

## **Recommended Server Inspection Procedure following Customer Application or Virtualization Engine Server Outage**

### Virtualization Engine for Tape TS7520 and TS7530

In the event that all active customer backup applications are terminated due to an outage caused by the TS7520 or TS7530, customer and service personnel are advised to check for the possibility of interruption of a key connection path between the CV6/CV7 server and SV6 controller. The following document describes an enhancement to the normal service and bring-up procedure following a TS7520 or TS7530. If the CV6 to SV6 path for product code access has been interrupted, the cause of the interruption should be addressed and the affected CV6 server restarted before it is put back in use (in a non-failover environment) or before fail-back is permitted to proceed (in a fail-over environment).

The remainder of this document first describes the different TS7530 and TS7520 configurations that are possible and the symptoms that may be seen depending on configuration type. Afterward, the recommended inspection procedures to perform should such an application or Virtualization Engine Server outage be encountered are given.

#### **Stand Alone System:**

Both the TS7520 and TS7530 are available in standalone configurations (the TS7520 is also available in a Limited Edition configuration but this section also applies to a TS7520 Limited Edition). If a product code path interruption occurs in a stand alone system, the host applications will hang and the system will appear unresponsive. An error notification may or may not be presented because in this state, the root filesystem is moved to read only to protect its contents and therefore logging stops. If you believe you have experienced a product code path interruption, please proceed to the section of this document labeled "Service Advice."

#### **High Availability System: Failover Not Configured**

Both the TS7520 and TS7530 are available in High Availability configurations. If a product code path interruption occurs to one of the members of an HA system, the host applications assigned to that server will hang and the system will appear unresponsive. An error notification may or may not be presented because in this state, the root filesystem is moved to read only to protect its contents and therefore logging stops. Because failover is not configured, the host jobs will not move to the surviving member of the HA pair. Therefore, customers with dual server configurations that are failover/failback capable are STRONGLY advised to enable the failover/failback capability. The overall system reliability and data availability can be significantly improved by the use of this capability. Data availability can be adversely affected by disabling this capability in the case that the described path loss occurs. If you believe you have experienced a product code path interruption, please proceed to the section of this document labeled "Service Advice."

### **High Availability System: Failover Configured**

Both the TS7520 and TS7530 are available in High Availability configurations. If a product code path interruption occurs in one of the members of an HA system, the host applications assigned to that server will temporarily hang and the system will appear unresponsive. An error notification from the server experiencing the issue may or may not be presented because in this state, the root filesystem is moved to read only to protect its contents and therefore logging stops. However, because failover is configured, the surviving member of the HA pair will take over the host jobs of the server experiencing the issue. Backup applications on the host may need to be restarted, but system availability will appear to be resumed. Depending on the error notification level configured on the surviving member of the HA pair, an error notification may be presented indicating a failover has occurred. If you believe you have experienced a product code path interruption, please proceed to the section of this document labeled "Service Advice."

### **4 Node High Availability System:**

Both the TS7520 and TS7530 are available in 4 node High Availability configurations. In the case of the issue described by this document, a four node system will react the same as two independent HA systems (failover cannot occur between HA pairs in different racks). Therefore, depending on the setup, either the "High Availability System: Failover Not Configured" section or the "High Availability System: Failover Configured" section should be reviewed. If after reviewing the sections, you believe you have experienced a product code path interruption, please proceed to the section of this document labeled "Service Advice."

### **Service Advice:**

Determination of product code path loss may be done by inspection of the server host adapter port activity indicators (the colored LEDs) on the back of the CV6 or CV7 as described later. If such inspection is inconclusive, a full path check may be completed using the following procedure, which will require IBM Service or IBM Service consultation.

- Log in to the affected CV6 or CV7 server directly via a secure shell (SSH) client application (such as *putty*). If the customer has not changed the default passwords, then the username *vetapeservice* and password *service4u* may be used.
- Check the write access to the disk logical unit 0 (LUN 0, where the functional code is stored). This may be accomplished safely by typing the following:  
*sudo touch /var/log/messages.*
- If this command times out or if it returns with an error condition (one error condition would be the return message: *cannot touch `/var/log/messages': Read-only file system*), then the likelihood of a LUN 0 data path interruption is high, and the customer should proceed as described below.

## What You Should Do If This Issue Is Encountered:

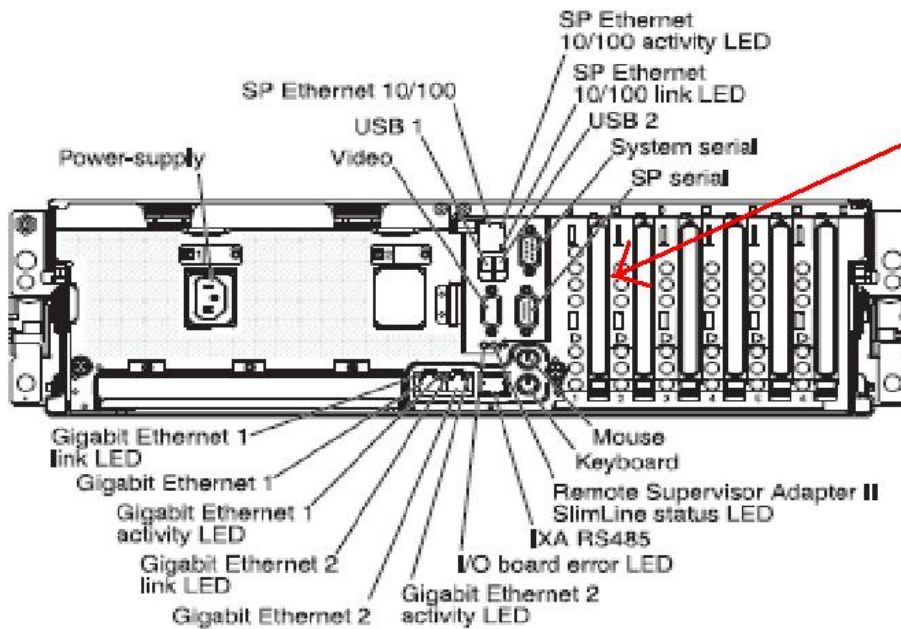
**Step 1:** Resume host jobs on surviving failover member in HA setups.

If in a HA configuration, take the steps required to resume your back up jobs on the surviving server. Depending on the operating system used and the backup client of the host, this may include rediscovering the virtual devices or restarting the backup jobs or backup services. For details about restarting host jobs, please consult the TS7500 Users Guide.

**Step 2:** Visually inspect the hardware

Perform visual inspection and make a note of the following:

- Fibre channel adapter card in slot 1 LEDs – The fibre channel adapter card LEDs of interest will be in slot 1, the top port (of two) for the 3954 CV6; and in slot 1, the top port (of four) for the 3954 CV7. Figure 1 shows the slot that the dual port fibre channel card in question would occupy for a 3954 CV6.



**Figure 1: Rear View of the 3954 CV6 - The arrow points to slot 1**

Figure 2 shows an image of the 3954 CV6 with the LEDs above the cable to examine.

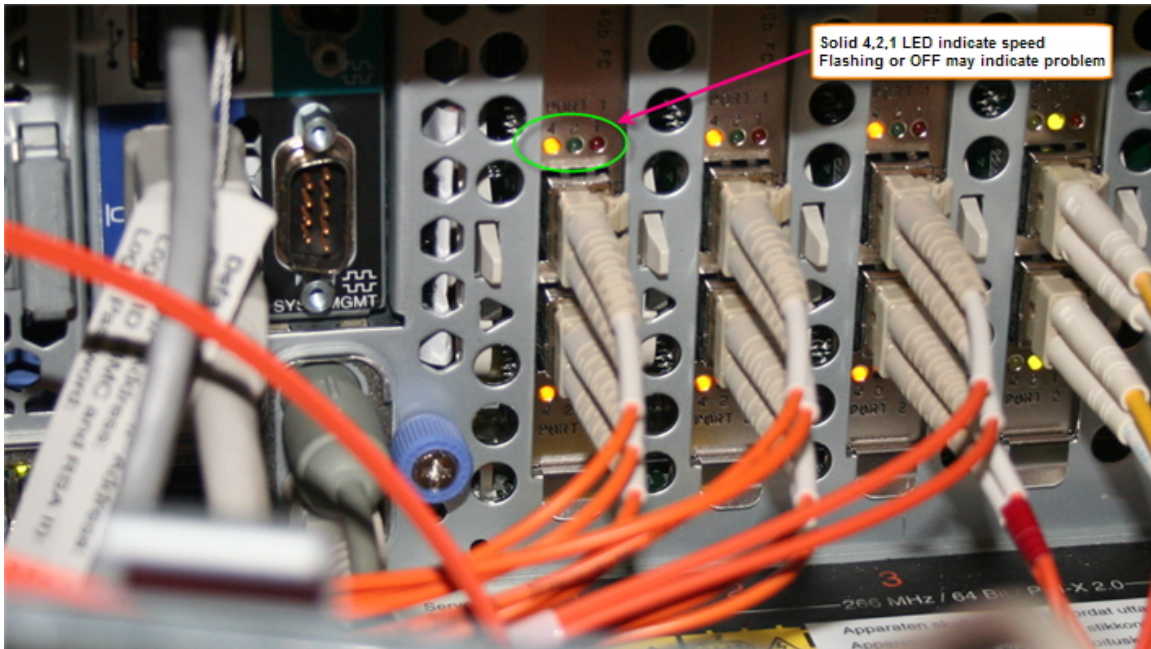


Figure 2: Picture showing LEDs to examine in a 3954 CV6

For a 3954 CV7, the fibre channel port that should be checked is contained in the first Quad Port fibre channel adapter. This card can be found in slot 1 as shown in Figure 3. Figure 4 shows an example Quad Port fibre channel card with the port to check and LEDs to check denoted by arrows.

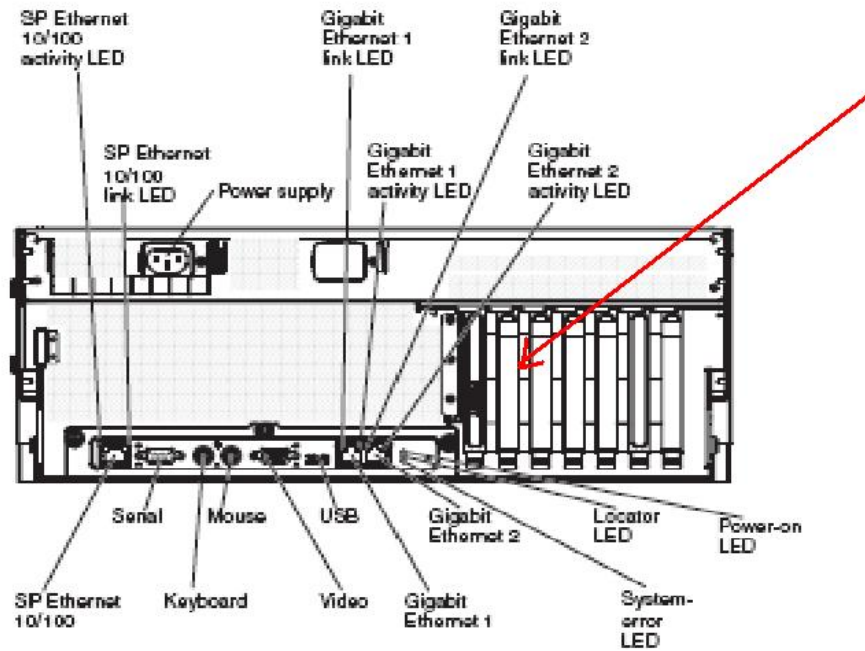
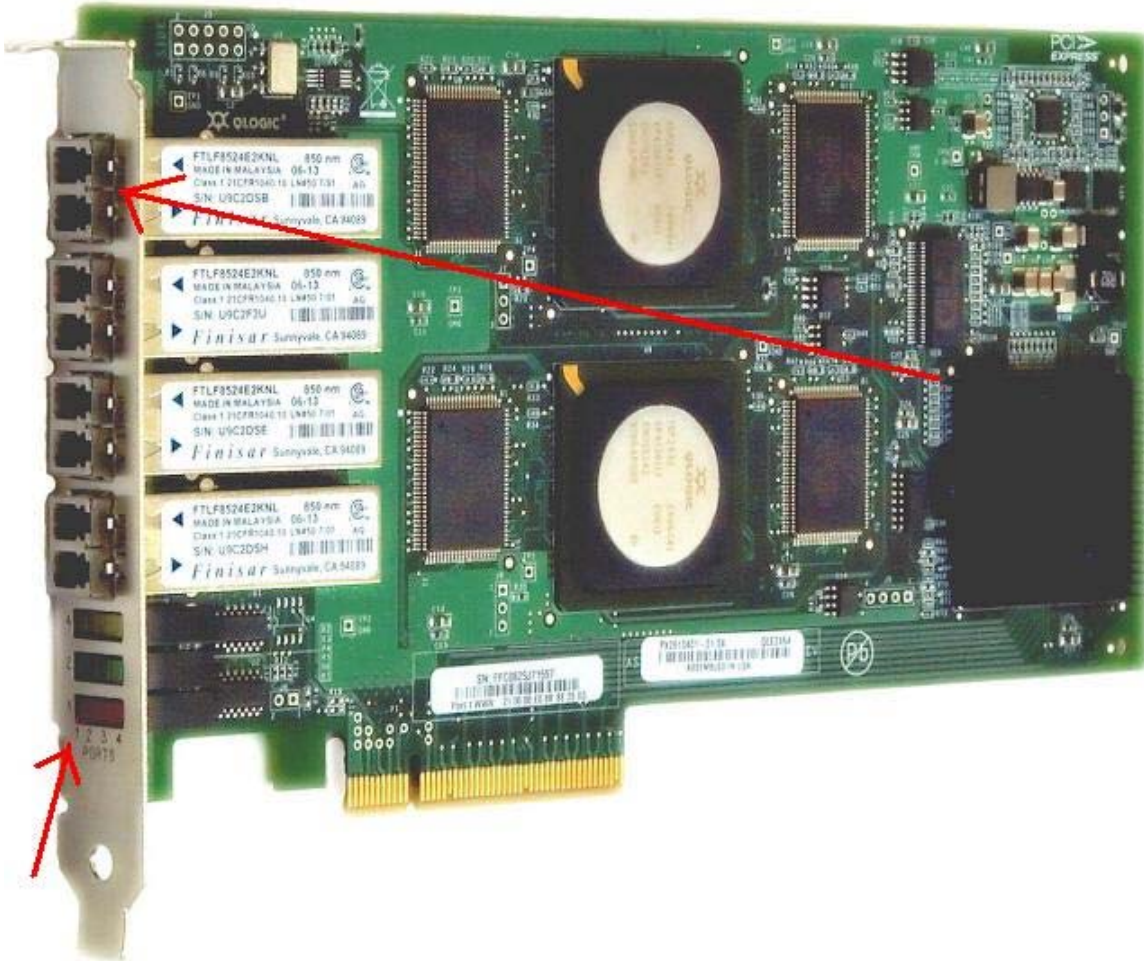


Figure 3: Rear View of the 3954 CV7 - The arrow points to slot 1





**Figure 4:** A quad port fibre channel card with the top arrow pointing to port number 1 and the bottom arrow pointing to the column of the LEDs to examine

- DS4200 Controller A LEDs – In a system without fibre channel switches, the fibre channel boot port (slot 1, port 1) will be directly connected to H1 (or Ch1) of Controller A of the SV6 it is associated with as its primary controller (see figure below). For a Ltd. Edition TS7520, there is a maximum of one 3955 SV6, so there is only one possible Controller A connection to check. For a standalone Enterprise Edition TS7520/TS7530, the port that should be checked is contained in the Controller A of the lower 3955 SV6. For a High Availability TS7520/TS7530 system, the H1 (or Ch1) port of Controller A corresponding to the server should be checked (for the lower server, check the lower 3955 SV6 in the same frame, and for the upper server check the upper 3955 SV6 in the same frame). Figure 5 gives a diagram of the back of a 3955 SV6 cache controller and Figure 6 gives a picture of an actual 3955 SV6 and illustrates the H1/Ch1 port.

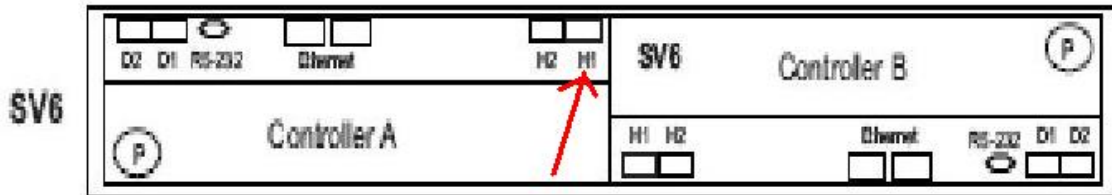


Figure 5: Rear View of the 3955 SV6 - The arrow points to H1 of Controller A

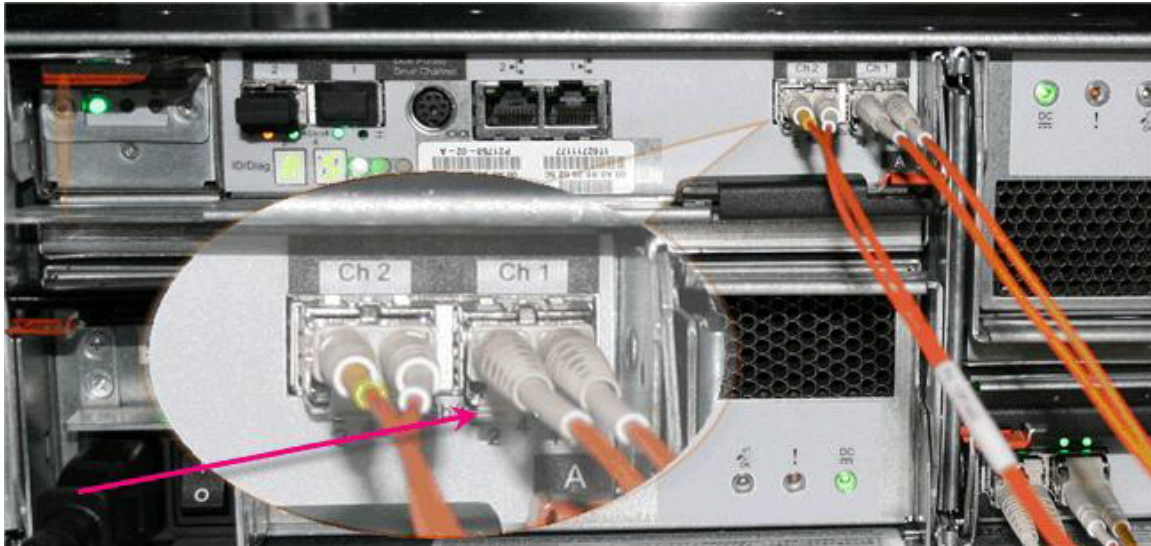
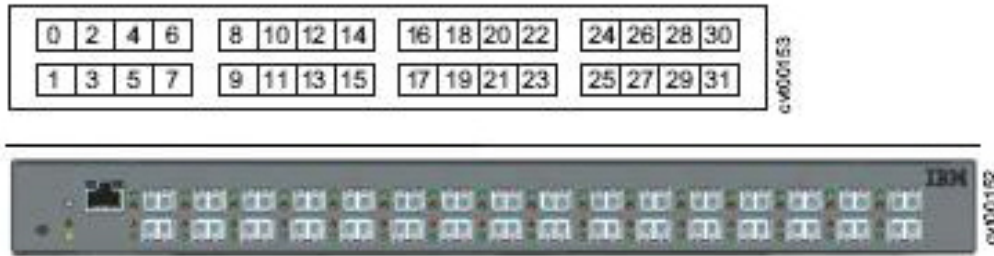


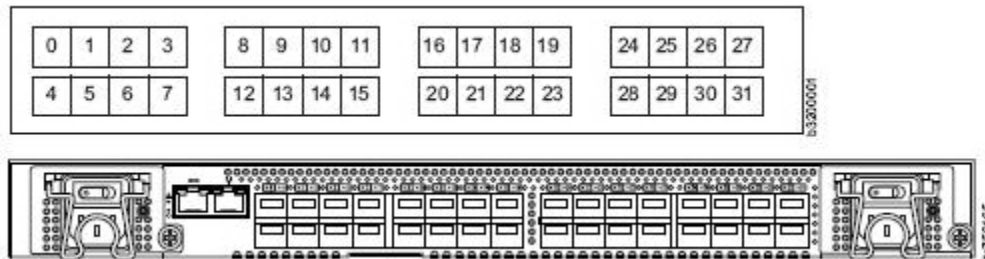
Figure 6: Picture of the back of a 3955 SV6 cache controller with the H1/Ch1 port denoted

For a system with fibre channel switches internal to base frame 1, the same Controller A, H1 ports mentioned above for systems without internal fibre channel switches should be checked.

- (If applicable) check the internal fibre channel switch LEDs – For systems with the internal fibre channel switches, there are two types of switches that can be found and there will always be two switches together (both of the same type). Figure 7 gives a diagram illustrating the port numbers as well as a picture of the back of the switch for a 1907 fibre channel switch. Figure 8 gives a diagram showing the port numbering as well as a diagram of the actual 1910 fibre channel switch.



**Figure 7: 1907 Fibre channel Switch**



**Figure 8: 1910 Fibre channel Switch**

The following table gives the boot port to check on a fibre channel switch according to which server is being verified:

Server Experiencing Problem	Switch Port To Check
Lower Server Base Frame 1	Switch 1 (upper) Port 0
Upper Server Base Frame 1	Switch 2 (lower) Port 0
Lower Server Base Frame 2	Switch 1 (upper) Port 4
Upper Server Base Frame 2	Switch 2 (lower) Port 4

**Table 1: Mapping of problem server to applicable switch and port**

**Step 3:** Contact IBM support and indicate that your server may have encountered a boot LUN path loss issue.

**Note - Do NOT attempt to failback the resources until the faulty component is identified and has been repaired/replaced.**

**Step 4:** Work with the IBM support representative to correct the problem  
The IBM support representative should help you to achieve the following sequence of goals:

1. Identify the hardware failure
2. Repair the hardware failure
3. Verify the hardware problem has been resolved
4. Reboot the server that experienced the hardware failure
5. Verify the server is operating at optimal performance