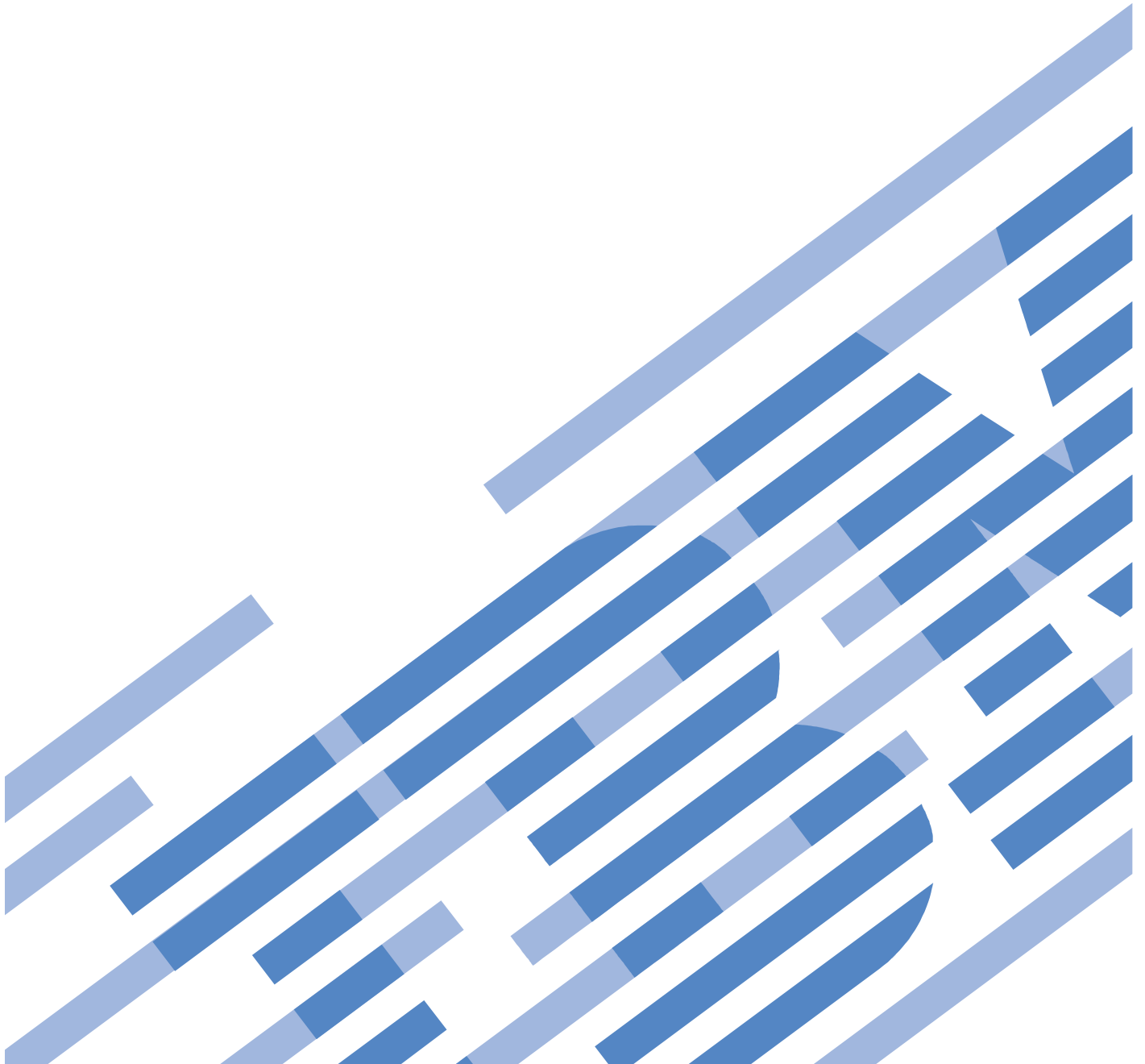


Power775
Memory DIMM Service Procedure
Last Modified 2/24/2011



Power775 Memory DIMM Service Procedure

CONTENTS

1	GENERAL	4
1.1	RELEASE / REVISION HISTORY	4
1.2	WHERE TO FIND THIS DOCUMENT, AND CONTENTS OF THE PARENT PDF	4
1.3	REQUIRED DOCUMENTS	4
1.4	RELATED DOCUMENTS	4
1.5	ABBREVIATIONS	5
2	OVERVIEW	6
2.1	SAFETY NOTICES	6
2.2	FILE SYSTEM RISK STATEMENT	8
2.3	CONFIRM HOW YOU GOT TO THIS POWER 775 MEMORY DIMM SERVICE PROCEDURE	8
2.4	MEMORY DIMM DESCRIPTION	9
2.5	BACKGROUND	10
2.6	CONCURRENCY	10
2.7	MEMORY DIMM WEIGHT	10
2.8	REQUIRED SSRS AND ROLES	10
2.9	ESTIMATED SERVICE TIME	11
2.10	P7IH HAND TOOL KIT REQUIRED TOOLS(AND FILL DRAIN TOOL)	11
2.11	PREREQUISITES FOR THIS PROCEDURE	11
2.12	OVERVIEW OF PROCEDURE	11
3	SERVICE PROCEDURE	12
3.1	PREPARE CEC DRAWER FOR SERVICE <= SSR TASK	12
3.2	HAVE CUSTOMER CHECK FOR GPFS NODE AND SHUTDOWN CEC DRAWER <= CUSTOMER TASK	14
3.3	START FRU REPLACEMENT PROCEDURE <= SSR TASK	15
3.4	MECHANICAL PREPARATIONS FOR CEC DRAWER SERVICE <= SSR TASK	20
3.5	MOVE CEC DRAWER TO SERVICE POSITION <= SSR TASK	28
3.6	LOCATE AND REPLACE MEMORY DIMM <= SSR TASK	33
3.7	RE-INSTALL CEC DRAWER TO ORIGINAL POSITION <= SSR TASK	42
3.8	VERIFY ALL D-LINKS AND L-LINKS ARE OPERATIONAL <= CUSTOMER TASK	45
3.9	CONFIRM WITH CUSTOMER THAT CEC IS OPERATIONAL <= SSR TASK	45
4	END OF POWER775 MEMORY DIMM SERVICE PROCEDURE	46
5	APPENDIX A: POWER775 BPC FSP COMMAND LINE PROCEDURE	47
5.1	PROCEDURE TO ACCESS THE BPC FSP COMMAND LINE	47
5.2	END OF APPENDIX A: POWER775 BPC FSP COMMAND LINE PROCEDURE	49

Power775 Memory DIMM Service Procedure

Figure List

Figure 1 CEC Drawer locations	9
Figure 2 DIMM Location in CEC Drawer	9
Figure 3 DIMM Detailed Image.....	10
Figure 4 Service Node configuration	13
Figure 5 HMC CEC Drawer Selection.....	15
Figure 6 Exchange FRU Panel	16
Figure 7 Memory DIMM Selection.....	17
Figure 8 FRU Location Code selection	18
Figure 9 Pending Actions Panel	19
Figure 10 Removal of Front Door.....	20
Figure 11 CAM Follower Installation	21
Figure 12 CEC Drawer rear view.....	21
Figure 13 Location Codes for D-Link and L-Link assemblies.....	22
Figure 14 Optical Backplane Enclosure	23
Figure 15 OBE Sidewall Assembly.....	24
Figure 16 D-Link Grouper	24
Figure 17 D-Link Grouper assembly detail.....	25
Figure 18 CEC Drawer rear water connections.....	26
Figure 19 CEC Drawer retaining ring image	27
Figure 20 Rear CEC Rail mounting bracket.....	27
Figure 21 CEC Drawer removal features	28
Figure 22 CEC Drawer in service position	30
Figure 23 Service Cover Screw Removal	30
Figure 24 HPIC Test Cable	31
Figure 25 HPIC Test Cable & Ethernet Test Cable connected to Top DCCA.....	31
Figure 26 Left HPIC and Ethernet Test cables connected to Rack Cables.....	32
Figure 27 DCCA Location of HPIC and E-Net Test Cables	32
Figure 28 HEX Cage ID.....	33
Figure 29 Standby Power LED	34
Figure 30 Service Power LED	35
Figure 31 Launch ASM.....	35
Figure 32 Select Service Processor IP Address.....	36
Figure 33 ASM Login	36
Figure 34 Enclosure Indicator	37
Figure 35 DIMM Location Identifiers.....	38
Figure 36 DIMM Location Identifiers save settings	39
Figure 37 DIMM LED Lightpipe Locations	39
Figure 38 DIMM Captive screw locations	40
Figure 39 DIMM details showing TIM	41
Figure 40 Removed DIMM with Manifold exposed	41
Figure 42 OBE Installation	44
Figure 43 D-Link Grouper Installation	45

Table List

Table 1 Release / Revision History	4
Table 2 Required Documents	4
Table 3 Related Documents	4

1 GENERAL

1.1 Release / Revision History

Document Name	Date	PDF name	Description
Power775 Memory DIMM Service Procedure	2/24/2012	"p775_dimm.pdf"	Initial Release

Table 1 Release / Revision History

1.2 Where to find this document, and contents of the parent PDF

The current Power775 Memory DIMM Service Procedure document is "p775_dimm.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 "System Enclosure", click "Memory DIMM" to download PDF "p775_dimm.pdf"

This is the only valid source for the latest Power775 Memory DIMM Service Procedure.

1.3 Required Documents

Document	Doc Number	Location
Safety Notices http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7hdx/G229-9054.pdf	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	Doc 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>

Power775 Memory DIMM Service Procedure

1.5 Abbreviations

Abbreviation	Definition	Details
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	
PCB	Printed Circuit Board	
RAID	Redundant Array of Inexpensive Disks	
SAS	Serial Attached SCSI	Protocol used for direct attached storage
SSR	System Service Representative	IBM Service personnel
SSD	Solid State Drive	
UEPO	Unit Emergency Power Off	
UNVSA	Utility Non-Volatile Storage Assembly	Harddrive function in PCIe cassette

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 at this link:
<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:

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

The following notices specifically pertain to this Power775 service procedure:

CAUTION:

This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

CAUTION:

The water-based coolant solution may contain an additive intended to inhibit corrosion (or provide other functions). The solution may cause irritation to the skin or eyes. Avoid direct contact with the solution. Employ appropriate Personal Protective Equipment when performing operations involving the coolant or which may potentially expose you to the coolant. Refer to the MSDS for more information. (C037)

DANGER:

Heavy equipment — personal injury or equipment damage might result if mishandled. (D006)



DANGER: Rack-mounted devices are not to be used as shelves or work spaces. (L002)



DANGER: Hazardous voltage present. Voltages present constitute a shock hazard, which can cause severe injury or death. (L004)

Power775 Memory DIMM Service Procedure



CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)



CAUTION: Sharp edges, corners, or joints nearby. (L006)



CAUTION: System or part is heavy. The label is accompanied by a specific weight range. (L009)



CAUTION: Protective eyewear is needed for the procedure. (L011)

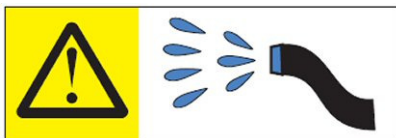


CAUTION: Pinch hazard. (L012)

ATTENTION: Small gaps exist that could pinch body parts if care is not exercised.



CAUTION: Chemical resistant gloves are needed for this procedure. (L014)



DANGER: Risk of electric shock due to water or a water solution which is present in this product. Avoid working on or near energized equipment with wet hands or when spilled water is present. (L016)

Power775 Memory DIMM Service Procedure



DANGER: Risk of injury due to heavy components falling from rack if the supplemental supports are not installed. (L019)

ATTENTION: The supplemental supports (Cam Followers) must be installed for the CEC or DE slide out service.



CAUTION: Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time. (L024)

2.2 File System Risk Statement

The Global Parallel File System (GPFS) implementation of software RAID stripes data across all the Disk Enclosures in the cluster. **If servicing a CEC Drawer supporting a Service Node, then all Disk Enclosures running off of this service node will go into panic and become unavailable. If servicing a CEC Drawer supporting a GPFS node then the file system will go into panic and become unavailable. To avoid this situation you must migrate the drawers to be served by other nodes/CEC Drawers.**

2.3 Confirm how you got to this Power 775 Memory DIMM Service Procedure

You should be performing this procedure if

The HMC Memory DIMM Exchange FRU procedure or a Repair of a Memory DIMM callout in a Serviceable Event instructed you to obtain this paper procedure.

You should have downloaded 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 Memory DIMM Service Procedure

2.4 Memory DIMM Description

Referring to Figure 1 below, the DIMMs are located in the CEC Drawers.

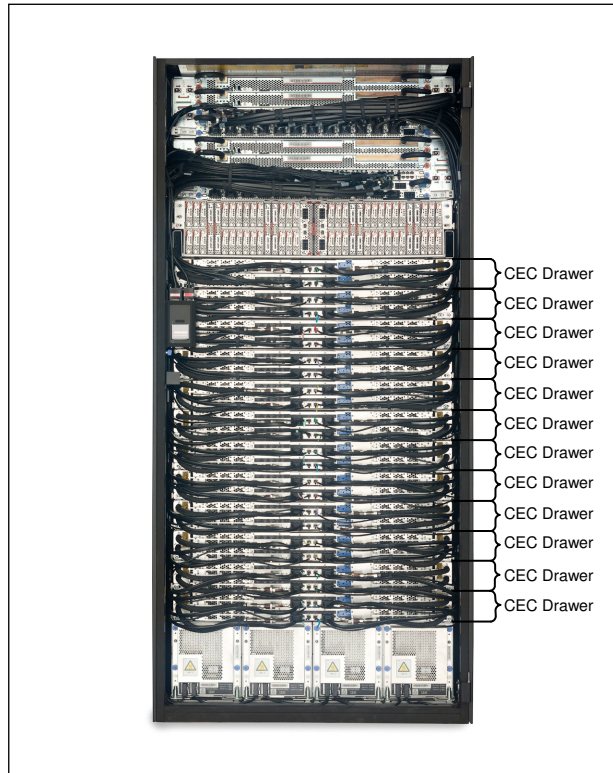


Figure 1 CEC Drawer locations

Figure 2 shows the CEC Drawer with the cover removed and DIMM location labeled.

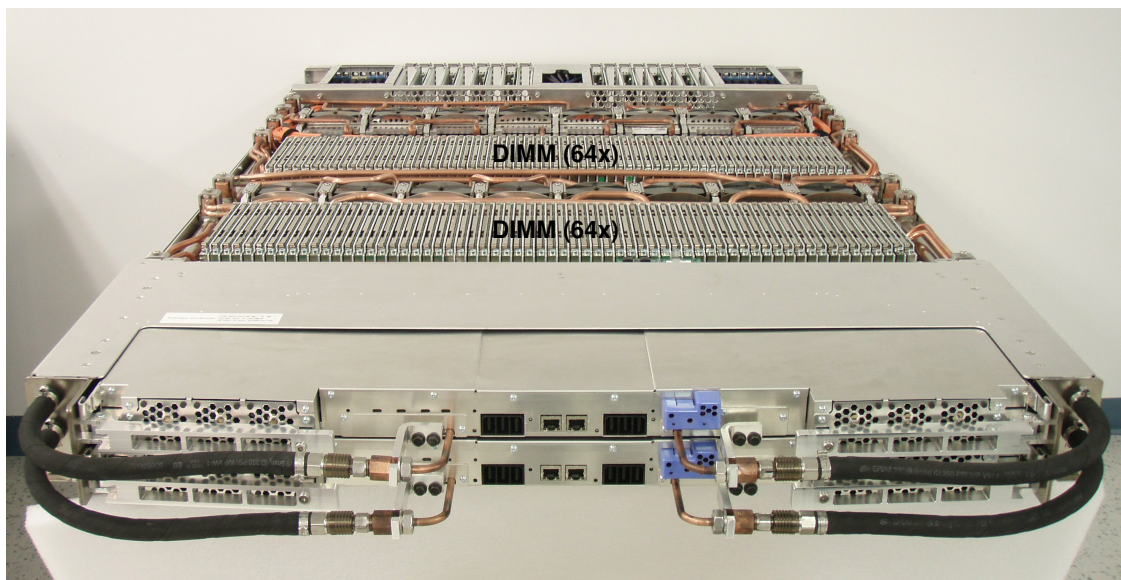


Figure 2 DIMM Location in CEC Drawer

2.5 Background

The Power775 DIMM as shown in Figure 3 is screwed into the CEC drawer DIMM water manifold which allows the DIMM heat to be conducted from the DIMM through a small sheet of indium thermal interface material (TIM) to the water carrying manifold.

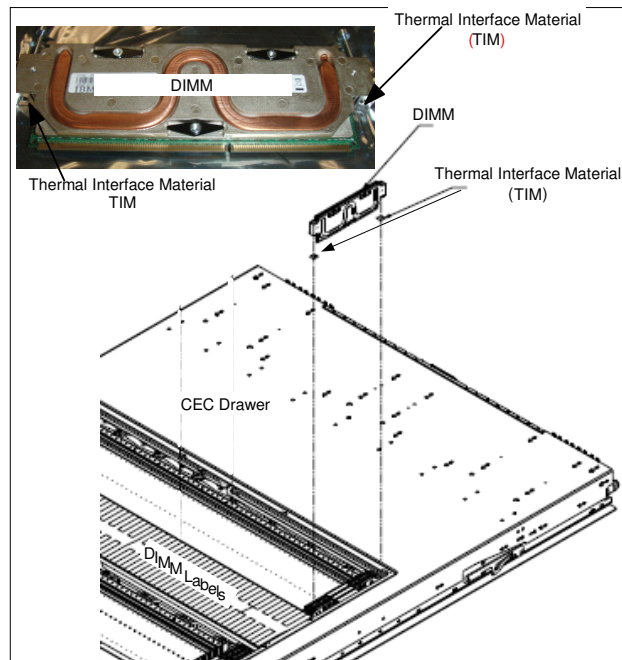


Figure 3 DIMM Detailed Image

It must be noted that water does not flow in the DIMM package. Conduction is the heat transfer mechanism. It is also worth repeating that between the DIMM and the manifold is a small piece of indium thermal interface material. The TIM is designed so it will stick to the DIMM and not the manifold; however, since the TIM is conductive we must ensure that the TIM does not fall off the DIMM and into the CEC Drawer. A second important point is to ensure that both the TIM sheets are on the new DIMM.

2.6 Concurrency

The DIMM is not concurrently maintainable from the point of view of the CEC Drawer. All power except standby voltages are removed from the CEC Drawer whose DIMM is being service. It must be noted that only the CEC Drawer whose DIMM is being serviced is powered off. All other CEC drawers in the rack remain powered on and operational.

2.7 Memory DIMM Weight

0.49 lbs (0.22 kg)

2.8 Required SSRs and Roles

This service procedure requires one SSR.

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

90 minutes

2.10 P7IH Hand Tool Kit Required Tools(and Fill Drain Tool)

- 2mm Hex Driver (0.07Nm Torque setting), PN 74Y0983, HPIC Jackscrews
 - 3/8" Ratchet, PN 6428140, CEC Drawer Mounting
 - 3/8" Torque Clutch - (23 - 31 Nm torque setting), PN 74Y0985, CEC Drawer Mounting
 - 3/8" Extension - 18", PN 46K2707, CEC Drawer Mounting
 - 3/8" Socket Bit, 5mm Hex, PN 74Y0986, CEC Drawer Mounting
 - 3mm Hex Driver (1Nm +/- 0.2Nm torque setting), 74Y0998, , Memory removal and installation
 - Flat Blade Screw Driver - 1/8" X 4", PN 73G5367, to remove CEC Drawer Service cover
 - HPIC Test Cable, PN 45D7998, Extension to provide standby voltages to CEC Drawer to light DIMM LEDs
 - E-Net Test Cable, PN 45D8000, Extension to communicate to CEC Drawer to light DIMM LEDs
-

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 of the FRU to be serviced
-

2.12 Overview of Procedure

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

PREPARE CEC DRAWER FOR SERVICE
HAVE CUSTOMER CHECK FOR GPFS NODE AND SHUTDOWN CEC DRAWER
START FRU REPLACEMENT PROCEDURE
MECHANICAL PREPARATIONS FOR CEC DRAWER SERVICE
MOVE CEC DRAWER TO SERVICE POSITION
LOCATE AND REPLACE MEMORY DIMM
RE-INSTALL CEC DRAWER TO ORIGINAL POSITION
VERIFY ALL D-LINKS AND L-LINKS ARE OPERATIONAL
CONFIRM WITH CUSTOMER THAT CEC IS OPERATIONAL

3 SERVICE PROCEDURE

STOP – Do not proceed unless you have read “G229-9054.pdf” which is available from InfoCenter; see Section 1.3.

3.1 Prepare CEC Drawer for Service <= SSR TASK

STEP 1 The HMC can be accessed via the keyboard/display that resides in the management rack or by plugging a laptop into the BPCH of the rack where the service will be performed.

STEP 2 Logon to the HMC.

STEP 3 Determine if the CEC Drawer contains the Service node, see Figure 4 . If it does, have the system administrator reassign the nodes supported by the Service Node to the backup service node. (A CEC Drawer with a Service node will have a UNVSA card (usually 2 as shown below) and a 2 port SAS card plugged its PCI slot(s) (the UNVSAs are normally plugged into PCI slots 14 & 16, the SAS card in slot 15, but may be in any 3 locations in the CEC Drawer) . If the CEC Drawer has one of its octants functioning as a Service node, all the CEC Drawers being supported by the Service node must be reassigned to the backup Service node in the building block before powering the CEC off.)

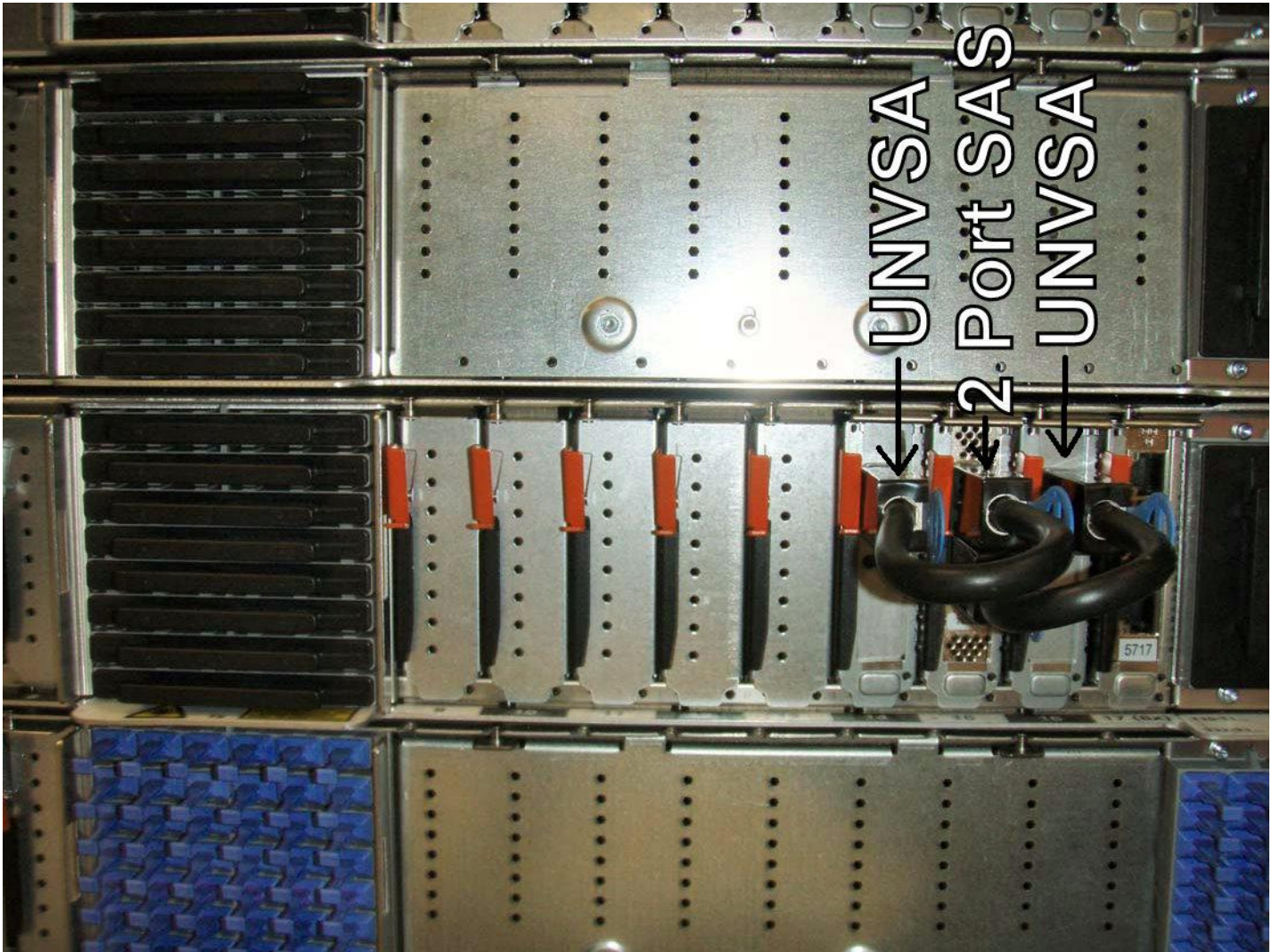


Figure 4 Service Node configuration

3.2 Have customer check for GPFS node and shutdown CEC Drawer <= CUSTOMER TASK

STEP 4 Check for GPFS node in CEC Drawer to be serviced

- Have the customer determine if there is a GPFS node in the CEC drawer to be shut down.
- If the CEC drawer contains a GPFS node, verify that there is an active backup GPFS node for the GPFS node that will be shut down during this service action. **If there is no active backup, the filesystem will go down when this CEC drawer is shut down.**
- If there is an active backup GPFS node, proceed to STEP 5.
- If there is no active backup GPFS node, perform the following:
 - If you can activate the backup GPFS node, activate it before proceeding with this service action. After the backup GPFS is active, you may proceed to STEP 5.
 - If you cannot activate the backup GPFS node because it requires service, service the backup GPFS node first. Then activate it, and confirm that it is acting as a backup for the GPFS node that is in this CEC drawer. After the backup GPFS is active, you may proceed to STEP 5.
 - If you cannot activate the backup GPFS node and you cannot service it before proceeding, prepare the cluster for the filesystem to come down before proceeding. After the filesystem has come down gracefully, you may proceed to STEP 5.

STEP 5 Have the system administrator to ensure that the CEC Drawer has no active partitions running. (This procedure is not a concurrent process from the point of view of the CEC Drawer whose DIMM is being serviced. It should be noted that this procedure is concurrent from the point of view of the other CEC Drawers in the rack. The procedure does not affect the other CEC Drawers in the rack from continuing to be used.)

STEP 6 Have customer shutdown and power off the CEC Drawer being serviced.

3.3 Start FRU Replacement Procedure <= SSR TASK

The servicing of a Memory DIMM can be performed two ways. Service can be initiated either from the Exchange FRU procedure from the HMC Systems Management Serviceability menu option for a selected CEC Drawer or through the Manage Serviceable Events menu option after a particular Serviceable Event has called out a Memory DIMM needing repair.

If servicing a Memory DIMM via an Exchange FRU procedure or through the Manage Serviceable Events option, skip to STEP 15.

If servicing a Memory DIMM via the paper procedure, continue to STEP 7.

STEP 7 Initiate the procedure by using Memory DIMM FRU exchange as described below:

STEP 8 In the HMC left Navigation pane, expand **Systems Management** then click **Servers**.

STEP 9 Place a checkmark in the **Select** column for the Server with the CEC Drawer to be serviced. See Figure 5 .

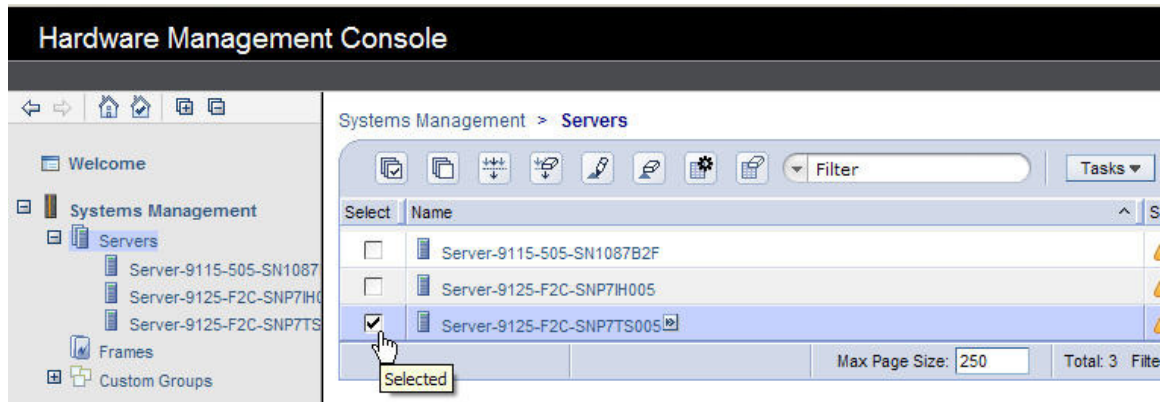


Figure 5 HMC CEC Drawer Selection

STEP 10 From the **Tasks** menu *select* **Serviceability -> Hardware -> Exchange FRU**. See Figure 6.

Power775 Memory DIMM Service Procedure

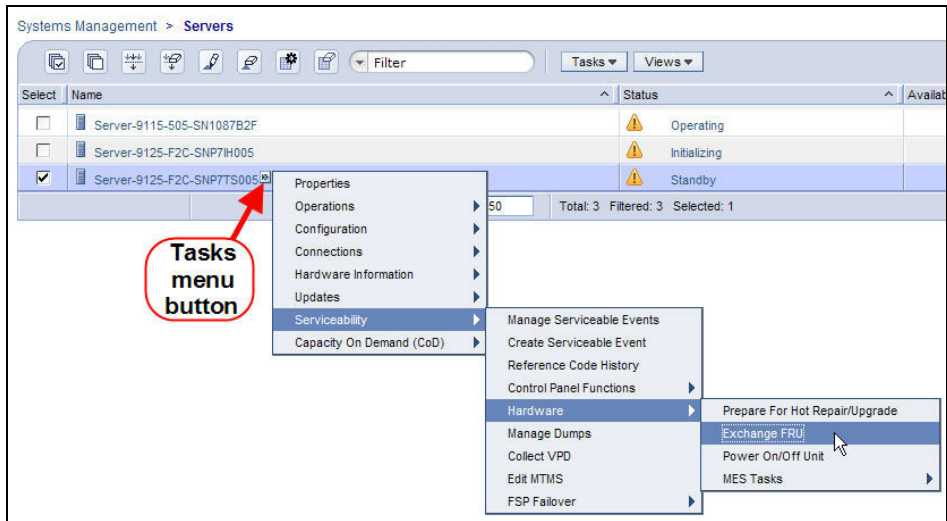


Figure 6 Exchange FRU Panel

Power775 Memory DIMM Service Procedure

STEP 11 In the Replace **Hardware – Replace FRU, Select FRU Type** window *select MemoryDIMM* then *click* the **Next** button. See Figure 7.

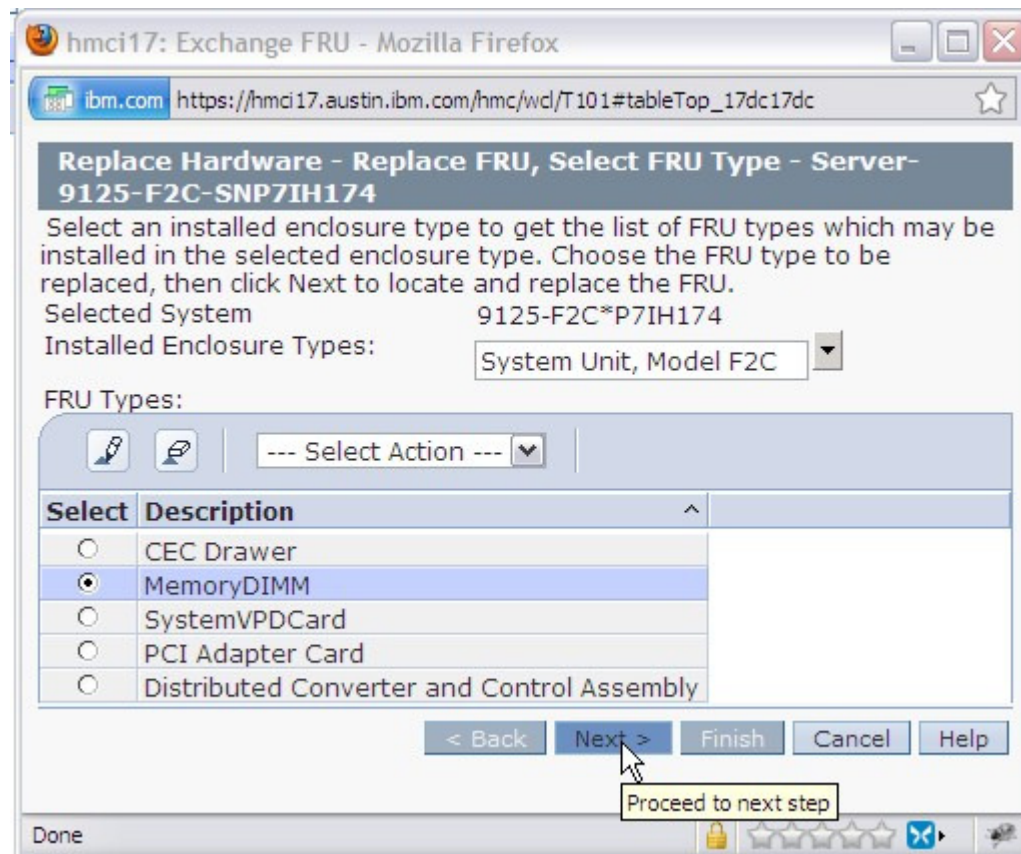


Figure 7 Memory DIMM Selection

STEP 12 In the Replace **Hardware – Replace FRU, Select Location** window *select* the FRU Location code to be serviced then *click* the **Add** button. See Figure 8.

- Select* the FRU **Location Code** of the **MemoryDIMM** to be serviced.
- Click the **Add** button.

Power775 Memory DIMM Service Procedure

STEP 13 The selected **Location Code** will be added to the **Pending Actions** list.

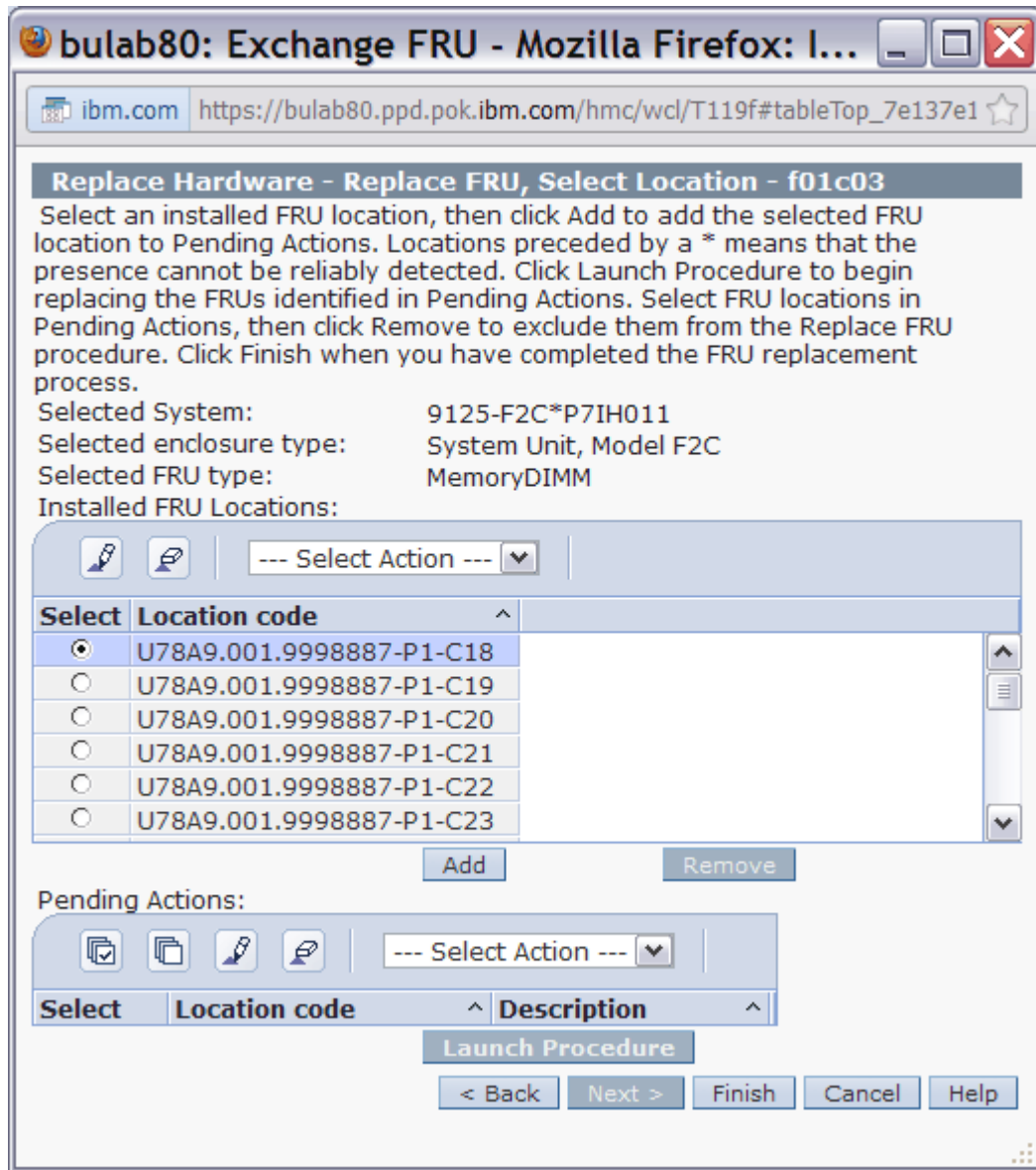


Figure 8 FRU Location Code selection

Power775 Memory DIMM Service Procedure

STEP 14 In the **Pending Actions** list, place a checkmark in the **Select** column for the CEC Drawer to be serviced then *click* the **Launch Procedure** button. See Figure 9.

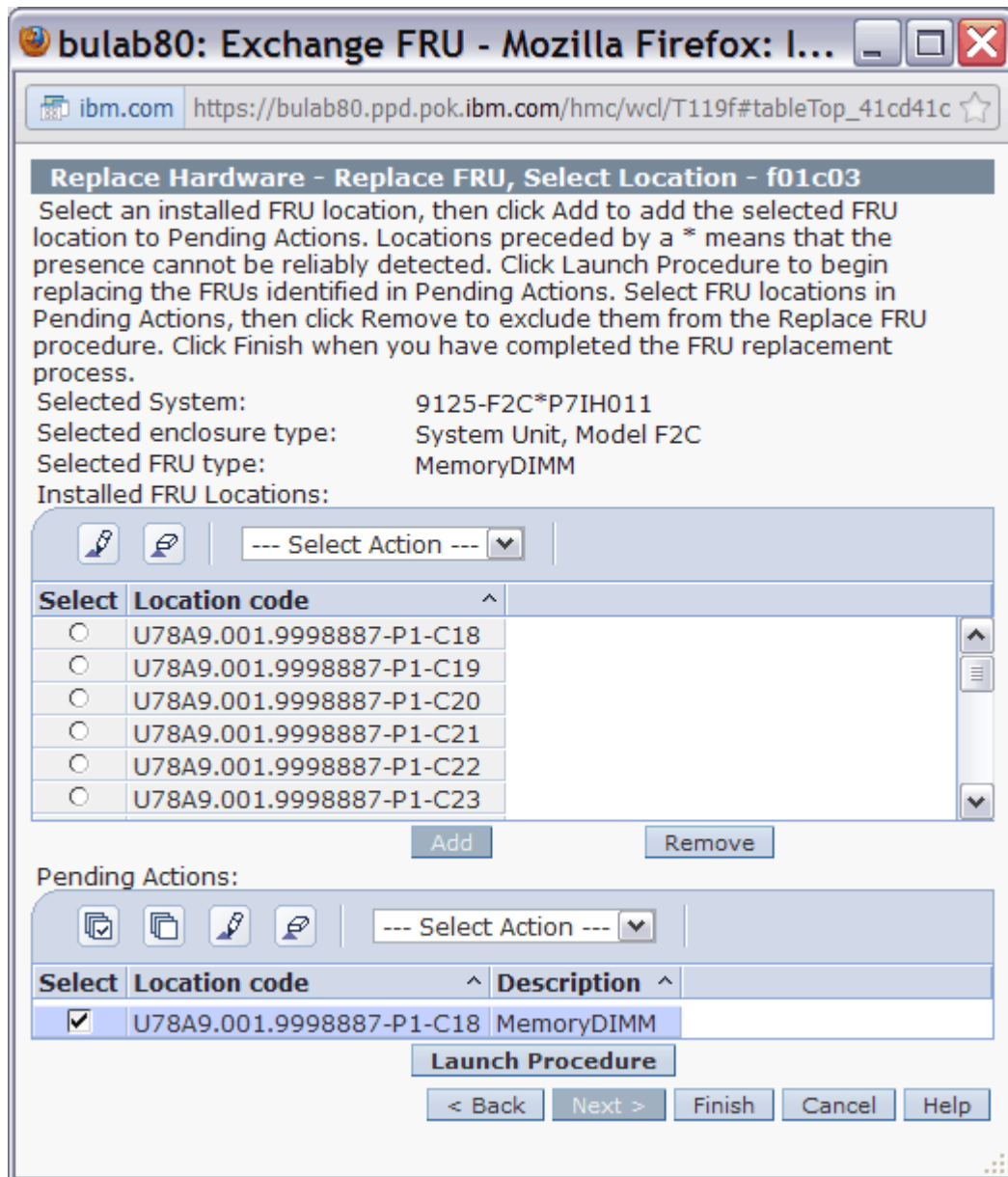


Figure 9 Pending Actions Panel

STEP 15 Follow the R&V Panels until directed to return to this paper procedure.

3.4 Mechanical Preparations for CEC Drawer Service <= SSR TASK



CAUTION: Sharp edges, corners, or joints nearby. (L006)

CAUTION:

This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)

- STEP 16 Open and remove the front door, See Figure 10. The front door weights 37lbs (16.8 kg)
- Push in the door lock latch to release and open the door.
 - Face the inside of the door and place hands on the cross bars.
 - Lift upwards.



Figure 10 Removal of Front Door



DANGER: Risk of injury due to heavy components falling from rack if the supplemental supports are not installed. (L019)

Power775 Memory DIMM Service Procedure

ATTENTION: The supplemental supports (Cam Followers) must be installed for the CEC or DE slide out service.

STEP 17 Locate and remove the CAM Followers from their storage location, they are shipped in the lowest slot in the frame. Remove the CAM Followers by removing the shipping/retention screw, PN 77G0599 using either a 7mm or 8mm socket (depending on which screw was used in Manufacturing) and store the screw for later use. Complete removal by pulling out the plunger locating pin and sliding the CAM Follower up to remove it from its storage location. Install the CAM Follower(see Figure 11) in the rack slot number of the CEC Drawer being serviced; slide CAM Follower hook into the appropriate frame slot so the roller aligns with CEC Drawer channels, then insert pin into frame rail.

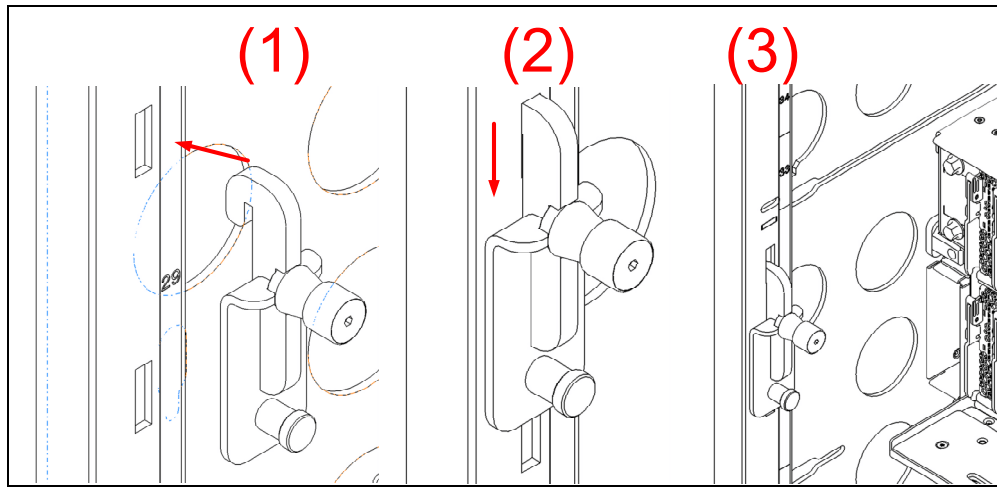


Figure 11 CAM Follower Installation

STEP 18 Go to the back of the rack and open the rear door.

STEP 19 Locate the CEC Drawer being serviced.
(Figure 12 is a photo of a CEC Drawer for the purposes of identifying the D-Link, the L-Link, the PCI cables, and the water connection locations)

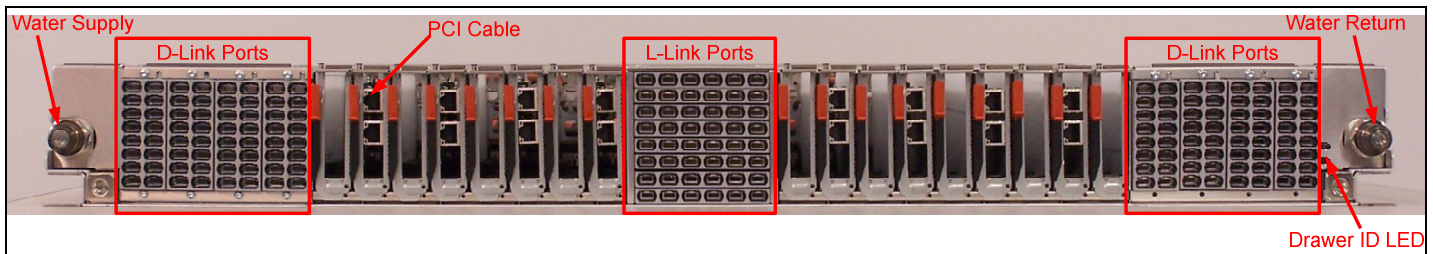


Figure 12 CEC Drawer rear view

Power775 Memory DIMM Service Procedure

(See Figure 13 for the location codes for the D-Links and the L-Link backplane assembly)

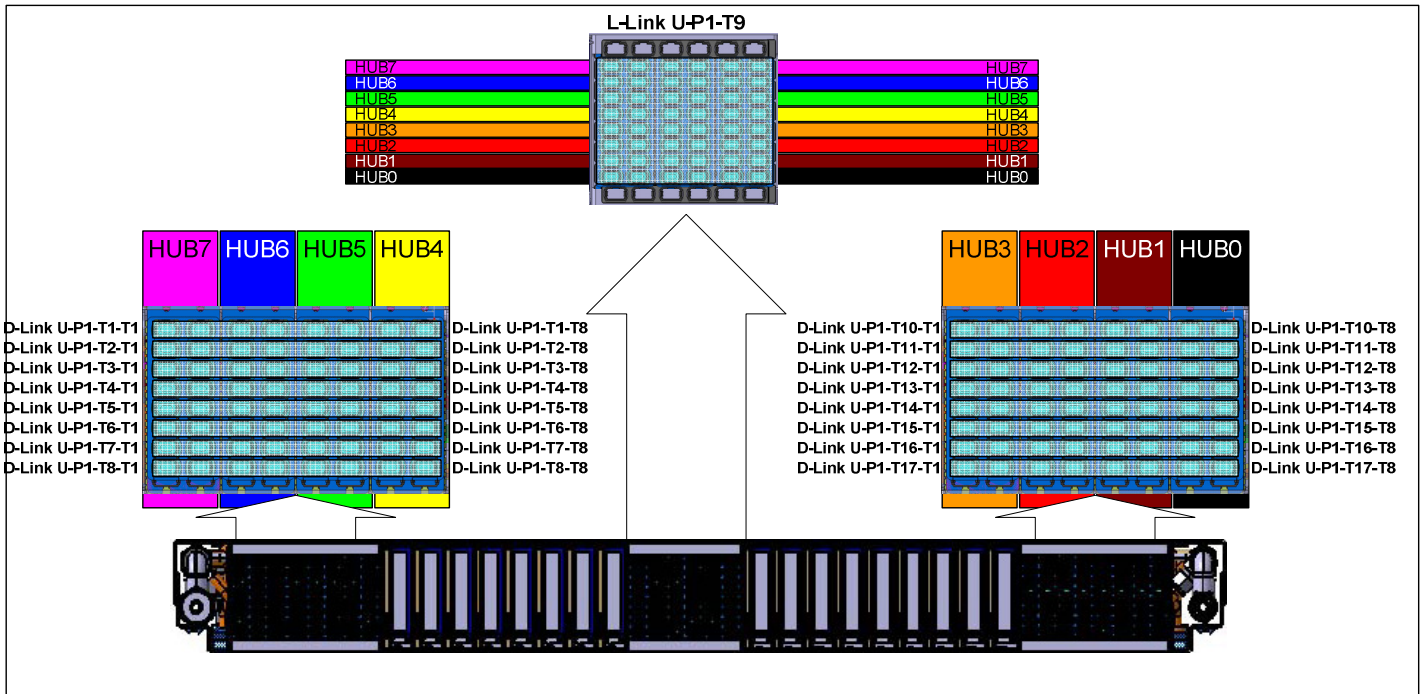


Figure 13 Location Codes for D-Link and L-Link assemblies

STEP 20 Label and disconnect any PCIe card cables

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

STEP 21 Disconnect the L-Links from the CEC Drawer being serviced if present. (some CEC Drawer will not have L-Links). Refer to Figure 13 above. (It is important to note that we must take every precaution to ensure that the L link do not get dirt, dust or other debris on them)

Are you are servicing a CEC Drawer that has L-Links?

If Yes, then continue to STEP 22

If No, then skip to STEP 27

STEP 22 Ensure that all 8 spring clips holding the OBE (Optical Backplane Enclosure) to the CEC drawer are properly latched. Identify the 4 handles in the OBE that plug into the CEC Drawer whose DIMMs are being serviced.



CAUTION: Sharp edges, corners, or joints nearby. (L006)

Power775 Memory DIMM Service Procedure

STEP 23 Pull out each of the 4 actuation handles until the connectors are unplugged. It is not necessary to pull the handle out more than 1/2 inch. Figure 14 shows a method for pulling out the handles. The photo also shows the spring clips on the right side of the OBE, holding the 4 sections of the OBE to the CEC drawers.

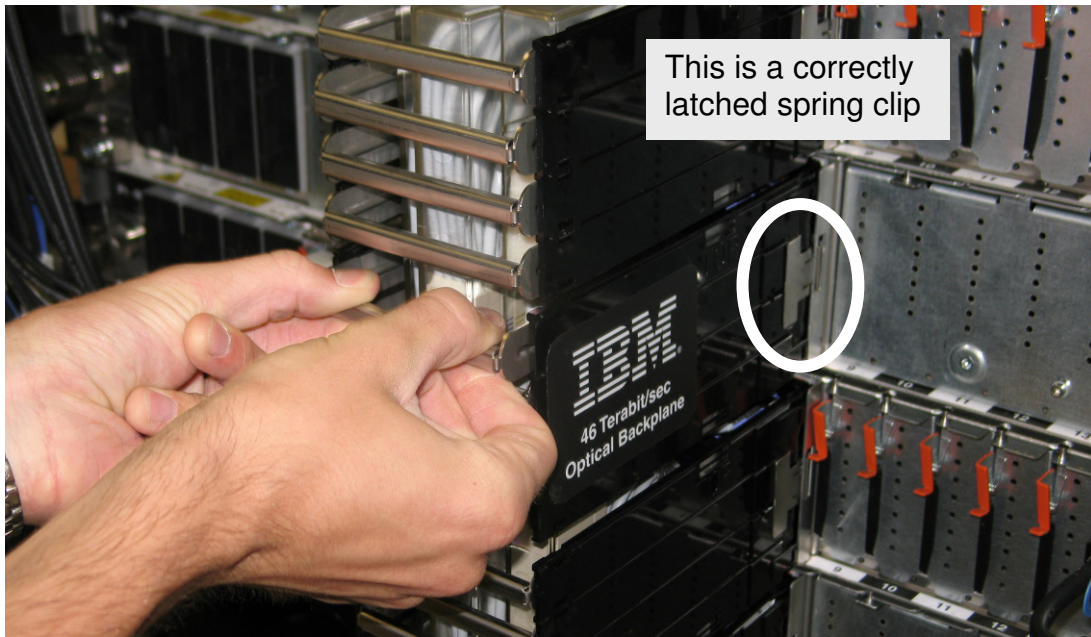


Figure 14 Optical Backplane Enclosure

STEP 24 Detach the OBE section of the CEC drawer being service as follows.

STEP 25 Press in the 2 spring clips on each side of the optical backplane enclosures, to de-latch the OBE from the CEC Drawer being serviced.

STEP 26 Pull the OBE handle/sidewall assembly slightly outward to separate it from the CEC drawer. See Figure 15. Take care not to bump the frame faces of the fiber optic connectors against any surface, including body parts, to prevent contamination or damage on the fiber endfaces. NOTE: Do not remove more than one CEC drawer per OBE at a time - the OBE must be supported by at least 3 CEC drawers while it is installed in the system.

Power775 Memory DIMM Service Procedure

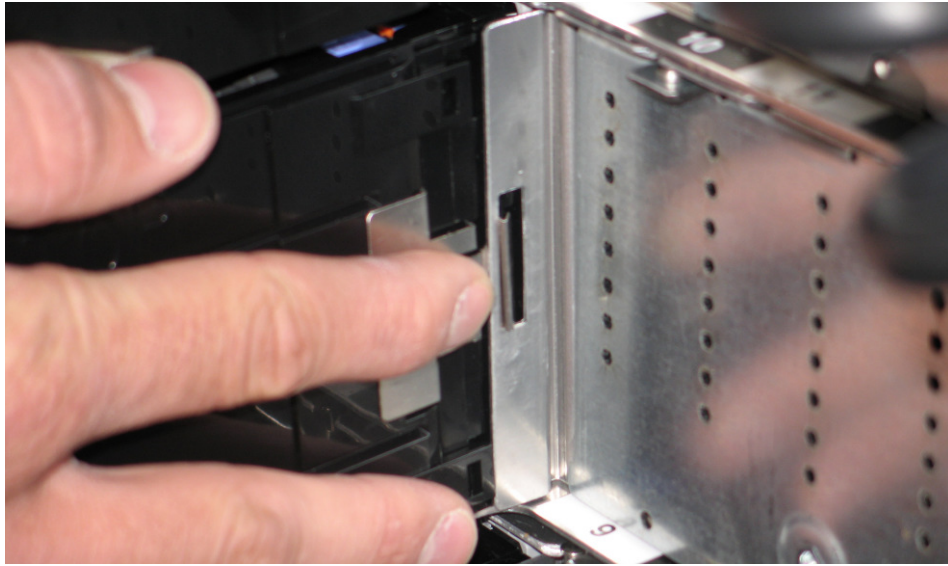


Figure 15 OBE Sidewall Assembly

STEP 27 Remove the CEC Drawer D-Links from both the left and right rear of the CEC Drawer (Right side of CEC shown in Figure 16) being serviced by pulling on the blue tabs of each D-Link. Take care not to bump the fiber optic connectors against any surface including body parts. (The row of D-Links are contained within the D-Link Grouper and will remain in the housing. It is worth noting that the housing has a label on it with its location and each cable has a label – see Figure 17.) Must remove cable support brackets.

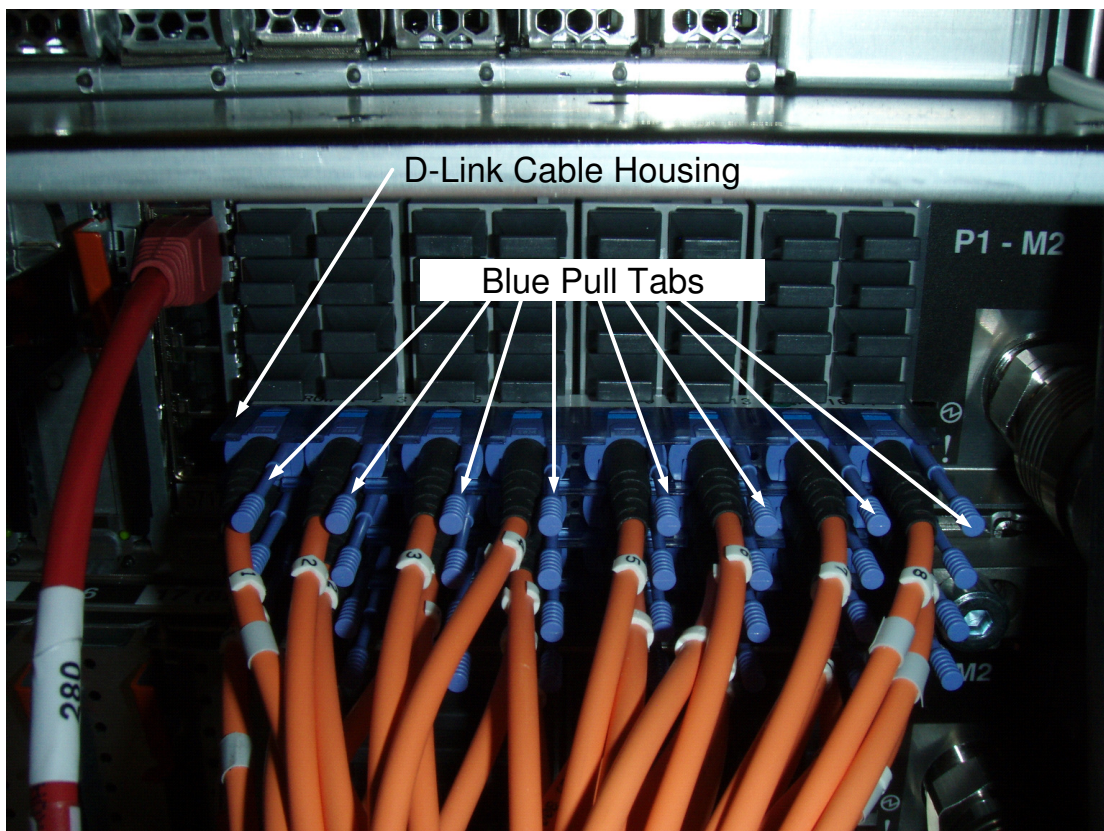


Figure 16 D-Link Grouper

Power775 Memory DIMM Service Procedure

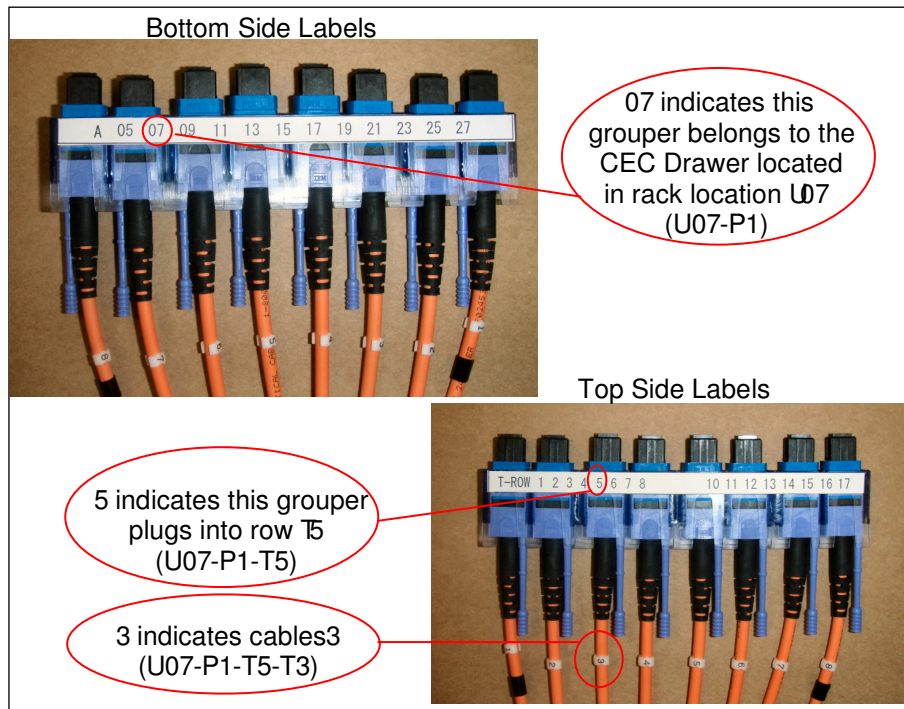


Figure 17 D-Link Grouper assembly detail

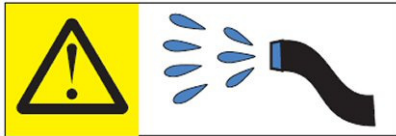
Power775 Memory DIMM Service Procedure



CAUTION: Protective eyewear is needed for the procedure. (L011)



CAUTION: Chemical resistant gloves are needed for this procedure. (L014)



DANGER: Risk of electric shock due to water or a water solution which is present in this product. Avoid working on or near energized equipment with wet hands or when spilled water is present. (L016)

CAUTION:

The water-based coolant solution may contain an additive intended to inhibit corrosion (or provide other functions). The solution may cause irritation to the skin or eyes. Avoid direct contact with the solution. Employ appropriate Personal Protective Equipment when performing operations involving the coolant or which may potentially expose you to the coolant. Refer to the MSDS for more information. (C037)

STEP 28 Disconnect the two water hoses from the left and right rear (see Figure 18) of the CEC Drawer. Disconnect the hoses by pulling the retaining ring on the hose, see Figure 19.

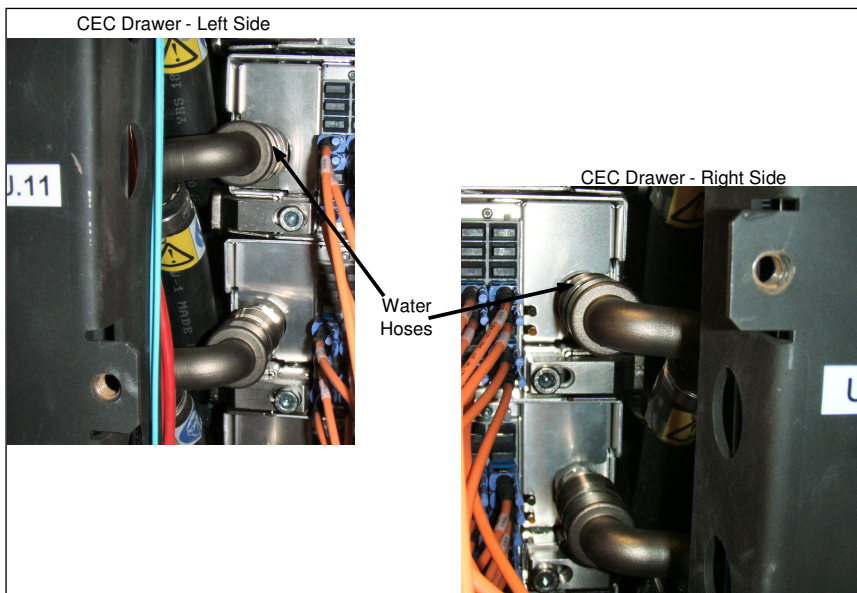


Figure 18 CEC Drawer rear water connections

Power775 Memory DIMM Service Procedure



Figure 19 CEC Drawer retaining ring image

STEP 29 Ensure that everything has been disconnected from the rear of the CEC Drawer and properly labeled.

Check List:

- 4 L-Link Actuation Handles
- All D-Links to CEC
- PCI Cables
- Both water connections

STEP 30 Loosen the rear CEC Rail mounting bracket captive screws using the tools listed below(see Figure 20):

3/8" Ratchet, PN 6428140

3/8" Extension - 18", PN 46K2707

3/8" Socket Bit, 5mm Hex, PN 74Y0986

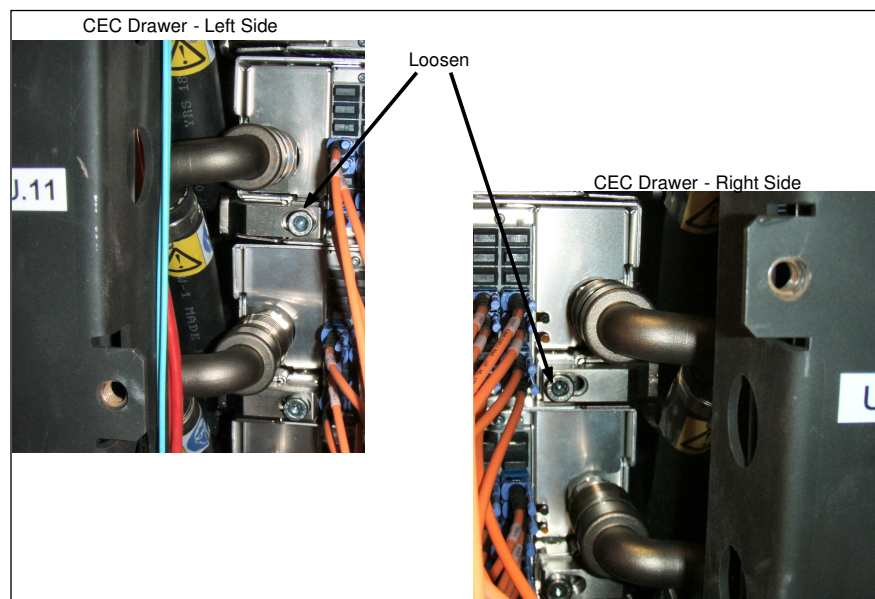


Figure 20 Rear CEC Rail mounting bracket

3.5 Move CEC Drawer to Service Position <= SSR TASK

STEP 31 Push the CEC drawer towards the front of the frame approximately 1.5 to 2 inches (30-55mm) while watching to see that all cables and hoses are disconnected from the rear of the CEC drawer.



CAUTION: System or part is heavy. The label is accompanied by a specific weight range. (L009)



DANGER: Risk of injury due to heavy components falling from rack if the supplemental supports are not installed. (L019)

ATTENTION: The supplemental supports (Cam Followers) must be installed for the CEC or DE slide out service.

STEP 32 Return to the front of the rack and start to slide the CEC Drawer out of the frame using the metal features as shown in Figure 21. The metal features are fixed to the DCCA to the left and right side of the DCCA Power Cables.

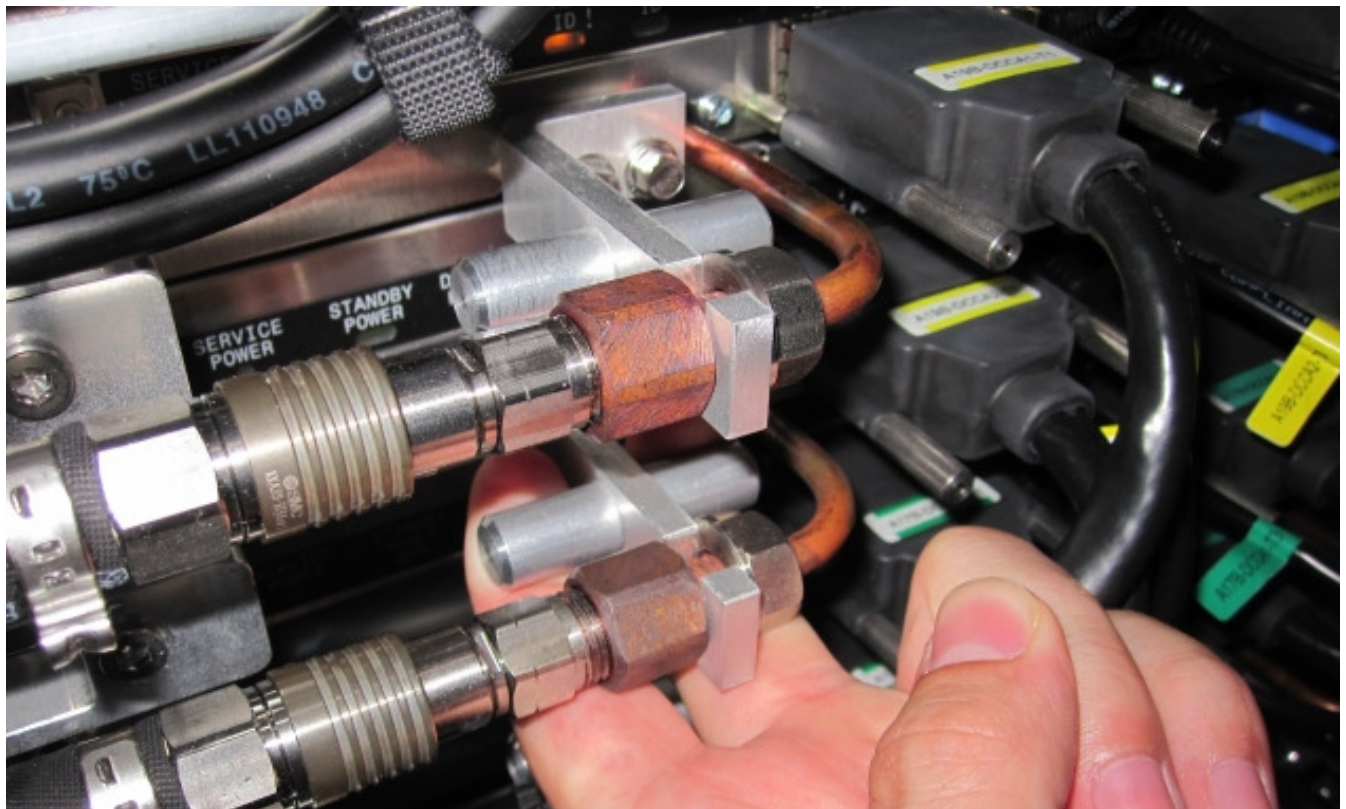


Figure 21 CEC Drawer removal features

Power775 Memory DIMM Service Procedure



DANGER: Rack-mounted devices are not to be used as shelves or work spaces. (L002)



CAUTION: Pinch hazard. (L012)

ATTENTION: Small gaps exist that could pinch body parts if care is not exercised.



CAUTION: Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time. (L024)

STEP 33 Continue sliding out the drawer until it has reached the service position as shown in Figure 22.

- **Do not pull the CEC drawer further out than shown in Figure 22**
- **Note, the CEC Drawer has a two stop latch designed into it.** One on the left side of the CEC Drawer and one on the right side. The latches are designed to stop the drawer when it reaches the position shown in Figure 22.
- **Always proceed with safety as the primary concern.**
- **Never stand under the CEC Drawer**
- **Always pull the drawer out slowly**
- **Never pull the CEC drawer further out than required.**

The Drawing below shows the CEC Drawer in the position where the latch has stopped the CEC from being pulled any further.

Power775 Memory DIMM Service Procedure

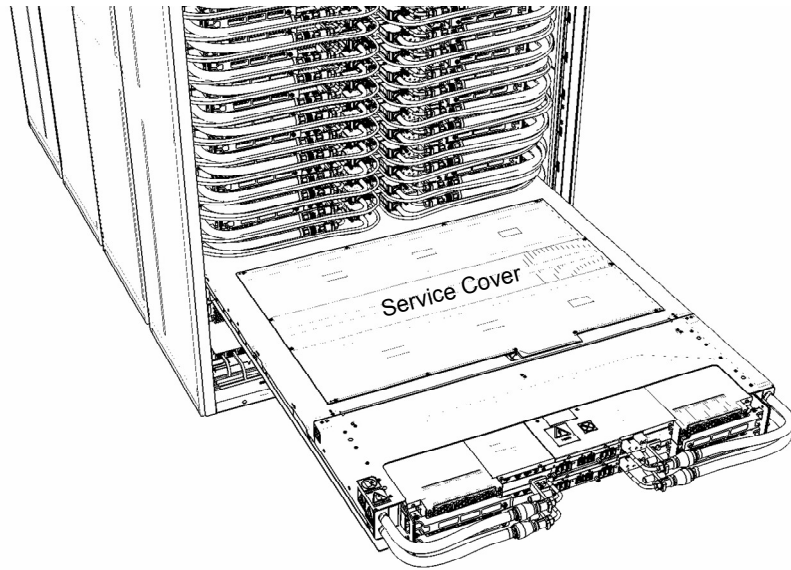


Figure 22 CEC Drawer in service position

STEP 34 Remove the Service Cover from the top of the CEC by loosening the 13 captive screws as shown in Figure 23. A flat blade screw driver PN 73G5367 is provided in the tool kit.

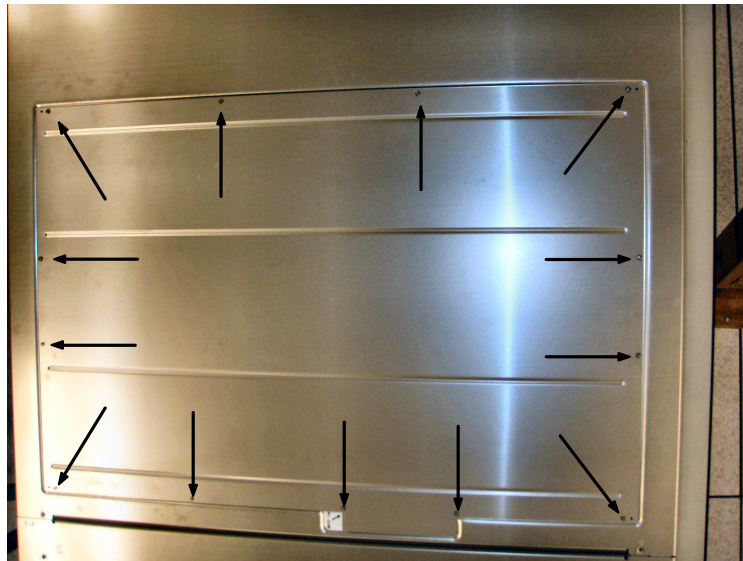


Figure 23 Service Cover Screw Removal

Power775 Memory DIMM Service Procedure

STEP 35 Connect the 'HPIC Test Cable' (PN 45D7998) to the 2 HPIC connectors of the top DCCA and to the HPIC cables that were plugged into the top DCCA of the CEC drawer. Connect the 'E-Net Test Cable, PN 45D8000, to the left ethernet port of the top DCCA of the CEC drawer whose DIMM is being serviced. (Note, both HPICs must be connected to the Test Cable for the CEC drawer to power on.) See **Figure 24**, **Figure 25**, **Figure 26** and **Figure 27**.

- Using the 2mm hex driver, connect the HPIC labeled T1-1 to the upper DCCA port T1 using the HPIC test cable.
- Using the 2mm hex driver, connect the HPIC labeled T4-1 to the upper DCCA port T4 using the HPIC test cable.
- Connect the T2-1 ethernet cable to the upper DCCA T2 port using the ethernet test cable.

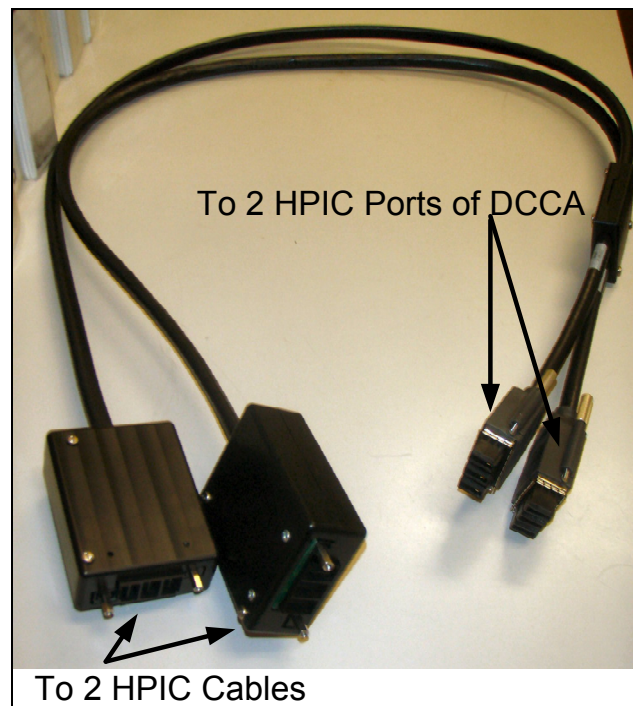


Figure 24 HPIC Test Cable

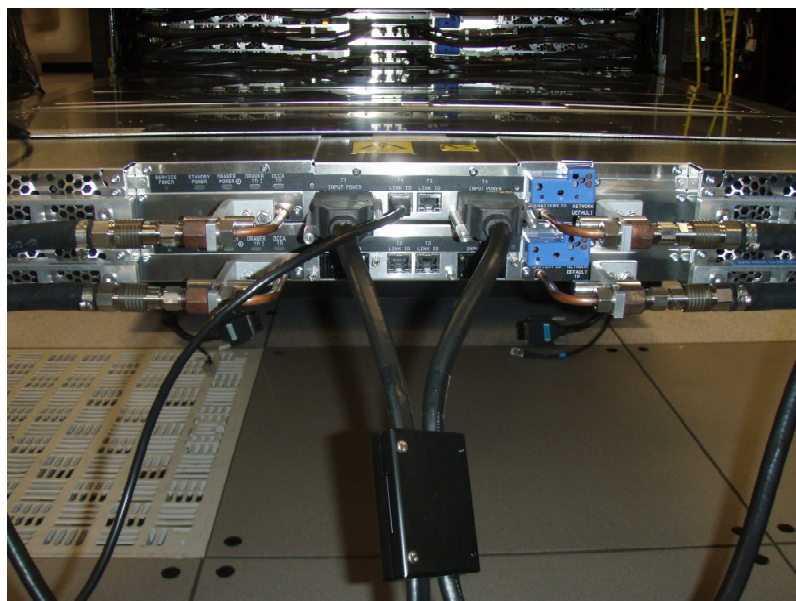


Figure 25 HPIC Test Cable & Ethernet Test Cable connected to Top DCCA

Power775 Memory DIMM Service Procedure



Figure 26 Left HPIC and Ethernet Test cables connected to Rack Cables

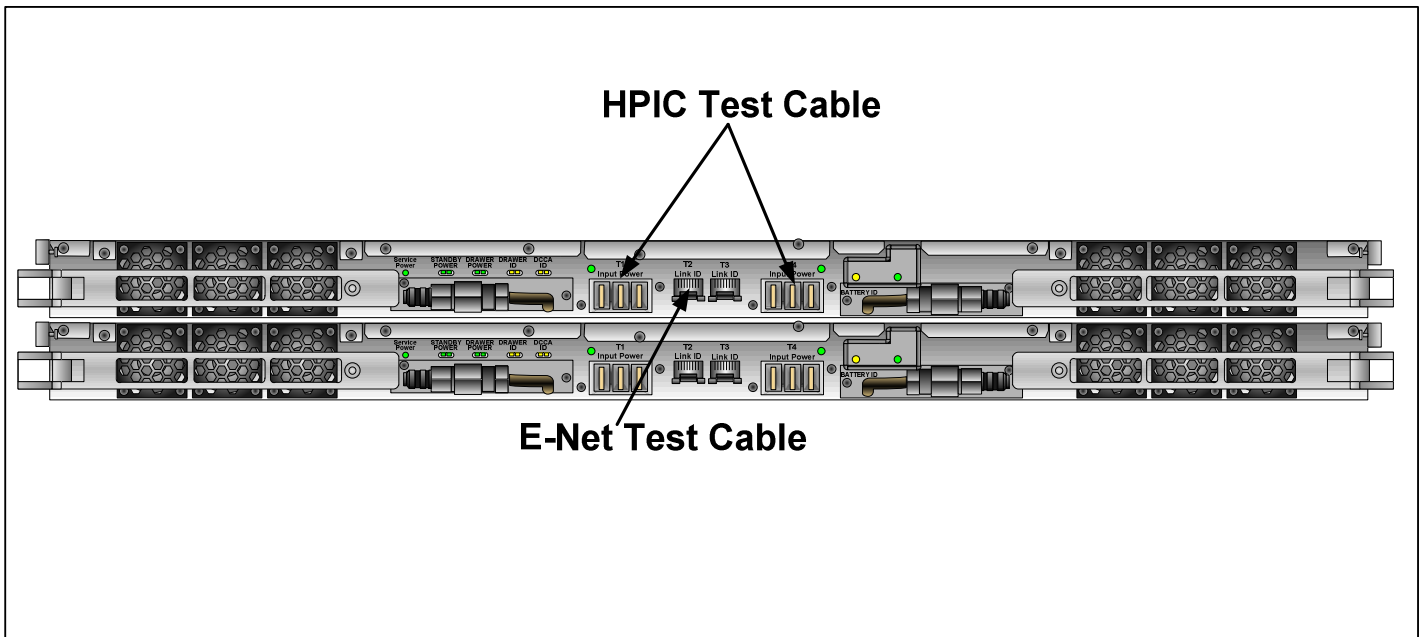


Figure 27 DCCA Location of HPIC and E-Net Test Cables

3.6 Locate and Replace Memory DIMM <= SSR TASK

ATTENTION: If the CEC Drawer powers down during STEP 36 to STEP 58, mark the HPIC test cable tool (45D7998) as bad, skip to STEP 76 to power off the CEC Drawer, and then throw out the HPIC tool and get a new one. The CEC Drawer is designed to power off if there is a problem with the HPIC tool safety ground wiring, and this is why you must throw out the HPIC tool.

STEP 36 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 Memory DIMM with the FRU needing replacement..

STEP 37 Place CEC Drawer in service mode by executing the following command on the BPC FSP Command line.

```
bpccmd -c 115F0002xx90
```

where xx = < cage id (hex) -see Figure 28 >

The proper return code for this command is ‘005F00’. If you do not receive a successful return code, contact next level of support.

For example to place the bottom most CEC drawer in the rack into service mode send
 bpccmd -c 115F00020390

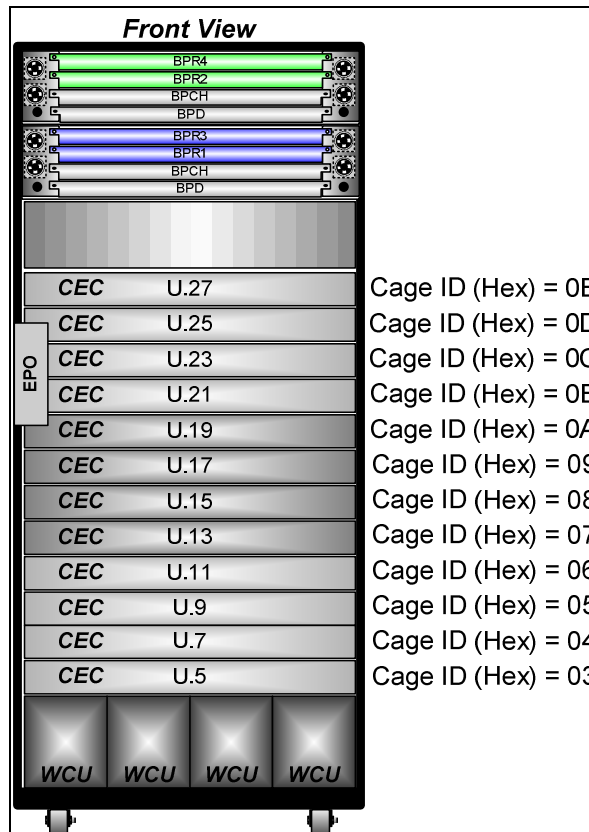


Figure 28 HEX Cage ID

Power775 Memory DIMM Service Procedure

STEP 38 Wait for the CEC FSP to be active. The 'Standby Power' LED will be lit on the top DCCA as shown in Figure 29.

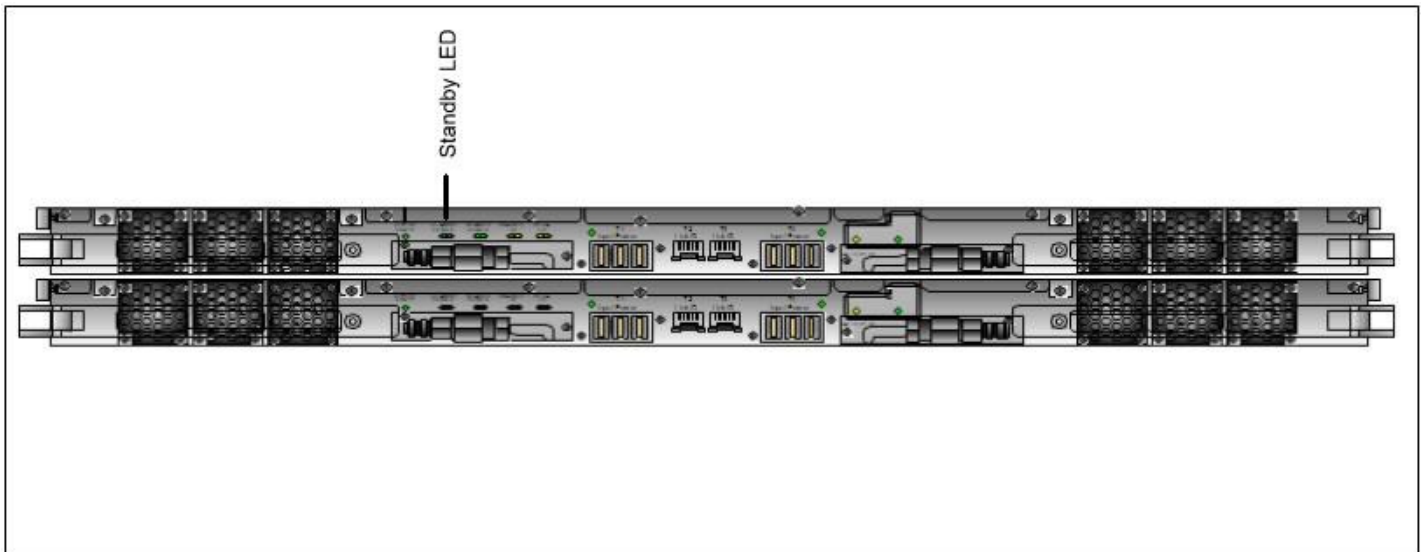


Figure 29 Standby Power LED

STEP 39 Place the CEC drawer in DIMM service mode by issuing the following command from the BPC FSP Command line, using the procedure “Appendix: Power775 BPC FSP Command Line Procedure” (included in this PDF):

```
bpccmd -c 8A5F0000<cake id (hex)-see Figure 28>
```

The proper return code for this command is '005F00'. If you do not receive a successful return code, contact next level of support.

For example to place the bottom most CEC drawer in the rack into DIMM service mode send
`bpccmd -c 8A5F000003`

Power775 Memory DIMM Service Procedure

STEP 40 Wait for the CEC FSP to be active. The 'Service Power' LED will be lit on the top DCCA. Refer to Figure 30.

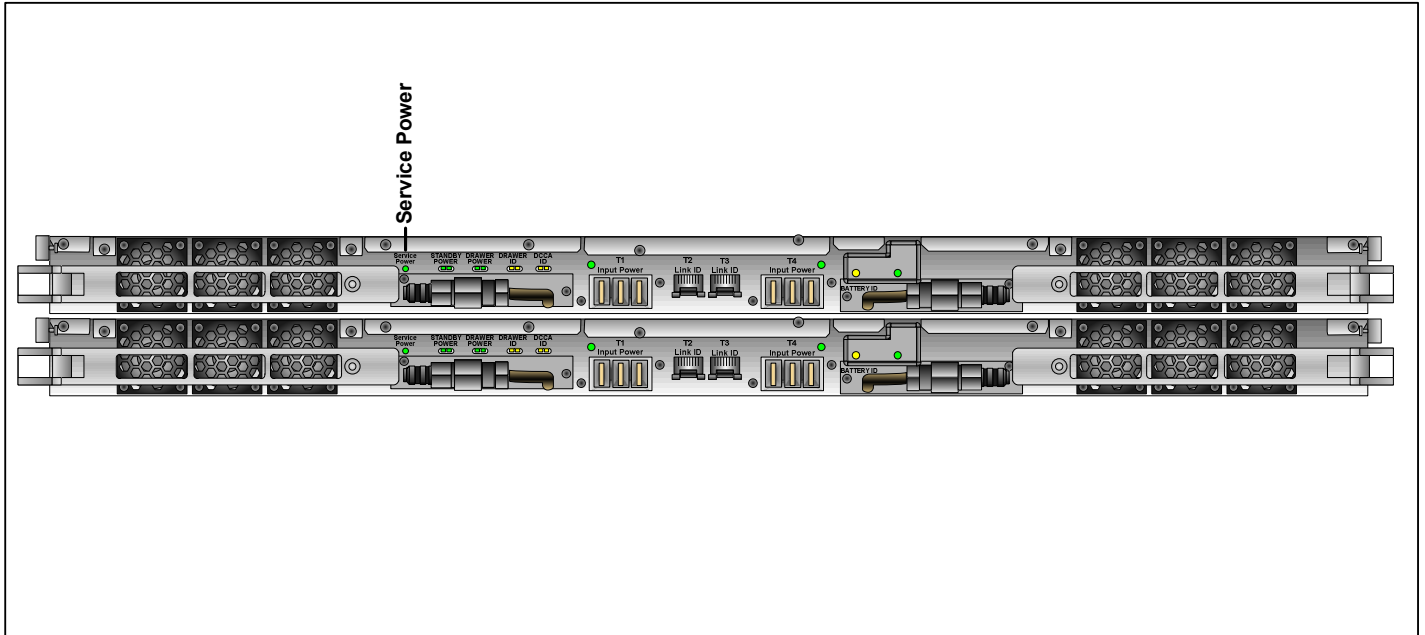


Figure 30 Service Power LED

STEP 41 Turn on the DIMM LED whose DIMM is being serviced as follows.

STEP 42 In the Navigation menu on the HMC, expand **Systems Management** then select **Servers**

STEP 43 Place a checkmark in the Select column of the Server to perform service on.

STEP 44 From the Tasks menu select Operations -> Launch Advanced Systems Management (ASM), this is for the FSP ASM. See Figure 31.

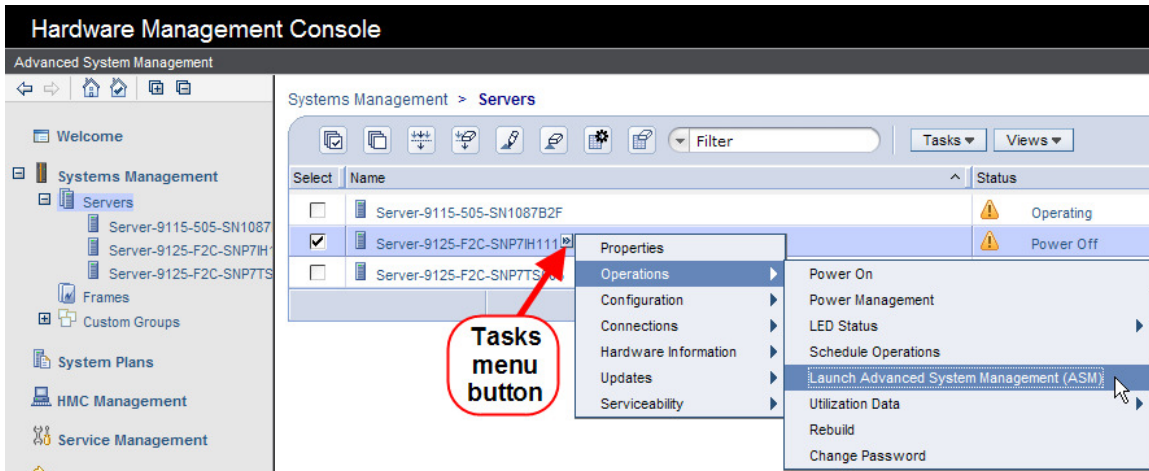


Figure 31 Launch ASM

Power775 Memory DIMM Service Procedure

STEP 45 In the window that appears, *select* the **Primary Service Processor IP Address** then *click* the **OK** button. See Figure 32. Note: It may take a few minutes for the FSP to initialize.

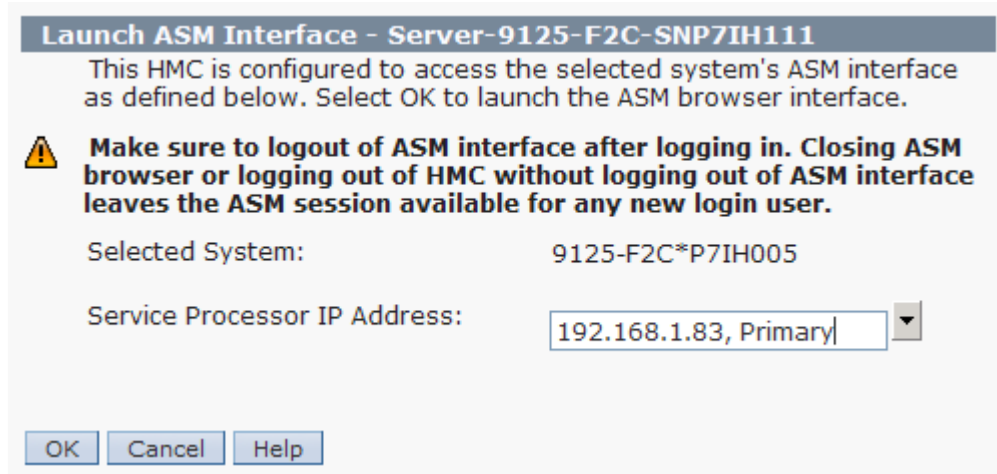


Figure 32 Select Service Processor IP Address

STEP 46 Login to the CEC FSP ASM using the User ID of celogin1. See Figure 33.



Figure 33 ASM Login

Power775 Memory DIMM Service Procedure

STEP 47 Display the Service Indicators User Interface. See Figure 34.

- *Expand System Configuration* then **Service Indicators**.
- *Click Enclosure Indicators*.
- *Click and highlight* the radio button next to the planar enclosure location code.
- *Click the Continue* button.

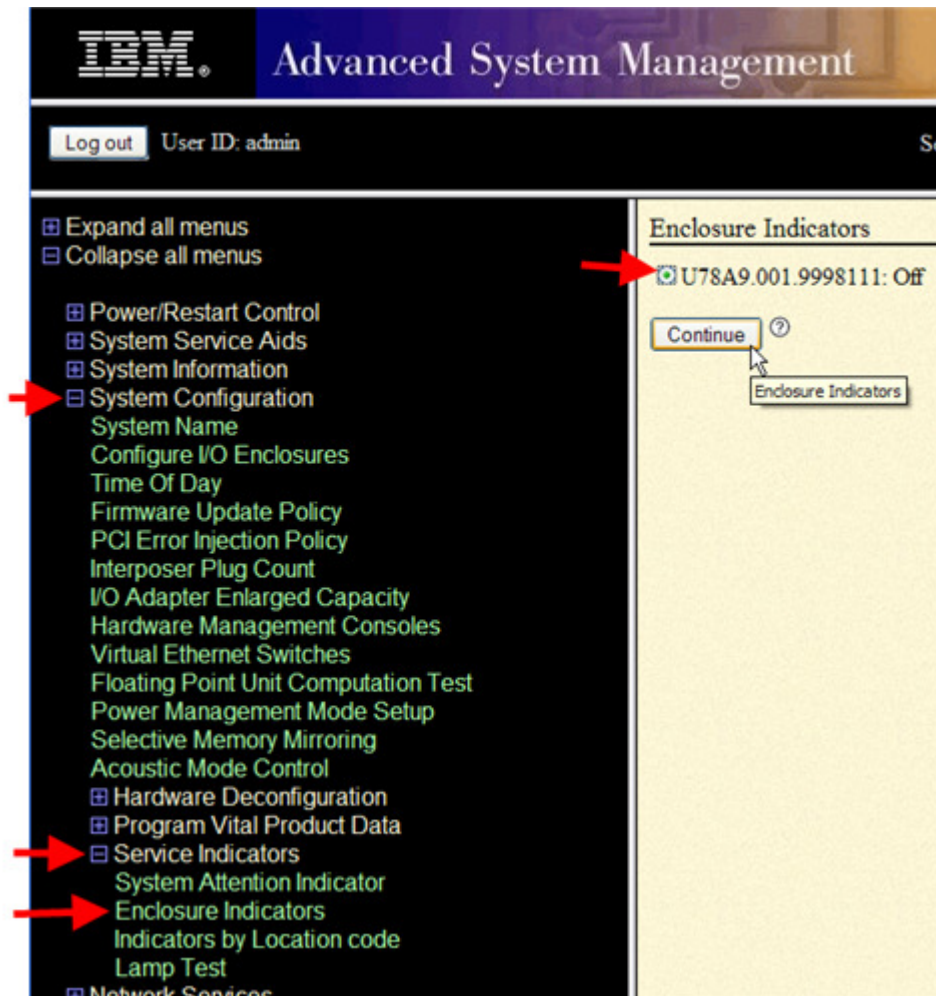


Figure 34 Enclosure Indicator

Power775 Memory DIMM Service Procedure

STEP 48 Change the **Identify indicator status** for the DIMM Location(s) to be serviced to **Identify**. See Figure 35.

Note: DIMM Location Codes range from C18 to C145

The screenshot shows the IBM Advanced System Management interface. The top header includes the IBM logo and the text 'Advanced System Management'. Below the header, there is a navigation bar with 'Log out' and 'User ID: admin' on the left, and 'Server-9125-F2C-SNP7IH111' on the right. The main content area is divided into two sections. On the left is a navigation menu with various system management options, including 'Expand all menus', 'Collapse all menus', 'Power/Restart Control', 'System Service Aids', 'System Information', 'System Configuration', 'System Name', 'Configure I/O Enclosures', 'Time Of Day', 'Firmware Update Policy', 'PCI Error Injection Policy', 'Interposer Plug Count', 'I/O Adapter Enlarged Capacity', 'Hardware Management Consoles', 'Virtual Ethernet Switches', 'Floating Point Unit Computation Test', 'Power Management Mode Setup', 'Selective Memory Mirroring', 'Acoustic Mode Control', 'Hardware Deconfiguration', 'Program Vital Product Data', 'Service Indicators', 'System Attention Indicator', 'Enclosure Indicators', 'Indicators by Location code', 'Lamp Test', 'Network Services', 'Performance Setup', 'On Demand Utilities', 'Concurrent Maintenance', and 'Login Profile'. On the right is a table of DIMM locations. The table has three columns: DIMM Location Code, Status, and a dropdown menu. The status for most locations is 'Off', but for location U78A9.001.9998111-P1-C145, the status is 'Identify'. A red arrow points to the 'Identify' dropdown menu for this location.

DIMM Location Code	Status	Dropdown
U78A9.001.9998111-P1-C137	Off	▼
U78A9.001.9998111-P1-C130	Off	▼
U78A9.001.9998111-P1-C131	Off	▼
U78A9.001.9998111-P1-C132	Off	▼
U78A9.001.9998111-P1-C133	Off	▼
U78A9.001.9998111-P1-C134	Off	▼
U78A9.001.9998111-P1-C135	Off	▼
U78A9.001.9998111-P1-C144	Off	▼
U78A9.001.9998111-P1-C145	Identify	▼
U78A9.001.9998111-P1-C138	Off	▼
U78A9.001.9998111-P1-C139	Off	▼
U78A9.001.9998111-P1-C140	Off	▼
U78A9.001.9998111-P1-C141	Off	▼
U78A9.001.9998111-P1-C142	Off	▼
U78A9.001.9998111-P1-C143	Off	▼
U78A9.001.9998111-P1-C88	Off	▼
U78A9.001.9998111-P1-C89	Off	▼
U78A9.001.9998111-P1-C82	Off	▼
U78A9.001.9998111-P1-C83	Off	▼
U78A9.001.9998111-P1-C84	Off	▼
U78A9.001.9998111-P1-C85	Off	▼
U78A9.001.9998111-P1-C21	Off	▼
U78A9.001.9998111-P1-C20	Off	▼

Figure 35 DIMM Location Identifiers

Power775 Memory DIMM Service Procedure

STEP 49 After all DIMM Locations to be serviced have been set to Identify, scroll to the bottom of the panel and click the Save Settings button. See Figure 36.

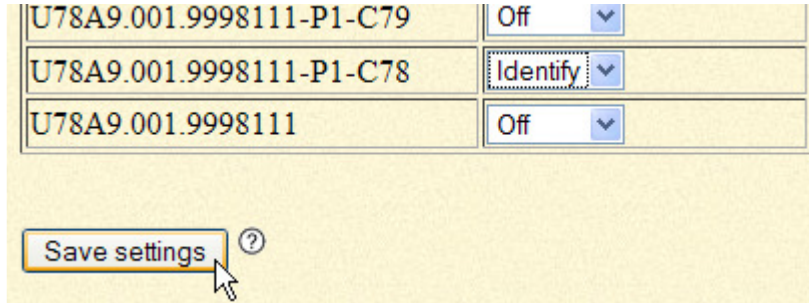


Figure 36 DIMM Location Identifiers save settings

STEP 50 Locate the DIMM to be service by both the LED and Label. Note: For LED location, look at the lightpipe that is part of the DIMM assembly(see Figure 37). DO NOT use the LED on the surface of the circuit board, for CEC Drawers with less than full population of DIMMs the LEDs on the circuit board can be confusing.

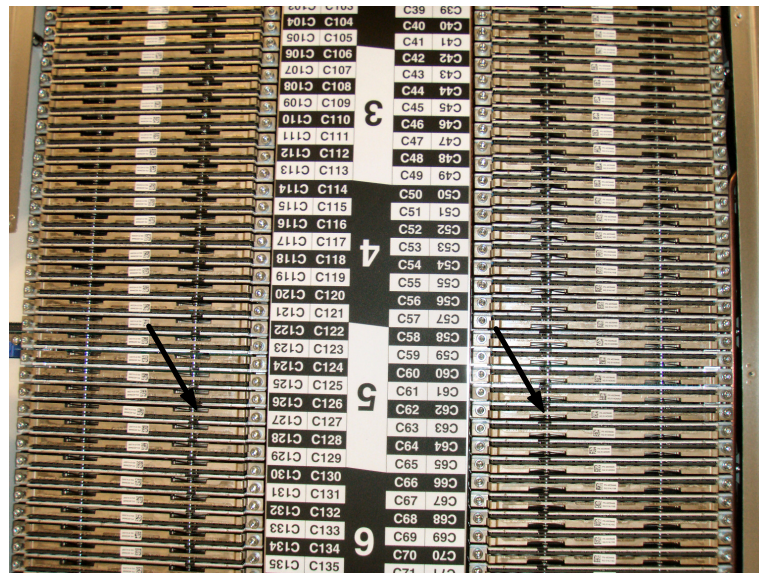


Figure 37 DIMM LED Lightpipe Locations

Power775 Memory DIMM Service Procedure

STEP 51 Using the 3mm hex driver PN 74Y0998, remove the DIMM by loosen the 2 captive screws of the DIMM. (Figure 38 below points to the 2 screws for DIMM C54)

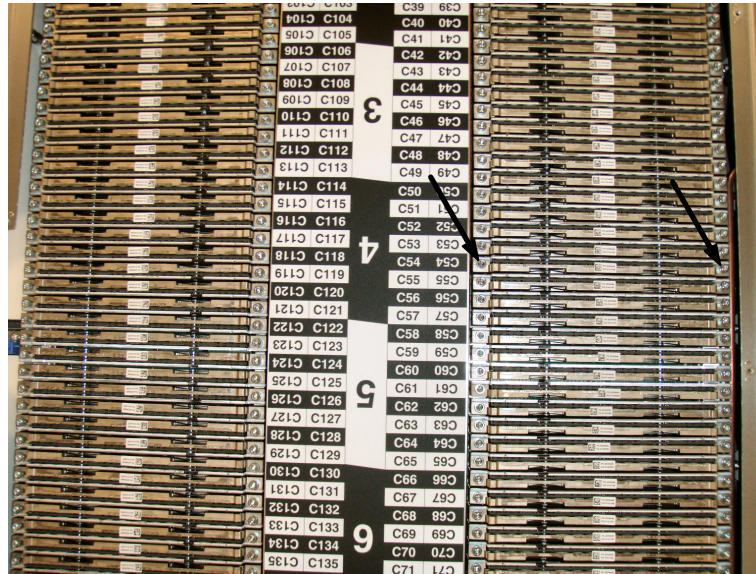


Figure 38 DIMM Captive screw locations



CAUTION: Hazardous energy present. Voltages with hazardous energy might cause heating when shorted with metal, which might result in splattered metal, burns, or both. (L005)

Be sure to use ESD protection during steps while handling DIMMs.

STEP 52 Remove the DIMM by holding the 2 screws and pulling the DIMM out of the DIMM connector.

STEP 53 Once the DIMM is removed, ensure that both pieces of Thermal Interface Material (TIM) are on the DIMM, see Figure 39. (The TIM is conductive. Ensure that the TIM does not fall into the CEC Drawer.)

Power775 Memory DIMM Service Procedure

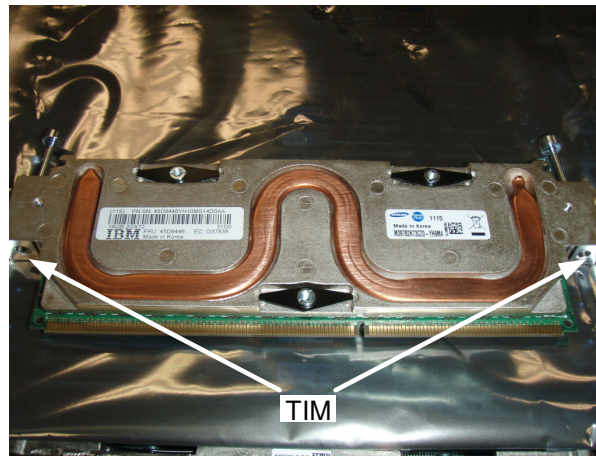


Figure 39 DIMM details showing TIM

STEP 54 Check the CEC Drawer to ensure there is no TIM on the manifold or loose pieces of TIM in the CEC.

(Figure 40 below shows the manifolds with the DIMM removed. No TIM should remain on the manifold.)

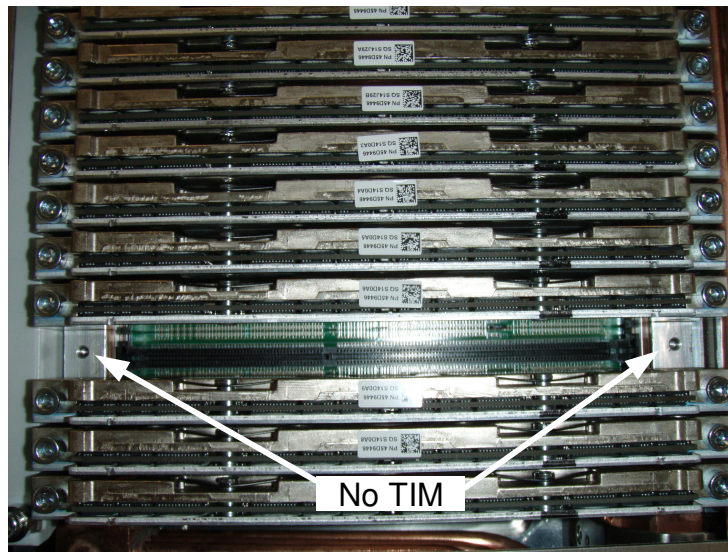


Figure 40 Removed DIMM with Manifold exposed

STEP 55 Check the new DIMM to ensure that both the pieces of TIM are on the DIMM. **Important!** If the pieces of TIM are not in place, a DIMM error will occur after the customer resumes operation.

STEP 56 Plug the new DIMM into the slot and turn the 2 DIMM screws by hand to ensure they are properly threaded. Turn the screws without the aid of a tool until the screw head is seated against the top of the DIMM.

STEP 57 Tighten the DIMM screws using the 3 mm, 1Nm, hex driver PN 74Y0998. This tool must be used to ensure that the correct torque is applied.

STEP 58 If there are other DIMMs to be serviced in the CEC drawer, repeat STEP 48 through STEP 57. Be sure to change the original LED being serviced to from Identify to Off if servicing additional DIMMs.

3.7 Re-install CEC Drawer to original position <= SSR TASK



CAUTION: Pinch hazard. (L012)

ATTENTION: Small gaps exist that could pinch body parts if care is not exercised.

STEP 59 Power off the CEC entering the following command on the BPC FSP Command line, using the procedure “Appendix: Power775 BPC FSP Command Line Procedure” (included in this PDF):

```
bpccmd -c 105F0002xx90
```

where xx = < cage id (hex) -see Figure 28 >

The proper return code for this command is ‘005F00’. If you do not receive a successful return code, contact next level of support.

For example to place the bottom most CEC drawer in the rack into service mode send

```
bpccmd -c 105F00020390
```

STEP 60 Verify that all LEDs on the CEC Drawer being serviced have turned off before proceeding.

STEP 61 Remove the HPIC Test and E-Net Test Cables.

STEP 62 Re-install the Service Cover on the CEC Drawer. Ensure the 13 captives screws are fully seated and tight.

STEP 63 Slide the CEC Drawer back into the frame. Note, there are staggered latches in the CEC Drawer one on the left and one on the right. One or both need to be disengaged, one at a time to return the CEC drawer to its operating position in the rack. Use P/N 41V1059 to lift the latches. **Do not** use screw driver to lift the latches as this may damage cables.

STEP 64 Log out of BPC FSP ASM.

STEP 65 Go to the rear of the rack.

STEP 66 Tighten the CEC mounting bracket screws using the following tools:

3/8" Ratchet, PN 6428140

3/8" Torque Clutch - (23 - 31 Nm torque setting), PN 74Y0985

3/8" Extension - 18", PN 46K2707

3/8" Socket Bit, 5mm Hex, PN 74Y0986

Power775 Memory DIMM Service Procedure

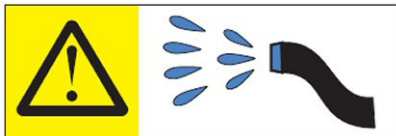
CAUTION: The water-based coolant solution may contain an additive intended to inhibit corrosion (or provide other functions). The solution may cause irritation to the skin or eyes. Avoid direct contact with the solution. Employ appropriate Personal Protective Equipment when performing operations involving the coolant or which may potentially expose you to the coolant. Refer to the MSDS for more information. (C037)



CAUTION: Protective eyewear is needed for the procedure. (L011)



CAUTION: Chemical resistant gloves are needed for this procedure. (L014)



DANGER: Risk of electric shock due to water or a water solution which is present in this product. Avoid working on or near energized equipment with wet hands or when spilled water is present. (L016)

STEP 67 Reconnect the 2 water hoses

CAUTION:

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

STEP 68 Plug the L-Links:

- With the Optical Backplane Enclosure retracted, partially insert the top row of connector into the L-Link ports, then second, the third and the fourth, so that all connectors are partially inserted into the L-Link Ports in the CEC drawer.
- Press inward on the 2 spring clips on each of the OBE handle/sidewall assembly, slide the OBE handle/sidewall assembly forward toward, and release the spring clips, to attach it to the CEC Drawer.
- Ensure that the spring clips are properly inserted on the insides of the slotted latching plates of the CEC drawer.
- Gently push the 4 OBE actuation handles forward, to slide the optical connectors into the L-ports in the CEC drawer. This step takes some care, since each handle actuates 12 connectors, and there may be some misalignment between one or more of the 12 individual connectors and the L-Ports in the CEC drawer. It may be necessary to rotate slightly the handle/sidewall assembly to align the connectors with the L-Ports. When all 12 connectors of a handle are aligned with the L-Ports, the handle will slide forward by ~1/2" to insert the connectors into the L-Ports.

NOTE: All 4 handles must be slid forward to prevent damage to the L-Port adapters before proceeding.

- Using the upper of the 4 actuation handles, press in the connector. When the actuator is connected a audible click will be heard for each of the 4 MPO connectors. (Approximately 20 lbs of force will be required for each of the handles to fully actuate all 12 connectors during insertion.)

Power775 Memory DIMM Service Procedure

- Once all 4 handles are slid forward with the L-Link connectors in the L-Ports of the adapters, do the final actuation of the handles, see Figure 41. This requires pushing the handle forward forcefully, hard enough to simultaneously seat the 12 connectors. It requires approximately 20 lbs of force for each handle to fully actuate all 12 connectors during insertion. When the connectors are fully actuated, an audible "click" will be heard, as all 12 connectors click into place.

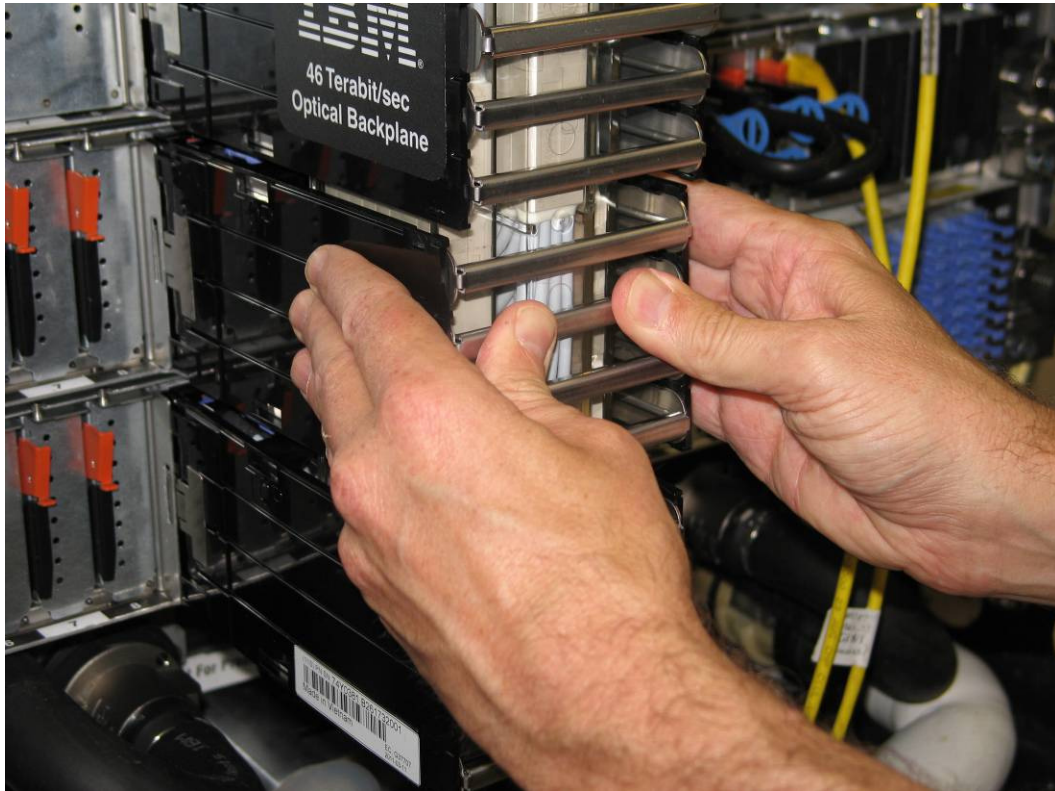


Figure 41 OBE Installation

STEP 69 Re-install the D-Links and cable support brackets starting from the bottom most position, refer to Figure 42

- Position the grouper for the D-Link optical connectors at the proper row.
- Insert the grouper into their respective D-Port adapter receptacles.
- Insert each connector into its port by pushing on the push/pull tab, or by pushing on the strain relief boot at the rear of the connector.
- Re-install the cable support brackets

Power775 Memory DIMM Service Procedure

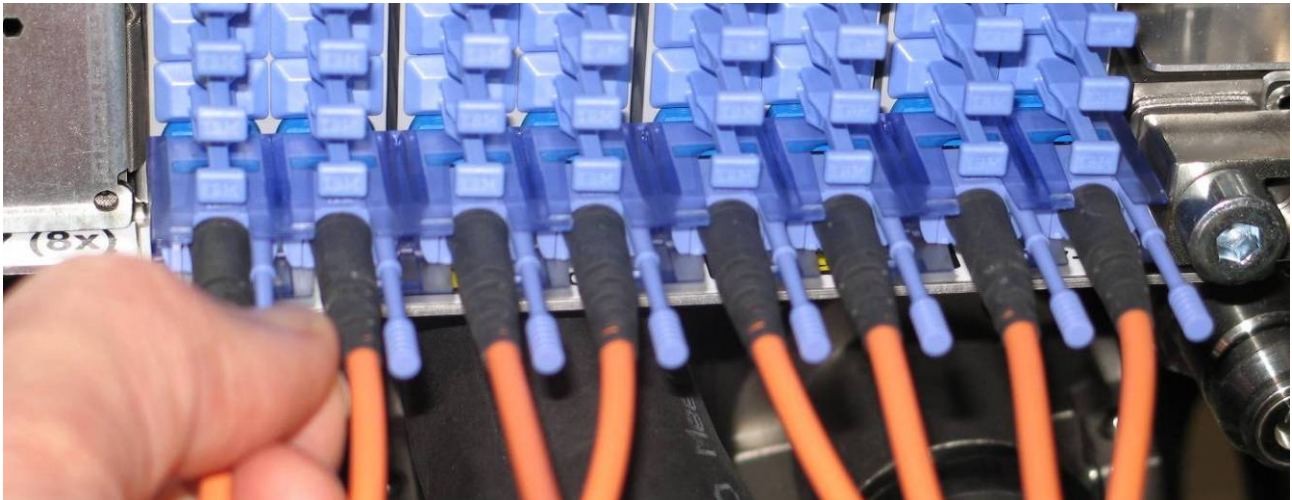


Figure 42 D-Link Grouper Installation

STEP 70 If required, re-plug all of the PCIe cables.

STEP 71 Return the CAM Followers to the original Rack storage location at the bottom of the Rack rails and secure using the retention screws which were removed in earlier step.

CAUTION:

This part or unit is heavy but has a weight smaller than 18 kg (39.7 lb). Use care when lifting, removing, or installing this part or unit. (C008)

STEP 72 Re-install and close the front door

STEP 73 Return to the HMC and the Exchange FRU R&V procedure.

GO BACK to use the R&V procedures at this point.

3.8 Verify all D-Links and L-Links are operational <= Customer TASK

STEP 74 Verify that the D-Links and L-Links are all operational.

3.9 Confirm with customer that CEC is operational <= SSR TASK

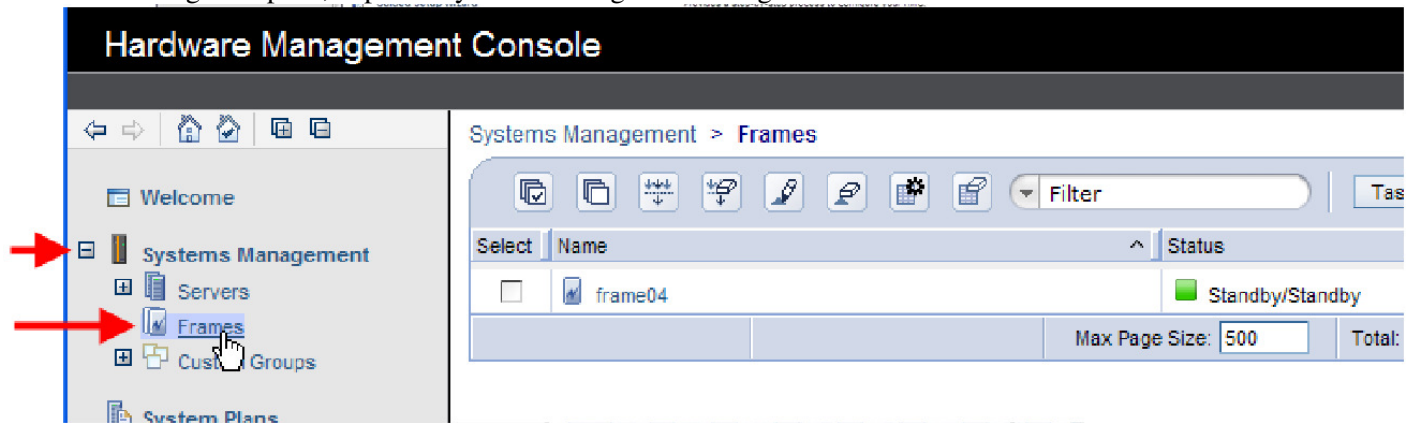
STEP 75 Confirm with the customer that the CEC is operational, including all the D-Links and L-Links.

4 END OF POWER775 MEMORY DIMM SERVICE PROCEDURE

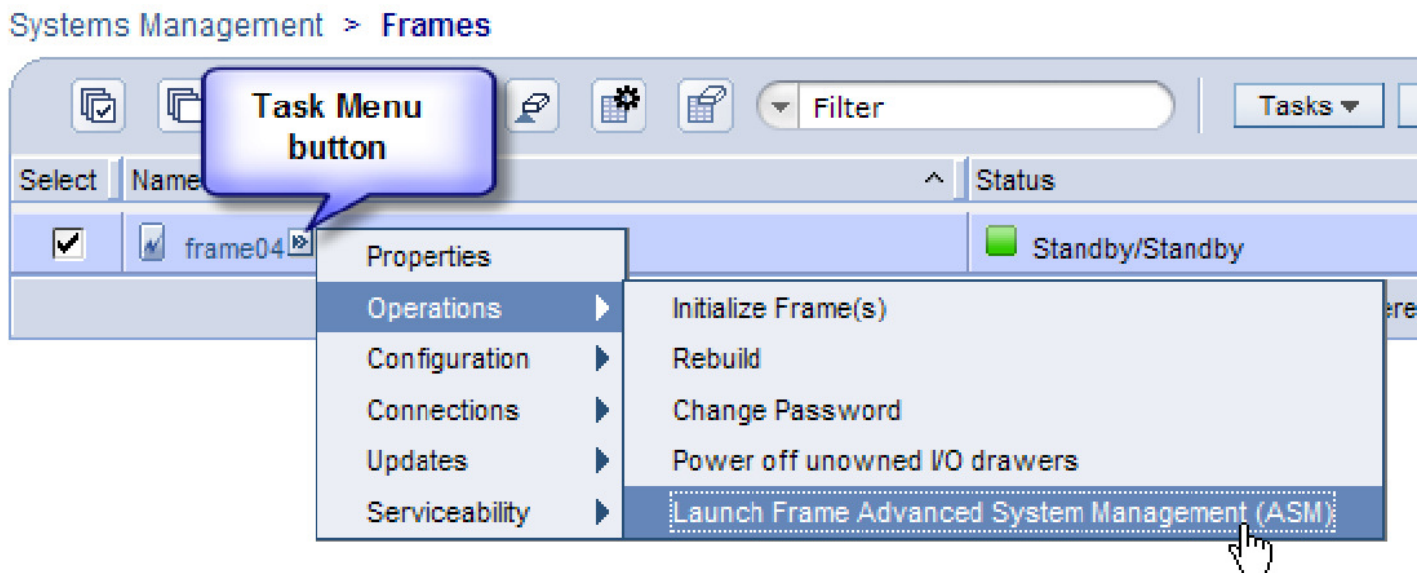
5 APPENDIX A: POWER775 BPC FSP COMMAND LINE PROCEDURE

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':

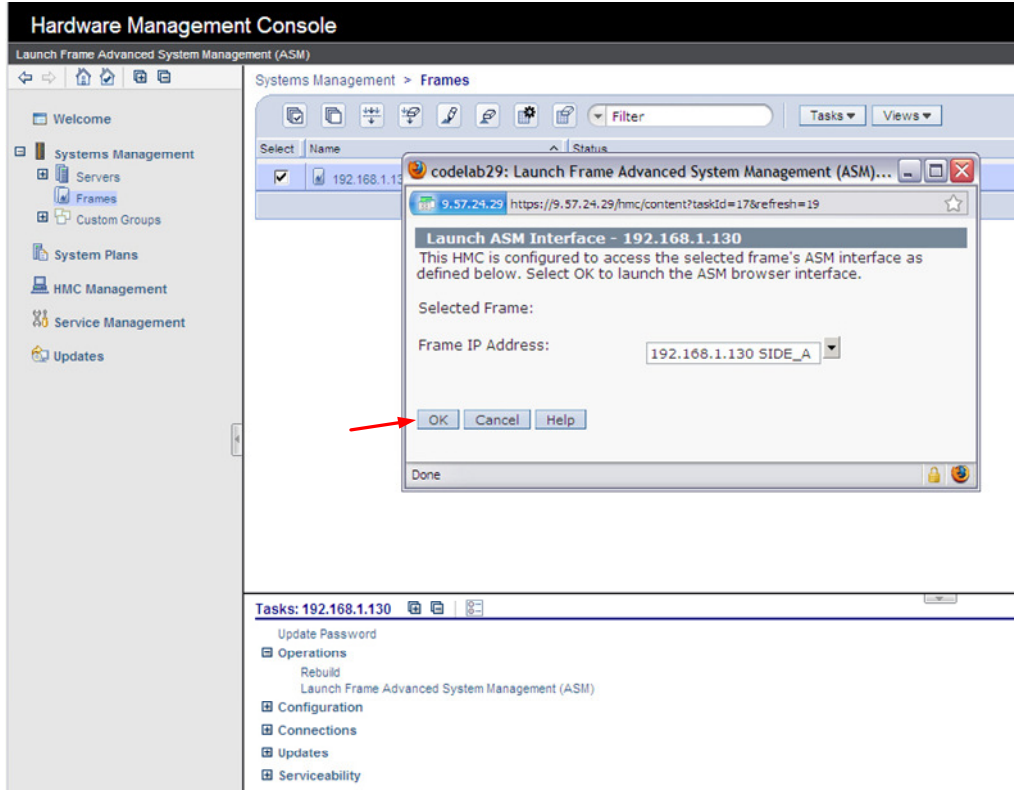


4. From the Tasks Menu right-arrow pull-down menu, click **Operations** → **Launch Frame Advanced Systems Management (ASM)**



Power775 Memory DIMM Service Procedure

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

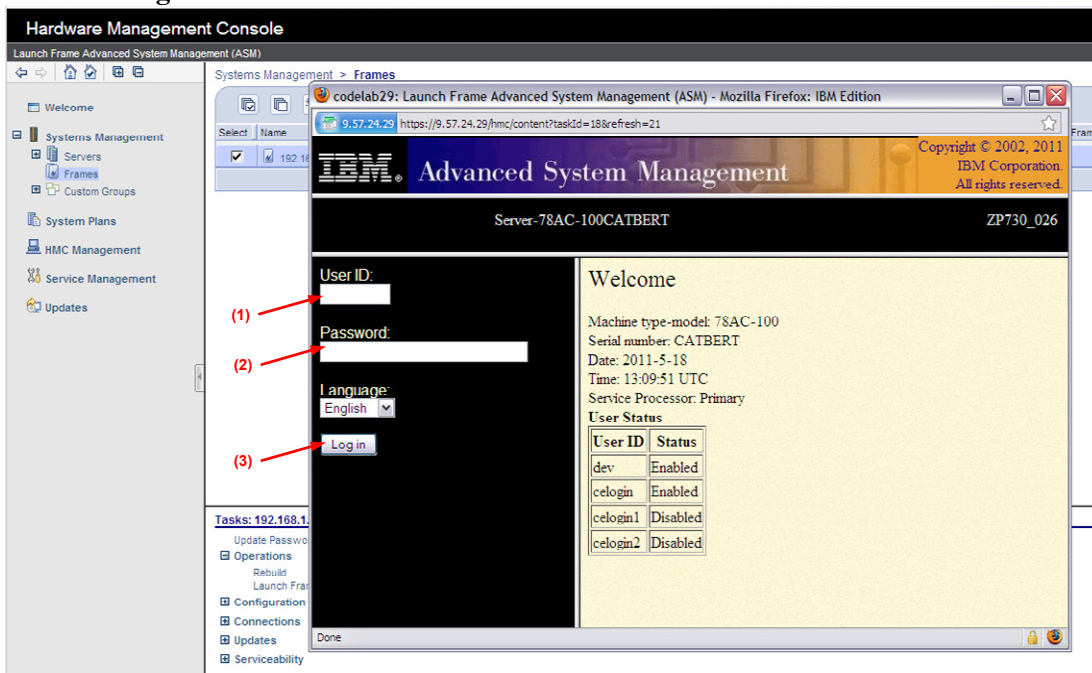


- The ASM login window is presented. Acquire the necessary User ID and Password.

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

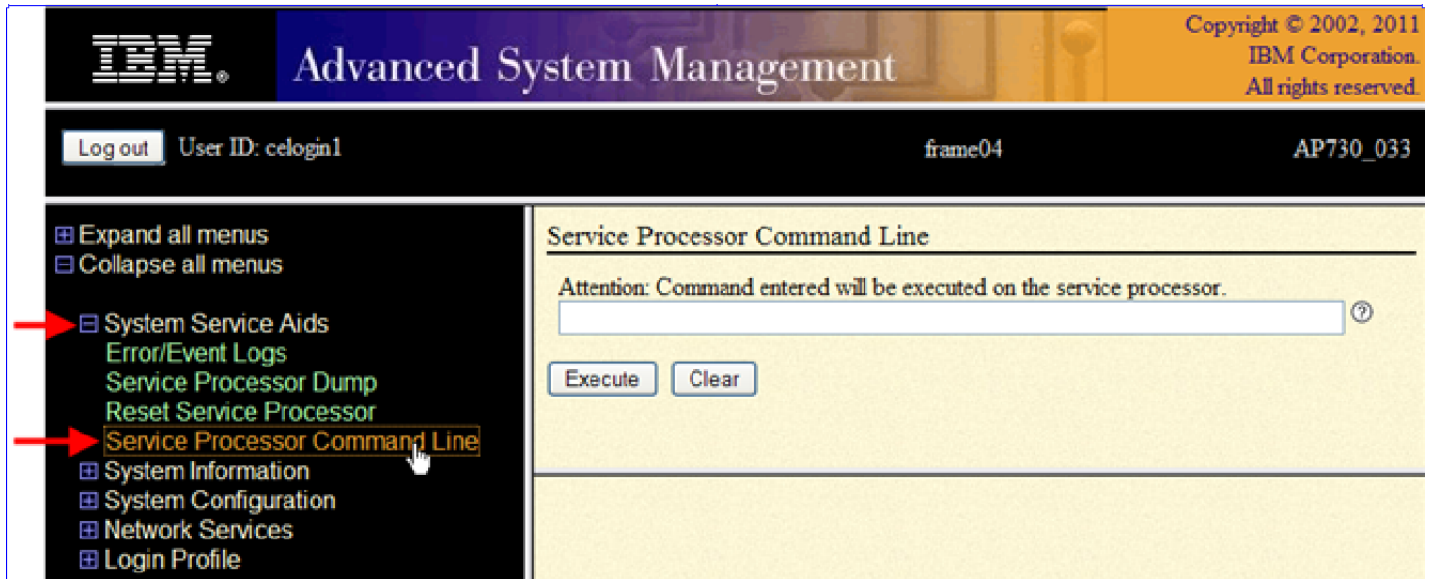
“celogin1” might be has enabled by the customer. If so, obtain the password from the customer.

- Enter User ID
- Enter Password
- Click **Log in** button



Power775 Memory DIMM Service Procedure

- 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
