StorageTek™ Shared Virtual Array (SVA)

V2X/V2X2 Operations and Recovery

Part Number : 96217
Revision N

StorageTek™ Shared Virtual Array (SVA)

V2X/V2X2

Operations and Recovery

We welcome your feedback. Please contact the Sun Learning Solutions Feedback System at:

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Preface

Notices

Please read the following compliance and warning statements for this product.

Caution: Potential equipment damage: Cables that connect peripherals must be shielded and grounded; refer to cable descriptions in the instruction manuals. Operation of this equipment with cables that are not shielded and not correctly grounded might result in interference to radio and TV reception.

Changes or modifications to this equipment that are not expressly approved in advance by Sun Microsystems Inc. will void the warranty. In addition, changes or modifications to this equipment might cause it to create harmful interference.

United States FCC Compliance Statement

The following compliance statement pertains to Federal Communications Commission Rules 47 CFR 15.105:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense.

Agency Compliance Statement

The SVA complies with the following agencies:

UL–Recognized Component by Underwriters Laboratories Inc. to Standard UL 60950, Information Technology Equipment.

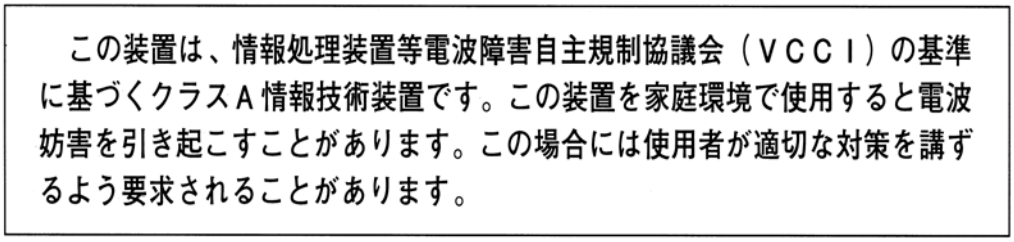
CE–Mark to show compliance to European Union Directives (European Union: Safety & EMC).

CISPR 22 and EN55022 Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Japanese Compliance Statement

The following compliance statement in Japanese pertains to VCCI EMI regulations: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English translation: This is a Class A product based on the Technical Requirement of the Voluntary Control Council for Interference by Information Technology (VCCI). In a domestic environment, this product may cause radio interference, in which case the user may be required to take corrective actions.

Taiwan Warning Label Statement

The following warning label statement (in Kanji) pertains to BSMI regulations in Taiwan, R.O.C.:


警告使用者：這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策

English translation: This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take adequate measures.

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NOTICE

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You, the end user, agree to take all appropriate steps to ensure that all of your obligations set forth in this Notice are extended to any third party having access to the Equipmen

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Alert Messages

Alert messages call your attention to information that is especially important or that has a unique relationship to the main text or graphic.

Note: A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures. A note usually, but not always, follows the information to which it pertains.

Caution: *informs you of conditions that might result in damage to hardware, corruption of data, or corruption of application software. A caution always precedes the information to which it pertains.*

Warning:A warning alerts you to conditions that might result in long-term health problems, injury, or death. A warning always precedes the information to which it pertains.

Mensajes de alerta

Los mensajes de alerta llaman la atención hacia información de especial importancia o que tiene una relación específica con el texto principal o los gráficos.

Nota: Una nota expone información adicional que es de interés especial. Una nota puede señalar excepciones a las normas o procedimientos. Por lo general, aunque no siempre, las notas van después de la información a la que hacen referencia.

Precaución: Una precaución informa sobre situaciones que podrían conllevar daños del hardware, de los datos o del software de aplicación. Las precauciones van siempre antes de la información a la que hacen referencia.

Advertencia: Una advertencia llama la atención sobre condiciones que podrían conllevar problemas de salud crónicos, lesiones o muerte. Las advertencias van siempre antes de la información a la que hacen referencia.

Related Documents

The following publications comprise the SVA document set available to Sun Microsystems Inc. customers.

Shared Virtual Array (SVA) Subsystem

Note: The book part numbers changed. The old numbers are shown in parenthesis.

- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Introduction 96216 (MO9135)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Operation and Recovery 96217 (MO9137)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Planning 96218 (MO9136)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Reference 96219 (MO9139)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 System Assurance 96220 (MO9138)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 System Assurance Tables 96223 (MO9169)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 General Information 96221 (MO9134)*
- *StorageTek Shared Virtual Array (SVA) V2X/V2X2 Peer-to-Peer Copy Configuration User's Guide 96225 (MO9211)*

Shared Virtual Array Administrator (SVAA) for OS/390

- *SVAA for OS/390 Configuration and Administration PN 3112905xx*
- *SVAA for OS/390 Reporting PN 3112906xx*
- *SVAA for OS/390 Installation, Customization, and Maintenance PN 3112908xx*
- *SVA SnapShot for OS/390 Installation, Customization, and Maintenance PN 3112913xx*

Shared Virtual Array Administrator (SVAA) for VM

- *SVAA for VM Configuration and Administration PN 3134629xx*
- *SVAA for VM Reporting PN 3134630xx*

- *SVAA for VM Installation, Customization, and Maintenance PN 3134631xx*

Shared Virtual Array Administrator (SVAA) for OS/390 and VM

- *SVAA for OS/390 and VM Messages and Codes PN 3112907xx*

Shared Virtual Array Administrator (SVAA) for Solaris

- *SVAA for Solaris User's Guide PN 3112909xx*
- *SVAA for Solaris Messages PN 3112910xx*
- *SVAA for Solaris Installation PN 3112911xx*
- *SVAA for Solaris Quick Start Guide PN 3134509xx*
- *SVAA for Solaris Command Quick Reference PN 3134119xx*

Shared Virtual Array Administrator (SVAA) for HP-UX

- *SVAA for HP-UX User's Guide PN 3134257xx*
- *SVAA for HP-UX Messages PN 3134244xx*
- *SVAA for HP-UX Installation PN 3134254xx*
- *SVAA for HP-UX Quick Start Guide PN 3134512xx*
- *SVAA for HP-UX Command Quick Reference PN 3134253xx*

Shared Virtual Array Administrator (SVAA) for AIX

- *SVAA for AIX User's Guide PN 3134602xx*
- *SVAA for AIX Messages PN 3134600xx*
- *SVAA for AIX Installation PN 3134599xx*
- *SVAA for AIX Quick Start Guide PN 3134601xx*
- *SVAA for AIX Command Quick Reference PN 3134598xx*

Shared Virtual Array Administrator (SVAA) for Windows 2000 Server and Windows NT Server

- *SVAA for Windows 2000 Server and Windows NT Server User's Guide PN 3134573xx*
- *SVAA for Windows 2000 Server and Windows NT Server Messages PN 3134571xx*
- *SVAA for Windows 2000 Server and Windows NT Server Installation PN 3134570xx*
- *SVAA for Windows 2000 Server and Windows NT Server Quick Start Guide PN 3134572xx*
- *SVAA for Windows 2000 Server and Windows NT Server Command Quick Reference PN 3134569xx*

Shared Virtual Array Console (SVAC) for Windows NT

- *SVAC for Windows NT Quick Start Guide PN 3112993xx*

Other Documents

- *Peer to Peer Remote Copy Configuration Guide MP4007x*
- *Planning For IBM Remote Copy SG24-2595-xx* (IBM document)

- *Remote Copy Administrator's Guide and Reference SC35-0169-xx* (IBM document)

Viewing and Printing Web-Based Electronic Documents

Publications listed in "Related Documents" can be viewed and printed from the Sun Microsystems Inc. Customer Resource Center (CRC) Web site at:

`http://www.support.storagetek.com`

History of Changes

Rev A – Initial release. September, 2002.

Rev B – Second release. December, 2002

Minor changes involved edits and corrections. Major changes include:

- Added "Low Capacity FSC 3E41 Messages" section to chapter four.

Rev C – Third release. March, 2003. Minor changes involving edits and corrections.

Rev D – Fourth release. March, 2003. Minor changes involving edits and corrections.

Rev E – Fifth release. May, 2003. Minor changes involving edits and corrections.

Rev F – Sixth release. December, 2003. Minor changes involving edits and corrections.

Rev G – Seventh release. April, 2004. Minor changes involving edits and corrections.

Rev H – Eighth release. February, 2005. Minor changes involving edits and corrections

Major changes include:

- Changed document part number
- Changed Danger to Warning

Rev J – Ninth release. December 2005. Minor changes and corrections.

Rev K – Tenth release. May 2006. Minor changes and correstions. Major changes involve:

- Adding the chapter "Detached Operator Panel" on page 25.
- Removed the chapter on system configuration by means of the

local operator panel.

- Add an appendix for the Virtual Initialization Program.

- Added “Dual Fenced Condition” on page 137.

Rev L – Eleventh release. June 2006. Minor changes and edits.

Rev M – Twelfth release. Late July 2006. Minor changes and corrections.

Rev N – Thirteenth release. November 2006. Minor changes and corrections in addition to:

- Removed incorrect PAV information
- Removed incorrect IFC card information
- Added List of Tables and List of Figures pages
- Replaced dual fenced condition recovery procedure.

Power Control Operations

1

Power Control Panel Controls and Indicators

The V2X/V2X2™ has a power control panel recessed into the right front door of the cabinet. The power control panel contains buttons and switches to select power control states and indicators to show the unit's power status. The following figure illustrates the SVA's power control panel. Table 1 on page 25 provides a brief functional description of the controls and indicators found on the power control panel.

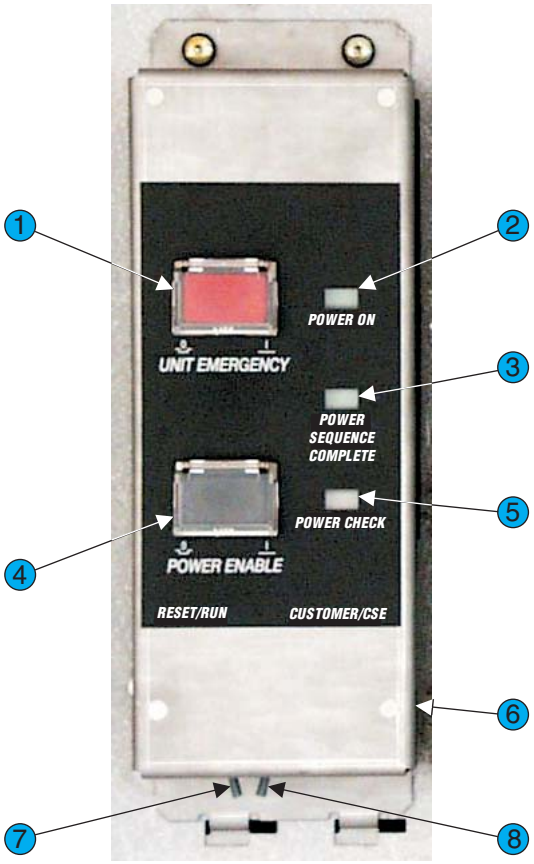

Figure 1 Power Control Panel

Table 1 Power Control Panel

Figure 1 Reference	Switch or Indicator	Function
1	UNIT EMERGENCY Switch (EPO)	Depressing this switch (0 position) instantly disables subsystem power beyond PDUs. Setting switch to the out (1) position allows subsystem power to be enabled when POWER ENABLE switch is pressed. A battery backup system protects nonvolatile cache data (NVS) during EPO.
2	POWER ON Indicator	Lights green if 5V DC is present and within spec at C3 motherboard.
3	POWER SEQUENCE COMPLETE Indicator	Microcode-controlled; lights green after subsystem verifies that all power checks completed error-free during ‘power on’ sequence.
4	POWER ENABLE Switch	Setting switch to OFF (0) initiates a Controlled Power Down (CPD) of subsystem. Setting switch to ON (1) enables subsystem power.
5	POWER CHECK Indicator	Microcode-controlled; lights amber if subsystem power checks do not complete error-free during ‘power on’ sequence.
6	ISP Drive LEDs	Light green when ISP drives are active (visible from the right side).
7	RUN/RESET Switch	Resets subsystem after thermal EPO. Switch is accessible only if front doors of unit are unlocked.
8	CSE/ CUSTOMER Switch	Determines how subsystem power is reset after EPO. Switch is set by service representative at installation and is accessible only if front doors of unit are unlocked.

Standard Power Operations

Turning on an SVA

1. Verify that the red UNIT EMERGENCY button on the power control panel is set to 1 (Out) position.
   - **A UNIT EMERGENCY button is in the 1 position** when the red button stands out from the frame.
   - **A UNIT EMERGENCY button is in the 0 position** when the red button is flush with the frame.

2. If a controlled power down was initiated at the Local Operator Panel, set the POWER ENABLE switch to the 0 (OFF) position and wait a few seconds before continuing.
3. Set the POWER ENABLE button on the Controller's power control panel to 1 (ON). The following sequence takes place:

Note: With the doors closed, some of these items are not noticeable.

- The POWER ON indicator lights on the power control panel and power distribution units.
- All array and controller impellers start spinning.
- After 3 to 5 minutes these conditions start to occur:
  - The local operator panel activates
  - Amber LEDs (present on some FRUs) light up
  - Array drives sequence on; an amber LED lights on each, then goes out as the drive becomes ready; when a drive is ready, its green LED lights
  - The support facility starts the IML/test verification procedure
  - Amber LEDs (present on some FRUs) go off as the FRU is validated
  - After the support facility verifies successful completion of the 'power-on' sequence, the POWER SEQUENCE COMPLETE indicator lights.

Note: IML can take 1 hour or longer, based on cache size and the number of arrays. When IML finishes, the "Subsystem Main Menu (SS01)" screen is displayed. The message 'Full Box IML Complete' is displayed on the upper 'Status' line, then is replaced by the message 'Battery Test Complete'.

4. **Mainframe:** The operator may vary online all channels and functional devices between the subsystem and host system(s).

***Caution: Potential Performance Loss* - The SVA does not support varying a CHPID online during a check0/warm start. The user receives the message "DYNAMIC PATH NOT OPERATIONAL" at the console.**

Open Systems: The operator may now mount all file systems connected to the SVA and start applications as required.

Turning Off an SVA

Before Powering Off

Mainframe:

1. At the host console, vary all of the addresses to the Disk Array Controller offline.
2. At the host console, vary all of the channels to the Disk Array Controller offline.

Open Systems:

1. Close all applications using the SVA.
2. Un-mount all file systems using the SVA.

After doing either mainframe/open systems pre-power down procedures, either use the Power Control Panel or the LOP to turn off the SVA.

Powering Off the SVA with the Power Control Panel

Set the POWER ENABLE button on the SVA's power control panel to 0 (OFF). The Power ON indicator on the SVA's power control panel goes out.

Note: Standard power off does not shut down the subsystem immediately. How long it takes depends on the amount of system activity and quiesce/cleanup needed.

Emergency Power Off Operations

This is also known as an emergency power off, or EPO.

Emergency Power Off

To turn off an SVA Controller in an emergency:

1. Locate the red UNIT EMERGENCY button on the unit's power control panel.
2. Lift the clear plastic guard, and press the UNIT EMERGENCY button. The unit powers down in the fastest possible sequence without compromising data integrity, and the Power On indicator goes out.

Resetting an SVA After an Emergency Power Off

Enabling Power After a Manual EPO

Find the CUSTOMER/CSE switch on the bottom of the power control panel, then:

If the CSE/CUSTOMER switch is set to 'CSE':

- set the CSE/CUSTOMER to 'CUSTOMER',
- then set the UNIT EMERGENCY switch to the 0 (OFF) position,
- Then return the CSE/CUSTOMER switch to the 'CUSTOMER', position,

- now initiate a normal power on sequence if that's desired at this time.

If the CSE/CUSTOMER switch is set to 'CUSTOMER':

- leave the CSE/CUSTOMER switch in the CUSTOMER position,
- set the UNIT EMERGENCY switch to the 0 (OFF) position,
- now initiate a normal power on sequence if that's desired at this time.

Enabling Power After a Thermal EPO

A serious condition must be assumed to exist within the SVA. Contact your Sun Microsystems service representative to have that situation fixed before any attempt is made to reset the power.

The Dual Fenced Condition

If one of the drives for the SVA's internal processor cards is "fenced" or otherwise unusable and the usable drive is in the middle of a write operation and there is a complete loss of power to the SVA or the EPO button is pressed, it renders the last usable drive as "fenced." When power is restored, the V2X/V2X2 finds no usable drives from which to IML.

Note: These drives are not used for customer data. Customer data is not impacted by this condition.

Creating The Dual Fenced Condition

This dual "fenced" condition is easily created by using the EPO button to shut down the SVA during an IML. **the SVA writes to the HD cards during an IML**. Using the EPO button once during an IML could "fence" the first drive. Using the EPO button a second time, before the reconstruction of the first fenced drive is complete, could fence the second drive. Repeated customer power outages could create the same conditions.

During a normal power down, the SVA finishes all write activity to the hard drives before finally shutting down power, thus avoiding this condition. It is only the sudden loss of power or the use of the EPO button that creates the conditions required to "fence" the drive(s).

Indications

This dual "fenced" condition is indicated at power on by the power up sequence stopping without the Power Complete LED illuminating and the LOP remaining blank.

Recovery

Recovery from the “dual fenced condition” is done with the VIP. Follow this procedure to correct the problem:

1. Reboot the SVA in VIP mode: this is done by holding the switch on the Faceplate Assembly in the **VIP** position, then pressing the power button.
2. Once VIP starts, there is a warning message superimposed over the main VIP screen indicating that there is a problem with a volume. This warning is shown in the following figure. Click on the **Ok** button.

Figure 2 VIP Dual Fenced Condition Warning

3. The Volume Verification Menu (shown in the following figure) displays.

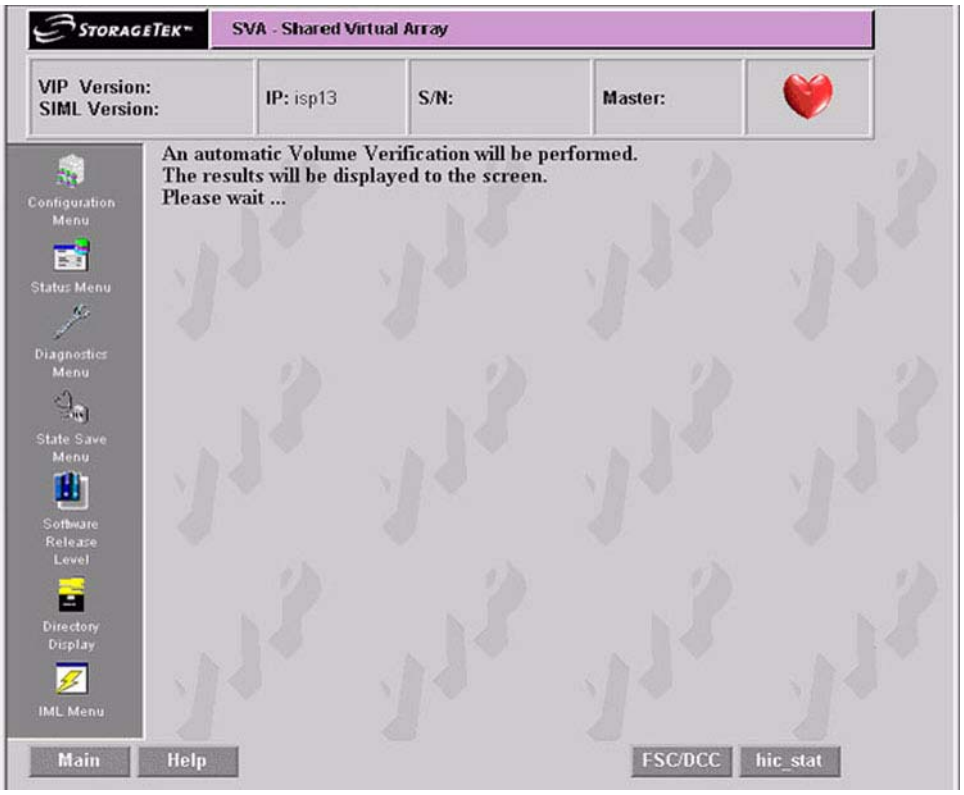

Figure 3 Volume Verification Menu

4. The volume verification starts as shown in the previous figure. Once it is complete, it looks like the screen of the following figure. *Examine that screen carefully*. It either indicates no faults were found, or if there was a problem:
   - the text of changes from “No faults were found” to one indicating a fault was found and fixed, or
   - the text displays an indication that some non-fixable faults found.

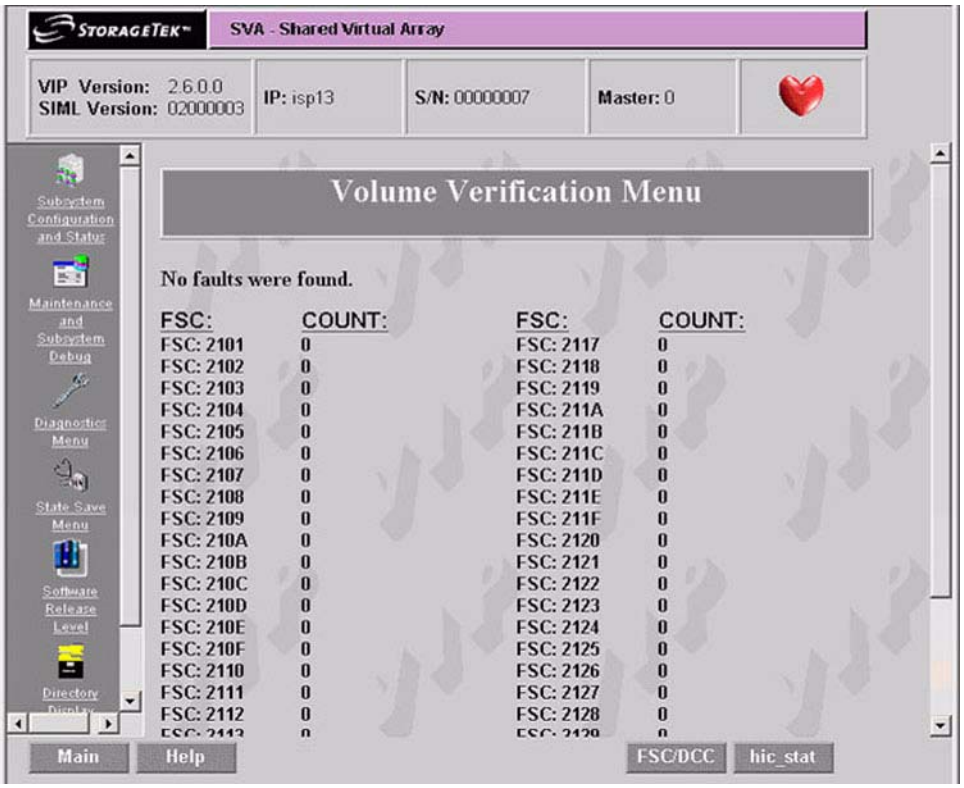

Figure 4 Volume Verification Menu with no faults found screen

5. After the previous figure (screen) appears:

- **If no faults were found**, you may continue with normal operation – the subsystem may be IMLed in production mode.
- **If fixable faults were found**, (they were fixed automatically) the you may continue with normal operation – the subsystem would be IMLed in production mode (check to see if the subsystem fenced any drives after the IML completes).
- **If non-fixable faults were found**, ***you need to perform a system initialization***.

Caution: Possible Performance Problem and Data Loss - **If non-fixable faults were found, a service representative should be called to assist with restoring the system correctly.** ***This is not a minor problem!***

Detached Operator Panel

2

Configuring and examining the current condition of an V2X/V2X2 requires a PC with the required software loaded.

Connecting to the SVA

The following figure displays the connection screen. Enter the IP address of the SVA to which you wish to connect, or its subsystem name, then click on the “Connect” button.

Figure 5 Connection Screen

If the connection was successful, you are taken to the Main Menu and Logon Screen. This screen is shown in the following figure. Either choose a menu item or log onto the SVA for more options.

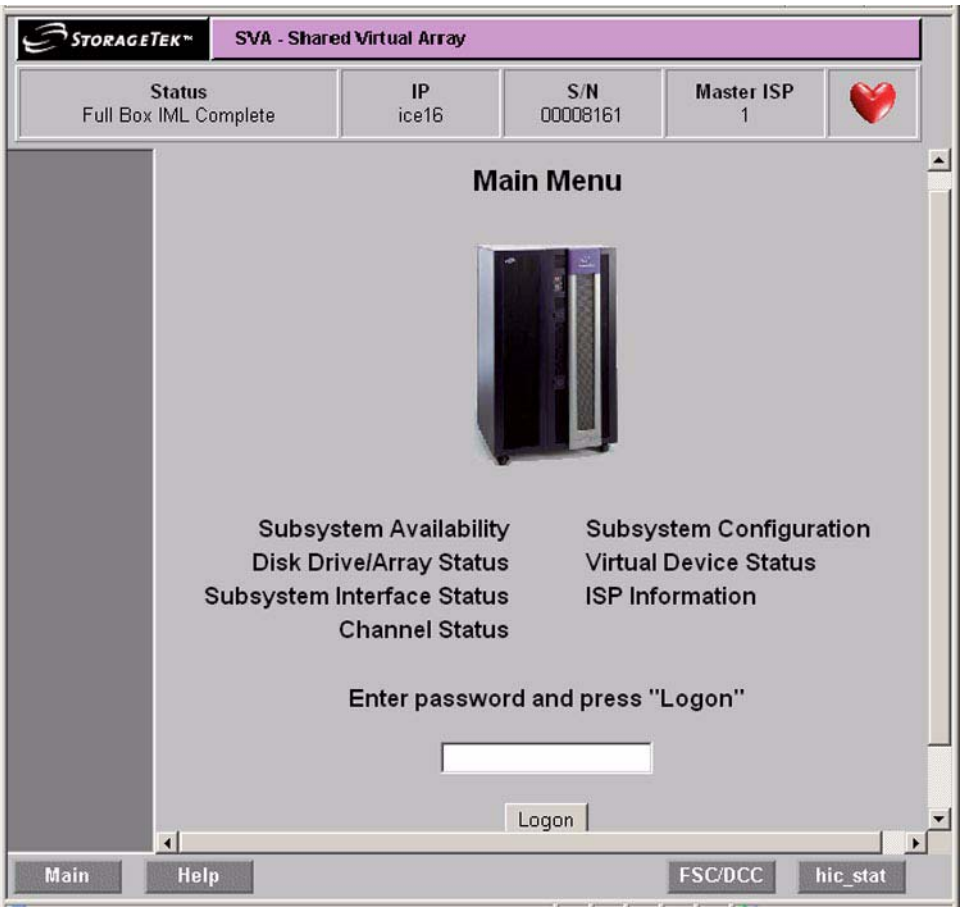

Figure 6 Main Menu and Logon Screen

If you choose to log onto the SVA, enter your password and click on the “Logon” button.

Note: Only one PC can be logged onto the SVA at a time. If a second PC attempts to log onto the SVA, a logon override message appears. See Figure 7 on page 35. If you re-enter the password, you are removing the other PC’s access. There is a provision on that screen to enter an explanation in the event that you bumped someone off of the SVA and they tried to connect again while you were still logged into the SVA. When you log out, this explanation is removed.

Figure 7 Password Override Screen

The following figure is the Customer Main Menu screen. You will see this once you have logged into the SVA. Those items in grey type face are reserved for the service representative and are not accessable with the customer login password.

Figure 8 Customer Main Menu (Logged In)

Current Configuration and Status

If you clicked on **Configuration** in the preceeding screen, you are presented with another screen, the Confuration and Status Menu screen as shown in the following figure.

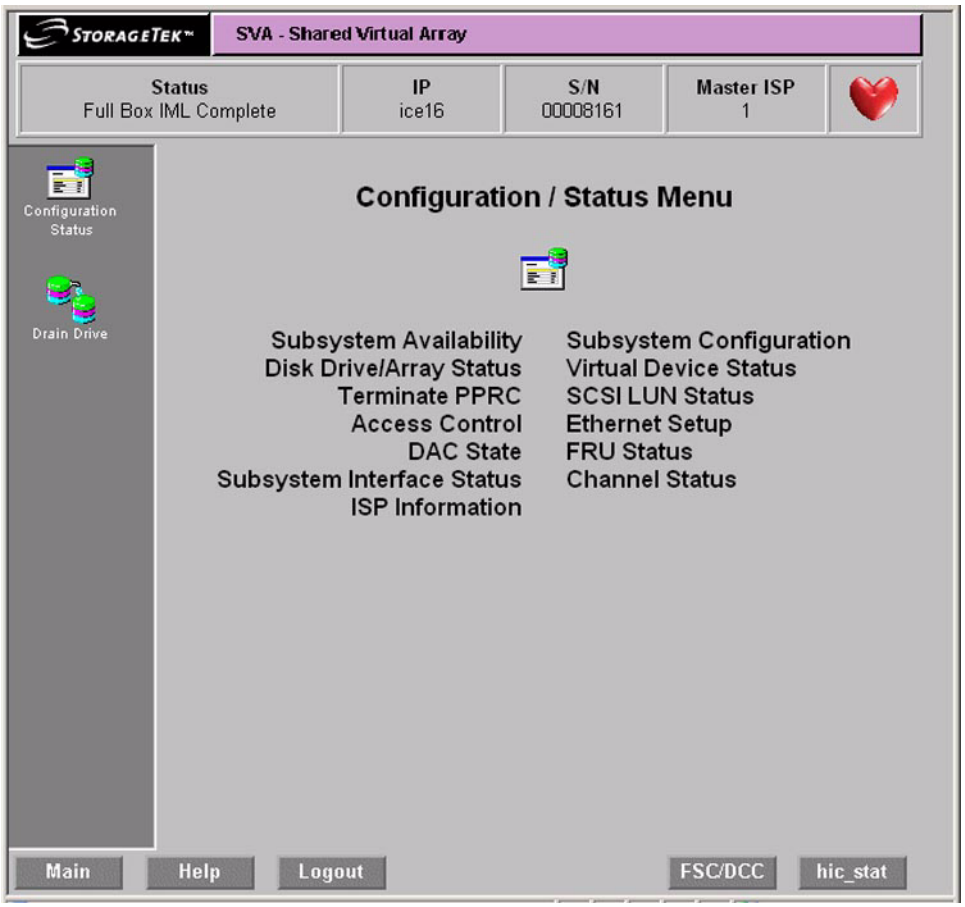

Figure 9 Configuration / Status Menu Screen

To view the SVA's current configuration, click **Subsystem Configuration**. This presents the Subsystem Configuration and Status screen as shown in the following screen.

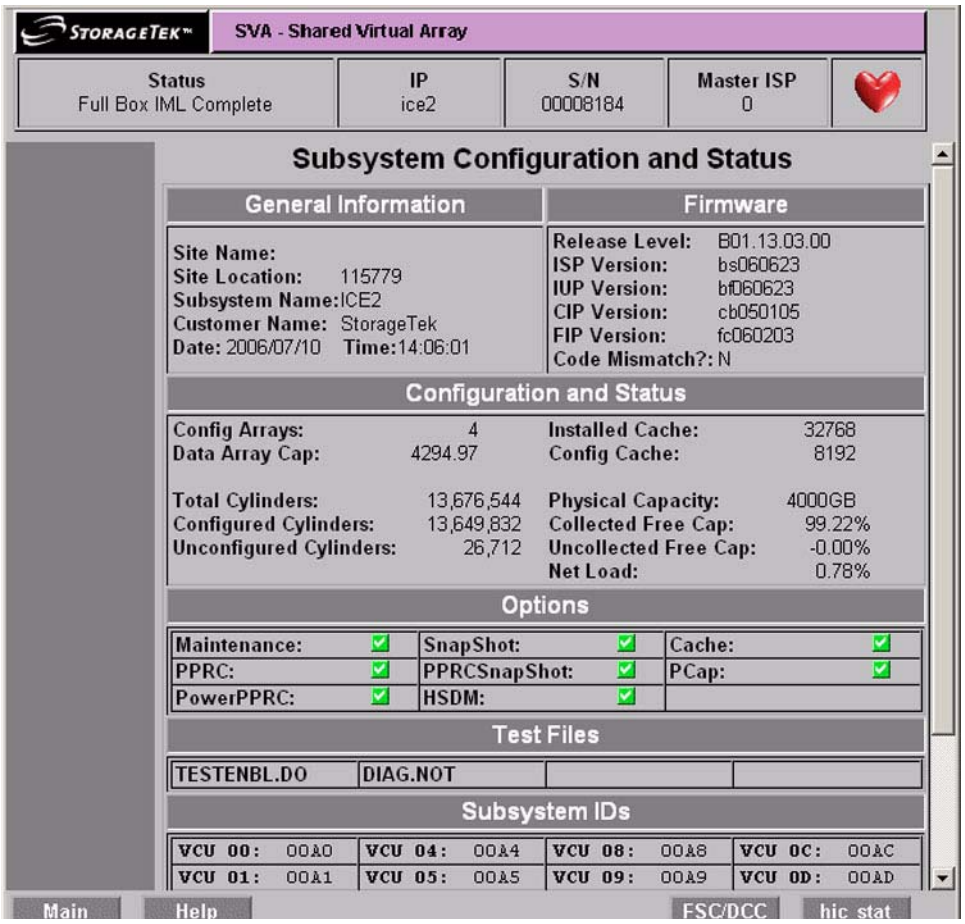

Figure 10 Subsystem Configuration and Status Screen

The only items you can change on this screen are date and time. For all other changes, consult your service representative.

In the preceeding figure in the options section, the green boxes with a white check mark are installed or enabled items. A red box with a white X in the center of it is used to indicate items that are not installed or not enabled.

To change the date or time shown in the preceeding figure, click on the blue date or time. This brings up the screen shown in the following figure.

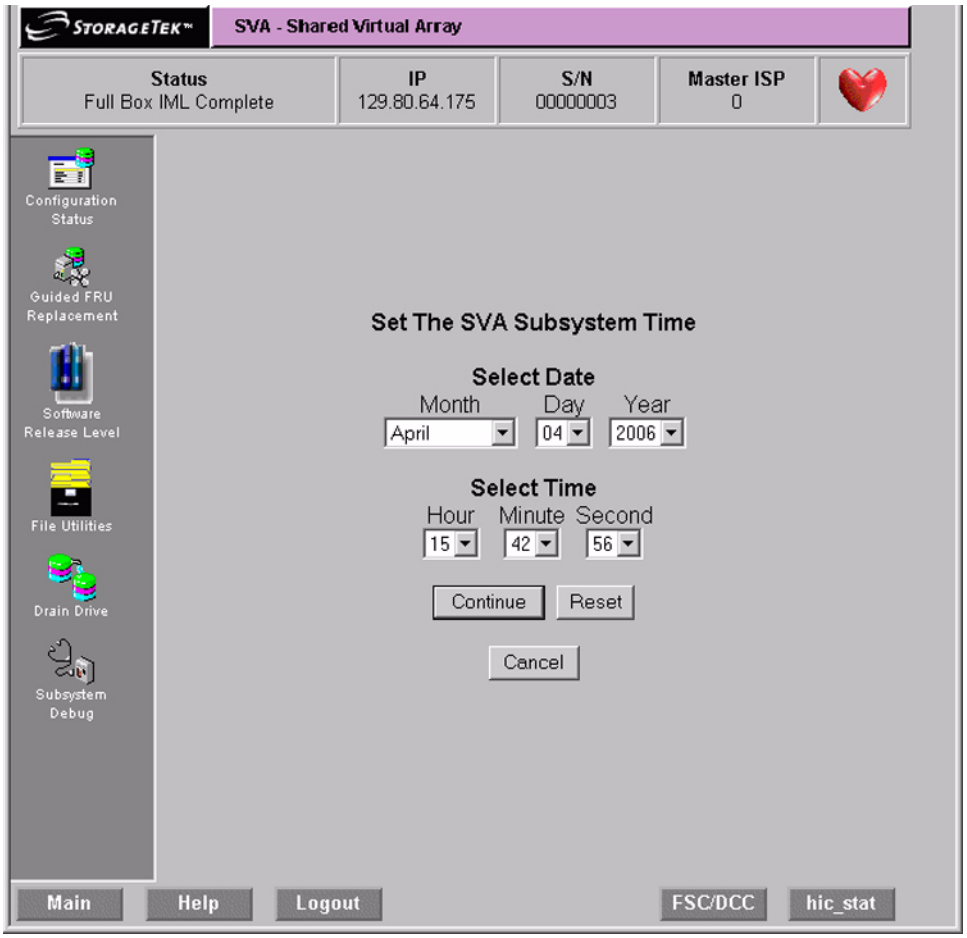

Figure 11 Set Date and Time Screen

Draining Drives or Arrays

In Figure 8 on page 36, if you click on the Drain Drive selection, you are presented with the following figure shown (the upper half of the screen) and Figure 13 on page 41 (the lower half of that screen).

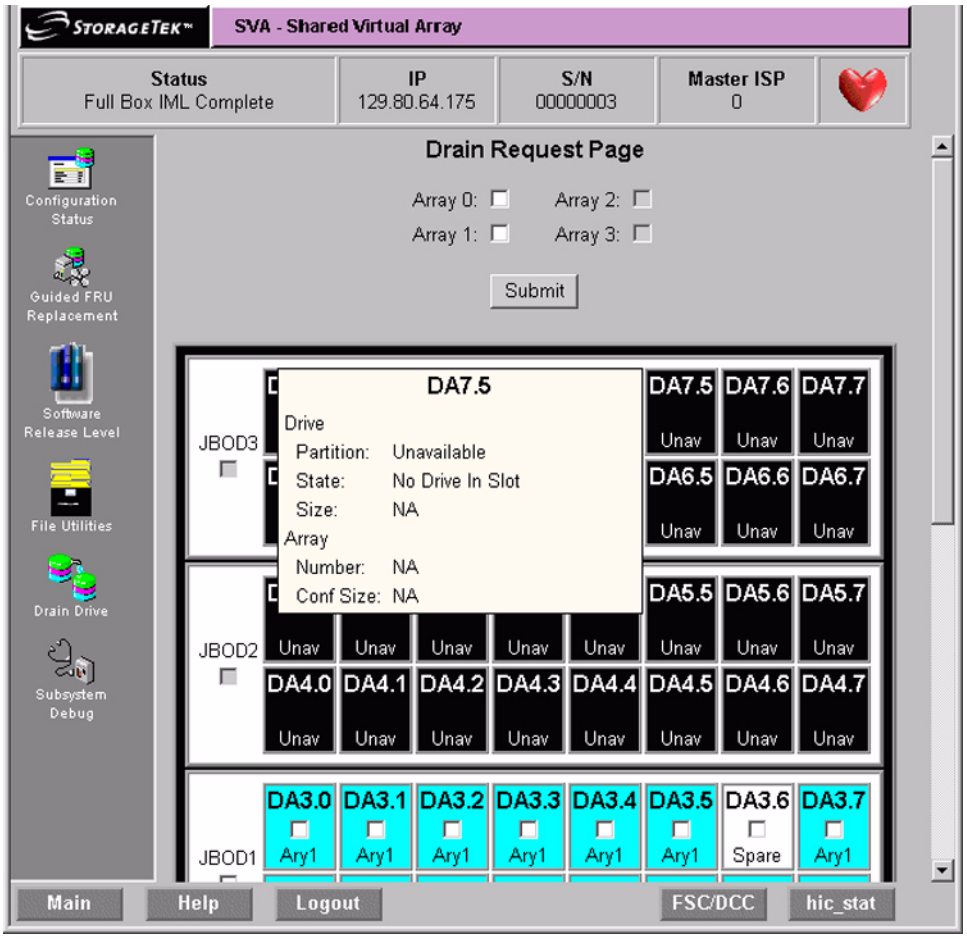

Figure 12 Drain Drive Request Screen (Upper Half)

Moving your cursor over a disk drive's block causes a pop-up box to appear with information regarding that drive.

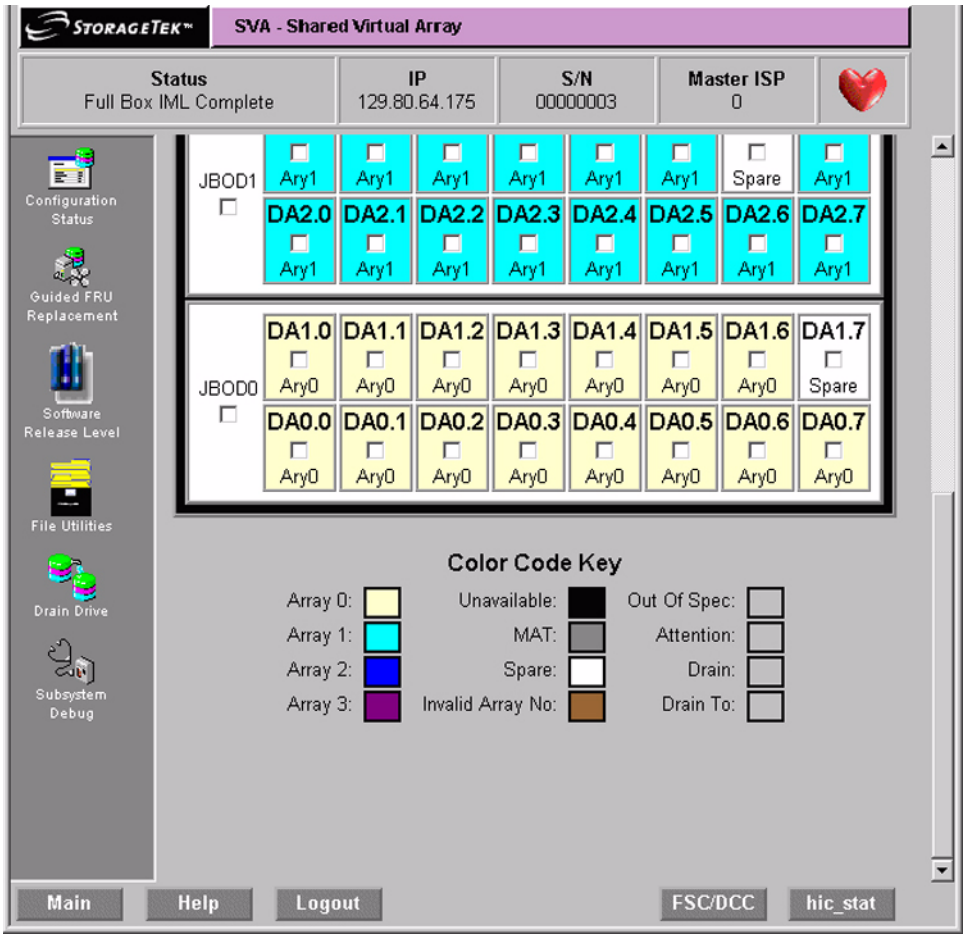

Figure 13 Drain Drive Request Screen (Lower Half)

To actually start a drive drain operation, click on the small box in the center or the desired drive. This brings up the warning screen as shown in Figure 14 on page 42.

At this time, verifiy that this in indeed the drive you wish to drain. If this is the correct disk drive, click the **Continue** button. If this is not the correct disk drive or you do not wish to continue the operation, click the

Canel button; you are returned to the Drain Request Page as shown in Figure 12 on page 40.

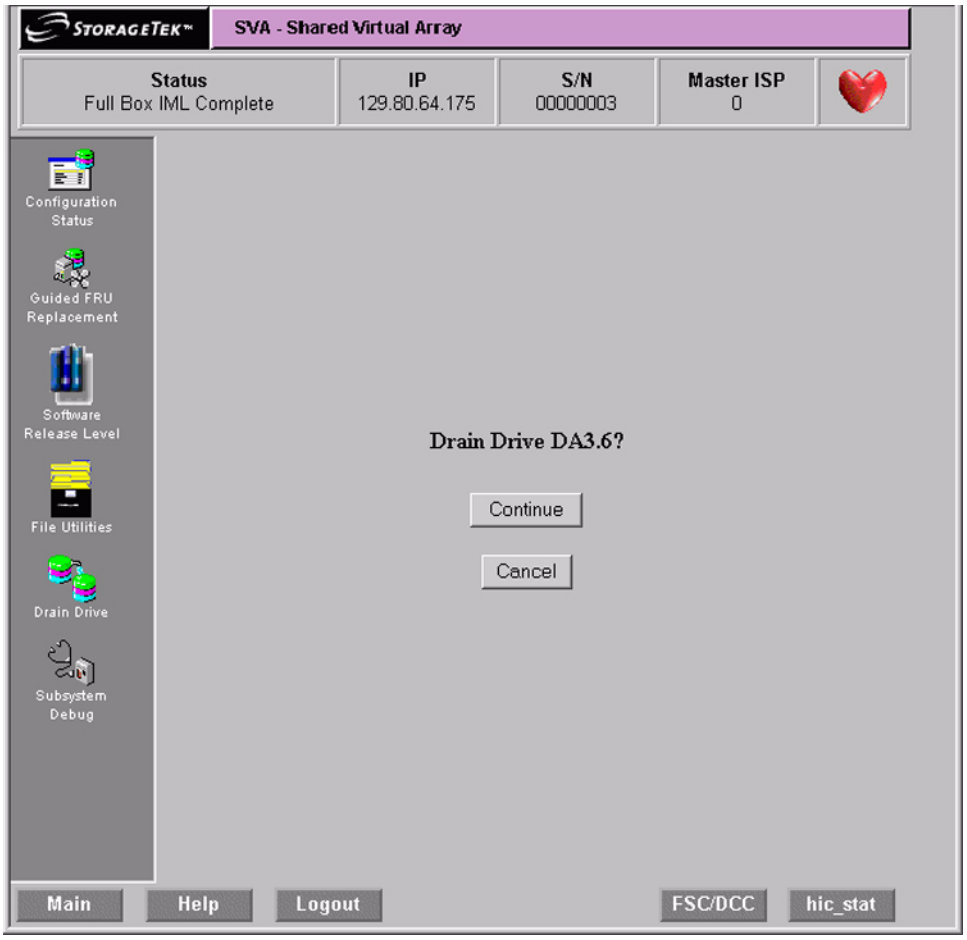

Figure 14 Drain Drive Request Warning Screen

Note: Drive drain times are dependant on system activity and the size of the disk drives involved.

On-Screen Functions and Indicators

On all VIP screens, the following buttons and indicators have these meanings:

Heartbeat

The heartbeat in the upper right corner of the screens indicates various things by is graphic:

- The red pulsating heartbeat indicates that you are connected and it is ready.

- The red heart with the circle and diagonal line through it indicates that the connection to the V2X/V2X2 has been lost (even if only temporally as in when doing a re-boot).
- A disk drive replacing the heart with a percentage close to it indicates a drive rebuild is in progress and the percentage it has completed.

Main

Clicking on the button labeled Main takes you to the main menu.

Help

Clicking on the button labeled Help brings up the help file and take you to the information relevant to the screen on which you clicked on the Help button. The help information for the Detached Operator Panel is one long file.

hic stat[1]

Clicking on the button labeled Hic Stat takes you to the current Hic Stat file.

FSC/DCC

Clicking on the button labeled FSC/DCC brings up the look-up screen for both a Fault Symptom Code (FSC) or a Diagnostic Condition Code.

1. Hic stat stands for HumanInterfaceControl_STATus log.

Subsystem Configuration

3

Note: A complete list of configuration terms and the definitions for them can be found in “Configuration Terms Defined” on page 85.

Initial Configuration of an SVA Subsystem

Once the SVA subsystem is installed, it must be configured to accept data. Configuring the subsystem is achieved in four steps. The first three configuration steps are performed by Sun Microsystems personnel. You can complete the fourth configuration step or a service representative can do so.

1. The configuration features that are standard for all subsystem configurations are factory-installed on the hard drives in the SVA Controller.
2. As part of the subsystem installation, a service representative installs the optional features selected by your company when placing the order. Features that can be installed with the subsystem are the addition of ServiceTek Plus or the customer’s cache size in the Controller.
3. As part of the subsystem installation, a service representative sets up the minimum subsystem configuration. This set-up procedure consists of several sub-tasks including:
   - Defining the minimum subsystem (global) configuration
   - Defining the minimum channel configuration
   - Allocating the spares required to form a production array
   - Forming at least one production array
   - Defining the minimum functional configuration and designating a privileged Extended Control And Monitoring (ECAM) device.

   In order to perform these configuration sub-tasks, you must have access to restricted functions. In addition, you must thoroughly understand the configuration process and its implications which are discussed in the SVA’s planning guide.

You can perform all of the configuration sub-tasks at the LOP. Once you have assigned passwords and security levels at the LOP, you can perform the remainder of these sub-tasks from a host-attached terminal via the Shared Virtual Array Administrator (SVAA).

Because SVAA is more flexible and easier to use, it is recommended that, after you assign passwords and security levels at the LOP, you then perform the remainder of the sub-tasks at a host terminal via SVAA.

Modifying the Subsystem Configuration

Verifying the Current Release Level

The current release level of the software for the SVA can be seen in the upper right portion of the Subsystem Configuration and Status

screen. The menu path to that screen is shown in the following screen.

CSE/Customer Logon → Subsystem Configuration and Status

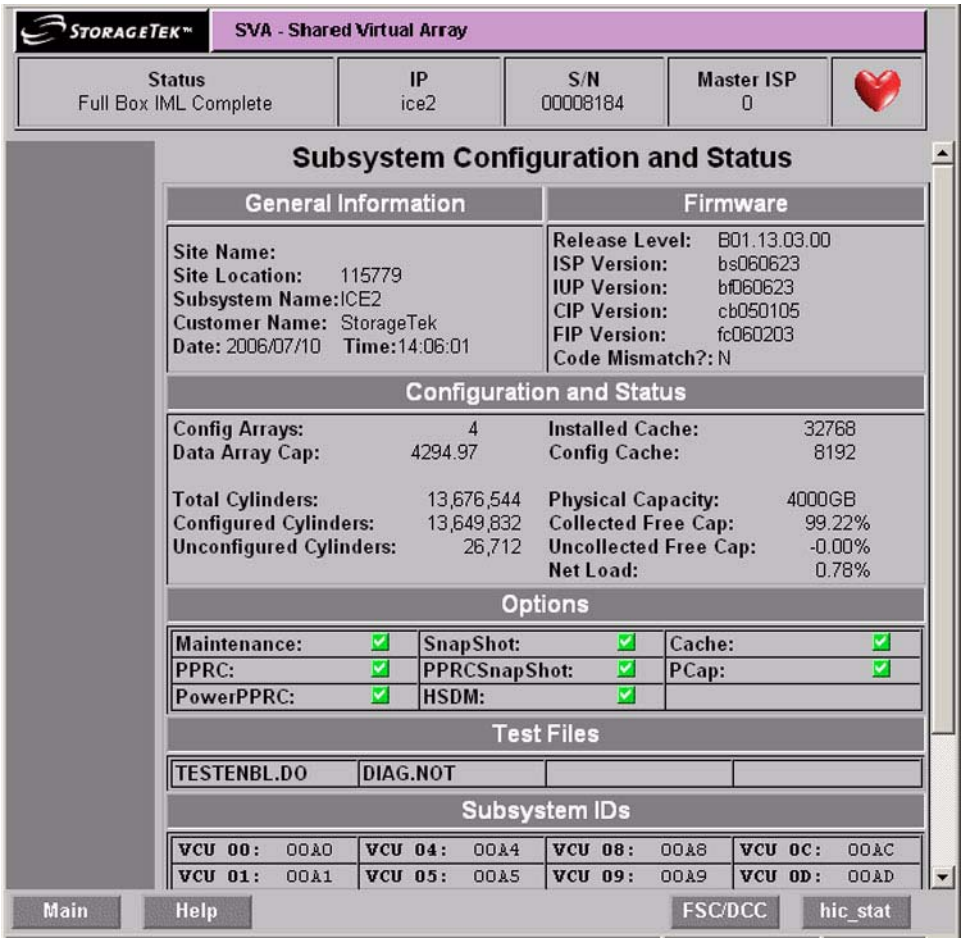

Figure 15 Subsystem Configuration and Status

The current level may be verified by checking on the Sun Web site under Customer Resource Center.

Note: This screen can be viewed without login into the subsystem, but you cannot make changes unless you log in with either the customer or service representative (CSE) password.

Current Status of the IML

The current status of the IML is shown in the upper left portion of the screen. In the example of the preceeding figure, the status is shown as “Full Box IML Complete.” This status is displayed at all times.

Changing Virtual Control Unit ID Numbers

The Virtual Control Unit (VCU)[2] ID numbers are changed on the Subsystem Configuration and Status screen. Click on the current VCU ID that is not correct and a dialogue box appears asking for the new ID number.

Correcting the Time and Date

Corrections to the time and date are done on the Subsystem Configuration and Status screen (see Figure 15 on page 47) in the General Information section. Click on the incorrect item. A dialogue box appears asking for the correct time and date.

Changing Device Configurations

***Caution: Potential Data Loss* - Changing these setting could result in the destruction of stored data. Be sure that the array in which the device you are changing has been drained before proceeding with this operation.**

The changing device configurations via the DOP is done by:

1. Use the following menu path shown to get to the Virtual Unit Data screen as shown in Figure 16 on page 49 .

2. A Virtual Control Unit is also know on the host end as a Logical Control Unit. For all intents and purposes, they are the same thing.

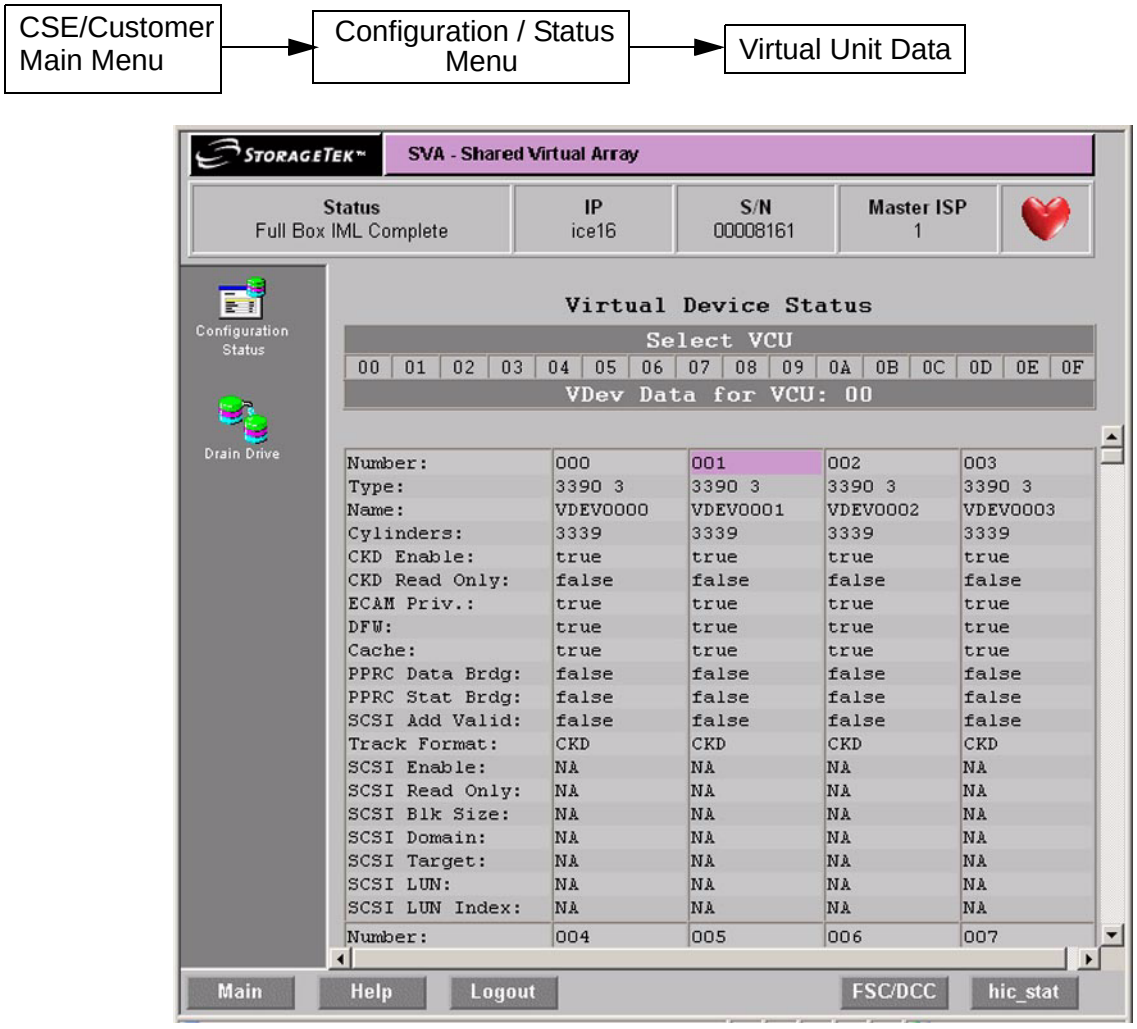

Figure 16 Virtual Unit Data Screen(Upper half)

2. Click in the box of the VUnit whose configuration you wish to change. That displays the “Virtual Unit Configuration Screen” as shown in the following figure.

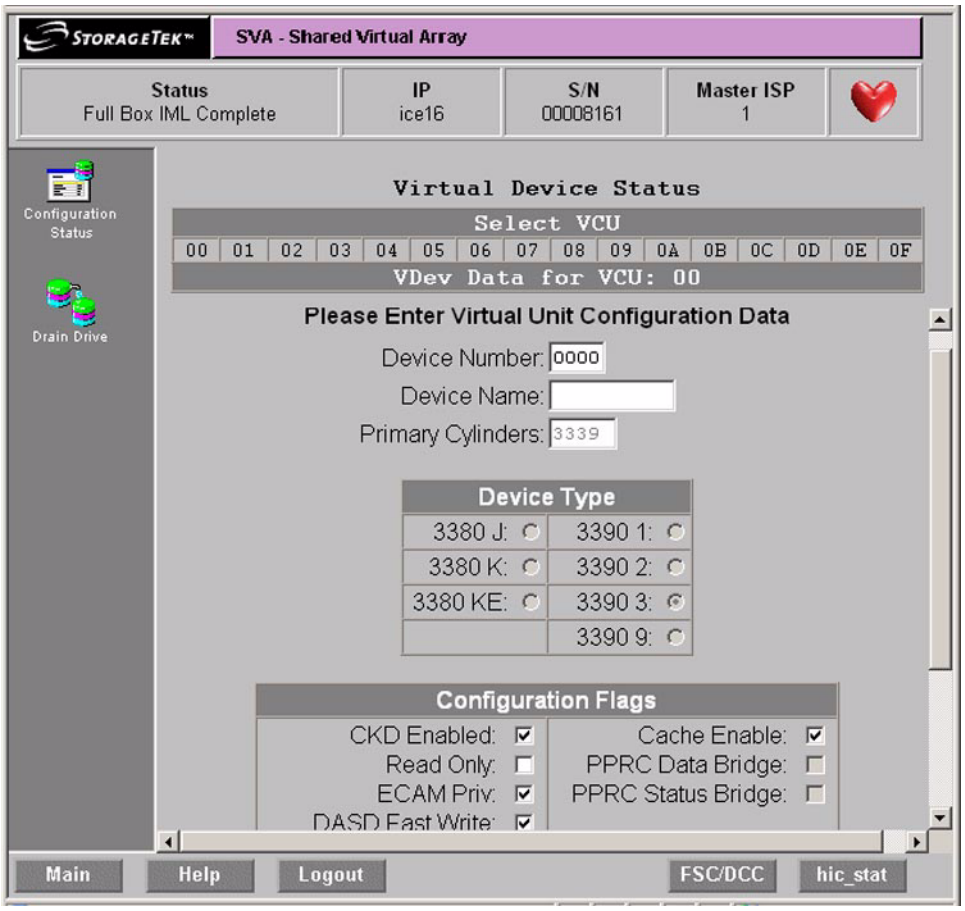

Figure 17 Virtual Unit Configuration Screen

3. The Device Number field is the device that you clicked on in the Virtual Unit Status screen. Normally you would not have to change the contents of this field. If you clicked on the wrong device, you change just change the number here. This field is also used to make a copy of an existing device.
4. Enter a Device Name, Device Type, and Configuration Flags as required.
5. Click on “Submit” when this screen is complete.

Note: Other devices may be configured in the same manner. However, the usual practice is to configure the SVA using the SVAA.

Subsystem Access Passwords

Subsystem control and maintenance functions are protected from unauthorized access by up to seven passwords depending on subsystem configuration.

All passwords are controlled by a system operator or data center manager. If a user enters an incorrect password, a screen prompts the user to enter another.

Customer Logon Password

This password is used on the DOP at the “Logon” screen as shown in Figure 3 on page 26. It gives access to all customer-accessible screens . This password is eight characters long. It must start with “A” followed by seven alphanumeric characters (0 through 9 and A through F). This password is shown at the “Access Control” screen and can be changed there.

CSE Logon Password

This password is used on the DOP at the “Logon” screen. It gives access to all service representative-accessible screens as shown in Figure 3 on page 26. It gives access to all customer-accessible screens . This password is eight characters long. It must start with “B” followed by seven alphanumeric characters (0 through 9 and A through F). This password is shown at the “Access Control” screen and can be changed there.

CSRC Connection Allow/Disallow

As shown in the Access Control screen, there is a button in about the center of that screen that allows the CSRC (Customer Resolution Center) to connect to the SVA. If this button is red with an X through it, the CSRC cannot access this SVA. If the button is green with a check mark in it as shown in Figure 18 on page 52, then the CSRC can connect to this SVA and view the error logs and see its current configuration.

Important – at no time can the CSRC, or anyone else logging into the DOP access customer data.

Changing Passwords

The Access Control screen is accessed by the following menu sequence:

CSE/Customer Main Menu → Configuration / Status Menu → Access Control

Figure 18 Access Control Screen

An example of the screen for changing the customer password is shown in the following screen. The change CSE password screen is similar, but you must be logged in with the CSE password to change the CSE password. The Connection password is done in a similar

fashion. To change the Connection password, you must be logged in with either the customer or CSE password.

Figure 19 Change Customer Password Screen

Viewing Operations

Viewing the Subsystem Availability

The Subsystem Availability screen describes how much of a specified subsystem resource is currently operational. This screen is viewable from either the Log On screen (see Figure 3 on page 26) or from the Configuration / Status screen. The Subsystem Availability screen is shown in the following figure.

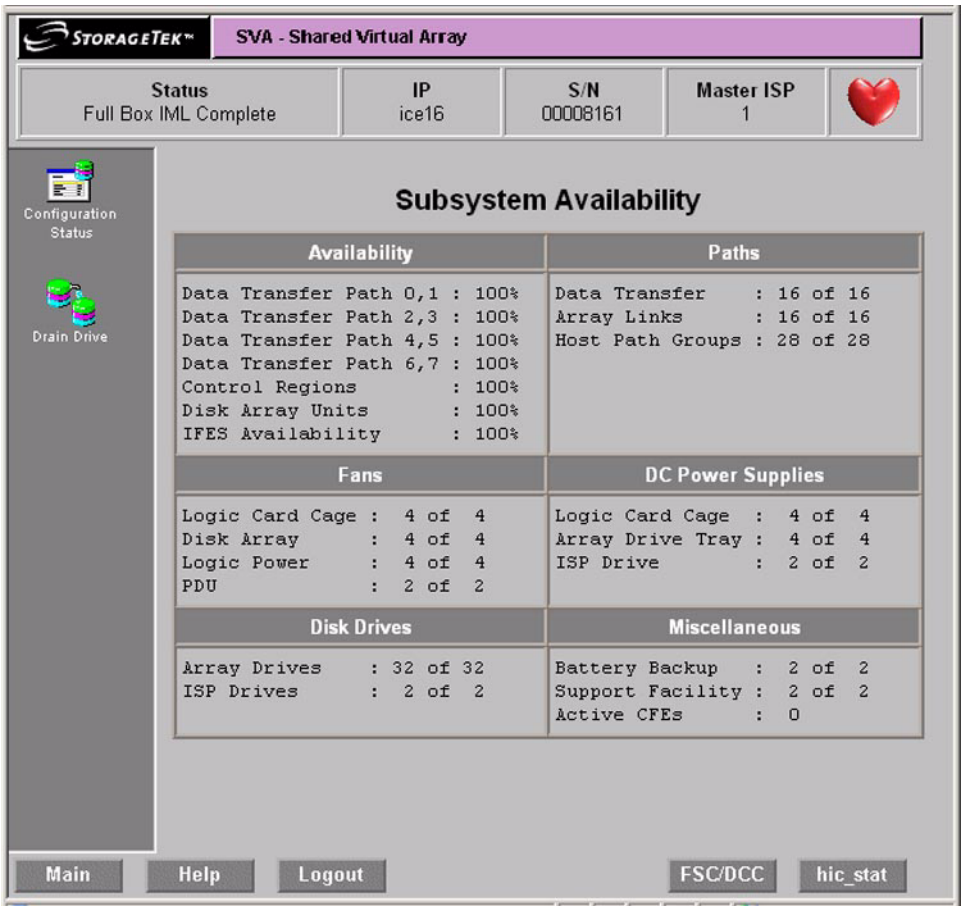

Figure 20 Subsystem Availability Screen

Viewing the Status of the FRU Configuration

The FRU CONFIGURATION screen describes the configuration and status of the Field-Replaceable Units (FRUs) in the subsystem including their hardware and software serial numbers, Engineering Change (EC) levels, and compatibility levels.

This screen is accessed via the following menu path:

CSE/Customer Main Menu → FRU Status

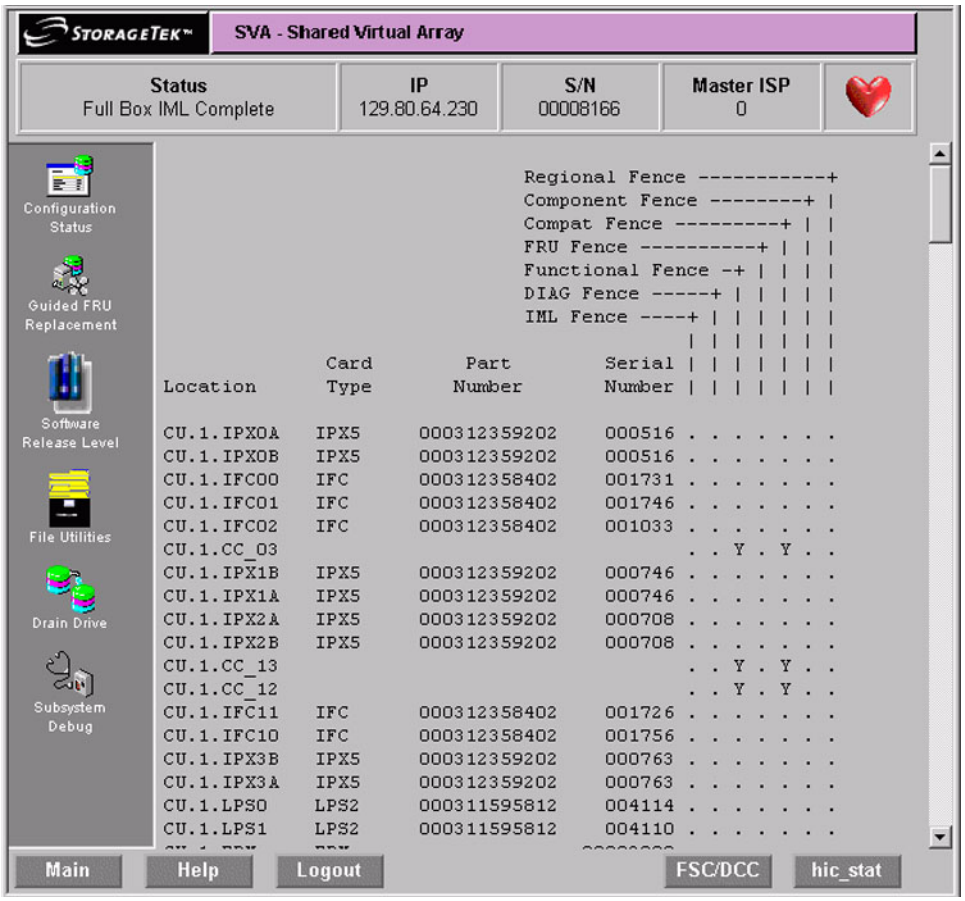

Figure 21 FRU Status Screen

Drain Operations

Drain operations, or removing customer data from an array or part of an array is done with the Drain Drive screen. The Drain Drive screen is a selection from the main menu after logging in with either the service representative or Customer password. A subsequent screen show the progress of any drain in progress (sometimes this can take a long period of time).

On the Drain Drive Page, select:

- A whole drive tray by clicking the square in the tray area (the white area) for JBOD0 through JBOD3.
- Individual drives or more than one drive by clicking the square in each drive.

Note: You need to check the net capacity load (NCL) before beginning a drain operation. The upper limits are:

- 2 arrays < ~43% NCL
- 3 arrays < ~57% NCL
- 4 arrays < ~65% NCL

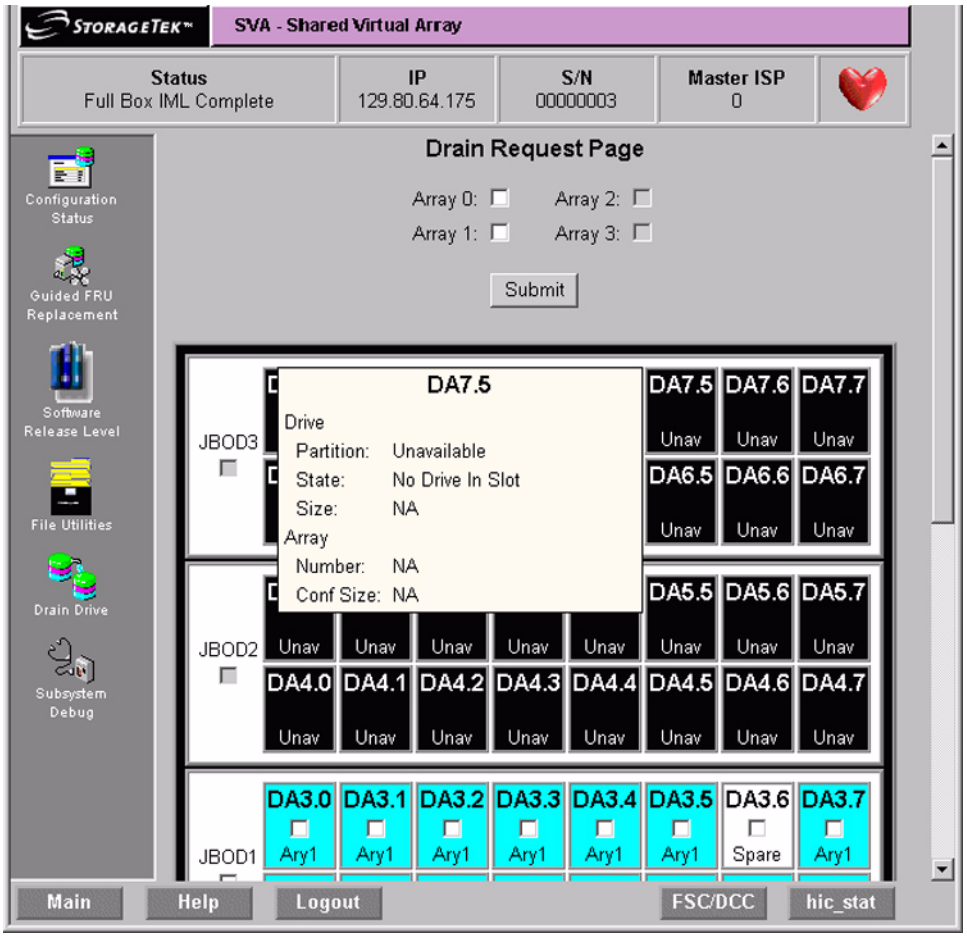

Figure 22 Drain Request Page Screen (upper part)

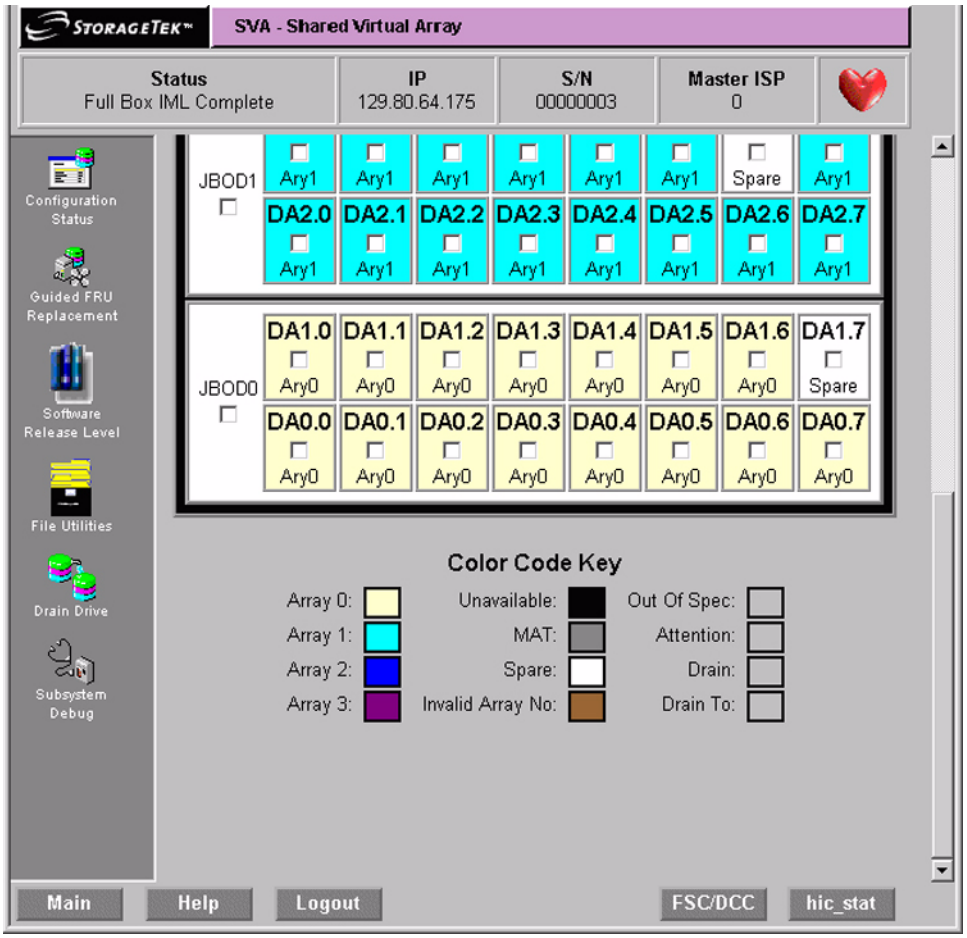

Figure 23 Drain Request Page Screen (lower part)

Once you have selected the drives you want drained, click the **Submit** button at the top of the page.

Caution: From a security standpoint, this drain function is more of a copy function. The SVA makes no attempt to erase or in any way obliterate the data on the drained drive(s) or array(s). While recovering the data is not possible by ordinary means, it is still there.

Other Configuration Alterations

Consult your service representative if you have other needed alterations to the configuration of the SVA. Be aware that some alterations to the configuration cannot be made once customer or live data is resident on the SVA. This data would have to be removed and temporarily stored elsewhere for some alterations.

Error Recovery Actions

4

General Operator Error Recovery Actions

For a fault or error that is not an array failure, the operator should perform the following procedure:

1. Generate an error report for the subsystem.
2. Record all of the information that is available about the fault or error including any information displayed on the . This includes:
   - The site location number, subsystem model number, and serial number of the machine which are displayed on the SUBSYSTEM CONFIGURATION screen.
   - The fault symptom code, which may be displayed on the , included in the SIM REFCODE or included in the error report.
   - The REFCODE which is included in the SIM alert.
   - The FRUID which may be displayed on the or included in the error report.
3. Perform a Fault Symptom Code (FSC) lookup. (Refer to “FSC/DCC Lookup”.)
4. Record the phone number of the phone nearest to the subsystem.
5. Call for service. (If the subsystem is supported by ServiceTek Plus, this step is automatically performed by the subsystem.)

FSC/DCC Lookup

Any time you find a Fault Symptom Code (FSC) or Diagnostic Condition Code (DCC) on the DOP, you may look up that code’s meaning by using the following procedure:

1. Click on the FSC/DCC button found in the lower right of most screens.
2. Clicking on that button brings up the lookup screen as shown in Figure 24 on page 60.
3. Click on either the “Lookup FSC Description” (default) radio button, or click in the “Lookup DCC Description” radio button.

4. Enter the FSC or DCC code in the window.
5. Click on the Submit button. The results of the search are shown in the something as shown in Figure 24.

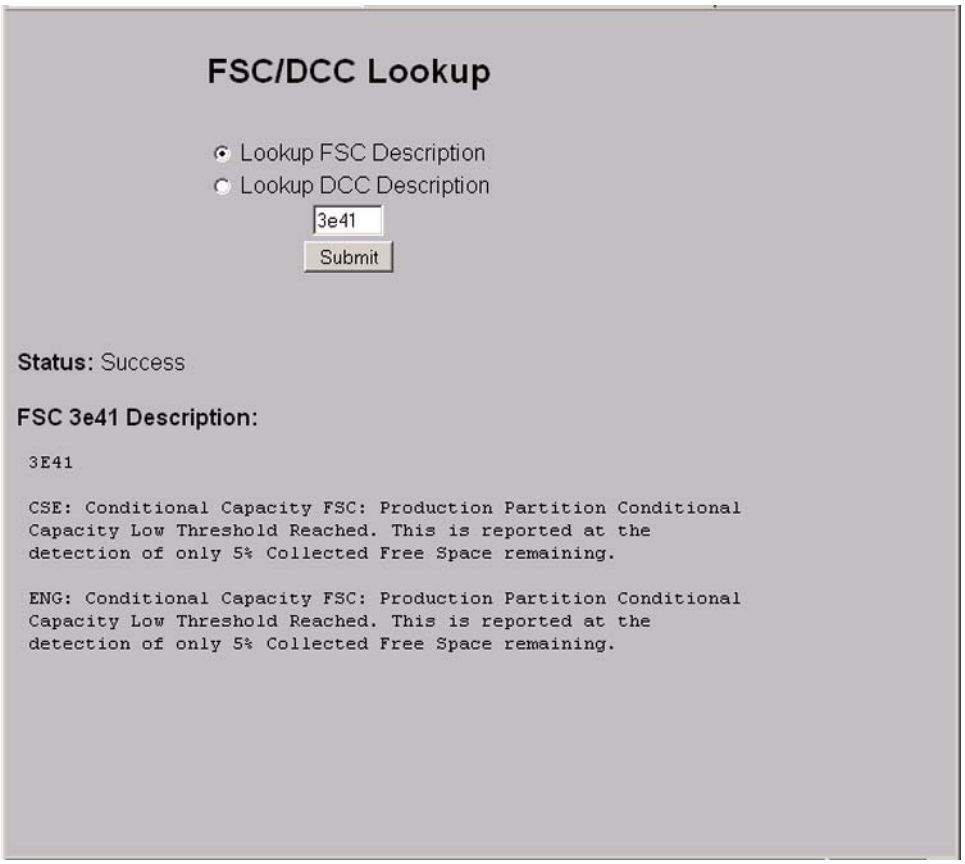

Figure 24 FSC/DCC Lookup Screen with FSC3a41 Showing.

Note: The results of a DCC lookup are similar.

6. You may look up another code or close that window when you are done.

Low Capacity FSC 3E41 Messages

When there is less than 10% collected free space, SVA reports this shortage by issuing a Service Information Message (SIM). The SIM contains a REFCODE, the first two bytes of which are the fault symptom code ’3E41’ that indicates low on capacity. The fault symptom code ’3E40’ indicates that the back-end capacity has been exhausted. At the same time, the V2X/V2X2 changes its thresholds to allow Free Space Collection (FSC) to do more work. This allows Free Space Collection routines to collect free space from more array cylinders so that new data can be written. As the V2X/V2X2 approaches 0% Collected Free Space (CFS), the Free Space

Collection routine is allowed access to more array cylinders as it tries to collect all free space remaining in the subsystem.

If you receive this low-on-capacity SIM, take the following steps:

1. Monitor FSC using SVAA Space Utilization reports or SVAA and the V2X/V2X2 local operator panel.
2. Identify which files or functional device can be migrated to another storage subsystem or backed up to tape.
3. Initiate the migration of the files or functional device to another storage subsystem or back up the files or functional device to tape.
4. Delete the files or functional device. (To delete a functional device, first vary the functional device offline to all attached hosts.)
5. Wait for free space collection and DDSR to return the capacity to the available cylinders pool.

Note: When a file or a functional device is deleted, the disk array capacity that it occupied may not become available for several minutes to several hours.

If the V2X/V2X2 has no more array cylinders to allocate, it no longer accepts any commands that require a write operation including commands that are issued to browse, scratch, or delete a data set. Such commands are rejected with INTERVENTION REQUIRED sense data.

If you receive an out-of-capacity SIM, take the following steps:

First, check for uncollected free space. If there is uncollected free space, free space collection collects it and the Intervention Required state is reset. Reduce the update write and write/delete content of the user workload and then follow the low-on-capacity procedure. If no uncollected free space exists:

1. Migrate data to archives.
2. Delete volumes with temporary or old data currently not in use.
3. Add storage capacity to increase the collected free space to acceptable levels. Acceptable levels would be considered 15-20% collected free space.

Note: At this point, deleting files is not sufficient; you must delete a functional device.

4. Initiate the migration of the functional device to another storage subsystem or back up the functional device to tape.
5. Vary the functional device offline to all attached hosts.

6. Delete the functional device.
7. Wait for free space collection and DDSR to return the capacity to the available cylinders pool.

Note: When a functional device is deleted, the disk array capacity that it occupied may not become available for several minutes to several hours.

If the V2X/V2X2 has no more array cylinders to allocate, it no longer accepts any commands that require a write operation including commands that are issued in an attempt to browse, scratch, or delete a data set. Such commands are rejected with INTERVENTION REQUIRED sense data.

The subsystem cancels the INTERVENTION REQUIRED condition when enough user capacity is available to sustain write activity.

Another strategy for managing a subsystem's CFS is to:

- Designate one functional device in the Production partition as a work volume.
- This functional device should contain an expendable data set (e.g., a work volume of temporary data) that occupies at least 64 megabytes of capacity.
- Designate one functional device *with low write activity* as a privileged ECAM device.
- This is the ECAM device that accepts the write operation and allow you to delete the work volume.

PPRC Secondary Devices Recovery

In the event that the primary SVA has become disabled, use the following procedure to recover PPRC secondary volumes so the host can access these volumes.

1. Use the following menu sequence to get to the Terminate PPRC screen.

CSE/Customer Login → CSE/Customer Main Menu → Terminate PPRC

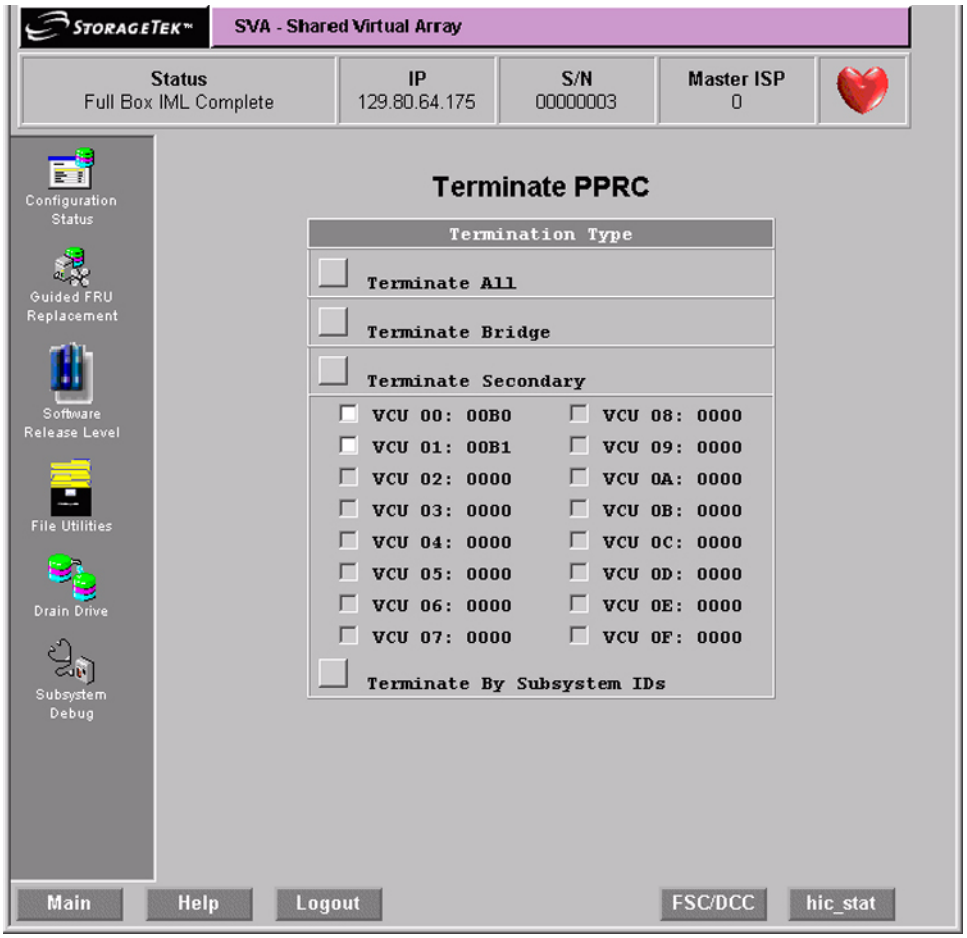

Figure 25 Terminate PPRC Screen

2. At the Terminate PPRC screen, click on either the SSIDs desired or click on the ALL SSIDs button to terminate the PPRC secondaries.

3. The Terminate PPRC screen will show a warning as shown below. Click on the **Continue** to complete the termination.

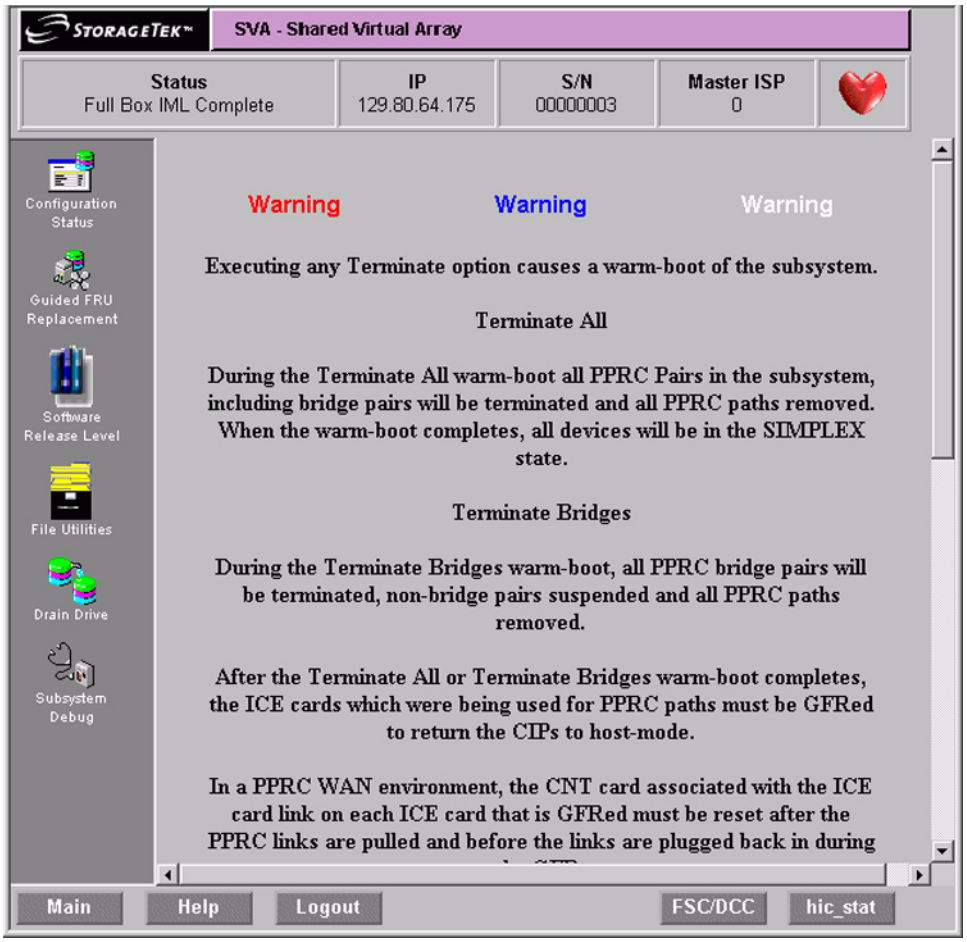

Figure 26 PPRC Termination Warning (upper half)

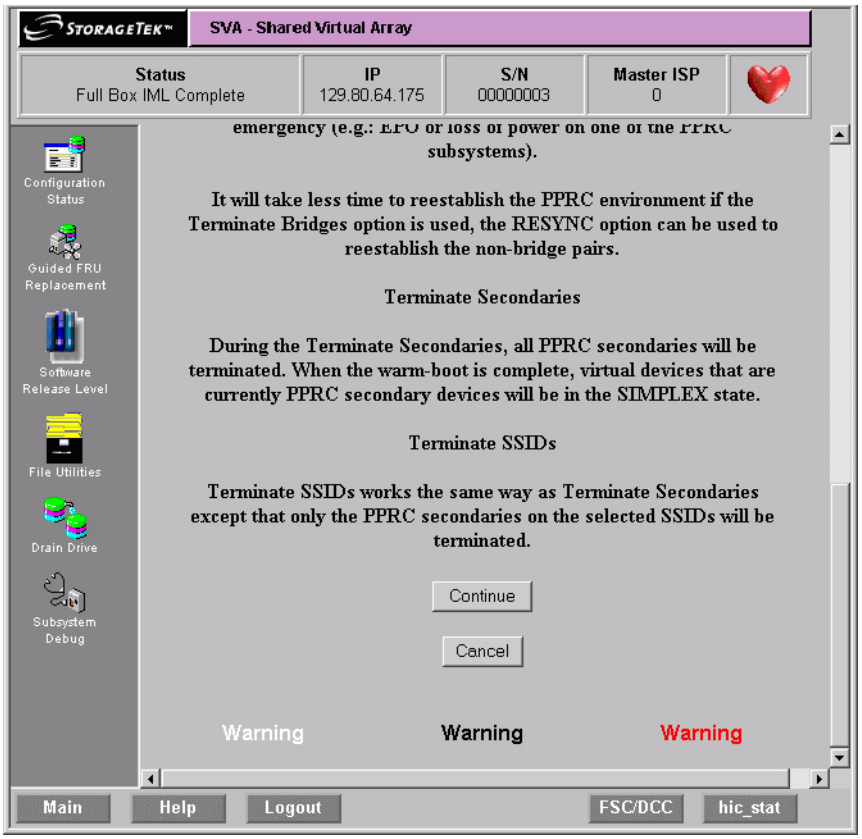

Figure 27 PPRC Termination Warning (lower half)

Note: All devices that were PPRC secondary devices will be put in the simplex state.

The SVA will do a warm start at this time.

Exception Conditions

5

Fencing

The SVA has removed the responsibility for fence management from the operator by automatically isolating failed resources and clearing an imposed fence when the resource has been replaced. The service representative performs the only human intervention required in the fence-processing sequence. Therefore, the SVA Controller rejects the ICKDSF CONTROL CLEARFENCE command.

An SVA does not fence functional devices, which are the equivalent of conventional devices behind a 3990. Since data is stored to, and accessed from, multiple physical drive modules within an array, there are multiple paths to a functional volume from the Controller. Should an error occur that restricts access to a physical device within the array, the drive reconstruction recreates the data stored on that device and places it on a spare drive.

Data Assurance Check Mode

In certain conditions, an SVA subsystem may enter a data assurance check mode. In this state, data cannot be assured to be correct and commands that access data are not accepted.

The conditions that cause the subsystem to enter a data assurance check mode are:

- The battery backup units that support NonVolatile Storage (NVS) have discharged after a power failure with modified records in NVS
- The mapping tables cannot be completely recovered during a Controller initialization.

In data assurance check mode, sense bytes 22 and 23, which contain the fault symptom code, are 9203 or E203. The console log for this time period may provide more information about the condition.

You can reset this condition and exit from this state by resetting the data assurance check mode at the local operator panel. After resetting the subsystem, normal operation can proceed; however, you must take steps to determine what, if any, data has been compromised.

Pinned Data

Traditionally, pinned data is data in cache that cannot be written to a device and, thus, must remain in cache until it is manually erased. Pinned data is usually the result of an un-correctable media failure where the record is stored.

An SVA subsystem does not experience pinned data because of dynamic mapping. All write operations result in a functional track being copied from cache to a disk array. The functional track is always written to a new location, never to the position from which it was read.

Exception Reporting

The SVA exception conditions are reported in several ways and can be collected and formatted by using the following utilities.

EREP Exception Reporting

The use of Environmental Record Editing and Printing (EREP) for exception reporting is of minimal value with the SVA. Most problems are resolved within the subsystem and are not visible to the host. Correctable errors are resolved using the redundancy data to reconstruct damaged functional tracks.

Using SIMs

Service Information Messages (SIM) contain sense data that describe certain error conditions encountered by the subsystem. All SIMs are recorded in the Error Recording Data Set (ERDS). Based on the SIM sense data, a SIM alert is sent to the operator console indicating that an error condition has been encountered and recorded in the ERDS.

A SIM alert includes:

- Machine type and model
- Plant of manufacture and machine serial number
- Failing part of the subsystem
- Severity of the failure
- Effect of the repair
- REFCODE.

When requesting service, the customer reports the machine type and machine serial number.

The SIM sense data recorded in the ERDS contains more specific information about the error than does the SIM alert message. The Environmental Record Editing and Printing (EREP) program or a

similar program can be used to produce a report describing the details of the error.

SIM alerts are issued to the operator console based on the severity of the error. An SVA subsystem generates SIM alerts for the following types of error conditions:

- Controller failures
- Cache failures
- Device failures.

The SVA does not generate SIM alerts for media failures because the disk arrays allow the dynamic recovery of any data stored on failed media. For more information about track recovery and drive reconstruction, refer to the introduction and reference manuals for the V2X/V2X2.

SIM sense data is also generated for conditions that are unique to the SVA. The unique conditions detected by the SVA are:

- Low number of spare drives
- Low NVS battery voltage
- Physical device failure: reconstruction process initiated
- Physical device failure: reconstruction process completed
- Net Capacity Load (NCL) threshold exceeded
- Drain operation complete
- Battery back to full charge
- Out of back-end space.

A SIM alert for these unique conditions may be generated based on the severity of the condition. For information about SVA specific SIMs and SIM alerts, refer to the *9500 Shared Virtual Array Reference*.

Establishing SIM Handling Procedures

In an MVS environment, a SIM alert remains on the operator console until the operator or storage administrator responds to the message. When a SIM alert is detected, the “A3” records generated by the SIM should be collected from all attached systems’ ERDS. To do this, run EREP with the input ERDS merged.

For MVS, the process to collect the “A3” records can be automated in several ways. The appropriate JCL and control statements necessary to generate an EREP report can be stored in a procedure library and invoked from a CLIST or REXX EXEC. Most console message automation utilities can be used to initiate an EREP report following a SIM alert.

Because SIM alerts in the VM environment do not require a response, the operator may miss the message. The operator can be made aware of SIM occurrences by the A3 records from the ERDS must be collected from all attached subsystems.

For further information on EREP or IBM 3990 disk controllers, refer to the *IBM Publications KWIC Index* for the appropriate manual.

If a subsystem is supported by ServiceTek Plus, the subsystem produces two types of ServiceTek Plus alerts that initiate automatic connection to the Customer Service Center (CSC).

Unit Failure – This type of alert occurs when there has been an SVA subsystem failure, when an SVA subsystem is about to fail, or when the SVA subsystem is running with degraded performance.

Trace/Event Log Down-Load – This type of alert occurs periodically and involves the down-loading of diagnostic data. Additionally, when the SVA subsystem performance and statistical thresholds have been reached, a call is initiated to CSC, and subsystem data is down-loaded.

The ServiceTek Plus Facility can be enabled or disabled through the LOP or via a CSC login. If ServiceTek Plus is disabled, a record is entered in the file HIC_STAT.dia indicating that ServiceTek Plus is disabled. In this event, exception conditions are still logged and are accessible through the LOP or a CSC login.

Disk Array Recovery

The SVA Control Unit can automatically recover from a simultaneous failure of two drive modules in the same array. Redundancy data is read from the remaining drives in the array and the data is reconstructed on a spare drive. However, three simultaneous device failures within a single array is considered an array failure because insufficient redundancy data remains to reconstruct the failing devices.

Recovery Procedure

The following procedure provides a guideline for recovering data from an SVA subsystem in the event of an array failure. Tailor this procedure to your environment.

Upon discovering an array failure:

1. Immediately halt all update activity to the subsystem.
2. Initiate DDSR processing for all functional volumes in the subsystem. This deletes un-allocated data space within the subsystem.

3. Begin a functional volume dump operation for all of the volumes on the subsystem. This step captures the remaining data specifying DATA ONLY for the dump operation. Use the CYLINDER processing option for the target devices to maximize performance.
4. Using the reports generated in the dump process, identify the data sets that could not be dumped because of I/O errors.
5. Un-catalog and delete the unreadable data sets.
6. Recover and/or restore the data sets identified as unreadable from the most current backup available.
7. Perform forward recovery for restored data sets, as needed.
8. Resume normal processing.

The time required to perform the entire procedure depends upon the Net Capacity Load and the size of the subsystem. However, use the following formulas to estimate the “expected” time required to perform the dump operation. (The two examples provided here are extreme cases, but they may be used to estimate the time for a specific site.)

Recovery Time Estimate

The amount of data contained on an SVA subsystem (its functional load) can be determined by multiplying the physical capacity by the Net Capacity Load and dividing that value by the compression-compaction index:

$$\text{functional load} = \frac{\text{(physical capacity) X (\% Net Capacity Load)}}{\text{(compression-compaction index)}}$$

Using the functional load, the amount of time required to dump that data can be estimated by multiplying the channel speed by the number of channels and dividing that value into the functional load. However, this formula assumes that tape devices are not a constraining factor.

$$\text{dump time (sec)} = \frac{\text{(functional load)}}{\text{(channel speed X number of channels)}}$$

As indicated, the result is in the number of seconds required. The number of minutes required may be obtained by dividing that value by 60.

Drive Module Status

A

The following table lists and describes the status designations for a drive module. The drive module status is represented by a two-character code: the first character identifies the partition with which the drive is associated; the second character displays the current state of the drive.

Status codes are displayed either as two characters or as two characters separated by a period. For example, the status of a drive module associated with the Production Partition in the active state is “PA” or “P.A.”.

Table 2 Drive Module Status Descriptions

Partition	State	Meaning
Production Partition		
Production: Active	P.A. (PA)	Drive module is a member of an array that is associated with the Production partition.
Production: Broken	P.B. (PB)	Drive module has been marked as broken. It remains in this state until reconstruction is complete. It also appears as U.B. in the unavailable partition.
Production: Copy (receiving drain data)	P.C. (PC)	Drive module is receiving data from the drain of a single drive module in the Production partition.
Production: Draining	P.D. (PD)	Drive module is being drained.
Production: Initialize array	P.I. (PI)	Drive module is part of an array initialization process.
Production: Pending drain	P.P. (PP)	Drive module is waiting to be drained. The drain cannot begin for one of the following reasons: A drive module reconstruction is in progress. Another drive in the array is being drained. The number of available spares is inadequate (this can occur if the number of spares was reduced after the drain request was accepted).

Table 2 Drive Module Status Descriptions (Continued)

Partition	State	Meaning
Production: Reconstruction	P.R. (PR)	Drive module is being used to reconstruct data for a Production partition drive module that failed.
MAT Partition		
MAT: Active	M.A. (MA)	Drive module is a member of an array that is associated with the MAT partition.
MAT: Broken	M.B. (MB)	Drive module has been marked as broken. It remains in this state until reconstruction is complete. It appears as U.B. in the unavailable partition.
MAT: Copy (receiving drain data)	M.C. (MC)	Drive module is receiving dat5a from the drain of a single drive module in the MAT partition.
MAT: Draining	M.D. (MD)	Drive module is being drained.
MAT: Initialize array	M.I. (MI)	Drive module is part of an array initialization process.
MAT: Pending drain	M.P. (MP)	Drive module is waiting to be drained. The drain cannot begin for one of the following reasons: A drive module reconstruction is in progress Another drive in the array is being drained The number of available spares is inadequate (this can occur if the number of spares was reduced after the drain request was accepted).
MAT: Reconstruction	M.R. (MR)	Drive module is being used to reconstruct data for a MAT partition drive module that failed
Spares Partition		
Spare: Active	S.A. (SA)	Drive module is available for forming arrays, for data reconstruction, or for receiving data from a drain of a single drive module
Spare: Fenced	S.F. (SF)	Drive module is fenced for a periodic drive test
Spare: Pending drain	S.P. (SP)	Drive module is waiting to be drained pending completion of a periodic drive test
Unavailable Partition		
Unavailable: Broken	U.B. (UB)	Drive module in slot is broken
Unavailable: Isolated	U.I. (UI)	Unavailable and isolated
Unavailable: No active drive module	U.N. (UN)	No active drive module is sensed in slot, or slot has not been installed

Service Information Messages

B

SIM Overview

The SVA support processor constantly monitors the SVA operations for “change-in-status” conditions. When it detects such a condition and determines that the condition should be reported to the host, the ISP generates a Service Information Message (SIM). It then sends the SIM to a host console on the subsequent I/O operation asynchronous of the change-in-status condition. If the subsystem is ServiceTek Plus-equipped, a Machine Initiated Maintenance (MIM) event may also be sent to the Customer Service Center (CSC). The SVA generates service SIMs based on the change-in-status condition detected. Because of its RAID architecture, unlike the 3390 and 3990, the SVA does not generate media SIMs. Media maintenance is internal to the Disk Array Units; it does not require Controller or host ERPs or operator intervention.

A service SIM is a text message that notifies users and service personnel that the subsystem hardware has experienced a condition requiring a service action, that subsystem operation may be affected by a threshold being reached or other event, or that general service-related information is being conveyed to the user. A service SIM acts as the service-action trigger for an SVA subsystem. The subsystem sends a service SIM when the ISP has detected an error condition, threshold, or event, AND has:

- Fenced and/or isolated the Field-Replaceable Unit (FRU) that requires service

  OR

- Determined that the error cannot be isolated or corrected by the SVA’s extensive internal error recovery programs or user intervention may be required.

In most cases, the SVA Control Unit executes error recovery actions. Host ERP involvement is delayed until after the failing FRU has been isolated. This frees up host resources for other processes. However, in certain conditions, full host ERP involvement is required.

A service SIM identifies the error condition and its severity classification, the general hardware area that experienced the fault, the impact of the failure, the FRU requiring service, and the impact of the repair.

The service SIM reduces the amount of work an operator or service representative must do to identify and isolate a problem and to request service.

In general, if a service SIM is reported and the required repair is not made, the SIM is reported two more times at approximately eight hour intervals. If the subsystem is powered down before the SIM count of three is reached, the SIM reporting process continues after the next power-on IML is completed.

SIMs are not issued during IML or until 16K start I/O operations have occurred. All SIMs, both initial reporting or repeat events, are stored on the subsystem until these conditions have been met.

SIMs that have a severity of SERVICE are information SIMs and generally do not require a service call. They provide information about the status of specific situations such as a remote session or drain operation. Usually, SIMs at a severity level of service are reported only once.

If a SIM cannot be issued to the host due to channel unavailability, no further SIMs are issued *until that initial failing SIM can be sent to and acknowledged by the host.* The ISP periodically checks for acknowledgement and re-send the SIM until this occurs. In the meantime, all subsequent SIMs accumulate in the SIM database on the ISP and are eventually sent to the host. No SIMs are discarded until all initial and repeat occurrences have been sent to and acknowledged by the host.

SIM Alert Message Formats

As stated previously, the SVA notifies the operator that a SIM event has occurred via a SIM alert message at the host operator console. While the SVA may create unique SIMs (SIMs different than those produced by the 3990-3), the SIM alert messages sent to the operator console are, in general, consistent with those sent by the 3990-3. In only a few instances are the SIM alert messages unique to the SVA.

Figure 28 represents the general format of a SIM alert message. Figure 29 and Figure 30 are examples of a SIM alert message for the

MVS and VM operating environments. Table 3 on page 77 describes the message fields within the SIM alert message.

```
MESSAGE, ADDRESS, AREA, SEVERITY, MACHINE TYPE, SERIAL NUMBER
REFERENCE CODE, SUBSYSTEM ID, VOLUME AND SERIAL NUMBER, CYLINDER AND HEAD, REPEATED
```

Figure 28 SIM Alert Message Format

```
IEA480E Ocuu,CACHE, SERVICE ALERT, MT=9200XD3, SER=200-00000001
REFCODE=0000-0000-0000, ID=01, VOLSER=volser, cchh=x'cccc hhhh', REPEATED
```

Figure 29 An Example MVS SIM Alert Message

```
DMKDAD403I ccuu, SCU, MODERATE ALERT, MT=9200XD3, SER=200-00000001
REFCODE=0000-0000-0000, ID=01, VOLSER=volser, CChh=x' cccc hhhh' , REPEATED
```

Figure 30 An Example VM/SP and VM/SP HPO SIM Alert Message

Table 3 SIM Alert Messages

SIM Alert Message Field	Description
Message	Identifies a category of SIM alert for the environment and condition. Messages beginning with 'IEA' are MVS SIM alert messages. Messages beginning with 'DMK' are VM/SP HPO SIM alert messages.
Address	Identifies the channel or unit address (the I/O address) of the failing functional storage control. This address is 'Ocuu' in MVS SIM alert messages and 'ccuu' in VM/HPO and VM/SP SIM alert messages.
Area	Identifies the general area of the SVA that requires service. For example, SCU (Storage Control Unit) in this field indicates that a fault requiring service has occurred in the non-cached part of the hardware. CACHE in this field mean that a fault requiring service has occurred in the cache or NVS. DASD in this field means that a fault occurred in the device hardware.

Table 3 SIM Alert Messages

Severity	Identifies the severity of the failure. The severity may be: ACUTE, SERIOUS, MODERATE, or SERVICE.
Machine type	Identifies the machine type and model number of the reporting unit.
Serial number	Identifies the serial number of the reporting unit.
REFCODE	Identifies a reference code that provides additional information about the fault or error. Refer to “SIM Reference Codes (SIM REFCODE).”
REPEATED	Identifies a SIM alert as a repeat SIM--a presentation of a previously-reported SIM. This field is blank for the initial SIM presentation.

SIM Reference Codes (SIM REFCODE)

As indicated in the preceding table, a SIM contains a 12-character (six-byte) REFCODE that identifies, where appropriate, the fault symptom code for the error and a list of FRUs the service representative may need to repair the unit.

The first four characters (first two bytes) of the REFCODE is the Fault Symptom Code (FSC). This FSC can be typed in at the operator panel (refer to “FSC Lookup”) to obtain general information about the error. These bytes are the same as bytes 20 through 21 of the SIM sense data.

The remaining eight characters (or four bytes) provide information about your subsystem and the location of the error that caused a SIM. These bytes are the same as bytes 11 through 14 of the SIM sense data.

Note: REFCODE=0000-0000-0000 identifies an information-only SIM. It does not reflect a machine fault condition and does not require a service call.

SIM ALERT Severity Levels

Table 4 lists the different severity levels established for SIM alert messages. It also describes the general effect on the system and applications of the condition that caused the SIM alert.

Table 4 SIM Severity Levels

Severity Field	Meaning	Recommended Action
SERVICE	No system or application performance degradation is expected in any environment. No system or application outage has occurred. The SIM is presented purely for informational purposes.	Although presented for informational purposes, the SIM may be part of a larger impact on system operations. Therefore, if accompanied by other higher-severity SIMs, an evaluation of the potential effects on system operations *in terms of the higher severity SIMs* is warranted. Otherwise, no specific action need be taken unless directed by local site data collection procedures.
MODERATE	Performance degradation is possible in a heavily loaded environment. No system or application outage has occurred.	Promptly evaluate the effects on system operations. As required, plan for service action by the customer service engineer. If you defer action, application outages and/or unacceptable performance degradation may occur if previously recoverable exceptions become unrecoverable.
SERIOUS	A primary I/O resource in the subsystem is disabled. Significant performance degradation is possible. System or application outage may have occurred.	Immediately evaluate the effect on system operations. Plan appropriate system recovery actions. Call for service action which is required to restore the unit to full operation.

Table 4 SIM Severity Levels (Continued)

Severity Field	Meaning	Recommended Action
ACUTE	A major I/O resource in the subsystem is disabled, or damage to the unit is possible. Performance may be severely degraded. System and/or application outages may have occurred.	Treat as an emergency. Evaluate the current or potential effect on system and application operations. Determine appropriate system recovery actions or actions to prevent possible product damage. Call for service action which is required to restore the unit to full operation.

SIM Logging and Reporting

At the host, a host Error Recovery Procedure (ERP) logs the SIM in the Error Recording Data Set (ERDS). If the SIM severity level is less than or equal to a pre-established severity level threshold (refer to “SIM Severity Reporting Option”), a SIM alert message is sent to the operator console. The SIM alert message contains a subset of the information included in a SIM. Refer to “SIM Alert Message Formats” for more information about the SIM alert message.

Because the ERDS often contains more detailed information about the condition than the SIM alert message, the host Environmental Record Editing and Printing (EREP) program, or a similar program, can be used to produce a report describing the error.

Error reports such as these speed problem determination and can help you to decide when to request immediate or deferred service.

SIM Severity Reporting Option

The SVA allows you to select which SIM alert messages are sent to the host console although the selection must be implemented by a service representative.

The following SIM severity reporting options are available:

Setting	Reporting Option
Zero	All SIMs are reported as SIM alert messages.
One	All SIMs, except those with the lowest severity, SERVICE, are reported as SIM alert messages.
Two	Only SIMs with the two highest severity levels, SERIOUS and ACUTE, are reported as SIM alert messages.
Three	Only SIMs with the highest severity level, ACUTE, are reported as SIM alert messages.

Note: ACUTE alerts cannot be suppressed.

As shipped, the severity reporting option is pre-set to zero; therefore, all SIMs are reported as SIM alert messages. Upon installation, you may request that the service representative change the severity reporting option. However, if you modify the setting, we recommend that:

- You do not suppress alerts with a severity higher than MODERATE.
- You regularly run EREP to extract the System Exception Report which contains detailed SIM activity for ALL logged SIM activity including those that have had SIM alert console messages suppressed.

To have SIMs automatically initiate EREP, keep the SIM severity reporting option at three. In this case, when a SIM alert message is received and the full SIM is logged in the error recording log, it is automatically included in an Asynchronous Notification Record Detail report.

Machine-Initiated Maintenance (MIM)

Machine-initiated maintenance reduces on-site service representative requirements by automatically reporting whether a system is inoperable, degraded, subject to potential failure, or ready to off-load event log data. When a fault condition occurs or a download timer expires, a MIM alert message is sent to a remote service center PC.

Messages concerning actual or potential unit problems are sent as they occur; critical messages are repeated at 24-hour intervals until servicing is complete. The remote support center (Customer Service Center or CSC) evaluates the messages to determine maintenance requirements, then performs remote servicing or dispatches a service representative for service.

SVA Generated SIMs and MIMs

Table 5 on page 82 provides a partial list of the SIM and MIM events generated by the SVA, listed by functional area and fault symptom code, problem description, severity, and whether a MIM event is also issued.

PSA-generated SIMs are not listed because a specific problem may be manifested by several Fault Symptom Codes occurring at different times or frequencies. All PSA-originated SIM/MIM events range in severity from MODERATE to ACUTE. They may contain SIMs, MIMs, or both depending on the precise nature of the problem isolated and

being reported by PSA. In all cases, the action to be taken by the user is to examine the subsystem operator panel menu giving further information on the CFE_ID being reported. A PSA-originated SIM/MIM event is identified by byte 29 and byte 30 bits 0-3 containing a value between 0x64 and 0x1000 (100-4096) which is the CFE_ID.

Table 5 System-Generated SIM and MIM Events

Functional Area/FSC	**Problem Description**	**Severity**	**MIM Issued**
Extended Control and Monitoring (ECAM) events			
730C	HOST INITIATED MAT COMPLETE	SERVICE	No
730D	HOST INITIATED DRAIN COMPLETE	SERVICE	No
7328	OP PANEL INITIATED DRAIN COMPLETE	SERVICE	No
7329	OP PANEL INITIATED MAT COMPLETE	SERVICE	No
Low Spares events			
3E5F	NEED SPARES!!!	ACUTE	Yes
3E61	ONE SPARE REMAINING	SERIOUS	Yes
3E62-5	2-5 SPARES REMAINING	MODERATE	Yes
3E66-F	6-15 (OR MORE) SPARES REMAINING	SERVICE	Yes
Drive Reconstruction events			
3E01	DRIVE RECONSTRUCTION BEGIN	SERVICE	No
3E02	DRIVE RECONSTRUCTION END	SERVICE	No
Conditional Capacity (none remaining or threshold reached) events[a]			
3E40	PRODUCTION PARTITION-NONE REMAINING	ACUTE	No
3E41	PRODUCTION PARTITION-THRESHOLD REACHED	SERIOUS	No
Subsystem Security (Secure Options) events			
71C2 through 71C9	SECURITY VIOLATION	MODERATE	Yes
7201	SECURITY VIOLATION UNCORRECTED	MODERATE	Yes
7200	SECURITY VIOLATION ONGOING	MODERATE	Yes

Table 5 System-Generated SIM and MIM Events (Continued)

Functional Area/FSC	Problem Description	Severity	MIM Issued
Support Facility Problems Detected events			
3FFF	SUPPORT FACILITY DOWN	SERIOUS	No
Host-based Application Problems events			
FFF5	ASYNCHRONOUS PROCESSING ERROR	SERVICE	No
MIM Failure Event			
7351	MIM SEND FAILED WITH RETRY	SERVICE	No

a. Customer action is required.

Configuration Terms Defined

C

The following table defines the terms used in the configuration process. These terms appear in the configuration instruction or on the DOP screens.

Table 6 Configuration Terms

Term	Meaning
Array ID	The array (Ary0 to Ary3) to which the drive module is assigned. Only drives in Production or MAP partitions have an array ID.
Base	The base channel address (hexadecimal) which is the lowest interface address on the channel.
Battery Backup	The relative percentage of dc electrical charge available in the NonVolatile Storage (NVS) battery backup system. If the battery can provide at least 72 hours of protection, the display reads 100%. If the battery can provide less than 72 hours of protection, the display reads 0%.
BFDID	The base functional device identifier (hexadecimal) for the channel. The BFDID identifies the path between the base address and the functional device.
CA	Indicates whether cache for the functional device is enabled (Y or Yes) or disabled (N or No). When cache is disabled, data is still cached, but the caching algorithm is changed. Therefore, in a write operation, tracks are queued for immediate de-staging to the arrays rather than being held in cache. In a read operation, a track is staged to cache and then queued for de-allocation from cache as soon as the read operation is completed.
Cache Size	The size (in megabytes) of customer cache installed in the subsystem.
Chan(nel)	The channel interface to which the channel is connected within the specified cluster. The SVA supports up to 32 parallel channels (16 per cluster), so channel interfaces are designated ‘A’ through ‘P.’
Clust(er)	The cluster (0 or 1) to which the channel interfaces.
Cluster/ Channels	The number of channels installed for each cluster.
CYLS	The number of cylinders for the functional device.
DA Capacity	The total formatted physical capacity (in gigabytes) of the Disk Array Units.

Table 6 Configuration Terms (Continued)

Term	Meaning
Data Transfer	The number of data transfer paths that are operational (maximum of four for 4 Data Path or eight for 8 Data Path).
Data Transfer Paths 0, 1, 2, and 3, or 0-8 for 8 Data Path feature	The percentage of data path resources that are operational.
Date and Time	Displays the current date and time, based on a 24-hour clock and displayed in Coordinated Universal Time (CUT).
Disk Array Controller	The number of operational dc power supplies available to support the Disk Array Controller (maximum of 4).
Disk Controller	The number of operational blower assemblies in the Disk Array Controller (maximum of 4).
Disk Drive Tray	The number of operational dc power supplies available to support the disk drive trays (maximum of 32).
Disk Drives	The number of physical disk drives that are operational (maximum of 64).
Drive Status	The status of the drive module. The first character indicates the partition; the second character indicates status (e.g., A = Active). Drive modules may be associated with one of four partitions, and they may have different status within the partition.
EC/N	The engineering change level of the FRU.
ENA(ble)	Identifies whether host access to the functional device is enabled (Y or Yes) or disabled (N or No).
Enab(le)	Identifies whether the channel interface is enabled (Y or Yes) or disabled (N or No).
FDID	The hexadecimal identifier of the functional device. The FDID is a value between 00 and 3FF.
FEN-Type	Indicates whether an FRU is fenced (Y or Yes), not fenced (N or No), or partially fenced (P or Partially), and the type of fence imposed. When the subsystem fences an FRU, it is taken out of use until it can be replaced or repaired. Fencing does not disrupt the subsystem's operation. A partially-fenced FRU indicates that some subset of the FRU (such as a port) is fenced, but all other portions of the FRU is unfenced.
FW	Indicates whether DASD fast write for the functional device is enabled (Y or Yes) or disabled (N or No). All writes to the SVA are DASD fast writes; DASD fast write is never truly disabled.

Table 6 Configuration Terms (Continued)

Term	Meaning
GB	The functional capacity (in gigabytes) of the functional device which is determined by the capacity of the device model being emulated.
Global Spares	The number of spare drive modules to be reserved when you form a new array. A subsystem may have one or two array spares assigned. This value is set from Def Array size.
HW Cpt	Describes the hardware compatibility level of the FRU.
ISP Ver(sion)	The level of software operating the SVA support processor.
List of Options	Indicates what options are installed or activated in the subsystem.
Loc ID	The code that describes the location (in Unit.Tray.Slot nomenclature) of the FRU. These codes are assigned by the manufacturer and are not required in routine operations.
MAT Partition	The MAT partition contains drives that are organized into one or more arrays. The purpose of the MAT partition is to allow you to test new arrays with non-critical data before moving the arrays into the Production partition.
Model	A number that identifies the general characteristics (such as hardware level) of the subsystem.
Name	The unique name for a channel or the name assigned to a functional device.
Net Load	The physical space (in gigabytes) on the disk arrays that is currently occupied by compressed user data.
Nonvolatile	The size (in megabytes) of NonVolatile Storage (NVS) installed in the subsystem. Sixteen megabytes of effective NVS is standard in an SVA subsystem.
Number of Arrays	The number of arrays currently defined in the subsystem.
Outlet Temp DAU	Indicates the temperature status (either normal or over temp) at the Disk Array Unit outlets. If any Disk Array Unit is over temperature, this field indicates over temp.
P/N	The part number for the FRU as assigned by the manufacturer.
Partition	Identifies the partitions to which the drives are assigned. Drives may be in one of four Partitions: production (P), MAT (M), Spare (S), and Unavailable (U).

Table 6 Configuration Terms (Continued)

Term	Meaning
PRIV	Indicates whether the functional device is a privileged ECAM device (Y or Yes) or not (No or No). To implement the SVAA software, you must designate at least one functional device as a privileged ECAM device--that is, as an eligible designation for Category 1-restricted messages. However, you should limit the number of such devices.
Production Partition	The Production partition contains drives that are organized into one or more arrays. Drives in the Production partition are used for storing and retrieving data.
PT	The partition with which the functional device is associated. Functional devices must be in either the MAT partition or the Production partition.
Range	The number of addresses (decimal) with which the channel can interface.
Release Level	The level of software operating in the SVA Controller.
S/N (Serial Number)	The unique hardware number that identifies a specific subsystem.
Site Location Number	The number assigned by Sun Microsystems that identifies your site.
Site Name	The unique name for your site. This name must be the same for all the SVA subsystems at a site.
Size	Identifies the size and configuration of the array. In an SVA, 15 (13 + 2) physical devices are organized into a logical group. Within the group, user data is recorded on identically addressed tracks on all but two of the devices. The identically addressed tracks on the other two devices are reserved for the two levels of redundancy data generated by the subsystem.
Spares Partition	The Spares partition contains drives that are available for forming arrays. When you form a production array, the drives for the array are taken from the Spares partition. Also, when the subsystem reconstructs a drive, it reconstructs the data onto a drive from the Spares partition.
Speed	The data transfer rate (in megabytes per second) of the channel. This value cannot be changed.
SSID	The SubSystem IDentifier (SSID) for the functional storage control with which the functional device is associated.
Subsystem Name	The name of a specific subsystem at a site. Each subsystem should have a unique name.

Table 6 Configuration Terms (Continued)

Term	Meaning
Support Facility	The number of operational dc power supplies available to support the system support processors (maximum of 2).
Total Cache	The percentage of total cache that is operational. Total cache is the sum of user cache and the SVA's reserved cache.
Type	The type of channel interface installed. The SVA supports Fibre and ESCON channels. OR The type of device that the functional device emulates. Functional devices may emulate 3380J, 3380K, 3380KE, 33901, 33902, 33903, or 33909 devices.
U.T.S.	The SVA **U**nit (0), **T**ray (0 to 7), and **S**lot (0 to 7) in which the drive module is located. Note: "Slot" is referred to as "Drive Number" on the CD29 screen. Note: Some units may be only half-populated. Therefore, not all U.T.S. locations contain drive modules.
Unavailable Partition	The Unavailable partition includes any drive or drive slot (the physical space where a drive can be installed) that is not active. Thus, broken drives or empty drive slots are listed in the Unavailable partition.
User Cache	The percentage of cache that is available for user data.
WP	Identifies whether the functional device is write protected (Y or Yes) or not write protected (N or No). If the functional device is write protected, the data on it is read-only and cannot be overwritten.

Virtual Initialization Program

D

Overview

The Virtual Initialization Program (VIP) is a standalone utility comprised of a subset of the support processor card (ISP card) functional microcode. It allows for a low level support processor file system access in order to perform very basic support processor functions. The VIP runs on only one ISP3a processor and has functional access to the ISP hard drives[3] and File System as well as machine FRU Bus. The VIP contains the NFTP server and supports the external Vshell client under the ISP Ethernet interface.

In order to utilize the VIP program, the machine must be re-booted in VIP mode. This is a disruptive re-boot and the subsystem will be unavailable to the host for data processing while in this mode. Generally speaking, the SVA will only be in VIP mode if it is encountering significant problems.

Caution: Sun Microsystems strongly suggests that only a qualified and trained person operate the VIP program.

3. These are the two internal hard drives that contain configuration data and various event logs. These are not to be confused with the drives holding customer data. The VIP program does not and cannot access customer data.

VIP Menu Tree

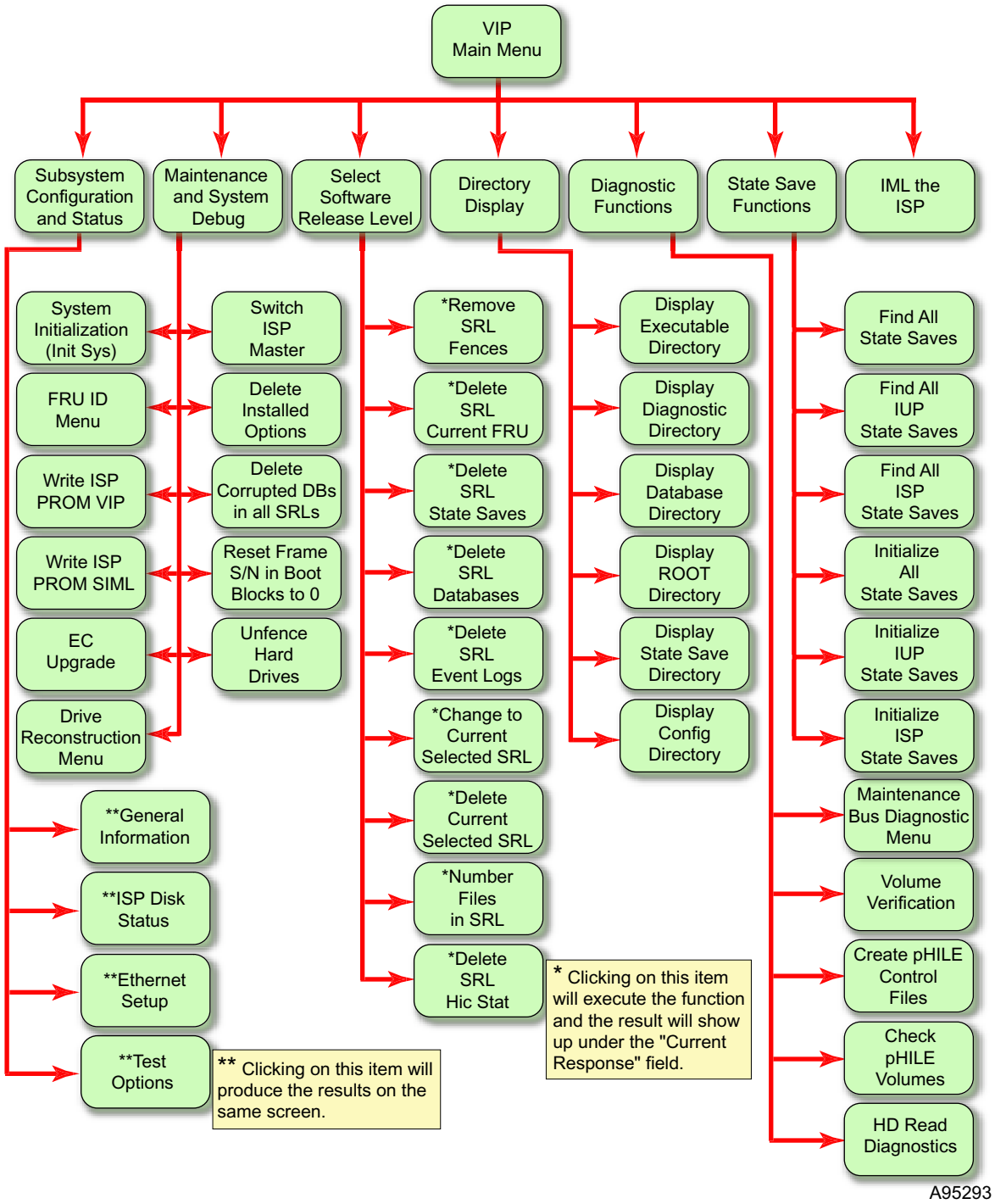

Figure 31 VIP Menu Tree

VIP Screens

On-Screen Functions and Indicators

On all VIP screens, the following buttons and indicators have these meanings:

Heartbeat

The heartbeat in the upper right corner of the VIP screens indicates various things by is graphic:

- The red pulsating heartbeat indicates that the DOP is connected and it is ready.
- The red heart with the hourglass next to it indicates that there is a program execution in progress.
- The red heart with the circle and diagonal line through it indicates that the connection to the SVA has been lost (even if only temporally as in when doing a re-boot).
- A disk drive replacing the heart with a percentage next to it indicates a drive rebuild is in progress and the percentage it has completed.

Main

Clicking on the button labeled Main will take you to the main menu. (See “VIP Menu Tree” on page 92.)

Help

Clicking on the button labeled Help will bring up the help file and take you to the information relevant to the screen on which you clicked on the Help button. The help information for the Virtual Initialization Program is one long file.

hic stat[4]

Clicking on the button labeled Hic Stat will take you to the current Hic Stat file. The actual file name is hic.stat.dia.

FSC/DCC

Clicking on the button labeled FSC/DCC will bring up the look-up screen for both a Fault Symptom Code (FSC) or a Diagnostic Condition Code.

4. Hic stat stands for HumanInterfaceControl_STATus log.

Tool Bar on the Left Side

The tool-bar on the right side allows you to do several functions with just one click - it does the function, or it is a shortcut to a particular screen.

Note: Actual screen display will depend on the microcode level of the VIP installed. The following are representations of what you may see. Actual screens will also depend on the configuration.

VIP Main Menu

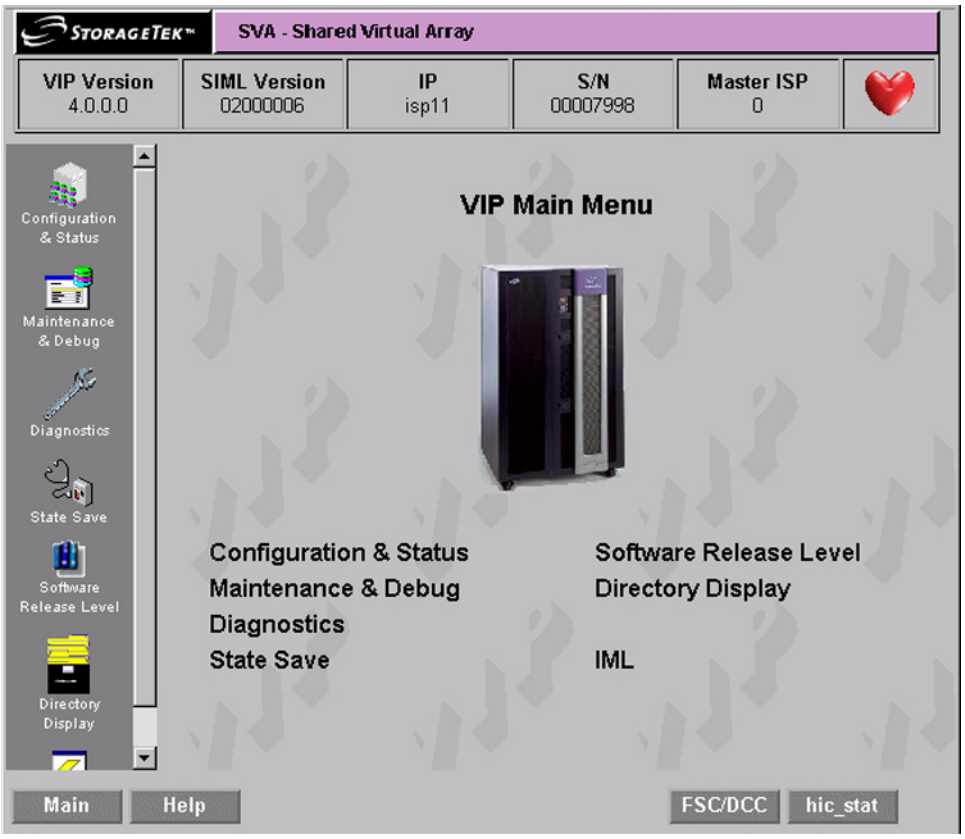

Figure 32 Main VIP Screen

System Configuration and Status

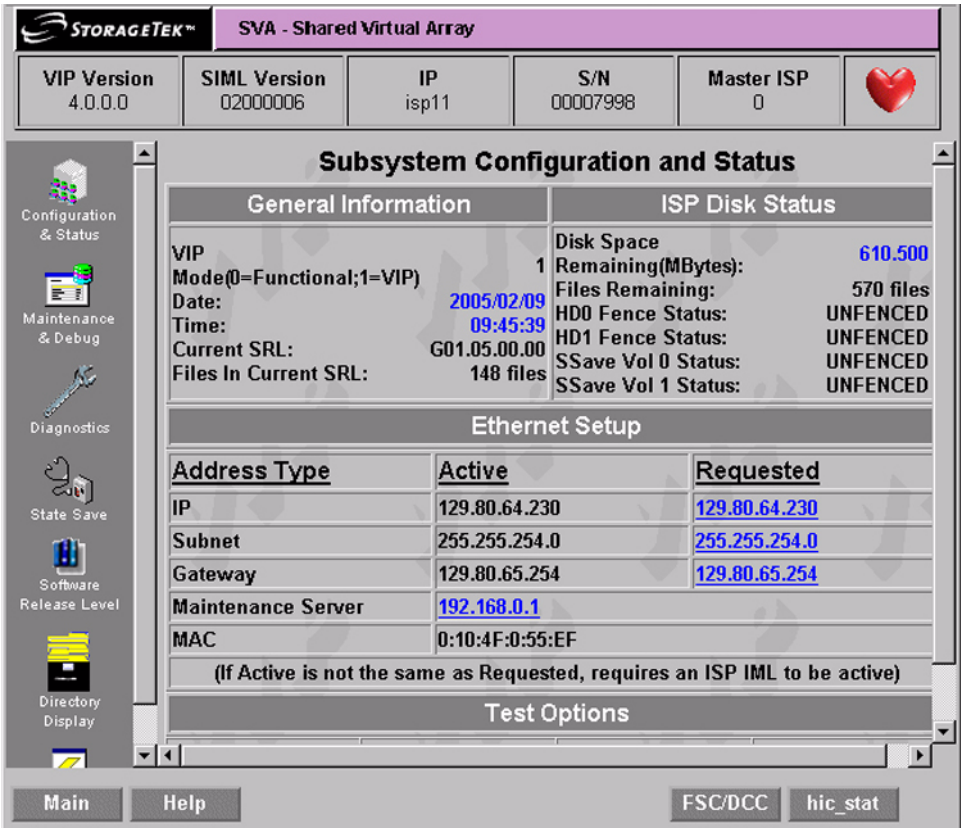

Figure 33 VIP System Configuration and Status Screen

Maintenance and System Debug

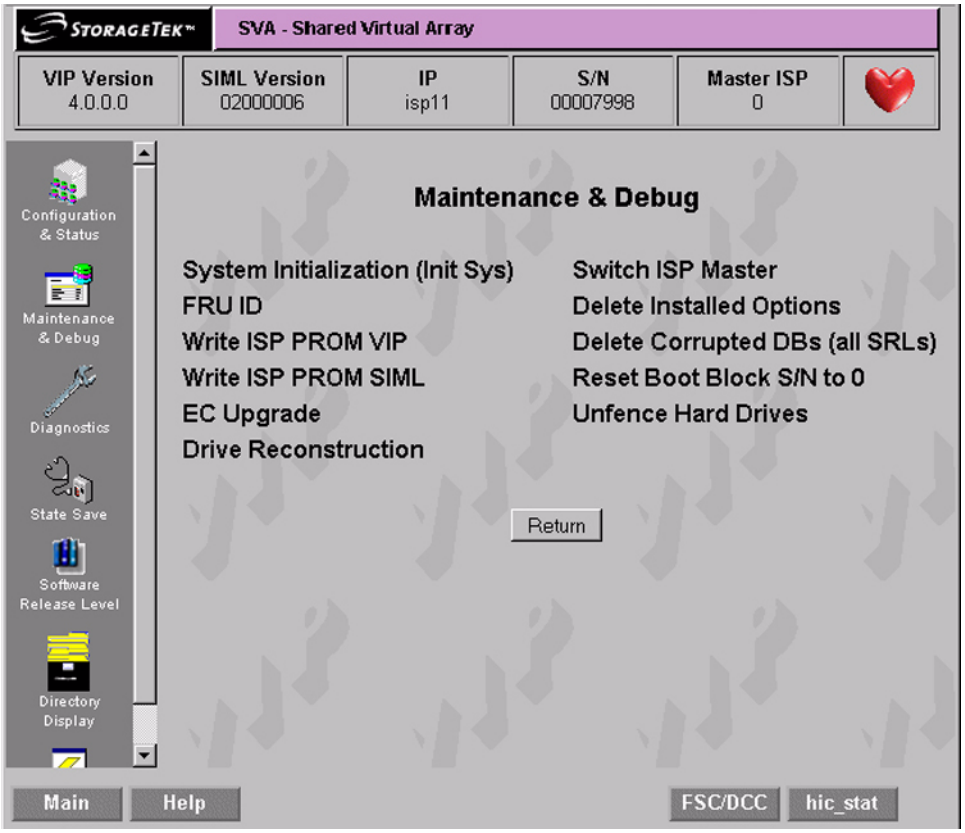

Figure 34 VIP Maintenance and System Debug Screen

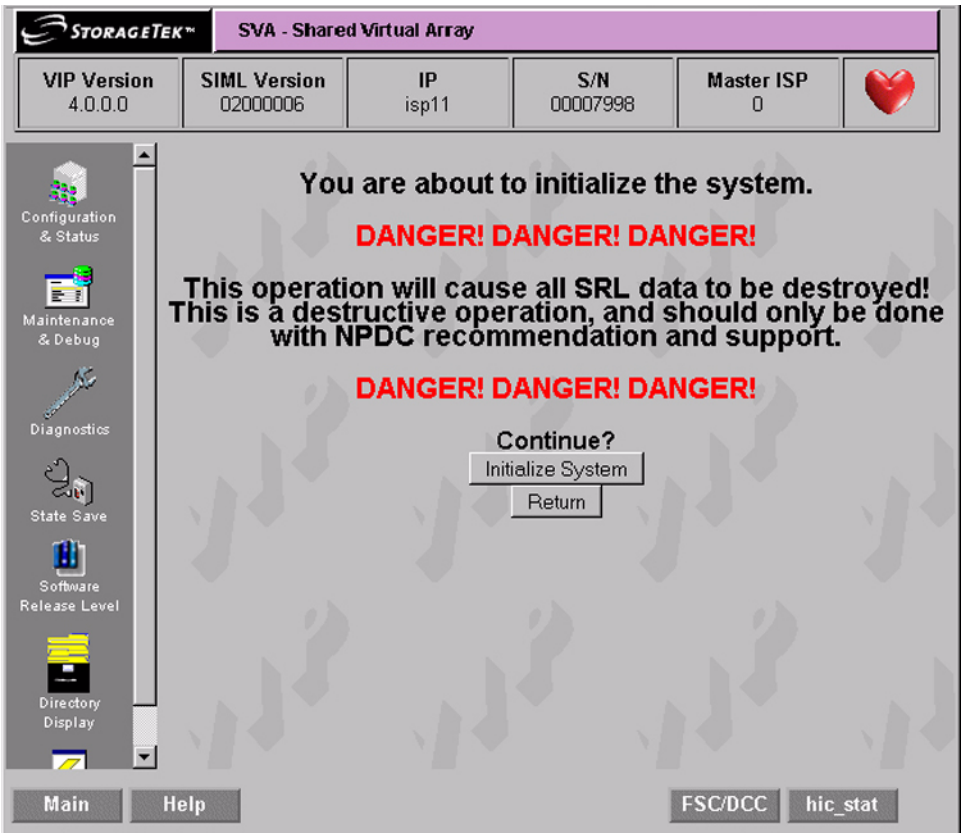

Figure 35 System Initialization Screen

After clicking on the “Initialize System” button, following screen will appear.

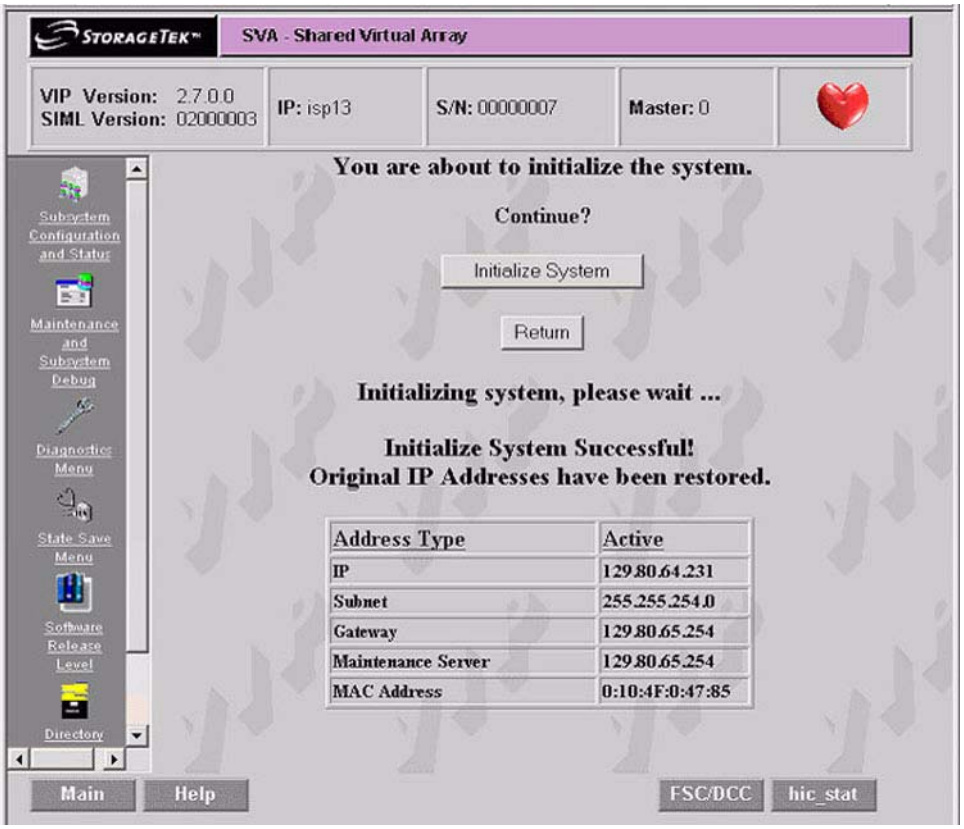

Figure 36 System Initialization Complete Screen

When this screen appears, verify that the IP address is correct. In the unlikely event that it is missing or incorrect, go to the "System Configuration and Status" on page 95 and enter the correct one.

FRU ID Menu

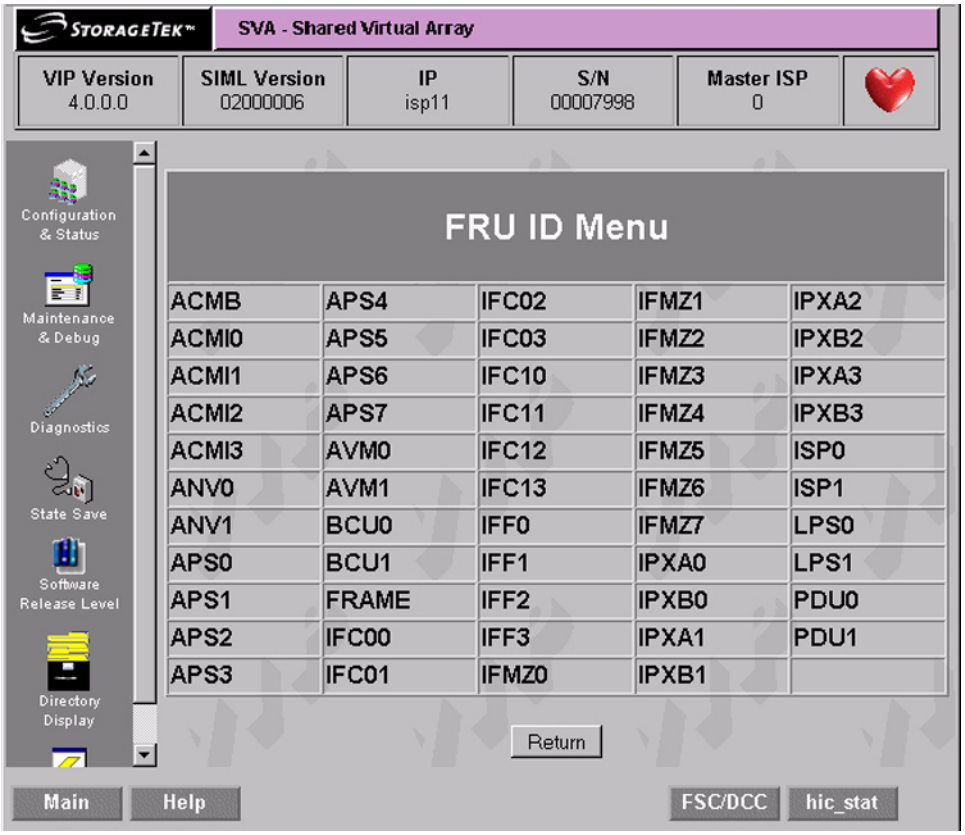

Figure 37 FRU ID Menu Screen

Write ISP PROM VIP

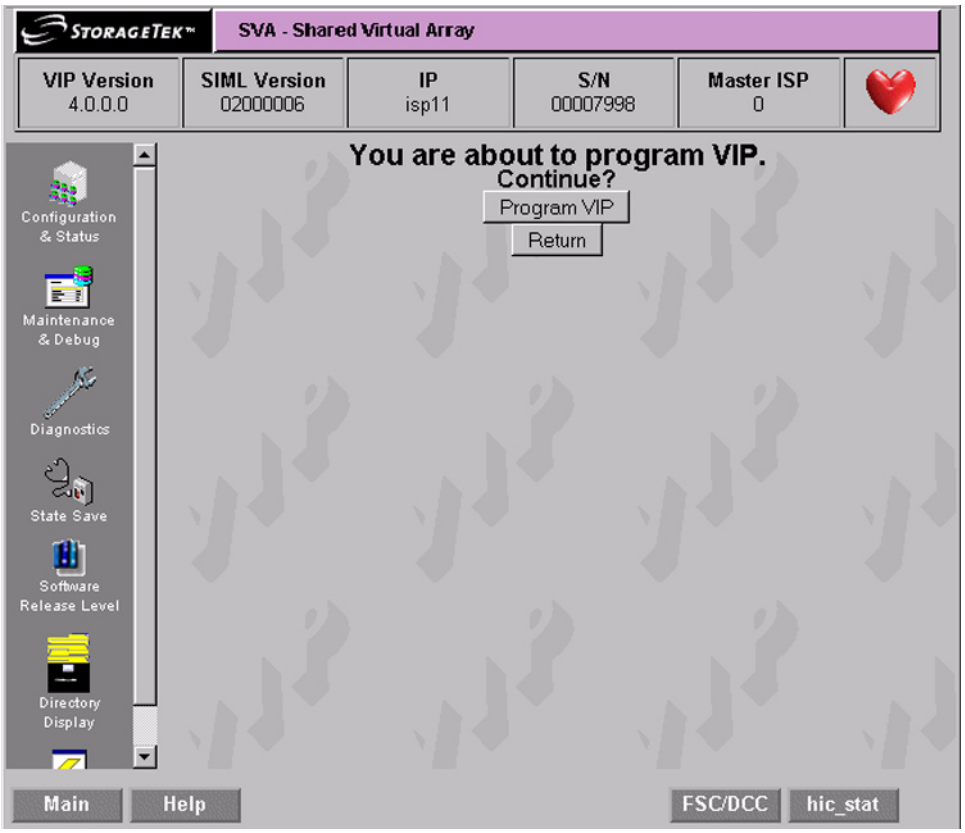

Figure 38 Write ISP PROM VIP Screen

Write ISP PROM SIML

Figure 39 Write ISP PROM SIML Screen

EC Upgrade

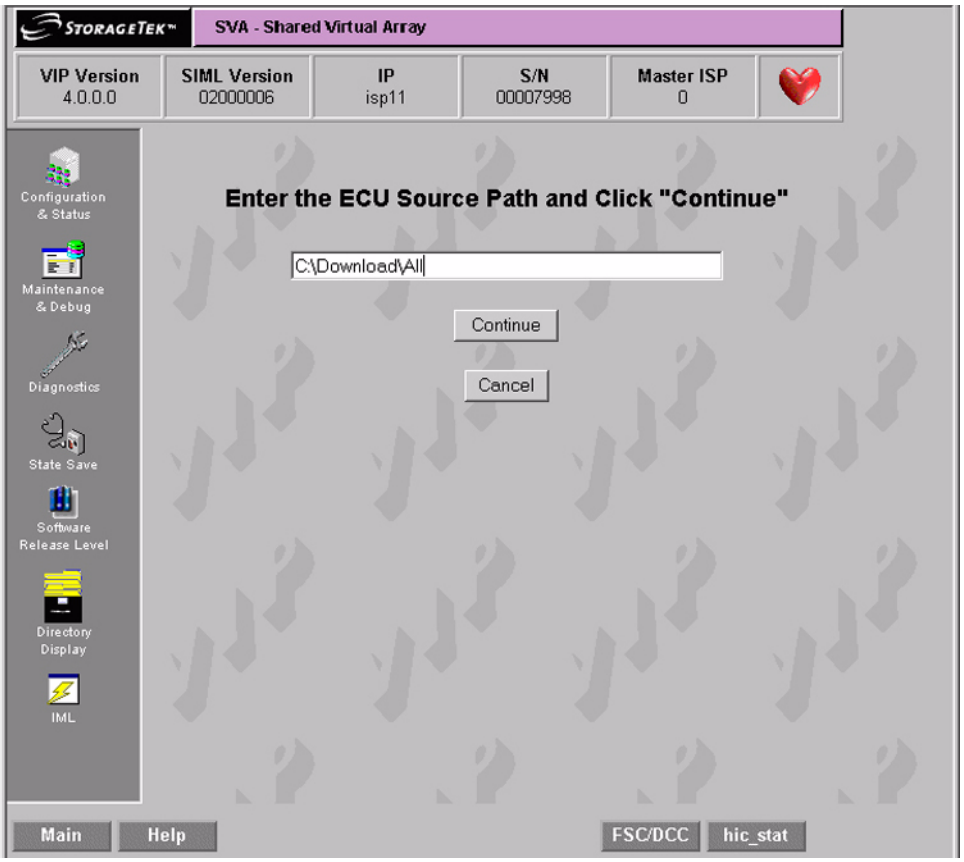

Figure 40 EC Upgrade Screen

After filling in the path, click on “Continue” to get to the next screen:

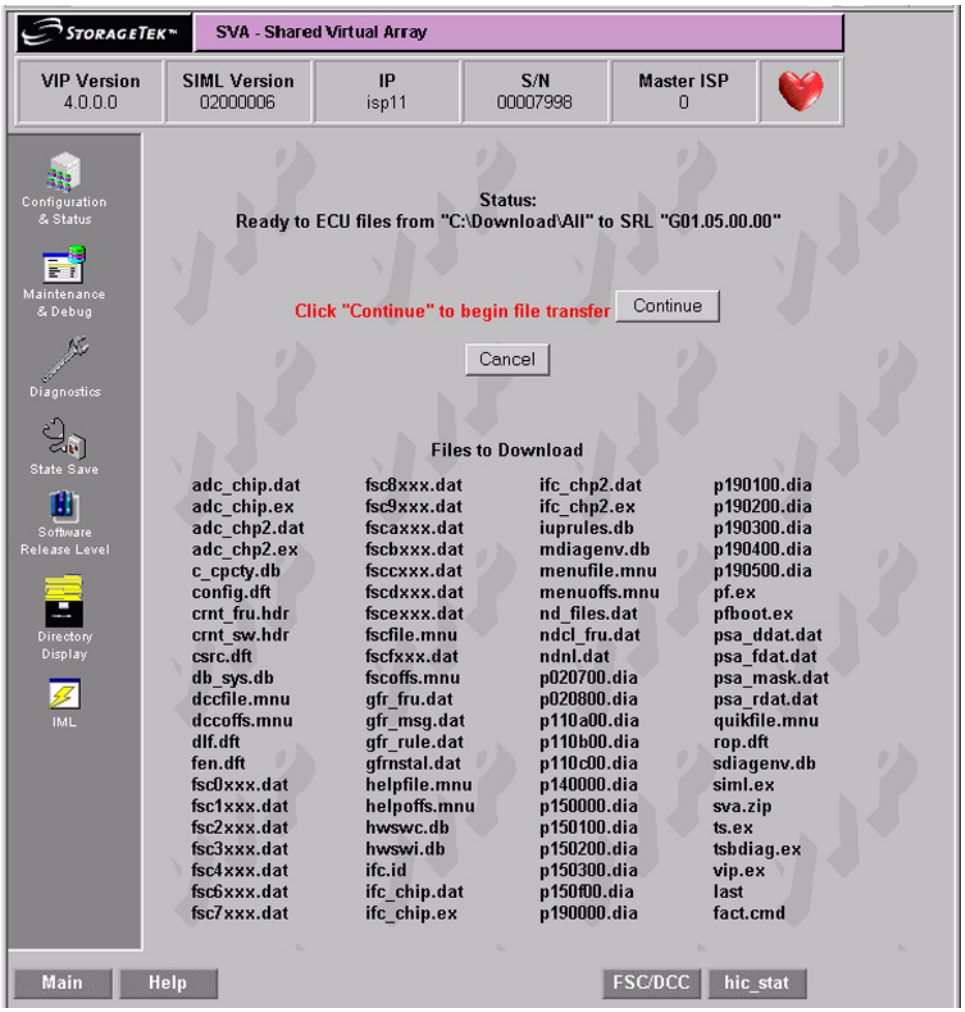

Figure 41 EC Upgrade Second Screen

As the files are transferred, the screen will look like this:

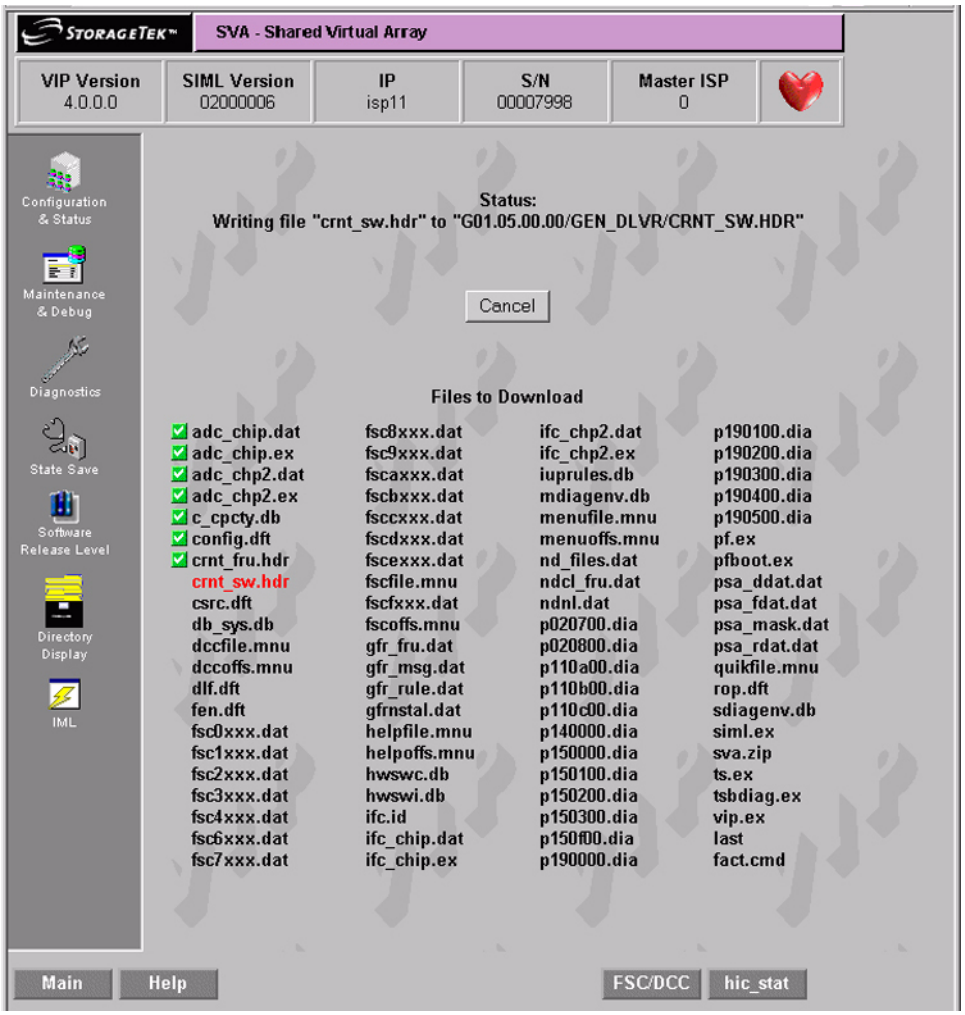

Figure 42 EC Upgrade File Transfer in Progress

Drive Reconstruction Menu

Figure 43 Drive Reconstruction Menu Screen

The above is the menu with no drives fenced. If there was a drive fenced, the following screen would be presented instead.

Figure 44 Drive Fenced Screen

Note: If a drive is fenced, the radio button for the correct drive reconstruction procedure is automatically selected as shown above.

A successful drive reconstruction results in the following screen being displayed:

Figure 45 Successful Drive Reconstruction Screen

In the event that a drive reconstruction fails, the following screen will be displayed.

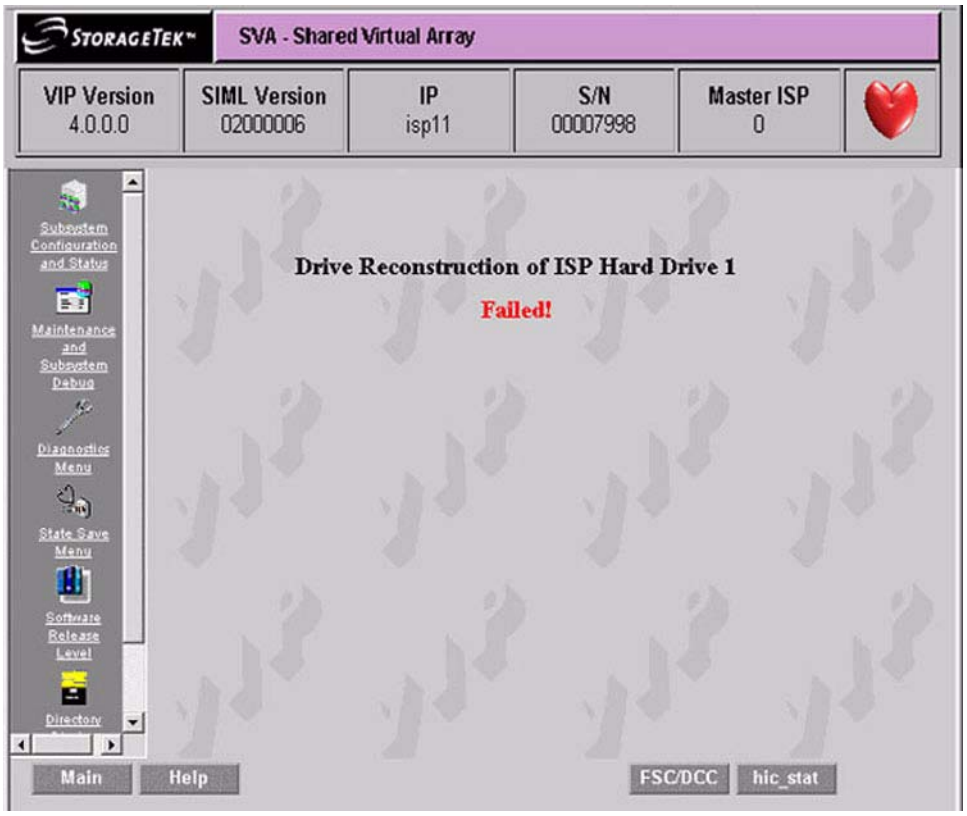

Figure 46 Drive Reconstruction Failure Screen

If you attempt to connect to the SVA when a Drive Reconstruction is currently in progress, the following screen will be displayed.

The Percent Complete is displayed in the upper right box of the Header frame, and the Command in Progress is displayed in the Window Status bar (bottom left of screen).

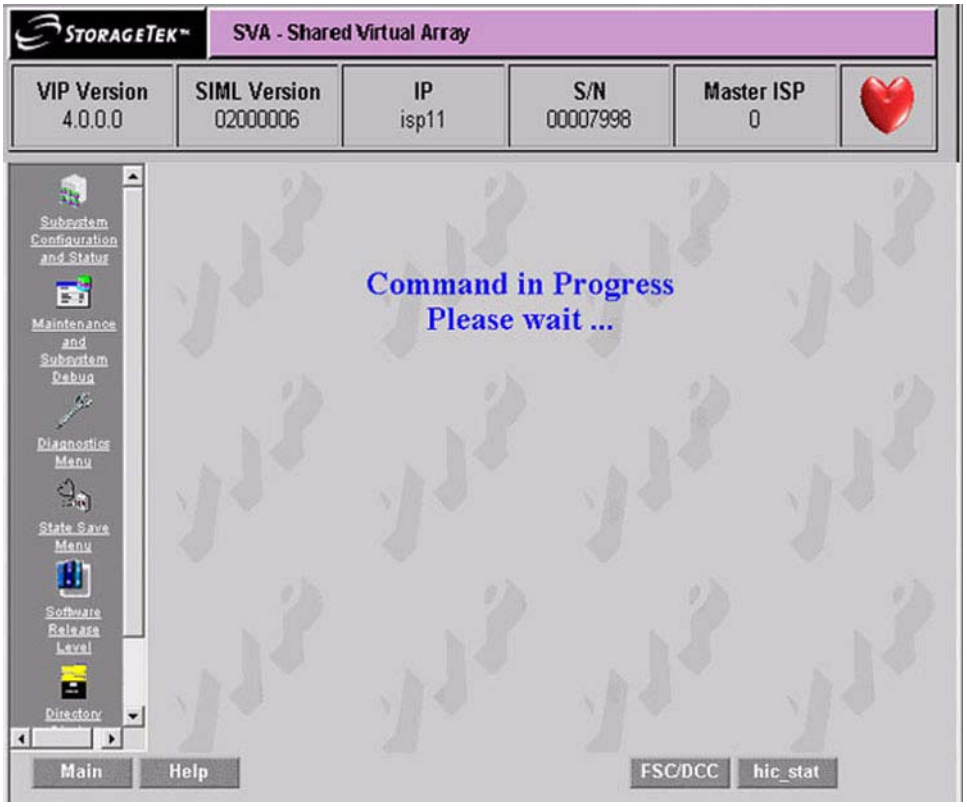

Figure 47 Connection During Drive Reconstruction Screen

Switch ISP Master

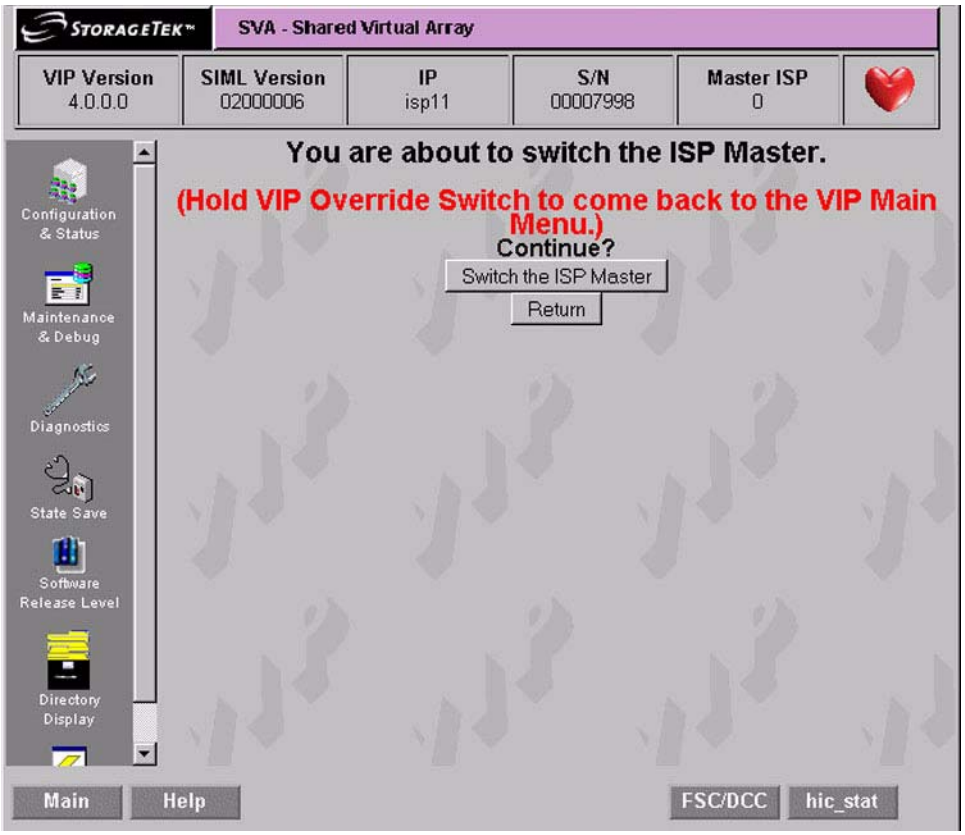

Figure 48 Switch ISP Master Screen

Delete Installed Options

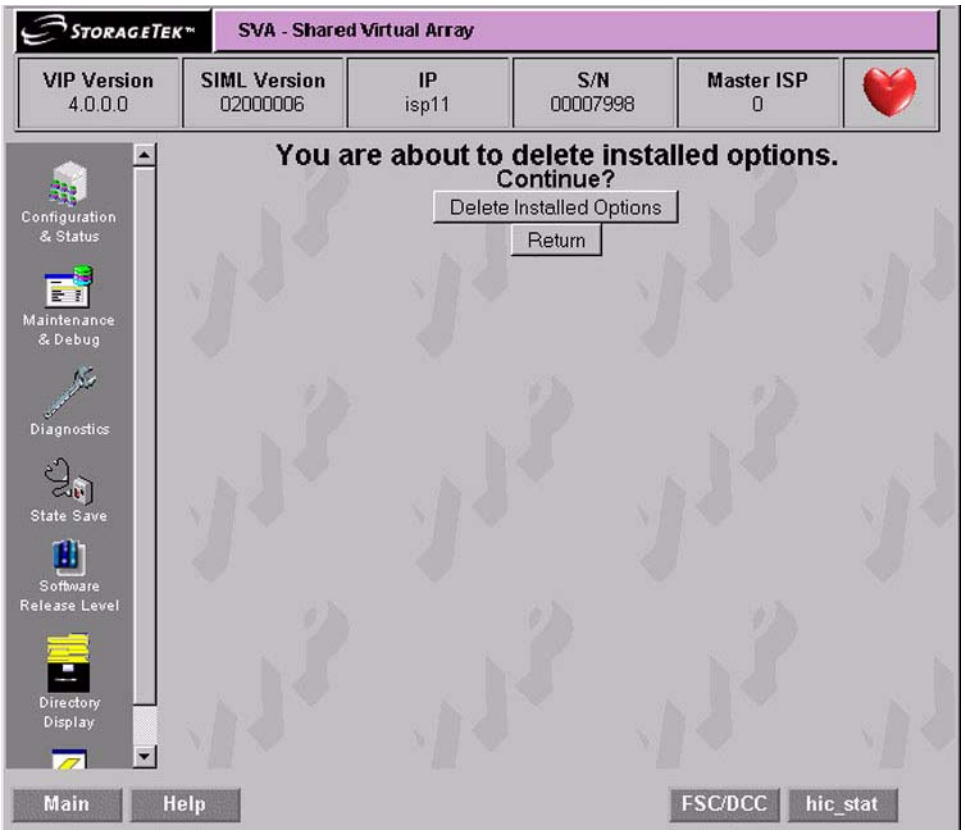

Figure 49 Delete Installed Options Screen

Delete Corrupted DBs in all SRLs

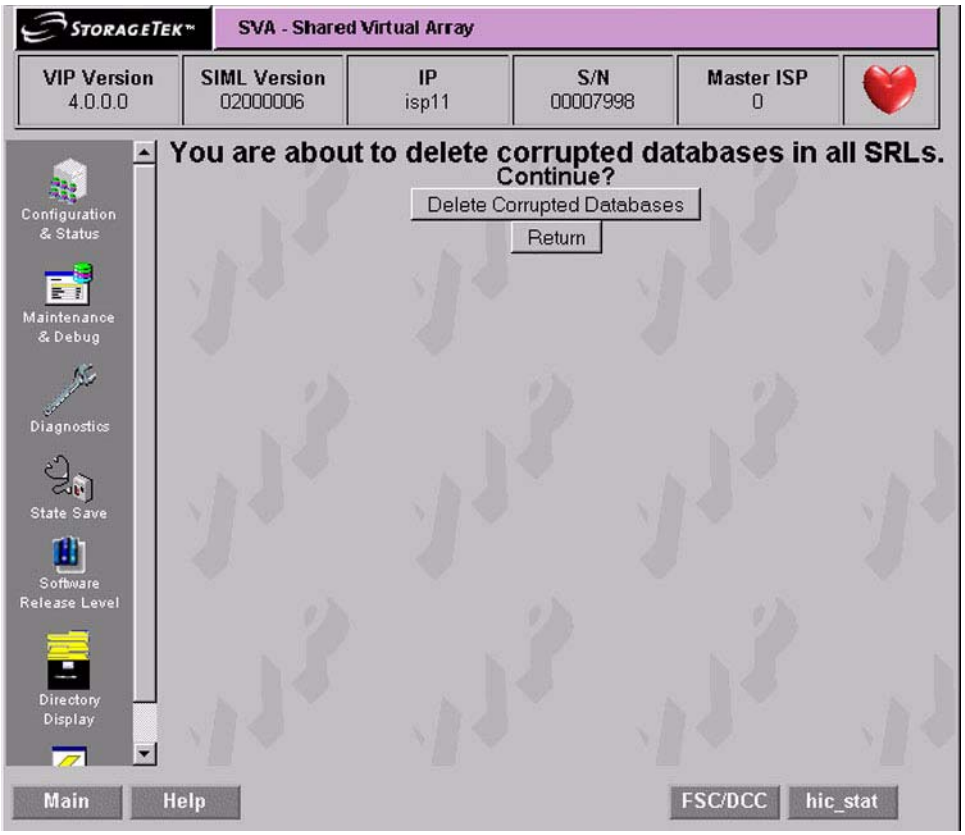

Figure 50 Delete Corrupted Databases in all SRLs Screen

Reset Frame S/N in Boot Blocks to 0

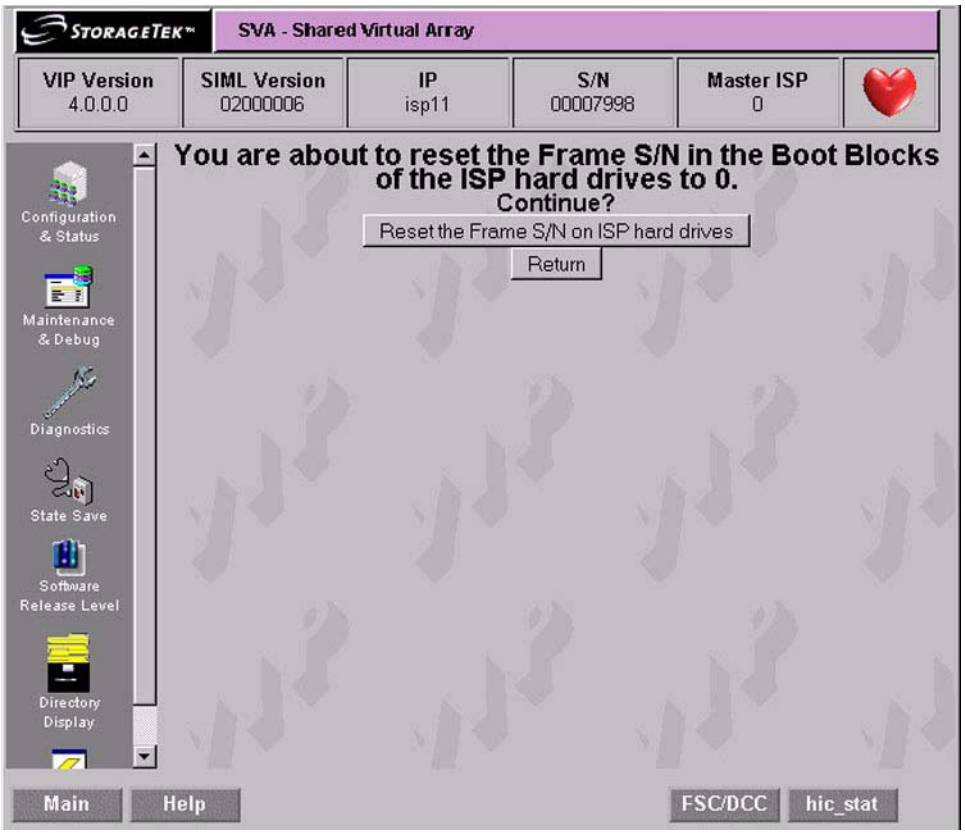

Figure 51 Reset Frame S/N in Boot Blocks to 0 Screen

Unfence Hard Drive

Figure 52 Unfence Hard Drive Screen

Select Software Release Level

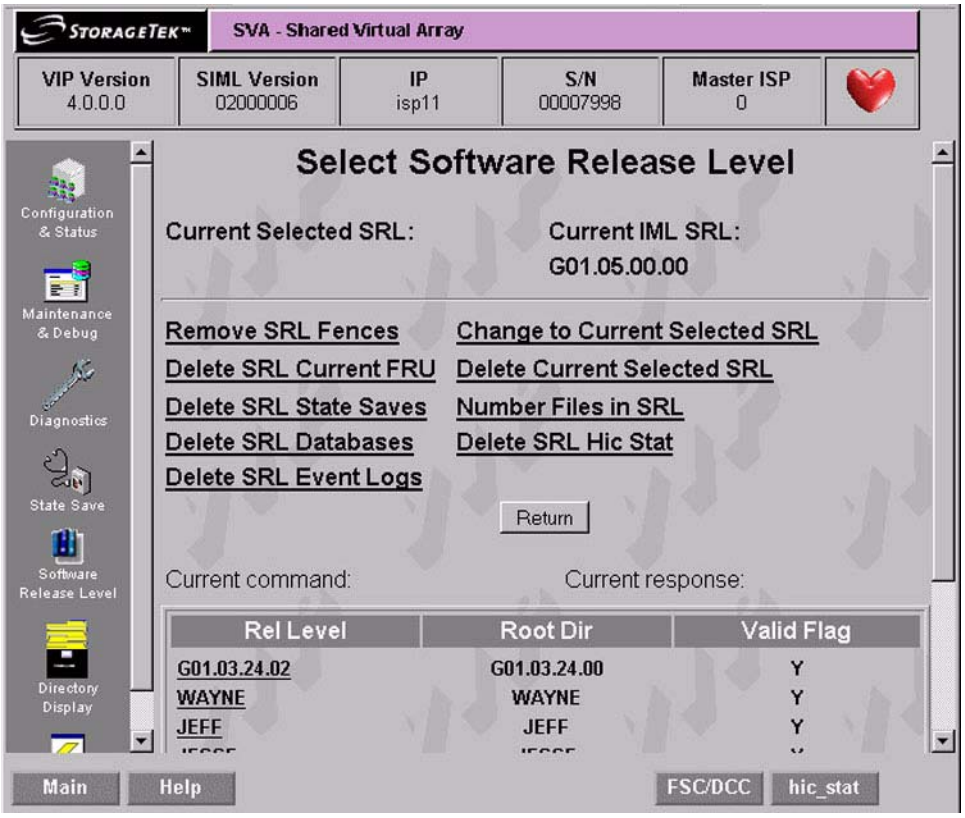

Figure 53 VIP Select Software Release Level Screen

Any item selected on this menu will show the results in the bottom portion of this screen.

Directory Display

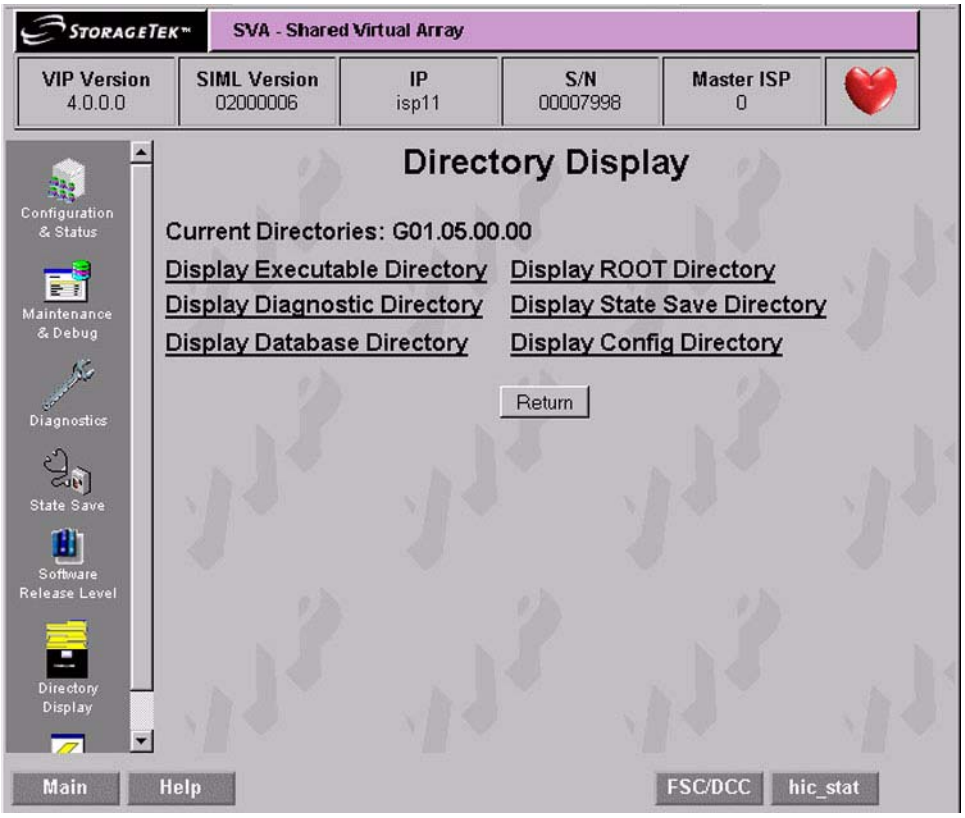

Figure 54 VIP Directory Display Screen

Figure 55 on page 117 shows the executable directory. All other directory displays are similar.

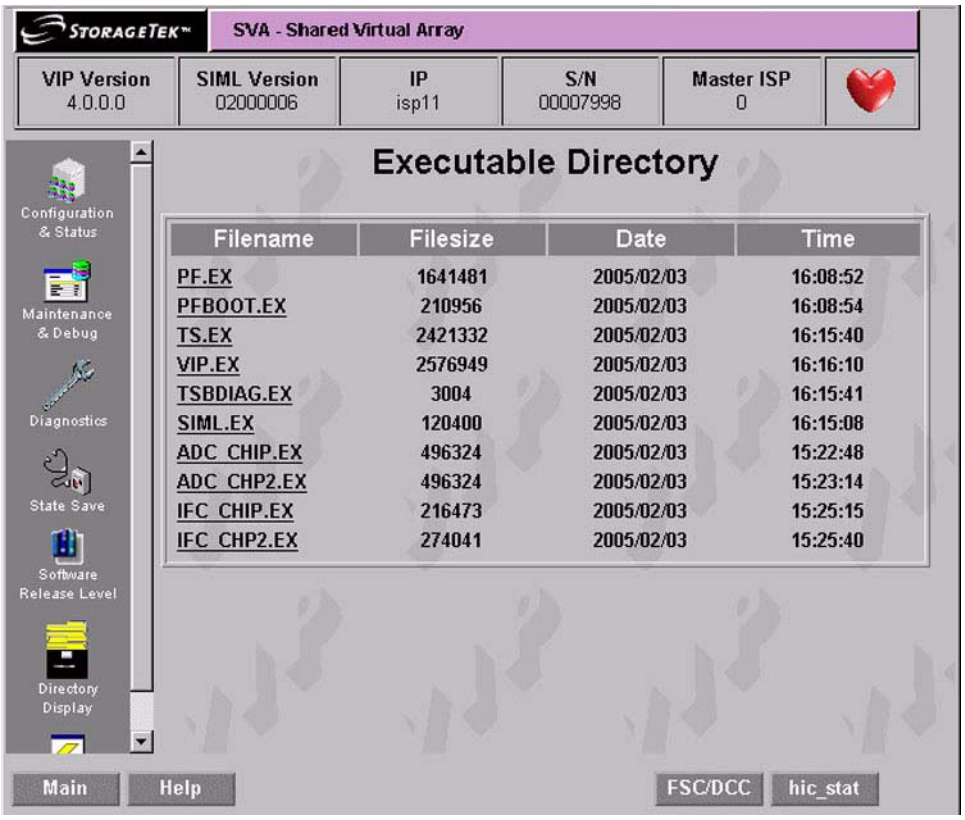

Figure 55 Display Directory Screen Example

Diagnostic Functions

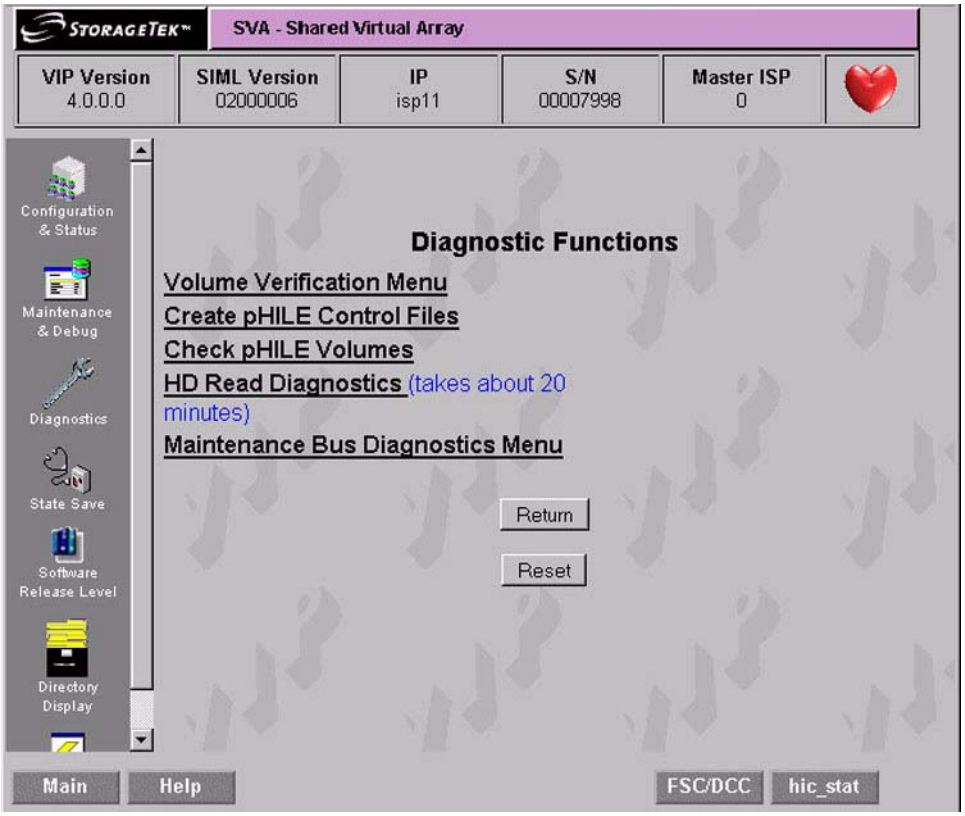

Figure 56 VIP Diagnostic Menu Screen

Note: The HD Read Diagnostics could take a lot longer than the 20 minutes indicated on the screen.

Volume Verification

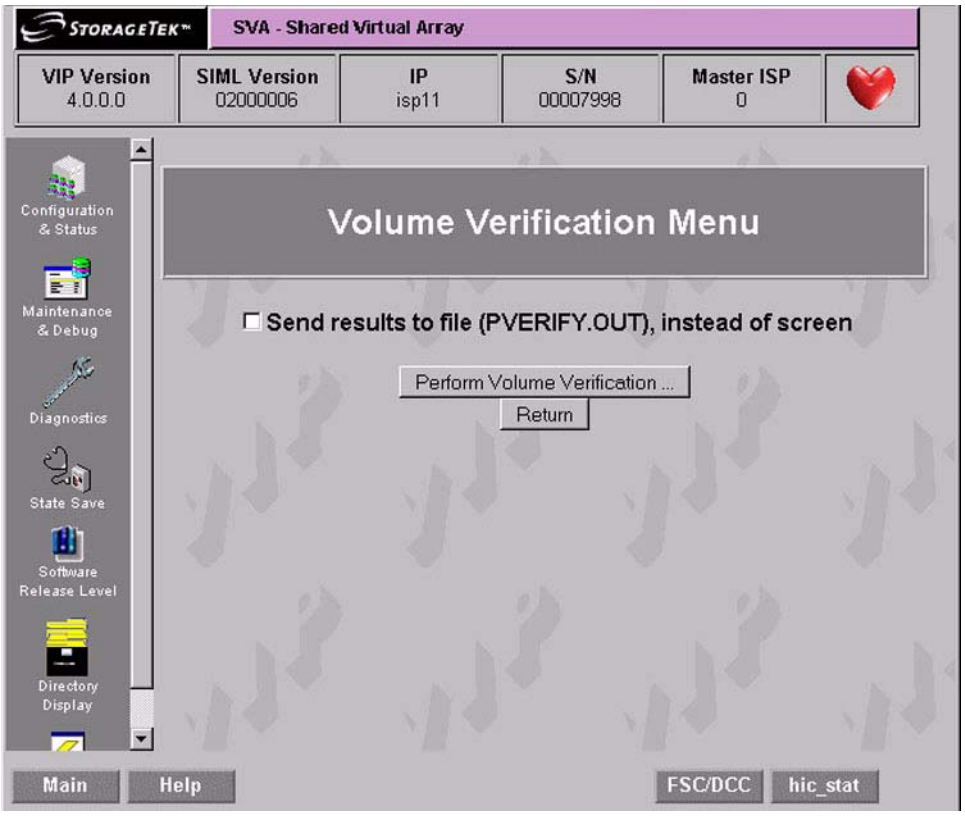

Figure 57 Volume Verification Screen

Create pHILE Control Files

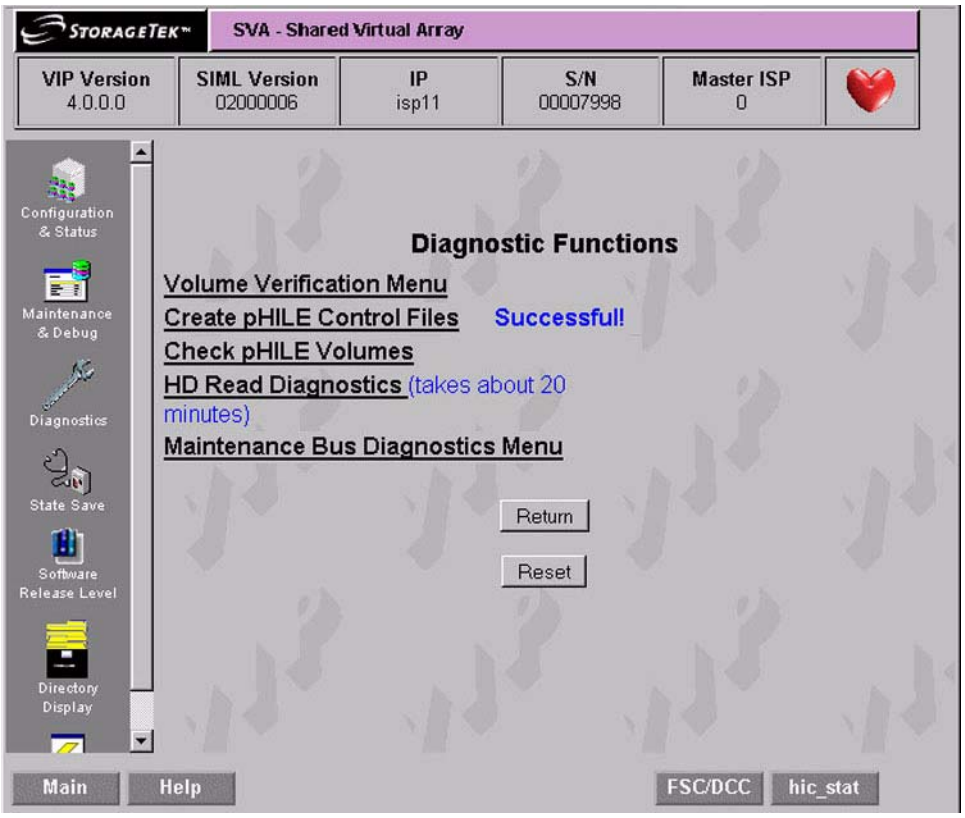

Figure 58 Create pHILE Control Files Screen

Note: This screen shows that the operation was successful.

Check pHILE Volumes

Figure 59 Check pHILE Volumes Screen

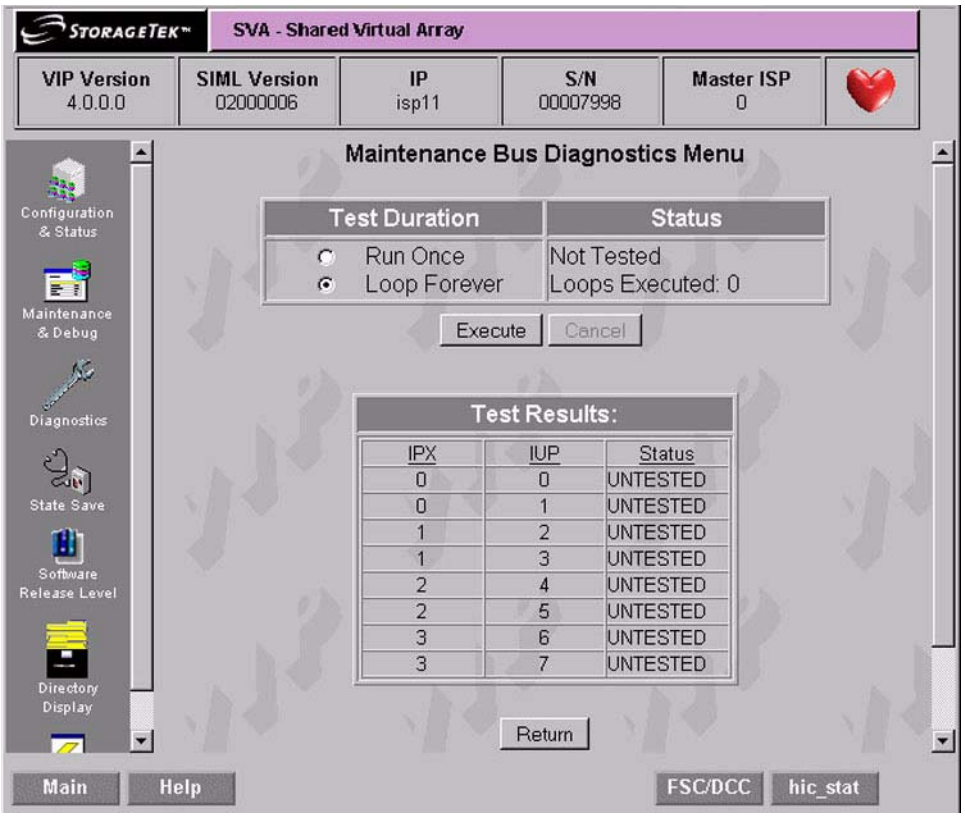

Figure 60 Maintenance Bus Diagnostic Menu Screen

Clicking on “Maintenance Bus Diagnostic Menu” of Figure 56 on page 118 brings up the screen of Figure 60. At this time, select either “Run Once,” or “Loop Forever” and then press “Execute.”

Note: The first time the VIP program is run, the Status and Test Results boxes will show “Untested” instead of the current display of FAILED and Failure.

Once a test is started, the screen of Figure 61 is displayed. This simply indicates that the command was sent to the server and the server answered. This only indicates a test start. Click on “Return” to see the test running as shown in Figure 62 on page 124.

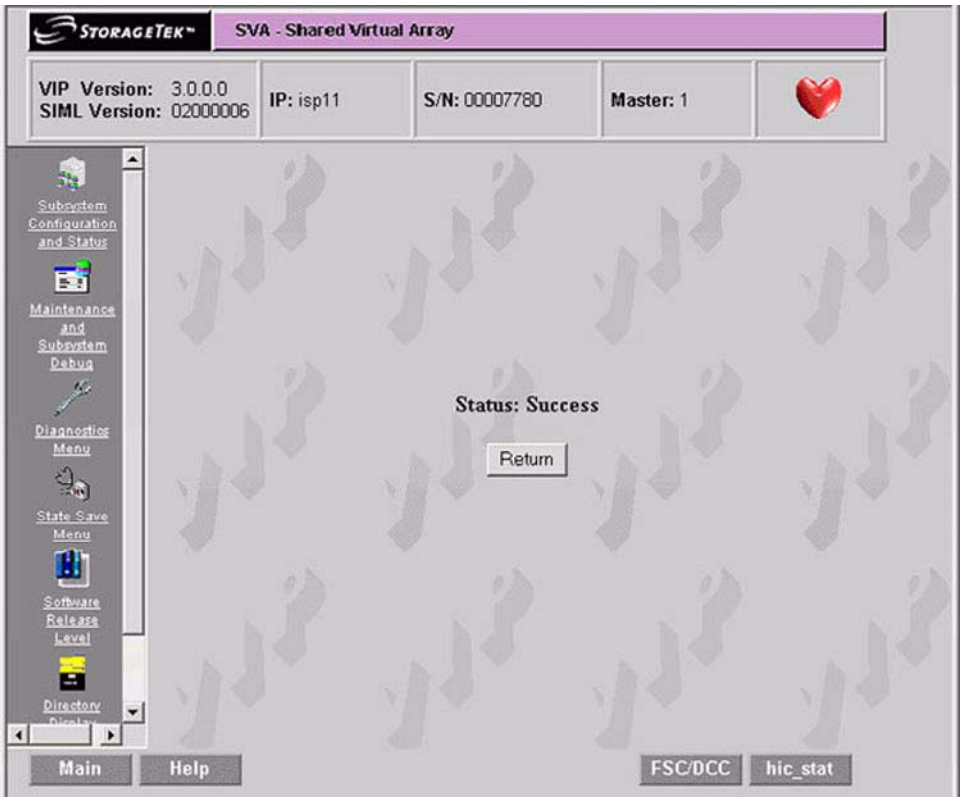

Figure 61 Command Sent to Server Screen

The screen of Figure 62 shows a test running. A couple of tests have completed and passed, and the rest are pending. Notice that the Status box on the screen shows that the test is running.

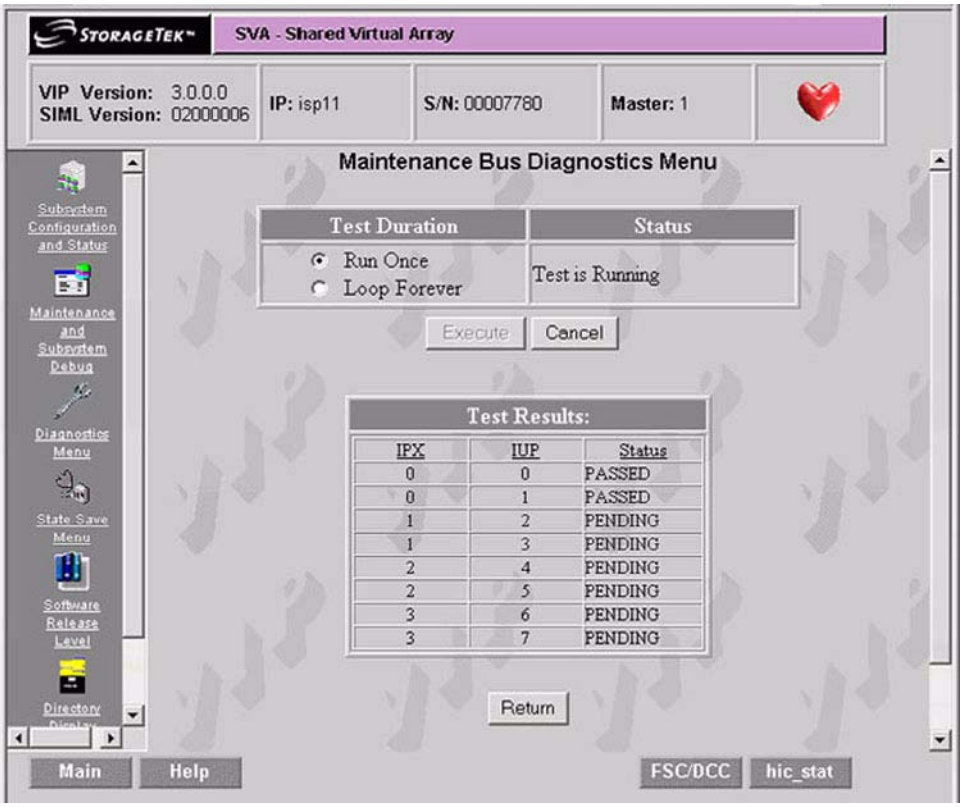

Figure 62 Test Running Screen

Once a test run is complete, the screen of Figure 63 is displayed. Notice that the Status box on the screen indicates the test is complete and the test was successful.

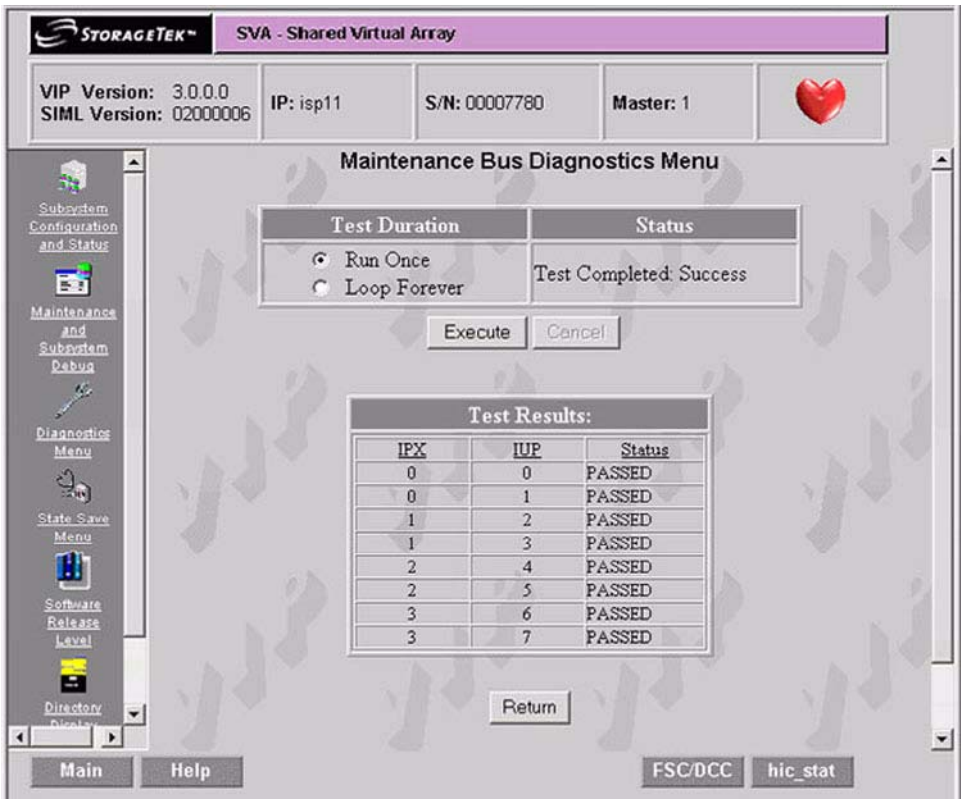

Figure 63 Test Pass Complete Screen

Note: Had the original selection been “Loop Forever,” the Status box would indicate “Test Is Running.” Clicking on Cancel would stop the looping.

In the event that an operator logs out of an SVA with a test running, reconnects, and attempts to run another test, the screen of Figure 64 is displayed.

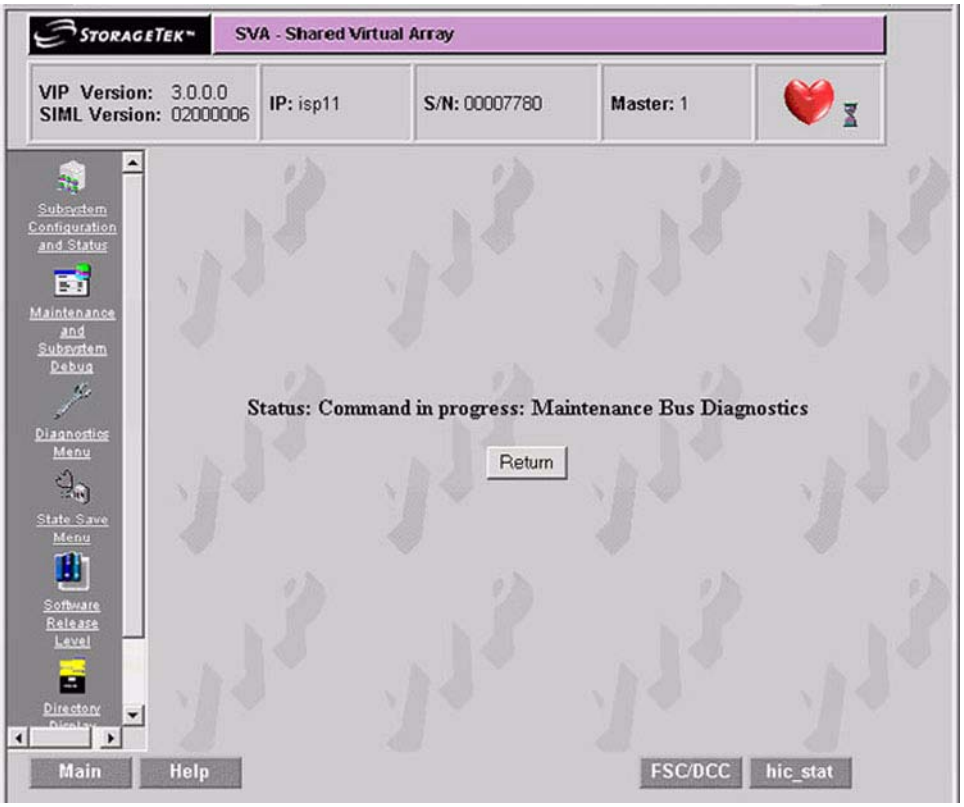

Figure 64 Command in Progress Screen

If a test was set to “Loop Forever,” the screen of Figure 65 is displayed while the test is running. Click on “Cancel” to stop the testing. Figure

65 shows that the test has run 17 times and is running for the 18th time.

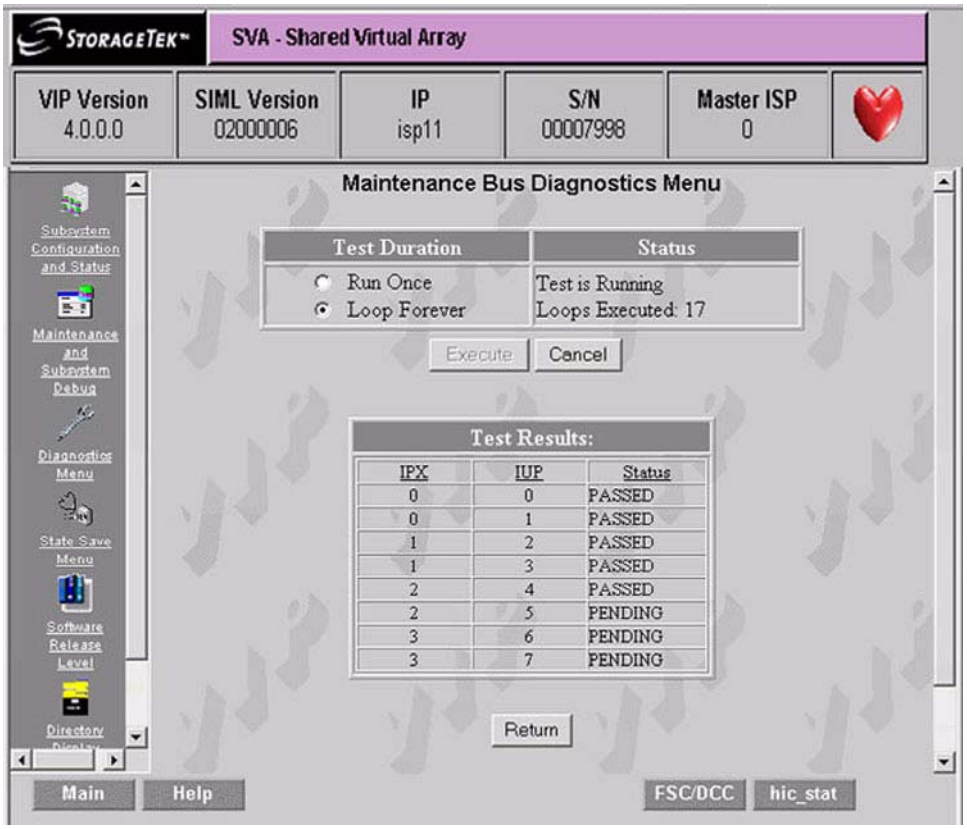

Figure 65 Test Set to Looping Forever Screen

State Save Functions

Figure 66 VIP State Save Menu Screen

Find All State Saves

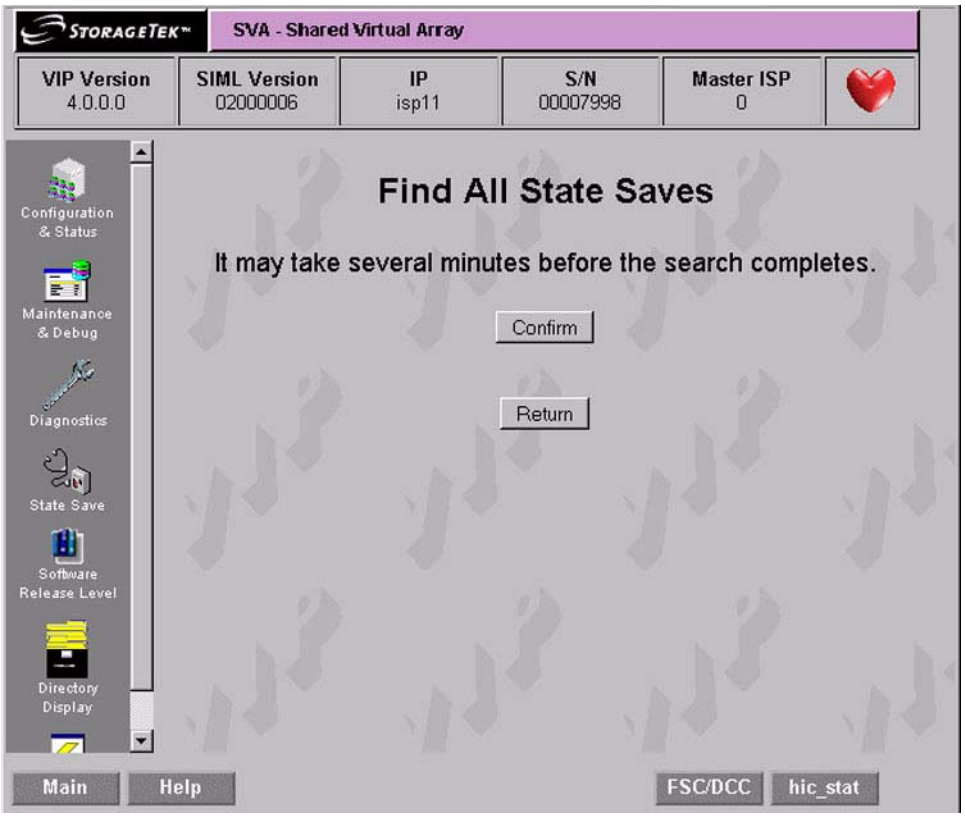

Figure 67 Find All State Saves Screen

Find All IUP State Saves

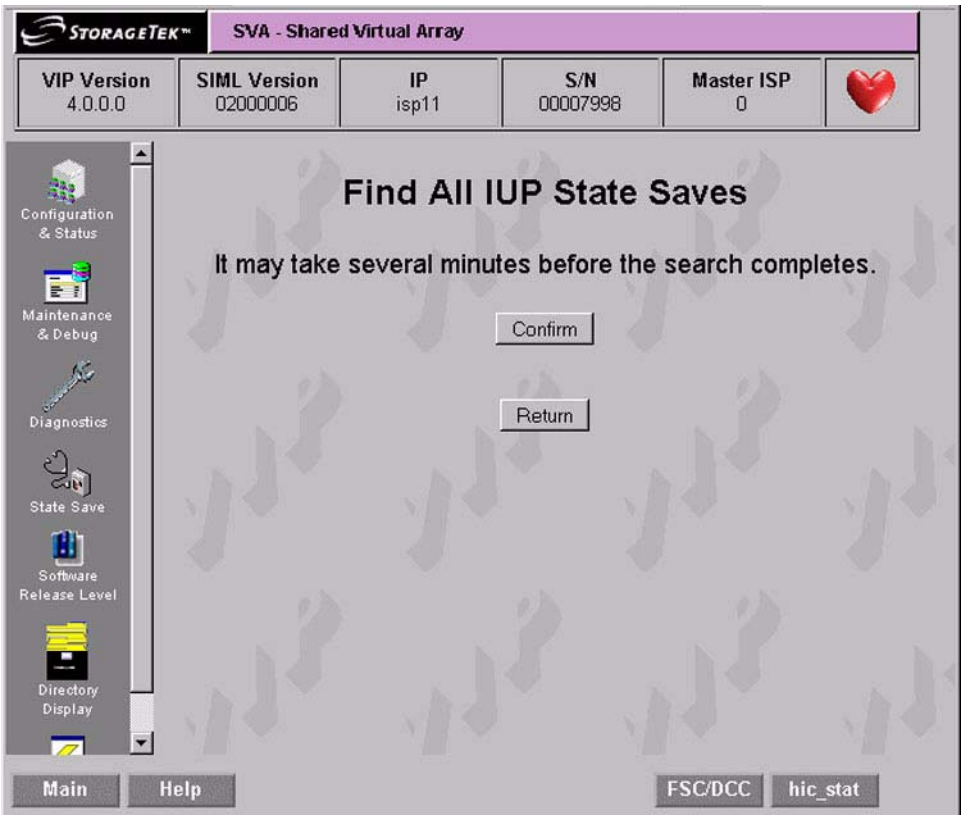

Figure 68 Find All IUP State Saves Screen

Find All ISP State Saves

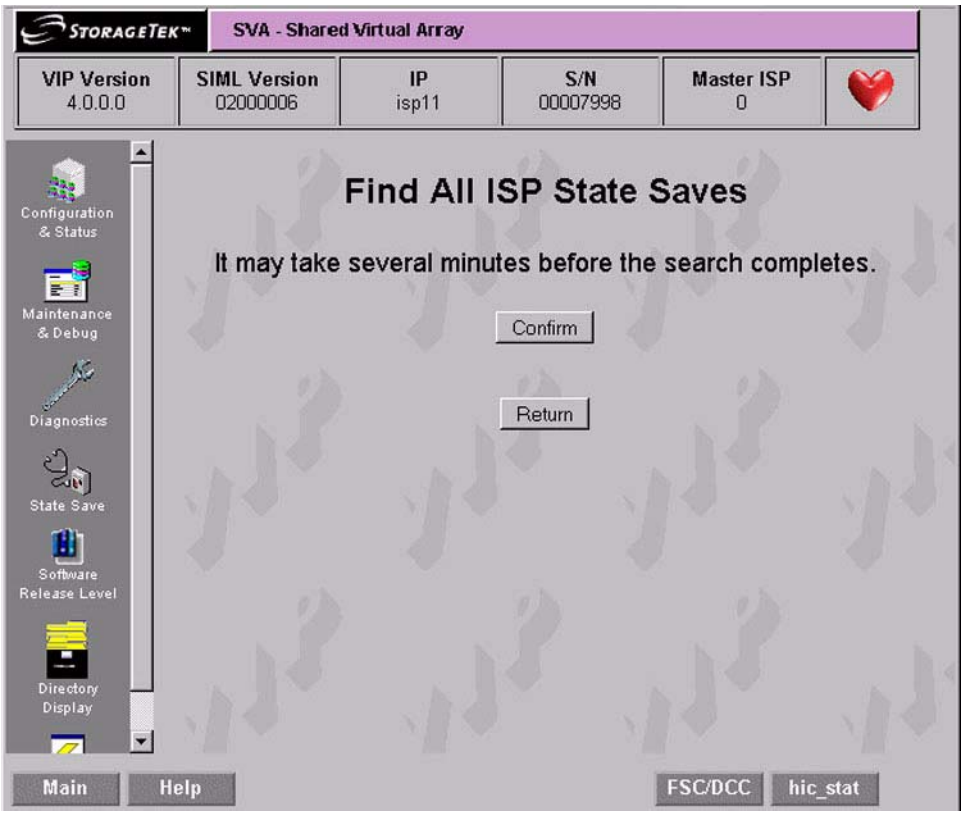

Figure 69 Find All ISP State Saves Screen

Initialize All State Saves

Figure 70 Initialize All State Saves Screen

Initialize All IUP State Saves

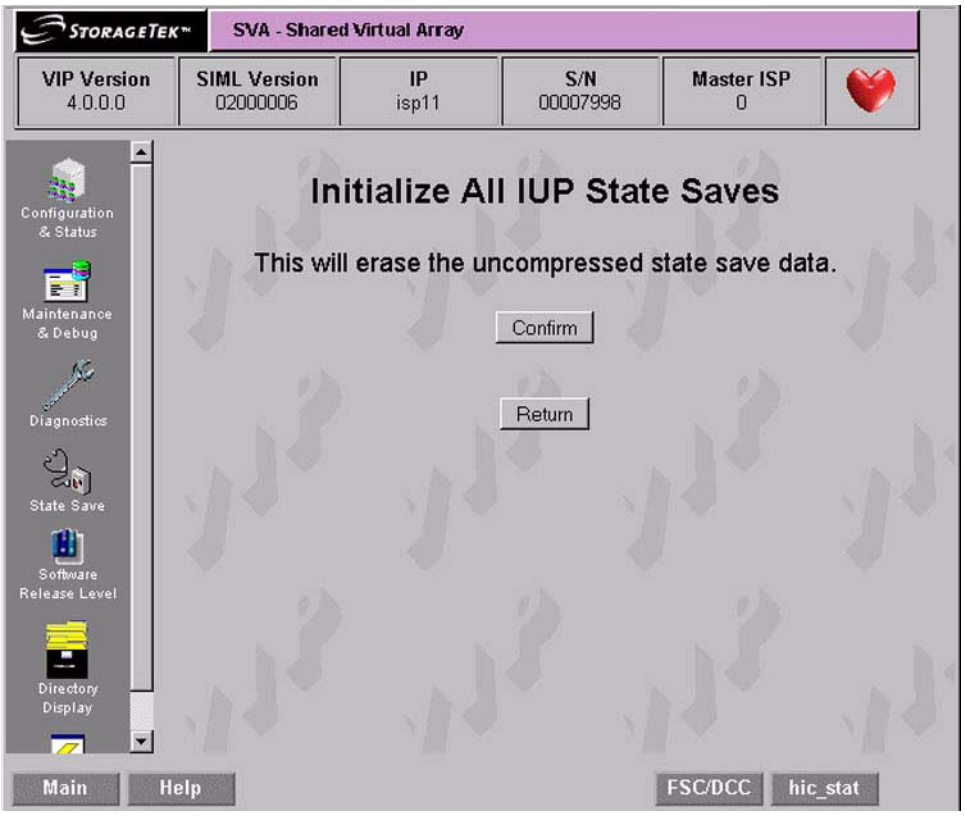

Figure 71 Initialize IUP State Saves Screen

Initialize ISP State Saves

Figure 72 Initialize ISP State Saves Screen

IML the ISP

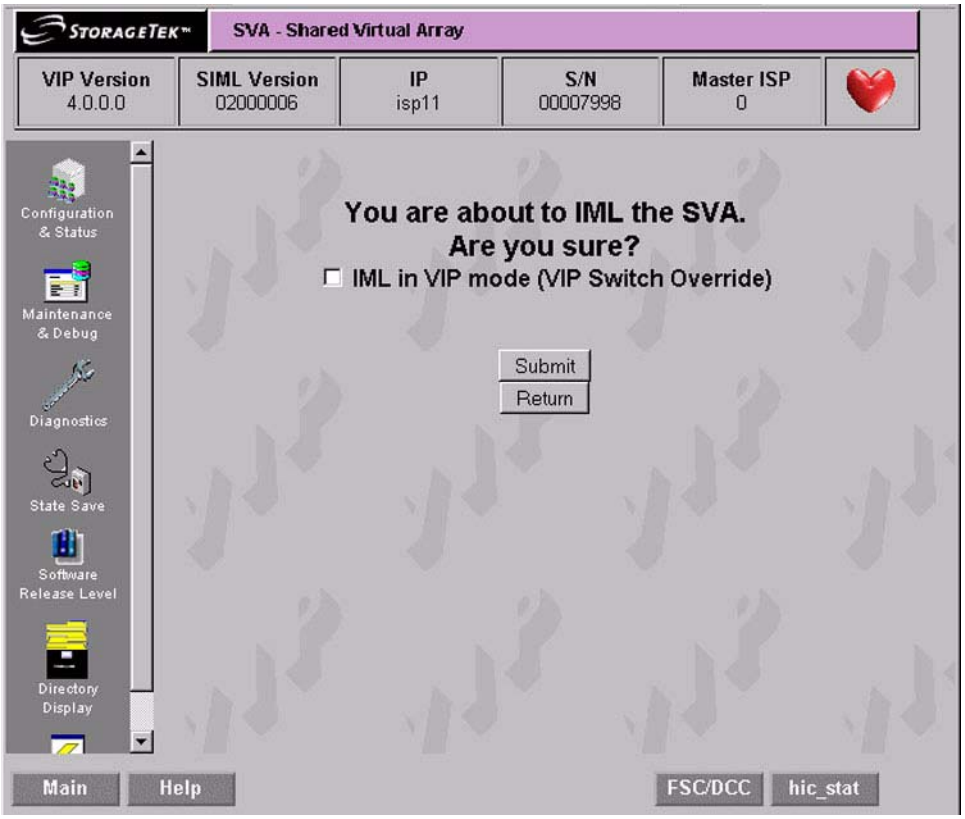

Figure 73 VIP IML Selection Screen

This screen allow you to remotely exit VIP and reboot the SVA without pressing any buttons on the actual SVA. If you click on the “IML in VIP mode (VIP Switch Overide),“ box, putting a check there, the SVA will come back up in VIP mode. While the SVA can be rebooted from a production screen, it cannot be brought up in VIP mode.

Dual Fenced Condition

E

If one of the drives for the ISP cards is “fenced” or otherwise unusable and the usable drive is in the middle of a write operation and there is a complete loss of power to the SVA or the EPO button is pressed, it will render the last usable drive as “fenced.” When power is restored, the SVA will find no usable drives from which to IML.

During a normal power down, the SVA finishes all write activity to the hard drives before finally shutting down power, thus avoiding this condition. It is only the sudden loss of power or the use of the EPO button that creates the conditions required to “fence” the drive(s).

Indications

This dual “fenced” condition is indicated at power on by:

1. the power up sequence stops without the Power Complete LED illuminating,
2. and the red and green LEDs on the ISP cards flashing.

Recovery

Recovery from the “dual fenced condition” is done with the VIP. Follow this procedure to correct the problem:

1. Reboot the SVA in VIP mode: this is done by holding the switch on the Faceplate Assembly in the **VIP** position, then pressing the power button.
2. Once VIP starts, there will be a warning message superimposed over the main VIP screen indicating that there is a problem with a

volume. This warning is shown in the following figure. Click on the **Ok** button.

Figure 74 VIP Dual Fenced Condition Warning

3. The Volume Verification Menu (shown in the following figure) shows up next.

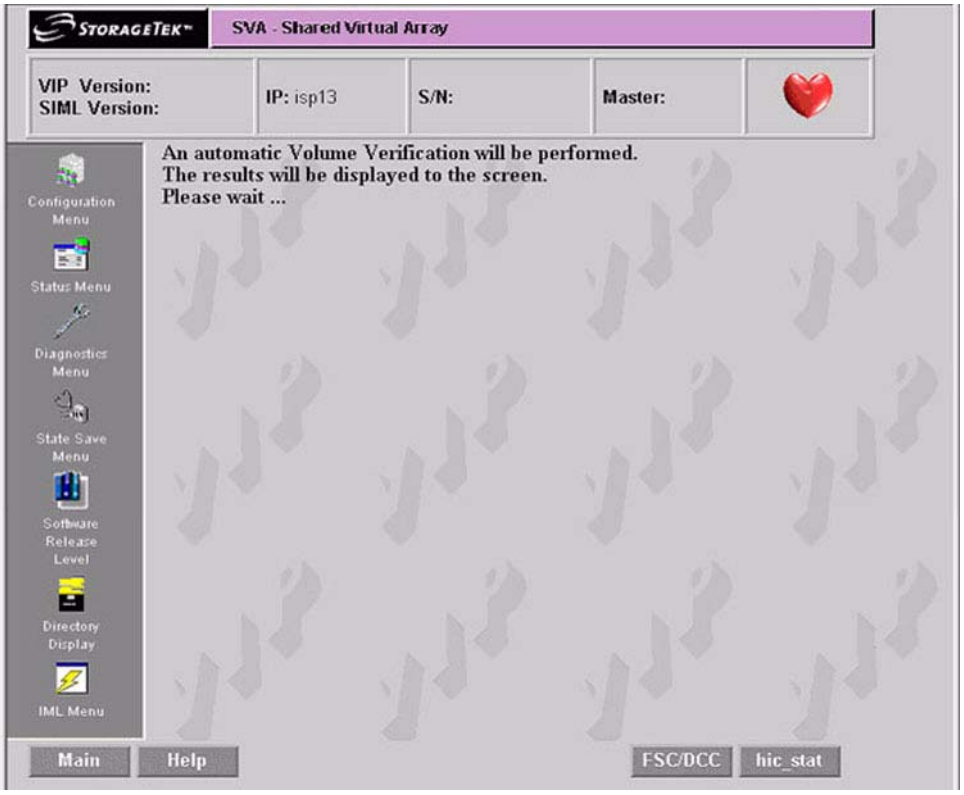

Figure 75 Volume Verification Menu

4. The volume verification starts as shown in the previous figure. Once it is complete, it will look like the screen of the following figure. *Examine that screen carefully.* It will either say no faults were found, or if there was a problem:
   - the text of will change from “No faults were found” to one indicating a fault was found and fixed, or
   - the text will display that non-fixable faults found.

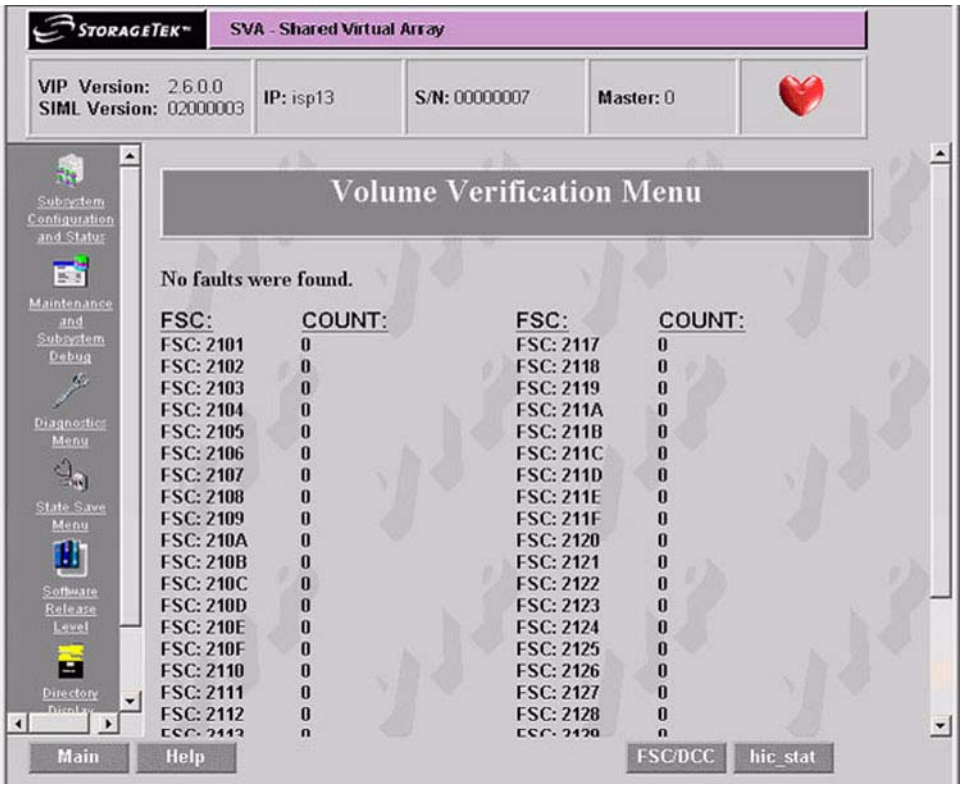

Figure 76 Volume Verification Menu with no faults found screen

5. After the previous figure (screen) appears:

- **If no faults were found**, you may continue with normal operation – the subsystem may be IMLed in production mode.
- **If fixable faults were found**, (they were fixed automatically) the you may continue with normal operation – the subsystem would be IMLed in production mode (check to see if the subsystem fenced any drives after the IML completes).
- **If non-fixable faults were found**, ***you need to perform a system initialization***.

Caution: Possible Performance Problem and Data Loss - **If non-fixable faults were found, NPDC should be called to assist with restoring the system correctly.** ***This is not a minor problem!***

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