

SCORPION

A NETWARE TOOL PRODUCED BY PORTLOCK SOFTWARE



Portlock Scorpion Version 1.0 User Guide

Scorpion by Portlock Software

Manual Edition 1.00 – August 21, 2002

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CHAPTER

1

Getting Started

1.1 What is Scorpion?

Scorpion converts NetWare Traditional volumes to NSS volumes and NSS volumes to Traditional volumes. Very fast, efficient and a superb replacement for Novell's VCU utility. Works while the volume is mounted. All characteristics of the volume are preserved during the volume copy including name spaces, trustees, directory restrictions, permissions, etc.

You can use Scorpion to copy from Traditional File System (TFS) to NSS (on versions 5.x and 6.x of NetWare). You can even use it to copy from TFS to TFS, NSS to TFS or NSS to NSS.

Scorpion allows you to convert from a smaller NetWare volume to a larger NetWare volume whether it is TFS or NSS. This is especially useful if you have upgraded your NetWare server to NetWare 6.x and want to convert the existing volumes to support the newer (and faster) NSS volumes.

1.2 Prelude to Scorpion

With all of the advantages provided by NetWare, network administrators and users require more. They need to expand beyond the limitations still imposed by the traditional NetWare storage system. They need the ability to store larger files and to store more of them in a single directory. They need to mount more volumes on a single server. They want faster volume mount times and quicker error recovery. While gaining these new capabilities, users and administrators still need all the NetWare advantages they've come to depend on.

Novell Storage Services (NSS) is Novell's answer to these needs. NSS gives you the ability to store large files and a large number of files without degrading system performance. NSS gives you rapid access to your data. Volumes can be mounted and repaired in seconds rather than hours, regardless of their size. Best of all, NSS gives you all these new capabilities while still maintaining full backward compatibility.

Novell has attempted to make the process of upgrading your traditional volumes to NSS volumes supported on NetWare 5.x and 6.x as easy as possible, yet an opportunity has emerged for Portlock Software to make this task even easier.

NetWare 6.x includes the VCU.NLM (Volume Conversion Utility) which can be used to convert traditional volumes to NSS. This is not an "in-place" conversion. It requires free disk space for the new NSS partition equal to or greater than the size of the traditional volume being converted. It is more of a copy utility than a conversion utility. For example, if you want to move a 2 GB volume, you need to have at least 2 GB of free space available. The original volume is renamed *volumename_old*, while the new NSS volume retains the original volume name.

The Volume Conversion Utility allows users to upgrade the traditional volume to NSS. However, the implied trustee rights do not transfer with this method. After you upgrade the SYS volume, you must manually add a public trustee with read and file scan rights to the LOGIN directory.

Portlock's Scorpion 1.0 converts NetWare Traditional volumes to NSS volumes and NSS volumes to Traditional volumes. It is very fast, efficient

and a superb replacement for Novell's VCU utility. This version also supports Traditional to Traditional and NSS to NSS volume copies. An added benefit is that Scorpion works while the volume is mounted. All characteristics of the volume are preserved during the volume copy including name spaces, trustees, directory restrictions, permissions, etc.

The program supports NetWare 4.x, 5.x and 6.x. The software also has the ability to be menu driven as well as command line operation.

While being similar to Novell's VCU, Scorpion 1.0 is comprised entirely of Portlock Software technology.

Installation of Scorpion

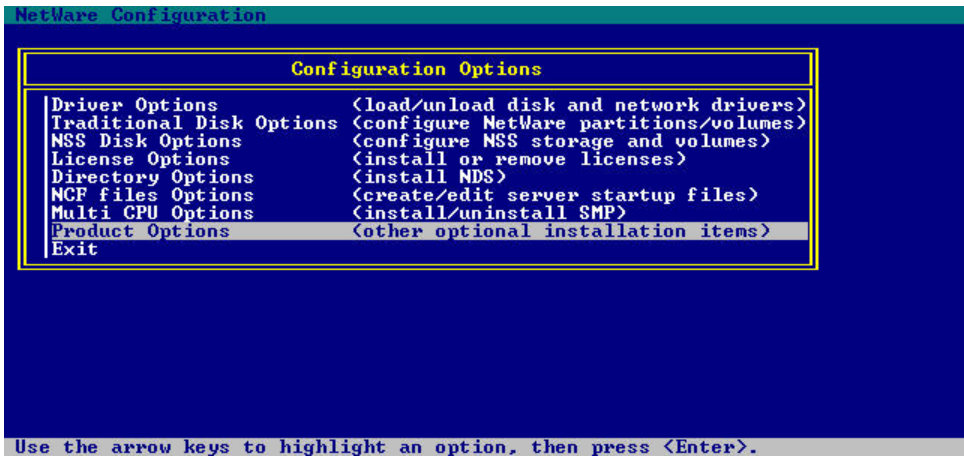
There are two methods utilized to install Scorpion. The first is used by loading INSTALL or NWCONFIG and the second is via PINSTALL.NLM

2.1 Installation Method One

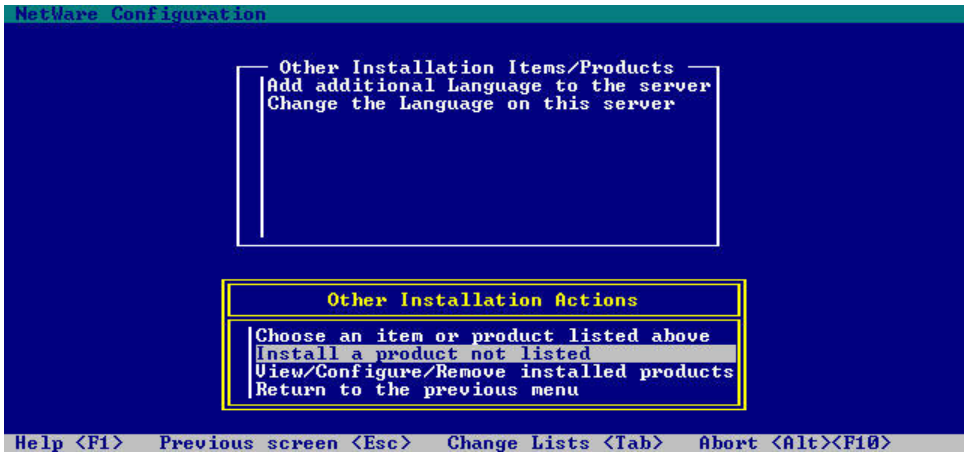
To install the Scorpion software using Method One, you must do the following:

For NetWare 4.x servers, type “LOAD INSTALL” at the system console prompt.

For NetWare 5.x or 6.x servers, type “NWCONFIG” at the system console prompt.



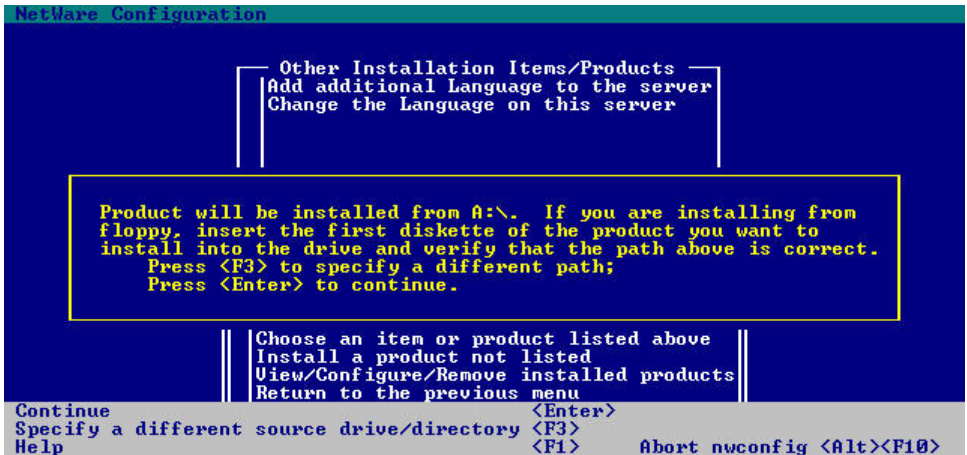
From the **Configuration Options** menu, select **Product Options**.



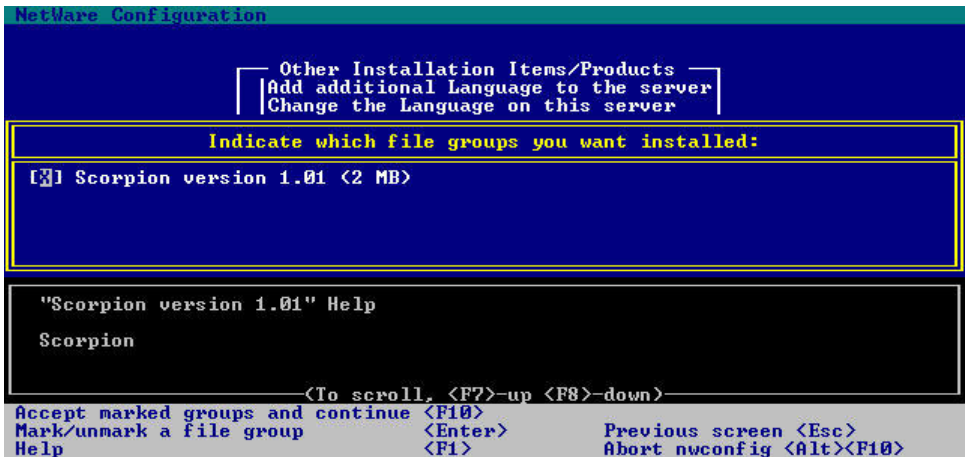
Choose **Install a product not listed** from the **Other Installation Actions** menu. The next step is to choose your installation path where you want to install the software.

***Tip:** On NetWare 5.x or 6.x, a list of previously used paths will display. If you press [ESC], you can select a new path to install from.

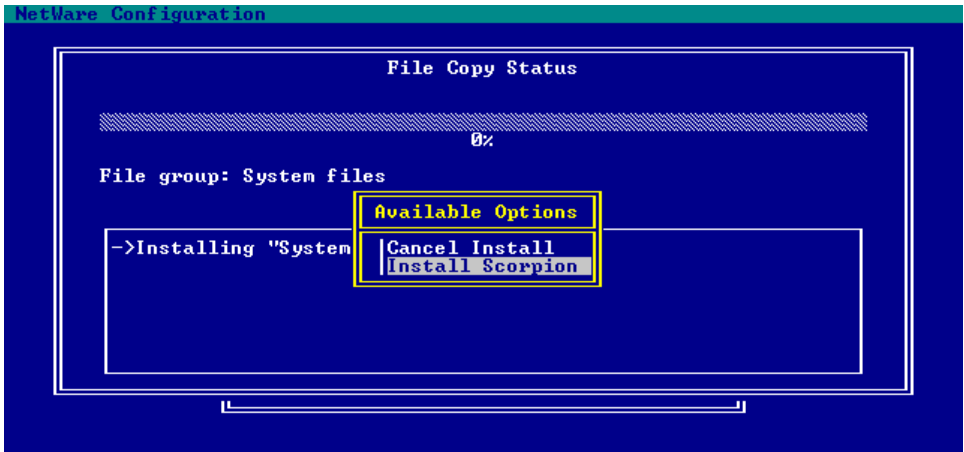
***Tip:** Make sure that you have your Portlock Software Scorpion License in the source directory. Otherwise, it will be installed as an evaluation version.



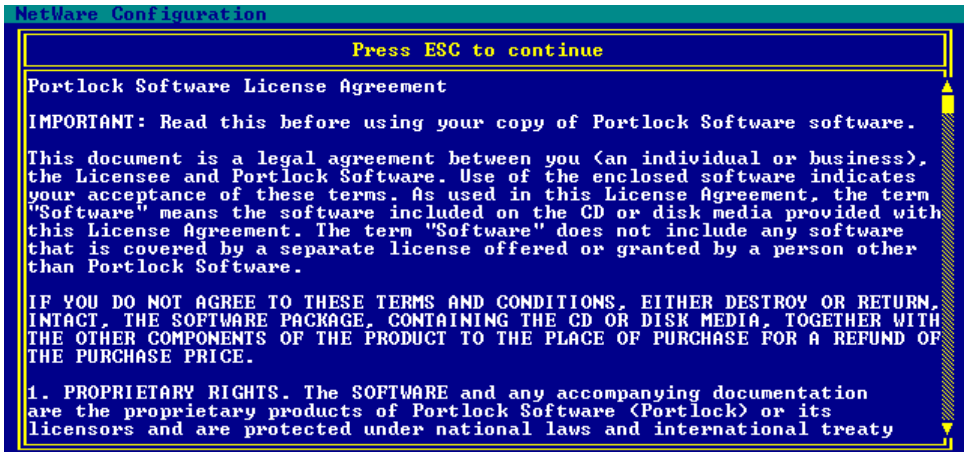
Press the [F3] function key to type in your installations path.



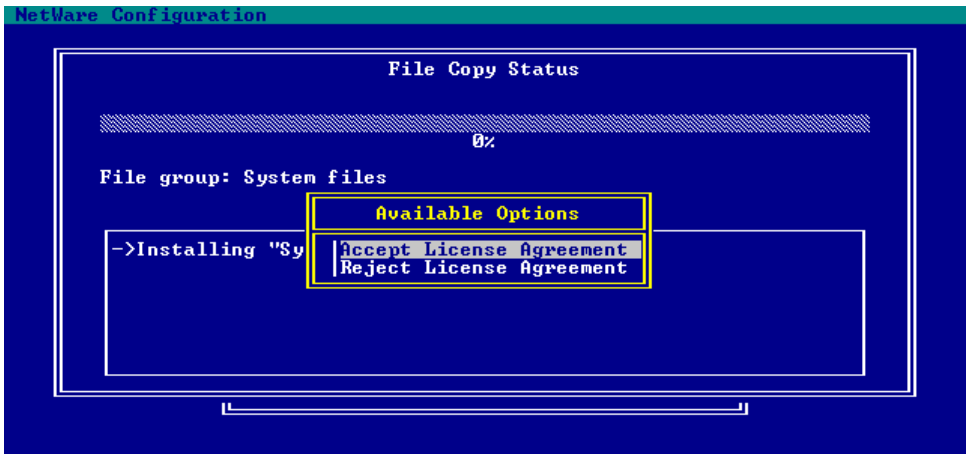
The screen will then show the **Scorpion Installation** screen. Press the [F10] function key to continue, and the Scorpion application will then be installed on your server. You then need to exit INSTALL or NWCONFIG by pressing [ESC].



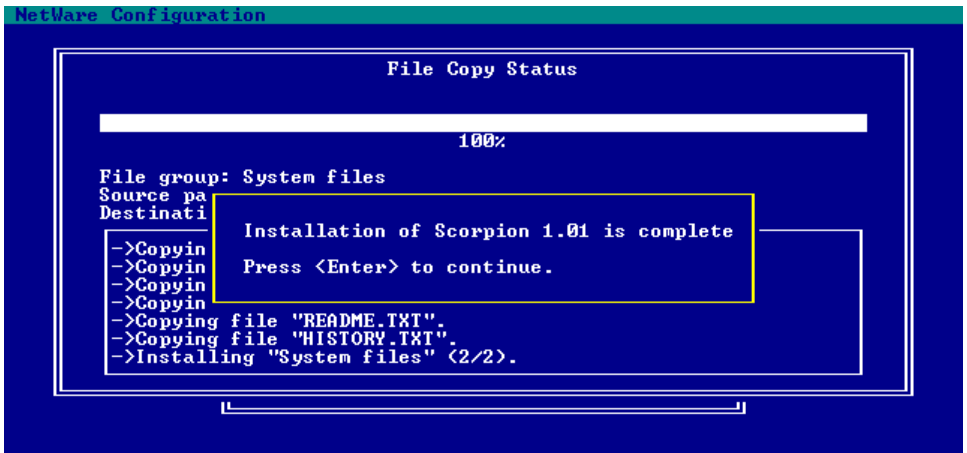
Select **Install Scorpion** from the **Available Options** menu and press [Enter].



You are then prompted with the Portlock Software license agreement. Once you have read the agreement, press [ESC] and the following menu will appear:



If you choose to accept the agreement select **Accept License Agreement** and press [Enter] to continue. If you reject the License Agreement, the installation will be aborted.



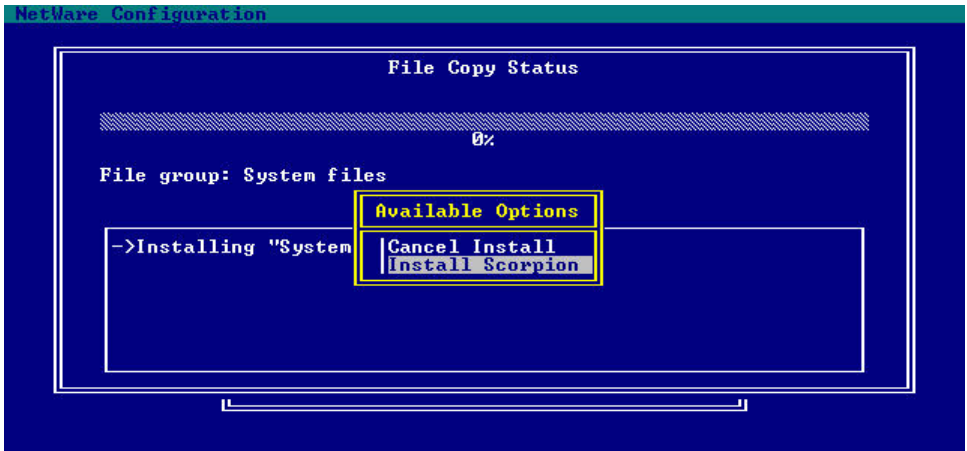
The installation will proceed. Once it is completed, press [Enter] to continue.

Portlock Software's Scorpion application will be installed on your server. You then need to exit INSTALL or NWCONFIG by pressing [ESC].

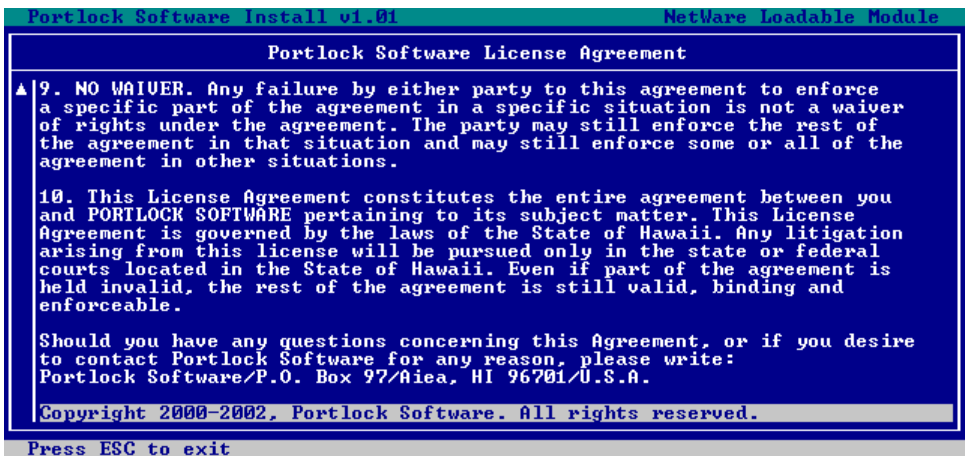
2.2 Installation Method Two

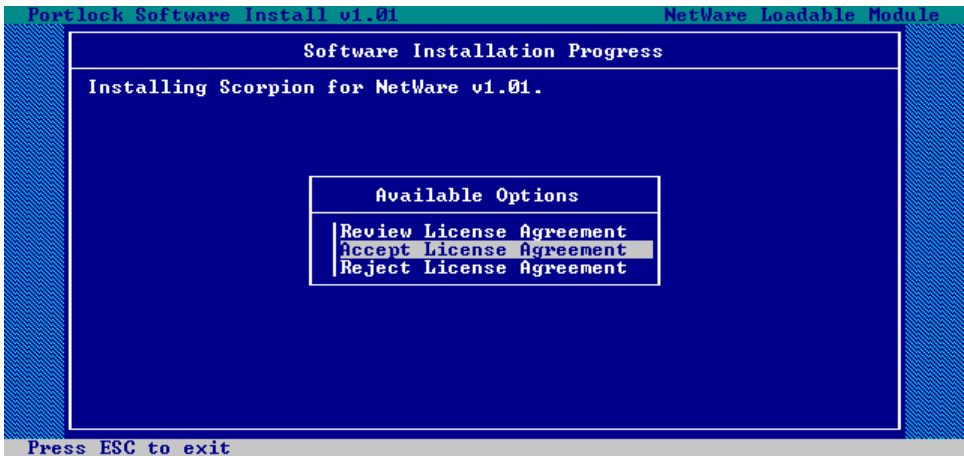
To install using PINSTALL.NLM you need to type:

load *installation path* pinstall. You will then be directed to the screen shown below:

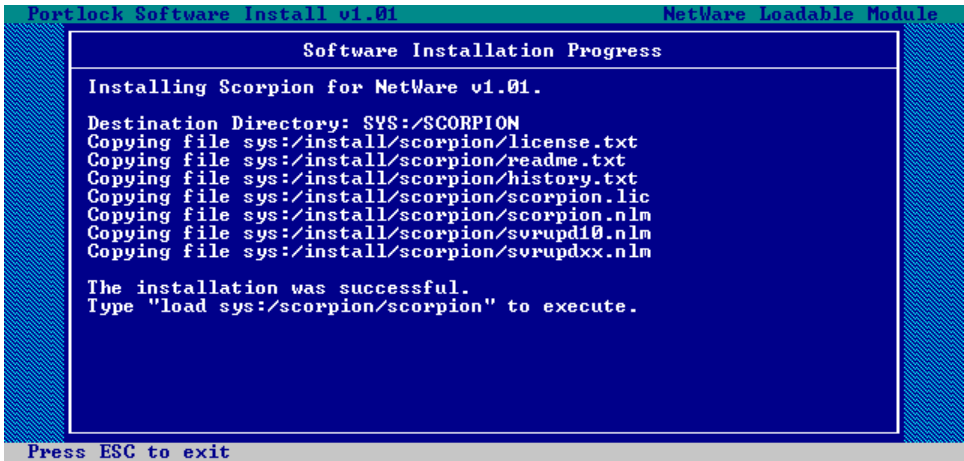


Read the license agreement carefully. If you agree, press [ESC].





The **Available Options** screen will then appear. Highlight the appropriate option, then press [Enter]. For this example, we will **Accept License Agreement**, and press [Enter].



Press [ESC] to return to the NetWare System Console Prompt.

Copying Volumes in NetWare 4.x

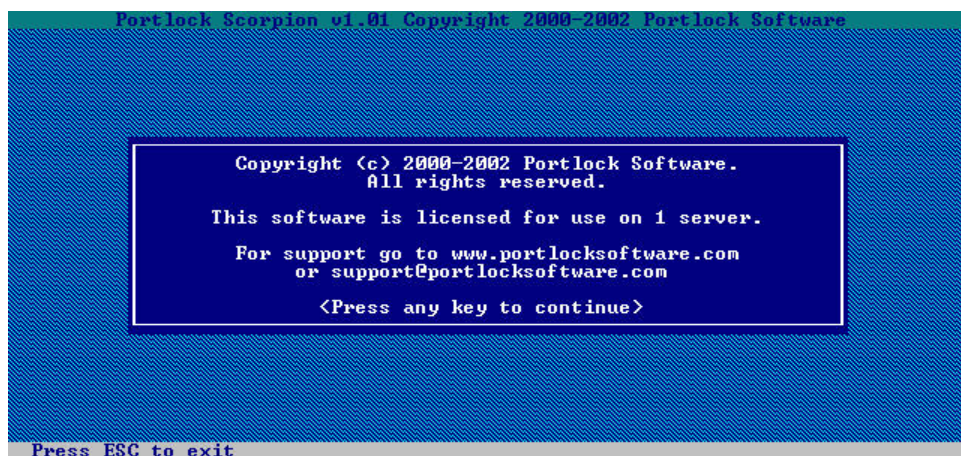
Copying Volumes in NetWare 4.x is essential if you want to copy the data or SYS volume to a new volume located on the same storage area, or to a new storage area.

Before loading and using Scorpion, make sure that you have created a new volume that you can copy the existing volume to. This new volume can be created by using the NetWare 4.x command Install.

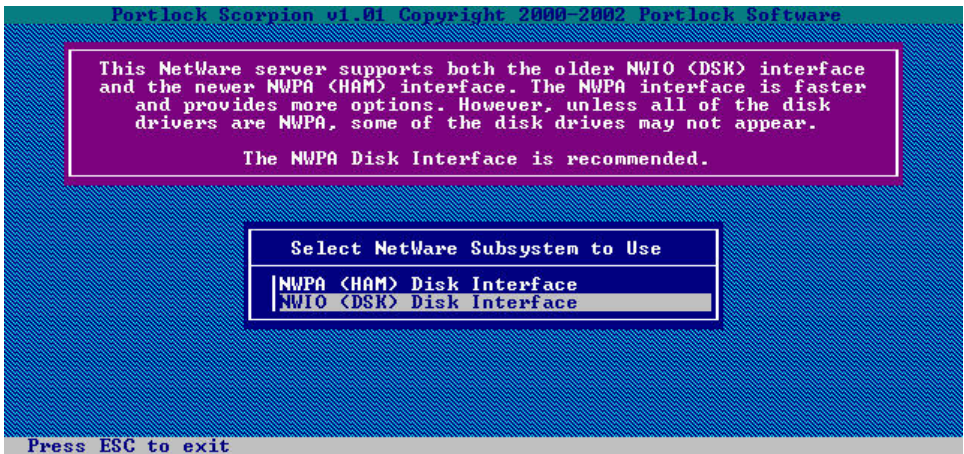
Note: If you are unsure of this process, please refer to your Novell documentation, or confer with a qualified NetWare professional.

```
NW_411_LH_A:load sys:scorpion\scorpion_
```

Load Scorpion by typing: **load sys:scorpion\scorpion** at the NetWare System Console Prompt.

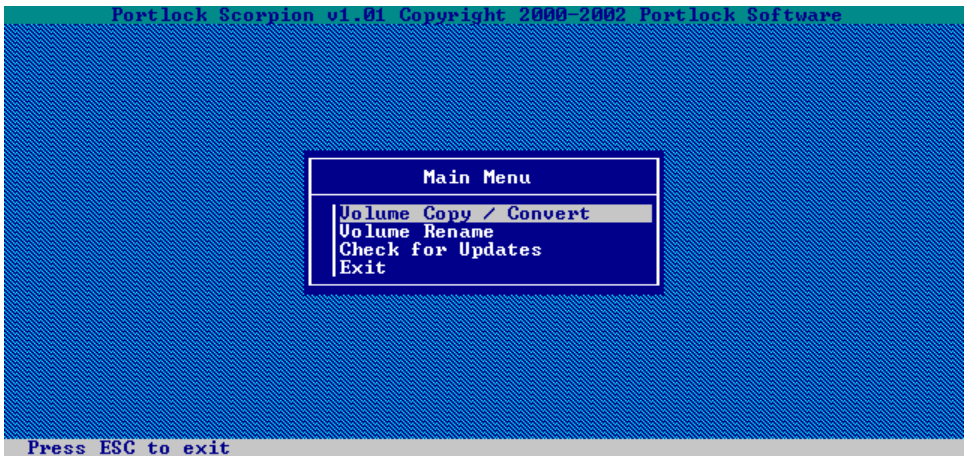


Press any key to continue.



If you choose the HAM drivers, and have some volumes that are mounted using .DSK drivers then those volumes will not appear. If you instead choose NWIO interface, this supports both NWPA and NWIO drivers.

Once you select the interface type, it will then scan your server for available volumes.



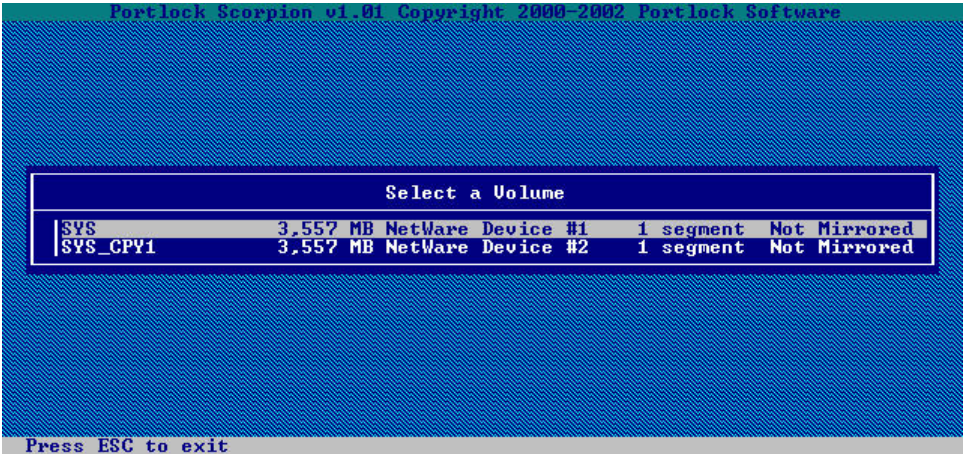
You will then be presented with the screen above. From here, you can copy and/or rename volumes on your server.

As with all procedures involving NetWare volumes, please ensure that you have a valid verified backup of your server before commencing any data manipulation. You can use Portlock Software’s Storage Manager or your regular Tape Backup software.

Please read through all the steps in this chapter before proceeding. If you are unsure of any steps then please try them on a test server, or consult a qualified NetWare professional.

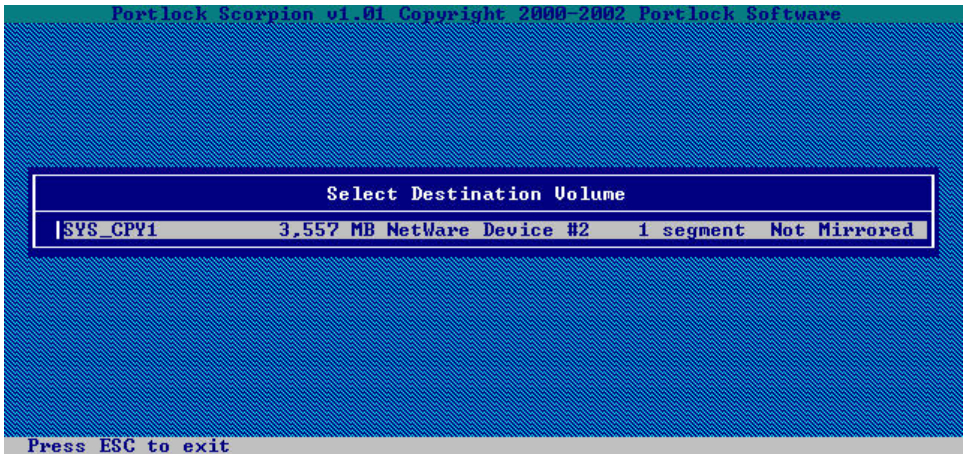
When you press [Enter] on the **Volume Copy/Convert** option, you will be presented with a list of volumes that Scorpion detected during loading. If there are any volumes that are not present, please make sure that all your disk drivers are loaded and that you chose the NWIO Interface option.

Also, to ensure that the destination volume has a complete copy of all data from the source volume, Portlock Software recommends that you get all users to logout of the server and disable all logins to the server by typing **disable logins** at the NetWare System Console Prompt. Doing this ensures that there are no locked files or that users do not update documents and files after they have been copied to the destination volume.



For this example, we will be copying the SYS volume to another volume. It does not have to be the SYS volume, it could easily be a data volume.

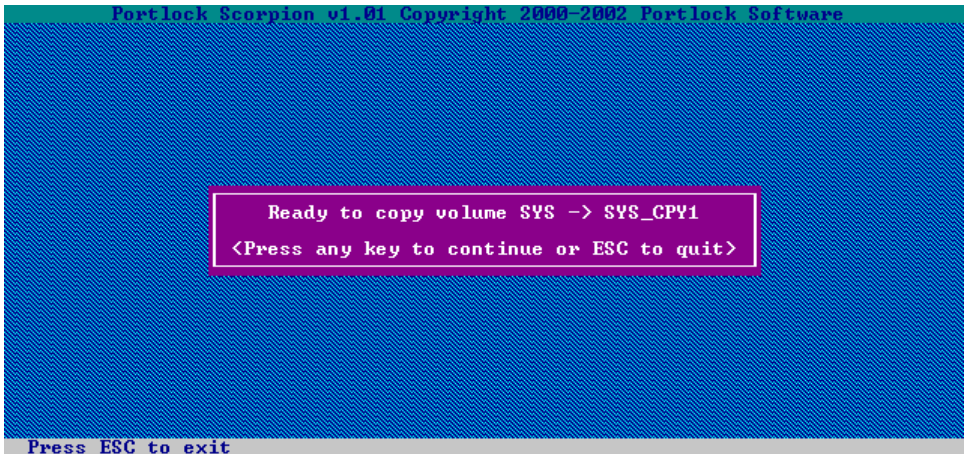
First, you must choose the source volume that you want to replicate. For our example, we will use the SYS volume.



Now, you are presented with potential volumes that can be copied to.

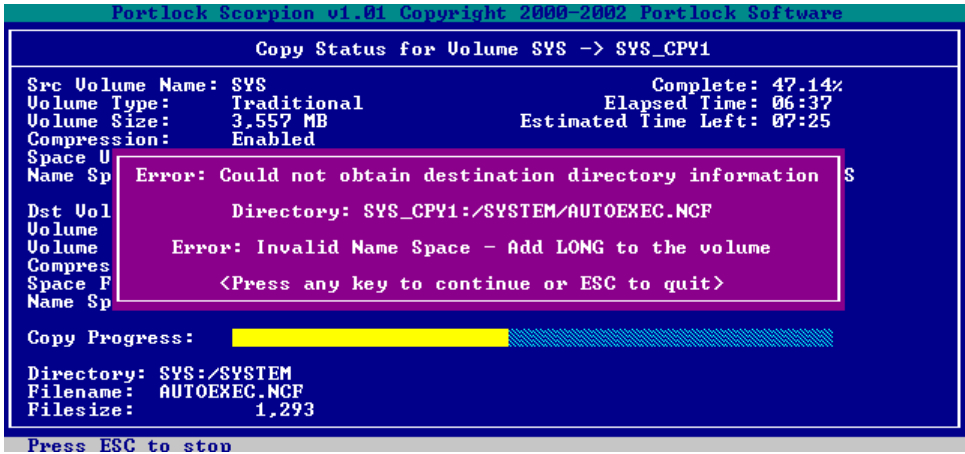
WARNING: Scorpion copies over all data from the root of the source volume to the root of the destination volume. You should make sure that there is no data contained on the destination volume before you start the copy process.

Once you press [Enter] on the destination volume, Scorpion will then display what it is about to do and await confirmation from you before continuing.



If everything is OK, press any key to continue. If not, press [ESC] to go back and choose again.

The following screen may appear during the copy process:



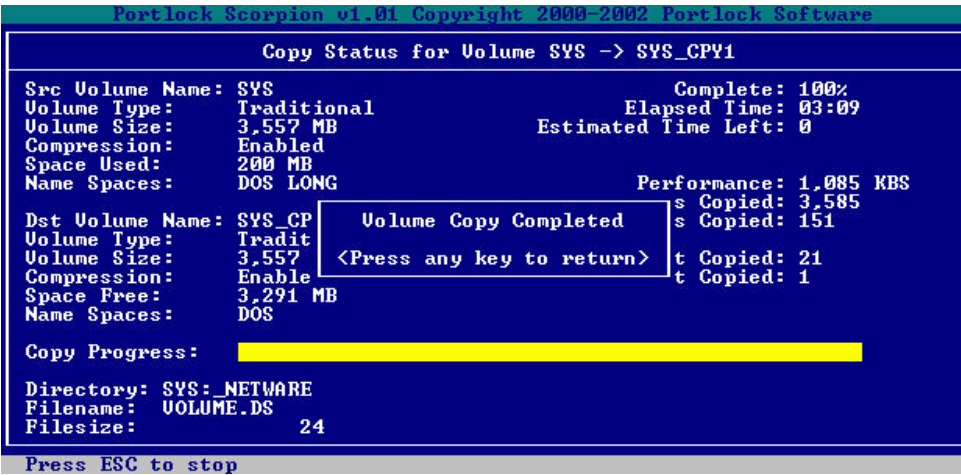
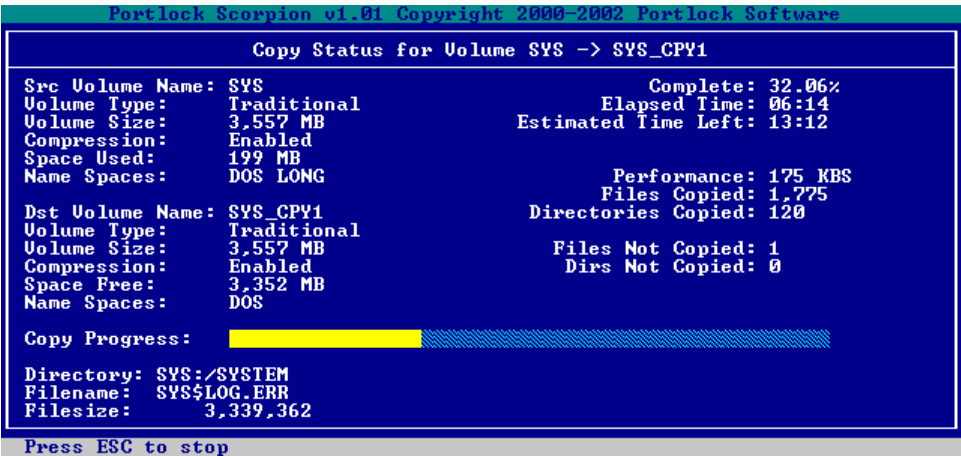
It shows that the name spaces are not the same on the two volumes. If name spaces are not the same on the source and destination volumes, then some files will not be copied over to the destination volume. To rectify this, you would have to type the following at the NetWare System Console Prompt:

ADD NAME SPACE *LONG* TO *SYS_CPY1*

For the items that are in italics, you would substitute the correct name space as mentioned in the error screen (in our case LONG) and the destination volume (in our case SYS_CPY1). Please substitute your own local information for this.

If you choose not to add the name spaces to the destination volume, the files will not be copied to the destination volume.

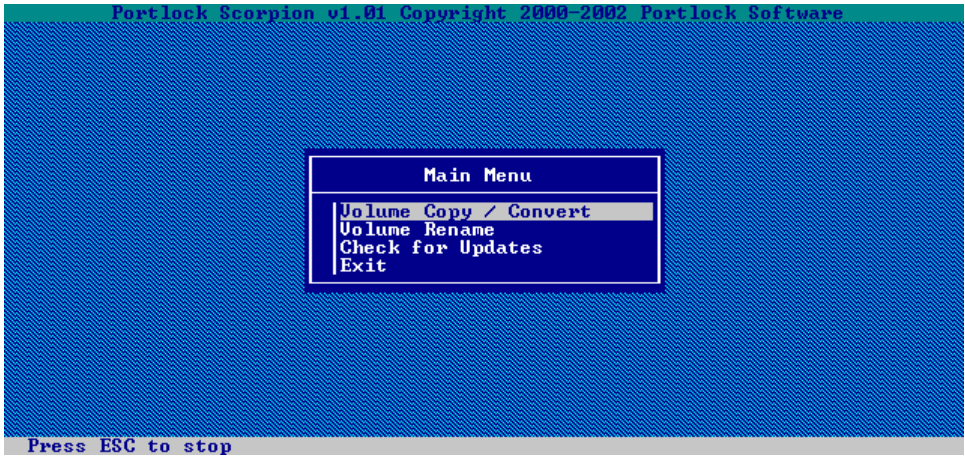
Here is a shot of the copy process in action:



When the copy process is complete, press any key to continue. You will then be presented with the Scorpion **Main Menu**.

From here, you have two choices. One is to [ESC] from the Scorpion program and return to the NetWare System Console Prompt. If you choose to do this then you will have to modify NetWare login scripts to point to the new volume for all users. You will also have to have users change any UNC (ie \\servername\vol1 to \\servername\newvol1) paths for any documents and shortcuts that they may have.

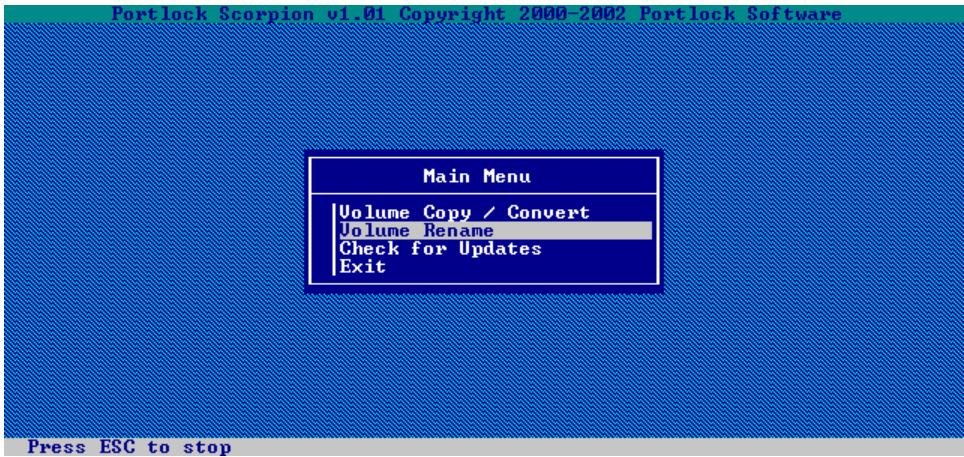
The other option is to now rename the destination volume to be the same as the source volume. If you do this, then NetWare login scripts and users shortcuts and documents need not be changed.



3.1 Renaming Volumes

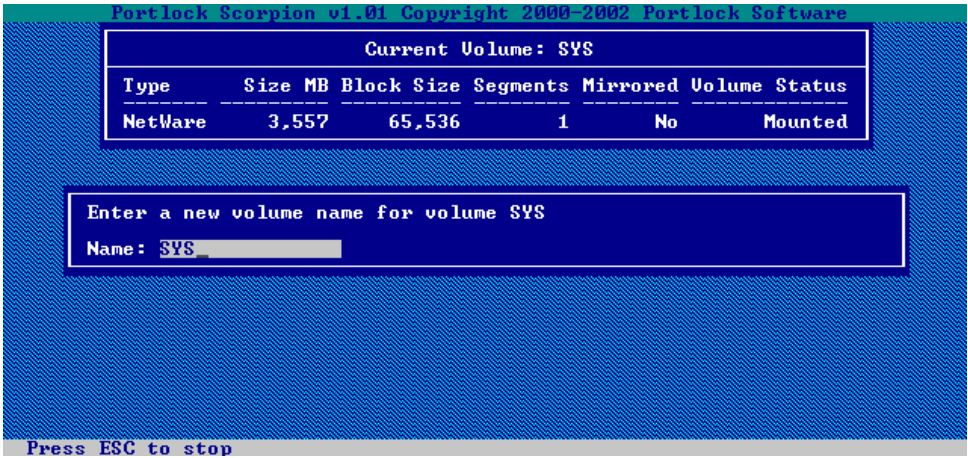
To rename volumes, there are several options. We will only be focusing on one of those options, which is described in the following pages.

First, you must choose the **Volume Rename** option from the **Main Menu** of the Scorpion program.

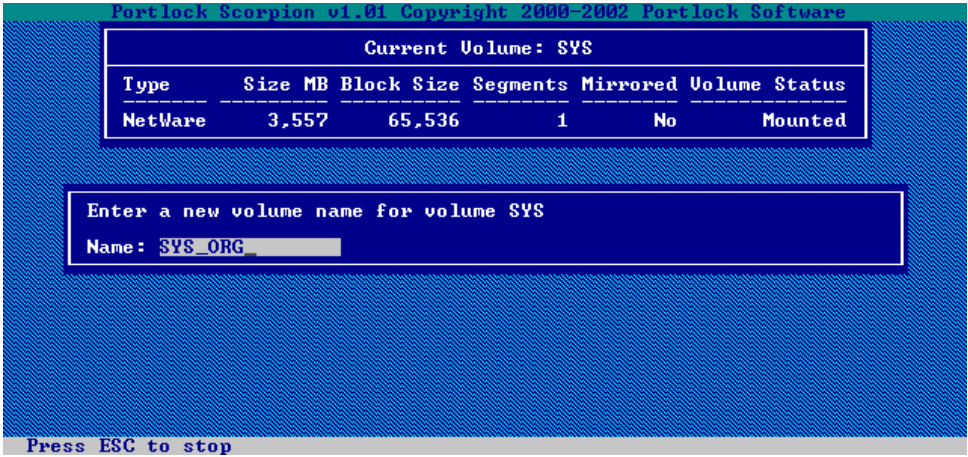


Then choose a volume to rename. We recommend that you change the source (old) volume name first. For our example, we will change the SYS volume to SYS_ORG.

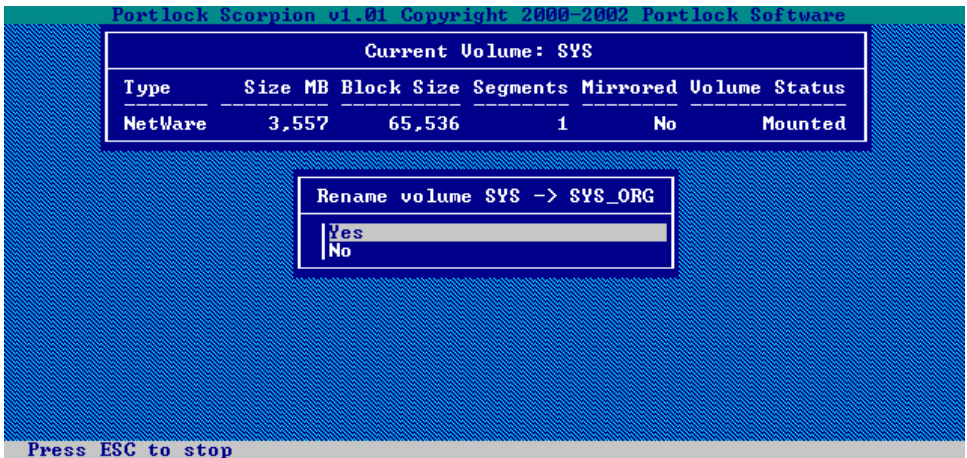
***Tip:** Portlock Software recommends that you change the name to something that makes sense to you, something like _org or _old as a suffix to your current volume name is a recommendation.



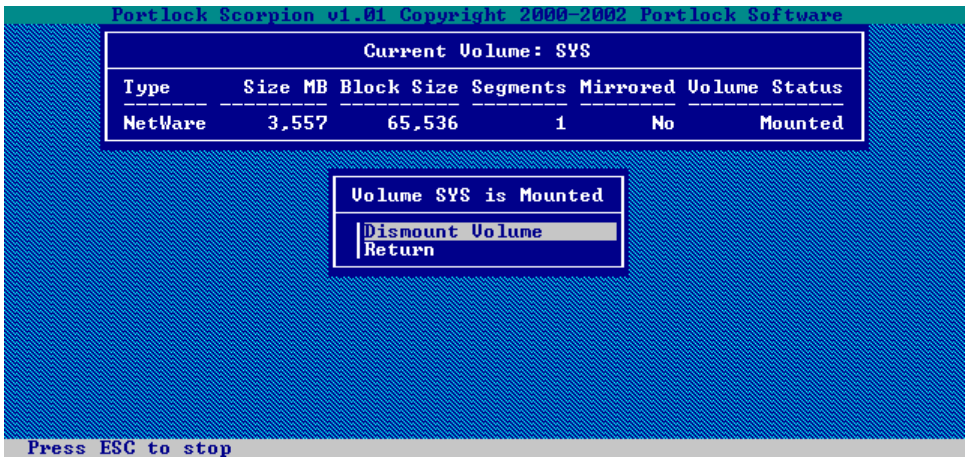
On this screen it shows the current volume name. We will change it to be the new volume name of **SYS_ORG**.



Press [Enter] and the following message will appear:

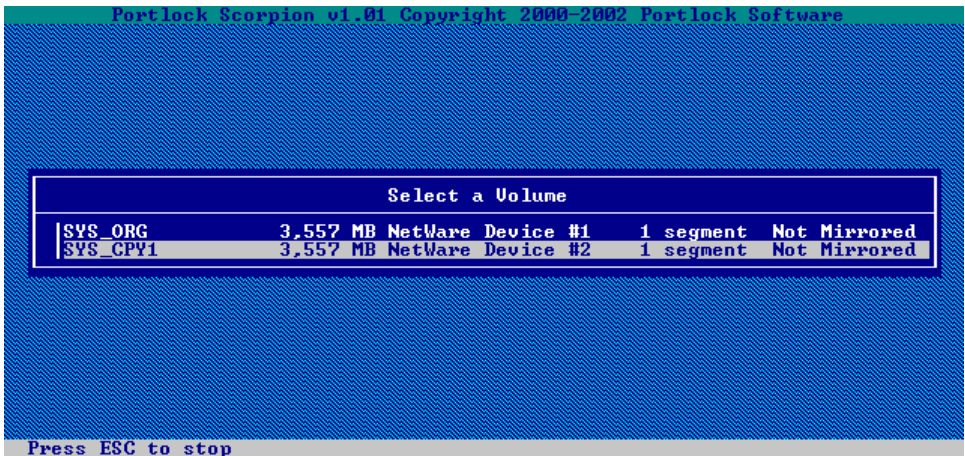


This is just to confirm the changes you want made. If this is correct, press [Enter] to continue.

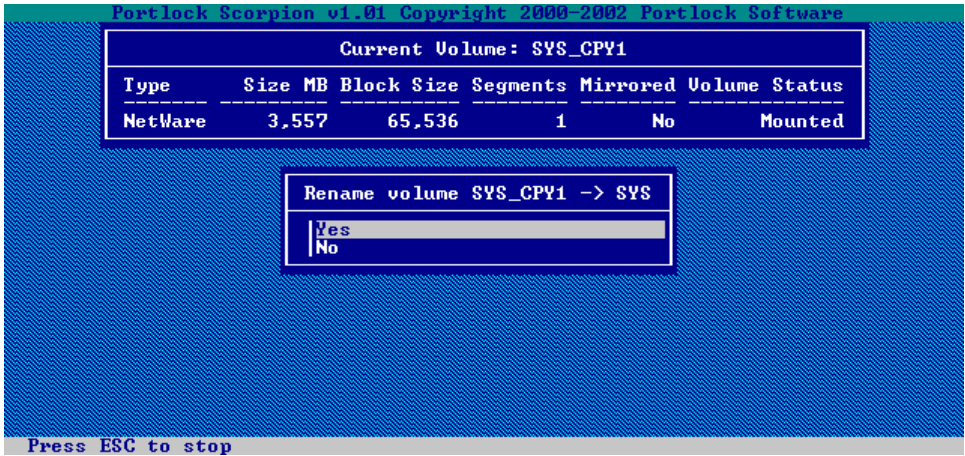


As part of the rename process, the volume needs to be dismounted and then mounted under the new volume name that you have selected.

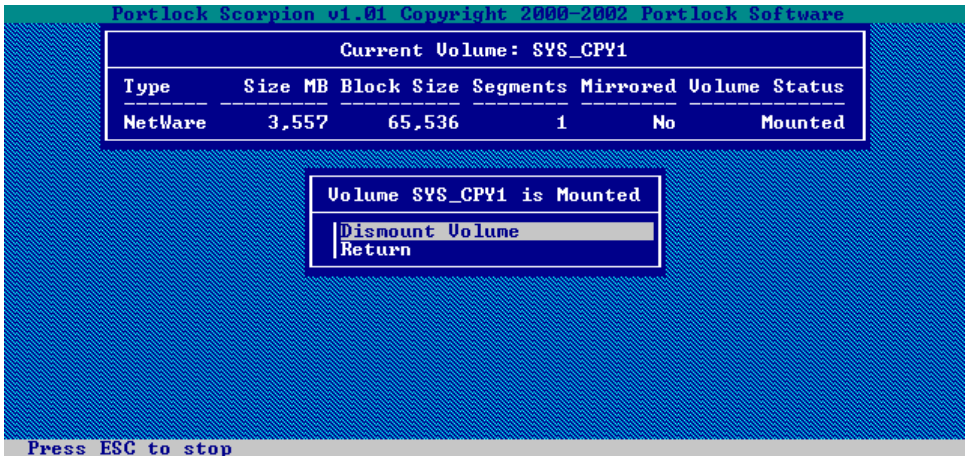
Now Scorpion will remount the volume and go back to the **Main Menu**. There you will once again choose the **Volume Rename** option to rename the new destination volume.



Now, we have to rename the new destination volume (for this example: SYS_CPY1) to the original source volume name (for this example: SYS).



Once again, it confirms that we agree to the volume rename. Press [Enter] to continue if everything is correct.



Because of the name change, the volume must be dismounted and then mounted again. Once this is completed, please exit by pressing [ESC].

Now that the volumes have been copied, we now have to tell Novell Directory Services (NDS) what we have done. This is a two-step process.

The first step is to run DSREPAIR on the server. As part of this process, you will need to have the Admin (or admin equivalent) username and password.

To load DSREPAIR, type: **load dsrepair** at the NetWare System Console Prompt.



```
NetWare 4.1 DS Repair 4.71                                     NetWare Loadable Module
DS.NLM 6.11 Tree name: P411
Server name: NW_411_LH_A.Servers.Portlock

Available Options
Unattended full repair
Time synchronization
Report synchronization status
View repair log file
Advanced options menu
Exit

Allows manual control of all repair operations as well as diagnostic information
and global repair functions.
Enter=Select menu action                                     Alt+F10=Exit
Esc=Exit                                                    F1=Help
```

From the **Available Options** menu, choose **Advanced Options menu** and press [Enter]. You will then be presented with the following menu.

```
NetWare 4.1 DS Repair 4.71                                     NetWare Loadable Module
DS.NLM 6.11 Tree name: P411
Server name: NW_411_LH_A.Servers.Portlock

Advanced Options
Log file and login configuration
Repair local DS database
Servers known to this database
View remote server ID list
Replica and partition operations
Check volume objects and trustees
Check external references
Security equivalence synchronization
Global schema operations
View repair log file
Create a database dump file
Return to main menu

Check all mounted volumes for valid volume objects and valid trustees on the
volumes
Enter=Select menu action                                     Alt+F10=Exit
Esc=Return to main menu                                     F1=Help
```

Choose the **Check volume objects and trustees** and press [Enter]. You will then be asked to enter your Admin (or equivalent) username and password.

```

NetWare 4.1 DS Repair 4.71                               NetWare Loadable Module
DS.NLM 6.11 Tree name: P411
Server name: NW_411_LH_A.Servers.Portlock                Total errors: 0

+-----+
| Advanced Options |
+-----+
| Log file and login configuration |
+-----+

+-----+
| Login as the admin |
+-----+
Administrator name: 
Password: 
Press <ENTER> to continue and log in

+-----+
| Create a database dump file |
| Return to main menu         |
+-----+

Enter the full Directory Services path (your complete name context). This user
needs the Supervisor object right to the Root object of this tree.
Enter=Edit highlighted field                               Alt+F10=Exit
Esc=Return to previous menu                               Down=Next field
                                                           F1=Help

```

Enter the username and password and then press [Enter]. The volume checks will then begin.

```

NetWare 4.1 DS Repair 4.71                               NetWare Loadable Module
DS.NLM 6.11 Tree name: P411
Server name: NW_411_LH_A.Servers.Portlock                Total errors: 2

+-----+
| View Log File (Last Entry): "SYS:SYSTEM\DSREPAIR.LOG" (5490) |
+-----+
Start: Wednesday, August 21, 2002 3:08:07 pm Local Time
Property: Host Resource Name, value: SYS_CPY1
Changed to: SYS
Volume: SYS, object ID: 010000E5, CN=NW_411_LH_A_SYS_CPY1.OU=Servers.0=Portlo
Checking trustees on volume: SYS

Volume: SYS_CPY1
Dismounted, volume is not checked

Property: Host Resource Name, value: SYS
Changed to: SYS_ORG
Volume: SYS_ORG, object ID: 010000E3, CN=NW_411_LH_A_SYS.OU=Servers.0=Portloc
Checking trustees on volume: SYS_ORG

Volumes checked: 2

Esc=Exit the editor                               F1=Help                               Alt+F10=Exit

```

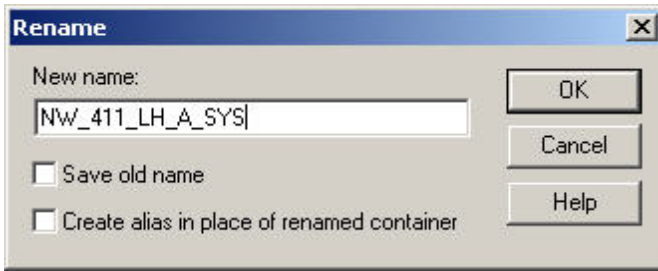
Look at the line which says **Property: Host Resource Name, value: SYS_CPY changed to: SYS**, this line is telling us that NDS has relinked the NDS volume object back to the volume.

Now the final step, after pressing [ESC] to get out of DSREPAIR, is to rename the volumes using NWAdmin. You will need to load this from a workstation.

Once it is loaded, you will need to drill down to the location of the server and volume objects.



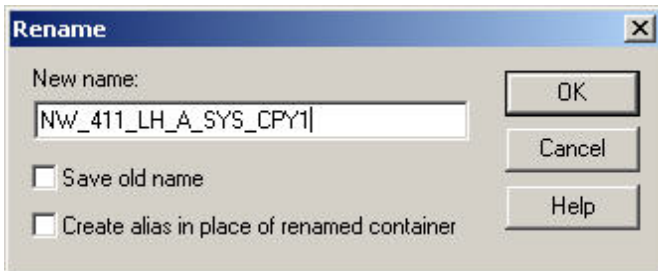
From here, you will need to select the volume objects and then rename them using the same process that we used earlier. This means that the object above called NW_411_LH_A_SYS becomes NW_411_LH_A_SYS_ORG and the object NW_411_LH_A_SYS_CPY becomes NW_411_LH_A_SYS.



Becomes NW_411_LH_A_SYS_ORG



and NW_411_LH_A_SYS_CPY becomes NW_411_LH_A_SYS



Leaving it looking like this.



Copying Volumes in NetWare 5.x

You would use Scorpion to copy a volume from Traditional File System (TFS) to NSS, TFS to TFS or even NSS to NSS.

Before loading Scorpion, please ensure that the volume that you are copying to has been created using NWCONFIG from the NetWare System Console Prompt.

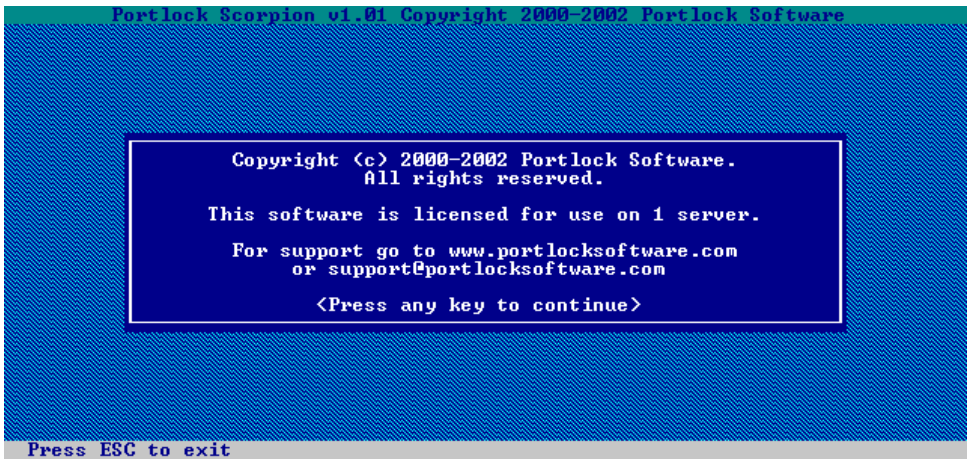
As always, please ensure that you have a valid verified Tape backup of the server before commencing any volume changes. If you are unsure of the quality of your backups, you could use Portlock Software's Storage Manager to image the server before beginning the copies with Scorpion.

Please take the time to read through this entire section before beginning your volume copies. If you are unsure of any of the steps then please try on a test NetWare server or consult a qualified NetWare professional for advice.

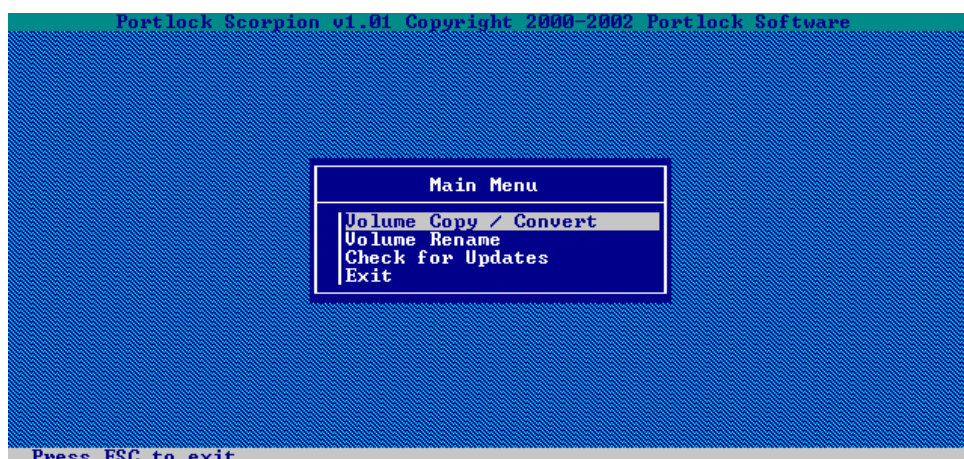
Load Scorpion by typing: **sys:scorpion\scorpion** at the NetWare System Console Prompt.



Press [Enter] to load Scorpion.



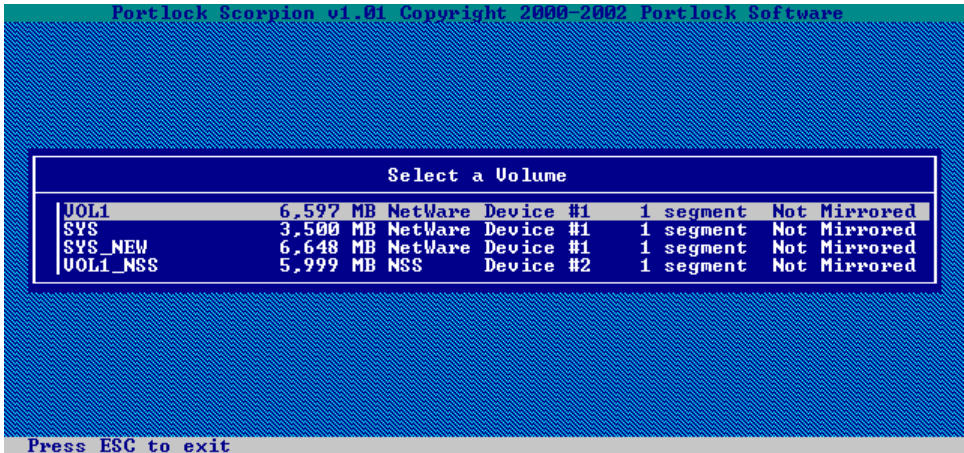
At this screen, press any key to continue.



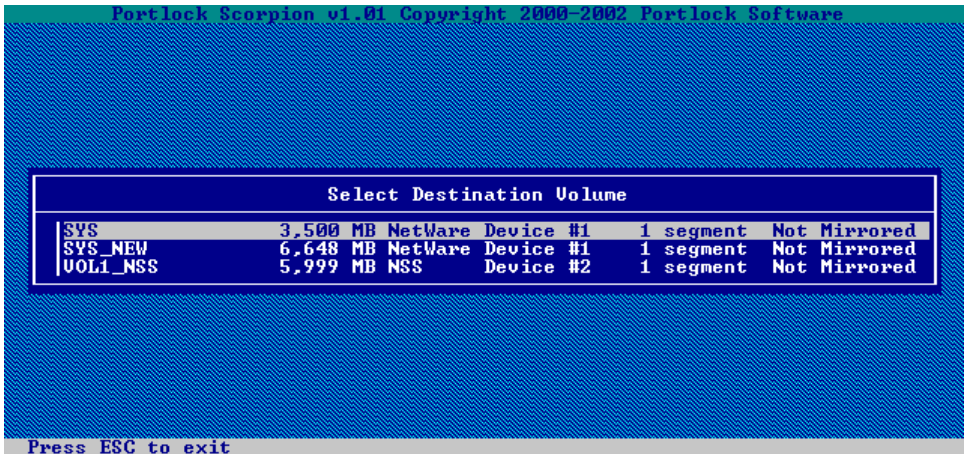
You are now presented with the **Main Menu** for Scorpion. From here, you can start to copy or rename volumes on your server.

When you press [Enter] on the **Volume Copy / Convert** option, you will be presented with a list of volumes that Scorpion detected during loading. If any volumes are not present, please make sure that all your disk drivers are loaded.

Also, to ensure that the destination volume has a complete copy of all data from the source volume, Portlock Software recommends that you get all users to logout of the server and disable all logins to the server by typing **disable logins** on the NetWare System Console Prompt. Doing this ensures that there are no locked files, or that users do not update documents and files after they have been copied to the destination volume.



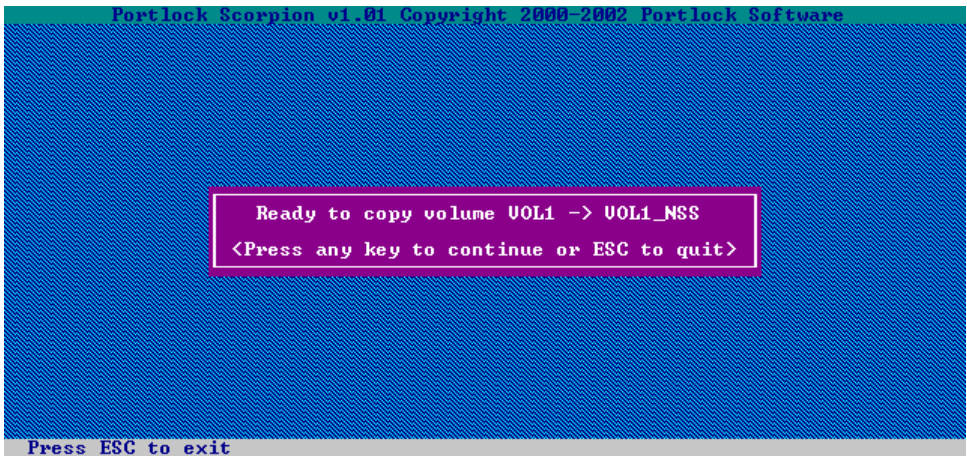
Select the volume that you want to copy. In this scenario, we will be converting the Traditional File System (TFS) VOL1 volume to NSS. Based on this, the source volume that we would choose would be VOL1.



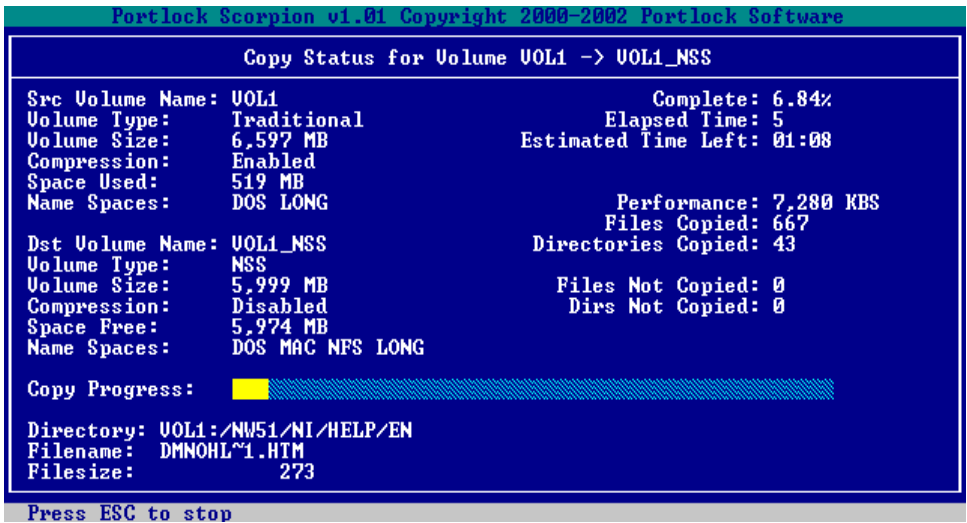
You are now presented with a list of volumes that you can copy the contents of the source volume to. Choose the destination volume that you wish to copy to.

WARNING: Scorpion copies over all data from the root of the source volume to the root of the destination volume. You should make sure that there is no data contained on the destination volume before you start the copy process.

In our example, we will be copying data to the VOL1_NSS volume. Once highlighted, press [Enter].



If everything is OK, press [Enter] to continue. If not, press [ESC] and go back and choose the source and destination volumes again.

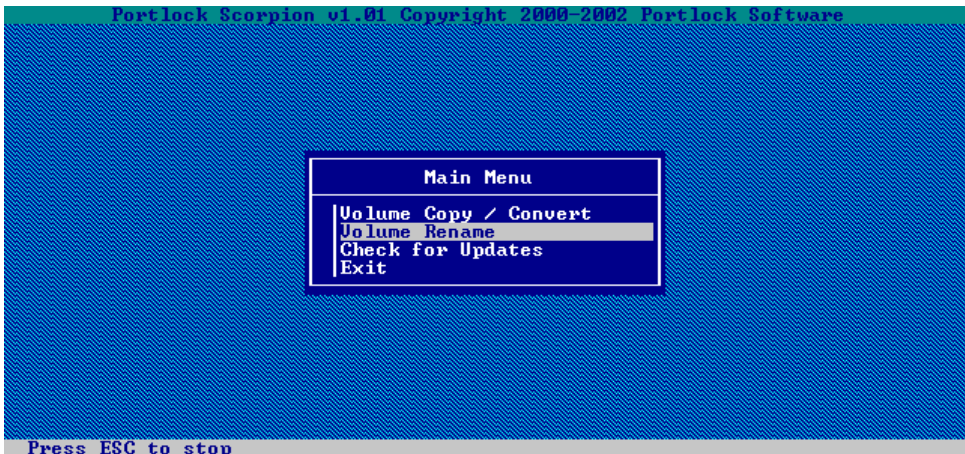


This is a shot of the copy progress screen. Notice that it shows the volume types for both the source and destination volumes. Also, the **Space Free** field will change as the copy progresses to show remaining disk space.

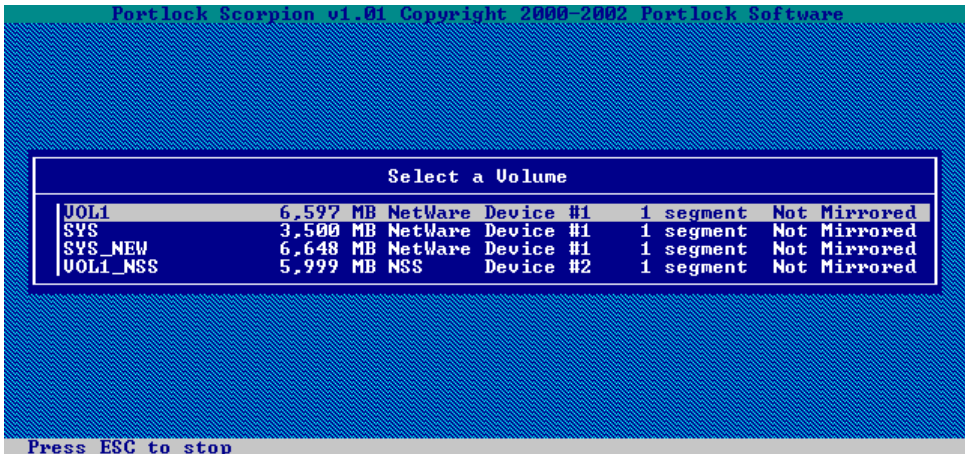
4.1 Volume Rename

To do the volume rename, there are several options. We will only discuss one of the possible methods.

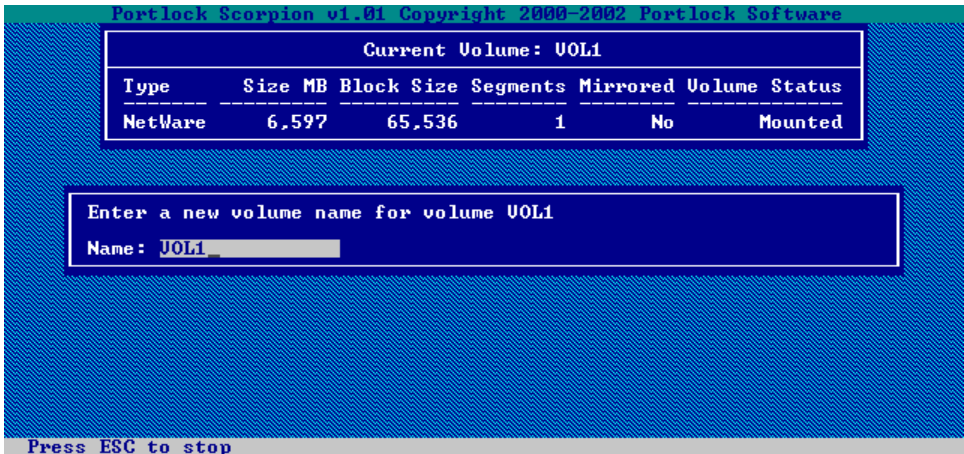
First, you must choose the **Volume Rename** option from the **Main Menu** of the Scorpion program.



Press [Enter] to display a list of volumes to rename.

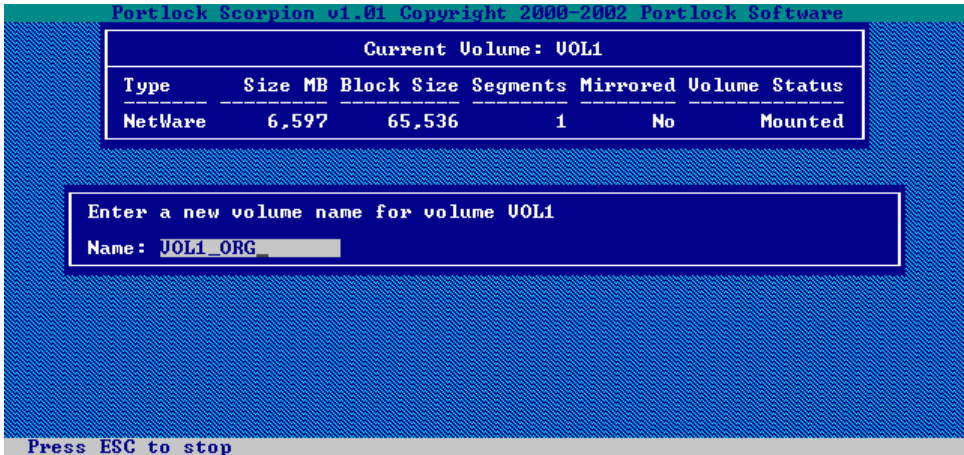


For our example, we have copied over VOL1 to VOL1_NSS, and we now need to rename both VOL1 and VOL1_NSS. First, press [Enter] on VOL1.



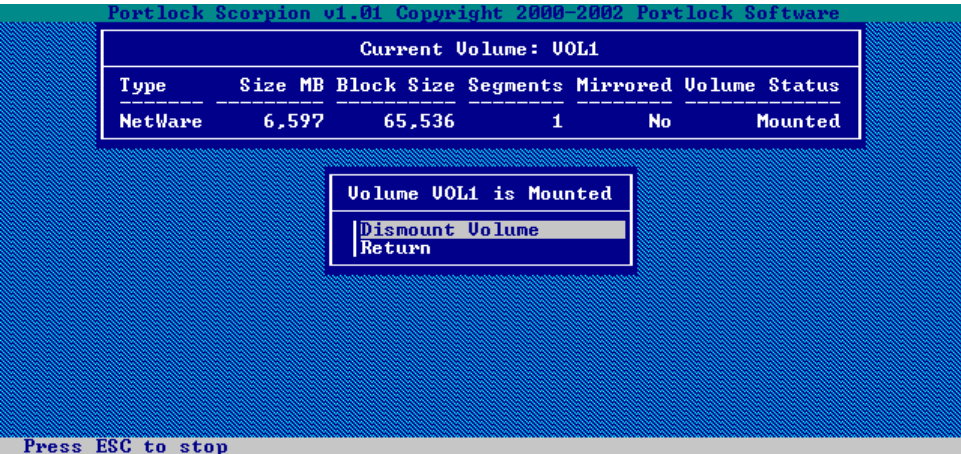
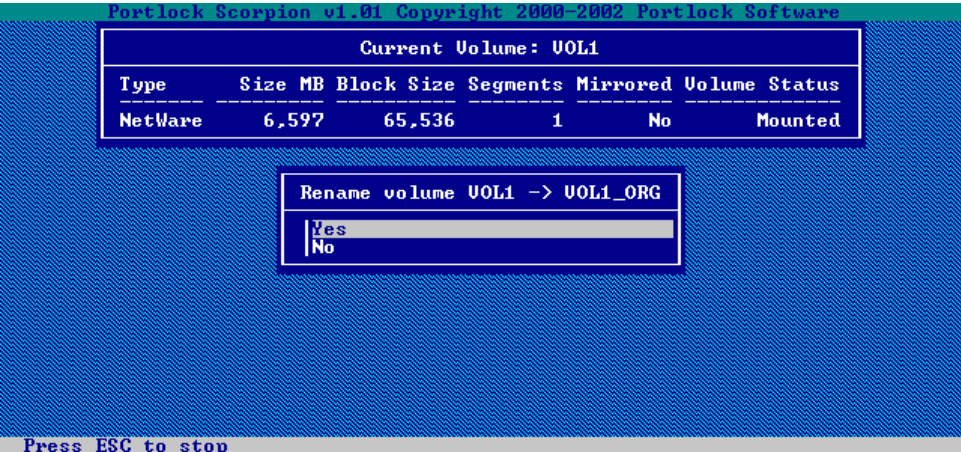
We recommend that you change the source (old) volume name first. For our example, we will change the VOL1 volume to VOL1_ORG.

**Tip:* Portlock Software recommends that you change the name to something that makes sense to you, something like _org or _old as a suffix to your current volume name is a recommendation.



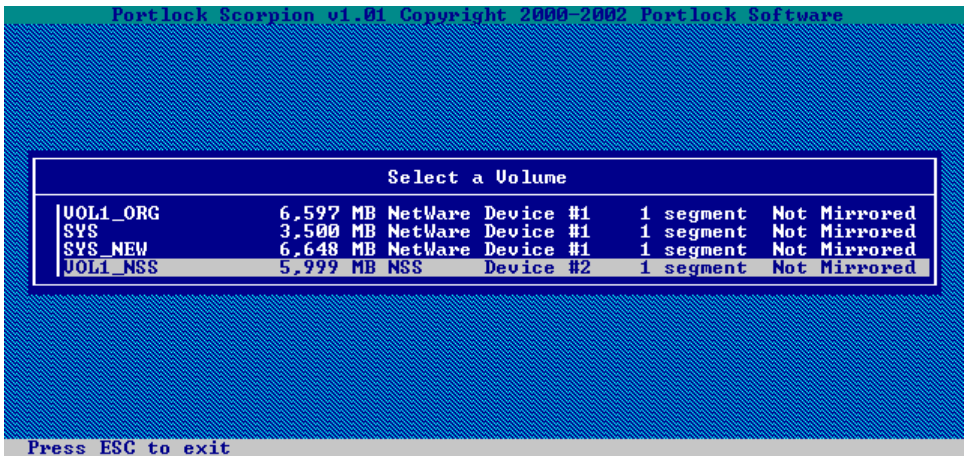
Press [Enter] and the following message will appear.

This is just to confirm the changes you want made. If they are correct, press [Enter] to continue the rename.

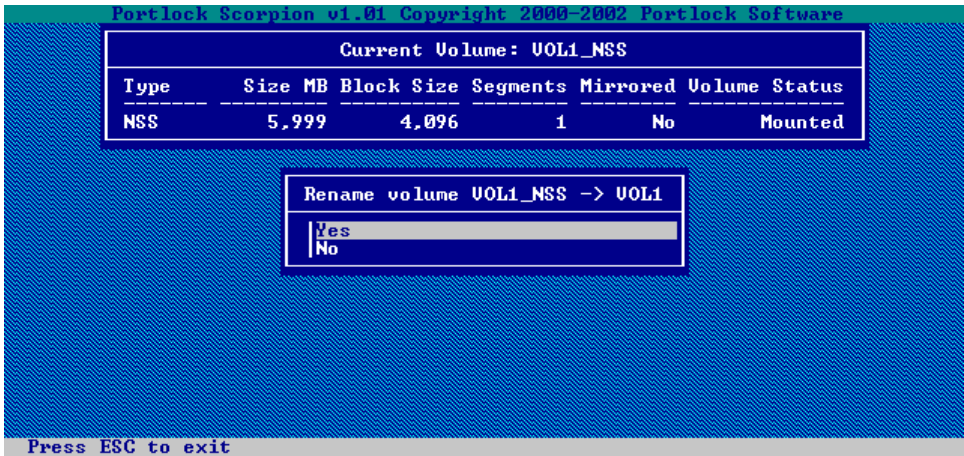


As part of the rename process, the volume needs to be dismounted and then mounted under the new volume name that you have selected.

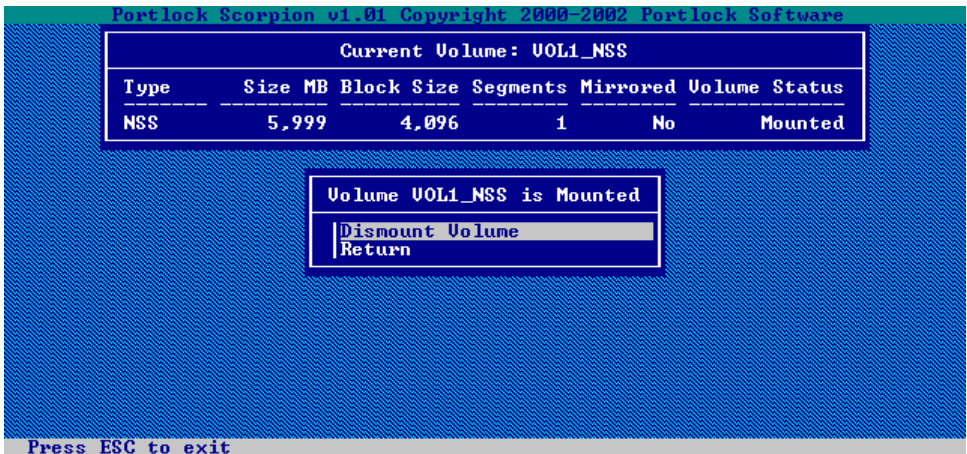
Now, Scorpion will remount the volume and go back to the **Main Menu** where you will choose Volume Rename once again to rename the new destination volume.



Now, we have to rename the new destination volume (in our example, VOL1_NSS) to the original source volume name (in our example, VOL1).



Once again, it confirms that we agree to the volume rename. Press [Enter] to continue.



Because of the name change, the volume must be dismounted and then mounted again. Once this is complete, please exit from Scorpion by pressing [ESC].

Now that the volumes have been copied, we now have to tell Novell Directory Services (NDS) what we have done. This is a two step process.

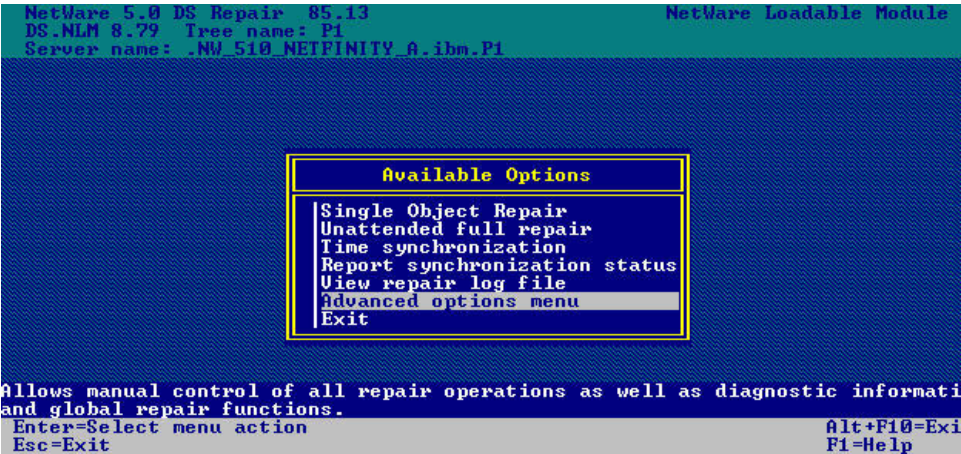
4.2 Reconnecting Volumes in NDS

The first step is to run **DSREPAIR** on the server. As part of this process, you will need to have the Admin (or admin equivalent) username and password.

To load DSREPAIR, type: **dsrepair** at the NetWare System Console Prompt.

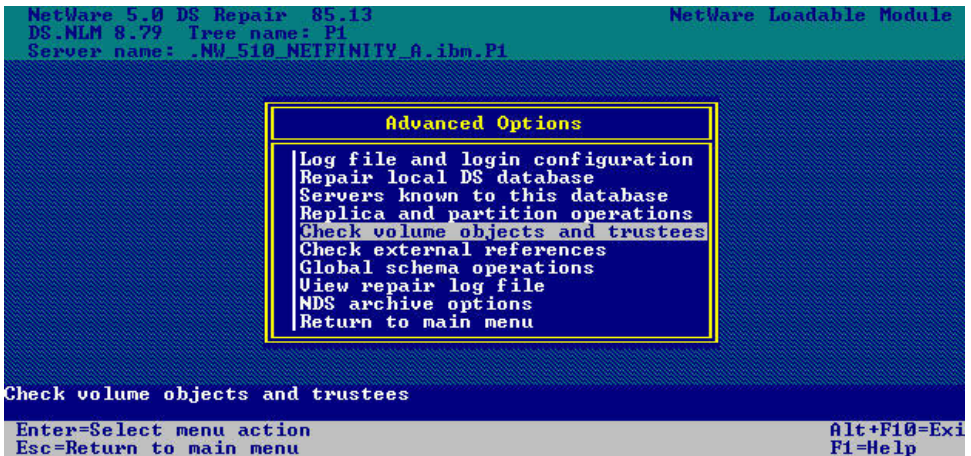


Press [Enter] to continue.

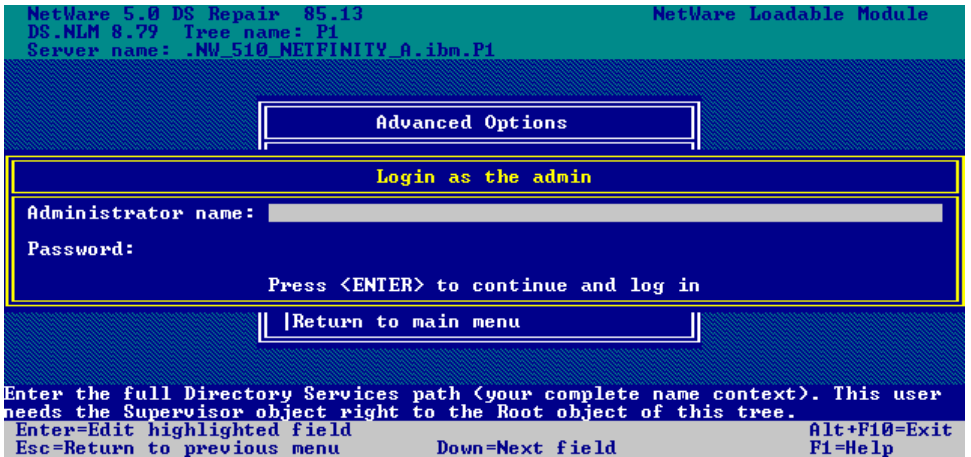


This screen will be slightly different if you have NDS 7.x installed on your server but the procedures outlined in this are the same for **all** NDS versions on NetWare 5.x, whether they are 7.x, 8.x, 85.x or 8.6.x)

From the **Available Options** menu, select **Advanced options menu**.



From the **Advanced Options** menu, select **Check volume objects and trustees**. Press [Enter], and you will be asked to enter your Admin (or equivalent) username and password.



Enter the username and password, and press [Enter]. The volume checks will begin.

```
NetWare 5.0 DS Repair 85.13                               NetWare Loadable Module
DS.NLM 8.79  Tree name: P1
Server name: .NW_510_NETFINITY_A.ibm.P1                    Total errors: 2

View Log File (Last Entry): "SYS:SYSTEM\DSREPAIR.LOG" (30013)

Volume: SYS, object ID: 00008098, CN=NW_510_NETFINITY_A_SYS.OU=ibm.O=P1.T=P1
Checking trustees on volume: SYS
ERROR: Property: Host Resource Name, value: VOL1_NSS
Changed to: VOL1
Volume: VOL1, object ID: 0000814A, CN=NW_510_NETFINITY_A_VOL1_NSS.OU=ibm.O=P1
ERROR: Property: Host Resource Name, value: VOL1
Changed to: VOL1_ORG
Volume: VOL1_ORG, object ID: 0000816A, CN=NW_510_NETFINITY_A_VOL1.OU=ibm.O=P1
Checking trustees on volume: VOL1_ORG

Volume name: SYS_NEW is not mounted and cannot be checked
Volumes checked: 3

*** END ***

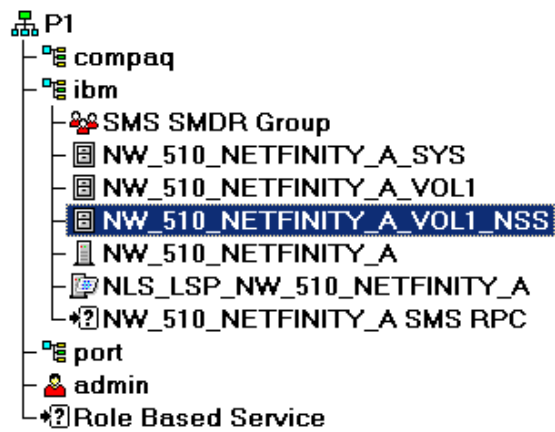
Esc=Exit the editor      F1=Help      Alt+F10=Exit
```

Notice the line which says **Property: Host Resource Name, value: VOL1_NSS changed to: VOL1**, this line is telling us that NDS has relinked the NDS volume object back to the volume.

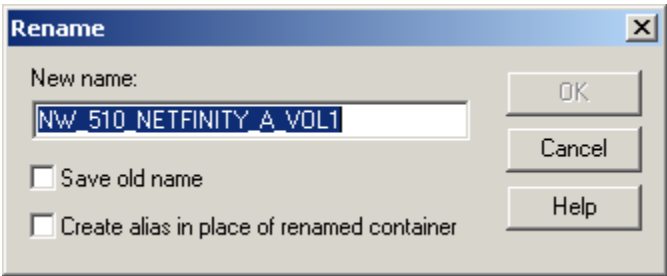
Now the final step, once you have pressed [ESC] to get out of DSREPAIR, is to rename the volumes using NWAdmin. You will need to load this from a workstation.

4.3 Rename volumes using NWAdmin

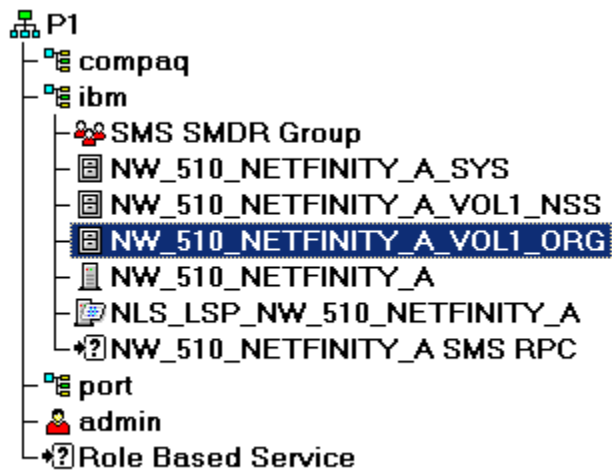
Once it is loaded, you will need to drill down to the location of the server and volume objects.



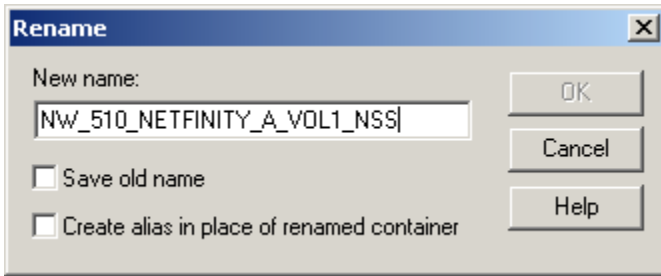
From here you will need to select the volume objects and then rename them using the same process that we did earlier. This means that the object called NW_510_NETFINITY_A_VOL1 becomes NW_510_NETFINITY_A_VOL1_ORG and the object NW_510_NETFINITY_A_VOL1_NSS becomes NW_510_NETFINITY_A_VOL1.



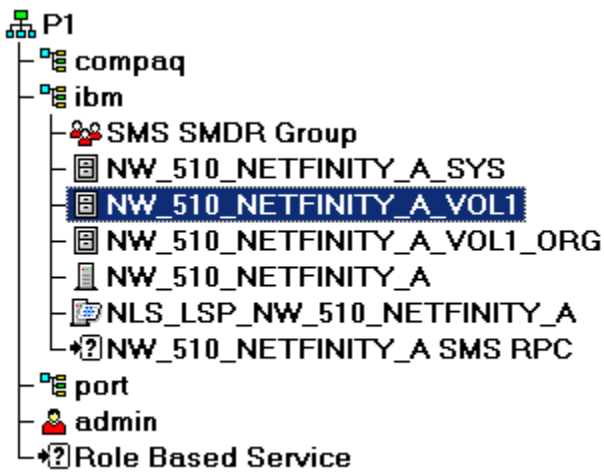
Becomes NW_510_NETFINITY_A_VOL1_ORG



and NW_510_NETFINITY_A_VOL1_NSS becomes NW_510_NETFINITY_A_VOL1.



Leaving it looking like this...



Copying of non SYS volumes in NetWare 6.x

This chapter focuses on converting Traditional File System (TFS) to NSS volumes in NetWare 6. The same procedure will work if you would rather convert an NSS volume to TFS.

See Chapter 6 on converting the NetWare 6.x SYS volume to NSS. This would normally only be required if you upgraded to NetWare6.x from a previous NetWare version.

For the purposes of this manual, we will assume that you have already created a destination volume that you want copied to.

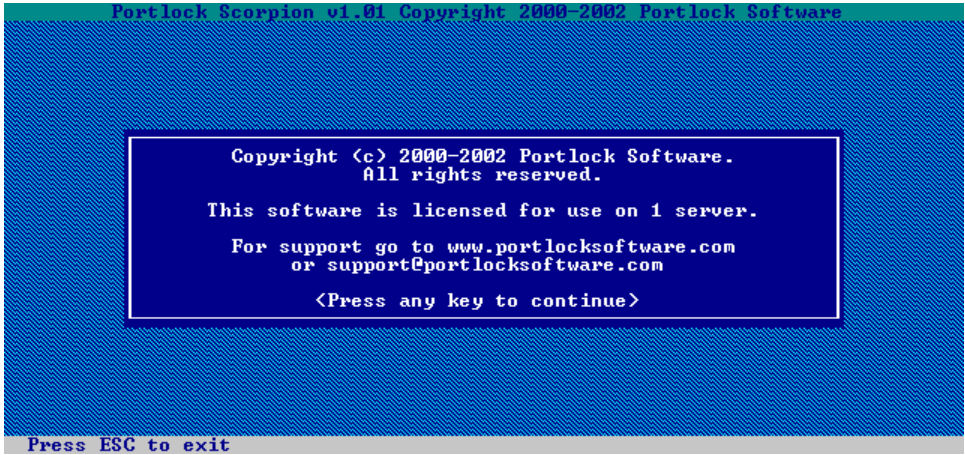
As always, please ensure that you have a valid verified Tape backup of the server before commencing any volume changes. If you are unsure of the quality of your backups, then you can use Portlock Software's Storage Manager to image the server before beginning the copies with Scorpion.

Please take the time to read through this entire section before beginning your volume copies. If you are unsure of any of the steps, please try on a test NetWare server or consult a qualified NetWare professional for advice.

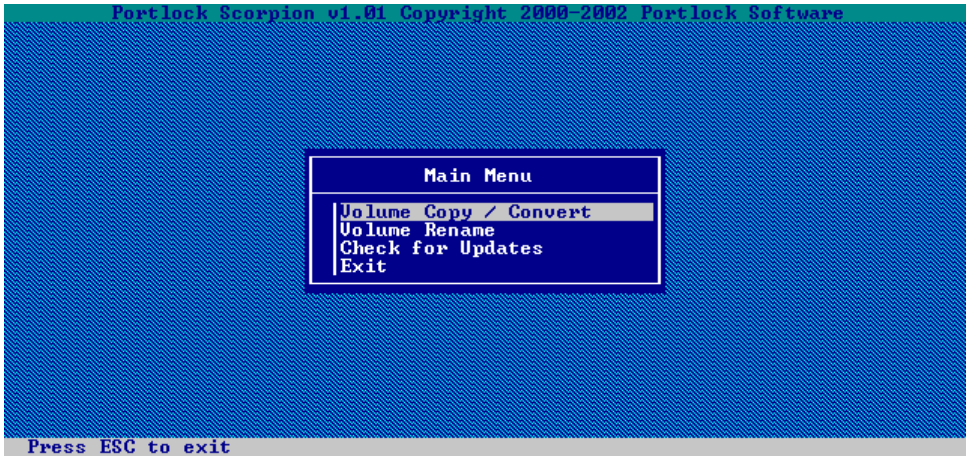
Load Scorpion by typing: **sys:scorpion\scorpion** at the NetWare System Console Prompt.



Press [Enter] to continue.



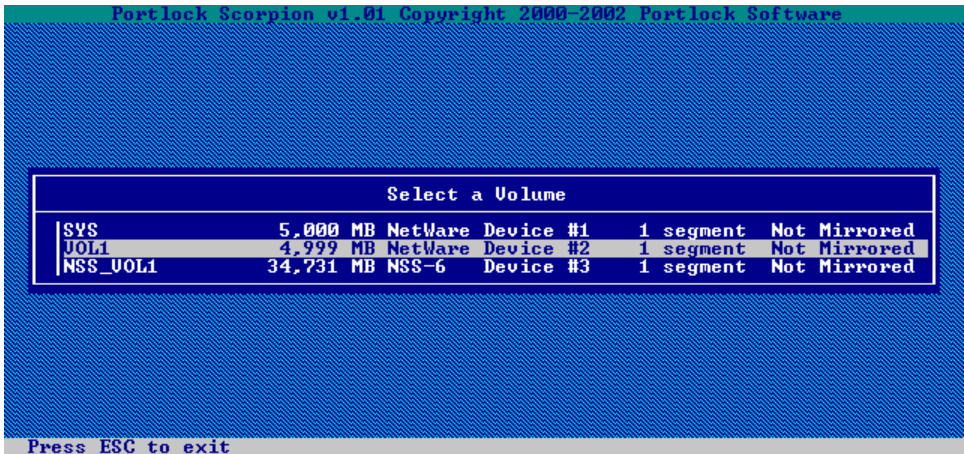
Press any key to continue.



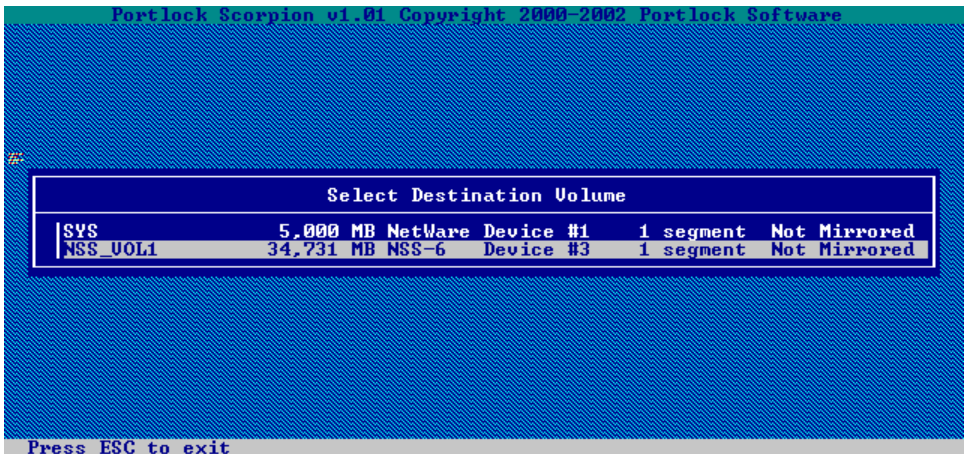
You are now presented with the **Main Menu** for Scorpion. From here, you can start to copy or rename volumes on your server.

When you press [Enter] on the **Volume Copy / Convert** option, you will be presented with a list of volumes that Scorpion detected during loading. If any volumes are not presented - that should be there - please make sure that all your disk drivers are loaded.

Also, to ensure that the destination volume has a complete copy of all data from the source volume, Portlock Software recommends that you get all users to logout of the server and disable all logins to the server by typing **disable logins** on the NetWare System Console Prompt. Doing this ensures that there are no locked files or that users do not update documents and files after they have been copied to the destination volume.



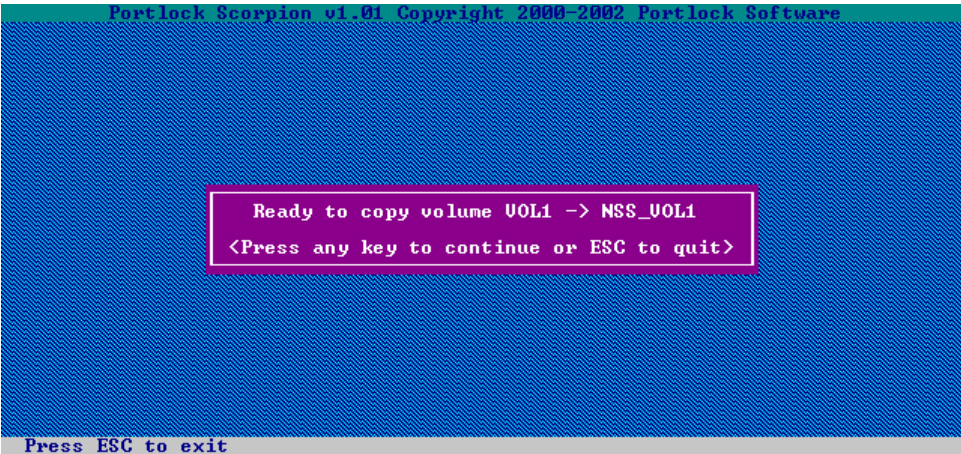
Select the volume that you want to copy. For this example, we will be converting the Traditional File System (TFS) VOL1 volume to NSS. Based on this, the source volume that we would choose would be VOL1.



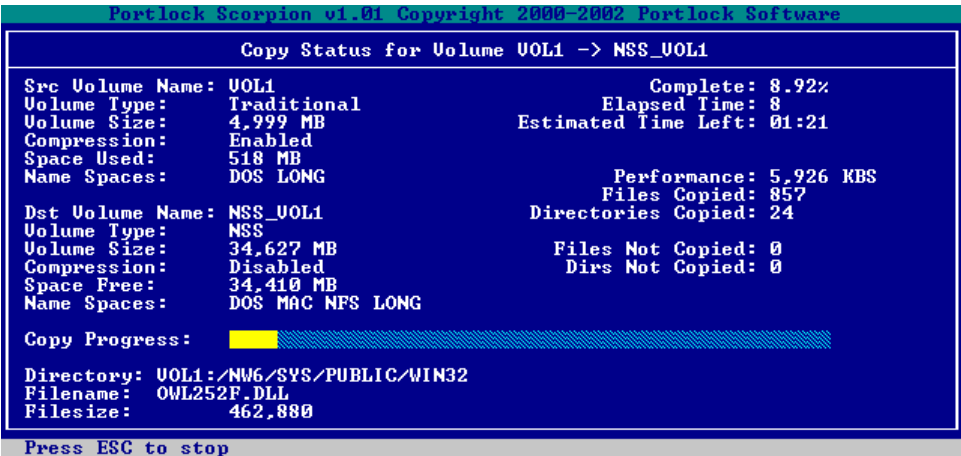
You are now presented with a list of volumes that you can copy the contents of the source volume to. Choose the destination volume that you wish to copy to.

WARNING: Scorpion copies over all data from the root of the source volume to the root of the destination volume. You should make sure that there is no data contained on the destination volume before you start the copy process.

In our example, we will be copying data to the VOL1_NSS volume, therefore, select that volume and press [Enter].



If everything is correct, then press [Enter] to continue. If not, then press [ESC] and go back and choose the source and destination volumes again.




This is a shot of the copy process in action. Notice that it shows the volume types for both the source and destination volumes. Also, the **Space Free** field will change as the copy progresses to show remaining disk space.

```
Portlock Scorpion v1.01 Copyright 2000-2002 Portlock Software
```

```
Copy Status for Volume UOL1 -> NSS_UOL1
```

```
Src Volume Name:  UOL1                      Complete: 100%  
Volume Type:      Traditional                Elapsed Time: 01:31  
Volume Size:       4,999 MB                  Estimated Time Left: 0  
Compression:       Enabled  
Space Used:        518 MB  
Name Spaces:       DOS LONG  
  
Performance: 5,837 KBS  
s Copied: 3,168  
s Copied: 291  
  
Dst Volume Name:  NSS_UO  
Volume Type:      NSS  
Volume Size:       34,627  
Compression:       Disabl  
Space Free:        33,935 MB  
Name Spaces:       DOS MAC NFS LONG  
  
Volume Copy Completed  
<Press any key to return>  
t Copied: 0  
t Copied: 0  
  
Copy Progress: [Progress Bar]  
  
Directory:  UOL1:  
Filename:   VOLDATA.TDF  
Filesize:   40  
  
Press ESC to stop
```

Now that the copy has completed, press any key and you will be returned to the Scorpion **Main Menu**.



Portlock Scorpion v1.01 (EVAL) Copyright 2000-2002 Portlock Software

Main Menu

- Volume Copy / Convert
- Volume Rename
- Check for Updates
- Exit

Press ESC to exit

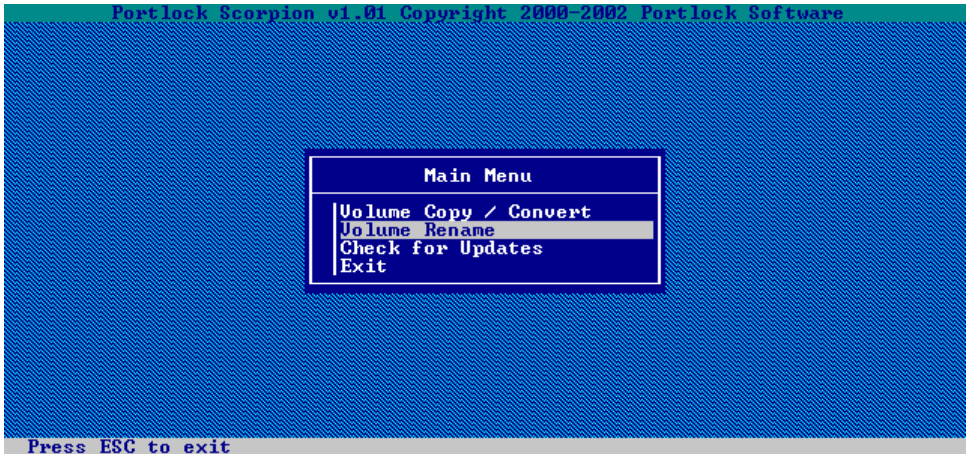
From here you have two choices. One is to [ESC] from the Scorpion program and return to the NetWare System Console Prompt. If you choose to do this, then you will have to modify NetWare login scripts to point to the new volume for all users. You will also have to have users change any UNC (ie \\servername\vol1 to \\servername\newvol1) paths for any documents and shortcuts that they may have.

The other option is to now rename the destination volume to be the same as the source volume. If you do this, then NetWare login scripts and users shortcuts and documents need not be changed.

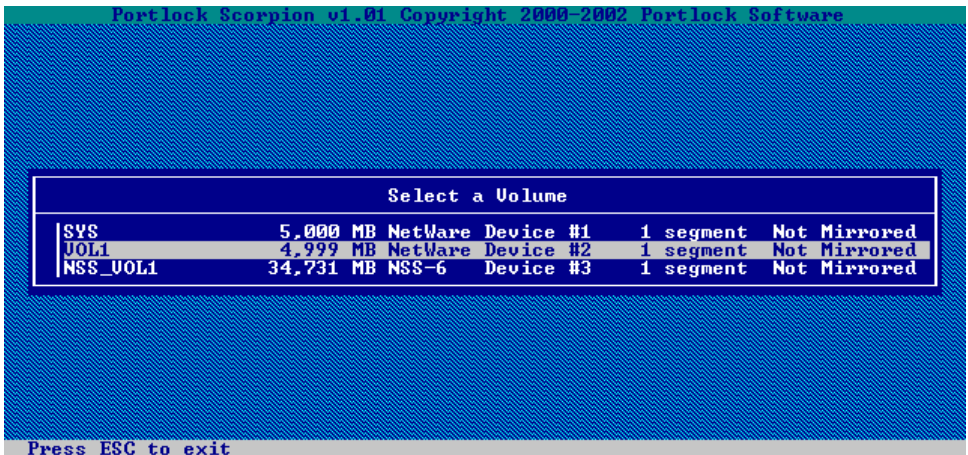
5.1 Volume Rename

To do the volume rename, there are several options. We will only discuss one of the possible methods.

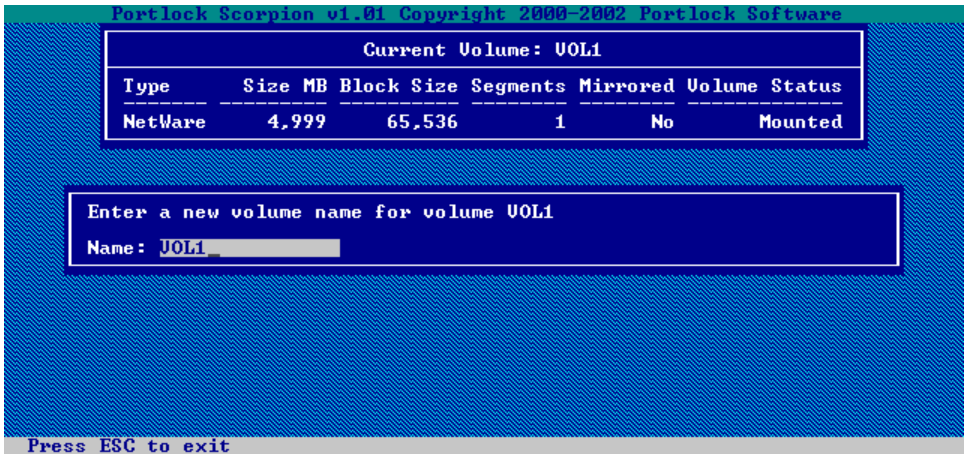
First, you must choose the **Volume Rename** option from the **Main Menu** of the Scorpion program.



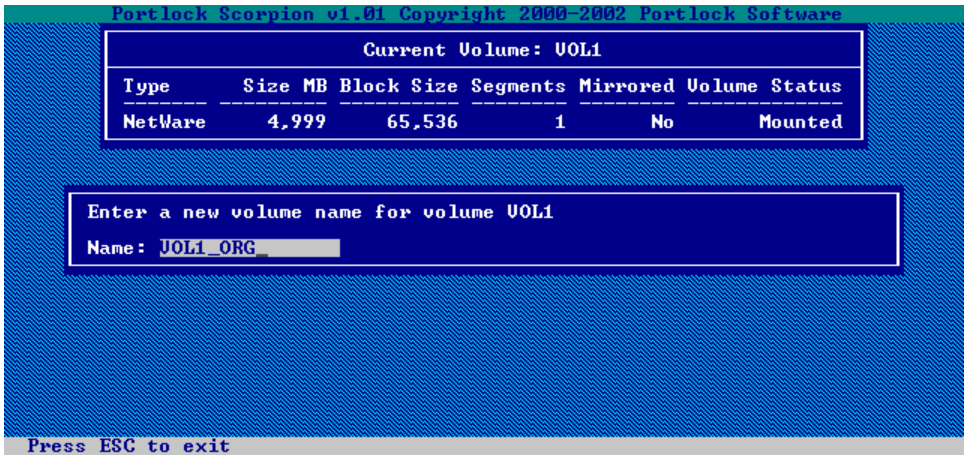
Press [Enter] to display a list of volumes to rename.



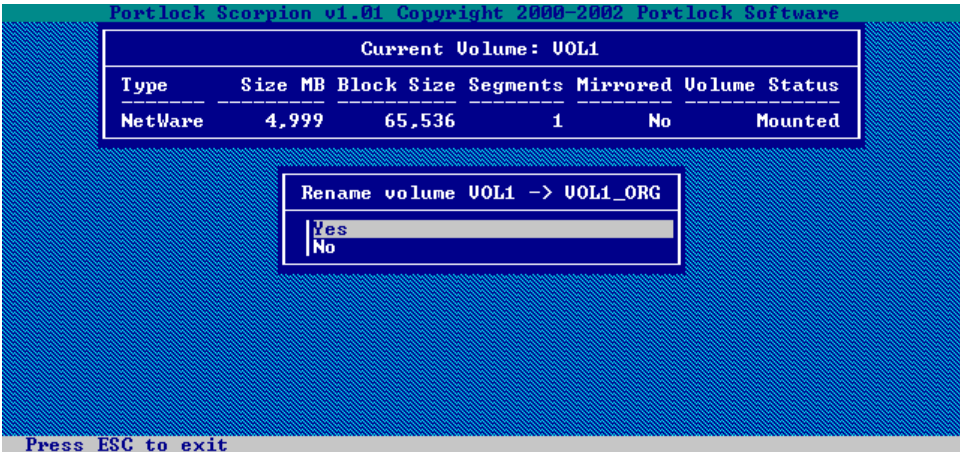
For our example, we have copied over VOL1 to NSS_VOL1 and we now need to rename both VOL1 and NSS_VOL1. Press [Enter] on VOL1 to begin.



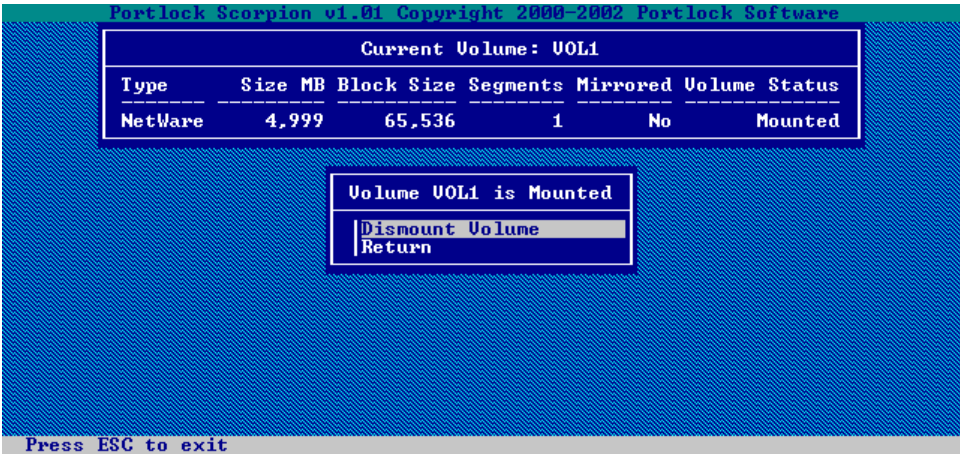
We recommend that you change the source (old) volume name first. For our example, we will change the VOL1 volume to VOL1_ORG. (Portlock Software recommends that you change the name to something that makes sense to you, something like _org or _old as a suffix to your current volume name.)



Then press [Enter] and the following message will appear.

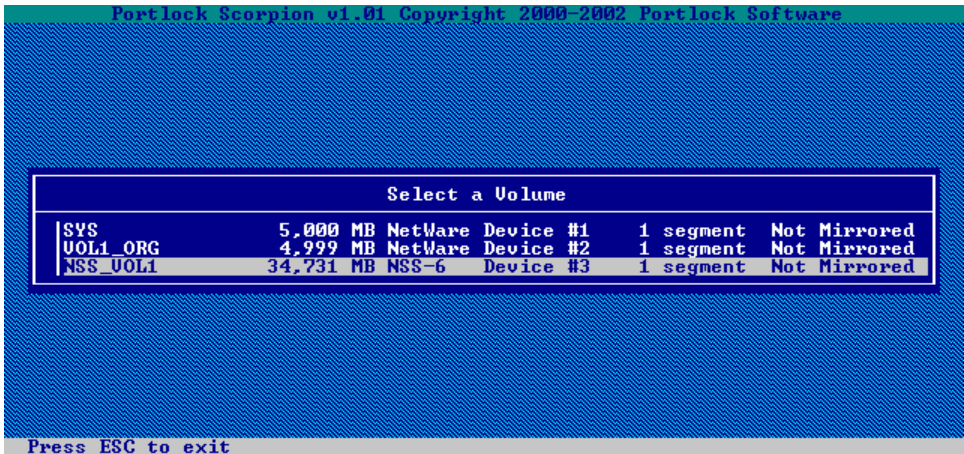


This message is to confirm the changes you want made. If they are correct, then press [Enter] to continue with the rename.

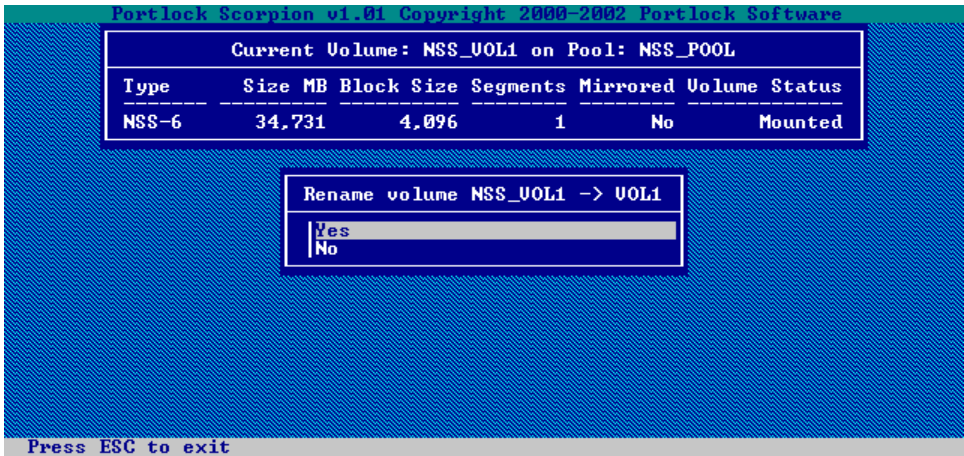


As part of the rename process, the volume needs to be dismounted and then mounted under the new volume name that you have selected.

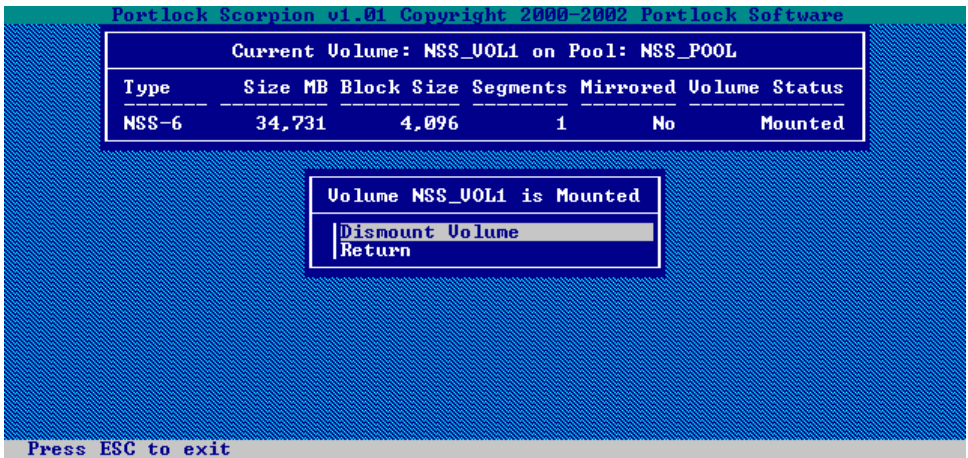
Now, Scorpion will remount the volume and go back to the **Main Menu**. Where you will then choose the **Volume Rename** option once again to re-name the new destination volume.



Now we have to rename the new destination volume (in our case NSS_VOL1) to the original source volume name (in our case VOL1).



Once again, it confirms that we agree to the volume rename. If it is correct press [Enter] to continue.



Because of the name change, the volume must be dismounted and then mounted again. Once this is complete, please exit from Scorpion by pressing [ESC].

Now that the volumes have been copied we now have to tell Novell Directory Services (NDS) what we have done. This is a two step process.

5.2 Reconnecting Volumes in NDS

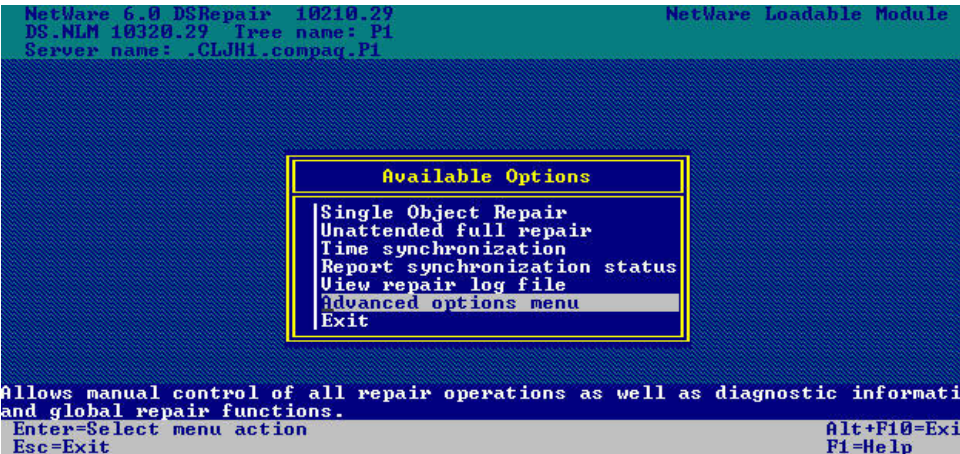
The first step is to run **DSREPAIR** on the server. As part of this process, you will need to have the Admin (or Admin equivalent) username and password.

To load DSREPAIR, type: **dsrepair** at the NetWare System Console Prompt.



```
CLJH1:dsrepair_
```

Press [Enter] to continue.

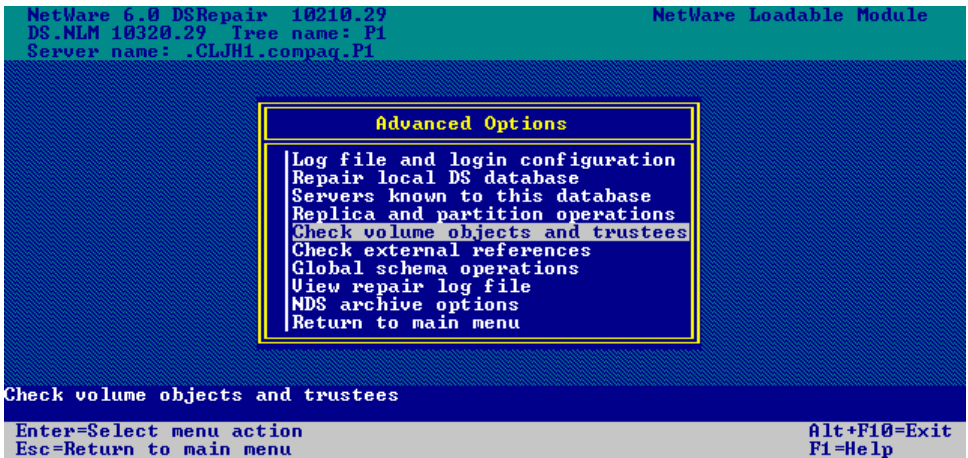


```
NetWare 6.0 DSRepair 10210.29      NetWare Loadable Module
DS.NLM 10320.29  Tree name: P1
Server name: .CLJH1.compaq.P1

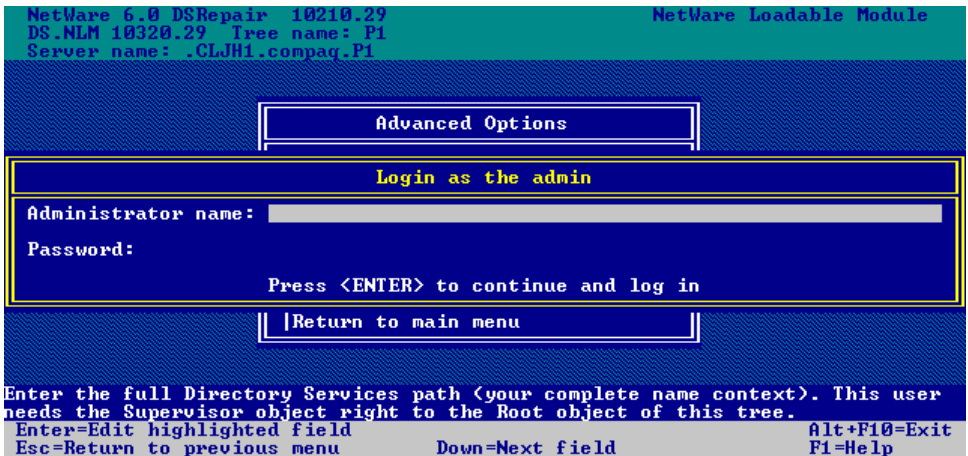
Available Options
Single Object Repair
Unattended full repair
Time synchronization
Report synchronization status
View repair log file
Advanced options menu
Exit

Allows manual control of all repair operations as well as diagnostic information
and global repair functions.
Enter=Select menu action      Alt+F10=Exit
Esc=Exit                      F1=Help
```

From the **Available Options** menu, choose **Advanced options menu** and press [Enter].



Choose the **Check volume objects and trustees** from the **Advanced Options** menu and press [Enter]. You will be asked to enter your Admin (or equivalent) username and password.



Enter the username and password, then press [Enter] and the volume checks will begin.

```
NetWare 6.0 DSRepair 10210.29                               NetWare Loadable Module
DS.NLM 10320.29 Tree name: P1                                Total errors: 2
Server name: .CLJH1.compaq.P1

View Log File <Last Entry>: "SYS:SYSTEM\DSREPAIR.LOG" <39001>

Repairing volume object for volume VOL1_ORG
Directory services volume object ID: 00000000
ERROR: The volume has never been installed
New volume object DN: CN=CLJH1_VOL1_ORG.OU=compaq.O=P1.T=P1.
Contacted a replica on server: CN=CLJH1.OU=compaq.O=P1
The volume object has been created for this volume, ID: 0000816E
The volume has been attached to the volume object
Volume: VOL1_ORG, object ID: 0000816E, CN=CLJH1_VOL1_ORG.OU=compaq.O=P1.T=P1
Checking trustees on volume: VOL1_ORG

Volume name: VOL1 is not mounted and cannot be checked
ERROR: Property: Host Resource Name, value: NSS_VOL1
Changed to: VOL1
Volume: VOL1, object ID: 0000816C, CN=CLJH1_NSS_VOL1.OU=compaq.O=P1.T=P1
Volumes checked: 3

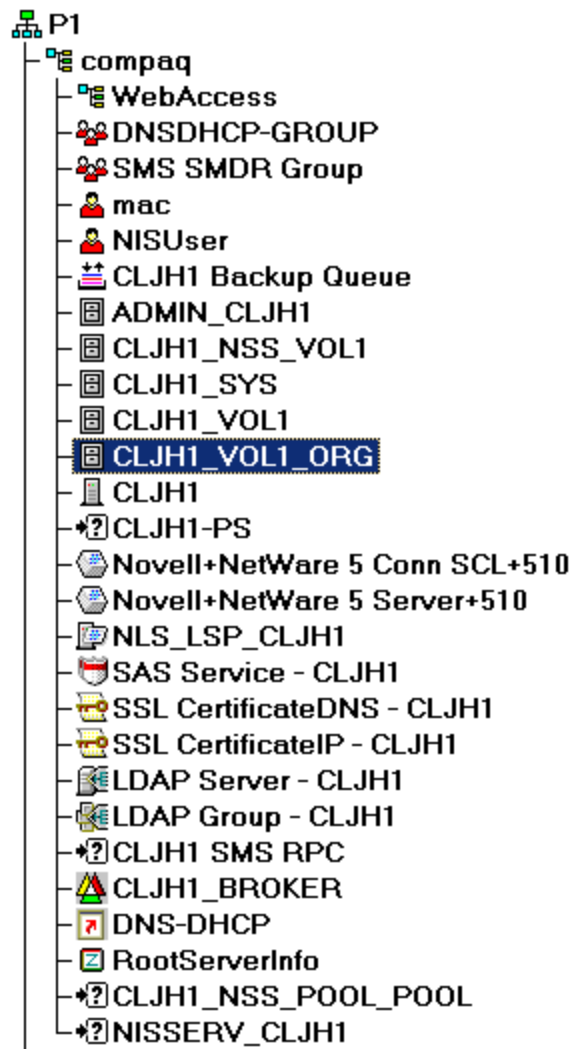
Esc=Exit the editor           F1=Help           Alt+F10=Exit
```

Two errors have occurred as a result of the rename. The first error, as you can see, is that it has detected that a new volume has been “added” to the server. Based on this, it has created a new volume object for the server in NDS.

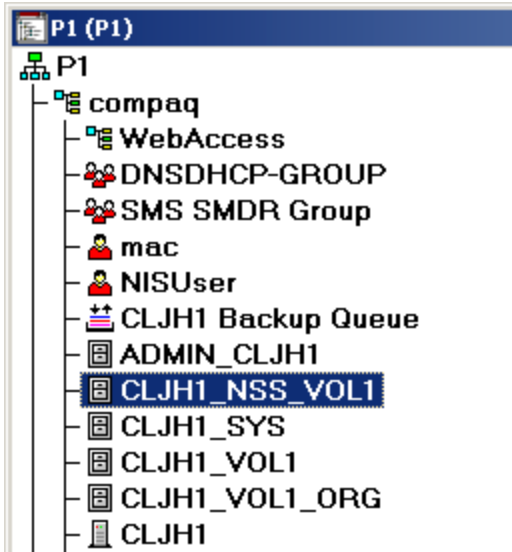
The second error is where it has relinked the VOL1 NDS object to our newly renamed NSS volume, which is now called VOL1.

The final step, once you have pressed [ESC] to get out of DSREPAIR, is to delete the old volume name that was our destination volume (in our case NSS_VOL1) using NWAdmin. This task must be completed from a workstation. Please load NWAdmin on your workstation to continue this process.

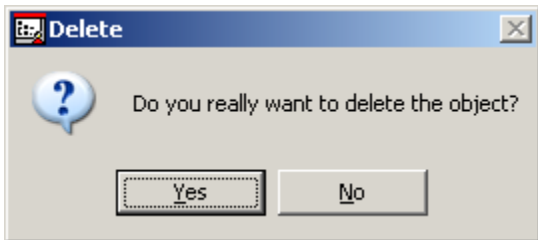
Once NWAdmin is loaded, you will need to drill down to the location of the server and volume objects.



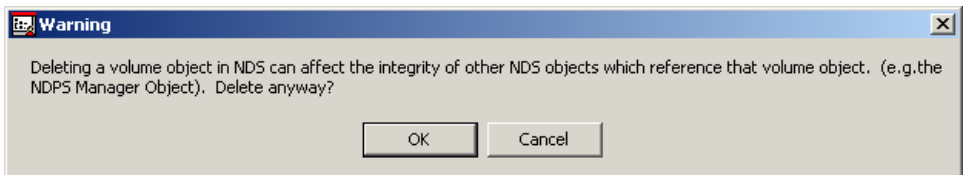
As you can see, we now have an NDS entry for our old source volume (in our case VOL1_ORG). To complete the process, you must delete the destination volume name (in our case CLJH1_NSS_VOL1).



To delete the destination volume name, highlight the volume to be deleted and press [Delete]. The following screen will then be displayed:



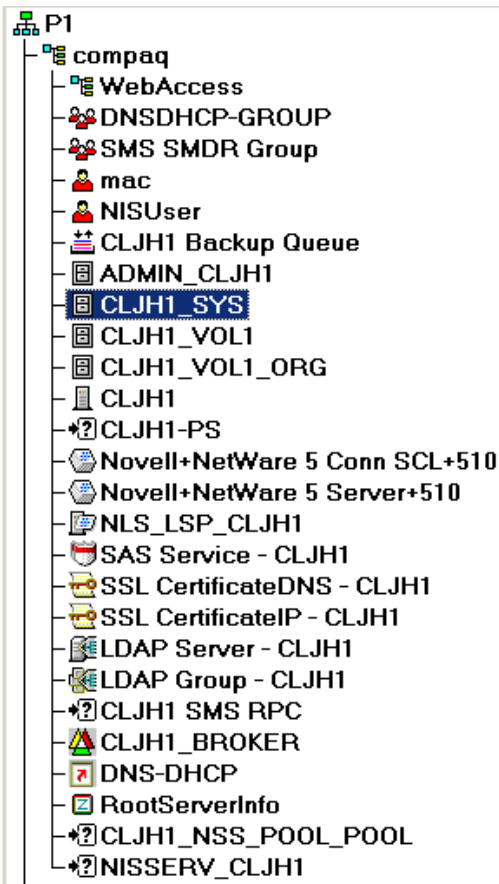
Press [Enter] or click on the **Yes** button and the following screen will appear:



In our example, it is OK because we currently have two NDS volume objects pointing to the same volume. If you are unsure, there is no harm in leaving both Volume objects in the NDS tree that point to the same volume.

For this, we will click on the OK button for the object to be deleted.

Now, the NWAdmin screen will look similar to the model below, with the volume object removed.



Congratulations, your copy is complete!

CHAPTER

6

Converting the NetWare 6.x

TFS SYS volume to NSS

In this chapter, we are going to convert a NetWare Traditional File System (TFS) SYS volume to a NSS SYS volume. The same procedure will work if you would rather convert an NSS volume to TFS.

This will be slightly different from Chapter 5, because we have to take into consideration NDS files that are located on the server.

You ***must*** ensure that there are no users connected, or even want to connect, to any data on this server while the conversion takes place. This is due to the fact that as part of the conversion process, the NDS NLM (DS.NLM) will be unloaded. This means that no users will be able to connect to the server that have already not done so.

For the purposes of this manual, we will assume that you have already created a destination volume that you want copied to.

As always, please ensure that you have a valid verified Tape backup of the server before commencing any volume changes. If you are unsure of the quality of your backups, then you can use Portlock Software's Storage Manager to image the server before beginning the copies with Scorpion.

Please take the time to read through this entire section before beginning your volume copies. If you are unsure of any of the steps, please try on a test NetWare server or consult a qualified NetWare professional for advice.

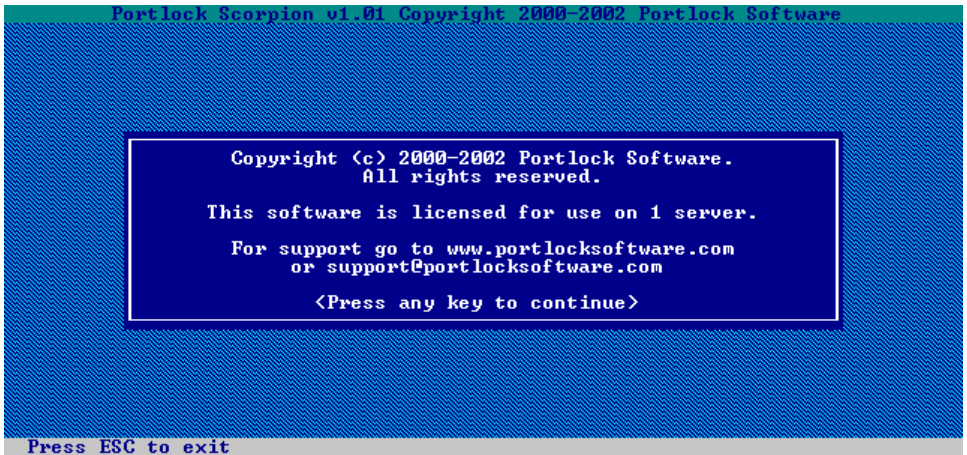
**We also have a video of the procedure available on our web site:
<http://www.portlocksoftware.com>.**

To begin, load Scorpion by typing: **sys:scorpion\scorpion** at the NetWare System Console Prompt.

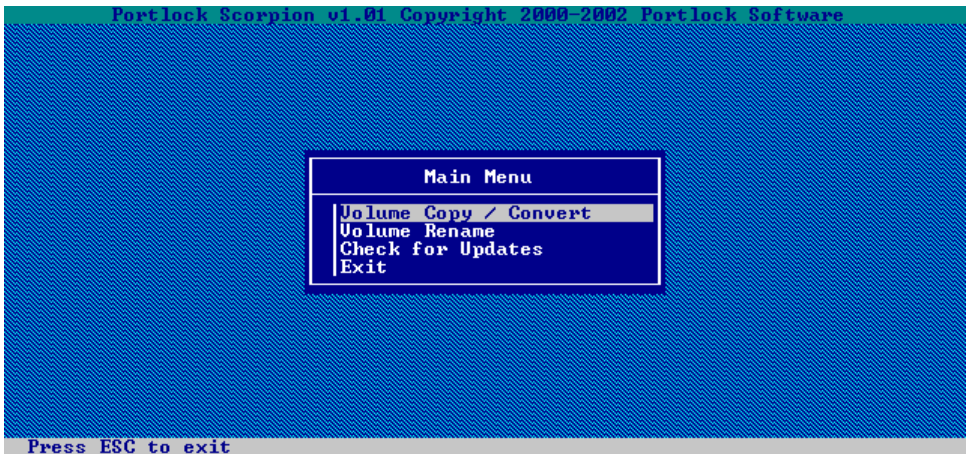
A screenshot of a NetWare System Console window. The title bar is black with the text 'CLJH1:sys:scorpion\scorpion_' in white. The main area is black and empty.

CLJH1:sys:scorpion\scorpion_

Press [Enter] to continue



Press any key to continue.

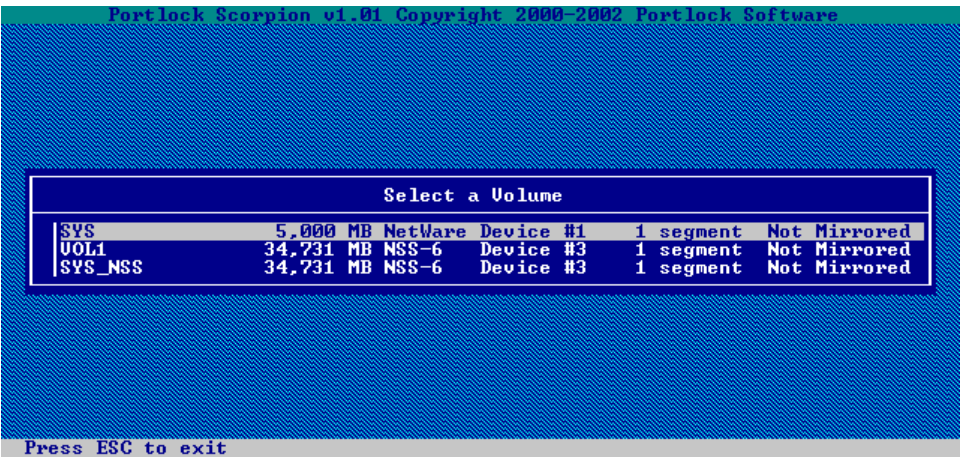


You are now presented with the **Main Menu** for Scorpion. From here, you can now start to copy or rename volumes on your server.

When you press [Enter] on the **Volume Copy / Convert** option you will be presented with a list of volumes that Scorpion detected during loading. If any volumes are not present, please make sure that all your disk drivers are loaded.

Also, to ensure that the destination volume has a complete copy of all data from the source volume, Portlock Software recommends that you get all users to logout of the server and disable all logins to the server by typing **disable logins** on the NetWare System Console Prompt. Doing this ensures that there are no locked files or that users do not update documents and files after they have been copied to the destination volume.

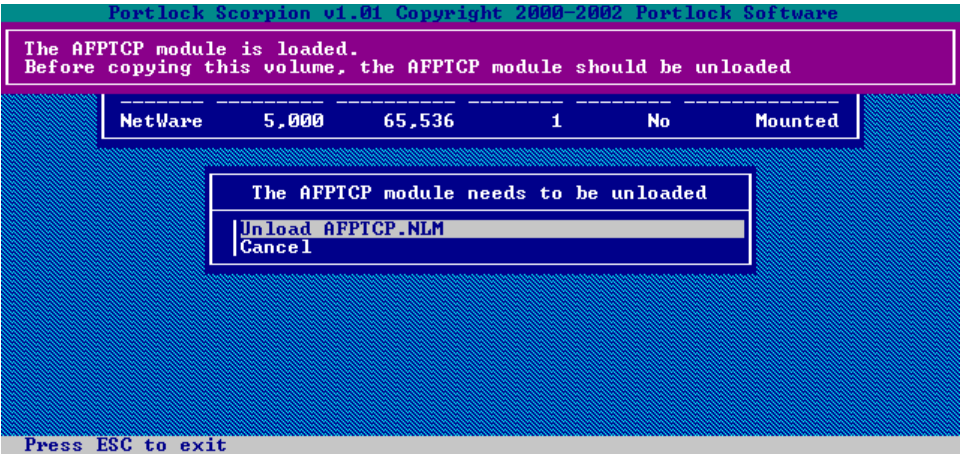
As we are migrating the SYS TFS volume to an NSS Volume, we have the following volumes on the server:

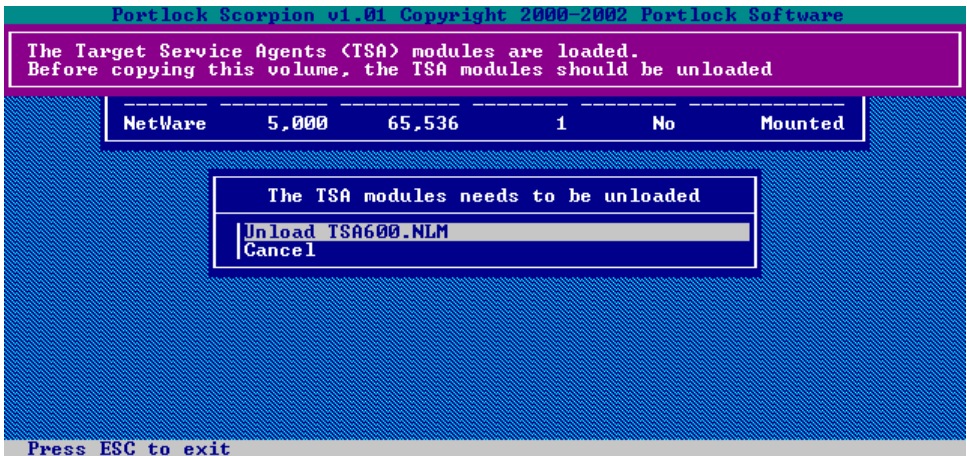


As you can see, we have created a new NSS volume called SYS_NSS that we are going to be migrating the SYS TFS volume to.

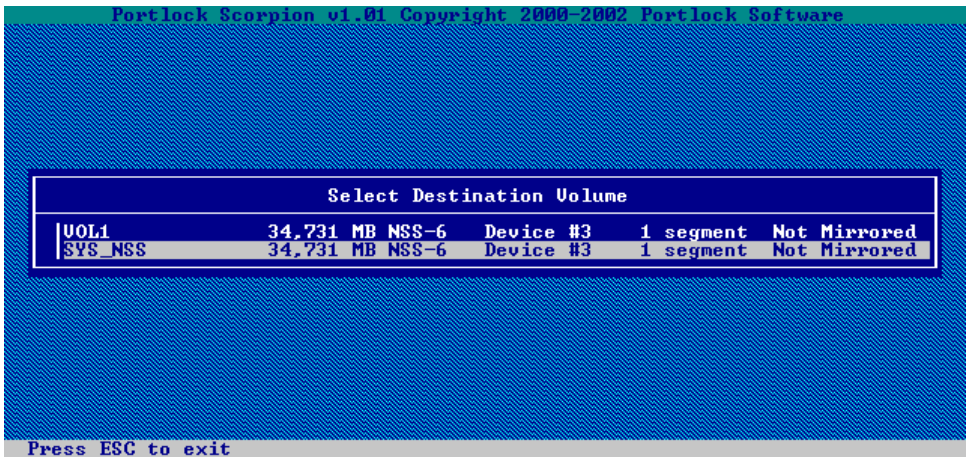
Now that we are in the **Volume Copy / Convert** command, we need to select the source volume, which is SYS and then press [Enter].

As part of the imaging process, we will have to unload some NLMs that keep files open on the SYS volume to ensure that we get a valid copy. The following are a couple of screen shots of NLMs that Scorpion may ask you to unload. You should always choose **Yes** and press [Enter].



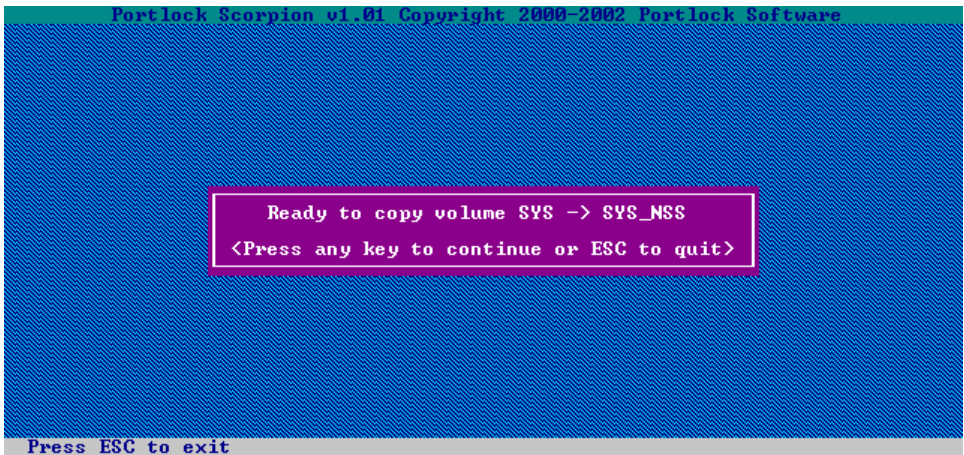


Now, we have to choose the destination volume.

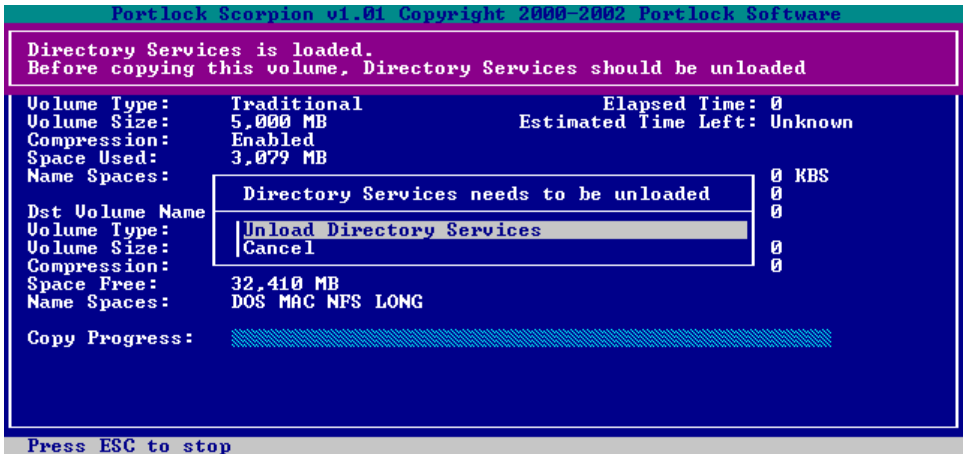


As we are migrating to an NSS SYS volume, we would select the new NSS volume that we created called SYS_NSS. Select the volume and press [Enter] to continue.

WARNING: Scorpion copies over all data from the root of the source volume to the root of the destination volume. You should make sure that there is no data contained on the destination volume before you start the copy process.



Scorpion is now confirming the choices that we made. Press any key to continue, or [ESC] if you wish to make a change.



As we are copying the SYS volume Scorpion is now going to unload Directory Services. This is done so that the copy of the SYS volume that we make is exactly the same for NDS on both volumes.

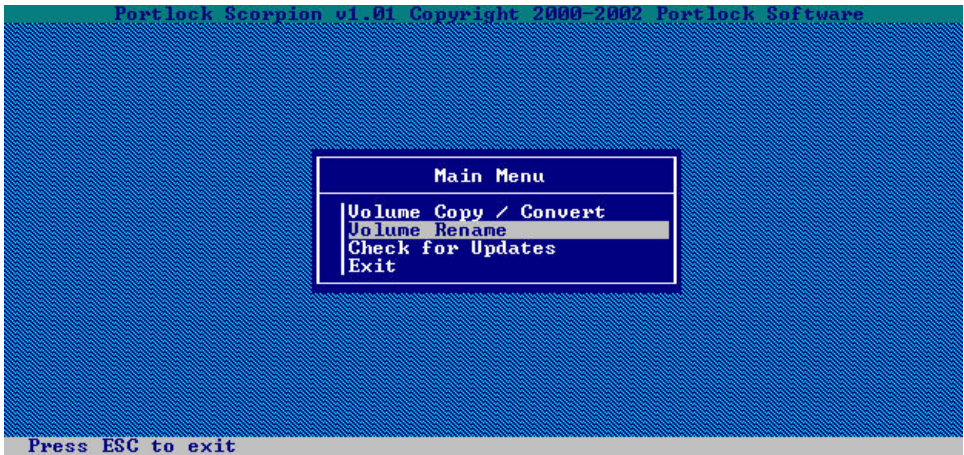
***Tip:** If DSREPAIR happens to be loaded, Scorpion will unload this first. Due to the nature of DSREPAIR, when it is unloaded, it changes the focus of the NetWare server back to the console prompt. Once it has unloaded DSREPAIR then you are prompted as shown in the screenshot above.

Once Directory Services has been unloaded, the copy process begins.

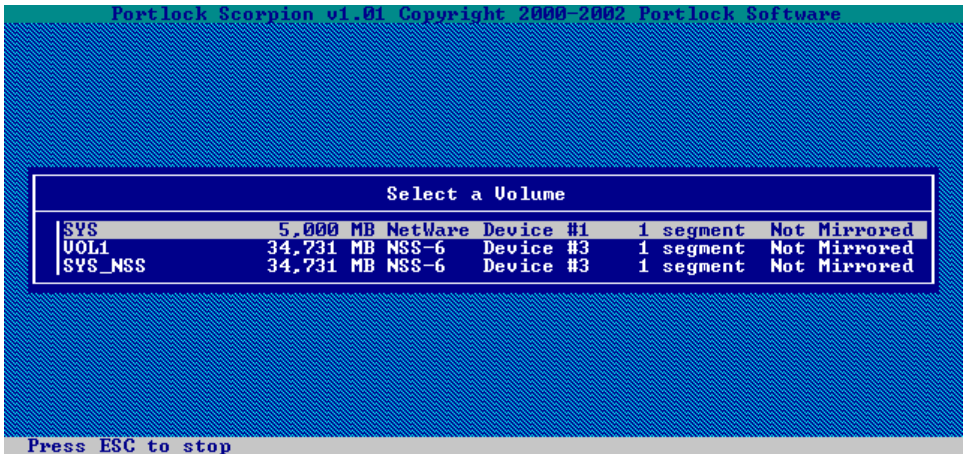
As you can see from this screen that it shows the volume types, size and space free. The **Space Free** section on the destination is constantly updated during the copy process.

***Tip:** You may find that the copy process comes up initially saying that it may take several hours to complete. This is due to the large number of small files that are contained in the SYS:SYSTEM directory. Once this directory is completed the **Estimated Time Left** will decrease.

Once the copy is completed, you will see the screen above, press any key to continue.

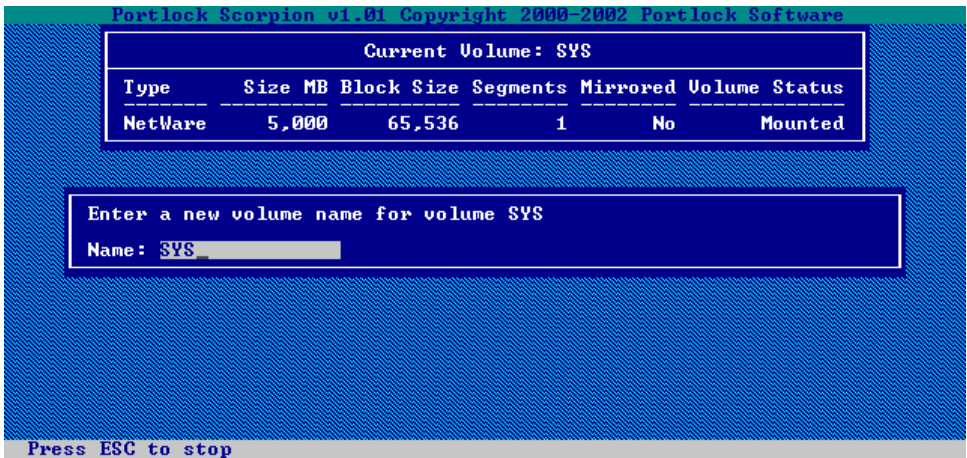


You are now presented with the **Main Menu**. Now choose the **Volume Rename** command.

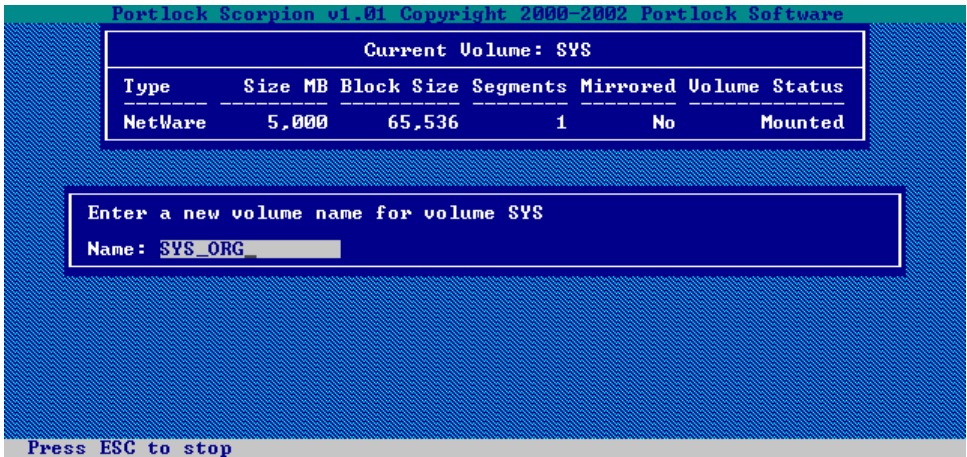


We now have to rename the volumes to make the new volume called SYS_NSS be the new SYS volume. We also have to rename the existing SYS volume to be some other name. We will be renaming the original SYS: volume to SYS_ORG:

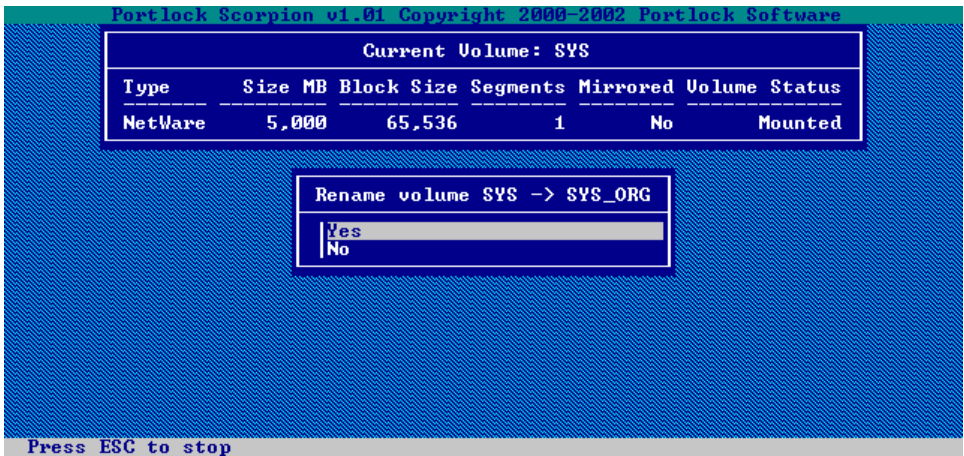
To do this press [Enter] on **SYS volume entry**.



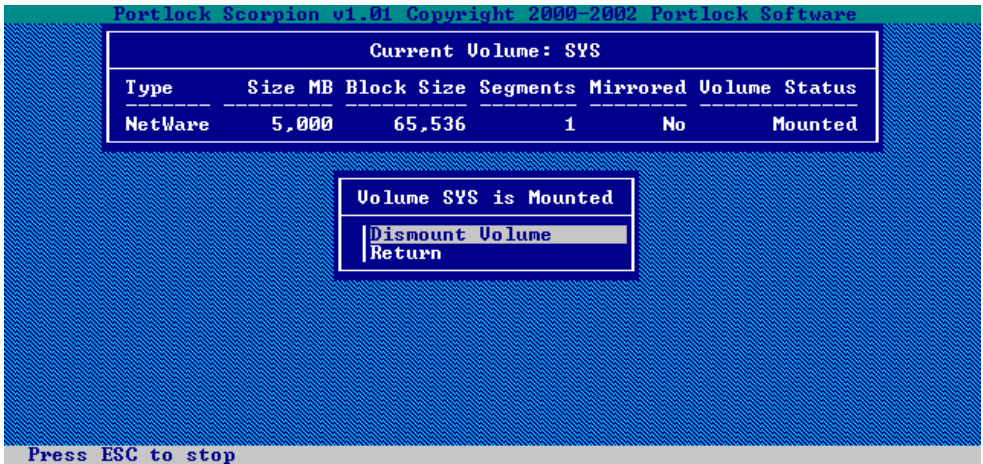
This will show you the current name for the volume. You must type in the new name, and then press [Enter].



Type in the name **SYS_ORG** and then press [Enter].



This is just to confirm the changes that you want made. If they are correct then press [Enter] to continue with the rename process.



As part of the rename process, the volume must be dismounted. Press [Enter] to continue.

When you do this, you may see some of the following screens that are shown on the next page. Please select to unload these NLMs. These NLMs have files that are open on the SYS volume.

The SYS volume is being dismounted.
The NetWare Scheduler <CRON> module is loaded.
The NetWare Scheduler should be unloaded.

NetWare Scheduler needs to be unloaded

Unload CRON.NLM
Do not unload CRON.NLM

Press ESC to stop

The SYS volume is being dismounted.
The Console Logging <CONLOG> module is loaded.
The Console Logging should be unloaded.

Console Logging needs to be unloaded

Unload CONLOG.NLM
Do not unload CONLOG.NLM

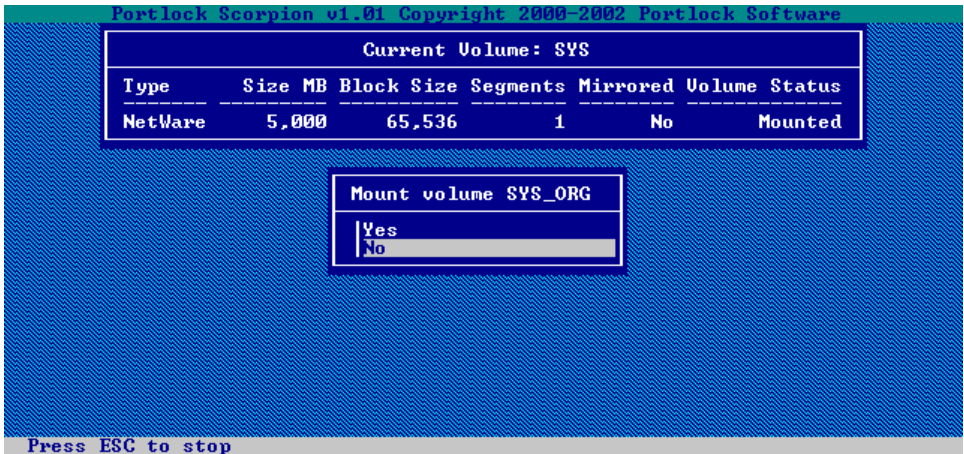
Press ESC to stop

The SYS volume is being dismounted.
The Java Subsystem is loaded.
The Java Subsystem should be unloaded. You may want to do this manually.

Java needs to be unloaded

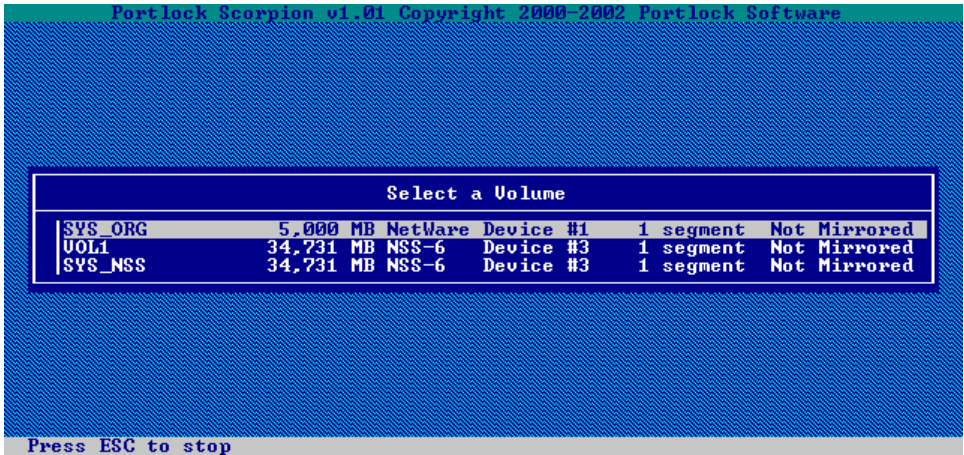
Unload JAVA.NLM
Do not unload JAVA.NLM

Press ESC to stop

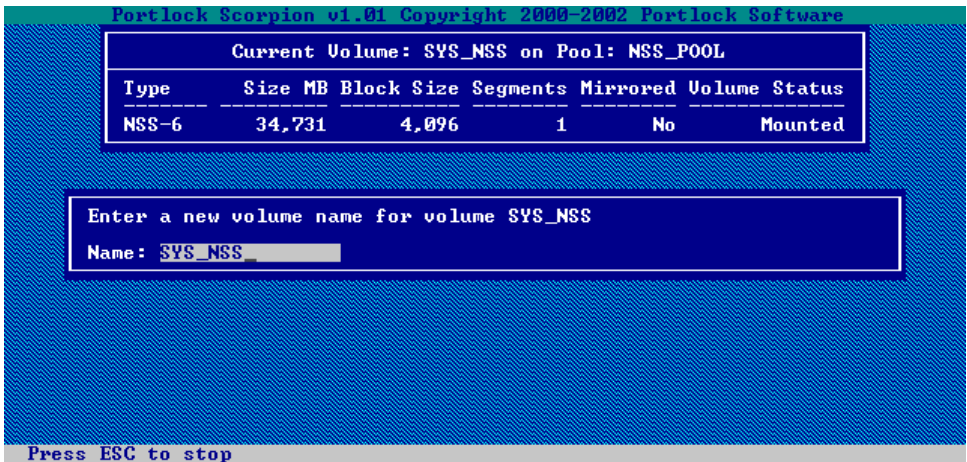


As part of the rename process, Scorpion will want to remount the volume. Select **No** and press [Enter].

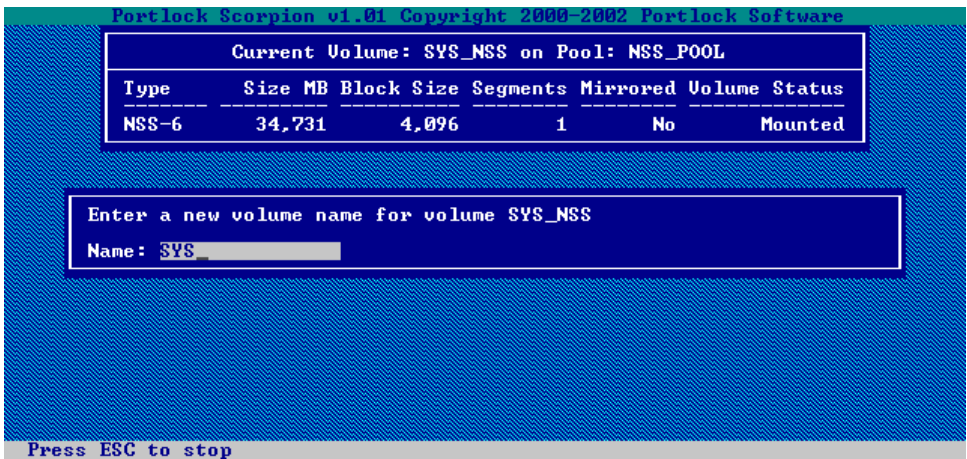
Scorpion will now return to the **Main Menu**. Select the **Volume Rename** option and then press [Enter].



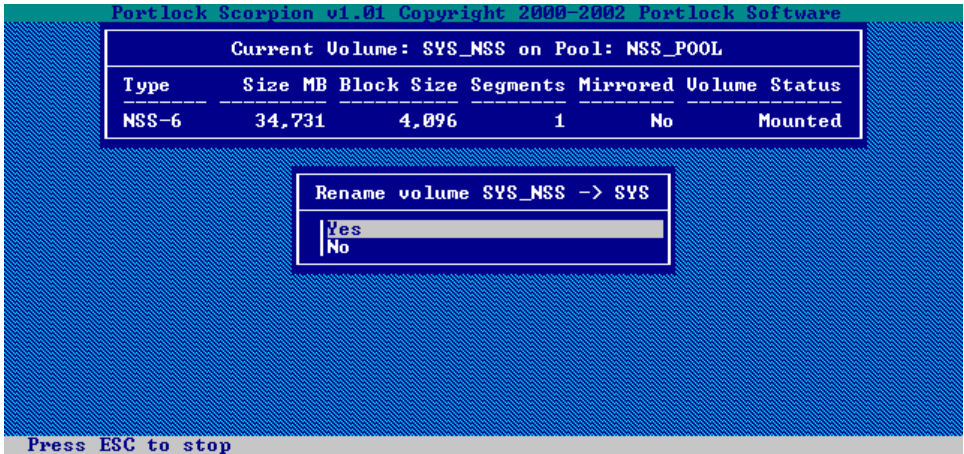
As you can see, the rename volume process has renamed the SYS volume to SYS_ORG. We now need to rename the SYS_NSS to be our new SYS volume. Select it and then press [Enter].



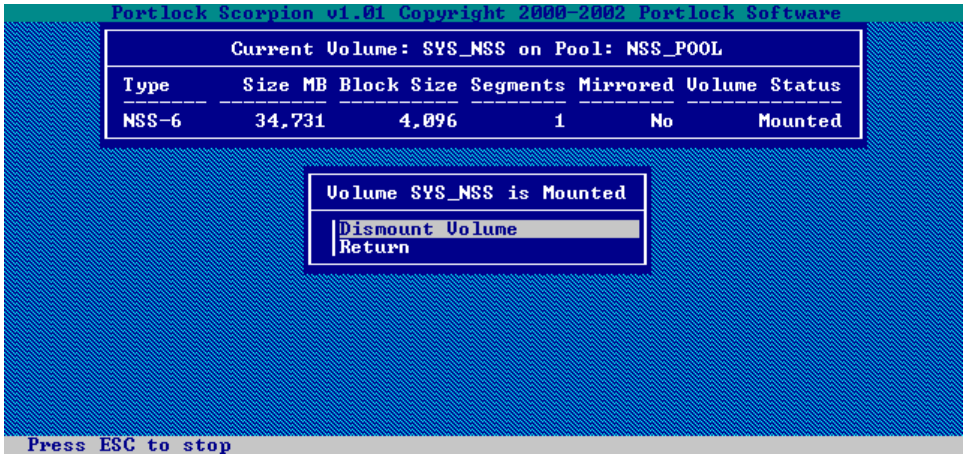
We now need to change the name of the volume to SYS.



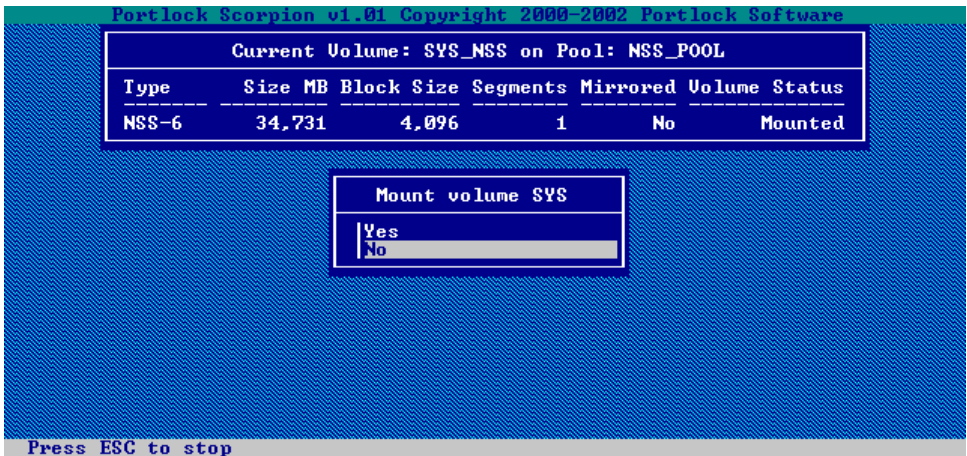
Change the volume name to SYS and then press [Enter].



Once again, Scorpion will confirm that the name change is OK before proceeding. Press [Enter] to continue.



As part of the rename of a volume process, the volume will need to be dismounted.

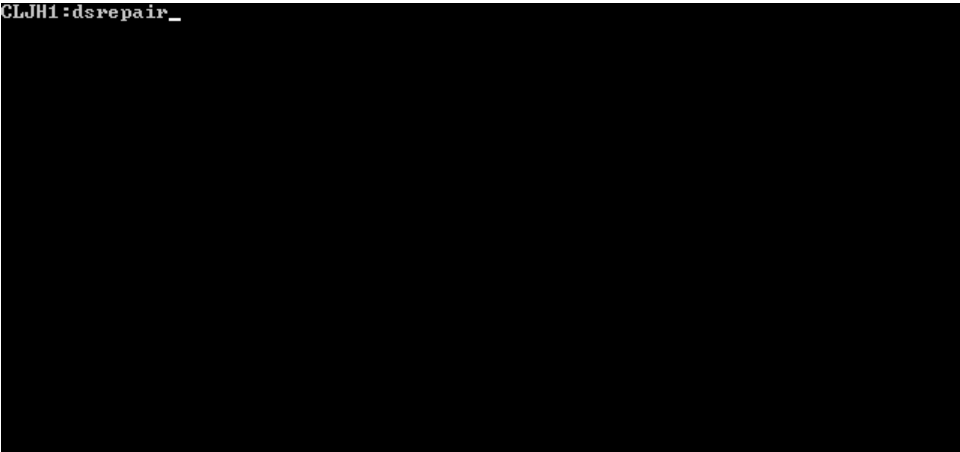


Once the rename process has completed, Scorpion will ask you to mount the renamed volume. Please select **No** and press [Enter]. You will now be redirected to the **Main Menu** for Scorpion.

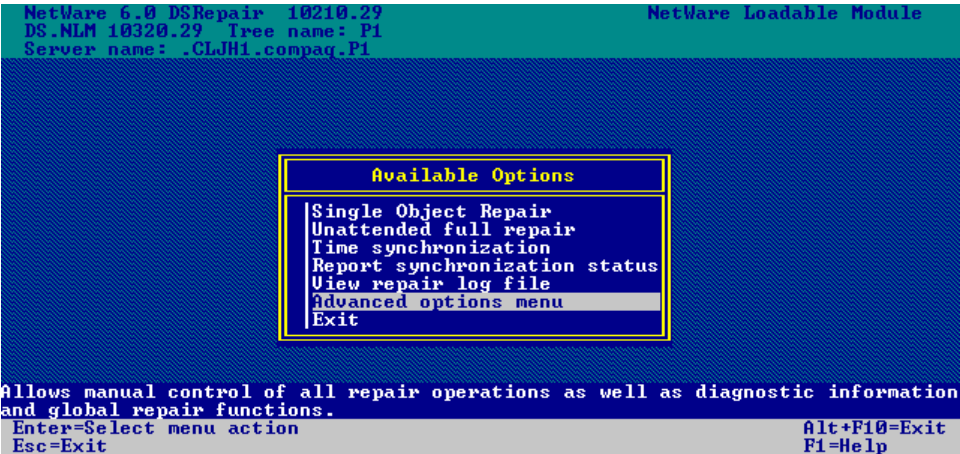
At this point, reboot your server so that all of the NLMs can be loaded from your new NSS SYS volume.

Once the server is rebooted, you have two more steps to complete. The first, is to run a DSREPAIR to fix the volume objects. The second, is to delete the old SYS_NSS volume object from NDS. As part of this process, you will need to have Admin (or admin equivalent) username and password.

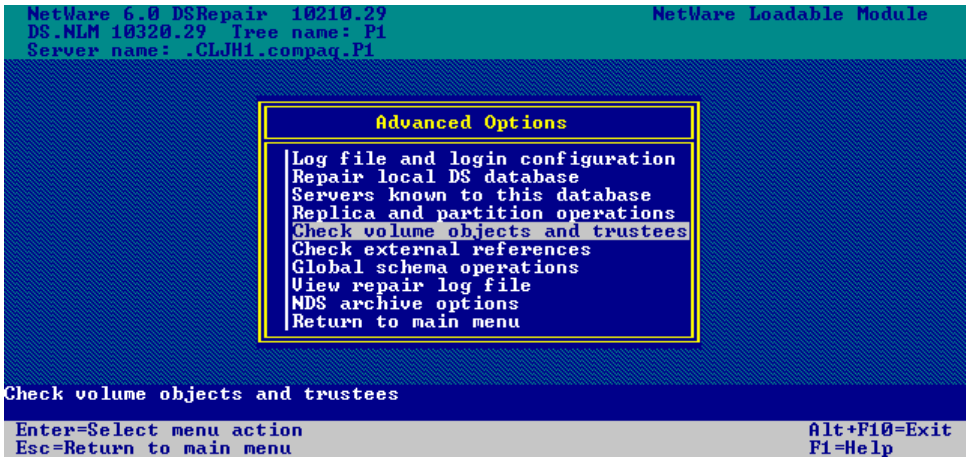
To load DSREPAIR, type: **disrepair** at the NetWare System Console Prompt.



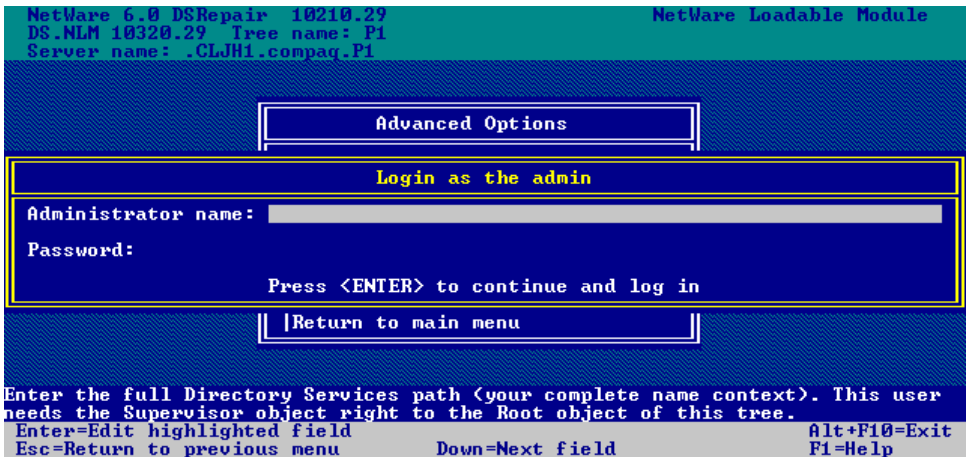
Press [Enter] to continue.



From the **Available Options** menu, choose the **Advanced options menu** and press [Enter].



Select the **Check volume objects and trustees** option from the **Advanced Options** menu and press [Enter]. You will then be asked to enter your Admin (or equivalent) username and password.



Enter your username and password and then press [Enter]. The volume checks will start to occur.

When they have completed, you may see something similar to the following on the DSREPAIR screen.

```

NetWare 6.0 DSRepair 10210.29                               NetWare Loadable Module
DS.NLM 10320.29  Tree name: P1
Server name: .CLJH1.compaq.P1                               Total errors: 2

View Log File (Last Entry): "SYS:SYSTEM\DSREPAIR.LOG" (59604)

Start: Monday, 19 August 2002 11:05:23 am Local Time

ERROR: Property: Host Resource Name, value: SYS_NSS
Changed to: SYS
Volume: SYS, object ID: 0000817C, CN=CLJH1_SYS_NSS.OU=compaq.0=P1.T=P1
Checking trustees on volume: SYS

ERROR: Property: Host Resource Name, value: SYS
Changed to: SYS_ORG
Volume: SYS_ORG, object ID: 00008178, CN=CLJH1_SYS.OU=compaq.0=P1.T=P1
Checking trustees on volume: SYS_ORG

Volume: VOL1, object ID: 0000816A, CN=CLJH1_VOL1.OU=compaq.0=P1.T=P1
Checking trustees on volume: VOL1

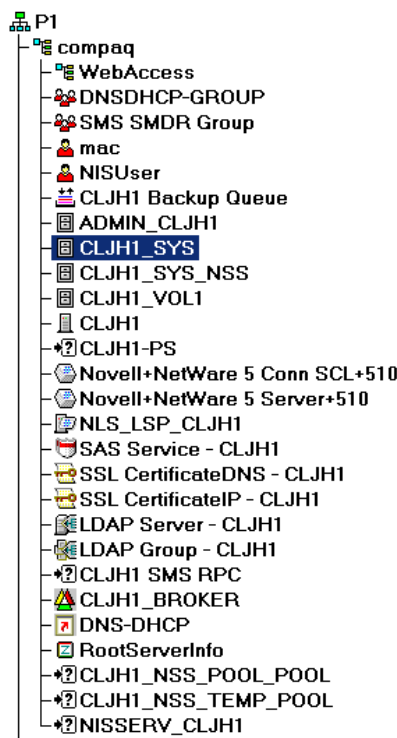
Volumes checked: 3

Esc=Exit the editor      F1=Help      Alt+F10=Exit

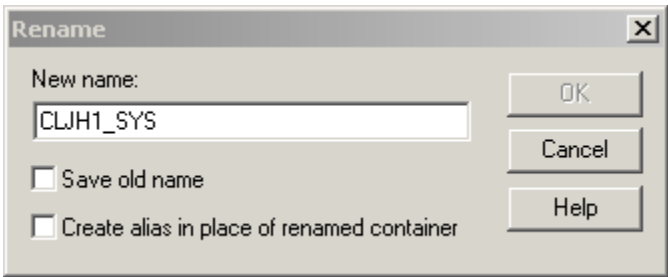
```

Notice how it shows the change of volume name. It is necessary to now exit DSREPAIR and load NWAdmin from a workstation.

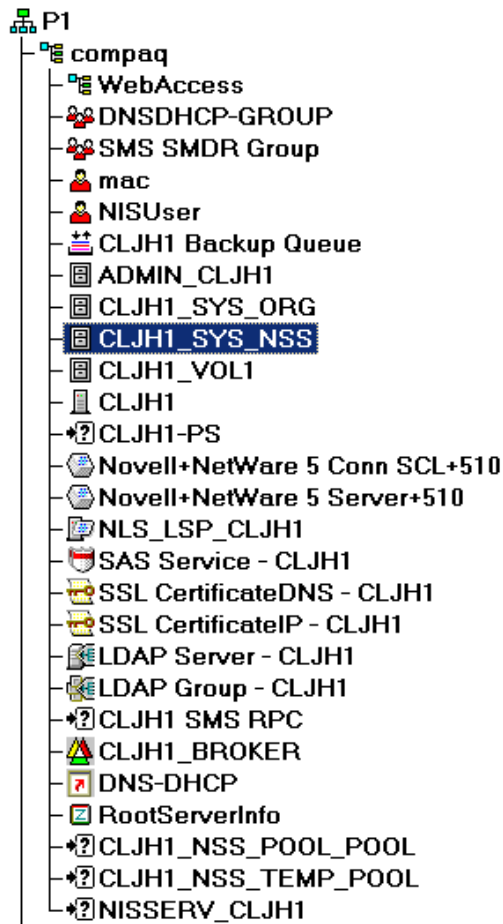
Once NWAdmin is loaded, you will need to drill down to the location of the server and volume objects.



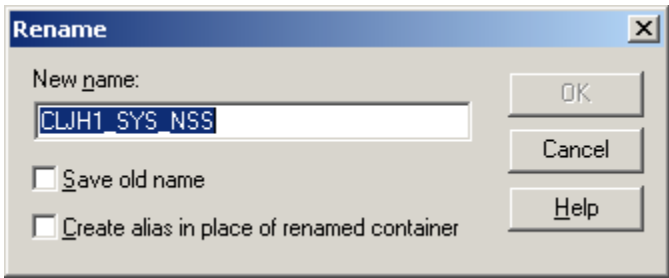
We now need to rename the objects in NDS to match the names that we have given the volumes. Highlight the **SYS entry**, and choose rename and the following screen will appear:



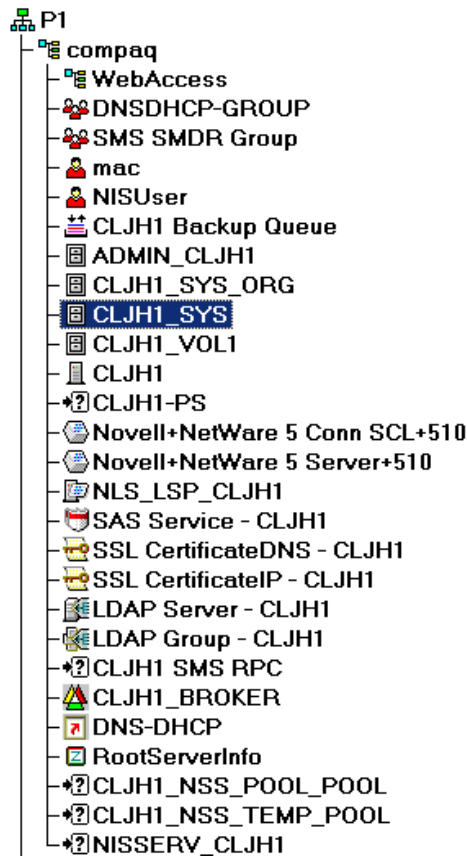
Change this to **CLJH1_SYS_ORG** and press [Enter].



Now select the **SYS_NSS volume object** and the following screen will appear:



Change this to **CLJH1_SYS** and press [Enter].



Congratulations! You have now completed converting your SYS volume from Traditional File System to NSS.

Tech Support

Technical Support at Portlock

Portlock Software is committed to providing support for its products that exceeds the industry standard for software companies. We provide support via our web site, email and the telephone.

Note: *Technical Support is only available in English.*

Before Contacting Technical Support:

Verify that you are running the current version of Volume Defrag. We update our products very often. The **README** file may indicate that we have already corrected your problem.

Write down any error or warning messages exactly as displayed by Volume Defrag.. This will often help Technical Support identify the location of the error in the Storage Manger source code. This can greatly speed up resolution of a support issue.

For Tech Support email us at support@portlocksoftware.com or call (406) 723-5200. Technical Support is offered Monday - Friday: 8 AM - 5 PM and Saturday: 10 AM - 4 PM (Support is often available during the evening).

Please visit our web site to obtain additional information on Novell NetWare and Portlock Software products at: www.portlocksoftware.com. There you can research Technical Documents, Product Data Sheets, Product User Guides, Training Videos and Press Releases.

TIDS (Technical Information Documents) regarding Volume Defragment can be useful in troubleshooting and when searching for specific information regarding a particular product. TIDS can be found at: <http://support.novell.com>.

If you would like to receive Portlock Software's monthly newsletter publications, sign up for our mailing list at:
<http://lb.bcentral.com/ex/manage/subscriberprefs.aspx?customerid=14054>

For technical support, send email to: support@PortlockSoftware.com.

For sales support, send email to: sales@PortlockSoftware.com.

Glossary

ATA

- Supports one or two hard drives, a 16-bit interface and PIO modes 0, 1 and 2. Also known as *IDE*.

ATA-2

- Supports faster PIO modes (3 and 4) and multiword DMA modes (1 and 2). Also supports logical block addressing (LBA) and block transfers. ATA-2 is marketed as *Fast ATA* and *Enhanced IDE (EIDE)*.

BIOS (Basic Input Output System)

- Pronounced “bye-ose,” an acronym for *basic input/output system*. The BIOS is built-in software that determines what a computer can do without accessing programs from a disk. On PCs, the BIOS contains all the code required to control the keyboard, display screen, disk drives, serial communications, and a number of miscellaneous functions.

Disk

- A round plate on which data can be encoded. There are two basic types of disks: *magnetic disks* and *optical disks*.

EIDE (Enhanced Integrated Drive Electronics)

- Short for *Enhanced IDE*, a newer version of the IDE mass storage device interface standard developed by Western Digital Corporation. It supports data rates of between 4 and 16.6 MBps, about three to four times faster than the old IDE standard. In addition, it can support mass storage devices of up to 8.4 gigabytes, whereas the old standard was limited to 528 MB. Because of its lower cost, enhanced EIDE has replaced SCSI in many areas.
- EIDE is sometimes referred to as *Fast ATA* or *Fast IDE*, which is essentially the same standard, developed and promoted by Seagate Technologies. It is also sometimes called *ATA-2*.

FAT (File Allocation Table)

- File systems used by DOS, DR-DOS, PC-DOS, and the Windows family to store user files and directories. NetWare volumes use a modified form of the DOS FAT.

FAT-12

- A version of the DOS FAT that uses twelve-bit numbers to store disk block addresses.

FAT-16

- A version of the DOS FAT that uses sixteen-bit numbers to store disk block addresses.

FAT-32

- A version of the DOS FAT that uses thirty-two-bit numbers to store disk block addresses.

GB (Gigabyte)

- A GB is 1,073,741,824 bytes. However, most disk drive companies use 1,000,000,000 as a GB when referring to disk drive capacity.

HotFix

- Hotfixing of disk sectors prevents data from being stored in a bad sector or cluster. During a Hotfix, the operating system automatically detects bad disk sectors, relocates the data to a safe cluster and marks the bad cluster as unusable to the system. This process is transparent to the user, requires no interaction on the user's part and does not report any error messages to any applications.

IDE (Integrated Drive Electronics)

- Abbreviation of either *Intelligent Drive Electronics* or *Integrated Drive Electronics*, depending on who you ask. An IDE interface is an interface for mass storage devices, in which the controller is integrated into the disk or CD-ROM drive.

Image

- A method of converting the contents of a hard drive — including its configuration settings and applications — into an image, and then storing the image on a server or burning it onto a CD or another device.

I/O

- Short for *input/output* (pronounced “eye-oh”). The term I/O is used to describe any program, operation or device that transfers data to or from a computer and to or from a peripheral device. Every transfer is an output from one device and an input into another. Devices such as keyboards and mice are input-only devices while devices such as printers are output-only. A writable CD-ROM is both an input and an output device.

LBA

- Short for *logical block addressing*, a method used with SCSI and IDE disk drives to translate the cylinder, head, and sector specifications of the drive into addresses that can be used by an enhanced BIOS. LBA is used with drives that are larger than 528 MB.

Master

- Refers to an architecture in which one device (the master) controls one or more other devices (the slaves).

MB (Megabyte)

- A MB is 1,048,576 bytes. However, most disk drive companies use 1,000,000 as a MB when referring to disk drive capacity.

NetWare

- A popular local-area network (LAN) operating system developed by Novell Corporation. NetWare is a software product that runs on a variety of different types of LANs, from Ethernets to IBM token-ring networks. It provides users and programmers with a consistent interface that is independent of the actual hardware used to transmit messages.

NetWare Partition

- A NetWare partition is an area of a disk drive that stores NetWare volumes. A NetWare partition contains three data areas: 1) System Area, HotFix Data Area, and the Data Area. The System Area contains information about the size of the partition. The Hot Fix Data Area contains information about redirected data blocks. The Data Area contains NetWare volumes. A NetWare Partition can contain eight NetWare volume segments. A NetWare volume can consist of one to thirty-two volume segments.

Novell's Definition:

- *A partition created on each network hard disk, from which NetWare volumes are created.*

NetWare Volume

- A NetWare volume is a file system that contains user files and data. A NetWare volume can consist of one to thirty-two NetWare volume segments.

Novell's Definition:

- *A fixed amount of physical hard disk storage space. A NetWare volume is the highest level in the NetWare file system directory structure.*

NetWare Volume Segment

- A NetWare volume segment is an consecutive area of a NetWare partition. One or more NetWare volume segments make a NetWare volume.

Novell's Definition:

- *A physical division of a volume. A volume can span up to 32 disk drives. If a volume includes more than one drive, each drive in the volume is a volume segment.*

NSS (Novell Storage Services)

Novell's Definition:

- *A high-performance, 64-bit storage and access system that supports very large files as well as large numbers of files and NSS volumes. NSS runs with the traditional NetWare file system in NetWare. NSS installs on the server as a set of NLM programs.*

NSS Admin Volume

Novell's Definition:

- *In NSS, a read-only volume that is automatically created when a storage group and NSS volume are created. This volume contains a dynamic list of objects that NSS uses, and it cannot be deleted.*

NSS Type 0 Partition

- An NSS Type 0 Partition is a NetWare Partition without the HotFix Data Area. This partition is not used for NSS volumes, it is used for NetWare volumes that can not be Mirrored or support HotFix Data Areas.

NSS Type 1 Partition

- An NSS Type 0 Partition is a Partition that contains one NSS volume. The NSS volume must be the same size as the partition. This partition can not be mirrored or support Hot Fix Data Areas.

NSS Type 2 Partition

- An NSS Type 2 Partition is a Storage Group than contains one or more NSS volumes.

NSS Storage Group (See NSS Type 2 Partition)

Novell's Definition:

- *A pool of storage free space that represents logical space owned by NSS. Once free space is claimed by NSS, the free space becomes a managed object which can be divided into other storage groups and NSS volumes.*

Partition

- A partition is a contiguous region of a disk drive used to store data.

Primary Partition

- A *primary partition* contains a single volume that is the size of the partition.

Restore

- A method of converting the contents of an Image. When contents of the hard drive are needed again, ghosting software converts the image back to original form.

SCSI (Small Computer System Interface)

- A method of linking disk drives (and more) to a computer.

Slave

- Any device that is controlled by another device, called the *master*.

