NetApp Global Services

Controller Module Replacement for the V-FAS3100 Family
For NetApp Authorized Service Engineers

README FIRST

README - Process Changes in Disk Re-assignment and Controller Giveback Sections

1	This action plan has been updated to include additional steps where required for disk assignments and 'cf giveback'.	
2	No Failed Disks can exist in the system, confirm on partner node by entering: '**aggr status -f** '. If there are failed disks, they must be replaced before the disk reassignment process is executed.	
3	If the 3100 Series is running **DOT 8**, the disk reassignment and giveback steps have changed under the following condition:	
	A.	The controller is HA configured, including Stretch and Fabric MetroClusters and the partner controller took over the "target" (down) controller.
	WARNING	If this system meets the above criteria, the disk reassignment should be only be executed when the 'cf giveback' can also be executed - Confirm with end-user that the 'cf giveback' can be executed immediately after the disk reassignment. If the giveback needs to be scheduled, defer the disk reassignment until then.
	NOTE	After the initial 'cf giveback' is completed from the partner node, we will login to the "target" (repaired) node. Then from the "target" node enter: 'cf takeover'. When the takeover is complete, issue: 'cf giveback' to finish the process of updating the disk ownership caches on both nodes.
4	The command to run the diagnostic test has changed to bypass running PAM card(s) if installed. In addition, steps have been inserted to leave the FC cable(s) disconnected if there is any ***"target"*** adapters to eliminate a FC diagnostic failure.	
5	Continue with page 1.	

SECTION OUTLINE for a V-FAS3100 (3140/60/70) Appliance Controller Module Replacement

This procedure will take 90-180 minutes

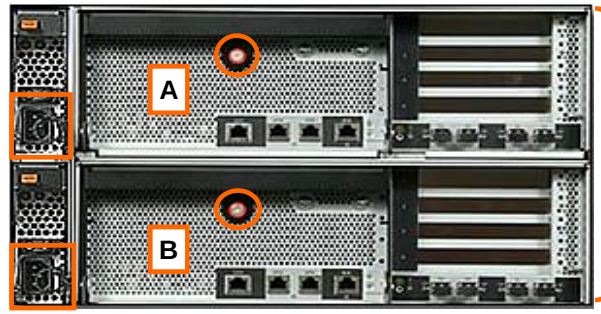
I.	Appliance/Controller Module Tray Visual Checks	**XI.**	Install PCI Riser and Cards
II.	Node Pre-Checks	**XII.**	Partially Reinsert the Replacement Controller and Reconnect the cables
III.	Node State Check and Shutdown Procedure		
IV.	Capture the Current System Configuration	**XIII.**	Set date and time on the RTC and Reset PROM variables
V.	Open the System: Remove the cables, Cable Management Tray and extract the Controller	**XIV.**	Run Diagnostics (20-45 min)
		XV.	Set Fibre Channel (FC) "target" Ports
VI.	Move onboard SFPs - Remove PCI Cards and the Riser	**XVI.**	Capture new System-ID on replacement Controller
VII.	Move the RLM Module	**XVII.**	Disk Reassign
VIII.	Exchange the CompactFlash Cards	**XVIII.**	Boot the Operating System - 'cf giveback' if applicable
IX.	Move the System DIMMs	**XIX.**	New controller registration, Submit logs and Part Return
X.	Move the NVRAM Battery and NVRAM DIMM		

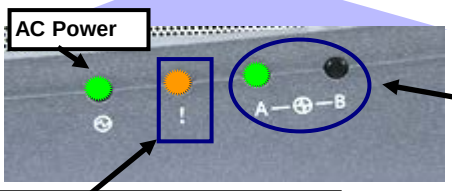
I. V-FAS3100 Family: Appliance / Controller Module Visual Checks

Step	Action Description
1	Visually verify if you are working on correct model and READ the **STOP** box below.

The FAS3100 Appliance has either one or two Controller Modules, A, B in a single chassis.

Fig 1





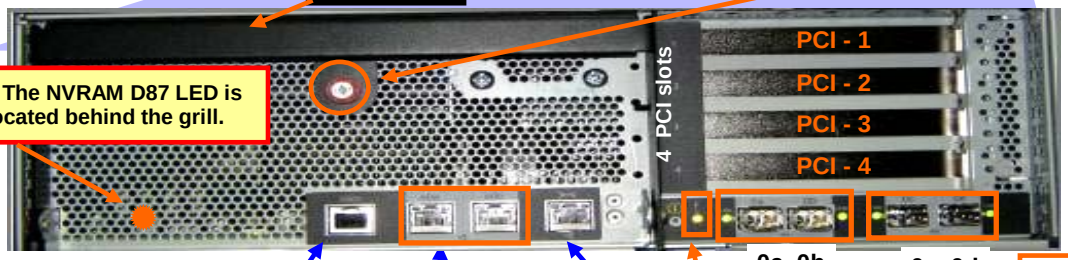
Controller activity LEDs: If LED flashes GREEN, that controller is online.

" ! " LED is ON when hardware failures are detected or if controller failover is disabled.

Active-Active Configuration has 2 controller cards, (A & B) as shown. A single controller system has only one card in the top slot.

1 Red Thumbscrew to extract each controller

Fig 3



★ The NVRAM D87 LED is located behind the grill.

Controller Rear View

0a, 0b

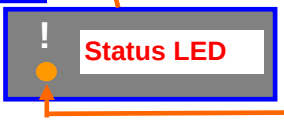
0c, 0d

Fibre Channel Ports

IOIOI (Console) Port

Ethernet Ports: e0a, e0b

RLM Port



The Status LED will be "ON" if the controller is faulted or if clustering is disabled

Each Controller Module, (A or B slot) has it's own System Serial Number

STOP !! The NVMEM D87 LED will start flashing through the grill, reference Fig 3, when power is removed from the controller if the system is "waiting for giveback", or the system was not shutdown properly (uncommitted data). Follow the steps in Section V carefully.

2	Continue with Section I on next page.

I. V-FAS3100 Family: Appliance / Controller Module Visual Checks (cont.)

Step	Action Description

Fig 4 **FAS3100 Controller Module with Memory cover removed**

Notes:

1. This Action Plan covers FAS and V-Series Controller

a. V-Series Steps denoted with V

2. This procedure will take 90-180 minutes.

3. Note the Caution on NVRAM LEDs in Section V.

4. This Action Plan needs to be followed in step order

5. FC port configuration, disk list and the system date are captured prior to removing the original Controller.

6. Many parts need to be moved from the Original Controller to the Replacement Controller Module.

7. System variables; date-time, disk reassignment and FC port configuration must be set before rebooting the system.

8 . If a HA configuration and DOT 8, the console may report you "must perform a final ' cf takeover' and 'cf giveback' from the 'partner node", the node that was repaired to complete the 'disk reassign' process. Follow the new steps in Section XVII and XVIII carefully.

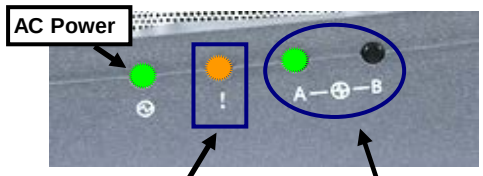
II. V-FAS3100 Family: Node Pre-Checks

Step	Action Description
1	Verify the **"Order Reference** 8xxxxxxxxx number on the RMA packing slip is the same as the **Part Request (PREQ)** number listed in your dispatch notes.
2	Adhere to anti-static precautions. (A paper ESD strap is included inside the RMA box if you don't have your own)
3	Remove the replacement Controller Module from the anti-static bag and examine the housing and connector for damage.
4	Go to Section III "Node State Check and Shutdown" on next page.

III. V-FAS3100 Family: Node State Check and Shutdown Procedure

Step	Action Description
1	Always capture the node's console output to a text file, ex: **"NetApp-dispatch-num.txt",** even if using the end-user's computer. To review the Job Aid on how to connect to console (IOIOI) port and serial emulator options, click >> **Console Attach Aid**
NOTE	**Visual Chassis Checks** **FRONT:** Look for an Amber Status (!) LED,Fig 5a, then observe which Activity LED is flashing, which is **OFF.** The activity LED that is not flashing is not running Data Ontap or the controller is not installed **REAR:** Look for the controller that has the Status (**!**)LED **ON**, Fig 5b**.** Both could be on, verify which Activity LED is not flashing - Continue with console response checks in step 2.

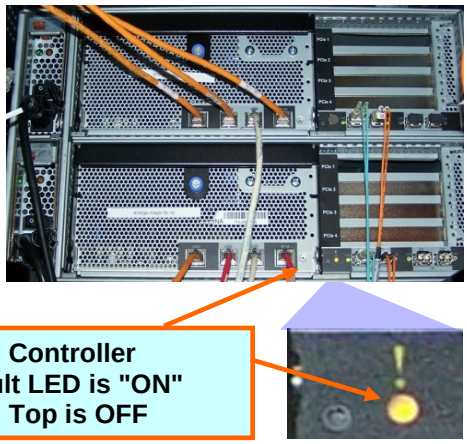
Fig 5a **Front OPS LEDS**



" ! " (LED is ON when hardware failures are detected and if the cluster fails over or clustering is disabled

Controller Activity LEDs
If LED actively flashes GREEN, that controller is online - "A" is online.
"A" is the top controller,
"B" is the bottom controller.

Fig 5b **Controller Fault (!) LED on Rear**



"B" Controller Fault LED is "ON"
"A" Top is OFF

NOTE	**Chassis Check:** To see if **two** controllers are installed reference clustered figures here > **Cluster Figs**
2	Check the state of the node by viewing the console port responses from (each) controller if HA (Active-Active) configuration . HA config requires two controller assemblies installed in the same physical chassis. Detailed messages here > **Appliance Check**
3	If a **SINGLE** controller configuration: The console response is **"login"** or **"password"** or the **<system prompt>**, the end-user will have issue a **'halt'** on the system for proper shutdown. **Work with NGS if you have questions.**
NOTE	The "**LOADER"** prompt will include **-A** if attached to the top controller or **-B** if attached to the bottom controller.
NOTE	**HA-config Status Command:** After logging in, **"cf status"** will display the state of the HA . Example of >> **cf status cmd**
STOP!	**WARNING for HA (Active-Active) configurations:** If the failure has caused a cluster failover you may have been dispatched on the surviving controller's serial number, not the failed one.
4	**Dual Controller Configuration**
a)	**If both controllers' are UP and Online:** the end-user will have to issue a **"cf takeover"** from the partner node if controller failover is active or **"halt"** it if controller failover is disabled. **Work with NGS if you have questions.**
5	If the console response is "LOADER-A|B>", go to Section IV.
6	Continue with Section III on next page.

III. V-FAS3100 Family: Node State Check and Shutdown Procedure (cont.)

Step	Action Description
7	If the console response is: **"Waiting for giveback….."** follow steps 7a-7c.
a)	At the "Waiting for giveback ……" prompt, Enter: **Ctrl-C**
b)	At the message: "Do you wish to halt this node rather than wait [y/n]? " Enter: **y**
c)	After the system drops to the LOADER-A|B> prompt, continue with next section.

```
Waiting for giveback...(Press Ctrl-C to abort wait)
Waiting for giveback...(Press Ctrl-C to abort wait)
^C
This node was previously declared dead.
Pausing to check HA partner status ...
partner is operational and in takeover mode.

You must initiate a giveback or shutdown on the HA
partner in order to bring this node online.


The HA partner is currently operational and in takeover mode.
This node cannot continue unless you initiate a giveback on the partner.
Once this is done this node will reboot automatically.

waiting for giveback...

Do you wish to halt this node rather than wait [y/n]? y
Halting...
Uptime: 3m10s
System halting...

LOADER-A>
```

Step 7: Hitting Enter displays this prompt

Step 7a): Enter: **CTRL-C**

Information on Partner Status

Step 7b): Enter: **"y"**

IV V-FAS3100 Family: Capture the Current System Configuration

Step	Action Description
NOTE	Confirm the "console" output is being saved to a text file. It will be needed later in this action plan.
1	The date and time is stored in the system PROM in Greenwich Mean Time, (GMT) also known as Universal Time Clock, (UTC). At the LOADER> prompt, enter: **"show date"**. Record on paper the system's GMT time and the local time to determine the number of hours (and minutes) the local time is ahead or behind GMT.

```
LOADER-A> show date
Current date & time is: 06/12/2011  15:59:10
```

Step 1): Enter **"show date"**

2		Skip to step 3 if this is not a V-Series (V3100). If V-Series perform the below Additional Steps.

Additional Steps for V-Series

A.	Enter the ***' printenv '*** command to capture the boot prom variables.
B.	Open up the console log.
C.	Use the **"Find"** function to search for variables prefixed with: **"fc-no"** - Do not rely on a visual search.
D.	Identify these variables from the **printenv** output in the console log: (i) **fc-non-array-adapter-list**, (ii) **fc-no-mgmt-ports** OR **fc-no-mgmt**? NOTE - Only one of these two variables may be used. An example of "printenv" output highlighting the variables is here >>> printenv.pdf
E.	If any of the above variables exist, they will have to be set on the replacement MB later in this action plan.

3	a)	Reference the example of console output on next page and follow these steps. The ….. (dots) represent deleted text to highlight the specific output messages to key on.
	b)	Continue with Section IV on next page.

IV V-FAS3100 Family: Capture the Current System Configuration

Step	Action Description
	c) From the **LOADER-A|B>** prompt enter **"autoboot"** to initiate a prom bootstrap.
	d) When this message appears: **"Press CTRL-C for special boot menu"** , press **CTRL-C (^C)** to load the **"Special boot options menu".** After about 30-40 seconds, the **"Maintenance menu"** will appear.
	NOTE If the original MB fails to boot to the Maintenance menu due to an error, skip to Section V.
	e) Enter **'5'** for "Maintenance mode boot".
	f) If asked **"Continue with boot?"** Answer: "**y**"

```
LOADER-A> autoboot
Loading X86_64/freebsd/image1/kernel:0x100000/3375736 0x538280/3221872
.....
Copyright (C) 1992-2010 NetApp.
All rights reserved.
*******************************
*                             *
* Press Ctrl-C for Boot Menu. *
*                             *
*******************************
^CBoot Menu will be available.

Please choose one of the following:

(1) Normal Boot.
(2) Boot without /etc/rc.
(3) Change password.
(4) Clean configuration and initialize all disks.
(5) Maintenance mode boot.
(6) Update flash from backup config.
(7) Install new software first.
(8) Reboot node.
Selection (1-8)? 5

                You have selected the maintenance boot option:
.....
.....
In a High Availability configuration, you MUST ensure that the partner node is (and remains) down, or that
takeover is manually disabled on the partner node, because High Availability software is not started or
fully enabled in Maintenance mode.

FAILURE TO DO SO CAN RESULT IN YOUR FILESYSTEMS BEING DESTROYED

NOTE: It is okay to use 'show/status' sub-commands such as 'disk show or aggr status' in Maintenance mode
while the partner is up

Continue with boot? yes
.....
.....
.....
*>
```

Step 3c): Enter **"autoboot"**

Step 3d): Wait for this message, then hit **^C (CTRL-C)**

Step 3e): Enter **"5"**

Step 3f): If this node has a partner node this message will be displayed. Answer: "**y**" .

maintenance mode console prompt

4	From the **> *>** prompt enter **"fcadmin config"** to log the configuration of the integrated FC host adapters.
	a) Note the **"0a-0d"** Adapter ports to see if configured as a **"target"** adapter. If so, it will need to be configured later.

```
*> fcadmin config
                  Local
Adapter Type      State                 Status
------------------------------------------------------
  0a    initiator CONFIGURED.           online
  0b    target    CONFIGURED            offline
  0c    initiator CONFIGURED.           online
  0d    target    CONFIGURED            offline
```

Step 4: Enter **"fcadmin config"**

Example Only

Step 4a): Log all the adapters listed as **"target"** adapters. In our example, adapters 0b and 0d are targets

5	Continue with Section IV on next page.

IV V-FAS3100 Family: Capture the Current System Configuration (cont.)

Step	Action Description
6	Skip to step 7 if this is not a V-Series (V3100). If V-Series perform the below Additional Steps.

Additional Steps for V-Series

A.	Enter the **' fcadmin channels '** command.
B.	Note, if any of the on-board (0a-0d) FC Adapters that are configured as "Initiators" display as "N or NL Ports", these adapters are likely connected to the third party storage. Ignore any "N" or "NL" ports that are connected to "target" adapters. See sample output here >> **fcadmin channels**

7	Next, from the ***>** prompt enter **"disk show -v"** to view which SAS and FC Adapter ports are driving disks- See Text Box 7 below.
NOTE	The **"disk show -v"** sample output below is abbreviated console output. If DOT 8.x, a **HOME** column is also listed with **OWNER** for each disk, which displays the node's systemname (and system-ID). After the controller is replaced it is necessary to confirm each SAS/FC Adapter port is seeing its storage. For example of a V-Series **'disk show -v'**, click here > **V-Series Disk Show**
8	Take note of all the "unique" Adapter port numbers displayed. See Text Box STEP 8. In this example: SAS Adapters 1b, 1d and FC Adapters 0c, 0d are displayed.
9	At the > *> prompt enter **"halt"** (after prom initialization the console will display the **LOADER-A|B>** prompt)

```
*> disk show -v
Local System ID: 1573753606
```

Example Only

```
  DISK       OWNER                    POOL   SERIAL NUMBER   HOME
------------ -------------            -----  -------------   -------------
1b.02.4      fas                                             fas3170cl2-ams(1573753632)
1b.02.3      fas                                             fas3170cl2-ams(1573753632)
1b.02.10     fas                                             fas3170cl2-ams(1573753632)
1b.02.20     fas                                             fas3170cl2-ams(1573753632)
1b.02.19     fas                                             fas3170cl2-ams(1573753632)
1b.02.6      fas                                             fas3170cl2-ams(1573753632)
1b.02.16     fas                                             fas3170cl2-ams(1573753632)
1b.02.7      fas                                             fas3170cl2-ams(1573753632)
.....
.....
0d.41        fas                                             fas3170cl2-ams(1573753632)
0d.43        fas3170cl2-ams(1573753632)   Pool0   JLVT7BUC   fas3170cl2-ams(1573753632)
0d.33        fas3170cl2-ams(1573753632)   Pool0   JLVS4EHC   fas3170cl2-ams(1573753632)
.....
.....
0c.21        fas3170cl1-ams(1573753606)   Pool0   JLVT0KDC   fas3170cl1-ams(1573753606)
0c.18        fas3170cl1-ams(1573753606)   Pool0   JLVT2HZC   fas3170cl1-ams(1573753606)
0c.28        fas3170cl1-ams(1573753606)   Pool0   JLVS585C   fas3170cl1-ams(1573753606)
....
1d.01.13     fas                                  QJ7W3XZ    fas3170cl1-ams(1573753606)
1d.01.21     fas                                  QJ7WSX8    fas3170cl1-ams(1573753606)
1d.01.16     fas                                  QJ7W3YT    fas3170cl1-ams(1573753606)
1d.01.12     fas                                  QJ7WS0R    fas3170cl1-ams(1573753606)
1d.01.14     fas                                  QJ7W8GM    fas3170cl1-ams(1573753606)
1d.01.18     fas                                  QJ7WX7E    fas3170cl1-ams(1573753606)
1d.01.22     fas                                  QJ7WY15    fas3170cl1-ams(1573753606)
1d.01.11     fas                                  QJ7W8N2    fas3170cl1-ams(1573753606)
.....
.....
*>
*> halt
```

Step 7: The **disk show -v** command prints out the System ID of the Local System **(1573753606).** It also prints the owner of each disk under the HOME heading which lists the node's system name. This system name is **(fas3170cl1-am)** and owns disks: 0c.21, 0c.18, 0c.28, 1d.01.13, 1d.01.21, etc.

NOTE- Partner owned disks are intermixed in the output. The partner hostname is 'fas3170cl2-ams' and it's System ID is (1573753632).

Step 8: Under the DISK heading, all SAS & FC Adapters are listed. In this example SAS adapter **1b** and **1d** and FC adapter ' **0c** and **0d**' are seen, but typically there are more. After the controller is replaced, confirm the same adapters are listed meaning there is an active SAS/FC path to the disks.

A typical listing will display many more disks and FC/SAS adapters than this partial listing.

Step 9: Enter **halt** to exit to the **LOADER-A|B>** prompt

10	Go to Section V, "Remove the cables, Cable Management Tray and extract the Controller Module" on next page.

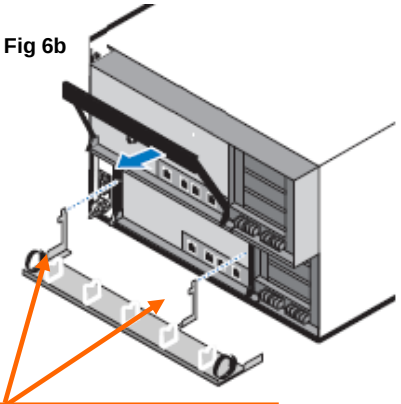
V. V-FAS3100 Family: Remove the cables, Cable Management Tray and extract the Controller Module

Step	Action Description
NOTE	**If TWO controllers modules are installed, DO NOT shut off the power supplies to replace the controller card, BUT DO shut off both power supplies if only ONE controller card is installed .**
1	On the controller to be serviced, loosen the red thumbscrew, ref Fig 2 & 3; pull down on the cam lever and slide the controller module towards you a few inches or until it stops.
STOP! and READ this CAUTION	**HA (Active-Active) Configuration*: If the red NVMEM Status D87 LED starts flashing ref Page-1, Fig 3, when the controller is extracted from the chassis:**
	(i) Confirm from end-user or NGS that the partner controller had a clean takeover, or if this controller was "waiting for giveback", the flashing LED can be ignored.
	(ii) If a non-successful takeover, the flashing LED indicates uncommitted customer data - **Contact NGS**
	Non-HA Configuration*: If the red NVMEM Status D87 LED is flashing, the system was not 'halted' properly:
	(i) Ask end-user if controller was properly "halted". If not, re-insert controller and if the system does not autoboot, enter '***bye***' at the LOADER-A|B> prompt . If the system boots to the login prompt, login and then enter ***'halt'*** to properly shutdown. **Engage NGS if questions.**
	* **The node configuration should have been determined by following Section III.**
NOTE	For detail on the locations of the two NVRAM LEDs click here >> FAS3100-NVRAM-LEDs
2	Before proceeding further the state of the NVMEM LED should be resolved if it's valid by reading caution above.
3	Label each cable connector with its port number and then unplug the cabling from the connector.
NOTE	If possible keep the cables in the cable clips on the cable tray to keep them in the correct position for reconnection.
4	Remove the cable management tray, Fig 6a-b, by pushing in the sides of the tray at the arrows and lifting it up.

Fig 6a

Optional Cable Management Trays

Fig 6b



Cable Management Tray Mounting Hooks

5	Push in on the blue release latch on the left side of the tray as shown in Fig 7 and firmly grip the tray on each side as you extract it.

Fig 7

Lower Cam Handle and pull to extract the tray

6	Go to Section VI, "Move onboard SFPs - Remove PCI Cards and the Riser" on next page.

VI. V-FAS3100 Family: Move onboard SFPs - Remove PCI Cards and the Riser

Step	Action Description
1	Remove each SFP/GBIC one at a time inserted in the original Controller Module's on-board Ethernet and FC ports and install into the same port location in the replacement Module. (Do not mix them up!)
2	Loosen the thumbscrew on the controller module side panel and swing the side panel open until it comes off the controller module. Ref Fig 8a.
3	Label each card with it's PCI slot number and slide out of PCI Riser, Fig 8b.
4	Loosen the PCI card riser thumbscrew and pull the riser up and out of the socket. Ref Fig 8c.
5	Attach and close the side panel of the System Tray.

Fig 8a)

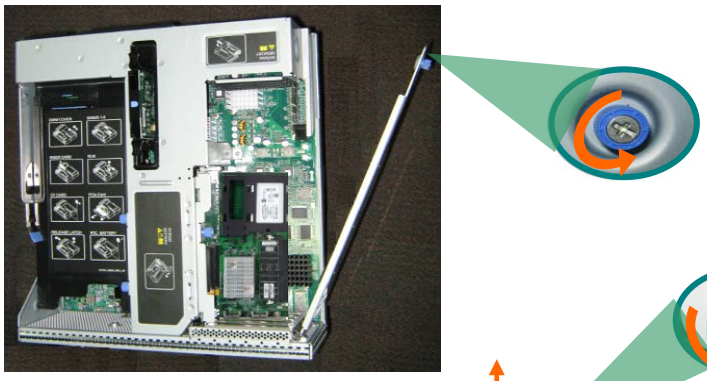
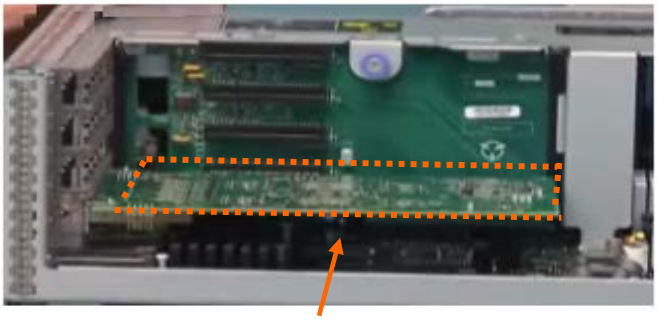


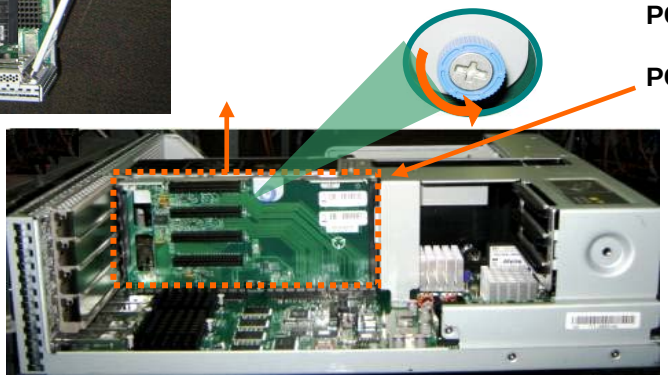
Fig 8b)



PCI Card is slot 4

PCI Riser Card

Fig 8c)

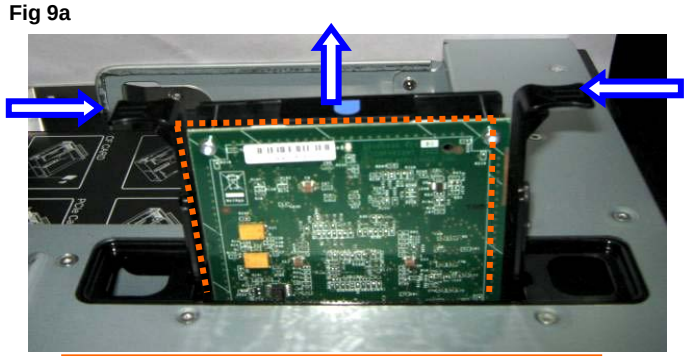


NOTE: Mark all PCI cards with it's slot number before it is removed. Insert into the same slot on the replacement Tray

VII. V-FAS3100 Family: Move the RLM Module

Step	Action Description
1	Pinch the retaining tabs on the RLM, and then lift the RLM straight out of the socket as show in figure 9a-b.
2	Insert the RLM into the replacement controller module by pressing it completely into the socket .
3	Go to Section VIII, "Exchange the CompactFlash Cards" on next page.

Fig 9a



RLM Card is vertically inserted into MB

Fig 9b

A typical FAS3100 RLM Module

VIII. V-FAS3100 Family: Exchange the CompactFlash Cards

Step	Action Description
1	On the original controller module, pull the CompactFlash (CF) card up and out of the socket and mark it with an "O" for original . Ref Fig 10a-b.
2	Exchange the CF cards between the controllers so that the "original" card is placed into the replacement controller.

Fig 10a

Fig 10b

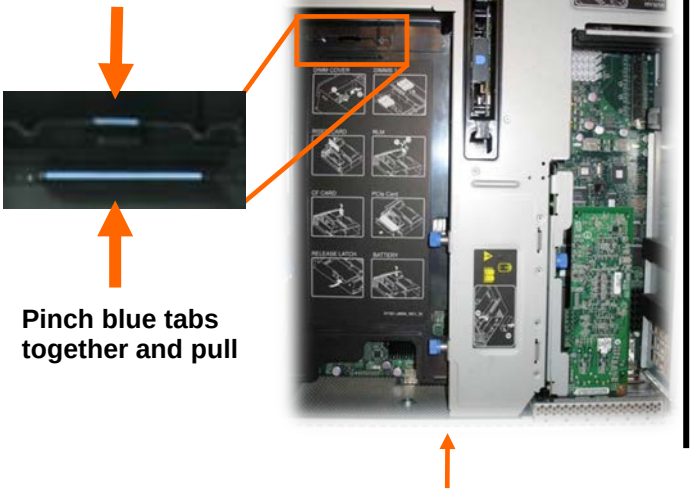
CompactFlash Card showing proper orientation

CompactFlash Slot

IX. V-FAS3100 Family: Move the System DIMMs

Step	Action Description
NOTE	Adhere to anti-static precautions. (A paper ESD strap is included inside the RMA box if you don't have your own)
1	Pinch the two blue tabs together and lift to remove the DIMM cover, ref Fig 11a.

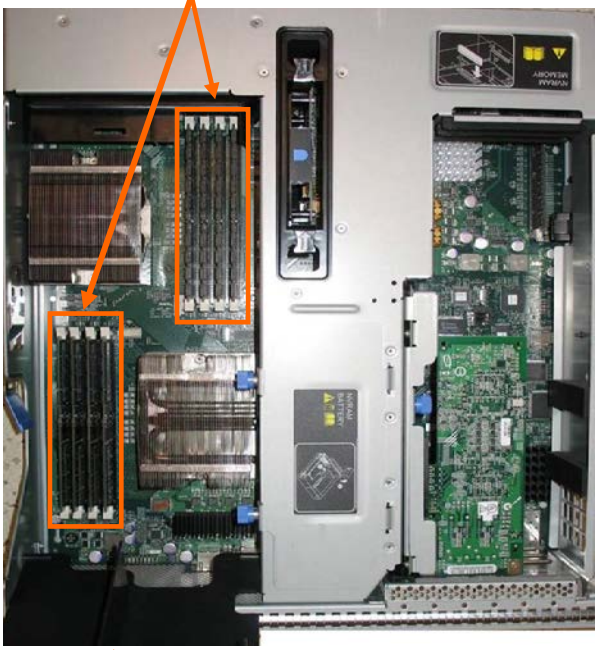
Fig 11a



Pinch blue tabs together and pull

Cable I/O Panel this Side

Fig 11b System DIMM slots with cover removed



NOTE	The FAS3140 has two system DIMMs. The FAS3160 has four DIMMs and the FAS3170 shown, has eight DIMMs
2	Continue with Section IX on next page.

IX. V-FAS3100 Family: Move the System DIMMs (cont.)

Step	Action Description
	CAUTION: Handle the DIMM by the board edges- **Do not touch the gold contacts.** Oil from the skin contaminates the connection.
3	**Move the NVMEM DIMM(s) and Main Memory DIMMs,** one at a time, from the Controller Module and install each one into the same slot in the replacement Controller Module. See next step for proper insertion technique.
4	Align DIMM with key slot and insert the DIMM straight into the slot. Use both thumbs on the outer edge of DIMM, Fig 12 and press evenly but firmly on the DIMM. It should "snap" in. If not, eject it and re-insert until it snaps in place.

Figure is not of a V-FAS3100 Series, but demonstrates the proper technique to insert Memory DIMMs

Fig 12

X. V-FAS3100 Family: Move the NVRAM Battery and NVRAM DIMM

Step	Action Description
1	Use Fig 13a-b to locate the NVRAM DIMM and NVRAM Battery Compartment.
STOP	The NVRAM Battery must be removed **before** removing the NVRAM DIMM. Insert the NVRAM DIMM into the replacement controller BEFORE the battery is installed or the system may not boot properly.
2	Push down on the battery cover, loosen the two blue thumbscrews, open the battery cover and remove the battery.
3	Remove the NVRAM DIMM from controller module and insert it (snaps-in) into the replacement controller module.
4	Insert the NVRAM battery into the replacement controller module and latch the compartment door.

Fig 13a

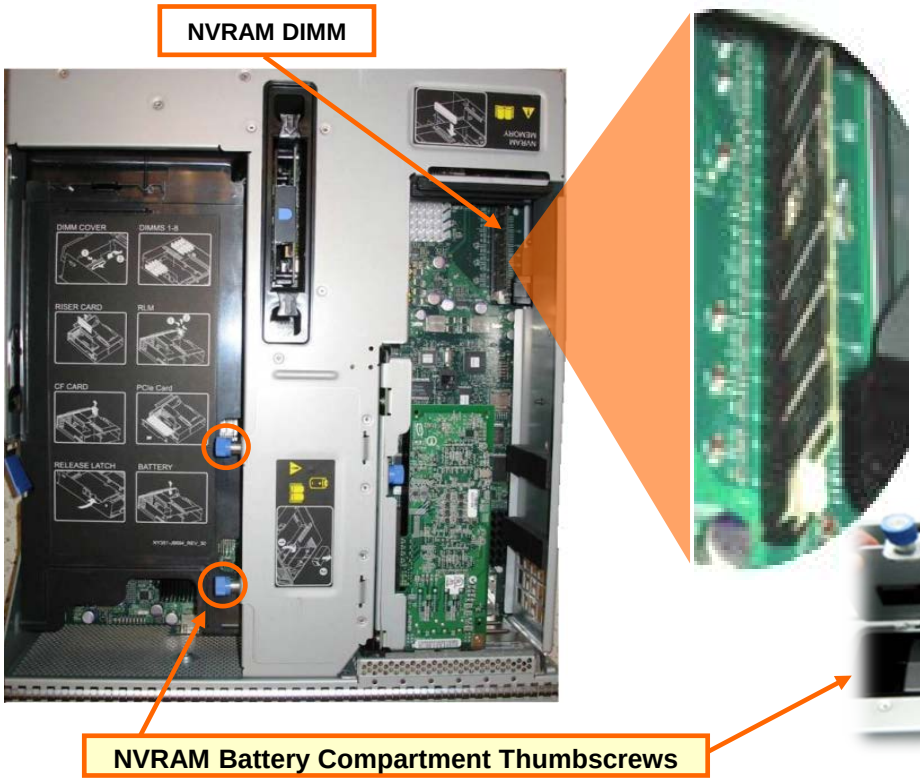
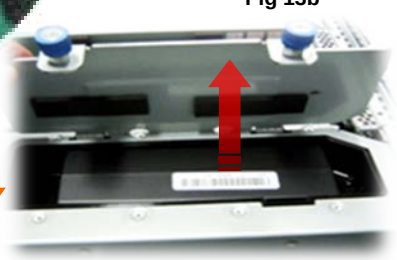


Fig 13b



5	Go to Section XI, "Install PCI Riser and Cards" on next page.

XI. V-FAS3100 Family: Install PCI Riser and Cards (if any)

Step	Action Description
1	Loosen the thumbscrew on the new controller module side panel and swing the side panel open until it comes off the controller module.
2	Align the PCI riser removed from the original controller module with the guide slots on the replacement controller module, and then push down to seat it completely in the socket and tighten the riser thumbscrew.
3	Install the PCI cards removed from the original controller module into correct slots on the replacement controller module.

XII. V-FAS3100 Family: Partially Reinsert the Replacement Controller and Reconnect the cables

Step	Action Description
1	**Partially** insert the controller into the slot so that the cables can be attached- **DO NOT engage the backplane yet.**
2	Re-attach the Cable Management Tray if removed. (Reference pictures in Section V)
STOP	In Section IV the **'fcadmin config'** output was captured. If the controller had any "0a-0d" Adapters configured as a "target", do not attach those specific cable(s) yet as the FCAL diag test may fail. A "STOP" has been added after the FC ports are configured in Section XV to insert the cable(s).
3	**Cables:** Fully insert each cable that was removed to its proper port until it clicks in. Test by pulling on them. Especially the FC and SAS ports!
4	Go to Section XIII, "Set date and time on the RTC" on next page.

XIII. V-FAS3100 Series: Set date and time on the RTC and Reset PROM variables

Step	Action Description
1	**Re-attach laptop to the console port and capture the display output even if using the end user's computer.**
2	Fully Insert the Controller Module into the slot and raise the cam lever and secure it with Red thumbscrew.
3	IMMEDIATELY after the console message **"Starting AUTOBOOT press Ctrl-C to abort…"** is displayed, press **Ctrl-C (^C)** key a couple times to abort the autoboot. See Console output example below.

```
Phoenix TrustedCore(tm) Server
Copyright 1985-2006 Phoenix Technologies Ltd.
.......
.......
Portions Copyright (C) 2002-2008 NetApp

CPU Type: Intel(R) Xeon(R) CPU           L5410  @ 2.33GHz

Starting AUTOBOOT press Ctrl-C to abort...
Loading x86_64/freebsd/image1/kernel:....0x100000/3386728 0x53b000/3222096
0x84da50/1190096
Autoboot of PRIMARY image aborted by user.

LOADER-A>
```

"…." = Deleted lines to save space

STEP 3: Press **"CTRL-C"**

Prompt example is from the top controller

4	IF you miss the window to abort the autoboot, look for this message: **"Press CTRL-C for boot menu"** and complete steps 4a-4d, otherwise if at the **"LOADER"** prompt, skip to step 5 on next page.
a.	Immediately Press **^C (CTRL-C)** to access the "Boot menu".
WARNING	If the console prints out: "***Call home for DISK NOT SPINNING***" and dumps core, it will drop to the LOADER-A|B> prompt. The failure is because one or more of the onboard "initiator" adapters are connected to a SAN switch. **SOLUTION:** Disconnect the FC cable on adapters "0a, 0b, 0c, 0d" until after they are configured in Sec XV.
b.	If a ***'System ID mismatch'*** warning message below is displayed, answer : **"y".**

```
.......
.......
******************************
*                            *
* Press Ctrl-C for Boot Menu.*
*                            *
******************************
^C
Boot Menu will be available.
Restoring /var from /cfcard/x86/freebsd/varfs.tgz
WARNING: System id mismatch. This usually occurs when replacing CF or NVRAM cards!
Override system id? {y|n} [n] y
```

STEP 4a: Press **"CTRL-C"**

STEP 4b: Enter: "y"

c.	Next, drop to the **LOADER** prompt from the Boot Menu by following the linked process > **here**
d.	Continue with Section XIII on next page.

XIII. V-FAS3100 Family: Set date and time on the RTC and Reset PROM variables (cont.)

Step	Action Description
5	At the **LOADER-A|B>** prompt enter: **"show date"** to display the date and time in GMT on the new PCM.

```
LOADER-A> show date
Current date & time is: 10/14/2010 16:36:50
LOADER-A>
```

Daylight Savings Time will vary the offset from GMT

Time is displayed in in 24hr mode

Step	Action Description
6	The original motherboard's GMT time and local time should have been recorded in Section IV. If you don't have it, you can obtain the GMT time from the partner node, or another NetApp appliance or any Unix Server using: **"date -u"**. (The "-u" option displays the time in GMT/UTC) The new motherboard's Real Time Clock (RTC) must be set within 2 minutes of the time displayed (which is GMT time) for users to be able to re-connect to this appliance.
NOTE	Detailed instructions for another method of obtaining the time in GMT and setting the date and time is here> RTC Check
7	To set the time issue: **set time hh:mm:ss** Set the time in GMT using 24 hour format - Do not set the time to local time.
NOTE	If this maintenance period spans across the midnight hour in GMT time, the DATE will also need to be set.
8	To change the date, issue: **set date mm/dd/yyyy** (mm = 2-digit month, dd = 2-digit Day, yyyy = 4-digit Year)
9	If the date or time was changed, issue: **show date** again to verify the GMT date and time are correct.
10	**Reset the PROM variables:** At the **LOADER-A|B>** prompt, Enter : **"set-defaults"** to reset all system environmental variables to factory default.

```
LOADER-A> set-defaults
LOADER-A>
```

STEP 10): At the **LOADER-A|B>** prompt, enter **set-defaults** to reset PROM variables to factory defaults.

Step	Action Description
11	**Update Firmware on the Replacement Controller Module:** At the **LOADER-A|B>** prompt, Enter : **"update_flash"** to copy the firmware on the Compact Flash card to the motherboard's flash PROM.
NOTE	If a message displays that states: "Current firmware version is newer than provided image", skip to step 12.

```
LOADER-A> update_flash
New BIOS Version: 4.4.0
New Loader Version: 1.8
Saving Primary Image to Secondary
Updating Secondary Boot Flash
Programming .+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+.+ done. 2097152
bytes written
Updating Primary Boot Flash
Programming .+.+.+.+.+.+.+.+.+.+.+.+.+.+ done. 917504 bytes written
LOADER-A>
```

Step 11: At the **LOADER-A|B>** prompt, enter **update_flash** to update the flash PROM

Step	Action Description
12	Go to Section XIV, "Run Diagnostics" on next page.

XIV. FAS3100 Family: Run Diagnostics (20-45 minutes depending on model and expansion options)

Step	Action Description
1	Test the Replacement Tray with diagnostics by entering **"boot_diags"** at the **"LOADER-A|B>"** prompt.
2	In the Diagnostic Menu, enter: **"run mb mem agent cf-card"**. (These diagnostics tests are basic confidence tests on the new motherboard, memory, agent & rlm, and CompactFlash)

```
LOADER-A> boot_diags
Loading x86_64/diag/diag.krn:...0x200000/12601344 0xe04800/4664888 0x1277638/8 Entry at
0x00202018
Starting program at 0x00202018


Copyright (c) 1992-2009 NetApp.
init mca for BSP

Diagnostic Monitor
 version: 5.4.6
   built: Wed Apr  7 11:21:22 PDT 2010
-------------------------------------
all      Run all system diagnostics
mb       FAS3170 motherboard diagnostic
mem      Main memory diagnostic
agent    agent & rlm diagnostic
cf-card  CompactFlash controller diagnostic
sas      SAS controller diagnostic
stress   System wide stress diagnostic

Commands:
Config  (print a list of configured PCI devices)
Default (restore all options to default settings)
Exit    (exit diagnostics)
Help    (print this commands list)
Options (print current option settings)
Version (print the diagnostic version)
Run     <diag ... diag>  (run selected diagnostics)

Options:
Count   <number> (loop selected diagnostic(s) (number) of passes)
Loop    <yes|no> (loop selected diagnostic(s))
Status  <yes|no> (print status messages)
Stop    <yes|no> (stop-on-error / keep running)
Xtnd    <yes|no> (extended tests / regular tests)
Mchk    <auto|off|on|halt> (machine check control)
Cpu     <0|1|2|3> (default cpu)
Seed    <number> (random seed (0:use machine generated number))

Enter Diag, Command or Option: run mb mem agent cf-card
```

STEP 1: Enter **"boot_diags"**

V-FAS3140 and V-FAS3160 are also valid models

NOTE: New RUN Command options

STEP 2: Enter **"run mb mem agent cf-card"**

3	Continue with Section XIV on next page.

XIV. FAS3100 Family: Run Diagnostics (cont.)

Step	Action Description
4	The test output below only includes the test suite summary line. Look to see that all these show as **PASSED**. If any state FAILED, scroll back through your test output to see which test FAILED and **call NGS to report the test failure**. Read all the **NOTE:** Text box information below.

```
FAS3170 Motherboard Diagnostic
------------------------------
.....
****** Misc. test suite ..................
.....
****** Cache test suite ....................... PASSED

Performing comprehensive BGE test on e0M
.....
****** Comprehensive BGE test ................. PASSED

Performing comprehensive BGE test on e0a
.....
****** Comprehensive BGE test ................. PASSED

Performing comprehensive BGE test on e0b
.....
****** Comprehensive BGE test ................. PASSED

Testing FCAL card on channel 0c

Performing comprehensive FCAL test on channel 0c
.....
****** Comprehensive FCAL test ................ PASSED

Testing FCAL card on channel 0d

Performing comprehensive FCAL test on channel 0d
.....
****** Comprehensive FCAL test ................ PASSED

Testing FCAL card on channel 0a

Performing comprehensive FCAL test on channel 0a
.....
****** Comprehensive FCAL test ................ PASSED

Testing FCAL card on channel 0b

Performing comprehensive FCAL test on channel 0b
.....
****** Comprehensive FCAL test ................ PASSED

Testing onboard NVRAM7
.....
****** Comprehensive NVRAM memory test ......... PASSED
.....
****** Comprehensive NVRAM IB test ............. PASSED
.....
****** Comprehensive NVRAM env test ............ PASSED
****** Comprehensive NVRAM test ................ PASSED
.....
Environmental check, subsystem: any ......... PASSED

****** Comprehensive mb test ................... PASSED
```

DIAGNOTIC RESULTS CONFIRMATION CHECKS
All Comprehensive Tests state: PASSED or SKIPPED , no test should indicate FAILED. If so STOP - call NGS!

NOTE: The BGE test prints for all 2 onboard Ethernet ports e0a-e0b

NOTE: The FCAL test prints for all 2 onboard FCAL ports 0a,0b,0c,0d.

Confirm the NVRAM tests all show PASSED

Note: That the **Comprehensive mb test** "PASSED"

Step	Action Description
5	Continue with Section XIV on next page.

XIV. FAS3100 Family: Run Diagnostics (cont.)

Step	Action Description
6	In text box Step 6 below, verify all the memory was discovered: FAS3140 ~4GB, FAS3160 ~8GB and FAS3170 ~16GB
7	If all tests show **PASSED** or **SKIPPED**, enter: **"exit"** to exit the main diagnostic menu. If any tests listed as **FAILED**, **report failure to NGS.**
8	Go to Section XV, "Set Fibre Channel (FC) "target" Ports" on next page.

```
Testing : 1592 MB (start=1c000000, end=7f800000)
Testing : 14336 MB (start=100000000, end=480000000)
Total Memory Size : 16376 MB
Main Memory Diagnostic
----------------------
.....
****** Comprehensive Memory test ............... PASSED

Agent Diagnostic
----------------
.....
****** Comprehensive RLM test .................. PASSED

CompactFlash Diagnostic
-----------------------
.....
****** Comprehensive CompactFlash test .......... PASSED


Pass = 1, Current date = Saturday Jun 17 04:32:08 2011

--- Completed pass 1.

Enter Diag, Command or Option: exit

Phoenix TrustedCore(tm) Server
.....

CPU Type: Dual-Core AMD Opteron(tm) Processor 2218
LOADER-A>
```

STEP 6:
Note: PLEASE CONFIRM
V-FAS3140 should total ~4GB
V-FAS3160 should total ~8GB
V-FAS3170 should total ~16GB
Output is from a FAS3170

Note: That the **Comprehensive Memory test, Comprehensive RLM test** & **Comprehensive CompactFlash test** "PASSED"

Note: Test Suite Complete message

STEP 7: Enter: "**exit"** to exit the Diags. The prom will initialize displaying many messages. After about 10-20 seconds, the it will drop to the **LOADER-A|B>** prompt.

XV. V-FAS3100 Family: Set Fibre Channel (FC) "target" Ports

Step	Action Description
1	The console prompt should be the **LOADER-A|B>** prompt if Diags were exited properly.
2	Skip to step 3 if this is not a V-Series (V3100). If V-Series perform the below Additional Steps.

Additional Steps for V-Series

A.	If any of the variables listed in step 2(D) of section IV were set, continue with step 1(B), if not, skip to step 3.
STOP	Variables that list multiple Host Adapters **(HA, HA)**, cannot have spaces after the comma(s) "," An example of proper syntax is: EXAMPLE: > **setenv fc-non-array-adapter-list 0c,0d,2a,2c** - no spaces after the commas.
B.	**Open the console log file.** Copy (Ctrl-c) the <variable and value>. Enter each variable into PROM using the **"setenv"** command and then pasting (Ctrl-v). **NOTE:** Copying and pasting the variable name and value insures correct spelling. However must remove spaces after commas!
C.	Enter ***' printenv '*** again to confirm the variable and value are correct without any spaces after commas. **Issues? Engage NGS.**

3	**a)**	From the **LOADER-A|B>** prompt enter **"autoboot"** to initiate a prom bootstrap.
	b)	When this message appears: **"Press CTRL-C for boot menu"** , press **CTRL-C (^C)** to load the **"Special boot options menu".** After about 30-40 seconds, the **"Maintenance menu"** will appear.
	c)	If a ***'System ID mismatch'*** warning message is displayed due to the new Controller Module , answer : **"y".**
	d)	Enter **'5'** for "Maintenance mode boot".
	e)	If asked **"Continue with boot?"** Answer: "**y**" to exit to the maintenance mode **>*>** prompt**.**

```
.......
.......
******************************
*                            *
* Press Ctrl-C for Boot Menu.*
*                            *
******************************
^C
Boot Menu will be available.
Restoring /var from /cfcard/x86/freebsd/varfs.tgz
WARNING: System id mismatch. This usually occurs when replacing CF or NVRAM cards!
Override system id? {y|n} [n] y

Please choose one of the following:
(1) Normal Boot.
(2) Boot without /etc/rc.
(3) Change password.
(4) Clean configuration and initialize all disks.
(5) Maintenance mode boot.
(6) Update flash from backup config.
(7) Install new software first.
(8) Reboot node.
Selection (1-8)? 5
.....
.....
.....
Continue with boot? yes
```

STEP 3b): Press **"CTRL-C"**

STEP 3c): Enter: "y"

STEP 3d): Enter **"5"**

STEP 3e): If this node has a partner node this

NOTE	If the replacement MB fails to boot to the Maintenance menu, confirm the memory DIMMS and all PCI cards are properly seated. Also was the original Boot Device (CF Card) moved from the orignal MB to the replacement? **Engage NGS for assistance.**
STOP	If the system reports the battery is not detected, re-check the battery connection. If the system reports the battery voltage is too low or a critical failure, do NOT proceed - Do NOT bypass the system stop. Engage NGS and ask if this MB is being replaced due to a battery issue. If so, a new battery needs to be installed before continuing. **Under NO CIRCUMSTANCES bypass the system halt on a system (NVMEM) battery voltage issue.**
4	Continue with Section XV on next page.

XV. V-FAS3100 Family: Set Fibre Channel (FC) "target" Ports (cont.)

Step	Action Description
5	Review the **fcadmin config** output from Section IV Step 4. If any onboard Adapter Ports (0a-0d) were configured on the original Controller Module as **"target"** proceed with next steps - If all of them were configured as "initiators", skip to step 9.
NOTE	If the old motherboard's "fcadmin config" was not captured in Section IV, engage NGS to determine the original configuration settings for the FC Adapters and the old System_ID by examining the Autosupports at NetApp, or if HA configuration run this command on the partner: **'partner fcadmin config'** to determine if either 0a, 0b, 0c or 0d is configured as a 'target'.
6	At the ***>** prompt, enter: **fcadmin config** to view the configuration of the FC Adapters on the Replacement Controller Module. Since we performed a 'set-defaults', all should display as **"initiators"**.
NOTE	If the adapter that needs to be changed to a ***target,*** is listed as **"**online", it must be off-lined first before it can be changed. Issue: **fcadmin offline <HA>**
7	For each Adapter to be configured as a target enter: **' fcadmin config -t target <HA>'.** Issue one command per adapter. This example configures Adapter ports 0b and 0d as target:
8	Enter **' fcadmin config'** to confirm the changed FC Adapters are displaying as PENDING: (target) ports.

Example Only

STEP 6: Enter: **fcadmin config**

```
*> fcadmin config
                    Local
Adapter Type        State                 Status
------------------------------------------------
  0a    initiator   CONFIGURED.           online
  0b    initiator   CONFIGURED            offline
  0c    initiator   CONFIGURED.           online
  0d    initiator   CONFIGURED            offline
```

STEP 7: Enter: **fcadmin config -t target <HA>** for each port to be configured as a target

```
*> fcadmin config -t target 0b
Tue Oct 28 07:19:05 GMT [fci.config.state:info]: Fibre channel initiator adapter
 0b is in the PENDING (target) state.
A reboot is required for the new adapter configuration to take effect.

*> fcadmin config -t target 0d
Tue Oct 28 07:19:05 GMT [fci.config.state:info]: Fibre channel initiator adapter
 0d is in the PENDING (target) state.
A reboot is required for the new adapter configuration to take effect.
```

STEP 8: Enter: **fcadmin config** to confirm each **target** port is shown as PENDING

```
*> fcadmin config
                    Local
Adapter Type        State                 Status
------------------------------------------------
0a    initiator   CONFIGURED.           online
0b    initiator   PENDING (target)      offline
0c    initiator   CONFIGURED.           online
0d    initiator   PENDING (target)      offline
```

STOP	If any FC cables were not connected to adapters '0a, 0b, 0c or 0d' as they were configured as "target" adapters on original MB, or were disconnected for a boot issue, firmly reconnect them now. They must click in.
10	Continue with Section XV on next page.

XV. V-FAS3100 Family: Set Fibre Channel (FC) "target" Ports (cont.)

Step	Action Description
11	Skip to next section if this is not a V-Series (V3100). If V-Series perform the below Additional Steps.

Additional Steps for V-Series

A.	Enter the command: "**fcadmin channels" to list new WWPNs of** on-board ports, 0a-0d.
B.	Provide the output of **fcadmin channels** to the end-user administrator to remap the array's host-group (a.k.a. LUN Masking) and if soft zoning is used on the SAN switches, to update the fabric zones - **NOTE - This is only required if FC Adapters 0c or 0d are configured as "Initiators" and display as "N or NL. No changes are required to the array or the fabric if 0a, 0b 0c, 0d adapters are configured as "target" adapters or not shown as "N" or "NL" ports.** See sample output here >> **fcadmin channels**
C.	If the Array is using one or more of the on-board FC Adapters, the end-user may see the new WWPNs through the SAN switch and already making the changes. An example of "fcadmin channels" output highlighting the WWPNs changing before and after a MB swap is >> **here.**
D.	Wait until the end-user administrator verifies the SAN Fabric zoning is changed if necessary, and he has updated the host-group on the array with the new WWPNs and that the array can see the NetApp FC WWPNs before continuing.

XVI. V-FAS3100 Family: Capture new System-ID on replacement Controller

Step	Action Description
NOTE	31xx systems have NVMEM integrated into the controller and so when replacing its controller, the disks need to be reassigned to the new System-ID.
1	Enter **"disk show -v"** at the maintenance mode prompt **"*>"** to display the new system ID.
2	Compare the new system ID to the old system ID. Retrieve the old ID by opening up the console log file to where the **disk show -v** was originally executed in Section IV, step 7. For **DOT 8,** always use the **HOME** column, not **OWNER.**

```
*> disk show -v
Local System ID: 1943753293
```

In this example, the local System ID for the new Controller is **1943753293**. The old MB System ID was **1573753606** (***disk show -v*** from Section IV)**.** The disks need to be reassigned to the local System ID.

Example Only

```
  DISK       OWNER                    POOL   SERIAL NUMBER  HOME
------------ -------------            -----  -------------  -------------
1b.02.4      fas3170cl2-ams(1573753632)   Pool0   9QJ7VRRF    fas3170cl2-ams(1573753632)
1b.02.3      fas3170cl2-ams(1573753632)   Pool0   9QJ7WMNQ    fas3170cl2-ams(1573753632)
.....
0d.41        fas3170cl2-ams(1573753632)   Pool0   JLVT29GC    fas3170cl2-ams(1573753632)
0d.43        fas3170cl2-ams(1573753632)   Pool0   JLVT7BUC    fas3170cl2-ams(1573753632)
.....
0c.21        fas3170cl1-ams(1573753606)   Pool0   JLVT0KDC    fas3170cl1-ams(1573753606)
0c.18        fas3170cl1-ams(1573753606)   Pool0   JLVT2HZC    fas3170cl1-ams(1573753606)
.....
1d.01.13     fas3170cl1-ams(1573753606)   Pool0   9QJ7W3XZ    fas3170cl1-ams(1573753606)
1d.01.21     fas3170cl1-ams(1573753606)   Pool0   9QJ7WSX8    fas3170cl1-ams(1573753606)
1d.01.16     fas3170cl1-ams(1573753606)   Pool0   9QJ7W3YT    fas3170cl1-ams(1573753606)
1d.01.12     fas3170cl1-ams(1573753606)   Pool0   9QJ7WS0R    fas3170cl1-ams(1573753606)
```

STOP	There are new considerations prior to executing the 'disk reassign' and additional steps for 'cf giveback' in the next two Sections.
3	Go to Section XVII, "Disk Reassign" on next page.

XVII V-FAS3100 Family: Disk Reassign

Step	Action Description
1	**Follow procedure-A if the node was successfully taken over by its partner.** **Follow procedure-B on next page if this node is a single controller configuration or the partner did NOT takeover.**
NOTE	The disk reassignment process takes several seconds and a message is printed for each disk that is reassigned.

A. Execute the "A" steps on the partner node. Engage-user to assist and for the password.

A1 Capture the DOT version at the maintenance prompt " *>" by entering: '**version**' .

Command Example Only:
```
*> version
NetApp Release 8.0.1 7-Mode: Thu Jan 27 20:23:12 PST 2011
```

STOP! If the OS version is NOT a DOT 8 verson, skip to step A3 below. If this system is running DOT 8.x, the "disk reassign" and 'cf giveback' steps need to be performed consecutively and then a second Takeover/Giveback is executed from the "target" node once the "target" node comes online. Follow these updated steps carefully.

A2 The question that must be answered by the customer is: ***"Are there any Windows applications running that would inhibit a 'cf giveback' at this time because the giveback process needs to be executed right after the disk re-assignment is finished?"*** **IF the customer states the giveback cannot be performed now, the 'disk reassignment' must be postponed until it can be performed - Engage NGS if questions.**

- **(i)** If the giveback can be preformed now, continue with step A3, otherwise continue with step (ii).
- **(ii)** Provide the customer and NGS support the new "Local" system-ID that was displayed in the last Section "Capture the new System-ID". Note, the "old" system-ID was captured in Section IV. Inform customer to engage NGS when it's time to do the reassignment to make sure it's entered properly.
- **(iii)** Confirm the "target" system is left at the maintenance mode prompt "*>" for the disk-reassignment to be performed later.
- **(iv)** Confirm all FC and Ethernet and Controller Interconnect cables are fully inserted into their proper port. All controller interconnect ports and FC Ports configured as "initiators", should have the "Link" LED ON.
- **(v)** On the partner node, enter: '**aggr status -f** ' to make sure there are no failed disks in the system as they will need to be replaced before the disk reassignment and giveback. Inform customer to open a support case if there are "failed" disks.
- **(vi)** Skip to Section XIX to complete this dispatch.

A3 Login as **"root"** to the Partner node. End-user may be required to provide password.

NOTE The partner console prompt must have the word **"(takeover)"** in it. If not, verify with end-user or NGS that the takeover did NOT occur. If it did not, use Method B

A4 Enter: **' priv set advanced '** at the prompt for the following command to work. Prompt will include **" * ".**

A5 At the console prompt enter: **' disk reassign -s <old_system_ID> -d <new_system_ID> '**.
Cut-n-paste the old and new System IDs from the console Log.

Command Example Only:
```
partner-system name(takeover)*> disk reassign -s 1573753606 -d 1943753293
```

A6 The following message will be displayed if the system is running DOT 8.x. This is a reminder that once the giveback is complete another Takeover and Giveback has be executed from the "target" (repaired) node. This will be done later. Enter **'y'** to continue.

```
disk reassign: A giveback must be done immediately following a reassign of partner disks.
After the partner node becomes operational, do a takeover and giveback of
 this node to complete the disk reassign process.
Do you want to continue (y/n)? y
```

Enter: **' y '**

REMINDER of takeover/giveback required from the "target" (repaired) node.

A7 Enter **'y'** to the question **"Would you like to continue (y/n)?"**

```
Disk ownership will be updated on all disks previously belonging to Filer with
sysid 1573753606.
Would you like to continue (y/n)? y
```

Enter: **' y '**

A console message will be displayed for each disk changing ownership (System ID)

CAUTION Do **NOT** run any other commands from the partner node before performing a 'cf giveback' !

A8 Continue with step 2 on next page.

XVII V-FAS3100 Family: Disk Reassign (cont.)

Step	Action Description

B. Single Controller configuration or the partner did NOT takeover. Execute the "B" steps from Maintenance mode on the replacement Controller.

B1 At the maintenance mode **" * > "** prompt enter: **' disk reassign -s <old_system_ID> -d <new_system_ID> '.** Cut-n-paste the old and new System IDs from the console Log.

B2 Enter **'y'** to the question **"Would you like to continue (y/n)?"**

Command Example Only:

```
partner-system name(takeover)*> disk reassign -s 1573753606 -d 1943753293
Disk ownership will be updated on all disks previously belonging to Filer with
sysid 1573753606.
Would you like to continue (y/n)? y
```

Enter: **' y '**

A console message will be displayed for each disk changing ownership (System ID)

B3 Continue with step 2.

2 **From the console port on "target" controller on which you replaced the NVRAM Adapter (in maintenance mode):**
Enter **' disk show -v '** to display the disks reassigned to the new System ID.

STOP! Verify the **system-id** for this node's disks listed under **"HOME"** if the column exists, use OWNER if not, and the new **"Local System ID"** are the same. If not, confirm the correct system-ids were entered on the 'disk reassign' command. **If problems, do NOT proceed, call NGS for assistance.**

```
*> disk show -v
Local System ID: 1943753293
```

The new local **System ID** for the Controller is **1943753293.** The owner name **(**fas3170cl1-ams**)** may or may not be shown. But those disks should reflect the new local **System ID**.

Example Only

```
  DISK         OWNER                      POOL   SERIAL NUMBER   HOME
------------ -------------                -----  -------------   -------------
1b.02.4      fas3170cl2-ams(1573753632)   Pool0    9QJ7VRRF    fas3170cl2-ams(1573753632)
1b.02.3      fas3170cl2-ams(1573753632)   Pool0    9QJ7WMNQ    fas3170cl2-ams(1573753632)
.....
0d.41        fas3170cl2-ams(1573753632)   Pool0    JLVT29GC    fas3170cl2-ams(1573753632)
0d.43        fas3170cl2-ams(1573753632)   Pool0    JLVT7BUC    fas3170cl2-ams(1573753632)
.....
0c.21        ---------------------------  Pool0    JLVT0KDC                (1943753293)
0c.18        ---------------------------  Pool0    JLVT2HZC                (1943753293)
.....
1d.01.13     ---------------------------  Pool0    9QJ7W3XZ                (1943753293)
1d.01.21     ---------------------------  Pool0    9QJ7WSX8                (1943753293)
1d.01.16     ---------------------------  Pool0    9QJ7W3YT                (1943753293)
1d.01.12     ---------------------------  Pool0    9QJ7WS0R                (1943753293)
.....
.....
```

3 Skip to step 4 if this is not a V-series Filer (V3100). If V-Filer, perform the below Additional Steps.

Additional Steps for V-Series Filer

STOP

The **"disk show -v"** command displays the connectivity to the third party array and any (optional) NetApp disks. If the storage listing is missing or incomplete:
(i) Confirm all FC connections are in the correct HA port and firmly seated on the NetApp controller.
(ii) If the connections are correct and firmly seated, confirm the WWPNs were correctly entered by end-user by reviewing the output of the "fcadmin channels" command BEFORE and AFTER the MB swap - **Engage NGS for assistance.**

4 At the maintenance mode prompt: " *** >**" , enter **' halt '** to exit to " **LOADER-A|B>** ".

5 Go to Section XVIII, "Boot the Operating System - 'cf giveback' if applicable" on next page.

XVIII V-FAS3100 Series: Boot the Operating System - 'cf giveback' if applicable

Step	Action Description
1	At the "**LOADER-A|B**" prompt, enter "**autoboot**" to boot Data Ontap.

```
LOADER-A>
LOADER-A> autoboot
```

STOP While the system is booting, visually confirm the "link" (typically green) LEDs are lit on all FCAL & SAS adapters that have a cable in them to verify the cable (and GBIC) are properly seated. FC Adapters configured as targets and Ethernet link LEDs will turn "ON" when the system is almost UP.

2	(i)	If the node autoboots to a **login** prompt (hit **<enter>** for response) - **see NOTE and "A. Example"** below - the node is operating in stand-alone mode or no partner takeover occurred. Skip to Step 3.
	(ii)	If the node displays **"Press Ctrl-C for Maintenance menu to release disks"** and **"Waiting for giveback" after the <enter> key is hit**, this node was taken over by its partner - see "B. Example" below. Login into the **PARTNER** node if it's **password** is known (or engage the system admin), issue a **'cf giveback'** - **READ text box Note B.1.**
	NOTE	An automatic giveback might be invoked if the option **'cf.giveback.auto.enable'** is enabled. The console will eventually display **"giveback completed"** and when finished, will have a "login" prompt when you hit <enter>.

A. Example: Complete boot (node operating in stand-alone mode or auto-giveback is enabled)

```
Loading X86_64/freebsd/image1/kernel:0x100000/3375736 0x538280/3221872 0x84abf0/1189648
Entry at 0x80148020
Loading X86_64/freebsd/image1/platform.ko:0x96e000/504604 0xa85c60/476544 0x9e9320/16452
0xafa1e0/27720
.........................
.........................
******************************
*                            *
* Press Ctrl-C for Boot Menu. *
*                            *
******************************
.....................
.....................

Data ONTAP (fas3240-ams.ams2k3dom.ngslabs.netapp.com)
login:
```

.... Many typical system startup messages removed for clarity

These are typical Boot strap console messages. If the node is operating in stand-alone mode, you should eventually get a "login" prompt when you hit <enter>.

B. Example: Partial boot (node is part of a HA configuration and was taken over by its partner)

```
Phoenix TrustedCore(tm) Server
Copyright 1985-2006 Phoenix Technologies Ltd.
All Rights Reserved
.....
.....
Copyright (C) 2000-2003 Broadcom Corporation.
Portions Copyright (C) 2002-2008 NetApp

CPU Type: Intel(R) Xeon(R) CPU           E5220  @ 2.33GHz

Starting AUTOBOOT press Ctrl-C to abort...
....
******************************
*                            *
* Press Ctrl-C for Boot Menu. *
*                            *
******************************
Chelsio T3 RDMA Driver - version 0.1
.....
Waiting for giveback...(Press Ctrl-C to abort wait)
```

"…." = Deleted lines to save space

NOTE B.1:
If you see this message, this node is part of a HA configuration and the partner node took over for it.

If the "cf giveback" fails due to partner "not ready", wait 5 minutes for the NVMEMs to synchronize. If the giveback fails due to "open CIFS sessions", failed disks or for any other reason, contact NGS.

STEP 2: Will get this response after hitting <enter>.

3	Continue with Section XVIII on next page.

XVIII. V-FAS3100 Series: Boot the Operating System - 'cf giveback' if applicable (cont.)

Step		Action Description
4		**IF** this is an **HA config running DOT 8.x**, have the end-user perform steps 4(a-c) below. Otherwise skip to Sec XIX.
	(a)	On the "partner node", enter: "**cf giveback"**
	(b)	Once the 'target node' (the new controller) comes back on line, login to it and enter: "**cf takeover".**
	(c)	Once the 'takeover' of the 'partner node' is complete, (takeover>) is part of the console prompt, enter: **'cf giveback'** to complete the process.

XIX. V-FAS3100 Series: New controller registration, Submit logs and Part Return

Step	Action Description
1	If the target system is UP, request end-user to send NetApp an Autosupport so the configuration setup can be verified and the new system serial number registered by NGS. Use the following command: filer> **options autosupport.doit <enter NetApp FSO/case # here>**. Without the < > brackets If the target system is down, issue the autosuppport from the partner system. **(The FSO number is 7 digits and begins with 5xxxxxx. Case numbers are ten digits and begin with 2xxxxxxxxx)**
2	Email the console log with the NetApp Reference Number in the Subject Line to **xdl-tpm-console-logs@netapp.com**
3	Place the defective part in the antistatic bag and seal the box.
4	Follow the return shipping instructions on the box to ship the part(s) back to NetApp's RMA processing center. If the shipping label is missing see process to obtain a shipping label here > **Missing Shipping Label?**
5	**Verify** with customer that the system is OK **and if working with NGS ask them if it is OK to be released.**
6	Close dispatch per Rules of Engagement.