



International Technical Support Organization

Enhanced Driver Maintenance

www.ibm.com/redbooks

System z Hw Update



© 2007 IBM Corporation. All rights reserved.

ibm.com/redbooks

International Technical Support Organization



Notices

This information was developed for products and services offered in the U.S.A.

IBM may not offer the products, services, or features discussed in this document in other countries. Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:
IBM Director of Licensing, IBM Corporation, North Castle Drive, Armonk, NY 10504-1785 U.S.A.

The following paragraph does not apply to the United Kingdom or any other country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any performance data contained herein was determined in a controlled environment. Therefore, the results obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurement may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. Questions on the capabilities of non-IBM products should be addressed to the suppliers of those products.

This information contains examples of data and reports used in daily business operations. To illustrate them as completely as possible, the examples include the names of individuals, companies, brands, and products. All of these names are fictitious and any similarity to the names and addresses used by an actual business enterprise is entirely coincidental.

COPYRIGHT LICENSE:

This information contains sample application programs in source language, which illustrate programming techniques on various operating platforms. You may copy, modify, and distribute these sample programs in any form without payment to IBM, for the purposes of developing, using, marketing or distributing application programs conforming to the application programming interface for the operating platform for which the sample programs are written. These examples have not been thoroughly tested under all conditions. IBM, therefore, cannot guarantee or imply reliability, serviceability, or function of these programs.


Note to U.S. Government Users Restricted Rights -- Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.



System z Hw Update

© 2007 IBM Corporation. All rights reserved.

1

ibm.com/redbooks | International Technical Support Organization 

Trademarks


The following terms are trademarks of the International Business Machines Corporation in the United States, other countries, or both:

IBM has two registered trademarks for the branding of ITSO publications. These registered marks are for the text word "IBM Redbooks" and the Redbooks logo. In a nutshell, the term Redbooks must always be used in the plural form (for both text and logo) since IBM only owns the registered mark for the plural form. Usage must follow the guidelines below:


Using the term Redbooks in written text
Redbooks are only to be referred to in the plural form, NEVER in the singular.
For the initial reference (first occurrence), you must use "IBM Redbooks®" and include "IBM" as well as the ®. For instances thereafter you may use "Redbooks" without "IBM" preceding the word or © following it.

Correct usage for written text:
In this IBM Redbooks® publication we will explore.....(® symbol required for 1st usage)
This Redbooks publication will show you.....(2nd usage or later - no ® or "IBM" needed)


Using the logo:


Redbooks (logo) 

OTHER ITSO PUBLICATIONS - Marks not yet registered
Trademark registration is a lengthy process and until we are officially registered, we cannot use the ® symbol. For those terms/logos in process, we will be using the ™ symbol. In contrast to the ® symbol (placed in the lower right hand corner), the ™ symbol is placed in the upper right hand corner. Please see examples below:

Redpaper ™
Redpapers ™
Redwiki ™
Redwikis ™ 


The following terms are trademarks of other companies:
Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.
Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.
Intel, Intel logo, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel SpeedStep, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.
UNIX is a registered trademark of The Open Group in the United States and other countries.
Linux is a trademark of Linus Torvalds in the United States, other countries, or both.
Other company, product, or service names may be trademarks or service marks of others.


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 2

ibm.com/redbooks | International Technical Support Organization 

Agenda


- Background
- Base Design
- Min/Max File
- EDM preparation
- EDM panels
- Potential EDM inhibitorsFFDC
- EDM Flow
- Additional Info when performing EDM


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 3

ibm.com/redbooks | International Technical Support Organization 

Background


- Enhanced Driver Maintenance – EDM
 - The official marketing term for CDU
- Prior to EDM, new GA Drivers/AROMs were disruptive via EC Upgrade (Alt SE Preload)
- New GA Drivers/AROMs – are never Concurrent
- EDM provides concurrent release for all future GA1+ drivers


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 4

ibm.com/redbooks | International Technical Support Organization 

Background


- Ability to concurrently install and activate a new driver
 - requires proper configuration and planning
- Ability to concurrently move from driver N to driver N+1
 - crossover points are predefined
- Ability to concurrently move from driver N to driver N+2
 - must be done serially (N to N+1, N+1 to N+2)
 - Prior to EDM, new GA Drivers/AROMs were disruptive via EC Upgrade (Alt SE Preload)
- Concurrent "back-off" is not supported
- Disruptive driver upgrades are permitted at any time
- Not every MCL bundle released will support EDM
- Like some concurrent patches
 - may need to vary off/on certain channels/devices
 - deactivate/activate CF partitions
- EDM is also referred to as concurrent driver upgrade (CDU)


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 5

ibm.com/redbooks | International Technical Support Organization 

Base Design


- New driver with totally new set of firmware ECs
 - There are 29 unique firmware EC streams.
 - A firmware driver (i.e., GAn) includes all defined firmware components.
- Based on Alternate SE Preload, Concurrent Switch, Concurrent Patch, & special enablement controls
- EDM only goes concurrently upwards
 - GA downgrade (ie. GA3 to GA2) is always disruptive.
- As with normal MCL application, No Service Required state or open problems should exist.
- ooCod and CBU can be active when performing EDM.

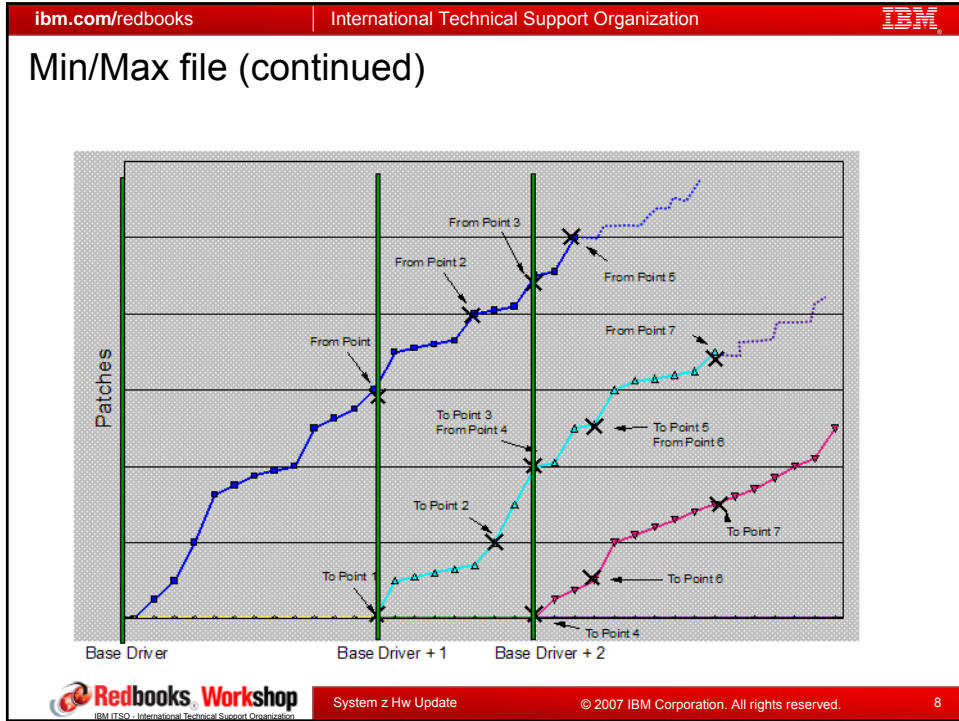
 System z Hw Update © 2007 IBM Corporation. All rights reserved. 6

ibm.com/redbooks | International Technical Support Organization 

Min/Max file

- Min/Max file is introduced as an EC stream on Driver 63
CDUMM - J99675
- Min/Max stream will contain MCL FROM and TO levels required to perform EDM. Also known as "sync points"
- Min/Max stream XML file resides on SE
- Not all MCL bundles released will support EDM.
- CE/Customer planning will involve anticipating when next GA driver/AROM will be installed to understand whether or not to install MCLs beyond current sync point.


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 7



Min/Max file (continued)

Approximation of SYNC point dates, e.g. every 8 weeks.


MCL Bundle	Target Date	EDM Supported
1	GA	Yes
2	GA + 2 weeks	No
3	GA + 4 weeks	No
4	GA + 6 weeks	No
5	Sync Point 1	Yes
6	GA + 10 weeks	No
7	GA + 12 weeks	No
8	GA + 14 weeks	No
9	Sync Point 2	Yes


ibm.com/redbooks | International Technical Support Organization 

EDM Panels

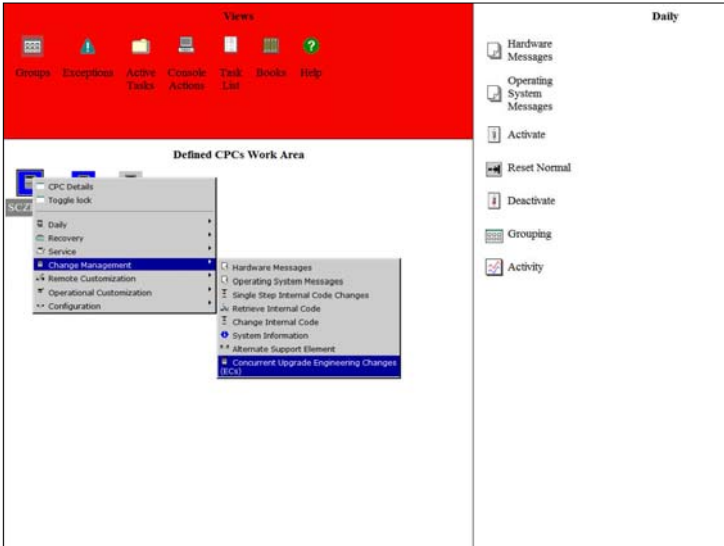
- 3 EDM actions are available:
 - Preload
 - Activate
 - Query function availability from last activate


Note: HMCs must be upgraded to DR 67 (version 2.9.2) before using EDM

 System z Hw Update © 2007 IBM Corporation. All rights reserved. 10

ibm.com/redbooks | International Technical Support Organization 

EDM Screens

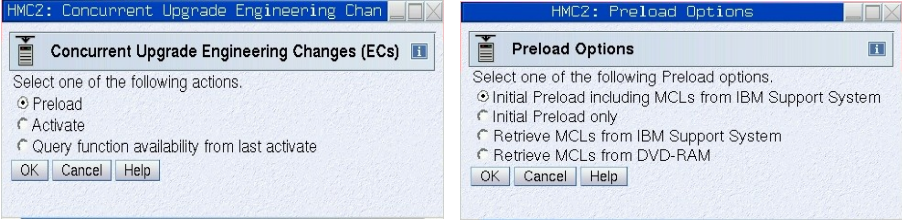


 System z Hw Update © 2007 IBM Corporation. All rights reserved. 11

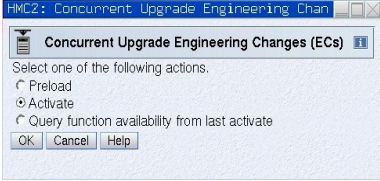
ibm.com/redbooks | International Technical Support Organization **IBM**

EDM Panels

- Preload
 - Options for loading the engineering changes in order to upgrade the CPC to a new level.



- Activate
 - After selecting a Preload option this action switches the CPC to a new level.

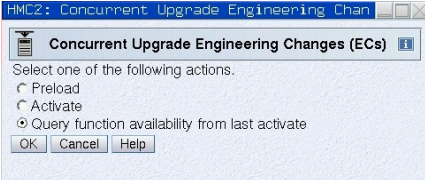


Redbooks Workshop System z Hw Update © 2007 IBM Corporation. All rights reserved. 12

ibm.com/redbooks | International Technical Support Organization **IBM**

EDM Panels

- Query function availability from last activate



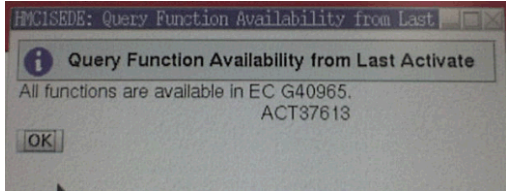
Redbooks Workshop System z Hw Update © 2007 IBM Corporation. All rights reserved. 13

ibm.com/redbooks | International Technical Support Organization **IBM**

EDM Panels

- Query function availability from last activate (continued)

Note EC number is that of the SYSTEM EC number



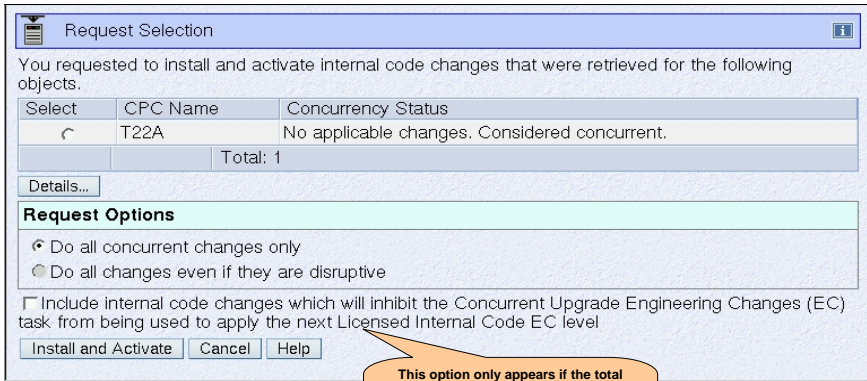
Above panel shows all functions enabled and available following EDM. (successful)

Redbooks Workshop IBM ITSO - International Technical Support Organization System z Hw Update © 2007 IBM Corporation. All rights reserved. 14

ibm.com/redbooks | International Technical Support Organization **IBM**

Potential to temporarily Inhibit EDM

- MCL Apply – Install and activate MCL Panel



Redbooks Workshop IBM ITSO - International Technical Support Organization System z Hw Update © 2007 IBM Corporation. All rights reserved. 15

ibm.com/redbooks | International Technical Support Organization | IBM

Potential to temporarily Inhibit EDM

The licensed internal code changes will be applied to or removed from the objects listed below:

T22A

Single Step Internal Code Change Options

- Retrieve and apply internal code changes
- Retrieve and apply (Clone) internal code changes to match a saved clonable level
- Apply internal code changes only
- Remove licensed internal code changes

Accept execution phase to be excluded.

Include internal code changes which will inhibit the Concurrent Upgrade Engineering Changes (EC) task from being used to apply the next < Licensed Internal Code EC level

OK Cancel Help

Single Step MCL will always show this option


Redbooks Workshop | System z Hw Update | © 2007 IBM Corporation. All rights reserved. | 16

ibm.com/redbooks | International Technical Support Organization | IBM

Code activation within certain entities


- Any outstanding Channel Config Off/On actions from Concurrent Patch Hardware Messages should be completed prior to EDM.
- During EDM, messages will be displayed after EDM SE switch.
- Following entities may require further action for code update
 - OSA adapter CHPID types (OSC, OSE, OSD, OSN)
 - Crypto (CONFIG off/on from SE Crypto Service Operations)
 - FICON and FCP Adapters
 - CF partition will need reactivation to pick up new CFCC code.
 - **Special note: CFCC level changes from (14 to 15) will generate structure size changes. This must be calculated and adjusted by operation prior to activation of a production CF LPAR.**


Redbooks Workshop | System z Hw Update | © 2007 IBM Corporation. All rights reserved. | 17

ibm.com/redbooks | International Technical Support Organization 

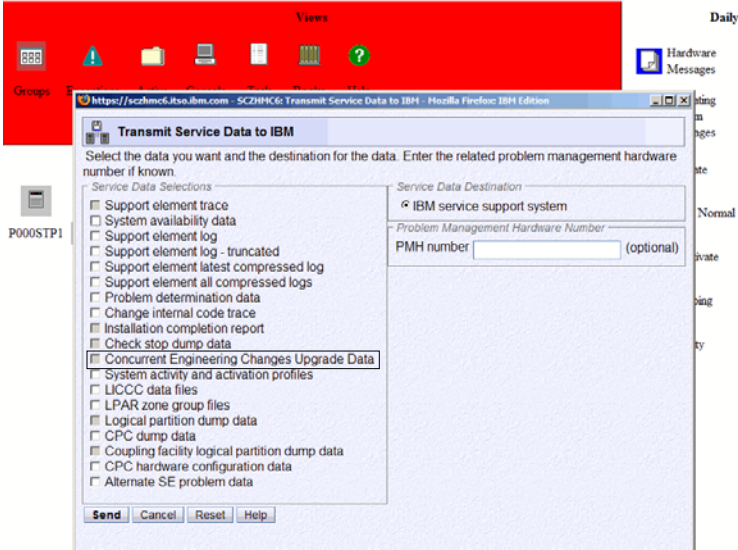
EDM internal tracking

- Panels display “in progress” intermediate messages
 - Describe operation being performed
 - provide step by step duration / elapsed times
- Nondisruptive LPAR & CEC EDM LPAR dumps
 - Pre HSA Allocation
 - Post HSA Allocation
 - Successful EDM Activate (started 10 minutes after EDM Complete panel message)
 - Failed EDM Activate (immediate)
 - These dumps are used to track EDM steps
 - Automatically gathered
 - May require manual TSD (Transmit Service Data) (new EDM selection, “Concurrent Engineering Changes Upgrade Data”)

 System z Hw Update © 2007 IBM Corporation. All rights reserved. 18

ibm.com/redbooks | International Technical Support Organization 

New EDM Transmit Service Data Option



The screenshot shows a web browser window titled "Transmit Service Data to IBM". The page contains a form with two main sections: "Service Data Selections" and "Service Data Destination".

Service Data Selections:


- Support element trace
- System availability data
- Support element log
- Support element log - truncated
- Support element latest compressed log
- Support element all compressed logs
- Problem determination data
- Change internal code trace
- Installation completion report
- Check stop dump data
- Concurrent Engineering Changes Upgrade Data
- System activity and activation profiles
- LCCC data files
- LPAR zone group files
- Logical partition dump data
- CPC dump data
- Coupling facility logical partition dump data
- CPC hardware configuration data
- Alternate SE problem data

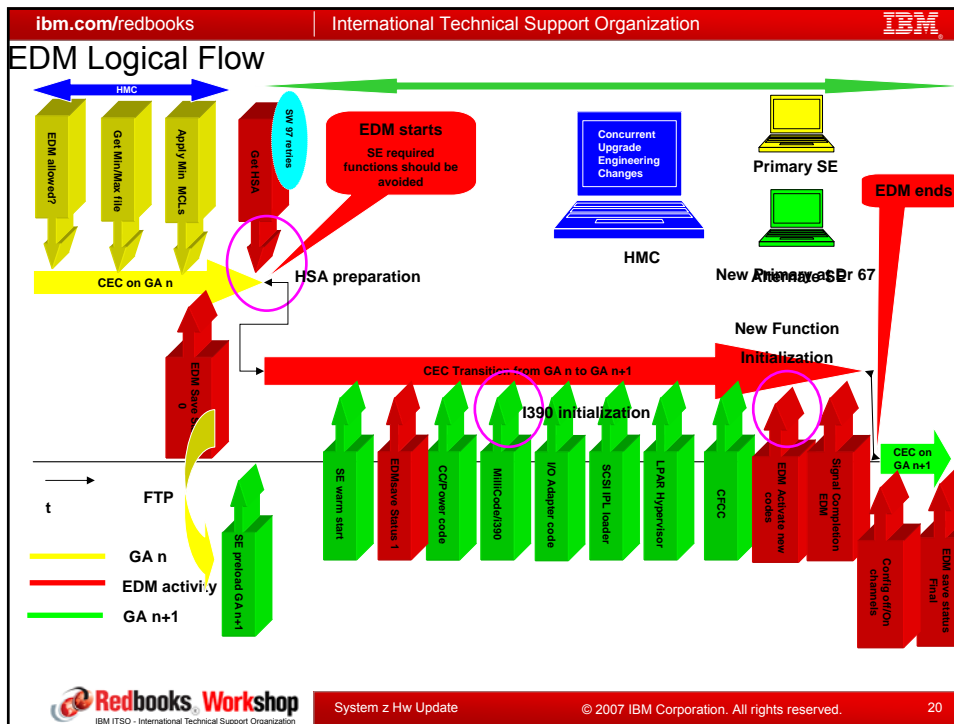
Service Data Destination:

- IBM service support system
- Problem Management Hardware Number

PMH number (optional)

Buttons: Send, Cancel, Reset, Help

 System z Hw Update © 2007 IBM Corporation. All rights reserved. 19



Additional Info relating to EDM

General Summary of EDM steps relating to z9 GA3

- SE preload
 - SE mirror is started before the load of the GA3 code
 - Saves the latest changes from primary
 - The GA3 driver load to the Alternate SE begins
 - This will take around up to 1 Hour to complete

- When “EDM Preload” competes, it’s time to start a “EDM Activate”
 - The EDM activation will take from 30-60 minutes depending on the configuration
 - Reboot of both SEs as the activation processes
 - Performs many of the concurrent patch processes

- After successful completion of the “EDM activate”, the Alternate SE will now be the Primary SE and be at the GA3 level driver
 - The former Primary GA2 SE will be an Alternate SE with the concurrent switch capability disabled

Additional Info relating to EDM

General Summary of EDM steps relating to z9 GA3

- Backup Data
 - From the HMC, perform a Backup Critical Data of the HMC and CPC (new SE code).
- Restore Alternate SE (old Primary)
 - Install disruptive AROM and reboot SE, follow prompts to install base code.
 - Install backup DVD and complete reload
- Verify required changes
 - Perform Query Coupling facility reactivations.
 - Query Channel/Crypto off/on pending.
 - Inform customer of required actions.

Additional Info relating to EDM



To avoid potential problems:

- Before starting EDM
 - Check if current level is at a proper “from” sync point
 - Make sure your Alternate SE is communicating properly with the Primary SE
 - Alternate SE – Query Switch capabilities
 - The data returned should indicate that concurrent switch is enabled
 - Make sure your CEC is fully operational
 - Resolve any outstanding Hw problems


ibm.com/redbooks | International Technical Support Organization | IBM

Additional Info relating to EDM



When problems occur:


- Generally EDM fails in one of several ways
- The Preload doesn't start
 - Primary and Alternate SEs communicating properly ?
 - Mirror operation required up front
- The Activate EDM does not start
 - GA2 Primary SE is not up to the required *from* MCL levels
 - Authorize Internal Code Changes switch not enabled 
 - The Authorize Concurrent Internal Code Changes needs to be enabled
 - CFCC patches pending on GA2
 - CF partition pending activation 
 - Channel patches pending application
 - Config On/Off

Change Management

-  Authorize Internal Code Changes
- Authorize Concurrent Internal Code Change

Change Management

-  Query Coupling Facility Reactivations
-  Query Channel/Crypto Configure Off/On Pending

 System z Hw Update | © 2007 IBM Corporation. All rights reserved. | 24

ibm.com/redbooks | International Technical Support Organization | IBM



Questions ?

 System z Hw Update | © 2007 IBM Corporation. All rights reserved. | 25

ibm.com/redbooks | International Technical Support Organization 

Thank You !

- Luiz A. Fadel
– fadel@br.ibm.com
- Ewerson Palacio
– bird@br.ibm.com



 **Redbooks Workshop**
IBM ITSO - International Technical Support Organization

System z Hw Update © 2007 IBM Corporation. All rights reserved. 26