

Power775
Cross-Power Cable Service Procedure
Last Modified 10/11/2011



Power775 Cross-Power Cable Service Procedure
PN: 41U8505, EC N44172

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1 GENERAL

1.1 Release / Revision History

File Name	Date	Description
"p775_cross_pwr_cable.pdf"	9/30/2011	Initial Release

Table 1 Release / Revision History

- Do not make any unauthorized alterations to the document.
- Report any deviations from this procedure through the appropriate Product Engineering channels.
- Destroy entire document when no longer needed, recalled, or obsolete.

1.2 Required Documents

Document	PN	Location
Safety Notices http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7hdx/G229-9054.pdf	Document #G229-9054	InfoCenter *

Table 2 Required Documents

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

1.3 Related Documents

Document	PN	Location
Power775 BPC FSP Command Line Procedure		Appendix A

Table 3 Related Documents

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

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1.4 Acronyms / Abbreviations

Acronym/Abbreviation	Definition	Details
BPA	Bulk Power Assembly	BPE populated with BPCH, BPD, BPRs, & BPFs
BPCH	Bulk Power Controller Hub	Referred to as BPC on the HMC
BPD	Bulk Power Distributor	
BPE	Bulk Power Enclosure	
BPF	Bulk Power Fan	
CB	Circuit Breaker	Branch circuit wall CB or PDU CB is part of customer's facilities power infrastructure
CEC	Central Electronics Complex	Also referred to as the NODE-P7IH on the Rating Labels
DCCA	Distributed Converter and Control Assembly	The Power Supply for CEC and DE are called the CEC DCCA and DE DCCA, respectively
DE	Disk Enclosure	
EDFI	Error Detection / Fault Isolation	Power/Thermal firmware diagnostic function
FRU	Field Replaceable Unit	
FSP	Flexible Service Processor	
GPFS	Global Parallel File System	IBM's file system utilizing software RAID
HDD	Hard Disk Drive	This also means hard drive
HMC	Hardware Maintenance Console	
HPC	High Performance Computing	
LED	Light Emitting Diode	
LIC	Licensed Internal Code	Specifically Power/Thermal firmware in this procedure's context
MTMS	Machine Type, Model, Serial #	
PCB	Printed Circuit Board	
RAID	Redundant Array of Inexpensive Disks	
SAS	Serial Attached SCSI	Protocol used for direct attached storage
SFP	Service Focal Point	Service application on the HMC
SSR	System Service Representative	IBM Field Service personnel
SSD	Solid State Drive	
UEPO	Unit Emergency Power Off	

Table 4 Acronyms / 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

2.1.1 IMPORTANT

Read “Safety_Notices_G229-9054.pdf” available from InfoCenter – see Section 1.2. The following are some of the cautions that specifically pertain to this Power775 service procedure.

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)

2.1.2 IMPORTANT

Here is a danger that specifically pertains to this Power775 service procedure.

DANGER:

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



Figure 1 Hazardous Voltage, Current, or Energy

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. **If a single Disk Enclosure is powered off while GPFS is active, the file system will go into panic and become unavailable.**

2.3 Cross-Power Cable Description

Referring to the drawing in Figure 2 Cross-Power Cable Location at BPCH T5 below, the Cross-Power Cable connects each BPCH -350Vdc source together between locations U-U-P2-C1-T5 and U-P1-C1-T5 (where U is the MTMS 9125 F2C Serial #) on the front of the rack.

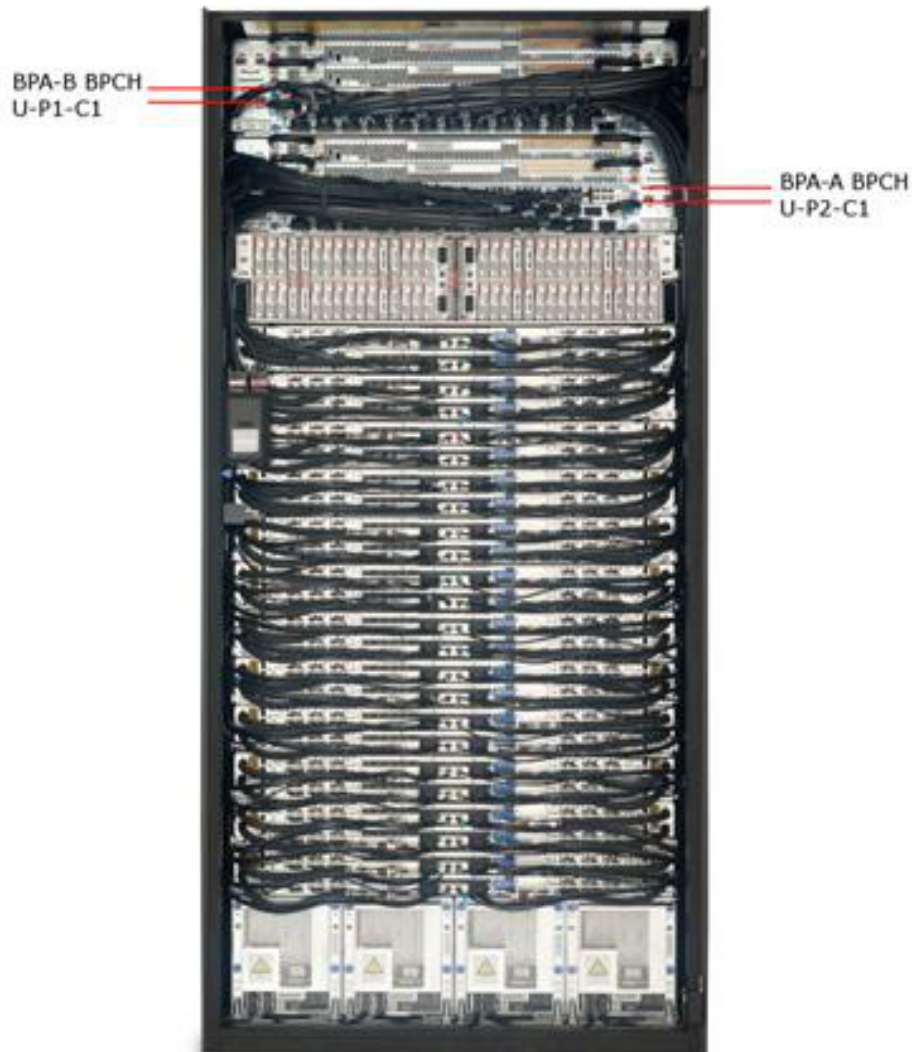


Figure 2 Cross-Power Cable Location at BPCH T5

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The Cross-Power Cable has standard 12-position (UPIC) Power Connectors and it's 960 mm / 3.15 feet long as shown in Figure 3 Cross-Power Cable below. The ends are labeled U-A33B-BPCHA-T5 and U-A33B-BPCHB-T5.



Figure 3 Cross-Power Cable

2.4 Background

2.4.1 Cross-Power Cable Function

The Cross-Power Cable bi-directionally connects the BPR output bus $-350V_{dc}$ from one BPA's BPCH over to the other side's BPCH and BPFs. The purpose is to provide input power redundancy to critical BPCH control/diagnostic/Ethernet hub circuitry and BPF cooling in the event that all BPRs within the same BPA stop providing $-350V_{dc}$

2.5 Concurrency

The Cross-Power Cable is concurrently maintainable.

2.6 Cross-Power Cable Weight

The Cross-Power Cable weighs 265.23 grams / 0.58 lbs

2.7 Required SSRs and Roles

This service procedure requires one SSR.

2.8 Estimated Service Time

This procedure normally takes approximately 30 minutes.

2.9 P7IH Hand Tool Kit P/N 74Y0988 Required Tools

3 SERVICE PROCEDURE

STOP – Do not proceed unless you have read “Safety_Notices_G229-9054.pdf” which is available from InfoCenter; see Section 1.2

3.1 Customer System Administrator

The Customer System Administrator should be made aware of this service activity, but they don't normally have specific steps to perform.

3.2 Identify and Replace Cross Power Cable ← SSR Task

1. You should have downloaded this procedure from the InfoCenter Website listed here to ensure you are using the latest version and ensure no pages are missing by verifying the last section is titled “End of Document”:
<http://publib.boulder.ibm.com/infocenter/powersys/v3r1m5/topic/p7ee2/p7ee2kickoff.htm>
2. If using printed copies of these procedures, then be sure to staple or paperclip the pages together to help keep them in the right page number sequence.
3. An HMC Service Focal Point SRC FRU Call or direction from a higher level of support should have directed you to perform this procedure. The HMC can be accessed via the keyboard/display that resides in the management rack.
4. Locate rack that requires service.
5. If the rack could not be located in Step 4 above, then light the UEPO Service Identify LED by accessing the **HMC BPC-A ASM SIDE_A** Service Processor Command Line (Refer to ‘Power775 BPC FSP Command Line Procedure’ in Appendix A of this PDF and select **SIDE_A** on the **Launch ASM Interface** window) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 28aa0001ff01
```

Expect 00aa00 returned which means the command executed properly and reported successful “UEPO Service Identify LED On” status.

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If something different is returned, then contact the next level of support. For reference, the returned “rrsdd” format hexadecimal characters can be translated as follows:

“rr” Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured
27 = Location code error
4A = Error in sent command
4B = Invalid State
95 = BPCH LIC Detected Error
96 = Mail-boxing error

“ss” Sequence Number:

aa = Arbitrary and unimportant

“dd” Return Data Definitions

00 = UEPO Service Identify LED turned on successfully. It is OK to continue with the service procedure

6. The UEPO Panel Identify Amber “!” LED should be blinking. Verify the rack MTMS (Machine Type Model Serial number) are as expected. The rack level MTMS is located on the face of the UEPO Panel (see Figure 4 below). The Green circular lightning-bolt LED indicates that the UEPO loop is complete and it should remain lit throughout the procedure.

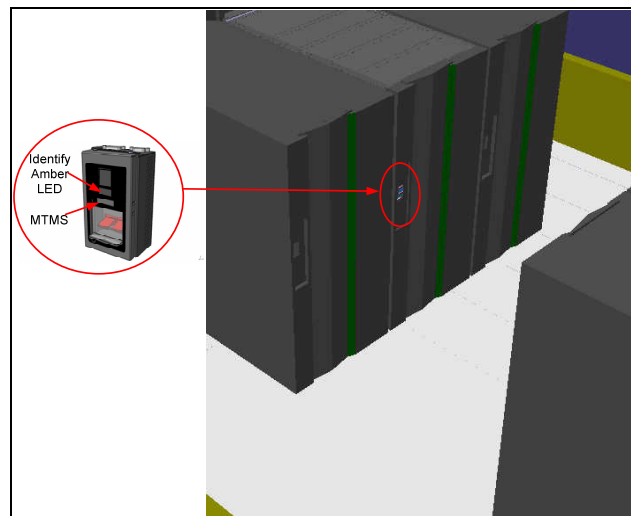


Figure 4 UEPO Panel Location on Front Door

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7. Make sure the targeted FRU is redundant by sending a Cross-Power Cable redundancy command to the BPCH FSP. To do this access the **HMC BPC-A ASM SIDE_A** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and ensure **ASM SIDE_A** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 9baa0000ff8005
```

Expect 00aa00 returned which means the command executed properly and reported successful "Redundant Cross-Power Cable" status.

If something different is returned, then contact the next level of support. For reference, the returned "rrsdd" format hexadecimal characters can be translated as follows:

"rr" Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
43 = Not valid for this FRU
96 = Mail-boxing error

"ss" Sequence Number:

aa = Arbitrary and unimportant

"dd" Return Data Definitions:

00 = Redundant status. It is OK to replace the Cross-Power Cable and continue with Step 8
01 = Non-redundant status. It is NOT OK to replace the Cross-Power Cable. Please contact next level of support

8. Open a new **ASM SIDE_B** window and make sure the Cross-Power Cable is redundant by sending a Cross-Power Cable redundancy command to the BPCH FSP. To do this access the **HMC BPC-B ASM SIDE_B** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and select **SIDE_B** on the **Launch ASM Interface** window) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 9baa0000ffc005
```

Expect 00aa00 returned which means the command executed properly and reported successful "Redundant Cross-Power Cable" status.

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If something different is returned, then contact the next level of support. For reference, the returned “rrsdd” format hexadecimal characters can be translated as follows:

“rr” Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
43 = Not valid for this FRU
96 = Mail-boxing error

“ss” Sequence Number:

aa = Arbitrary and unimportant

“dd” Return Data Definitions:

00 = Redundant status. It is OK to replace the Cross-Power Cable and continue with Step 9
01 = Non-redundant status. It is NOT OK to replace the Cross-Power Cable. Please contact next level of support

9. Issue a Cross-Power Cable deactivate command to the BPCH FSP. To do this access the **HMC BPCH-A ASM** Service Processor Command Line (Refer to ‘Power775 BPC FSP Command Line Procedure’ in Appendix A of this PDF and ensure **ASM SIDE_A** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 10aa0000ff8005
```

Expect 00aa00 returned which means the command executed properly and confirmed successful “Deactivated Cross-Power Cable” status.

If something different is returned, then contact the next level of support. For reference, the returned “rrsdd” format hexadecimal characters can be translated as follows:

“rr” Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
4A = Error in sent command
4B = Invalid State
95 = BPCH LIC Detected Error
96 = Mail-boxing error

“ss” Sequence Number:

aa = Arbitrary and unimportant

“dd” Return Data Definitions:

00 = Deactivate successful. It is OK to continue with the service procedure

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10. Issue a Cross-Power Cable deactivate command to the BPCH FSP. To do this access the **HMC BPCH-B ASM** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and ensure **ASM SIDE_B** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 10aa0000ffc005
```

Expect 00aa00 returned which means the command executed properly and confirmed successful "Deactivated Cross-Power Cable" status.

If something different is returned, then contact the next level of support. For reference, the returned "rrsdd" format hexadecimal characters can be translated as follows:

"rr" Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
4A = Error in sent command
4B = Invalid State
95 = BPCH LIC Detected Error
96 = Mail-boxing error

"ss" Sequence Number:

aa = Arbitrary and unimportant

"dd" Return Data Definitions:

00 = Deactivate successful. It is OK to continue with the service procedure

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11. Open the front door as shown in Figure 5 below.

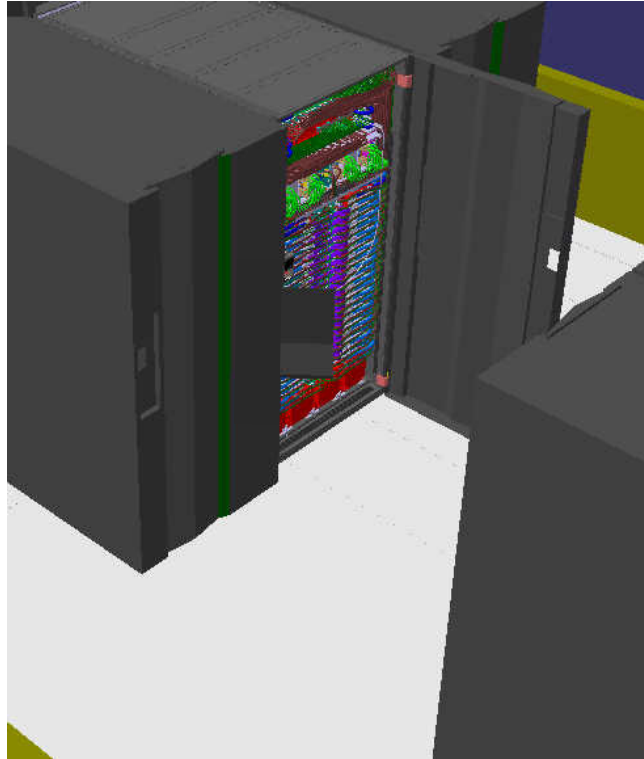


Figure 5 Front Door Open

DANGER:

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



Figure 6 Hazardous Voltage, Current, or Energy

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12. Locate both BPCHs (see Figure 7 below) and the Cross-Power Cable plugged into position T5 on each BPCH (see Figure 9 below).

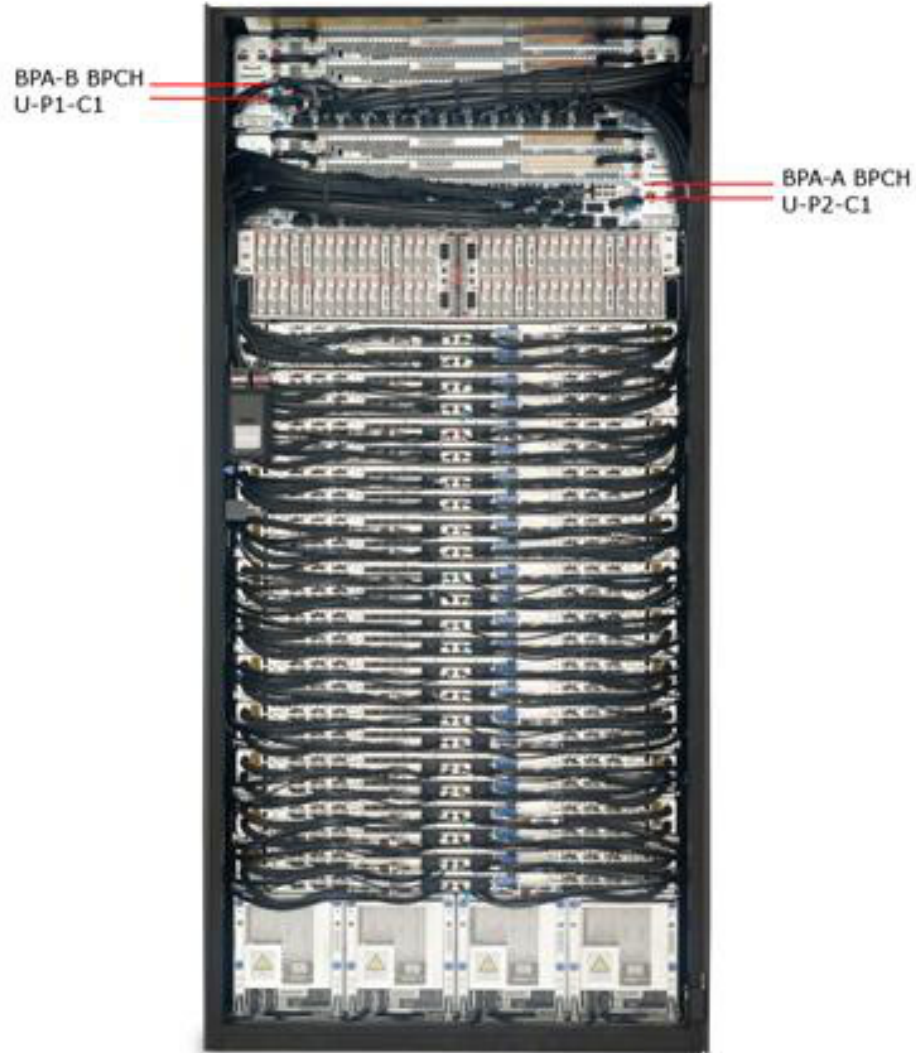


Figure 7 BPCH Locations

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Figure 8 BPCH T5 Location

13. Disconnect the Cross-Power Cable from BPCH-A T5 location U-P2-C1-T5 (where U is the MTMS 9125 F2C Serial #) by sliding the white Locking Wedge away from the cable connector, depressing the connector latch, and unplugging the cable connector (reference Figure 9 below)
14. Disconnect the other end of the Cross-Power Cable from BPCH-B T5 location U-P1-C1-T5 (where U is the MTMS 9125 F2C Serial #) by sliding the white Locking Wedge away from the cable connector, depressing the connector latch, and unplugging the cable connector (reference Figure 9 below again)

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Figure 9 Removal of Cross-Power Cable from BPCH T5

15. Unfasten any required Soft Cable Ties/velcro from the cable bundle and remove the suspect defective Cross-Power Cable from the rack.
16. Ensure location labels are present on each plug of the replacement Cross-Power cable. If they are not, then label the plugs similar to the suspect defective cable just removed.
17. Connect the replacement Cross-Power Cable to BPCH-A T5 location U-P2-C1-T5 (where U is the MTMS 9125 F2C Serial #) by plugging the T5 cable connector, seat/engage the connector latch, and install the white Locking Wedge (reference Figure 8 above)
18. Connect the replacement Cross-Power Cable to BPCH-B T5 location U-P1-C1-T5 (where U is the MTMS 9125 F2C Serial #) by plugging the T5 cable connector, seat the connector latch, and install the white Locking Wedge (reference above Figure 8 again)
19. Neatly route the replacement Cross-Power Cable and resecure the Cable Ties/velcro strips keeping the cable bundle neatly inside the frame.

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20. Issue a Cross-Power Cable activate command to the BPCH-A FSP. To do this access the **HMC BPC-A ASM SIDE_A** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and ensure **ASM SIDE_A** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):
- ```
bpccmd -c 11aa0000ff8005
```

Expect 00aa00 returned which means the command executed properly and reported successful "Activated Cross-Power Cable" status.

If something different is returned, then the returned "rrsdd" format hexadecimal characters can be translated as follows:

**"rr" Return Code Definitions:**

00 = Command executed properly  
21 = Cage Not Present / Configured  
22 = FRU Not Present / Configured.  
27 = Location code error  
4A = Error in sent command  
4B = Invalid State  
95 = BPCH LIC Detected Error  
96 = Mail-boxing error

**"ss" Sequence Number:**

aa = Arbitrary and unimportant

**"dd" Return Data Definitions**

00 = Cross-Power activate successful. It is OK to continue the service action

21. Issue a Cross-Power Cable activate command to the BPCH-B FSP. To do this access the **HMC BPC-B ASM SIDE\_B** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix B of this PDF and ensure **ASM SIDE\_B** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):
- ```
bpccmd -c 11aa0000ffc005
```

Expect 00aa00 returned which means the command executed properly and reported successful "Activated Cross-Power Cable" status.

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If something different is returned, then the returned “rrsdd” format hexadecimal characters can be translated as follows:

“rr” Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
4A = Error in sent command
4B = Invalid State
95 = BPCH LIC Detected Error
96 = Mail-boxing error

“ss” Sequence Number:

aa = Arbitrary and unimportant

“dd” Return Data Definitions

00 = Cross-Power activate successful. It is OK to continue the service action

22. Turn off the UEPO Service Identify LED by accessing the **HMC BPC-A ASM SIDE_A** Service Processor Command Line (Refer to ‘Power775 BPC FSP Command Line Procedure’ in Appendix A of this PDF and ensure **ASM SIDE_A** is active per Step 12) and enter the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -c 28aa0000ff01
```

Expect 00aa00 returned which means the command executed properly and reported successful “UEPO Service Identify LED Off” status.

If something different is returned, then contact the next level of support. For reference, the returned “rrsdd” format hexadecimal characters can be translated as follows:

“rr” Return Code Definitions:

00 = Command executed properly
21 = Cage Not Present / Configured
22 = FRU Not Present / Configured.
27 = Location code error
4A = Error in sent command
4B = Invalid State
95 = BPCH LIC Detected Error
96 = Mail-boxing error

“ss” Sequence Number:

aa = Arbitrary and unimportant

“dd” Return Data Definitions

00 = UEPO Service Identify LED turned off successfully. It is OK to continue with the service procedure

19. Confirm the UEPO Panel Service Identify LED is now off.

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23. Wait 5 minutes and then perform Steps 24 & 25 to verify the original SRC does NOT reoccur and to confirm the service procedure completed successfully.
24. Issue an BPCH-A real-time Power/Thermal SRC read-out command to the **HMC BPC-A ASM SIDE_A** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and ensure **ASM SIDE_A** is active per Step 12) by entering the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -m gi,3,s
```

Verify the original SRC problem is not listed in any of the `src.referenceCode` fields (there may be multiple fields to check).

25. Open a different ASM window and issue an BPCH-B real-time Power/Thermal SRC read-out command to the **HMC BPC-B ASM SIDE_B** Service Processor Command Line (Refer to 'Power775 BPC FSP Command Line Procedure' in Appendix A of this PDF and ensure **ASM SIDE_B** is active per Step 12) by entering the following at the command prompt (IMPORTANT: DOUBLE-CHECK THE COMMAND IS TYPED IN EXACTLY CORRECT BEFORE PRESSING ENTER BECAUSE EVEN A SINGLE INCORRECT CHARACTER COULD RESULT IN SEVERE UNINTENDED SYSTEM DISRUPTION!!):

```
bpccmd -m gi,3,s
```

Verify the original SRC problem is not listed in any of the `src.referenceCode` fields (there may be multiple fields to check).

26. If any of the `src.referenceCode` fields list the original SRC that led you to perform this service procedure, then continue with replacing the next item on the FRU call list or contact the next level of support.
27. If the original SRC error has not reoccurred and is now cleared, then close the front door of the rack and close out the HMC Service Focal Point problem as appropriate.

4 END OF POWER775 CROSS-POWER CABLE 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' (see Figure 10 HMC Frames)

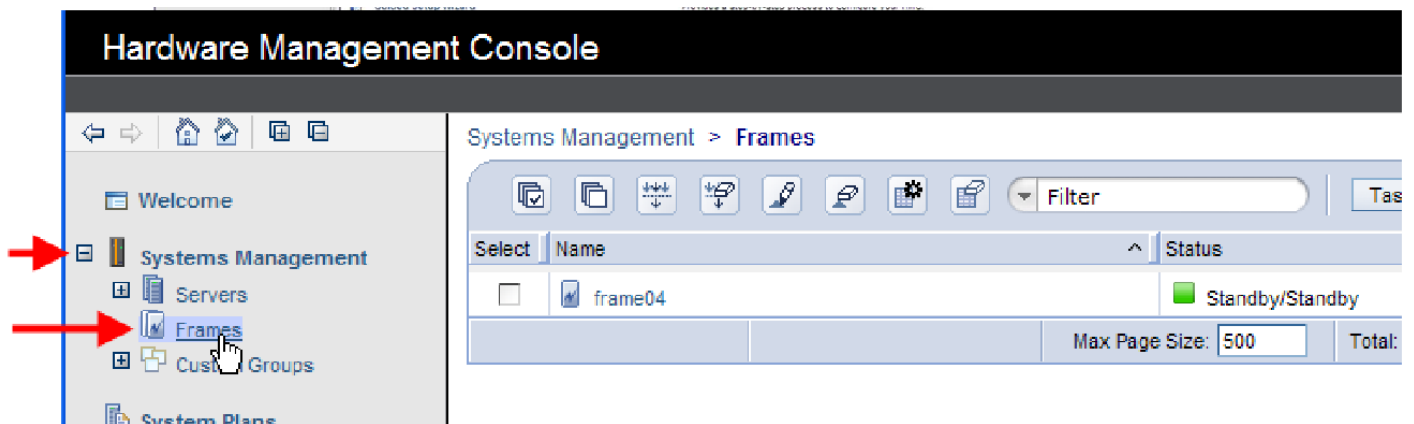


Figure 10 HMC Frames

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- From the Tasks Menu right-arrow pull-down menu, click **Operations** → **Launch Frame Advanced Systems Management (ASM)** as shown in Figure 11

Systems Management > Frames

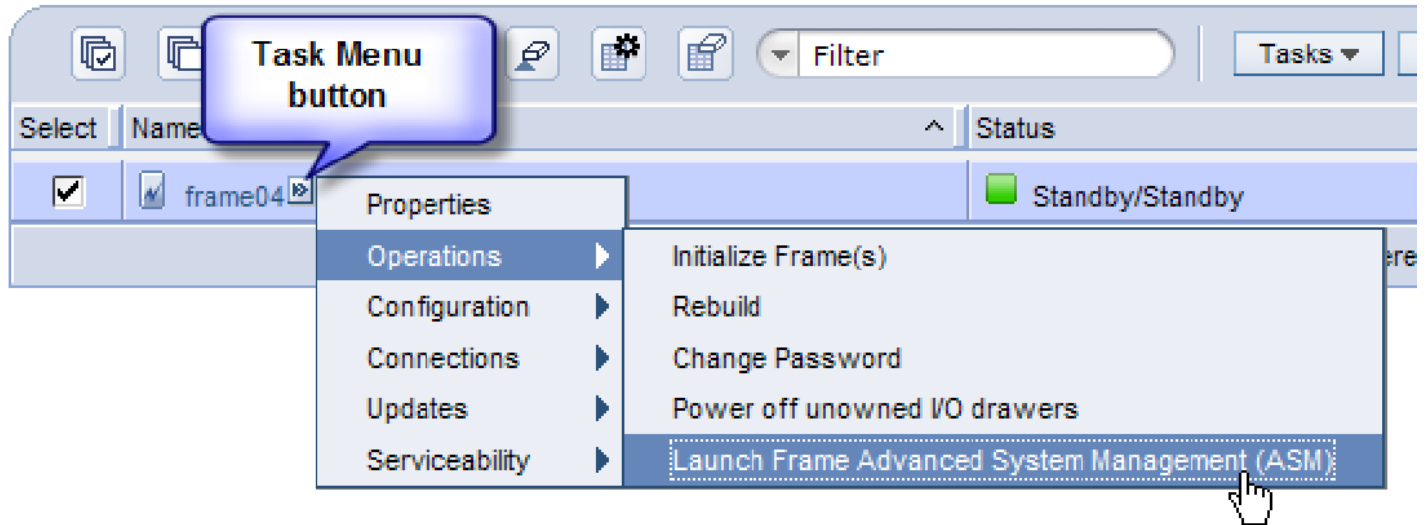


Figure 11 Launch Frame Advanced System Management (ASM)

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- From the Launch ASM Interface window, select **SIDE_A** or **SIDE_B** (whichever the instructions call for) from the 'Frame IP Address:' pull-down arrow menu, then click the **OK** button (see Figure 12 which shows the SIDE_A BPC FSP selected)

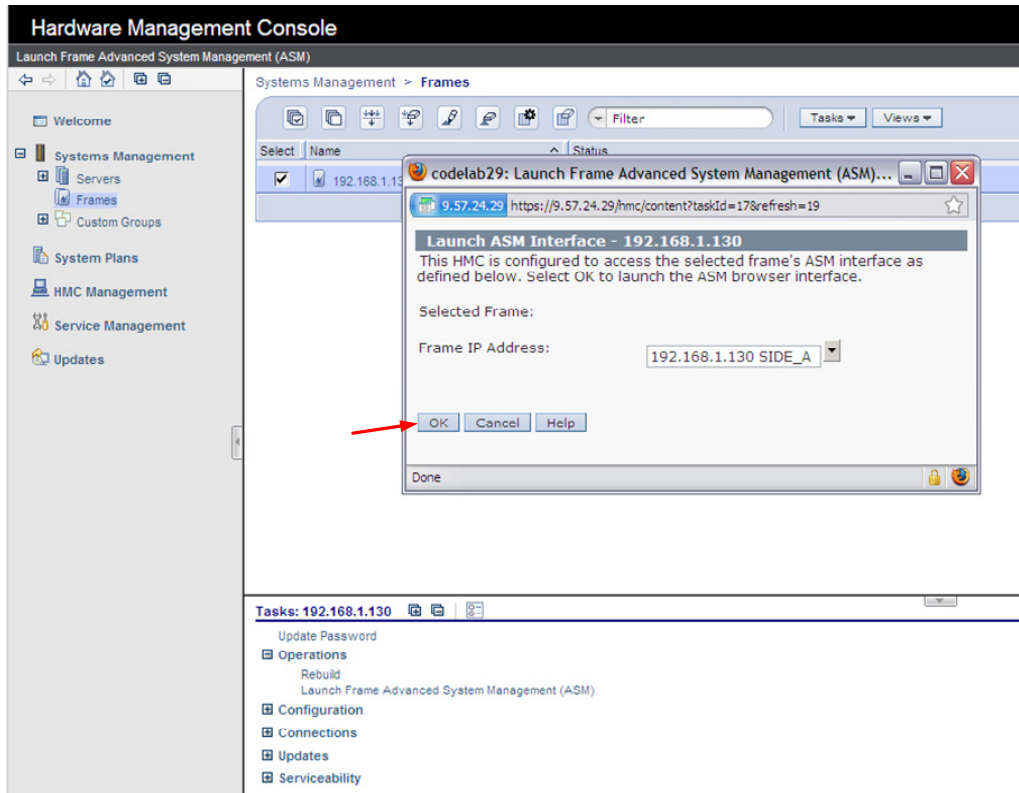


Figure 12 Select BPC FSP SIDE_A

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6. The ASM login window is presented. Acquire the necessary User ID and Password.
“celogin” requires Daily Password from the IBM Support Center.
“celogin1” might be enabled by the customer. If so, obtain the password from the customer.
7. Enter User ID
8. Enter Password
9. Click **Log in** button

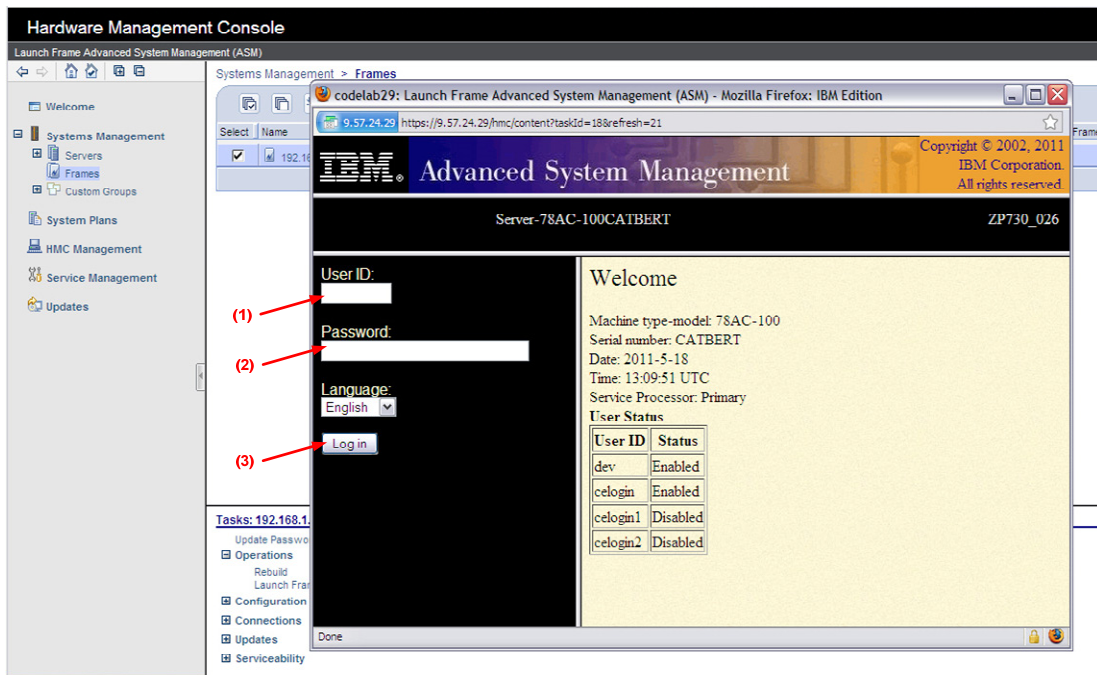


Figure 13 ASM Login

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10. Expand 'System Service Aids' + sign and Select 'Service Processor Command Line' to obtain Figure 14.

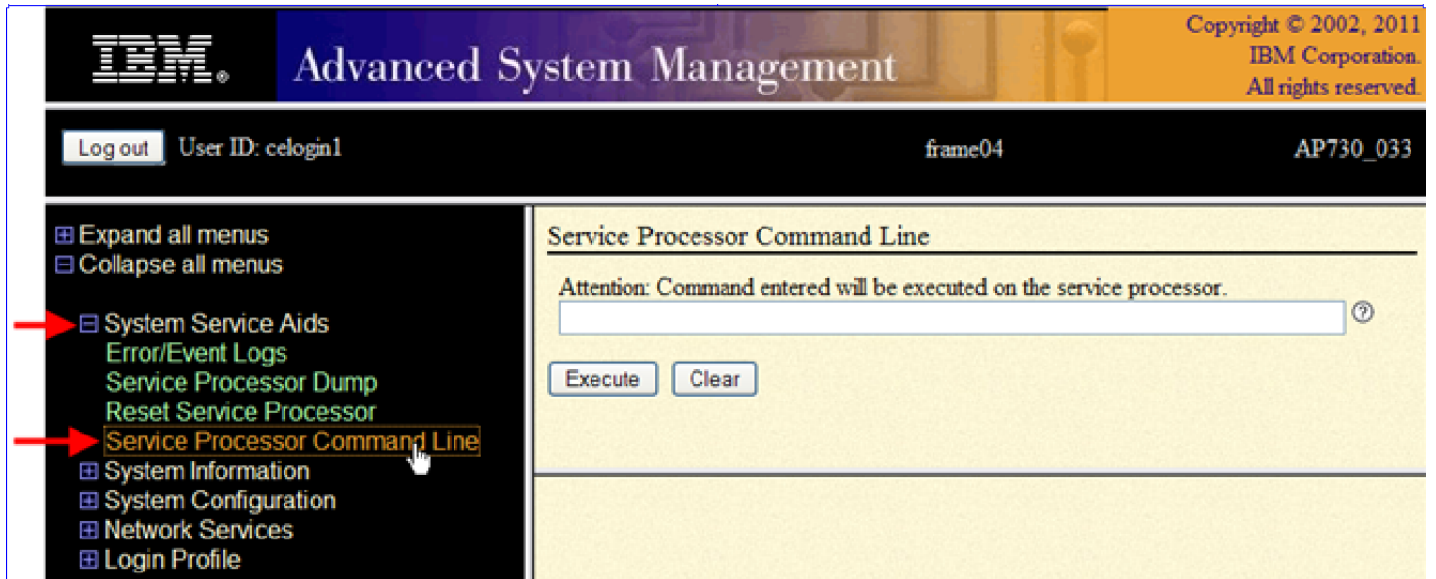


Figure 14 ASM Service Processor Command Line

11. 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).
12. If you are not sure whether you are on the ASM **SIDE_A** or **SIDE_B** BPC FSP Command Line, then enter the command **bpccmd -m GET_SIDE** to query which BPC FSP is actively connected.
13. Return to the step of the paper service procedure that directed you to this Appendix A.

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

6 END OF DOCUMENT
