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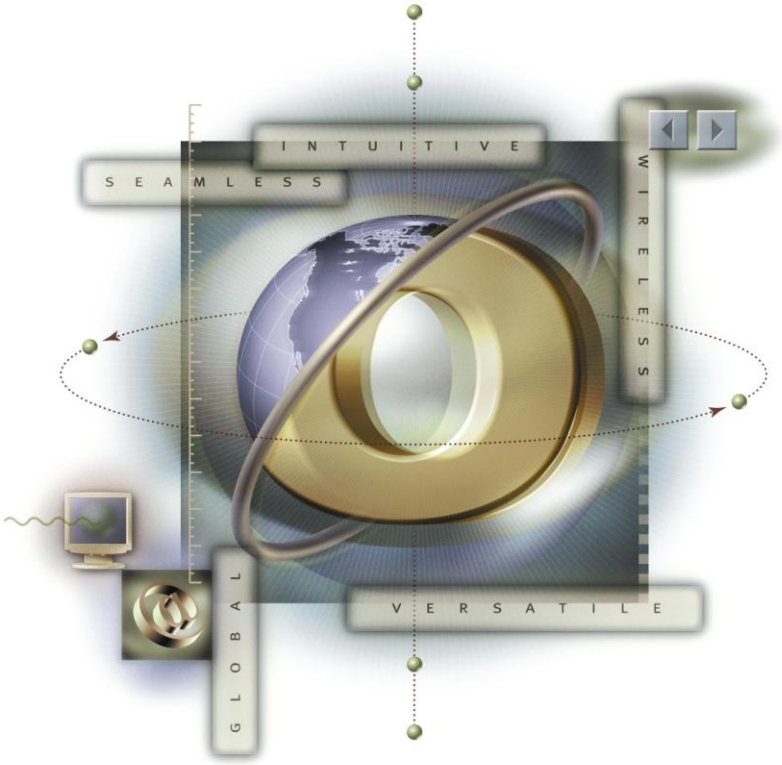

Opera Hotel Edition

Opera 4.0.04 & 5.0.1 Cluster Installation

Version 4.04 & 5.0.1

June 16, 2008

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Document Number:

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Introduction

This document describes the installation process using the Opera Cluster Solution (OCS) installation wizard, for Opera Version 4.0.03 and higher.

Please note that Oracle Fail Safe clusters are no longer supported for Opera Version 4.0.03 and higher with the introduction of this new solution. Whereas the former solution used Microsoft clustering, this new solution incorporates the Oracle Cluster File System (OCFS) for shared database files.

Premise

The Opera Cluster Solution (hereafter OCS), was developed to provide a cost-effective, redundant Opera environment for smaller Opera customers.

OCS requires the use of 2 servers and a Storage Area Network (SAN) disk storage array to house shared database and application files. Under normal conditions, one server acts as the database server, while the other server acts as the application server. In the event of a server failure, each server is sufficiently sized to be able to run both database and application server functions in an Opera Single-Server configuration. Once the failing server is repaired, it can be re-introduced into the environment so that each server is again operating in normal mode.

Failover of functions between servers is not automatic and requires a brief Opera outage to perform. The *Opera Cluster Control* utility has been developed to assist in transferring database and application server functions from one server to the other. Using *Opera Cluster Control* is explained toward the end of this document

Prerequisites

1. For installation purposes, this document will assume that the installer is familiar with database clustering concepts and has the technical ability to understand the information presented and follow the instructions within this document to the letter.
2. All installation steps outlined herein should take place at the server console. Using *Windows 2003 Remote Desktop* with the */console* switch (*mstsc /console*) also works. *Terminal Server*, *VNC*, *Webex* and *pcAnywhere* are not supported connections for the installation.

   Note: DO NOT install any software across a network share. Install directly from locally mounted CD drives or hard drives containing the pre-staged software from the CDs.
3. Cluster servers should not be a Windows Domain controllers, DHCP, Wins or DNS servers.
4. The suggested hardware is an Opera approved HP Packaged Cluster, or two HP servers (DL380, DL385, DL580, DL585) attached to a HP MSA 500 (or larger) Disk Array using SCSII cabling (either copper or fibre). Any other hardware vendor solutions must be pre-approved by Opera Support Services before attempting this installation.
5. Opera provided servers have been pre-imaged with the Micros created Windows 2003 Operating System image. This image differs somewhat for each major account client. Alternate vendor hardware solutions must have Windows 2003 (Standard or Enterprise) pre-installed with current Microsoft service packs and security patches applied.

6. Both Network Interface (NIC) cards of each clustered server should be plugged into a network switch. The NICs used for the Interconnect connection on each server should be connected via a separate 1gb switch or VLAN.

   Note: The use of a crossover cable for the interconnect is not supported.

7. This document covers both 32-bit and x64-bit server installations. All x64 servers should be pre-configured with a 64-bit Windows OS facilitating the installation of the 64-bit version of the Oracle database.

Assumptions

1. The clustered servers are pre-loaded with *Windows 2003 Server* (either Standard or Enterprise version**)** Service Pack 2. As previously mentioned, servers with x64 processors should have the 64-bit version of *Windows Server* installed to facilitate the installation of the 64-bit version of the *Oracle* database.

2. In this example the clustered server names are set as NPLCLUST1 and NPLCLUST2. Server naming conventions are left up to the site. Most major the account clients have established naming conventions valid throughout their enterprise. The same applies to established network IP addressing conventions for the servers.

3. This installation assumes that the hardware is setup correctly and configured per the hardware vendor's specifications and guidelines. If there are any hardware issues, including configuration, please contact your hardware vendor.

4. All examples in this document are per OPERA established standards for the installation.

Operating System Changes

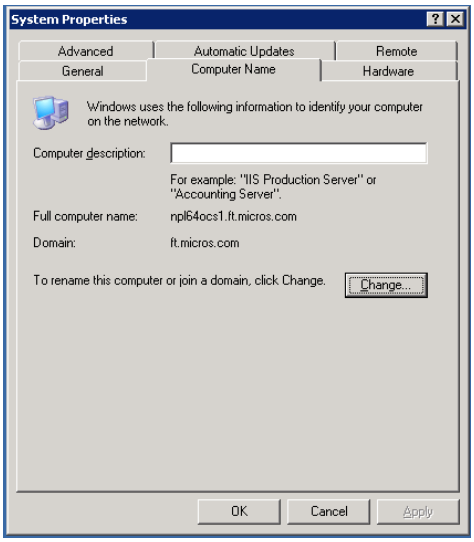
In this section we will perform various Windows Server related functions to prepare the servers for the Opera installation. In order to ensure a successful installation, please follow the outlined procedures carefully.

Server Naming

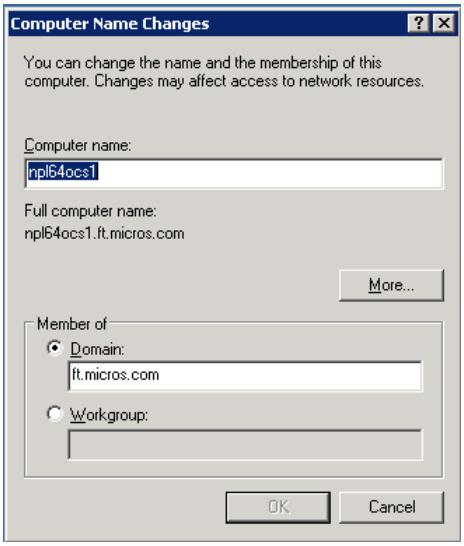
Most Major Account Clients (MAC) have specific server naming and IP addressing standards. Make sure you are using the latest standards available for the specific MAC hotel you are installing. You can find this information on the MAC specific Share Point site.

Rename both servers to their appropriate names.

1. Right-click on My Computer ➔ select Properties ➔ select the Computer Name tab ➔ click the Change button



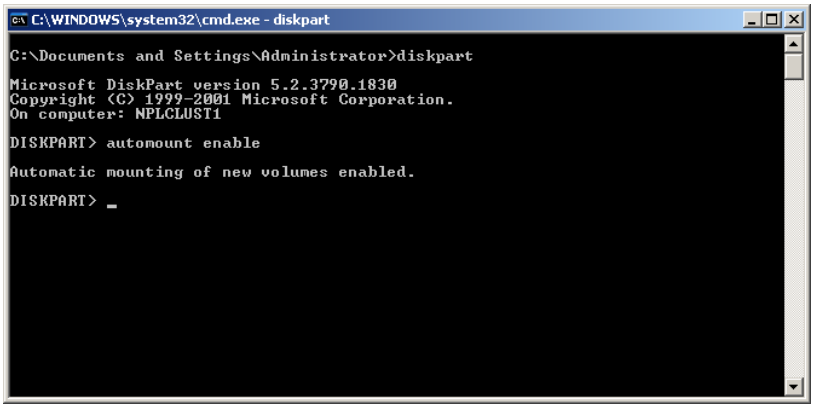
2. Enter the proper computer name in the box as indicated below…



Disk Automount

Automount of new partitions needs to be enabled on both nodes.

1. Open a Windows command prompt and type "diskpart".
2. Type "automount enable" at the DISKPART command prompt.

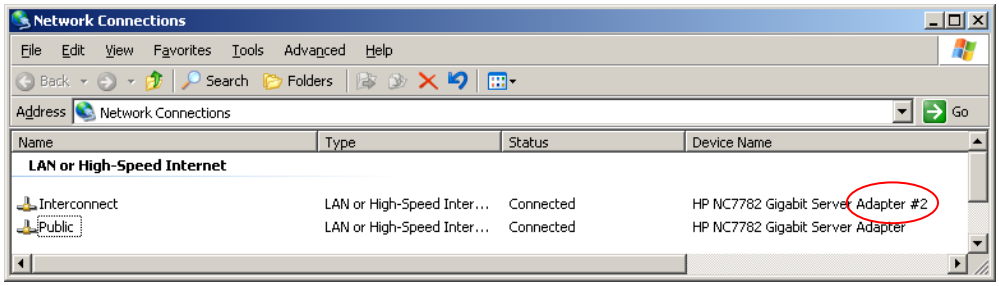


3. Exit Diskpart and close the command prompt window.

Network Configuration

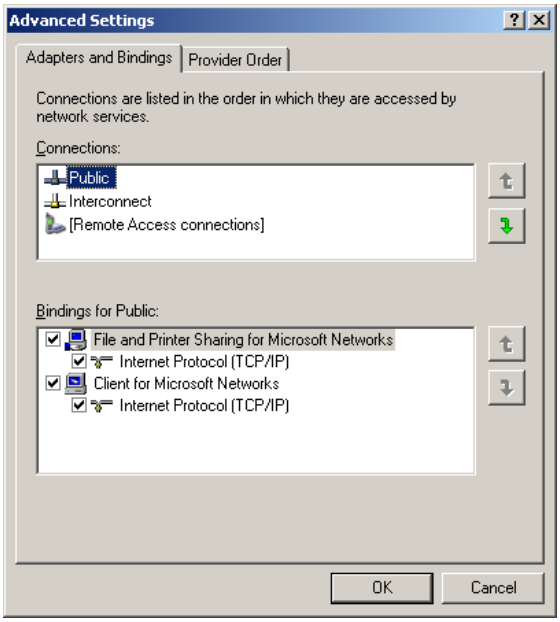
Each server must contain two network interface cards (NICs). One interface (called Public) will be used as a general connection to the customer's network while the other interface (called Interconnect) will be a private connection just between the two OCS servers.

1. Right-click on *My Network Places* ➔ select *Properties*
2. Rename each NIC per the following standards:
   a. NIC #1: *Public*
   b. NIC #2: *Interconnect*



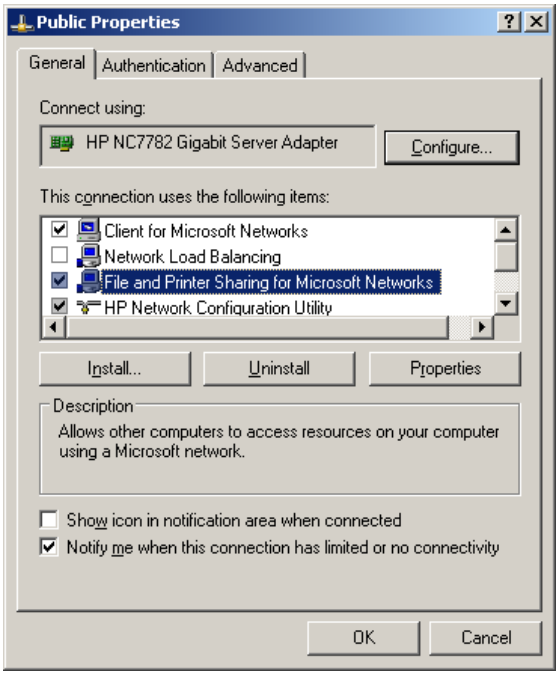
Note: As indicated above, the number of the NIC can be determined by viewing the *Device Name* column

3. Select "Advanced" on the menu bar and make certain that the *Public* NIC is listed before the *Interconnect*. Highlight a NIC and use the arrows to the right of the connections display to position the NICs in the correct order.

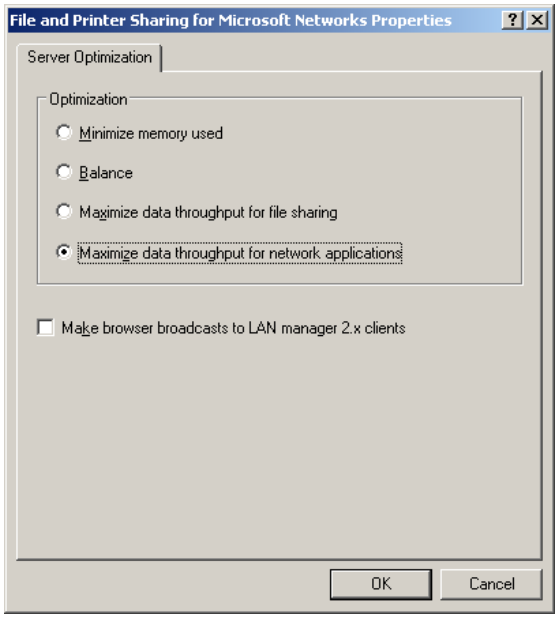


4. Make sure the Interconnect NIC on each server is plugged into a switch. Remember, the use of crossover cables for the *Interconnect* NIC's is NOT supported in the *Opera 4.0.03* cluster.

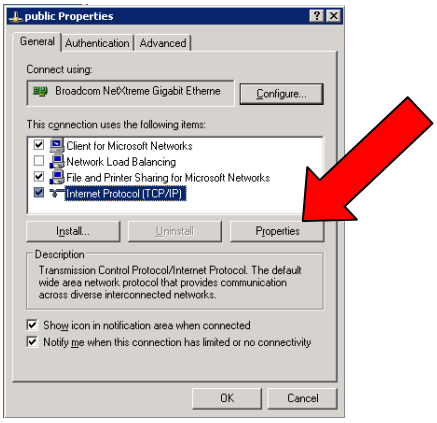
5. For each NIC on each server, double-click on "File and Print Sharing …"



6. Select "Maximize data throughput for network applications", then click the OK button.



7. Configure each NIC cards with IP addresses. Use the table of Installation values from Appendix to configure these
   a. From Network connections window Right Click Properties on "Public" Network card
   b. Click on Internet Protocol(TCP/IP)
   c. Click on Properties



d. Click on Use IP Address

e. Enter IP Address (Use data from Table of Installed values)

f. Enter Subnet Mask (Use data from Table of Installed values)

g. Click on OK

Note: You may lose connection if you are configuring this using Remote Desktop. Reconnect using IP address.

h. Repeat steps a - g from above to configure Interconnect NIC card.

8. Repeat step 7 for both nodes.

9. Perform ping test from both nodes using IP addresses configured

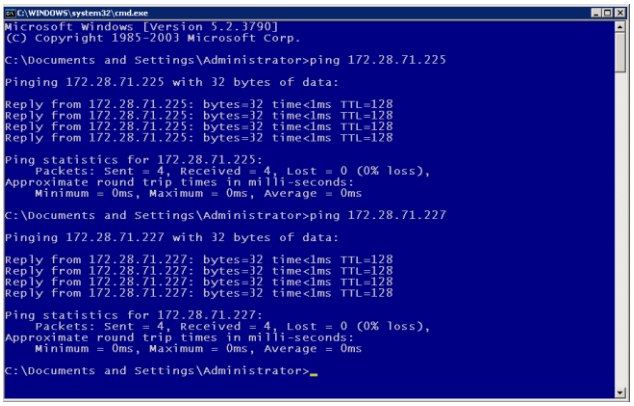


Fig: Ping Test using PUBLIC IP addresses

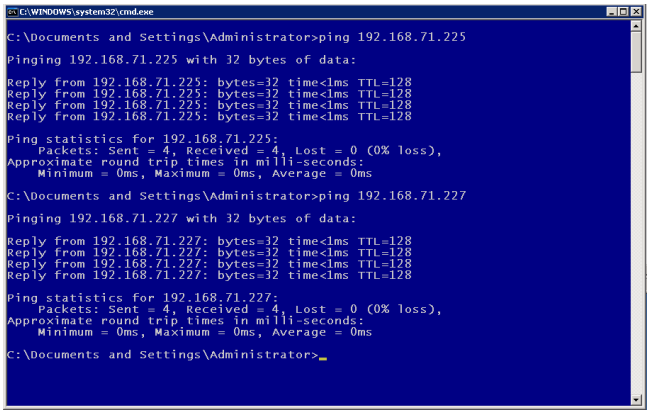


Fig: Ping Test using Interconnect IP addresses

Server Internal Drives

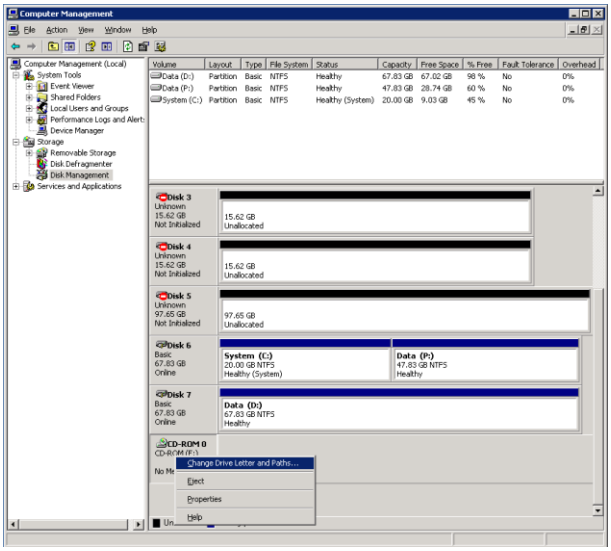
In this section we will establish some standards for our Opera installation. We will change the CD/DVD drive to use the Z: drive designation and ensure that a D: drive is available for the Opera installation.

Using Disk Manager:

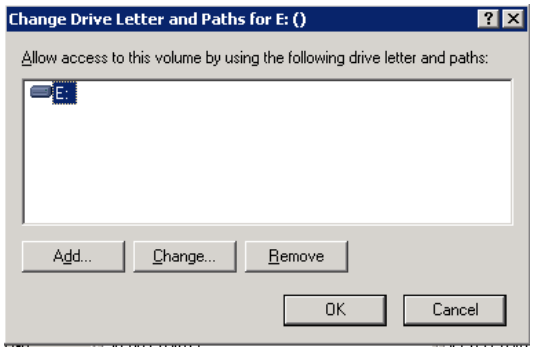
1. Rename the CD ROM or DVD drive to *Z:* if it is not already done.

    a. Right-click on *My Computer* and select *Manage*.

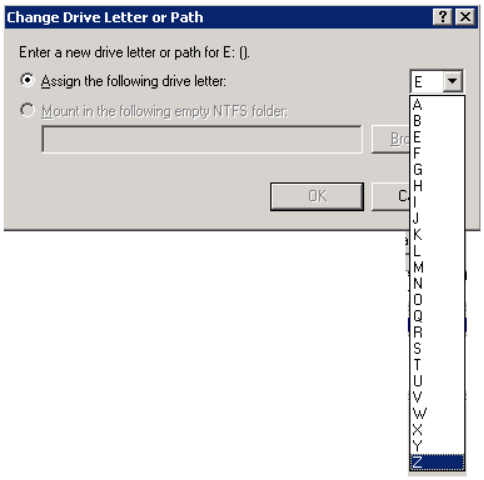
    b. Right-click on the CD-ROM drive and select "Change Drive Letter and Paths..."



c. Click on the *Change* button.



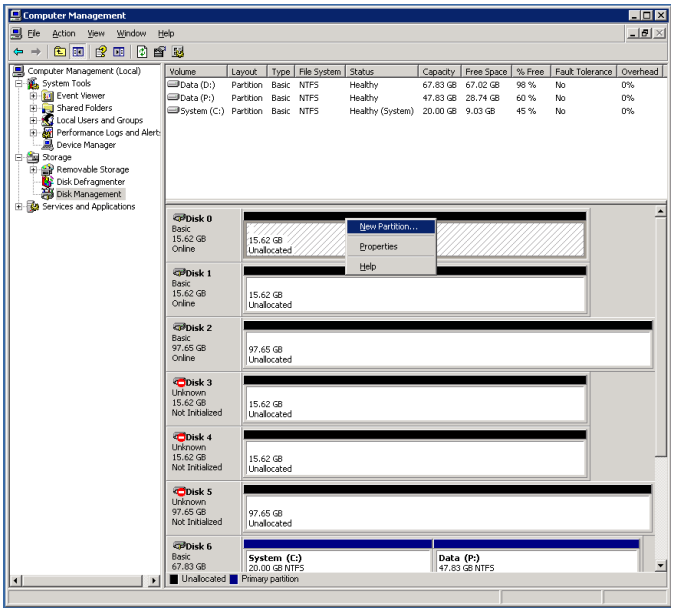
d. Select the *Z* drive letter from the pull-down list.



e. Click *OK*, then click the *Yes* button.

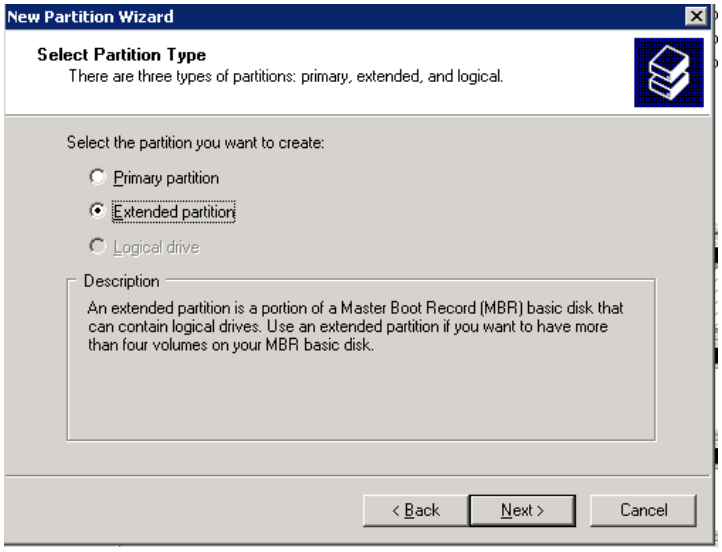
2. If there is no *D:* drive defined:

a. Create a new *D:* drive partition on the remainder of Disk-0 by right-clicking on the unallocated area and selecting "New Partition".

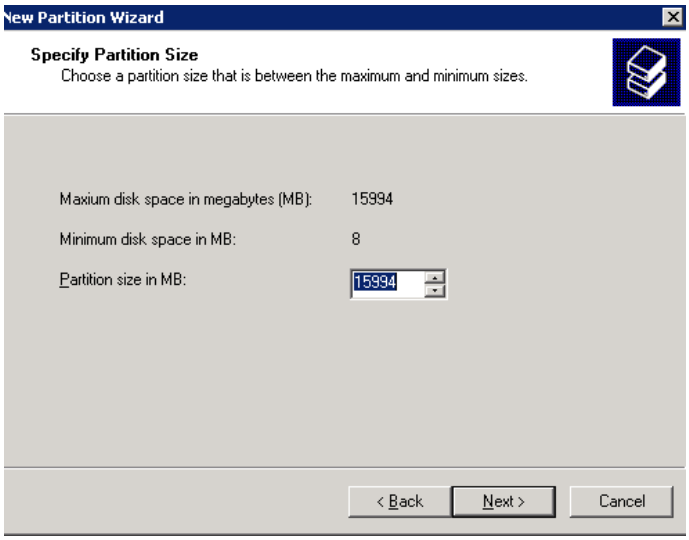


b. Follow the "New Partition Wizard" prompts to create the new D: partition.

c. Make this an extended partition.



d. Use the maximum size available.



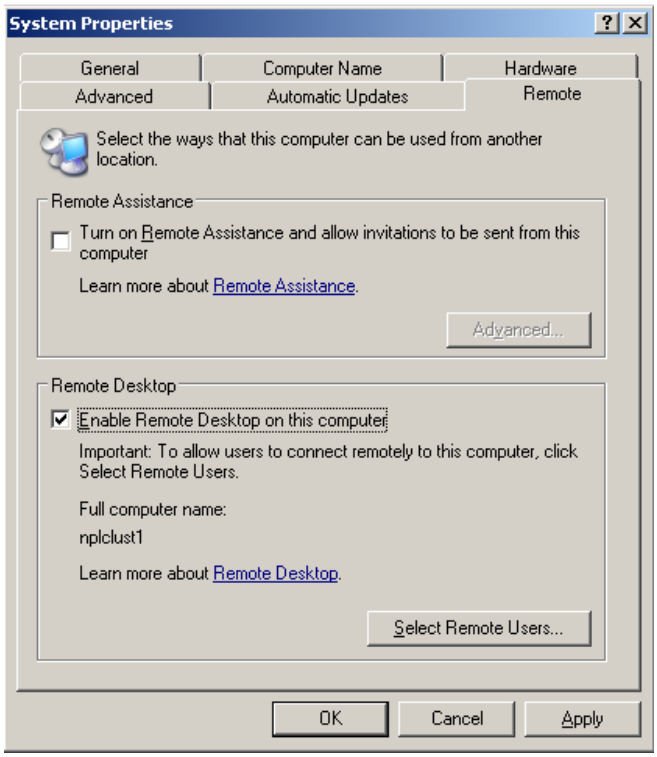
e. Click Next, then exit the wizard.

Enable Remote Desktop

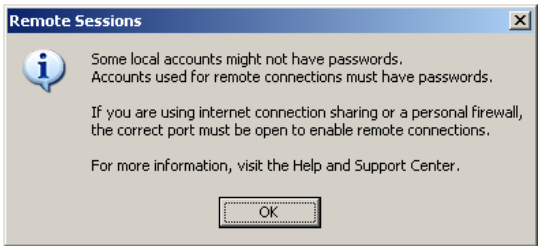
Here we will allow the servers to allow connections via Remote Desktop. If you are already using a remote desktop connection, you can obviously skip this section.

1. Right-click on *My Computer* and select *Properties* to open the *System Properties* panel.

2. Select the *Remote* tab and check the "*Enable Remote Desktop…*" box.



3. Acknowledge the below warning by clicking *OK*



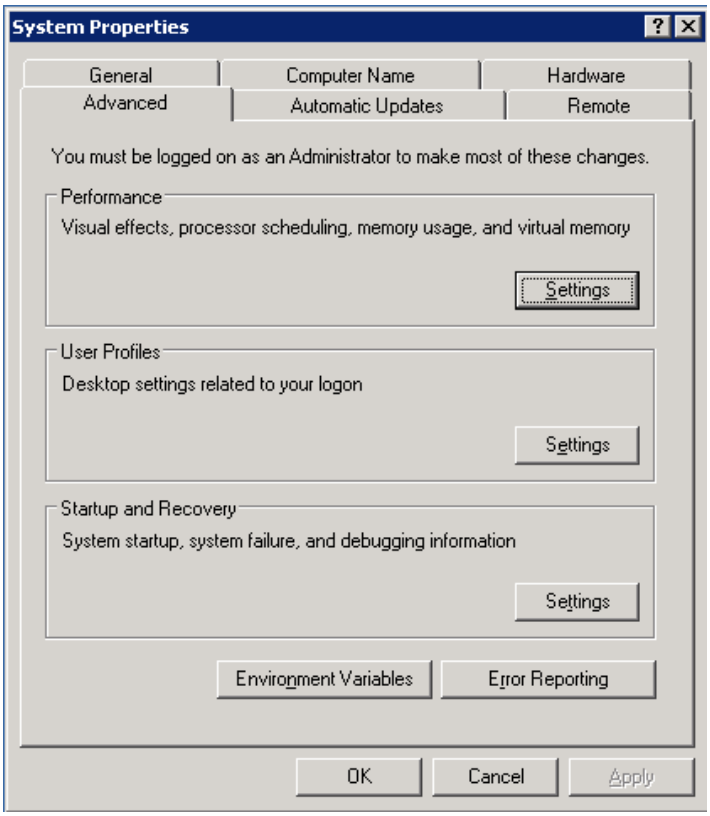
4. Click on the *Apply* button to save the change.

TEMP and TMP variables

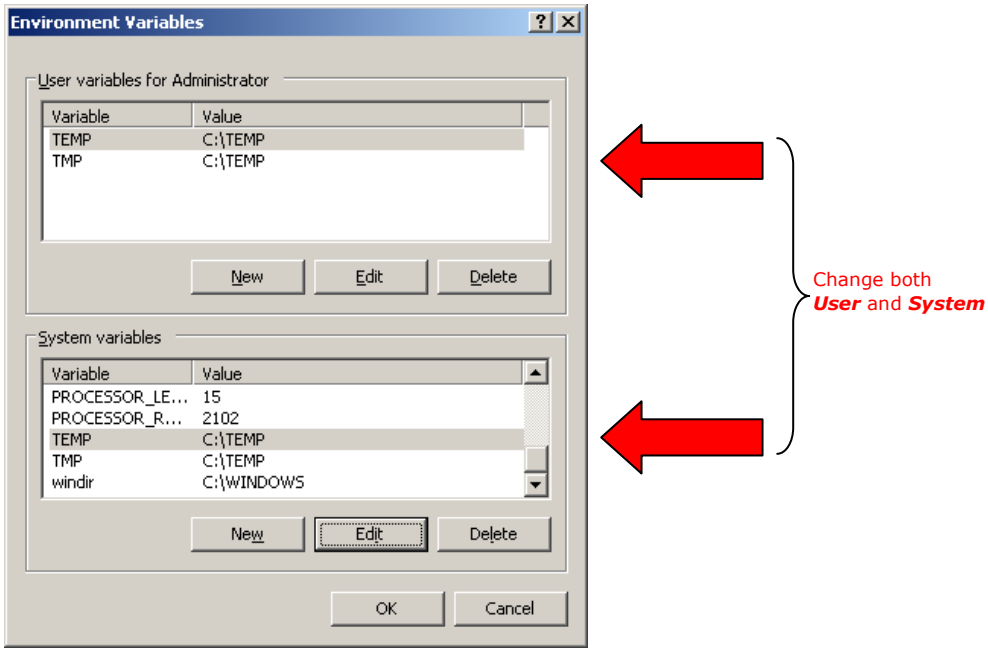
The *Oracle Universal Installer* (OUI) will need to use the temporary folders defined within *Microsoft Windows* to install properly across all nodes. The TEMP and TMP folders should be the same across both nodes in the cluster. By default these settings are defined as %USERPROFILE%\Local Settings\TEMP and %USERPROFILE%\Local Settings\TMP.

For *Opera* standards redefine these as TEMP=C:\TEMP and TMP=C:\TEMP for each node. Once these variables have been set, create the C:\TEMP directory using *Windows Explorer*.

1. On the *System Properties* panel select the *Advanced* tab then click on the *Environment Variables* button.

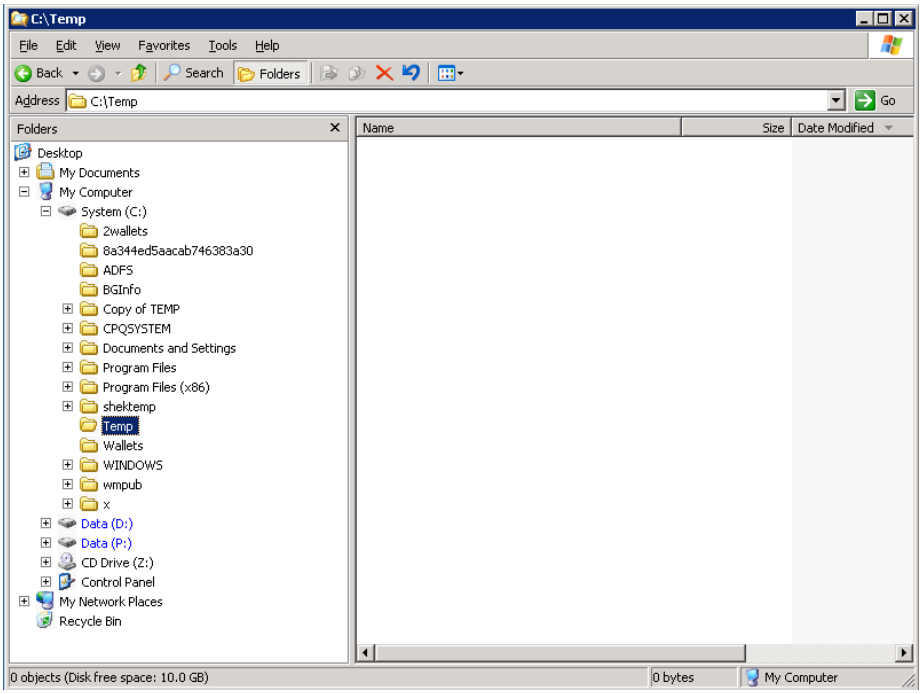


2. For both "User variables…" and "System variables", change the default values for both the TEMP and TMP variables by highlighting the variable and clicking on the Edit button. Enter C:\TEMP as the same value for each variable.



3. Click on the *OK* button to return to the *System Properties* panel.

4. Open a *Windows Explorer* window and create the C:\Temp folder.



Startup and Recovery

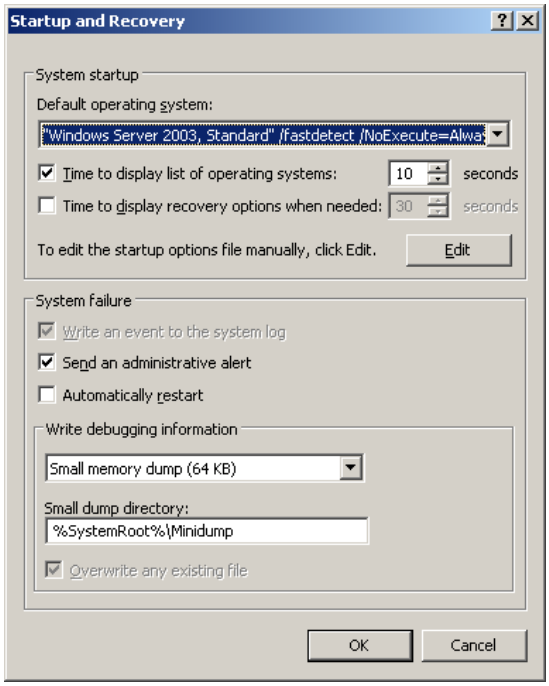
Here we will implement boot-up parameters per Opera installation standards.

1. On the *System Properties* panel click the *Advanced* tab.
2. Click the *Settings* button in the "*Startup and Recovery*" section.

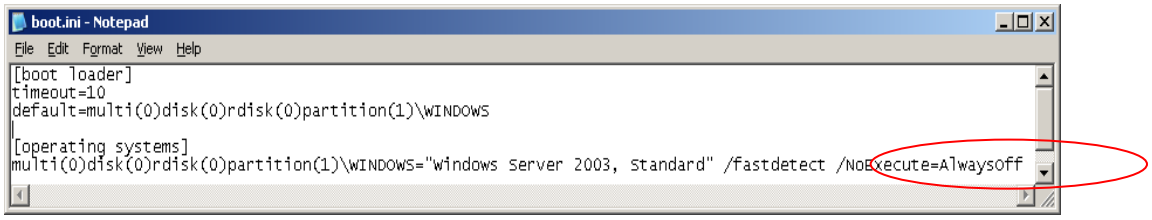
    a. Check the "*Time to display list …*" box and change the value to 10 seconds

    b. Make sure "*Automatically Restart*" is NOT checked

    c. Select "*Small Memory dump*" in the "Write debugging information" section



    d. Click the *Edit* button in the startup options and modify the boot.ini file using the *Notepad* window. Change the execute entry to "*/NoExecute=Alwaysoff*" as indicated below.



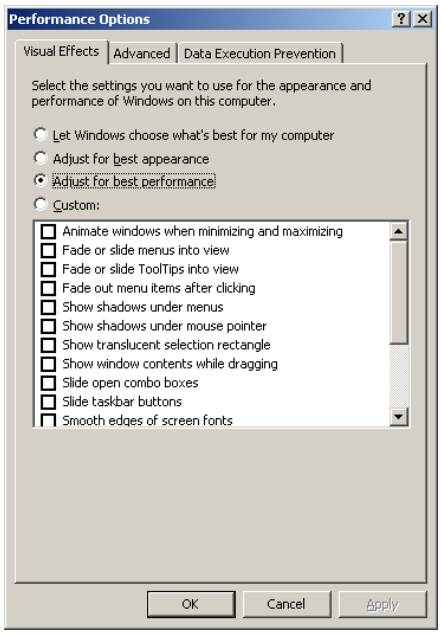
    e. *Save* and *Exit* the *Notepad* window.

    f. Click on the *OK* button to return to the *System Properties* panel.

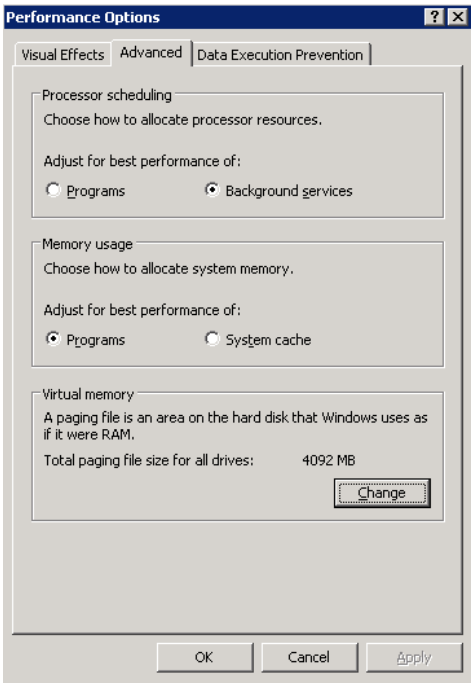
Performance Settings

In this section we will set some Windows parameters to maximize Opera performance.

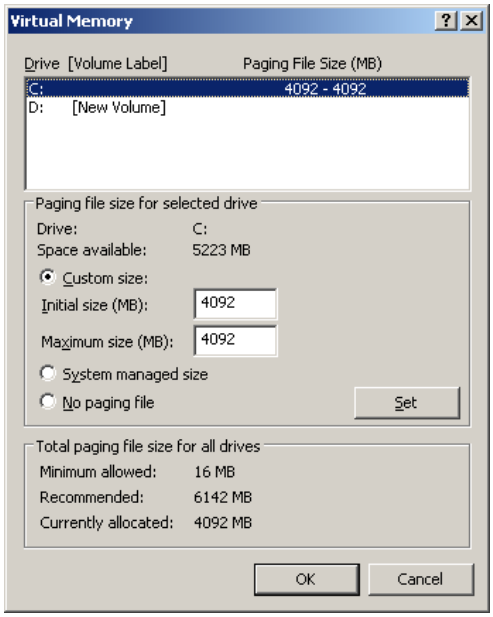
1. On the *System Properties* panel, click the *Advanced* tab.
2. Click the *Settings* button in the Performance section.
3. On the *Visual Effects* tab choose "Adjust for best performance".



4. Click the *Advanced* tab and in the *Virtual Memory* section, click on the *Change* button.



5. Choose *Custom Size* and set the initial and maximum sizes of the paging file to "4092".

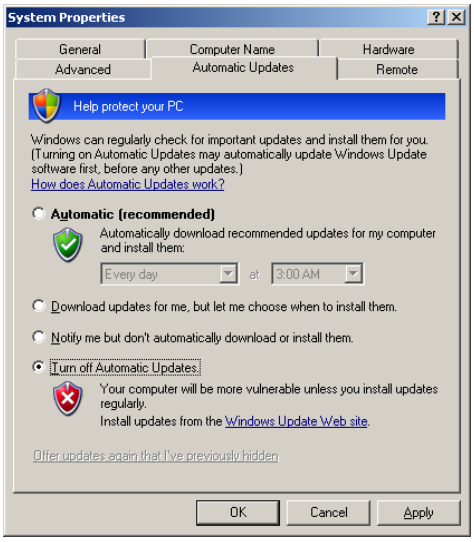


6. Click on the *OK* button twice to return to the *System Properties* panel.

Automatic Updates

As an Opera installation standard, we will not allow the servers to accept automatic operating system updates from Microsoft. Any required updates will need to be manually downloaded and installed by the customer's IT staff. We have identified issues in the past where automatically downloaded and installed updates, without a subsequent reboot, have caused serious Opera performance degradation.

1. From the *System Properties* panel, select the *Automatic Updates* tab. Choose the "*Turn off Automatic Updates*" option.



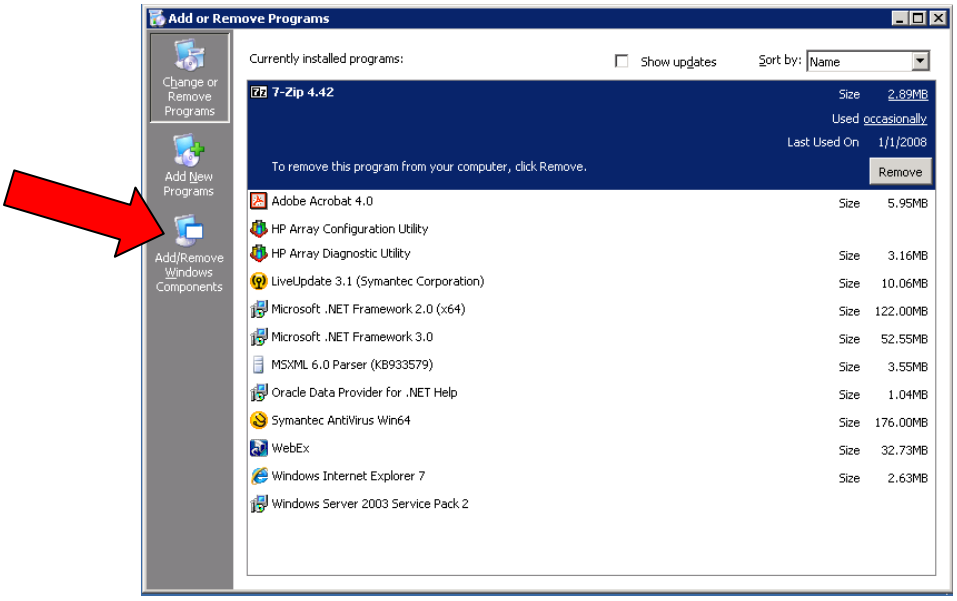
2. Click on the *OK* button to save the change and close the *System Properties* panel.

Internet Explorer Enhanced Security

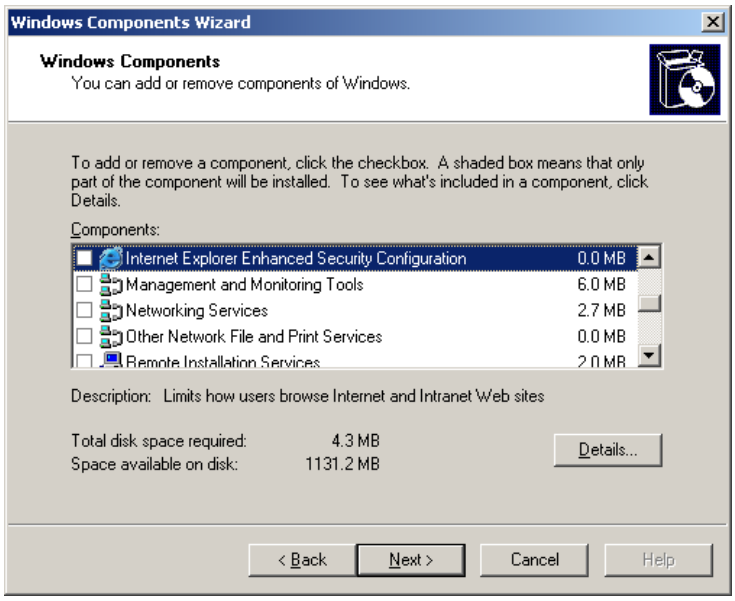
The IE Enhanced Security featured often interferes with the loading of critical Opera Application Server functions on Opera workstations. We will de-install this feature to allow direct invocation of Opera from the Opera servers (server acting as workstation).

1. Click on *Start* ➔ *Settings* ➔ *Control Panel* ➔ *Add or Remove Programs*

2. In the left screen panel, click the *Add/Remove Windows Components* icon.



3. Deselect (uncheck) the "Internet Explorer Enhanced Security…" component.

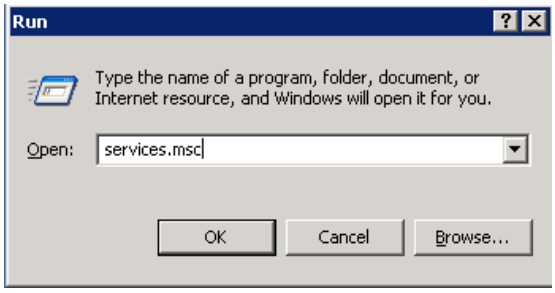


4. Click the *Next* button to have *Windows* remove the component; then click *Finish* and close the window.

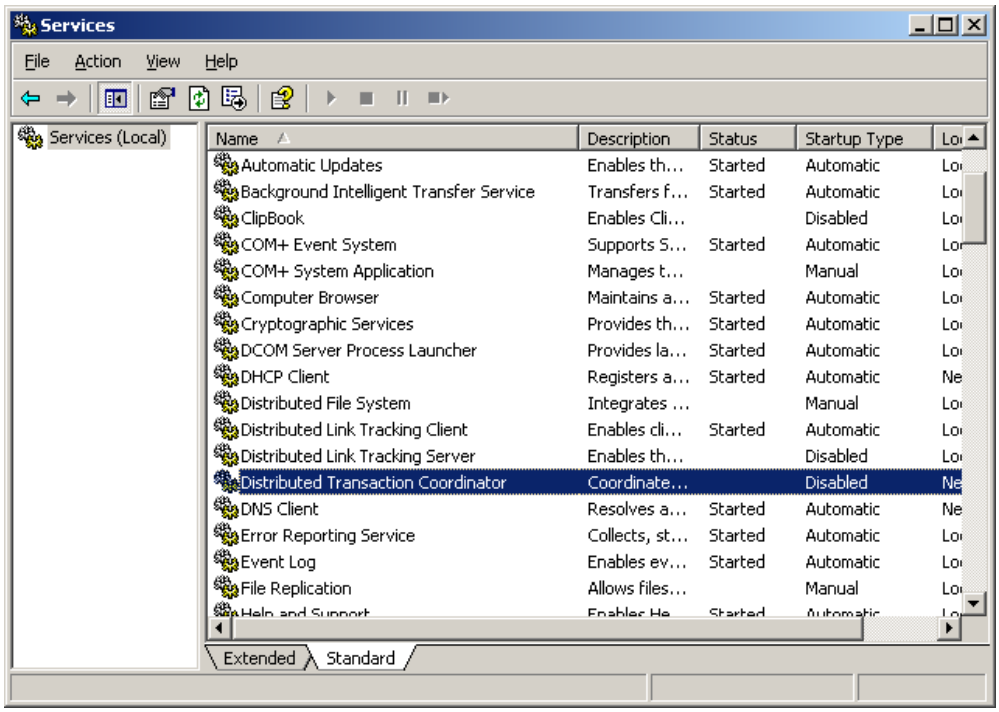
Distributed Transaction Coordinator

The *Windows Distributed Transaction Coordinator* service often interferes with *Oracle* database installation and patch updates. Since this service is not required on Opera servers, we will disable it. The service must be re-enabled and started to allow *Windows Updates* (also disabled for Opera servers) to be implemented successfully.

1. Click *Start* ➔ *Run* and type "*services.msc*" in the *Open* box and then click the *OK* button.

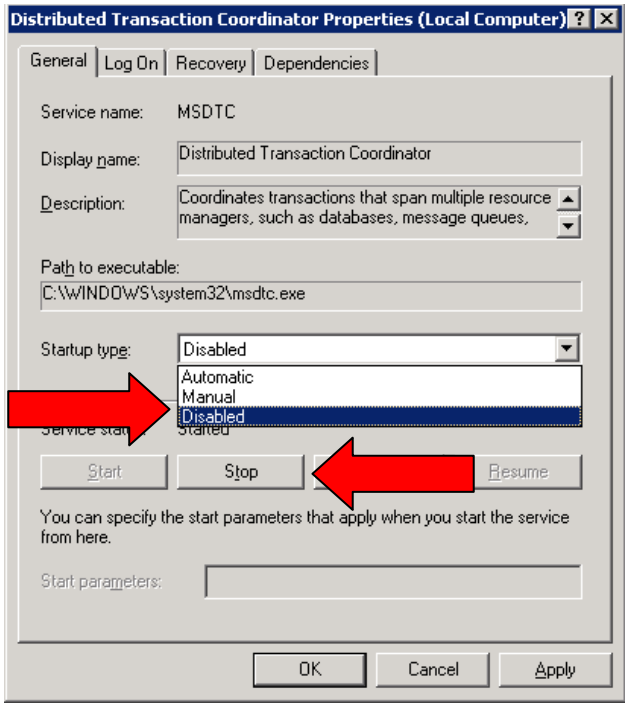


2. Navigate to and highlight the "*Distributed Transaction Coordinator*" service.



3. Double-click on the service name to open its' properties panel.

4. Select *Disabled* from the pull-down list for *Startup Type* and then *stop* the service by clicking on the *Stop* button.



5. Click the *OK* button to save the changes and close the Properties panel.

Single Server Installation

OCS requires that each server be able to support both Oracle Database and Application Server functions. The easiest way to provide these functions on each server is to do an Opera Single-Server install on both servers. The OCS media includes Single-Server installs for both 32-bit (x86) and 64-bit (x64) server hardware.

Pleas install *Opera 4.0.03 Single Server Edition* to the D: drive of both servers as per the Single Server Installation document included on the installation media.

Caution: DO NOT PROCEED until the Single Server installation has completed on each of the clustered server nodes.

SAN Configuration

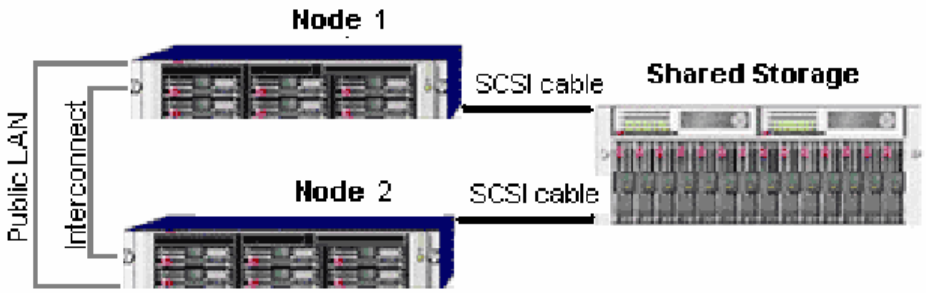
SAN Configuration Check

OCS requires the use of a SAN for storage of database and application files that are shared between the two OCS servers. This section describes how to configure the SAN to provide three logical drives for the OCS installation.

Note: This document assumes that the customer is using HP hardware. Alternative vendors will provide their own software for configuring their model of SAN. If you are not using a HP SAN, then please refer to your alternate vendor's documentation for SAN configuration. However, please adhere to the OCS installation standards by providing three logical shared drives for the OCS installation.

If the hardware was purchased from Micros, the SAN should be pre-configured per OCS installation standards. We can check to ensure the configuration has been done using the following procedure:

1. Shut down both server nodes and the SAN.
2. Check that both nodes are correctly attached to the *MSA 500 SAN* as per the following diagram:

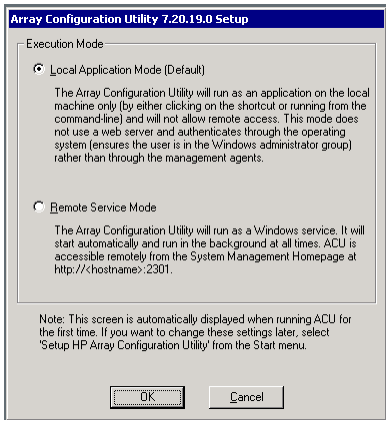


3. Power on the SAN and wait until both MSA controllers display "*Startup Complete*".

4. Power on each server node … Node1 and then Node2.
5. Log-in as the local administrator on the first node.
6. Invoke the HP Array Configuration utility as follows:

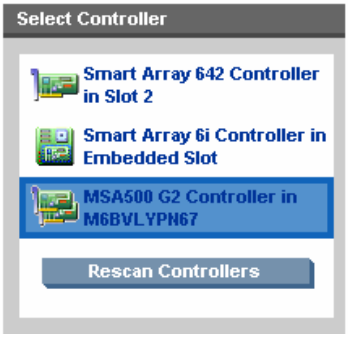
   Start ➔ *Programs* ➔ *HP System Tools* ➔ *HP Array Configuration Utility* ➔ *HP Array Configuration Utility*

7. Select "*Local Application Mode (Default)*" and click the *OK button.*

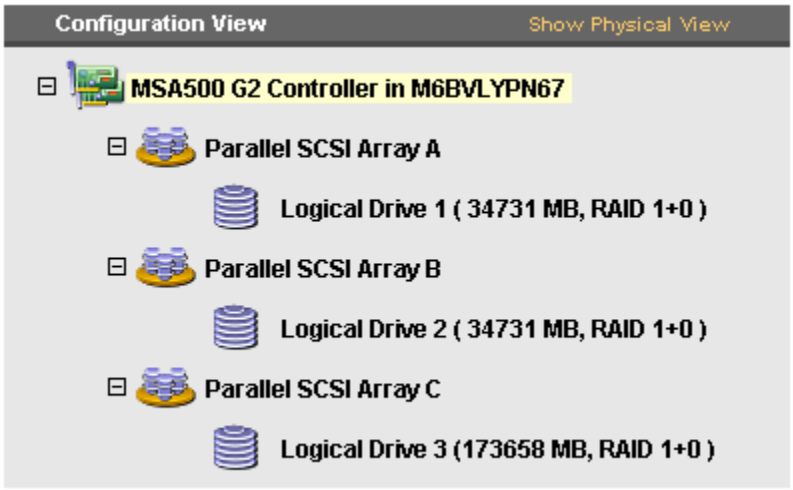


On the left side of the display, you should see two controller icons as indicated below. The *Smart Array Controller* is for disks internal to that node; while the *MSA Controller* is for the SAN disk array. If the MSA Controller does not appear, review the connections between the server nodes and the SAN

Note: On some servers, you may see a third controller similar to the display below. For our purposes, the *Smart Array 642 Controller* can be ignored because it does not require configuration.



8. In either case (2 or 3 controllers displayed), select the *MSA500 G2 Controller*. The configuration should appear as below. If that is not the case, follow the steps in the next section of this document (Manual SAN Configuration) to configure the SAN.

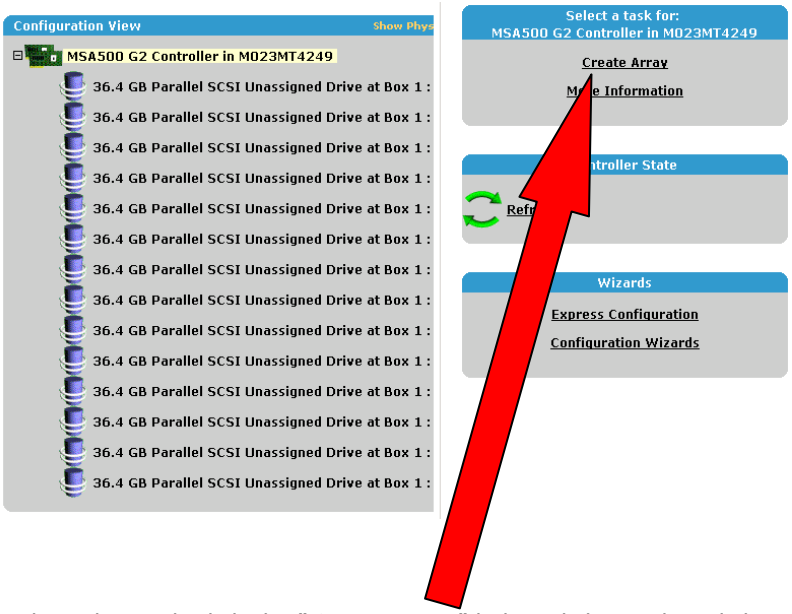


9. If your display appears as above, then please click on the link to skip to the section of this document titled "Windows Disk Configuration"; otherwise proceed with the manual process described in the following section.

Manual SAN configuration

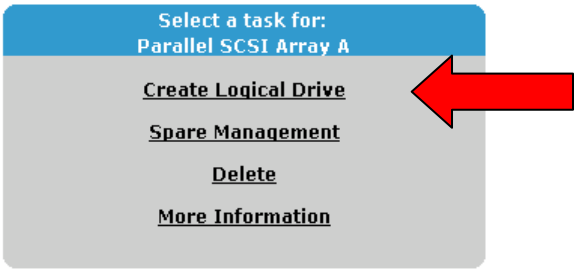
Note: If your SAN was configured correctly as determined in the previous section of this document, then click here ➔ Windows Disk Configuration to skip this manual configuration process.

When the SAN is not yet configured correctly, it should display as follows:

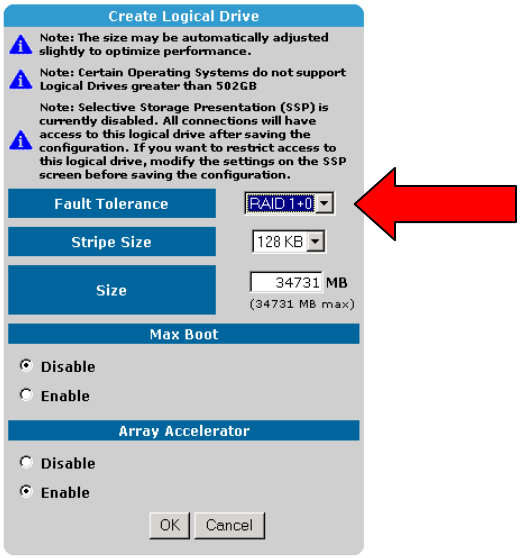


1. In the right side task panel, click the "*Create Array*" link and then select disks 1 and 8 per the example below:

2. In the right side task panel click the "*Create Logical Drive*" link.

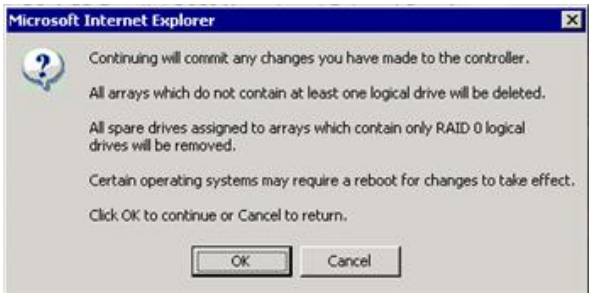


3. Ensure that *Fault Tolerance* is set to ***RAID 1+0*** and accept remaining default values by clicking on the OK button

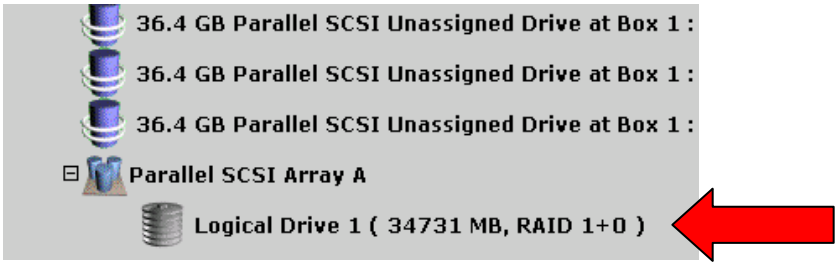


4. Click the *Save* button to save your changes.

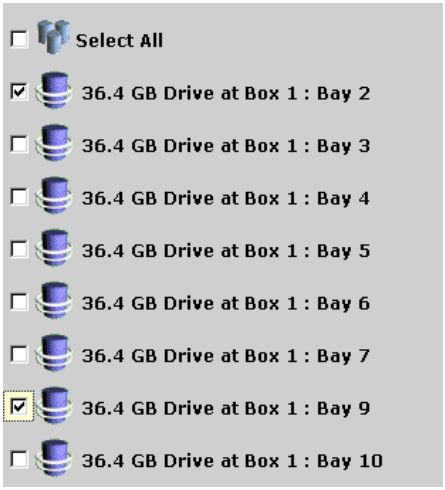
5. Confirm the warning message by clicking on the *OK* button.



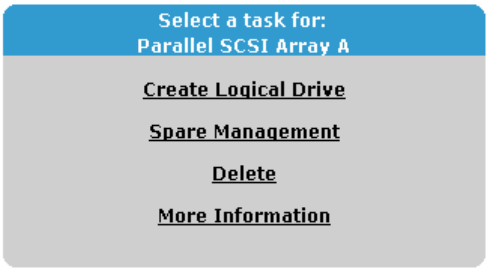
You have now created the first logical drive as indicated by the display.



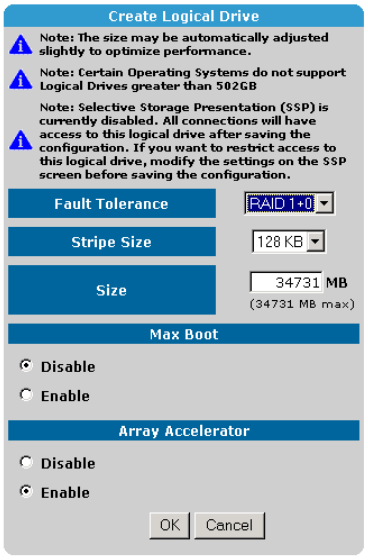
6. In the task panel click the "*Create Array*" link and this time select disks 2 and 9 per the example below:



7. Click the "Create Logical Drive" link in the task panel.



8. After once again verifying that *Fault Tolerance* is set to ***RAID 1+0***, accept remaining default settings by clicking the *OK* button.

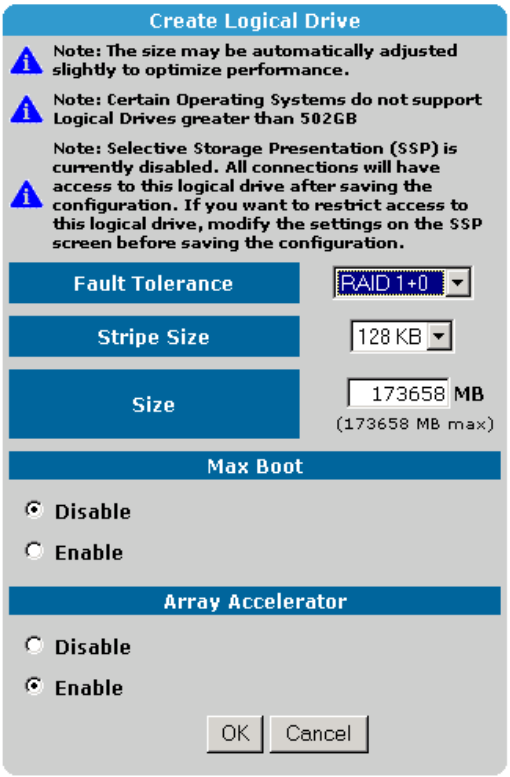


9. Click the *Save* button to save your configuration changes.

10. As before, confirm the warning message by clicking on the *OK* button.

11. In the task panel, again click on the "Create Array" link and then select all remaining drives by selecting "Select All"

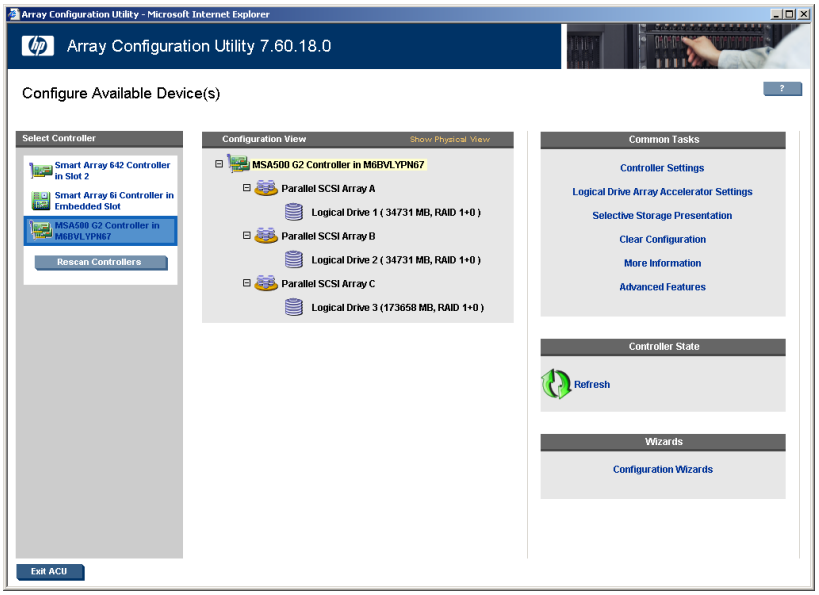
12. As done before, confirm that *Fault Tolerance* is set to ***RAID 1+0*** and click the *OK* button to accept remaining defaults.



13. Click the *Save* button

14. Confirm the warning message by clicking *OK*.

The SAN should now be completely configured and the results should now be displayed as indicated below:



15. Exit the Array Control Utility

Windows Disk Configuration

The Oracle database control files, data files, redo files, archive log files, and the Opera night audit report files will all be stored on the shared *Oracle Clustered File System* (OCFS) drives. This allows the files to be available to both nodes at any given time.

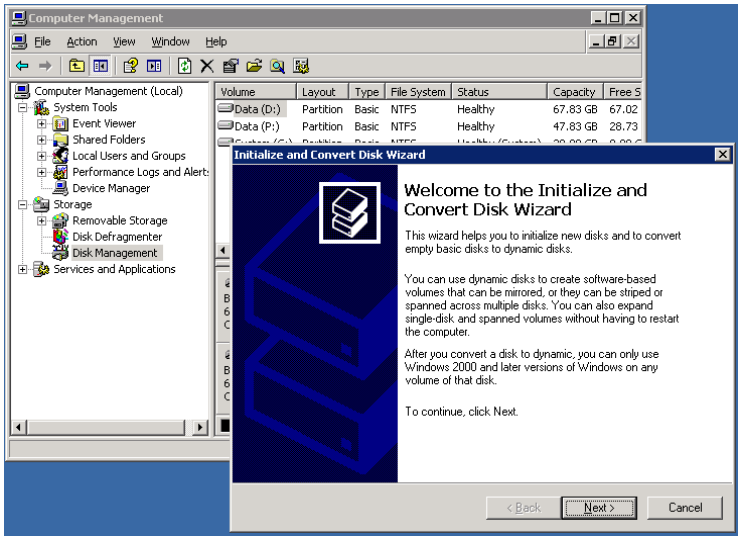
In this section we will prepare the SAN drives for the installation of OCFS. OCFS will be automatically installed and configured by the OCS installation Wizard

The following steps should only take place on NODE1 of the cluster unless specifically specified otherwise.

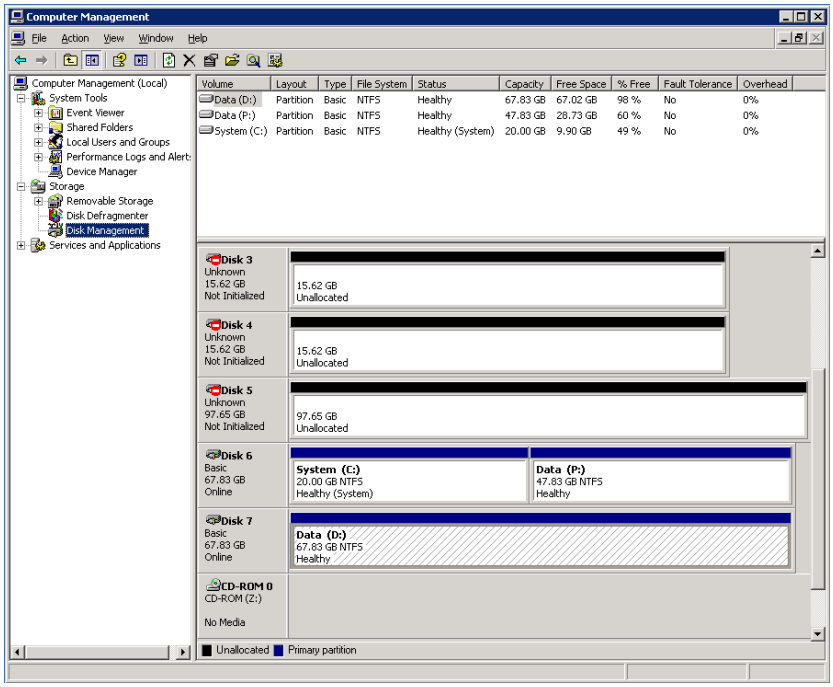
1. Navigate to the Disk Management screen as follows:

   Right click on *My Computer* ➔ *Manage* ➔ *Disk Management*

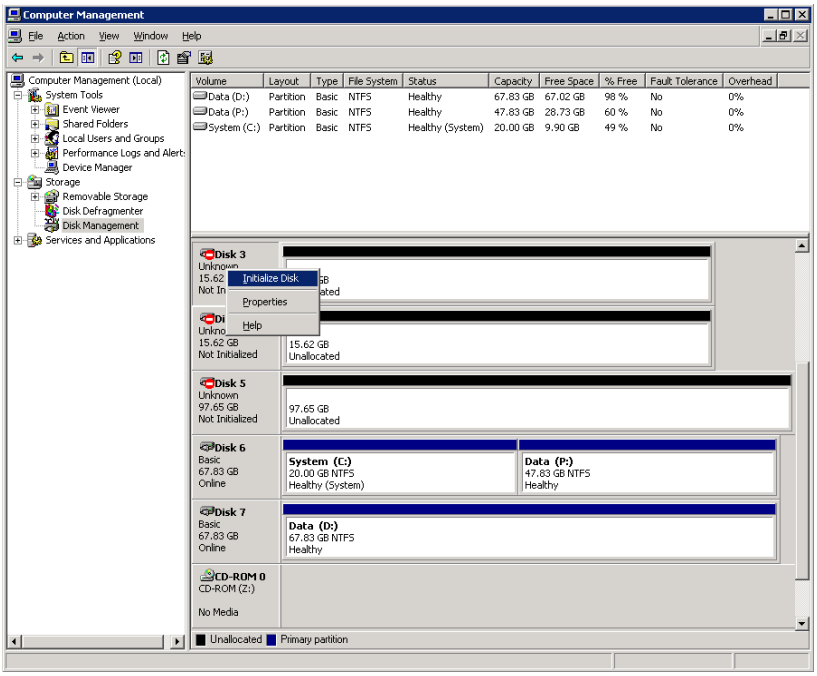
   If the *Initialize and Convert Disk Wizard* screen appears as below, then close it by clicking the *Cancel* button.



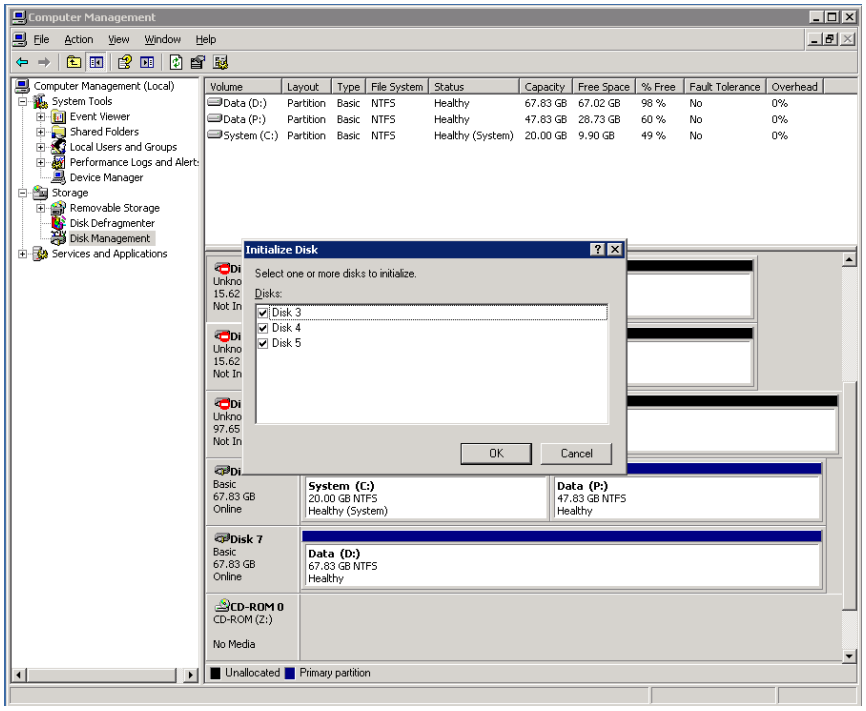
2. Expand the Disk Management panel so that all disks presented to the server are visible as indicated below:



3. For disks that have not yet been initialized, as indicated for disks 3-5 above, right-click on an uninitialized disk and choose *Initialize Disk*.



4. Select the disks that are to be initialized using the check boxes and then click the *OK* button.

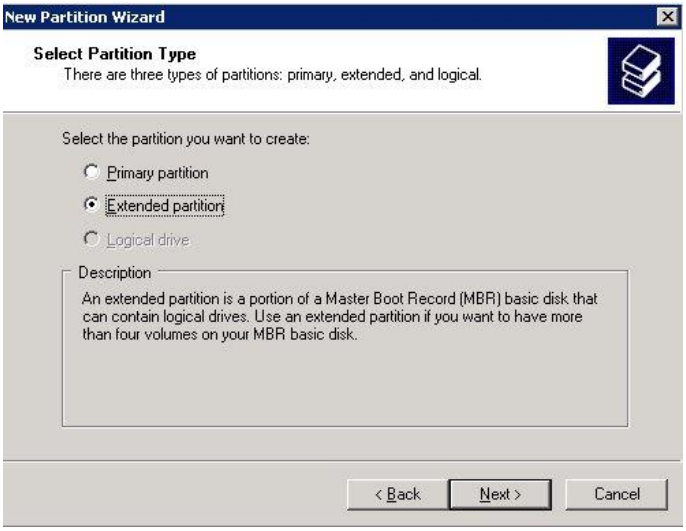


5. In order to create Extended Partitions, right click the unallocated region of a basic disk and choose *New Partition*.

Note: Dynamic disks are not supported. If prompted to write a signature, then do so, but make sure to de-select the option to upgrade to dynamic disks.

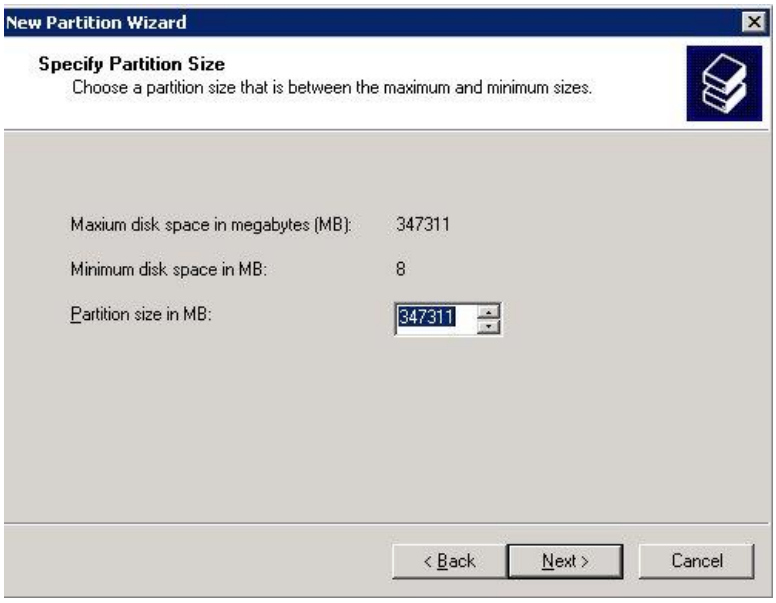
6. When the *New Partition Wizard* screen appears, click the *Next* button.

7. Choose *Extended Partition* and then click the *Next* button.



8. Allocate the entire disk, then click the *Next* button.

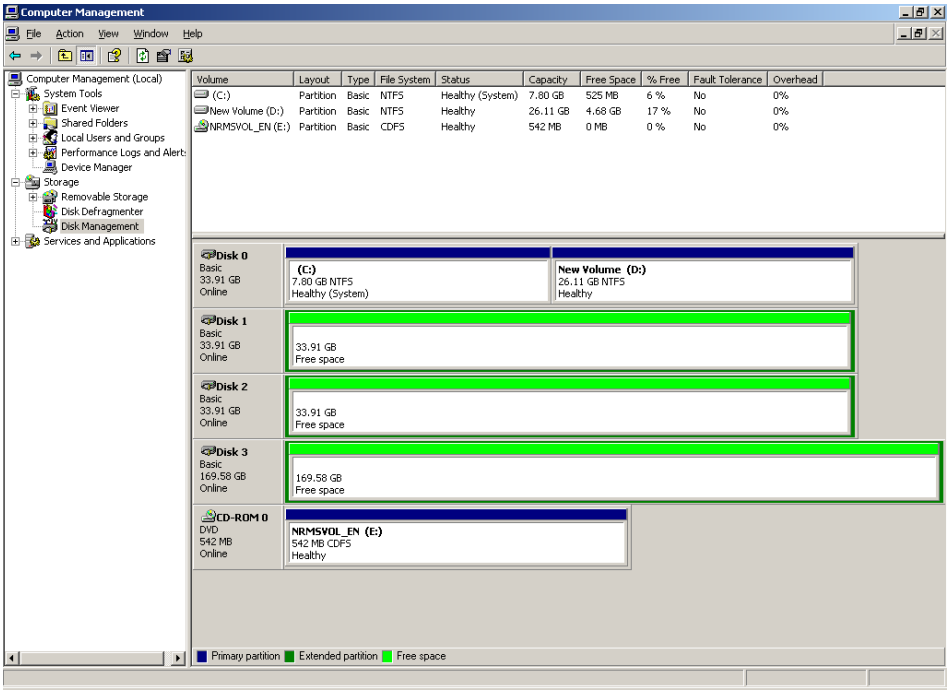
Note: The partition size value may be different in your environment.



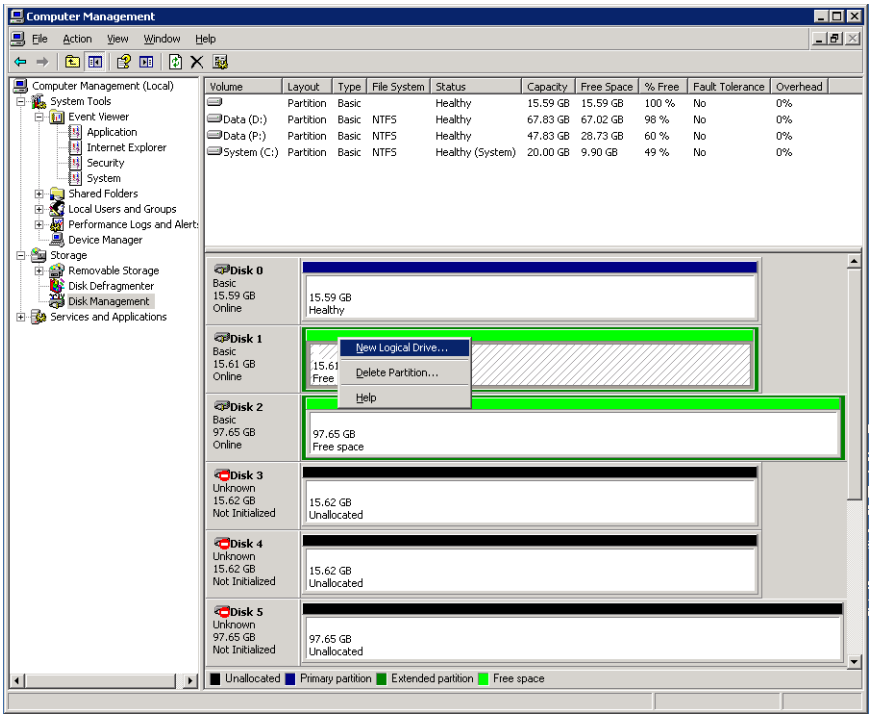
9. Click *Finish* to create the partition.

10. Repeat the partition creation steps for the two remaining disks.

When all partitions have been created the Disk Management display should appear similar to the example below:

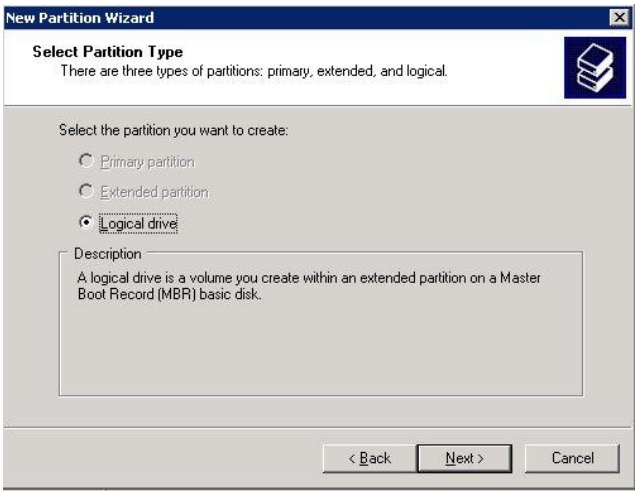


11. Right click the first *Extended Partition* and select *New Logical Drive*.

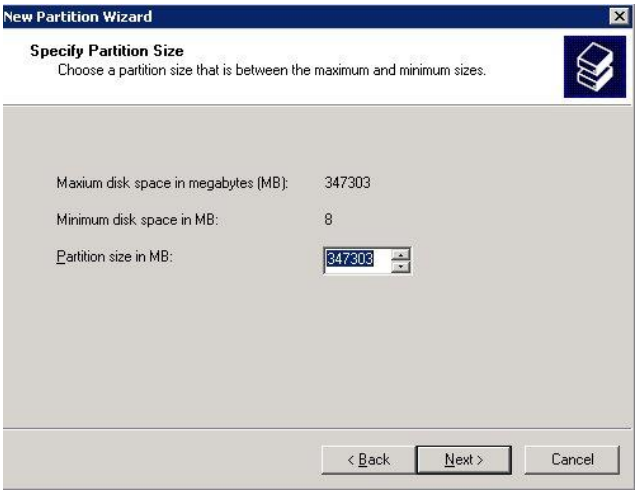


12. The New partition wizard will appear. Click *Next*

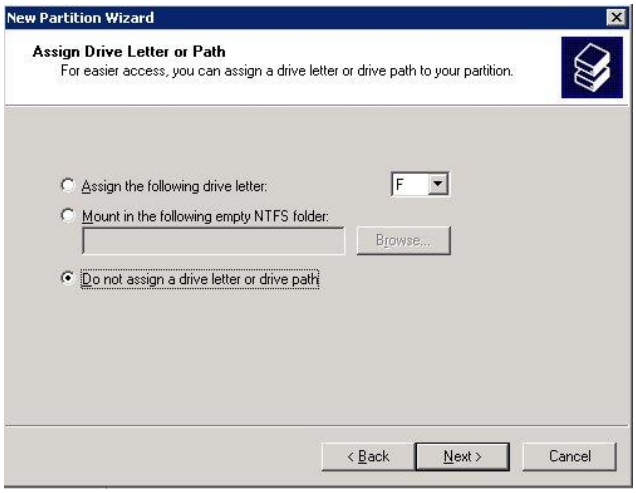
Select "*Logical drive*" and click the *Next* button.



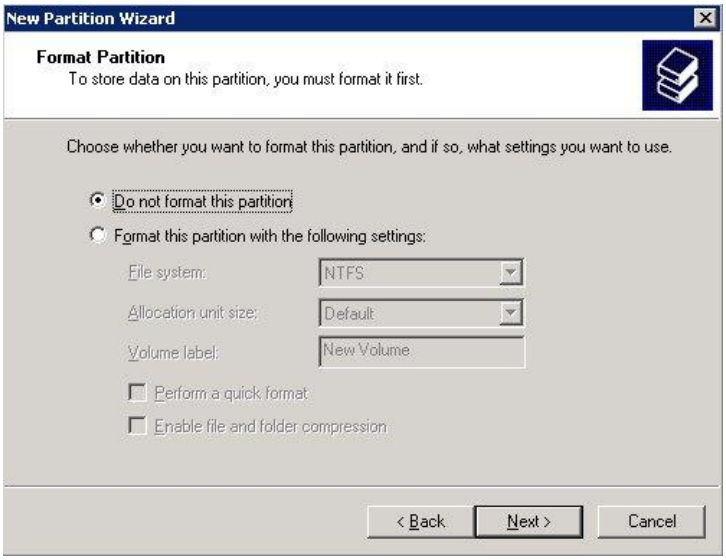
13. Allocate the entire partition for the new logical drive and click *Next*.



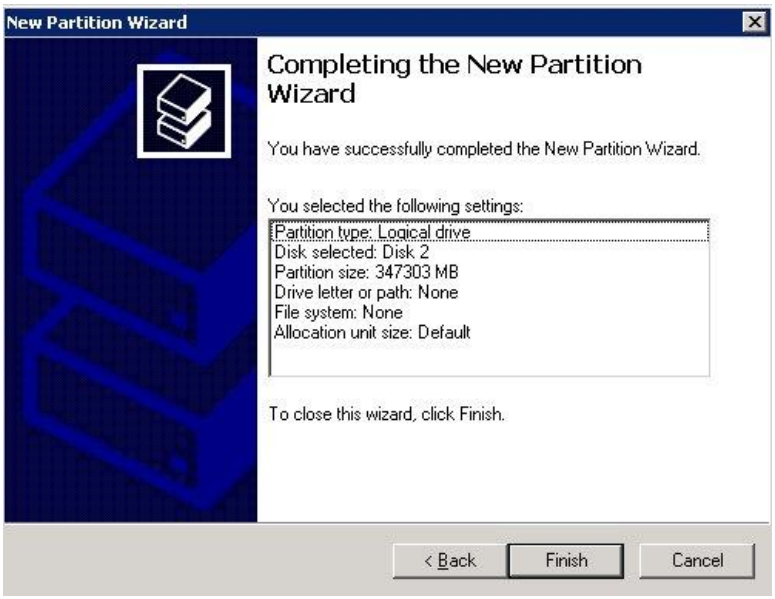
14. Select "*Do not assign a drive letter or drive path*" and click *Next*.



15. Select "*Do not Format this partition*" and click *Next*.

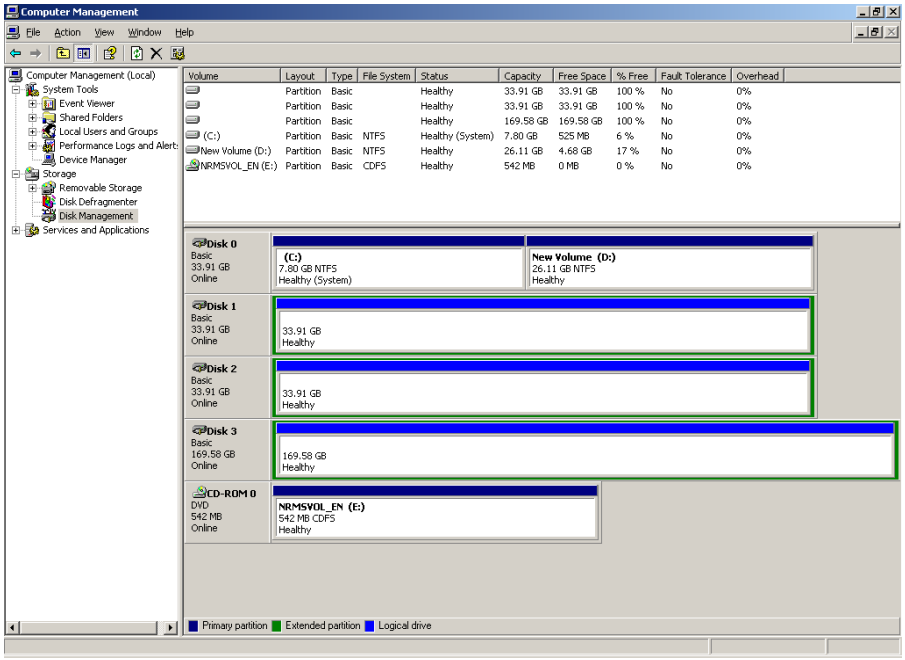


16. Complete Logical Drive creation by clicking *Finish*.



17. Repeat the Logical Drive creation steps for the remaining drives.

Once completed, the results should appear similar to the example below:



18. **Reboot** both servers.

19. After the reboots, remove all drive letters assigned to the SAN disks (typically the letters are assigned on NODE2).

Cluster Installation Wizard

At this point we are finally done with all server preparatory work and can invoke the OCS Wizard to complete the installation. Please review the caution items below before invoking the wizard.

~~ CAUTION ~~ ~~ CAUTION ~~

Before proceeding please confirm the following:

- ORACLE_SID environment variables are removed from both nodes.
- SAN drive letters are removed from both nodes after rebooting in the previous section of this document.
- OracleServiceOpera is stopped and set to Manual startup on both nodes.

On **NODE1**:

1. Copy the contents of the CLUSTER folder from the Installation Media DVD's into a temporary folder. You can also run the setup.exe directly from the DVD. DVD2's cluster folder contains Cluster media for 64-Bit (x64) servers and DVD3's cluster folder contains cluster media for 32-Bit (x86) servers.

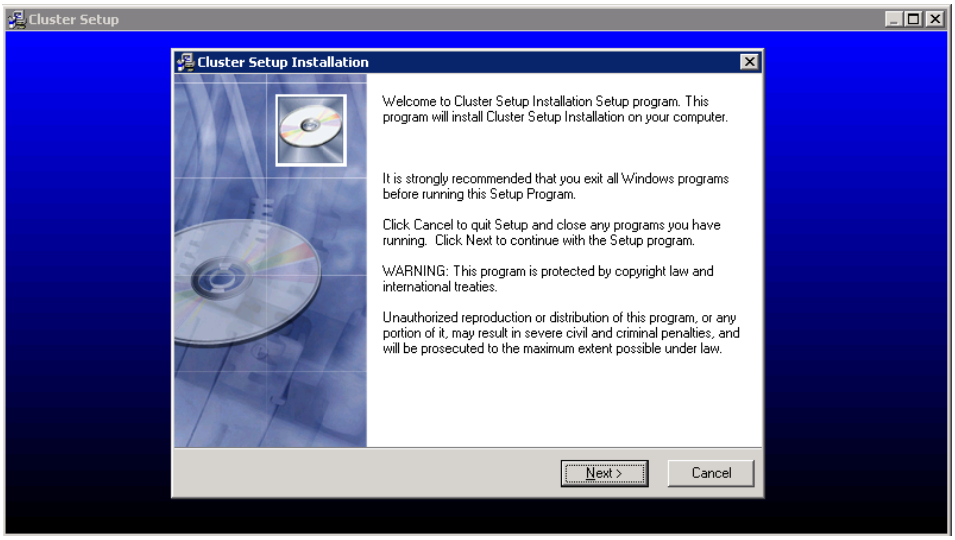
2. The cluster installation wizard will require some important information to be entered by the installer. For convenience and to expedite the process, make sure you have all of the required information available before launching the installation wizard.

   Please use the table on the next page to record all of the required information before proceeding.

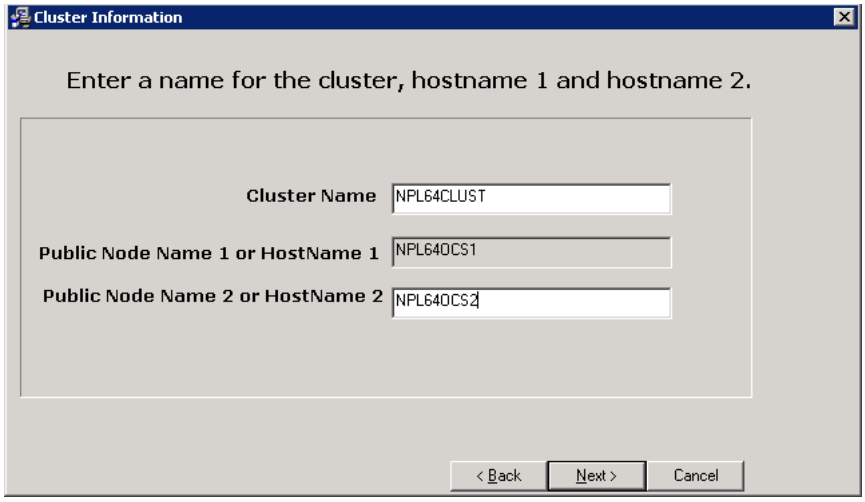
The following table is provided for collecting the required information. Use the last column for recording the values to be used for this particular installation:

Table of Installation Values			
Item	**Description**	**Warning / Comment**	**Installation Value**
Cluster Name	The internal name assigned to the cluster. Visible in config. files.	Cannot contain any spaces or hyphens (-).	
Host Name 1	Hostname of Node1 of the cluster. This name is assigned to the first network interface.	Cannot contain any spaces or hyphens (-).	
Host Name 2	Hostname of Node2 of the cluster. This name is assigned to the first network interface.	Cannot contain any spaces or hyphens (-).	
Node 1			
Virtual Host Name	This name is usually the hostname followed by VIP.	Cannot contain any spaces or hyphens (-).	
Private Node Name	This name is usually the hostname followed by INTERCONNECT	Cannot contain any spaces or hyphens (-). **DO NOT** use the word PRIVATE in this name.	
IP Address for Public Node	Public IP address used for Node 1.	Static IP address obtained from customer's IT staff.	
IP Address for Private Node (Interconnect)	Interconnect IP address for Node 1. This address should be non-routable (e.g. 192.168.xxx.xxx).	Static IP address obtained from customer's IT staff.	
IP Address for Virtual Host	Only used during installation.	Static IP address obtained from customer's IT staff.	
Public Subnet Mask	Subnet mask for customer's LAN.	Obtained from customer's IT staff.	
Private Subnet Mask	Subnet mask for the interconnect network.	Obtained from customer's IT staff.	
Node 2			
Virtual Host Name	This name is usually the hostname followed by VIP.	Cannot contain any spaces or hyphens (-).	
Private Node Name	This name is usually the hostname followed by INTERCONNECT	Cannot contain any spaces or hyphens (-). **DO NOT** use the word PRIVATE in this name.	
IP Address for Public Node	Public IP address used for Node 2.	Static IP address obtained from customer's IT staff.	
IP Address for Private Node (Interconnect)	Interconnect IP address for Node 2. This address should be non-routable (e.g. 192.168.xxx.xxx).	Static IP address obtained from customer's IT staff.	
IP Address for Virtual Host	Only used during installation.	Static IP address obtained from customer's IT staff.	
Virtual App Server IP	IP address that workstations use to connect to Opera. This address is moved between the 2 nodes during Failover.	Static IP address obtained from customer's IT staff.	
Cluster Storage Information	The hard disks which will be used for creating the Oracle Cluster File System. The following drives will be created by the wizard… I:, L:, R:	It is extremely important that you provide the correct drive numbers as displayed in Windows Disk Manager. The order of the drives is hardware dependant. The I: Drive should be the largest disk of the three.	L: ____ I: ____ R: ____

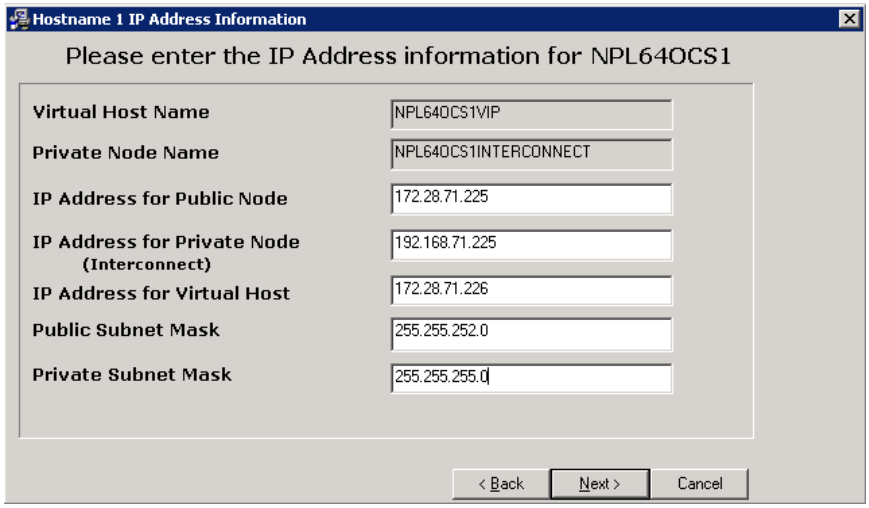
3. Once you have gathered all of the required information and recorded it in the table above, then run the installation wizard (Setup.exe), read the verbiage and then click *Next*.



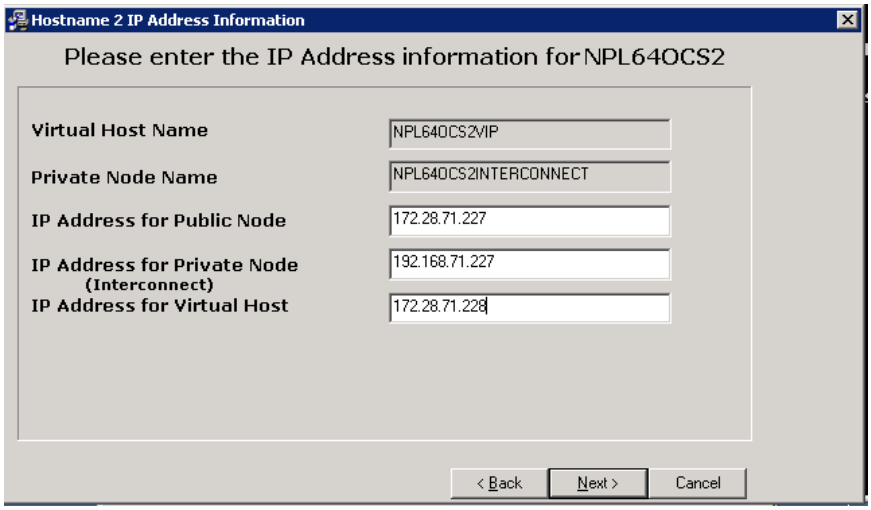
4. You are now prompted to begin entering the information previously collected and recorded in the *Table of Installation Values*. Enter appropriate values from the table and click *Next* to proceed.



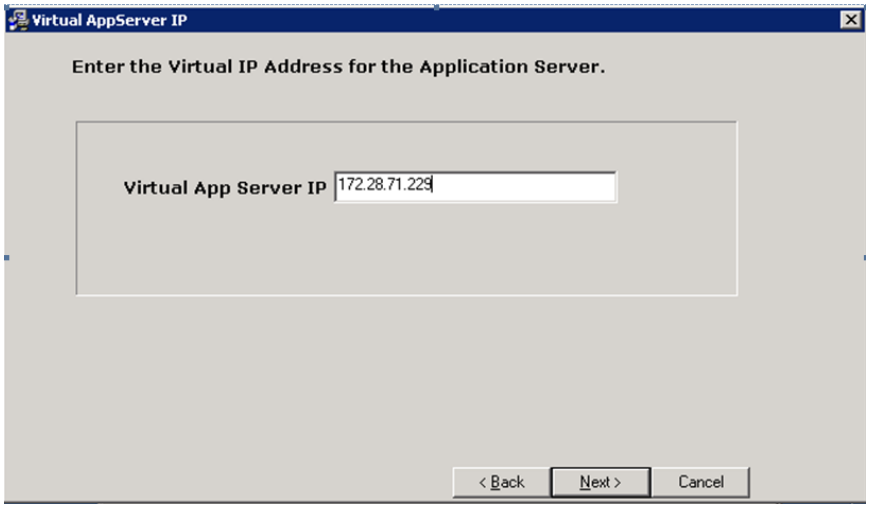
5. Enter host and IP information from the table for Node1 and then click *Next*.



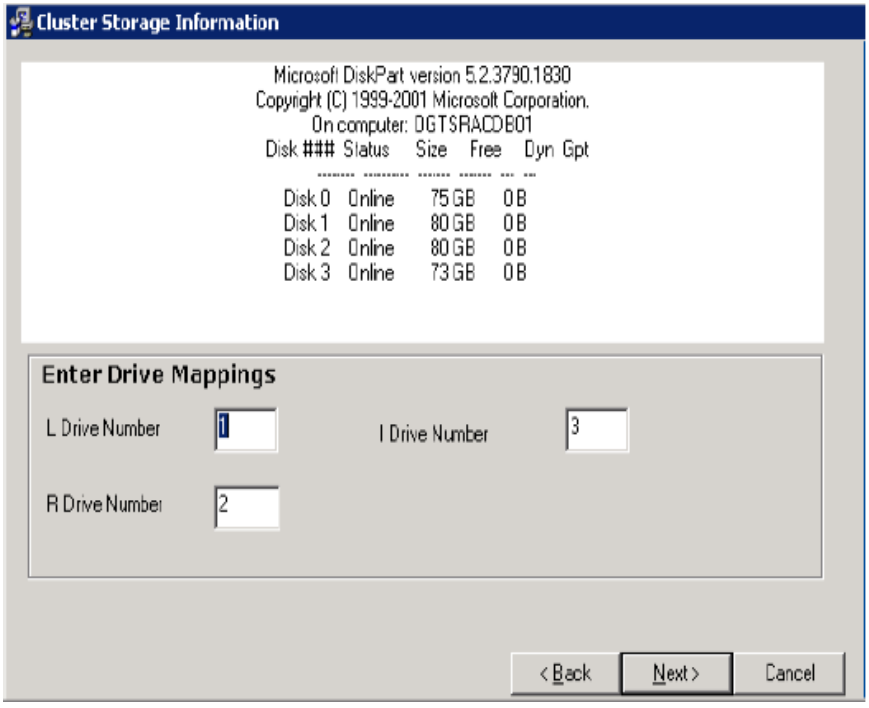
6. Enter the host and IP information from the table for Node2 and then click *Next*.



7. Enter the virtual IP address on which the Opera Application Server will run and then click *Next*.

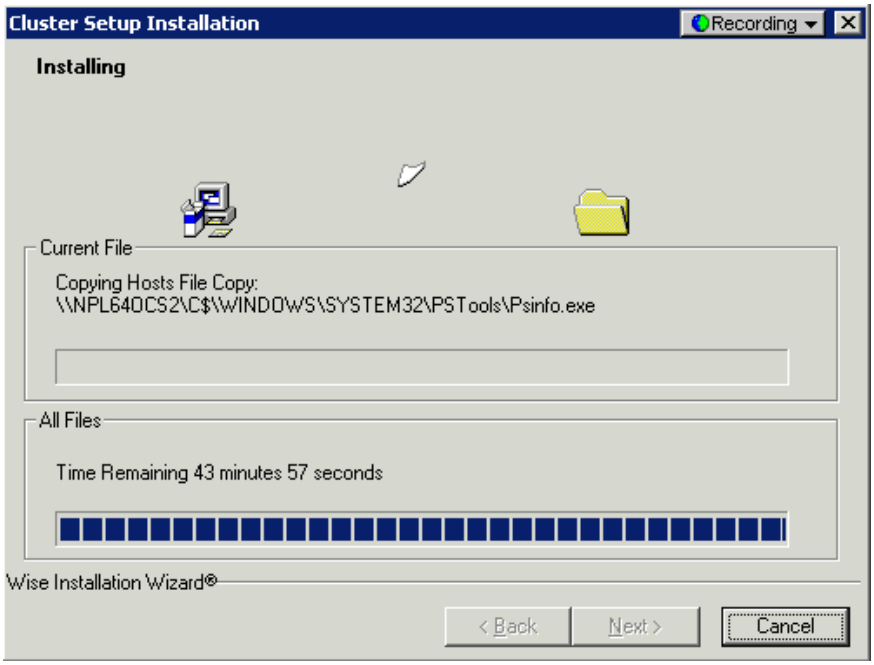


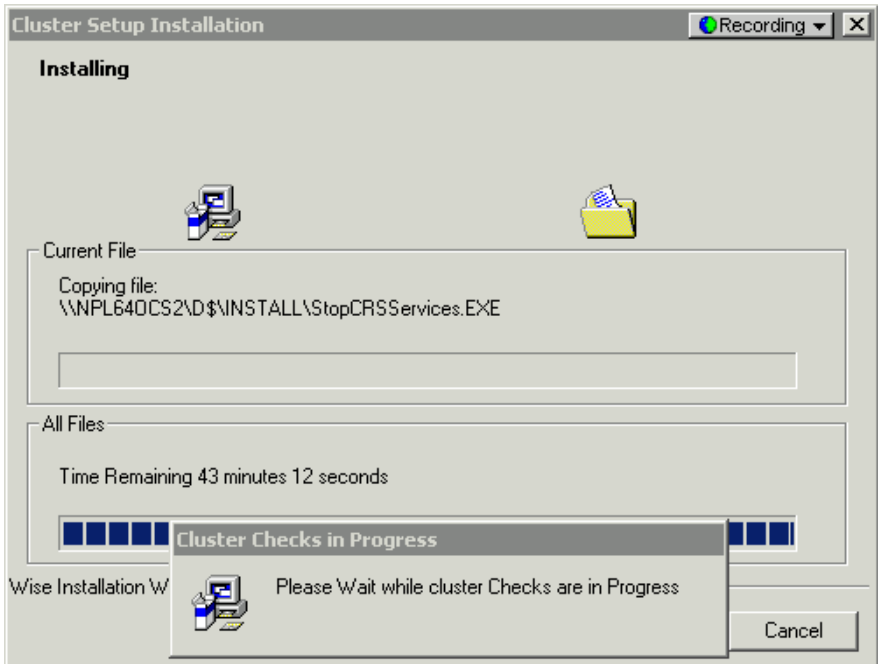
8. Select the SAN disks to be used as recorded in your *Table of Installation Values*. Significant space is required for the I: disk, so make sure the drive with the most capacity is assigned to that Drive. Once you are certain that the drive numbers are assigned correctly, click *Next* to begin the install.

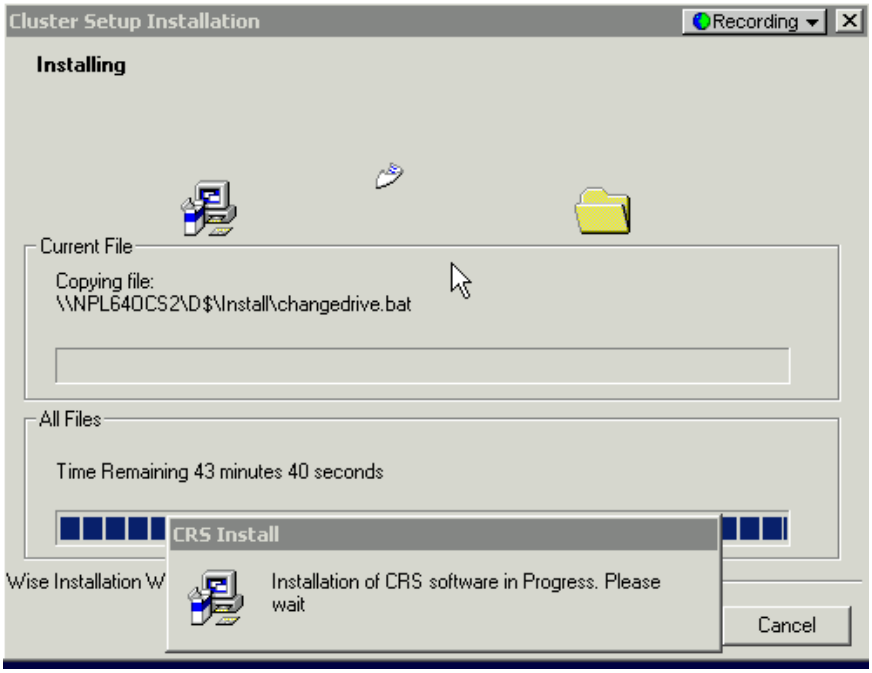


NOTE: Drive numbers are dependent upon hardware, so your numbers may differ from those in the example above.

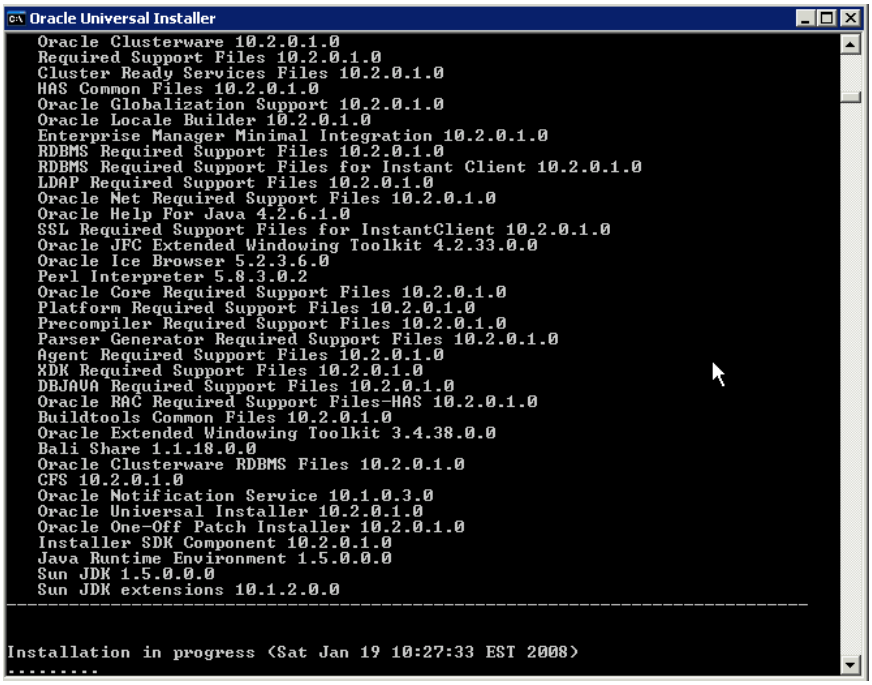
The wizard will now install and patch *Oracle Clusterware* on both nodes.

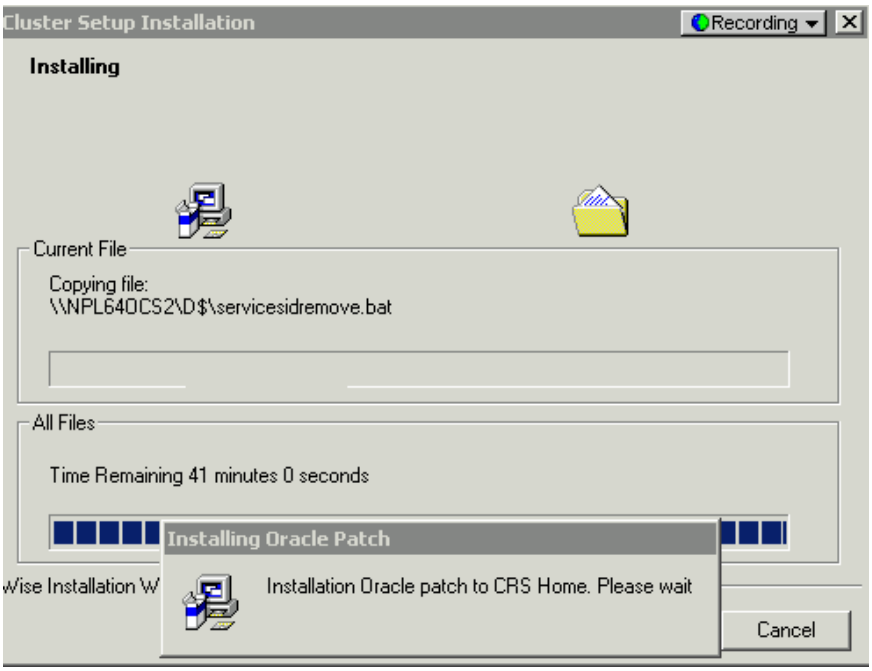


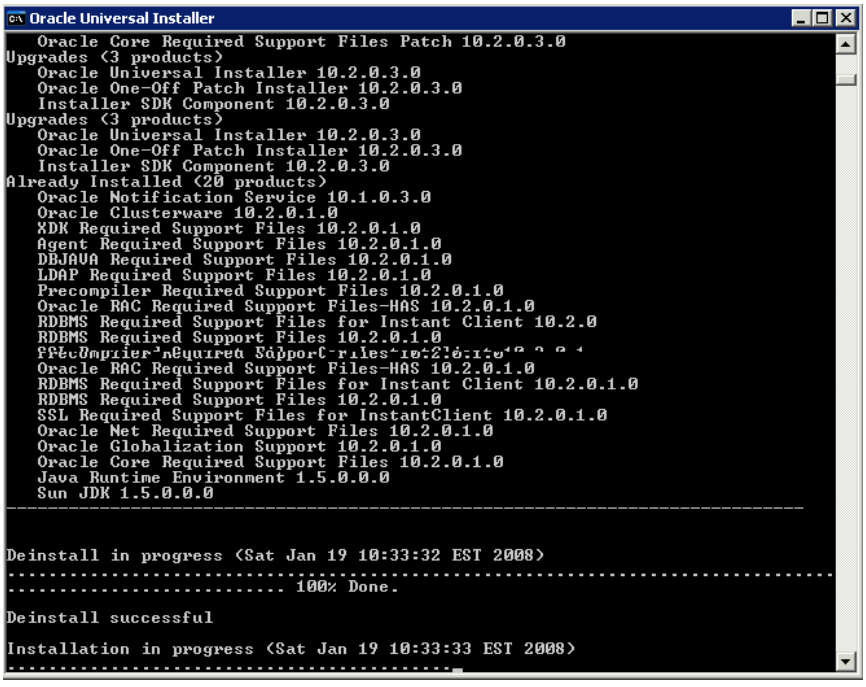




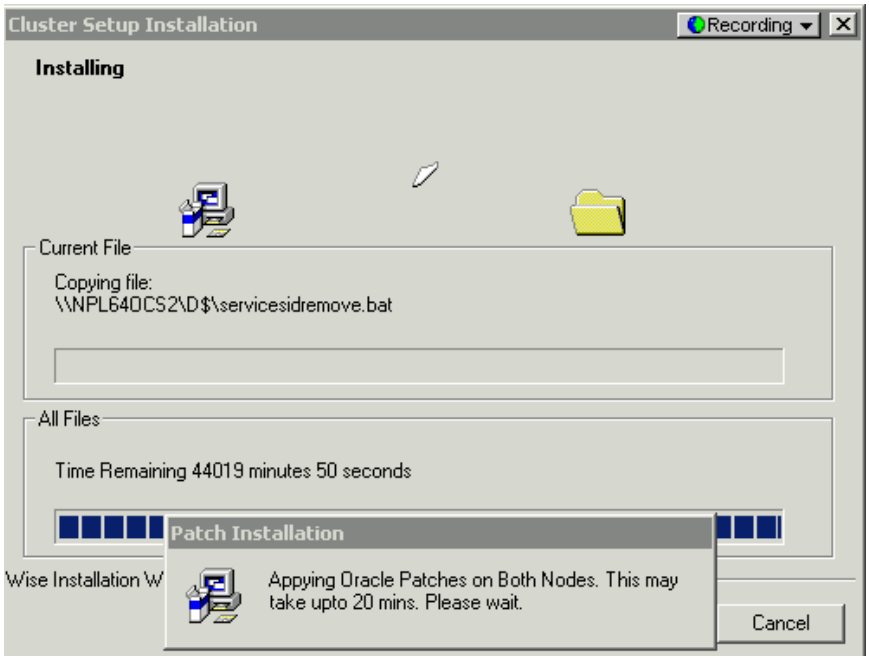
The Oracle Universal Installer will run some checks and be launched.



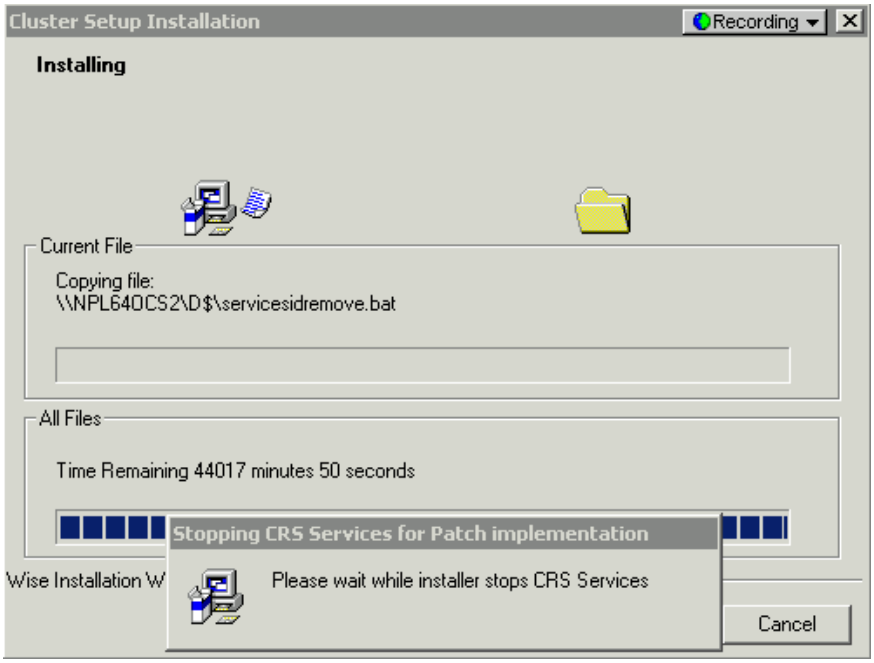

Cluster Setup Installation
Recording
Installing
Current File
Copying file:
\\NPL64OCS2\D$\servicesidremove.bat
All Files
Time Remaining 41 minutes 0 seconds
Installing Oracle Patch
Installation Oracle patch to CRS Home. Please wait
Cancel


Oracle Universal Installer
Oracle Core Required Support Files Patch 10.2.0.3.0
Upgrades (3 products)
Oracle Universal Installer 10.2.0.3.0
Oracle One-Off Patch Installer 10.2.0.3.0
Installer SDK Component 10.2.0.3.0
Upgrades (3 products)
Oracle Universal Installer 10.2.0.3.0
Oracle One-Off Patch Installer 10.2.0.3.0
Installer SDK Component 10.2.0.3.0
Already Installed (20 products)
Oracle Notification Service 10.1.0.3.0
Oracle Clusterware 10.2.0.1.0
XDK Required Support Files 10.2.0.1.0
Agent Required Support Files 10.2.0.1.0
DBJAVA Required Support Files 10.2.0.1.0
LDAP Required Support Files 10.2.0.1.0
Precompiler Required Support Files 10.2.0.1.0
Oracle RAC Required Support Files-HAS 10.2.0.1.0
RDBMS Required Support Files for Instant Client 10.2.0
RDBMS Required Support Files 10.2.0.1.0
Oracle RAC Required Support Files-HAS 10.2.0.1.0
RDBMS Required Support Files for Instant Client 10.2.0.1.0
RDBMS Required Support Files 10.2.0.1.0
SSL Required Support Files for InstantClient 10.2.0.1.0
Oracle Net Required Support Files 10.2.0.1.0
Oracle Globalization Support 10.2.0.1.0
Oracle Core Required Support Files 10.2.0.1.0
Java Runtime Environment 1.5.0.0.0
Sun JDK 1.5.0.0.0
Deinstall in progress (Sat Jan 19 10:33:32 EST 2008)
100% Done.
Deinstall successful
Installation in progress (Sat Jan 19 10:33:33 EST 2008)

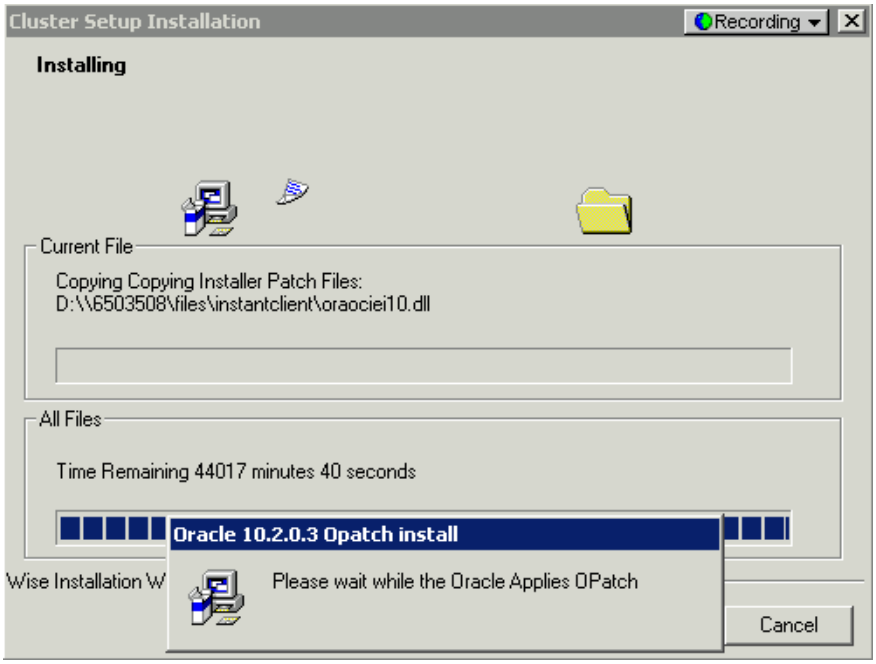
Additional patches are now being applied. This takes awhile.

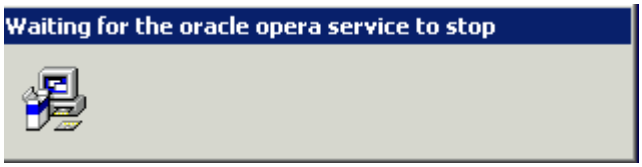


Stopping CRS Services on both nodes to apply patches…

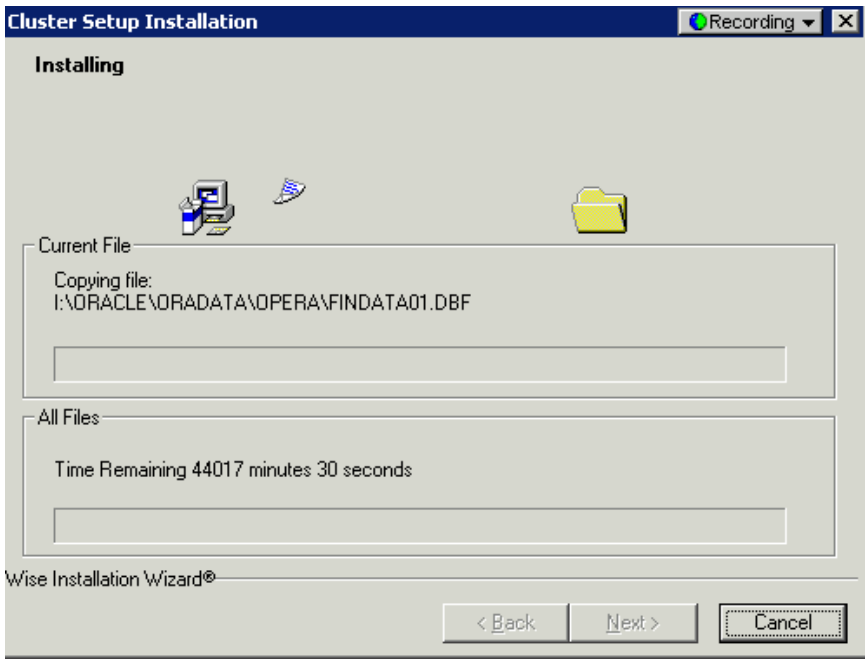


An additional One-off Patch for CRS home...

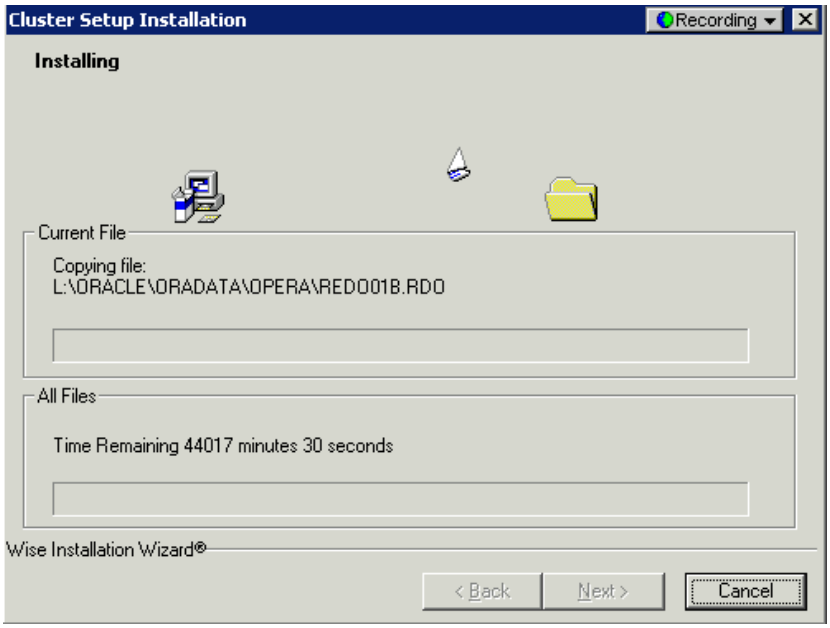




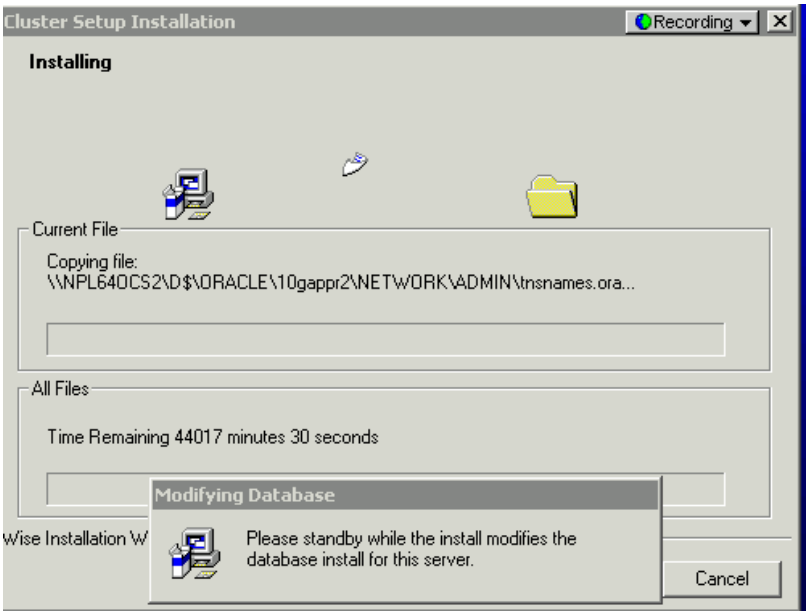
Moving the Oracle database Data Files to the I: Drive…



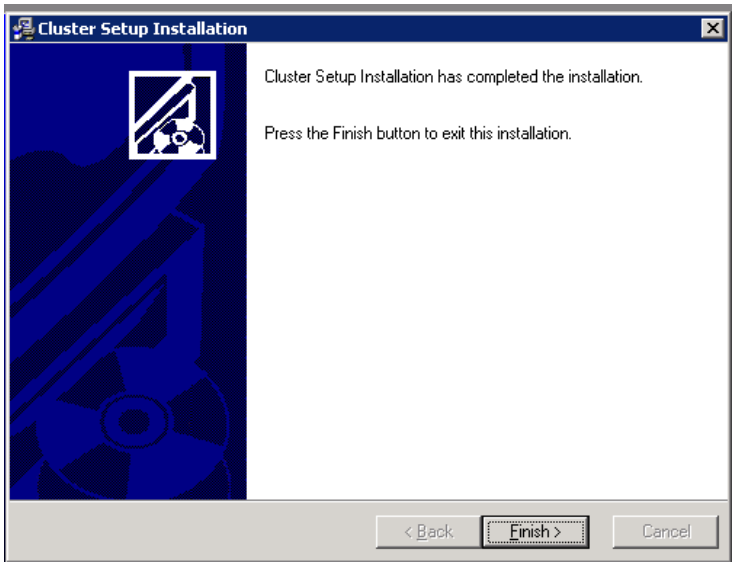
Moving the second set of Oracle Redo files…



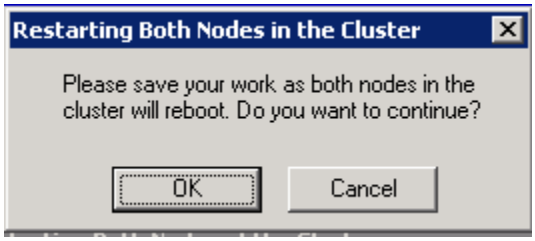
Please wait while the wizard installer modifies Database…



9. Press *Finish* in order to exit the installation wizard.



10. Clicking *OK* will restart **both** nodes.



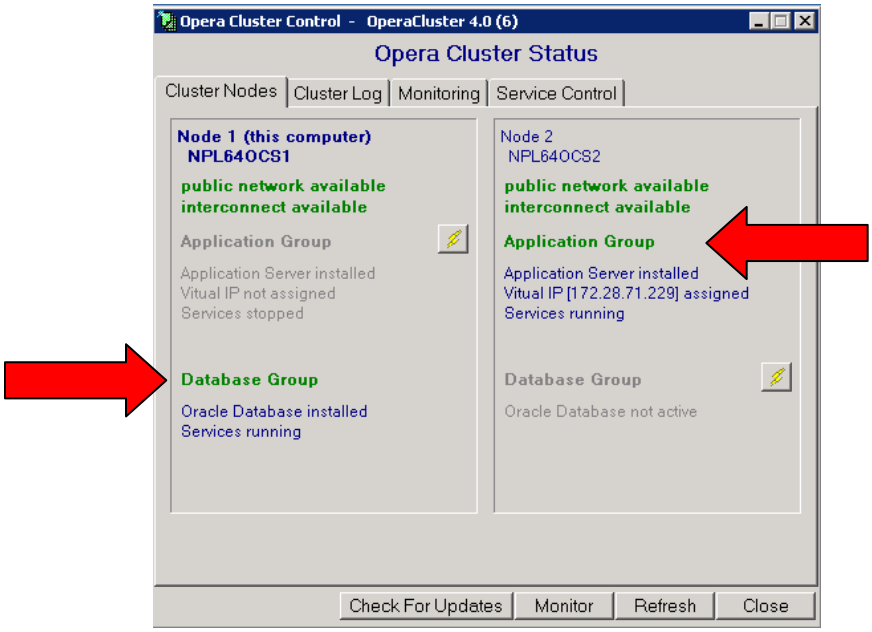
CAUTION: Please ensure that both nodes are restarted as anticipated before proceeding.

Opera Cluster Control

After completion of the Opera Cluster Solution wizard and restarting both nodes, Node1 will become the Database Node and Node2 will become the Application Server Node.

Note: It is important to test Failover steps before handing over the system to the users.

Open the *Opera Cluster Control* utility using the desktop shortcut and observe the below screen. Notice that the Database Group is highlighted on the Node1 (left) panel and that the Application Group is highlighted on the Node2 (right) panel of the display as we would anticipate. This is the normal mode of operation.



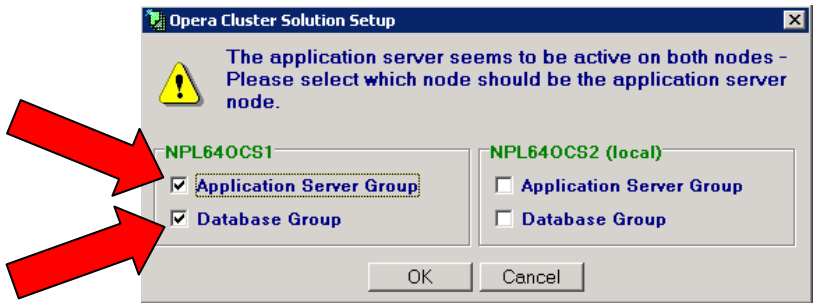
Fail Over Steps

The Opera Cluster Control utility will check to see which node is the Application Server and which one is the Database server.

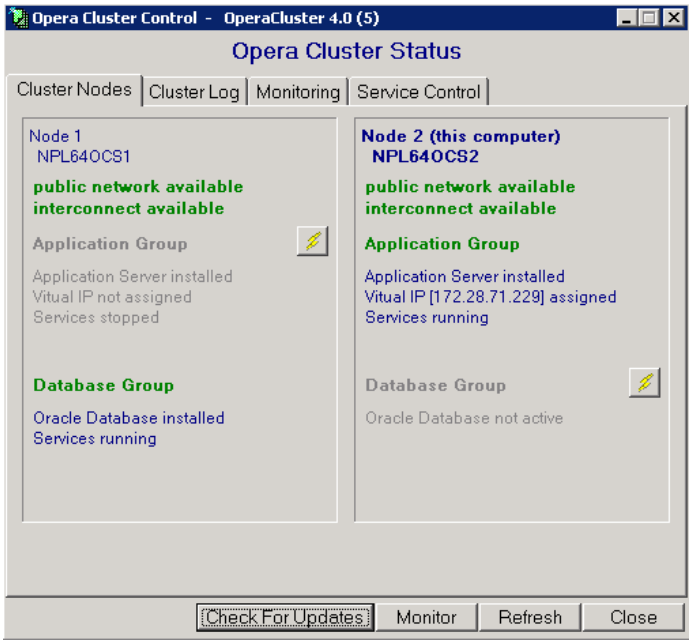
Note: Each node can act as either the Application Server or the Database server or either of the nodes can support both App and Database functions in the event of a total failure of one of the nodes.

There are two ways to failover either the Application Server or the Database Server.

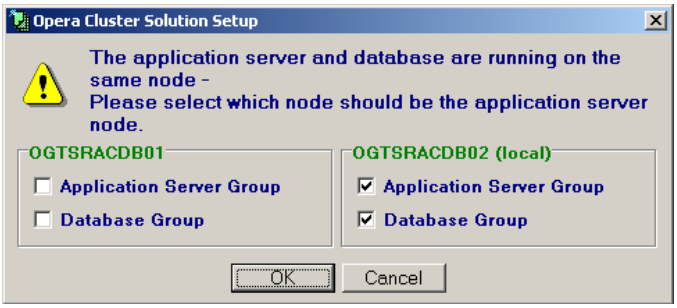
1. If both Application and Database are running on one server then the *Cluster Control* utility prompts with a window like this:



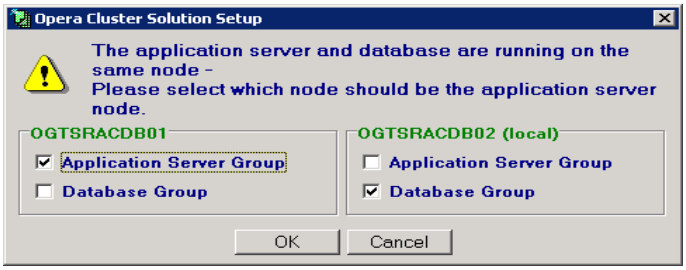
2. If App and Database are running on different nodes, then *Cluster Control* launches with the following window and the user has a chance to click on the failover buttons.



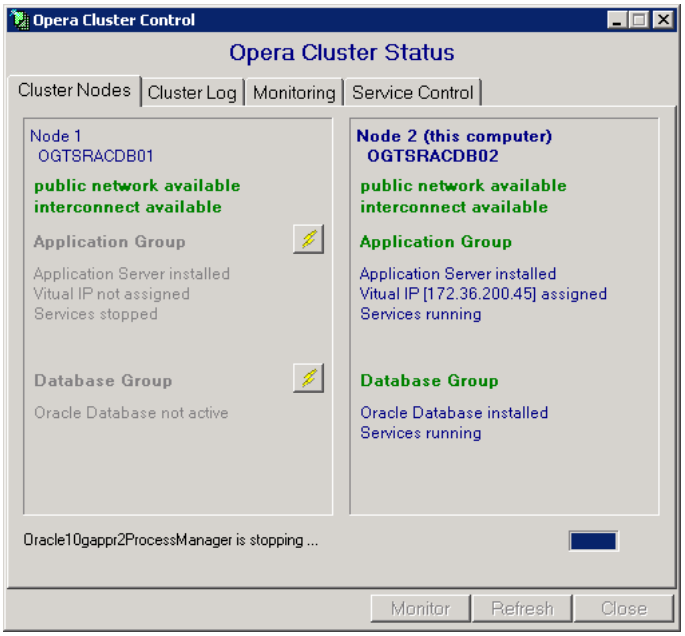
In our first example both App and Database are running on Node 2:



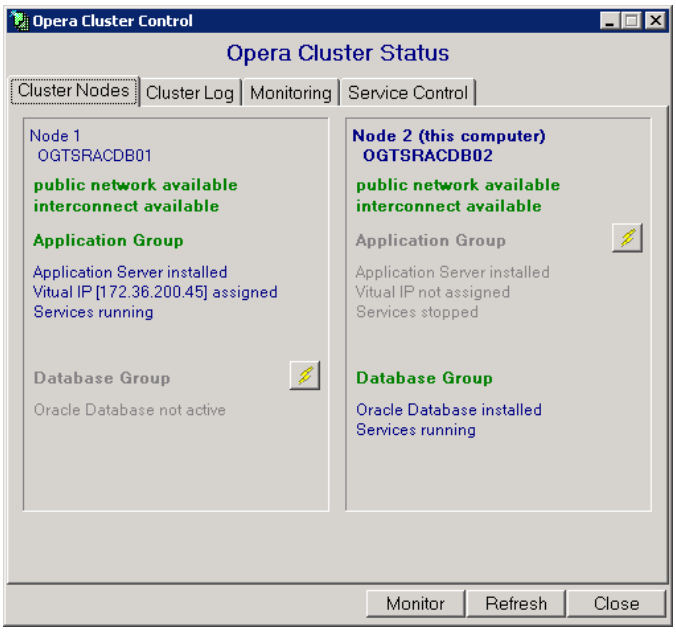
To failover the application Server to the other node (Node 1 named OGTSRACDB01 in this example), check the Application Server Group on OGTSRACDB01 and click *OK*.



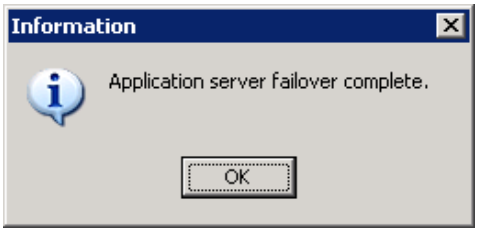
The *Opera Cluster Control* stops the Application Server on Node 2 (OGTSRACDB02 in this example)…



And then starts the Application Server on Node 1…



And prompts with a message when failover is complete.



Troubleshooting Installation Errors

The *Opera Cluster Solution* (OCS) installation process produces a number of log files that can be interrogated to assist with resolving installation errors. These logs can be found in the following directories. Please review these logs for any obvious errors and provide a zipped file of these logs to Opera Support if additional assistance is required to resolve installation issues.

C:\Temp\Opera40

Contains:

- Control.log
- AppInstall.log
- DatabaseInstall.log
- OPatches.log
- CopyMicros.log

C:\Program Files\Oracle\Logs

Contains:

- installActions*.log
- silentinstallAction*.log

C:\Temp\CRS

Contains:

- Install.log
- Controlfile.log
- Opatchcs.log
- strtprocmgrOAPPUPGRD.LOG

D:\oracle\CRS\log\<hostname>

Contains:

- Cssd\Ocssd.log
- Crsd\crsd.log
- Evmd\evmd.log

Appendix

Table of Installation Values

The following table is provided for collecting the required information. Use the last column for recording the values to be used for this particular installation:

Table of Installation Values			
Item	**Description**	**Warning / Comment**	**Installation Value**
Cluster Name	The internal name assigned to the cluster. Visible in config. files.	Cannot contain any spaces or hyphens (-).	
Host Name 1	Hostname of Node1 of the cluster. This name is assigned to the first network interface.	Cannot contain any spaces or hyphens (-).	
Host Name 2	Hostname of Node2 of the cluster. This name is assigned to the first network interface.	Cannot contain any spaces or hyphens (-).	
Node 1			
Virtual Host Name	This name is usually the hostname followed by VIP.	Cannot contain any spaces or hyphens (-).	
Private Node Name	This name is usually the hostname followed by INTERCONNECT	Cannot contain any spaces or hyphens (-). **DO NOT** use the word PRIVATE in this name.	
IP Address for Public Node	Public IP address used for Node 1.	Static IP address obtained from customer's IT staff.	
IP Address for Private Node (Interconnect)	Interconnect IP address for Node 1. This address should be non-routable (e.g. 192.168.xxx.xxx).	Static IP address obtained from customer's IT staff.	
IP Address for Virtual Host	Only used during installation.	Static IP address obtained from customer's IT staff.	
Public Subnet Mask	Subnet mask for customer's LAN.	Obtained from customer's IT staff.	
Private Subnet Mask	Subnet mask for the interconnect network.	Obtained from customer's IT staff.	
Node 2			
Virtual Host Name	This name is usually the hostname followed by VIP.	Cannot contain any spaces or hyphens (-).	
Private Node Name	This name is usually the hostname followed by INTERCONNECT	Cannot contain any spaces or hyphens (-). **DO NOT** use the word PRIVATE in this name.	
IP Address for Public Node	Public IP address used for Node 2.	Static IP address obtained from customer's IT staff.	
IP Address for Private Node (Interconnect)	Interconnect IP address for Node 2. This address should be non-routable (e.g. 192.168.xxx.xxx).	Static IP address obtained from customer's IT staff.	
IP Address for Virtual Host	Only used during installation.	Static IP address obtained from customer's IT staff.	
Virtual App Server IP	IP address that workstations use to connect to Opera. This address is moved between the 2 nodes during Failover.	Static IP address obtained from customer's IT staff.	

Cluster Storage Information	The hard disks which will be used for creating the Oracle Cluster File System. The following drives will be created by the wizard… I:, L:, R:	It is extremely important that you provide the correct drive numbers as displayed in Windows Disk Manager. The order of the drives is hardware dependant. The I: Drive should be the largest disk of the three.	L: ____ I: ____ R: ____