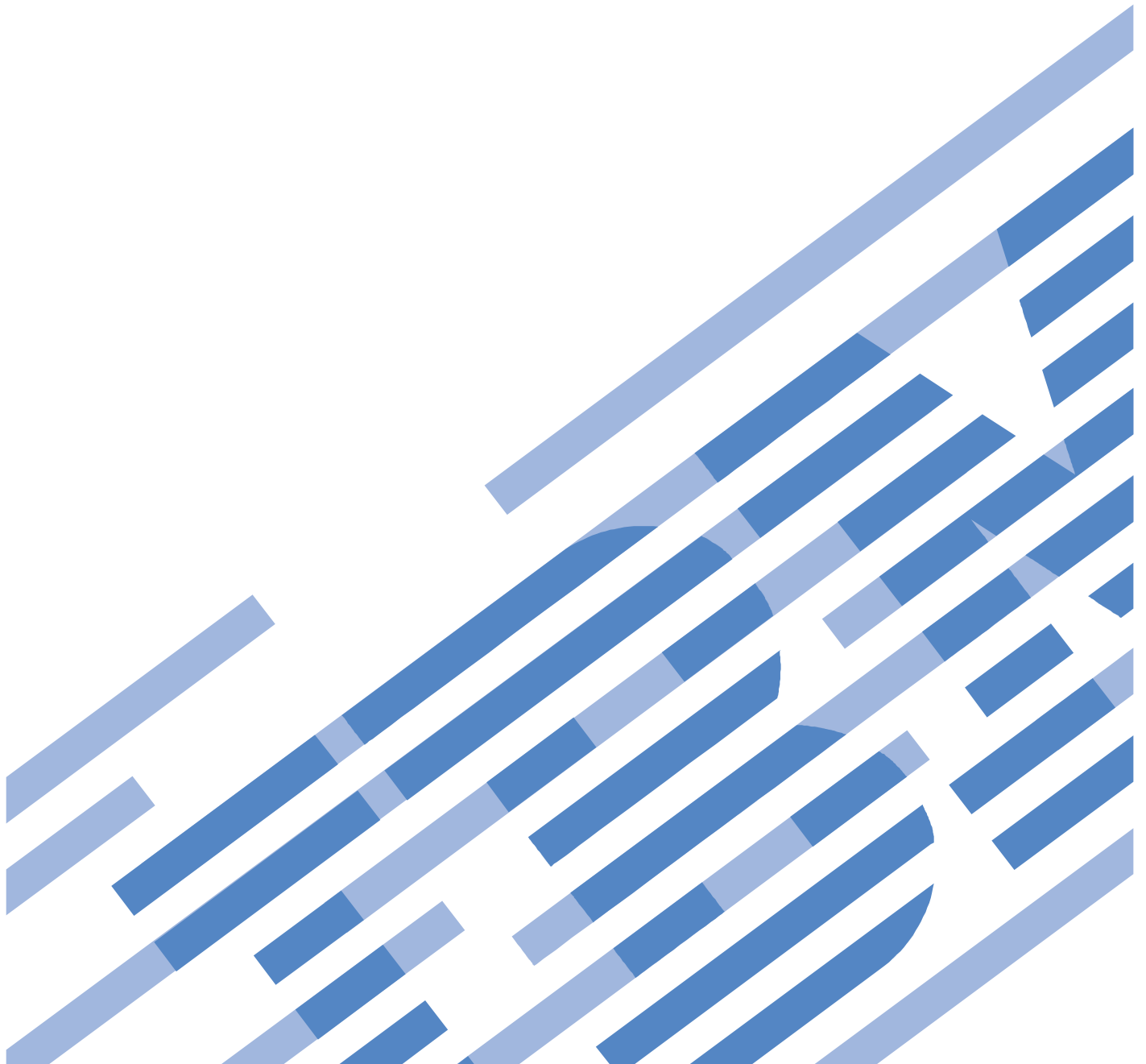


Power775
Drive Carrier Service Procedure
Last Modified 9/28/2011



Power775 Drive Carrier Service Procedure
PN: 41U8186, EC N44172

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1 GENERAL

1.1 Release / Revision History

Document Name	Date	PDF name	Description
Power775 Drive Carrier Service Procedure	9/28/2011	"p775_de_carrier.pdf"	Initial Release

Table 1 Release / Revision History

1.2 Where to find this document

The current "Power775 Drive Carrier Service Procedure" document is "p775_de_carrier.pdf" which is to be downloaded from: InfoCenter Website: <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7ee2/p7ee2kickoff.htm>

Click "PDF files for the IBM Power 775 (9125-F2C) removing and replacing parts"

Under "Disk Enclosure", click "Drive Carrier" to download PDF "p775_de_drive.pdf"

This is the only valid source for the latest Power775 Drive Carrier Service Procedure.

1.3 Required Documents

Document	Document Number	Location
Safety Notices http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7h	Doc# G229-9054	Infocenter*

Table 2 Required Documents

*InfoCenter Website: <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7ee2/p7ee2kickoff.htm>

1.4 Related Documents

Document	Document Number	Location
"GPFS Native RAID Administration and Programming Reference"	SA23-1354	InfoCenter *

Table 3 Related Documents

*InfoCenter Website: <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7ee2/p7ee2kickoff.htm>

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1.5 Abbreviations

Abbreviation	Definition	Details
BPA	Bulk Power Assembly	
CEC	Central Electronic Complex	Also referred to as the “node”.
DCCA	Distributed Conversion and Control Assembly	The power supplies for the CEC and DE are called the CEC DCCA and DE DCCA respectively.
DE	Disk Enclosure	
GPFS	Global Parallel File System	IBM’s file system utilizing software RAID
HDD	Hard Disk Drive	This also means hard drive
HPIC	High Power Interface Cable	DCCA power cable
LED	Light Emitting Diode	
LIC	Licensed Internal Code	
PCB	Printed Circuit Board	
RAID	Redundant Array of Inexpensive Disks	
SAS	Serial Attached SCSI	Protocol used for direct attached storage
SSR	Systems Services Representative	IBM Service personnel
SSD	Solid State Drive	
UEPO	Unit Emergency Power Off	

Table 4 Abbreviations

2 OVERVIEW

This section is an overview only. Do not start the service procedure until Section 3 which contains the detailed steps.

2.1 Safety Notices

Read “Safety_Notices “ available from InfoCenter – see Section 1.3.
<http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7hdx/G229-9054.pdf>

The following cautions apply to all Power775 service procedures:

CAUTION:

Energy hazard present. Shorting might result in system outage and possible physical injury. Remove all metallic jewelry before servicing. (C001)

CAUTION:

The doors and covers to the product are to be closed at all times except for service by trained service personnel. All covers must be replaced and doors locked at the conclusion of the service operation. (C013)

CAUTION:

Servicing of this product or unit is to be performed by trained service personnel only. (C032)

2.2 ATTENTION: File System Risk Statement

The Global Parallel File System (GPFS) implementation of software RAID stripes data across all the Disk Enclosures in the cluster. **It is very important to follow the procedure and only replace a single Drive Carrier at a time following the replacement priority order; if too many drives are removed while GPFS is active, the file system will become unavailable. DO NOT swap drives between different locations.**

2.3 Confirm how you got to this Power 775 Drive Carrier Service Procedure

You should be performing this procedure if you have determined that a Drive Carrier needs replacement.

You should download this procedure from:

InfoCenter Website: <http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7ee2/p7ee2kickoff.htm>

This is the only valid source for the latest Power775 Drive Carrier Service Procedures

2.4 Drive Carrier Description

The definition of a Drive in the context of Power775 is either of the following, and this procedure applies to both types of drives:

- a. A 2.5” Small Form Factor (SFF) Serial Attached SCSI (SAS) Hard Drive Assembly
This will be referred to as “hard drive”. See Figures 1 & 3.
- b. A 2.5” SFF SAS Solid State Drive (SSD) Assembly
This will be referred to as “SSD”. See Figures 2 & 4.



Figure 1 Hard Drive Assembly Photo



Figure 2 SSD Assembly Photo

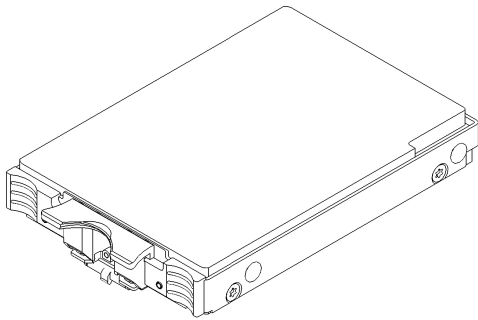


Figure 3 Hard Drive Assembly Drawing

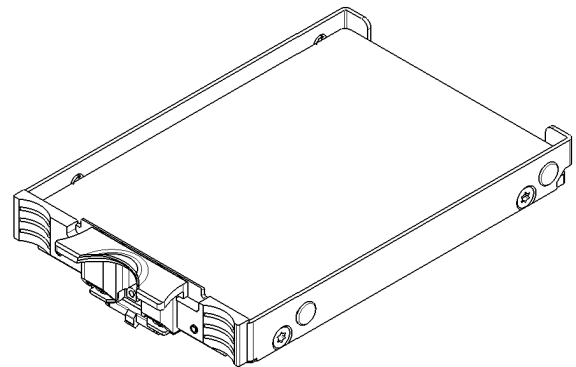


Figure 4 SSD Assembly Drawing

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The Drive Carrier is used to hold up to four Drives located (Figures 5,6 and 7).
There are 96 Drive Carriers in the Disk Enclosure (DE) (see Figures 8,9 and 10).

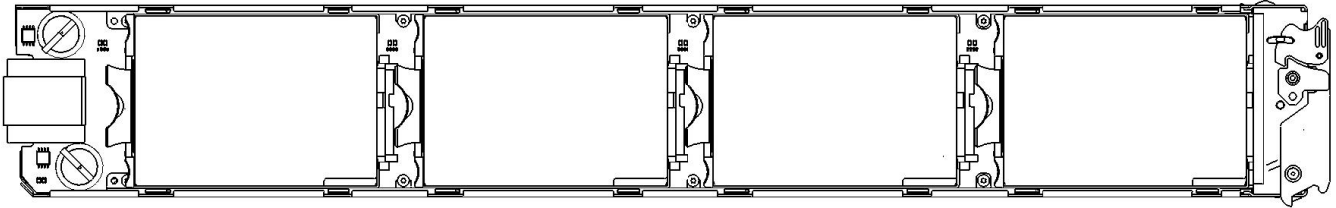


Figure 5 Drive Carrier Drawing



Figure 6 Drive Carrier Photo - Top View



Figure 7 Drive Carrier Photo - Side View (Label Show Drive Position)

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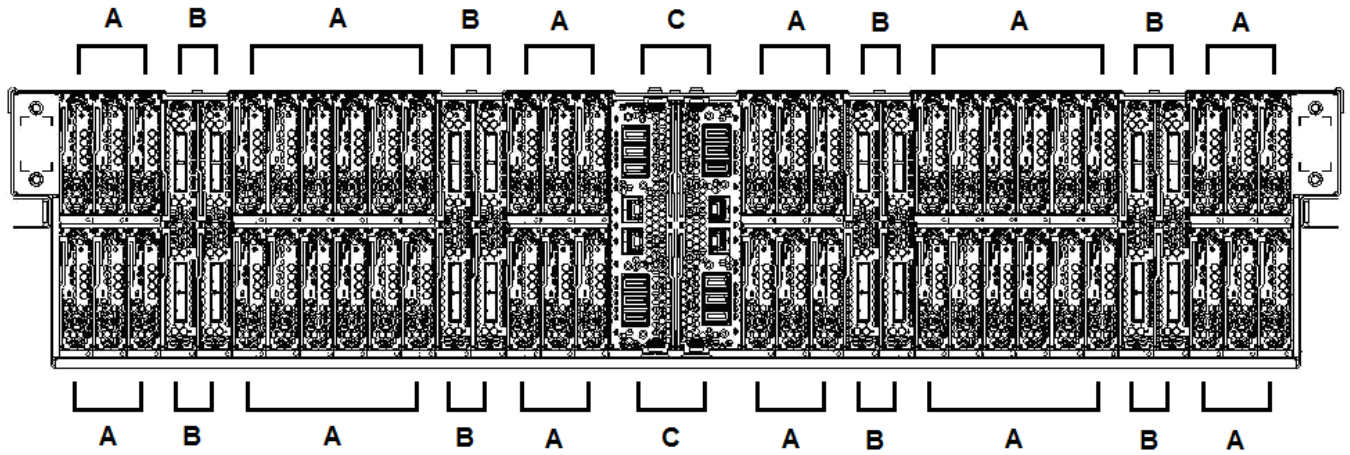


Figure 8 Disk Enclosure (Front View – showing 48 Drive Carriers, 8 Port Cards, and 2 DCCAs)

A = Drive Carrier B = Port Card C = DE DCCA



Figure 9 Disk Enclosure Photo (Front View – showing 48 Drive Carriers, 8 Port Cards, and 2 DCCAs)

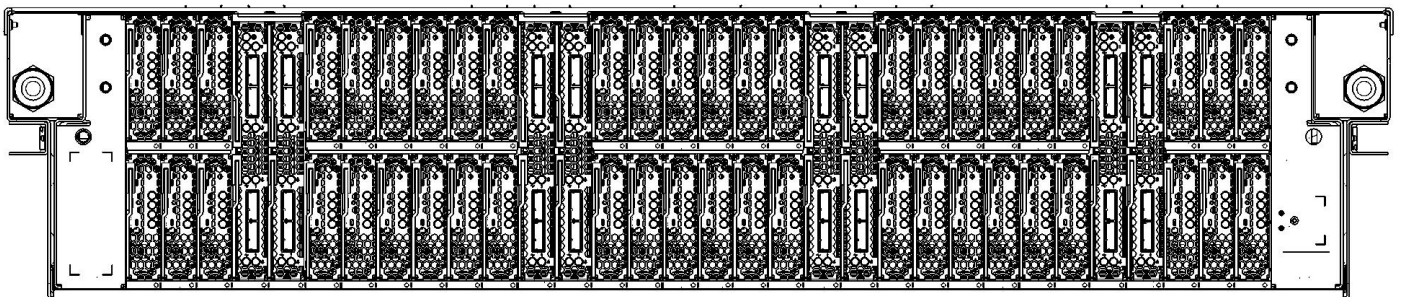


Figure 10 Disk Enclosure (Rear View – showing 48 Drive Carriers and 8 Port Cards)

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2.5 Drive Carrier Weight

Drive Carrier by itself	0.87 lbs (0.39 kg)
Drive Carrier with 4 Drive Assemblies installed	2.91 lbs (1.32 kg)

2.6 Background

The Global Parallel File System (GPFS) implementation of software RAID stripes data across all the recovery groups in a cluster. Every recovery group contains one small declustered array (DA) of 4 SSDs and from 1 to 4 DAs of 47 hard drives each. Each Disk Enclosure (DE) contains 2 recovery groups. One consists of the drives in the top Drive Carriers and the other consists of the drives in the bottom Drive Carriers. Each Drive Carrier contains from 1 to 4 drives. Concentrating on half a DE, these drives are further divided into four groups of 47 hard drives and 1 SSD. For the upper recovery group, the drives of the first DA reside in drive position 1 of the 48 upper Drive Carriers. The drives in the second DA reside in drive position 2, and so on.

The entire file system can be compromised if a single declustered array has lost enough drives to eliminate redundancy and then loses another drive. When you remove a Drive Carrier for service, you are removing 4 drives at once from 4 different DAs. Only the file system can check the health of its declustered arrays. **Thus, it is critical to interact with the file system to ensure that the drives on the Drive Carrier have been suspended and that only the correct Drive Carrier is removed when performing the service.**

An electro-mechanical actuator locks the Drive Carrier's latch as soon as one or more drives are powered on in that Drive Carrier. This was implemented as a final check that the SSR has identified the correct Drive Carrier to remove in order to do the Drive service, as only the Drive Carrier being serviced will be unlocked. The actuator pin is moved to lock the latch trigger. See Figure 7 below. (The blue and red colors are only for contrast.)

NOTE – When the Drive Carrier is removed, if the actuator pin is accidentally moved to the locked position, it will be necessary to move gently back to the unlocked position with your finger before reinstalling the Drive Carrier.

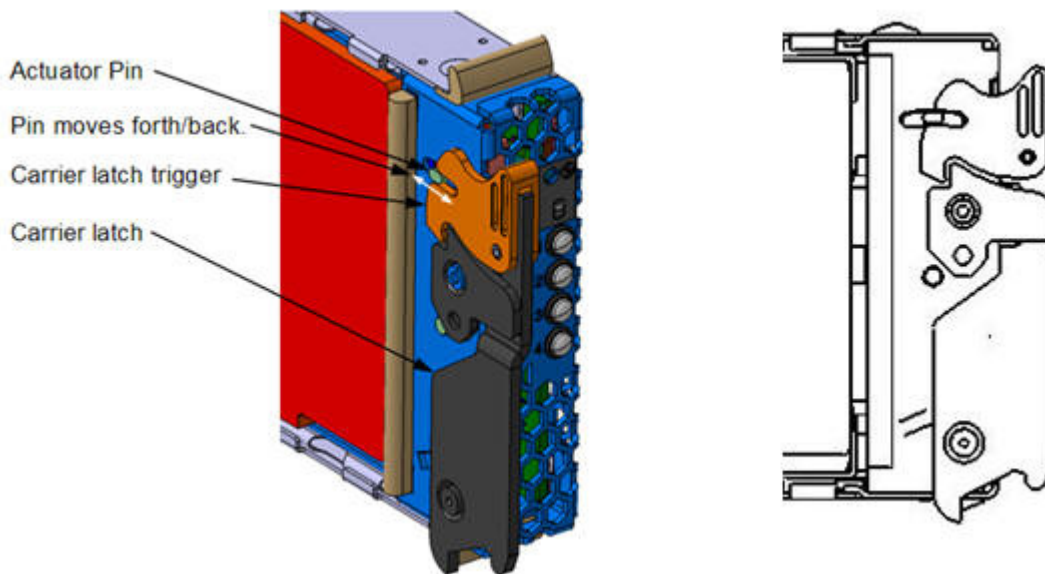


Figure 11 Electro-mechanical Actuator in Drive Carrier Latch (2 Views)

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GPFS has a replacement threshold of 1 set for the small DAs containing the SSDs, and a replacement threshold of 2 set for the large DAs. This means that if an SSD fails in a small DA, it will be marked immediately for replacement. By contrast, when only one hard drive fails, it is not marked for replacement; when the second hard drive in that DA fails, both failed hard drives are marked for replacement.

GPFS provides several indications that disk replacement is required:

- * AIX error report and Linux syslog entries
- * The pdReplacePdisk callback can be configured to run an admin-supplied script at the moment a pdisk is marked for replacement
- * The P7 cluster event notification TEAL agent can be configured to send disk replacement notices when they occur to the P7 cluster EMS
- * The mmlsrecoverygroup command with the -L and --pdisk flags shows the states of all pdisks, which may be examined for the "replace" attribute
- * The mmlspdisk command with the --replace flag lists only those pdisks that are marked for replacement

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2.6.1 Enclosure VPD label and Location Code and Recovery Group Name

The VPD label is placed on the rear of a DE just above the drawer LEDs. The following picture shows the information contained in the label.



Figure 12 DE VPD Label

An example of a location code of Drive 4 in Drive Carrier 35 contained in the DE that this VPD label is attached to would be as follows:

U78AD.001.992001B-P1-C35-D4

By convention as explained in the GPFS D-RAID Administration and Programming Reference document, the 7 digit unique SN on the enclosure VPD label, is to be used in the recovery group name as follows:

xxxxxxxTOP
xxxxxxxBOT

where xxxxxxx is the final 7 digits of the unique SN.

2.7 Concurrency

The Drive Carrier is concurrently maintainable without losing any customer function and while maintaining redundancy.

NOTE: If a Drive Carrier is out longer than the repair time-out (configurable parameter in GPFS with default of 5 minutes), the disks go from Suspended to Suspended/Missing state and GPFS will start draining the data that was on those disks to spare space. Normally, this won't really hurt anything, but in the extreme case where some affected array brought down too many disks, it can cause the server to resign control of the recovery group, causing delays and other inconvenience. The procedure out of this situation is to put the carrier back and run `mmchcarrier --replace` or `--resume`. In the resign situation, the `mmchcarrier replace/resume` command may take a long time to work while it waits for the backup server to take over the recovery group.

2.8 Required SSRs and Roles

This service procedure contains steps to be performed by a customer system administrator and an IBM SSR (System Service Representative).

- The customer system administrator performs the STEPs in Sections marked with “<= CUSTOMER TASK”
 - The SSR performs the STEPs in Sections marked with “<= SSR TASK”
-

2.9 Estimated Service Time

0.5 Hour – 1 Hour

2.10 Required Tools

The P7IH qualified service ladder PN is 46G5947.

2.11 Prerequisites for this Procedure

In order to perform this procedure, you will need the following information:

- 1) The location code of the FRU to be serviced
 - 2) The cage location of the FRU to be serviced
 - 3) The frame number and frame serial number of the FRU to be serviced
-

2.12 Service Procedure Overview

This is an overview of the tasks to be performed. Read this overview but do not perform any of the tasks yet.

3.1	IDENTIFY THE FRAME <= SSR TASK	15
3.2	CHECK THE HEALTH OF THE DAS <= CUSTOMER TASK	22
3.3	FORCE RELEASE OF THE DRIVE CARRIER <= CUSTOMER TASK	23
3.4	DRIVE CARRIER REPLACEMENT <= SSR TASK	24
3.5	UNSUSPEND THE DRIVES <= CUSTOMER TASK	29
3.6	VERIFY THAT THE DRIVE REPLACE FIXED THE PROBLEM <= CUSTOMER TASK	29
3.7	CONFIRM WITH THE CUSTOMER <= SSR TASK	29

3 SERVICE PROCEDURE

STOP – Do not proceed unless you have read “Safety Notices” which is available from InfoCenter; see Section 1.3.

These steps define the procedure to replace a Drive Carrier in a P7IH cluster.
For additional detail on using GPFS, see “GPFS D-RAID Administration and Programming Reference” available on from InfoCenter. Also, manual pages for the GPFS commands will be installed as part of GPFS.

3.1 Identify the frame <= SSR TASK

- STEP 1 Use the procedure “Appendix A: Power775 BPC FSP Command Line Procedure” (included in Section 5 of this document) to access the BPC FSP command line of the frame containing the Disk Enclosure with the FRU needing replacement.
- STEP 2 Blink the Enclosure Identify LEDs of the DE with the failed Drive Carrier by using the following command from the BPC Command Line:

This is the command syntax:

```
bpccmd -c 27<blank>0000<cage ID><FRU ID><LED blink state 00=off, 02=blink>
```

<blank>	= “11”
<cage ID>	= see Figure 13
<FRU ID>	= “01” for the DE Identify LED.
<LED state>	= “02” for this step

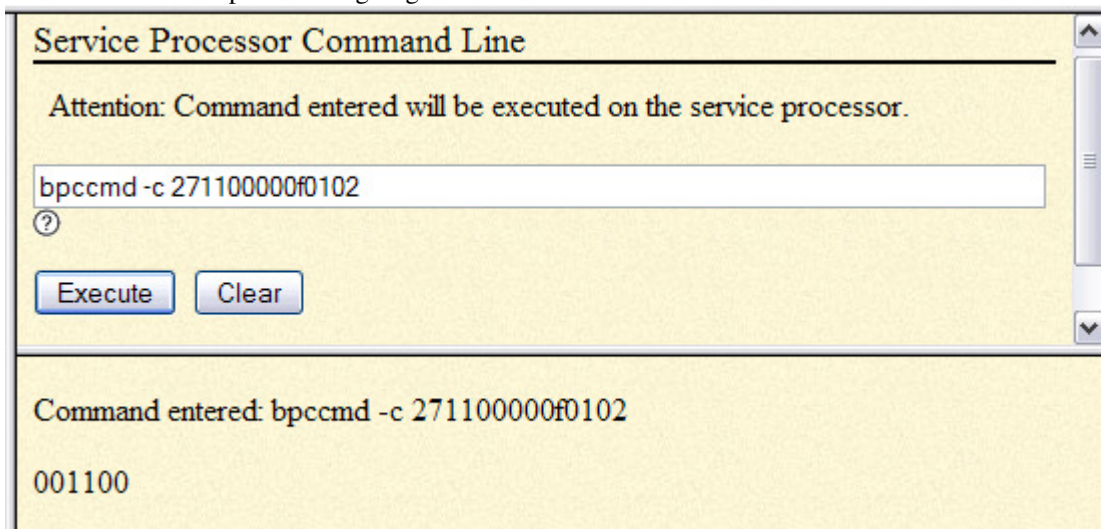
Type in the following, inserting the correct Cage ID DE chassis location:

```
bpccmd -c 27110000xx0102
```

Where “xx” is the Cage ID of the DE you are servicing.

This field will be 05,07,09,0B,0D, or 0F (see Figure 13).

The correct return code is 001100. If you do not receive this, contact the next level of support.
Below is an example assuming Cage ID=0f



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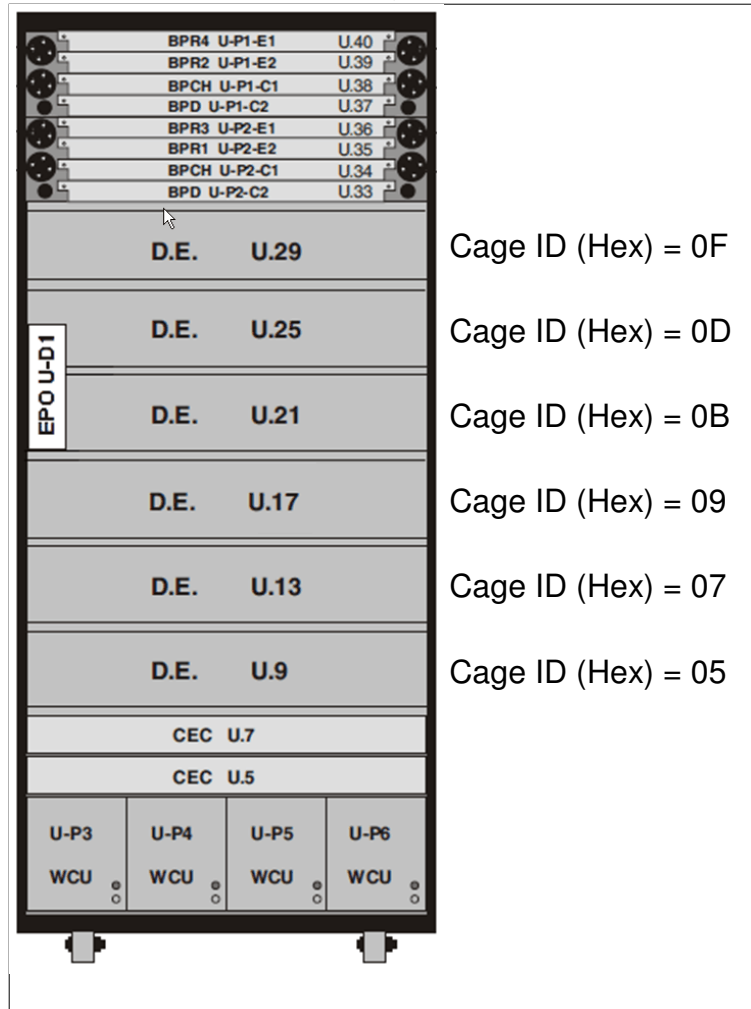


Figure 13 Disk Enclosure HEX Cage ID

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- STEP 3 Locate the frame. Confirm that it is the correct frame by checking that its UEPO Panel Identify LED is blinking. This LED is located on the UEPO panel and it is marked by the “!” symbol (see Figure 14 and Figure 15).

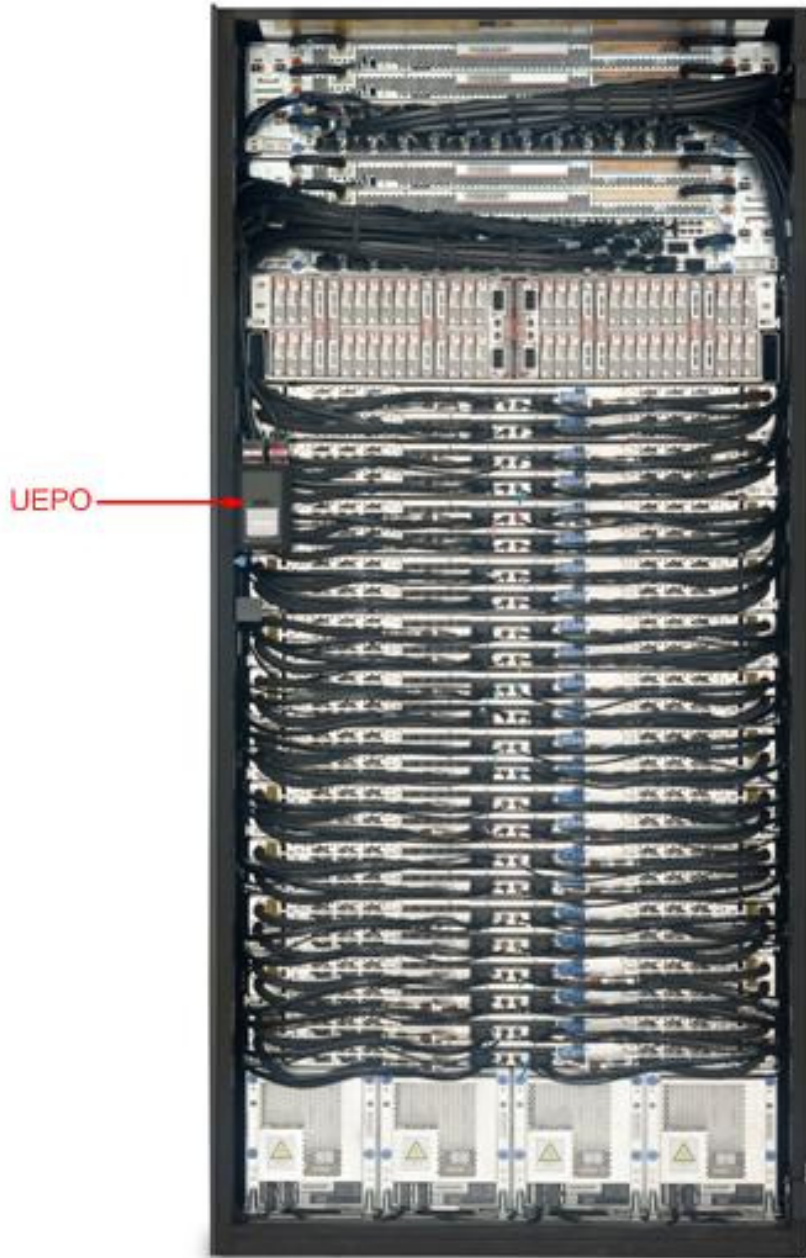


Figure 14 Frame Photo showing UEPO location

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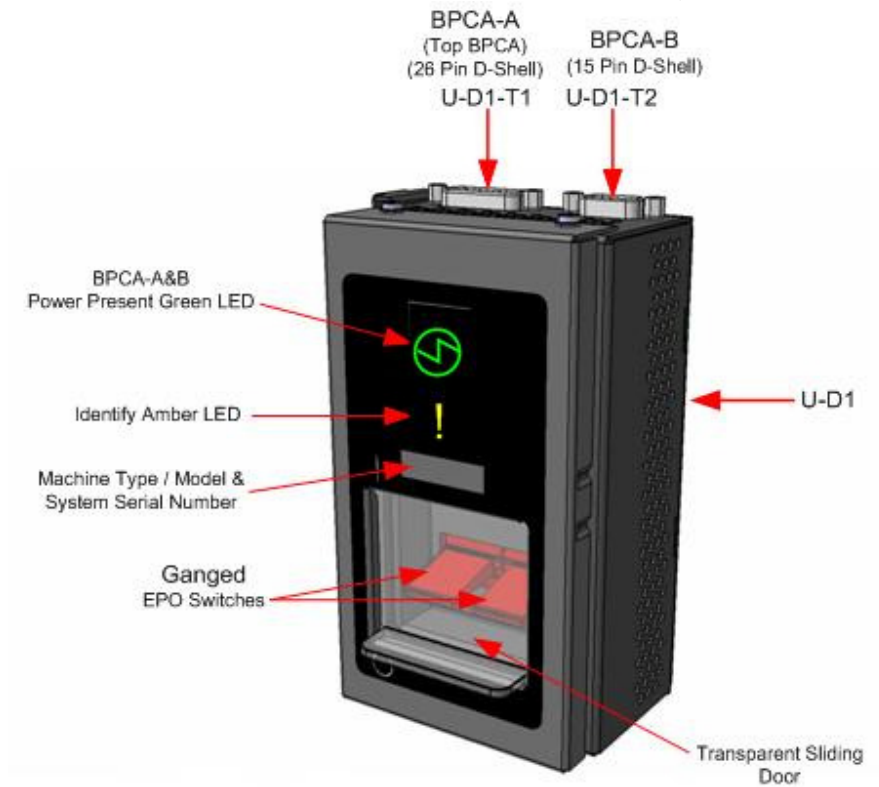


Figure 15 UEPO assembly showing frame Identify Amber LED

STEP 4 If the Drive Carrier is at location c001 to c056, then open the front door.

If the Drive Carrier is from location c057 to c112, then open the rear door.

Locate the latch along the left side of the door; push in on the X button, the latch handle will pop out, extended out from the latch pocket. Grasp the latch handle and swing the door to the right (see Figure 16 and Figure 17).

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Figure 16 Door Latch



Figure 17 Door Latch handle shown extended

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STEP 5 Identify the Disk Enclosure

Identify the Disk Enclosure requiring service by looking for the blinking amber Enclosure ID LEDs on the DE DCCAs on the front side of the Disk Enclosure (see Figure 17) OR on the right side of the rear of the Disk Enclosure (Figure 18).

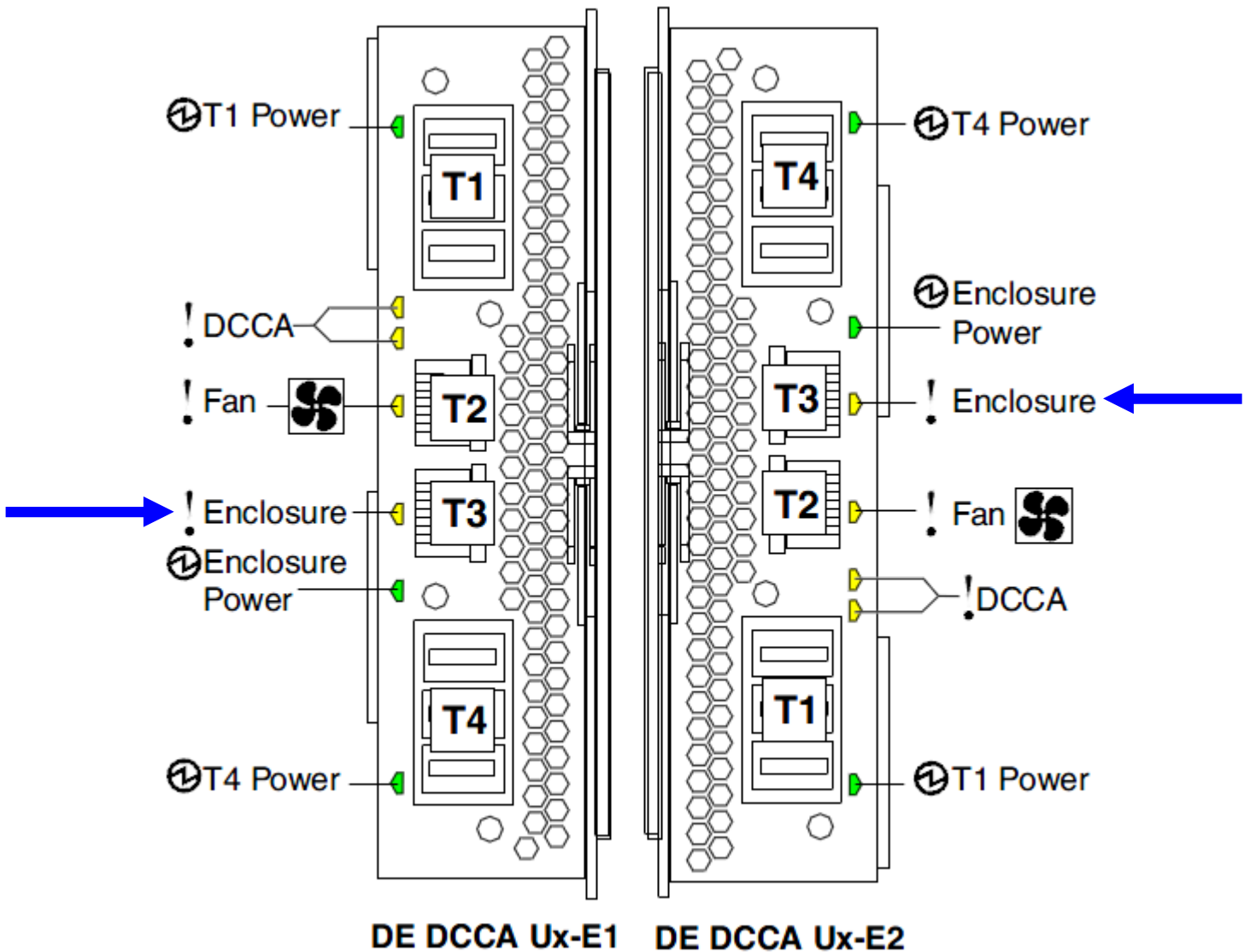


Figure 18 The Front DE Enclosure ID LED is located on the DCCAs

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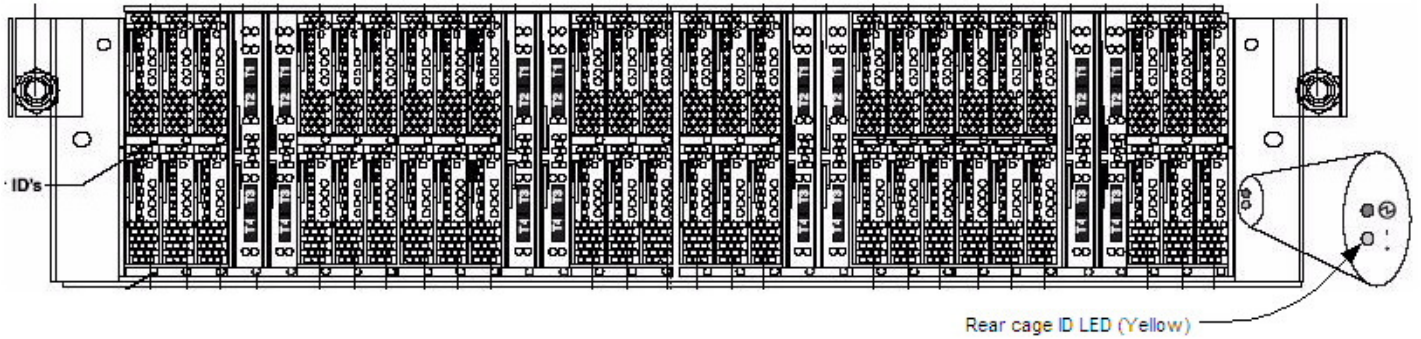


Figure 19 Rear DE Enclosure ID LED is located on the bottom right side of the disk enclosure:

STEP 6 Check the Enclosure VPD Label.

Verify that the location code of the Drive Carrier to be replaced matches the enclosure VPD Label of the DE you have identified (see Figure 12).

STEP 7 Bring over the Ladder if you are going to need it for service.

STEP 8 Turn off the Enclosure Identify LEDs of the DE by using the following command from the BPC Command Line:

This is the command syntax:

```
bpccmd -c 27<blank>0000<cage ID><FRU ID><LED blink state 00=off, 02=blink>
```

<blank>	= "11"
<cage ID>	= see table below
<FRU ID>	= "01" for the DE Identify LED.
<LED state>	= "00" for this step

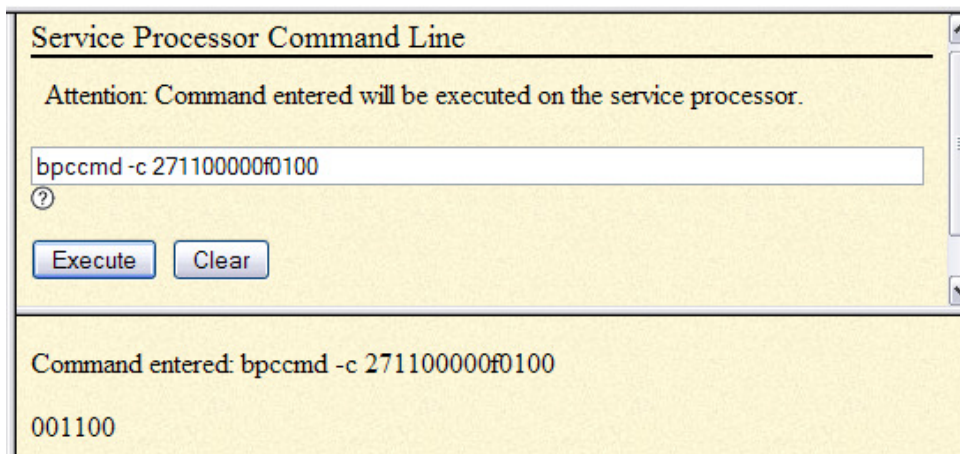
Type in the following, inserting the correct cage ID DE chassis location:

```
bpccmd -c 27110000xx0100
```

Where "xx" is the cage ID of the DE you are replacing. This field will be 05,07,09,0B,0D, or 0F (see Figure 13).

The correct return code is 001100. If you do not receive this, contact the next level of support.

Below is an example assuming Cage ID=0f



3.2 Check the Health of the DAs <= Customer Task

STEP 9 Log onto the Executive Management Server (EMS)

STEP 10 Log onto the Service Node.

STEP 11 SSH into a GPFS I/O Node

STEP 12 From the GPFS LPAR, issue command:

```
/usr/lpp/mmfs/bin/mmlsrecoverygroup xxxxxxTOP --L
```

“xxxxxxxTOP” is the recovery group name. Use the recovery group in which the failed Drive Carrier is a member (see Section 2.6.1 for more detail).

Use the output of this command to determine the health of the 5 Declustered Arrays (DAs) in the recovery group.

Make sure that removal of the Drive Carrier, which will cause a drive to be removed from up to 4 of the 5 DAs, will not result in loss of availability of the DA; i.e. make sure that the affected DAs are healthy enough to tolerate removal of the Drive Carrier. **The next step will force a release of the Drive Carrier and will not perform any checking before hand, so this manual check is critical.**

If the DAs are healthy enough to tolerate removal of the Drive Carrier, proceed to STEP 13.

If the DAs are not healthy enough, do not proceed: make other repairs to them first until they are healthy enough, or contact next level of support.

See “GPFS Native RAID Administration and Programming Reference” from InfoCenter for more details.

3.3 Force Release of the Drive Carrier <= Customer Task

NOTE ON TIME CONSTRAINT: The following step should be performed after the SSR prepares the frame for work. The door should be opened and, if necessary, the ladder should be in place to minimize repair time. If the Drive Carrier is not replaced and resumed within the repair time-out (configurable parameter in GPFS with default of 5 minutes), then it's possible that this could result a server resign, causing longer unavailability.

This step forces a release targeting all 4 drives in the Drive Carrier.

STEP 13 From the GPFS LPAR, issue either command format below:

```
/usr/lpp/mmfs/bin/mmchcarrier xxxxxxTOP --release --force-release --pdisk '<pdisk name 1>;< pdisk name 2>;< pdisk name 3>; < pdisk name 4>'
```

The above command suspends all the drives on the Drive Carrier to be removed.

This command should complete quickly and release the Drive Carrier.

When the command output tells you to replace drives, ignore that.

There is not a command at this time for replacing the Drive Carrier, so instead we are targeting the 4 drives.

Example output on success:

```
mmchcarrier 000DE37TOP --release --force-release --pdisk 'c046d1;c046d2;c046d3;c046d4'
```

```
[I] Suspending pdisk c046d1 of RG 000DE37TOP in location 78AD.001.000DE37-C46-D1.  
[I] Suspending pdisk c046d2 of RG 000DE37TOP in location 78AD.001.000DE37-C46-D2.  
[I] Suspending pdisk c046d3 of RG 000DE37TOP in location 78AD.001.000DE37-C46-D3.  
[I] Suspending pdisk c046d4 of RG 000DE37TOP in location 78AD.001.000DE37-C46-D4.  
[I] Carrier released.
```

```
- Remove Carrier
```

```
- Replace disk in location 78AD.001.000DE37-C46-D1 ***NOTE: IGNORE THIS LINE
```

```
- Reinsert Carrier *** Replace Carrier Card instead in later STEP.
```

```
- Issue the following command:
```

```
mmchcarrier 000DE37TOP --replace -- pdisk 'c046d1;c046d2;c046d3;c046d4'
```

```
***NOTE: do not use the "--replace" command shown in the output.
```

```
You have to use the "--resume" command instead. See STEP 21.
```

Repair timer is running. Perform the above within 5 minutes to avoid the carrier disks from being reported as missing.

NOTE: If a Drive Carrier is out longer than the repair time-out, the disks go from Suspended to Suspended/Missing state and GPFS will start draining the data that was on those disks to spare space. Normally, this won't really hurt anything, but in the extreme case where some affected array brought down too many disks, it can cause the server to resign control of the recovery group, causing delays and other inconvenience. In the resign situation, the mmchcarrier -- resume command may take a long time to work while it waits for the backup server to take over the recovery group.

3.4 Drive Carrier Replacement <= SSR Task

NOTE ON TIME CONSTRAINT: If the Drive Carrier is not replaced and resumed within the repair time-out (configurable parameter in GPFS with default of 5 minutes), then it's possible that this could result a server resign, causing longer unavailability.

- STEP 14 Check the LED states and the state of the latch actuator on the Drive Carrier. Remember that removing the wrong Drive Carrier may bring down the entire cluster filesystem. Before unseating the Drive Carrier, the SSR MUST:
- a. Check that the Frame, Cage Location, and FRU location code for the Drive Carrier that was deactivated by the customer sys admin all match exactly the physical Frame, Cage Location and FRU location code.
 - b. Check that the Frame (UEPO) , Enclosure ID, Port Card Slot ID, and amber Drive Carrier Slot ID LEDs are blinking (see Figure 20, Figure 21, Figure 22).

NOTE: The Drive Carrier Slot ID and the Port Card Slot ID functions have 2 LEDs on the backplane going into a single light pipe. If the LED is not blinking, do not assume that the LED is broken as it is very unlikely that both are broken (see Figure 21) If this LED is not blinking, it is recommended to stop and contact next level of support.

- c. Verify the green Drive Carrier power LED is off. Do not remove the Drive Carrier if its power LED is on. If the power LED is illuminated at least one hard drive or SSD is active. Removal of the Drive Carrier while any drive is active may **BRING DOWN THE FILESYSTEM**. Make sure all green drive activity LEDs on the Drive Carrier are off before removal of the Drive Carrier (see Figure 24).
- d. Check that the Drive Carrier latch is unlocked. Remember that the latch for the Drive Carrier is on the left side. Make sure you have the correct latch and you are not off by one slot. When the latch is unlocked, a slight downward and outward pressure with your finger tip on the terracotta touch point will move the latch. No side to side motion is required.

NOTE: Do not attempt to circumvent the latch locking mechanism. If slight pressure does not move it, double check all of the items above. Remember that if you unseat the wrong Drive Carrier, you may bring down the entire cluster filesystem. If you are positive that you have the correct Drive Carrier and the LEDs are in the correct state, and yet the latch is locked, CONTACT THE NEXT LEVEL OF SUPPORT.

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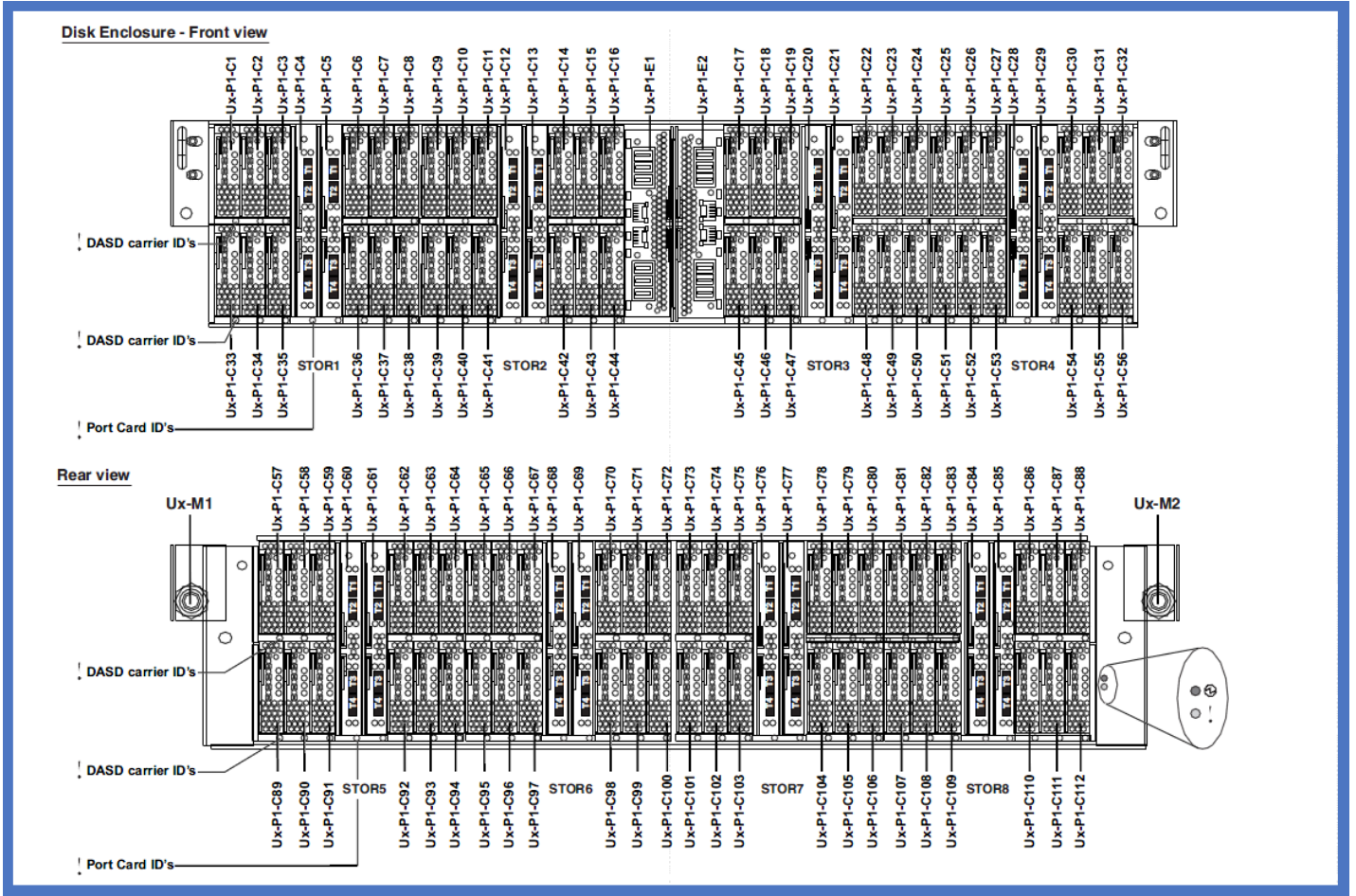


Figure 20 Disk Enclosure LEDs

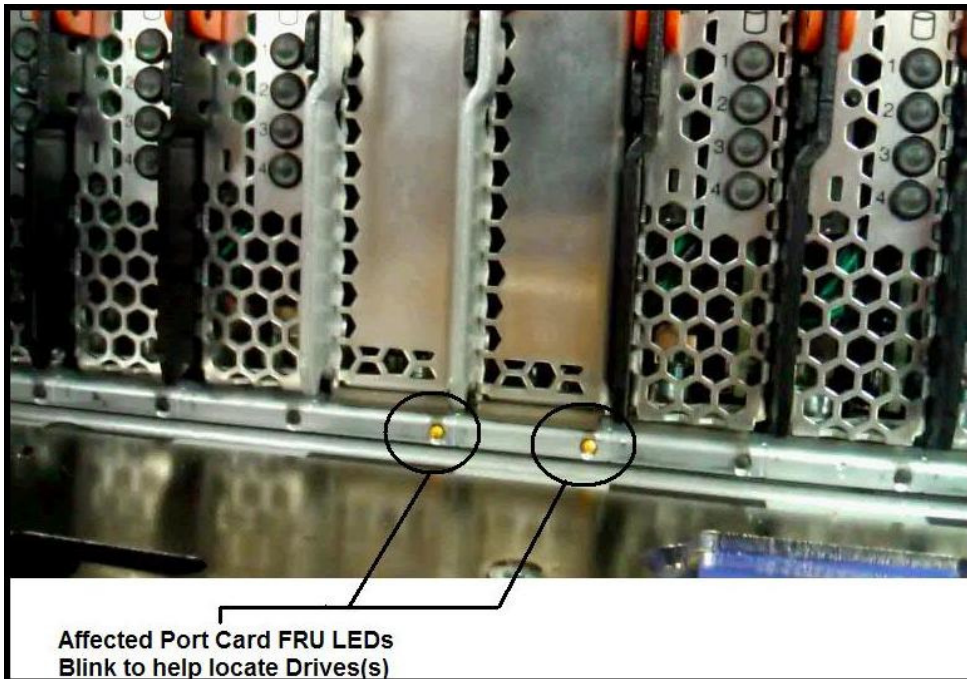


Figure 21 Port Card FRU / ID LEDs

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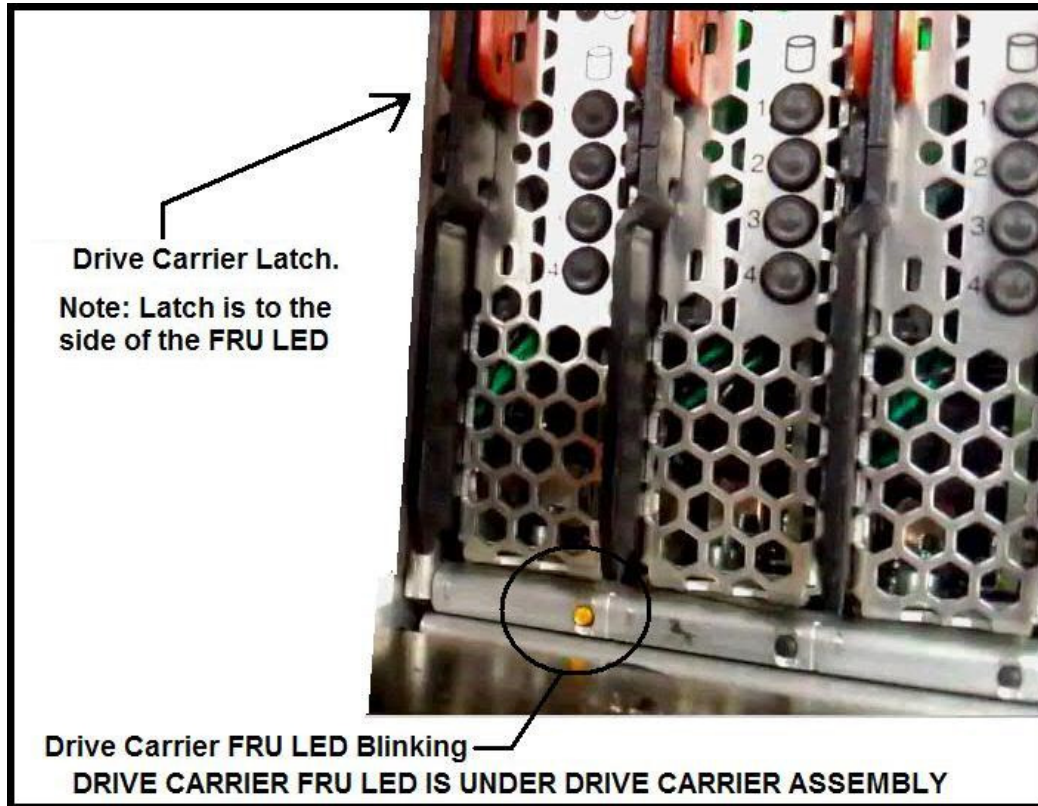


Figure 22 Drive Carrier FRU / ID LED

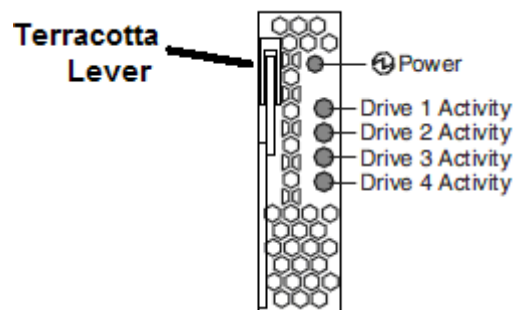


Figure 23 Drive Carrier LEDs Drawing

STEP 15 After the Drive Carrier to be removed has been verified, unseat the card using the terracotta lever and remove the Drive Carrier. Make sure to complete Step 16 right away after removal.

ATTENTION: While handling the old and new Drive Carriers, be very careful not to damage the signal pins on the 120 signal pin connector. If the pin field looks damaged, do not plug the Drive Carrier into the DE as it will likely damage the backplane connector on the chassis.

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- STEP 16 Confirm that the correct Drive Carrier has been removed by observing the LEDs. All 4 Drive Identify LEDs should be blinking. This is because all 4 drives were targeted with the mmhcarrier command. The blinking amber LEDs are next to a silk screen arrow pointing to the latch of the drive, and are labeled “Drive 1”, “Drive 2”, “Drive 3”, and “Drive 4” (see Figure 24 and Figure 25).

NOTE: Ignore the LEDs labeled “Carrier” These will not blink when targeting the 4 drives.

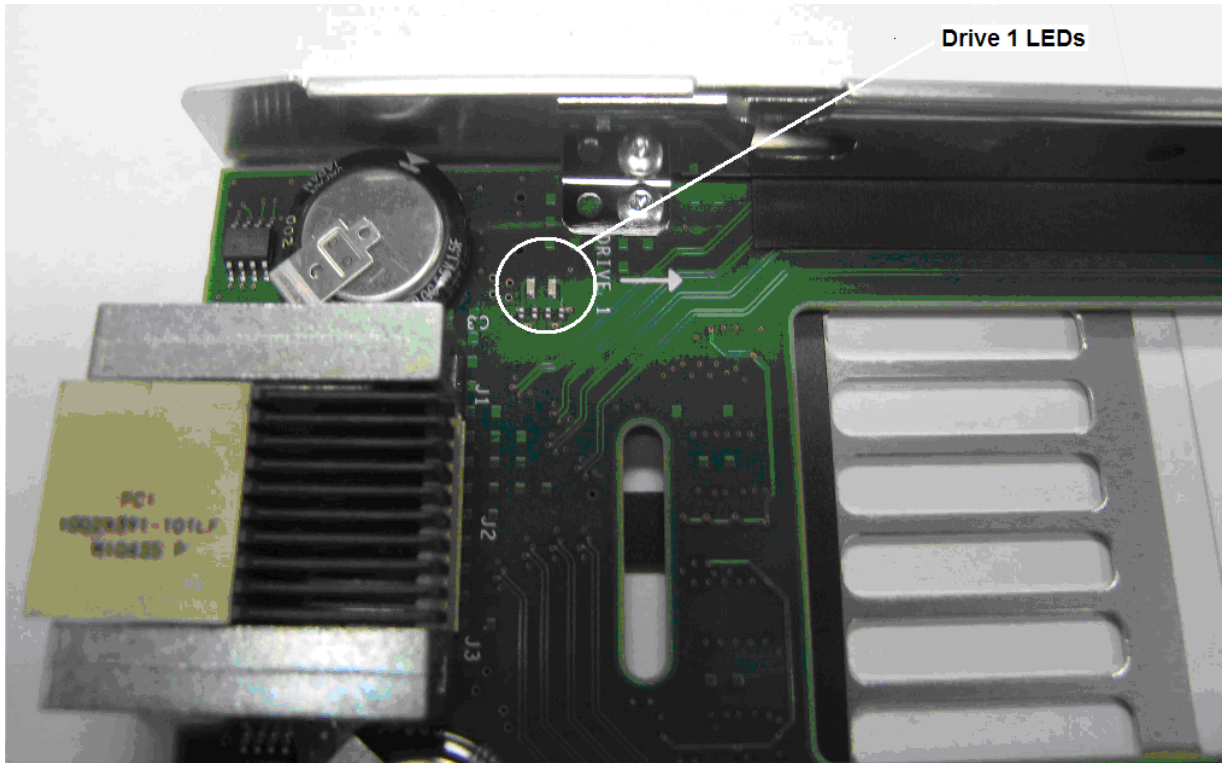


Figure 24 Drive 1 LEDs and arrow

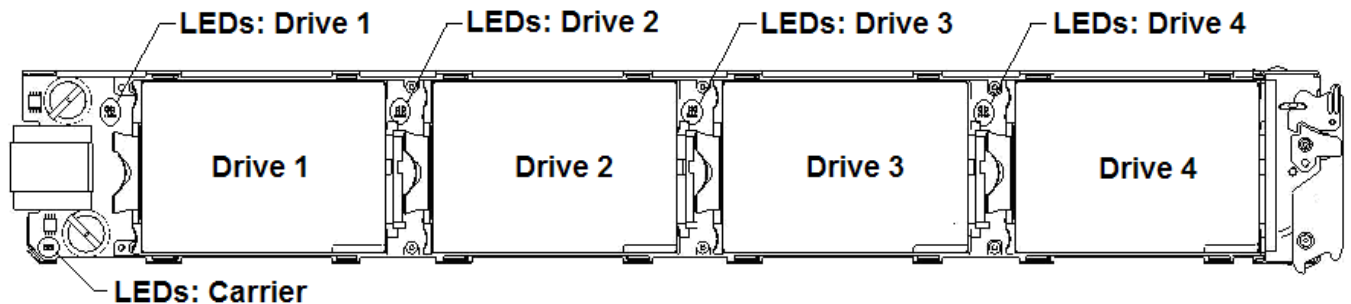


Figure 25 Drive Carrier LEDs and Drive Locations

- STEP 17 Making sure to preserve the location of the drives from the old Drive Carrier to the new Drive Carrier, transfer the hard drives or SSDs from the defective Drive Carrier to the replacement Carrier. For example, Drive 1 removed from the old Drive Carrier MUST be placed in the Drive 1 location of the new Drive Carrier.

To remove the drives from the old Drive Carrier:

- Lift the blue latch in order to slide the tab out of the slot in the Drive Carrier PCB.
- Slide the hard drive or SSD away from its connector (towards the latch end).

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- c. Lift the latch end first out of the Drive Carrier, followed by the connector end.

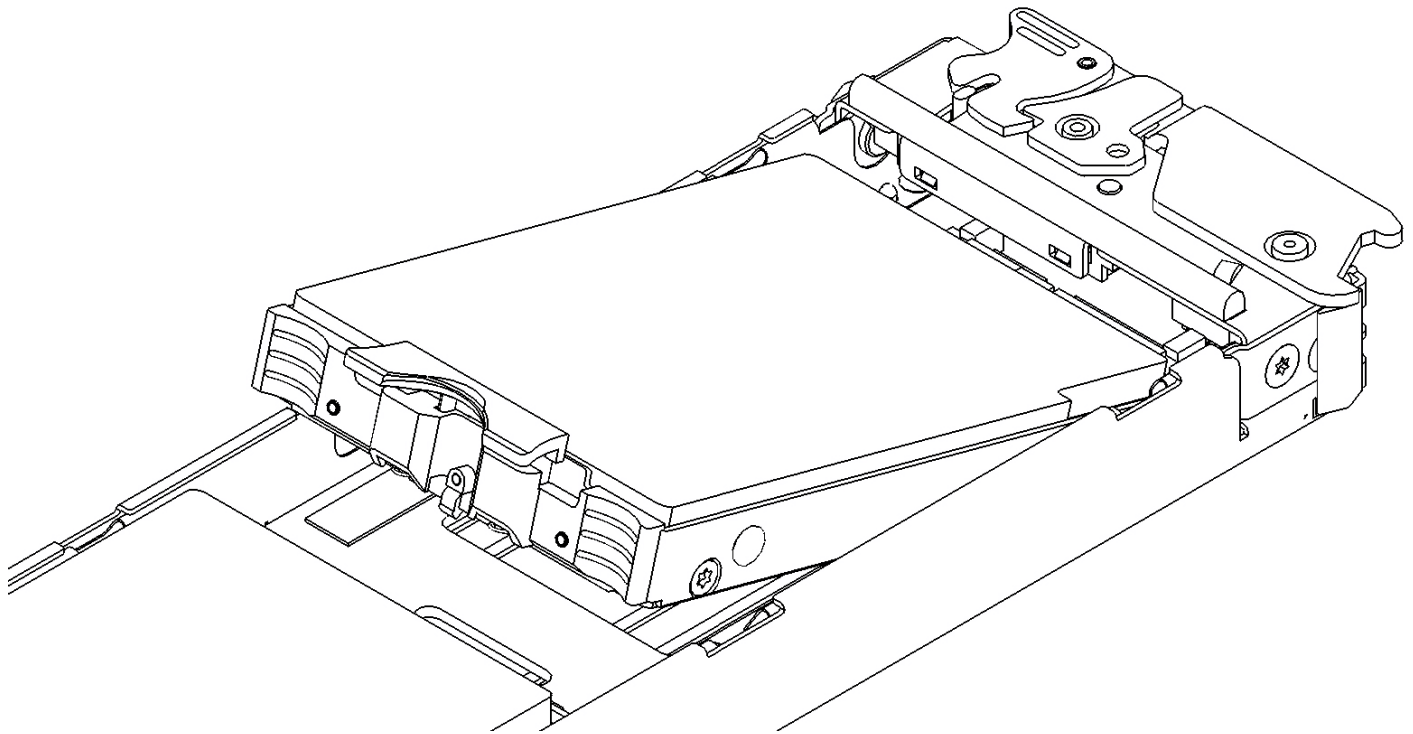


Figure 26 DRIVE Removal

To install the drives in the new Drive Carrier:

- d. Insert the drive and make sure 4 tabs on the drive sled align and slide into the slots in the Drive Carrier rails.
- e. Press down and slide the drive toward the connector in one motion until it is fully seated in the connector. The blue latch should have snapped into place once the drive was fully seated. If not, press on the blue latch to make sure it engages with the slot in the Drive Carrier PCB.

NOTE: The amber drive Identify LEDs will continue to blink even after installing the new drives as long as the capacitors have store energy left. **BE CAREFUL** not to swap any Drive locations. The drives must be in the same locations in the new Drive Carrier as they were in the old Drive Carrier.

- STEP 18 Inspect the Drive Carrier signal connector for bent pins before installing the Drive Carrier back into the same location it was removed from.

ATTENTION: DO NOT plug a Drive Carrier with bent connector signal pins into a Disk Enclosure. It will damage the Disk Enclosure. If there are any bent pins, replace the Drive Carrier with a new Drive Carrier and be careful to move the drives from the old Drive Carrier to the same locations in the new Drive Carrier.

- STEP 19 After inspecting the Drive Carrier connector signal pins plug the Drive Carrier back into the chassis at the same location it was removed from. The DE Port Card will sense plug detect of the Drive Carrier and will power on the hard drives and SSD if applicable. The DE Port Card will turn off the amber Drive Carrier slot LED, turn on the green Drive Carrier power LED, and lock the electro-mechanical actuator. It should take no longer than about one minute for this power up procedure to complete.

- STEP 20 Close the doors to the frame and inform the customer sys admin that the Drive Carrier has been replaced.

3.5 Unsuspend the drives <= Customer Task

STEP 21 Issue the following command from the GPFS LPAR to resume the suspended drives. Since this procedure uses the "--force-release" option, you will have to use the "--resume" option to resume the drives. Also, since this procedure targets all 4 drives, all 4 location codes must be present.

EXAMPLE USAGE:

```
/usr/lpp/mmfs/bin/mmchcarrier xxxxxxTOP --resume -- pdisk 'c046d1;c046d2;c046d3;c046d4'
```

3.6 Verify that the drive replace fixed the problem <= Customer Task

STEP 22 From GPFS, confirm that the repaired Drive Carrier resolved the problem. If the problem manifested as drive failures, then from the GPFS LPAR, issue command:

```
"/usr/lpp/mmfs/bin/mmlspdisk all --replace".
```

This will list all pdisks requiring replacement in all the DE recovery groups.

Make sure the drive locations having problems no longer show up in the list.

3.7 Confirm with the customer <= SSR Task

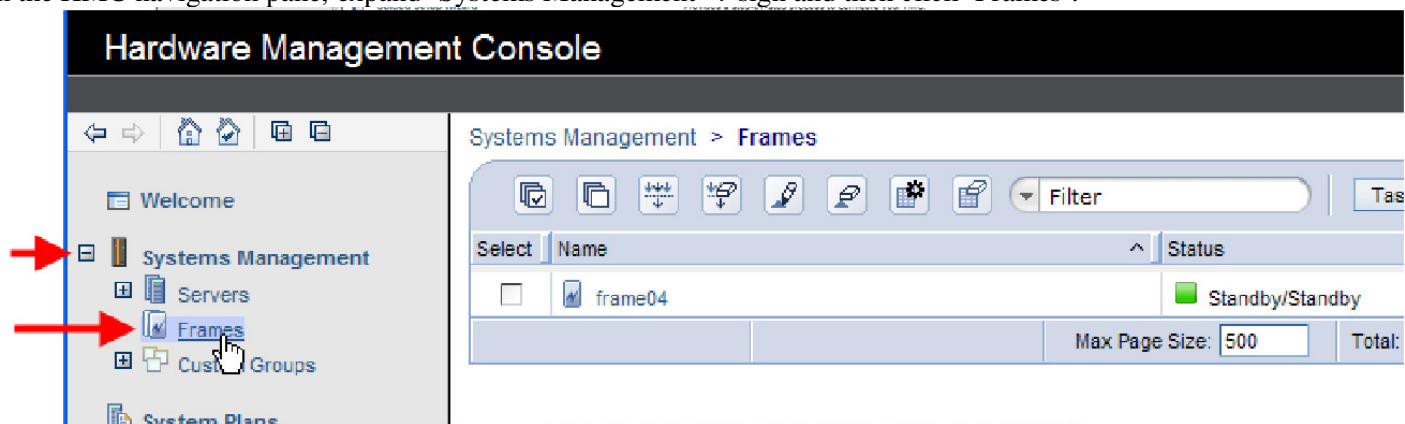
STEP 23 Confirm with the customer that the Drive replacement fixed the problem.

4 END OF POWER775 DRIVE CARRIER SERVICE PROCEDURE

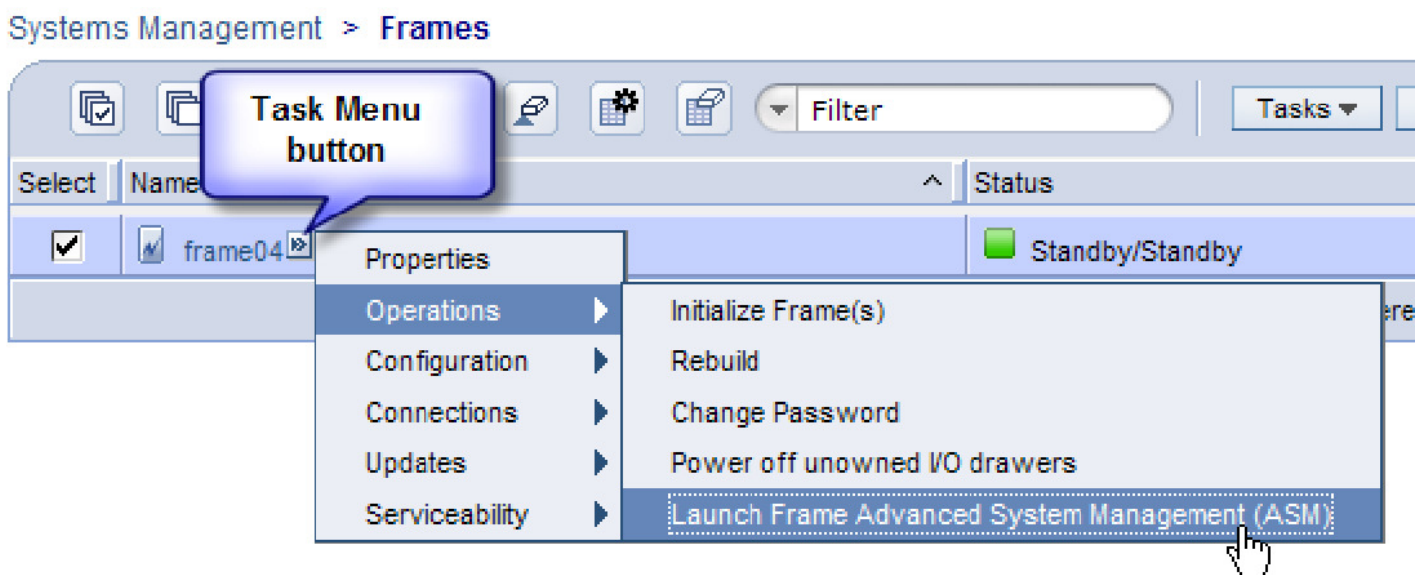
5 APPENDIX A: POWER775 BPC FSP COMMAND LINE PROCEDURE

5.1 Procedure to Access the BPC FSP Command Line

1. The HMC can be accessed via the keyboard/display that resides in the network management rack.
2. Login to the HMC if not done already.
3. In the HMC navigation pane, expand 'Systems Management' + sign and then click 'Frames':



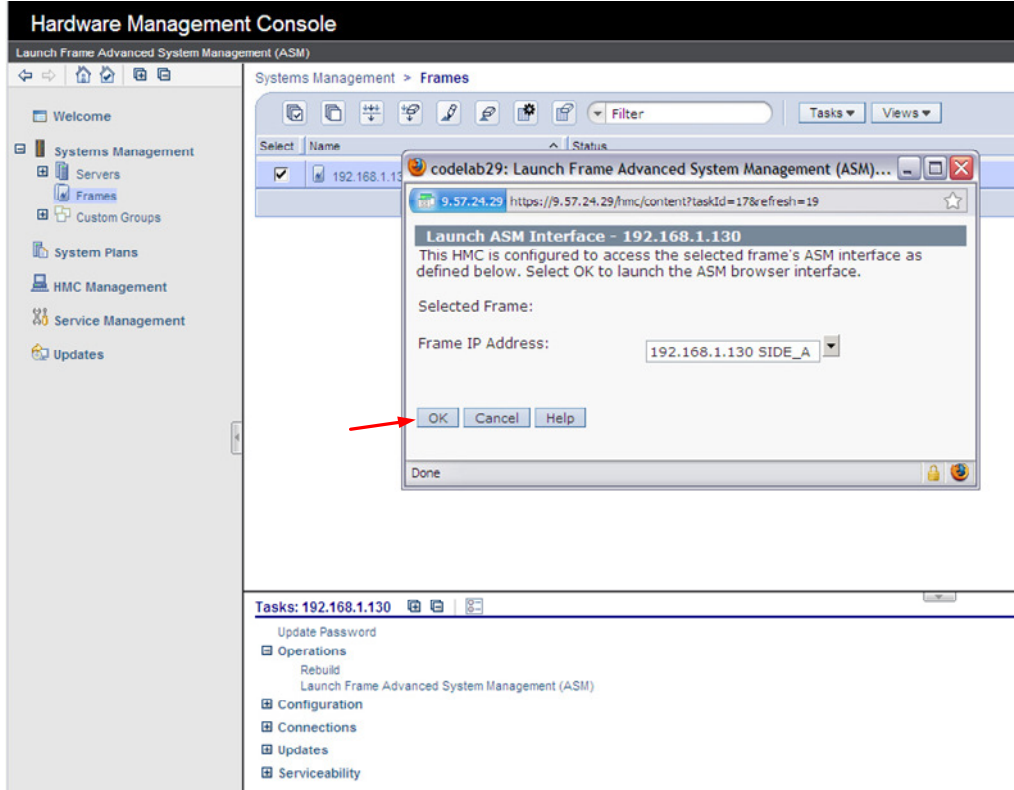
4. From the Tasks Menu right-arrow pull-down menu, click **Operations** → **Launch Frame Advanced Systems Management (ASM)**



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5. From the Launch ASM Interface window, select **SIDE_A** for the 'Frame IP Address' then click the **OK** button.

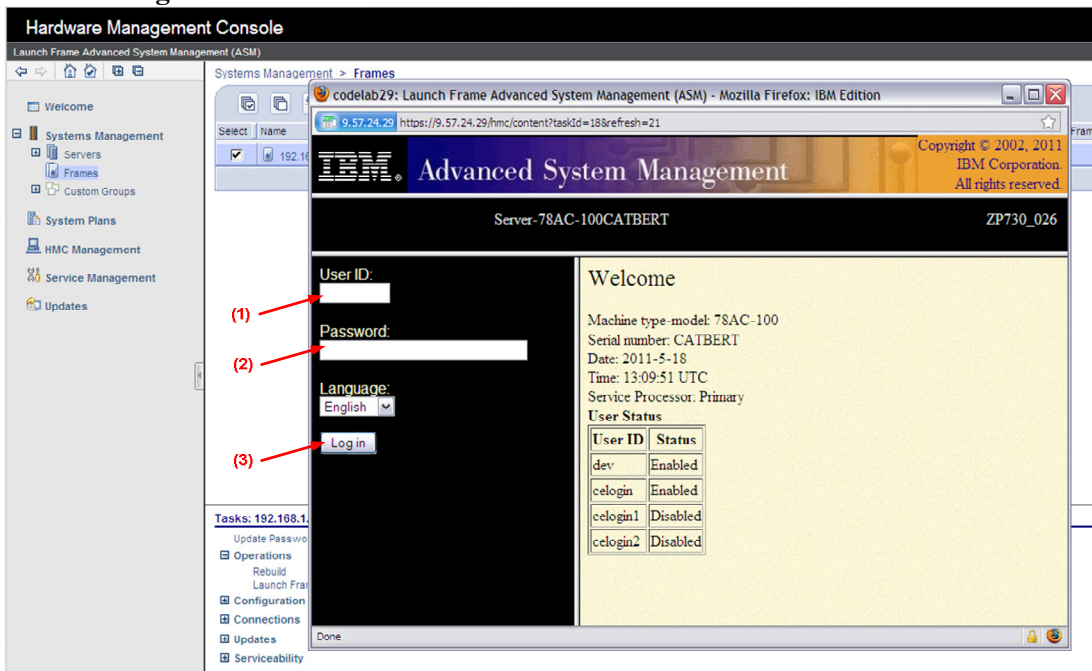


6. The ASM login window is presented. Acquire the necessary User ID and Password.

“celogin” requires Daily PW from the IBM Support Center.

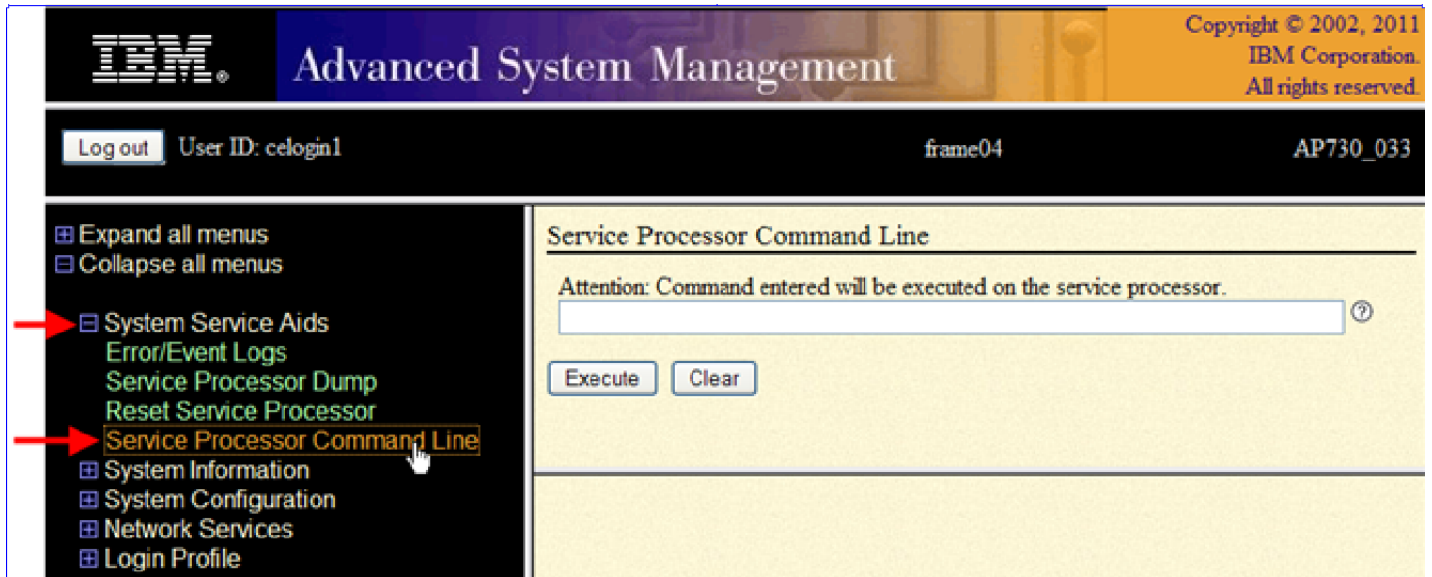
“celogin1” might be has enabled by the customer. If so, obtain the password from the customer.

1. Enter User ID
2. Enter Password
3. Click **Log in** button



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- Expand 'System Service Aids' + sign and Select 'Service Processor Command Line'.



- The ASM BPC FSP Command line will be presented. Enter the commands defined in the paper service procedures at this command line and press the Enter key (or click the **Execute** button).
- Return to the step of the paper service procedure that directed you to this Appendix.

5.2 End of Appendix A: Power775 BPC FSP Command Line Procedure