

# IBM **z17** News / Overview

Advanced AI  
where it matters  
most

zExpertenforum Oktober z17 News

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# IBM Z – Naming for IBM z17

Brand Name:	IBM
Product Class:	IBM mainframe
Family Name:	IBM Z®
Model and Processor Capacity Features:	ME1, Features: Max43, Max90, Max136, Max183, Max208
Machine Type:	9175



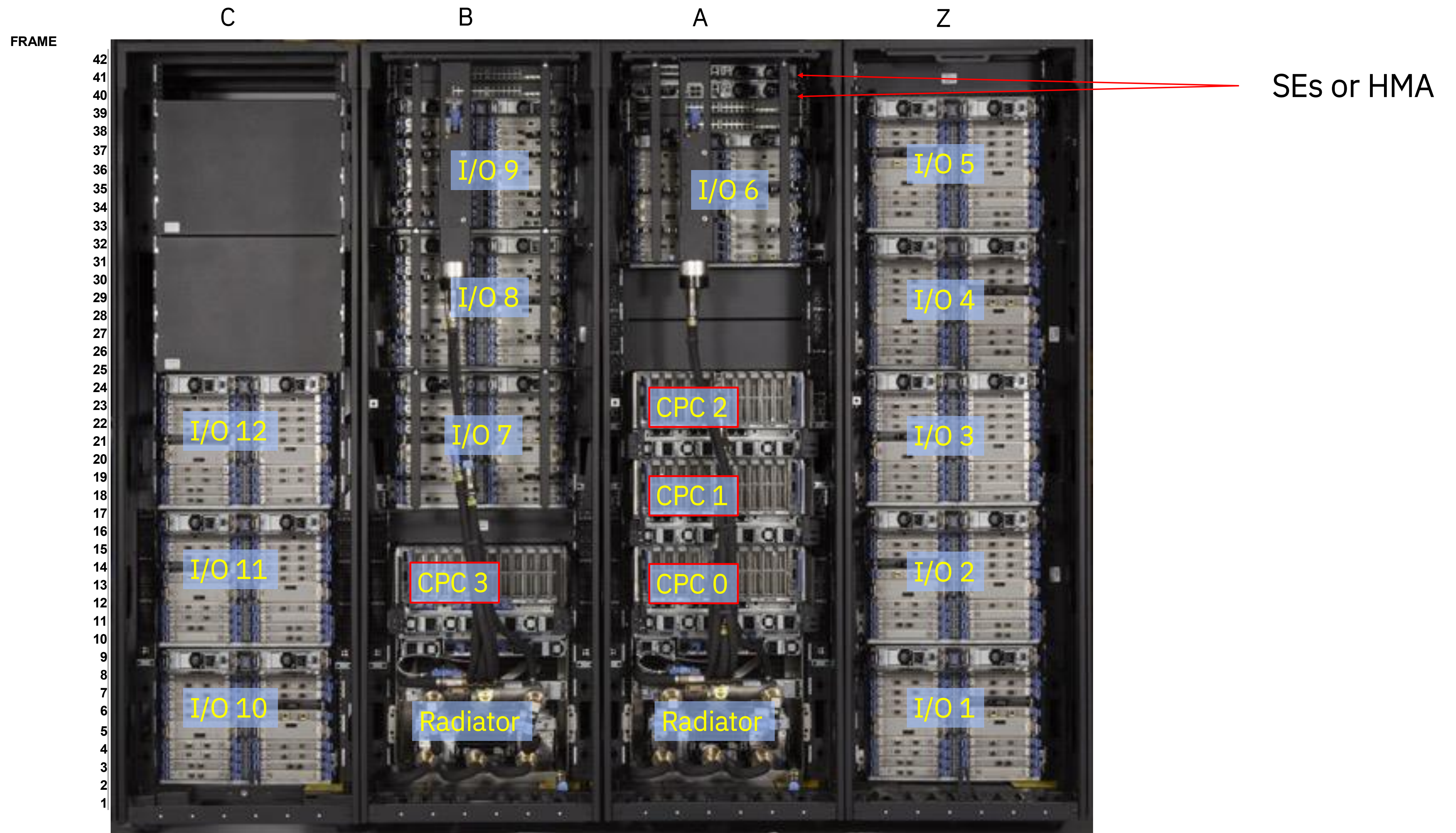


# IBM z17 4-frame





# IBM z17 ME1, rear view

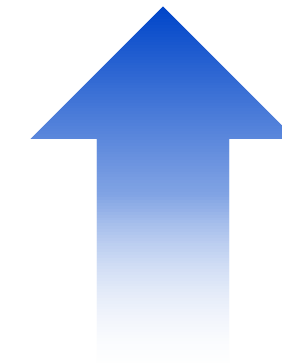




# IBM z17 system highlights

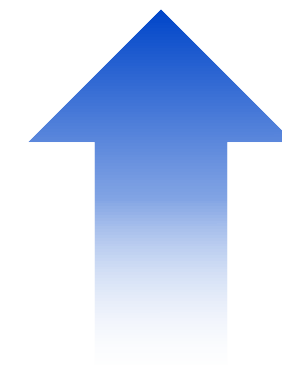


- 1-4 , 19" frames
- 208 customer cores
- IBM Telum II processor
- Improved I/O subsystem
- Less weight & floor space



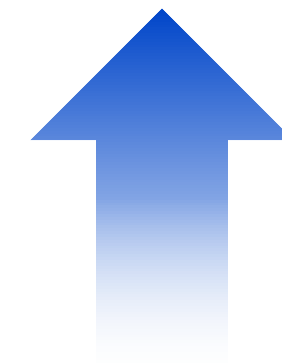
11% more  
performance

Single thread  
performance  
vs IBM z16



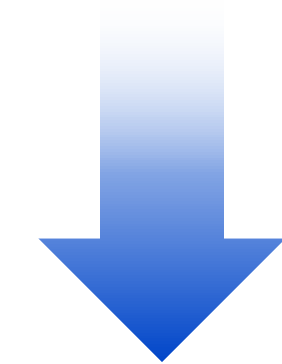
15-20%  
capacity growth

vs IBM z16



60% more  
memory

Up to 64 TB  
memory

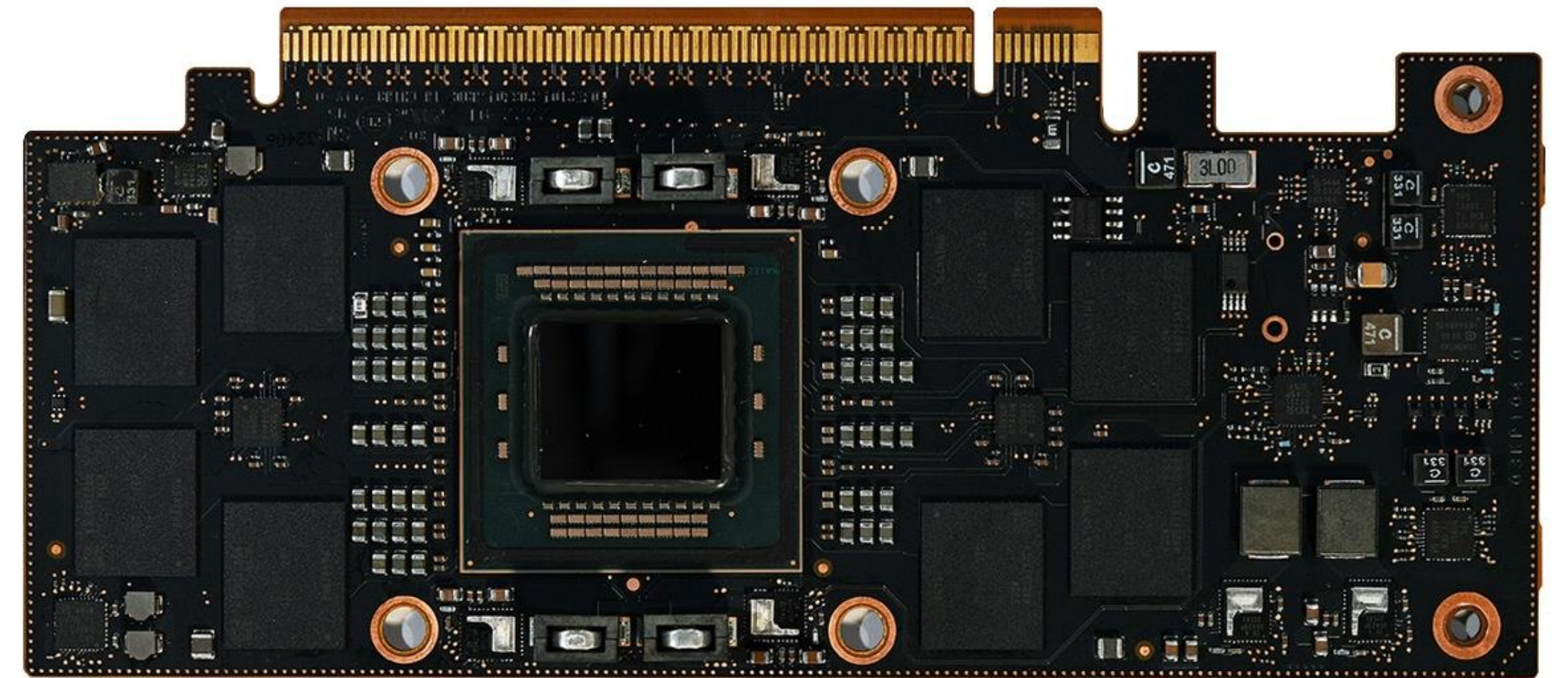
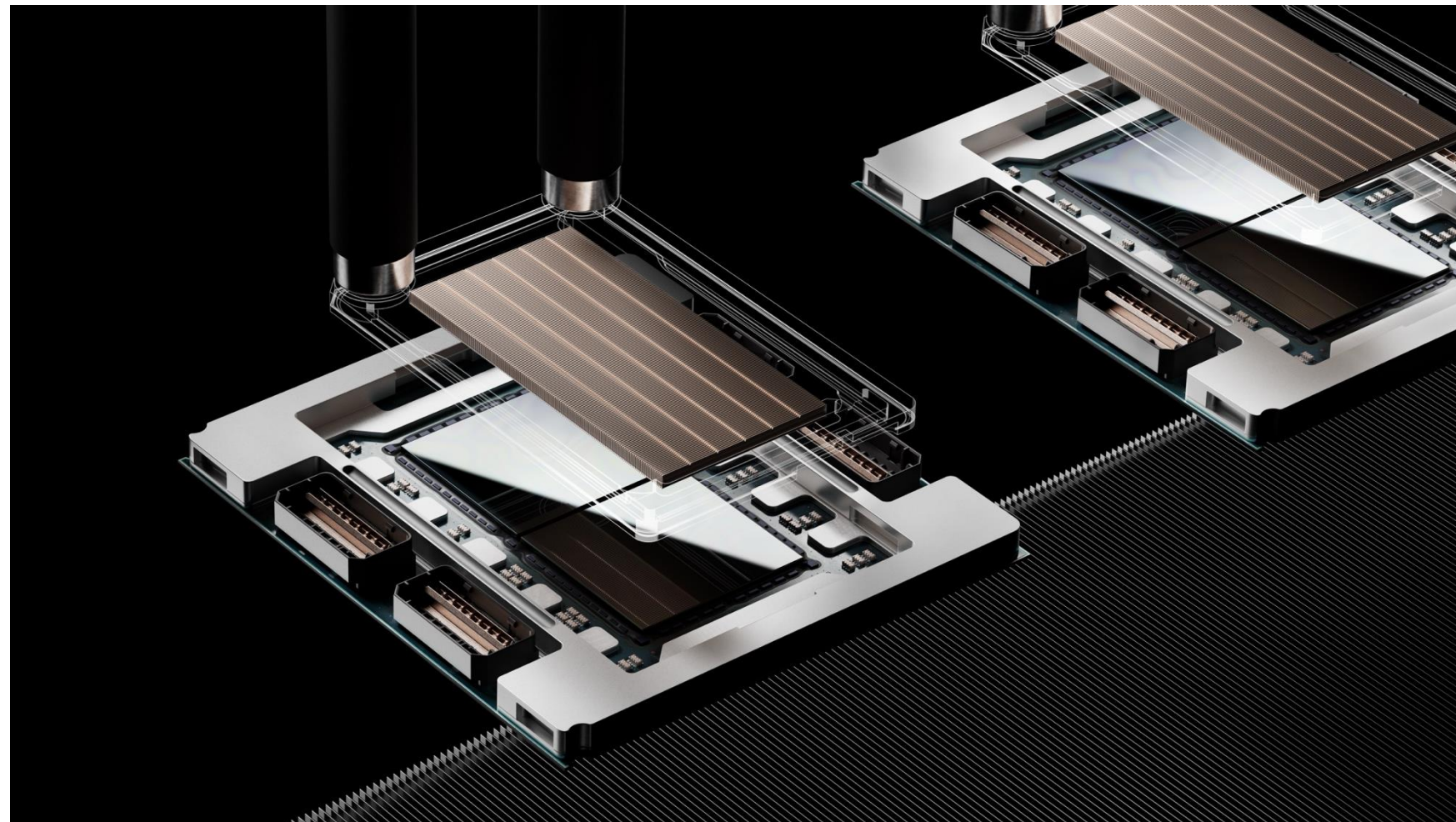


19% less  
power

than IBM z16



# IBM Telum II Processor and Spyre Accelerator





# IBM Telum II Dual Chip Module (DMC)





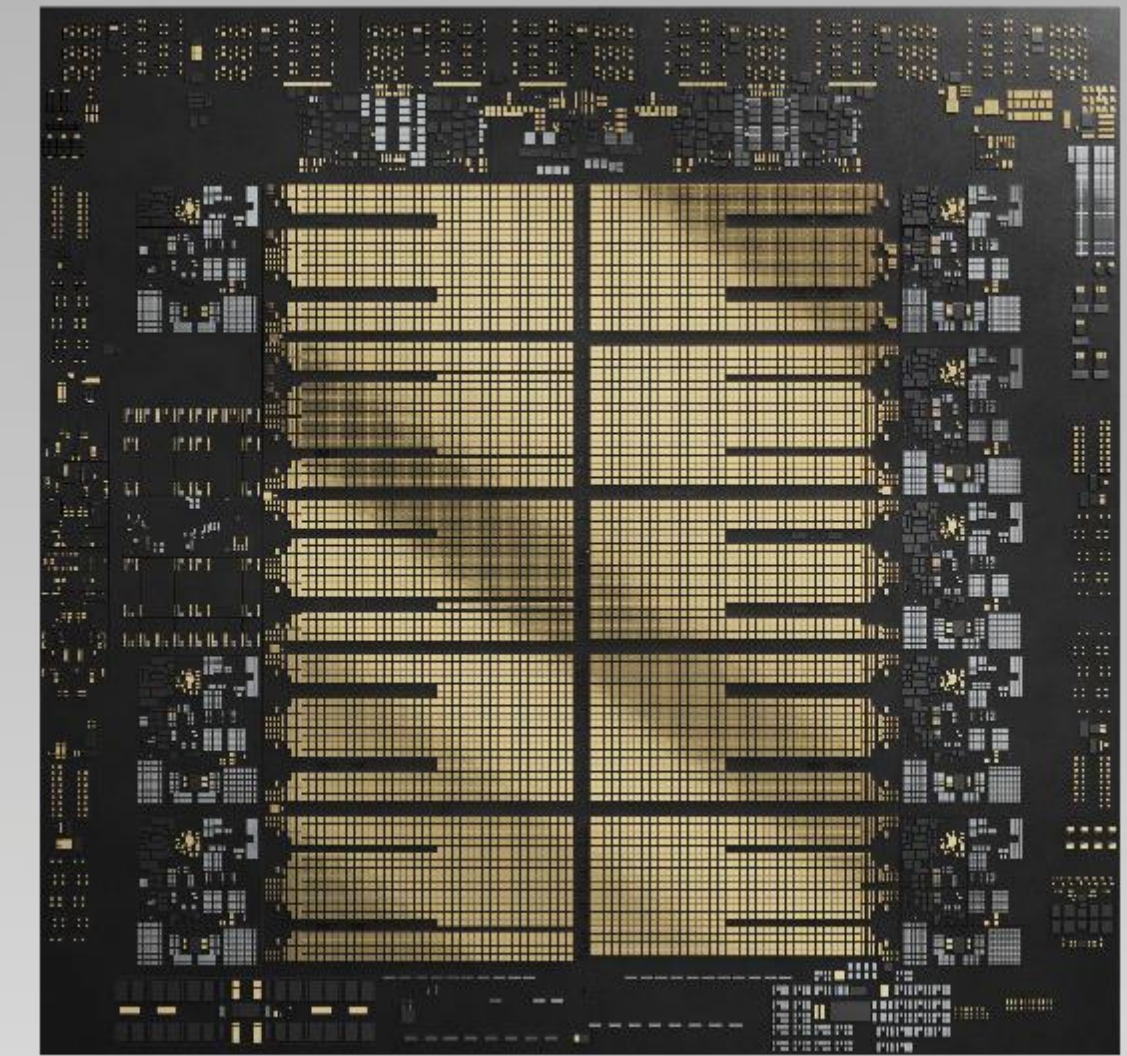
# Telum II Chip in hand





# IBM Telum II Processor

- 5nm technology, 5.5GHz
- 8 cores with 20% area reduction and improved microprocessor power management
- 40% more cache per core
- 24.1 Miles (39 KM) of wire per chip
- 43.0 Billion (Milliarden) transistors
- **NEW:** On-chip Data Processing Unit (DPU): Increased I/O performance with 70% reduction in power for I/O management, RAS, reduced latency
- 2<sup>nd</sup>-gen AI Accelerator for high-speed inferencing with fine tuning
- 8x dedicated AI processing per core





# IBM Telum II™ Processor

10 - 36MB L2s

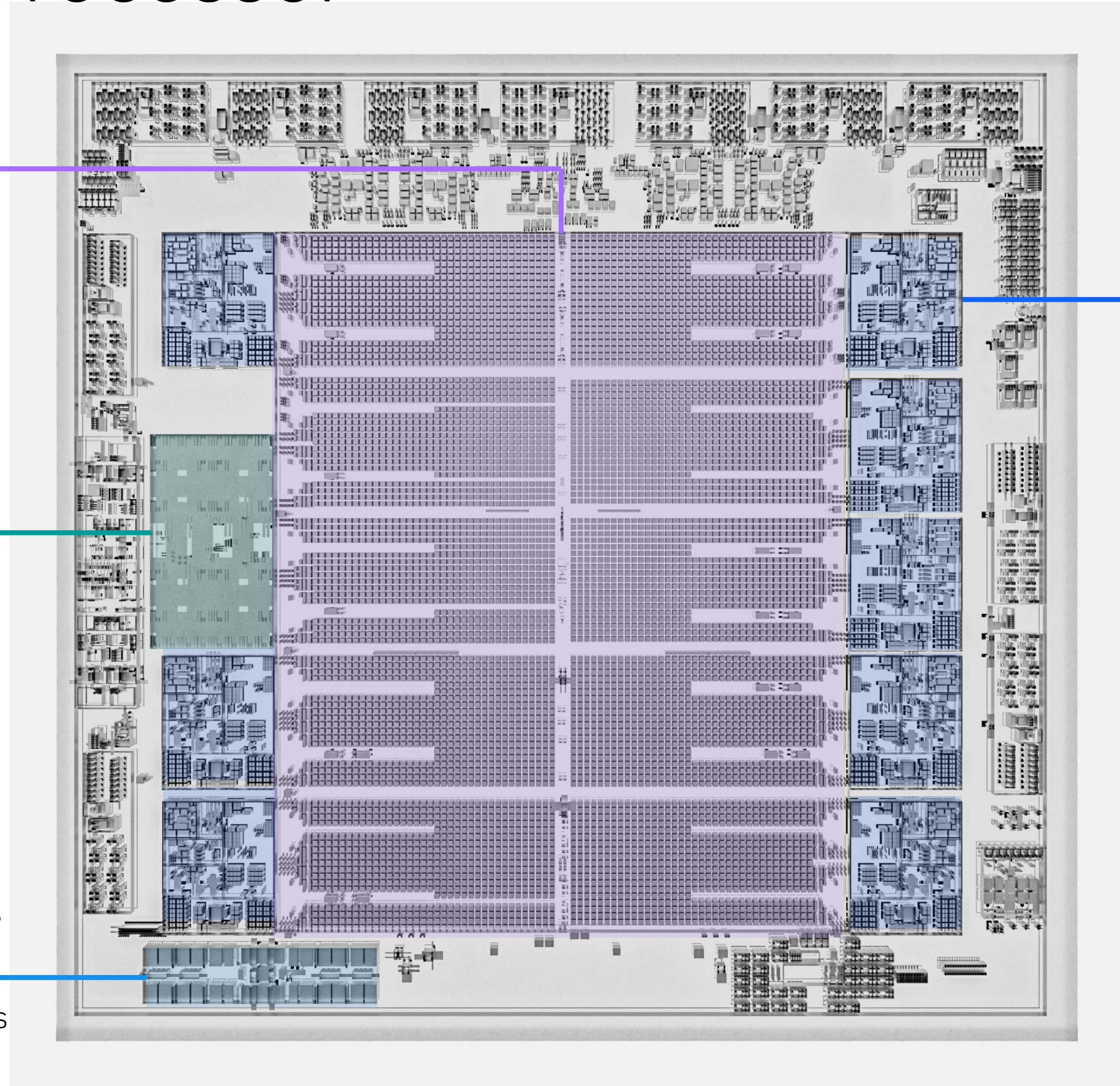
40% more cache per core over z16

I/O DPU

A redesigned I/O subsystem resulting in power and data center footprint reduction

2<sup>nd</sup> Gen AI accelerator

Improved quantization and matrix operations  
8x accelerators available per core



8 - 5.5GHz cores

+11% Single thread performance  
20% area reduction and 15%  
power reduction

Process up to **450 billion (Milliarden)** inference operations per day  
with **1 ms** response time, a **50%** increase over z16

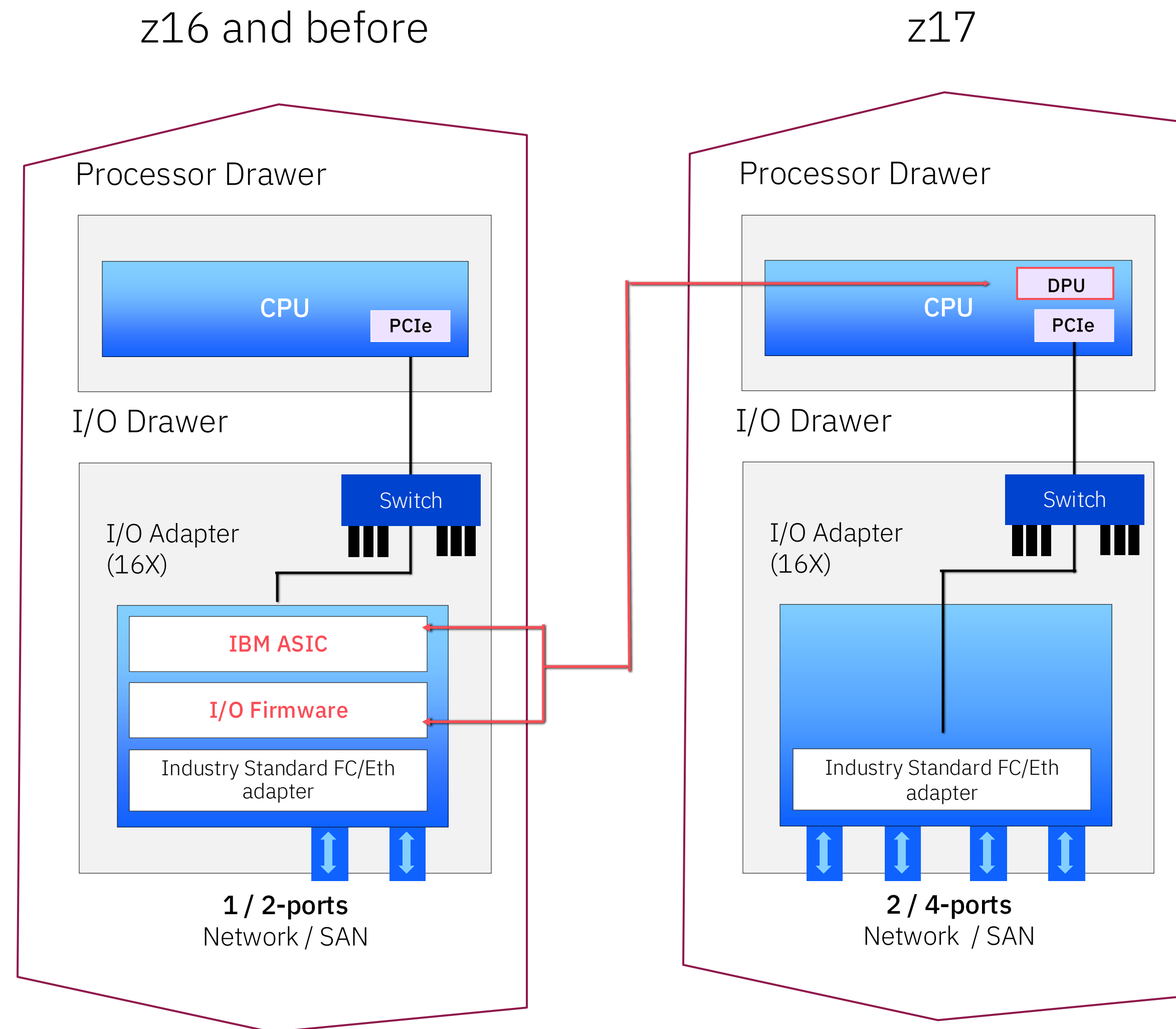


# IBM z17 vs. z16

	z16	z17	z17 differentiation
Processor Chip	7nm technology 5.2G Hz 8 cores per chip 18.8 Miles of wire per chip 22.5B transistors	5nm technology 5.5 GHz 8 cores per chip 24.1 Miles of wire per chip 43B transistors	20% core processor area reduction 15% power reduction +11% single thread performance
Capacity	200 cores	208 cores	+12-20% capacity
Cache	32MB L2 256MB virtual L3 2GB virtual L4	36MB L2 360MB Virtual L3 2.8GB virtual L4	+40% cache growth
Total system memory	4U DDR4 DDIMM 40TB max memory	4U DDR5 DDIMM 64TB max memory	+60% system memory growth
On-chip AI acceleration	Telum	Telum II	More AI processing per chip Up to 8x on-chip AI processors available per CPC drawer
Off-chip PCIe Accelerator card	N/A	Spyre AI accelerator chip 32 Gen AI-ready cores on extended adapters 75W PCIe gen5 x16 adapter Up to 48 adapters per system	Available only on z17
System I/O	Off-chip I/O processing	On-processor chip I/O DPU	70% Reduced power for I/O management Double density with new FICON Express 32G (4-port) Double density with converged Network Express adapter (2-port)



# IBM z17 I/O - Next-gen I/O Infrastructure





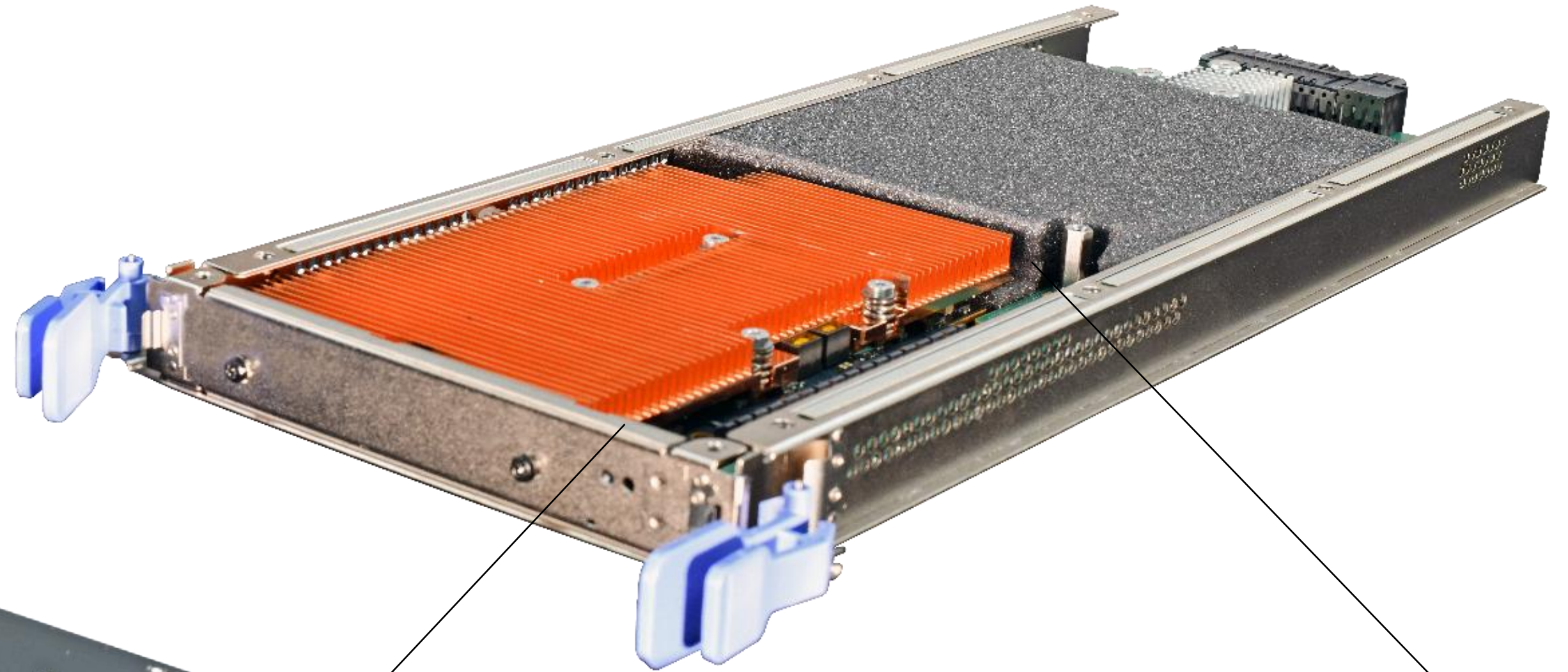
# IBM z17 - New Build (NB) I/O Features

Description	Feature Code	Ports	Max Features	Comments- CHPID Types
<ul style="list-style-type: none"><li>• IBM Spyre AI Reserve Slot</li><li>• Spyre AI Adapter</li></ul>	<ul style="list-style-type: none"><li>• 0061</li><li>• 0463</li></ul>	N/A	48	Sets of 8
FICON Express32-4P LX	0387	4	96	FC, FCP
FICON Express32-4P SX	0388	4	96	FC, FCP



# IBM z17 Artificial Intelligence Accelerator (Spyre)

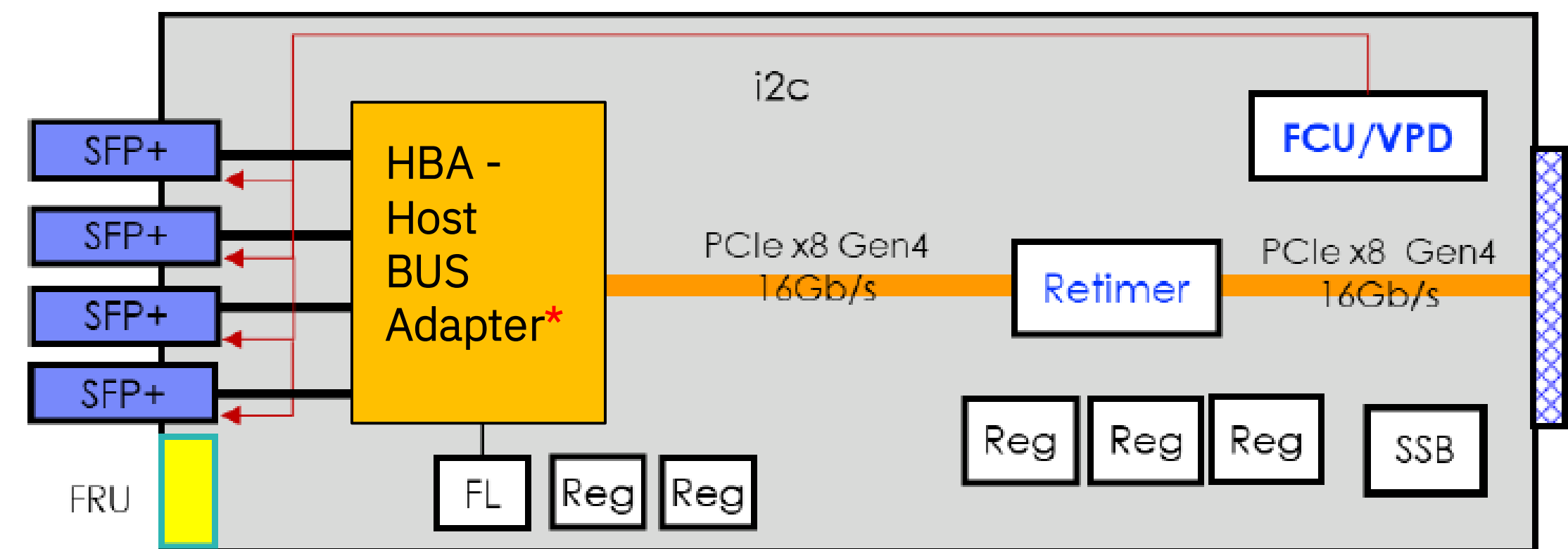
- 75W PCIe gen5x16 adapter
- 128GB of LPDDR5 memory





# New FICON / FCP Express32-4P –(4 Ports)

- CHPID types supported: FICON (FC) and FCP
- Four PCHIDs/CHPIDs
- NO mixed CHPIDs for same card – only FC or FCP
- Supports EDiF / FCES
- Auto-negotiates to 8, 16, or 32 Gbps
- Negotiation to 2 or 4 Gbps NOT supported (Switch needed)
- Max. 96 features per system- total: 384 CHNs
- 10KM LX - 9-micron single mode fiber
  - Unrepeated distance - 10 kilometers (6.2 miles)
  - Receiving device must also be LX
- SX - 50- or 62.5-micron multimode fiber
  - Distance variable with link data rate and fiber type
  - Receiving device must also be SX



HBA is used to translate PCIe to FC protocol



# IBM z17 - New Build (NB) I/O Features

Description	Feature Code	Ports	Max Features	Comments - CHPID Types (FID Types)
ICA SR2.0	0216	2	48	CS5
Coupling Express3 LR 10GB	0498	2	32	CL5
Coupling Express3 LR 25GB	0499	2	32	CL6
Network Express SR 10G	0524	2	48	OSH / NETH
Network Express LR 10G	0525	2	48	OSH / NETH
Network Express SR 25G	0526	2	48	OSH / NETH
Network Express LR 25G	0527	2	48	OSH / NETH



# Network / OSA on IBM Z today

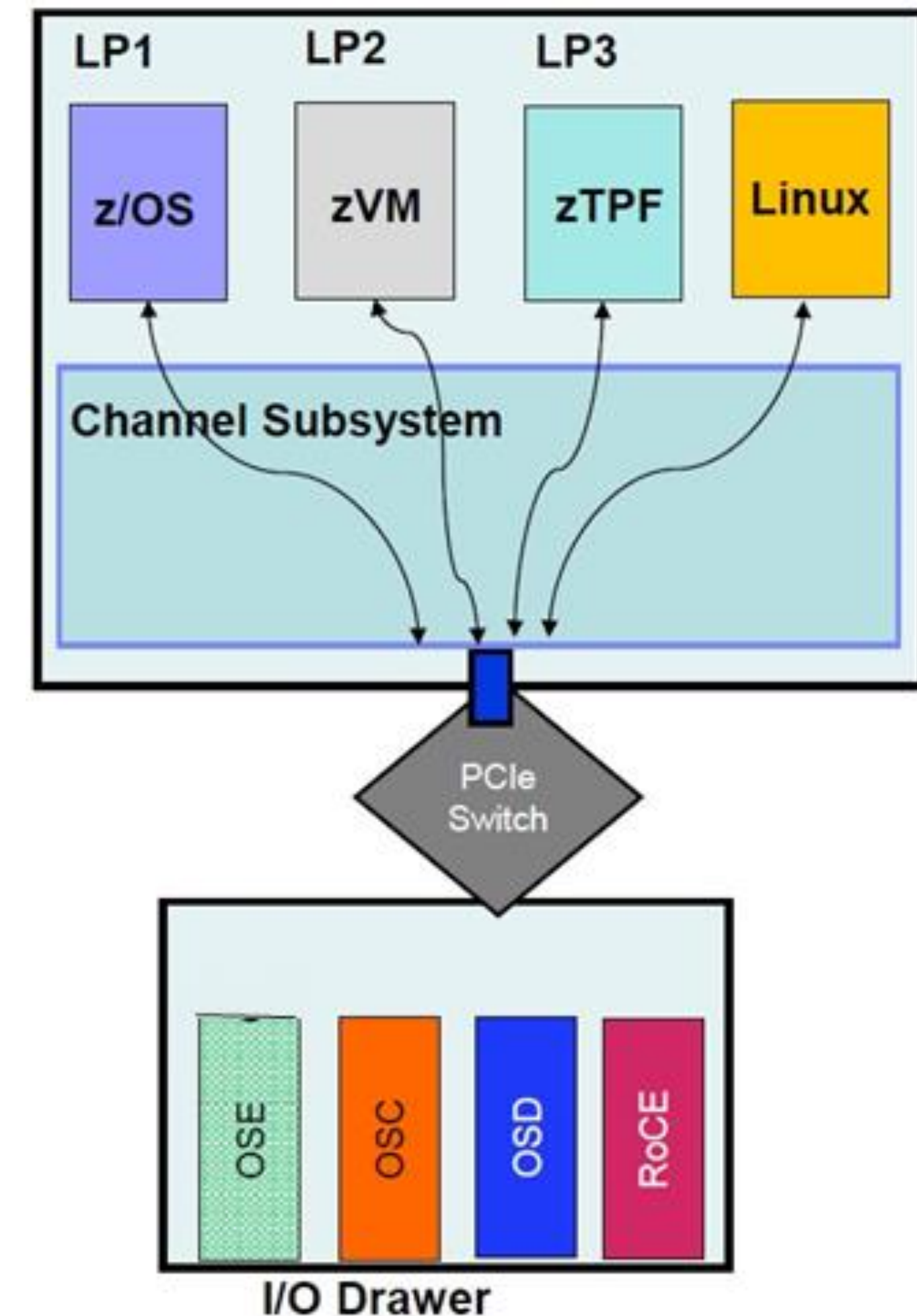
IBM Z currently has multiple unique functions that ultimately result in some protocol flowing over an Network link.

Each requires a unique channel type (with unique protocol driver) for a separate physical port:

- OSD – general TCP/IP, UDP, etc.
- OSC – Console controller functionality
- RoCE RDMA capability used in SMC-R protocol
- OSE<sup>1</sup> SNA (LSA) and TCP/IP (LCS) 1- IBM z17 does not support OSE

Considering redundancy requirements and bandwidth for each protocol shared across all LPARs, the current system Networking design can require many:

- I/O card slots
- Switch ports

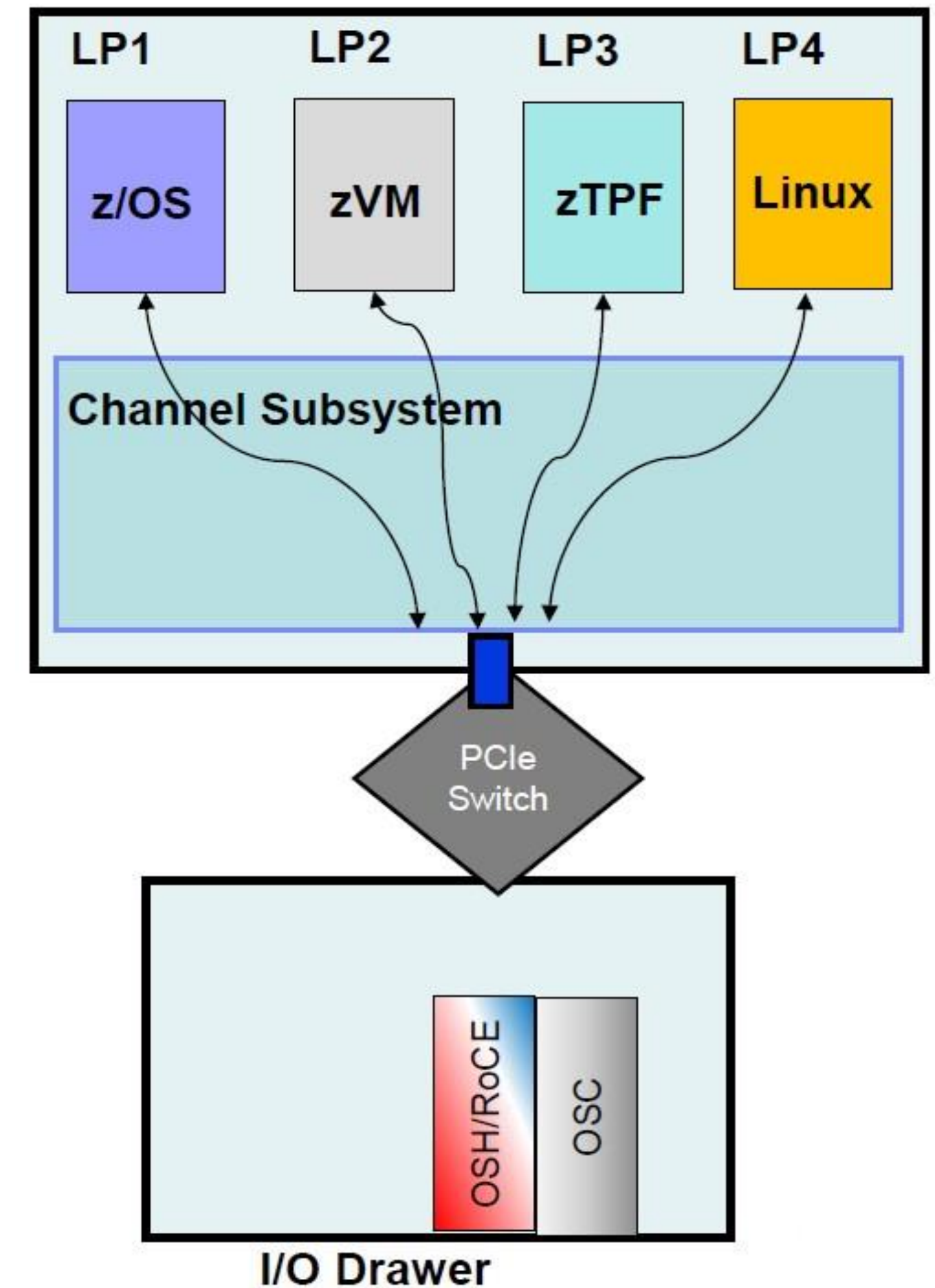




# Converged Multi-Function Network Adapter – Network Express

- A single port on the new adapter can simultaneously have two ‘personalities’:
  - **OSH** using the new Enhanced QDIO protocol capability
  - **NETH** for SMC-R RDMA or Linux native usage (TCP/IP, etc.)
- Each port can be configured to provide support for a single host protocol (EQDIO or native PCIe) or combination of host protocols
- Each entity can be independently manipulated (configured/deconfigured), affecting the underlying components of that entity (CHPIDs or FIDs)

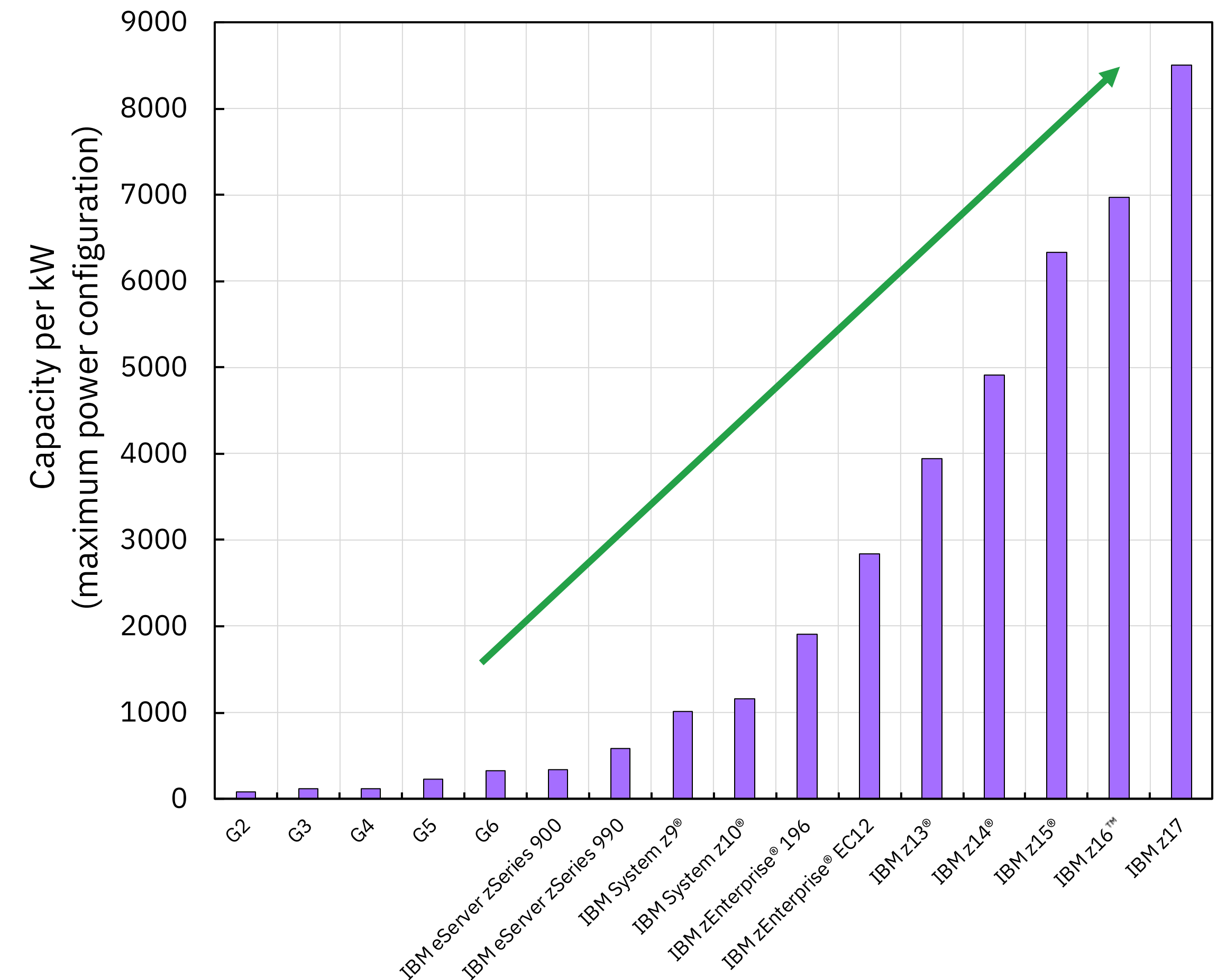
Note: at GA1 CHPID type OSC requires an OSA Express7S 1.2 GbE SX/LX





# IBM Z: continuous energy efficiency improvements & ESG focus

- 115X increased total capacity per kW over the last 15 generations
- IBM z17 reduces power consumption, weight, footprint compared to previous generations while increasing overall compute and capacity
- Lifecycle sustainability focus across every aspect including chip, prefilled coolant, packaging

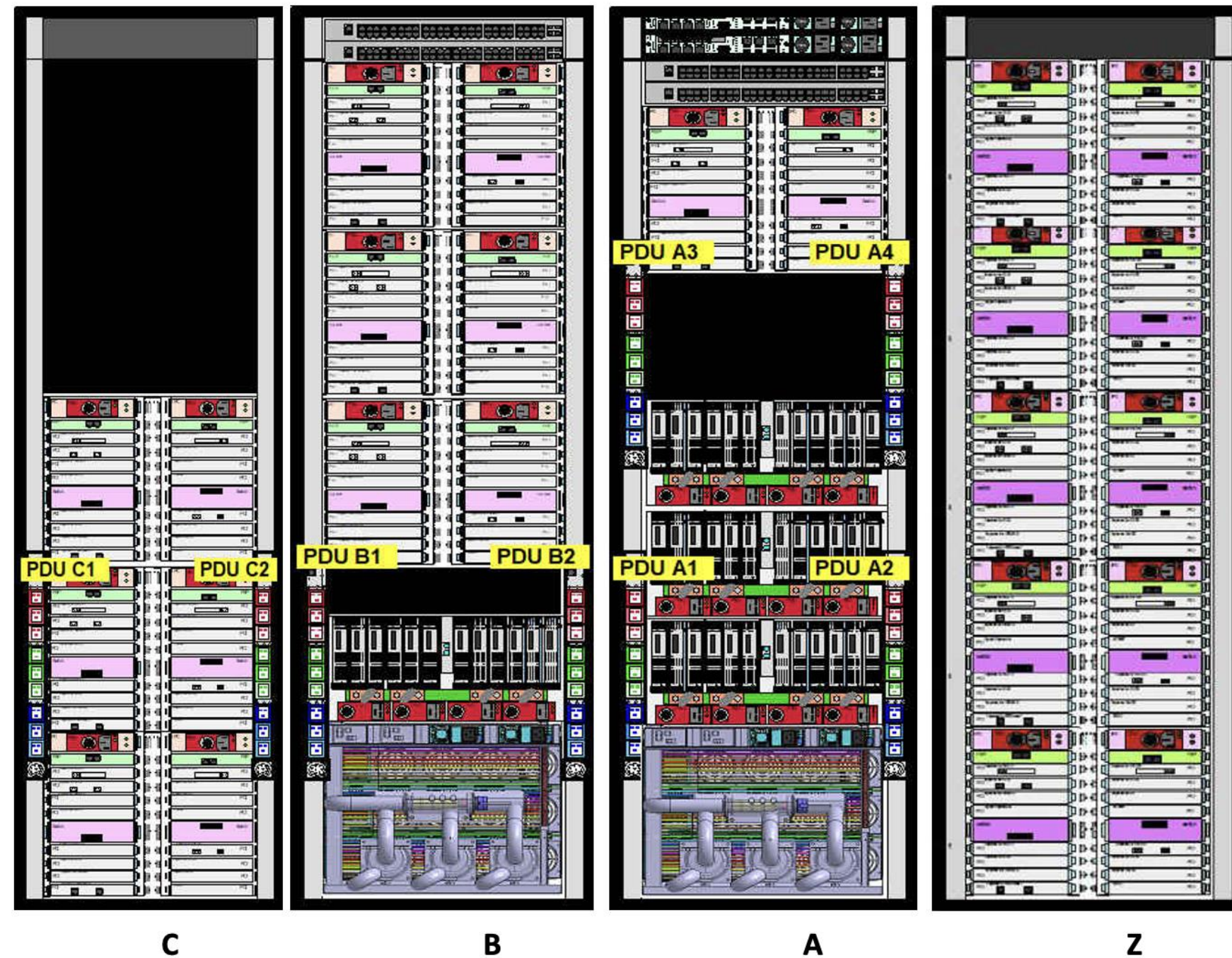




# Generation to generation power efficiency

A large IBM z17 enables more AI inferencing capability with lower power and a smaller data center footprint than a similarly configured IBM z16.

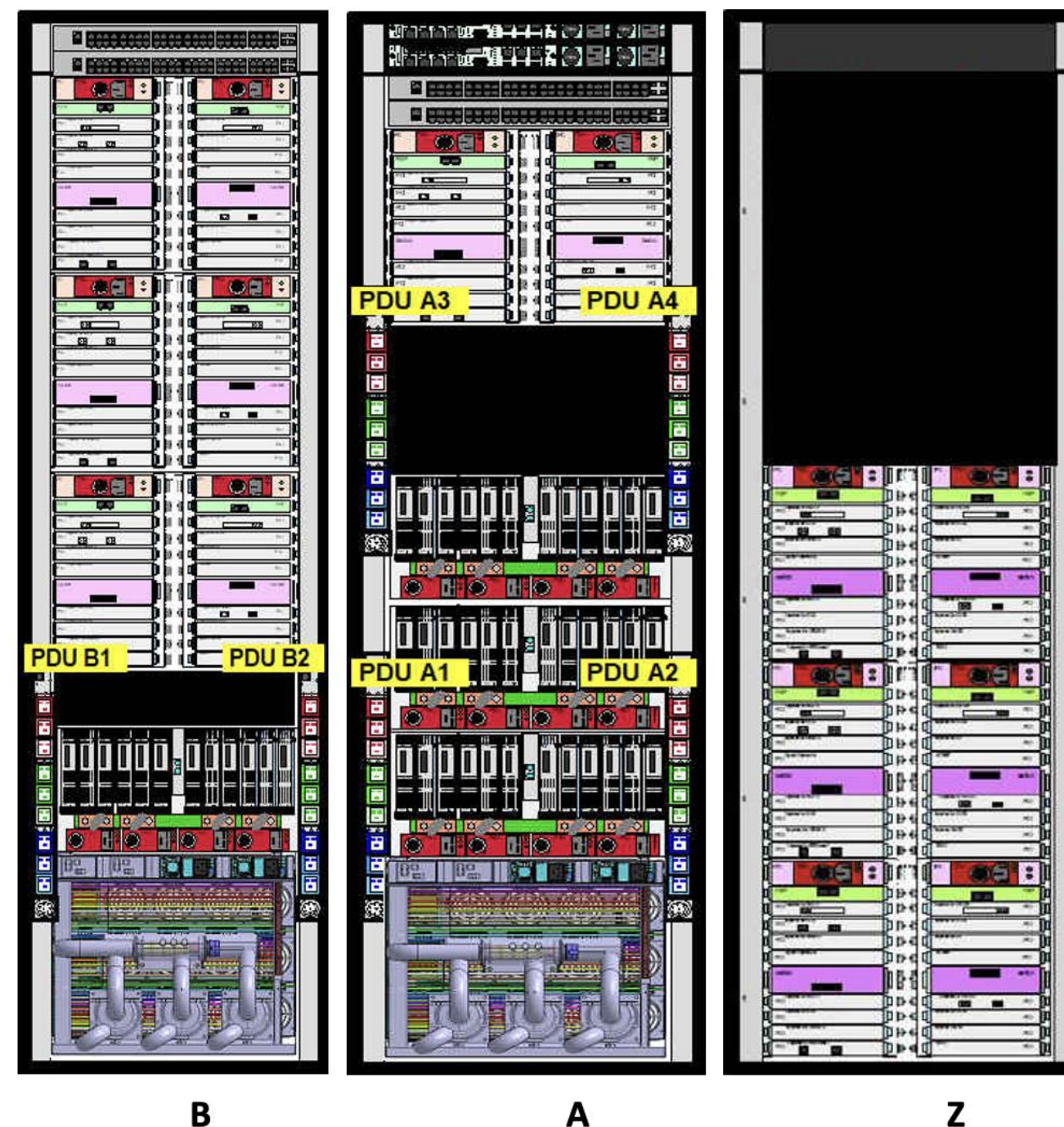
IBM z16 Max200



Large z16 system

- 19,612 W
- 4 frames
- 8 power line cords

IBM z17 Max 208

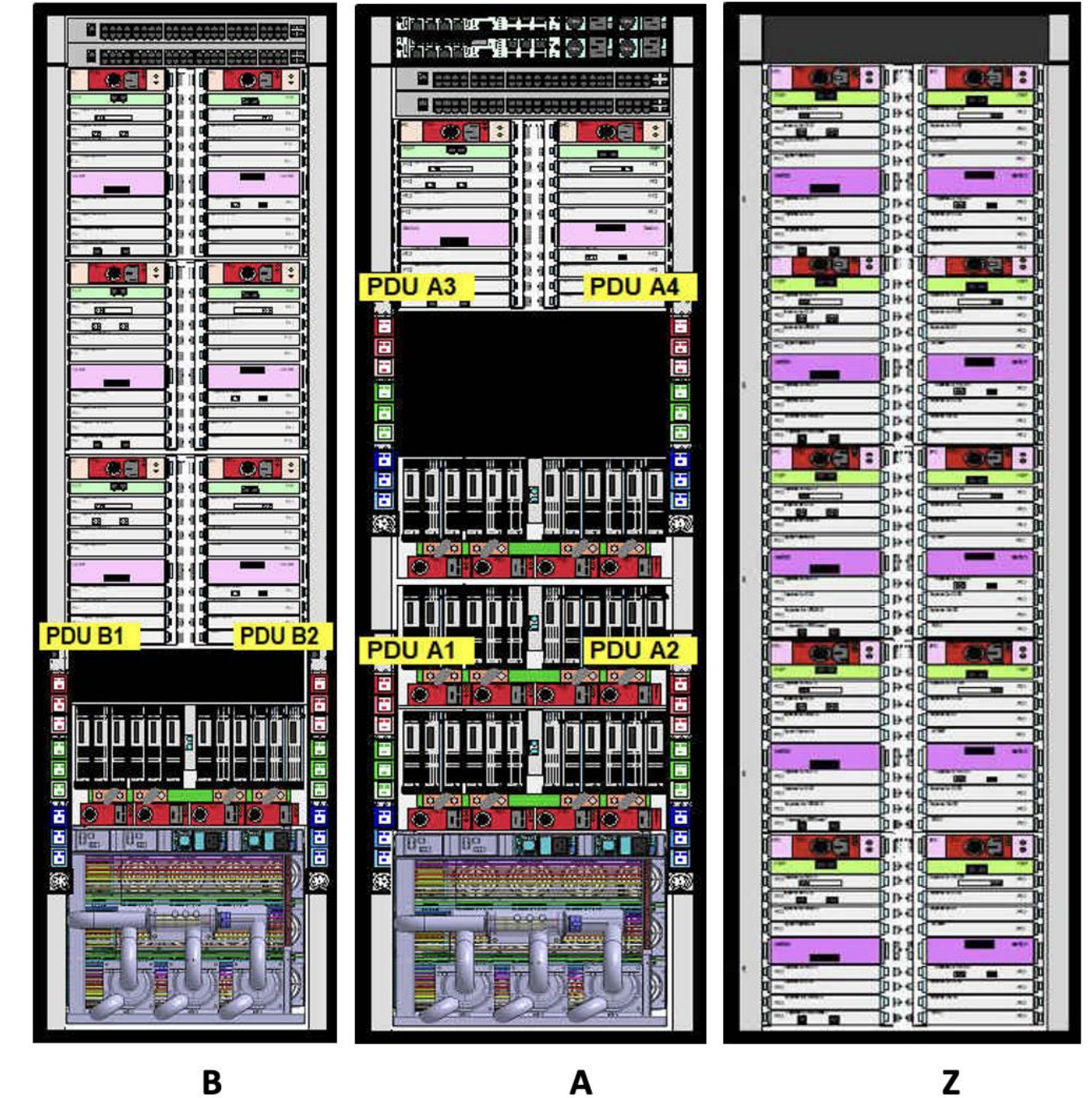


Similar large z17 system

- 14,918 W (-24%)
- 3 frames
- 6 power line cords

Increased capabilities with **14% less power** and **25% smaller footprint** than similar z16

IBM z17 Max 208 + 40 Spyre



Similar large z17 system w/ 40 Spyre

- 18,450 W (-6%)
- 3 frames
- 6 power line cords

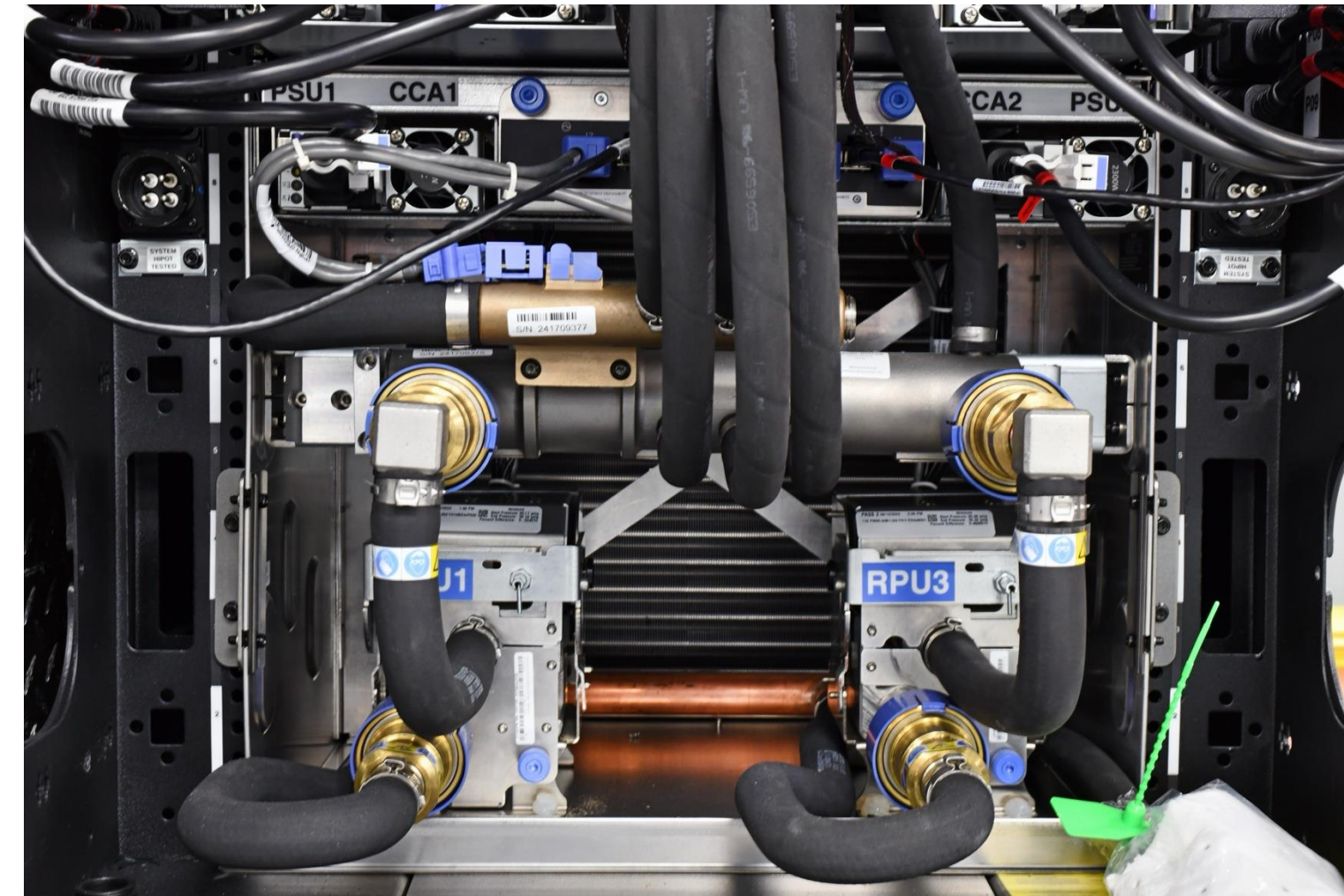
Significant AI inferencing capability with **3% less power** and **25% smaller footprint** than similar z16



# Cooling

Cooling is similar to z16

- N+1 redundancy on fans (and their controls)
- N+1 redundancy on coolant pumps with N+2 cooling fan assembly
  - N+2 on coolant sensors

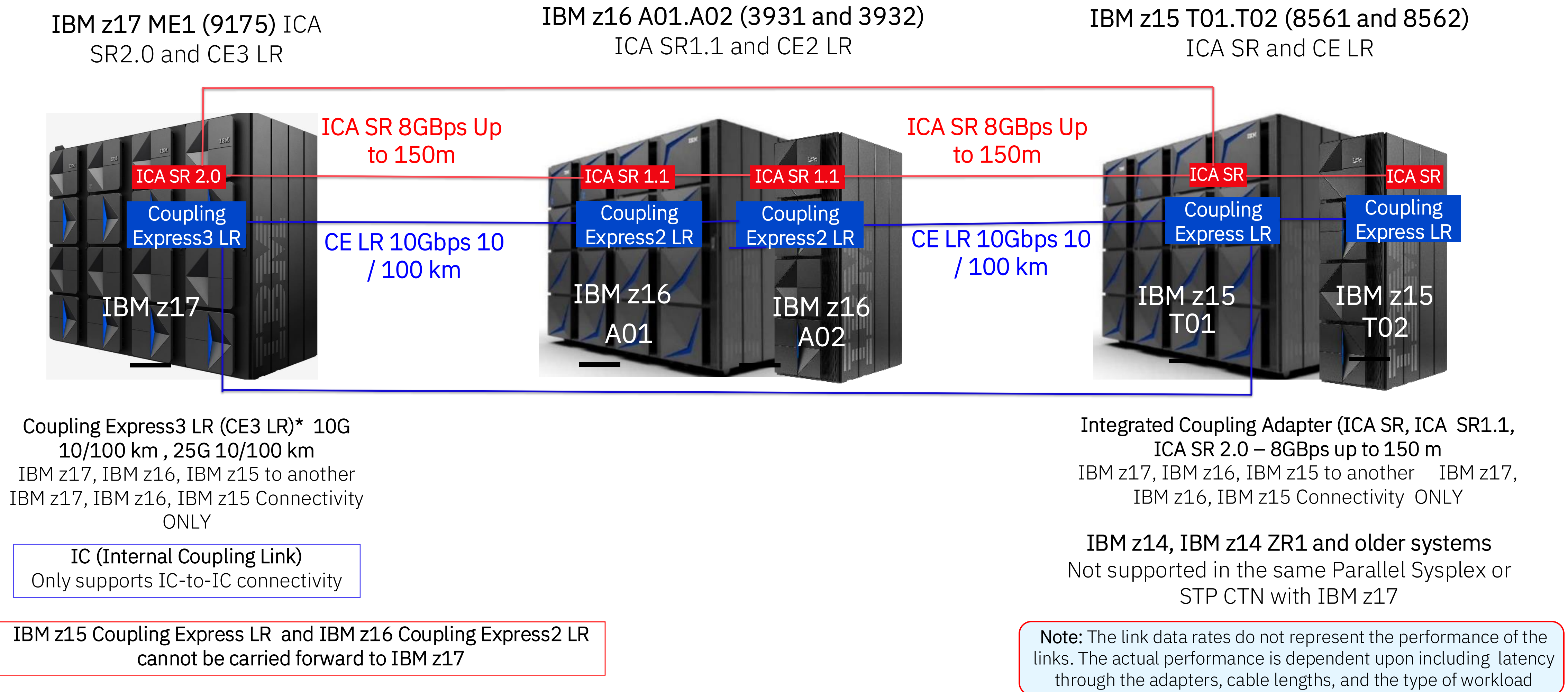


No fill and drain tool – (Not required with the Propylene Glycol Cooling)





# IBM z17 Coupling Connectivity and Coexistence





# Driver 61 / Version 2.17.0 (HMC/SE)

- HMC support to n-2 only
  - z14 no longer supported
  - same as SYSPLEX support
- Note:
  - HMC Driver 61 / Ver. 2.17.0 can be loaded on
    - z17 HMA (Hardware Management Appliance – 2 HMC / 2 SE)
    - IBM z16 HMA
    - IBM z15 HMA
  - Standalone HMC (Tower & Rack: no longer supported)

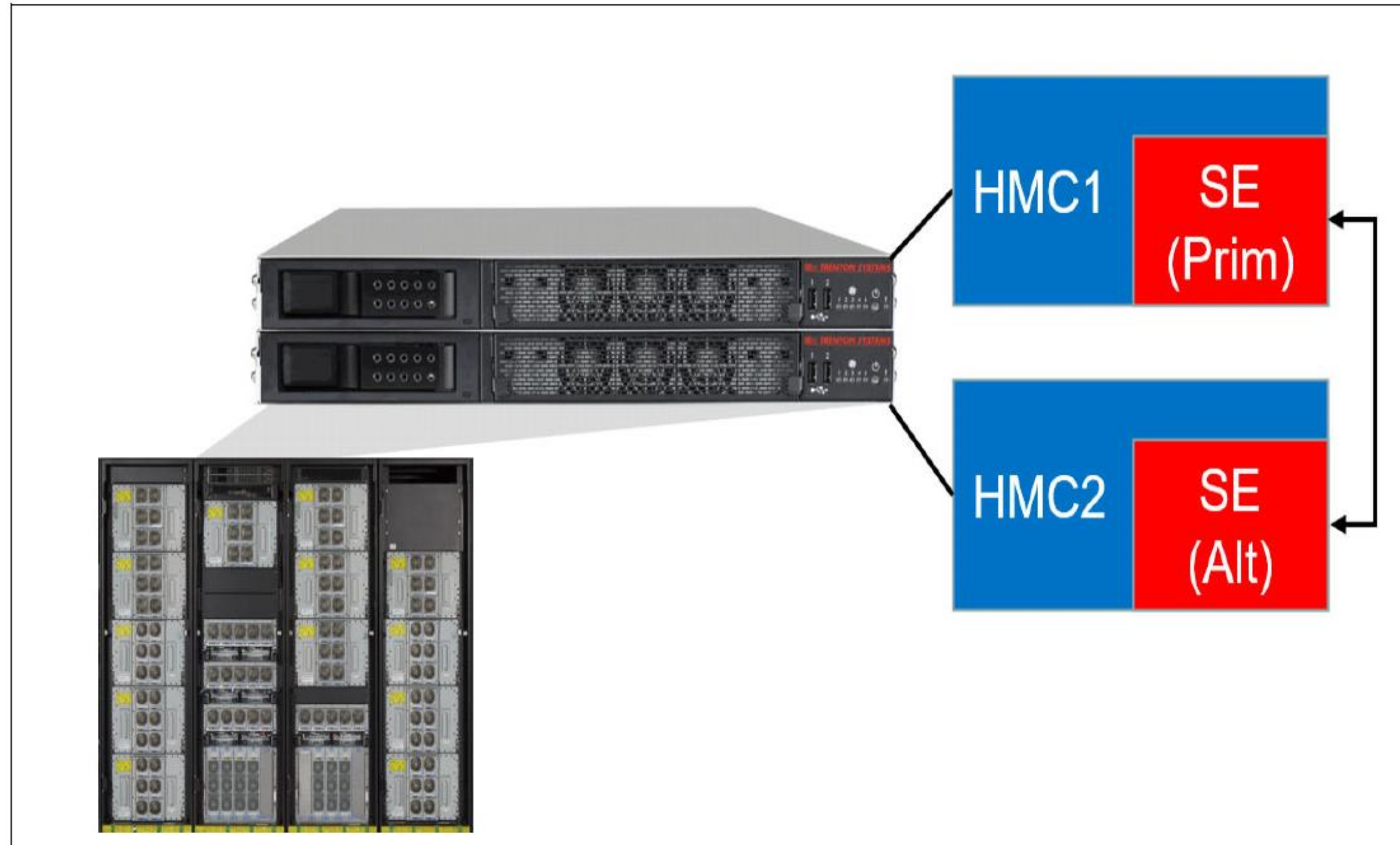
Machine Family	Machine Type	Firmware Driver	SE Version
IBM z17	9175	61	2.17.0
IBM z16	3931, 3932	51	2.16.0
IBM z15	8561, 8562	41	2.15.0

## IMPORTANT

- Minimum 1 HMA per Data Center
- Maximum 2 HMAs per Data Center
- IBM z17 with SE only is available



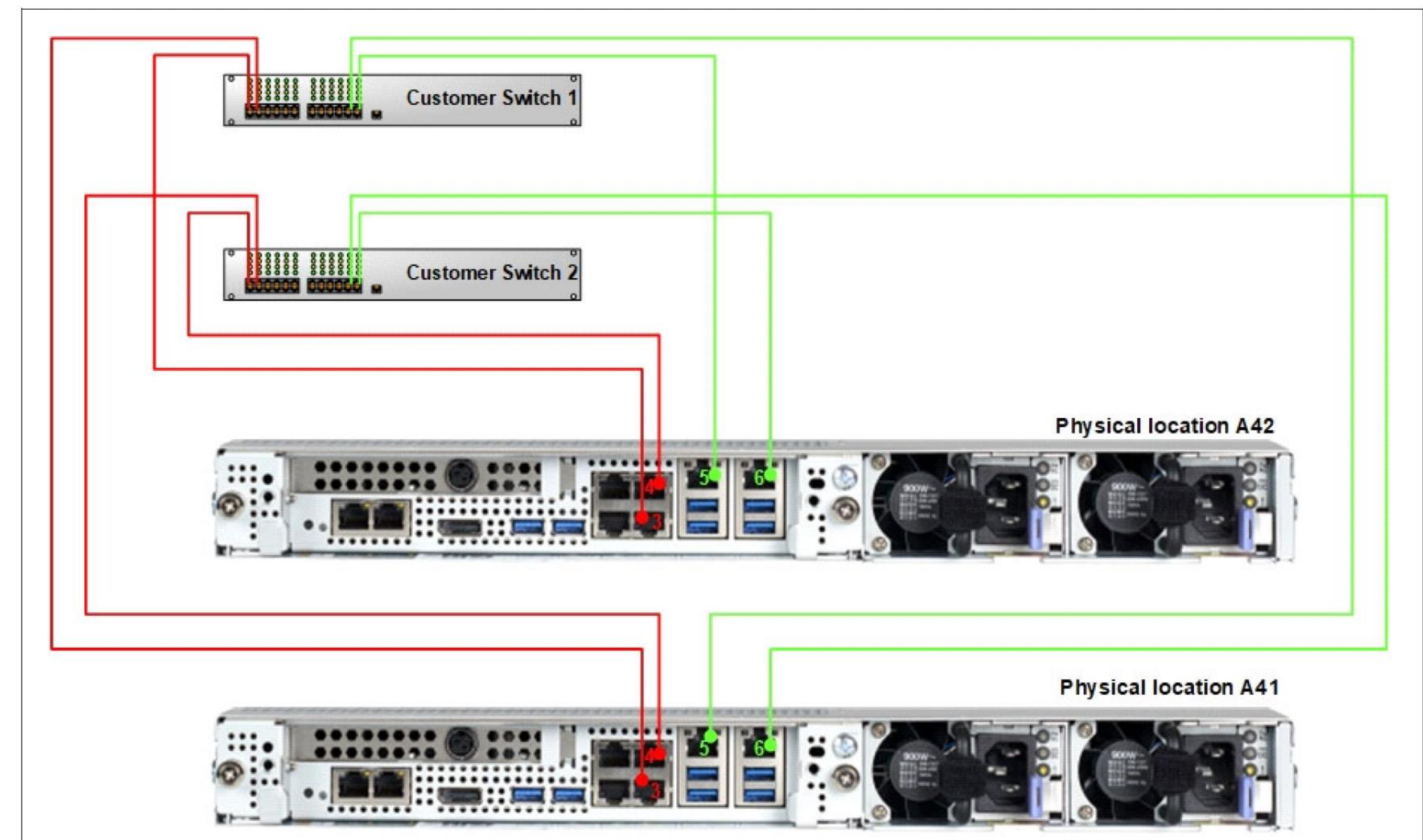
# What is an HMA?



## Hardware Management Appliance

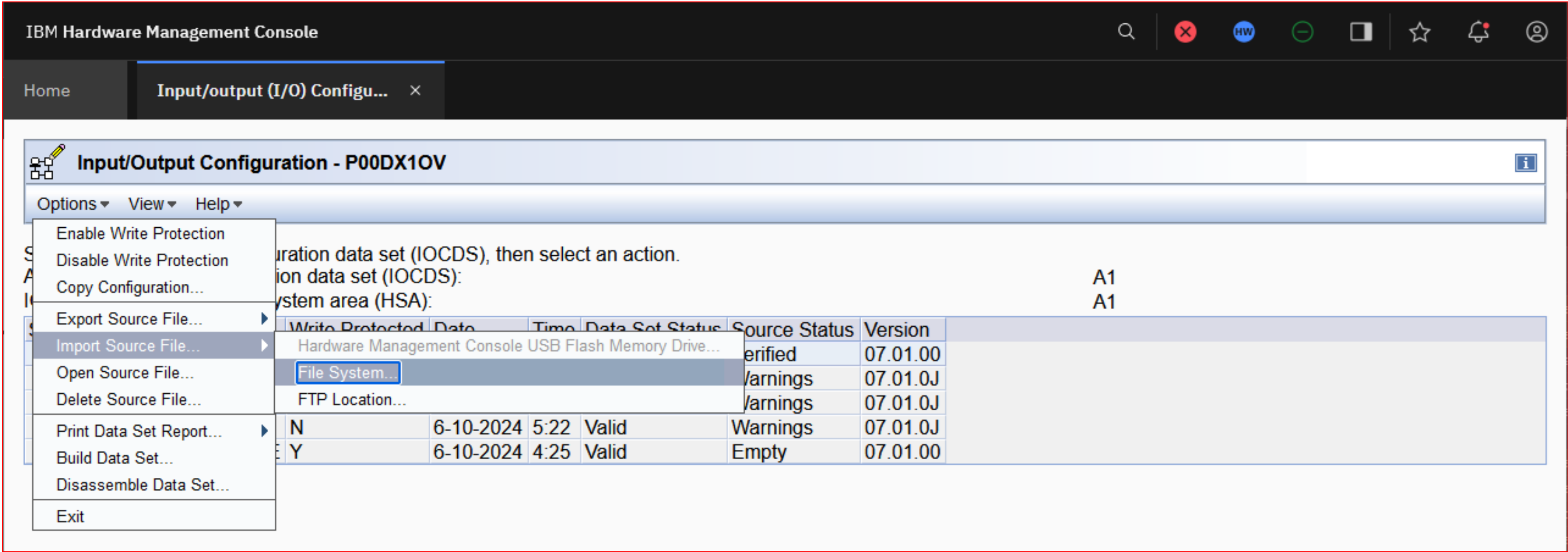
HMA is an Appliance feature consist of:

- Two HMCs
- Two SEs
- Each HMC and SE has own 2 physical Network Ports which has to be connected to a customer provided Switch
- The SE runs virtual on the HMC -> if HMC must be restarted also the SE will be restarted.



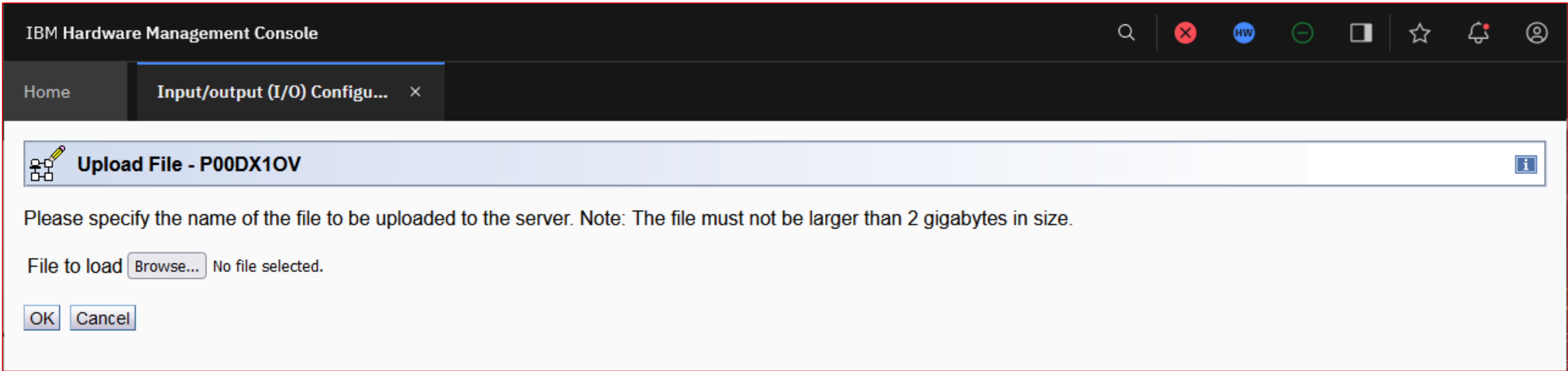


# Import/Export Remote File System



Provide option to import/export files directly from/to client workstation remotely connecting to the HMC Addresses

- USB access to HMA HMC in the Data Center
- Complexity of SFTP/FTPS
- Secure connection





# Import/Export Remote File System

## Import/Export from Remote Browsing File System

As with Driver 61/Version 2.17.0, only HMAs are supported; most clients will use the HMC via remote connections. For the tasks listed below, Import/Export from Remote Browsing File System is supported:

- ▶ Fibre Channel Endpoint Security
- ▶ Secure Boot Certificate Management
- ▶ Certificate Management
- ▶ System Input/Output Configuration Analyzer
- ▶ Analyze Console Internal Code
- ▶ Change Console Internal Code
- ▶ FCP Configuration
- ▶ Audit log Scheduled Operations
- ▶ Export/Import IOCDS
- ▶ Save/Restore Customizable Console Data
- ▶ Crypto Configuration
- ▶ View/Archive Security Logs
- ▶ Advanced Facilities
- ▶ OSA Advanced Facilities
- ▶ Crypto UDX configuration
- ▶ Transmit Service Data
- ▶ Transmit VPD
- ▶ Import Secure Execution Keys
- ▶ Export/Import Profiles
- ▶ Reassign HMC
- ▶ Manage Firmware Features
- ▶ System I/O Configuration Analyzer
- ▶ Perform Model Conversion



# Security Enhancements: Dual Control



# Dual Control Value Proposition

Dual control adds an extra layer of security for critical tasks on the HMC.

Dual control enabled tasks require another level of verification from an approver before they can be run.

## Requirements/Value

- Industry or Company Security Standard
- User action error protection
  - Unintended activation of a wrong active LPAR
- Fraud Protection (most likely insider)
  - Misuse of Crypto
  - Security Attack (take down one or more LPARs)
- Financial Protection or Workload Performance Degradation
  - Capacity on Demand (eg. On/Off Capacity on Demand)
  - User mistake or Fraud protection



# Dual Control Design Highlights

Dual Control definitions in User Management roles

- Optionally assigned to users

Dual Control available to z17, z16, z15 using HMC 2.17.0

## Dual Control Target per User Role

- Object and
- Task

## Dual Control Approver per User Role

- Any User Role for task/object authorization control
- Can also create special User Role with list of specific users for DC approval

## Dual Control Management Execution Requests for Approval

- Run by requester restricted to time window in the future
- Run by requester
  - No time window restriction
- Run immediately
  - Automatically without requester further involvement
- Run on a specific date and time

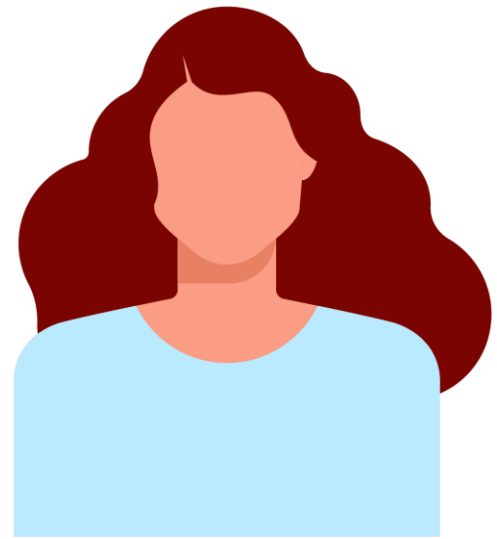
## Dual Control CPCs supported (Requires z17 HMC 2.17.0)

- z17 CPC (no restrictions)
- z16 & z15 CPCs
  - Should remove Single Object Operations in any role applied to a User under Dual Control
  - *Perform Model Conversion (Capacity on Demand) & Change LPAR Cryptographic Controls* tasks not available for HMC 2.17.0 z16 & z15 targets

## Dual Control external interfaces (UIs, WS APIs, BCPii v2, IBM HMC Mobile)

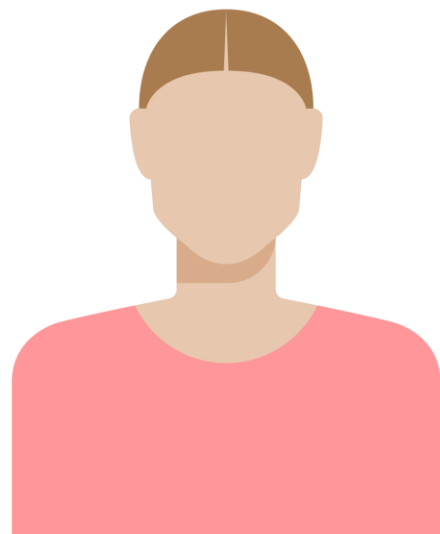


# Primary user personas



**Noëmi**  
**Junior system  
administrator**

**Daniel**  
**Experienced system  
administrator**



**Marco**  
**Security  
administrator**



**Hardware management**



**Security**



# Dual control set-up for the deactivate task



Marco selects the objects that should be enabled for dual control with the deactivate task

IBM Hardware Management Console

HomeUser managementNew role

New Role

Dual control

Objects by group

Dual control

Create a task and object mapping

Task

Objects by type

Specific objects

Objects by group

Summary

Select the objects for which dual control will be required when the Deactivate task is launched (optional).

<input type="checkbox"/>	Name	Type	Description	System
<input type="checkbox"/>	A32	Defined CPC	Central processing complex (CPC)	A32
<input checked="" type="checkbox"/>	A32:CF1	LPAR Image	LPAR Image	A32
<input checked="" type="checkbox"/>	A32:CF2	LPAR Image	LPAR Image	A32
<input type="checkbox"/>	A214:FEB28B	LPAR Image	LPAR Image	A212
<input type="checkbox"/>	A214:KATESSE	LPAR Image	LPAR Image	A212

100

1 – 100 of 100 items

1 of 10 pages

Cancel

Back

Next

Back

Next

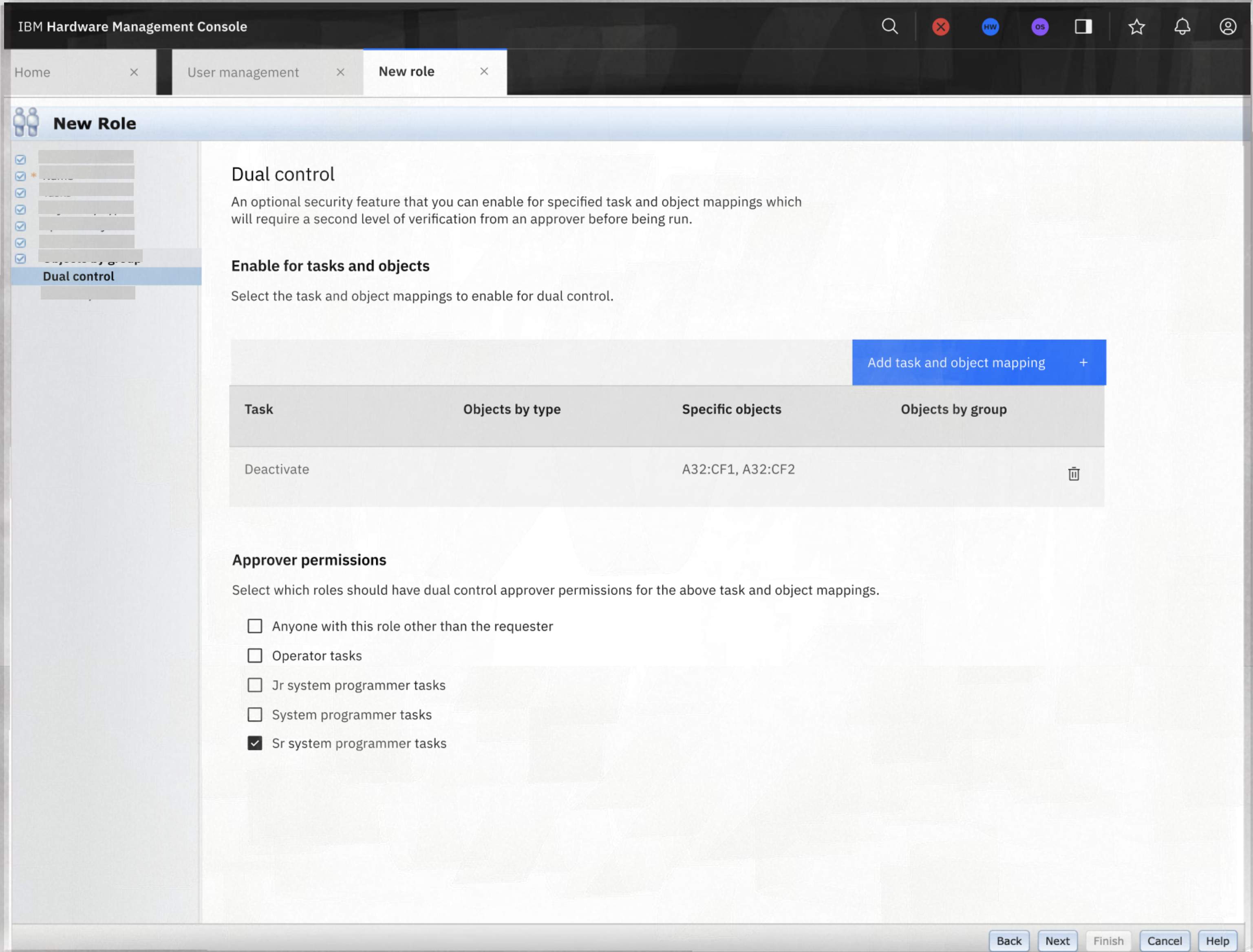
Finish

Cancel

Help



Once all the tasks and object mappings are defined, Marco selects the roles of the users that should have approver permissions for the designated task and object mappings.

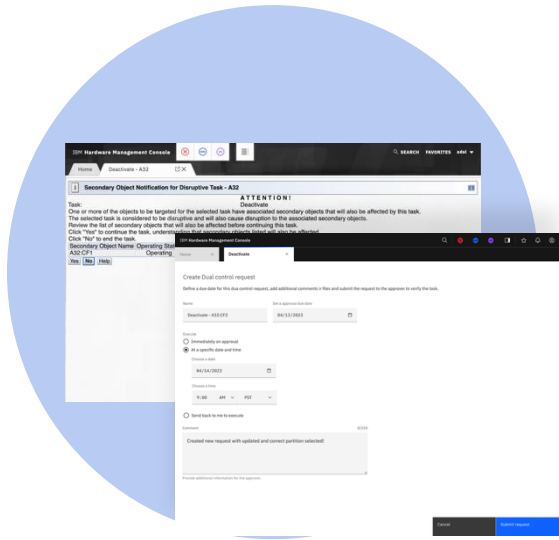




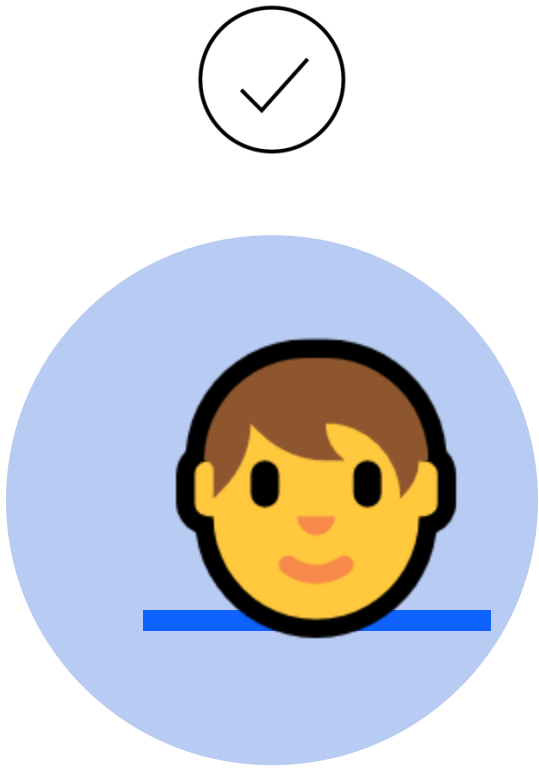
Dual Control  
Task use touch points



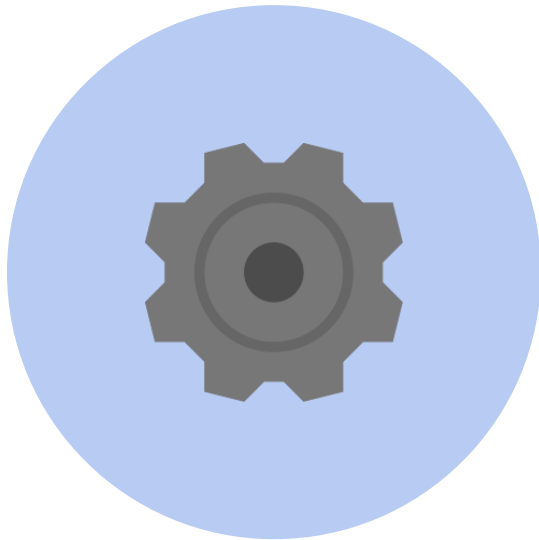
Noëmi



Selections made in  
task and approval  
request submitted



Daniel  
Approval/Rejection



Task is run



# In task



Noëmi sees that this is a *dual control enabled task and object mapping*

Once she has made her selections and is done within task, she *creates a dual control request*

IBM Hardware Management Console

HomeDeactivate - A32:CF1

!

Disruptive Task Confirmation : Deactivate - A32:CF1

i

Dual control enabled This task requires dual control in order to run the action.

Learn more about dual control

Attention: The Deactivate task is disruptive.

Executing the Deactivate task may adversely affect the objects listed below. Review the confirmation text for each object before continuing with the Deactivate task.

Objects that will be affected by the Deactivate task

System Name	Type	OS Name	Status	Confirmation Text	Confirmation Status
A32:CF1	Image		Not operating		

Do you want to execute the Deactivate task?

Type the password below for user "adal" then click "Yes".

Cancel

Help

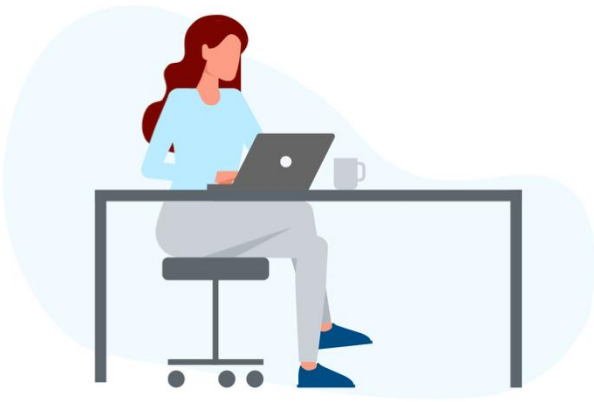
Create dual control request

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# Submitting a dual control request



Noëmi selects an *approval due date*, and that the Deactivate should run immediately after it’s approved.

She submits the request

IBM Hardware Management Console

Home

User Management

Deactivate - A32:CF1

Search

Close

HW

OS

Fullscreen

Star

Notifications

User

Create dual control request

This task requires approval before you can run it. Create a dual control request that includes an approval due date and instruction that indicates how you want to proceed after receiving an approval. You can also provide a description of the request, and comments for the approvers.

Request name

Deactivate - A32\_CF1

Approval due date

09/25/2024

Description (optional)

57/1024

Deactivation of the CF1 partition per direction from BDV.

Instructions for running the approved task

☒ Run immediately

☐ Run at a specific date and time

☐ Run the task manually

Comment (optional)

81/1024

Please approve this deactivate request as discussed in planning meeting with BDV.

Help

Cancel

Submit request

GUIDANCE

After you send the request, reviewers are notified and either approve or deny the request. You can track the status of your request through the Dual Control Management task.

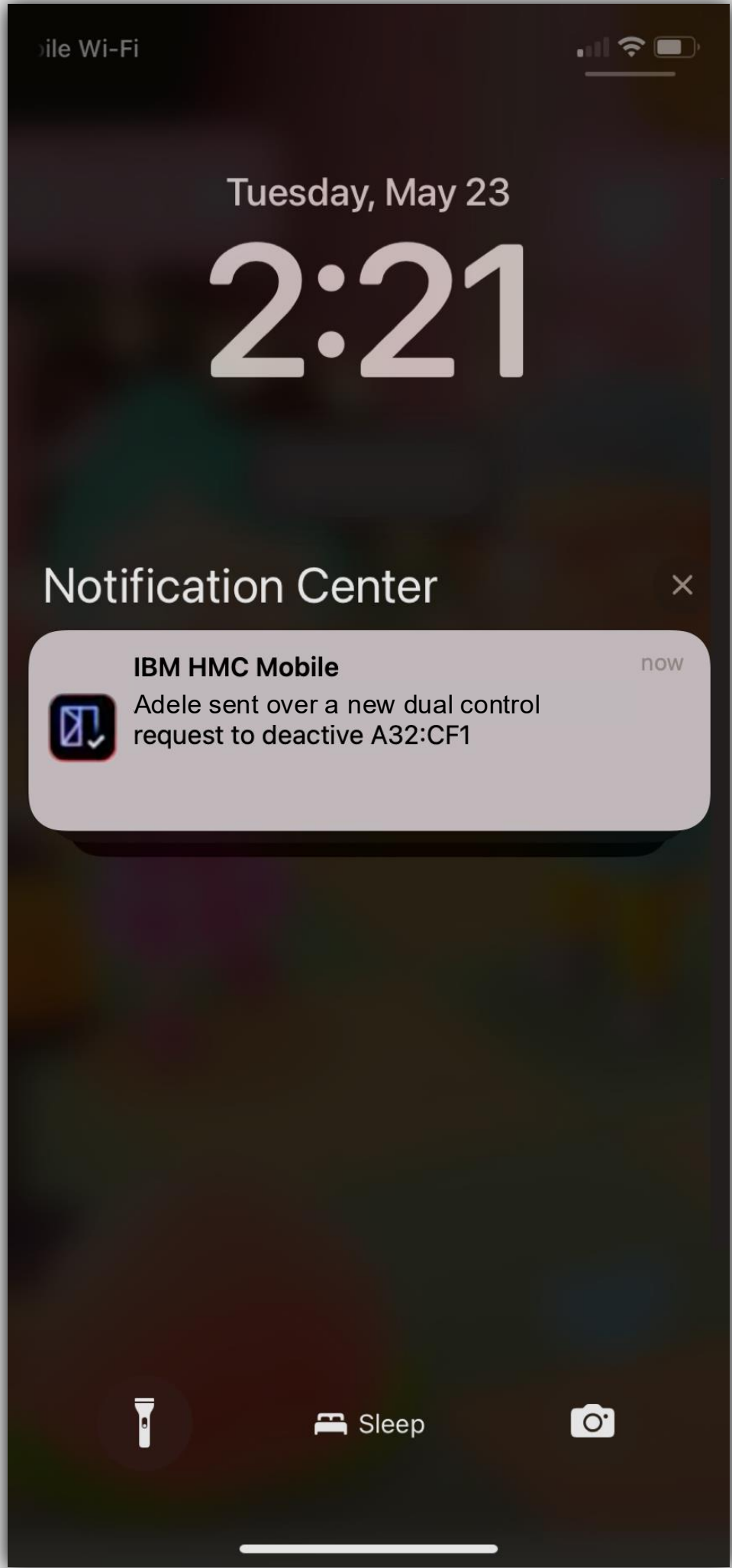
If your request is approved, the task is run according to the instruction that you select.



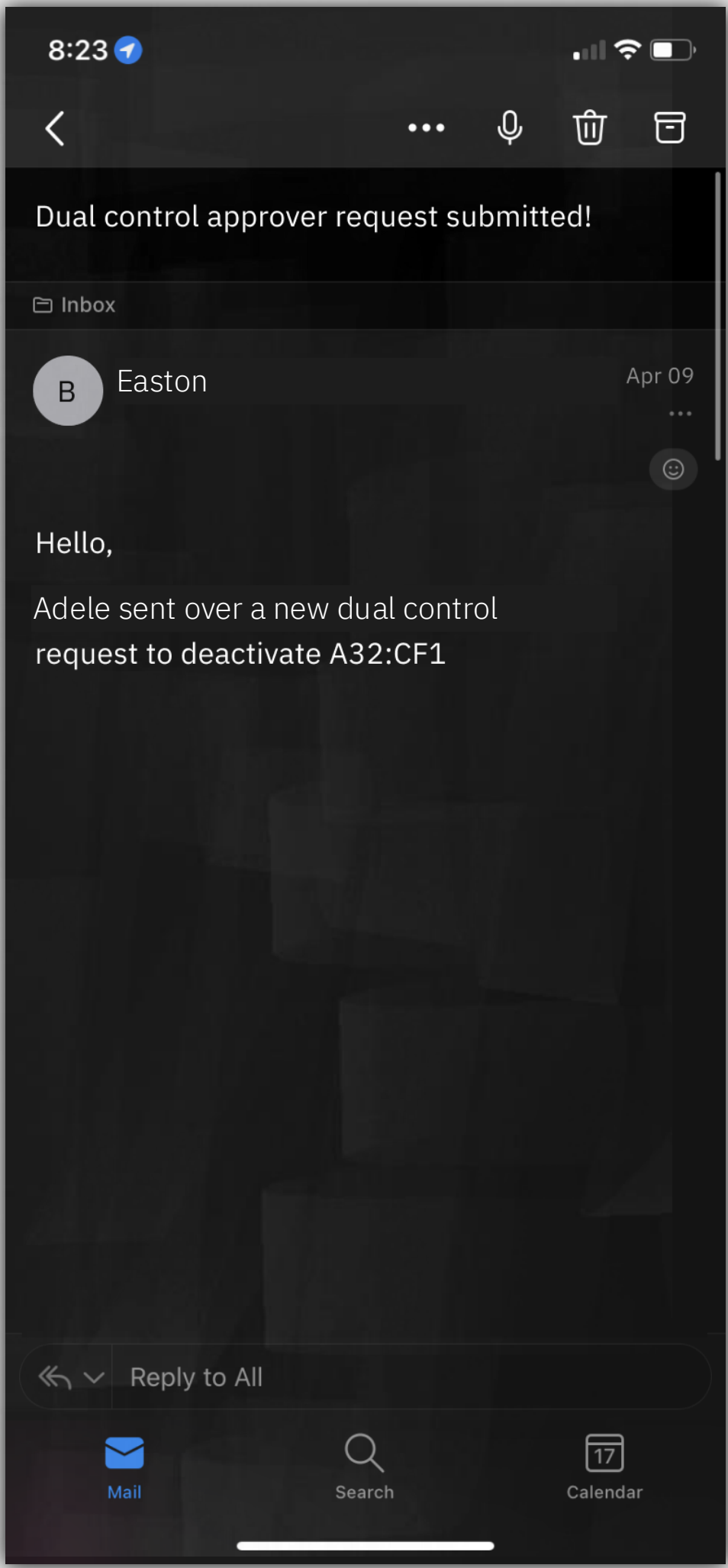
# Approver notified of dual control request



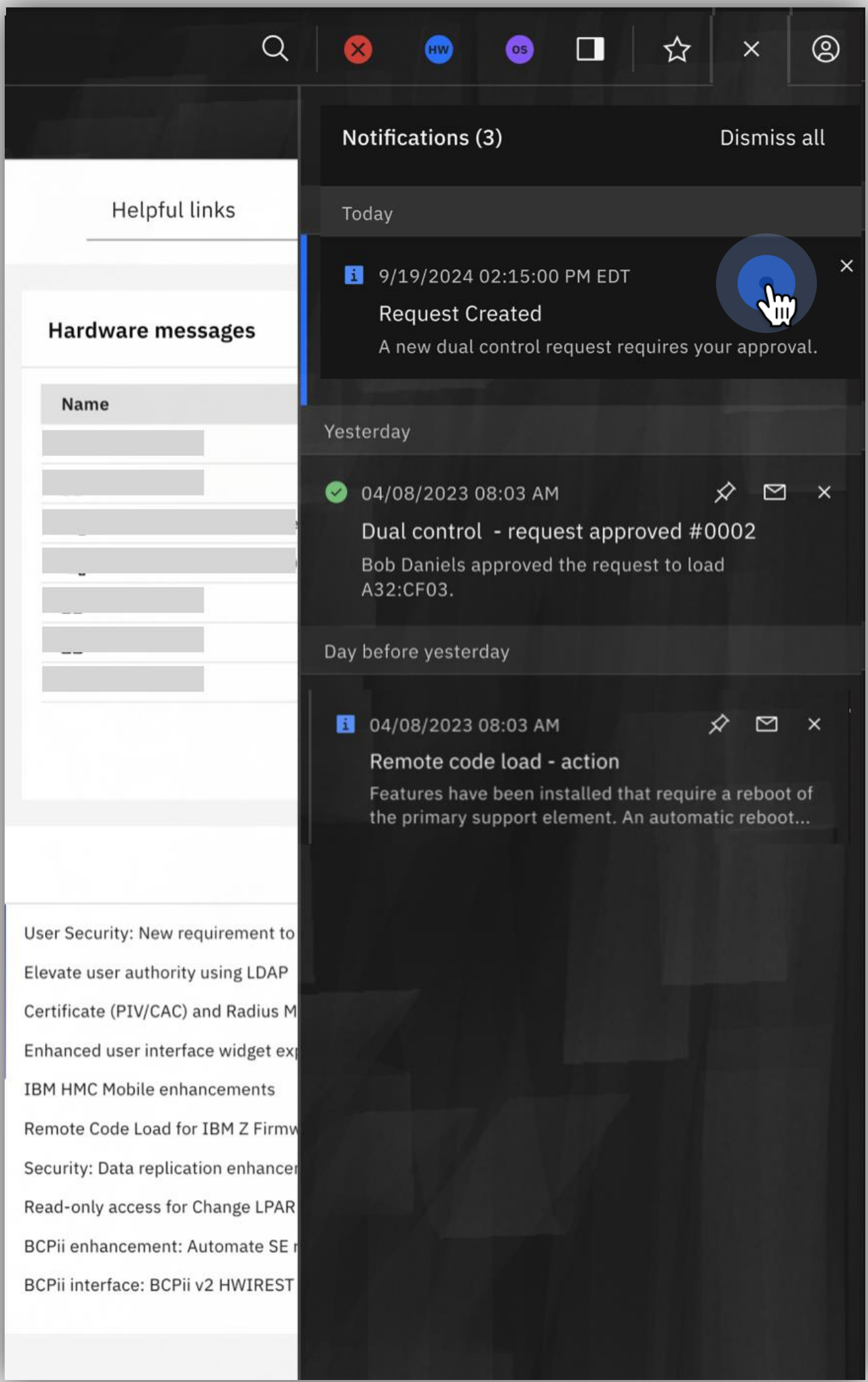
Daniel, a dual control approver, is notified of the request via mobile, email, APIs, BCPii, and the notification panel in the HMC



HMC Mobile



Email



Notification/Alert panel



# Approver reviews the request



Daniel reviews the request and sees that Noëmi selected the wrong partition to deactivate. He clicks reject.

IBM Hardware Management Console

Home

Dual Control Managem...

×

← Return to dual control requests

!

Disruptive

Approval of this request might result in the disruption of partition operations.

Name

#0152 Deactivate - A32\_CF1

Description

Deactivation of the CF1 partition per direction from BDV.

Request information

Task

Deactivate

Target(s)

CF1

Approval due

9/25/24

Approver(s)

Not assigned

Requester

adal

Request sent

9/19/24, 2:16:40 PM EDT

Run

Scheduled

Immediately on approval

Assign myself

+

History

adal created the request.

9/19/24, 2:16:40 PM EDT

Comments

adal commented.

9/19/24, 2:16:28 PM EDT

Please approve this deactivate request as discussed in planning meeting with BDV.

Comment

0/1024

Write comment

Add comment

Help

Reject

Approve

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# Approver rejects the request



Daniel writes a comment to explain why it was rejected

IBM Hardware Management Console

Home

Dual Control Managem...

×

← Return to dual control requests

!

Disruptive

Approval of this request might result in the disruption of partition operations.

Name

#0152 Deactivate - A32\_CF1

Description

Deactivation of the CF1 partition per direction from BDV.

Request information

Task

Deactivate

Target(s)

CF1

Approval due

9/25/24

Approver(s)

Not assigned

Requester

adal

Assign myself

+

History

adal created the request.

9/19/24, 2:16:40 PM EDT

Cancel

Reject

The partition you selected is incorrect! It should be CF2 on A32.

Comment

0/1024

Write comment

Add comment

Help

Reject

Approve

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Notified of rejection,  
launches the dual control  
management task



Noëmi  
is notified that her request has been  
rejected so she launches the dual  
control management task and clicks  
into request card to view details

HW

OS

Notifications (4)

Dismiss all

Today

9/19/2024 02:16:40 PM EDT

Request Rejected

Dual control request, "Deactivate - A32:CF1", has been rejected by easton.

HomeDual Control Managem...

Dual control management

Search requests

Open

1 request

Approved 

1 request

Closed 

80 requests

#0151 Activate - A32\_CF2

Deactivation of the CF2 partition per direction from BDV.

Requester

adal

Approval due

9/25/24

Not assigned

Request sent

9/19/24, 2:12:48 PM EDT

Run

Scheduled

Immediately on approval

#0112 Load - B32\_ZOS

Requester

dcuser1

Approver

dcadmin

Approved

Request sent

9/5/24, 5:21:14 PM EDT

Run

Manual

After approval

#0152 Deactivate - A32\_CF1

Deactivation of the CF1 partition per direction from BDV.

Requester

adal

Approver

eric.weinmann@us.ibm.com

Rejected

Request sent

9/19/24, 2:16:40 PM EDT

Run

Scheduled

Immediately on approval

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39



# Realizing mistake



Noëmi  
reads Daniels’s comment about  
selecting the wrong partition.  
She proceeds to submit a new  
request

IBM Hardware Management Console

Home

Dual Control Managem...

Return to dual control requests

Rejected

Name

#0152 Deactivate - A32\_CF1

Description

Deactivation of the CF1 partition per direction from BDV.

Edit

Request information

Task

Deactivate

Target(s)

CF1

Approver(s)

eric.weinmann@us.ibm.com

Requester

adal

Request sent

9/19/24, 2:16:40 PM EDT

Run

Scheduled

Immediately on approval

History

adal created the request.

9/19/24, 2:16:40 PM EDT

eric.weinmann@us.ibm.com rejected the request.

9/20/24, 2:53:09 PM EDT

Comments

adal commented.

9/19/24, 2:16:28 PM EDT

Please approve this deactivate request as discussed in planning meeting with BDV.

eric.weinmann@us.ibm.com commented.

9/20/24, 2:53:09 PM EDT

The partition you selected is incorrect! It should be CF2 on A32.

Comment

0/1024

Write comment

Add comment



# Submitting new request

Noëmi makes her selections once again and ensures she has selected the correct partition to deactivate. She then submits the new request



IBM Hardware Management Console

Home

Activate - A32:CF2

Create dual control request

This task requires approval before you can run it. Create a dual control request that includes an approval due date and instruction that indicates how you want to proceed after receiving an approval. You can also provide a description of the request, and comments for the approvers.

Request name

Activate - A32\_CF2

Approval due date

09/25/2024

Description (optional)

57/1024

Deactivation of the CF2 partition per direction from BDV.

Instructions for running the approved task

☒ Run immediately

☐ Run at a specific date and time

☐ Run the task manually

Comment (optional)

84/1024

Please approve the deactivate request as discussed in the planning meeting with BDV.

Help

Cancel

Submit request

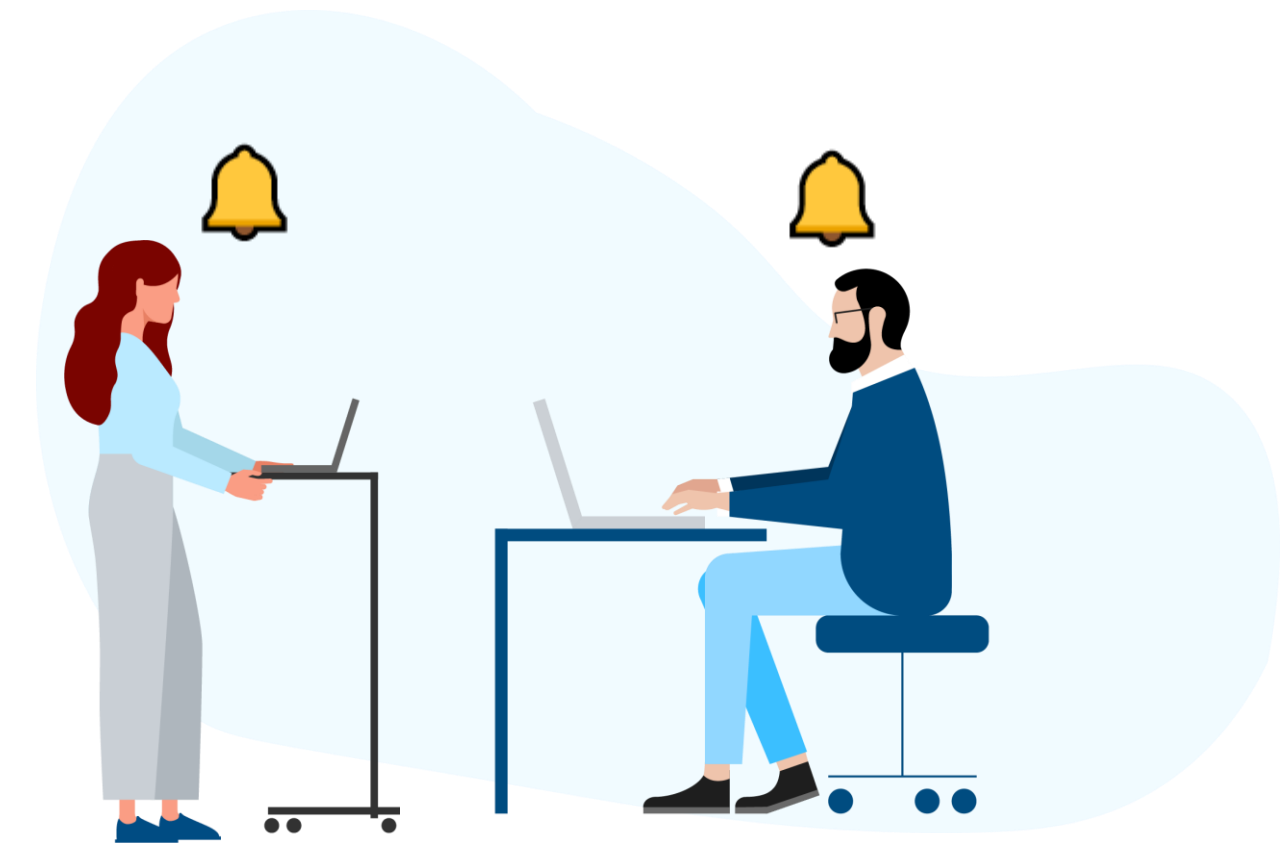
GUIDANCE

After you send the request, reviewers are notified and either approve or deny the request. You can track the status of your request through the Dual Control Management task.

If your request is approved, the task is run according to the instruction that you select.



Deactivate is run and  
both Noëmi  
and Daniel are notified



IBM Hardware Management Console

Home

Dashboard

Systems Management

Custom Groups

HMC Management

Service Management

Tasks Index

Dashboard

Systems health

Systems

630

Unacceptable status

Partitions

6

Adapters

No power

300

Service required

300

Communications not active

20

Service

10

Hardware messages

Name

S202B (12)

SETR70 (2)

Optical network and system

Fibre channel network (1)

R31 (1)

S15 (4)

HMC1 (1)

Frequently used tasks

Change Password

User Management

Configure Data Replication

Activate

Archive Security Logs

Load

What's new

Security: Secure boot enhancements

Verify that a boot program originates from a trusted source and has not been tampered with. Import and manage certificates used for validation.

User Security: New requirement to

Elevate user authority using LDAP

Certificate (PIV/CAC) and Radius M

Enhanced user interface widget ex

IBM HMC Mobile enhancements

Remote Code Load for IBM Z Firmv

Security: Data replication enhance

Read-only access for Change LPAR

BCPii enhancement: Automate SE

BCPii interface: BCPii v2 HWIREST

Notifications (4)

Dismiss all

Today

9/19/2024 02:17:01 PM EDT

Request Run Successful

Dual control request "Deactivate - A32-CF2" has completed successfully.

9/19/2024 02:17:00 PM EDT

Request Running

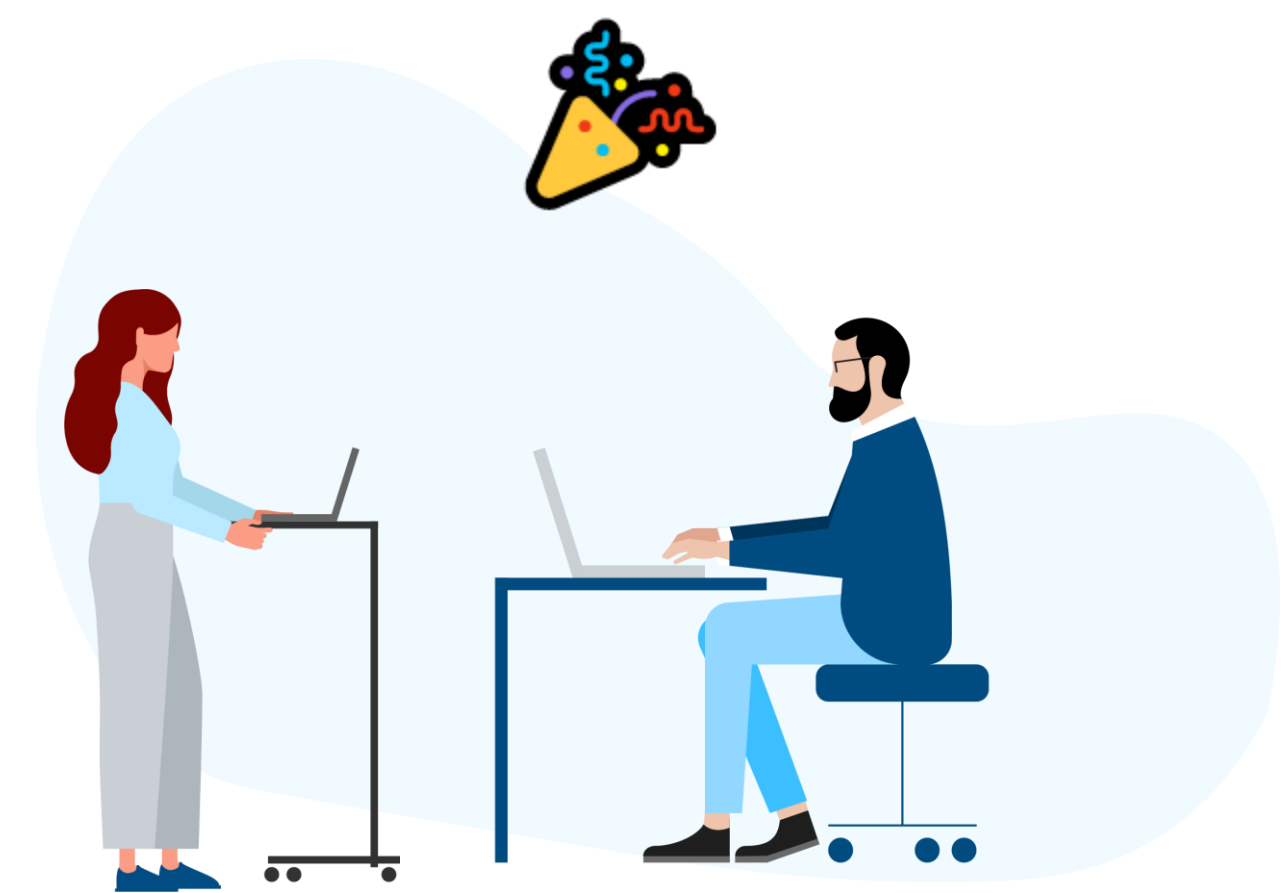
Dual control request "Deactivate - A32-CF2" has started running.

Yesterday

Day before yesterday



Noemi and Daniel are review the results



[← Return to dual control requests](#)

Successful

Name

#0160 Deactivate - A32 CF2

Description

Deactivation of the CF2 partition per direction from BDV.

Edit

Request information

<div>Task</div> <div>Deactivate</div>	<div>Target(s)</div> <div>CF2</div>	<div>Approver(s)</div> <div>eric.weinmann@us.ibm.com</div>	<div>Requester</div> <div>adal</div>
<div>Request sent</div> <div>9/23/24, 2:12:08 PM EDT</div>	<div>Run</div> <div>✓ Successful</div> <div>9/12/24, 5:01:09 PM EDT</div>		

History

adal created the request.

9/23/24, 2:12:08 PM EDT

eric.weinmann@us.ibm.com approved the request.

9/23/24, 2:14:44 PM EDT

Deactivate has started.

9/23/24, 2:14:44 PM EDT

Deactivate has completed.

A32:CF2 is in a deactivated state.

9/23/24, 2:14:45 PM EDT

Comments

adal commented.

9/23/24, 2:12:08 PM EDT

Please approve the deactivate request as discussed in the planning meeting with BDV.

adal commented.

9/23/24, 2:13:37 PM EDT

Created a new request with the updated and correct partition CF2 selected!

Comment

0/1024



# Dual Control Summary

01

## Role-based task and object enablement

Security Administrators can enforce controls on which tasks & objects & users require Dual Control, and which users are granted permission to approve a Dual Control request.

### Enable for tasks and objects

Select the task and object mappings to enable for dual control.

			Add task and object mapping +
Task	Objects by type	Specific objects	Objects by group
Load		A32:LPAR1, A32:LPAR2	

### Approver permissions

Select which roles should have dual control approver permissions for the above task and object mappings.

- ☐ Anyone with this role other than the requester
- ☐ Operator tasks
- ☐ Jr system programmer tasks
- ☐ System programmer tasks
- ☒ Sr system programmer tasks

Image: Task and object mappings selection, approver permissions



# Dual Control Summary

02

## Flexible request options

Users can submit Dual Control requests for supported tasks with different run options:

- Run immediately
- Run at specific date and time
- Run manually by requester
- Run manually by requestor restricted to a time window

IBM Hardware Management Console

Home

Load - A32:CF2

Search

Close

HW

OS

Fullscreen

Star

Alerts

User

Create dual control request

The task you have launched requires dual control and will need approval prior to execution. Please define an approval due date and when/how the request should execute if it is approved. You may also add a description or comment to provide additional information to the reviewers.

Request name

Approval due date

Load - A32:CF2

09/23/2024

Description (optional)

0/1024

Instructions for running the approved task

☐ Run immediately

☐ Run at a specific date and time

☒ Run the task manually

☒ Restrict running task within time window

Start date

Start time

mm/dd/yyyy

hh:mmAMEDT

End date

End time

mm/dd/yyyy

hh:mmAMEDT

**GUIDANCE**

After you send the request, reviewers are notified and either approve or deny the request. You can track the status of your request through the dual control management task.

If your request is approved, the task is run according to the instruction that you select.

Image: Task to be run by requestor restricted to a time window



# Dual Control Summary

03

## Real-time notifications

Users are notified about the status of a dual control requests on the HMC, and through external methods (emails, HMC mobile notifications, APIs) to get as close to real-time visibility as possible.

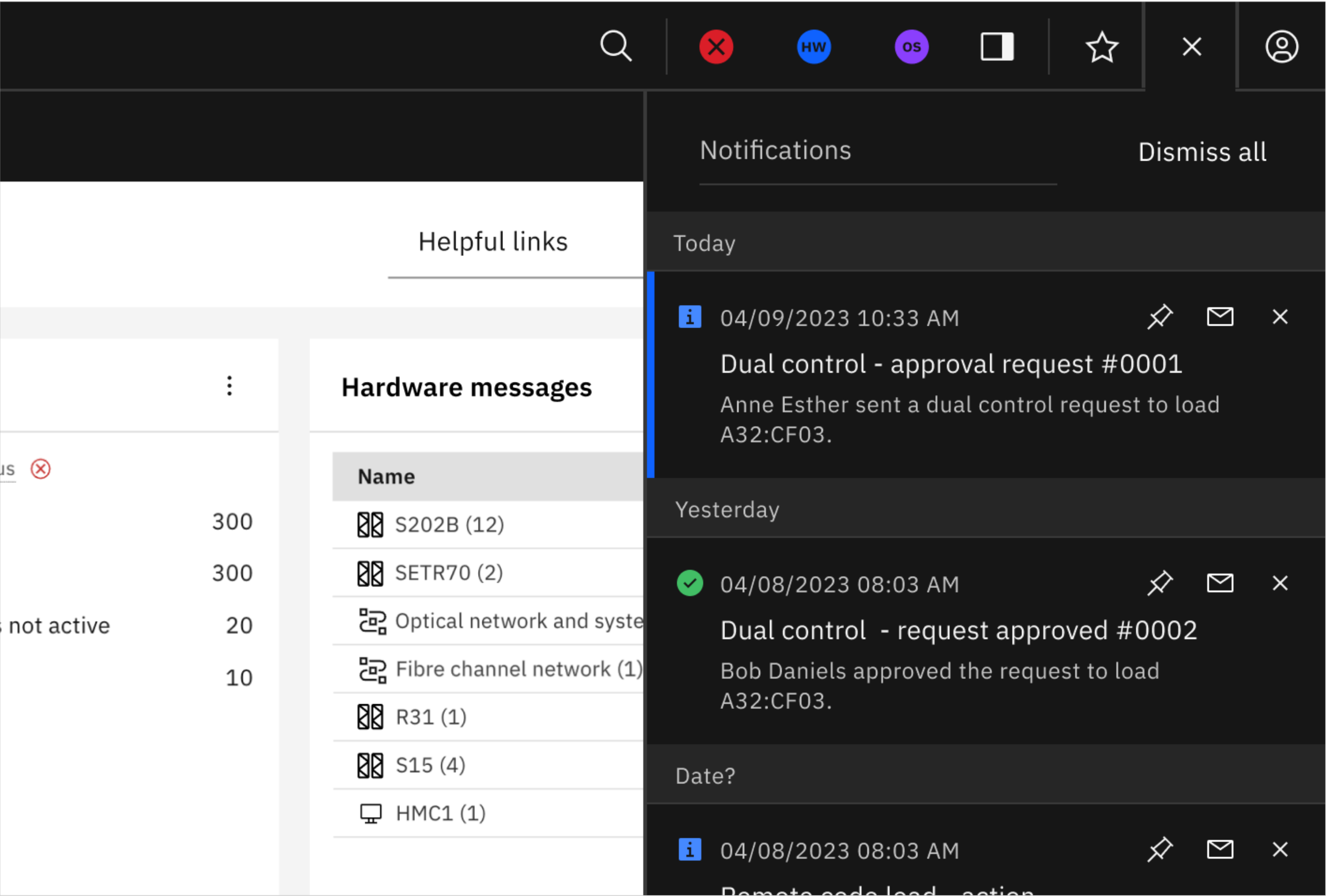


Image: Notifications panel on the HMC



# Dual Control Summary

04

## Request management and tracking

Requestors and approvers track the status of Dual Control requests in the Dual control management task.

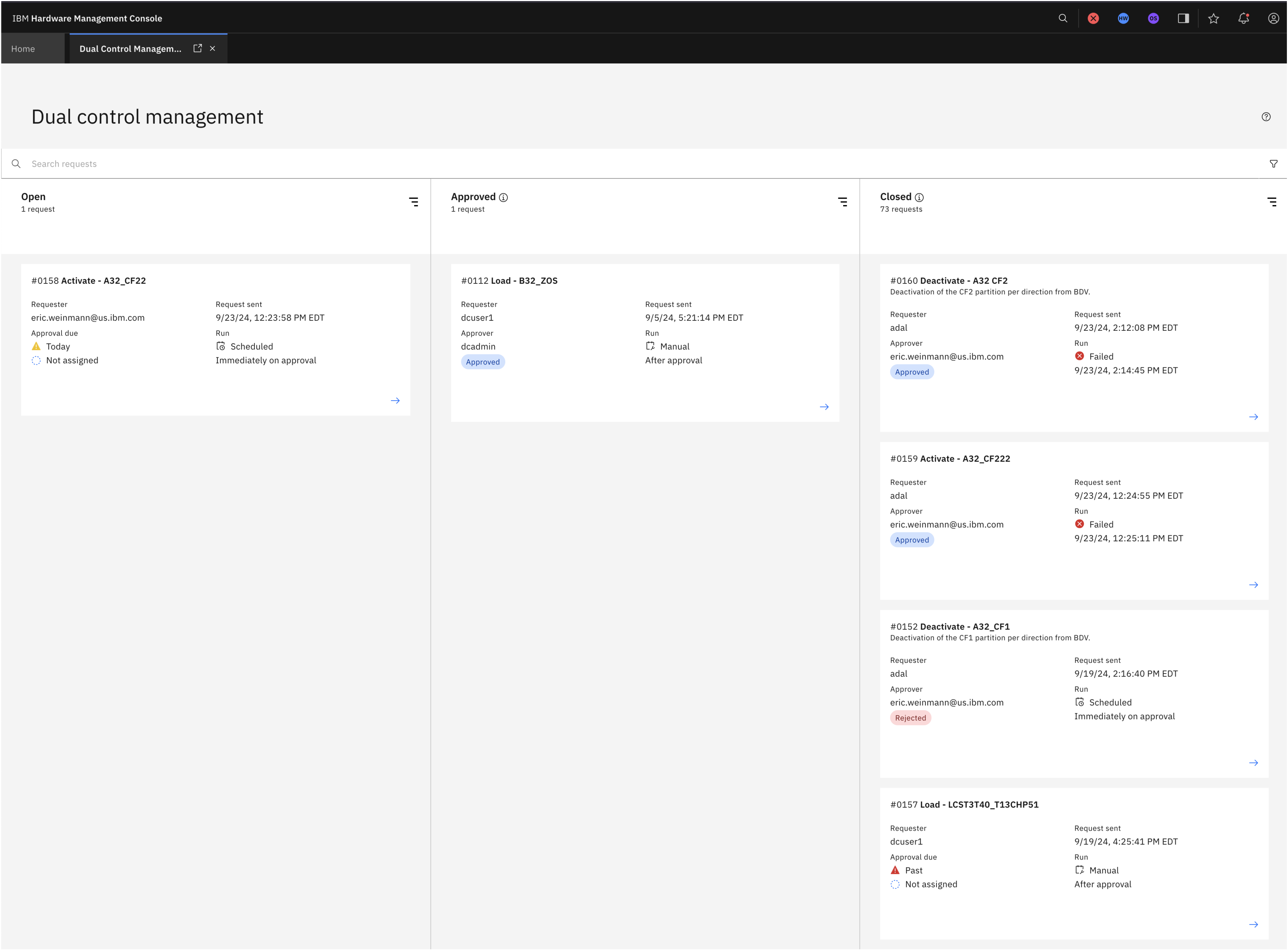


Image: Dual control management task kanban board



# Dual Control Summary

05

## Approver autonomy

Approvers can assign themselves to requests. They are provided with supporting information to make an accurate judgement to approve or reject a Dual Control request. Key information is:

- Requestor and approver information
- Task inputs
- History of events
- Comments
- Approval due date
- Run options
- Run time window

IBM Hardware Management Console

Home

Dual Control Managem...

×

← Return to dual control requests

!

Disruptive

Approval of this request might result in the disruption of partition operations.

Approved

Name

#0112 Load - B32\_ZOS

Description

—

Request information

Task

Load

Target(s)

ZOS

Approver(s)

dcadmin

Requester

dcuser1

Request sent

9/5/24, 5:21:14 PM EDT

Run

↻ Manual

After approval

Inputs

CPC ⓘ

B32

Image ⓘ

ZOS

Force ⓘ

true

Options ⓘ

Normal

Load Address ⓘ

04801

Load Parameters ⓘ

4813SI

Device Type ⓘ

ECKD

IPL Type ⓘ

CCW

Load ⓘ

OS

Time-out Value ⓘ

60

History

dcuser1

created the request.

9/5/24, 5:21:14 PM EDT

dcadmin

approved the request.

9/5/24, 5:21:27 PM EDT

Comments

No comments

Add comments to share information.

Comment

0/1024

Write comment

Image: Dual control request review page



# Dual Control

## Supported tasks

- Activate
- Deactivate
- Stop (DPM)
- Reset
- Load
- Change LPAR Cryptographic controls
- Perform Model Conversion

## Dual Control Task List

### Customer prioritized task list

Activate (System & Partition)

Activate a system

Deactivate (System & Partition)

Deactivate a system

Reset (Clear/Normal)

Perform resets clear of selected images, and Perform resets normal of selected images

Load

Remembers last used values for all of its fields (woohoo!), also Load from Removable Media or Server

Change LPAR Controls

Customize logical partition processor resources for selected CPCs

Change LPAR Cryptographic Controls

Change LPAR Group Controls

Customize a group assignment for logical partitions of selected CPCs

Configure Channel Path On/Off

Toggle channel paths between online and standby states

Change LPAR Security

Change LPAR Security

Customize / Delete Activation Profiles

Customize or delete activation profiles for selected objects

Customize / Delete Activation Profiles - Cryptographic section

Perform Model Conversion (Capacity on Demand)

Perform Model Conversion

Power off or restart

NEED FULL TASK LIST (restart console, SE, system, etc)

Manage System Time

Setup, modify, and view a topographical visualization of an STP-only Coordinated Timing Network. This task is formerly known as "System (Sysplex) Time."

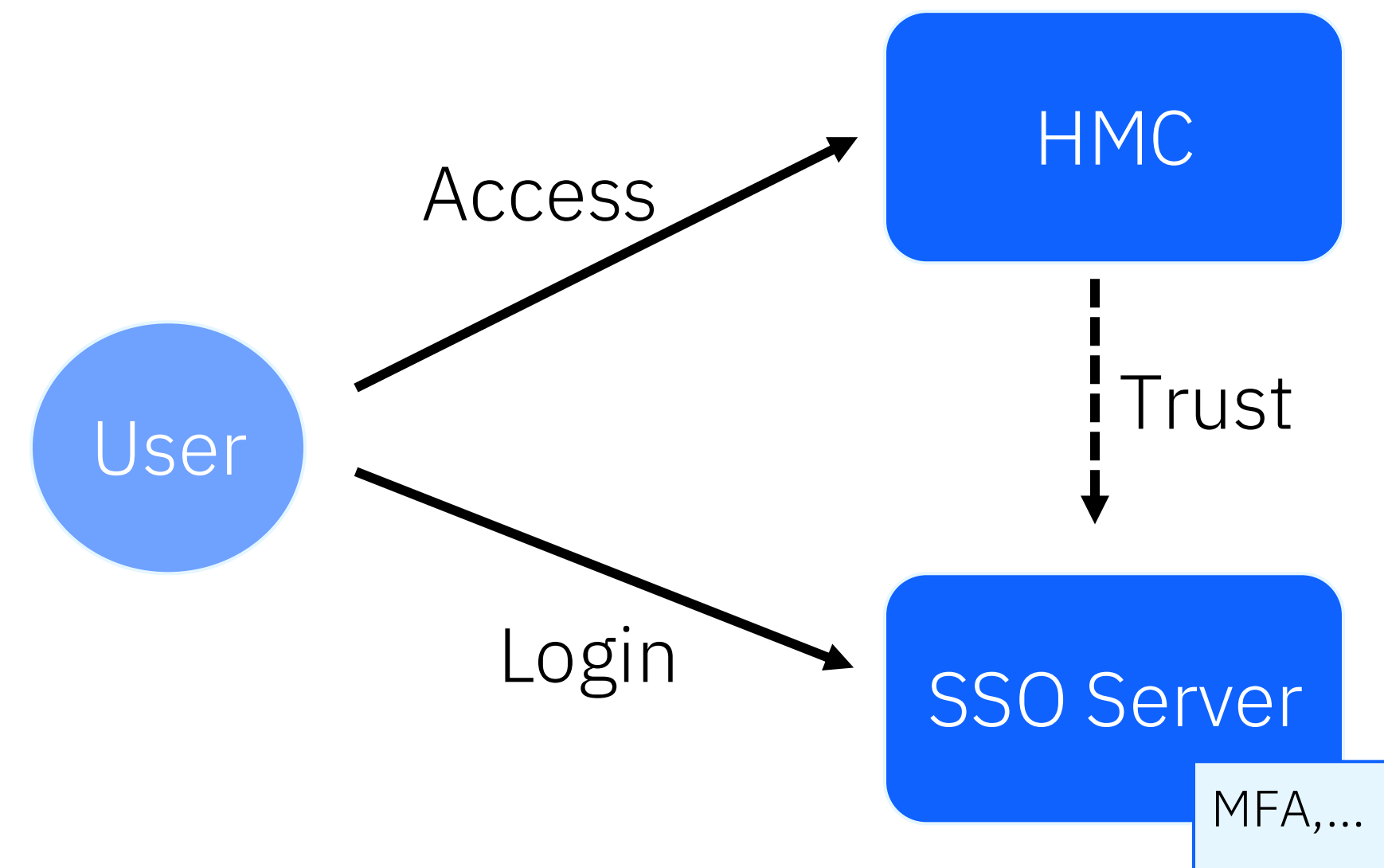


# Single Sign On



# Single Sign On (SSO)

- New authentication method for the HMC/SE
- HMC/SE never knows the user's credentials
- Allows for users to use existing credentials from other services on the HMC/SE
- OpenID Connect (OIDC) is the technology used
- **Note:**
  - SSO server provides the MFA support





# Network Time Security



# Network Time Security (NTS) And Other Enhancements

- HMC Manage System Time task Enhancements
  - Configure External Time Source (ETS) action
    - Support for 3 Network Time Protocol (NTP) servers
    - Support for 2 Precision Time Protocol (PTP) servers
    - Support for Mixed Mode (use of both NTP and PTP servers in parallel)
  - Manage CTN Certificates STP action
    - Allow use of certificates for secure NTS NTP communications between the CPC and configured ETS(es)
- HMC Customize Console Date\Time task
  - NTP NTS support for HMC ↔ External Time Source connections
- PTP Communication support
  - Multicast & Unicast (new)

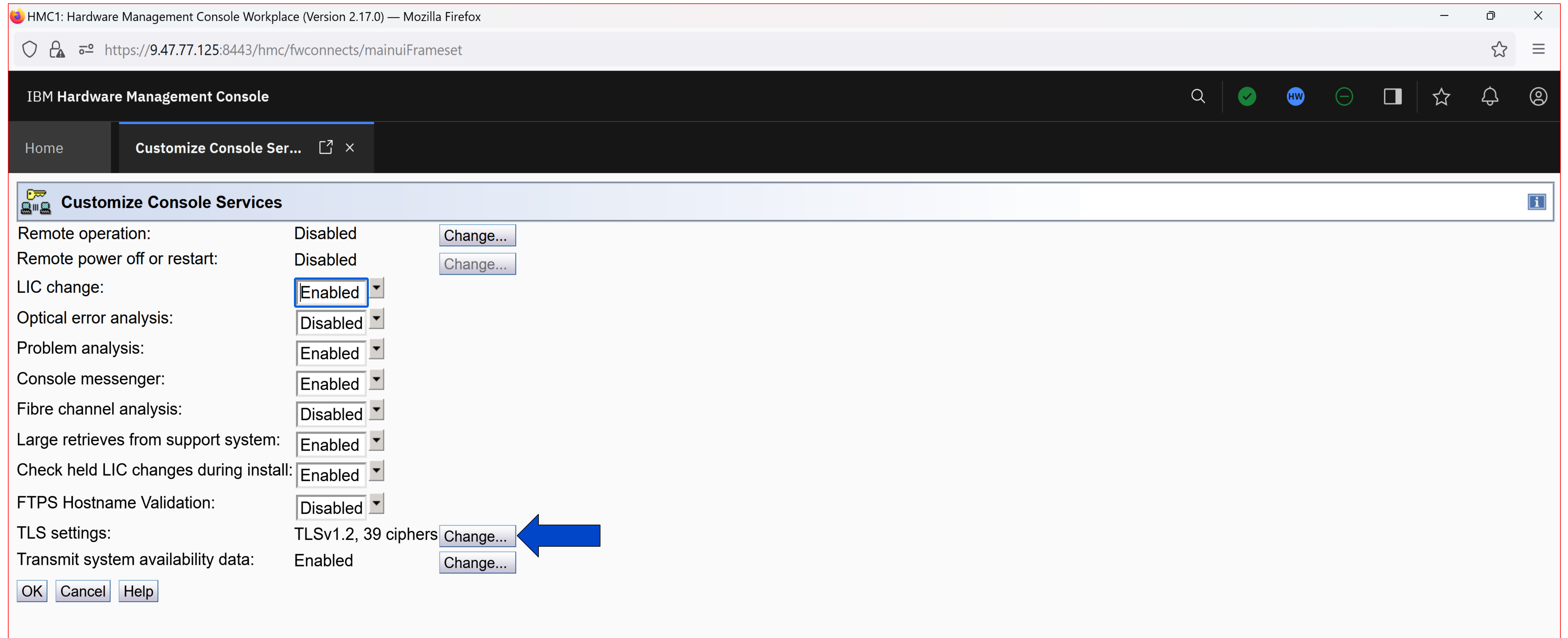


# TLS Cipher Suite Configuration



# Cipher Suites Filtering per TLS

- Single Customize Console Services sub-task, Configure TLS Settings => mapped to Cipher Suites
  - Individual cipher suite shown for management based on Minimum TLS level





# TLS 1.2 Filtered Ciphers

HMC1: Hardware Management Console Workplace (Version 2.17.0) — Mozilla Firefox

https://9.47.77.125:8443/hmc/fwconnects/mainuiFrameset

IBM Hardware Management Console

HomeCustomize Console Ser...

Configure TLS Settings

Specify the TLS settings for the console including "Remote Browser", "Web Services API HTTP Server" or "Single Object Operation" connections into the console.

Minimum TLS protocol version: 

TLSv1.2

TLS Cipher Suites:

---

Select Action

Select	Name	Protocols	Description
<input checked="" type="checkbox"/>	TLS_AES_256_GCM_SHA384	TLSv1.3	Authentication with 256 bit AES_GCM cipher and SHA-384 hashing.
<input checked="" type="checkbox"/>	TLS_AES_128_GCM_SHA256	TLSv1.3	Authentication with 128 bit AES_GCM cipher and SHA-256 hashing.
<input checked="" type="checkbox"/>	TLS_CHACHA20_POLY1305_SHA256	TLSv1.3	ChaCha20 stream cipher and Poly1305 message authenticator and SHA-256 hashing
<input checked="" type="checkbox"/>	TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384	TLSv1.2	ECDHE key exchange and ECDSA authentication with 128 bit AES_GCM cipher and SHA-384 ha
<input checked="" type="checkbox"/>	TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256	TLSv1.2	ECDHE key exchange and ECDSA authentication with 128 bit AES_GCM cipher and SHA-256 ha
<input checked="" type="checkbox"/>	TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256	TLSv1.2	ECDHE key exchange and ECDSA authentication with ChaCha20 stream cipher and Poly1305 me
<input checked="" type="checkbox"/>	TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384	TLSv1.2	ECDHE key exchange and RSA authentication with 256 bit AES_CBC cipher and SHA-384 hashir
<input checked="" type="checkbox"/>	TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256	TLSv1.2	ECDHE key exchange and RSA authentication with ChaCha20 stream cipher and Poly1305 mess
<input checked="" type="checkbox"/>	TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256	TLSv1.2	ECDHE key excha
<input checked="" type="checkbox"/>	TLS_DHE_RSA_WITH_AES_256_GCM_SHA384	TLSv1.2	DHE key exchange
<input checked="" type="checkbox"/>	TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256	TLSv1.2	DHE key exchange
<input checked="" type="checkbox"/>	TLS_DHE_DSS_WITH_AES_256_GCM_SHA384	TLSv1.2	DHE key exchange
<input checked="" type="checkbox"/>	TLS_DHE_RSA_WITH_AES_128_GCM_SHA256	TLSv1.2	DHE key exchange
<input checked="" type="checkbox"/>	TLS_DHE_DSS_WITH_AES_128_GCM_SHA256	TLSv1.2	DHE key exchange
<input checked="" type="checkbox"/>	TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384	TLSv1.2	ECDHE key excha
<input checked="" type="checkbox"/>	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384	TLSv1.2	ECDHE key excha
<input checked="" type="checkbox"/>	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256	TLSv1.2	ECDHE key excha
		Total:	49

# TLS 1.3 Filtered Ciphers

HMC1: Hardware Management Console Workplace (Version 2.17.0) — Mozilla Firefox

https://9.47.77.125:8443/hmc/fwconnects/mainuiFrameset

IBM Hardware Management Console

HomeCustomize Console Ser...

Configure TLS Settings

Specify the TLS settings for the console including "Remote Browser", "Web Services API HTTP Server" or "Single Object Operation" connections into the console.

Minimum TLS protocol version: 

TLSv1.3

TLS Cipher Suites:

---

Select Action

Select	Name	Protocols	Description
<input checked="" type="checkbox"/>	TLS_AES_256_GCM_SHA384	TLSv1.3	Authentication with 256 bit AES_GCM cipher and SHA-384 hashing.
<input checked="" type="checkbox"/>	TLS_AES_128_GCM_SHA256	TLSv1.3	Authentication with 128 bit AES_GCM cipher and SHA-256 hashing.
<input checked="" type="checkbox"/>	TLS_CHACHA20_POLY1305_SHA256	TLSv1.3	ChaCha20 stream cipher and Poly1305 message authenticator and SHA-256 hashing
<input checked="" type="checkbox"/>	TLS_EMPTY_RENEGOTIATION_INFO_SCSV		Not a true cipher suite and cannot be negotiated
		Total:	4

Default Ciphers

OK

Cancel

Help



# Complete HMC User configuration replication to SEs



# HMC User Data Replicated to SE

## ➤ Strategy

- Provide ability to manage all user data in a single place, i.e., the HMC

## ➤ Existing support

- Standard HMC user definitions are replicated to managed SEs
- Clients can utilize these HMC user definitions to logon locally to the SE

## ➤ What's changing?

- HMC defined user patterns and templates including LDAP Server definitions are now replicated to managed SEs
- Clients can utilize these HMC definitions to logon locally to the SE with pattern-based users
- Recommend doing all HMC User Data definitions (not just users) only on HMC, no User Mgmt on SE



# Quantum-Resistant Password Hashing



# Local Users Quantum-Resistant Password Hashing

- With z17, quantum-resistant hashing algorithm applied to storage of local users passwords
  - Prior to z17, local user password hashing used, but with z17, now it's quantum-resistant
  - **Note:** HMC/SE are also closed appliances with no access and additionally have an encrypted SSD
- User recommendation: [define HMC Users on one HMC & allow replication to other HMCs and to SEs](#)
- Implications of z17 HMC Local users replicated to other HMC/SE levels
  - **z17 HMCs/SEs:** none
  - **z16/z15 HMCs/SEs**
    - HMCs => [HMC Data Replication of User Profile Data](#) will be blocked until MCL/Opt In for new quantum-resistant
    - MCL Bundle: z16 – H31, z15 – H62
    - Must also Opt in ==> see next chart
    - SEs
      - [For SE local console logon \(not Single Object Operations\), HMC user/password is normally authenticated to connected HMC](#)
      - If no connection to HMC, SE local console logon would fail until Quantum Resistant MCL (z16 - S44, z15 – S98)/Opt In for new quantum-resistant
- **Note:** HMC LDAP or SSO authenticated users are not affected by this change



# Quantum-Resistant Password Hashing – Opt In

IBM HMC

✓

HW

⊖

☰

Home

Customize Console Servi... ✕

Customize Console Services

Remote operation:

Disabled

Change...

Remote power off or restart:

Disabled

Change...

LIC change:

Enabled

▼

Optical error analysis:

Disabled

▼

Problem analysis:

Enabled

▼

Console messenger:

Enabled

▼

Fibre channel analysis:

Disabled

▼

Large retrieves from support system:

Enabled

▼

Check held LIC changes during install:

Enabled

▼

Minimum TLS version:

TLSv1.2

▼

Transmit system availability data:

Enabled

Change...

Quantum-resistant password protection:

Disabled

Change...

OK

Cancel

Help

IBM HMC

✓

HW

⊖

☰

Home

Customize Console Servi... ✕

SEARCH FAVORITES natufano@... com ▼

Customize Console Services

Quantum-resistant password protection is required to replicate with Driver 61 (2.17.0) and later HMCs

Are you sure you want to enable quantum-resistant password protection?

\* Data replication will fail for HMCs which are not enabled

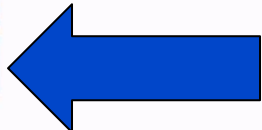
\* User profile data cannot be restored to HMCs which are not enabled

\* Quantum-resistant password protection cannot be disabled

ACT50211

Enable quantum-resistant password protection

Cancel





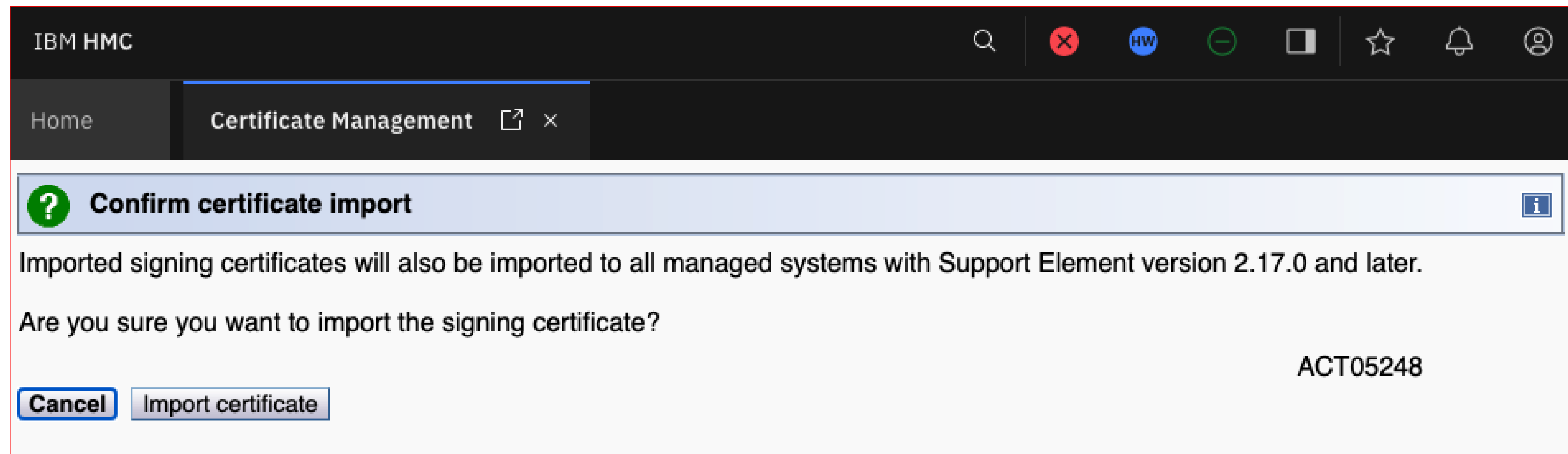
# Replicate HMC Certificates to SE



# Replicate HMC Certificates to SE

- Certificates imported to the *HMC Certificate Management task* will also be imported to *managed IBM z17 SEs*.
  - Certificates deleted from the Certificate Management task will also be deleted from managed IBM z17 SEs.
    - If multiple HMCs are managing the same SE, certificate is only deleted if no other HMC has that certificate imported.
    - If the HMC and SE stop communicating, certificates associated with that HMC are removed from the SE until communications are reestablished.
- Tasks/Options that can take advantage of this enhancement include:
  - LDAP
  - MFA
  - Remote Syslog Server
  - FTPS

## New Confirmation Dialogue



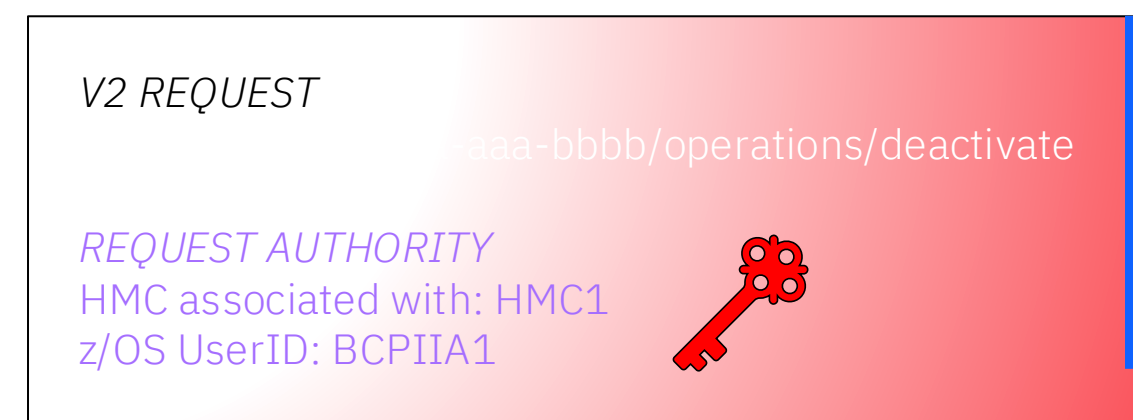
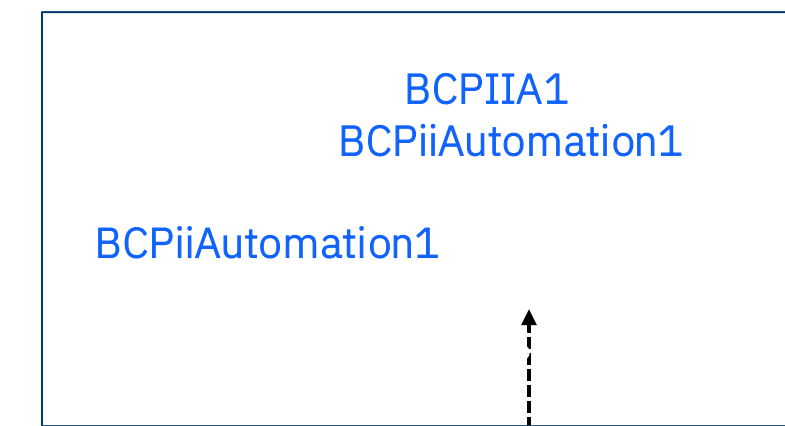


# BCPii Enhancements/SOD



# BCPii v2 Enhanced Security, HMC Target, Async support

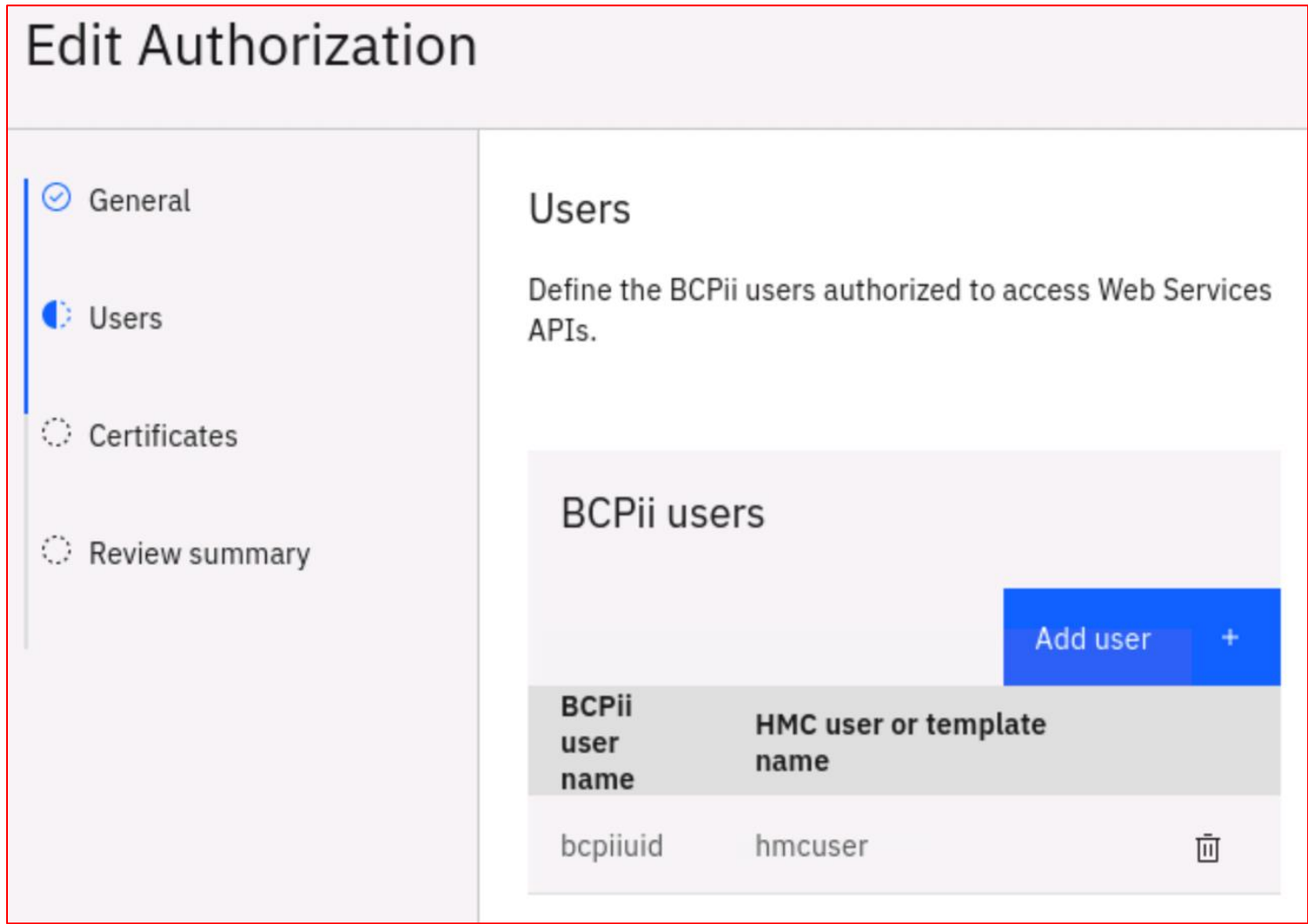
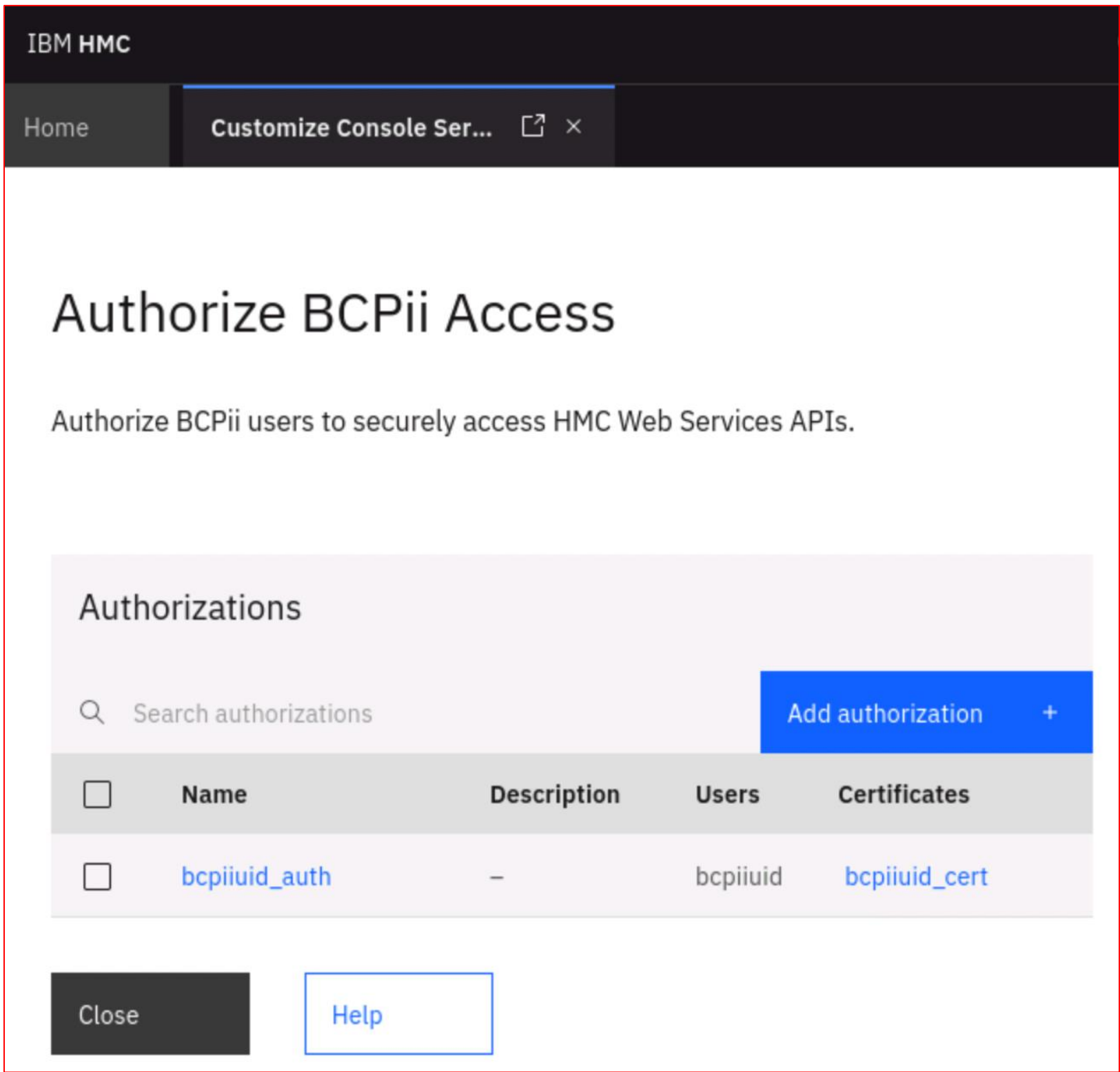
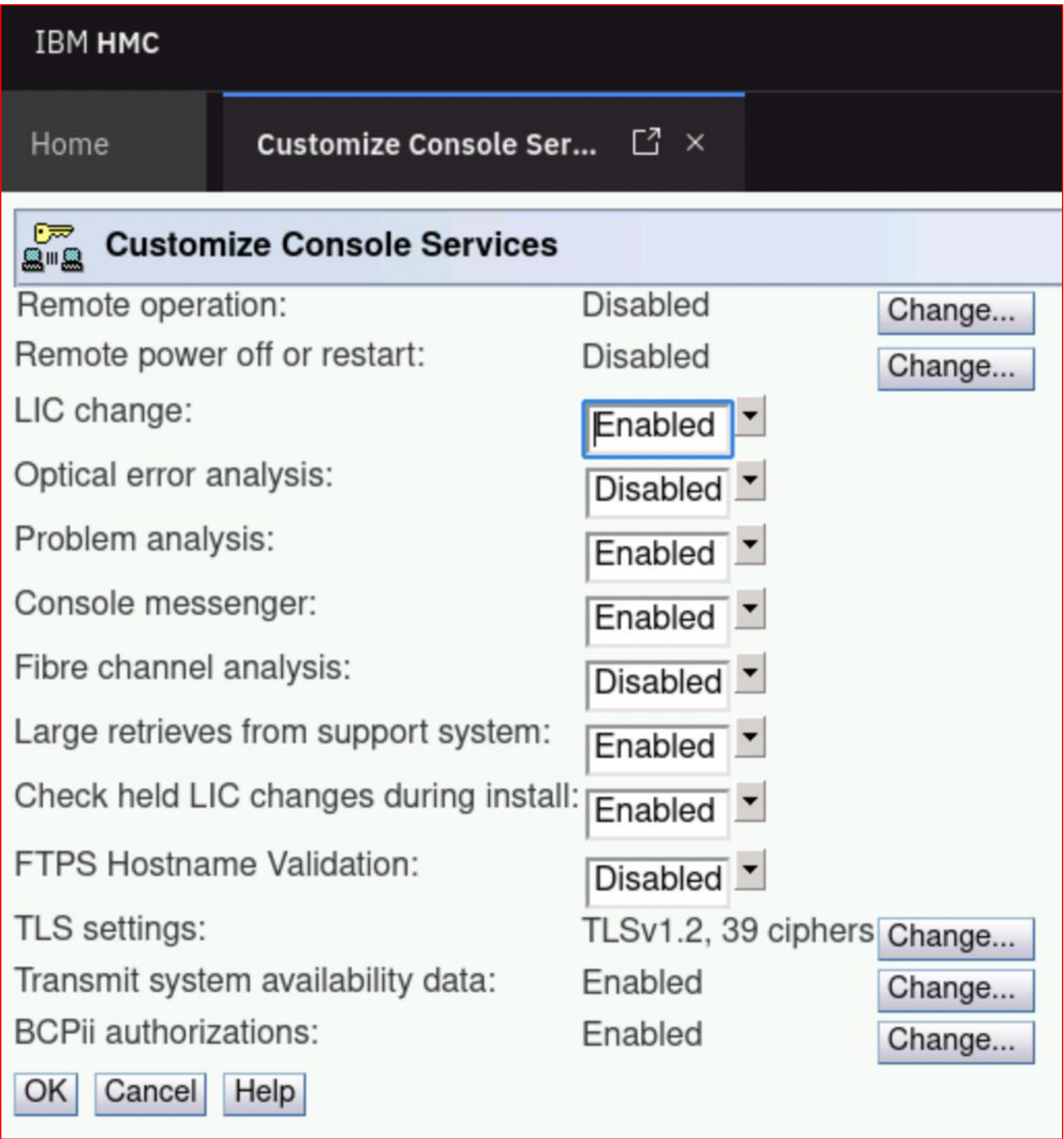
- BCPii HWIREST/v2 will pass the z/OS USER ID to SE/HMC via signed JSON Web Token (JWT)
  - *z/OS user mapped/limited to HMC user task/object permissions*
- Enhanced Security plus
  - *HMC Target support*
  - *BCPii HWIREST/v2 Asynchronous Notification support*
- BCPii HWIREST/v2 Infrastructure fully complete with z17 GA1 with associated z/OS release
  - All new HMC WebServices APIs HMC/SE support available immediate to BCPii v2 without z/OS changes





# Configuring an HMC for BCPii Targeting

- The HMC needs to be configured to validate a JWT and map the z/OS BCPii ID to an HMC user
  - Import bcpii-authorization certificate used to validate JWT signature to HMC
  - Associate the certificate(s) with a BCPii to HMC user mapping
- The *Authorize BCPii Access* sub-task can be launched from *Customize Console Services*





# SOD for BCPii v1/SNMP Deprecation

- z17 addresses BCPii v2 limitation on Asynchronous Notifications
- There will be no further feature enhancements in BCPii v1
  - Nor for the HMC/SE SNMP automation interface
- All future feature enhancements will only be for HMC/SE WS APIs & BCPii v2
- Above Translation: BCPii v1 & SNMP are being deprecated
  - BCPii v1 & SNMP are available or allowed; would recommend developing migration plan once a client has a z17 CPC
  - From Google:
    - A functionality that is deprecated is likely to be removed in the future, hence it is not advisable to use it.
    - Deprecated functional items are usually replaced or updated with newer versions.
  - IBM has no roadmap target to remove BCPii v1 (yet)
    - IBM also has no timeline to remove HMC/SE SNMP support (yet)



# IBM z17 Redbooks and other interesting links

April 8<sup>th</sup>, 2025 – New and Updated Redbooks

- [IBM z17 Technical Introduction, SG24-8580](#)
- [IBM z17 Technical Guide, SG24-8579](#)
- [IBM z17 Connectivity Handbook, SG24-5444-22](#)

April 8<sup>th</sup>, 2025 – Updated Redpaper

- [IBM Z Functional Matrix, REDP-5157-08](#)

Jun 18<sup>th</sup>, 2025 – New and updated Redbook materials:

- [IBM z17 Configuration Setup, SG24-8581](#)
- [IBM Z Time Synchronization Implementation Guide, SG24-8480-02](#)

IBM z17 other interesting links

- [IBM z17 interactive 3D Demo](#)
- [THIS is how IBM makes servers That cannot fail](#)





# Technology outlook for IBM Z

2019

2035

- Performance
- Capacity
- Data privacy & protection
- Resiliency
- Dedicated workload accelerators
- Sustainability
- Stack optimization
- Simplification



**IBM z15**

14nm

Accelerated  
Compression

Accelerated Sort  
Secure Execution

System Recovery  
Boost



**IBM z16**

7nm

Accelerated  
AI

Quantum-Safe  
System

Secure Boot

Memory Encryption  
Flexible Capacity for  
Cyber Resiliency



**IBM z17**

5nm

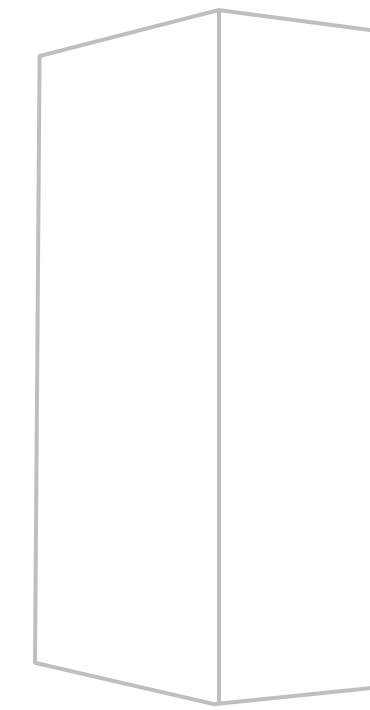
IBM Spyre  
Accelerator

Multi-model,  
agentic, & gen AI

Accelerated I/O

Standardized  
Quantum-Safe  
Algorithms

AI-powered  
security



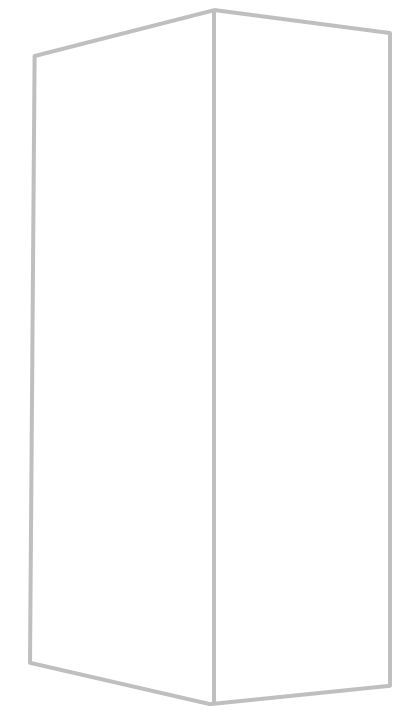
**IBM zNext**

3-2nm



**IBM zNext +1**

?nm



**IBM zNext +2**

?nm



