How to Install Windows 2000 Cluster Services: Installing the Windows 2000 Cluster Service: Node 1

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This portion of the article shows you, step-by-step, how to install the Windows 2000 Cluster Service. Not every potential option will be discussed, only the most common. This section has been divided into two web pages to make it easier to load into your web browser and read. There are many graphics, and it make take a minute or two for all of them to load.

Before you begin, you must have two pieces of information necessary for the installation of Cluster Services. The are:

- **The virtual name you will be assigning the cluster. This is the name that will be used by clients to attach to the cluster.**
- **The virtual IP address you will be assigning to the cluster. This is the IP address that will be used by clients to attach to the cluster.**

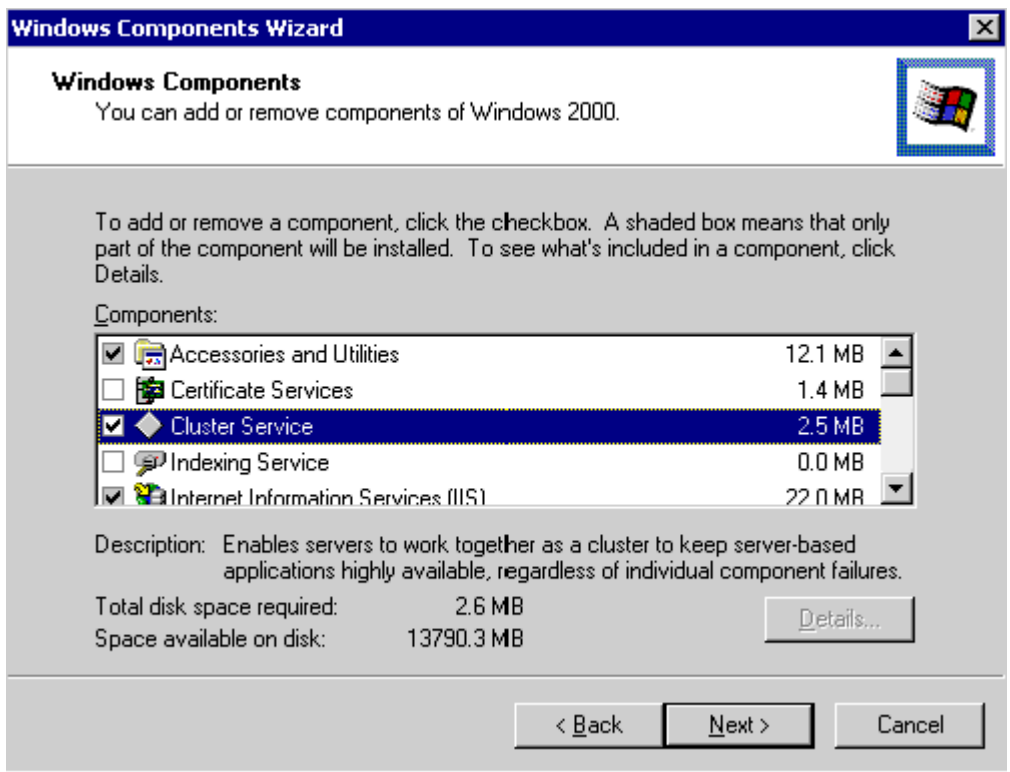
The above information should be determined before you begin to install the Cluster Service.

Note: If you are using a hub to connect the nodes of the private network, then you don't have to take any special steps other than to ensure than the hub is operational and that the private network card on the primary node can talk to it.

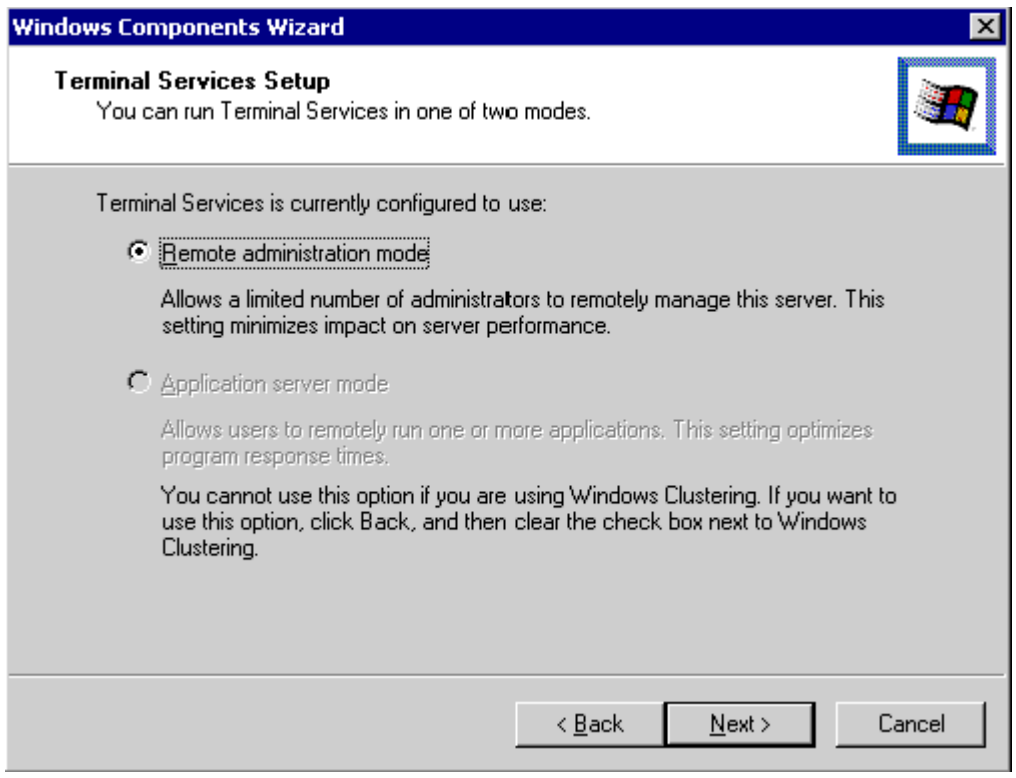
If you are using a cross-over cable to connect the primary node to the secondary node's private network card, then you must turn on the secondary node, but don't boot it, in order to successfully install Cluster Service. Start the node, but when Windows 2000 starts, press the F8 key to go to the Windows 2000 Advanced Options Menu. Stay at this screen until you are ready to install the Cluster Service on the secondary node. If you don't do this, then the private network card in the primary server won't be available and you will be unable to install the Cluster Service on it.

Installing the Cluster Service on Node 1 of the Cluster

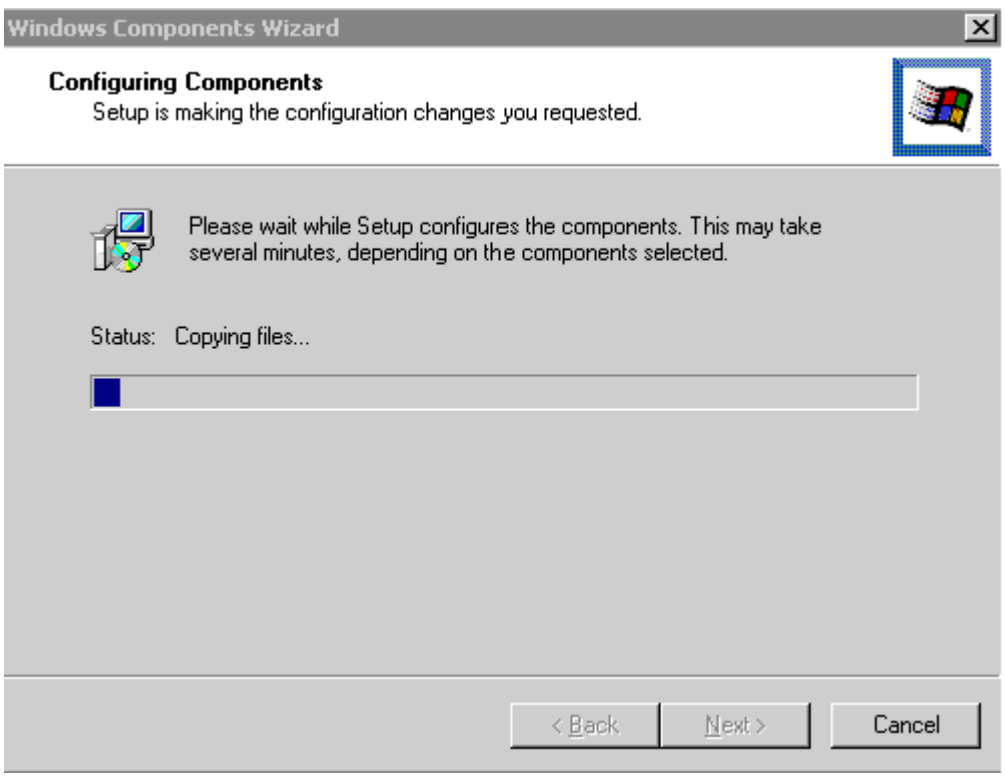
1. Start the "Add/Remove Programs" option in Control Panel, and then select "Add or Remove Windows Components." The following screen appears:



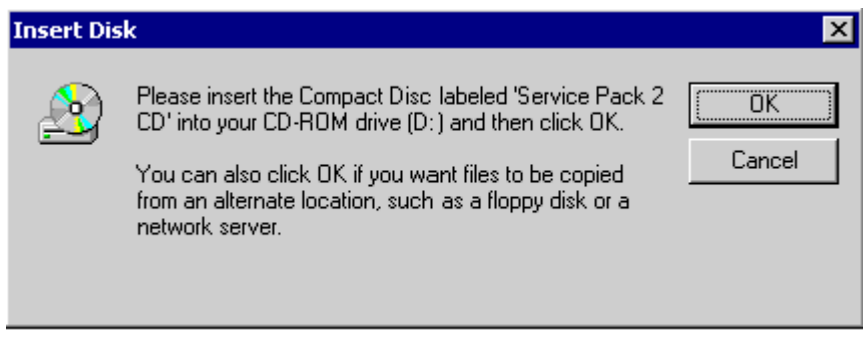
2. From this screen, check the box to the left of "Cluster Service" and then click on the "Next" button. The following screen appears:



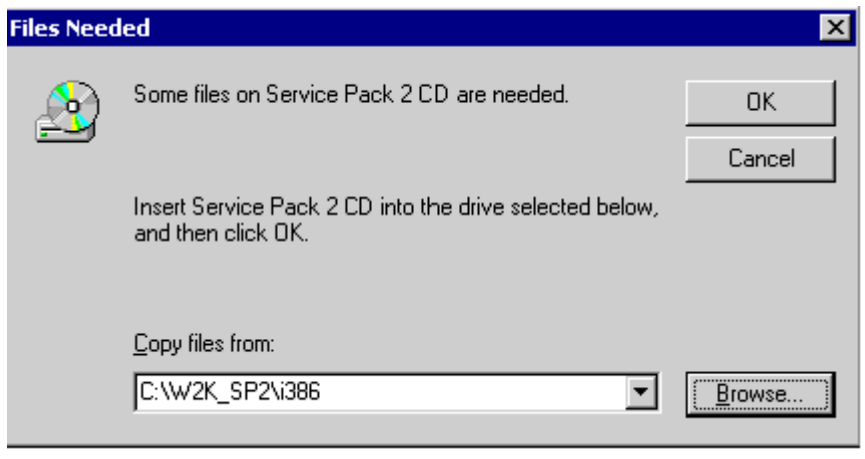
3. How you respond to this screen depends on how you want to configure Terminal Services on this server. In this example, we don't want to make any changes to the current settings, so we just select "Next". The following screen appears:



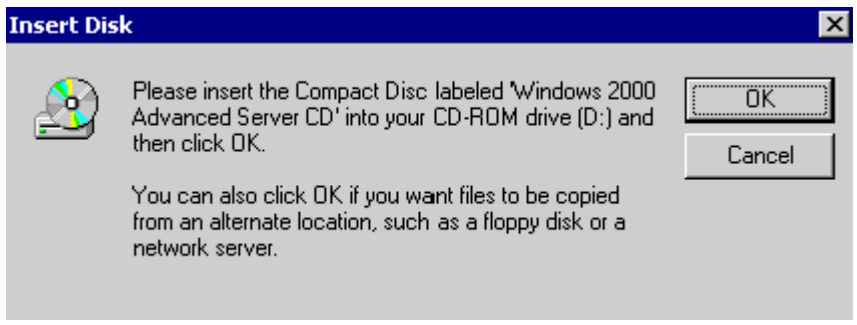
4. This screen tells you that Windows 2000 is now installing the Cluster Service files. But before this screen completes, this screen may appear:



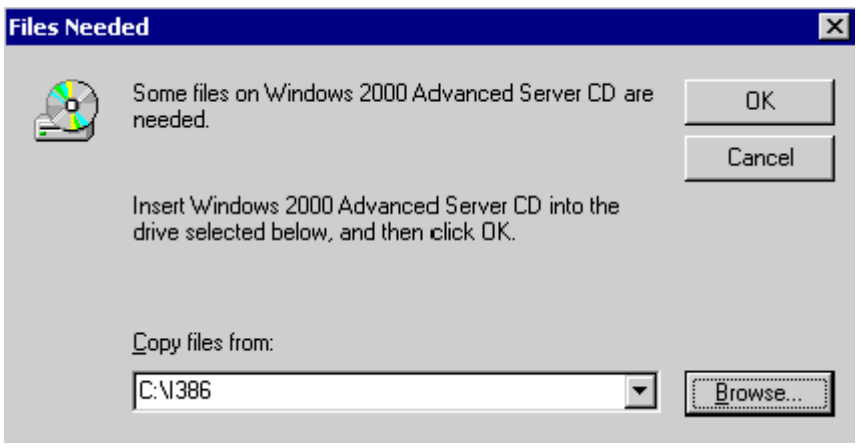
5) This screen is asking you to insert the CD with the Windows 2000 Service Pack files on them. You may either put the CD in the CD drive on the server and click "OK," or if the Service Pack 2 files are locally stored, as in this example, just click "OK".



6) If the install program can't find Service Pack 2 files in the CD player, it will prompt you (as above) for the location of these files. Use the "Browse" button to find the files on the current server, or on a remote server, then click "OK." Next, the following screen may appear:

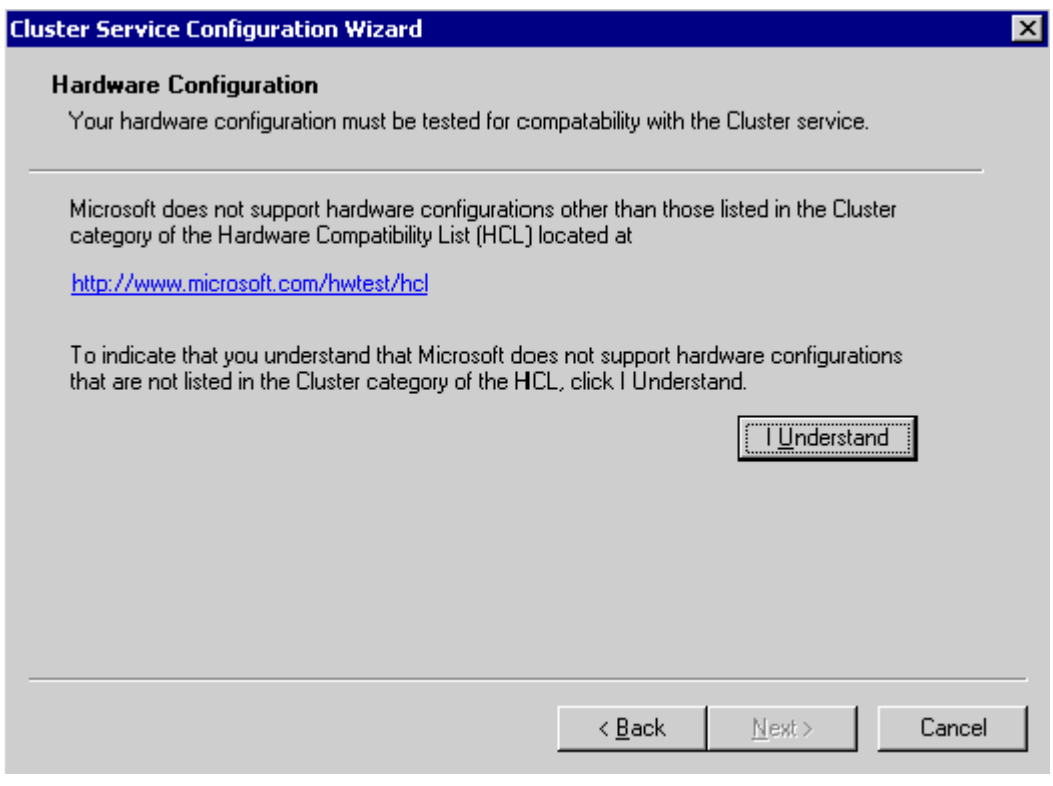


7) This screen is asking you to insert the CD with the Windows 2000 Advanced Server files on them. You may either put the CD in the CD drive on the server and click "OK," or if the Windows 2000 Advanced Server files are locally stored, as in this example, just click "OK".

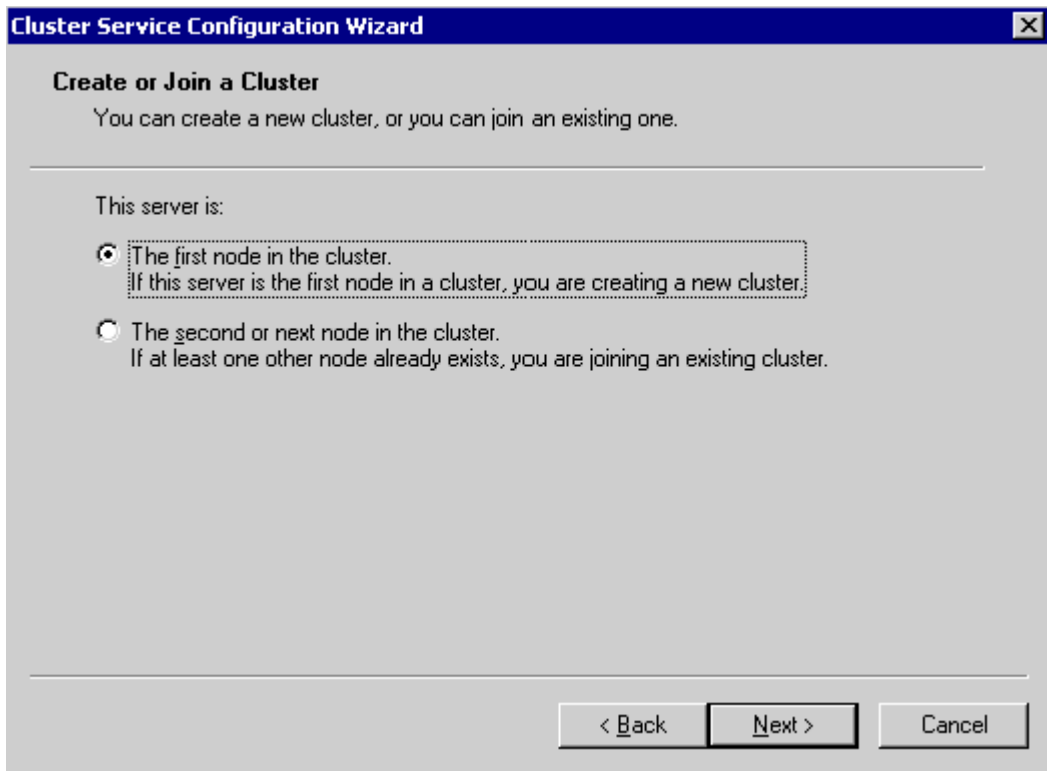


8) If the install program can't find the Windows 2000 Advanced Server files in the CD player, it will prompt you (as above) for the location of these files. Use the "Browse" button to find the files on the current server, or on a remote server, then click "OK". After a few moments, all of the necessary files should have been copied and this screen should now appear:

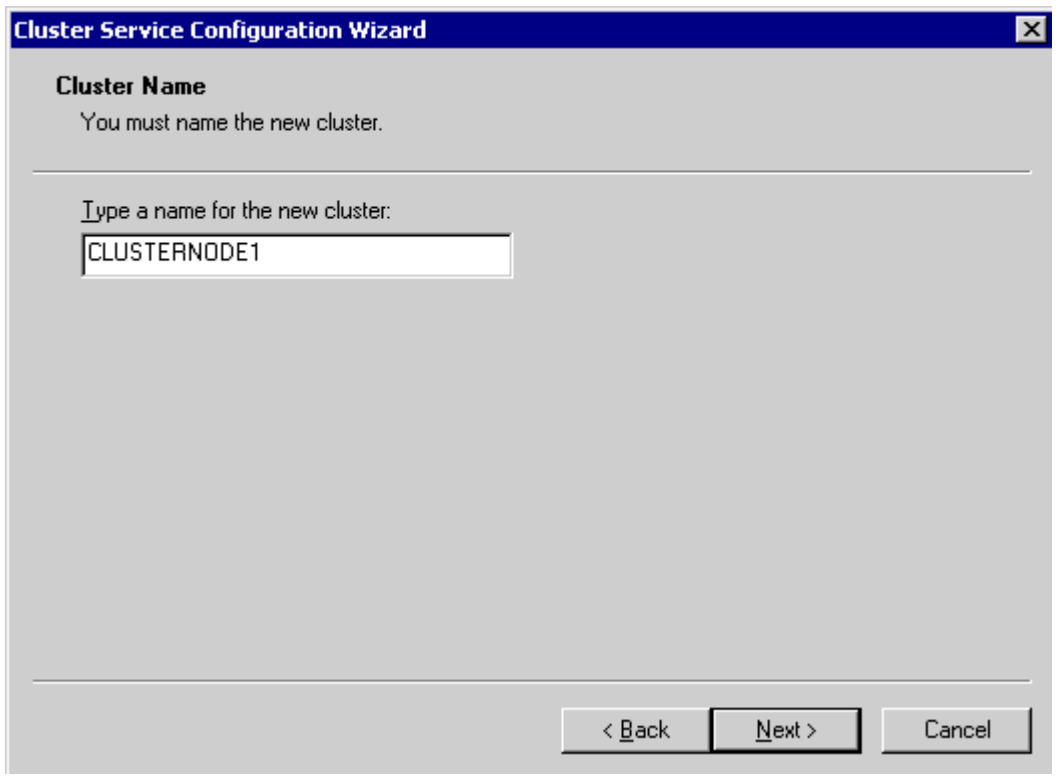
9) Now that all of the files for the Cluster Service have been copied to your server, it is now time to begin configuring the Cluster Service using the Cluster Service Configuration Wizard. Click "Next" to begin the wizard, and this screen appears:



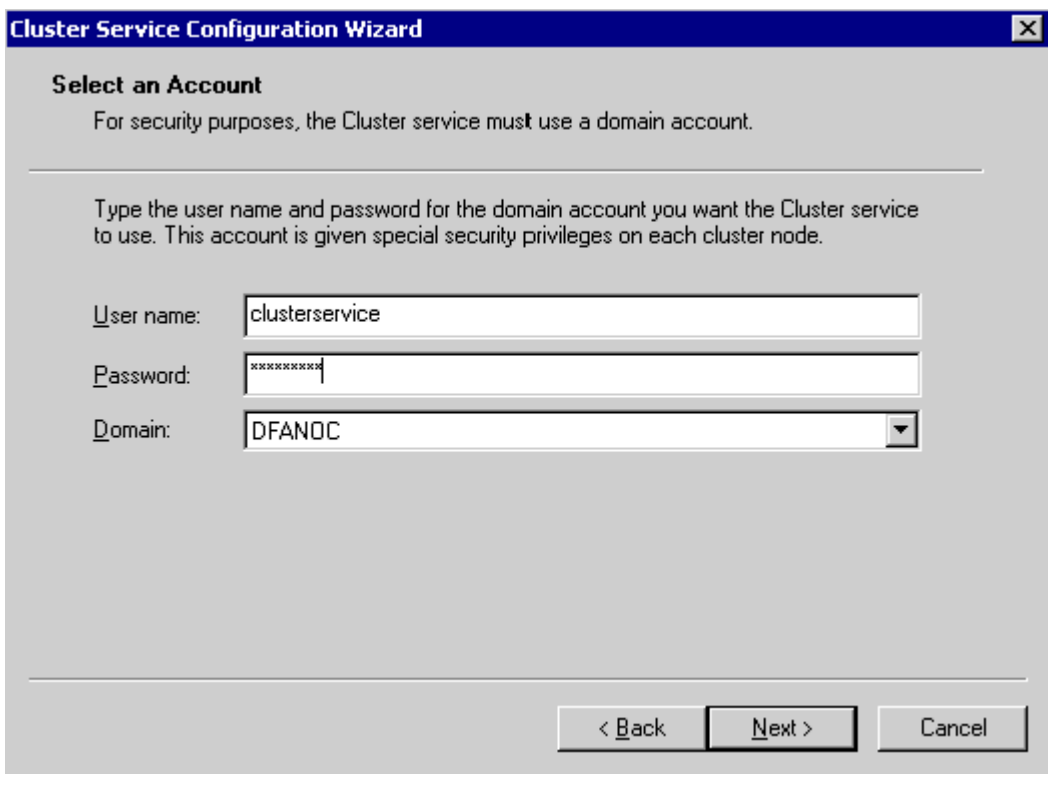
10) In this screen, Microsoft wants you to confirm that you understand that Microsoft does not support hardware configurations not listed in the Cluster category of the Microsoft Hardware Compatibility List. Click on "I Understand," then "Next," to continue. This screen appears:



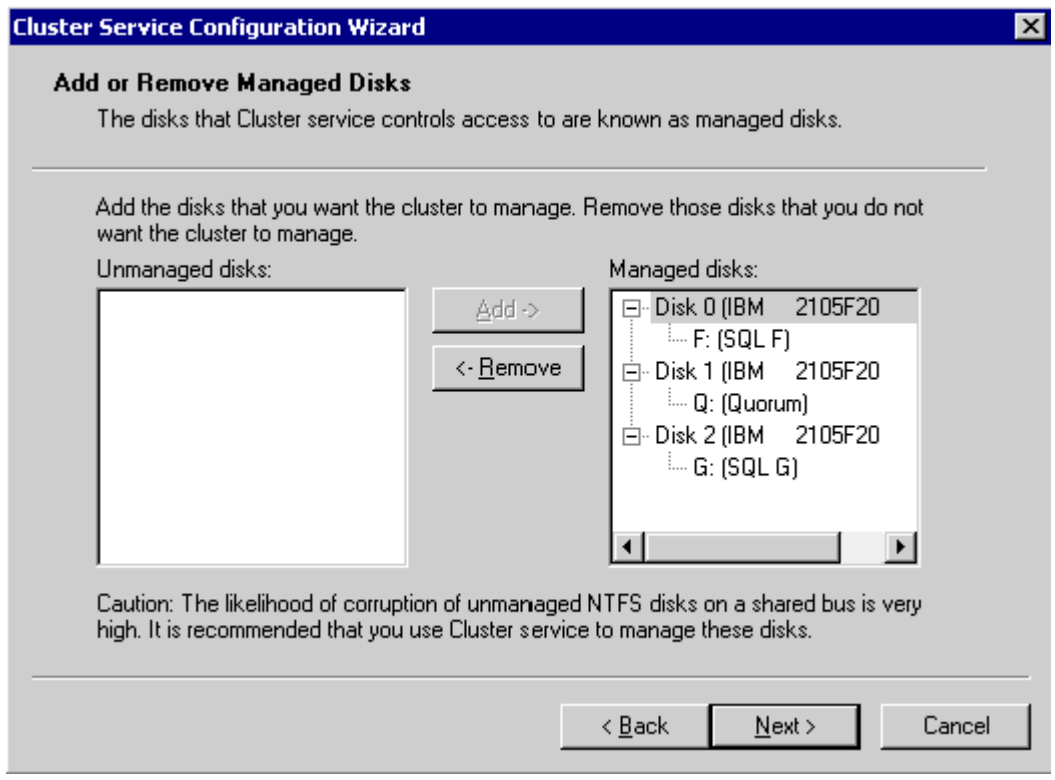
11) Now you have to specify if the server you are installing the Cluster Service on is the first node in the cluster (in this case, it is), or if it is "The second or next node in the cluster." Since this is the first node, be sure the "The first node in the cluster" option is selected and click "Next." Then this screen appears:



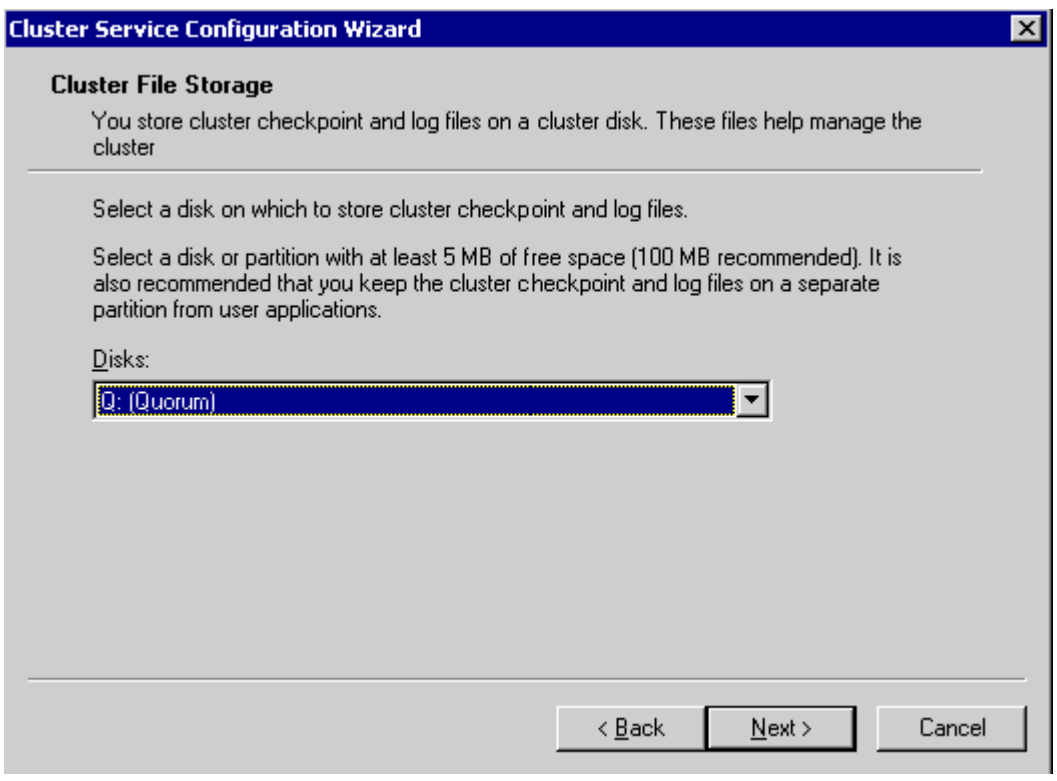
12) Now you must specify the virtual name of the cluster you are creating. Enter a name and click "Next." In our case, the cluster name is "clusternode1." Then this screen appears:



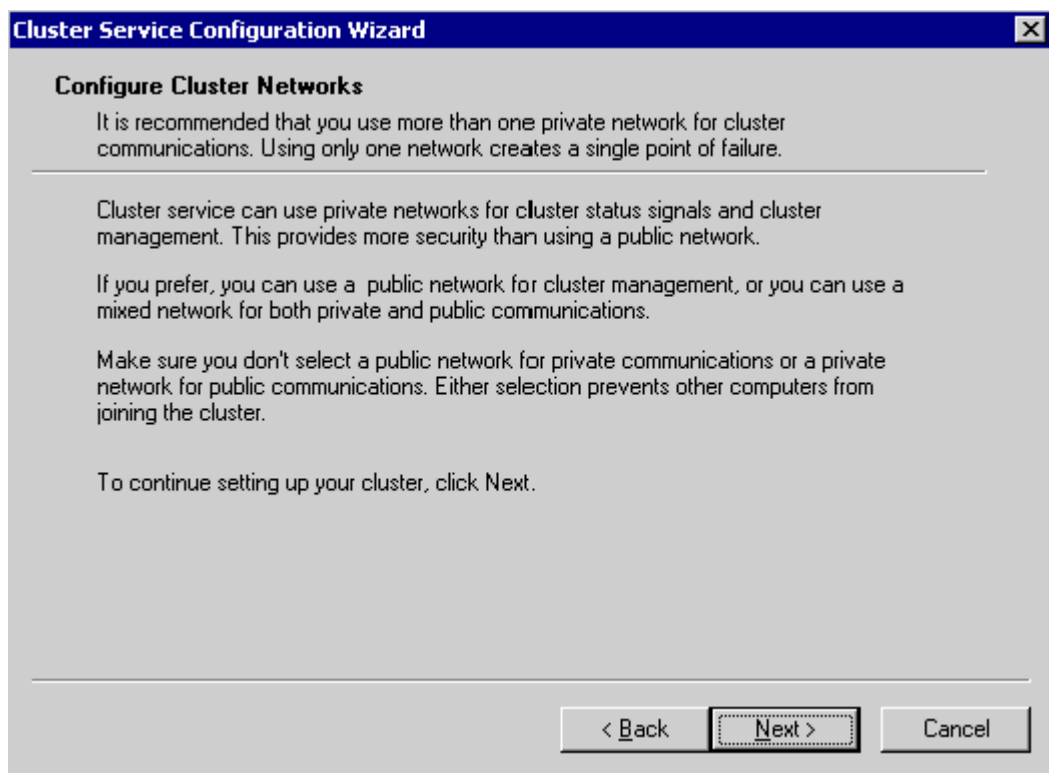
13) When Cluster Service is installed, it is installed as a service on your server. Because of this, you must assign a domain account to the service, which is used by the Cluster service to log into the operating system. This account must belong to the local administrators group of the server. The account we use in this example is "clusterservice." You must enter both the name of this domain account, along with its password and domain name. Click "Next" to continue, and this screen appears:



14) This screen is used to specify to the Cluster Service which drives on the shared array will be managed by the cluster. By default, all drives on the shared array are listed under "Managed disks" (see above). If this is what you want, and in our case, it is, then you need only click on "Next" to continue. But, should you not want all of the drives on the shared array to be managed by this cluster, then you must highlight the disk(s) and then click "Remove" to move them to the "Unmanaged disks" window, and then click "Next." After clicking "Next," this window appears:

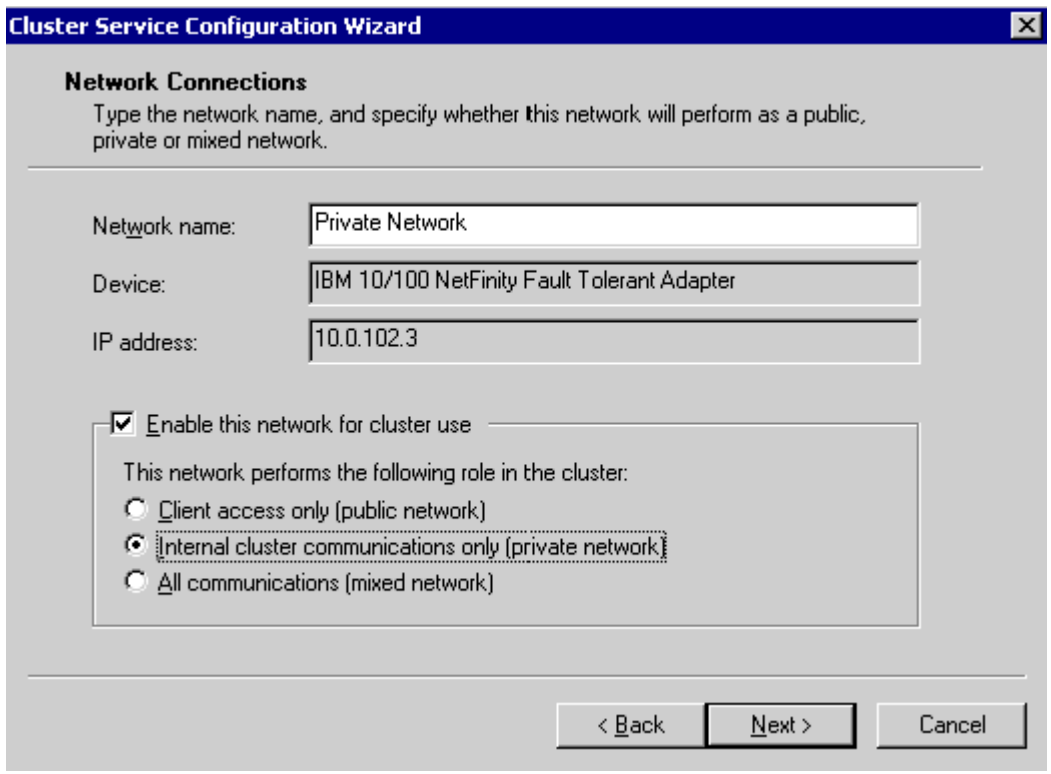


15) Now you must tell the Cluster Service which disk on the shared array will be used as the Quorum drive. This is the drive used by Cluster Service to store its checkpoint and log files, which are used by the Cluster Service to communicate between nodes of the cluster. Select the appropriate drive from the drop-down list under "Disks." Note here that we have made our life easy by giving the Q: drive the name "Quorum" previously using the Disk Administrator. Of course, any drive letter and name could be used. Once you are done, click "Next," and the following screen appears:



16) This screen is informational only. It recommends that besides the public network used to

access the cluster by clients, that you also have a private network that can be used by the nodes in the cluster to communicate. This is the approach we will take here. After reading the message, click "Next," and the following screen appears.



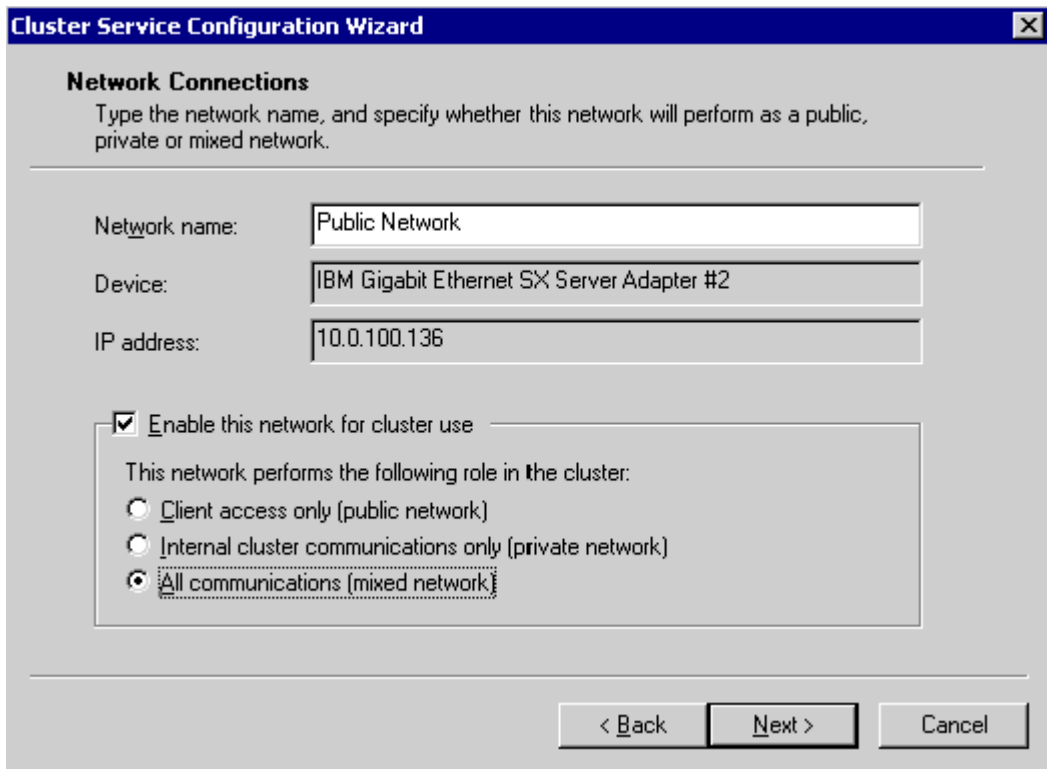
17) The Cluster Configuration Wizard is now asking you to specify which network card to use for the Private Network in the cluster. Note that the "Network name" above is "Private Network." It is named this because when we originally configured the private network card, we give this connection the name "Private Network." We did this to make this step in the Cluster Server configuration process easier.

Be sure that the checkbox next to "Enable this network for cluster use" is selected. This must be selected; otherwise the cluster would not use this network card.

Under the option, "This network performs the following role in the cluster," the radio button next to "Internal cluster communications only (private network) is selected. This means that the internal network can only be used by cluster service, which is the only option that makes sense.

Note that this screen will appear for every network card in your server. In most cases, such as this one, there are only two network cards in the server, and so this screen will only appear twice, as shown next.

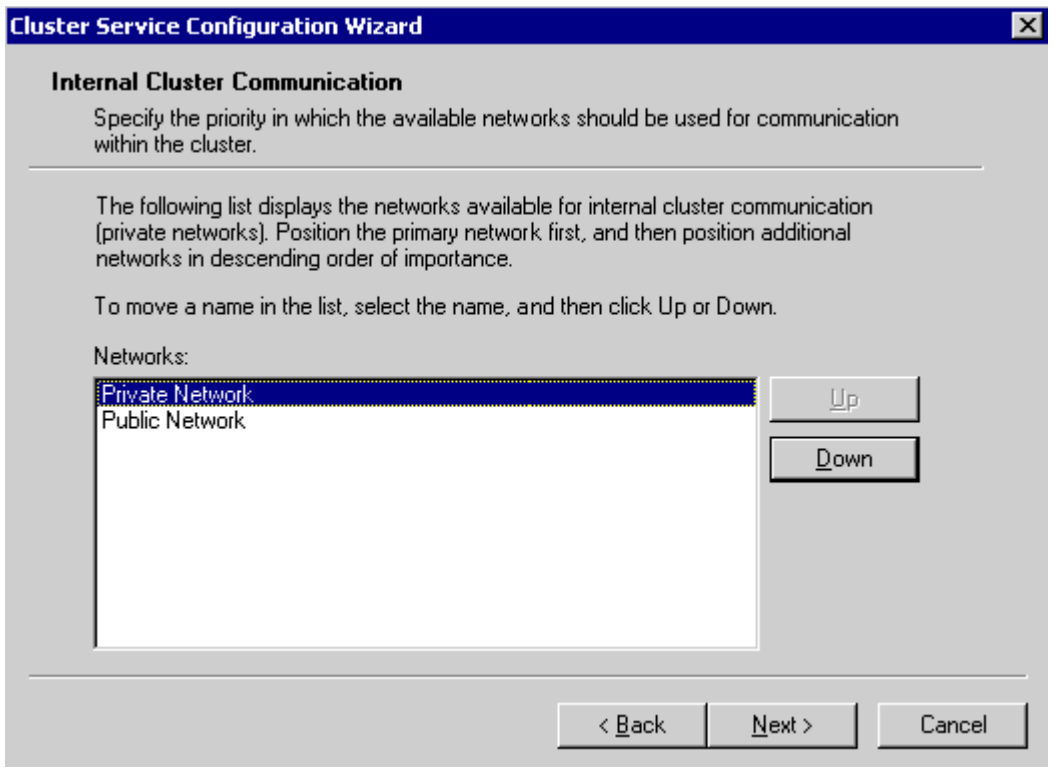
Once all the options are set, click "Next," and this screen appears:



18) This is similar to the previous screen, but now, we are configuring the public network. Under "Network name," the name "Public Network" is there because that is the name we gave it when we configured this network card when we installed Windows 2000. "Enable this network for cluster use" must be selected.

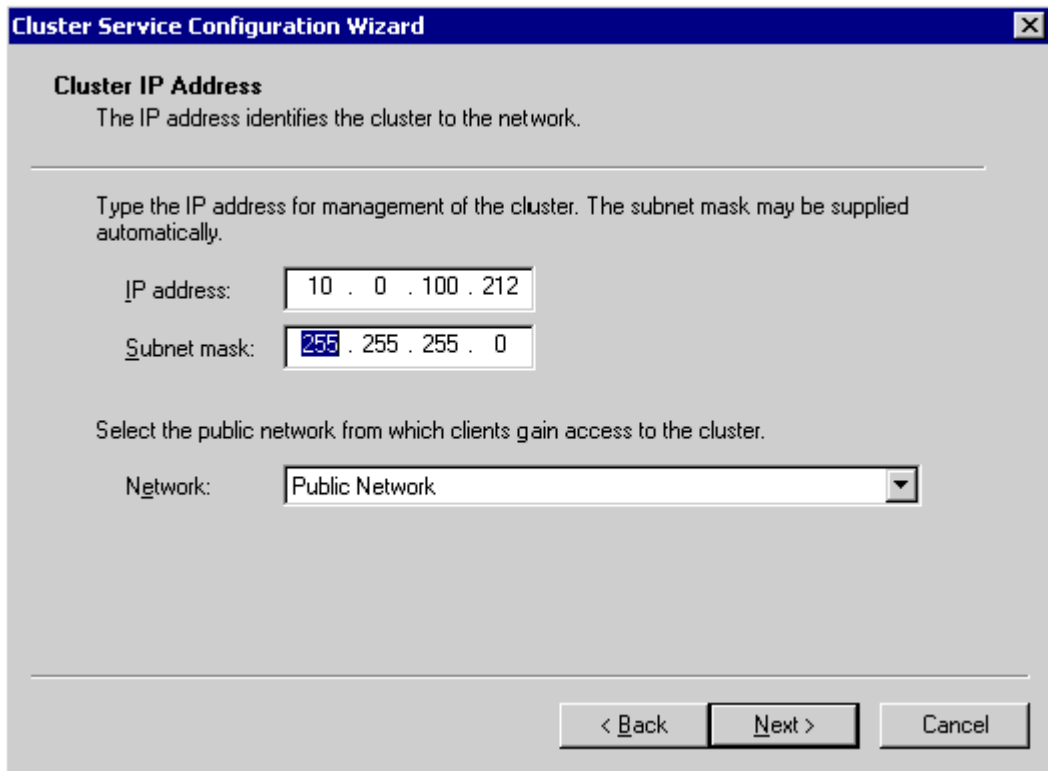
Under the option, "This network performs the following role in the cluster," the radio button next to "All communications (mixed network) is selected. Although you could choose "Client access only (public network), we chose "All communications (mixed network) instead because this provides additional redundancy should the private network fail. For example, since this option is selected, should the private network fail, Cluster Service will still be able to communicate via the public network if need be.

Once all the options are set, click "Next," and this screen appears:



19) Because we specified that the Public Network was mixed, the Cluster Configuration Wizard needs to know which network should be used as the primary network for internal communications, and which one to be used as the backup network should the primary network fail. The primary network must appear first in this list, and the backup network second. If they are not correct, you can move then with the "Up" and "Down" options.

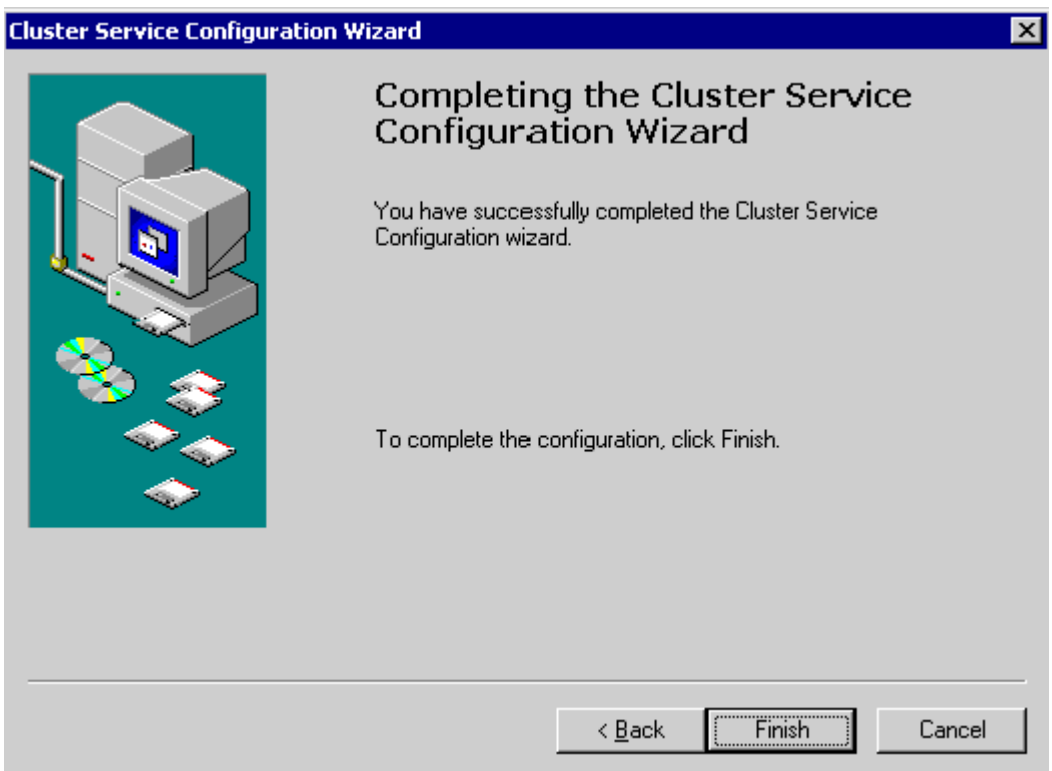
Now click "Next," and the following screen appears:



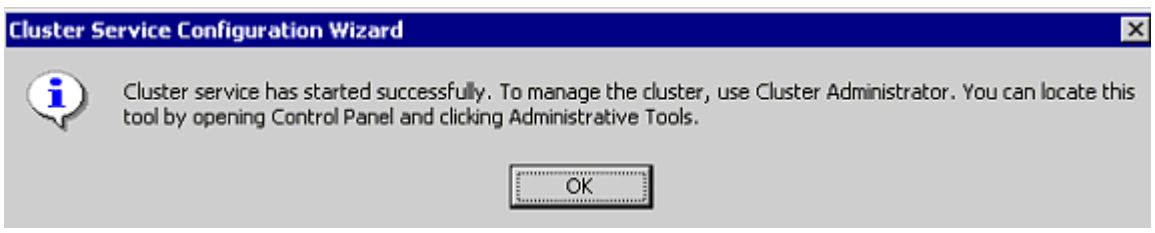
20) Now you must tell the Cluster Service Configuration Wizard the IP address that is to be used as the virtual cluster IP address, which is the IP address used by clients to connect to the cluster. You must also specify the appropriate subnet mask.

Next to "Network," you must select the name of the public network, which in our case, is "Public Network," which is the network to be used by clients to access the cluster.

When you are done, click "Next," and this screen appears:



21) The primary node has now been configured and you are ready to finish this task. Click on "Finish," then after a few more seconds of activity on the screen, the Cluster Service will start automatically, testing to see if it can start. If it can, then this screen appears:



After you click "OK," and a few seconds longer, this screen appears:

22) Now click "Finish," and you are done installing Cluster Service on the primary node.

To see if Cluster Service is running successfully, start the Cluster Administrator to see if the cluster resources are online. You can also check the Event Viewer for any potential problems that arose during the installation.

To learn how to install the Cluster Service on Node 2, click here.

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How to Install Windows 2000 Cluster Services: Installing the Windows 2000 Cluster Service: Node 2

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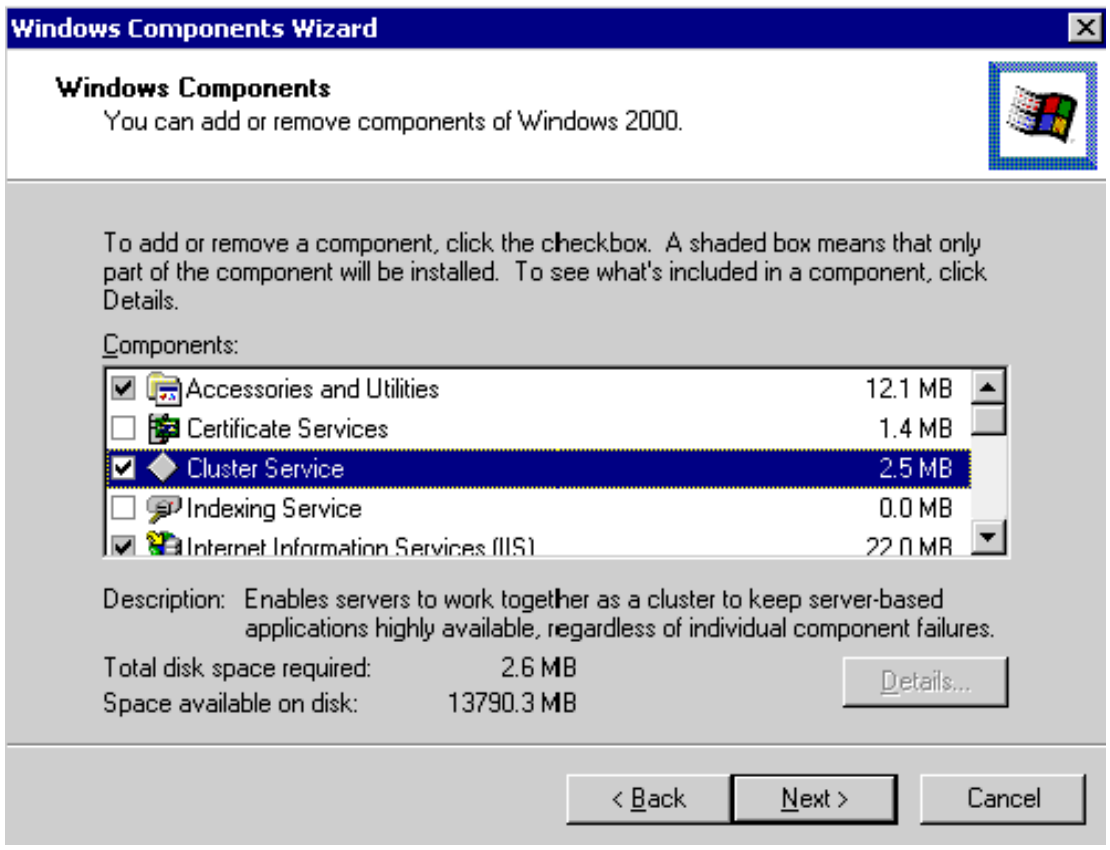
Installing SQL Server 2000 Clustering on Node 2 of the Cluster

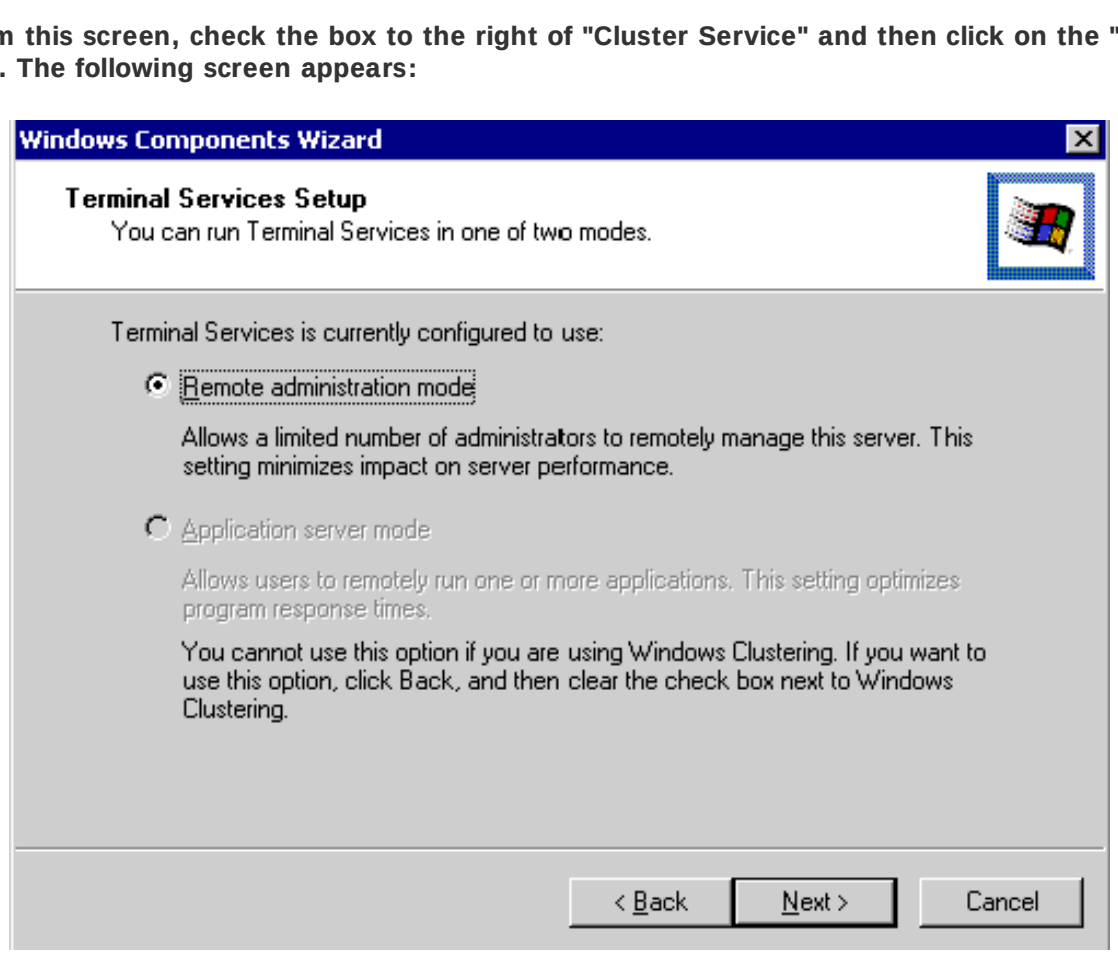
Once the primary node of the cluster has had Cluster Service installed on it, you can now install Cluster Services on the secondary node.

Before you start, be sure that the primary node is up and running and that Cluster Service is up and running successfully.

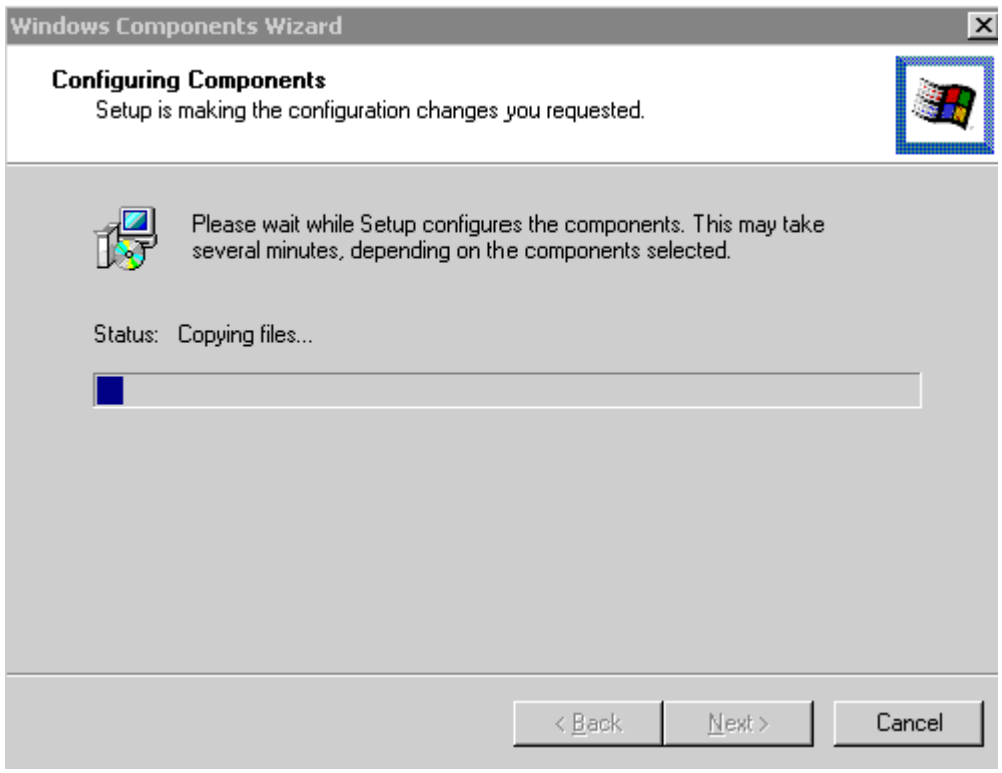
1. On node 2, start the "Add/Remove Programs" option in Control Panel, and then select "Add or Remove Windows Components." The following screen appears:



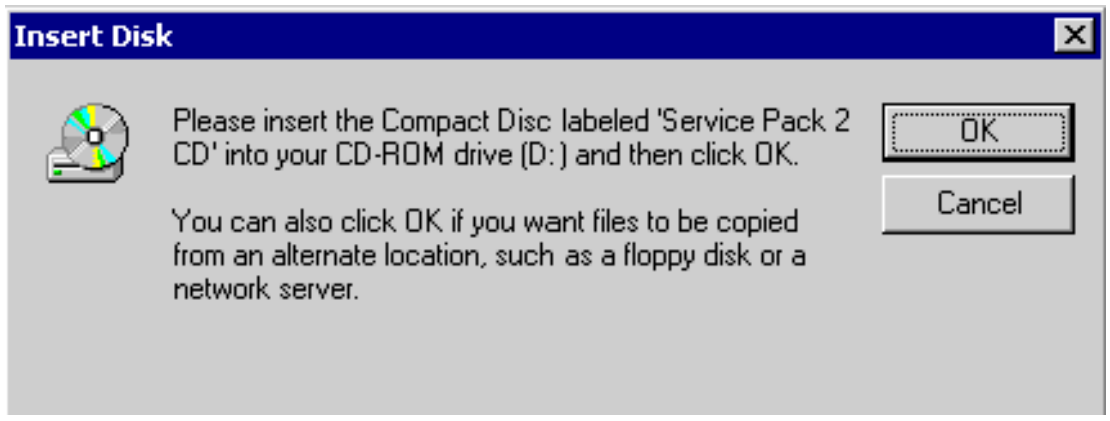
2. From this screen, check the box to the right of "Cluster Service" and then click on the "Next" button. The following screen appears:



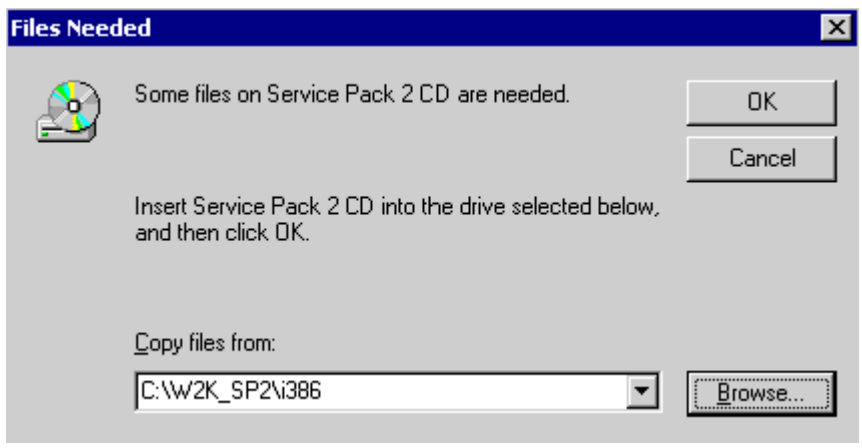
3. How you respond to this screen depends on how you want to configure Terminal Services on this server. In our example, we don't want to make any changes to the current settings, so we just select "Next". The following screen appears:



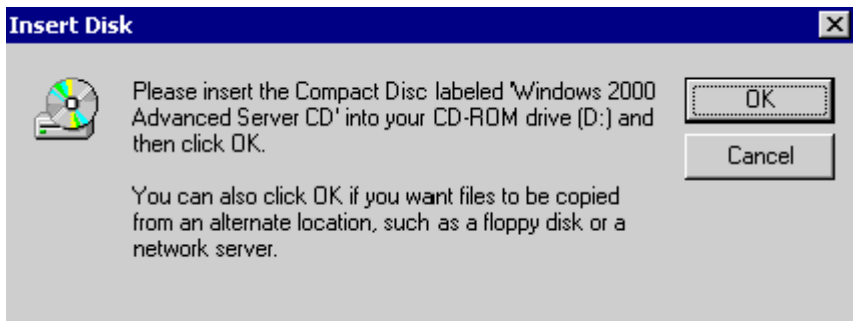
4) This screen tells you that Windows is now installing the Cluster Service files. But before this screen completes, this screen may appear:



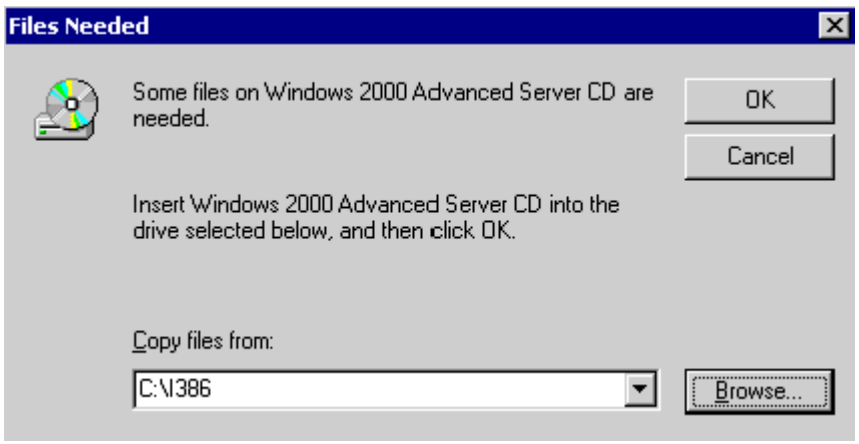
5) This screen is asking you to insert the CD with the Windows 2000 Service Pack files on them. You may either put the CD in the CD drive on the server and click "OK," or if the Service Pack 2 files are locally stored, as in this example, just click "OK".



6) If the install program can't find Service Pack 2 files in the CD player, it will prompt you (as above) for the location of these files. Use the "Browse" button to find the files on the current server, or on a remote server, then click "OK". Next, the following screen may appear:

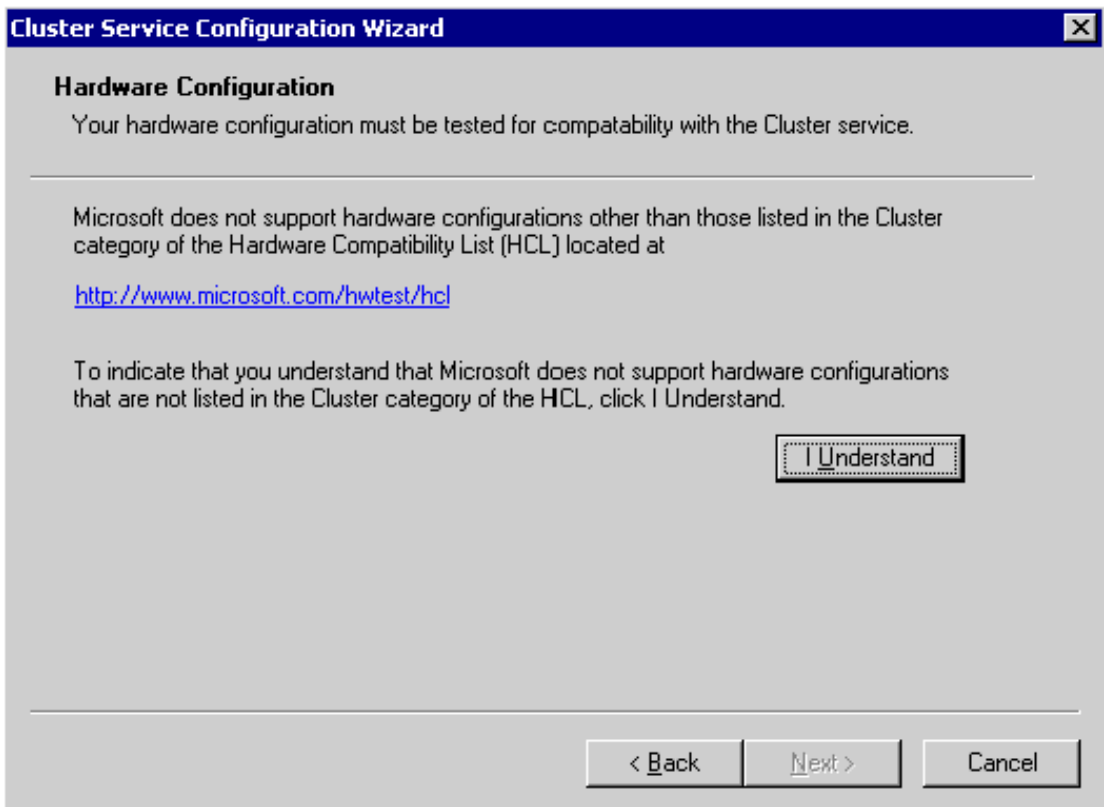


7) This screen is asking you to insert the CD with the Windows 2000 Advanced Server files on them. You may either put the CD in the CD drive on the server and click "OK," or if the Windows 2000 Advanced Server files are locally stored, as in this example, just click "OK".

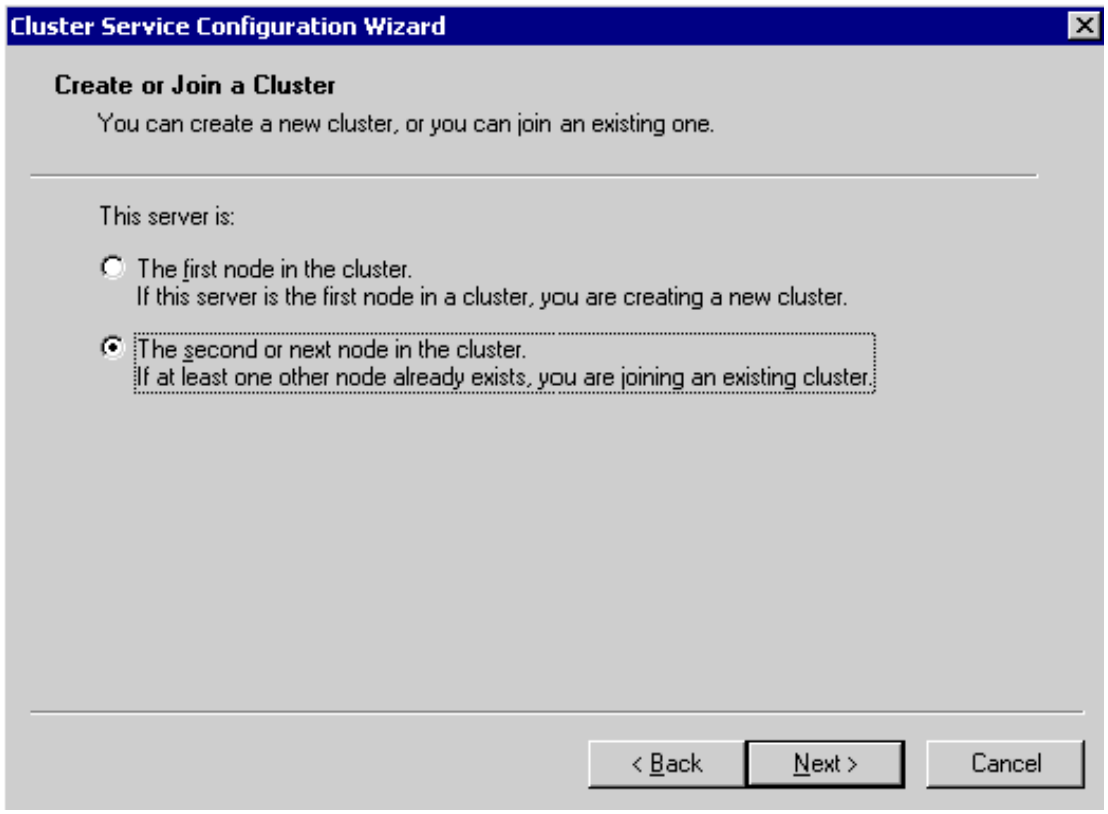


8) If the install program can't find the Windows 2000 Advanced Server files in the CD player, it will prompt you (as above) for the location of these files. Use the "Browse" button to find the files on the current server, or on a remote server, then click "OK." After a few moments, all of the necessary files should be copied and this screen should now appear:

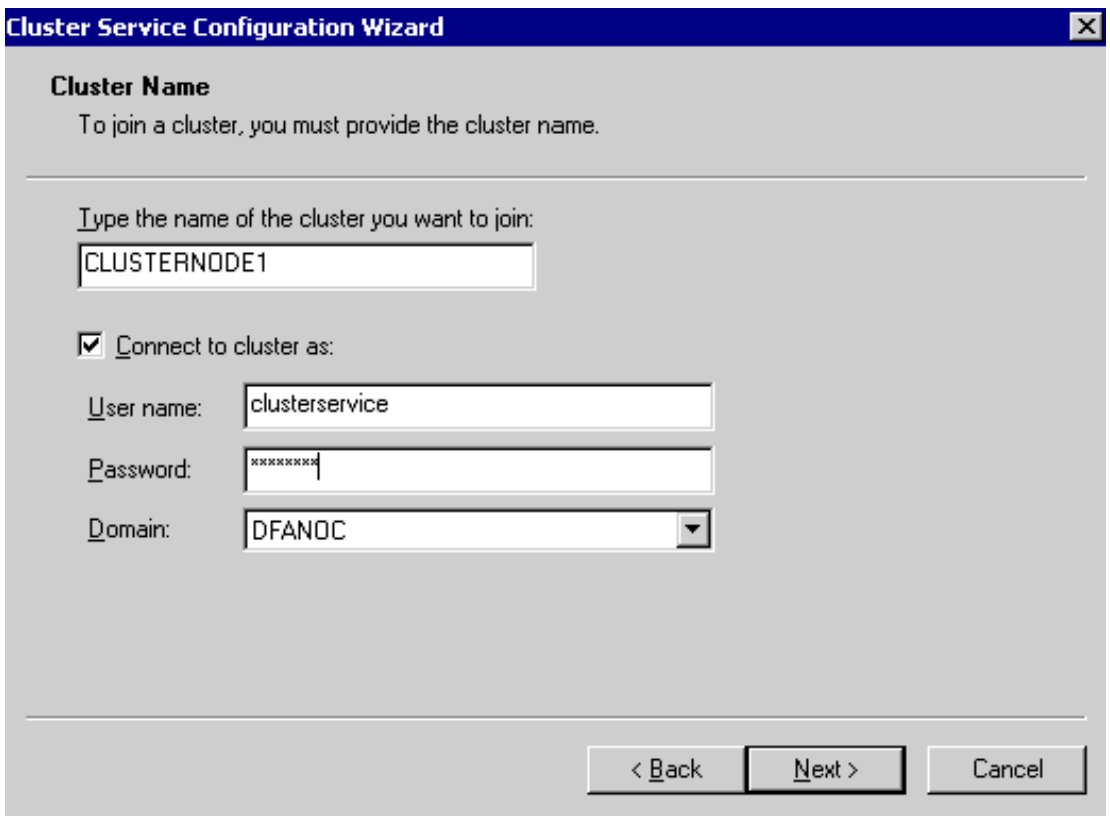
9) Now that all of the files for the Cluster Service have been copied to your server, it is now time to begin configuring the Cluster Service using the Cluster Service Configuration Wizard. Click "Next" to begin the wizard, and this screen appears:



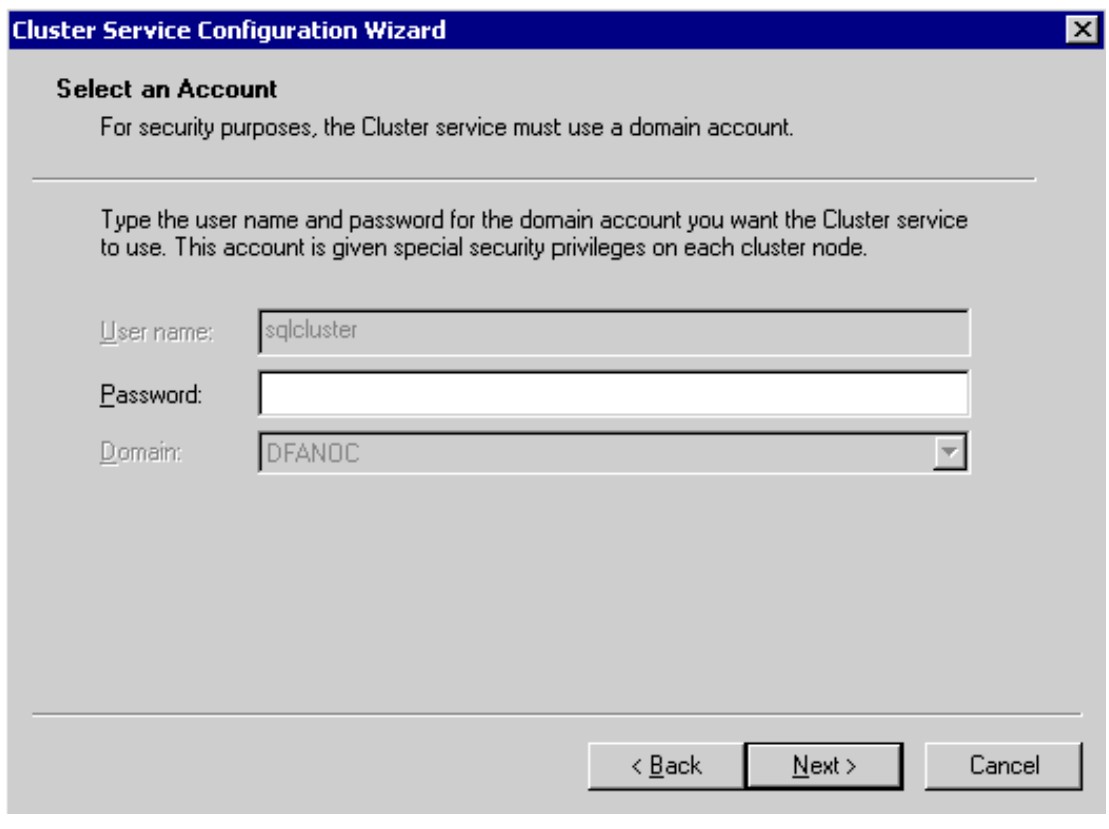
10) In this screen, Microsoft wants you to confirm that you understand that Microsoft does not support hardware configurations not listed in the Cluster category of the Microsoft Hardware Compatibility List. Click on "I Understand," then "Next," to continue. This screen then appears:



11) Because we are now adding the second node to the cluster, we want to select the option "The second or next node in the cluster," in order to join the cluster we have already created. Then click "Next," and this screen appears:

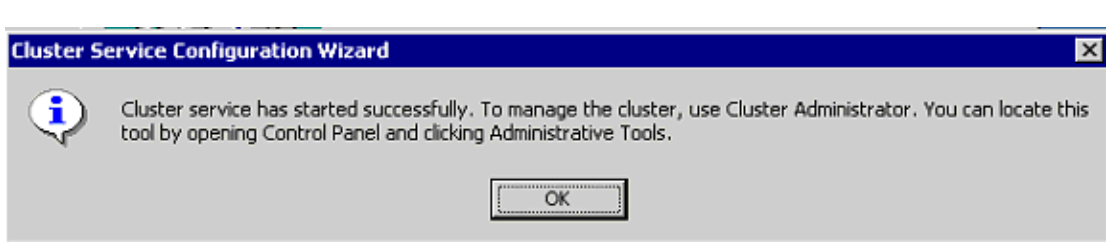


12) To add this node to the current cluster, you must enter the name of the cluster, along with the name of the domain account used for the Cluster Service, along with its password. Once you have done this, click "Next," and this screen appears:



13) You must now reenter the password of the domain account you are using as the Cluster Server service account. Click "Next," and this screen appears:

14) That's all there is to adding a node to a current cluster. Click "Finish." After a few seconds, the Cluster Service starts and this screen appears:



15) Click "OK," and this screen appears.

16) Click "Finish," and you are done.

To verify that the Cluster Service is working correctly on this secondary node, start Cluster Administrator to verify that you can see both nodes of the cluster.

Read the next section: Testing and Verifying the Windows 2000 Clustering Service

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