



StorageTek Virtual Operator Panel

Customer Version

Part Number : 96179
Revision H



Virtual Operator Panel

Customer Version

Sun Microsystems, Inc.
www.sun.com

Part No. 96179
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Revision History

EC	Date	Revision	Description
129914	February 2006	A	Initial Release
129918	March 2006	B	Second release. Minor changes and corrections. Also added information regarding the correct port address
129936	April 2006	C	Third release. Minor changes and corrections. Also corrected the installation instructions.
129967	May 2006	D	Fourth release. Minor changes and corrections in addition to: <ul style="list-style-type: none">■ Changes made to the dialogues to accommodate FICON■ This is for VOP version 1.0.4 where 1.0 is the major change and minor release version number and 4 is the update number.
129994	June 2006	E	Fifth release. Minor changes and corrections in addition to: <ul style="list-style-type: none">■ Changed to Sun documentation format.■ This is for VOP version 1.0.5
135001	July 2006	F	Sixth release. VOP version 1.0.6. Minor changes and corrections in addition to: <ul style="list-style-type: none">■ Changed “tape cartridge” to “data cartridge”■ Updated some screen captures
135033	September 2006	G	Seventh release. Version 1.0.7. Minor changes and corrections in addition to: <ul style="list-style-type: none">■ Changed covers to Sun covers.■ Revised screen shots and text for the current code release (1.0.7).
135063	October 2006	H	Eighth release. VOP version 1.0.8. Minor changes and corrections in addition to: <ul style="list-style-type: none">■ Updated screen shots and text to accommodate the new encryption feature.■ Changed text to accommodate the menu item movements.

Preface

This publication is for the customer who will be installing and or operating the Virtual Operator Panel (VOP).

Organization

The organization of this guide is:

- | | |
|------------|---|
| Chapter 1 | “Installation” provides information regarding the installation of the Virtual Operator Panel software. |
| Chapter 2 | “Single Drive Operation” describes the operation of the virtual operator panel. |
| Appendix A | “Computer Path Additions for Windows 2000 and XP” describes the modification of the search path on a computer operating Windows 2000 or XP. |
| Appendix B | “VOP in Multiple Drive Installations” gives instructions for configuring drives in the multi-drive environment with the VOP. |
| Appendix C | “Service Calls” gives information regarding placing service calls in order to minimize the tape drive’s down time. |
| Glossary | The “Glossary” defines some terms and abbreviations used in this guide. |
| Index | The “Index” provides an additional means of locating information within this document. |

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The URL for the CRC is <http://www.support.storagetek.com>

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Installation

This chapter is about the installation of the Virtual Operator Panel (VOP), its associated software, and changes to existing software settings.

Computer Hardware Requirements

These are the hardware requirements for this Virtual Operator Panel installation:

- 512 megabytes memory
- 1000 megahertz processor

Note – For best results set the monitor screen resolution to 1024 x 768 or greater.

- Available Ethernet port on the computer or set up a private network with a second Ethernet card as discussed in [Appendix B, “VOP in Multiple Drive Installations”](#).
- RJ45-RJ45 Ethernet cross-over cable (length as required, this connects the computer to a single T10000 tape drive)

Note – When a Service Delivery Platform (SDP) is installed at a customer site, the SDP is connected to the tape drive. If a customer is having a problem with a tape drive or simply desires to know a tape drive’s status or configuration, that customer should call Sun Microsystems StorageTek Support and the status, service, or configuration questions will be answered by a technician. A support technician might need to connect to the tape drive by way of the remote service capability for which the SDP unit is designed and intended to provide. If a tape drive configuration change is needed at an SDP/T10000 tape drive site, the reconfiguration service will be provided remotely for the customer as part of the site service agreement. If at any point these services cannot be fully satisfied remotely by way of the SDP, SUN will dispatch a service representative to the site to provide the necessary customer service.

Minimum Operating System Requirements

These are the minimum system operating requirements for this Virtual Operator Panel installation:

- Windows 2000 or XP
- Linux–Redhat 9.0, ES
- Solaris–SunOS 5.8, SunOS 5.9, and SunOS 5.10

Software Installation

Note – If you have installed an earlier version of the VOP on a computer, use the `README.txt` file for quick installation instructions for the upgrade.

The software installation involves two separate pieces of software. First you need to either ensure that the Java software is installed, or install it. Then you will need to install the VOP software.

Java Installation

To install the virtual operator panel on your computer:

Note – These instructions were correct at the time of this writing. Sun can choose to change that Web site which would necessitate your having to search for the Java 2 Platform listed below.

1. Go to <http://www.sun.com>
2. Click **Downloads**
3. At the top of the screen, find **Downloads** and scroll over it. That will produce a drop-down menu.
4. Click **Java 2 Standard Edition**
5. Find the link for **J2SE 1.4.2** and click that

Note – The VOP was developed with version 1.4.2.

6. On the next screen, find the link for **Download J2SE_JRE** and click that link (this is under the *J2SEv 1.4.2_10 JRE* title bar)
7. On the next page, click the **Accept** radio button

8. Find the platform you are using. Click either the online or offline installation for your platform
9. Follow the on-screen instructions. This will download a compressed file to your computer – remember where it went!
10. Change directories to the directory to which you downloaded the java file
11. Double click (or run, if using a command line) the file you downloaded to install it and follow the on-screen prompts.

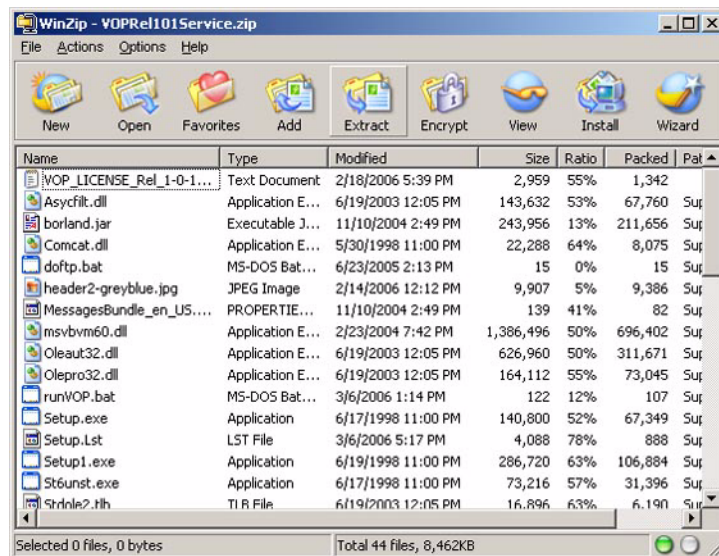
VOP Software Installation

First, Insert the Sun provided VOP CD into your computer's CD ROM drive. Then:

For Microsoft Windows Installations

1. If there is an existing VOP folder, rename an existing VOP folder to VOP_old, uninstall it, or remove it.
2. Double-click the zip file. A pop-up window like the one shown in the following figure appears.

FIGURE 1-1 Winzip Window



3. Click Extract on the WinZip box. A window like the one shown in the following figure will appear.

FIGURE 1-2 WinZip Directory Selection



4. Choose the directory of your choice.

Note – If you use the C:\Windows\Temp or C:\Temp folder, be sure to remove anything there first so you can tell the new files from the old ones that tend to accumulate there. In the previous example, the directory C:\Temp2 was created for this extraction; the before mentioned temporary directory had other files in them.

5. Click Extract on the WinZip Window (see the previous figure).
6. Once the files have extracted, close the WinZip Window.
7. Installation:
 - **For Automatic installation**, double-click Setup.exe. This will put the VOP files in the folder:
C:\Program Files\VOP_Rel_1_0_8_Customer.

Note – The actual path will vary with the software release level.

Pay attention to the name of the directory into which the installation program is extracting the files. You will have to go to that directory to start VOP or create a shortcut for the desktop. You will also need that directory path if you want to update the computer's search path for commands.

- **For manual installation:**
 - i. Create a new folder labeled C:\Program Files\VOP_Rel_1_0_8_Customer. (This is the suggested folder. Earlier versions used other folder names, and any of those still work.)
 - ii. In the folder where you extracted the contents of the zip file, copy the contents of the folder \Windows\VOP into the new VOP folder.

Note – For ease of operation after a *manual* installation, add the VOP folder to the path line. See “[Computer Path Additions for Windows 2000 and XP](#)” on page 67. Remember, you will have to change that path with each new version of VOP.

Note – A copy of the VOP user’s guide is included in the zip file and was extracted into the temporary directory. Put it in a safe place before executing the next step.

8. Delete the files you extracted from the zip file in the temporary folder (in the previous example that was Temp2). These files are no longer needed (however, see the previous note).
9. Now you will need to modify the `sunVOP.bat` file if you wish to enable the heart beat feature. To do this:

- a. In the VOP directory into which the VOP files were installed, find the `sunVOP.bat` file.
- b. Open the `sunVOP.bat` file in a text editor such as Notepad. The file should look like:


```
#    %1 is optional drive ip address to connect to
java -classpath "lib;lib/VOP.jar;lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b %1
cd bin
```

Note – The simpler the text editor used the better. Some word processing programs may imbed code that will interfere with the batch file running, even though you saved the file as a text file.

- c. If the `-b` is not there, add it.
- d. Save the file.

For Unix or Linux Installations

1. Rename an existing VOP installation to `VOP_old`.
2. Make a new directory labeled `VOP`. This would typically be done in the root directory.
3. Copy the zip file to the temporary directory for installation.
4. Enter the command `unzip VOPRelxxxCustomer.zip` (`xxx` is the release version of the VOP) and extract the files into the same temporary directory.
5. Copy the files located in the new directory `linux_unix\VOP` to the `VOP` directory.
6. Delete the contents of the temporary directory as they are no longer needed.
7. Now modify the `sunVOP` file if you wish to enable the heart beat feature. To enable the hear beat feature:

- a. In the VOP directory into which the VOP files were installed, find the sunVOP file.

- b. Open the sunVOP file in a text editor such as Vi. The file should look like:

```
#!/bin/ksh
#cd $HOME/VOP
# $1 is optional drive ip address to connect to
VOPdir=`echo $0 |sed 's!/VOP/.*/VOP!'\` vopdir2=`echo
$VOPdir |grep "\.\/" |wc -c` if [ $vopdir2 -ne "0" ]
then VOPdir="." fi chkVOPdir=`echo $VOPdir |wc -c`
if [ $chkVOPdir -lt "3" ] then VOPdir=`which $0 | sed
's!$0!!'\` fi cd $VOPdir java -classpath
"lib:lib/VOP.jar:lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b $1 &
```

- c. If the -b shown on the last line of this example is not there, add it.
- d. Save the file.

8. Enter the command rehash.

9. Make sure the java/j2re1.4.2_10/bin and VOP/bin folders are in the search path on the computer¹.

10. Solaris and Linux only – Do one of the following:

- Create the .netrc file with the makeNetrc utility:

- i. Find the makeNetrc file in the /bin directory.
- ii. Run the makeNetrc file. This will make an entry for each T10000 tape drive found. This utility will prompt you for a node name or IP address for each T10000 tape drive and generate a .netrc entry for it.

- Create the .netrc file manually in the home directory:

- i. Type vi .netrc
- ii. Enter one of the following two lines for each tape drive in the domain. You are specifying each tape drive by either its serial number or IP address.

- To specify a tape drive by its node name:

```
machine T10000-<last 9 digits of serial number> login stktape password
stktape
```

Note – The default node name is the tape drive's serial number. You can change this.

- To specify a tape drive by its IP address:

```
machine <IP address (for example: 129.80.5.67)> login stktape
password stktap
```

- e. Enter “:wq” to exit vi.

1. For LINUX and UNIX systems, this will require that you change the \$PATH variable in the .cshrc file to include the java/bin directory. And, in the CLASSPATH file, add the path to the java directory.

11. Enter `chmod 400 .netrc`.
12. Run the `checkNetrc` file on the distribution CD to verify that the `.netrc` file is correct.

Note – The `.netrc` file contains data for logging in to a remote host over the network for file transfers by FTP. This file resides in the user's home directory on the machine initiating the file transfer. Its permissions should be set to disallow read access by group and others. (For more information, check the `man netrc help` file.)

Changing the Computer's IP Address

Under normal circumstances, the computer probably accesses a DHCP server to automatically obtain an IP address. These instructions change that connection to a static connection for connecting directly to a tape drive and then back to automatic mode so the computer can reconnect to the corporate network once again.

Changing the Computer to a Static IP Address

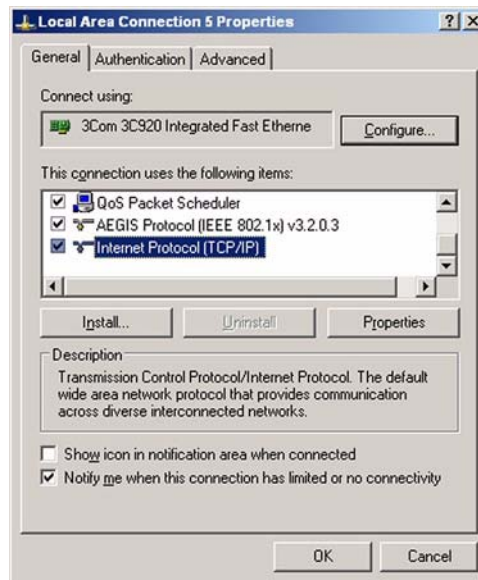
These instructions connect a computer to a T10000 tape drive with the default IP Address. You will need to change the computer's IP address on the Ethernet card to an address other than that used by the tape drive. To do that, perform the following steps:

Note – This is for Windows 2000 - Windows XP is similar.

1. Click **Start** in the lower left of the screen.
2. Click **Settings**.
3. Click **Network and Dial-up Connections**.
4. Click **Local Area Connection**. A dialogue box as shown in the following figure appears.

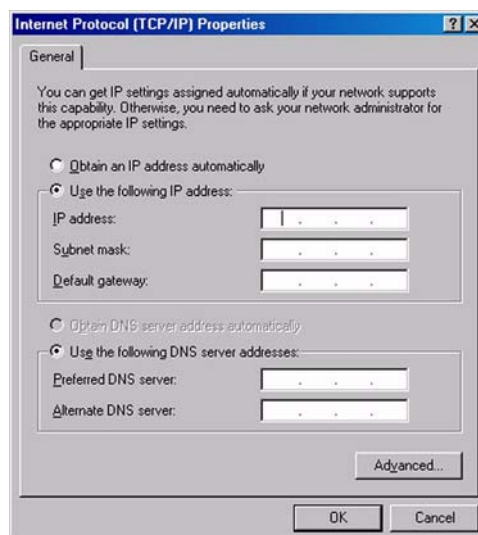
5. Click **Internet Protocol (TCP/IP)** to highlight it as shown in the following figure.

FIGURE 1-3 Local Area Connection Dialogue Box



6. Click **Properties** in the Local Area Connection Properties dialogue box. The dialogue box of the following figure appears.
7. Click **Use the following IP address** radio button as shown in the following figure.

FIGURE 1-4 Internet Protocol (TCP/IP) Properties Dialogue Box



- a. Enter the default IP address of 10.0.0.2 (The tape drive's default IP address is 10.0.0.1, so the computer must be an unused IP address. Since you are connecting directly to the tape drive, anything but the address of 10.0.0.1 should work.)
 - b. Enter the subnet mask 255.255.255.0
8. Click OK in the Internet Protocol (TCP/IP) Properties dialogue box. (See the bottom of the previous figure.)
9. Click OK in the Local Area Connections dialogue box. (See the bottom of [FIGURE 1-3 on page 28](#).)
10. Start the VOP and connect to the tape drive.

Changing A Computer to a Dynamic IP Address

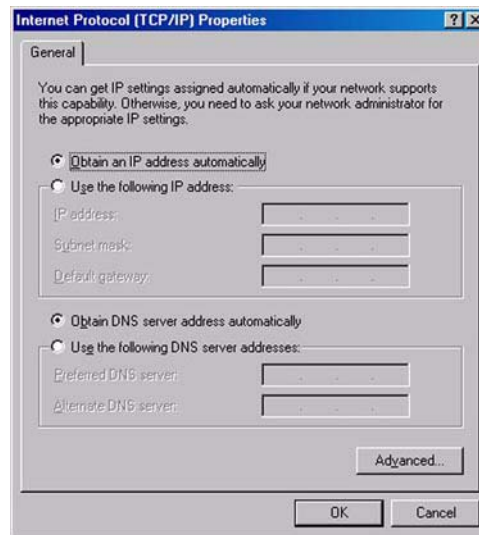
These instructions are provided in the event that you need to change the computer's local connection back to a dynamic IP address.

Note – Some computers that use an Ethernet connection can to connect to a corporate Intranet/Internet connection without having to change the local settings. In these cases, you can be able to switch cables, reboot and not have to change the local settings.

To change the computer's settings to a dynamic IP address, perform the following steps:

1. Click Start in the lower left of the screen.
2. Click Settings.
3. Click Network and Dial-up Connections.
4. Click Local Area Connection. A dialogue box as shown in [FIGURE 1-3 on page 28](#) appears.
5. Click Internet Protocol (TCP/IP) to highlight it as shown in [FIGURE 1-3 on page 28](#).
6. Click Properties in the Local Area Connection Properties dialogue box. The dialogue box in the following figure appears.
7. Click Obtain an IP address automatically (radio button) as shown in the following figure.

FIGURE 1-5 Internet Protocol (TCP/IP) Properties Dialogue Box



8. Click OK in the Internet Protocol (TCP/IP) Properties dialogue box.
9. Click OK in the Local Area Connections dialogue box.

The computer is now configured to reconnect to the corporate network and will automatically obtain an IP address when you connect to the network.

Single Drive Operation

You can install the VOP software on a platform (running Win2000, Windows XP, LINUX, or Solaris) that can connect to the tape drives with an Ethernet connection. Like all other Sun/StorageTek remote diagnostic functions, the VOP does not allow anyone to read or write customer data. This software will allow you to erase a tape, but customer type data cannot be written to the tape, changed, or read.

The VOP has two basic uses:

- Drive monitoring and operation
- Drive configuration

Starting VOP

The command line has four options. These are:

- size x y This will change the size of the displayed VOP screen
- verbose This will record telnet traffic character by character
- b For the heart beat feature
- <node name or IP Address> This is used to automatically connect to the tape drive

Note – For help on running the command line command `sunVOP`, add the `-h` parameter.

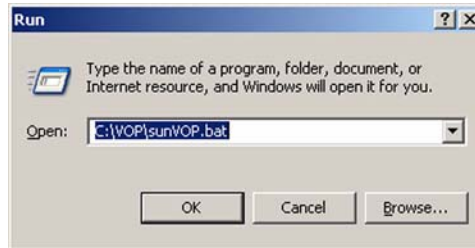
If the VOP was installed with the *automatic installation (Windows only)*, then the VOP will have a shortcut on the program list. Click the **Start** button, then click Programs > VOP_Rel_1_0_8_customer > VOP_Rel_1_0_8_customer.

Note – The actual path name will vary with the release level.

If the VOP was installed with the *manual installation (Windows, Solaris, LINUX, and UNIX)*:

Windows: To find the command line click the **Start** button in the very lower left corner of the monitor screen. Then click the word **Run...** . This brings up a command line screen as shown in the following figure. The exact path will vary depending on where you put the VOP files.

FIGURE 2-1 Run Command Line



Starting the VOP with the command line can be done with or without the drive's IP address. Both methods are shown. See the following two sections.

With the Drive IP Address

1. **From a command line, enter the command:**

`sunVOP <IP address>`

Where the IP address would be 10.0.0.1 if you are connecting to a new drive, or the IP address or node name of a drive already configured.

2. **Press the Enter key.**

Once successfully connected to the drive, the IP address or the device name appears on the upper part of the screen.

Without the Drive IP Address

1. **From a command line, enter the command `sunVOP`, or use the shortcut and click the **Start** button, then click `Programs > VOP_Rel_1_0_8_customer > VOP_Rel_1_0_8_customer`.**
2. **Once the VOP has started, you will need to connect to the drive. This is done by the following:**
 - a. Click **File > Connect to Drive**.

- b. In the dialogue box as shown in the following figure, enter the IP address (or alias) of the drive. Enter the value 10.0.0.1 for an unconfigured new drive, or the IP address of a configured drive.

FIGURE 2-2 IP Address Dialogue Box



- c. Click **OK** to finish the connection. Once you have successfully connected to the drive, the IP address or name of the drive appears at the top of the screen.

Custom Batch Files

You can edit the `sunVOP` file, rename it, and specify a tape drive in that file. This would give you a list of batch files to start the VOP and have it connect to a specific tape drive without having to type in the IP address of that tape drive.

Windows Batch Files

The original `sunVOP.bat` file looks like this (depending on the editor, this could all be one line):

```
# %1 is optional drive ip address to connect to
java -classpath "lib;lib/VOP.jar;lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b %1
cd bin
```

The item of interest is the second `%1` near the end of the file (bolded in the preceding example). Change that to the tape drive's IP address (or alias) and rename the file as you save it. For example, a tape drive known as `ngdtape02` would have a `runVOP.bat` file named `runVOP_ngdtape02.bat`. The contents of which would be:

```
# %1 is optional drive ip address to connect to
java -classpath "lib;lib/VOP.jar;lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b ngdtape02
cd bin
```

Linux, Solaris, and UNIX Files

The original sunVOP file looks like this (depending on the editor, this could all be one line):

```
#!/bin/ksh
#cd $HOME/VOP
#    $1 is optional drive ip address to connect to
VOPdir=`echo $0 |sed 's!/VOP/.*/VOP!'\`
vopdir2=`echo $VOPdir |grep "\.\/" |wc -c`
if [ $vopdir2 -ne "0" ]
then
VOPdir="./"
fi
chkVOPdir=`echo $VOPdir |wc -c`
if [ $chkVOPdir -lt "3" ]
then
VOPdir=`which $0| sed 's!$0!!'\`
fi
cd $VOPdir

java -classpath "lib:lib/VOP.jar:lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b $1 &
```

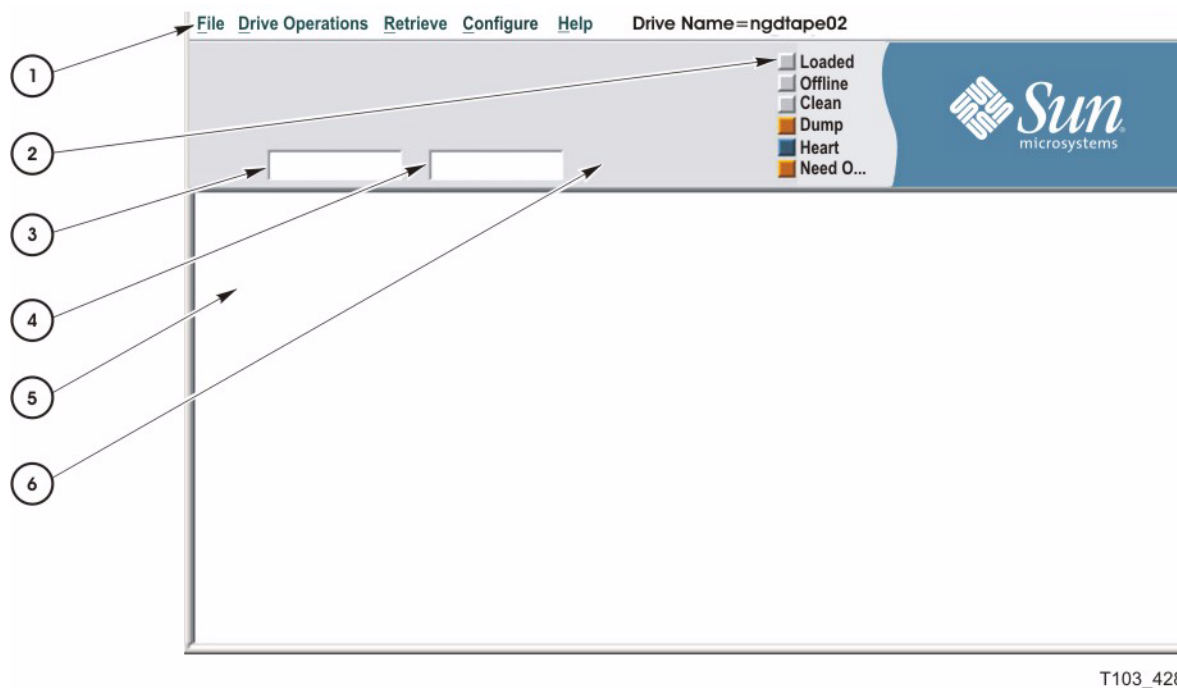
The item of interest is the second \$1 (bolded) near the end of the file. Change that to the tape drive's IP address or alias (bolded in the following example) and rename the file as you save it. For example, a tape drive known as ngdtape02 would have a runVOP file named runVOP_ngdtape02. The contents of which would be:

```
#!/bin/ksh
#cd $HOME/VOP
#    $1 is optional drive ip address to connect to
VOPdir=`echo $0 |sed 's!/VOP/.*/VOP!'\`
vopdir2=`echo $VOPdir |grep "\.\/" |wc -c`
if [ $vopdir2 -ne "0" ]
then
VOPdir="./"
fi
chkVOPdir=`echo $VOPdir |wc -c`
if [ $chkVOPdir -lt "3" ]
then
VOPdir=`which $0| sed 's!$0!!'\`
fi
cd $VOPdir
java -classpath "lib:lib/VOP.jar:lib/borland.jar" -
Djava.security.policy=rmi.policy
com.storagetek.VOPmain.CustomerVOPMain -b ngdtape02 &
```

VOP Screen

The following figure shows the VOP main screen and its various areas.

FIGURE 2-3 VOP Screen



T103_428

Figure Reference Meaning

- | | |
|---|---|
| 1 | Menu bar, including the tape drive's IP address or node name. |
| 2 | Status indicator buttons* |
| 3 | Primary front panel screen |
| 4 | Alternate front panel screen |
| 5 | VOP main display screen |
| 6 | Display of a standard label of a data cartridge |

Note: The primary and alternate front panel screens are the messages that would be displayed on a tape drive with a front panel. On the front panel, these two messages would alternate. On the VOP they are displayed side by side.

* The status button at the bottom of this set only shows when the tape drive is in encryption mode. For the various labels and meanings of this additional button, see the document Crypto Key Management Station Key Management System User's Guide PN 96262.

VOP Indicators

The buttons (at the top and slightly to the right of center of the VOP screen) indicate Loaded, On-line, Clean, and Dump (top to bottom). The following table defines the color meanings of these buttons.

TABLE 2-1 VOP Button Colors Defined

Button Color	Button	Meaning
Black	All	There is no connection to this tape drive
Sun Blue	Loaded and On-line	Indicates that the condition is true
Grey	All	Indicates that the condition is not true
Orange	Dump, Status (encryption)*, and Clean	Indicates there is a problem - either the drive needs to be cleaned (the Clean button is orange) or there is a service problem (the Dump button is orange)
Magenta	On-line and Off-line	Indicates that the drive is in transition from online to offline, or from offline to online
Sun Blue	Heart	Alternates between Sun blue and grey at the rate of one color change per second. This indicates the connection to the drive is active.

* The status button at the bottom of the VOP buttons only shows when the tape drive is in encryption mode. For its various labels, colors, and meanings see the document Crypto Key Management Station Key Management System User's Guide PN 96262.

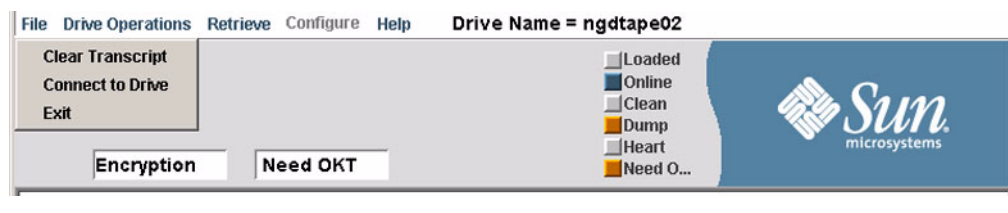
Menu Selections

This section discusses the drop-down menus and the options under each menu.

File

The following figure shows the drop-down options under **File**.

FIGURE 2-4 File Options



The meaning of these items is explained in the following sections.

Clear Transcript

This function clears the text on the lower part of the VOP screen. You could consider it to be a clear screen command.

Connect to Drive

This function is used to establish a connection to a drive. Choosing this function will result in the dialogue box of [FIGURE 2-2](#). Once the IP address is entered, the VOP will attempt to establish a connection to the desired tape drive.

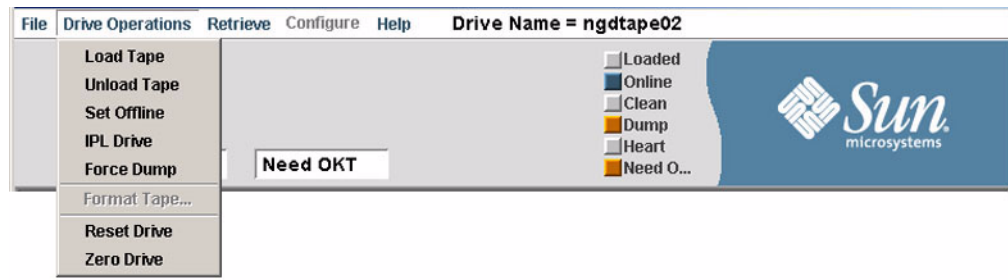
Exit

This function quits the VOP.

Drive Operations

The following figure shows the drop-down options under **Drive Operations**. However, the functions for making a tape of any sort and rebuilding the media information region (MIR) are not available in the online state. These only become usable when the drive is offline as shown in the following figure.

FIGURE 2-5 Drive Operation Options



The meaning of these items is explained in the following sections.

Load Tape

This function causes a cartridge in the input tray to load.

Unload Tape

This function causes a loaded cartridge to rewind and unload.

Set Online or Set Offline

- When the tape drive is online, this function reads **Set Offline**. Clicking on **Set Offline** will cause the tape drive to go offline.
- When the tape drive is offline, this function reads **Set Online**. Clicking on **Set Online** will cause the tape drive to go online.

IPL Drive

This function will cause the tape drive to perform an initial program load (IPL). Communication with the drive by way of the VOP will be lost.

Force Dump

This function will force a dump. This dump will be stored in the tape drives internal memory and the Dump light will change from grey to red.

Format Tape

This function has a submenu as shown in the following figure.

FIGURE 2-6 Format Tape Submenu



The buttons of the bottom of the Format Tape submenu have the following functions:

- **Make** This begins the current operation.
- **Abort** This terminates the current operation.
- **Done** This stops the current operation. See the Make functions below. Some will format one cartridge after the other until you click on Done after the last one.

To change the formatting of a tape, do the following:

1. **Select the desired function from the list shown in the previous figure.**
2. **Click Make. You will be prompted to insert the cartridge at that time.**

Note – For the specifics of the Make or Rebuild function you are using, see the headings that follow.

3. **Click Done when you have completed the operation.**
4. **Click Drive Operations > Set Online to return the tape drive to the online state.**

The tape drive is now ready to resume normal operations.

Make Data Tape

To make a data cartridge:



Caution – Data security issue: The make data tape function does not do a data security erase on a tape. If you are doing a quick format on a tape, the old data is still there. It just is not retrievable by ordinary means, but it is still there.

Note – Make sure the data cartridge's write protect switch is set to the **Unlocked** position.

1. Click **Drive Operations > Set Offline.**
2. Click **Drive Operations > Format Tape... > Make Data Tape.**

Note – This function can be aborted after it has started by clicking **Abort** on the **Format Tape** submenu.

3. **Remove any data cartridge currently loaded in the tape drive (beginning this operation will unload any cartridge currently loaded).**
4. **Follow the VOP screen prompts and load the standard data cartridge that you want either logically erased or load a new data cartridge.**

Note – A successful data cartridge build will result in the tape drive automatically unloading the data cartridge.

Note – If an attempt to make a data cartridge fails:

- The message part of the VOP screen will contain a failed message and an FSC.
 - The tape drive will NOT automatically eject the data cartridge.
-



Caution – Tape damage: Any resistance to removing the data cartridge, beyond the usual friction between the data cartridge case and the tape drive, probably indicates that the leader is not fully rewound.

If you believe the leader is not fully rewound, attempt another load operation (click **Drive Operations > Load**) followed by another unload operation (click **Drive Operations > Unload**). If a load and unload operation fails to correct the situation, contact a service representative about a possible stuck data cartridge. **Do not forcibly remove a data cartridge.** Attempt another build of the data cartridge before deciding that the data cartridge is defective. Click **Drive Operations > Unload** and after the data cartridge unloads, gently push it back into the tape drive until it lowers onto the hub assembly to reload it.

5. **When prompted, remove the data cartridge.**
6. **If the cartridge you unloaded was the last or only cartridge you needed to format, continue on to the next step. If there are other cartridges to format, return to [Step 4](#).**
7. **Click Done on the Format Tape submenu.**
8. **Click Drive Operations > Set Online.**

This completes the process of creating data cartridges and returns the tape drive to an online state.

Make Code Tape

This function transfers the current microcode of a tape drive onto a cartridge. You will need either a dump cartridge or a data cartridge before beginning this function.

This function will cause the tape drive to unload any cartridge loaded when this function is selected.

To make a code cartridge:

1. **Make sure the cartridge's write protect switch is set to the Unlocked position.**
2. **Click Drive Operations > Set Offline.**
3. **Click Drive Operations > Format Tape... > Make Code Tape.**

Note – This function can be aborted after it has started by clicking Abort on the Format Tape submenu.

4. **Remove any cartridge currently in the tape drive.**
5. **Follow the VOP screen prompts and load the dump cartridge on which you want to load the tape drive's code.**

Note – A successful code cartridge build will result in the tape drive automatically unloading the cartridge.

Note – If an attempt to make a code cartridge fails:
The message part of the VOP screen will contain a failed message and an FSC.
The tape drive will NOT automatically eject the cartridge.



Caution – Tape damage: Any resistance to removing the cartridge, beyond the usual friction between the cartridge case and the tape drive, probably indicates that the leader is not fully rewound.

If you believe the leader is not fully rewound, attempt another load operation (click **Drive Operations > Load**) followed by another unload operation (click **Drive Operations > Unload**). **Do not forcibly remove a cartridge.**

6. **When prompted, remove the cartridge.**
7. **Click Done on the Format Tape submenu.**
8. **Click Drive Operations > Set Online.**

This completes the process of creating code cartridges and returns the tape drive to an online state.

Make Dump Tape

This function reformats a stock cartridge or code cartridge into a special dump cartridge. This dump cartridge is used for some diagnostic functions and moving log files (dumps) from the tape drive onto this cartridge.

A dump is only of use to Sun disk engineering or tier 3 support. It is a large data file that contains information about the contents of various registers in the tape drive's microprocessor, sensor conditions, and other statistical information relating to the

condition of the tape drive at the time an error occurred that resulted in the tape drive creating the dump. This dump cannot be analyzed by a custom or a service representative at the customer's site.

Note – The procedure for getting a dump cartridge into and out of a tape drive inside a library is beyond the scope of this book. That procedure is usually site specific.

Note – Make sure the cartridge's write protect switch is in the **Unlocked** position.

Dump cartridges are created from data cartridges or code cartridges by:

1. **The tape drive must be in an offline state. If the display shows Online, click Drive Operations > Set Offline. This sets the tape drive to the Offline state.**
2. **Click Drive Operations> Format Tape... > Make Dump Tape.**

Note – This function can be aborted after it has started by clicking Abort on the Format Tape submenu.

3. **Follow the VOP screen prompts and directions.**

Note – A successful dump cartridge build will result in the tape drive automatically unloading the cartridge.

Note – If an attempt to make a dump cartridge fails:

- The message part of the VOP screen will contain a failed message and an FSC.
 - The tape drive will NOT automatically eject the cartridge.
-



Caution – Tape damage: Any resistance to removing the cartridge, beyond the usual friction between the cartridge case and the tape drive, probably indicates that the leader is not fully rewound.

If you believe the leader is not fully rewound, attempt another load operation (click **Drive Operations > Load**) followed by another unload operation (click **Drive Operations > Unload**). If a load and unload operation fails to correct the situation, contact a service representative about a possible stuck cartridge. **Do not forcibly remove a cartridge.** Attempt another build of the dump cartridge before deciding that the cartridge is defective. Click **Drive Operations > Unload** and after the cartridge unloads, gently push it back into the tape drive until it lowers onto the hub assembly to reload it.

4. **When all cartridges that you wish to convert to dump cartridges have been converted, click Done on the Format Tape submenu.**
5. **Drive Operations > Set Online.**

This completes the building of one or more dump cartridges. The tape drive is now back online and ready for normal operations.

Rebuild MIR

This function is used when the media information region (MIR) of tape on an existing data cartridge has been damaged or is otherwise unusable. Choosing this function will cause the tape drive to rewrite the MIR on the tape of the loaded data cartridge. Because the entire written part of the tape must be read, this takes time. This function can be aborted after it has started with the abort button at the top of the screen.

To rebuild the MIR from the VOP:

Note – This can be a lengthy process, especially on a fully utilized cartridge.

1. **The tape drive must be in an offline state. If the display shows Online, click Drive Operations > Set Offline. This sets the tape drive to the Offline state.**
2. **Click Drive Operations > Format Tape... > Rebuild MIR.**

Note – This function can be aborted after it has started by clicking Abort on the Format Tape submenu.

3. **Follow the on-screen prompts and directions.**

Note – If more than one tape has a defective MIR, the next cartridge is loaded into the tape drive when the VOP screen displays the prompt to load a customer cartridge. This process continues until all defective MIRs have been rebuilt.

Note – A successful MIR rebuild will result in the tape drive automatically unloading the cartridge.

If an MIR rebuild fails:

- The message part of the VOP screen will contain a failed message and an FSC.
- The tape drive will NOT automatically eject the cartridge.



Caution – Tape damage: Any resistance to removing the cartridge, beyond the usual friction between the cartridge case and the tape drive, probably indicates that the leader is not fully rewound.

If you believe the leader is not fully rewound, attempt another load operation (click **Drive Operations > Load Tape**) followed by another unload operation (click **Drive Operations > Unload Tape**). If a load and unload operation fails to correct the situation, contact a service representative about a possible stuck cartridge. **Do not forcibly remove a cartridge.**

- Attempt another rebuild of the MIR before deciding that the MIR part of the tape in that cartridge is defective. Click **Drive Operations > Unload Tape** and after the cartridge unloads, gently push it back into the tape drive until it lowers onto the hub assembly to reload it.
4. **When all cartridges with defective MIRs have been repaired, click the Done button on the format selection submenu.**
 5. **Drive Operations > Set Online.**

This completes the rebuild of the MIR on one or more cartridges. The tape drive is now back online and ready for normal operations.

Note – The next two items, Reset Drive and Zero Drive do not appear on the menu for tape drives that do not have the encryption feature enabled.

Reset Drive

This option is used on encryption drives to remove all media keys and device keys from the drive. The drive will be inoperable until both are reloaded.

Zero Drive

This function destroys the tape drive. It meets the FIPS requirement that allows you to destroy the drive. There is a dialogue box that appears to confirm your decision to destroy the drive before this function is executed.

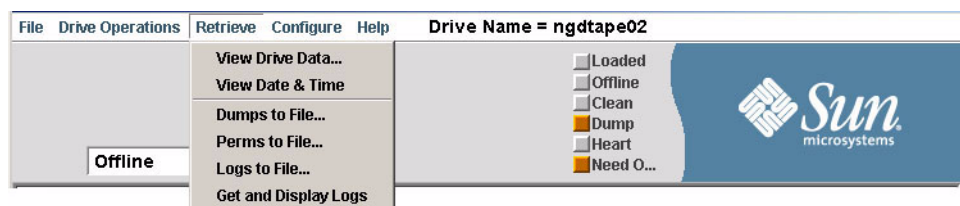


Caution – This function deletes all the keys including the internal enabling key and *it renders the drive useless*. All you can do after executing this function is send it back to Sun and have it rebuilt.

Retrieve

The following figure shows the options available under Retrieve.

FIGURE 2-7 Retrieve Options



The meaning of these items is explained in the following sections.

View Drive Data

Clicking **View Drive Data** presents the five tabs:

- Encryption ([FIGURE 2-8](#))
- Fibre ([FIGURE 2-9](#))
- Manufacturing ([FIGURE 2-11](#))

- Network (FIGURE 2-12)
- Radio Frequency Identification (RFID) (FIGURE 2-13)
- Version (FIGURE 2-14)

These are information only displays. As shown in the following figures, The display varies slightly depending on the interface setting (Fibre or FICON).

Note – The Encrypt tab only shows on drives that have the encryption option enabled.

FIGURE 2-8 Retrieve > Drive Data > Encrypt (encryption)



FIGURE 2-9 Retrieve > Drive Data > Fibre Tab (Set to Fibre)

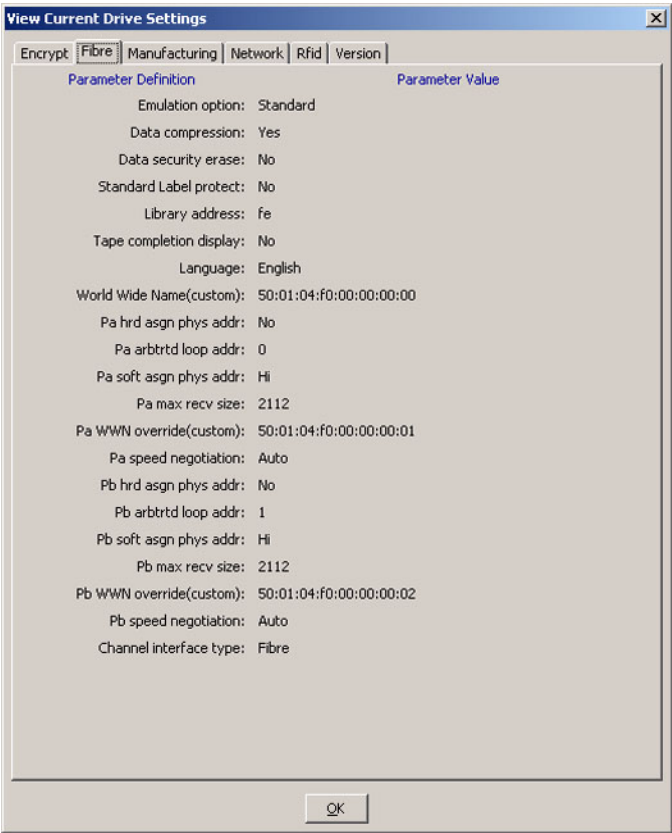


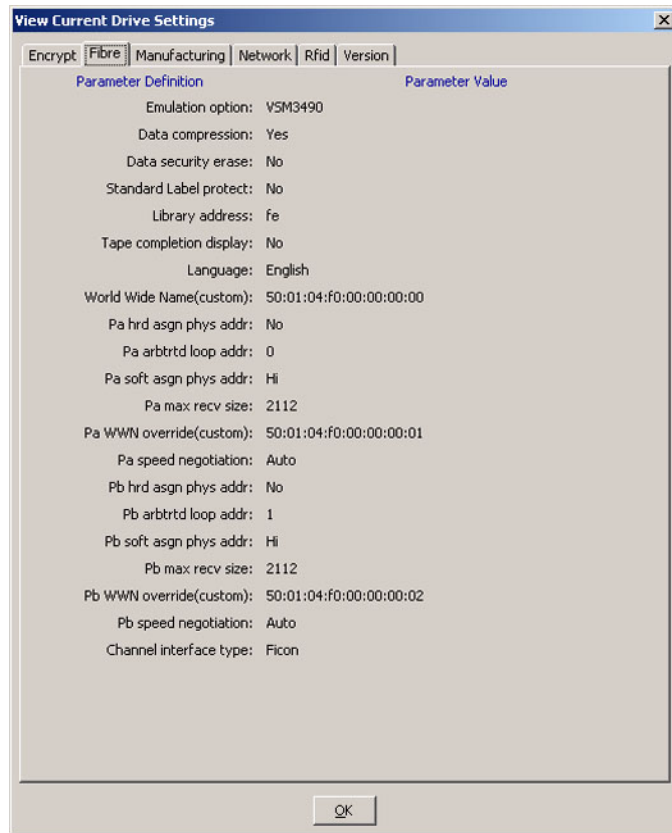
FIGURE 2-10 Retrieve > Drive Data > Fibre Tab (Set to FICON)

FIGURE 2-11 Retrieve > Drive Configuration > Manufacturing Tab



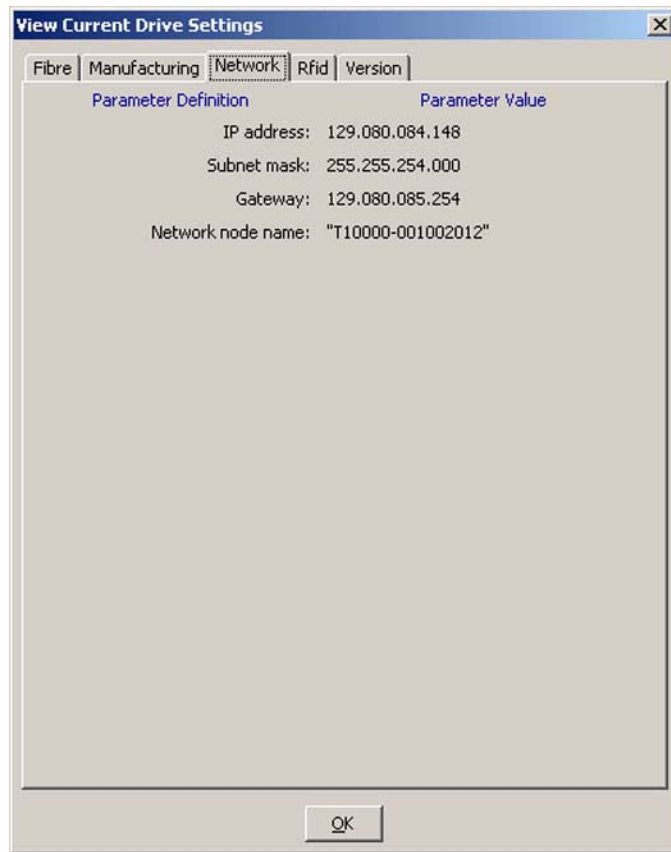
FIGURE 2-12 Retrieve > Drive Configuration > Network Tab

FIGURE 2-13 Retrieve > Drive Configuration > RFID Tab

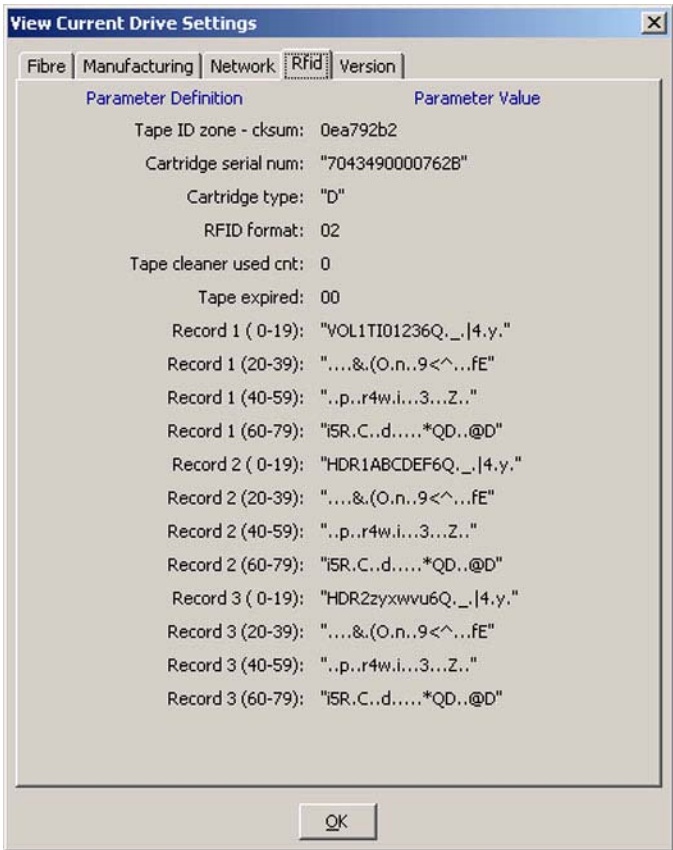
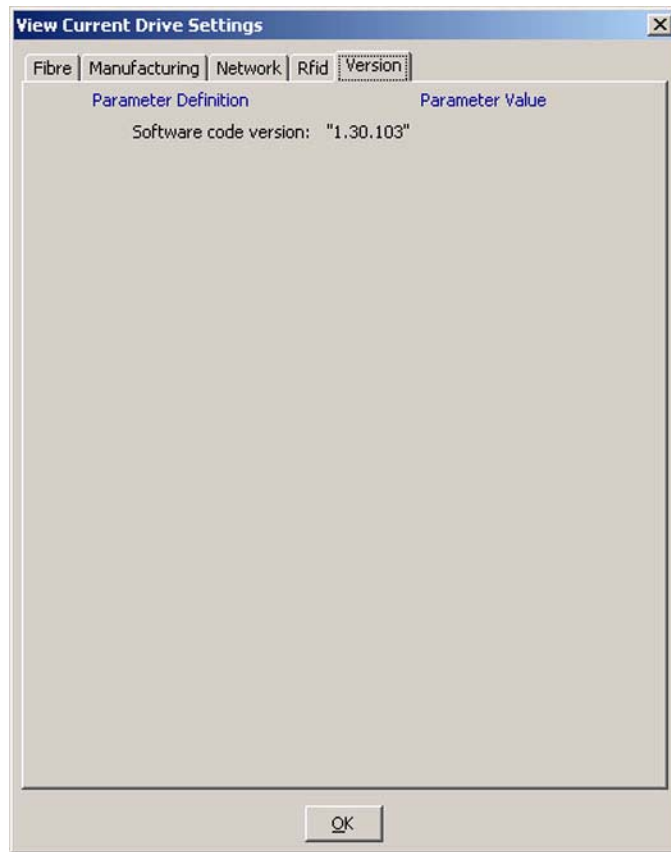


FIGURE 2-14 Retrieve > Drive Configuration > Version Tab

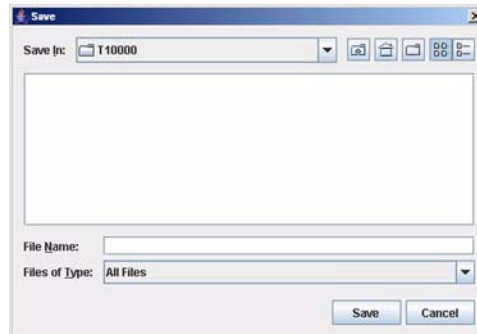
View Date & Time

This function displays the tape drive's date and time in the lower part of the window. See ["Set Clock" on page 63](#) if the time and date are not correct.

Dumps to File

Choosing to copy the dump to a file will create a file and you will need to select a folder on the computer where you want this file placed. The dialogue box for this operation is shown in the following figure.

FIGURE 2-15 Save Dialogue Box



Perms to File

This is a text file list of all the permanent errors taken by the drive. Choosing to copy this file to the computer uses the same dialogue box as shown in the previous figure.

Logs to File

Copying the logs to a file uses the same dialogue box as shown in the previous figure.

Get and Display Logs

This function retrieves the event log currently on the tape drive and displays that log file in main VOP viewing area.

Configure

Note – The tape drive must be offline to display the Configure submenu items.

Caution – *Improper settings can render a drive useless*—Only change the settings for a drive if you are sure of what you are doing.

The following figure shows the options available under **Configure**.

FIGURE 2-16 Configuration Options



Note – While viewing the various tabs under Drive Data, if you change any setting and then change your mind and click **Cancel** at the bottom of the window, you will still get the message shown in the following figure. Click **No** to fully cancel that change.

FIGURE 2-17 Changes Pending Dialogue Box



This can be avoided by clicking the check in the box to the right of the item you changed. This check box is in the column labeled Update (see the figure on the next page).

Drive Data

There are two tabs for settings under the **Configure > Drive Data** sub menu.

Configure > Drive Data > Fibre Tab

There are two versions of this tab, depending on the Channel Interface Type setting near the bottom of this tab. One is for the Fibre settings and the other is for the FICON settings.

The **Fibre** tab (and set to **Fibre** as shown near the bottom of the screen) and its setting options are shown in the following figure.

FIGURE 2-18 Configure Drive Data’s Fibre Settings (Fibre Settings)

The screenshot shows a window titled "Configure Drive Parameters" with a close button (X) in the top right corner. Inside the window, there are two tabs: "Fibre" (selected) and "Network". The "Fibre" tab contains a table with three columns: "Parameter Definition", "Parameter Value", and "Update". The table lists various parameters for Fibre configuration, including emulation options, data compression, security, protection, addresses, completion display, language, WWN, and speed negotiation. At the bottom of the window, there are three buttons: "Load Drive Config", "Commit", and "Cancel".

Parameter Definition	Parameter Value	Update
Emulation option:	Standard	<input type="checkbox"/>
Data compression:	<input checked="" type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> Off	<input type="checkbox"/>
Data security erase:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Standard Label protect:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Library address:	fe	<input type="checkbox"/>
Tape completion display:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Language:	English	<input type="checkbox"/>
World Wide Name(custom):	50:01:04:f0:00:00:00:00	<input type="checkbox"/>
Pa hrd asgn phys addr:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Pa arbtrtd loop addr:	0	<input type="checkbox"/>
Pa soft asgn phys addr:	<input checked="" type="radio"/> Hi <input type="radio"/> Lo	<input type="checkbox"/>
Pa max rcv size:	2112	<input type="checkbox"/>
Pa WWN override(custom):	50:01:04:f0:00:00:00:01	<input type="checkbox"/>
Pa speed negotiation:	Auto	<input type="checkbox"/>
Pb hrd asgn phys addr:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Pb arbtrtd loop addr:	1	<input type="checkbox"/>
Pb soft asgn phys addr:	<input checked="" type="radio"/> Hi <input type="radio"/> Lo	<input type="checkbox"/>
Pb max rcv size:	2112	<input type="checkbox"/>
Pb WWN override(custom):	50:01:04:f0:00:00:00:02	<input type="checkbox"/>
Pb speed negotiation:	Auto	<input type="checkbox"/>

Load Drive Config Commit Cancel

The **Fibre** tab (and set to **FICON** as shown near the bottom of the screen) and its setting options are shown in the following figure.

FIGURE 2-19 Configure Drive Data's Fibre Settings (FICON Settings)

Parameter Definition	Parameter Value	Update
Emulation option:	<input checked="" type="radio"/> V5M3490 <input type="radio"/> 3592	<input type="checkbox"/>
Data compression:	<input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> Off	<input type="checkbox"/>
Data security erase:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Standard Label protect:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Library address:	fe	<input type="checkbox"/>
Tape completion display:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Language:	English	<input type="checkbox"/>
World Wide Name(custom):	50:01:04:f0:00:00:00:00	<input type="checkbox"/>
Pa hrd asgn phys addr:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Pa arbtrtd loop addr:	0	<input type="checkbox"/>
Pa soft asgn phys addr:	<input checked="" type="radio"/> Hi <input type="radio"/> Lo	<input type="checkbox"/>
Pa max rcv size:	2112	<input type="checkbox"/>
Pa WWN override(custom):	50:01:04:f0:00:00:00:01	<input type="checkbox"/>
Pa speed negotiation:	Auto	<input type="checkbox"/>
Pb hrd asgn phys addr:	<input checked="" type="radio"/> No <input type="radio"/> Yes	<input type="checkbox"/>
Pb arbtrtd loop addr:	1	<input type="checkbox"/>
Pb soft asgn phys addr:	<input checked="" type="radio"/> Hi <input type="radio"/> Lo	<input type="checkbox"/>
Pb max rcv size:	2112	<input type="checkbox"/>
Pb WWN override(custom):	50:01:04:f0:00:00:00:02	<input type="checkbox"/>
Pb speed negotiation:	Auto	<input type="checkbox"/>

Load Drive Config Commit Cancel

The pull-down and fill-in Parameter Values are explained in the following sections:

Emulation options:The emulations available depend on the Channel Interface selected.

- Fibre Channel options:

TABLE 2-2 Emulation Pull-down Menu Options

Option	Use/Meaning
Standard	T10000 tape drive functionality
9840B*	Emulates a StorageTek T9840B tape drive
9940B	Emulates a StorageTek T9940B tape drive (see note for 9840B))
3592	Emulates an IBM 3592 tape drive
F2483	Emulates a Fujitsu F2483 tape drive

* The use of the 9X40 emulation mode is only recommended for early evaluation when other drivers may not be available. This mode is not recommended for normal operations.

- FICON Channel options:

VSM3490—Used in conjunction with a StorageTek Virtual Storage Manager.

3592—Emulates an IBM 3592 tape drive.

Data Compression:

The Data Compression option controls how the tape drive and host will deal with data compression.

TABLE 2-3 Data Compression Options

Option	Use/Meaning
Yes	Data compression is set to On by default on power on/reboot. This may be overridden by the host for a job.
No	Data compression is set to Off by default on power on/reboot. This may be overridden by the host for a job.
Off	Compression is turned Off on power on/reboot and the host cannot override this setting for jobs as is the case then this option is set to Yes or No.

Data Security Erase:

The Full DSE option controls the type of data security erase (DSE) performed.

TABLE 2-4 Data Security Erase Options

Option	Use/Meaning
Yes	This allows for a full data security erase. This is a time-consuming operation.
No	No full DSE; however, the tape drive writes a mark on the tape and prevents access to old data on that tape.

Standard Label Protect

When set to **Yes**, this option prevents a tape from overwriting the tape label with user data in the event that a tape drive performed a rewind or unload/reload of a tape. A tape can be manually unloaded and reloaded through the front panel, VOP, or a Library. If the customer's job is unaware of this, the tape will be mis-positioned when the job resumes.

Criteria:

1. A write is allowed when the first or second block is a tape mark (file mark).
2. A Write is allowed over the first block if it is an 80 byte block and has "VOL1" as the first 4 characters in either ASCII or EBCDIC.
3. A Write is allowed over the second block, if it is an 80 byte block.
4. In all other cases, a write at either block 0 or 1 produces a permanent error reported which is returned to the host.

5. Writes at blocks 2 through the maximum are not checked.

TABLE 2-5 Standard Label Protect Options

Option	Use/Meaning
Yes	Enables standard label protection.
No	Disables standard label protection.

Library Address:

Valid entries are library dependant – *see the library documentation for the library in which the tape drive is being installed*. For libraries that do not use a serial interface, the entry may be left blank or set to FF; this is the drive's library address on the serial interface (sometimes called the tape transport interface of the 9310 library). This is a manual service representative entry.

Tape Completion

This option turns the tape bar on and off.

TABLE 2-6 Pa/Pb hrd asgn phsy addr Options

Option	Use/Meaning
Yes	Enables the tape bar.
No	Disables the tape bar.

Note – This option is not functional for this code release.

Language:

This option sets the language in which most operational text displays (loading, unloading and so on) will be presented.

TABLE 2-7 Language Pull-down Menu Options

Option	Use/Meaning
English	Normally, the language most commonly used in the data center will be selected.
Espanol	
Francais	
Italiano	
Deutsch	

World Wide Name:

The WWN is a 64-bit address used in Fibre Channel. The tape drive comes with a WWN assigned at the factory, but this address can be changed. The following table displays the parenthetical information that displays to the right of the field identifier, indicating where this name originated.

Note – This is the WWN of the *drive*, not to be confused with the WWN of either of the two ports on the drive.

TABLE 2-8 World Wide Name Options

Option	Use/Meaning
Default	This is the factory assigned number
Custom	This is one that a service representative or customer entered
Library	This is one that was assigned by the attached library*

* The library must support dWWN. The 9310 library does not support it while the others do.

Pa (or Pb) hrd asgn phsy addr:

This option is used to enable or disable a hard physical address of the port.

TABLE 2-9 Pa/Pb hrd asgn phsy addr Options

Option	Use/Meaning
Yes	Enables a hard physical address, manually set by the Pa(Pb) hrd asgn phsy addr Option menu item. If the preset hard address is not available at loop initialization, the drive then seeks a soft physical address.
No	Disables a hard physical address and causes the drive to seek a soft physical address assignment at loop initialization. The drive is shipped with No selected.

Pa/Pb arbtrtd loop addr:

This displays the 24-bit Address Identifier (AI) assigned to the port at interface logon. This is in the form of **xyyzz**, where:

In an Arbitrated Loop

xx = domain (bits 23-16)

yy = area (bits 15-08)

zz = PA (bits 07-00)

In a Fabric log on

xx = switch in the fabric

yy = port on the switch

zz = 00 (constant in a fabric)

The following table shows the Arbitrated Loop Physical Address (AL_PA) by address (system) and index (decimal index) for the hard physical address configuration. Valid index entries are 000–125.

TABLE 2-10 Arbitrated Loop Physical Address

PA xx	Index ddd	PA xx	Index ddd	PA xx	Index ddd	PA xx	Index ddd	PA xx	Index ddd
01	125	34	100	63	075	90	050	BC	025
02	124	35	099	65	074	97	049	C3	024
04	123	36	098	66	073	98	048	C5	023
08	122	39	097	67	072	9B	047	C6	022
0F	121	3A	096	69	071	9D	046	C7	021
10	120	3C	095	6A	070	9E	045	C9	020
17	119	43	094	6B	069	9F	044	CA	019
18	118	45	093	6C	068	A3	043	CB	018
1B	117	46	092	6D	067	A5	042	CC	017
1D	116	47	091	6E	066	A6	041	CD	016
1E	115	49	090	71	065	A7	040	CE	015
1F	114	4A	089	72	064	A9	039	D1	014
23	113	4B	088	73	063	AA	038	D2	013
25	112	4C	087	74	062	AB	037	D3	012
26	111	4D	086	75	061	AC	036	D4	011
27	110	4E	085	76	060	AD	035	D5	010
29	109	51	084	79	059	AE	034	D6	009
2A	108	52	083	7A	058	B1	033	D9	008
2B	107	53	082	7C	057	B2	032	DA	007
2C	106	54	081	80	056	B3	031	DC	006
2D	105	55	080	81	055	B4	030	E0	005
2E	104	55	079	82	054	B5	029	E1	004
31	103	59	078	84	053	B6	028	E2	003
32	102	5A	077	88	052	B9	027	E4	002
33	101	5C	076	8F	051	BA	026	E8	001
								EF	000

Pa/Pb soft asgn phsy addr:

This option chooses the order in which the soft physical address is found.

TABLE 2-11 Pa/Pb soft asgn phsy addr Options

Option	Use/Meaning
Hi	The drive seeks a soft PA in an ascending order at loop initialization.
Lo	The drive seeks a soft PA in a descending order at loop initialization.

Note – The tape drive is shipped with Lo selected. The Solaris default FCP-driver behavior requires the config setting “Soft PA LO.”

Pa/Pb Maximum Receive Size:

This is the maximum receive size in kilobytes. This option sets the maximum packet size that the drive can receive from the host.

TABLE 2-12 Maximum Receive Size Options

Option	Use/Meaning
2112	Unless there is a compelling reason to change this, the packet size would normally be set to the highest value.
2048	
1280	
1024	
768	

Note – For *FICON*, this needs to be set to 2048. Other values can cause problems.

For *Fibre Channel*, the factory-shipped setting is 2112 but the other value of 2048 may be selected to accomodate the host processor - the setting needs to match other equipment on the network.

Pa/Pb WWN override

This is an address or name (alias) for port A (or port B).

TABLE 2-13 World Wide Name Override Options

Option	Use/Meaning
Default	This is the factory-assigned number
Custom	This is one that a service representative or customer entered
Library	This is one that was assigned by the attached library. Note: The library must support dWWN. The 9310 library does not support it while the others do.

Pa/Pb Speed Negotiation:

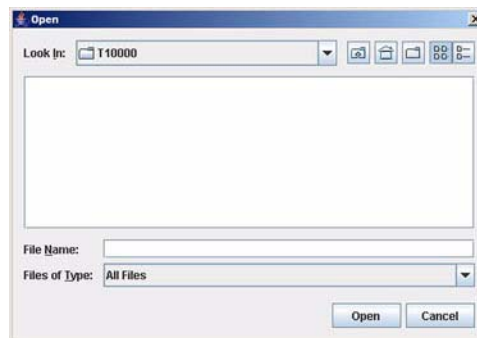
This option sets the transfer speed between the host and the tape drive. These are radio buttons and the choices are 1GB, 2GB and 4GB.

Bottom of the Screen Buttons

The buttons listed here are found on the bottom of the screen for each of the Configure > Drive Data tabs.

- **Load File**—This button allows you to load the options from a saved file on the hard drive, thus allowing you to configure drive after drive with the same configuration (as is usually the case) and only having to configure a few individual items such as its WWN. Clicking on this button brings up the Open dialogue box as seen in the following figure. Navigate to where you have the configuration files saved, click it, and then click **Open**. This action will load the configuration setting from the saved file to the tape drive's PROM. *Do not forget to change the address setting on each drive to its unique settings.*

FIGURE 2-20 Open Dialogue Box



- **Commit**—This button loads the changes you have made to this configuration options page into the drives PROM. Clicking on this button closes this dialogue box.
- **Cancel**—This button aborts any changes you have made since opening this screen and closes this dialogue box.

Configure > Drive Data > Network Tab

The **Network** setting options are shown in the following figure.

FIGURE 2-21 Configure > Drive Data > Network Settings

Parameter Definition	Parameter Value	Update
IP address:	129.080.084.148	<input type="checkbox"/>
Subnet mask:	255.255.254.000	<input type="checkbox"/>
Gateway:	129.080.085.254	<input type="checkbox"/>
Network node name:	T10000-001002012	<input type="checkbox"/>

Buttons: Load Drive Config, Commit, Cancel

The fill-in **Parameter Values** are as follows:

IP Address

Valid entry is a standard IP address assigned by the customer. If DHCP is enabled, it will set this value.

Note – If a DHCP server is being used, the value shown here may not be the value in use by the DHCP server. The value used by the DHCP server is not displayed here—this is the last value manually entered.

Subnet Mask

Valid entry is a standard subnet mask assigned by the customer. If DHCP is enabled, it will set this value.

Note – If a DHCP server is being used, the value shown here may not be the value in use by the DHCP server. The value used by the DHCP server is not displayed here—this is the last value manually entered.

Gateway

Valid entry is a standard gateway address assigned by the customer. If DHCP is enabled, it will set this value.

Note – If a DHCP server is being used, the value shown here may not be the value in use by the DHCP server. The value used by the DHCP server is not displayed here—this is the last value manually entered.

Network Node Name

Valid entries are either an alias name or an IP address assigned by the customer. If DHCP is enabled, it will set this value.

Bottom Screen Buttons

See “Bottom of the Screen Buttons” on page 61.

Save Drive Config

This configuration function saves the current drive settings to a file on the hard drive. Clicking on this menu item brings up the dialogue box as shown in [FIGURE 2-15](#). Navigate to the directory in which you wish to save the configuration file, give it a name, then click **Save**.

Set Clock

This function sets the clock of the tape drive to the time and date that the computer is showing. No messages appear on the screen.

Load Code from Tape

This function loads the operational code for the tape drive from a code cartridge to the internal flash PROM of the tape drive. After the code load is complete and you unload the code cartridge, the tape drive will go through an IPL to load the new microcode.

To load code from a cartridge:

1. Click **Drive Operations> Set Offline**.
2. Click **Configure > Load Code from Tape**.

Note – If there was a cartridge loaded into the tape drive, it will unload at this time.

3. When prompted by the VOP screen, load the code cartridge into the tape drive. The pop-up dialogue box indicates the load progress.

Caution – *Possible code corruption:* Do not disturb the tape drive while the code is loading from the code cartridge.



Note – While the code is loading from the code cartridge, the LED on the rear of the tape drive will be flashing a fast yellow. This is normal. If the LED turns to a fast flashing green, the code load is complete. If the LED turn to a solid color and is not flashing, this indicates an error condition. If an error condition exists on either the LED on the rear of the tape drive or on the front panel display screen of the tape drive, contact a service representative.

Note – A pop-up dialogue box appears that will indicate the progress of the load. No user interaction is required for this dialogue box.

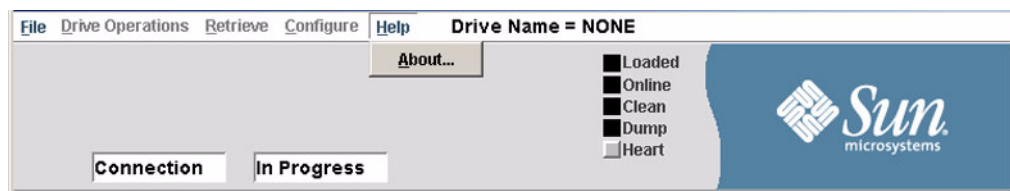
4. When the VOP screen indicates that the code load is complete, the large white message area of the VOP screen will prompt you to removed the cartridge. Once the cartridge is removed, the drive will IPL and load the new code.

Once the IPL is complete, the tape drive is online and is ready to resume normal operations.

Help

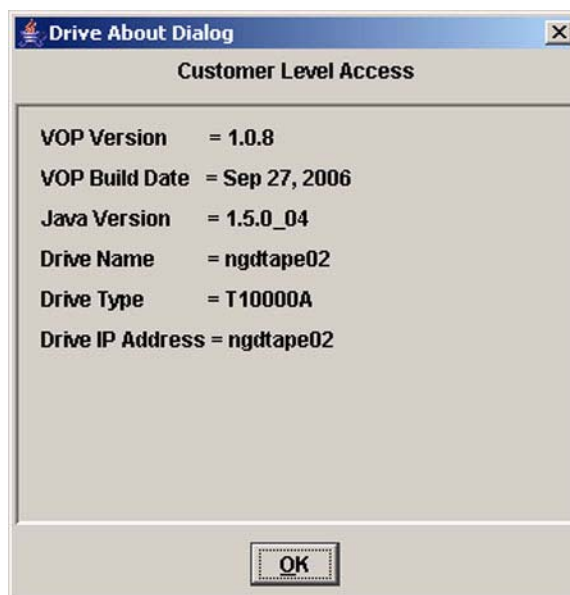
The figure below shows the Help submenu.

TABLE 2-14 Help Submenu



Clicking on the **About** menu item displays the following dialogue box.

FIGURE 2-22 About Dialogue Box



Note – The actual content of the previous dialogue box will depend on the software release level.

Click **OK** or the X box in the upper right corner to exit this dialogue box.

Computer Path Additions for Windows 2000 and XP

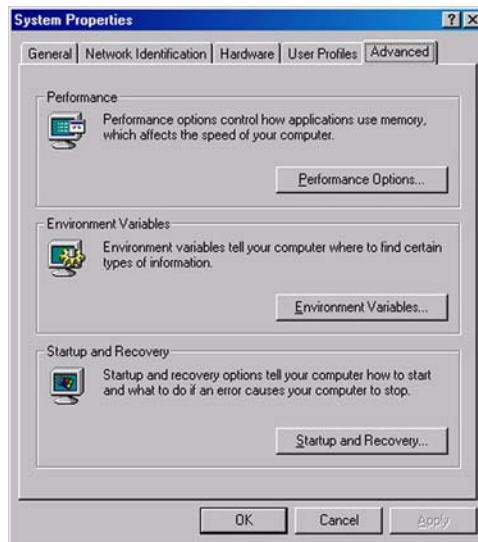
These directions are for adding the path for java\j2re1.4.2_05\bin and VOP\bin in the system environmental file. These instructions are for computers running Windows 2000. Windows XP is nearly the same.



Caution – Possible system operation problems: If you have never changed the path string on a personal computer, find someone who has to assist you with this operation. Corruption of the path string may make it difficult to start some programs and may make it impossible for them to operate.

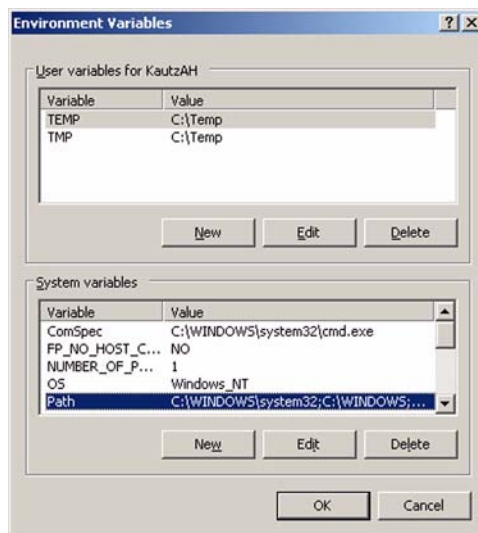
1. Click **Start**.
2. Scroll to **Settings** and find **Control Panel**.
3. Click **Control Panel**.
4. Find the **System** icon and double-click it.
5. Click **Advanced** tab, see [FIGURE A-1 on page 68](#).
6. Click **Environmental Variables** button. (It is in a different part of the screen in Windows XP.)

FIGURE A-1 System Properties (Windows 2000 shown)



7. In the second pane down, titled “System variables,” click the Path item. This dialogue box is shown in the following figure.

FIGURE A-2 Environmental Variables



8. Click Edit.

9. The dialogue box of in the following figure appears. The java, VOP, and VOP\bin folders should be in that path. If they are not, add them to the end.

FIGURE A-3 Edit System Variable



Example of a path add:

The original path *was*:

`C:\Program Files\Adobe;\Windows\Test`

Note – The actual path string will vary from one computer to another and will depend on whether you did an automatic installation of the VOP or put the files in another directory.

With the Java directory added, it would look like this:

`C:\Program Files\Adobe;\Windows\Test;\Program Files\Customer;\Program Files\Customer\bin;\Program Files\Java`

Note – Paths start from the main directory and are separated by a semicolon. The tape drive at the beginning of the line is assumed unless otherwise specified.

10. With the path addition complete, click OK. This will return you to the Environmental Variables dialogue box (see [FIGURE A-2 on page 68](#)).
11. At the bottom of the “Environmental Variables” dialogue box, click OK. This will return you to the System Properties dialogue box (see [FIGURE A-1 on page 68](#)).
12. At the bottom of the System Properties dialogue box, click OK.
13. This completes the search path addition. You need to reboot the computer to have this change take effect.

VOP in Multiple Drive Installations

The following is supplemental and recommended information for library and rack mount T10000 tape drive installations.

The recommended method of connecting the tape drives to a host computer is shown here. It is beyond the scope of this document to explain all the permutations possible by using a dynamic IP addressing, routers, and switches. These instructions also assume that the tape drives and computer will either be in a private network, or the computer will have a separate network interface card (NIC) for connecting to the tape drives. does not recommend connecting the tape drives to a public network. The basics of the setup are shown in [FIGURE B-1 on page 73](#).

This information is also for customers who either chose not to use the Service Delivery Platform (SDP) or whose security concerns will not allow the use of SDP.

- For security reasons, Sun recommends that you put tape drives on a private LAN
- The IP address will be 10.0.0.xxx
- Reserve 10.0.0.1 for the factory default IP address for tape drives
- Reserve 10.0.0.2 for the VOP computer
- Set up the IP addresses:
 - For Libraries, set the IP address of each tape drive to the library numbering scheme for tape drives. Set the node name to tape drive number.

Note – If a drive slot is not populated, simply skip the number or numbers of drive slots that do not contain a tape drive.

- **For rack mount drives**, set the IP address and the node name. To make it easier and faster to identify a failing tape drive later, use a node name that the operators mounting cartridges use to identify this tape drive.

To set each tape drive's initial configuration, do the following:

1. **Label each end of the Ethernet cable per the tape drive number and plug one connector into the switch. Do NOT connect the other end into the tape drive at this time.**
2. **Install all of the tape drives with the Ethernet port NOT connected. Power each one on as they are installed.**
3. **Connect an Ethernet cable from the host computer (the computer on which the VOP is installed) to the Ethernet switch box (see [FIGURE B-1 on page 73](#)).**

Note – See the setup documentation for the switch box you are using. Some switch boxes have the host computer connected to a special port.

4. **Bring up the VOP with 10.0.0.1 as the connection IP address (that is the address set in the tape drive when Sun shipped it).**
5. **Perform the following procedure for each tape until all tape drives have the proper IP address set.**
 - a. Connect the tape drive into the switch with the appropriately numbered Ethernet cable - this is where you plug the Ethernet cable into the tape drive's Ethernet port.
 - b. After the VOP connects to the tape drive, do the following:
 - i. If the T10000 tape drive is not set to Offline (the Online button is grey when it is Offline and blue when it is Online), from the main menu, click **Drive Operations > Set Offline** to set it to Offline.
 - ii. Go to the tape drive's network connections setting by clicking **Configure > Drive Data > Network**.
 - iii. Click in the IP Address fill-in area and enter the IP address.
 - iv. Do the same thing for subnet mask, gateway, and node name.
 - v. Click **Commit** at the bottom of the dialogue box. This saves the settings and will IPL the tape drive.
 - c. Go to next drive by going back to [Step a](#).

Note – The VOP does not have to be restarted. It is still looking to connect to a tape drive with the IP address of 10.0.0.1, which the next unconfigured tape drive will have.

6. **UNIX and Solaris: Run the script `multiVOP`. A tag was put in the `.netrc` file for each T10000 tape drive identified to the make netrc utility. MultiVOP will launch a window for each T10000 tape drive in the `.netrc` file.**

Note – If you add entries to the `.netrc` file *manually*, the multiVOP script will NOT launch a sunVOP for that drive.

FIGURE B-1 Basic Non-SDP VOP Connection Diagram

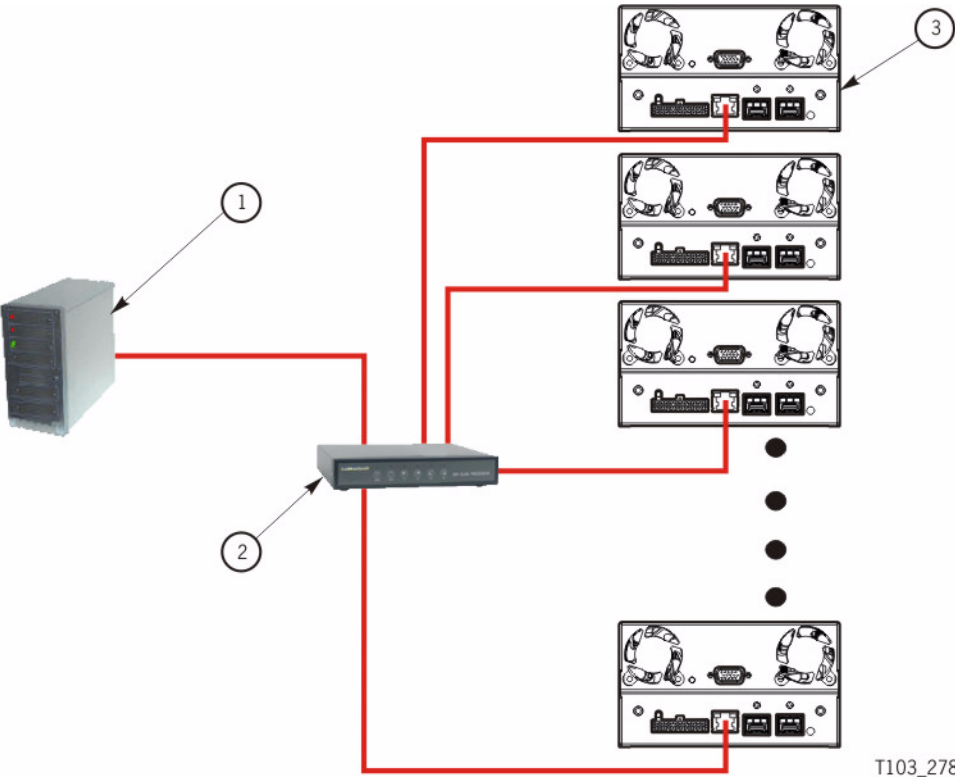


Figure Reference	Description
1	Host computer on which the VOP is installed
2	Ethernet switch box (see manufacture’s documentation for operation, settings, connections, and other requirements)
3	T10000 tape drive

Service Calls

If you have as much of the following information as possible when you place a service call, the process is much easier:

- Account name
- Site location number
- Contact name
- Telephone number
- Equipment model number
- Tape drive address
- Tape drive code level
- Tape drive serial number
- Urgency of the problem
- Fault Symptom Code (FSC) from either the tape drive's front panel display screen (rack mount drives), the VOP display screen, or as is displayed on the host system display screen
- Problem description
- What color and flash rate is exhibited by LED on the rear of the tape drive? (This LED is not visible when the tape drive is installed in some libraries.)
- Is the tape drive in a library? If so, which library?
- If the tape drive was running properly before this incident:
 - What changes has the site made recently?
 - What software application was running at the time of the failure?
 - Were any hardware configuration changes made recently?
 - Were any software configuration or upgrades done recently?
 - Were any additions or deletions to the hardware or software done at the site?
- If the tape drive was NOT running properly before this incident, what was the last problem?

Glossary

This glossary defines terms and abbreviations in this publication.

Some of the definitions are taken from other glossaries. The letters in the parentheses that follow some definitions indicate the source of the definition:

(A) *The American National Standard Dictionary for Information Systems*, ANSI X3.172-1990, copyright 1990 by the American National Standards Institute (ANSI).

(E) The ANSI/Electronic Industries Association (EIA) Standard-440-A, *Fiber Optic Terminology*.

(I) *The Information Technology Vocabulary*, developed by Subcommittee 1, Joint Technical Committee 1, of the International Organization for Standardization and International Electrotechnical Commission (ISO/IEC/JTC1/SC1).

(IBM) *The IBM Dictionary of Computing*, copyright 1994 by IBM.

(T) Draft international standards committee drafts, and working papers being developed by the ISO/IEC/JTC1/SC1.

A

address A character or group of characters that identifies a register, a particular part of storage, or some other data source or destination. (A).

C

capacity Total amount of User Data stored on one data cartridge in 8 bit bytes. *Synonymous with "User Capacity" or "Native Capacity"*. This is the capacity that the user sees after the ECC/Format/ERP etc. overhead has been assessed (no compression).

capacity, raw Total amount of data stored on one data cartridge in 8 bit bytes before any ECC/Format/ERP etc. overhead has been assessed (no compression).

capacity, user Total amount of data stored on one data cartridge in 8 bit bytes that is sent by the host computer. This is the capacity that the user sees after the ECC/Format/ERP etc. overhead has been assessed (no compression).

cartridge	A storage device that consists of magnetic tape on supply and takeup reels, in a protective housing. (IBM)
cleaning cartridge	A data cartridge that contains special material to clean the tape path in a transport or drive.
compress	To save space by eliminating gaps, empty fields, redundancy, or unnecessary data to shorten the length of records or files. (IBM)
configuration	The manner in which the hardware and software of an information processing system is organized and interconnected. (T)
connector	An electrical or optical part that joins two or more other parts.

D

data cartridge	A container holding magnetic tape that can be processed without separating the tape from the container.
data security erase (DSE)	A random binary pattern, over-writing existing data, from the point of an Erase command, to the end-of-tape.
data tape	A data cartridge formatted for use as a regular data tape for the system in which it is used.
data track(s)	The region(s) of recorded tape containing user data formed as discreet longitudinal "tracks" (similar to railroad tracks).
diagnostics	Pertaining to the detection and isolation of errors in programs and faults in equipment. (IBM)
drive	A device for moving magnetic tape and controlling its movement. (IBM)
dump	To copy the contents of all or part of virtual storage to collect error information. (IBM)

E

emulation	The use of programming techniques and special machine features to permit a computing system to execute programs written for another system. (IBM)
EOT	End of Tape.
error	A discrepancy between a computed, observed, or measured value or condition and the true, specified, or theoretically correct value or condition. (I) (A)
ESD	Electrostatic Discharge.

F

fault symptom code

(FSC) A four-character hexadecimal code generated in response to an error to help isolate failures within the device.

FC *See fibre channel.*

fiber optics The branch of optical technology concerned with the transmission of radiant power through fibers made of transparent materials such as glass, fused silica, and plastic. (E)

fiber-optic cable A cable made of ultrathin glass or silica fibers which can transmit data using pulses of laser light. Fiber-optic cables have several advantages over copper cables: they have much less signal loss; they allow information to be transmitted at higher speeds and over longer distances; they are not affected by external electrical noise; and they are better for transmissions which require security.

fibre channel The National Committee for Information Technology Standards standard that defines an ultrahigh-speed, content-independent, multilevel data transmission interface that supports multiple protocols simultaneously. Fibre Channel supports connectivity to millions of devices over copper and/or fiber-optic physical media and provides the best characteristics of both networks and channels over diverse topologies.

fibre connection

(FICON) An ESA/390 and zSeries computer peripheral interface. The I/O interface uses ESA/390 and zSeries FICON protocols (FC-FS and FC-SB-2) over a Fibre Channel serial interface that configures units attached to a FICON-supported Fibre Channel communications fabric.

FICON *See fibre connection (FICON).*

FICON channel A channel having a Fibre Channel connection (FICON) channel-to-control-unit I/O interface that uses optical cables as a transmission medium.

file-protect To prevent the erasure or overwriting of data stored on data cartridges.

FIPS Federal Information Processing Standards

FRU Field Replaceable Unit.

FSC Fault Symptom Code.

FTP Generic definition: File Transfer Protocol.

G

GB *See gigabyte (GB).*

Gb Gigabit, equal to 10^9 bits.

Gbps Gigabits per second.

gigabyte (GB) One billion (10^9) bytes.

H

hardware All or part of the physical components of an information processing system, such as computers or peripheral devices. (T) (A)

hub A Fibre Channel Arbitrated Loop switching device that allows multiple servers and targets, such as storage systems, to connect at a central point. A single hub configuration appears as a single loop.

I

indicator A device that provides a visual or other indication of the existence of a defined state. (T)

interface Hardware, software, or both, that links systems, programs, or devices. (IBM)

internet protocol (IP) A protocol used to route data from its source to its destination in an Internet environment. (IBM)

internet protocol (IP)

address A four-byte value that identifies a device and makes it accessible through a network. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be from 0 to 255. For example, 129.80.145.23 could be an IP address.

IP See *internet protocol (IP)*

L

library A robotic system that stores, moves, mounts, and dismounts data cartridges that are used in data read or write operations.

link A physical connection (electrical or optical) between two nodes of a network.

M

menu A list of options displayed to the user by a data processing system, from which the user can select an action to be initiated. (T)

N

network An arrangement of nodes and branches that connects data processing devices to one another through software and hardware links to facilitate information interchange.

O

offline Neither controlled by, nor communicating with, a computer. (IBM)

online Pertaining to the operation of a functional unit when under the direct control of the computer. (T)

P

performance One of two major factors, together with facility, on which the total productivity of a system depends. Performance is largely determined by a combination of throughput, response time, and availability. (IBM)

R

read/write head The data sensing and recording unit of a diskette magazine drive or tape drive. (IBM)

release A distribution of a new product or new function and fixes for an existing product. (IBM)

R/W Read/Write.

S

SCSI Small Computer Serial Interface.

SDP Service Delivery Platform.

submenu A menu related to and reached from a main menu. (IBM)

sub-system A system that is part of some larger system.

switch In Fibre Channel technology, a device that connects Fibre Channel devices together in a fabric.

system A combination of functionally interrelated interacting mechanical and electrical elements designed to work as a coherent entity.

T

tape drive A device for moving magnetic tape and controlling its movement. (T)

TCP/IP Transmission Control Protocol/Internet Protocol

**transmission control
protocol/internet protocol**

(TCP/IP) A set of communication protocols that support peer-to-peer connectivity functions for both local and wide area networks. (IBM)

V

Virtual Operator Panel

(VOP) A software application that allows a user to monitor and perform some operations on a large number of tape drives remotely.

VOLSER VOLume SERial Number. It is, usually 6 characters long and is both the paper label stuck on the back edge of the cartridge and in the VOLID label that is recorded, particularly by MVS systems, at the beginning of the media.

volume serial number

(VOLSER) An alphanumeric label that the host software uses to identify a volume. It attaches to the spine of a cartridge and is both human- and machine-readable.

VOP See *Virtual Operator Panel (VOP)*.

W

wrap A single pass of tape from either BOT to EOT or EOT to BOT with the head(s) in a fixed transverse location.

write-enabled A setting on a data cartridge that allows data to be written on the tape.

write-protected A setting on data cartridges that prevents data from being written on the tape. Reading data is still possible.

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Sun Microsystems, Inc. 4150 Network Circle, Santa Clara, CA 95054 USA Phone 1-650-960-1300 or 1-800-555-9SUN Web sun.com



ARGENTINA: 5411-4317-5636 • AUSTRALIA: 1-800-550-786 • AUSTRIA: 43-1-601-26-0 • BALKANS: 301-6188-111 • BELGIUM: 32-2-704 89 83 • BRAZIL: 55-11-51872100 • BRUNEI: 65-216-8333 • CANADA: 1-800-422-8020 (GENERAL); 416-964-2001 (LEARNING MANAGEMENT SYSTEM SALES, TORONTO) • CHILE: 562-372-4500 • COLOMBIA: 571-629-2323
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