

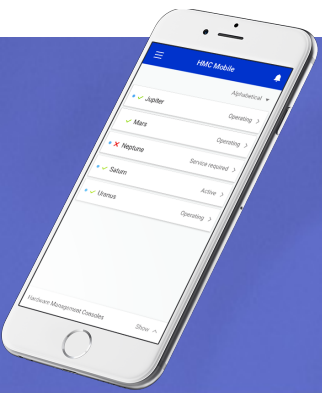


# IBM Z HMC (Hardware Management Console) 2.15.0 Workspace Enhancements & 2Q2021 Release

**May 13, 2021**

*Z Exchange*

**Brian Valentine**  
**HMC/SE Development**  
File Updated: 05-12-21



## IBM Z

© 2021 IBM Corporation

**Z Exchange**

# Topics

- ▶ HMC 2.15.0 System Support
- ▶ 2Q2021 Release
  - LDAP Group Membership
  - BCPii v2/HWIREST API
  - Remote Code Load for IBM Z Firmware
- ▶ HMC/SE/TKE without DVD Drive
- ▶ Mini KMM for SE
- ▶ Hardware Management Appliance
- ▶ Statements of Direction
- ▶ HMC Dashboard Status Enhancement
- ▶ HMC Remote Browsing Window Sizing options
- ▶ YouTube Videos for HMC Content
- ▶ Appendix
  - System Recovery Boost
  - HMC Legacy Support
  - zBX Support Removed
  - Removal of System (Sysplex) Time task
  - HMC Mobile Functional Enhancements
  - Defined Group Capacity HMC Scheduled Ops support
  - HMC Hardware for HMC 2.15.0/TKE Hardware for TKE 9.2

# HMC 2.15.0 System Support

# HMC 2.15.0 System support

- HMC support to n-2 only
- zBX support removed

Machine Family	Machine Type	Firmware Driver	SE Version
z15	8561, 8562	41	2.15.0
z14 M0x/LMx	3906	36	2.14.1
z14 ZR1/LR1	3907	36	2.14.1
z13	2964	27	2.13.1
z13s	2965	27	2.13.1



# 2Q2021 Release

**May 4<sup>th</sup> Announce**

<https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?subtype=ca&infotype=an&supplier=897&letternum=ENUS121-029>

**Required MCL Bundle Info: SE S38 & HMC H25**

LDAP Group Membership  
BCPii v2/HWIREST API  
Remote Code Load for IBM Z Firmware

# LDAP Group Membership

# Goals

- ▶ Link HMC user authority levels to LDAP group membership
  - Can Provide Elevated User Privileges
- ▶ Leverage existing LDAP group definitions and membership
  - HMC User Pattern Ordered list of group-to-template mappings
    - Each entry maps an LDAP group name to an HMC User Template name
    - Intended use: highest authority groups before lower authority groups
  - Add and remove user in higher privilege LDAP group at LDAP Server
- ▶ **Note:**
  - Interface for HMC Definitions
    - HMC User Interface
    - HMC WebServices APIs
  - User Profile Data settings can be replicated via HMC Data Replication

# User Management task changes

## ► New information in User Pattern:

- Ordered list of group-to-template mappings
  - Each entry maps an LDAP group name to an HMC User Template name
  - Intended use: higher authority groups before lower authority groups
- Name of LDAP Server Definition for group lookups
  - Identifies the LDAP server that hosts the group entries
  - Specifies how to find group entries and their member list
- Name of default User Template (optional)

## Setup Steps – User Management task on HMC

### **LDAP directory already has group definitions**

#### **1. Two LDAP Server Definitions**

Very likely to refer to the same LDAP server

1. Contains search instructions for user lookups
2. Contains search instructions for group lookups

#### **2. User Template for each authority level**

#### **3. User Pattern specifies ordered mapping of LDAP groups to User Templates**

# LDAP Server Definitions

## ■ User lookups

- ▶ To find the user's directory entry and verify the logon password
- ▶ Existing, no changes required to use LDAP Groups support
- ▶ Returns the DN (Distinguished Name) of the user's entry

## ■ Group lookups

- ▶ To determine if the user is a member of a specific group
- ▶ Uses the group name and user's DN
- ▶ Search Filter specifies how

## Search filter for group lookup

- **Highly dependent on LDAP schema**

- 1. Find the group**

- ▶ **Name of group - typically the CN (Common Name)**
- ▶ **Substituted for {1}**

- 2. Determine if user is a member of that group**

- ▶ **Name of group membership attribute**
- ▶ **User's DN is substituted for {0}**

- **For example**

- ▶ **(&(uniqueMember={0})(cn={1}))**

# LDAP Server Definition – for user lookup

- Existing, no change
- For example:

The screenshot displays the 'User Management' interface. On the left is a navigation sidebar with icons and labels for 'Users', 'Roles', 'Patterns', 'Templates', 'Passwords', 'LDAP', and 'Multi-Factor Authentication'. The 'LDAP' option is currently selected. The main content area is titled 'LDAP Server Definitions' and contains a list of four server types: 'Bluepages by email', 'Group lookup LDAP server', 'My group lookup LDAP server', and 'User lookup LDAP server'. The 'User lookup LDAP server' is highlighted. To the right of this list, a 'Summary for User lookup LDAP server' is shown, containing three sections: 'General' (description), 'Host Connection Information' (primary/backup host names, port, and SSL settings), and 'Initial Bind Information' (Distinguished name). A red rectangular box highlights the 'Directory Entry Location' section, which specifies how to locate a user's directory entry, including the distinguished name tree, search scope, and search filter.

**User Management**

**LDAP Server Definitions**

- Bluepages by email
- Group lookup LDAP server
- My group lookup LDAP server
- User lookup LDAP server**

**Summary for User lookup LDAP server**

- General**  
Description: LDAP server for user lookups and authentication, with search filter for email address
- Host Connection Information**  
Primary host name: 9.160.89.52  
Backup host name:  
Connection port: 389  
Use a Secure Sockets Layer (SSL) connection: Disabled  
Allow self-signed or untrusted server certificates: Disabled
- Initial Bind Information**  
Distinguished name (DN): cn=admin,dc=hmcse,dc=example,dc=com
- Directory Entry Location**  
How to locate a user's directory entry: Search a DN tree  
Distinguished name tree: ou=users,dc=hmcse,dc=example,dc=com  
Search scope: Entire tree should be searched  
Search filter: mail={0}



# LDAP Server Definition – for group lookup

- New
- For example:

The screenshot displays the 'User Management' interface. On the left is a navigation sidebar with icons for Users, Roles, Patterns, Templates, Passwords, LDAP, and Multi-Factor Authentication. The main area is titled 'LDAP Server Definitions' and contains a list of server types: Bluepages by email, Group lookup LDAP server, My group lookup LDAP server (highlighted), and User lookup LDAP server. To the right, a 'Summary for My group lookup LDAP server' is shown, detailing configuration settings under four sections: General, Host Connection Information, Initial Bind Information, and Directory Entry Location. The 'Directory Entry Location' section is highlighted with a red border.

**User Management**

**LDAP Server Definitions**

- Bluepages by email
- Group lookup LDAP server
- My group lookup LDAP server**
- User lookup LDAP server

**Summary for My group lookup LDAP server**

- General**  
Description:
- Host Connection Information**  
Primary host name: 9.160.89.52  
Backup host name:  
Connection port: 636  
Use a Secure Sockets Layer (SSL) connection: Enabled  
Allow self-signed or untrusted server certificates: Disabled
- Initial Bind Information**  
Distinguished name (DN): cn=admin,dc=hmcse,dc=example,dc=com
- Directory Entry Location**  
How to locate a user's directory entry: Search a DN tree  
Distinguished name tree: ou=groups,dc=hmcse,dc=example,dc=com  
Search scope: Entire tree should be searched  
Search filter: (&(uniqueMember={0})(cn={1}))

# User Template (no change)

## ■ Points to LDAP server used for user lookups



### User Template Details

General  
Session  
Authentication  
Roles

#### Authentication

\* Enterprise Directory Server (LDAP): User lookup LDAP server

☒ Delay login after failed attempts

Number of failed attempts before disable delay: 3

Delay (minutes): 1

☐ Disable for inactivity (days): 30

☒ Require password for disruptive actions

☐ Require text input for disruptive actions

#### Multi-factor authentication (MFA)

Select the MFA type for the template. Define MFA servers on the Multi-Factor Authentication tab of the User Management task.

☒ No MFA

☐ HMC MFA

☐ IBM Z Multi-Factor Authentication

MFA override attribute name: ?

\* Primary server:

Select an option

Backup server:

Select an option

\* Policy name:

Enter a new name or select an option

Reset

At next login, reset the shared secret keys for users connected to this template

# New User Pattern wizard

## ■ Add group-to-template mappings

**New User Pattern**

✓ Welcome  
✓ Name  
✓ User Pattern  
\* **Template**  
User Access  
Summary

**Template Settings**

A template specifies object and task access permissions for users matching the pattern.

Select a template for users matching the pattern.

☐ Use a specific template

☒ Use a template based on user LDAP group membership

Select an LDAP server for user LDAP group membership lookup, configure LDAP group to template assignments, and choose an optional default template if a user is not found in a group.

\* LDAP server for user LDAP group lookup: My group lookup LDAP server

**LDAP Groups To Template Name Mappings**

User LDAP group membership lookups will occur in the order found in the table. If a user is a member of multiple LDAP groups, the template assignment comes from the first group membership match.

Group Name	Template Name
------------	---------------

No items to display

Total: 0 Selected: 0

Select a default template or fail login for users not found in a group


☐ Use a default template: Lazy Bum

☒ Fail login

☐ Use a template based on an LDAP attribute

Back Next Finish Cancel Help

# ... New User Pattern wizard

 **New User Pattern**

☒ Welcome

☒ \* Name

☒ \* User Pattern

☒ \* **Template**

☐ User Access

☐ Summary

### Template Settings

A template specifies object and task access permissions for users matching the pattern.

Select a template for users matching the pattern.

☐ Use a specific template

☒ Use a template based on user LDAP group membership

Select an LDAP server for user LDAP group membership lookup, configure LDAP group to template assignments, and choose an optional default template if a user is not found in a group.

\* LDAP server for user LDAP group lookup:

#### LDAP Groups To Template Name Mappings

User LDAP group membership lookups will occur in the order found in the table. If a user is a member of multiple LDAP groups, the template assignment comes from the first group membership match.

Group Name	Template Name
------------	---------------

+

-

↶

↷

Actions ▼

Add LDAP Group Template Assignment

Provide an LDAP group for user ID membership lookup and a template to use when a user ID is found in the group.

\* LDAP group name:

\* Template name:

Add

Cancel

Help

<

>

Total: 0 Selected: 0

Select a default template or fail login for users not found in a group

☐ Use a default template:

☒ Fail login

☐ Use a template based on an LDAP attribute

Back

Next

Finish

Cancel

Help

## ... New User Pattern wizard

### ■ Can add, delete and reorder

**New User Pattern**

☒ Welcome  
☒ \* Name  
☒ \* User Pattern  
☒ \* **Template**  
 User Access  
 Summary

#### Template Settings

A template specifies object and task access permissions for users matching the pattern.

Select a template for users matching the pattern.

☐ Use a specific template  
☒ Use a template based on user LDAP group membership

Select an LDAP server for user LDAP group membership lookup, configure LDAP group to template assignments, and choose an optional default template if a user is not found in a group.

\* LDAP server for user LDAP group lookup:

#### LDAP Groups To Template Name Mappings

User LDAP group membership lookups will occur in the order found in the table. If a user is a member of multiple LDAP groups, the template assignment comes from the first group membership match.

Group Name	Template Name
securityAdmin	SecAdmin
<input checked="" type="checkbox"/> sysprogs	System Programmer
<input type="checkbox"/> operators	Oper

Total: 3 Selected: 1


Select a default template or fail login for users not found in a group

☐ Use a default template:   
☒ Fail login  
☐ Use a template based on an LDAP attribute

Back Next Finish Cancel Help

## ... New User Pattern wizard

### ■ Summary information


**New User Pattern**

☒ Welcome  
☒ \* Name  
☒ \* User Pattern  
☒ \* Template  
☒ User Access  
**Summary**

### Summary

Verify the information and then click **Finish** to create the user pattern.

**User Pattern:**

Name: My pattern for LDAP groups

Description: User Pattern for use with group definitions in LDAP

User pattern: \*@example.com

Pattern type: Glob-like

User Settings retention time(days): 90

**Template**

Template type: Template from LDAP group membership

Ordered group to template list:

Group Name	Template Name
securityAdmins	SecAdmin
sysprogs	System Programmer
operators	Oper

LDAP server: My group lookup LDAP server

Default template: None - Fail login if users not found in a group

**User Access**

User ID log in access: All users

# BCPii v2/HWIREST API



## Base Control Program internal interface (BCPii) V1 Refresher

- ▶ Allows authorized z/OS applications to have HMC-like control over systems in the process control (HMC) network
  - Set of robust APIs provided (HWIQUERY, HWISET/HWISSET2, HWICMD/HWICMD2)
  - Use SNMP APIs on the SE under the covers
- ▶ Granular access controls on HMC/SE to control what access a source LPAR has
  - Controls whether an LPAR can originate BCPii requests
  - Controls what systems/LPARs can be targeted
  - Provided via image activation profiles, Customize LPAR Security, and system details tasks
- ▶ RACF profile checking on the z/OS side
- ▶ Complete communication isolation of existing networks (intranet/internet) from the process control (HMC) network
  - Communication to the support element completely within base z/OS
- ▶ Configuration
  - All systems in the Sysplex must be defined to one or more Change Management HMCs
  - Add 127.0.0.1/255.255.255.255 as a write access community name entry using the Customize APIs task on the SE
  - Zero special network configuration required



## BCPii v2/HWIREST API Highlights

- ▶ Similar automation capabilities as V1
  - Set of robust REST-like APIs provided (i.e. HWIREST)
  - Superset of function for queries, updates and commands
  - Use web service APIs on the SE under the covers
  - Limited to z15 and later systems
- ▶ Same granular access controls on HMC/SE as V1
- ▶ Similar RACF profile checking on the z/OS side
- ▶ Same network isolation characteristics as V1
- ▶ Same configuration characteristics

# BCPii v2/HWIREST API Documentation

- ▶ Uses Web Services API publication available on Resource Link
  - <http://www.ibm.com/servers/resourcelink>
    - Library → z15 → Web Services API
      - ◆ *IBM Z Hardware Management Console Web Services API SC27-2638-04*
- ▶ BCPii unique differences highlighted throughout the book
  - Authorization requirements
  - Indication if service or operation is supported over BCPii v2/HWIREST API interface
  - Unique operation request/response body differences
- ▶ BCPii Appendix
  - General description of BCPii support
  - HMC versus BCPii management scope comparison
  - Summary of supported services and operations
  - Pointer to z/OS BCPii documentation

## BCPii v2/HWIREST API Details

### ▶ Operational categories supported

- Asynchronous job processing (polling mechanism for command completion)
- Session management (query API version only)
- Core IBM Z resources
  - Console, Group, CPC, Logical Partition, Reset/Image/Load/Group profile, Capacity record objects only
  - Energy management

### ▶ Operation categories currently unsupported

- Asynchronous notifications
  - Can use BCPii v1 method for notifications of v1 functionality events
- Session management (all except query API version)
- Inventory, metric, and aggregation services
  - Can obtain most of same info via Attribute queries
  - Metric data being looked at for future
- Dynamic Partition Management (DPM)

# BCPii v2/HWIREST API Enablement and Documentation

## ► Availability

- MCL Bundle Info: **SE S38 & HMC H25**
  - **Same bundles also provide support for**
    - ◆ LDAP Group Membership
    - ◆ Remote Code Load for IBM Z Firmware
- z/OS 2.4: APAR OA60351
  - Not required for LDAP Group or Remote Code Load support

## ► z/OS Publications/Samples

- <https://www.ibm.com/support/knowledgecenter/en/SSLTBW>
  - MVS Programming: Callable Services for High-Level Languages
    - ◆ Base Control Program internal interface
  - MVS System Management Facilities (SMF)
    - ◆ BCPii SMF 106
  - MVS System Codes
    - ◆ BCPii System Code '042'X
- Samples
  - **Github:** <https://github.com/IBM/zOS-BCPii>

# BCPii v2/HWIREST API Usage

## ▶ HWIREST API details

- sample REXX syntax
  - address bcp<sub>ii</sub> “hwirest requestParm. responseParm.”

### requestParm details

```
requestParm.httpMethod
requestParm.uri
requestParm.targetName
requestParm.requestBody
requestParm.clientCorrelator
requestParm.encoding
requestParm.requestTimeout
```

### responseParm details

```
responseParm.responseDate
responseParm.requestId
responseParm.location
responseParm.responseBody
responseParm.httpStatus
responseParm.reasonCode
```

- invocation example to obtain total installed storage on CPC R32

```
/* A previous HWIREST request obtained and set the following information:
```

```
  CPCR32 = "/api/cpcs/37c6f8a9-8d5e-3e5d-8466-be79e49dd340"
```

```
  CPCR32TargetName = "IBM390PS.R32"
```

```
*/
```

```
requestParm.httpMethod = HWI_REST_GET
```

```
requestParm.uri = CPCR32||'?properties=storage-total-installed'
```

```
requestParm.targetName = CPCR32TargetName
```

```
address bcpii "HWIREST" "requestParm. responseParm."
```

```
Say 'request finished with HTTPStatus' || responseParm.httpStatus
```

```
Say 'request finished with reasonCode' || responseParm.reasonCode
```

```
If responseParm.httpStatus = 200 & LENGTH(responseParm.responseBody) > 0 then
```

```
  Parse responseParm.responseBody and retrieve value
```

## BCPii v2/HWIREST API Summary

- ▶ Same configuration steps and security characteristics as V1
- ▶ Limited to z15 and later systems
- ▶ Superset of query, update, and command support as V1
  - Currently lacks asynchronous notification support
  - Additional attributes immediately available
  - New operations immediately available
- ▶ *Virtually eliminates the need for z/OS side changes in the future*
  - HWIREST API is primarily just a transport
  - Extendible JSON format for request/response data
  - New firmware features immediately available without the need for z/OS side changes

# Remote Code Load for IBM Z Firmware

# Remote Code Load Option for Firmware

- ▶ Remote Update Controls for Setup and Monitoring without connection into HMC
- ▶ Utilizes existing zRSF Call Out Connection Infrastructure
  - Means to configure Single Step MCL Scheduled Ops via IBM Resource Link & zRSF response
  - IBM SSR Monitors Sales Force Call Home for Intermediate & Completion Status
    - Will be equivalent to same information as if sitting next to HMC
    - When complete, SSR will notify client.
      - ◆ Client could start remote testing at that point.
- ▶ Requires Opt In Security Configuration by Client
  - Verbal communication from Client to SSR on execution direction & security token
  - Client has ability to
    - Confirm what FW Updates are scheduled
    - Can easily cancel any scheduled FW Update
- ▶ 96 % Success Rate => If exception issue encountered, IBM SSR to be dispatched immediately
  - FFDC (First Failure Data Capture) already complete
  - SSR dispatch time could be up to 2 hours
    - However, should arrive with Next Level of Support actions in hand => goal of concurrent recovery
    - System normally continues to run even if exceptions encountered
- ▶ Client Benefit (& IBM) for Migration to Remote Code Update Orchestration
  - Provides ability for both Client/SSR to not be onsite for update process
  - Potential for Client to do acceptance test remotely as well



# Remote Code Load for IBM Z Firmware – Opt In

- ▶ Verbal communication from Client to SSR on execution direction
  - MCL Bundle, HMC or CPC Target (if CPC, must specify HMC for orchestration), date/time
- ▶ Client Opt's in on HMC to allow SSR to schedule Remote Code Load
  - Select **Generate Token** on *Manage Remote Firmware Updates* task

The screenshot displays the IBM Hardware Management Console interface. The main page is titled "Manage remote firmware updates" and includes a table for "Scheduled remote firmware updates". The table is currently empty, with a message stating "There are no currently scheduled remote firmware updates." A yellow banner at the top of the page prompts the user to "Generate a token to opt-in to remote firmware updates." with a "Generate token" link.

An "Authorize remote firmware updates" dialog box is open, showing the following text:

By checking the box below and clicking "Generate token," you agree to allow IBM Service Support Representatives (SSRs) remote access to your environment to perform firmware updates on one or more systems in the environment.

- Tokens are valid for up to seven days from the time they are generated
- Tokens are only valid for the systems managed by the HMC from which they were generated
- The remote firmware upgrade process complies with all IBM security and compliance standards, including GDPR

Once the token is generated, share it with your IBM Service Support Representative to confirm the scheduled firmware update.

☒ I agree to let IBM Service Support Representatives access my environment remotely.

Buttons: Cancel, Generate token

# Remote Code Load for IBM Z Firmware – Opt In

- ▶ Client Opt in on HMC to allow SSR to schedule Remote Code Load
  - Must communicate security token to SSR
    - Expiration: days:hours:minutes:seconds (initial expiration 7 days)

The screenshot displays the IBM Hardware Management Console (HMC) interface. The top navigation bar includes the title 'IBM Hardware Management Console', a search icon, and the user 'bdvalent@... com'. The main content area is titled 'Manage Remote Firmware Updates' and contains a message about the remote firmware update authorization code (10BE61) and its expiration time (06:22:55:12). Below this, there is a section for 'Scheduled remote firmware updates' which is currently empty, showing a table with columns for Target bundle, Date, Time, Target name, and Status. At the bottom, there are 'Close' and 'Help' buttons.

IBM Hardware Management Console

Home Manage Remote Firmwar... X

## Manage remote firmware updates

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61.  
Token expires in 06:22:55:12

[Copy token](#) [Generate new token](#)

### Scheduled remote firmware updates

Target bundle	Date	Time ⓘ	Target name	Status
There are no currently scheduled remote firmware updates.				

[Close](#) [Help](#)

# Remote Code Load for IBM Z Firmware – SSR Schedules

## ► SSR Schedules Remote Code Load on IBM Resource Link

- Includes Client and SSR Contact Info
- Must be Scheduled 24 hours prior to execution
  - Recommendation will be 2 to 3 days prior to allow client & SSR opportunity for confirmation

Resource Link

IBM Systems > IBM Z > Resource Link > Fixes >

### Remote Code Load

Select the Hardware Management Console (HMC) where this remote code load will be scheduled.

Customer number: B123456

Target: SE T32 8561 0226EA8 T01

Schedule HMC: HMC T32HMC TOP 2461 DK8C009 VA3

Bundle: S34a

Date: 2021-02-16

Time (24 hour): 22:00:00

Authorization token: 10BE61

IBM requestor

Name: Brian V

Email: BrianV@ibm.com

Phone number: 5551234567

Customer contact

Name: John Smith

Email: JohnSmith@company.com

Phone number: 5557654321

Submit

# Remote Code Load for IBM Z Firmware – View Scheduled

- ▶ Client can View upcoming Remote Code Loads on orchestration HMC
  - Can view SSR Contact Info using arrow

IBM Hardware Management Console

Home Manage Remote Firmwar... X

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61.  
Token expires in 06:23:42:22

[Copy token](#) [Generate new token](#)

Scheduled remote firmware updates

Target bundle	Date	Time ⓘ	Target name	Status
⌵ S34a	2/16/21	10:00 PM	T32	Scheduled

[Close](#) [Help](#)

IBM Hardware Management Console

Home Manage Remote Firmwar... X

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61.  
Token expires in 06:23:40:56

[Copy token](#) [Generate new token](#)

Scheduled remote firmware updates

Target bundle	Date	Time ⓘ	Target name	Status
⌶ S34a	2/16/21	10:00 PM	T32	Scheduled

SSR contact  
Name: Brian V  
Phone: 5551234567  
Email: BrianV@ibm.com

[Close](#) [Help](#)

# Remote Code Load for IBM Z Firmware – Cancel

- ▶ Client can Cancel upcoming Remote Code Load on orchestration HMC
  - Select trash can for cancel
  - Can be canceled right up to the last minute prior to execution

IBM Hardware Management Console

Home Manage Remote Firmwar... X

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61. [Copy token](#) [Generate new token](#)  
Token expires in 06:23:42:22

Scheduled remote firmware updates

Target bundle	Date	Time ⓘ	Target name	Status
⌵ S34a	2/16/21	10:00 PM	T32	Scheduled

Close Help

Customize Scheduled Oper... X Manage Remote Firmwar... X

### Manage remote firmware updates

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61. [Copy token](#) [Generate new token](#)  
Token expires in 06:22:54:06

Scheduled remote firmware updates

**Cancel scheduled remote firmware update** X

The scheduled remote code update for 2/16/2021 at 10:00 PM will be removed. Please contact the IBM Service Support Representative scheduled for this operation to confirm cancellation.

**Target**  
Bundle: S34a  
Name: T32

**SSR contact**  
Name: Brian V  
Phone: 5551234567  
Email: BrianV@ibm.com

Type target bundle to confirm cancellation  
Target bundle

Type target name to confirm cancellation  
Target name

Back to scheduled updates Cancel update

Close Help

# Remote Code Load for IBM Z Firmware – Execution

- ▶ Generally, Client has no involvement during execution
  - SSR will be remotely monitoring all detailed steps of Remote Code Load
  - SSR will notify Client of completion of Remote Code Load
    - Client can view that execution is **In Progress** if they were to open task during execution

T32HMC TOP: Hardware Management Console Workplace (Version 2.15.0)

IBM Hardware Management Console

Home Manage Remote Firmwar... X

### Manage remote firmware updates

Use the table below to view and cancel updates, as well as to find contact information for the IBM Service Support Representative (SSR) assigned to schedule your remote update.

Your remote firmware update authorization code is 10BE61.  
Token expires in 06:03:22:06

[Copy token](#) [Generate new token](#)

#### Scheduled remote firmware updates

Target bundle	Date	Time ⓘ	Target name	Status
<input checked="" type="checkbox"/> S34a	2/17/2021	01:00 PM	T32	<span style="color: blue;">●</span> In progress

[Close](#) [Help](#)

# **HMC/SE/TKE without DVD Drive**

## HMC/SE No DVD

- ▶ **No DVD/CD drives in New Build HMC/TKE & all SE HW**
  - DVD/CD drives becoming obsolete in the industry
    - Analogous to history of 5 1/4" floppy
  - Note:
    - **MES HMC/TKE** hardware could still have DVD/CD drive
- ▶ USB slots still present
- ▶ 2 main options for service and functional operations:
  - USB
  - Electronic
- ▶ Both options provide:
  - HMC/TKE/SE firmware loading
  - eBoD (eBusiness on Demand) records
    - eg, On Off Capacity on Demand, Capacity Backup Unit (Disaster Recovery)
  - Operating System code
    - used for Load from Removable Media or Server task



# HMC/SE No DVD – Firmware Loading

## ► Firmware Loading

### ● USB

- Same as with DVDs today
- New system orders will normally ship HMC, TKE, or SE firmware on USB
  - ◆ UNLESS new FC (Feature Code) 0846 ordered

### ● Electronic (**NEW** for 2.15.0)

- Use when USB not acceptable or when FC 0846 ordered
- Firmware (ISO image) put on HMC
- HMC provides server for ISO image loading
- ISO image loaded to target HMC/TKE/SE over network (same subnet)
- New build HMCs pre-loaded with HMC/SE ISO images

### ● Note:

- HMC 2.15.0 (MES or new build) with Legacy Systems (z14/z13)
  - ◆ No process change needed for z14/z13!
    - HMC 2.15.0 process change if USB not acceptable
  - ◆ Can support z14/z13 Service functions/Read Only Feature directly on SE
    - No ISO Images required for z13/z14

## HMC/SE No DVD – Firmware Loading

- ▶ FC 0846 detail (No physical media shipped)
  - *Drives requirement for **two** 2.15.0 HMCs on every unique network subnet where HMC, SE, or TKE is connected.*
    - For dead HMC recovery scenario
  - *ISO image download options (if needed)*
    - zRSF ( Remote Support Facility) to HMC
    - RL (Resource Link) to FTP server.
      - ◆ HMC downloads from FTP server
  - **Note:**
    - TDA (Technical & Delivery Assessment) updated to ensure ISO on HMC before system install

## HMC/SE No DVD – Firmware Loading

### ► IBM Resource Link ISO download to FTP server

- 1) Selects “AROM images” from the Resource Link Fixes page
- 2) User selects device type , enters CEC machine type + serial number
- 3) System VPD determines images available, select download type
- 4) Download

# HMC/SE No DVD – Firmware Loading

## ► RL – Select “AROM images”

Resource Link	Fixes	
Site search		
Planning	Hardware	Software
Education	Known defects/problems <ul style="list-style-type: none"><li>Exception letters</li></ul>	Get fixes <ul style="list-style-type: none"><li>Download</li><li>Check status of ordered fixes</li></ul>
Library		
Fixes	Alerts <ul style="list-style-type: none"><li>Machine alerts</li><li>Hiper alerts</li><li>Red alerts</li></ul>	Report problems <ul style="list-style-type: none"><li>Software problem reporting</li></ul>
Problem solving	Report problems <ul style="list-style-type: none"><li>Hardware problem reporting</li></ul>	Preventive actions <ul style="list-style-type: none"><li>Preventive Service Planning buckets (PSP)</li><li>Subscribe to APARs</li><li>Search for APARs</li></ul>
Services	Downloads <ul style="list-style-type: none"><li>AROM images</li></ul>	Maintenance
Tools		
Customer Initiated Upgrade		
Feedback		

# HMC/SE No DVD – Firmware Loading

- ▶ RL - select device type , enter CEC machine type + serial number

IBM Systems > IBM Z > Resource Link > Fixes >

## AROM Download

Select the device type and associated machine type and serial number.

Device:\*

SE ▼

Machine type:\*

8561 ▼

Machine serial number:\*

Submit

## HMC/SE No DVD – Firmware Loading

- ▶ RL - System VPD determines images available, select download type

IBM Systems > IBM Z > Resource Link > Fixes >

### AROM Download

3906-M02 0211FF8

Select HMC AROM.

AROM:\*

HMC Driver 40 level 0001 NETWORK ▼

Download Type:\*

Download Director ▼

Submit

# HMC/SE No DVD – Firmware Loading

## ► RL - Download

IBM Systems > IBM Z > Resource Link > Fixes >

### AROM Download

3906-M02 0211FF8

Download files for AROM HMC Driver 40 level 0001 NETWORK.

---

Download all files using IBM Download Director.

 4 files (100.35 MB)

## HMC/SE No DVD – eBoD

- ▶ **eBoD (eBusiness on Demand):** Controls for Processor/Memory add
  - **CPCs prior to z15**
    - DVD/CD
    - zRSF electronic download for Customer Initiated Upgrade
    - Feature Code 1750
      - ◆ LICCC MES delivered via Manufacturing website
  - **z15 CPCs**
    - USB
    - zRSF electronic download for Customer Initiated Upgrade
    - Feature Code 1750
      - ◆ LICCC MES delivered via Manufacturing website
      - ◆ HMC FTP support to import onto system
    - USB **NOT** Acceptable
      - ◆ Utilize one of the above electronic solutions



# HMC/SE no DVD – Operating Systems

## ► Load from Removable Media or Server => OS solutions

- z/VM => Plan for USB/Network distribution
- Linux => Plan for USB/Network distribution
- VSE => Plan for USB/Network distribution
- TPF => Doesn't use HMC, only loads from DASD
- z/OS => Plan for USB/Network distribution
- **Note:**
  - Plans will vary on how USB/Network distribution will be executed
  - OS will provide directions

## ► More on Feature Codes:

- **FC 0843**
  - USB Load media which can be used for IBM Z Operating System code loads
- **FC 0848**
  - Base HMC or SE Critical Data Backup USB: 8GB
  - FC 0848 ordered if larger capacity USB required: 32GB

# Mini KMM for SE

# Mini KMM for SE

## ▶ SE Keyboard/Display intended for Service use

- Non critical hardware for functional & monitoring of CPC, Images, & OSes
- Customer physical access intended use => HMC only (no SE physical access)
  - Understand that some clients may physically access SE
  - New Human Interface for SE => clients must utilize service solution
  - For Hardware Management Appliance Feature
    - ◆ Intended HMC/SE Physical access via remote browser workstation
    - ◆ If clients access VA directly => must accept service solution
  - **Recommendation to clients: Don't physically access Mini KMM in IBM Z frame**

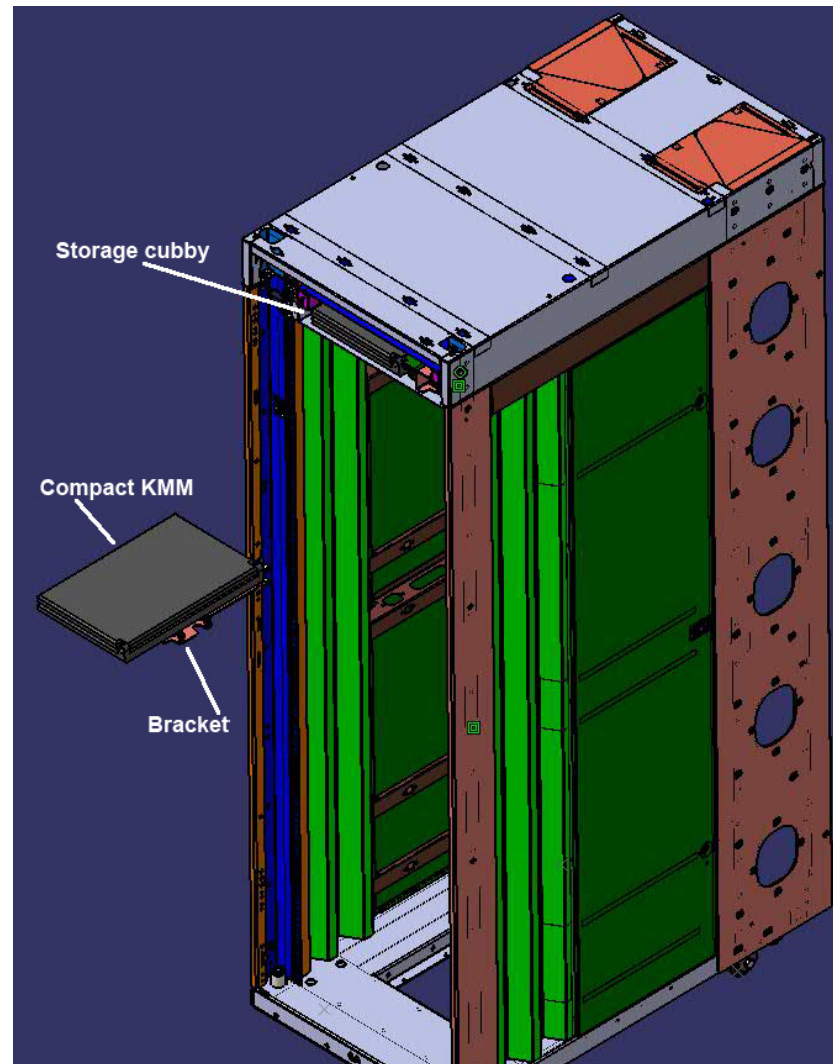
## ▶ Mini (or Compact) KMM (Keyboard Monitor Mouse) solution

- Single KMM
- Attaches via USB-C cable connection
  - Connections via front/back of frame
  - Interface Adapter to switch between Primary/Alternate SEs



## Mini KMM for SE

Opens OUT of the  
drawer space

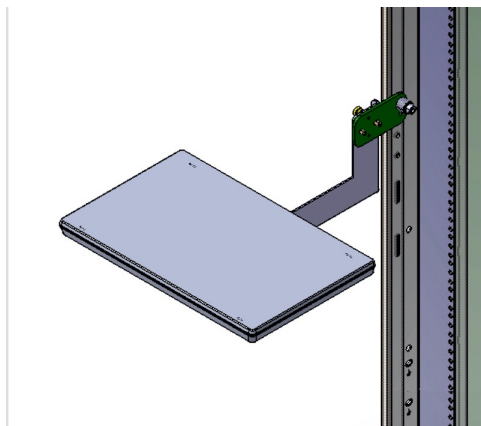
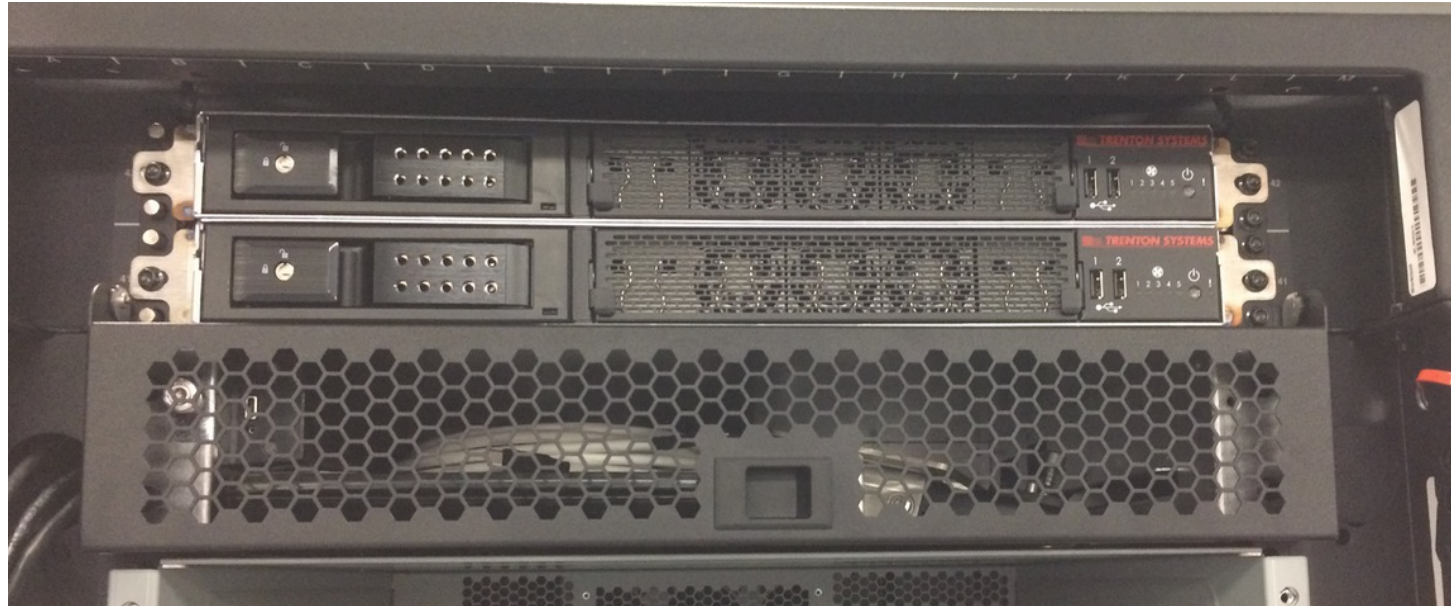


Mounts to either side,  
left or right,  
front or back

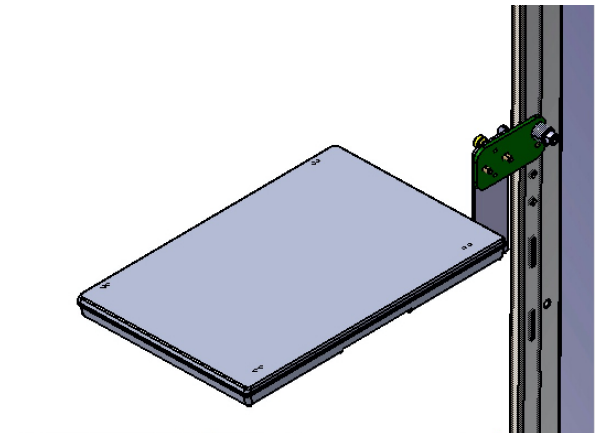
Can mount on an adjacent  
rack

## Mini KMM for SE

Storage Cubby => Closed



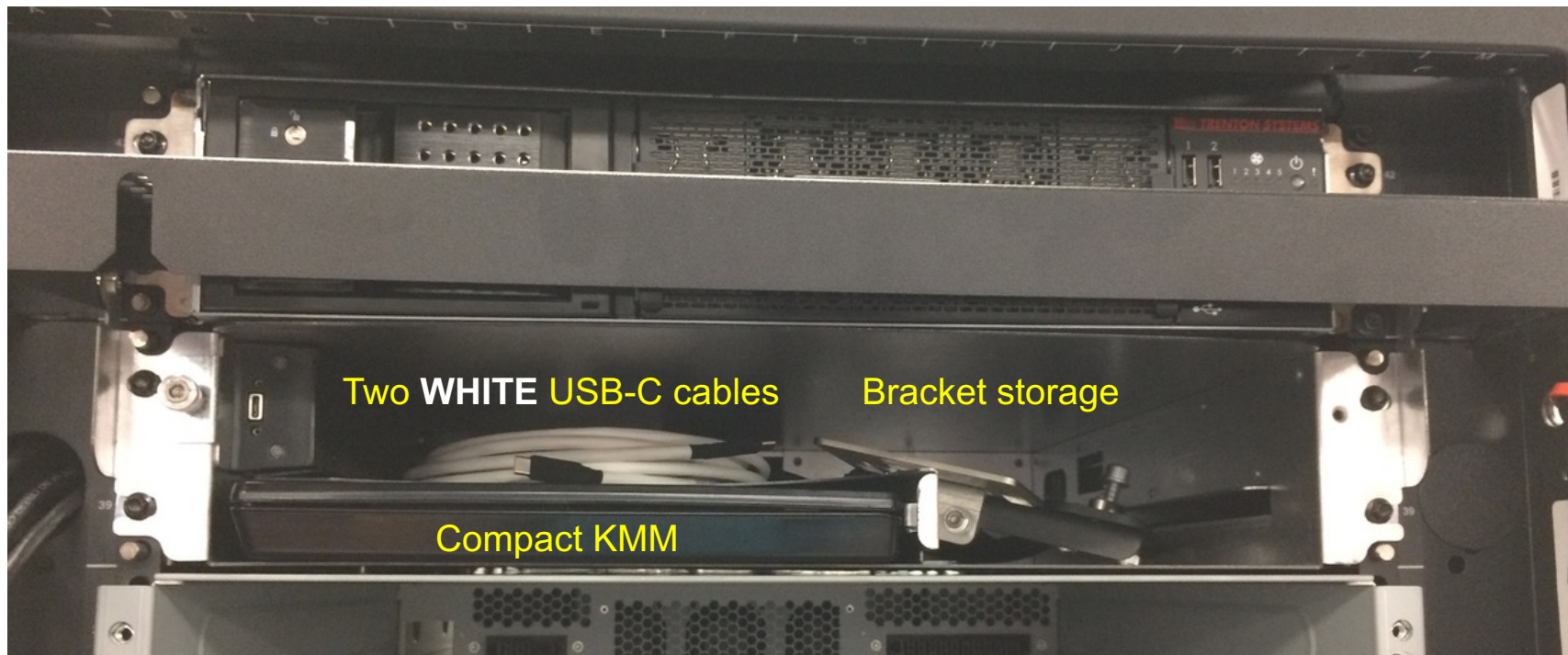
Mini KMM  
Frame Mounting





## Mini KMM for SE

Open Cubby => KMM Stored



# Hardware Management Appliance

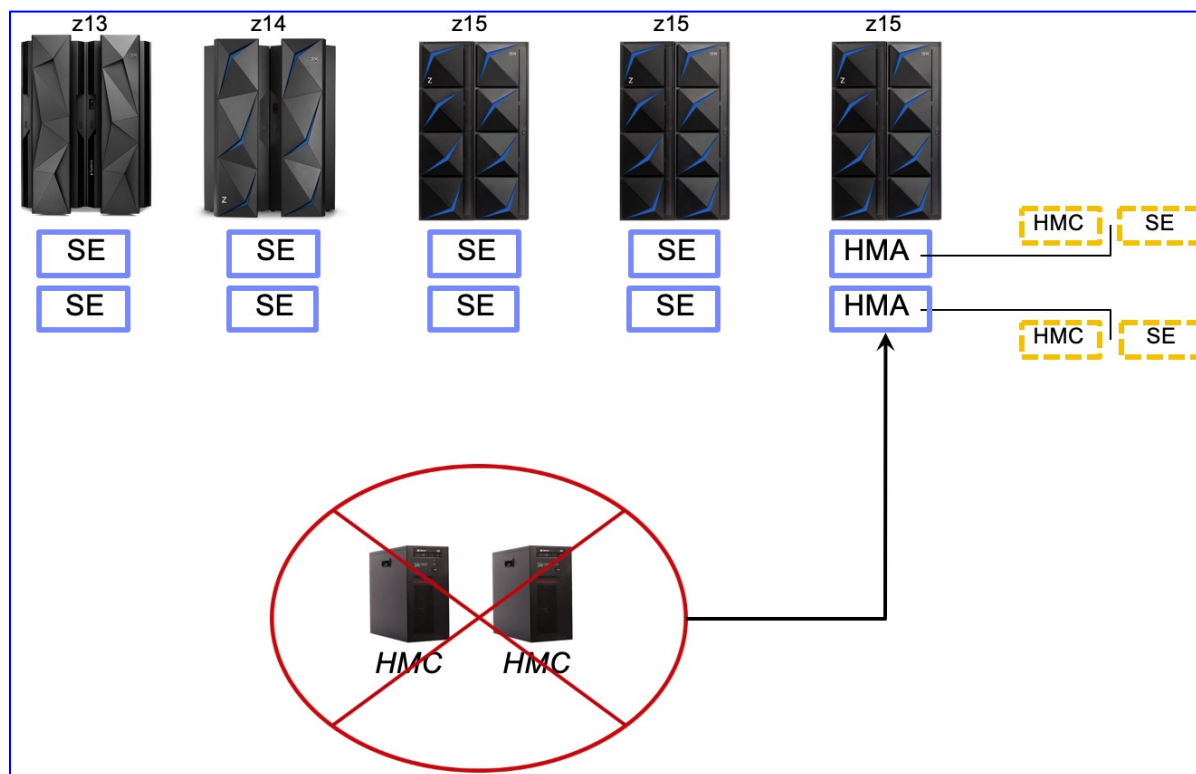
# Hardware Management Appliance

- ▶ **Prior to z15, HMC/SE hardware**
  - Redundant Support Elements => 1U Rack Mounted
  - Recommend redundant Hardware Management Consoles
    - 1U Rack Mounted or MiniTower
- ▶ **New z15 Option => HMA (Hardware Management Appliance)**
  - Redundant physical appliances => increased capacity 1U Rack Mounted
  - Will run virtual instances of HMC and SE on each physical appliance
    - Redundant HMC/SEs
  - Management of HMA internally by IBM Z appliance firmware
  - New build feature only => no MES for initial HMA install
    - In future will allow MES from existing HMA to new hardware HMA
- ▶ **New **optional** Feature Code of the CPC**
  - Expect most CPCs to utilize SE hardware
  - One or two CPCs to utilize Hardware Management Appliance hardware
  - Physical 1U/Minitower HMCs still available
- ▶ **No longer need to manage external physical server boxes**
  - Expectation for customer keyboard/display via
    - Operator own workstation remote browse into HMC
    - Dedicated workstations (not supplied by IBM Z) for remote browse
  - No longer have a need to manage MES physical box upgrades of HMC HW



# Hardware Management Appliance

- ▶ z14 Crown Jewel/Game Changer for Platform Mgmt => [HMC Mobile](#)
- ▶ z15 => [Hardware Management Appliance](#) provides similar impact potential!
  - HMC & SE packaged in HMA (redundantly inside Z CPC frame)
  - Eliminates need for managing separate box outside of CPC package
  - No real change in general user experience
    - 90% of clients utilize remote browser into HMC
  - Can be used to manage n-2 legacy systems, not just z15



# Hardware Management Appliance

## ► The Support Element runs as a guest of the HMC.

- Still have two 1U Rack Mounted servers running HMCs first level.
- SEs maintain primary/alternate relationship
- HMCs have peer relationship => data replication can be set up

## ► Accessing the HMC and SE.

- You can access the HMC through a remote web browser as usual
- If you walk up to the physical KMM display, you will see the HMC UI
  - Recommend against using physical KMM inside frame other than Service personnel
- The SE can be accessed via “Single Object Operations” from the HMC as usual
- You can also use “Virtual Support Element Management” -> “Open Console” to view the full SE desktop

## ► Things to be aware of

- Since the SE is running as a guest under the HMC, any HMC Console Restart (reboot) will be disruptive to the SE running on that HMC
  - For Service personnel
    - ♦ operations like HMC code updates must be performed on the HMC hosting the Alternate SE first, followed by a Primary/Alternate switch before proceeding to update the other HMC.
- “Restart application” on the HMC will \*not\* disrupt operation of the SE.
- Vast majority of SE and HMC tasks work the same way they do on standalone consoles
  - For HMC UI tasks that might trigger a console restart (6 or 7 tasks)
    - ♦ Warning message will displayed on entry if Primary SE is being hosted
    - Final save action will be blocked if console restart required

# Statements of Direction

# HMC New Build Hardware

- ▶ Future orderable HMC (Hardware Management Console) hardware available only via HMA (Hardware Management Appliance)
  - z15/z15 T02 Statement of Direction
    - **Future HMC Hardware**
      - ◆ *IBM z15 is planned to be the last server to offer the ability to order stand-alone Hardware Management Console (HMC) hardware.*
      - ◆ *For future systems, new HMC hardware can be ordered only in the form of the Hardware Management Appliance feature (#0100) which was introduced on IBM z15.*
      - ◆ *The Hardware Management Appliance feature provides redundant HMCs and Support Elements (SEs) that reside inside the Central Processor Complex (CPC) frame, and the ability to eliminate stand-alone HMC hardware (tower or rack mounted) outside the CPC frame.*
      - ◆ *Stand-alone HMC hardware (tower or rack mounted) can still be ordered and used with IBM z15.*
  - Note:
    - **Some subset of HMC Standalone hardware will most likely be supported for the next generation IBM Z system (MES carry forward).**
    - **However, one should expect subsequent Z system generations to not support any standalone HMC hardware.**
    - **HMA hardware is functionally equivalent to standalone HMC other than the requirement to remote browse into the HMC which is mostly done for HMC today.**
      - ◆ **If ordering a new z15, it is recommended to consider ordering HMA feature on that system to obtain that functional equivalency experience.**

# Default Users Statement of Direction

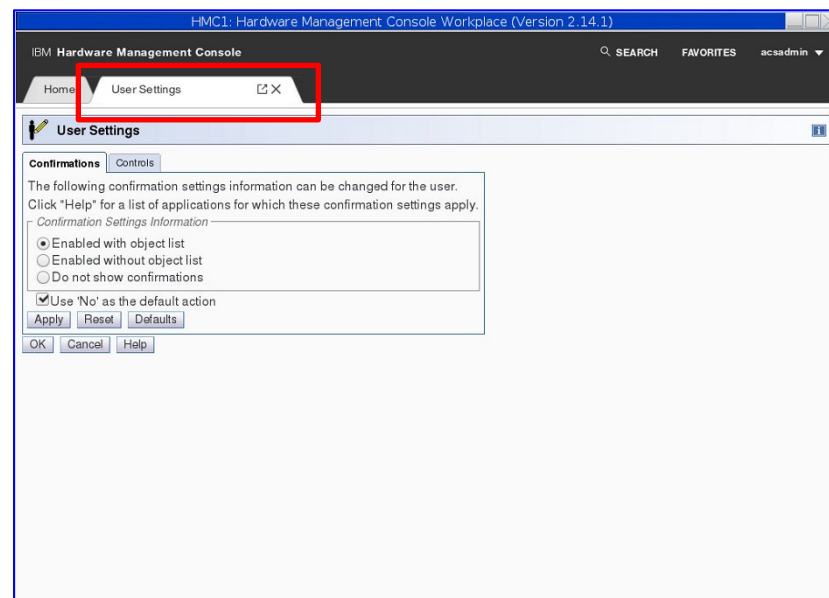
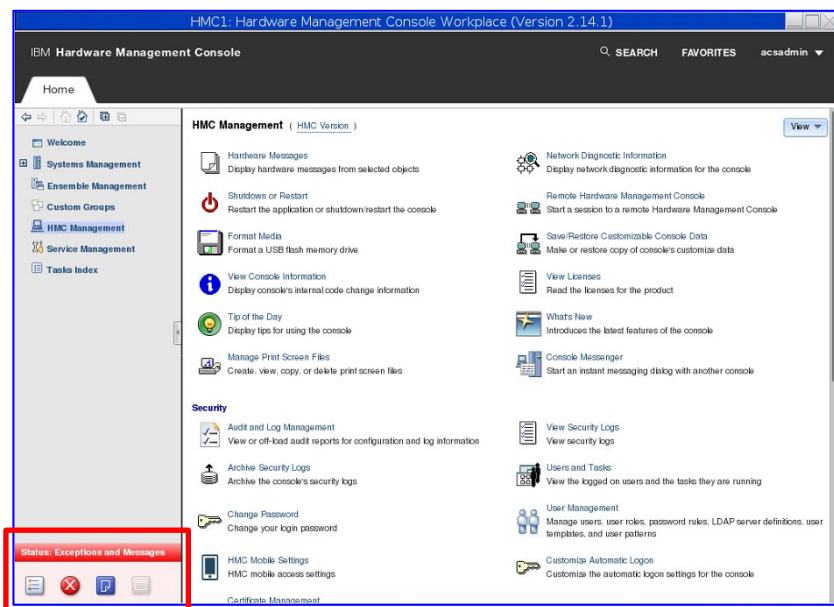


- ▶ Future HMCs (Hardware Management Consoles) will only ship ACSADMIN & SERVICE Default User IDs
- IBM Z May 2021 Statement of Direction
  - **HMC Default User IDs**
    - ◆ *IBM z15 is planned to be the last server to ship HMC (Hardware Management Console) and SE (Support Element) default user IDs of ADVANCED, OPERATOR, STORAGEADMIN, and SYSPROG.*
    - ◆ *For future systems, the default user roles for ADVANCED, OPERATOR, STORAGEADMIN, and SYSPROG will be shipped, but the user IDs will no longer be included. HMC/SE default user IDs for ACSADMIN and SERVICE will continue to be shipped on future systems.*
  - Note:
    - **Any Default User IDs which are part of a previous HMC level can be carried forward to new HMC levels as part of a MES Upgrade or via the selection of *User Profile Data* for the *Save/Restore Customizable Console Data* or *Configure Data Replication* tasks.**
    - **Recommendation:**
      - ◆ **All HMC users should use unique User IDs and only given access to what they are required to manage.**

# HMC Dashboard Status Enhancement

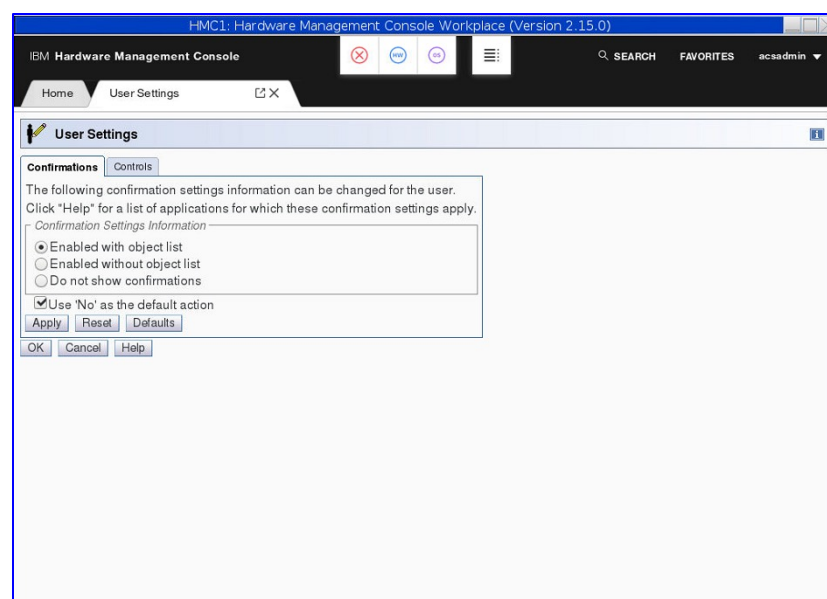
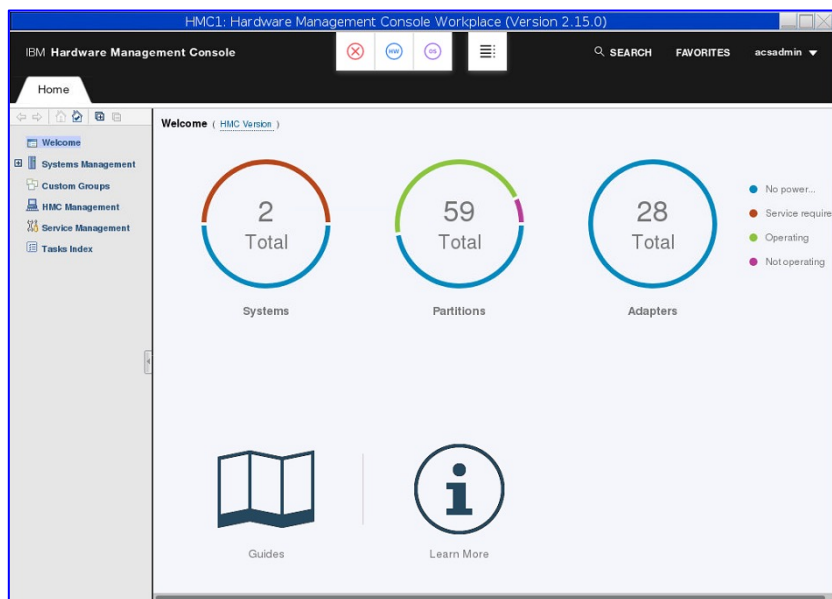
# User Pain Point

- ▶ In z14, the Status Bar is located in the Home tab and tasks are launched in tabs
- ▶ While working in a task tab, console status is not visible
  - A user is not notified of an unacceptable status, hardware message or operating system message until they close the task or return to the Home tab.



# Enhancement

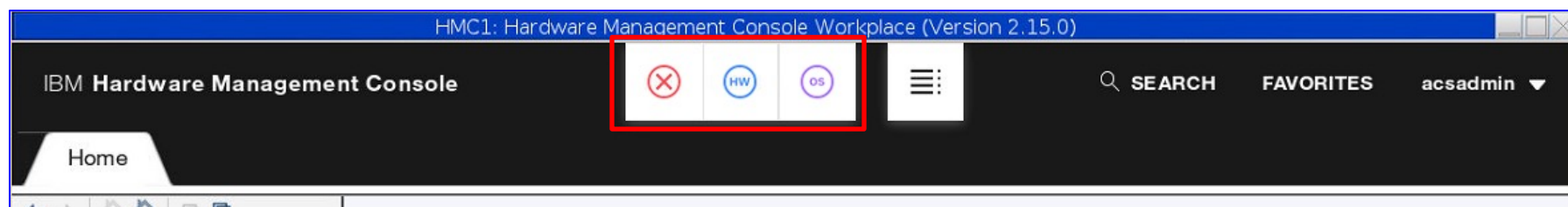
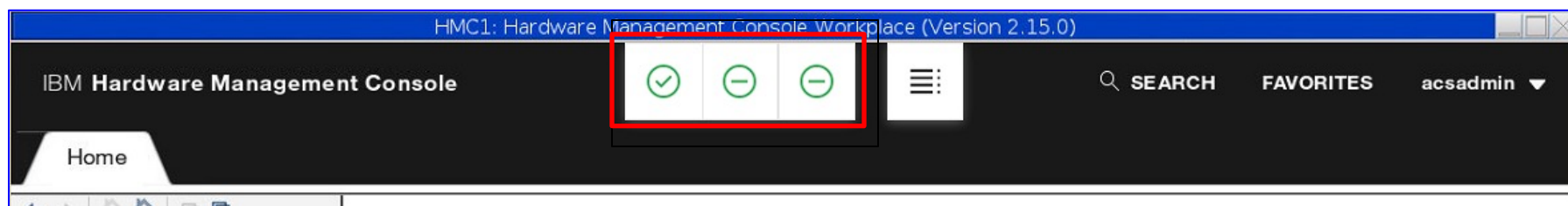
- ▶ In z15, the Status Bar is moved to the masthead
  - Always visible, even when working in a task tab





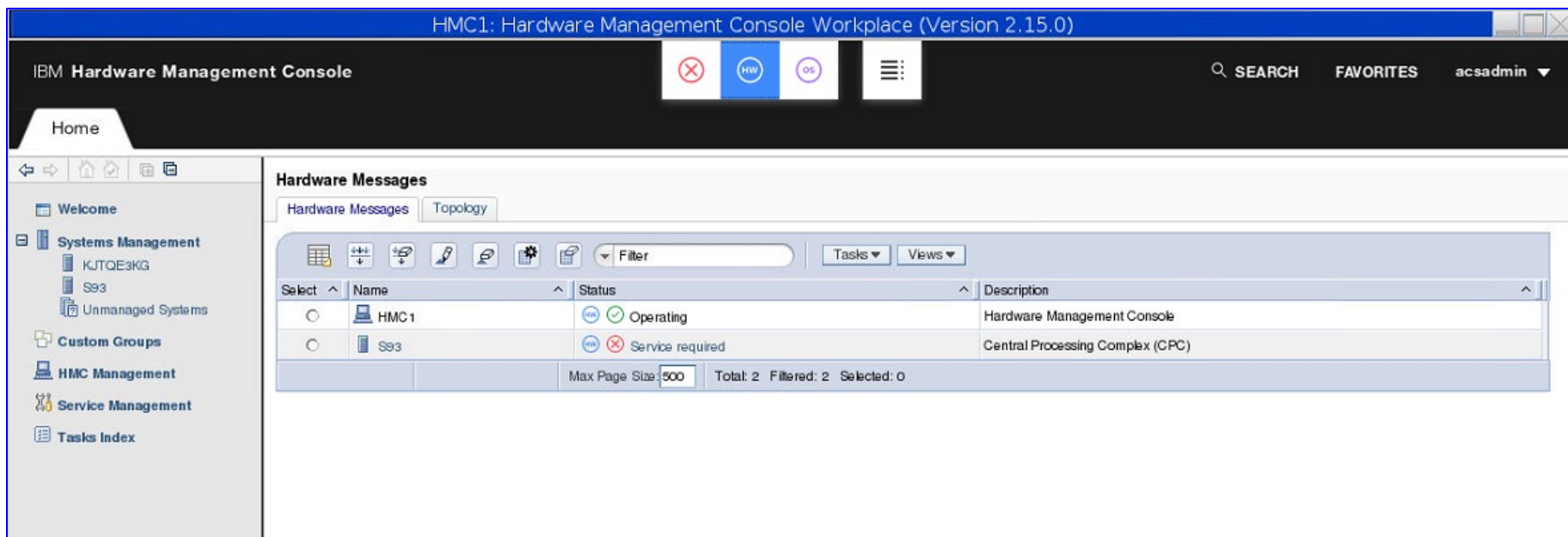
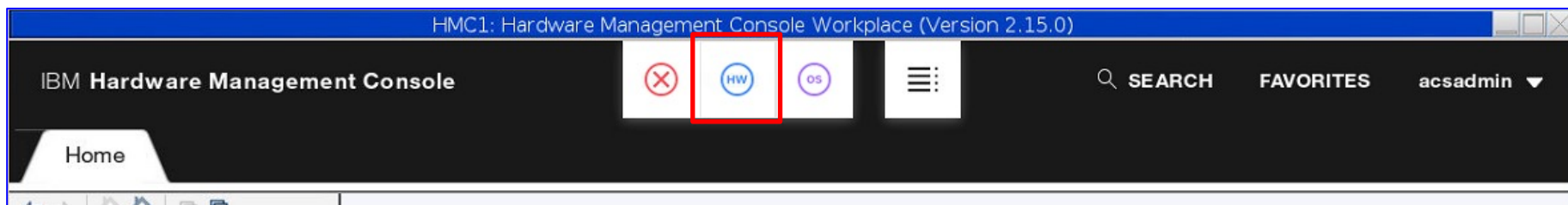
# Status

- ▶ Status Bar contains indicator buttons for exceptions (unacceptable status), hardware messages, and operating system messages
  - Button is green when condition does not exist
  - Button is red (exceptions), blue (hardware messages), and or purple (operating system messages) when condition exist



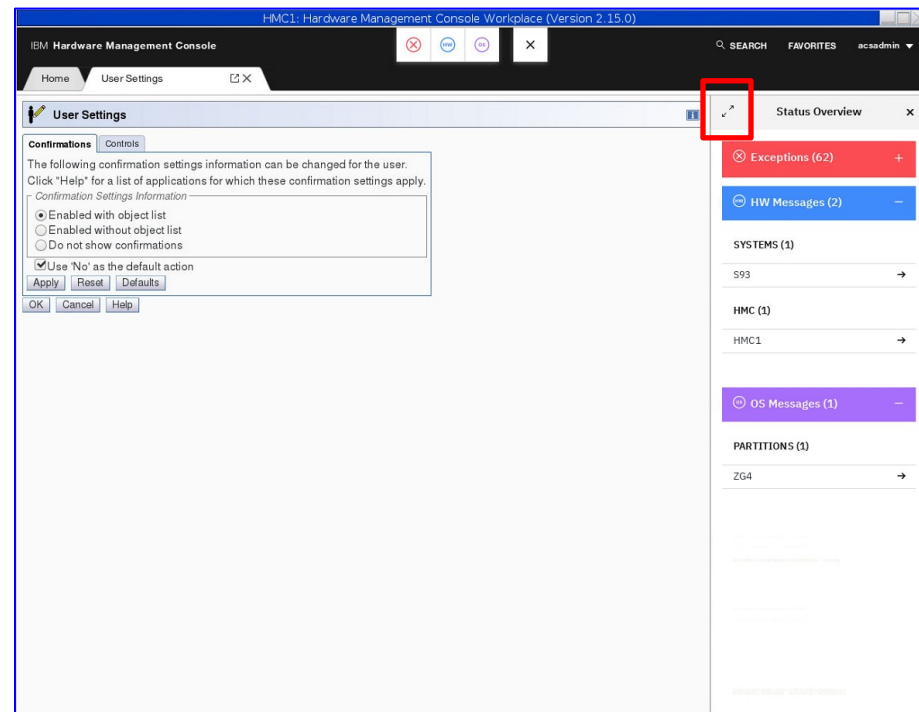
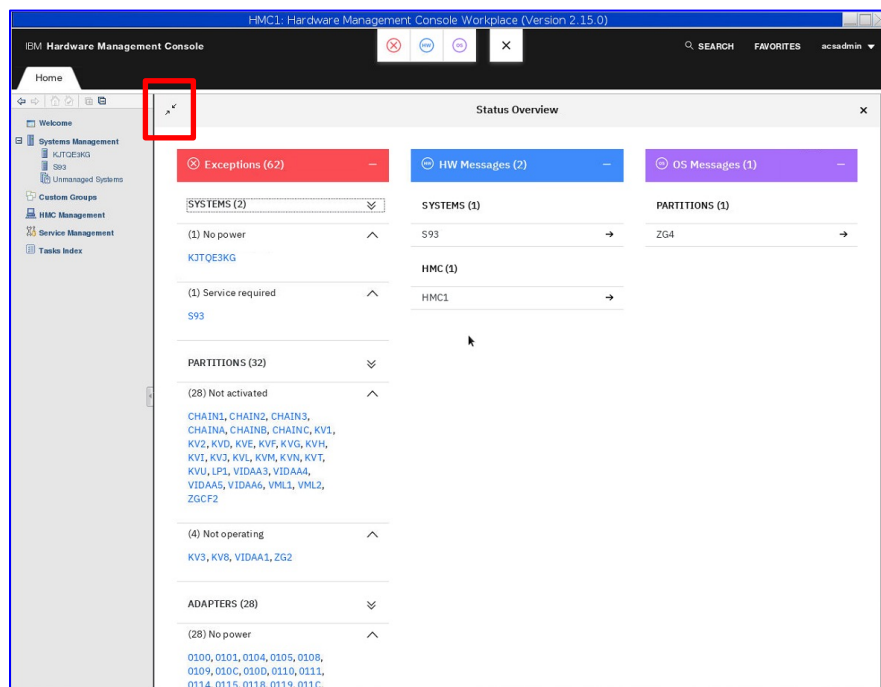
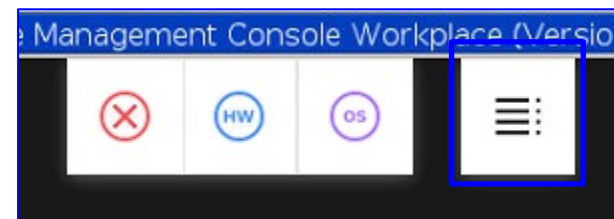
## Status - Details

- ▶ Click a masthead button to see all objects with unacceptable status, hardware messages, or operating system messages.



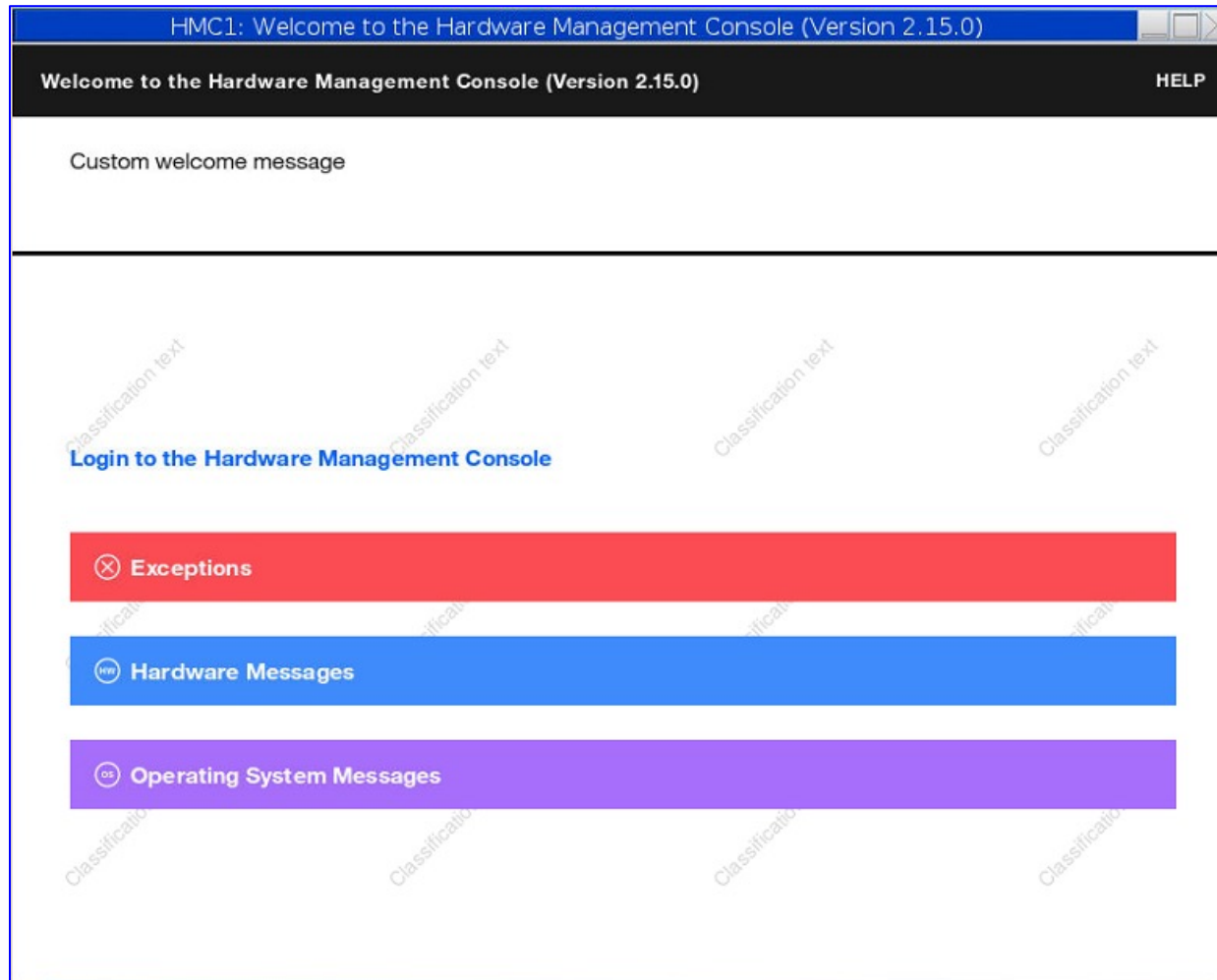
# Status – Status Overview

- ▶ Status Overview button opens the redesigned view
  - Shows detailed status information
  - Can be expanded into Home tab workarea
  - Can be docked to right of tabs
    - Always visible when docked



# Status - Welcome

- Status redesign carried forward to Welcome page



# HMC Remote Browsing Window Sizing options

# User Pain Point and Enhancement

## ▶ User Pain Point

- Prior to HMC 2.15.0, when a user logged in, the HMC window always opened full screen, even if a user previously resized the window.

## ▶ Enhancement






- Beginning with HMC 2.15.0, the HMC window size is saved for each user
  - Whenever a user resizes their HMC window, its size (as a percentage of screen size) is remembered
  - Whenever a user logs in, the HMC window opens to their remembered size
- Only applies to remote HMC connections
  - Always full screen for SE (including Single Object Operations)
  - Always full screen for local HMC

# HMC YouTube Videos

# YouTube Videos for HMC Content

- ▶ Current Documentation on HMC
  - Online Help information
    - Also, can be found on
      - ◆ IBM Resource Link
  
- ▶ New additional information on HMC via YouTube videos
  - Monitor for videos being added to the IBM HMC playlist url
    - **<https://ibm.biz/IBM-Z-HMC>**
    - Initial topic areas to be covered
      - ◆ Manage System Time
      - ◆ User Management
      - ◆ HMC Mobile
      - ◆ Tree Style User Interface
      - ◆ Dynamic Partition Manager
    - Additional areas of interest, notify
      - ◆ **[bdvalent@us.ibm.com](mailto:bdvalent@us.ibm.com)**
      - ◆ Brian Valentine

## IBM Z Hardware Management Console Videos

<input type="text" value="Search"/>		
	HMC Overview and Management (4 Videos)	Learn about the IBM Z HMC dashboard and management features.
	Access and Security (11 Videos)	Learn about managing access and security on the HMC.
	HMC Mobile (1 Video)	Stay connected to your enterprise from anywhere in the world.
	Manage System Time (STP) (5 Videos)	Learn to manage coordinated time networks for your systems.
	Dynamic Partition Manager (5 Videos)	Learn to manage systems enabled for Dynamic Partition Management.



*Thank you for your time and consideration....*

**Brian Valentine**  
**HMC/SE Team**  
**Twitter: @bdvalent125**



**Contact for questions or additional feedback:**

**Brian Valentine, (607) 429-4382, [bdvalent@us.ibm.com](mailto:bdvalent@us.ibm.com)**



# Trademarks

***Please see  
<http://www.ibm.com/legal/copytrade.shtml>  
for copyright and trademark information.***

# Appendix

# System Recovery Boost

# System Recovery Boost

- ▶ **System recovery boost** offers the customer **additional CP capacity** during particular system recovery operations so as to “**speed up**” the recovery
  - **IPL** – when an LPAR is being IPLs
  - **Shutdown** – when an LPAR is being shutdown
- ▶ **Boosts are for 60 minutes for load (30 minutes for shutdown)**, and are initiated by the operating system automatically
- ▶ There are two forms of System Recovery Boost
  - **Speed boost**: Boosts sub-capacity CP engines to full capacity for the boost period
  - **zIIP capacity boost**: Allows CP capacity to be run on all currently active zIIP engines for the boost period.
- ▶ There are no additional HW, SW, or maintenance charges for the boost period.

# System Recovery Boost: zIIP Boost

- ▶ During the **zIIP capacity boost**, all active zIIPs associated with the LPAR are used to **extend CP capacity**
- ▶ zIIP boost is only supported on shared processor pools
- ▶ A **new temporary record**, the “Boost” record is available that allows the customer to **activate additional temporary zIIPs for a limited number of hours**
  - Customers must **own at least 1 zIIP** on the machine in order to purchase a zIIP boost record
  - The number of zIIPs provided by the record is 1 to 20 zIIPs.
  - The boost record will activate the zIIPs for up to 6 hours.
  - The Boost record has an expiration date of one year.
  - The number of boost records the customer may order is one per system.
- ▶ Customers should **activate the boost record prior to “boost” event**. They should plan on deactivating the record when the boost event is done.
  - The record will self deactivate when it has used all of it's hours, but customer deactivation should be encouraged

# System Recovery Boost: Operating Systems

- ▶ Check with your operating system team for information on support for System Recovery boost
  - Not all operating systems will support both types of boost
  - Availability of the boost on the different operating systems: Dave Surman chart

Operating System Support			
System Recovery Boost is supported by:			
z/OS 2.4, z/OS 2.3, z/TPF (available November 2019), z/VM 7.1, and SADMP			
Requires a z15 CPC, and installation of required PTFs			
z/OS	z/TPF	z/VM	SADMP
<b>Supports:</b> <ul style="list-style-type: none"> <li>• Speed Boost</li> <li>• zIIP Boost</li> <li>• GDPS enhancements.</li> </ul> <b>Boost period:</b> <ul style="list-style-type: none"> <li>• 30' for shutdown</li> <li>• 60' for startup</li> </ul>	<b>Supports:</b> <ul style="list-style-type: none"> <li>• Speed Boost</li> </ul> <b>Boost period:</b> <ul style="list-style-type: none"> <li>• 30' for shutdown</li> <li>• 60' for startup*</li> </ul> <p><i>*No more than 20' spent in catch-up phase after system has restarted completely.</i></p>	<b>Supports:</b> <ul style="list-style-type: none"> <li>• Speed Boost</li> </ul> <b>Boost period:</b> <ul style="list-style-type: none"> <li>• 30' for shutdown</li> <li>• 60' for startup</li> </ul> <p><i>z/VSE® guests running under z/VM will inherit any System Recovery Boost benefit provided by z/VM.</i></p>	<b>Supports:</b> <ul style="list-style-type: none"> <li>• Speed Boost</li> </ul> <b>Boost period:</b> <ul style="list-style-type: none"> <li>• Duration of the dump, or up to 60'</li> </ul>

Copyright© by SHARE Association Except where otherwise noted, this work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivs 3.0 license. <http://creativecommons.org/licenses/by-nc-nd/3.0/>

© ⓘ ⓘ ⓘ 31

# Audit log entries showing partition boosting

OTH3DJ6K: Primary Support Element Workplace (Version 2.15.0)

IBM Support Element

Home Audit and Log Management

Audit and Log Report

### Audit log

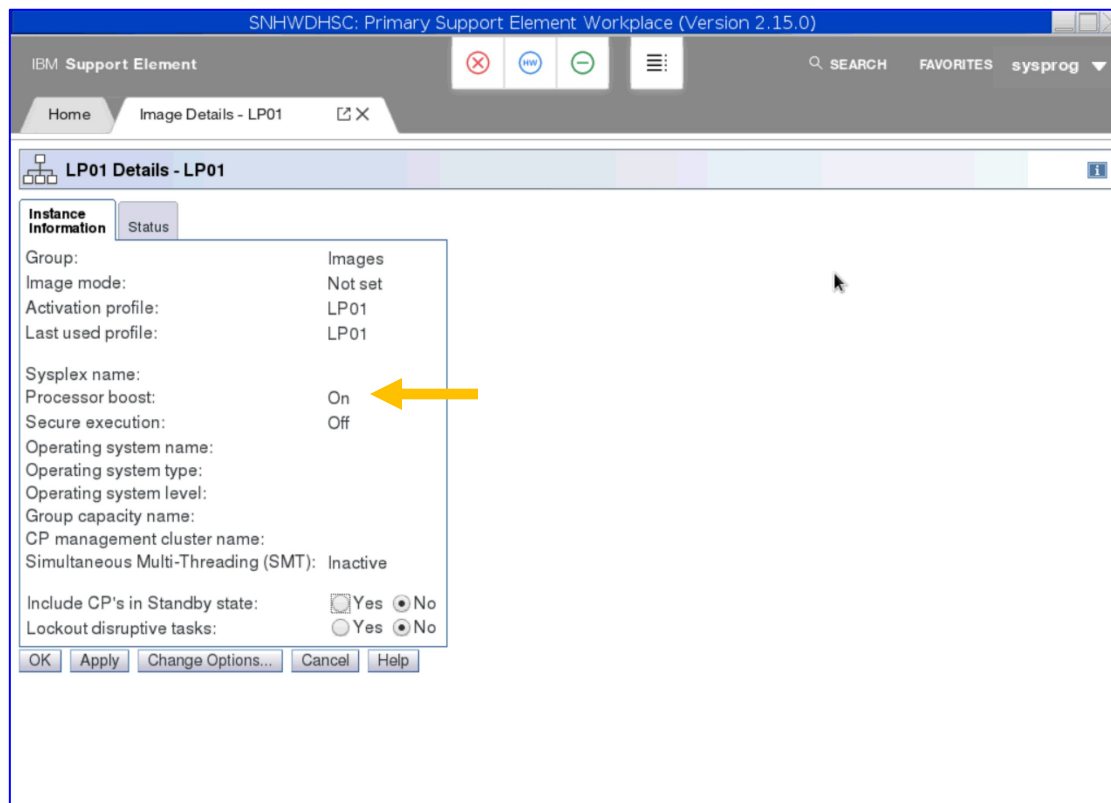
Date	Message Id	User	Audit Event
July 8, 2019 5:23:41 PM EDT	6120		Speed boost is on for partition BLUEC1, partition number 1.
July 8, 2019 5:21:01 PM EDT	6123		zIIP capacity boost is off for partition BLUEC1, partition number 1.
July 8, 2019 5:20:56 PM EDT	6122		zIIP capacity boost is on for partition BLUEC1, partition number 1.
July 8, 2019 5:20:50 PM EDT	6121		Speed boost is off for partition BLUEC1, partition number 1.

Save Close Help

- Audit entries are created for system recovery boost activation and deactivation
- Both zIIP capacity boost, and speed boost events are recorded
- Partition being boosted is identified



# SE partition image details: boost is active



- Boost activity is shown on the SE partition image details
- Processor boost is shown as On or Off

# HMC – Partition image details – Also shows Boost Status

The screenshot displays the IBM Hardware Management Console (HMC) interface. The title bar indicates 'HMC1: Hardware Management Console Workplace (Version 2.15.0)'. The main header shows 'IBM Hardware Management Console' with navigation icons and a search bar. The breadcrumb trail shows 'Home' and 'Image Details - IA7UNO2I...'. The main content area is titled 'IA7UNO2I:BLUEC1 Details - IA7UNO2I:BLUEC1'. The 'Instance Information' tab is selected, showing the following details:

Instance Information	
Group:	CPC Images
Activation profile:	BLUEC1
Last used profile:	BLUEC1
Sysplex name:	
System recovery boost:	On
Operating system:	INSTALL
CPU LPAR cluster name:	
Operating system type:	SSC
Operating system level:	1.0.0

Below the instance information, the 'Task Information' section is visible, showing 'Task name:' and 'Task status:'. At the bottom, there are radio buttons for 'Lock out disruptive tasks:' with 'Yes' and 'No' options. The 'System recovery boost' status is highlighted with a yellow arrow.

# HMC Monitors Dashboard – Processor boost status

HMCDAILY03: Hardware Management Console Workplace (Version 2.15.0) - Mozilla Firefox  
 https://9.60.14.37/hmc/connects/mainuiFrameset.jsp

IBM Hardware Management Console

Home Monitors Dashboard - SE... X

Monitors Dashboard

sysprog

Last refresh time: 03:15:15 PM Date: 04/08/19 Time zone: UTC-04:00 [Pause Refresh](#)

Overview

--- Select Action --- Filter

Select	Name	Status	Type	Machine Type - Model	Processor Usage(%)	I/O Usage(%)	Power Consumption (kW) (Btu/hr)	Ambient Temperature (°C) (°F)
<input type="checkbox"/>	SETR87	Operating	CPC	8562 - T02	0	2		

Page 1 of 1 Max Page Size: 100 Total: 1 Filtered: 1 Displayed: 1 Selected: 0

Details

SETR87

Processors

--- Select Action --- Filter

Select	Name	Processor Usage(%)	SMT Usage(%)	Thread 0 Usage(%)	Thread 1 Usage(%)
<input type="checkbox"/>	CP000	0	0	0	0
<input type="checkbox"/>	CP004	0	0	0	0
<input type="checkbox"/>	CP008	0	0	0	0
<input type="checkbox"/>	CP00C	0	0	0	0
<input type="checkbox"/>	IFP010	0	0	0	0

Page 1 of 1 Max Page Size: 100 Total: 5 Filtered: 5 Displayed: 5 Selected: 0

Aggregated Processors

--- Select Action --- Filter

Select	Type	All Processor Usage(%)	Shared Processor Usage(%)
<input type="checkbox"/>	All Types	0	0
<input type="checkbox"/>	CP	0	0
<input type="checkbox"/>	IFP	0	0

Page 1 of 1 Max Page Size: 100 Total: 3 Filtered: 3 Displayed: 3 Selected: 0

Logical Partitions

--- Select Action --- Filter

Select	Name	All Processor Usage(%)	CBP Processor Usage(%)	CP Processor Usage(%)	ICF Processor Usage(%)	IFL Processor Usage(%)	ZIP Processor Usage(%)	Processor Boost
<input type="checkbox"/>	LP02	0	0	0	0	0	0	Off

Page 1 of 1 Max Page Size: 100 Total: 1 Filtered: 1 Displayed: 1 Selected: 0

Channels

--- Select Action --- Filter

Adapters

--- Select Action --- Filter

# HMC Legacy Systems

# HMC Legacy Systems

- ▶ HMC 2.15.0 Legacy System support only provides n-2 system levels.
  - z14/z14 ZR1 GA2 Statement of Direction
    - **HMC Support Efficiency Updates**
      - ◆ *IBM z14 is planned to be the last release that will allow HMC support across the prior four generations of server (N through N-4) .*
      - ◆ *Future HMC releases are intended to be tested for support of the prior two generations (N through N-2). For example, the next HMC release would support the z15 generation, plus z14 generation and z13®/z13s® generation.*
      - ◆ *This change will improve the number and extent of new features and functions that are able to be pre-tested and maintained in a given release with IBM's continued high-reliability qualification procedures.*
  - Note:
    - **z14 HMC level 2.14.1 will continue to maintain support for n-4 systems.**
      - ◆ **if you need to support > n-2 level systems**
    - **n-2 support is same strategy as SYSPLEX coupling support**

# zBX Support Removal

# Removal of zBX Support

- ▶ HMC 2.15.0 and z15 no longer support zBX (IBM Z Blade Center Extension).
  - z14/z14 ZR1 GA2 Statement of Direction
    - **Ensemble and zEnterprise® Unified Resource Manager**
      - ◆ *IBM z14 is planned to be the last IBM Z server to support Ensembles and zEnterprise Unified Resource Manager (zManager). The z14 HMC level is planned to be the last HMC level to support Ensembles.*
  - Notes:
    - **z14 HMC level 2.14.1 will continue to maintain support for zBX.**
      - ◆ zBX Mod 002, 003, and 004
    - **z14 & previous CPCs can connect to zBX**
    - **July 9<sup>th</sup>, 2019 End Of Support Announcement**
      - ◆ zBX (MT 2458) Mod 004 will no longer be supported after 12-31-20.
      - ◆ Should consider migration of zBX workload to other IBM Z LPARs if possible

# Removal of SE System (Sysplex) Time task



## Removal of SE System (Sysplex) Time task

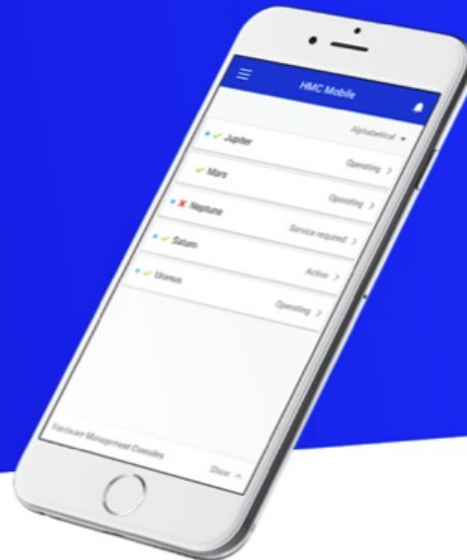
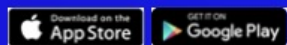
- ▶ Support Element 2.15.0 (z15) no longer supports *System (Sysplex) Time* task.
  - z14/z14 ZR1 GA2 Statement of Direction
    - **Removal of System (Sysplex) Time on the Support Element**
      - ◆ *IBM z14 is planned to be the last machine generation to support the System (Sysplex) Time task on the Support Element. The System (Sysplex) Time task was replaced by the "Manage System Time" task on the Hardware Management Console 2.14.0 release, associated with the IBM z14 models. Clients should begin shifting to the new HMC 2.14.0 or later releases for tasks and procedures, including time management.*
  - Note:
    - **Clients should migrate all time management actions to using the HMC Manage System Time introduced on HMC 2.14.0.**
      - ◆ **Take the time to proactively learn this significantly enhanced task.**
      - ◆ **See the following presentation to begin learning about the improvements/changed user interface for Manage System Time**
        - *HMC 2.14.0 (Hardware Management Console) Workspace/System Enhancements*
        - Available from St. Louis SHARE reference materials.
      - ◆ **Also view Manage System Time YouTube Videos (<https://ibm.biz/IBM-Z-HMC>)**

# IBM HMC Mobile

# HMC Mobile Introduction ➔ [ibm.biz/hmc-mobile](https://ibm.biz/hmc-mobile)

## Introducing IBM HMC Mobile for Z and LinuxONE

Stay connected to your enterprise  
from anywhere in the world.



Keep watch over all your systems and partitions and  
receive alerts when messages or status changes arise.



### Monitor your systems

Access all your systems, even  
if they are spread across  
multiple HMCs.



### Comprehensive security

Take advantage of a wide  
range of fully customizable  
security features.



### Getting started is easy!

Try a demo HMC before  
connecting to your network.

# IBM HMC Mobile Security



## ► Connectivity

- Device WiFi or VPN access to the Hardware Management Console
- Network Transport is HTTP over TCP/IP Sockets, TLS 1.2 for connection security
- App notifications, if enabled, are proxied through IBM RSF Proxy to the Apple/Google Push Notification Services

## ► Controls

- Disable app access (default)
- Restrict app access to specific users and IP addresses
- Multi-Factor Authentication
- Restrict object access and actions with HMC user and role based authorization controls
- Disable storage of user authentication password in the device native encrypted keychain
- Disable all app actions (view-only)
- Disable app notifications (server side)
- Require app password

# IBM HMC Mobile

## ► Initial Release

- System & Partition views
- Monitor Status & Messages
- Real Time Status Notifications
- Recovery Actions: Activate/Deactivate Partition, Change Activation Profile

## ► Release 2.1

- Additional Recovery Actions: Load OS into partition, Reset partition
- Delete HW Messages
- Biometric recovery actions confirmation

## ► Release 2.3 – z14 GA2

- View Hardware Message Details
- Delete OS messages
- Session expiration autologin

## ► Platforms

- iOS 11+ , Android 4.4+
- Available free in Apple & Google Play stores

# IBM HMC Mobile Enhancements

## ► Release 2.4

- Send OS commands, Respond to OS Messages
- Support Tablet Rotation

## ► Release 3.0 => requires HMC 2.15.0

- Granular Action Permissions
- Change Partition Capping,
- Change Partition Weights,
- Add Logical Processor

## ► Systems

- Initial Release on IBM Z: (n, n-1)
  - z14, z14 ZR1
  - z13, z13s
  - LinuxONE
- Release 3.0: (n-2)
  - z15, z14, z13, LinuxONE

# IBM HMC Mobile – z14 Action Permissions – All or None



## Enable mobile access

IBM Hardware Management Console

SEARCH FAVORITES acsadmin

Home HMC Mobile Settings

### IBM HMC Mobile for Z and LinuxONE

These settings are for the IBM HMC Mobile for Z and LinuxONE app. The app can be downloaded from the iOS App Store or Google Play Store.

Enable HMC Mobile to access the rest of the HMC Mobile settings.

☐ Enable HMC Mobile

**DOWNLOAD APP**

GET IT ON Google Play Download on the App Store

### User access

Select users to have HMC Mobile and Web Services API access. Any changes made here will also be reflected in the Customize API Settings task.

User access table hidden until HMC Mobile enabled.

### IP restrictions

Enable HMC Mobile to access the rest of the HMC Mobile settings. The app can be downloaded from the iOS App Store or Google Play Store.

## Enable access and tailor settings in the HMC Mobile Settings task.

IBM Hardware Management Console

SEARCH FAVORITES acsadmin

Home HMC Mobile Settings

### Push notifications

Push notifications allow users to be informed of system and/or partition events. They are routed through the HMC Remote Support Facility (RSF) to Apple and Google Push Notification Services. To use push notifications, you must be under warranty or have a maintenance contract in place.

☒ Enable push notifications for HMC Mobile users

### Read-only access

Restricting mobile app users to read-only access will prohibit them from making changes to all systems and partitions, even if they have permission to do so on the HMC.

☐ Restrict HMC Mobile users to read-only access

CANCEL APPLY HELP

### GUIDANCE

Push notifications are used to alert mobile device owners of an event even if their phone is locked, thereby allowing HMC users to proactively manage issues as they arise.

# IBM HMC Mobile – z15 Granular Action Permissions

## Granular action permissions

Select which actions users can perform. Disable actions to make the app read-only.

The screenshot displays the 'HMC Mobile Settings' page for 'Z and LinuxONE'. It includes a 'DOWNLOAD APP' section with links to the Google Play and App Store. Below this is the 'User access' section, which contains a table of users and templates. The 'User actions' section is at the bottom, featuring a table of actions and a list of users to whom they can be assigned. A 'GUIDANCE' box on the right explains the 'Access Enabled' status and provides instructions on how to restrict users to read-only mode.

### HMC Mobile for Z and LinuxONE

These settings are for the IBM HMC Mobile for Z and LinuxONE app. The app can be downloaded from the iOS App Store or Google Play Store.

Enable HMC Mobile to access the rest of the HMC Mobile settings. This action also enables the HMC Web Services API.

☐ Enable HMC Mobile

### User access

Select users to have HMC Mobile and Web Services API access. Any changes made here are reflected in the Customize API Settings task.

<input type="checkbox"/>	Username or template	Type	Last app login
<input type="checkbox"/>	alex.fergison	User	August 1, 2016
<input type="checkbox"/>	angela.song	User	Never
<input type="checkbox"/>	armadillo	Template	n/a
<input type="checkbox"/>	francis.rodriguez	User	September 19, 2016
<input type="checkbox"/>	james.smith	User	Never
<input type="checkbox"/>	narwal	Template	n/a
<input type="checkbox"/>	patrick.templar	User	November 20, 2016
<input type="checkbox"/>	rajesh.singh	User	June 19, 2016
<input type="checkbox"/>	smith.thomson	User	Never
<input type="checkbox"/>	tiger	Template	n/a

### User actions

Disabling actions prohibits mobile app users from making changes to all systems and partitions, even if they have permission to do so on the HMC. When all actions are disabled, the HMC mobile app is in read-only mode.

☐ Actions are enabled

Action	Users and templates	Access Enabled:
Activate Partition	alex.fergison, james.smith...	<input type="checkbox"/>
Deactivate Partition	angela.song, francis.rodriguez...	<input type="checkbox"/>
Start Partition	james.smith	<input type="checkbox"/>
Stop Partition	francis.rodriguez	<input type="checkbox"/>
Change Activation Profile	james.smith	<input type="checkbox"/>
Load OS into Partition	francis.rodriguez	<input type="checkbox"/>
Reset Partition	patrick.templar, james.smi...	<input type="checkbox"/>
Change Partition Weight	rajesh.singh	<input type="checkbox"/>
Change Partition Capping	All	<input type="checkbox"/>
Delete Hardware Message		<input type="checkbox"/>
Delete OS Message	smith.thomson	<input type="checkbox"/>
Send OS Message	smith.thomson	<input type="checkbox"/>

**GUIDANCE**

Disable all actions to switch to read-only mode. When the app is in read-only mode, all users are restricted from performing any actions.

Enable actions to choose which actions mobile app users can perform and further customize user action selections.

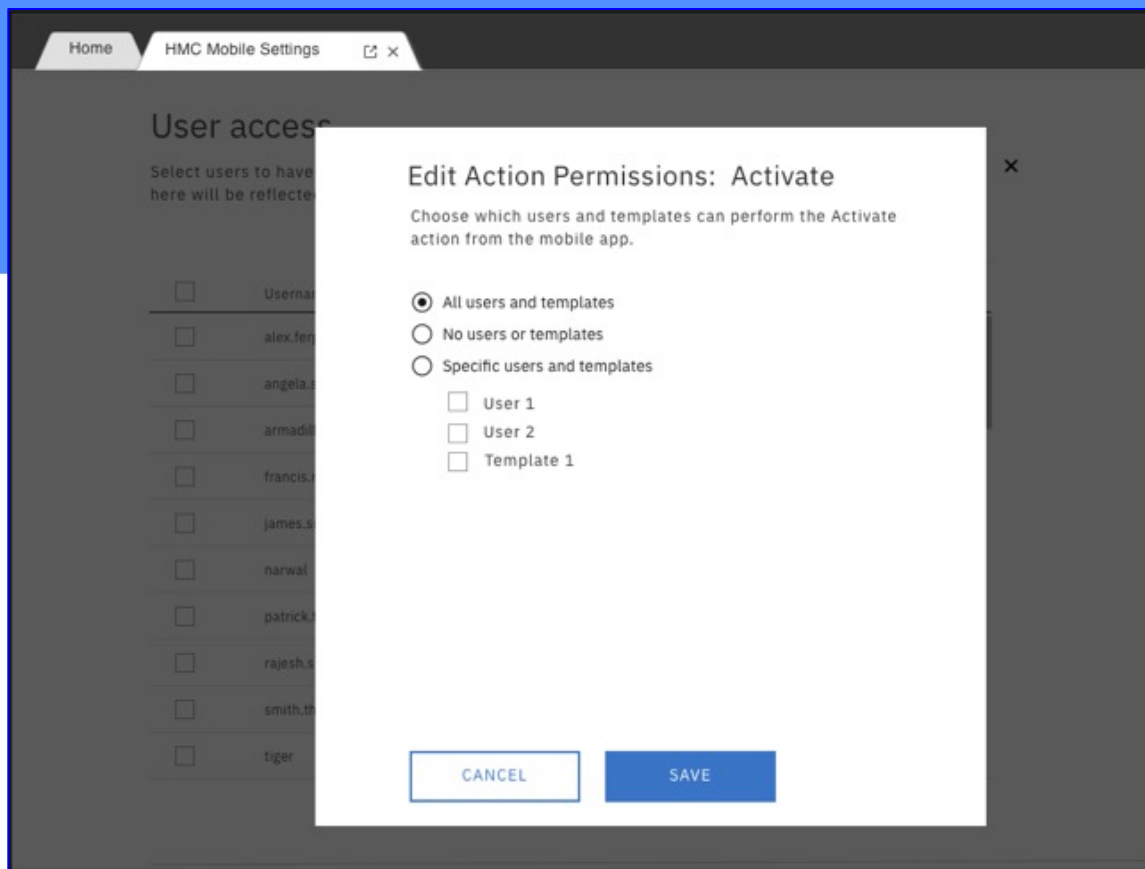
User actions are only available if a user has permission to do them on the HMC. Task permissions are assigned in the HMC User Management task.



# IBM HMC Mobile – z15 Granular Action Permissions

## Granular action permissions

Select which actions users can perform. Disable actions to make the app read-only.



# IBM HMC Mobile Field Data

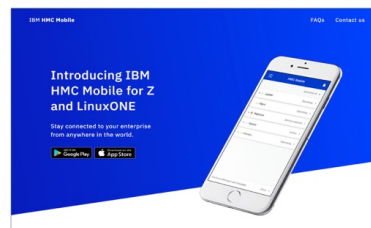
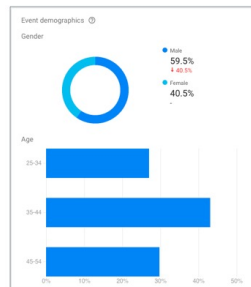
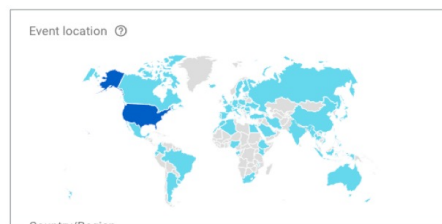
Allows systems administrators to monitor and manage their hardware from anywhere.

**1934** IOS  
APP INSTALLS

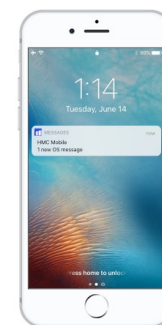
**1150** ANDROID  
APP INSTALLS

**14280** PRODUCT  
PAGE VIEWS

**30,308** NOTIFICATIONS  
PER MONTH

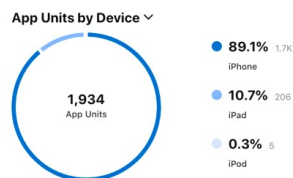


[ibm.biz/hmc-mobile](https://ibm.biz/hmc-mobile)



User engagement > Screen class

Screen class	% total	Avg. time
HomeViewController	28.69% ↑ 63.5%	3m 23s ↑ 48.6%
SessionExp...ontroller	16.44% ↑ 2...4%	32m 24s ↑ 989.8%
SystemDet...ontroller	8.31% ↑ 263.8%	2m 10s ↑ 347.8%
LPARDetail...ontroller	6.95% ↑ 146.4%	3m 6s ↑ 101.1%
HMCDrawer...ntroller	5.49% ↓ 29.4%	1m 57s ↓ 20%
(not set) HMCDrawerViewController	↑ 760.8%	4m 23s ↑ 434.1%
Partitions...Controller	4.84% ↑ 180.9%	1m 55s ↑ 150.2%
SettingsVi...Controller	2.24% ↓ 36.4%	0m 38s ↓ 40%



“

*I can't wait to get this on my personal device. It's more convenient and faster to get an answer. the learning curve is great, there isn't one!*

*When will this be replacing the HMC?*

# Defined Group Capacity HMC Scheduled Ops support

# Scheduled Ops support for LPAR Group Controls

## ► Prior to z15,

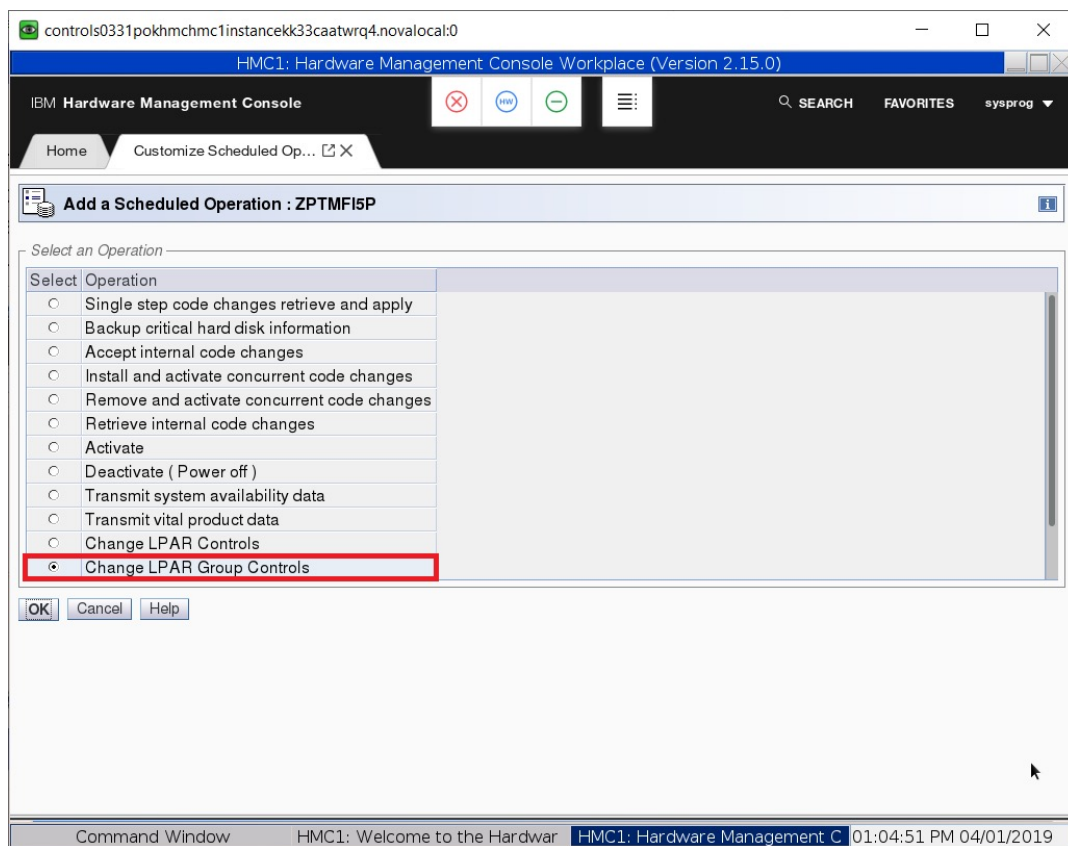
- Change LPAR Controls task for immediate changes
- Change LPAR Controls scheduled operation (in Customize Scheduled Operations task)
- Change LPAR Group Controls task for immediate changes

## ► Starting with HMC/SE 2.15.0,

- Added a Change LPAR Group Controls scheduled operation
  - The scheduled operation cannot be created when the target CPC is older than 2.15.0
  - The scheduled operation cannot be created or viewed if the user does not have authority for the Change LPAR Group Controls task

# New Scheduled Op Type

- ▶ Perform the following actions:
  - Open the Customize Scheduled Operations task against the CPC
  - Click on “Options” in the menu bar and then click on “New”
  - Select “Change LPAR Group Controls”



# Change LPAR Group Control

controls0331pokhmcmc1instancekk33caatwrq4.novalocal:0

HMC1: Hardware Management Console Workplace (Version 2.15.0)

IBM Hardware Management Console

Home Customize Scheduled Op... X

**Set up a Scheduled Operation - ZPTMF15P**

Description:

Date and Time Repeat Options

**Capacity and Capping** Members

Select each group to be included and set the desired scheduled values

Select	Group Name	Current Member Partitions	Current Group Capacity	Scheduled Group Capacity	Current CP Absolute Capping	Scheduled CP Absolute Capping	Current CBP Absolute Capping	Scheduled CBP Absolute Capping	Current ICF Absolute Capping	Scheduled ICF Absolute Capping	Current IFL Absolute Capping	Scheduled IFL Absolute Capping
<input type="checkbox"/>	DEFAULT		0		None		None		None		None	
<input type="checkbox"/>	GROUP1	LP01 LP02 LP04 LP05 LP06 LP07	11		0.01		None		None		99.9	
<input type="checkbox"/>	GROUP2		0		None		200.01		100.00		None	

Save Cancel Help

Command Window HMC1: Welcome to the Hardware Management Console HMC1: Hardware Management Console 01:13:27 PM 04/01/2019

## ► Notes:

- Current values are shown in the “Current” columns for reference
- Scheduled operation spans two sub-tabs, “Capacity and Capping” and “Members”

# Change LPAR Group Control



controls0331pokhmchmc1instancekk33caatwrq4.novalocal:0

HMC1: Hardware Management Console Workplace (Version 2.15.0)

IBM Hardware Management Console

Home Customize Scheduled Op... X

**Set up a Scheduled Operation - ZPTMF15P**

Description:

Date and Time Repeat Options

Capacity and Capping Members

Select each group to be included and set the desired scheduled values

Select	Group Name	Current Member Partitions	Current Group Capacity	Scheduled Group Capacity	Current CP Absolute Capping	Scheduled CP Absolute Capping	Current CBP Absolute Capping	Scheduled CBP Absolute Capping	Current ICF Absolute Capping	Scheduled ICF Absolute Capping
<input type="checkbox"/>	DEFAULT		0		None		None		None	
<input checked="" type="checkbox"/>	GROUP1	LP01 LP02 LP04 LP05 LP06 LP07	11	<a href="#">No change</a>	0.01	<a href="#">No change</a>	None	<a href="#">No change</a>	None	<a href="#">No change</a>
<input type="checkbox"/>	GROUP2		0		None		200.01		100.00	

Save Cancel Help

Command Window HMC1: Welcome to the Hardwar HMC1: Hardware Management C 01:41:59 PM 04/01/2019

controls0331pokhmchmc1instancekk33caatwrq4.novalocal:0

HMC1: Hardware Management Console Workplace (Version 2.15.0)

IBM Hardware Management Console

Home Customize Scheduled Op... X

**Change LPAR Group Controls - ZPTMF15P**

Specify the group capacity for GROUP1.

Group capacity value:

☐ No change

☒ Group capacity (0 to 2147483647)

OK Cancel Help

Command Window HMC1: Welcome to the Hardwar HMC1: Hardware Management C 01:45:21 PM 04/01/2019



## ► Notes:

- In a selected row, scheduled values are displayed as links that can be clicked on to change the value
- Click on No change or value link to update



# Change LPAR Group Control

controls0331pokhmchmc1instancekk33caatwrq4.novalocal:0

HMC1: Hardware Management Console Workplace (Version 2.15.0)

IBM Hardware Management Console

Home Customize Scheduled Op... X

### Set up a Scheduled Operation - ZPTMFI5P

Description:

Date and Time Repeat Options

Capacity and Capping Members

Select each group to be included and set the desired scheduled values

Select	Group Name	Current Member Partitions	Current Group Capacity	Scheduled Group Capacity	Current CP Absolute Capping	Scheduled CP Absolute Capping	Current CBP Absolute Capping	Scheduled CBP Absolute Capping	Current ICF Absolute Capping	Scheduled ICF Absolute Capping
<input type="checkbox"/>	DEFAULT		0		None		None		None	
<input checked="" type="checkbox"/>	GROUP1	LP01 LP02 LP04 LP05 LP06 LP07	11	<u>12</u>	0.01	<u>None</u>	None	<u>No change</u>	None	<u>150.50</u>
<input type="checkbox"/>	GROUP2		0		None		200.01		100.00	

Save Cancel Help

Command Window HMC1: Welcome to the Hardwar HMC1: Hardware Management C 01:57:40 PM 04/01/2019

## ► Notes:

- After all updates are complete, click the Save button



# **HMC Hardware for HMC 2.15.0 & TKE Hardware for TKE 9.2**

# HMC Hardware for HMC 2.15.0/TKE Hardware for TKE 9.2

## New Build Hardware

Feature Code	Form Factor	Type	Firmware Integrity Monitoring
0062	Tower	HMC	Yes
0063	1U Rack Mounted	HMC	Yes
0087	1U Rack Mounted	TKE	Yes
0088	Tower	TKE	Yes
0100	1U Rack Mounted in CPC Frame	Hardware Mgmt Appliance (HMC/SE)	Yes

# HMC Hardware for HMC 2.15.0/TKE Hardware for TKE 9.2

## MES Hardware

Feature Code	Form Factor	Type	Firmware Integrity Monitoring
0095	Tower	HMC	No
0096	1U Rack Mounted	HMC	No
0082	Tower	HMC	Yes
0083	1U Rack Mounted	HMC	Yes
0097	1U Rack Mounted	TKE	No
0098	Tower	TKE	No
0085	1U Rack Mounted	TKE	Yes
0086	Tower	TKE	Yes