

# SHARE in Seattle – Session 16645

## Top 10 Things You Should Be Doing On Your HMC But You're ~~NOT~~ You Probably Are

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## Agenda

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# Setting up the HMC for Remote Use

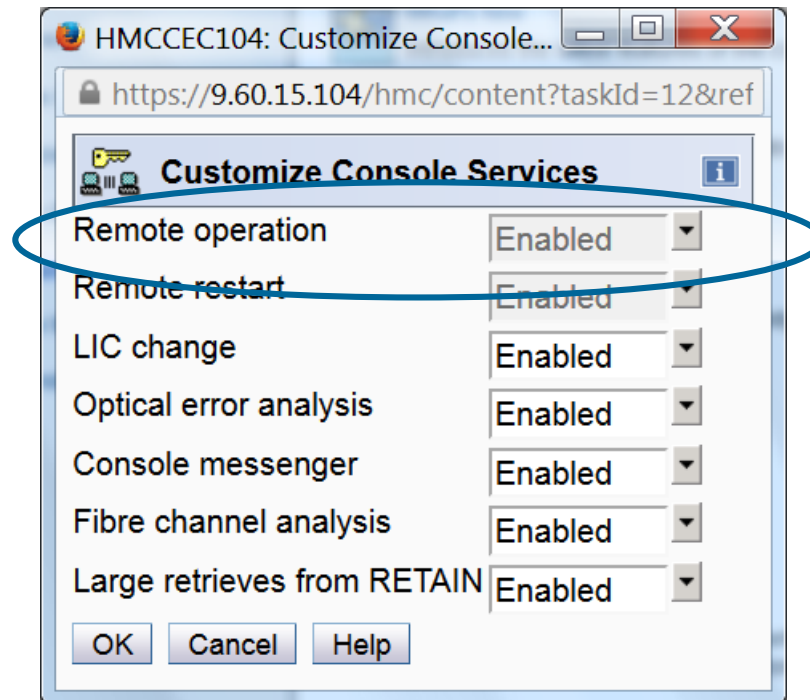
## Setting up HMC for Remote Use

- Enables access from anywhere on the Local Area Network
  - Work with your Network Administrator to allow port 443 (HTTPS) and port 9960 (Applets)
  - Could also allow remote access using an existing business VPN
- Allows the HMC to be physically secured
  - Lock it in a restricted area and ask people to login remotely
- Multiple users can access the HMC at the same time
  - HMC is design to handle concurrent users
- Read more information on “IBM z Systems HMC Security”
  - <http://www.share.org/p/do/sd/topic=64&sid=9171>
  - [https://www.ibm.com/servers/resourcelink/lib03011.nsf/pages/zHmcSecurity/\\$file/zHMCSecurity.pdf](https://www.ibm.com/servers/resourcelink/lib03011.nsf/pages/zHmcSecurity/$file/zHMCSecurity.pdf)

## Setting up HMC for Remote Use (cont.)

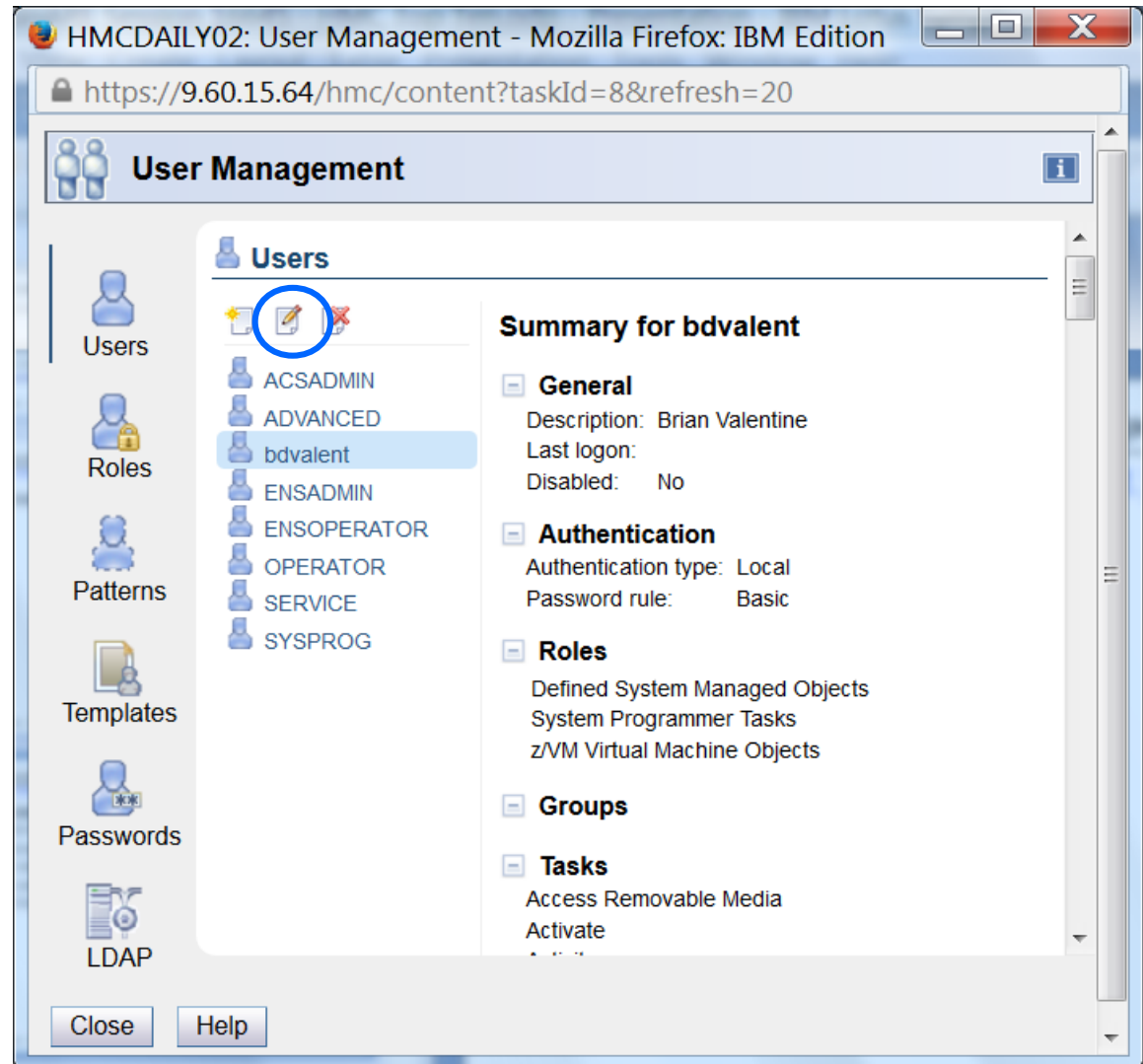
- Enable locally through the **Customize Console Services** task

 **Customize Console Services**  
  Customize the enablement of various console services



## Setting up HMC for Remote Use (cont.)

- Enable specific users
  - ACSADMIN log on
  - User management task
  - Select Users
  - Select User to enable
  - Select Details to edit



## Setting up HMC for Remote Use (cont.)

HMCDAILY02: User Details - Mozilla Firefox: IBM Edition  
https://9.60.15.64/hmc/content?taskId=9&refresh=21

### User Details - bdvalent

General  
Session  
Authentication  
Roles

**General**

Name:

Description:

Object id:

Default group:

Disable user

Allow remote access to the console

Allow access to Web Services management interfaces

Maximum web services API sessions (0-9999):

Idle web services API session timeout (1-360 minutes):

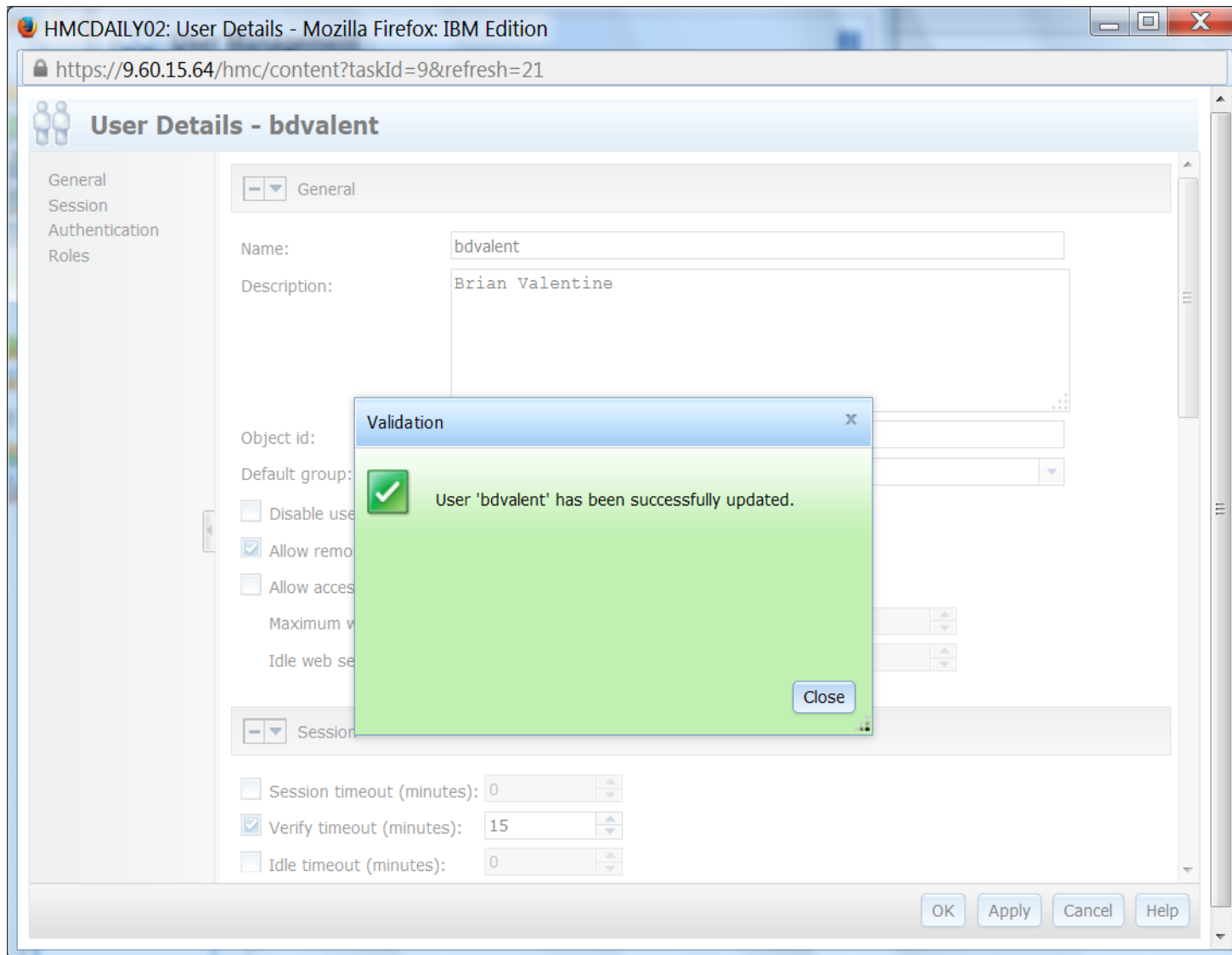
**Session**

Session timeout (minutes):

Verify timeout (minutes):

Idle timeout (minutes):

## Setting up HMC for Remote Use (cont.)





# Securing User IDs

## Securing User IDs

### • Best Practices

- Do not share HMC user IDs among multiple people
- Make sure each user is permitted only access to the tasks and managed resources needed to perform job responsibilities (see slides)
- Define password rules that adhere to the guidelines for the customer enterprise and make sure each user is configured to use these password rules (see slides)
- Use data replication to ensure that User Profile information (users, roles, password rules, etc) are automatically synchronized among all HMCs installed in the enterprise (see slides)
- Disable the default user IDs
  - Even better DELETE them
  - At a minimum change the default passwords for these users

## Securing User Ids (cont.)

- Use the **User Management** task to create custom users

**New icon**

**Create a custom user based on OPERATOR**

## Securing User Ids (cont.)

- Use the **User Management** task to modify existing default users

The screenshot displays the IBM z Systems Hardware Management Console (HMC) interface. On the left, the 'User Management' task is selected, showing a list of users including ACSADMIN, ADVANCED, ENSADMIN, ENSOPERATOR, IBMOperator, OPERATOR, SERVICE, and SYSPROG. The 'Users' icon in the left navigation pane is circled in red. A blue callout bubble points to the 'Details icon' (a person icon) above the user list. The main window shows the 'User Details - OPERATOR' configuration page. The 'General' tab is active, displaying fields for Name (OPERATOR), Description (Operator level user), Object id (d5ef6360-2e4a-11e7-8b2331d5994), and Default group (No default group). The 'Disable user' checkbox is checked, highlighted by a blue callout bubble. Other options include 'Allow remote access to the console' and 'Allow access to Web Services management interfaces'. The bottom of the window features 'OK', 'Apply', 'Cancel', and 'Help' buttons.

## Securing User Ids (cont.)

- Or use the **User Management** task to delete existing users

The screenshot shows the 'User Management' section of the HMC console. A blue callout bubble points to the delete icon (a red 'X' over a document) in the 'Users' toolbar. The user list includes ACSADMIN, ADVANCED, ENSADMIN, ENSOPERATOR, IBMOperator, OPERATOR (highlighted), SERVICE, and SYSPROG. A dialog box titled 'Delete Item Verification' is open, displaying the message: 'You selected to delete the following user. User identification: OPERATOR. Warning: Deleting the user will remove it permanently from the list of available users.' The dialog includes 'Yes' and 'No' buttons and the ID 'ACT03028'.







# Create Custom Users and Roles

### Create Custom Users and Roles

- Creating a custom user definition for each person that uses the HMC allows for the following benefits:
  - Specific access to the required objects for each user
  - Specific access to the required tasks for each user
  - More granularity in the audit logs, know exactly which person performed specific actions
  - No more sharing of user credentials and passwords
  - Each user will have unique saved sessions on disconnects

## Create Custom Users and Roles (cont.)

- **User Management** task – convenient dashboard to manage all aspects of system users that log on to the HMC

 Users	<p><b>Users</b>                  A <i>user</i> object defines the user's authentication, roles which determine access permissions, and a default group to which any objects created by the user will be added.</p>
 Roles	<p><b>Roles</b>                  A <i>role</i> defines permissions to tasks, type of objects or specific objects, groups, and task lists.</p>
 Patterns	<p><b>User Patterns</b>                  A <i>user pattern</i> is used to automatically create users on this system based on successful authentication of user IDs that conform to a defined string pattern.</p>
 Templates	<p><b>User Templates</b>                  A <i>user template</i> defines the settings and permissions for users authenticated with a user pattern. The template requires an LDAP server definition.</p>
 Passwords	<p><b>Password Rules</b>                  A <i>password rule</i> defines a set of rules to be used when creating a user password.</p>
 LDAP	<p><b>LDAP Server Definitions</b>                  An <i>LDAP server definition</i> specifies host connection and directory entry location information to be used for authentication.</p>

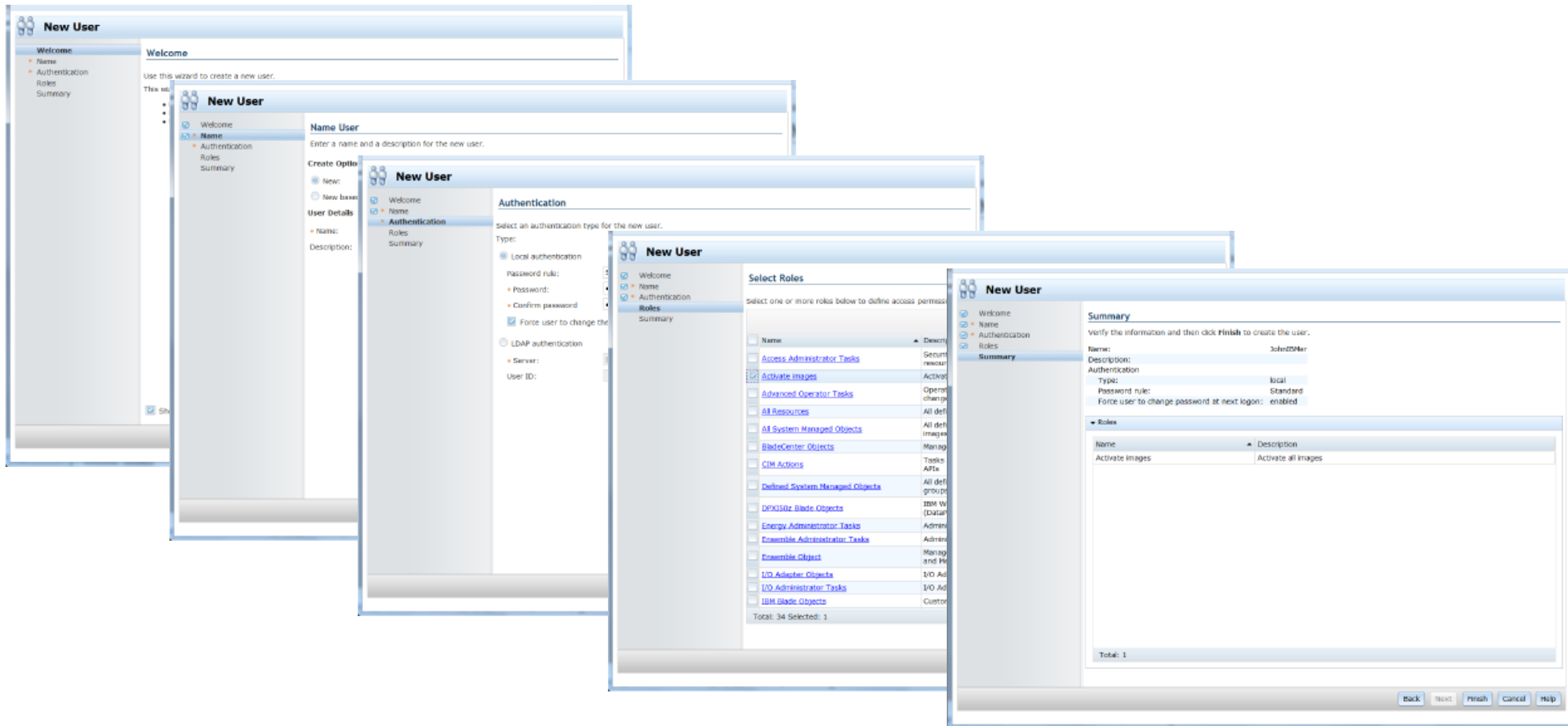
- **User Settings**


User Settings  
 Customize the appearance of the workplace



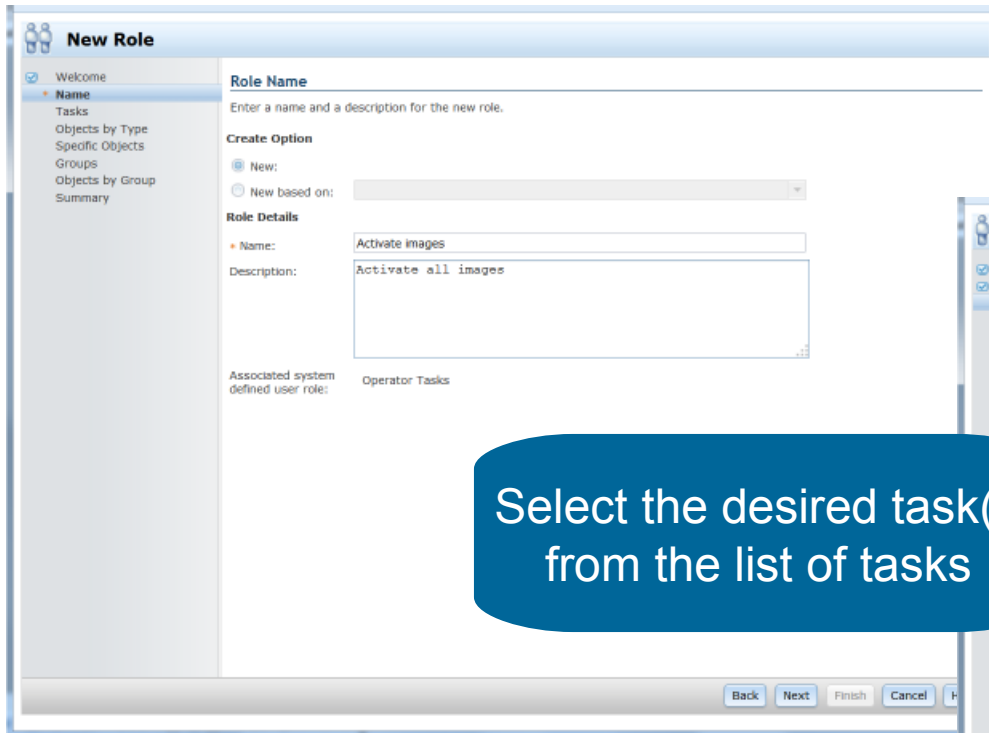
## Create Custom Users and Roles (cont.)

- **User Management** wizards provide a guided step-by-step process for each new definition



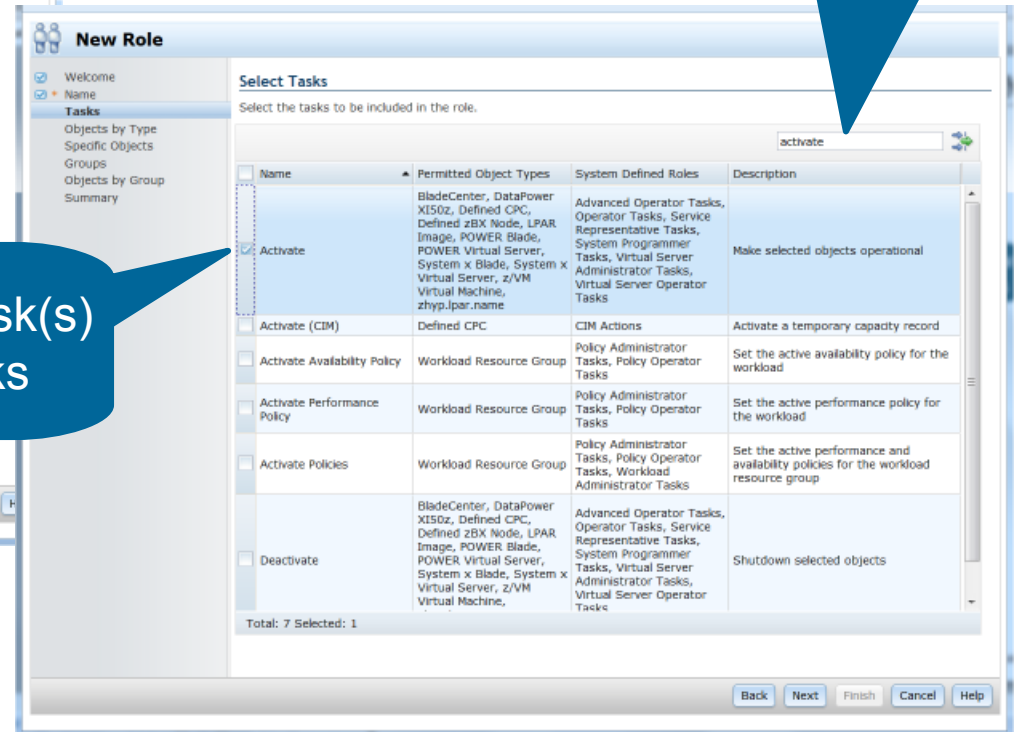
## Create Custom Users and Roles (cont.)

- Limit access to specific tasks and objects
  - Create a role with specific task(s) a user should have access to



Select the desired task(s) from the list of tasks

Use the filter to narrow down the list of tasks



## Create Custom Users and Roles (cont.)

- Limit access to types of objects and/or specific objects
  - Add to the custom role the object type(s) and specific object(s) a user should have access to

**New Role**

Welcome  
Name  
Tasks  
Objects by Type  
Specific Objects  
Groups  
Objects by Group  
Summary

### Select Objects by Type

Select the types of objects to include in the role. The role will include all objects of the selected type.

Name	Description
<input type="checkbox"/> Alternate Hardware Management Console	A Hardware Management Console (HMC) paired with the primary HMC to provide redundancy in an ensemble
<input type="checkbox"/> BladeCenter	BladeCenter chassis which contains blades (DataPower XI50z, POWER, and/or System x)
<input type="checkbox"/> DataPower XI50z	IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise (DataPower XI50z) blade used to optimize XML and Web services processing
<input type="checkbox"/> Default Workload Resource Group	System defined workload resource group used as a default in an ensemble
<input type="checkbox"/> Defined CPC	CPC defined to the console via Add Object Definition
<input type="checkbox"/> Defined zBX Node	zBX Node defined to the console via Add Object Definition
<input type="checkbox"/> ECKD Storage Resource	ECKD Storage Resource
<input type="checkbox"/> Element Group	Element Group
<input type="checkbox"/> Ensemble	Ensemble
<input type="checkbox"/> FCP Storage Resource	FCP Storage Resource
<input checked="" type="checkbox"/> LPAR Image	LPAR Image
<input type="checkbox"/> Pattern Match Group	Group containing objects whose name matches a specified pattern
<input type="checkbox"/> POWER Blade	Select IBM POWER blade running AIX applications in an ensemble
<input type="checkbox"/> POWER Virtual Server	Virtual server defining resources (processor, memory, and I/O) on a POWER blade
<input type="checkbox"/> System Manual Definition	Template used to manually define a system object to the Hardware Management Console

Total: 25 Selected: 1

Back Next Finish Cancel Help

**New Role**

Welcome  
Name  
Tasks  
Objects by Type  
Specific Objects  
Groups  
Objects by Group  
Summary

### Select Specific Objects

Select the objects to include in the role.

Name	Type	Description	Hypervisor	System
<input type="checkbox"/> POLXSM08	Undefined CPC	Central Processing Complex (CPC)		POLXSM08
<input type="checkbox"/> POLXSM11	Undefined CPC	Central Processing Complex (CPC)		POLXSM11
<input type="checkbox"/> POLXSM12	Undefined CPC	Central Processing Complex (CPC)		POLXSM12
<input type="checkbox"/> POLXSM13	Undefined CPC	Central Processing Complex (CPC)		POLXSM13
<input type="checkbox"/> POLXSM14	Undefined CPC	Central Processing Complex (CPC)		POLXSM14
<input type="checkbox"/> POLXSM20	Undefined CPC	Central Processing Complex (CPC)		POLXSM20
<input type="checkbox"/> POLXSM22	Undefined CPC	Central Processing Complex (CPC)		POLXSM22
<input type="checkbox"/> POLXSM30	Undefined CPC	Central Processing Complex (CPC)		POLXSM30
<input type="checkbox"/> POLXSM36	Undefined CPC	Central Processing Complex (CPC)		POLXSM36
<input checked="" type="checkbox"/> POLXSMOZ	LPAR Image	LPAR Image		POLXSMOZ
<input type="checkbox"/> P2560057	Node	Node		P2560057
<input type="checkbox"/> POLXSM2B	Undefined CPC	Central Processing Complex (CPC)		POLXSM2B
<input type="checkbox"/> R32	Defined CPC	Central Processing Complex (CPC)		R32
<input type="checkbox"/> S15	Defined CPC	Central Processing Complex (CPC)		S15
<input type="checkbox"/> S31W	Undefined CPC	Central Processing Complex (CPC)		S31W
<input type="checkbox"/> S32	Defined CPC	Central Processing Complex (CPC)		S32
<input type="checkbox"/> S32:APIVM1	LPAR Image	LPAR Image	S32	S32
<input type="checkbox"/> S32:APIVM2	LPAR Image	LPAR Image	S32	S32
<input type="checkbox"/> S32:CF01	LPAR Image	LPAR Image	S32	S32

Total: 69 Selected: 1

Back Next Finish Cancel Help

## Create Custom Users and Roles (cont.)

- Assign custom roles to users
  - The user permissions are limited to the specific objects and tasks specified in the roles assigned to that user

**New User**

Welcome

**Name User**

Enter a name and a description for the new user.

**Create Option**

New:

New based on:

**User Details**

Name: John

Description:

---

**New User**

Welcome

**Select Roles**

Select one or more roles below to define access permissions for this user.

Name	Description
<input type="checkbox"/> Access Administrator Tasks	Security administrator tasks used to configure and control access to machine resources and tasks
<input checked="" type="checkbox"/> Activate Images	Activate all images
<input type="checkbox"/> Advanced Operator Tasks	Operator Tasks role plus additional capabilities such as manage internal code change levels and channel configuration
<input type="checkbox"/> All Resources	All defined and undefined managed objects (includes all objects of all types)
<input type="checkbox"/> All System Managed Objects	All defined and undefined system managed objects (includes systems, LPAR images, and groups)
<input type="checkbox"/> BladeCenter Objects	Managed BladeCenter chassis objects
<input type="checkbox"/> CIM Actions	Tasks supported through the Common Information Model (CIM) interface APIs
<input type="checkbox"/> Defined System Managed Objects	All defined system managed objects (includes systems, LPAR images, and groups)
<input type="checkbox"/> DPX150z Blade Objects	IBM WebSphere DataPower Integration Appliance XI50 for zEnterprise (DataPower XI50z) blade objects
<input type="checkbox"/> Energy Administrator Tasks	Administrator tasks that provide power and thermal monitoring capabilities
<input type="checkbox"/> Ensemble Administrator Tasks	Administrator tasks used to create and manage an ensemble
<input type="checkbox"/> Ensemble Object	Managed objects related to the ensemble object (including the alternate HMC and Member's group)
<input type="checkbox"/> I/O Adapter Objects	I/O Adapter Objects
<input type="checkbox"/> I/O Administrator Tasks	I/O Administrator Tasks
<input type="checkbox"/> IBM Blade Objects	Customer acquired select blade objects (POWER and System x)

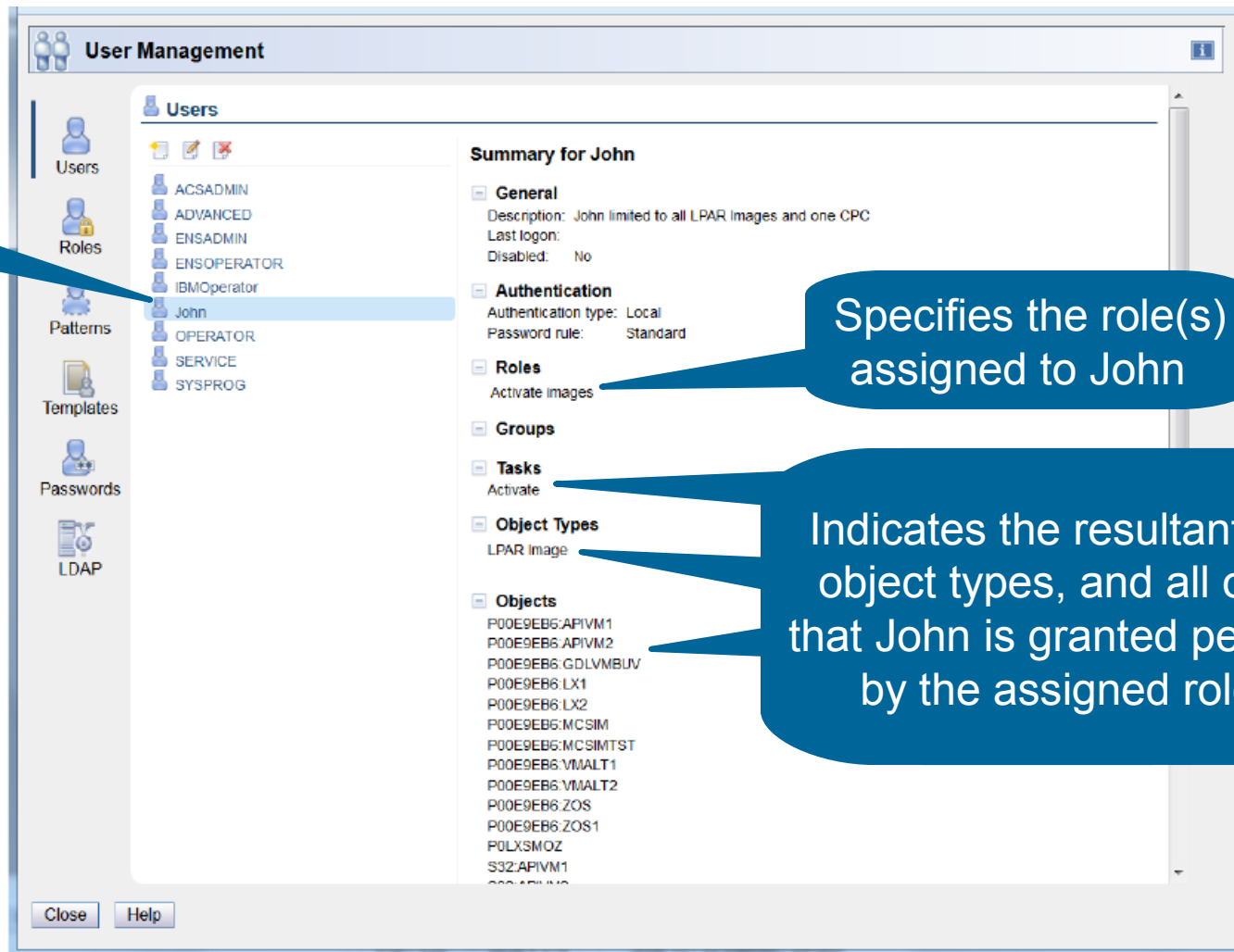
Total: 34 Selected: 1

Back Next Finish Cancel Help

Select the custom role(s) that the user should have access permission

## Create Custom Users and Roles (cont.)

- **User Management** dashboard shows the newly created user summary



# Custom Authentication Settings

## Custom Authentication Settings

- Users can be configured for either local authentication or LDAP
- Local Authentication
  - Governed by Password Rules
  - Allows HMC users to meet corporate password rules
- Lightweight Directory Access Protocol (LDAP)
  - Provided by many enterprise directory servers
    - IBM Security Directory Server
    - Microsoft Active Directory
    - Apple Workgroup Manager
  - Allows HMC users to hook into existing corporate authentication
  - Single password across all HMCs and corporate network

## Custom Authentication Settings – Password Rules

- Use the **Password Rules** navigation icon in the **User Management** task, then select the **New** icon to create a new password rule

**Password Rules**  
*A password rule defines a set of rules to be used when creating a user password.*

**New icon** (points to the '+' icon in the Password Rules list)

**Details icon** (points to the 'Basic' rule in the list)

**User Management**

**Password Rules**

- Basic
- Standard
- Strict

**Summary for Basic**

**General**  
 Description: Basic password rule definition

**Password Rules**

Expiration (days): 0  
 Minimum length: 4  
 Maximum length: 8  
 Consecutive characters: 0  
 Similarity count: 0  
 History count: 0  
 Case sensitive: No

**Character Rules**

Minimum Length	Maximum Length	Alphabetic	Numeric	Special	Custom 1	Custom 2
4	8	Allowed	Allowed	Not allowed		

Close Help



## Custom Authentication Settings – Password Rules (cont.)

- Custom password rules are defined and managed through the **New Password Rule** wizard and **Password Rule Details**

**New Password Rule**

**Welcome**

Welcome

Use this wizard to create a new case-sensitive password rule. This wizard guides you through the following tasks:

- Creating and naming the password rule
- Setting the password rules
- Setting the password character rules

**New Password Rule**

**Password Rules**

Define the settings and restrictions to which the password must adhere.

Select whether this password should expire after a set number of days.

Password never expires

Expiration (days):

Enter the minimum and maximum number of characters for the password.

Minimum length:

Maximum length:

Enter the number of times a character can be repeated consecutively.

Consecutive characters:

Enter the number of characters that can match the previous password when changed.

Similarity count:

Enter the number of previous passwords that are saved before a password can be reused.

History count:

**New Password Rule**

**Password Character Rules**

Define the parts for the password by defining character rules.

Actions

**Edit Character Rule**

Select the number of characters that can be defined by this fragment of the password.

Minimum length:

Maximum length:

Identify what types of characters can be included in this fragment of the password.

Alphabetic characters:

Numeric characters:

Special characters:

Optionally define custom character sets that define the characters that can or cannot be included in this fragment of the password.

Custom character set 1:

Custom character set 2:

OK Cancel Help

Back Next Finish Cancel Help

Specify settings for password expiration, length, etc

Define rules for specific fragments of the password

## Custom Authentication Settings – Password Rules (cont.)

- **New Password Rule** wizard summary

**New Password Rule**

Summary

Verify the information and then click **Finish** to create the password rule.

Name: IBM Password Rules

Description:

Password Rules

Expiration (days): 90

Minimum length: 8

Maximum length: 32

Consecutive characters: 0

Similarity count: 0

History count: 8

Character Rules

Minimum Length	Maximum Length	Alphabetic Characters	Numeric Characters	Special Characters	Custom Characters
1	1	Required	Not allowed	Not allowed	1
7	31	Required	Required	Allowed	

Buttons: Back, Next, **Finish**, Cancel, Help

Click **Finish** to create the password rule

## Custom Authentication Settings – Password Rules (cont.)

- The new password rule is added to the list of password rules and the summary is shown in the **User Management** dashboard

**Newly created password rule**

**Password rule summary**

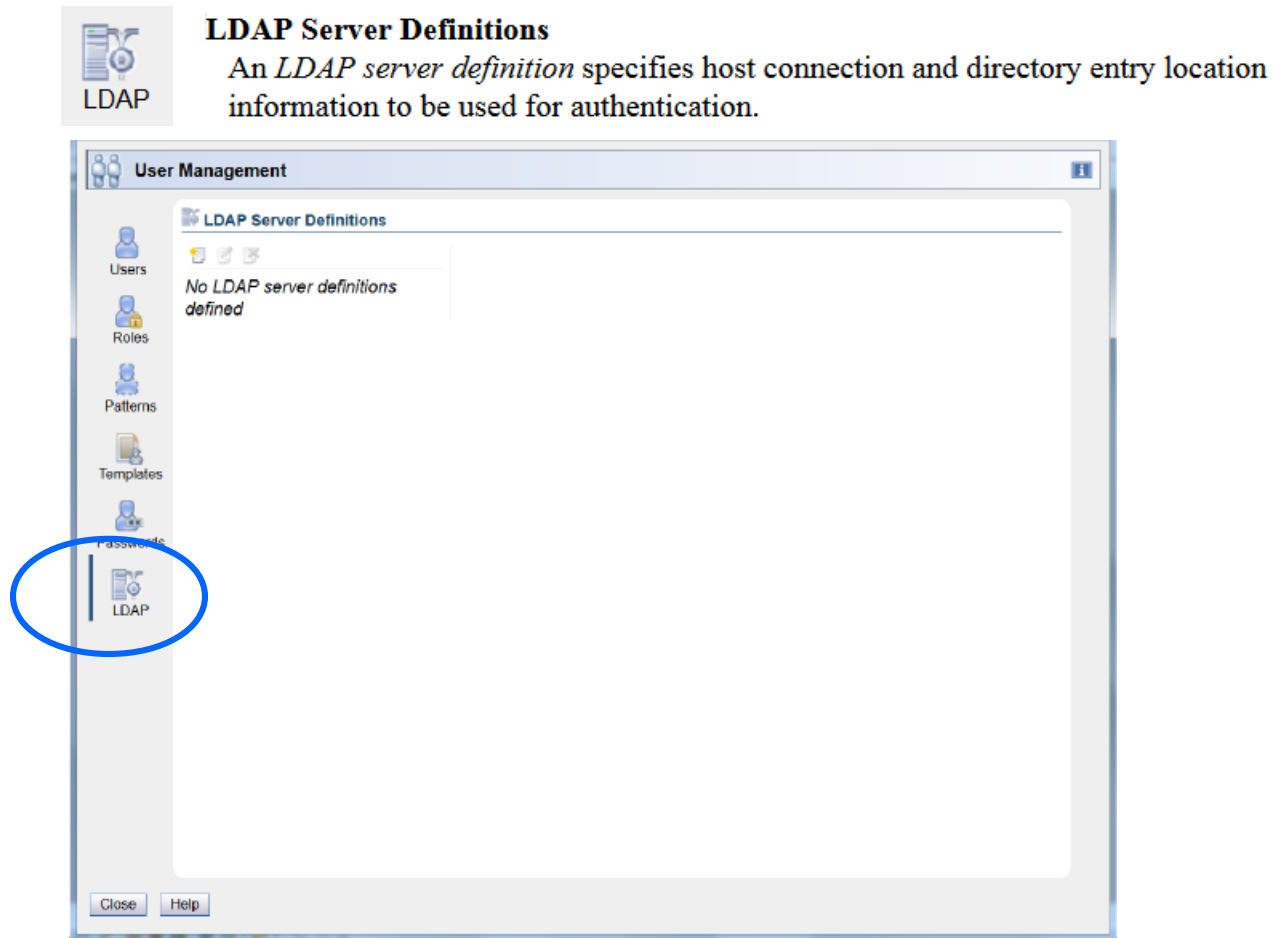
**Summary for IBM Password Rules**

- General**  
Description:
- Password Rules**  
Expiration (days): 90  
Minimum length: 8  
Maximum length: 32  
Consecutive characters: 0  
Similarity count: 0  
History count: 8  
Case sensitive: Yes
- Character Rules**

Minimum Length	Maximum Length	Alphabetic	Numeric	Special	Custom 1	Custom 2
1	1	Required	Not allowed	Not allowed		
7	31	Required	Required	Allowed		

## Custom Authentication Settings – LDAP Server Definitions

- LDAP servers are configured through the **LDAP Server Definitions** navigation icon in the **User Management** task



## Custom Authentication Settings - LDAP Server Definitions (cont.)

- LDAP server definitions are created through the **New LDAP Server Definition** wizard

The image displays three sequential screenshots of the 'New LDAP Server Definition' wizard in the IBM z Systems Hardware Management Console (HMC). The wizard is divided into several steps, with the following callouts highlighting key configuration points:

- Host Connection Information:** A callout bubble points to the 'Primary host name' field, which contains 'ldapserv1.ibm.com'. The text reads: "Specify host name and other connection properties".
- Directory Entry Location Information:** A callout bubble points to the 'Pattern' field, which contains the distinguished name pattern: 'uid={0},c=us,ou=edirectory,o=ibm.com'. The text reads: "Enter a distinguished name (DN) pattern to match (as shown)".
- Directory Entry Location Information (Alternative):** A callout bubble points to the 'Search filter' field. The text reads: "Alternately, search a directory entry on a DN tree through a property filter".

The wizard interface includes a left-hand navigation pane with steps: Welcome, Name, Host Connection, Bind Information, Directory Location, and Summary. The bottom of the wizard features navigation buttons: Back, Next, Finish, Cancel, and Help.

## Custom Authentication Settings - LDAP Server Definitions (cont.)

• **New LDAP Server Definition** wizard summary

**New LDAP Server Definition**

Summary

Verify the information and then click **Finish** to create the server definition.

Name: LDAP-Server-1  
Description: Sample LDAP server definition

**Host Connection Information**  
Primary host name: ldapserv1.ibm.com  
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):

**Directory Entry Location Information**  
Distinguished name pattern: uid={0},c=us,ou=edirectory,o=ibm.com

Back Next **Finish** Cancel Help

Click **Finish** to create the LDAP server definition.

## Custom Authentication Settings - LDAP Server Definitions (cont.)

- The new LDAP server definition is added to the list and the summary is shown in the **User Management** dashboard

Newly created LDAP server definition

LDAP server definition summary

**User Management**

**LDAP Server Definitions**

- LDAP-Server-1

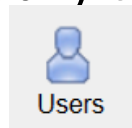
**Summary for LDAP-Server-1**

- General**  
Description: Sample LDAP server definition
- Host Connection Information**  
Primary host name: ldapserv1.ibm.com  
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):
- Directory Entry Location**  
How to locate a user's directory entry: Use a DN pattern  
Distinguished name pattern: uid={0},c=us,ou=edirectory,o=ibm.com

Close Help

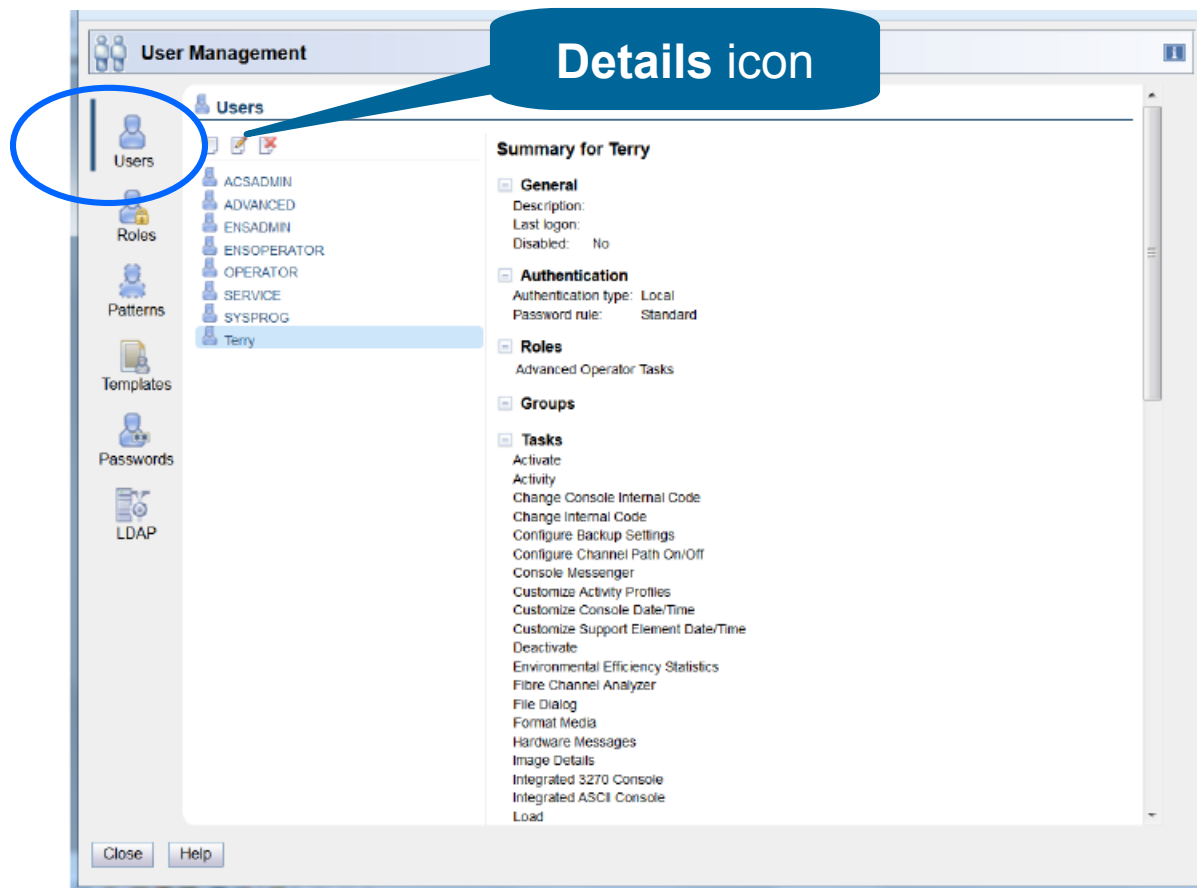
## Custom Authentication Settings - Users

- Use the **Users** navigation icon in the **User Management** task, then select the **Details** icon to modify the user properties



### Users

A *user* object defines the user's authentication, roles which determine access permissions, and a default group to which any objects created by the user will be added.





## Custom Authentication Settings – Users (cont.)

- Configure the authentication type for the user

Set Authentication Type

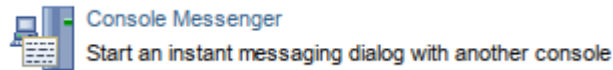
Set LDAP Server

Alternately, select Local authentication and choose your password rule

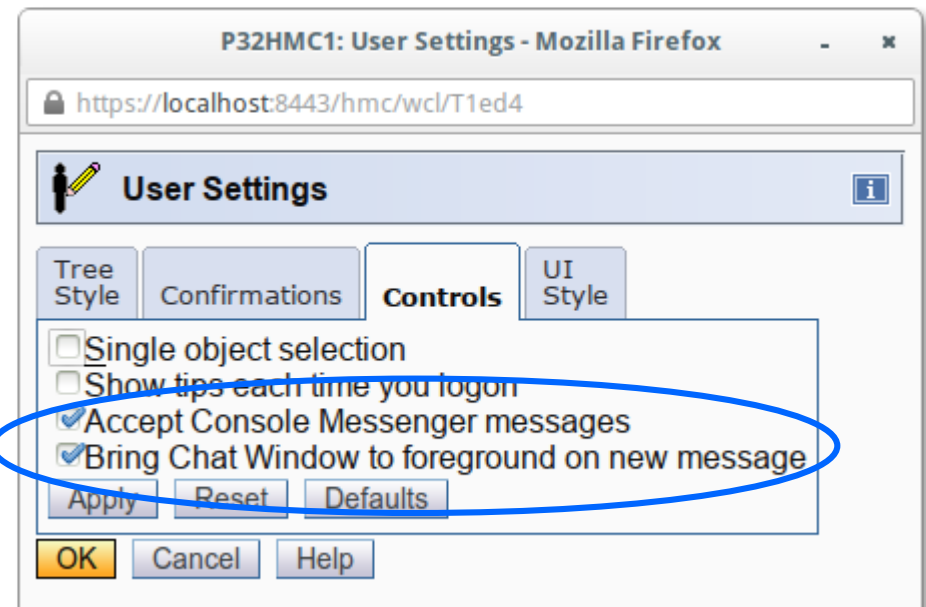
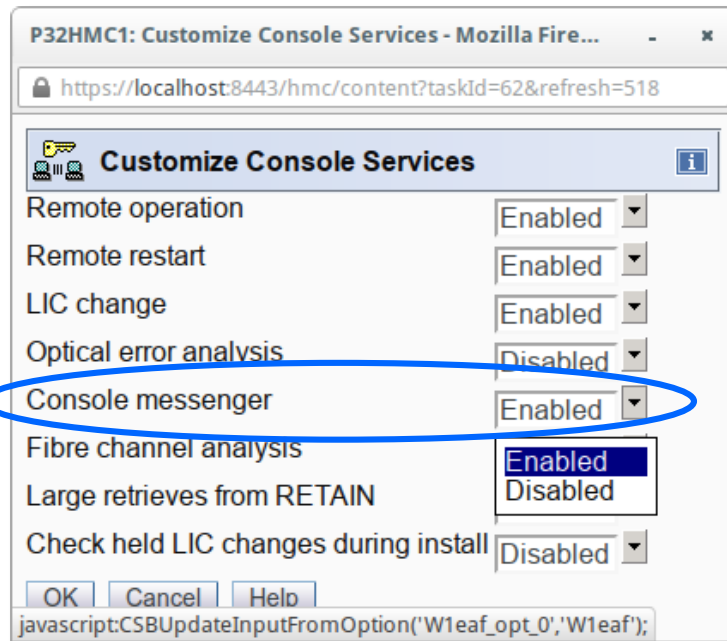
# Communicating with Other Users

## Communicating With Other Users

- **Console Messenger** task allows sending broadcast messages or start one-on-one chat sessions with other users

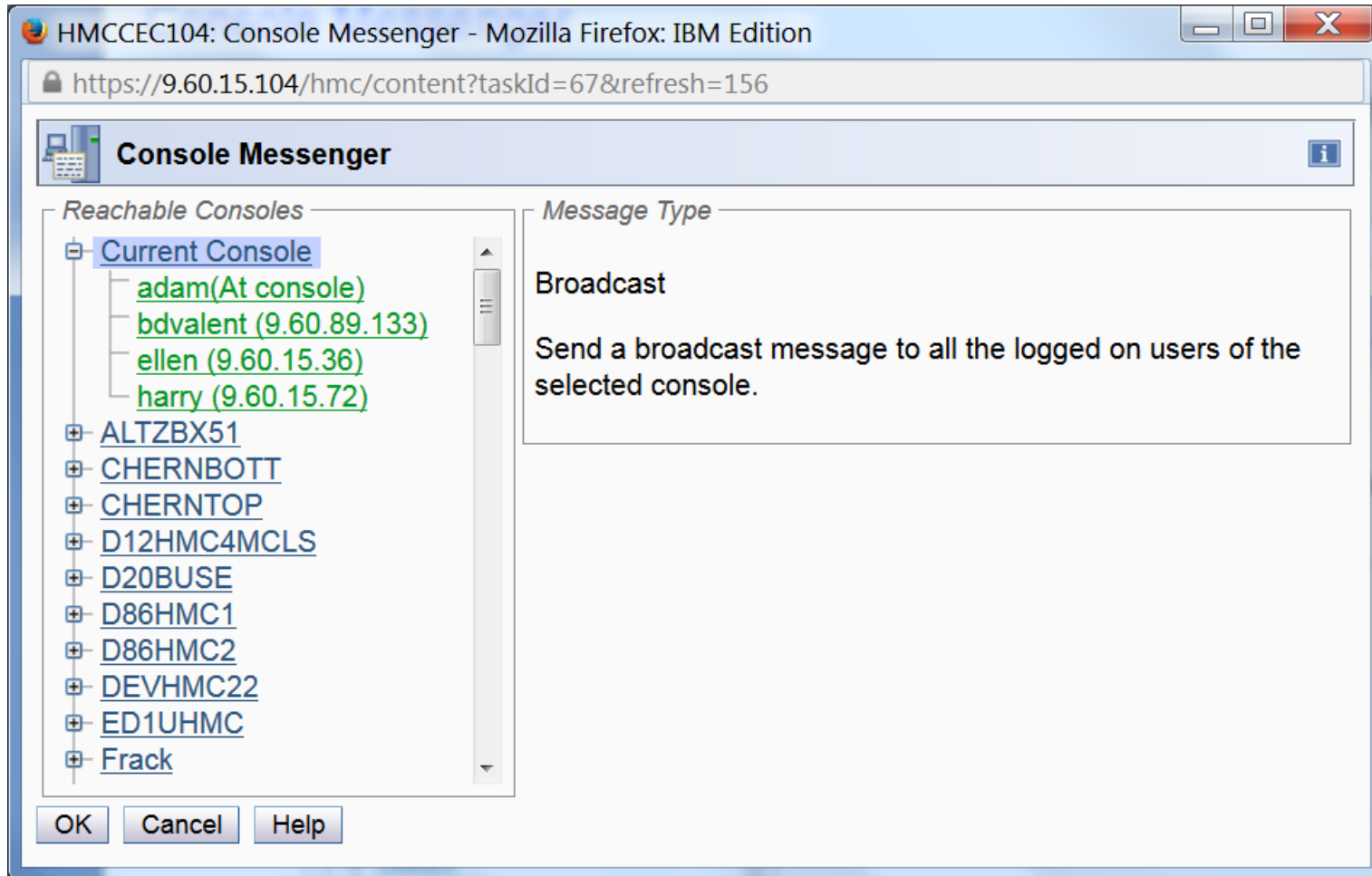


- Must be enabled on the console and for the user



## Console Messenger

All HMCs with console messenger enabled and with the same security domain are listed.



## Broadcast message to all users of same console

HMCCEC104: Console Messenger - Mozilla Fir...  
 https://9.60.15.104/hmc/content?taskId=81&refresh=199

**Send Broadcast Message**

Recipient  
 Current Console

Message  
 Pizza is here. We'll be in 3T014 conference room.

Send Cancel Help

HMCCEC104: Console Messenger - Mozilla Firefox: IBM ...  
 https://9.60.15.104/hmc/content?taskId=72&refresh=183

**Broadcast Message Sent**

The broadcast was successfully sent to the following consoles.

Console Name	Sessions Received
HMCCEC104	3

Close

**Broadcast Message Received**

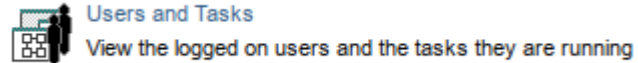
From  
 bdvalent on HMCCEC104 [view more info](#)

Message 02/15/15 02:33:25 PM EST  
 Pizza is here. We'll be in 3T014 conference room.

Initiate Chat Close Help

## Users and Tasks

- Can also be initiated from the **User and Tasks** task



HMCCEC104: Users and Tasks - Mozilla Firefox: IBM Edition

https://9.60.15.104/hmc/content?taskId=69&refresh=158

**Users and Tasks**

The following is the list of users currently logged on. The table below lists all tasks running in the system.

*Users Logged On*

Select	Session Id	User Name	Logon Time	Running Tasks	Access Location	Notes
<input type="checkbox"/>	19	adam	2/15/15 1:51 PM	0	At console	
<input checked="" type="checkbox"/>	20	harry	2/15/15 1:54 PM	0	9.60.15.72	
<input type="checkbox"/>	21	ellen	2/15/15 1:56 PM	0	9.60.15.36	
<input type="checkbox"/>	23	bdvalent	2/15/15 2:03 PM	1	9.60.89.133	This is your session

Chat With

*Running Tasks*

Select	Task Id	Task Name	Targets	Session Id	Start Time
<input type="radio"/>	69	Users and Tasks		23	2/15/15 2:07 PM

Switch To Terminate

Close Help

## Two-Way Communication

HMCCEC104: Console Messenger - Mozilla Firefox: IBM Edition

https://9.60.15.104/hmc/content?taskId=70&refresh=165

### Console Messenger Chat

Chat Partner

harry on HMCCEC104  
Status : **Logged on**

[view more info](#)

History

02/15/15 02:12:46 PM EST

Me (02:12:57 PM): Hi Harry

Partner (02:13:29 PM): Hi Brian

Me (02:16:45 PM): Are you almost done with your testing on LP01? I would like to get switch in the production image.

Partner (02:17:09 PM): Yes. Go ahead.

Me (02:17:49 PM): thanks

Message

Bring chat window to foreground on message arrival.

Send Close Help


# HMC Data Replication

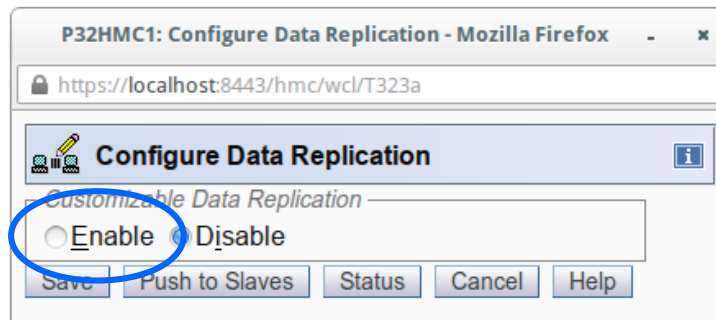


## HMC Data Replication

- An HMC task and underlying communication framework
- Allows the exchange of configuration data between linked machines:
  - Acceptable Status Settings
  - Associated Activation Profiles
  - Customer Information Data
  - Group Data
  - Monitor System Events Data
  - Object Locking Data
  - Outbound Connectivity Data
  - User Profile Data
- A convenient way to keep multiple HMC synchronized
- Can be disabled to prevent this exchange
- Exchanges of data (inbound and outbound) are logged

## HMC Data Replication (cont.)

- Enabled via **Configure Data Replication** task  [Configure Data Replication](#)  
Configure the Data Replication settings for the HMC
- Occurs from the slave machine
- Master must be runnable/reachable
- Master need not be enabled for slave configuration, but it does need to be enabled for actual data exchange



## HMC Data Replication (cont.)

- Configuration task allows you to
  - Search for/select masters
  - Select which data types to replicate
  - Establish 'local' modification warnings
    - Warns task user, on the slave, that their changes may interfere with data that is being replicated
    - It may cause a data item to become 'ahead' of the master

## HMC Data Replication (cont.)

P32HMC1: Configure Data Replication - Mozilla Firefox

https://localhost:8443/hmc/content?taskId=96&refresh=579

### Configure Data Replication

Customizable Data Replication

Enable  Disable

Data Source(s)

P32HMC2

New

Delete

Customizable Data Types

Select	Data Types
<input type="checkbox"/>	Customer Information Data
<input type="checkbox"/>	Group Data
<input type="checkbox"/>	Remote Service Data
<input checked="" type="checkbox"/>	User Profile Data
<input type="checkbox"/>	Monitor System Events Data

Local Customizable Data Change Warnings

Select the customizable data types that should generate warning when the type of data is manually changed on this Hardware Management Console and are also configured to be replicated from one or more data sources.

Select	Data Warning Types
<input type="checkbox"/>	Customer Information Data
<input type="checkbox"/>	Group Data
<input type="checkbox"/>	Remote Service Data
<input checked="" type="checkbox"/>	User Profile Data
<input type="checkbox"/>	Monitor System Events Data

Save Push to Slaves Sync from Master Status Cancel Help

Master Name

Requested Data Types From The Master

Warn Users When They Change Selected Data on Local Machine

Used to Force Updates If Slave Gets 'Ahead' Of Master

## HMC Data Replication (cont.)

mjh1: Configure Data Replication

**Data Replication Status**

Data Sources

Name	Status	IP addresses
mjh2	<input checked="" type="checkbox"/> Communicating	10.0.0.2 fe80:0:0:0:c0:ff:fe01:51ff 0.0.0.0 fe80:0:0:0:c1:ff:fe01:51ff

Data Types

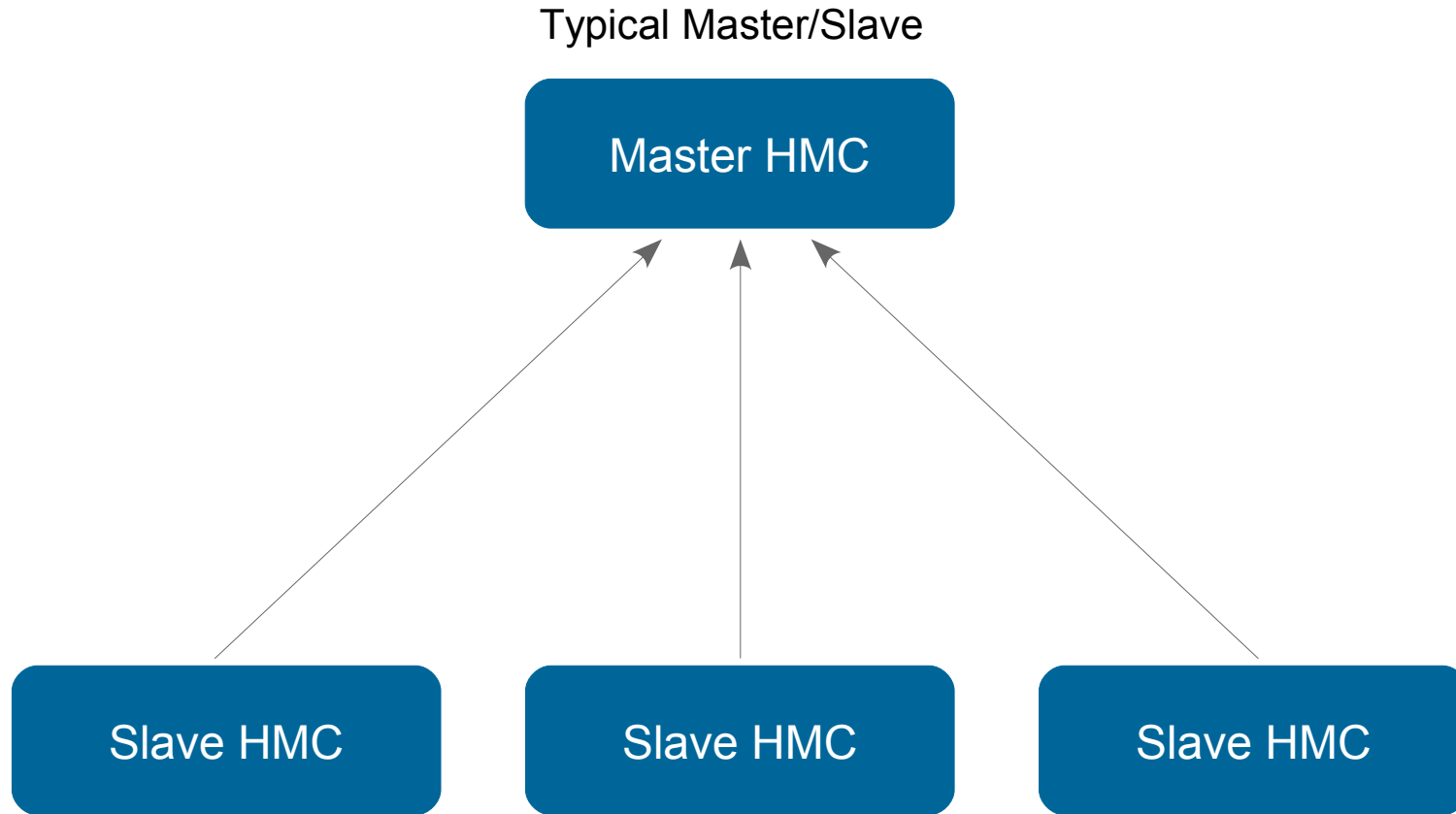
Name	Local Level	Bound to a Master	Updated Since Console Start	Status
Customer Information Data	1	Yes	No	<input checked="" type="checkbox"/> OK
Group Data	0	No	No	<input checked="" type="checkbox"/> OK
Remote Service Data	0	No	No	<input checked="" type="checkbox"/> OK
User Profile Data	0	No	No	<input checked="" type="checkbox"/> OK
Monitor System Events Data	0	No	No	<input checked="" type="checkbox"/> OK
Acceptable Status Settings	0	No	No	<input checked="" type="checkbox"/> OK
Outbound Connectivity Data	0	No	No	<input checked="" type="checkbox"/> OK
Object Locking Data	0	No	No	<input checked="" type="checkbox"/> OK

ACT05012

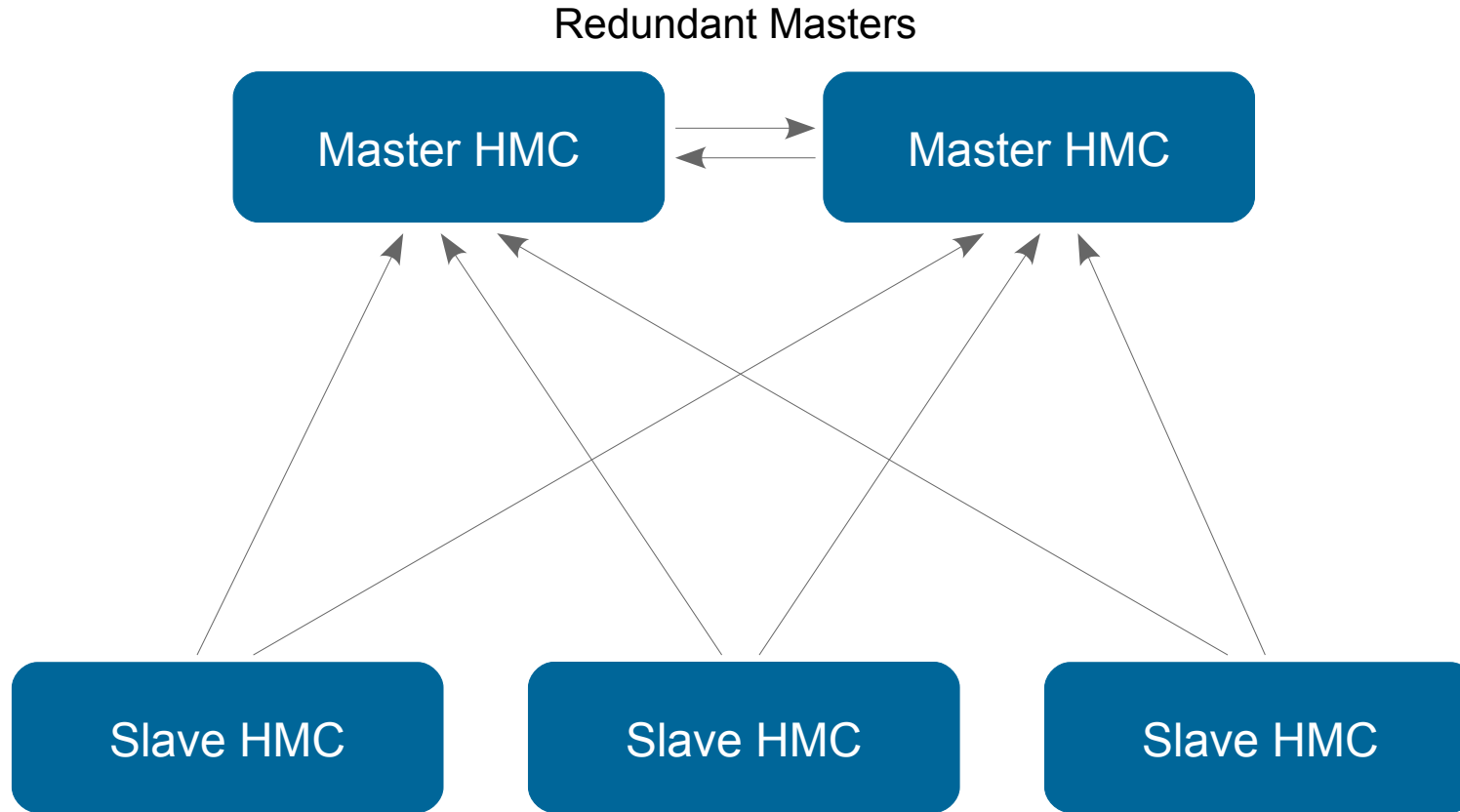
Close

Local Level Information

## HMC Data Replication (cont.)



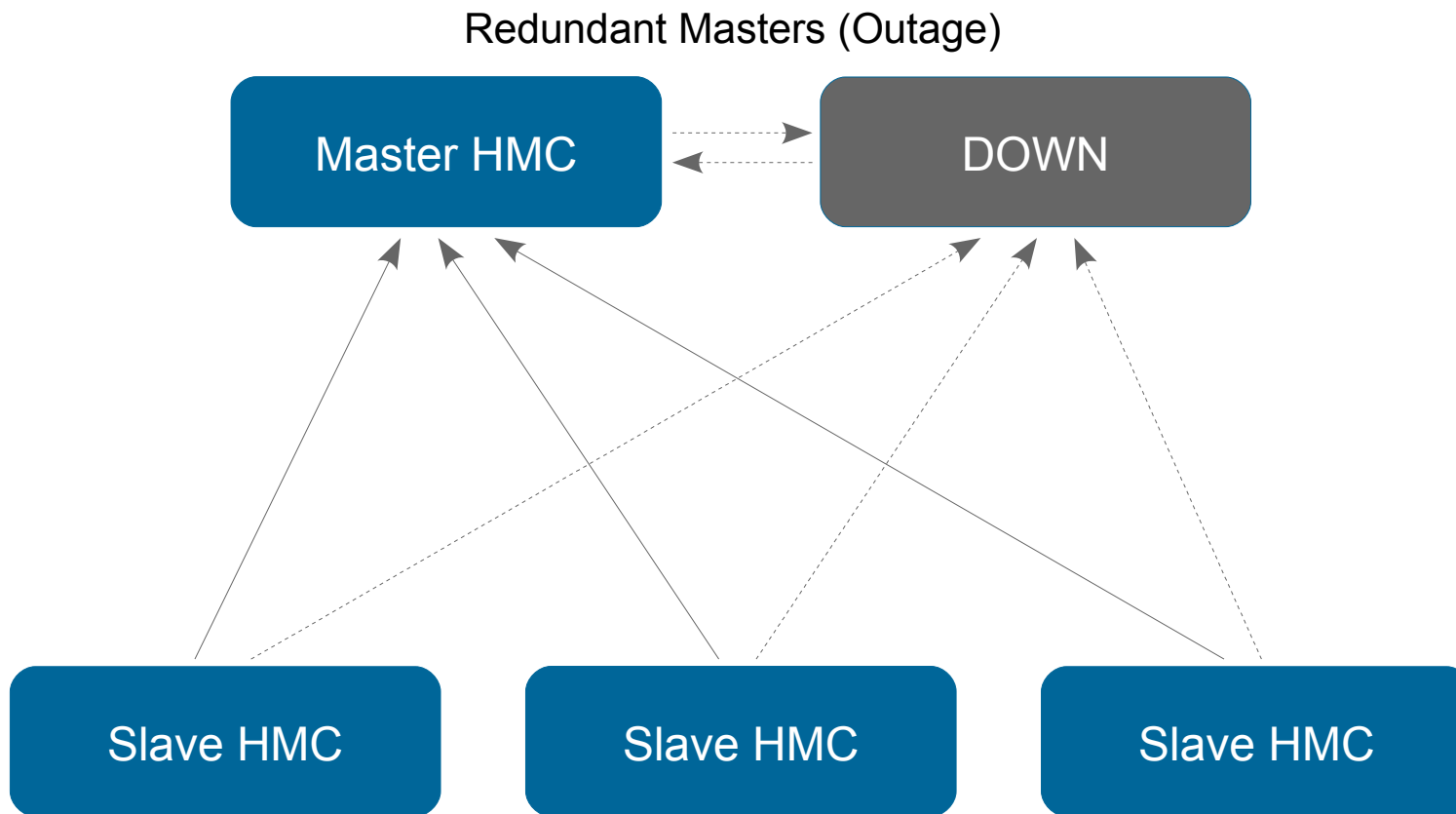
## HMC Data Replication (cont.)



Changes made on either master:

- Propagate to all slaves
- And the peer master

## HMC Data Replication (cont.)





# HMC Certificate Management

## HMC Certificate Management

- Self-signed certificate created at the time of HMC installation
  - Not used until remote communications enabled
- Recommend replacing the self-signed certificate with one signed by a Certificate Authority (CA)
  - If the remote users using a network which potentially isn't secure
- If the self-signed certificate is not replaced and a user adds the certificate as an exception, there is a risk of the HMC being “spoofed” and capturing HMC credentials
- If your company does not have its own CA, you can purchase a certificate from a commercial CA that is already in your browser
  - Check your browser for a list of CA certificates already installed and trusted

## HMC Certificate Management (cont.)

- Use the *New Certificate* action in the **Certificate Management** task to change the current certificate



Certificate Management

Create, modify, delete, and import certificates used on the HMC, and view certificate signing information

P32HMC1: Certificate Management - Mozilla Firefox

https://localhost:8443/hmc/content?taskId=70&refresh=536

**Certificate Management**

Create ▾ Selected ▾ Advanced ▾

**New Certificate**

Certificate for this console:

Select	Property	Value
<input type="radio"/>	Version	3
<input type="radio"/>	Serial Number	78745020305661003580885907565053457269
<input type="radio"/>	Issuer	CN=P32HMC1.endicott.ibm.com
<input type="radio"/>	Valid From	Jan 14, 2014 10:19:48 AM
<input type="radio"/>	Valid Until	Jun 26, 2022 11:19:48 AM
<input type="radio"/>	Subject	CN=P32HMC1.endicott.ibm.com
<input type="radio"/>	Subject Alternative Names	DNS: P32HMC2.endicott.ibm.com, DNS: P32HMC1.endicott.ibm.com, IP: 9.60.14.53, IP: 9.60.14.54, IP: 9.60.15.53, IP: 9.60.15.54

Apply Cancel Help

## HMC Certificate Management (cont.)

- Select *Signed by a Certificate Authority*



## HMC Certificate Management (cont.)

- Fill in the specifics for the HMC (e.g. your organization and company)
- The IP address (v4 and/or v6) and the TCP/IP host name of the HMC is included automatically in the certificate
- You will be guided to write the Certificate Signing Request (CSR) to the USB Flash Drive (UFD)

**P32HMC1: Certificate Management - Mozilla Firefox**

https://localhost:8443/hmc/wcl/T254c

**New Certificate**

Enter the following information for the certificate signing request to be created:

Organization (e.g. IBM)

Organization unit (e.g. Development)

Hardware Development

Two letter country or region code (e.g. US)

State or Province (e.g. CA)

Locality (e.g. Los Angeles)

Number of days until expiration (e.g. 365) \*

Email address (e.g. xxxx@ibm.com)

## HMC Certificate Management (cont.)

- After generating a new certificate using the CSR, use *Import Server Certificate* to load the new certificate

The screenshot shows the 'Certificate Management' interface in a Mozilla Firefox browser window. The browser address bar shows 'https://localhost:8443/hmc/content?taskId=70&refresh=538'. The page title is 'P32HMC1: Certificate Management - Mozilla Firefox'. Below the title bar, there are tabs for 'Create', 'Selected', and 'Advanced'. A dropdown menu is open under the 'Advanced' tab, with 'Import Server Certificate' highlighted by a blue circle. Other options in the menu include 'Delete and Archive Certificate', 'Work with Archived Certificate', 'Export Server Certificate', 'Manage Trusted Signing Certificates', 'View Issuer Certificate', and 'Configure SSL Cipher Suites'. Below the menu, there is a table with columns 'Select' and 'Property'. The table contains the following rows:

Select	Property
<input type="radio"/>	Version
<input type="radio"/>	Serial Number
<input type="radio"/>	Issuer
<input type="radio"/>	Valid From
<input type="radio"/>	Valid Until
<input type="radio"/>	Subject
<input type="radio"/>	Subject Alternative Names

To the right of the table, there is a section titled 'Certificate for this console:' with the following details:

- 0885907565053457269
- ibm.com
- M
- Jun 26, 2022 11:19:48 AM
- CN=P32HMC1.endicott.ibm.com
- DNS: P32HMC2.endicott.ibm.com, DNS: P32HMC1.endicott.ibm.com, IP: 9.60.14.53, IP: 9.60.14.54, IP: 9.60.15.53, IP: 9.60.15.54

At the bottom of the interface, there are buttons for 'Apply', 'Cancel', and 'Help'. Below the buttons, there is a small code snippet: 'javascript:menuItemLaunchAction();'.

- Load the new certificate using removable media
- The new certificate will now be used for new HMC connections

# Monitor System Events

## Monitor System Events

- Allows you to receive an email when a particular event happens for objects that you're interested in
- Supported event types
  - State Changes
  - Hardware Message
  - Operating System Messages
  - Security Log
  - Performance Index
  - Availability Status
- Uses an SMTP server to send out email
  - It's recommended that you use a private SMTP server designated just for the HMCs use



## Monitor System Events (cont.)

- Launch **Monitor System Events** task
- Configure SMTP settings



Monitor System Events

Add, edit, test, enable, disable, or delete system event monitors

**Event Monitor Summary**

*Settings*

SMTP Server:

SMTP Port: \*

Minimum time between emails: \*  (in seconds, minimum of 60)

*Monitors*

Select	Name	Description	Last Event	Enabled
<input checked="" type="radio"/>	Availability Status Example	Example availability status monitor		<input type="checkbox"/>
<input type="radio"/>	HW Msg Example	Example hardware message monitor.		<input type="checkbox"/>
<input type="radio"/>	OS Msg Example	Example operating system message monitor.		<input type="checkbox"/>
<input type="radio"/>	Security Log Example	Example security log monitor.		<input type="checkbox"/>
<input type="radio"/>	Service Class PI Example	Example service class PI monitor		<input type="checkbox"/>
<input type="radio"/>	State Change Example	This is example of a state change monitor.		<input type="checkbox"/>
<input type="radio"/>	Virtual Server CPU Example	Example virtual server CPU utilization monitor		<input type="checkbox"/>
<input type="radio"/>	hdwmsg2		Jan 31, 2013 2:43:06 PM	<input type="checkbox"/>
<input type="radio"/>	hdwmsg3			<input type="checkbox"/>

Add... Edit... Delete

OK Test... Help

## Monitor System Events (cont.)

- Manage existing monitors or click the *Add* button to create a new monitor

**Event Monitor Summary**

*Settings*

SMTP Server:

SMTP Port: \*

Minimum time between emails: \*  (in seconds, minimum of 60)

*Monitors*

Select	Name	Description	Last Event	Enabled
<input checked="" type="radio"/>	Availability Status Example	Example availability status monitor		<input type="checkbox"/>
<input type="radio"/>	HW Msg Example	Example hardware message monitor.		<input type="checkbox"/>
<input type="radio"/>	OS Msg Example	Example operating system message monitor.		<input type="checkbox"/>
<input type="radio"/>	Security Log Example	Example security log monitor.		<input type="checkbox"/>
<input type="radio"/>	Service Class PI Example	Example service class PI monitor		<input type="checkbox"/>
<input type="radio"/>	State Change Example	This is example of a state change monitor.		<input type="checkbox"/>
<input type="radio"/>	Virtual Server CPU Example	Example virtual server CPU utilization monitor		<input type="checkbox"/>
<input type="radio"/>	hdwmsg2		Jan 31, 2013 2:43:06 PM	<input type="checkbox"/>
<input type="radio"/>	hdwmsg3			<input type="checkbox"/>

## Monitor System Events (cont.)

- Enter in a name for the monitor
- Choose the event type
- Select event targets and details
- Select/Enter Event Pattern for matching events
- Limit to a particular schedule
- Enter in one or more email addresses to be notified when the monitor is triggered

**Event Monitor Editor**

Name:

Description:

Event type:

- State Changes
- Hardware Messages
- Operating System Messages
- Security Log
- CPU Utilization
- Performance Index (PI)
- Availability Status

Event targets:

Select	Object Name
<input type="checkbox"/>	P00E9EB6:MCSIMTST
<input type="checkbox"/>	P00E9EB6:VMALT1
<input checked="" type="checkbox"/>	P00E9EB6:VMALT2
<input type="checkbox"/>	P00E9EB6:ZOS
<input type="checkbox"/>	P00E9EB6:ZOS1
<input type="checkbox"/>	POLXSM28

Event pattern:

Event schedule:

- Limit to times: Start Time:  End Time:
- Limit to days:  Sunday  Monday  Tuesday  Wednesday  Thursday  Friday  Saturday
- Limit to dates: Start Date:  End Date:

Notification list:

## Monitor System Events (cont.)

- Email contains events summary since last email

Who	Subject	Date	Size
P32HMC1_EventM	Monitor System Events, Message Count: 1	07/24/2014 10:46 AM	6K



**Monitor System Events, Message Count: 1**  
**P32HMC1\_EventMonitor** to: Jason Stapels

Message Number: 1 \*\*\*\*\*  
 Event: 'State Change'  
     Source: 'P00E9EB6 VMALT2'  
     Text: 'Operating-->Not Operating'  
     Time: 'Jul 24, 2014 10:46:24 AM EDT'  
 Monitor:  
     Name: 'z/VM Gets Deactivate'  
     Description: 'z/VM Partition is no longer operating'  
     Enabled: 'true'  
     Regular Expression: '.\*-->Not Operating # From any state to Not Operating'  
     Start Time: 'unspecified'  
     End Time: 'unspecified'  
     Start Date: 'unspecified'  
     End Date: 'unspecified'  
     Active Days: '[ Sun, Mon, Tue, Wed, Thu, Fri, Sat ]'  
     Email Addresses: 'jstapels@us.ibm.com'  
     Locale: 'en\_US'

# Absolute Capping

### Absolute Capping

- Existing ways to cap the utilization of a partition
  - Dedicated processors
  - Active manipulation of LPAR weights (i.e. WLM)
  - capping via LPAR weights
  - Limit number of shared logical processors to physical capping requirement (may actually cause LPAR to have under-defined logical processors as compared to the partition's weight)

## Absolute Capping (cont.)

- Potential drawbacks with methods mentioned
  - Dedicated processors
    - Not very granular, may want to cap less than one processor's worth of capacity
    - May not be possible if there aren't enough engines
    - Loses processor utilization efficiency of shared processors
  - Existing shared processor capping is based off of the weight of all **active** partitions
    - Customers may fail to compute the capacity correctly
    - Configuration change (processors add) may lead to more capacity being allocated than desired
  - If partitions are deactivated, other active partitions capping increases
    - If only one shared active partition left, result => no capping (100 % of shared pool)

## Absolute Capping (cont.)

- Absolute Capping
  - Additional method introduced to ensure software licensing Terms and Conditions related to capacity are always met (ie. Software Pricing)
- A method to define an absolute cap for a given partition
  - If specified, always works independently of any other capping
  - Defines an absolute number of processors to cap the partition's activity to
  - Specified to hundredths of a processor (eg. 4.56 processors) worth of capacity
  - Value not tied to the LICCC processors maximum
    - A value from 0.01 to 255 valid
    - Activation profiles more portable as you migrate to higher machine capacity or newer systems
    - If you specify a value above current machine maximum or number of processors defined for an LPAR (Image), absolute capping will be ignored but other capping means will still be honored



## Absolute Capping (cont.)

- Absolute Capping Controls:
  - Activation Profiles
    - Customize Activation Profiles
      - Classic editor
      - Profile wizard
    - Change LPAR Controls Task
    - Change LPAR Weights Scheduled Operation
  - APIs
    - SNMP APIs
    - CIMMOM APIs
    - WebServices APIs

## Absolute Capping (cont.)

P32HMC1: Customize/Delete Activation Profiles - Mozilla Firefox

https://localhost:8443/hmc/content?taskId=100&refresh=588

Customize Image Profiles: P00E9EB6:VMALT1 : VMALT1 : Processor

Group Name <Not Assigned>

Logical Processor Assignments

Select	Processor Type	Initial	Reserved
<input checked="" type="checkbox"/>	Central processors (CPs)	8	1
<input checked="" type="checkbox"/>	System z application assist processors (zAAPs)	0	1
<input checked="" type="checkbox"/>	System z integrated information processors (zIIPs)	0	1

Not Dedicated Processor Details for :  
 CPs  zAAPs  zIIPs

CP Details

Initial processing weight: 10 (1 to 999)  Initial capping

Enable workload manager

Minimum processing weight: 0

Maximum processing weight: 0

Absolute Capping:  None  Number of processors (0.01 to 255.0) 5.5

Buttons: Cancel, Save, Copy Profile, Paste Profile, Assign Profile, Help

May be combined with traditional capping or WLM, but not both

LPAR Weight Potential Max Cap: 8

Absolute Cap: 5.5

## Absolute Capping (cont.)

P32HMC1: Change LPAR Controls - Mozilla Firefox

https://localhost:8443/hmc/wcl/T3893

**Change Logical Partition Controls - P00E9EB6**

Last reset profile attempted:  
Input/output configuration data set (IOCDs):a0 P32VMIOC

CPs   zAAPs   zIIPs   Processor Running Time

Logical Partitions with Central Processors

--- Select Action ---

Logical Partition	Active	Defined Capacity	Current	Initial Capping	Absolute Capping	Number of Dedicated Processors	Number of Not dedicated Processors
APIVM1	Yes	0		<input type="checkbox"/>	<a href="#">None</a>	0	2
APIVM2	No	0		<input type="checkbox"/>	<a href="#">None</a>	0	1
GDLVMBUV	No	0		<input type="checkbox"/>	<a href="#">None</a>	0	1
LX1	Yes	0	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	4
LX2	Yes	0	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	4
MCSIM	Yes	0	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	8
MCSIMTST	No	0	<input type="checkbox"/> 0	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	4
VMALT1	Yes	0	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">1.55</a>	0	2
VMALT2	Yes	0	<input type="checkbox"/> 10	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	2
ZOS	No	0	<input type="checkbox"/> 0	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	6
ZOS1	No	0	<input type="checkbox"/> 0	<input type="checkbox"/> 10	<input type="checkbox"/> <a href="#">None</a>	0	1

Save to Profiles   Change Running System   Save and Change   Reset   Cancel   Help

Click on link to make Changes to the Absolute Capping setting



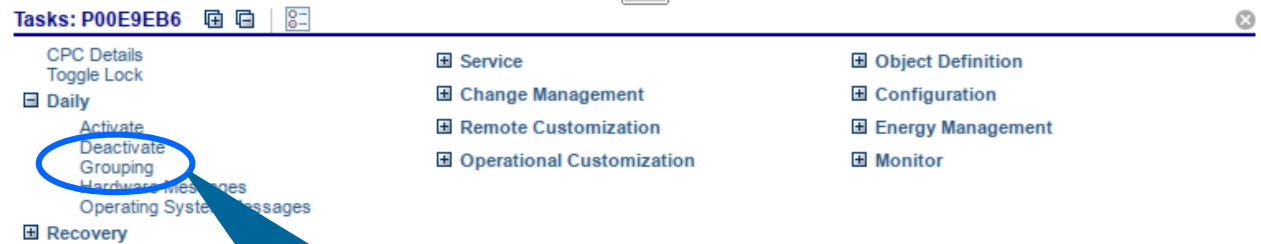
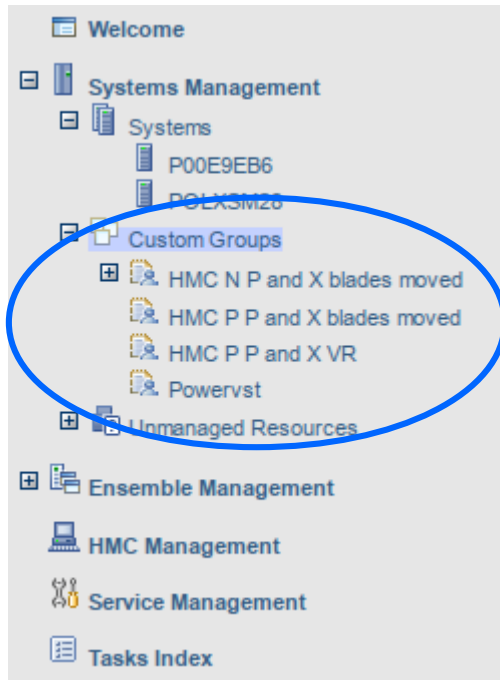
# Custom Groups

## Custom Groups

- A custom group is a set of objects that have been grouped based on a specific set of criteria:
  - Group based on a name pattern
  - Group based on an object type
  - Group based on a specific selection of objects
- A convenient way to work with only the objects that you care about
- Set your group up based on a location or a environment type
- Easily run tasks against the custom group

## Custom Groups

- Quickly access from the Tree Navigation pane

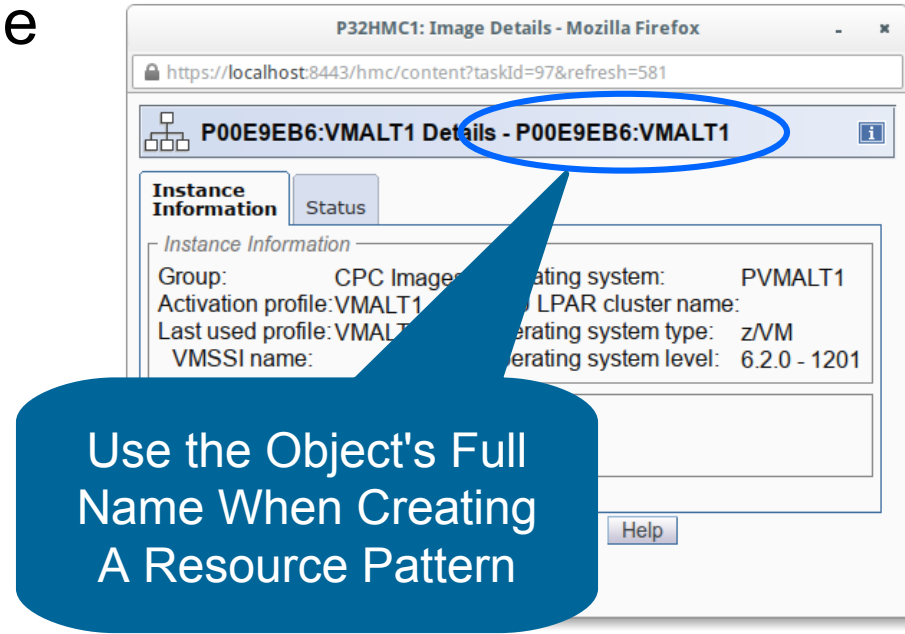
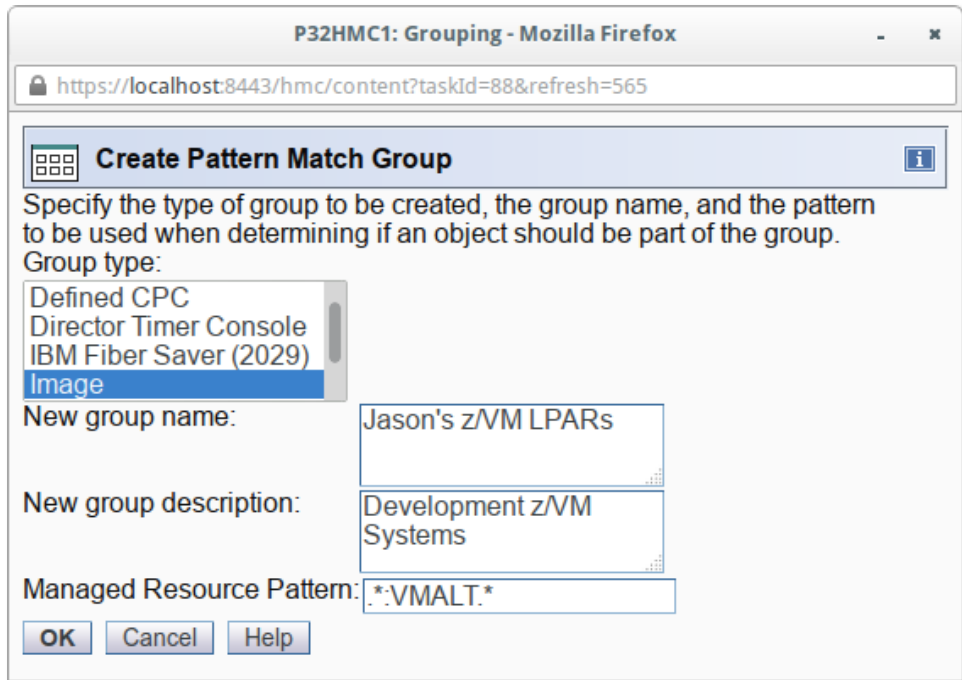


Accessed from the Daily Tasks

- Use the **Grouping** task to configure

## Custom Groups (cont.)

- Creating a new custom group based on name filters
- Be sure to use the FULL object name



## Custom Groups (cont.)

- Or create a group from a selection of objects

Systems Management > Systems > P00E9EB6

Images z/VM Virtual Machines Topology

Filter Tasks Views

Select	Name	Status	Activation Profile	Last Used Profile	OS Name	OS Type	OS Level
<input checked="" type="checkbox"/>	APIVM1	Not Operating	APIVM1				
<input checked="" type="checkbox"/>	APIVM2	Not activated	APIVM2				
<input type="checkbox"/>	GDLVMBUV	Not activated	GDLVMBUV				
<input type="checkbox"/>	LX1	Not Operating	LX1	LX1			
<input type="checkbox"/>	LX2	Exceptions	LX2				
<input type="checkbox"/>	MCSIM	Exceptions	MCSIM	MCSIM			
<input type="checkbox"/>	MCSIMTST	Not activated	MCSIMTST				
<input checked="" type="checkbox"/>	VMALT1	Operating	VMALT1	VMALT1	PVMALT1	z/VM	6.2.0 - 1201
<input checked="" type="checkbox"/>	VMALT2	Not activated	VMALT2				
<input type="checkbox"/>	ZOS	Not activated	ZOS				
<input type="checkbox"/>	ZOS1	Not activated	ZOS1				

Max Page Size: 500 Total: 11 Filtered: 11 Selected: 4

Tasks: APIVM1...

Image Details Toggle Lock

- Daily
  - Activate
  - Deactivate
  - Grouping**
  - Hardware Messages
  - Operating System Messages
  - Reset Normal
- Operational Customization
  - Configure Channel Path On/Off
  - Customize/Delete Activation Profiles
  - Logical Processor Add
  - View Activation Profiles
- Recovery
  - Access Removable Media
  - Integrated 3270 Console
  - Integrated ASCII Console
  - Load
  - Load from Removable Media or Server
  - PSW Restart
  - Reset Clear

Select Objects Then Launch Grouping Task From Daily Actions

P32HMC1: Grouping - Mozilla Firefox

https://localhost:8443/hmc/content?taskId=90&refresh=568

### Manage Groups

Selected Item(s):

- P00E9EB6 APIVM1
- P00E9EB6 APIVM2
- P00E9EB6 VMALT1 (PVMALT1)

Select the type of group action to perform.

Group Action

- Create a new group
- Add to an existing group
- Remove from an existing group
- Remove group
- Edit existing group
- Create a new pattern match group

New group name: All Jason's z/VM LPARs

New group description:

Group name:

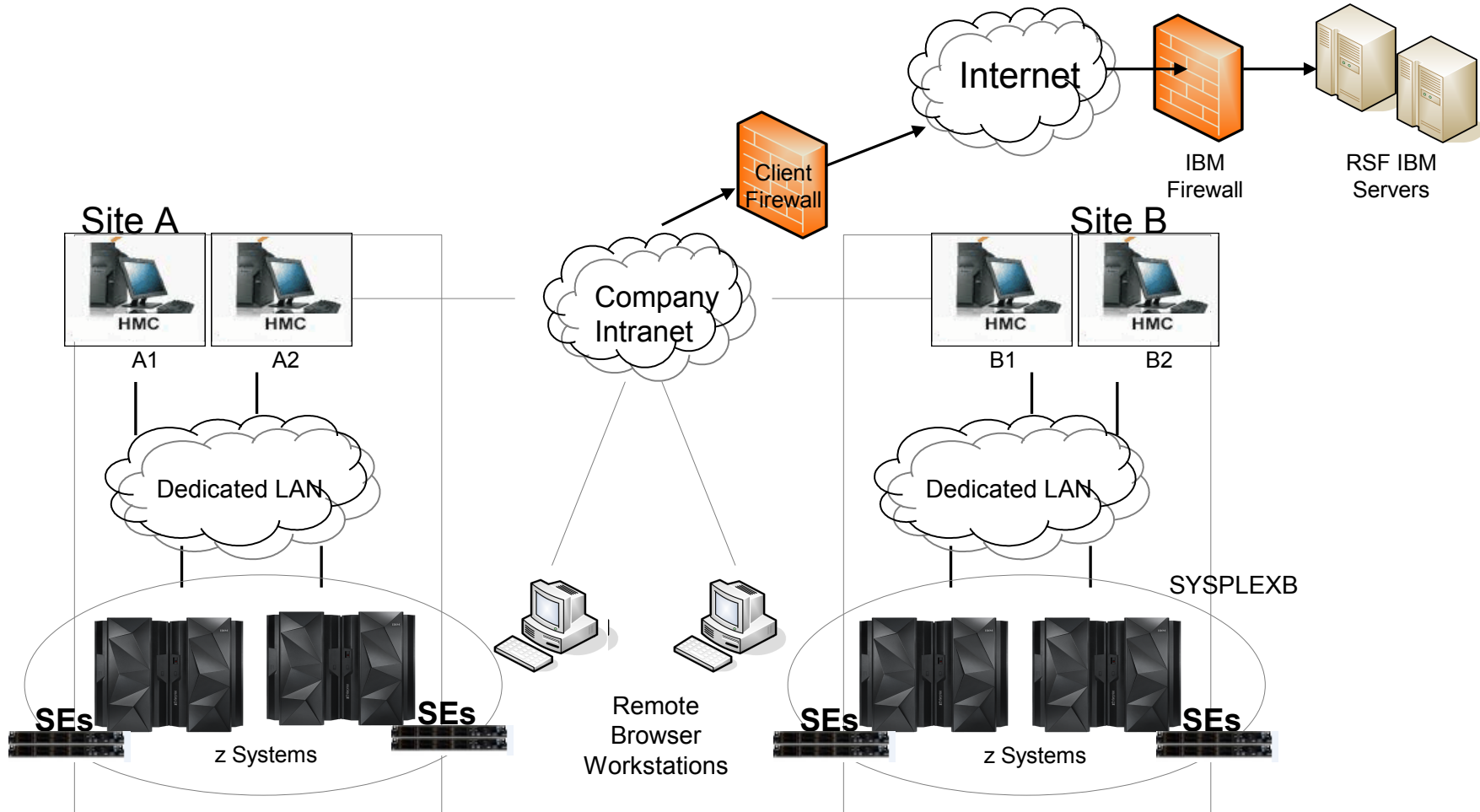
- HMC N P and X blades moved
- HMC N P and X VRs
- Powervst

OK Cancel Help



# Setting up HMCs for Redundancy

## Multiple Sysplex Network Topology



## Setting up HMCs for Redundancy

- Enable 2 HMCs as Problem Call Home Servers
  - Execute Customize Outbound Connectivity task on each HMC to enable
- Ensure that 2<sup>nd</sup> HMC Outward Intranet LAN to RSF Servers has outward firewall ports opened for port of multiple RSF servers
  - See HMC 2.13.0 SHARE presentation for list of RSF ips/ports to open
  - Could be two different outward subnets
    - HMC A1 2<sup>nd</sup> ethernet => subnet intr1, HMC A2 2<sup>nd</sup> ethernet => subnet intr2
- Have HMCs on different subnet connections to CPCs/SEs
  - Each SE has two network connections
  - Ensure each network connection goes to a different HMC
    - Primary SE em3 => HMC A1 subnet ded1,
    - Primary SE em4 => HMC A2 subnet ded2
    - Alternate SE configured same

Thank you for your time and consideration....



**Brian Valentine**  
**HMC/SE Team**

**Contact for any Questions:**

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## Other SHARE Sessions of Related Interest

- March 3<sup>rd</sup>, 10:00 – 11:00 AM
  - **16704:** *The New IBM z13 Part 1: Processor Design, Server Structure, z/Architecture Enhancements, and Operating System Support*
- March 3<sup>rd</sup>, 11:15 AM – 12:15 PM
  - **16459:** *The New IBM z13 Part 2: Crypto, I/O Design, Features, and Functions, Parallel Sysplex and Implementation Planning*
- March 3<sup>rd</sup>, 9:30 – 10:30 AM
  - **16705:** *IBM z Systems Hardware Management Console (HMC) 2.13.0*
- March 4<sup>th</sup>, 1:45 – 2:45 PM
  - **16930:** *IBM z Systems z13 Simultaneous Multi-Threading (R)Evolution*
- March 4<sup>th</sup>, 3:15 – 4:15 PM
  - **16626:** *How to Make the Most out of BCPii*
- March 5<sup>th</sup>, 8:30 – 9:30 AM
  - **16821:** *Capping, Capping, and Capping. Comparison of Hard and Soft-Capping Capacity Controls*

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