

Everything You Always Needed to Know About zEnterprise Server Firmware Support and Maintenance

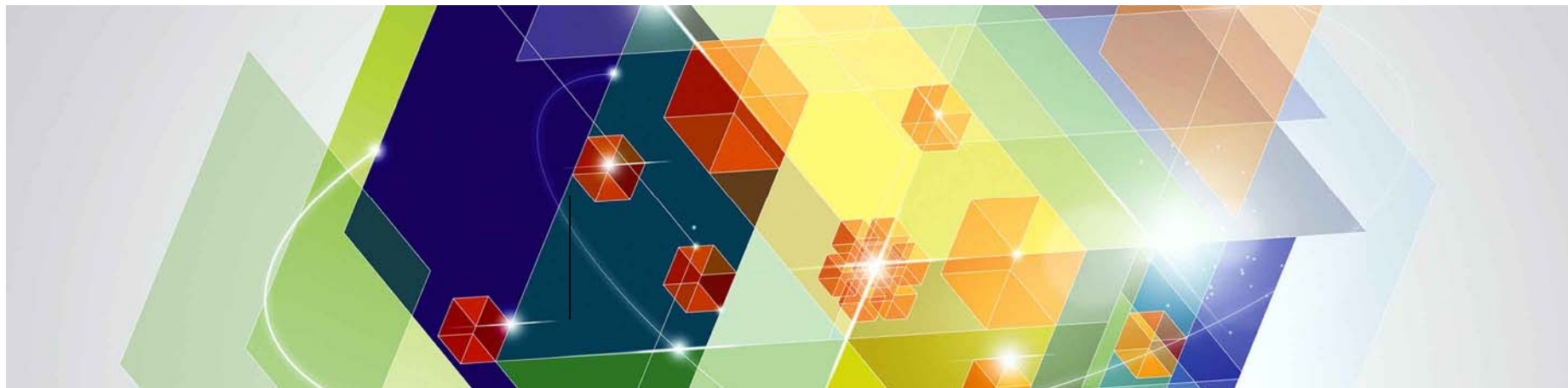
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Speaker: Harv Emery



System z – Freedom Through Design



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What is System z Firmware and How is it Released?

- System z firmware is Licensed Internal Code (LIC) including microcode, millicode and just plain code that runs in various system components including the HMC and SE
- Firmware is released in sets called “**Drivers**” that define a specific machine level of function and feature support that usually corresponds to an announcement letter.
- Driver level must be upgraded to a higher level to get newly announced support

Machine	Machine Type	Driver	Release Date	Current Support	SE, HMC LIC Version
z114 GA, z196 GA2	2818, 2817	93G	9/2011	Full	2.11.1
z196 GA	2817	86E	9/2010	Reduced	2.11.0
z10 BC GA2, EC GA3	2098, 2097	79F	12/2009	Full	2.10.2
z10 BC GA, EC GA2	2098, 2097	76D	10/2008	None	2.10.1
z10 EC GA	2097	73G	2/2008	None	2.10.0
z9 BC GA2,9 EC GA3	2096, 2094	67L	5/2007	Full	2.9.2
z9 BC GA, EC GA2	2096, 2094	64X	4/2006	None	2.9.1
z9 EC GA	2094	63J	9/2005	None	2.9.0
z890 GA, z990 GA3	2086, 2084	55K	5/2004	Limited	1.8.2
z990 GA2	2084	53P	10/2003	None	1.8.1
z990 GA	2084	52	6/2003	None	1.8.0

What is “LIC CC”? Is it part of a Driver?

- No, LIC CC is **Licensed Internal Code for Configuration Control** specific to one machine.
- **LIC CC and VPD (Vital Product Data)** records internal to the machine keep track of purchased entitlements to use the machine’s hardware. Usually the right to use all physically present hardware has not been purchased.
 - Purchased processor unit (core) types: (Number of CPs, IFLs, etc)
 - Purchased memory, Plan Ahead memory, and Flexible Memory information
 - CP capacity setting for full or sub-capacity
 - CP capacity “highwater” mark for CP capacity purchased but delivered inactive
 - OnDemand records for CBU, On/Off Capacity on Demand, and Planned Events
 - zBX blade enablements for System x and POWER7 blades
 - Unified Resource Manager level: Manage or Automate/Advance Manage
- **Many concurrent upgrades can be done just by changing LIC CC and/or VPD**
 - An IBM Service Representative can change LIC CC on site from media
 - A customer can do some of these using **Customer Initiated Upgrade (CIU)** OnDemand function if required contracts are in place
 - Upgrades are configured, priced and purchased on Resource Link
 - Required LIC CC changes are “manufactured” and made available for download
 - Downloading changes the LIC CC and accomplishes the upgrade.

What is in a Driver? And how to I know my machine's level?"

- A Driver contains (ECs) Engineering Change streams that include LIC for specific functions
- The Driver Level, EC streams and, EC stream fix levels can be displayed on the HMC and can also be determined by customized reports from the [Resource Link](#) website.
- On the HMC, display “[System Information](#)” for the machine. The WSC TSYS z196 is at Driver 93, SE Version 2.11.1 with SE Framework EC N48168 at fix level 375. (There are many more EC streams that the five shown.)



System Information - TSYS

Machine Information

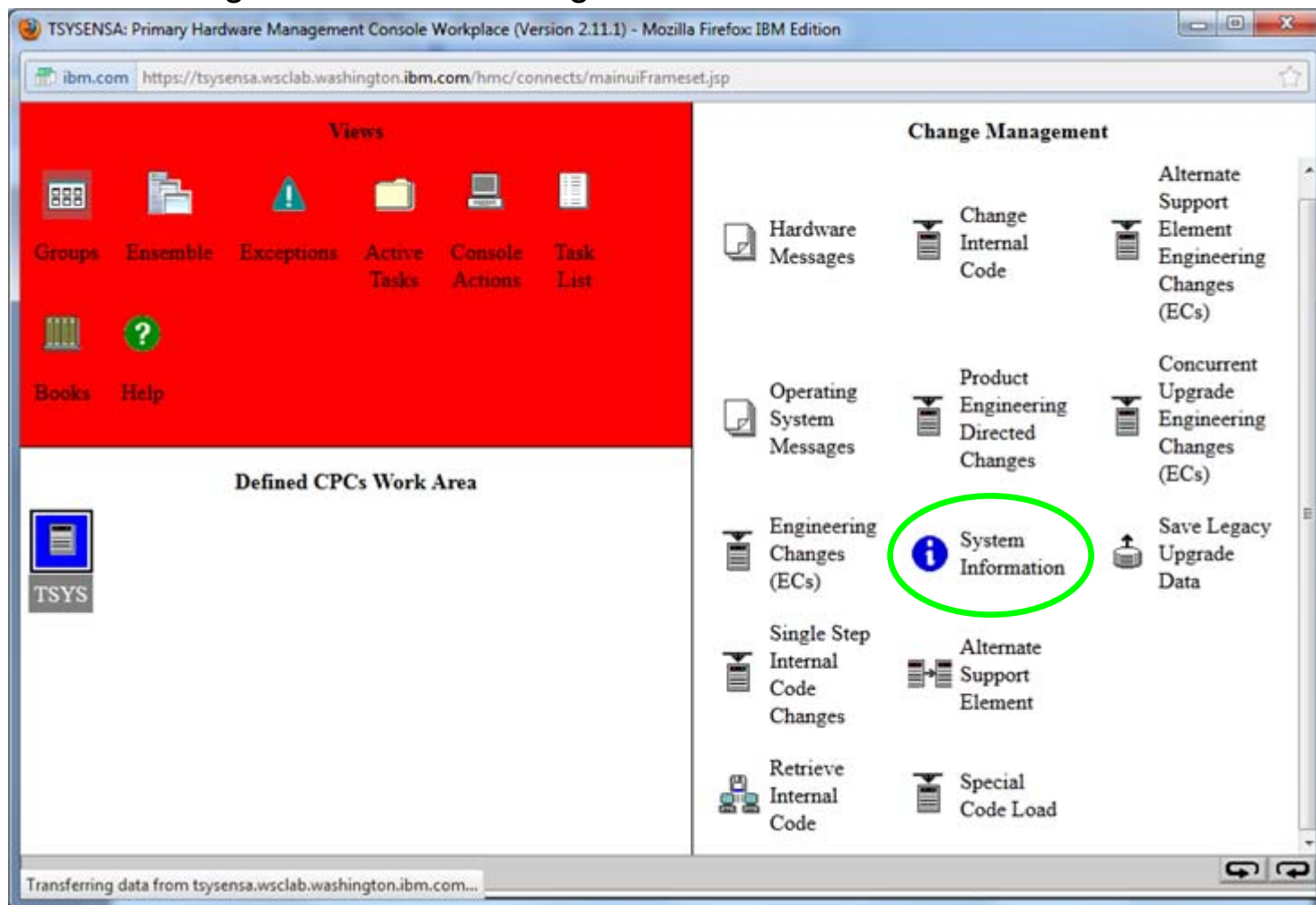
EC number: N48168 LIC control level: 0005 Engineering Changes AROM
 Type: 2817 Model number: M80 Serial number: 0000200C7675
 Version: 2.11.1 Driver level: 93

Internal Code Change Information

Select	EC Number	Retrieved Level	Installable Concurrent	Activated Level	Accepted Level	Description
<input type="radio"/>	N48168	375	375	375	337	SE Framework
<input type="radio"/>	N48128	001	001	001	001	Enablement of new functions
<input type="radio"/>	N48123	003	003	003	003	Ficon Express8S LIC
<input type="radio"/>	N48122	005	005	005	005	OFCP Express8S LIC
<input type="radio"/>	N48121	011	011	011	011	OSA Express4S Networking

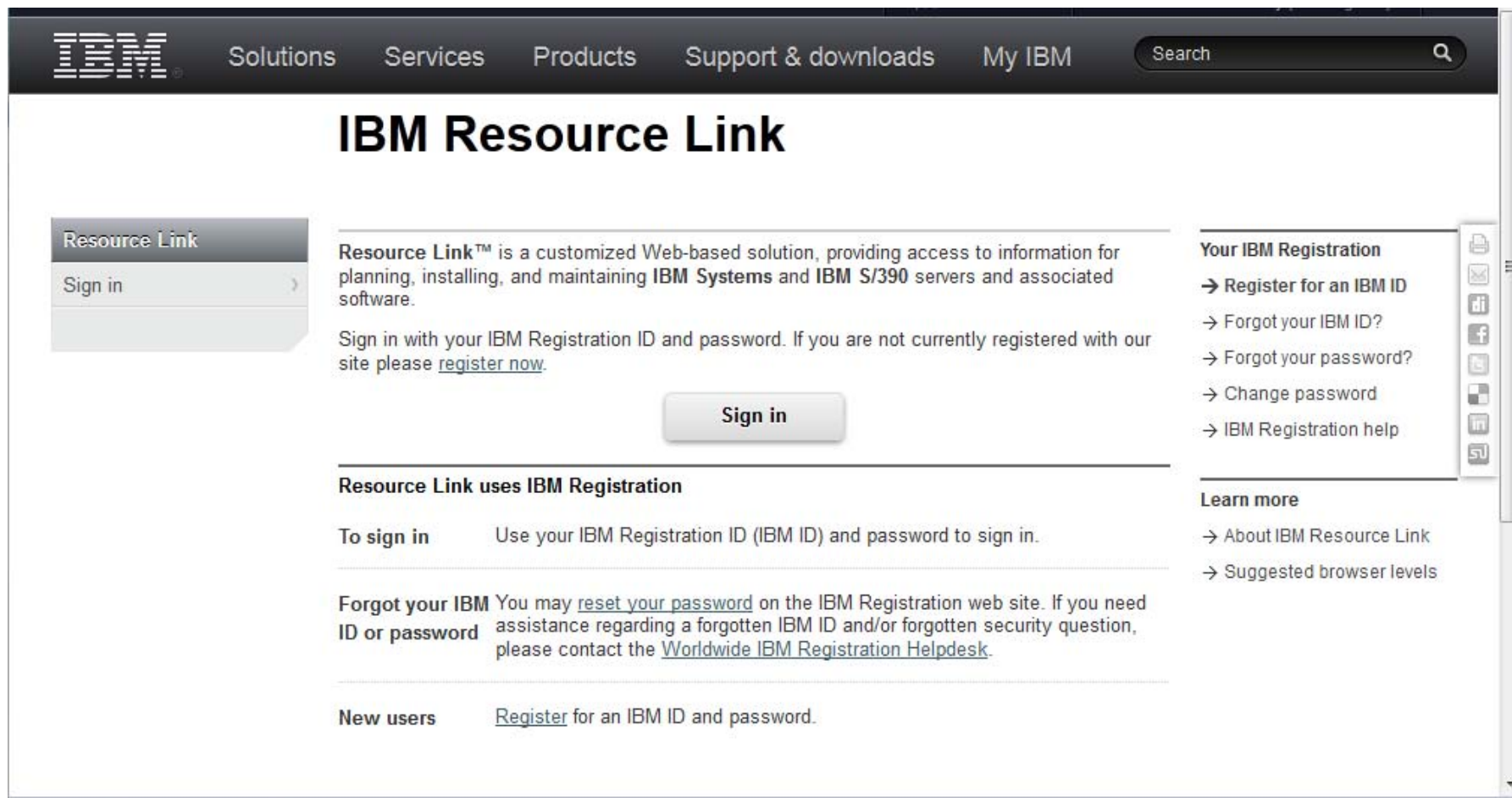
How is that done? (Not that they would let me near an HMC!)

- Select the machine object (TSYS at the WSC) and double click “System Information”
- This HMC’s level is also shown in the top blue bar as 2.11.1 (Driver 93)
- An HMC at a higher level can manage machines at a lower level.



What is Resource Link and how do I use it to get that information?

- Resource Link is the System z Hardware Support Website
- A no charge IBM Registration ID is required to use it. If you don't have an ID already, register here: <https://www.ibm.com/servers/resourceLink/svc03100.nsf?Opendatabase>



The screenshot shows the IBM Resource Link website. The top navigation bar includes the IBM logo, links for Solutions, Services, Products, Support & downloads, and My IBM, along with a search bar. The main heading is "IBM Resource Link". On the left, there is a "Resource Link" sidebar with a "Sign in" button. The main content area describes Resource Link as a customized Web-based solution for planning, installing, and maintaining IBM Systems and IBM S/390 servers. It includes a "Sign in" button and a section titled "Resource Link uses IBM Registration". This section contains instructions for signing in, a link for "Forgot your IBM ID or password", and a link for "New users". On the right, there is a "Your IBM Registration" sidebar with links to register, forgot ID, forgot password, change password, and IBM Registration help. Below this is a "Learn more" section with links to about IBM Resource Link and suggested browser levels. A vertical sidebar on the far right contains social media icons for print, email, Dribbble, Facebook, Twitter, YouTube, LinkedIn, and SlideShare.

IBM Resource Link

Resource Link
Sign in

Resource Link™ is a customized Web-based solution, providing access to information for planning, installing, and maintaining **IBM Systems** and **IBM S/390** servers and associated software.

Sign in with your IBM Registration ID and password. If you are not currently registered with our site please [register now](#).

Sign in

Resource Link uses IBM Registration

To sign in Use your IBM Registration ID (IBM ID) and password to sign in.

Forgot your IBM ID or password You may [reset your password](#) on the IBM Registration web site. If you need assistance regarding a forgotten IBM ID and/or forgotten security question, please contact the [Worldwide IBM Registration Helpdesk](#).

New users [Register](#) for an IBM ID and password.

Your IBM Registration

- Register for an IBM ID
- Forgot your IBM ID?
- Forgot your password?
- Change password
- IBM Registration help

Learn more

- About IBM Resource Link
- Suggested browser levels

So, how can I get this information on Resource Link?

- Register for “Machine Information”*

Machine information

Resource Link	
Site search	>
Planning	>
Education	>
Library	>
Fixes	>
Problem solving	>
Services	>
Tools	
▪ Product tools	
Customer Initiated Upgrade	>
Feedback	>

Machine information is a set of reports based on data transmitted to IBM from your supported IBM servers.

Registration is required to access machine information on Resource Link.

Register

[Register for machine information](#)

You will be notified by email when your registration is processed and your request to access machine information is approved. Afterwards, you can return to this page to browse the machine information for your servers.

Learn more

- [About machine information](#)
- [Frequently Asked Questions](#)
- Examples:
 - [Machine list](#)
 - [Machine profile page](#)
 - [System status report](#)
 - [EC/MCL report](#)
 - [PCHID report](#)
 - [MES report](#)

*Note: “Machine Information” is available only if the machine is under IBM Maintenance.

Identify Your Company Customer Number(s) and an IBMer to Verify

- This information is treated as confidential to your company by IBM.
- Wait for a confirmation to the email address you registered on Resource Link

Machine information registration

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All fields are required. When you have entered all of the required information, click Submit. Your authorization will be sent to your email address.

Note: IBM employees are not pre-registered for machine information.

Customer number:^{*}

Company name:^{*}

IBM account rep name:^{*}

IBM account rep email:^{*}

IBM account rep phone:^{*}

Submit

So, what happens next with Machine Information

- After confirmation, Machine Information will allow you to “View All Machines”
- “All Machines” means all supported machines for the customer number(s) registered
- Machines must be configured to “Transmit System Availability Data” weekly to IBM (See the [TSAD How To Video](#) on Resource Link)

IBM Systems > System z > Resource Link > Tools >

Machine information

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[→ View all machines](#)

You have access to machine information for at least one customer number. Register again for your other customer numbers, if any.

Register

→ [Register for machine information](#)

You will be notified by email when your registration is processed and your request to access machine information is approved. Afterwards, you can return to this page to browse the machine information for your servers.

Learn more

- [About machine information](#)
- [Frequently Asked Questions](#)
- Examples:
 - [Machine list](#)
 - [Machine profile page](#)
 - [System status report](#)
 - [EC/MCL report](#)
 - [PCHID report](#)
 - [MES report](#)

“Customer Data” Report on TSYS, our z196 M80

Machine 2817 C7675 M80

z196

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Customer data	System status	EC/MCL	PCHID	MES
Installation Planning Aids	Power Estimation Tool			

System Name:	TSYS	Available Reports
Enterprise Number:	EN0004600000	
Customer Number:	4600317	
Customer:	IBM CORP	
Address:	OS 390 E-BUSINESS BILL WYNNE 800 NORTH FREDERICK AVE LOWER LEVEL/B 183 GAITHERSBURG , MD 208793326	
Contact:	Operations	
Upgrade history:	2817_02C7675_UpgradeHistory.csv (5KB)	

This machine has a Maintenance Agreement.

VPD was last received on 2012/05/24.

The Support Element last connected on 2012/05/25.

Resource Link EC/MCL Report for TSYS in “Machine Information”

Customer data	System status	EC/MCL	PCHID	MES
Installation Planning Aids	Power Estimation Tool			
• Summary	• MCL Report	• Missing MCLs		
• Pending Status	• All			



This report was generated on 2012/05/25 05:09:02.

Support Element:

EC Number N48168 / [Version 2.11.1](#) / Driver 93 - Bundle 30za

There are 0 MCLs missing including 0 Hipers, 0 Disruptive and 0 Configuration Dependand.

There are 0 MCLs received that are not active.

The SE last changed on 2012/05/24 15:16:06.

HW Microcode patches were last RECeived on 2012/05/24 23:58:39.

HW Microcode patches were last ACTvated on 2012/05/24 12:18:29.

Hardware Management Console:

EC Number N48180 / [Version 2.11.1](#) / Driver 93 - Bundle 30

There are 0 MCLs missing including 0 Hipers, 0 Disruptive and 0 Configuration Dependand.

There are 0 MCLs received that are not active.

The HMC last changed on 2012/05/24 21:03:42.

HW Microcode patches were last RECeived on 2012/05/24 19:34:15.

HW Microcode patches were last ACTvated on 2012/05/24 19:36:47.

Ok, so you told me about an EC; but, what is an MCL and a Bundle?
And, I saw HIPERs mentioned. Sounds scary. What are they?

- An **MCL** is a **Microcode (or Machine) Change Level** sometimes called a hardware patch
 - Some MCLs implement new function in existing EC streams
 - Some MCLs are problem fixes
 - The vast majority of problems are found in ongoing IBM testing
 - MCLs are numbered in sequence for each EC stream in the Driver
(For example, SE Framework EC N48168 shown earlier had 375 MCLs applied)
 - The Machine Information “Missing MCL Report” provides details
- A **Bundle** is a group of MCLs tested together and then released to IBM Service
(For example, Bundle 30za mentioned had 9 MCLs and was released on May 16, 2012)
- A **HIPER MCL** is a fix for a **H**igh Impact **PER**vasive problem
 - They are very rare but they need special attention
 - **Subscribe on Resource Link for notification of HIPER Alerts**
 - The concept is analogous to Red Alerts subscriptions for software
- There are also **Machine Alerts** on Resource Link
 - Some are notifications of potential problems
 - Others are information of general interest to customers.
 - **Subscribe on Resource Link for notification of Machine Alerts**

Resource Link EC MCL Report for TSYs in “Machine Information”

- [Summary](#)
- [MCL Report](#) 
- [Missing MCLs](#)
- [Pending Status](#)
- [All](#)

This report was generated on 2012/05/25 05:09:02.

MCL Report:

EC	Long Name	REC	ACT	Activate Time	ACC	MAX
N48145	BLADE CENTER WAREHOUSE BIOS	004	004	2012/03/02 12:26:04	004	004
N48146	BLADE CENTER WAREHOUSE OS	000	000	2011/08/11 16:48:11	000	000
N48147	BLADE CENTER COMPONENTS	001	001	2011/08/11 16:54:01	001	001
N48144	BLADE SWITCHES	016	016	2012/02/10 15:05:48	016	016
N48167	SE - CDU MIN/MAX	000	000	2011/08/11 16:48:11	000	000
N48162	SE COUPLING FACILITY CODE	009	009	2012/04/09 13:05:39	009	009

View Hiper Alerts and Machine Alerts under Fixes

Fixes

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Problem solving	›
Services	›
Tools	›
Customer Initiated Upgrade	›
Feedback	›

Hardware

Known defects/problems

- Exception letters

Alerts

- Machine alerts
- Hiper alerts

- Red alerts

Software

Get fixes

- Download
- Order fixes on physical media
- Check status of ordered fixes

Preventive actions

- Preventive Service Planning buckets (PSP)
- Service bulletins and advisories
- Subscribe to APAR tracking

Search technical databases

- Troubleshooting
- Tips and howto

Maintenance

- Maintenance suggestions for Parallel Sysplex environments
- z/OS and OS/390 enhanced holddata

Resource Link Hiper Alerts for z196

- Click individual alerts to view
- Click “Subscribe to this page” to have email notification sent to email address you registered on Resource Link. (Look for “Subscribe on other pages)

Hiper Alerts: zEnterprise 196

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Problem solving	
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Tools	›
Customer Initiated Upgrade	›
Feedback	›

Date issued	Document number and title
28 Mar 2012	032812 HIPER MCL's for 2097, 2098, 2817, 2818
25 Jan 2012	012512 HIPER MCL's for 2817, 2818 HIPER MCL released to address root cause of outage. See HIPER GTS INFO ALERT: 011912A
19 Jan 2012	011912A HIPER MCL's for 2817, 2818 HIPER MCL released to address an unscheduled outage and/or sysplex outage, on Driver 93 machines with HCA3 adapters and Server Time Protocol (STP)
23 May 2011	052311 HIPER MCL's for 2097, 2098, 2817 HIPER MCLs have been released for machines at Driver-86 and Driver-79.
29 Dec 2010	122910 HIPER MCL's for 2817 HIPER MCL released for z196 Driver-86 to address a potential System Checkstop.

Subscribe

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Resource Link Machine Alerts for z196

- Click individual alerts to view
- Click “Subscribe to this page” to have email notification sent to email address you registered on Resource Link. (Look for “Subscribe on other pages)

Machine Alerts: zEnterprise 196

Date issued	Document number and title
15 May 2012	051512 Machine Alert for 2817
	Under a specific hardware configuration, Enhanced Driver Maintenance (EDM) from Driver-86 to Driver-93 could fail resulting in loss of all image partitions on a CEC
06 Apr 2012	040612 Machine Alert for 2064/2066/2084/2086/2094/2096/2097/2098/2817/2818
	2817, 2818, 2097, 2098, 2096, 2084, 2086, 2064 and 2066 latest available SUL information.

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- System z
- zEnterprise 196 (z196)
- Alerts > Machine Alerts > Hardware > z196

Fields marked with an asterisk (*) are required.

Options

Subscription name:*

Machine Alerts

Save in existing or new folder:

Existing folder name:*

My default folder

New folder name:*

Notify me by



Email



Daily email



Weekly email



Plain text email



Html email



Delivery to this folder



Delivery via syndication feed (RSS,Atom)



[What is this?](#)

And, one more thing: Driver Exception Letters

- A Driver Exception Letter documents general items of interest for the driver level, recommended MCL service levels, hardware compatibility issues with IBM or OEM equipment, and announced function that either cannot be used or does not work correctly.
- Always review the applicable Driver Exception Letter before moving to a new driver or implementing significant new function.

Fixes

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Hardware

Known defects/problems

» Exception letters

Alerts

- Machine alerts
- Hiper alerts
- Red alerts

Software

Get fixes

- Download
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- Service bulletins and advisories
- Subscribe to APAR tracking

Search technical databases

- Troubleshooting
- Tips and howto

Maintenance

- Maintenance suggestions for Parallel Sysplex environments
- z/OS and OS/390 enhanced holddata

Links to Exception Letter PDFs for z196 Drivers 86 and 93

Exception Letters: zEnterprise 196

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Tools	›
Customer Initiated Upgrade	›
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Exception Letters contain important information regarding your z196 server's microcode service level. You should install all outstanding MCLs and then review the Exception Letter for your server's driver level prior to invoking any new function on the processor.

- Driver 93 Customer Exception Letter
- Driver 86E Customer Exception Letter

Contents of SC28-6909, the June 22nd Exception Letter for Driver 93

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So what do I do about MCL fix application and Driver Upgrades?

- An IBM Service Representative downloads* and applies MCL bundles and does Driver upgrades
- **MCL Installation Strategy:**
 - Between driver upgrades, regular installation of MCLs is key for optimal performance. **IBM recommends that microcode maintenance is performed at least quarterly.**
 - HIPER MCL information should be reviewed as soon as available. **If the HIPER MCL is applicable to your environment, IBM recommends that it is installed as soon as a maintenance window can be scheduled.**
- **Driver Migration Strategy:**
 - Because new drivers contain fixes as well as new function, **driver upgrades should be installed regularly as part of normal machine maintenance.**
 - For customers with conservative change management policies, **Product Engineering recommends migration to the latest driver within one to two quarters (three to six months) after becoming available.**
 - If you wish to use new features or function(s) being provided with a new driver you may wish to install the latest driver as soon as it becomes available.
 - **IBM will support the n-1 driver for six to nine months** following the GA (General Availability) of a new Driver to allow enough time to transition to the latest driver.

*Note: MCL download from IBM is available only for machines under IBM Maintenance. For other machines, MCLs can be ordered from IBM Boulder. Orderable MCL packages are updated quarterly.

IBM MCL Support for an n-1 Driver

- From the GA of the latest (n) driver the previous (n-1) driver will enter a period called "**reduced support**". During this time, it is possible that not all problems discovered will be fixed in the n-1 driver unless they are deemed to have Customer impact.
 - Examples of problems that will be fixed in the current driver during this reduced support period:
 - Data Integrity - Problems that result in unscheduled outages (UIRA)
 - Reliability, Availability and Serviceability (RAS) function
 - Breakage in base functionality
 - Examples of problems that will **not** be fixed during this "reduced support" period:
 - Low or non-impacting problems
 - Problems with a valid workaround
 - Non-pervasive problems
- The next three months will be a period of "**Limited Support**" for the n-1 Driver.
 - Examples of problems that will be fixed during this "Limited Support" period are:
 - Pervasive UIRA fixes (HIPER)
 - Data Integrity
 - Serious Maintenance Package problems
- At the end of the "Limited Support" period, the n-1 driver will enter "**End of MCL Support**". IBM will continue to analyse problems, but no new MCLs will be released for a driver that has reached "End of MCL Support". Fixes, that is MCLs, will only be delivered at later driver level.

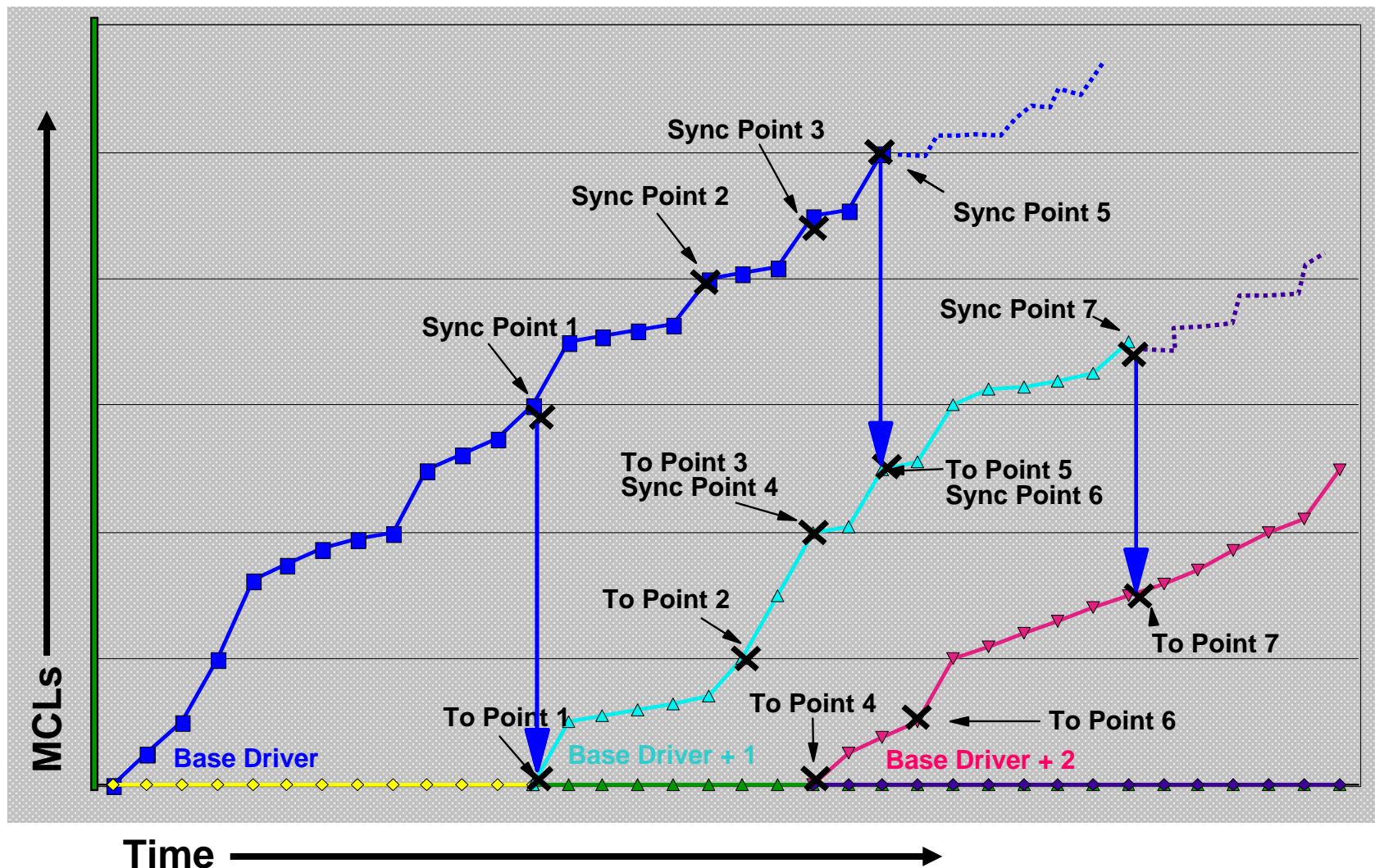
So, how do I go to a new Driver if I want to do that?

- **Enhanced Driver Maintenance** (aka Concurrent Driver Upgrade) **EDM (aka CDU)** is a process that upgrades the machine concurrently from specific EC stream MCL levels in the n-1 driver to specific EC stream MCL levels in the new Driver level
- **A Min/Max or Sync Point MCL** - Establishes an the 'from' point in the n-1 driver and a the 'to' point in the new driver
 - The min/max also defines the concurrent AROM control level for media with the specific Driver and MCLs that are to installed during the EDM process.
 - There may be flexibility to specify multiple AROM control levels that may be used during an EDM upgrade.
 - The **Sync from / to** points are the exact MCL levels that the EDM package was tested for.
 - If a Driver update is being planned, care should be taken not to install MCL bundles that go past the desired sync point MCL in the n-1 driver. **Normal maintenance function will not move past a sync point without specific direction to do so.**
- **A driver upgrade can also be done disruptively** using a different AROM control level for disruptive upgrade and performing a Power on Reset (POR)

What determines when a EDM sync point MCL is released and how is it communicated ?

- Consistent with the 'quarterly microcode maintenance' recommendation, **a new EDM min/max will also be released approximately once per quarter.**
- The “**EDM Sync Point**” schedule is communicated via a Field Info when a new Driver is released. This schedule identifies when a new EDM upgrade package (consisting of the EDM AROM and min/max MCL) are targeted to be released. **This information flows to Resource Link “Machine Alerts”**
- An EDM 'sync point' may not require a new concurrent AROM to be released. It could be accomplished by releasing an updated min/max MCL to be used with the existing EDM AROM.
- Additional min/max MCLs may be released to adjust the EDM “from/to” point due to the release of HIPER MCLs or MCLs to correct the EDM process itself.
- **An EDM concurrent upgrade can not skip a driver level** (upgrade the n-2 to the n driver). (Example: For z10 machines you can not use EDM to upgrade Sync Driver-73 directly to Driver-79. You must upgrade Sync Driver-73 to Driver-76 then to Driver-79.)
- **A driver level can be skipped by a disruptive upgrade.**

Enhanced Driver Maintenance

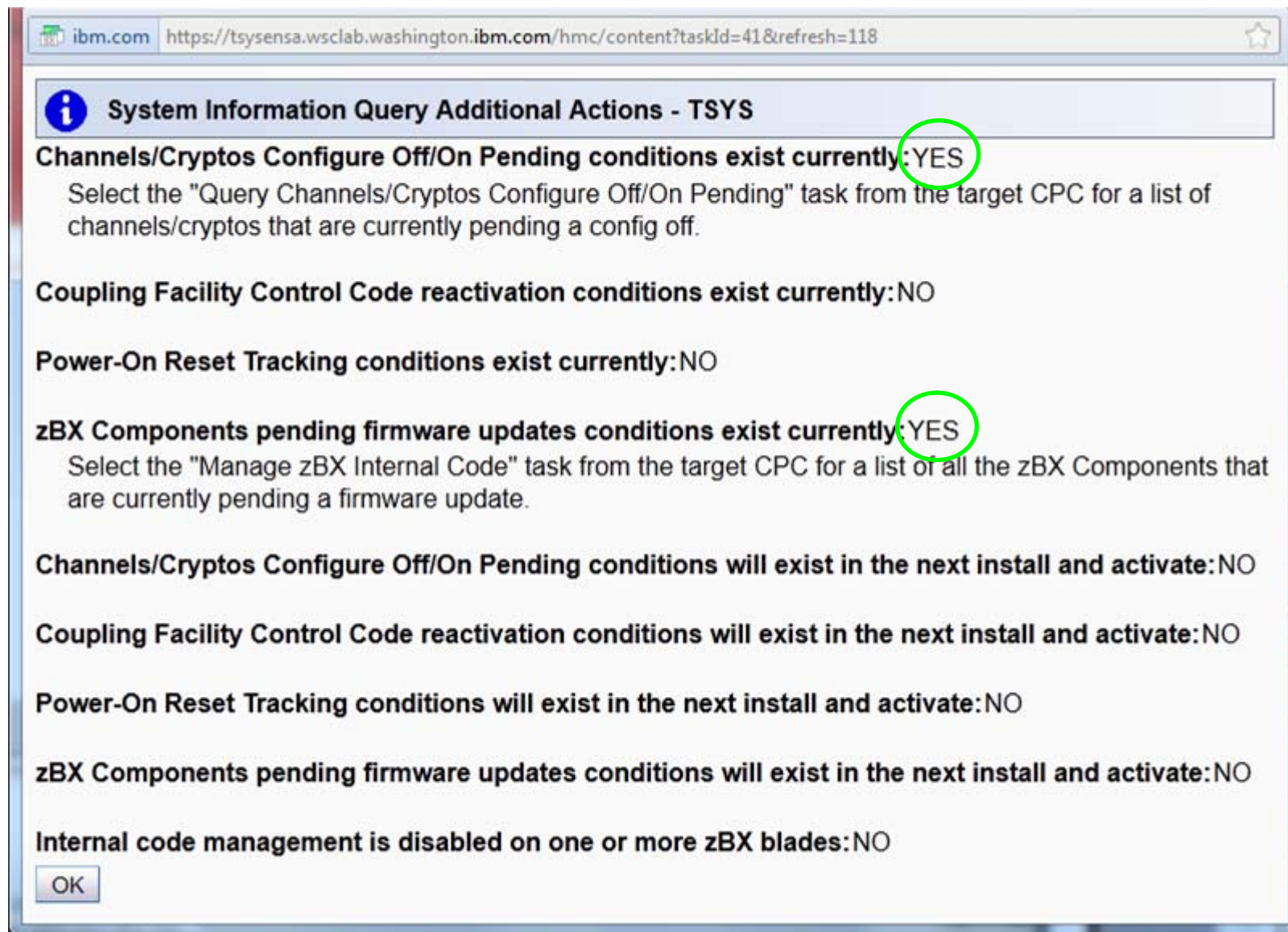


So, what is the MCL fix application process?

- **For machines under IBM Maintenance, MCL application is done by an IBM Service Representative.**
- **Most commonly, Bundles of MCLs are downloaded* to the HMC from the IBM Remote Support Facility** and are applied from there
 - They can also be copied to media, DVD or USB memory stick, and applied from there.
- **Bundles are applied in order** and all fixes in the Bundle are applied.
 - “Cherry picking” is a bad idea because MCLs in a Bundle are tested together
 - Product Engineering may occasionally recommend deviation from this policy.
- **The vast majority of MCLs can be installed and removed 100% concurrently**
 - A small percentage enter a “**pending**” state and require follow-up actions to complete activation
 - Examples:
 - **Some CFCC MCLs require CF LPARs to be deactivated/activated**
 - **Some Cryptographic Co-processor MCLs require co-processors to be taken offline and brought back online**
 - **Some OSA-Express MCLs require CHPIDs to be taken offline and brought back online**
 - This can involve an especially large number of actions after a concurrent Driver upgrade
 - HMC function has also been added to reduce the work to perform these follow-up actions
 - Development work is done to reduce the number of these in every new System z server
 - **Plan configurations where possible so activation can be done without production outages**

* Note: MCL download from IBM is available only for machines under IBM Maintenance. For other machines, MCLs can be ordered from IBM Boulder. Orderable MCL packages are updated quarterly.

Pending Conditions Query After Concurrent MCL Apply



ibm.com https://tsysensa.wsclab.washington.ibm.com/hmc/content?taskId=41&refresh=118

i System Information Query Additional Actions - TSYS

Channels/Cryptos Configure Off/On Pending conditions exist currently: YES
 Select the "Query Channels/Cryptos Configure Off/On Pending" task from the target CPC for a list of channels/cryptos that are currently pending a config off.

Coupling Facility Control Code reactivation conditions exist currently: NO

Power-On Reset Tracking conditions exist currently: NO

zBX Components pending firmware updates conditions exist currently: YES
 Select the "Manage zBX Internal Code" task from the target CPC for a list of all the zBX Components that are currently pending a firmware update.

Channels/Cryptos Configure Off/On Pending conditions will exist in the next install and activate: NO

Coupling Facility Control Code reactivation conditions will exist in the next install and activate: NO

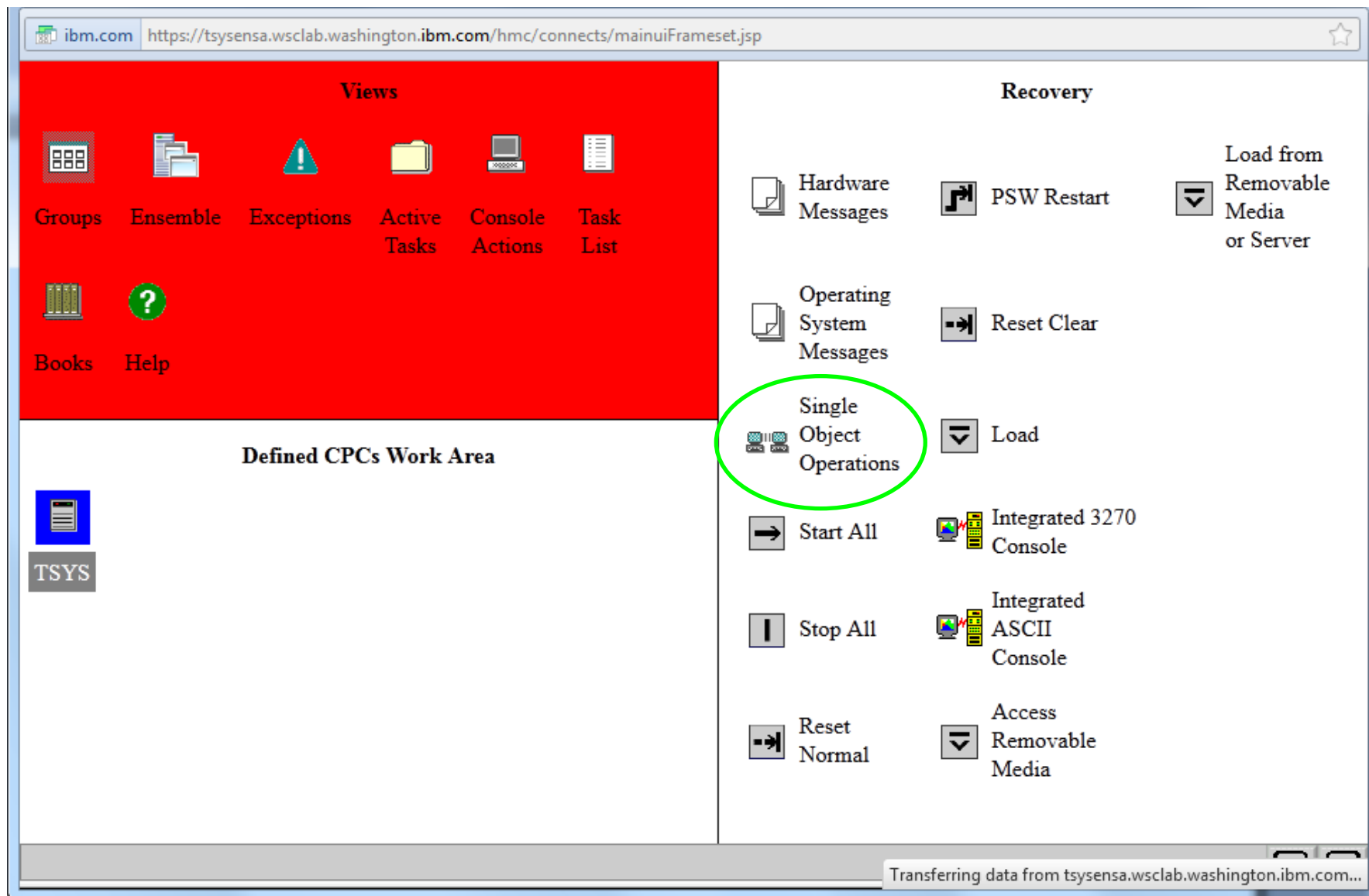
Power-On Reset Tracking conditions will exist in the next install and activate: NO

zBX Components pending firmware updates conditions will exist in the next install and activate: NO

Internal code management is disabled on one or more zBX blades: NO

OK

TSYS – “Single Object Operations”

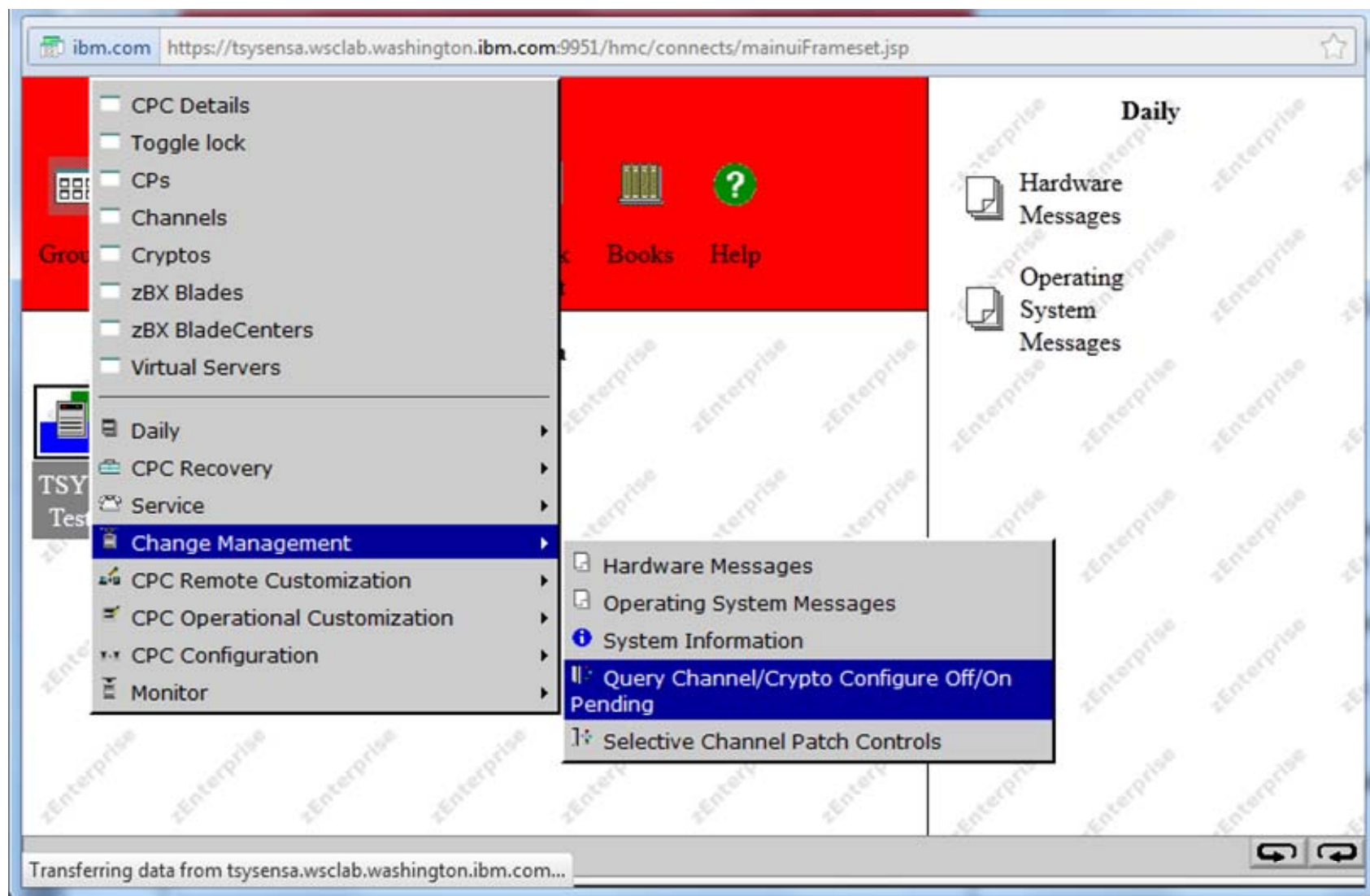


The screenshot displays the IBM TSYS web interface. The browser address bar shows the URL: <https://tsysensa.wsclab.washington.ibm.com/hmc/connects/mainuiFrameset.jsp>. The interface is divided into several sections:

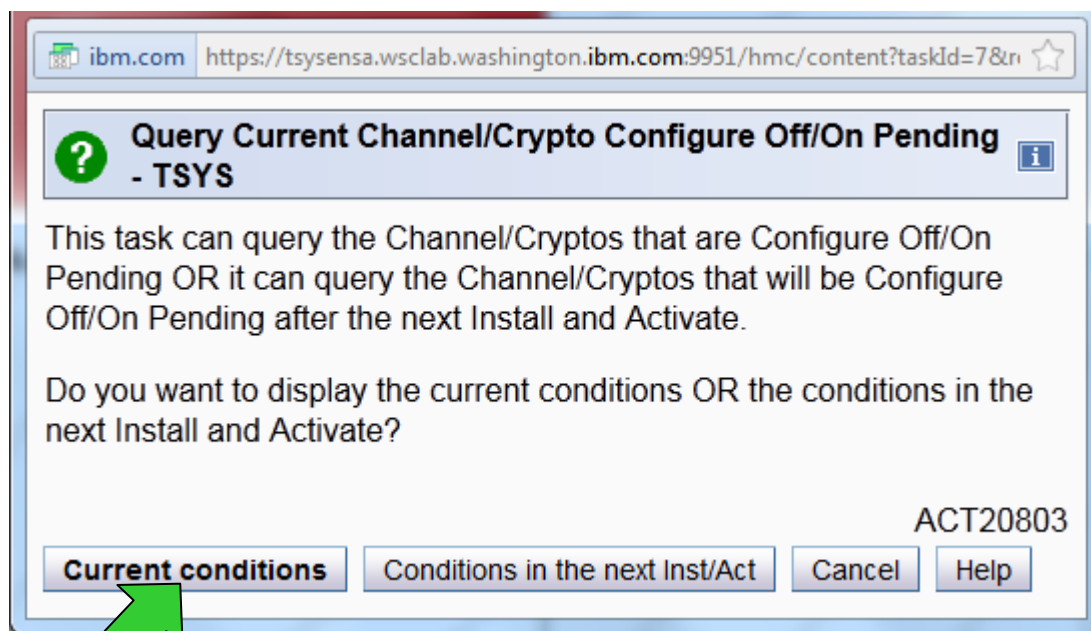
- Views (Red Background):** Contains icons for Groups, Ensemble, Exceptions, Active Tasks, Console Actions, Task List, Books, and Help.
- Recovery:** Contains icons for Hardware Messages, Operating System Messages, PSW Restart, Reset Clear, Load, Load from Removable Media or Server, Integrated 3270 Console, Integrated ASCII Console, Access Removable Media, Start All, Stop All, and Reset Normal.
- Defined CPCs Work Area:** Contains a TSYS icon.
- Single Object Operations:** This menu item is circled in green and is located in the Recovery section.

The status bar at the bottom indicates: "Transferring data from tsysensa.wsclab.washington.ibm.com..."

Change Management, Query Pending



Current Pending Conditions in Detail



ibm.com https://tsysensa.wslab.washington.ibm.com:9951/hmc/content?taskId=7&n

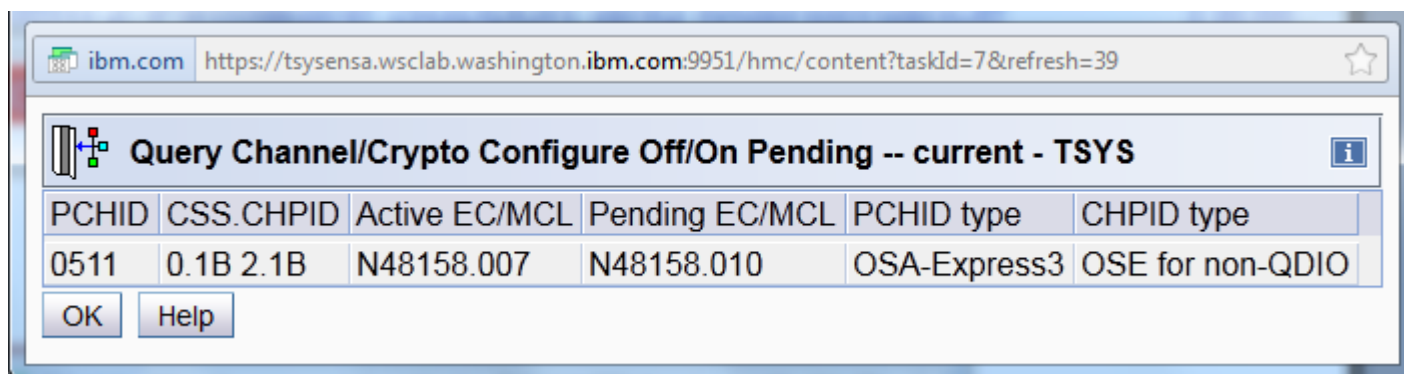
Query Current Channel/Crypto Configure Off/On Pending - TSYS

This task can query the Channel/Cryptos that are Configure Off/On Pending OR it can query the Channel/Cryptos that will be Configure Off/On Pending after the next Install and Activate.

Do you want to display the current conditions OR the conditions in the next Install and Activate?

ACT20803

Current conditions Conditions in the next Inst/Act Cancel Help



ibm.com https://tsysensa.wslab.washington.ibm.com:9951/hmc/content?taskId=7&refresh=39

Query Channel/Crypto Configure Off/On Pending -- current - TSYS

PCHID	CSS.CHPID	Active EC/MCL	Pending EC/MCL	PCHID type	CHPID type
0511	0.1B 2.1B	N48158.007	N48158.010	OSA-Express3	OSE for non-QDIO

OK Help

Resource Link Pending Status Report in “Machine Information”^{*}

-
- [Summary](#)
 - [MCL Report](#)
 - [Missing MCLs](#)
 - [Pending Status](#)
 - [All](#)
-

This report was generated on 2012/05/25 05:09:02.

Pending Status:

Status as of 2012/05/24 19:15:35.

Channels/Cryptos Configure Off/On Pending conditions exist currently: YES

PCHID	CSS.CHPID	Active EC.MCL	Pending EC.MCL
0511	2.1B 0.1B	N48158.007	N48158.010

zBlade Extension Reactivation conditions exist currently: YES

Blade id
B.2.01

^{*}Note: “Machine Information” is available only if the machine is under IBM Maintenance.

What's the story on the IBM Remote Support Facility*?

▪ Support functions

- **Transmit System Availability Data (TSAD)**: Periodic transmission of hardware inventory, system configuration, and system availability data. (**Highly Recommended**)
- **Download OnDemand orders** configured on Resource Link on request
 - Customer Initiated Upgrade permanent upgrade orders for installation
 - On/Off Capacity on Demand, Capacity Backup, or Capacity for Planned Event new record orders or record replenishment orders for temporary upgrades
- **Report problems** to open Hardware Problem Records (PMHs or PMVs)
 - Automatically to open Hardware Problem Records (PMHs) for problems detected by the HMC or SE on a System z server
 - On “Report a Problem” HMC function to open Viewable Hardware Problem Records (PMVs)
- **Transmit additional data and logs** needed by IBM support for problem analysis
 - Automatic or on request by an IBM Service Support Representative
- **Download firmware fixes**: Microcode Change Levels (MCLs) for a System z server being managed or for an HMC or SE to be applied by IBM Service

▪ RSF Communication

- Always initiated from the HMC and always encrypted using certificate-controlled SSL
- Always checked by RSF to validate that the connecting HMC is “known” to RSF
- **NEVER** includes client data
- Using broadband: Fully compatible with proxy servers and firewalls
- Using dial modem: Through PPP to AT&T to RSF over a “Fenced Internet” connection
(Note: Statement of Direction: Modem support is planned to be withdrawn in the near future)

***Note: RSF is available only for a machine under IBM Maintenance.**

Removal of HMC Dial Modem Support (October 12, 2011 Statement of Direction¹)

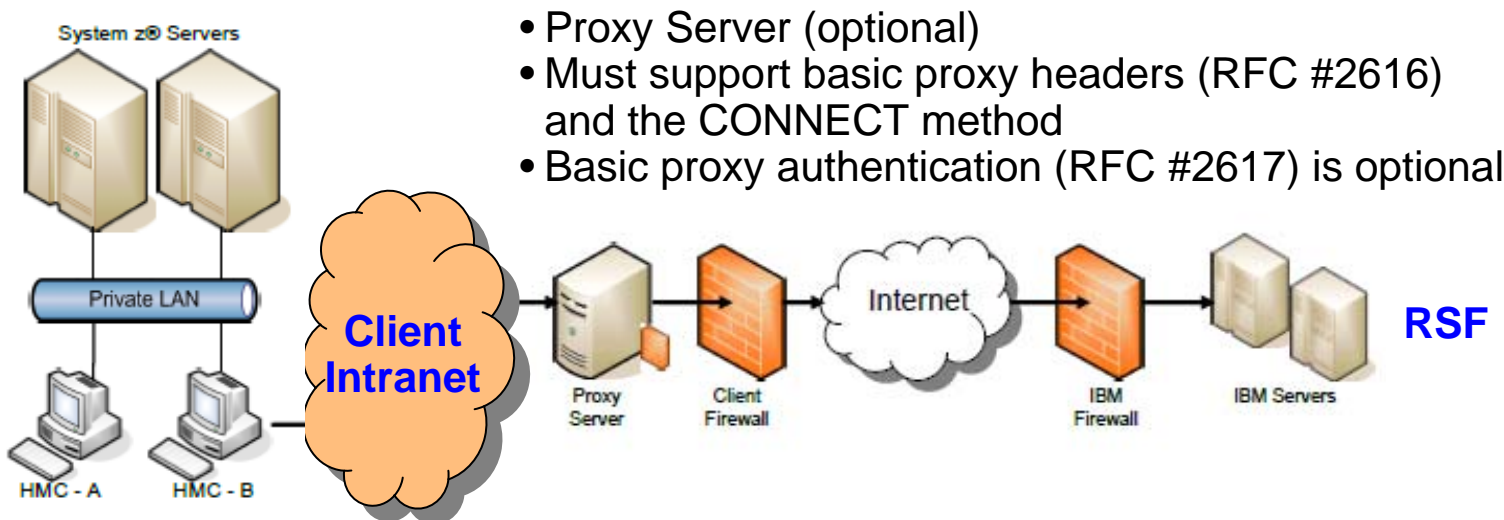
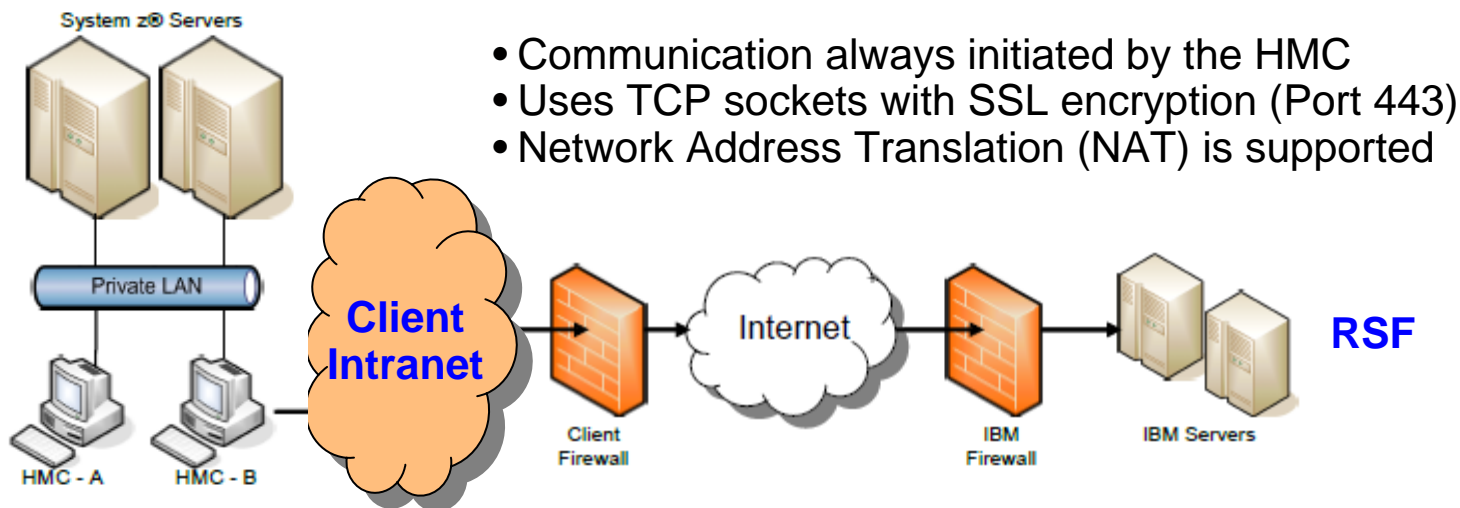
- **Beginning with the next System z server after the IBM zEnterprise 196 and 114, the new Hardware Management Console (HMC) LIC is intended no longer to provide modem support.** As a result, it will no longer be possible to use dial access to the Remote Support Facility (RSF) or to access an External Time Source (ETS) for Server Time Protocol (STP). Only broadband connections will be allowed. The new HMC LIC is planned to support Network Time Protocol (NTP) authentication support to provide enhanced security when an NTP server is accessed to get accurate time for the STP Coordinated Timing Network (CTN).
- **Enterprises using modems for RSF or STP should plan to migrating to broadband connections.** The currently available NTP server option for ETS, as well as internet time services available using broadband connections, can be used to provide the same degree of accuracy as dial-up time services.
Reference: [Integrating the Hardware Management Console's Broadband Remote Support Facility into your Enterprise, SC28-6880](#)
- **Note:** When implemented, the above changes are intended to apply to new HMC orders for z196 and z114, as well as upgrades of older HMCs to this new version of HMC LIC.

¹ All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice. Any reliance on these Statements of General Direction is at the relying party's sole risk and will not create liability or obligation for IBM.

How Secure is a System z Hardware Management Console?

- Designed to be a **closed platform** with no access to the underlying system
 - The HMC Application LIC is the only “application” that can run.
 - Nothing else can be installed
- Uses TCP/IP to connect to managed System z servers and to IBM RSF, but:
 - The integrated firewall is designed to block inbound HTTP access by default
 - Only specific configured ports can be opened only by enabling specific HMC functions
 - Access can be controlled for individual authentication by LDAP or strong passwords
- All data communication is encrypted using Secure Socket Layer (SSL)
 - The HMC can create and use self-signed, customized certificates
 - The HMC can use certificates created by a certificate authority
- Firmware fixes transferred from IBM are encrypted, digitally signed and checked prior to use
- HMC Remote Access reference on Resource Link:
 - HMC Operations Guide, [Version 2.11.1](#) (for z196), especially Appendix C and D

Remote Support Facility (RSF*) Broadband Access



***Note: RSF is available only for machines under IBM Maintenance.**

RSF* Broadband Access and References

▪ **RSF IP Addresses for HMC Driver 73 or later (z9 EC GA – February, 2008)**

(Check the applicable HMC Operations Guide for earlier Driver levels)

– **IPv6 (Configure for TCP port 443)**

- 2620:0:6C0:1::1000
- 2620:0:6C1:1::1000
- 2620:0:6C2:1::1000

– **IPv4 (Configure for TCP port 443)**

- 129.42.26.224
- 129.42.34.224
- 129.42.42.224

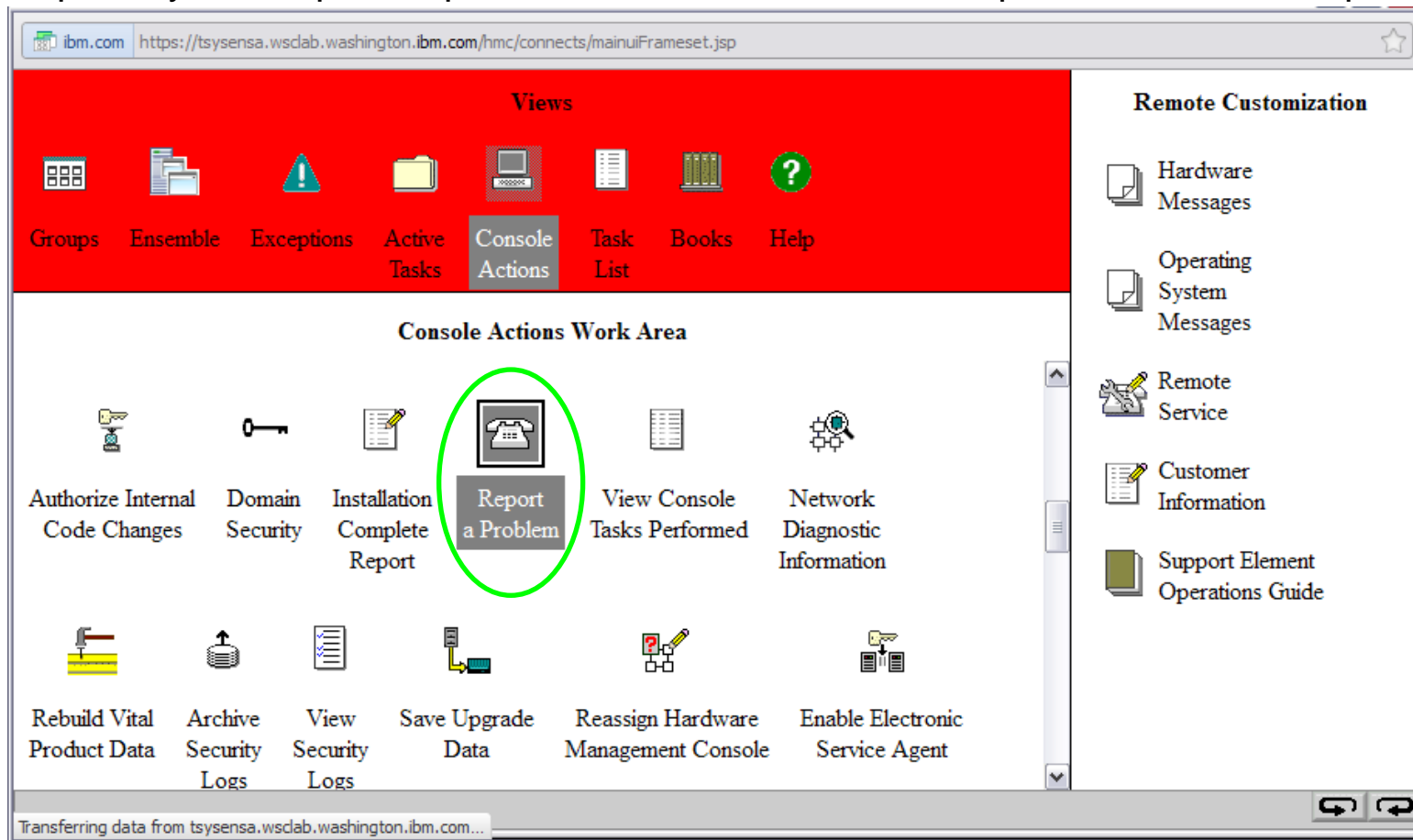
▪ **Remote Support Facility references on Resource Link:**

- [Broadband Remote Support Facility \(RSF\)](#) Z121-0244-03
- [Integrating the HMC Broadband Remote Support Facility on your Enterprise](#) SC28-6880
- HMC Operations Guide, [Version 2.11.1](#) (for z196), especially Appendix C and D

***Note: RSF is available only for machines under IBM Maintenance.**

How do I get a problem reported if I think I have one?

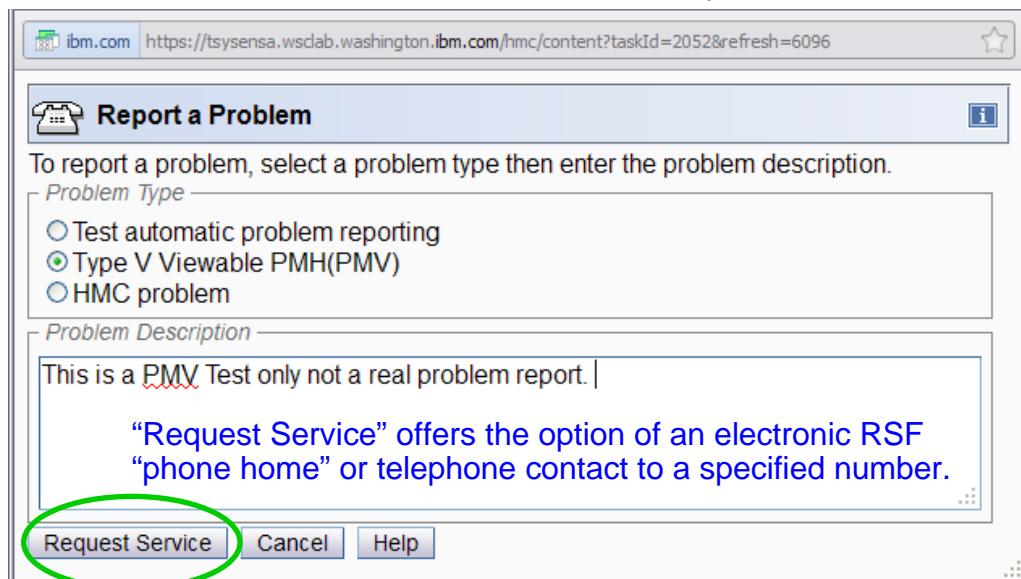
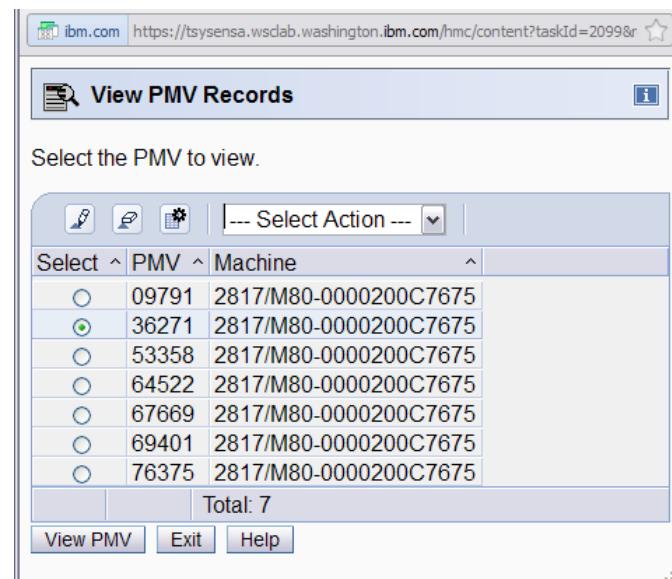
- Most likely the machine will use RSF* to open a PMH automatically and IBM will contact you
- If not, ask an IBMer to open a PMH **OR**
- Especially for suspected problems with the HMC use “Report a Problem” to open a PMV



***Note: RSF is available only for machines under IBM Maintenance.**

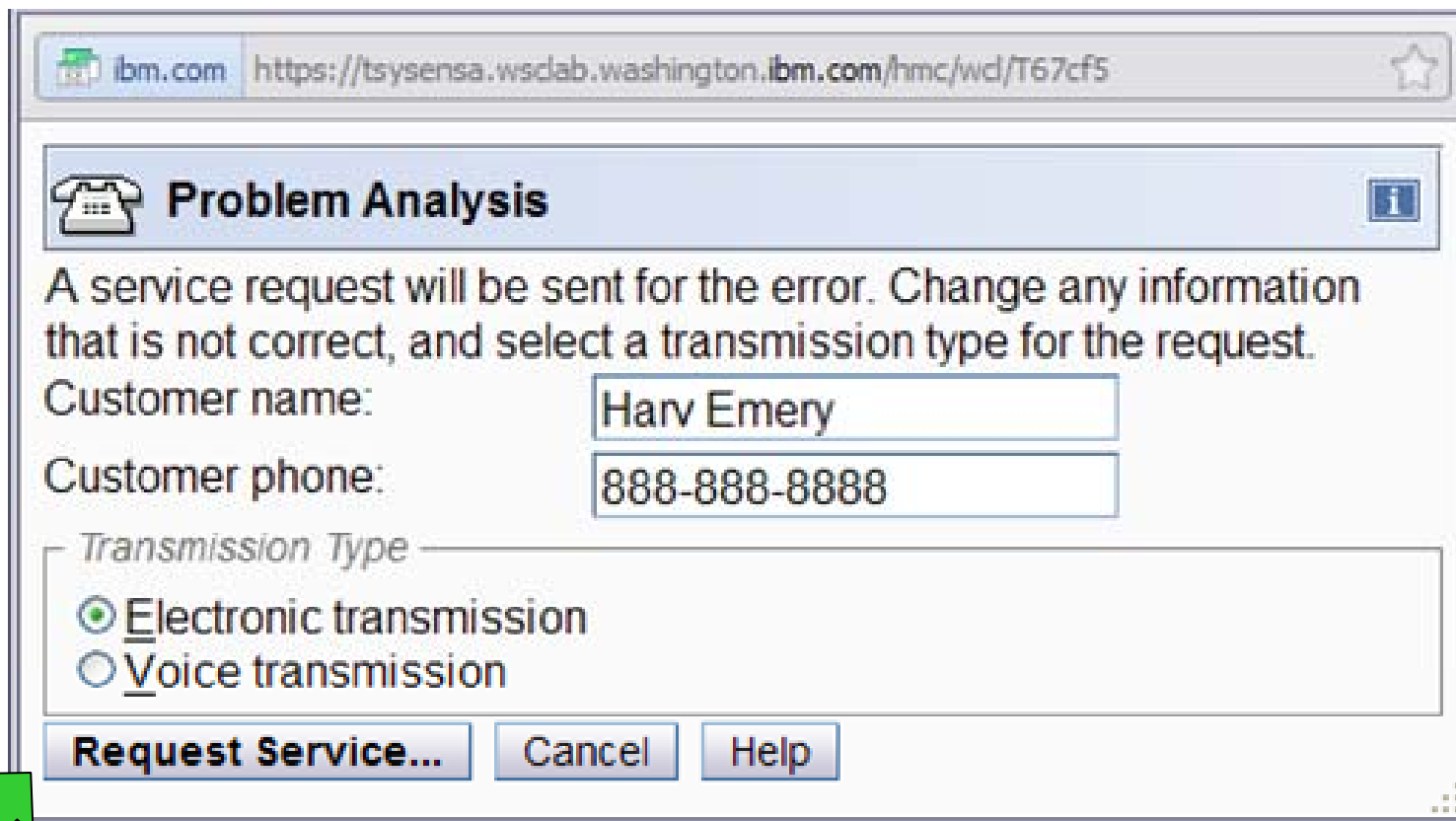
Problem Management Viewable (PMV) Record Support (Requires Driver 93 on the HMC)

- **A PMV Record is a new viewable hardware problem record (PMH) in the IBM Service Support System (Retain) that is designed to facilitate reporting of and work on problems encountered with zEnterprise Ensemble Licensed Internal Code (LIC).** For example, a PMV may be appropriate for problems encountered with the Unified Resource Manager or LIC running in hardware components in the zBX when a problem is suspected but is **NOT** reported automatically as a classic hardware PMH record by the SE and HMC Remote Support Facility (RSF) “phone home” function.
- **A PMV record like a software PMR record (but unlike a classic hardware PMH record) can be viewed, refreshed, and directly updated by a customer.**
- A customer can report a problem in a PMV record using **new PMV option in the HMC “Report a Problem” Console Task.** This can be done for any z196 or z114 managed by the HMC. A customer can view and update PMV records created for any z196 or z114 on the HMC using the **new “View PMV Records” Console Task.** This includes PMV records created on any HMC for the same CEC.

Select	PMV	Machine
<input type="radio"/>	09791	2817/M80-0000200C7675
<input checked="" type="radio"/>	36271	2817/M80-0000200C7675
<input type="radio"/>	53358	2817/M80-0000200C7675
<input type="radio"/>	64522	2817/M80-0000200C7675
<input type="radio"/>	67669	2817/M80-0000200C7675
<input type="radio"/>	69401	2817/M80-0000200C7675
<input type="radio"/>	76375	2817/M80-0000200C7675

Enter Contact Information, Select Electronic, Request Service



Problem Analysis

A service request will be sent for the error. Change any information that is not correct, and select a transmission type for the request.

Customer name:

Customer phone:

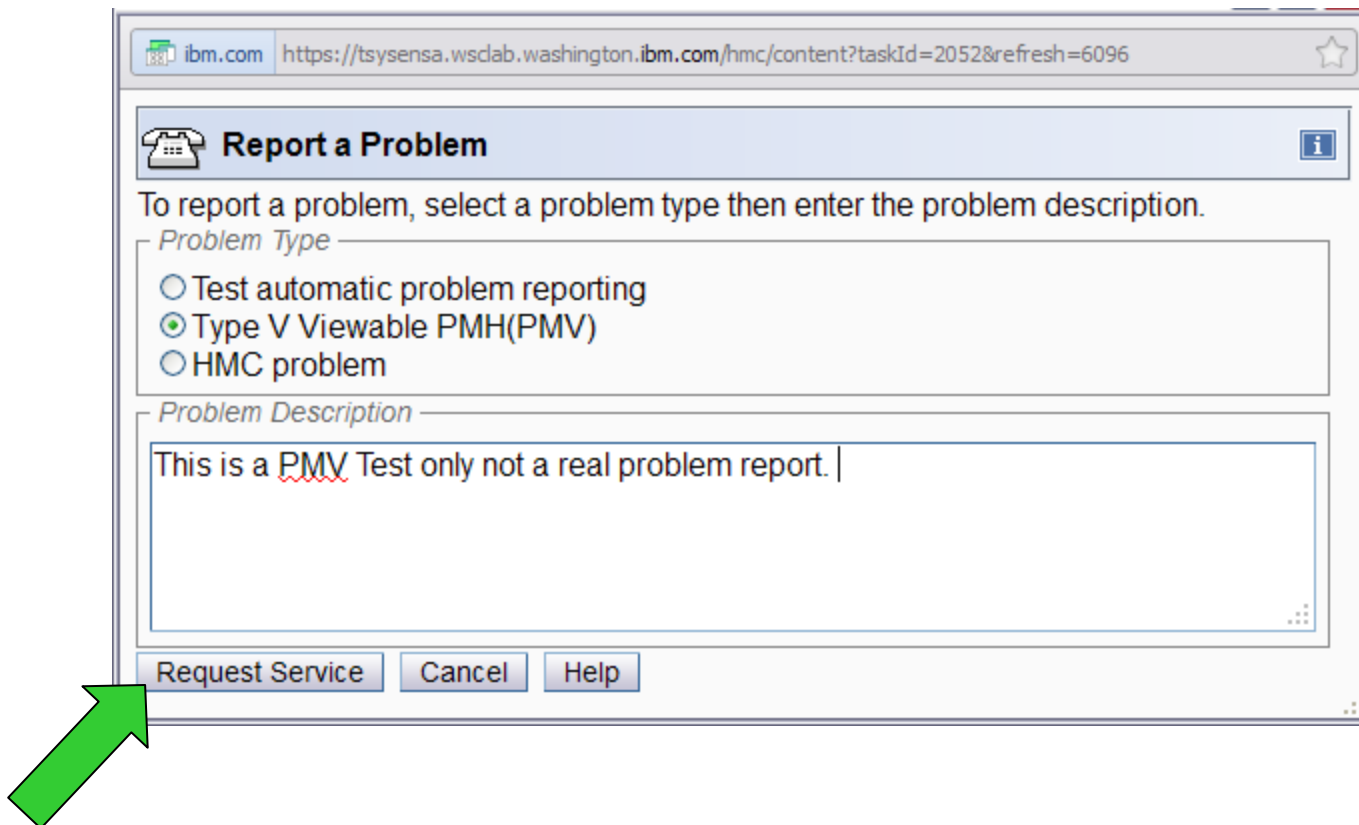
Transmission Type

☒ Electronic transmission

☐ Voice transmission

Request Service... **Cancel** **Help**

“Report a Problem”, Select PMV, Enter Description, Request Service



The screenshot shows a web browser window with the URL `https://tsysensa.wslab.washington.ibm.com/hmc/content?taskId=2052&refresh=6096`. The page title is "Report a Problem". Below the title, there is a text instruction: "To report a problem, select a problem type then enter the problem description." The form contains two main sections: "Problem Type" and "Problem Description".

Problem Type

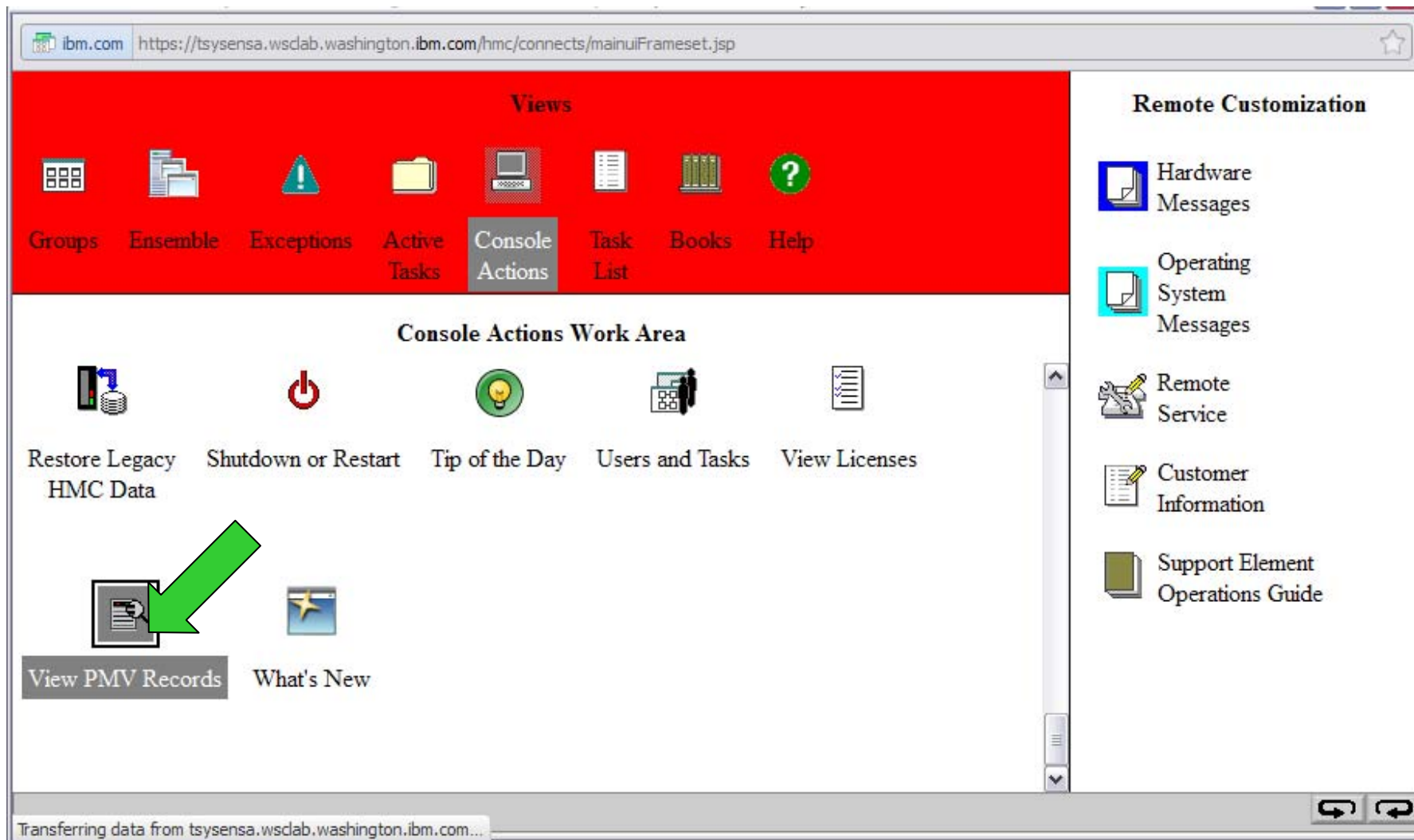
- ☐ Test automatic problem reporting
- ☒ Type V Viewable PMH(PMV)
- ☐ HMC problem

Problem Description

This is a PMV Test only not a real problem report. |

At the bottom of the form, there are three buttons: "Request Service", "Cancel", and "Help". A large green arrow points to the "Request Service" button.

Console Actions zEnterprise Driver 93 “View PMV Records”



Views

Groups Ensemble Exceptions Active Tasks **Console Actions** Task List Books Help

Console Actions Work Area

Restore Legacy HMC Data Shutdown or Restart Tip of the Day Users and Tasks View Licenses



View PMV Records What's New

Remote Customization

- Hardware Messages
- Operating System Messages
- Remote Service
- Customer Information
- Support Element Operations Guide

Transferring data from tsysensa.wslab.washington.ibm.com...

View, Refresh, Add a Comment, View, Add or Download an Attachment to a PMV Record (System Generated Information is shown)


View PMV Records


Details of PMV 36271

```

+SYSTEM GENERATED TEXT--D/T2817PMV--
PROB TYPE: V          CONNECT ID: 0
CPN: 145  REF: 28000911 REF_EXT: 00000000 REF_EXT2: 00000000 STATUS: 00
CEC LOCATION: A25B CEC S/N: 0000200C7675 HMC M/T: 4367  HMC MOD: PAM
COMFILE ID: PCOMFILE
CONCURRENT: UNKNOWN
REFERENCE CODE SEARCH LIST NOT AVAILABLE
FRU INFORMATION NOT AVAILABLE
+SYSTEM GENERATED TEXT--D/T2817PMV--
CURRENT EC/CHANGE LEVEL STATUS:
SUBSYSTEM -EC LEVEL  -P/N  -MCL (RCD) (ACT) (ACC) -ACT DATE & TIME
ENABLE2   N48128    41U7659      0    0    0    00-00-0000 00:00
G2PFCS    N48123    41U7660      2    2    1    09-06-2011 14:21
G2PFCEP   N48122    41U7661      2    2    0    09-06-2011 14:49
G2NET     N48121    41U7662      5    5    2    09-06-2011 14:54
G2OSX     N48120    41U7663      4    4    1    09-06-2011 14:54
+SYSTEM GENERATED TEXT--D/T2817PMV--
G2OSM     N48119    41U7669      0    0    0    00-00-0000 00:00
G2ICC     N48118    41U7670      0    0    0    00-00-0000 00:00
G24S      N48117    41U7671      0    0    0    00-00-0000 00:00
ENABLE3   N48127    41U8003      0    0    0    00-00-0000 00:00
ENABLE4   N48126    41U8004      0    0    0    00-00-0000 00:00
ENABLE5   N48125    41U8005      0    0    0    00-00-0000 00:00
ENABLE6   N48124    41U8006      0    0    0    00-00-0000 00:00

```

Add Comment Refresh PMV Add Attachment View Available Attachments View Downloaded Attachments Cancel

System z Social Media

- System z official Twitter handle:
 - [@ibm_system_z](https://twitter.com/ibm_system_z)
- Top Facebook pages related to System z:
 - [Systemz Mainframe](#)
 - [IBM System z on Campus](#)
 - [IBM Mainframe Professionals](#)
 - [Millennial Mainframer](#)
- Top LinkedIn Groups related to System z:
 - [Mainframe Experts Network](#)
 - [Mainframe](#)
 - [IBM Mainframe](#)
 - [System z Advocates](#)
 - [Cloud Mainframe Computing](#)
- YouTube
 - [IBM System z](#)



- Leading Blogs related to System z:
 - [Evangelizing Mainframe \(Destination z blog\)](#)
 - [Mainframe Performance Topics](#)
 - [Common Sense](#)
 - [Enterprise Class Innovation: System z perspectives](#)
 - [Mainframe](#)
 - [MainframeZone](#)
 - [Smarter Computing Blog](#)
 - [Millennial Mainframer](#)

Thank you!
ibm.com/systems/z



www.SHARE.org/AnaheimEval

