



IXA Installation Problem Determination Guide

Version 1.0

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To be used in addition to the Integrated xSeries® Adapter (IXA) instructions located on the following web page:

<http://www.ibm.com/servers/eserver/series/integratedxseries/>

Look for the IXA install read me first, then use the link from that to the instructions.

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1.0 Preparing the server problems:

Symptom(s)	Possible Cause(s)	Recovery
<p>BIOS/Firmware (Remote Supervisor Adapter (RSA I), Baseboard Management Controller (BMC) or Integrated System Management Processor (ISMP)) diskette won't boot up the server.</p>	<ol style="list-style-type: none"> 1) Bad diskette? 2) Bad diskette image? 3) Server not configured to boot off diskette? 4) Downloaded the wrong version of the BIOS/RSA I Firmware? 	<ol style="list-style-type: none"> 1) Replace defective diskette and retry. 2) The downloads are executable files, they must be run to create a diskette image, you don't want to copy them directly to the diskette. Instead, run the executable file from your <u>root directory</u> and follow the prompts to create the diskette. <p>NOTE: You may have trouble creating the DOS bootable diskettes when the Use IBM Download Director is enabled. (This is just above the "I Agree" licensing option, uncheck before agreeing and is the default).</p> <ol style="list-style-type: none"> 3) Configure the server as diskette bootable in POST/BIOS setup menu. 4) You need to select the DOS bootable version of the BIOS/RSA I Firmware, not the operating system specific version.
<p>Can't connect browser to RSA II card for firmware update.</p>	<ol style="list-style-type: none"> 1) Is the RSA II Slimline installed? 2) Is DHCP addressing turned on on the RSA II? 3) Using a switch or a cross-over cable from the PC to the RSA II? 4) Ethernet address on the PC set to 192.168.70.101? 5) Subnet mask consistent on both configurations? 6) RSA II address configured properly? 7) PC Firewall preventing connection? 	<ol style="list-style-type: none"> 1) Verify this feature is properly installed. 2) Use setup advanced options to turn off DHCP addressing on the RSA II and use a hard coded address of 192.168.70.125. 3) Do what it says. NOTE: the newer servers have auto polarity detection, enabling a standard ethernet cable to work. 4) – do what it says. 5) – do what it says. 6) Under BIOS setup menu (F1 during reboot), Under Advance Settings, RSA II, set to static address 192.168.70.125. Bring up a DOS window, IPCONFIG to verify the IP address, then ping the RSA II.

		<p>7) Disable your PC firewall software till after the update is completed. WARNING: RSA II cards <u>CANNOT</u> be flashed / updated using the Update Express CD , the CD will tell you it has worked , will show you the new BIOS level , but will never talk to the IXA correctly , giving you no IOA or associated adapters below it reporting in on the WRKHDWRSC *CMN command.</p>
RSA II firmware won't install.	1) Wrong download?	<p>1) RSA II cards use packet files for the firmware updates. The files are named *****US.PKT. Recheck the download being used, check IXA installation documentation for what to use. Retry with the new files.</p> <p>NOTE: you must use a laptop connected with either a cross-over cable or through a switch to the ethernet port on the RSA II card. Do not use the update express CD to do this.</p>
Server won't power on or reboot.	RSA II User ID and password have been changed?	<p>1) Use a paperclip and reset the RSA II defaults using the hole in the tailstock of the RSA II. See picture #1 at the end of the document. NOTE: RSA II SlimLine doesn't have this reset button</p> <p>2) Use the RSA II GUI (requires knowledge of the user ID and password and reset them to USERID and PASSWORD (Zero, not O).</p>
"Update All" RSA I firmware option fails.	Was this a "previously used" RSA I card?	Manually apply the 5 pieces of firmware instead of using the Update All option.

2.0 IXA Card Installation Problems:

Symptom(s)	Possible Cause(s)	Recovery
IXA card won't fit into the defined slot.	<ol style="list-style-type: none"> 1) Is the blue card extender handle removed? 2) Black and orange slot switches opened? 3) Proper model IXA for the server being installed? 4) Latches on the xSeries® slots for the IXA making good contact? 	<ol style="list-style-type: none"> 1) Check the IXA installation document, the blue card extender handle may need to be removed with a T10 Torque wrench (included in IXA kit). 2) Open the black and orange slot switches to allow card to be inserted. 3) Use the proper model IXA for the server being installed (see web page link on the title page of this document). See the web page for details. See pictures #4 & 5 at end of document. The wrong IXA card won't fit in the slots of non-supported servers. 4) Check latches on the xSeries® slots for the IXA, latches must be down flat for good switch contact. Flange on IXA tailstock may not be inserted in the hole in xSeries® frame. See pictures # 2 & 3 at the end of the document.
No LED on IXA card when xSeries® server is plugged in for the <u>first</u> time.	<ol style="list-style-type: none"> 1) Card plugged in the proper slot? 2) IXA installed while the xSeries® had power and burned out? 3) Card not fully inserted into the PCI slot? 4) Jumper on xSeries® backplane not moved to "enable standby power" position?" 5) Small flange on IXA tailstock not inserted in hole on back of server frame, preventing the IXA from being completely seated? 	<p>FOR ALL – Must power off the iSeries® to correct these situations.</p> <ol style="list-style-type: none"> 1) Verify card placement in the documentation 2) IXA cards are not hot pluggable. (Can not even have power cords plugged into the xSeries® unit.). Order a new card. 3) Card may not be fully inserted into the PCI slot connections. Also see prior problem (above) cause #3. 4) Set jumper on xSeries® backplane. See the IXA installation documentation for the specific xSeries® server. 5) Adjust card so small flange on IXA tailstock gets inserted in hole

	6) IXA plugged into slot 5 on xSeries® 235 (For models 11X, 1AX, 21X, 2AX, 31X, 3AX, 41X, 4AX and 6AX, use card position 4.)?	on back of server frame. See pictures #2 & 3 at end of the document. 6) Some x235 motherboards have problems supplying standby power to IXA cards, move the IXA to slot 4 and try it there - no jumpers are required to use slot 4.
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3.0 Server startup Problems:

Symptom(s)	Possible Cause(s)	Recovery
xSeries®' power indicator blinks, but the xSeries® isn't being powered on by the iSeries® during the IPL of iSeries®.	<ol style="list-style-type: none"> 1) SPCN download completed? (check the Product Activity Log for SRC1xxx9107 logged indicating that SPCN download was started and SRC1xxx 91DD for good completion (logging on iSeries® only, not i5/OS)). 2) RSA card installed in the xSeries® server? 3) Good connection between RJ485 cable from the IXA to the Remote Supervisor Adapter (RSA)? 4) Loaded BIOS, then RSA firmware and co-req firmware? 5) SPCN cabled properly? 6) New xSeries® AND matching PTFs? 7) RSA II user ID and/or password changed from the default values? 8) Are PAL entries of 1000 9021 present? 9) IXA card in the correct slot in the xSeries®? 	<ol style="list-style-type: none"> 1) Check IXA LED, if blinking, wait for SPCN download to complete (check Product Activity Log for 1xxx 91DD SRC for good completion). Download can take 15-25 minutes per card. 2) RSA card must be separately installed in some of the xSeries® servers. The IXA talks to the RSA to send power commands. 3) Check RJ485 cable from the IXA to the Remote Supervisor Adapter (RSA/RSA II): right port (check documentation: some servers plug directly into the server, others plug into the ASM Interconnect Module)?, good connection? NOTE: on the xSeries® 365 server, the RSA II serial port setting for COM2 has to be set to ASM Interconnect. This is a requirement. (See steps 15 & 16 in the IXA installation guide under Installing RSA II firmware for details). 4) Check Product Activity Log for SRC1xxx8940 or SRC1xxx8942 (RSA was not flashed with firmware): Load BIOS, then RSA firmware and co-req firmware (BMC and/or ISMP). See

		<p>Example #4 at end of document.</p> <ol style="list-style-type: none"> 5) <u>iSeries®</u> uses SPCN string to/through each tower/IXA. <u>i5</u> uses a loop. 6) New models require PTFs to recognize them. Check the web page. The PTFs are needed in the primary AND target secondary partitions (if applicable). 7) Must be set to USERID and PASSWORD (zero, not O, case sensitive). Use paperclip in reset hole on tailstock of RSA II to restore default values. See picture #1 at the end of the document. 8) Check the RSA II serial port setting for COM2, it has to be set to ASM Interconnect, when present. (See steps 15 & 16 in the IXA installation guide under Installing RSA II firmware for details). The iSeries® should power the server on after this. 9) Check documentation: install the IXA card in the correct slot in the xSeries®.
HSL failure messages after installing the IXA card.	<ol style="list-style-type: none"> 1) Cable connections tight? 2) HSL cable failure? 	<ol style="list-style-type: none"> 1) Check the HSL cable connections for tightness. Watch out for missing thumbscrew inserts or inserts that are the wrong size. Replace missing/wrong pieces. 2) Use the System Service Tools (SST) interface under Hardware Service Manager to verify the HSL loop cables. See Example #3 at end of document. Replace failing cables.
IXA IOP never appears on WRKHDWRSC *CMN	<ol style="list-style-type: none"> 1) IXA attached “hot” to an iSeries® without required IPL? (270 and 8xx systems, i5 supports concurrent adds.) 2) IXA resource not allocated to partition/profile from i5 Hardware Management Console (HMC)? 3) xSeries® powered on 	<ol style="list-style-type: none"> 1) IPL the iSeries® to find and add the IXA to the system. 2) Use the HMC to dynamically add the resource for the current IPL and to add it “as desired” for future IPLs. See example #2 at the end of the document. 3) The iSeries® needs to power on the xSeries® via SPCN. PWRDWN SYS, manually power

	<p>manually via the white power on button on the xSeries® server?</p> <p>4) RSA II restarted manually thru the RSA II interface during iSeries® IPL?</p> <p>5) Missing required PTFs?</p>	<p>off the xSeries®, re-verify all setup steps, then IPL the iSeries® and let it power on the xSeries®.</p> <p>NOTE: On iSeries®, if an IXA has previously been recognized, or on i5 whether it has or not, manually power down xSeries®, pull all power cords, let sit for 2 minutes, then re-plug the power cord(s) and let iSeries®/i5 power on the xSeries®.</p> <p>4) The SPCN download may have been interrupted by this action. On iSeries®: Look for SPCN download completion SRC: 1xxx 91DD in PAL. If not there, PWRDWN SYS, manually power off the xSeries®, then IPL the iSeries® and let it power on the xSeries®. If the SRC is there, look for other symptoms listed here.</p> <p>5) MF34048 for v530 of OS/400 and MF34047 for v520 of OS/400 need to be applied. Please see the integrated server web page for PTFs relating to new xSeries® servers, specific fixes or the <u>IXA read me first</u>.</p>
<p>IOP and IOA for IXA in xSeries® 445 shows up under WRKHDWRSC *CMN as Not Operational.</p>	<p>xSeries® problem with too many communications cards?</p>	<p>Call hardware support and ask about Retain tip H18491 having to do with Broadcom 5704 cards in certain slots.</p>
<p>IOP is showing up under WRKHDWRSC, but no IOA.</p>	<p>1) Latches on the xSeries® slots for the IXA making good contact?</p> <p>2) SPCN download completed? (iSeries®: Check in Product Activity Log (PAL): 1xxx 91DD SRC for good completion).</p> <p>3) Loaded BIOS, then RSA firmware and co-req firmware?</p> <p>4) PreReq PTFs in place?</p> <p>5) Timing issue?</p>	<p>1) Check latches on the xSeries® slots for the IXA, latches must be down flat for good switch contact. Flange on IXA tailstock may not be inserted in the hole in xSeries® frame. See pictures # 2 & 3 at the end of the document.</p> <p>2) Wait for the SPCN download to complete or look for failure SRC: 1xxx 9109, in the PAL.</p> <p>3) Load BIOS, then RSA firmware and co-req firmware. See Example #4 at end of document.</p> <p>4) To support the RSA II adapter: V5R2M0, verify MF34047 or</p>

		<p>supersede is applied. V5R3M0, verify MF34048 or supersede is applied. Please see the integrated server web page for PTFs relating to new xSeries® servers, specific fixes or the IXA read me first.</p> <p>5) Can try to re-IPL the IOP to acquire the IOA.</p>
Server fails to vary on.	<ol style="list-style-type: none"> 1) Missing/wrongly configured Point to Point TCP interface? 2) Server reboot not completing? 	<ol style="list-style-type: none"> 1) Check/reconfigure the Point to Point TCP interface (CFGTCP option 1) 2) Check on the iSeries® for Product Activity Log entries SRC B012-6210, 2689B4B1. Check for latest IXA PTFs, for B4B1 only, check server console for Power On Self Test errors.
The configuration of an iSeries®' partition's buses are no longer correct after adding an IXA to the system.	IXA's can possibly get added/re-added to an iSeries®' partition configuration and throw off the bus configuration. This could be an unsupported concurrent tower add	<p>Whenever adding an IXA to a partitioned system, make the IPL a manual one and come up to DST to verify that the partition configuration has not been altered by the new addition. If it has, you need to rearrange the information back to the customer's original configuration. See example #1 at the end of the document.</p> <p>NOTE: For iSeries® 270 and 8xx systems, if the xSeries® did not report in and the iSeries® was IPL'd above DST, problems can be expected. On their initial IPL, the IXA/xSeries® must report in before DST. If the IXA is <u>replaced</u> after the iSeries® is IPL'd and the xSeries® did not report in, then the new IXA reports in, this is considered a HOT add. In this case, the xSeries® can not be added until the iSeries® is powered off/on.</p>

4.0 Post - Hardware Installation Problems:

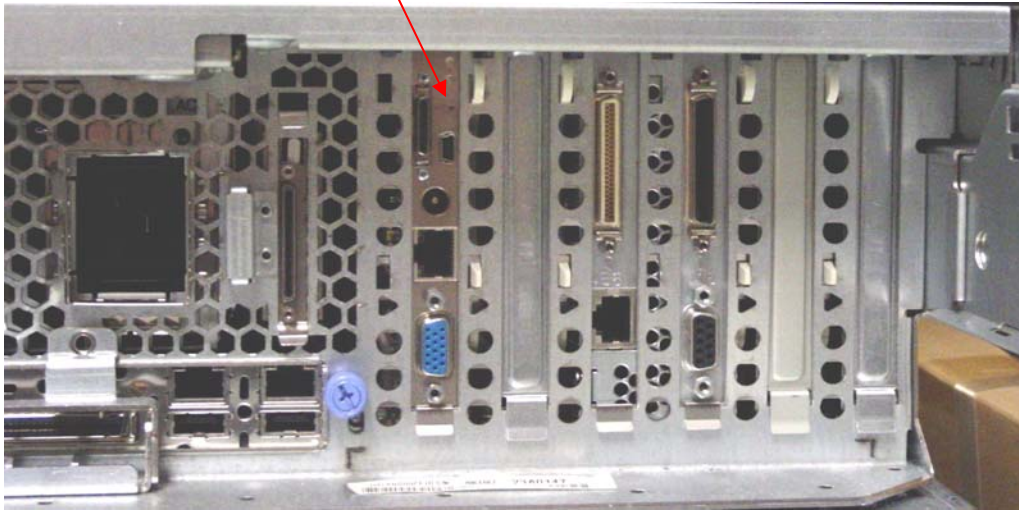
Symptom(s)	Possible Cause(s)	Recovery
Intermittent failures on an IXA	Have a faulty IXA that you want to replace?	See Example #5 at the end of this document.

<p>xSeries® video not working after IXA install.</p>	<ol style="list-style-type: none"> 1) RSA II being used? 2) Video adapter device drivers missing/wrong? 	<ol style="list-style-type: none"> 1) When the RSA II is installed, this disables the onboard display adapter port, check that the monitor is connected to the RSA II port. 2) Locate and install the video adapter device driver that matches. Update Express is a good place to start. Look for the ATI Radeon 7000_RV100 Video Adapter BIOS Dos flash (YI002519.001 23k4638.exe) NOTE: not all servers have same video chip, so you may have to locate the driver.
<p>After software install, device drivers are missing.</p>	<ol style="list-style-type: none"> 1) *FULL install done? 2) Server Guide down level? 	<ol style="list-style-type: none"> 1) *BASIC install option is recommended for IXA software installs and Server Guide installation is what is used. Next time use this. For now, locate missing device drivers on the web and download them to the server for installation. The correct version of the Update Express CD will work here. 2) Server Guide may be down level and not have all drivers for server. Download the correct level for next time. For now, locate missing device drivers on the web and download them to the server for installation.
<p>Server Guide or Update Express CD's won't work.</p>	<ol style="list-style-type: none"> 1) CD image created correctly? 2) Server not configured to boot off CD? 	<ol style="list-style-type: none"> 1) Both of these images are downloaded as .iso files. They should not be copied directly to the CD as data. They must be burned to the CD with an application that can handle the .iso files. Recreate the CD and retry. 2) Configure server with CD as a possible boot source in POST/BIOS setup WARNING: RSA II cards CANNOT be flashed / update using the Update Express CD, the CD will tell you it has worked, will

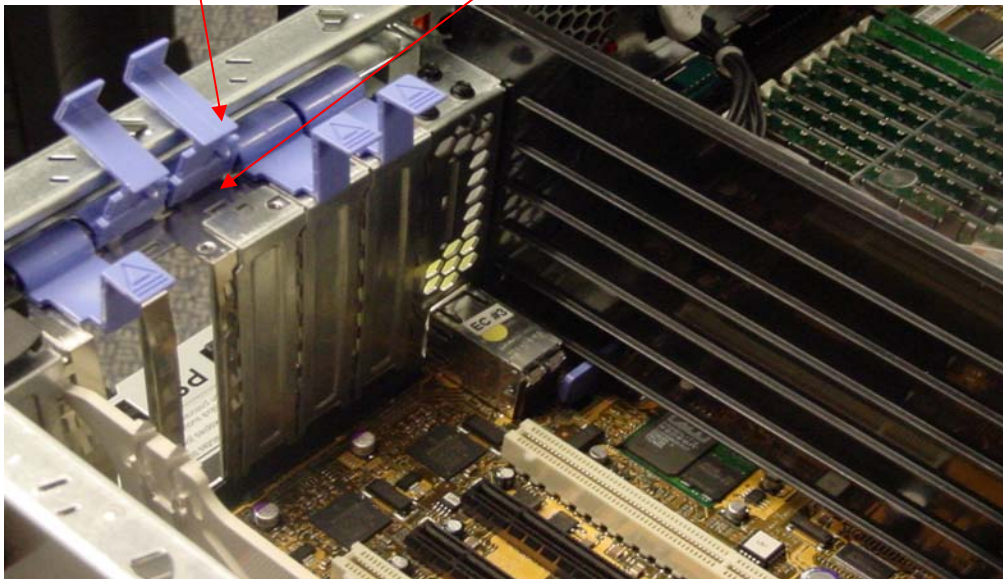
		show you the new firmware level, but will never talk to the IXA correctly, giving you no IOA or associated adapters below it reporting in on the WRKHDWRSC *CMN command.
System Error light (!) or the Information light (i) is lit on the front of the xSeries® server. (May just be an LED on some servers)	<ol style="list-style-type: none"> 1) Possible hardware failure. 2) Log files have filled up to notification level? 	<ol style="list-style-type: none"> 1) Locate the light path diagnostics on the server's bezel or covers. Determine which light is on; locate corresponding diagnostic information on the covers of the server. If hardware, call it in. 2) If logs, clear the System logs from the setup menu upon reboot. There may be an option to do this from the RSA II browser interface, just don't leave the ethernet cable plugged in when you are done, this is not recommended.

5.0 Pictures:

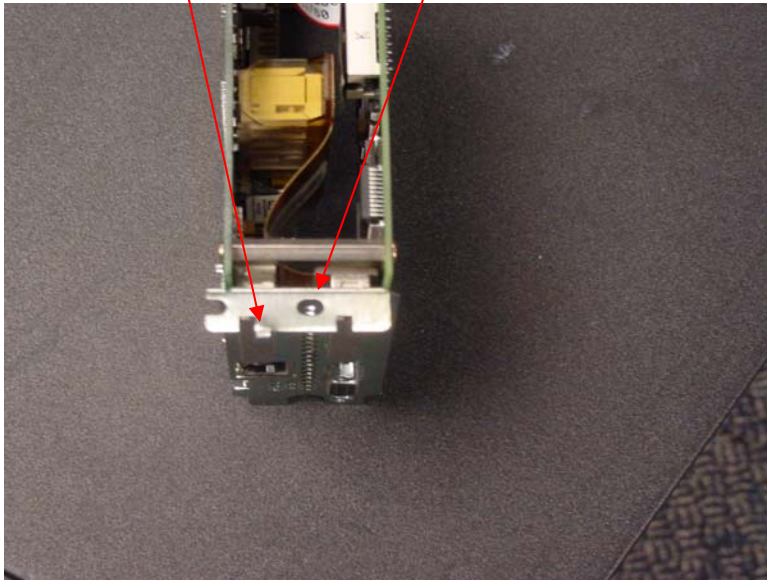
Picture #1: RSA II reset switch



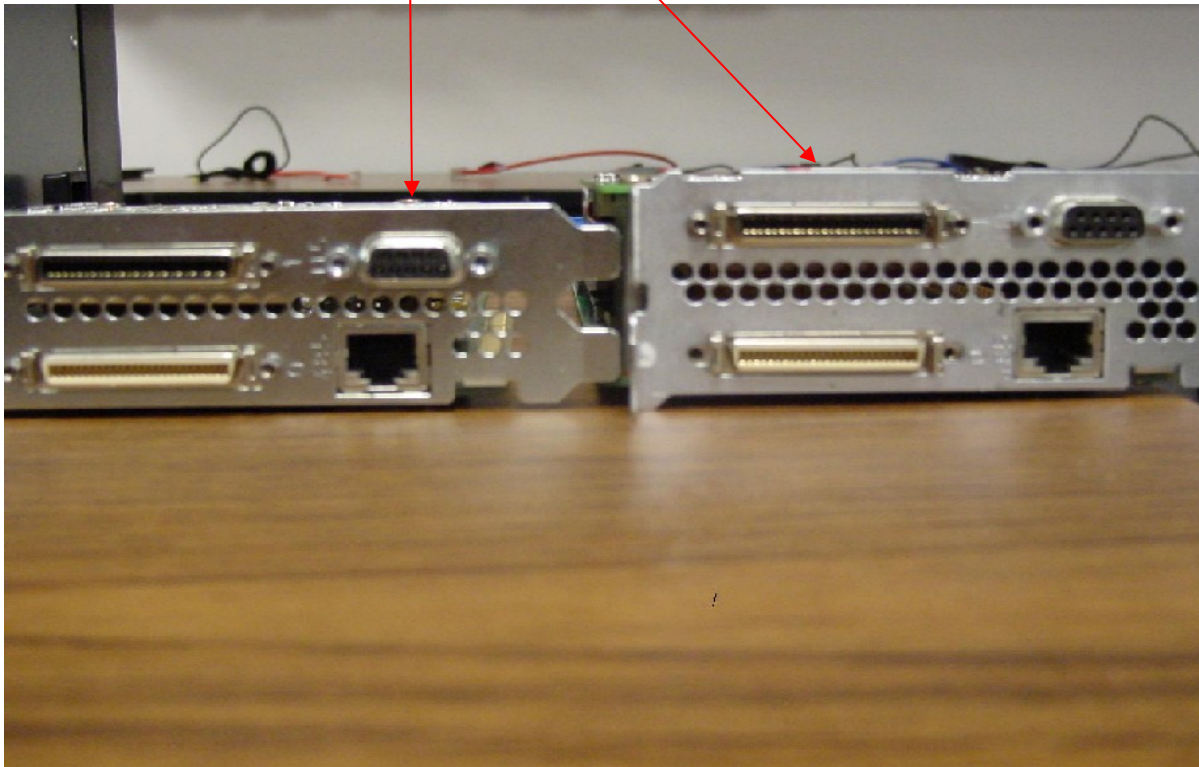
Picture #2: Stub on xSeries® latch and hole on xSeries® for tailstock flange.



Picture #3: Tailstock flange and hole in tailstock of IXA (for stub on xSeries® latch)



Picture #4 IXA comparison: 1519-200 versus 1519-100 (note the thickness of the cards)



Picture #5 IXA comparison: 1519-200 (handle missing) versus 1519-100 (side view). Note that the color of the heat sinks are different.



6.0 Examples:

- 1) Partition Configuration example: Suppose the customer's LPAR configuration, before adding the IXA, contained buses 23, 24 and 25. You should document these buses prior to adding the IXA. After adding the IXA, you should IPL in Manual mode to the Dedicated Service Tools (DST) interface. Once there, go under the partition information and verify that the original configuration still matches what you wrote down. If it doesn't match, contact hardware support. If it matches, look for the new IXA and move the resource to the target partition it will be running in.
- 2) All resources (IXS and IXA included) report in to the Managed Server on the Hardware Management Console (HMC) on an i5 server that is partitioned or is using the capacity on demand support. They are available to be allocated to any partition profile. Go to the profile you want them to be included in.
 - a. If its associated partition is active, you can dynamically add it for the current IPL (see the rest of this example on how to add it for the next IPL).
 - i. Right click on the partition and select **Dynamic logical partitioning -> Physical adapter resources -> Add**.
 - ii. Locate the resource you want to add within a frame (tower or CEC) where your IXS is located, or the IXA's frame (these show up as UTMP-0x) by expanding the widgets next to the frames shown.
 - iii. Select the frame, then select the resource. Click **OK**. Eventually the resource will show up under WRKHDWRSC *CMN (be patient, it is rebooting).

- b. If the partition is not active, or you want to allocate the resource for the next IPL, right click on the partition profile and select the **Physical IO tab**.
 - i. Then in the top window locate either the frame (tower or CEC) where your IXS is located, or the IXA's frame (these show up as UTMP-0x) by expanding the widgets next to the frames shown.
 - ii. Select the frame and click on **Add as desired** to allocate it IF it is available at the next IPL (ie, not already allocated by another partition), **OR Add as required** saying it has to be available or the partition will not come up. The resource should move to the bottom window as part of your partition profile.
- 3) High Speed Link (HSL) problems can be analyzed using the System Service Tools (SST or DST) interfaces. Use the Hardware Resource Manager service function to review the state of the HSL links between the frames to verify they are operating. For SST:
- a. Option 1 Start a service function
 - b. Option 7 Hardware Service Manager
 - c. Option 2 Logical hardware resources (buses, IOPs, controllers...)
 - d. Option 4 High-speed link resources
 - e. Cursor down to the HSL Loop entry that the IXA is installed on and enter 12 for Display Port Information.
 - f. Verify the operational status of the various ports/connections that are shown.
 - g. If both HSL connections to the IXA card are not operational, then:
 - i. The IXA card may not be properly seated in its slot.
 - ii. The HSL connections may not be tight enough.
 - iii. The IXA card may be bad.
 - h. Correct any problems shown.
- 4) On the newer xSeries® models, there can be additional Advanced Systems Management firmware that needs to be loaded called Baseboard Management Controller (BMC) or the Integrated System Management Processor (ISMP). Which one is required, or if any are required, depends upon the model of xSeries® you are installing the IXA into. Look for them as co-req downloads to the RSA II Slimline firmware. Both of these are loaded via bootable diskettes. Their application is either automatic or use simple steps. Download them and create a bootable diskette just like you do for the BIOS diskettes.
- 5) **DO NOT REPLACE** an IXA with all systems powered off, on the next ipl the iSeries® will re-number the buses as the new IXA card will have a different serial number and it will be assigned a new bus number. This can cause an entire LPAR system to fail. Instead, IXA cards must be replaced concurrently via the System Service Tools (SST) interfaces or via the Hardware Management Console (HMC).
- a. You should walk the High Speed Link (HSL) loop to prove there are no errors on it (except those that come from the IXA you want to replace) prior to using concurrent maintenance. This is done to ensure you aren't accidentally disabling multiple HSL segments.
 - b. Now power off the xSeries® from the iSeries® via SST or the HMC. You will get a flashing power light on xSeries® you want to work on, power off message appears very quickly on the iSeries®, please wait 2 minutes, before doing anything.

- c. Check to make sure you haven't powered off the wrong xSeries®: if the power light is still on solid and the message on the iSeries® says the xSeries® is powered off and you have waited 2 minutes and you have walked the HSL loop to prove the only error on loop was from the IXA you want to replace, then you have probably chosen the wrong IXA. You need to locate the unit you did power off, unplug the power cords (s) for 2 minutes. Then plug them back in and let the iSeries® power the server back up itself. Check the IOP/IOA resource names and try again.
- d. You must remove the power cords from the xSeries® (they maybe 2 of them, some have dual power).
- e. You can then remove the System Power Control Network (SPCN) cable, the RS-485 cable, and the 2 HSL cables.
- f. You can now replace the IXA card, with a new one. BUT put the cables back in THIS ORDER ONLY:
 - i. The 2 - HSL cables, then the RS485 cable, then all the power cords to xSeries® (there maybe 2), then the SPCN last.
- g. The new IXA card will keep the serial number of the old one until the next IPL, but the buses will be intact and the LPAR configuration is left unchanged, as the same bus is used.

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