Parallel Sysplex Update & WSC z/OS Hot Topics

Part1 : Parallel Sysplex Update

Part2 : WSC z/OS Hot Topics

Meral Temel
z/OS Technical Engagement Leader
IBM z Washington Systems Center

Meral.temel@ibm.com

Agenda

- Parallel Sysplex Improvements With IBM z16
  - CF Connectivity (Performance)
    - Enhanced ICA SR Coupling Link Protocol in IBM z16
    - New Coupling Express2 LR Adapter giving more Throughput compared Coupling Express LR (in z15)
  - CF Level 25 - CF Image scalability improvements (Scalability)
  - CF Level 25 - Lock record data and structure full conditions (Resilience)
  - CF Level 25 - Cache residency metrics (Capability)
  - CF Level 25 - Improved IFCC Handling for subset of Cache and Lock Structure Commands (Resilience)
  - CF Level 25 - Only DYNDISP=THIN (Simplification)
- CF Structure Sizing With z/OSMF
- Storage Constraint Relief
  - More use of above the bar storage
  - More sensitive to frame shortages
- Compliance Center Data Support From XES/XCF
- z/OS 3.1 Requirement - SSD Capable Sysplex Couple Datasets

IBM z16 Highlights - z/OS zHW Support

IBM **z16 (3931) Model A01** Functions & Features

One hardware model, Five Features, 1-4 19” Frame System
Up to 85 user partitions, 32 TB per partition, 200 CPUs/zIIPs/IFLs per partition, up to 224 Pus -Up to 16 TB per z/OS LPAR with z/OS V2.5
•2 CP chips on a Dual Chip Module (DCM), 5.4 GHz •L1 Private 128K i & 128K d •L2 n/a •L3 Shared 32 MB / core, 192 MB effective shared •L4 n/a
256 GB HSA, 40 TB maximum, 10 TB per drawer
Channel Subsystem scalability •Up to six (6) Channel Sub Systems (CSSs) •4 Subchannel Sets per CSS
HiperDispatch Enhancements
IBM Z Integrated Accelerator for AI
Hardware Instrumentation Services (CPUMF)
New machine instructions
Crypto Express8S
OSA Express7S 1.2

(z/OS support in blue)

IBM System Recovery Boost
Coupling Express2 LR 10Gb (CX6-DX) PCIe adapter
CF Level 25 •Retry buffers for cache and lock commands •Cache residency time metrics •Scalability improvements •Request latency/performance improvements
ICA-SR 1.1 Max ICA SR per CEC 48 adapters/96ports (same as z15)
Max ICP CHPIDs per CEC – 64
10 GbE and 25 GbE RoCE Express 3 SR and LR (CX6-DX)
FICON Express 32S
zHyperLink® Express1.1 • Maximum 16 Adapters /32 ports
IBM Flexible Capacity for Cyber Resilience
Validated Boot

- ***Industry First AI-Onchip***
- ***Hybrid Cloud***
- ***Industry First Quantum Safe Ready Platform***

Parallel Sysplex Improvements With IBM z16

- CF Connectivity (Performance)
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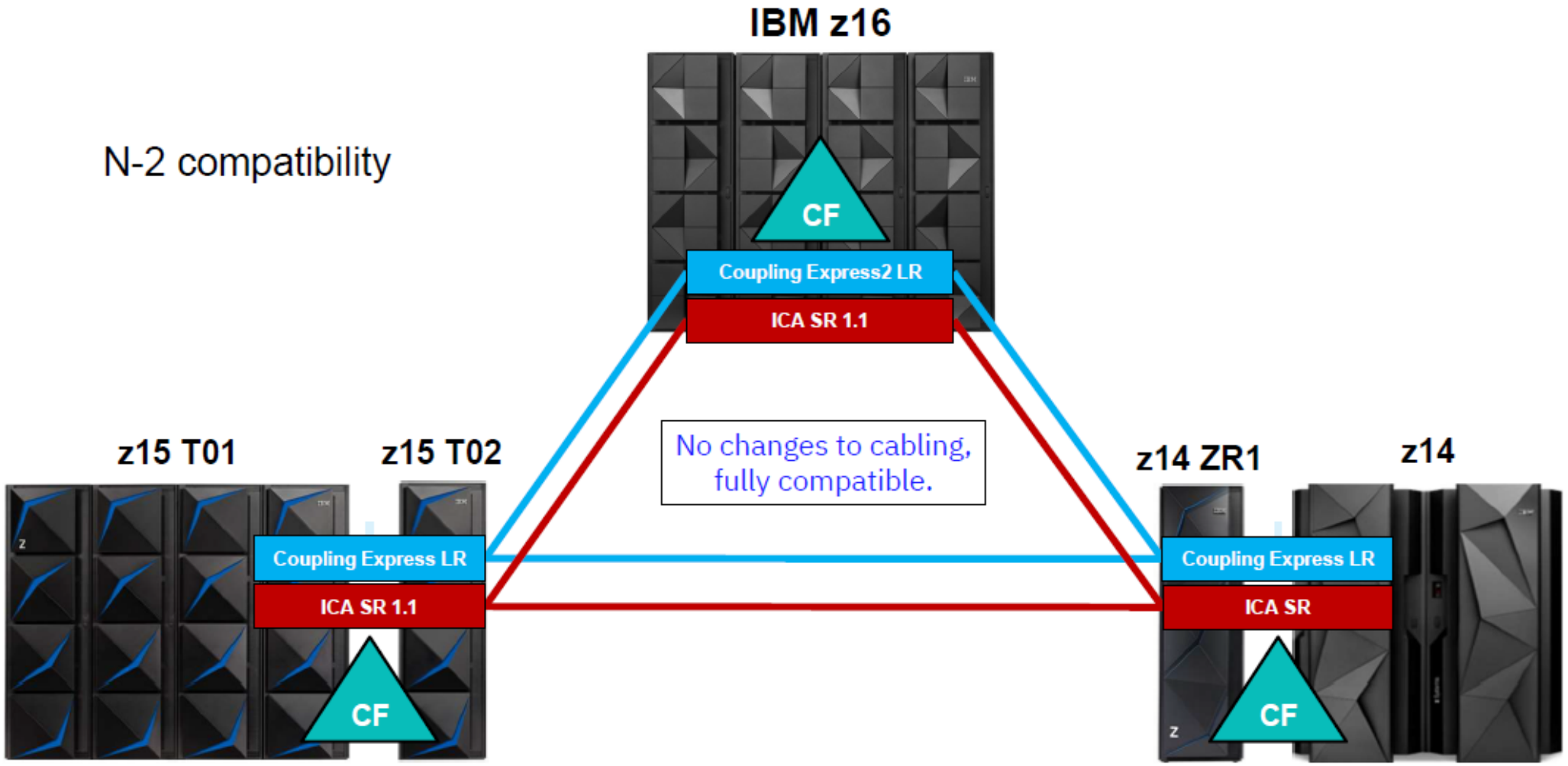
IBM z16 Coupling Connectivity



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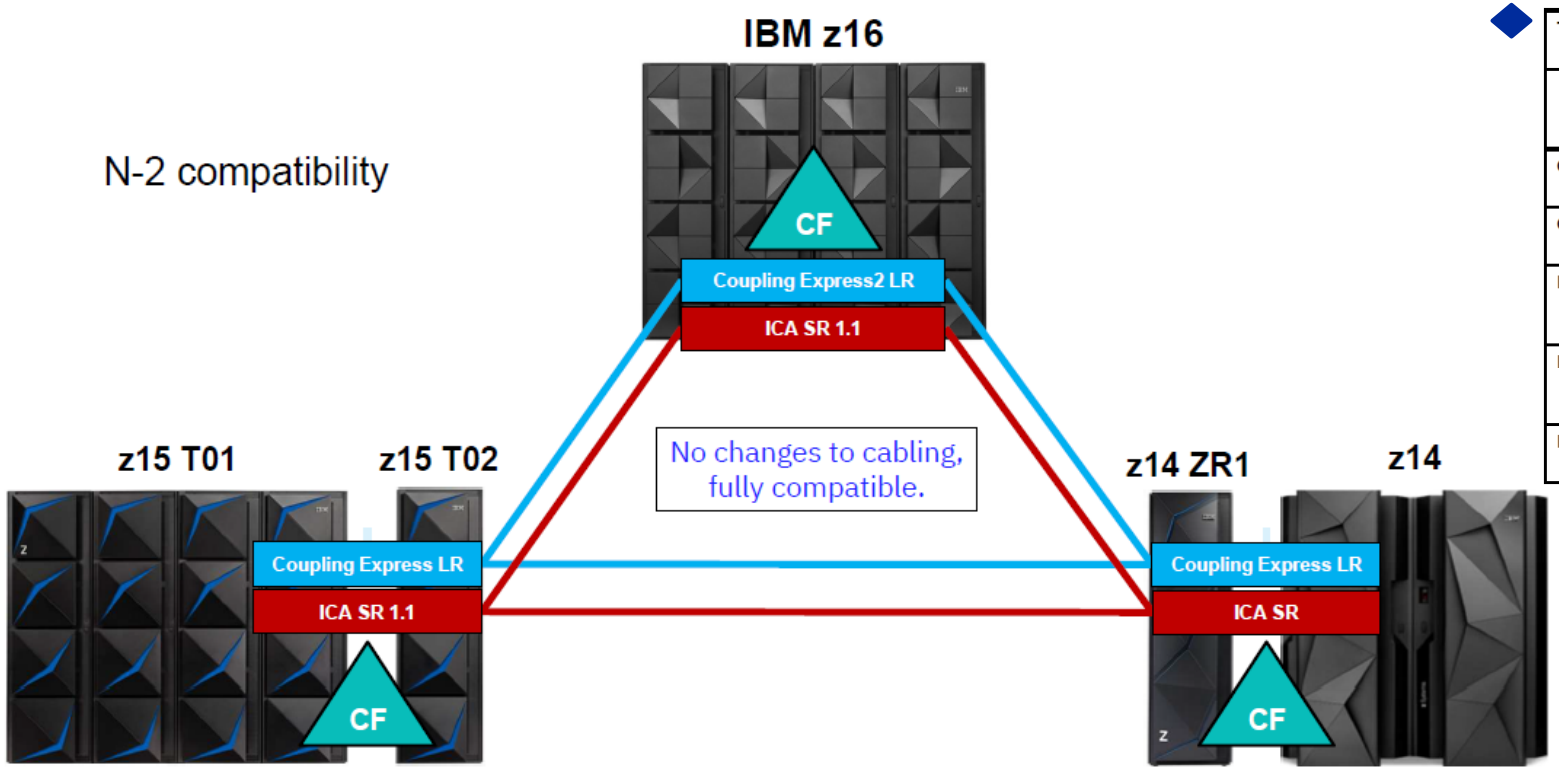

Type	Description	Feature Code	Link rate	Max unrepeated distance	Maximum number of supported links			
					IBM z16	IBM z15	IBM z14 ZR1	IBM z14 M0x
CE2 LR	Coupling Express2 LR	0434	10 Gbps	10 km (6.2 miles)	64	N/A	N/A	N/A
CE LR	Coupling Express LR	0433	10 Gbps	10 km (6.2 miles)	N/A	64	32	64
ICA SR1.1	Integrated Coupling Adapter	0176	8 GBps	150 meters (492 feet)	96	96	N/A	N/A
ICA SR	Integrated Coupling Adapter	0172	8 GBps	150 meters (492 feet)	96	96	16	80
IC	Internal Coupling	N/A	Internal speeds	N/A	64	64	32	32

- Table shows the limits for the z15 and z16 high-end machines. Some of these limits (64 CE LR and 96 ICA SR) are less on the z15/z16 midrange machines

The IBM ICA SR (FC 0172) is a two-port fan-out feature that is used for short distance coupling connectivity and uses channel type CS5. For IBM z16, the new build feature is ICA SR1.1 (FC 0176).

The ICA SR (FC 0172) and ICA SR1.1 (FC 0176) use PCIe Gen3 technology, with x16 lanes that are bifurcated into x8 lanes for coupling.

Both cards are designed to drive distances up to 150 meters (492 feet) with a link data rate of 8 GBps. ICA SR supports up to four channel-path identifiers (CHPIDs). A maximum four CHPIDs per port can be defined (No Change)

IBM z16 Coupling Connectivity

Description	Feature Code	New Build / Carry Forward	Ports	Maximum Feature Quantity
Integrated Coupling Adapter Short Reach (ICA SR)	0172	Carry Forward	2	48
Integrated Coupling Adapter Short Reach 1.1 (ICA SR1.1)	**0176**	**New Build** / Carry Forward	**2**	**48**
Coupling Express2 LR	**0434**	**New Build**	**2**	**32**

Coupling Express LR cannot be carried forward to IBM z16 machines

ICA SR (Resides in CPC Drawer)

Coupling Express2 LR (Resides in card slot of the PCIe I/O)

Fan-out feature	Feature Code	Use	Cable type	Connector type	Maximum distance	Link data rate[a]
PCIe+ Gen3 fan-out	0175	PCIe I/O drawer conn.	Copper	N/A	4 m (13.1 ft.)	16 GBps
ICA SR	0172	Coupling link	OM4	MTP	150 m (492 ft.)	8 Gbps
			OM3	MTP	100 m (328 ft.)	8 Gbps
ICA SR1.1	0176	Coupling link	OM4	MTP	150 m (492 ft.)	8 Gbps
			OM3	MTP	100 m (328 ft.)	8 Gbps

a. The link data rates do not represent the performance of the link. The performance depends on many factors, including latency through the adapters, cable lengths, and the type of workload.

The ICA SR (FC 0172) was introduced with the IBM z13. ICA SR1.1 (FC 0176) was introduced with IBM z15.

ICA SR and ICA SR1.1 are two-port, short-distance coupling features that allow the supported IBM Z to connect to each other. ICA SR and ICA SR1.1 use coupling channel type: CS5.

The ICA SR uses PCIe Gen3 technology, with x16 lanes that are bifurcated into x8 lanes for coupling.
The ICA SR1.1 uses PCIe Gen4 technology, with x16 lanes that are bifurcated into x8 lanes for coupling.

Unlike the ICA SR link that resides in the CPC drawer, the CE LR adapter resides in the card slot of the PCIe+ I/O drawer.

IBM z16 Coupling Connectivity

The maximum number of combined external coupling links (active CE LR, ICA SR links) is 160 per IBM z16 A01 system.
IBM z16 systems support up to 384 coupling CHPIDs per CPC.

Type	Description	Feature Code	Link rate	Max unrepeated distance	Maximum number of supported links			
					IBM z16	IBM z15	IBM z14 ZR1	IBM z14 M0x
CE2 LR	Coupling Express2 LR	0434	10 Gbps	10 km (6.2 miles)	64	N/A	N/A	N/A
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NEW with z16

Enhanced ICA SR **Protocol**
NEW with z16

CE LR does not carry forward to z16

IBM z16 internal coupling links (Link type ICP)

- 7 primary send buffers/channel (Same as z15)
- Max 64 ICP CHPIDs / CEC

- Table shows the limits for the z15 and z16 high-end machines. Some of these limits are less on the z15/z16 midrange machines.

IBM z16 Enhanced ICA SR Coupling Links

On IBM z16, the enhanced ICA-SR couplink link protocol provides

- Up to 10% improvement for read requests and lock requests
- Up to 25% for write requests and duplexing write requests

compared to CF service times on IBM z15 systems.

The improved CF service times for CF requests can translate into better Parallel Sysplex coupling efficiency and therefore, may reduce Software costs for the attached z/OS images in the Parallel Sysplex

Disclaimer
Measurements were done with an IBM internal workload generating a representative mix of coupling facility requests on an IBM z16 running. Two z/OS partitions with 16 GCPs on each partition and CF image(s) with 4 ICFs each running at about 30% utilization. Measured with shared ICA-SR links. The amount of improvement will vary based on workload and configuration .

ICA-SR Synchronous Response Time

Request Type	Read/Write Ratio	z15 Response Time	z16 Response Time	Delta %
		z15 - X1182TEA	z16 - X2057AG1-3	
4K Cache	10/90	12.4	9.0	-28%
4K Cache	80/20	8.6	7.4	-14%
32K Cache	80/20	14.6	12.1	-17%
List	0/100	10.5	5.7	-46%
	20/80	9.0	5.8	-36%
	5/95	12.5	6.9	-45%
Lock		5.9	4.5	-24%

ICA-SR Duplexing Response Time

Runid	Program	Duplexed Writes
X2046TG1	z15	54.1
X2062AGD-F	z16	35.5
Delta		-34%

Parallel Sysplex Performance Benchmark Values (IBM Performance POK)

Typical Coupling Synchronous Service Time (microseconds)		
Link Type	**Lock**	**List or cache**
IC	3-8	5-10
CS5	5-10	6-15
CL5	15-18	18-30

Notes:

1. Service Time may vary based on distance and utilization
2. Typical Async Service Time 20 - 50 usecs

→ Service Time may vary based on distance and utilization

IBM z16 ICA SR Latency Improvements

- Shorter CF service times
- Better coupling efficiency
- Less coupling overhead

which gives you

- Reduced z/OS CPU consumption
  - Potential cost savings in Parallel Sysplex environments
- Faster batch/transactional workload execution for data sharing workloads
- Sysplex enablement of applications and workloads may be more palatable
  - If “increased cost due to coupling” was an impediment

IBM z16 - ICA SR Protocol Improvements – Reduced Coupling Overhead

ICA SR coupling link protocol efficiency improvements → Shorter service times reduce coupling overhead

Coupling Technology versus Host Processor Speed

Host effect with primary application involved in data sharing
Chart is based on 9 CF ops/Mi – may be scaled linearly for other rates

CF\Host	z14 ZR1	z14	z15 T02	z15	z16
z14 ZR1 CL5	18%	18%	18%	18%	18%
z14 ZR1 CS5	11%	11%	12%	12%	12%
z14 CL5	18%	18%	18%	18%	18%
z14 CS5	11%	11%	12%	12%	12%
z15 T02 CL5	18%	18%	18%	18%	18%
z15 T02 CS5	11%	11%	12%	12%	12%
z15 CL5	18%	18%	18%	18%	18%
z15 CS5	11%	11%	11%	11%	12%
z16 CL5	18%	18%	18%	18%	18%
z16 CS5	10%	10%	11%	11%	10%

IC links scale with the speed of the host technology and would provide an 8 to 10% effect in each case

IBM z16 Coupling Express2 Long Reach Improvements (New Adapter)

Coupling Express2 Long Reach improvements

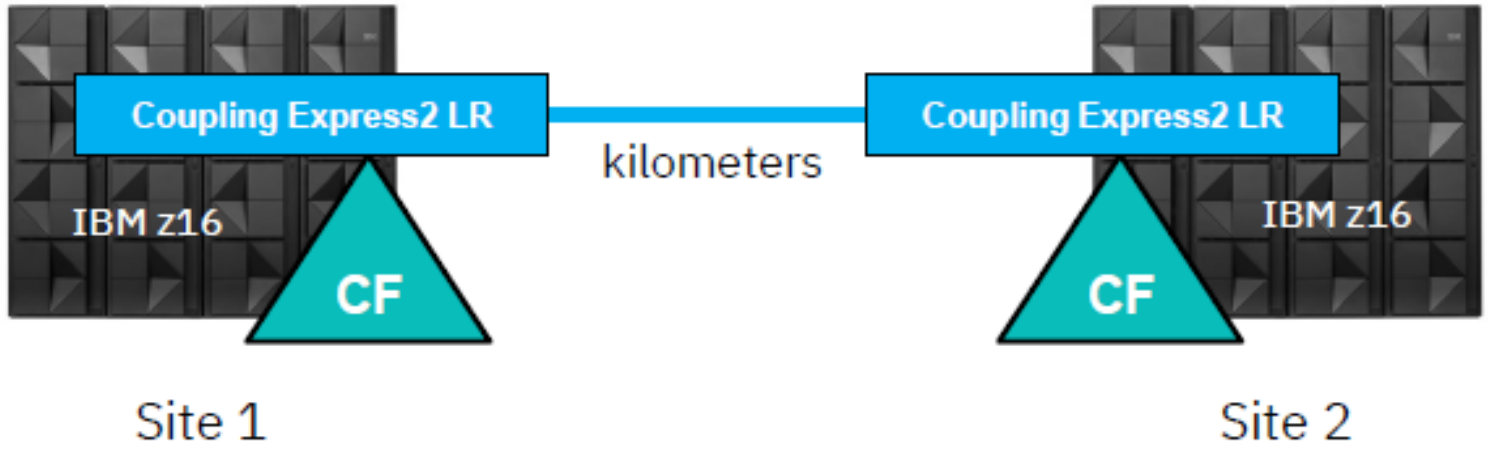
NEW with z16

Provides greater **throughput** at distance

- Note: throughput, not latency (speed of light has not changed)
- Attractive to those with a stretched, multi-site sysplex at metro distances

Distances up to 100 kilometers (62 miles)
10 km (6.2 miles) without DWDM extenders
100 km (62 miles) with certified DWDM equipment

(Same as in z15)



IBM z16 Coupling Connectivity

ICA SR coupling link protocol efficiency improvements - > Reduced Service Time
Coupling Express2 LR coupling links – > More throughput

ICA SR **Protocol Efficiency Improvements** NEW with z16

IBM Integrated Coupling Adapter CA SR 1.1 (ICA SR 1.1)

reduced service time

- Short range links
  - Up to 150 meters
- Link type:CS5 (2 ports)
- PCIe gen3 x8 (up to 8 Gb/second)
- 8 primary send buffers/channel
- 4 channels/port
- Max 48 adapters (96 ports)

New Coupling Express LR Adapter with **more throughput** NEW with z16

Coupling Express2 LR (CE LR)

more throughput

- Long range links
  - Up to 10 km unrepeated
  - Up to 100 km with qualified DWDM
- Link type: CL5 (2 ports)
- 10Gb Ethernet (1x)
- 32 primary send buffers/channel
  - Can use 8 at shorter distances
- 4 channels/port
- Max 32 adapters (64 ports)

Maximum of 384 coupling CHPIDs (of all types) per CEC

Parallel Sysplex Improvements With IBM z16

CF LEVEL 25 :

CF Image scalability improvements
Performance & Scalability improvements Through Dispatcher Changes

CFCC Level 25 is delivered on IBM z16 servers with driver level 51

z16 - CF LEVEL 25 – CF Image Processor Scalability Improvements

Coupling Facility Processor scalability

CF work management and **dispatcher changed** to improve efficiency as processors are added to scale up the capacity of a CF image.

CF images support up to 16 processors. Previously, to obtain sufficient CF capacity, customers might needed to split the CF workload across more CF images. However, this change brings more configuration complexity and granularity (more, smaller CF images, more coupling links, and logical CHPIDs to define and manage for connectivity, and so on).

To improve CF processor scaling for the customer's CF images and to make effective use of more processors as the sysplex workload increases, CF work management and dispatcher provide the following improvements IBM z16:

- IBM z16 provides improved CF processor scalability for CF images.
- Increased number of CF tasks

z16 - CF LEVEL 25 – CF Image Processor Scalability Improvements – More details

It was not about only changing the number of processors.

For z16, the CFCC code **underwent a major refactoring to provide better processor scaling beyond "a chip's worth" of CF image processors**:

- Formation of small 2- or 3- processor **"affinity groups"** of CF processors within the CF image
- Built-in topology understanding of LPAR mapping of CF processors to chips/DCMs in the CEC
- Affinization of incoming work from coupling link buffers to affinity groups
- Dynamic management of mappings of processors and coupling link buffers to affinity groups (as they come and go dynamically)
- **New CF command/task dispatching algorithm** to preserve processing and cache locality within affinity groups, including task-related heaps, stacks, and other data structures
- Change from **112→224 CF tasks**, to scale the maximum amount of work the CF image can process concurrently, to help avoid task monopolization and CF duplexing task constraints

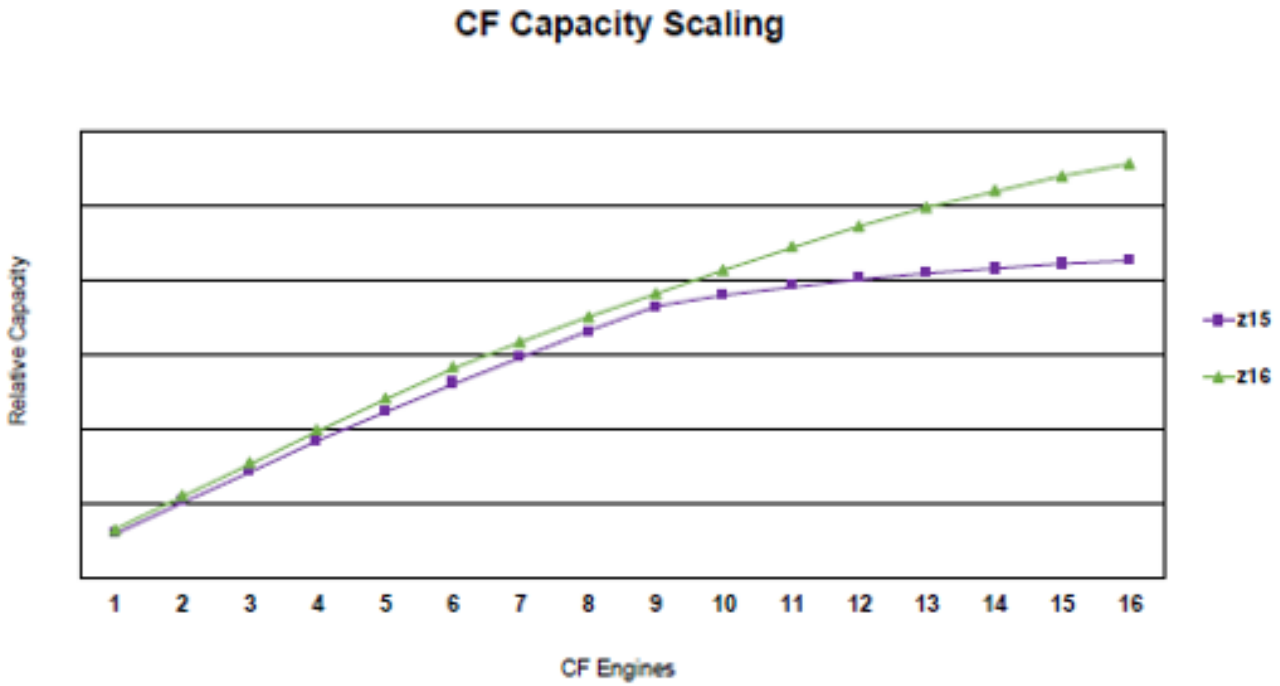
Customizations in link hardware

- Target message arrival initiatives to specific CF memory areas to preserve locality
- Event summary indications into CF memory to improve CF polling efficiencies
- Only get the attention of the specific CF processors in the desired affinity group to process new work!

Result: Better internal CF scaling (vertical scaling) provides **more effective CF throughput** and **capacity** per CF image, minimizing the number of CF images to manage and connect

z16 - CF LEVEL 25 – CF Image Processor Scalability Improvements

- IBM z16 provides improved CF processor scalability for CF images compared to IBM z15
- Compared to IBM z15, the relative scaling of a CF image beyond a 9-way is significantly improved; meaning that the effective capacity of IBM z16 CF images continues to increase meaningfully all the way up to the maximum of 16 processors in a CF image.
- Processing and dispatching enhancements that result in meaningful scaling of effective throughput up to the limit of 16 ICF processors.



Disclaimer
Measurements were done with an IBM internal workload generating a representative mix of coupling facility requests
on an IBM z16 running. Two z/OS partitions with 16 GCPs on each partition and CF image with a range of 1 to 16 ICFs running at about 30% utilization. Measured with shared ICA-SR links. The points on the curve are a combination of measurements and interpolations. The amount of improvement will vary based on workload and configuration.

IBM z16 CF Level 25 : New lock record data reserved entries for structure full recovery (Resilience)

IBM z16 CF LEVEL 25: New lock record data reserved entries for structure full recovery (Resilience)

Some lock structure users use “special” lock structure locks to serialize their own processing, such as management of open data sets and table space interest across the sysplex.

Not all locks have anything to do with serialization of database updates or user database data or transactions.

When lock structures use up all of the modify lock “record data entries” that track held locks, users might need to perform special back-out or recovery processing to recover from this structure full condition.

At times, that processing requires them to obtain more “special” lock structure locks, which are needed to perform the recovery that can lead to a paradoxical situation:

They must use more “record data entries” to recover from being out of record data entries.

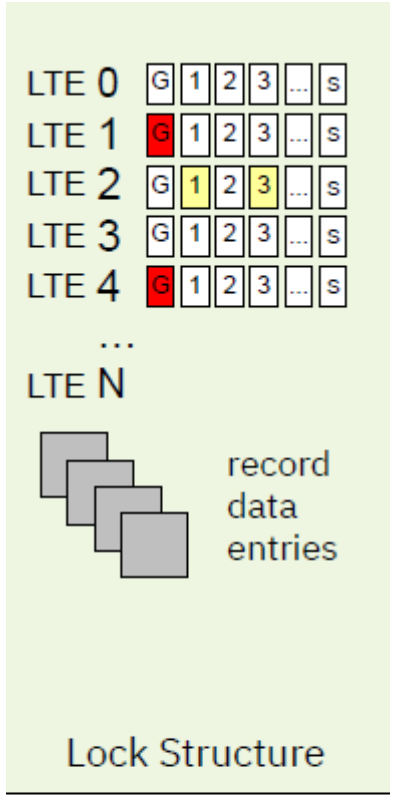
Let’s look deeper into this…

Lock record data and structure full conditions

Lock structures and “record data”

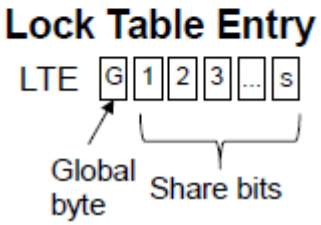
Exploiters can optionally use record data
- Structure then has space for the lock table and …
- Data entries that contain the “record data”

Record data usage is up to the exploiter.
- Information about held locks, or
- Recovery information, or
- Other management information, and maybe more



Motivating failure scenario (VSAM/RLS)

1. An attempt to create/update a record data entry fails due to “structure full”
2. Exploiter initiates recovery/backout procedures to deal with the failure
3. Which in turn, need to create/update record data
4. Which also fail due to “structure full”
5. Manual intervention required to recover (so, an elongated outage)



IBM z16 CF LEVEL 25: New lock record data reserved entries for structure full recovery (Resilience)

CFCC level 25 on IBM z16 is providing improved use support for handling of lock structure “record data full” conditions by:

Thresholding record data structure full conditions to occur when less than 100% full, reserving a special “for emergency use only” pool of record data entries for critical recovery purposes (user-specified threshold)

Providing new APIs that allow exploiters to make use of this new reserved pool only when needed for recovery actions, but not for normal database locking purposes

z/OS APAR OA60650 and VSAM RLS APAR OA62059 are required in z/OS V2R3, V2R4 and V2R5 . z/OS 3.1 has this in base code.

Exploiters can now reserve “record data” entries

The exploiter can require the number of unused record data entries to exceed a given percentage of in-use entries

Conceptually, a floating number of free entries are reserved* for use by “recovery” requests

In effect, a “normal” request can be failed with a pseudo-full condition before the structure becomes truly full

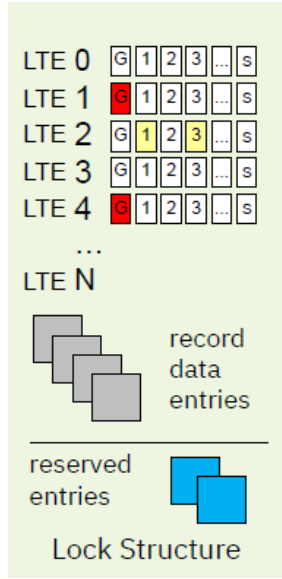
When creating/updating record data, the exploiter indicates whether the CF may use a reserved entry

A “normal” request is rejected if it would leave too few free entries

A “recovery” request can use any free entry

– Structure full rejects are still possible. The exploiter must ensure that the recovery protocol is appropriate for the chosen percentage value.

VSAM/RLS exploits this capability. Others may do so as they see fit



Technically, nothing is reserved. The CF simply makes sure a “normal” request leaves enough free entries to meet the required percentage.

CF Level 25 - Cache residency metrics

IBM z16 CF Level 25 - Cache residency metrics

Introduction to Cache Structure Management

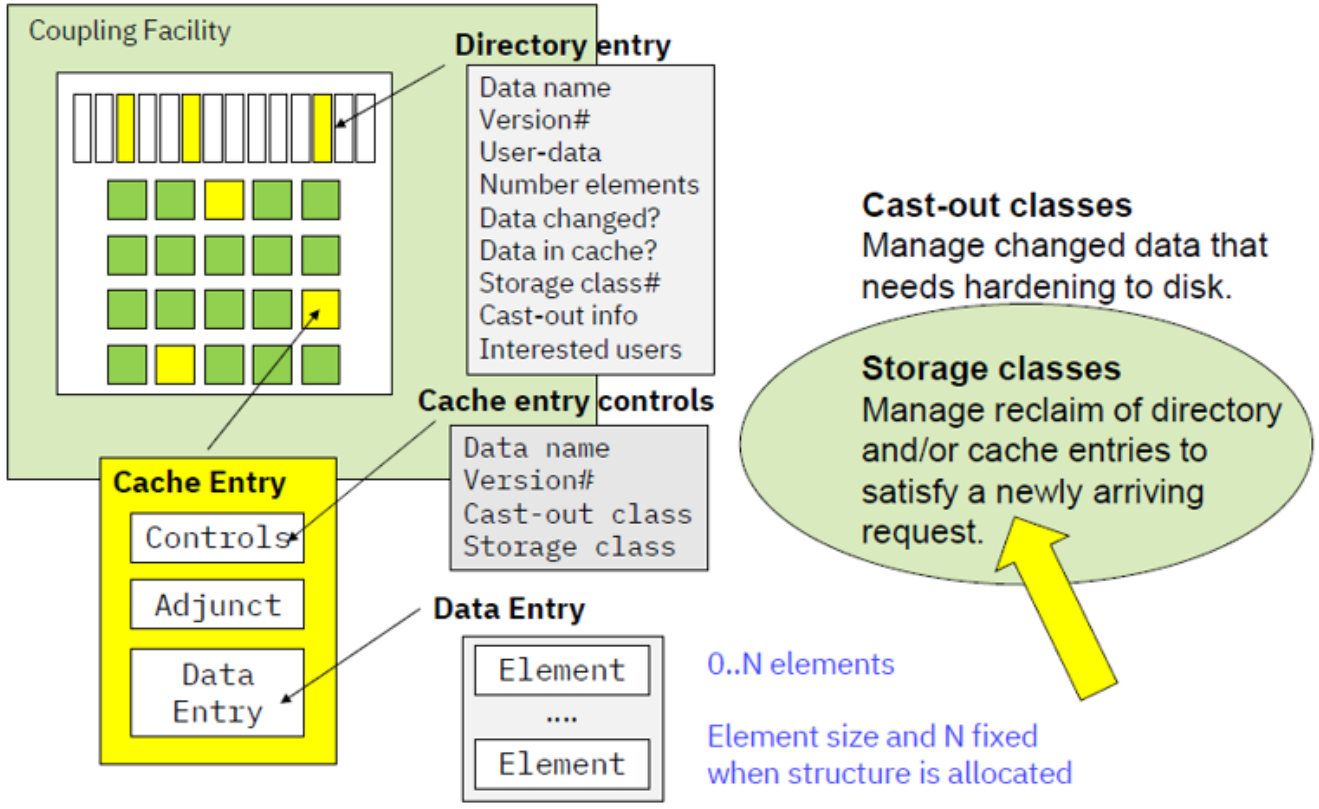
- Cache structures are typically very full（Is needed, maximize amount of data in the cache)
- New data needs to push existing data out of the cache
- If the cache is full, existing entries need to be **reclaimed** to make room.

- A reclaim algorithm is used to determine which one to reclaim

- The exploiter can also use following to manage reclaimation
  - storage classes
  - a reclaim vector

- Cache effectiveness is determined by hit ratio

- Bad reclaim choices could impact the effectiveness of the cache



*Depending structure attributes some objects and controls are not applicable

IBM z16 CF Level 25 - Cache residency metrics

Introduction to Cache Structure Management

Reclaim

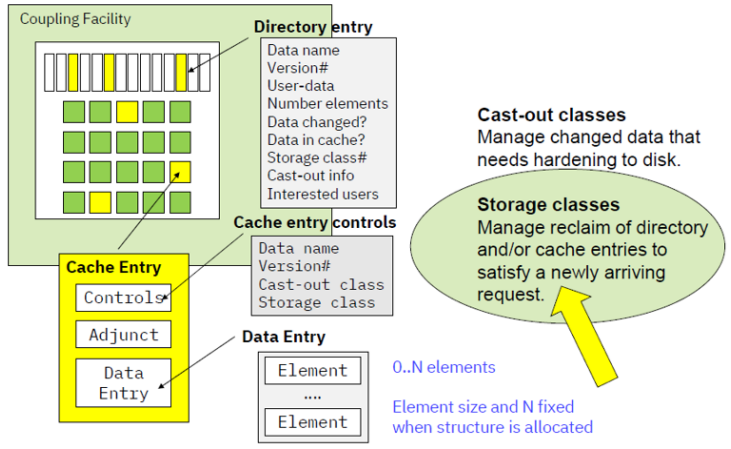
- The management of resources in the cache structure.
- When a user writes a data item to the cache structure and a resource like a directory entry or data entry is unavailable, the system attempts to **reclaim** an existing directory entry or data entry to satisfy the request.
- Not all resources are available for reclaim. For example, a data entry containing changed data cannot be reclaimed.
- Reclaim is implemented through the association of data items with **storage classes**.
- Users can define a reclaim vector and use IXLCACHE to control reclaim processing. Otherwise, a system default for reclaim is in effect.

Storage class

Class assigned to a data item in the cache structure used in the reclaim process.

Each data item defined to the cache structure (either through a directory-only cache structure or a cache structure that contains both directory entries and data entries) must be assigned to a **storage class**.

Storage class assignments simplify the **reclamation** of resources by grouping together data items with similar characteristics.



IBM z16 CF Level 25 - Cache residency metrics

New cache residency time metrics for directory/data entries are available

- The metrics show **how long data entries or directory entries remain resident in the cache structure** from the time they are created until the time they are eventually “reclaimed” out of existence.
- They **provide moving weighted average directory entry and data area residency times**, in microseconds.
- They allow monitoring of effects of cache-unfriendly batch processes, such as image copy, reorganization, and update-intensive workloads.
- Reclaims from all causes are included in the creation of directory entries or data areas, “structure alter” contractions or reapportionments, incidental reclaims of data areas that are caused by reclaim of a directory entry, and so on.
- Residency times are accounted for only at the time of reclaim (not while the cache objects are still in use).
- Specific deletions of these objects do not factor into the residency time metrics.
- These metrics were implemented as new fields within the CF Storage Class controls:
  - They are retrieved by using the IXLCACHE READ_STGSTATS command or IXLMG/IXLYAMDA services that are requesting CF Storage Class controls.
- They are also available in CF structure memory dumps that capture CF Storage Class controls.
- **The metrics are included in Db2 Performance Manager statistics** and used for improved cache structure management (cache sizing, castout processing, reclaim management, and so on). The inclusion of these metrics in sysplex SMF/RMF data is not planned, but can be added later.

These new metrics allow exploiters (such as Db2) to provide direct, useful feedback on the CF cache structure “cache effectiveness”.

IBM z16 CF Level 25 - Cache residency metrics

DB2 usage of the residency metrics

Reporting

- Can better understand the effects of cache-unfriendly batch processes like image copy, database reorgs, update-intensive workloads, etc
- Can improve recommendations for re-targeting work from specific tablespaces or datasets to other cache structures

Improve cache structure management

Structure sizing

Could thrash if the structure is too small

Castout processing

– Hardening changed data frees up cache entries
– Can avoid reclaim processing if the cache is not full

Reclaim management

– Better reclaim processing

Available with Db2 Function Level 100. Requires IBM z16 (CFLEVEL 25) and z/OS 3.1 or with the PTFs for APAR OA60650 for z/OS 2.4 and later , the z/OS support for cache structure object residency time metrics is available.

IBM z16 CF Level 25 - Improved IFCC Handling (Resilience)

New retry buffer support for
subset of Cache and Lock Structure Commands
Improved IFCC handling with CFLEVEL 25

IBM z16 CF Level 25 - Improved IFCC Handling (Resilience)

- New retry buffer support is added for IFCC retry idempotency for subset of cache and lock structure commands

Background
IFCCs are rare but happens

List Structures → Its architecture was always recognized as nonidempotent,
Rather sophisticated retry buffer mechanism was incorporated to allow z/OS to retrieve the results of commands (even after link glitches occurred) so that such glitches always were well recovered.

Cache Structure → Initially, its' architecture was defined to be idempotent (commands can be tried again after link glitches, such as IFCCs); therefore, no specific accommodations were available for retrying, such as retry buffer support.

Over time, new constructs were added to the cache and lock structure architecture that made them become not perfectly retriable (nonidempotent), but retry buffers were not added to the architecture to mitigate the lack of retriability:

- Cache structure serialization objects, such as castout locks and cache entry version numbers
- Performance-optimized lock structure commands with no retry buffer support

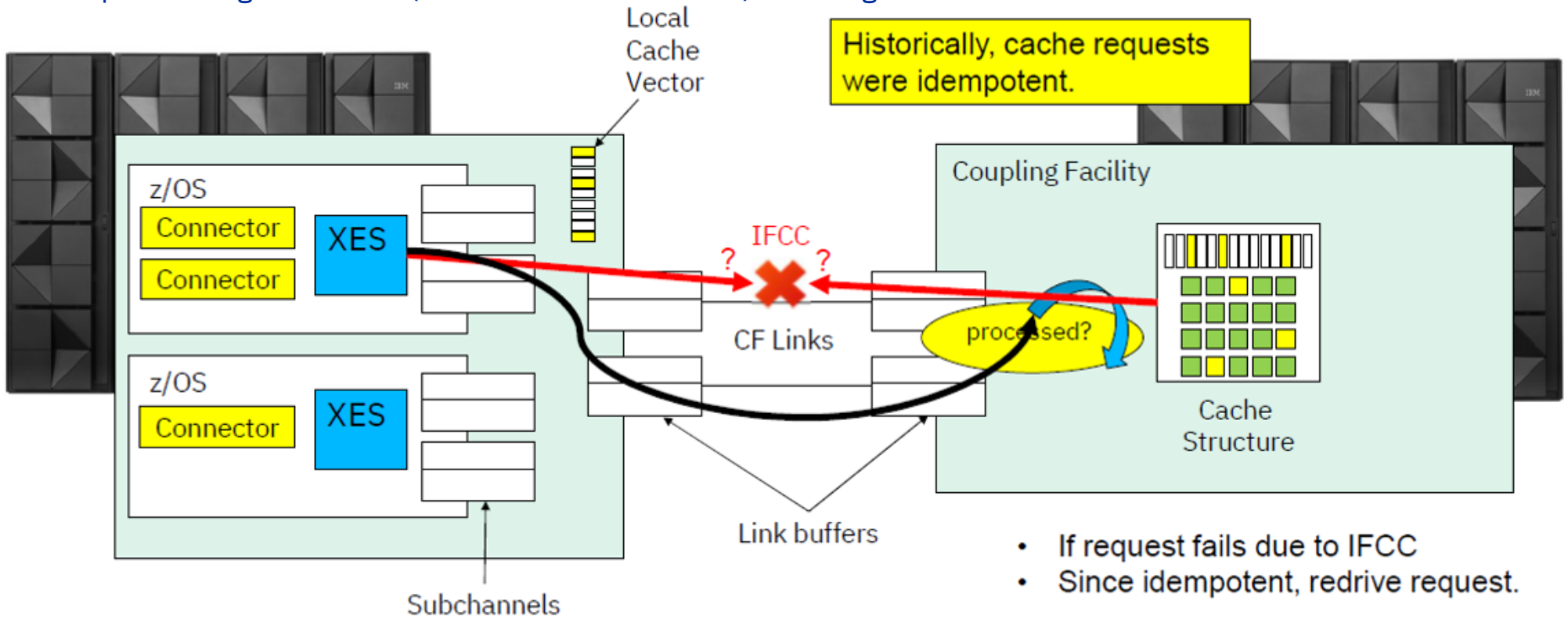
z/OS software provided simple retry logic to provide IFCC recovery for these nonidempotent commands, but inevitably cases existed in which z/OS cannot provide unambiguous command results to callers. Users might not handle this ambiguity well.

CF cache users who use of these nonidempotent constructs experienced occasional customer problems based on it.

The only approach that cleanly and completely addresses the issue is
To provide retry buffers for the small subset of cache and lock commands that manipulate objects in a nonidempotent way, along with the accompanying transparent z/OS retry buffer use.

IBM z16 CF Level 25 - Cache and Improved IFCC Handling (Resilience)

CF Cache Request Background IFCC (Interface Control Check) Handling



z/OS software continued to provide simple retry logic to provide IFCC recovery for these commands, but there were inevitably cases where z/OS could not provide complete and unambiguous command results to callers following an IFCC

Exploiters may or may not have handled this kind of ambiguity very well

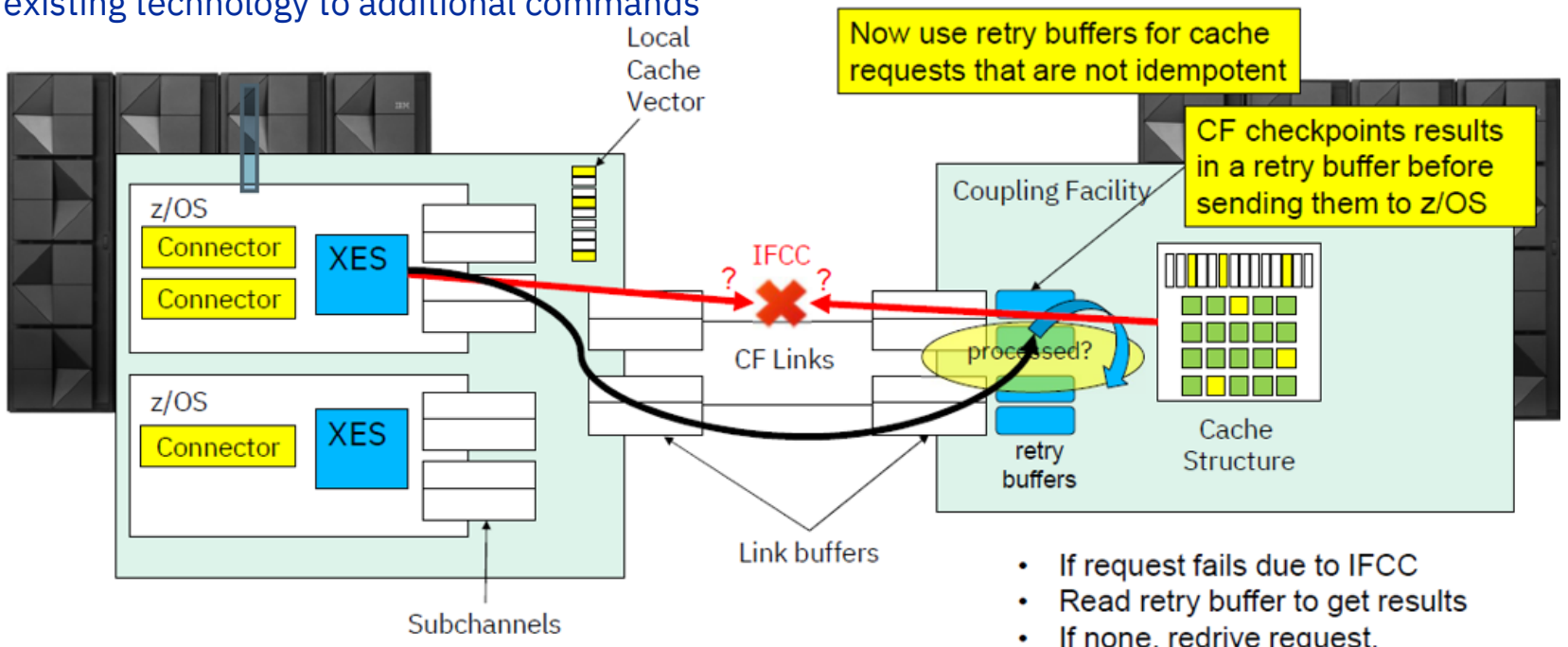
CF cache exploiters who make use of these non-idempotent constructs have experienced occasional customer problems and resiliency issues, based on this ...

IBM z16 CF Level 25 - Cache and Improved IFCC Handling (Resilience)

Improved IFCC Handling With IBM z16 CF LEVEL 25

- For z16, we've implemented an approach that cleanly and completely addresses the issue, which is to provide functional CF retry buffers for the subset of cache and lock commands that manipulate objects in a non-idempotent way

- Use CF retry buffers for the subset of cache commands that manipulate objects in a non- idempotent way
- Extends an existing technology to additional commands



z/OS can transparently provide all the required IFCC recovery support .No exploiter participation needed

Down-level systems can continue to use the "old" software retry support until they are upgraded, while up-level systems that use the same CF structure can take full advantage of the new retry buffers for improved IFCC recovery. APAR OA60275 is required on z/OS V2R2, V2R3, V2R4, and V2R5. z/OS 3.1 has this support in base code.

CF Level 25 - Only DYNDISP=THIN (Simplification)

IBM z16 CF Level 25 – Only DYNDISP=THIN (Simplification)

In previous CFCC Code, CF LEVEL 24 , CFCC Changed Shared-Engine *CF Default* to **DYNDISP=THIN**
Coupling Facility images can run with shared or dedicated processors. Shared processor CFs can operate with different Dynamic Dispatching (DYNDISP) models:

- **DYNDISP=OFF**: LPAR timeslicing controls the CF processor.
- **DYNDISP=ON**: An optimization over pure LPAR timeslicing, in which the CFCC code manages timer interrupts to share processors more efficiently.
- **DYNDISP=THIN**: An interrupt-driven model in which the CF processor is dispatched in response to a set of events that generate Thin Interrupts.

Thin Interrupt support was available since zEC12/zBC12,. It is proven to be efficient and well-performing in numerous different test and customer shared-engine coupling facility configurations

Therefore, IBM z15 made **DYNDISP=THIN** the *default mode* of operation for coupling facility se shared processors.

With IBM z16, CF LEVEL 25 DYNDISP=ON|OFF is deprecated

For CFCC Level 25, DYNDISP=THIN is the only available behavior for shared-engine CF dispatching.

Specifying OFF or ON in CF commands and the CF configuration file is preserved for compatibility, but a warning message is issued to indicate that these options are no longer supported, and that **DYNDISP=THIN behavior is to be used.**

CF Structure Sizing With z/OSMF (z/OS 3.1 New Function)

Resolves a long-standing pain-point

We have talked about this z/OSMF section, sharing here also with details for complete view

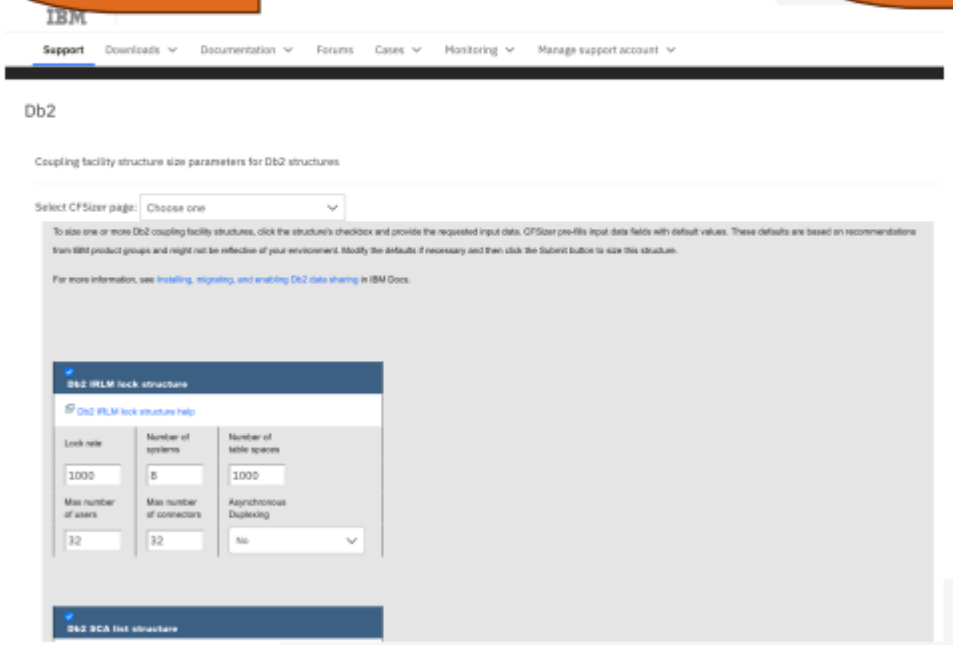
CF Structure Sizing With z/OSMF – Problems in CFSizer Web Application

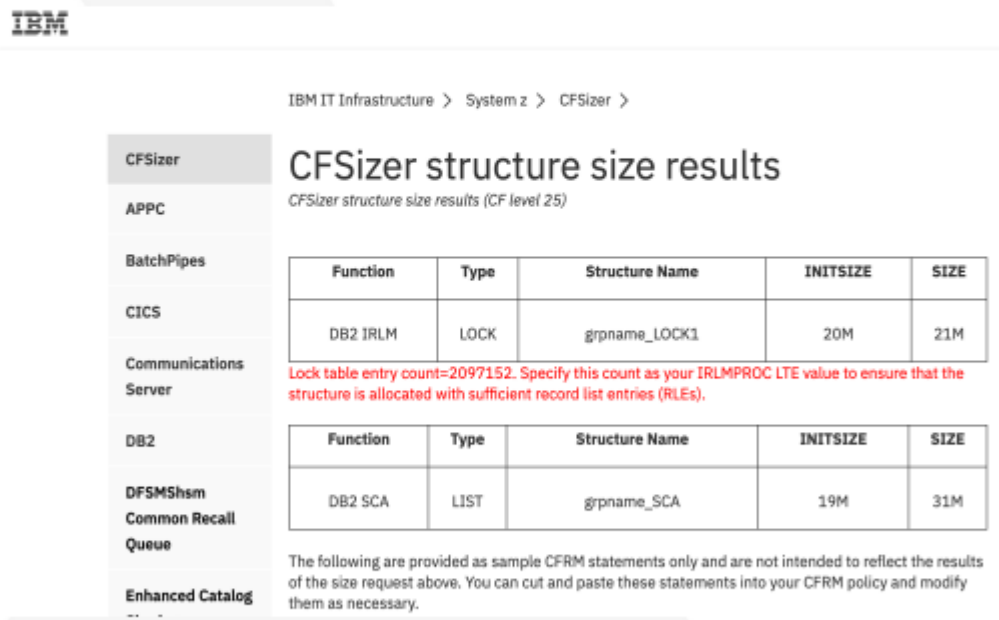
- Support CF Sizing in z/OSMF Sysplex CFRM Policy Editor
  - Problem to be solved – CF Sizer web application

"Tedious"

Manual Steps

Error-Prone





"Inflexible"

"Hard to Use"

No Persistence

CF Structure Sizing With z/OSMF

For Many Years,

CFSizer, web-based application used to size structures for new CF Levels , new or changing workloads, or to validate current size

- It takes application-specific workload description as input which is hard to collect
- There is no way to preserve input specifications
- Sizing performed by CF installed in Poughkeepsie
  - CF Level is not selectable
  - Typically uses the latest available CF Level
  - May not match installation configuration

CF Structure Sizing With z/OSMF – z/OSMF Sysplex Management Plug-in

Prior to 3.1, z/OSMF Sysplex Management plugin provided graphic interface for

- Display sysplex topology and sysplex resources like structures, CDS, etc.
- Modify sysplex resources such as switching primary and alternate CDS, create CDS, rebuild
- structure, reallocate structure, etc.
- Graphic interface with best practice built-in to help with editing CFRM policies

z/OSMF 3.1 and CD provide CFRM policy editor for graphic based CFRM policy editing

- Bulk editing and copy (PH39687) are supported to increase efficiency
- Import CFRM policy from data set, USS file or JCL (PH39687)
- Export CFRM policy from CFRM Policy Editor to data set or USS file (PH39687)
- Modernized Comparison view for policy changes (PH44343)
- Export CFRM policy to CSV file (PH44343)
- **CF Sizing in z/OSMF (z/OS 3.1 new function)**

CF Structure Sizing With z/OSMF

Support CF Sizing in z/OSMF Sysplex CFRM Policy Editor

Goals ⟶ Significant improvement over existing sizing methods (CF Sizer web application)

1. Persistence of user sizing inputs
2. Ability to map sizing inputs to (multiple) specific structures
3. Size multiple structures in a single action (bulk sizing)
4. Minimize manual input
5. Calculating structure sizings using CF levels that you already have or CF Levels that you do not already have

Integrated into the CFRM Policy Editor (z/OSMF Sysplex Management plugin)

Sizing input (and output) tightly coupled to administrative policies

This is intended as a replacement to the CF Sizer Web Application; the Sizer.exe Batch functionality will be addressed in the future

CF Structure Sizing With z/OSMF – What z/OS 3.1 can do in background

Historically, z/OS issued CF requests to compute structure sizes

Requires an accessible CF
Limits the set of available CFLEVELs to whatever happens to be installed

Sizing operations with z/OS 3.1

Can specify desired CFLEVEL

Sizing requests will be computed:

1. By a CF at the requested CFLEVEL, if available
2. Otherwise, z/OS if emulation for that CFLEVEL is available
3. Otherwise, the request fails

z/OS 3.1 can emulate sizing operations

Initially, just CFLEVEL 25 (IBM z16)

CF Structure Sizing With z/OSMF

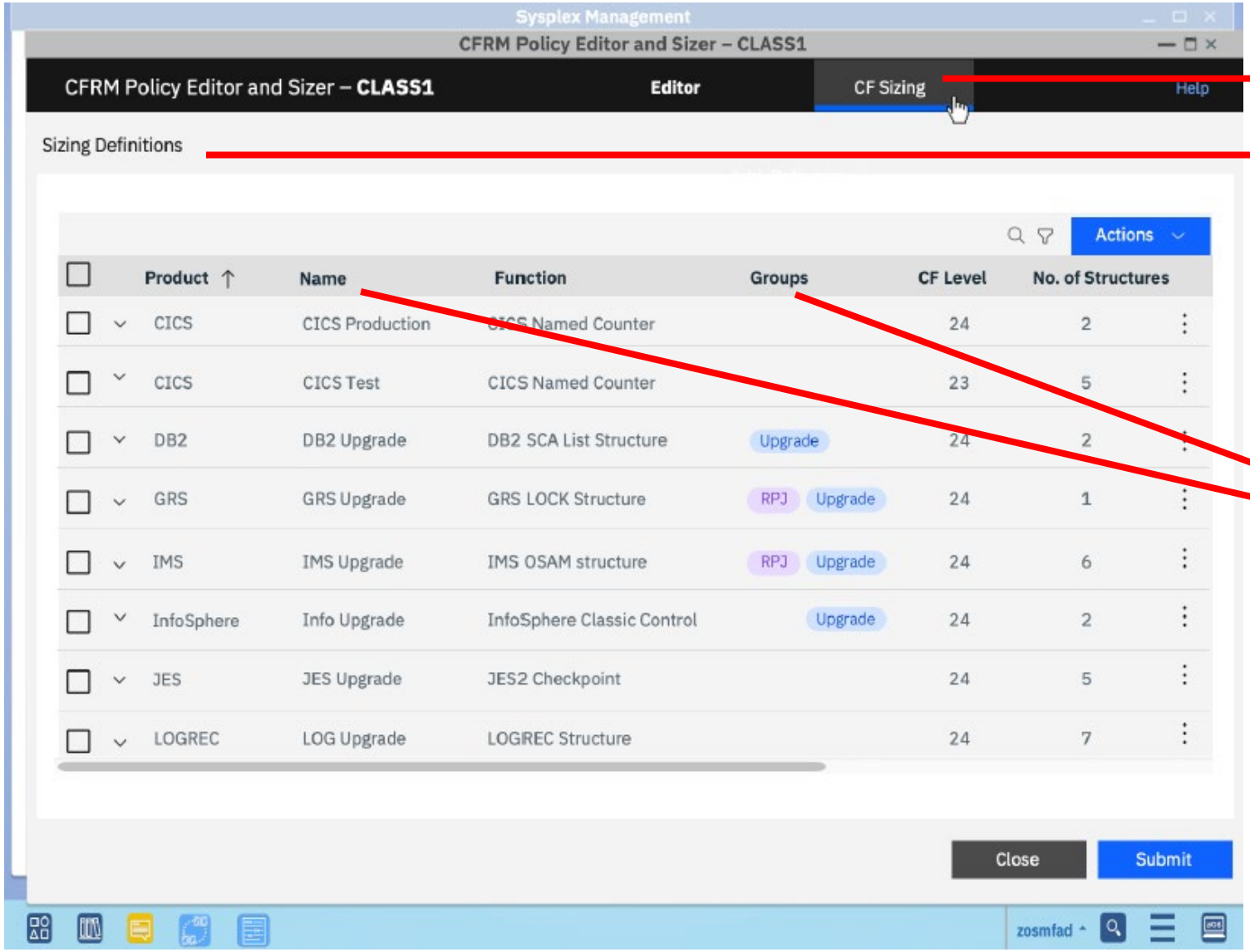
Support CF Sizing in z/OSMF Sysplex CFRM Policy Editor

Implementation – CF Sizing Definition

- New z/OSMF managed object
- Used for persisting user sizing inputs
- Can be applied to multiple structures
- A structure can only be associated with one CF Sizing Definition
- Define once, run sizing multiple times, across multiple structures as needed
- Flexibility (ability to change CF Level)

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor



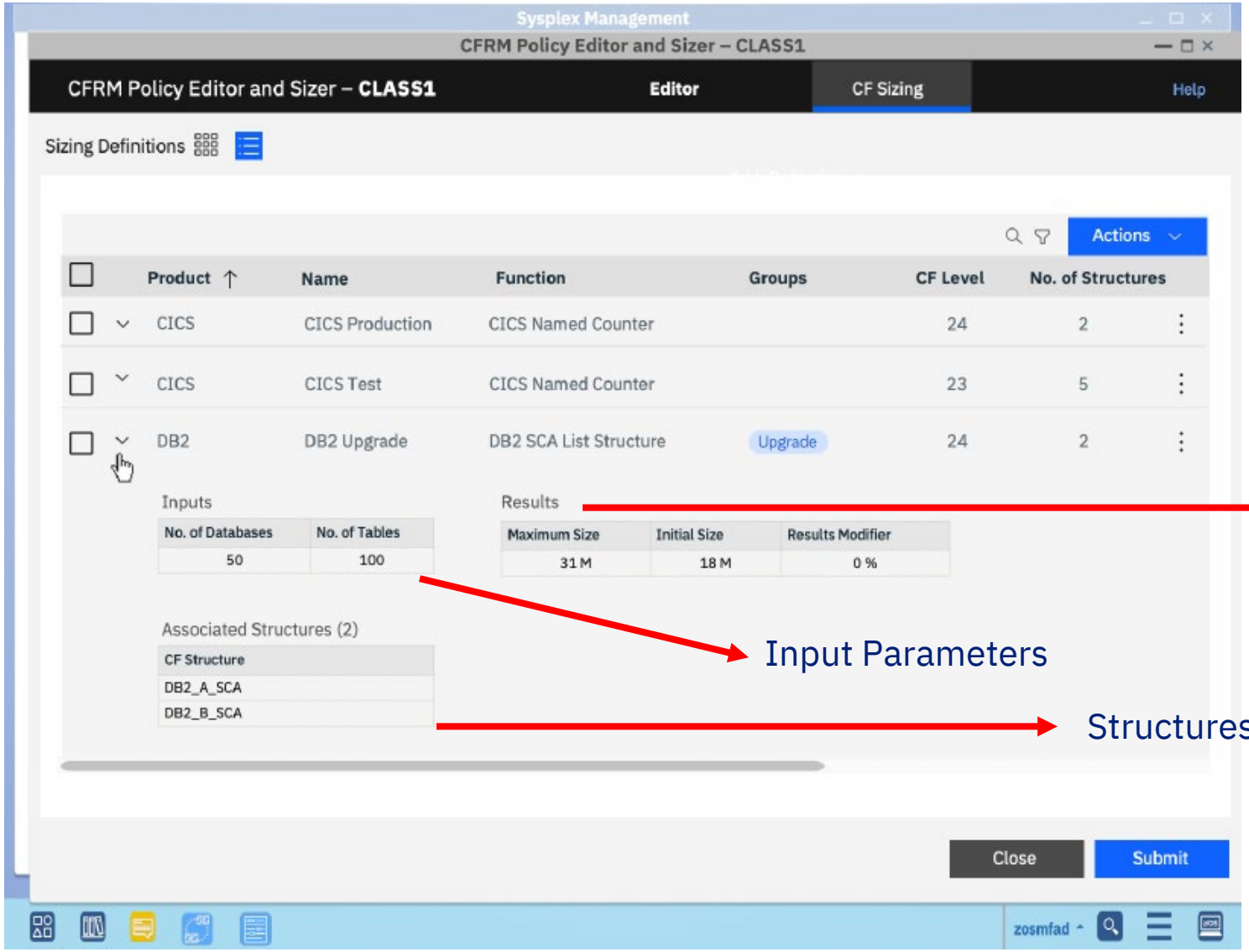
New CF Sizing Tab

Sizing Definitions Table

The Name and Groups fields are used to identify the sizing definition

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor



Expand Sizing Definition Content

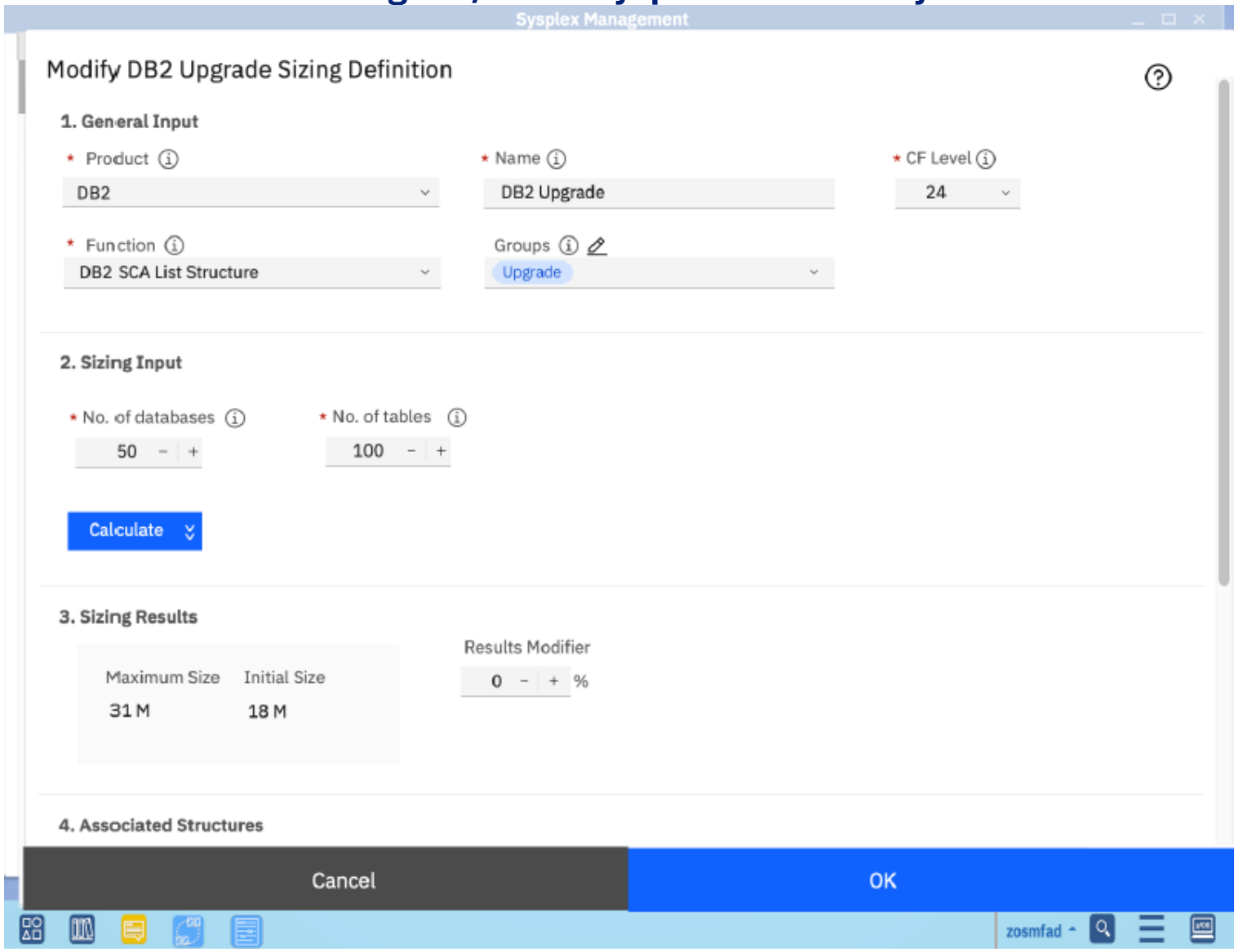
Calculated Results

Input Parameters

Structures that are associated with the definition

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor



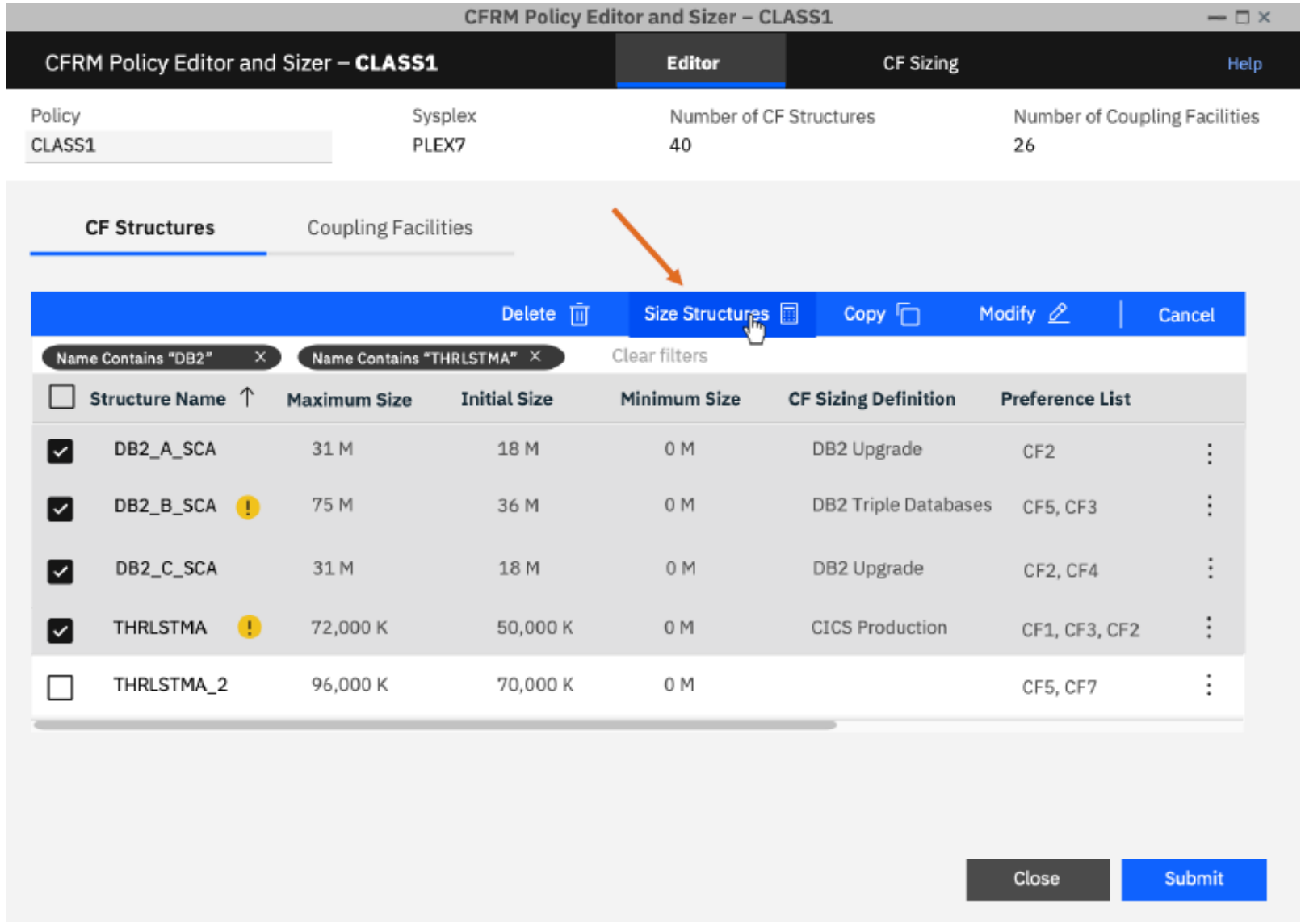
Editing /Adding a Sizing Definition

4 Sections

1. What is being sized(Product, Function)
2. Input Parameters
3. Sizing Results
4. What CF Structures are associated with this sizing definition

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor

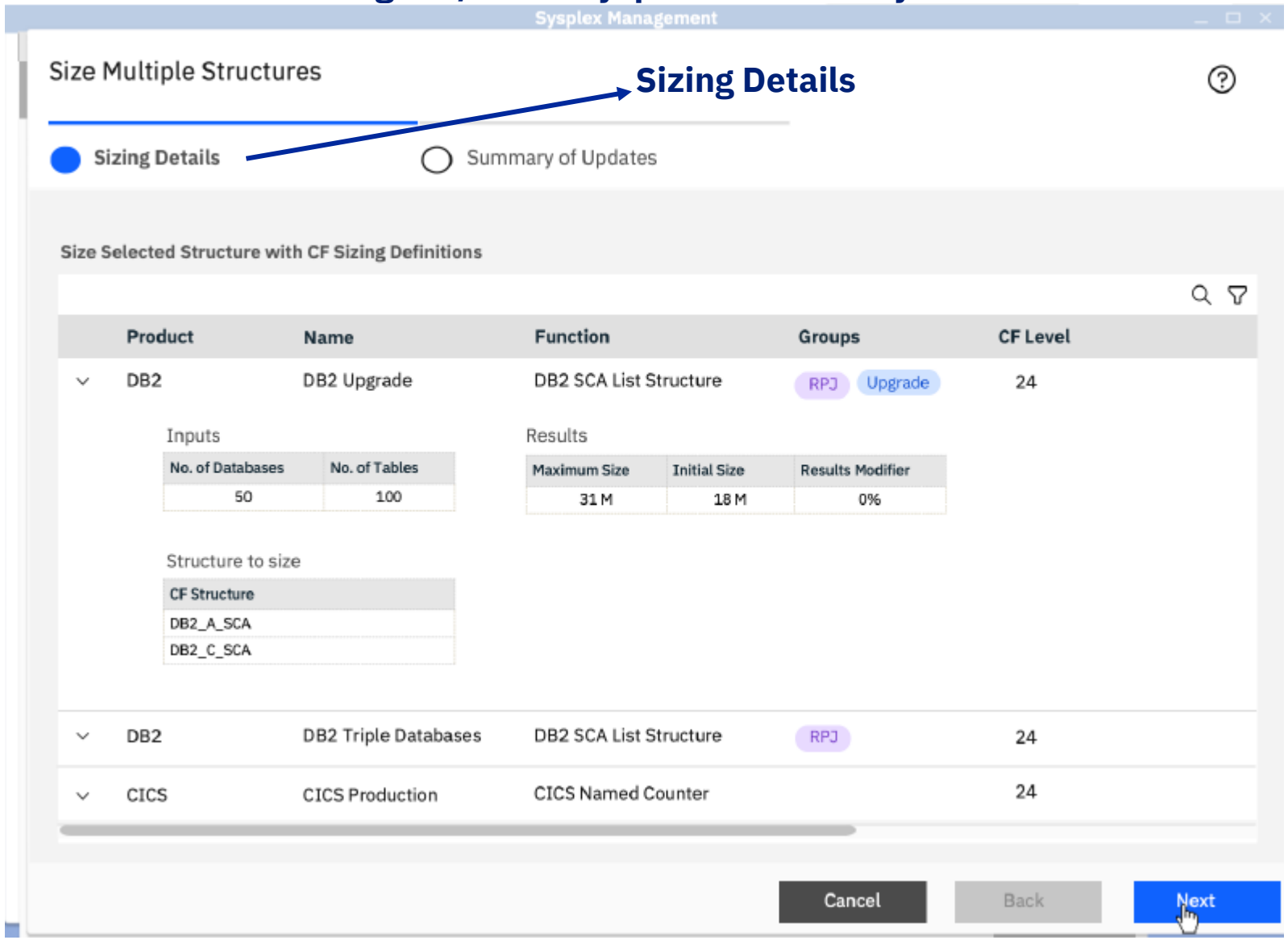


Making a Sizing Update

- You can size Structures from ‘Size Structure’ section
- You can size one or more structures

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor

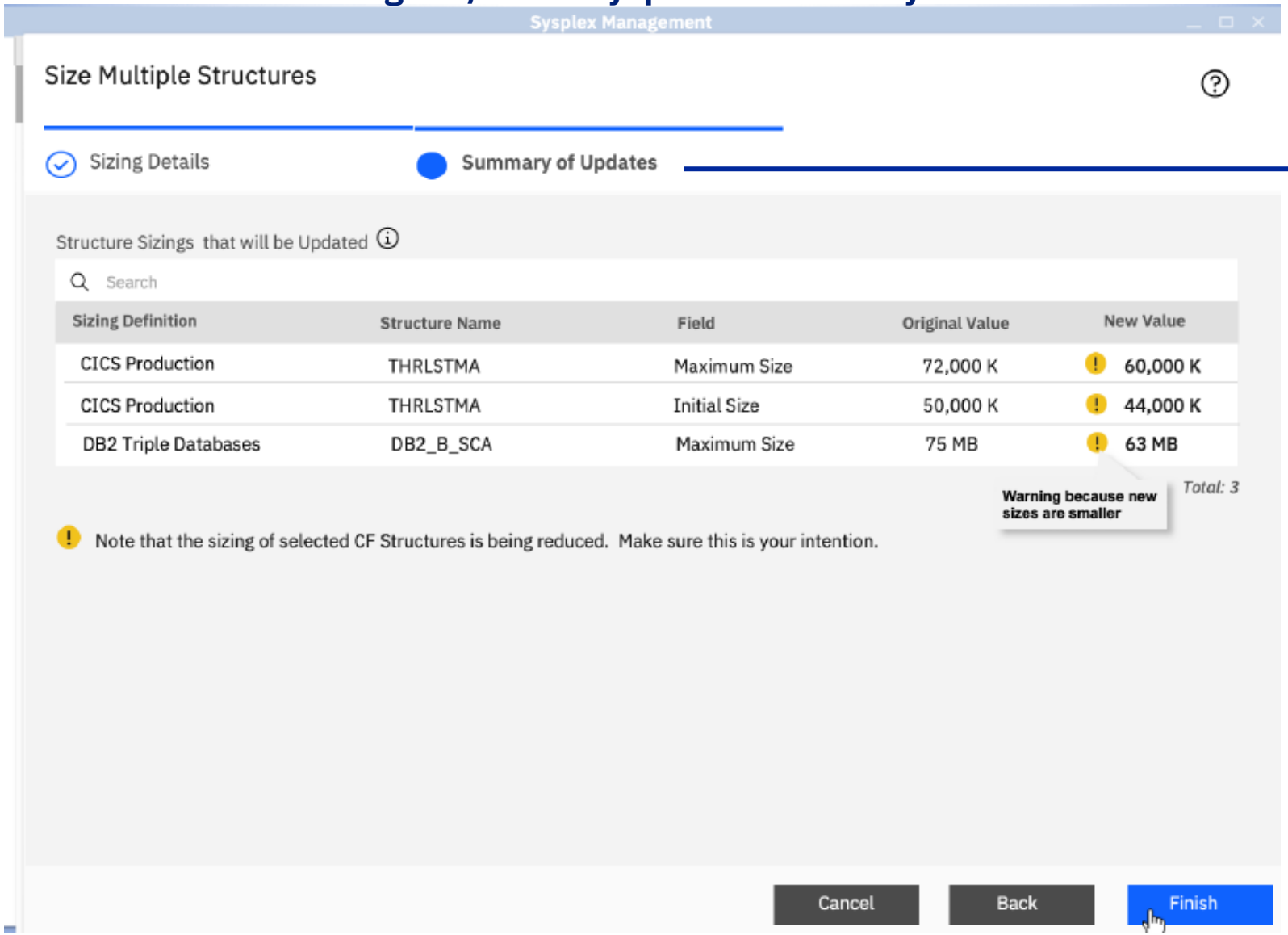


Sizing Structures (Step 1 of 2)
Use Sizing Details

- Check what CF Sizing Definition will be sued
- Sizing input details

CF Structure Sizing With z/OSMF

How it works ? CF Sizing in z/OSMF Sysplex CFRM Policy Editor



Summary Of Updates

Sizing Structures (Step 2 of 2)
Use Summary of Updates

- Shows all values that will be updated
- Warning if the new value is smaller than original

Storage Constraint Relief

- More use of above the bar storage
- More sensitive to frame shortages

(New with z/OS 3.1 also rollbacked to 2.5 with ptfs)

Storage Constrains Relief

Related to Couple Dataset I/O

We wanted to use larger I/O buffers to help reduce the number of start I/O requests needed to read/write large records

- Expect better performance
- Less opportunity for multi-segment writes to fail before completing the I/O

Concerned about potential system impact

- Historically, these below the bar buffers were small by today's standards
- But there could be systems that are storage constrained
- We wouldn't want to lose the ability to do CDS I/O if large buffers could not be obtained

So ....

- **Buffers are now backed above the bar**
- Buffers can vary in size
  - Use large buffers if possible
  - Drop down to the original size if the system appears to be short on frames

Storage Constrains Relief

z/OS 3.1 base - > z/OS 2.5 APAR OA60480

- It helps relieve the “fixed below the bar” constraint (available)
- The data portion of inbound signal buffers used by list paths can be backed above the bar

z/OS 3.1 base - > z/OS 2.5 APAR OA62295

- It tries to avoid a timer DIE “death spiral” during AVQLO conditions
- XCF limits its use of signal buffers when the system is short on available frames
- Seems to have benefit beyond resolution of the specific problem scenario

- **OA62980 :** The XCF data space was over committed by a huge MAXMSG value
  - Expect to deliver this at end of the year.
  - It will not resolve the virtual storage constraint, but XCF will not wait-state if unable to get a signal buffer because the data space is full

IBM Z Security & Compliance Center Support From XES/XCF

(z/OS V2R4 and V2.5 with ptfs and z/OS 3.1 Base)

IBM Z Security & Compliance Center Support from XES/XCF

Compliance support for z/OS (z/OS 2.5 CD Q2 2022 , z/OS 3.1 Base)

- For highly regulated industries, such as financial services, demonstrating compliance is a critical step in ensuring client and application data protection. Compliance officers need to adhere to multiple regulations or laws at the same time. They are responsible for understanding and implementing the controls that are required for their organization and have a responsibility to provide data that proves to external auditors that security checks are in place. **Using new SMF 1154 record subtypes and modernized reporting, z/OS 3.1 is enhanced to collect the following compliance evidence data:**

  - IBM z16 CP Assist for Cryptographic Function (CPACF) counters.
  - ICSF crypto software usage tracking health checks that are established to monitor the state of ICSF and deliver a warning when ICSF is not available.
  - Compliance-related evidence from several z/OS products and components including TCP/IP, FTP, TN3270E, CSSMTP, ICSF, CICS, Db2, XES/XCF, RACF, and JES2.

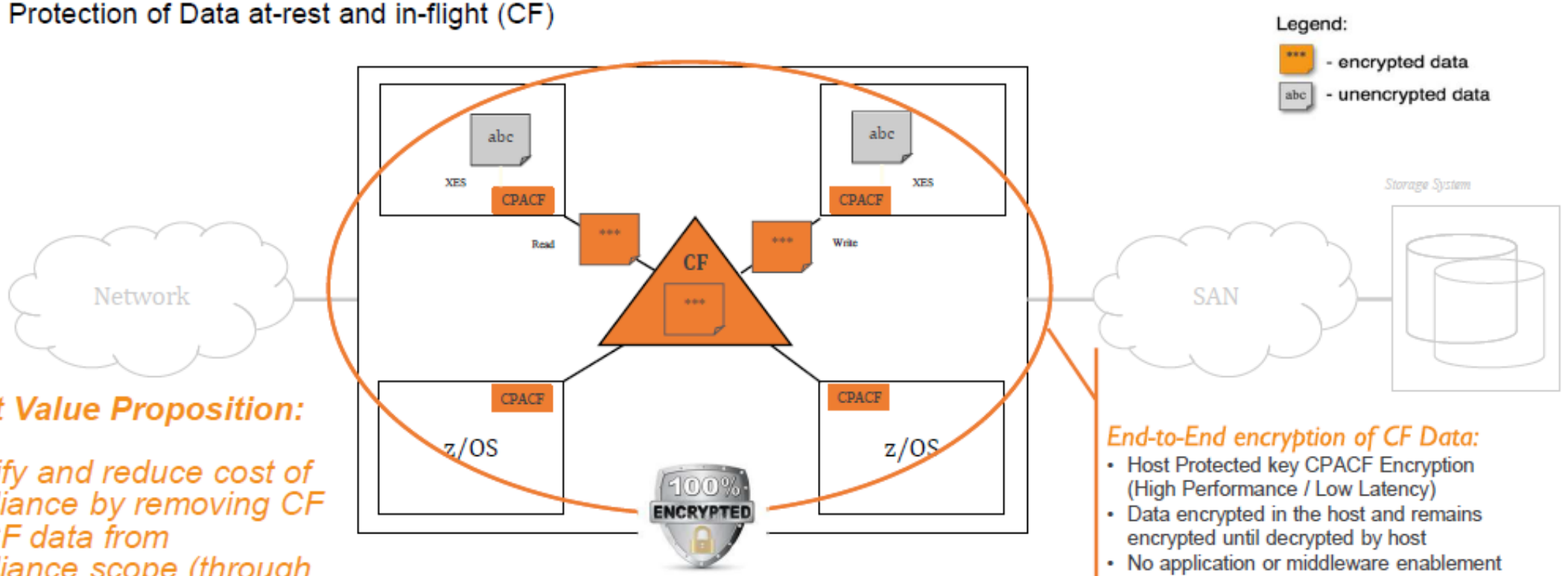
- Participating products and components will collect and write compliance data to new SMF 1154 records associated with its unique subtype
- The new SMF 1154 records can be consumed by solutions, such as the IBM Z Security and Compliance Center.

This support requires PTFs for z/OS 2.4 and z/OS 2.5. The PTFs are identified by a fix category designated specifically for compliance data collection support named **IBM.Function.Compliance.DataCollection**. Use this fix category to identify and install the specific PTFs that enable compliance data collection.

IBM Z Security & Compliance Center Support from XES/XCF

Coupling Facility Data Encryption in a Parallel Sysplex

Protection of Data at-rest and in-flight (CF)



Client Value Proposition:

Simplify and reduce cost of compliance by removing CF and CF data from compliance scope (through ability to encrypt all CF data)

Especially in cases where CF and/or links are outside the data center.

End-to-End encryption of CF Data:

- Host Protected key CPACF Encryption (High Performance / Low Latency)
- Data encrypted in the host and remains encrypted until decrypted by host
- No application or middleware enablement required
- List & Cache Structures only – *No Lock!*

IBM Z Security & Compliance Center Support from XES/XCF

Enhanced Security and Data Protection through CF Structure Encryption

By default, customer data that flows through the Coupling Facility (CF) link infrastructure is vulnerable to exposure because the data is not encrypted

With z/OS support for CF Structure Encryption:

Via the CFRM policy, you can direct that particular CF structures be transparently encrypted (no changes to middleware or applications)

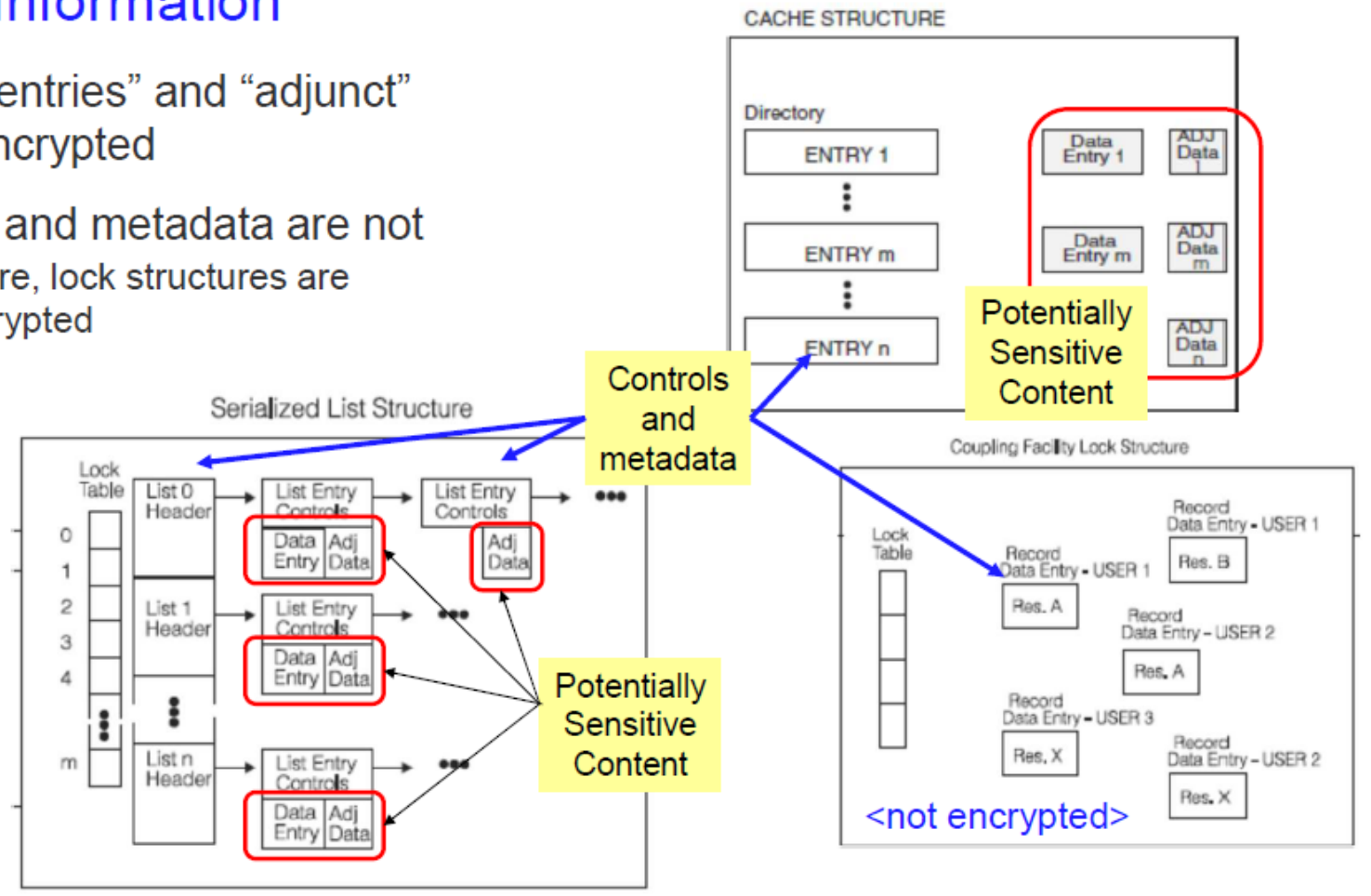
For those structures, host-based encryption is used to encrypt (decrypt) data written to (read from) the designated structure

Encryption provides better protection against potential breaches that could otherwise expose sensitive data

IBM Z Security & Compliance Center Support from XES/XCF

Encryption applies to data in structure objects likely to contain sensitive information

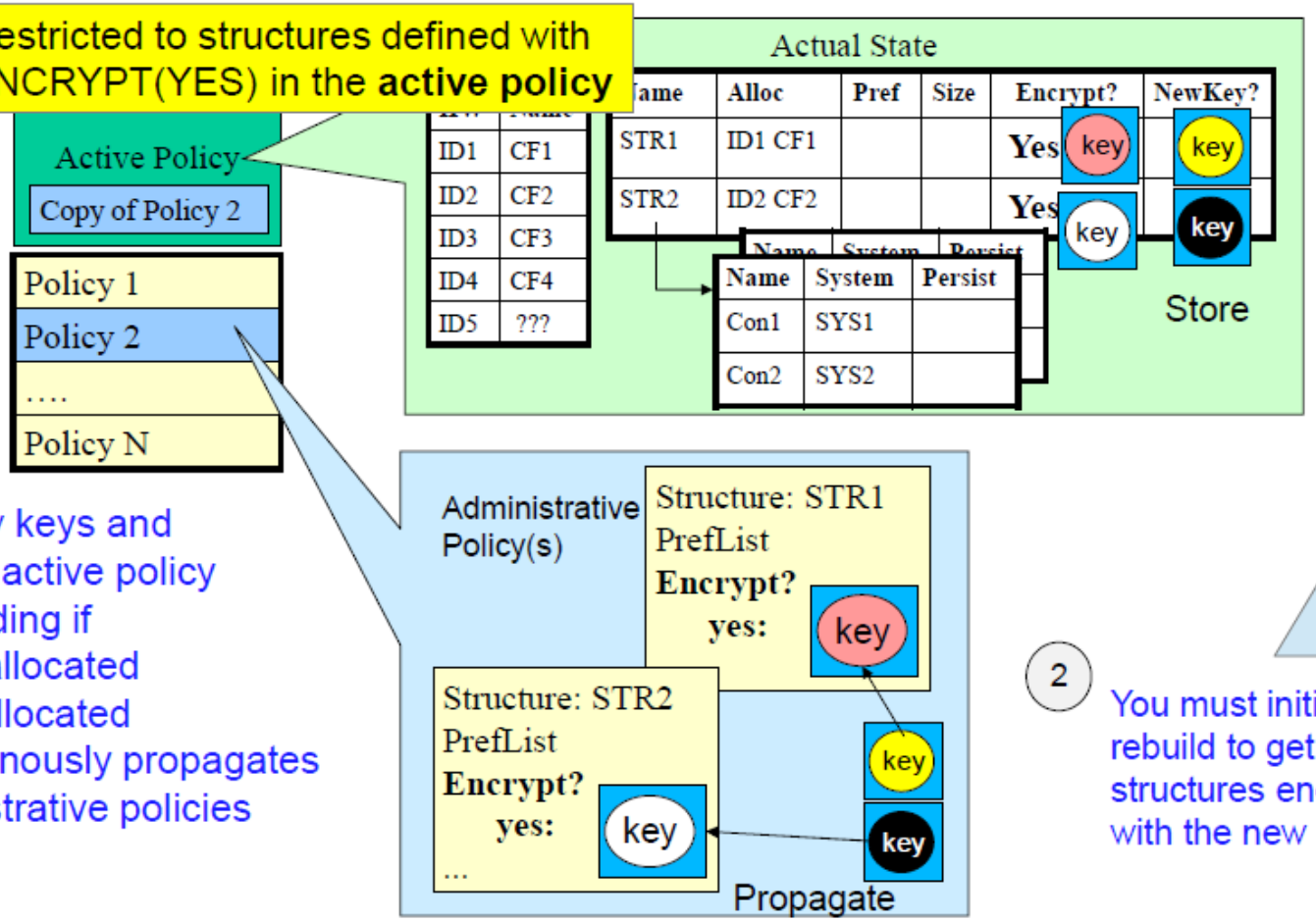
- Data in “entries” and “adjunct” will be encrypted
- Controls and metadata are not
  - Therefore, lock structures are not encrypted



IBM Z Security & Compliance Center Support from XES/XCF

SETXCF MODIFY,STRNAME=STR*,ENCRYPTKEY

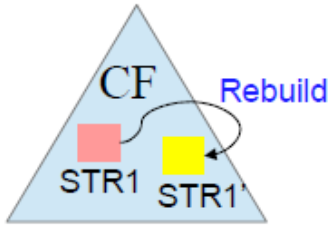
Restricted to structures defined with ENCRYPT(YES) in the **active policy**



The "Key exists in active policy" case

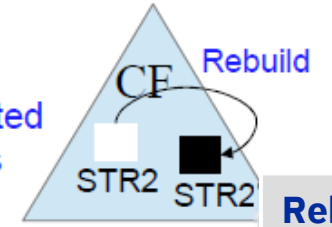
1

SETXCF:
-Generates new keys and
-Stores them in active policy
--Change pending if structure is allocated
--Done if not allocated
-Then asynchronously propagates them to administrative policies



2

You must initiate rebuild to get structures encrypted with the new keys



Rebuild Structure

IBM Z Security & Compliance Center Support from XES/XCF

XES/XCF compliance evidence let you make these assertions

- Sensitive data is encrypted in every allocated structure
  - Implies CFRM Policy has ENCRYPT(YES) for every allocated structure that could be encrypted
- Sensitive data is encrypted in every allocated structure to which ENCRYPT(YES) applies
- Sensitive data is encrypted by the latest encryption key
  - There are no pending key changes
  - If you rotated the keys (generated new ones), have the new keys been applied? (rebuilt structure)
- All allocated structures defined with ENCRYPT(YES) are capable of being encrypted
  - No lock structure is defined with ENCRYPT(YES)
- All encryption keys were changed as required by the key rotation policy
  - We report the age in days of the oldest encryption key currently in use
  - You must determine whether that meets your rotation criteria

Sensitive data = Content of adjunct areas and/or data entries in list and cache structures.

IBM Z Security & Compliance Center Support from XES/XCF

Capturing compliance evidence

- ENF86 driven on every system
  - The signal identifies the set of systems expected to provide data
  - Each such system is expected to write an SMF1154 record with its compliance data
- For XES/XCF compliance data
  - Must read the CFRM policy to get CF structure encryption state
  - Don’t need all systems reading the policy. So, …
  - One system does the read, extracts the compliance data, and sends the results to the systems that are supposed to write data
  - Upon receipt, each system writes its SMF 1154 subtype 113 record
- CF structure encryption (CSE) summary

The z/OS Health Check XCF_CF_STR_ENCRYPT raises an exception if the encryption state of a structure does not match the CFRM active policy. The SMF records makes it possible for programs to process this compliance evidence more easily.

Subtype 113 specific section for SMF Type 1154 Record

Record type 1154 subtype 113 self-defining section (SMF1154_113_HDR)					
Offsets		Name	Length	Format	Description
0	0	SMF1154_113_TRN	2	Binary	Number of subtype specific data section triplets
2	2	SMF1154_113_RSV1	2	Binary	Reserved – set to '00'x
4	4	SMF1154_113_CSE_Offset	4	Binary	Offset of CF structure encryption summary data section from the start of the record
8	8	SMF1154_113_CSE_Length	2	Binary	Length of a single CF structure encryption summary data section instance
10	A	SMF1154_113_CSE_Number	2	Binary	Count of CF structure encryption summary data section 1 instances

CF structure encryption (CSE) summary section		
Offsets		Name
0	0	SMF1154_113_CSE_Version
4	4	SMF1154_113_CSE_SysName
12	C	SMF1154_113_CSE_SysID
16	10	SMF1154_113_CSE_Strs_Encrypted
17	11	SMF1154_113_CSE_Data_Defs
18	12	SMF1154_113_CSE_KEY_ChgPND
19	13	SMF1154_113_CSE_Str_Defs
20	14	Unused
22	16	SMF1154_113_CSE_Key_Age
24	18	Unused

CF structure encryption (CSE) summary section

- ENF86 indicates which systems are to provide data
- All data derived from active CFRM policy
- Summary of allocated CF Structure use of structure data encryption
- Data collected by one XCF Compliance Data Collection Server Task
- Data written to SMF by XCF Compliance Data Collection Server Task on each system that is to provide data

z/OS 3.1 Requirement – SSD Capable CDS

z/OS 3.1 Requires SSD (System Status Detection) - Capable Sysplex Couple Datasets

z/OS 3.1 Requirement - SSD Capable CDS

SSD capable Sysplex Couple Dataset must be used in sysplex

Ensure that sysplex uses SSD – capable sysplex Couple Datasets. To use SSD is actually a best practice for many years.

Sysplex CDSes must be formatted to support System Status Detection (SSD) Protocol

- z/OS 3.1 can not initialize a sysplex containing a downlevel sysplex CDS
- z/OS 3.1 can not join a running sysplex that contains a downlevel sysplex CDS

How to Check ? There are two ways to check it

1- Use XCF_SYSSTATDEF_PARTITIONING Health Check

2- Use `D xcf,cpl,type=sysplex` command and check that 'system status detection protocol is supported' for both primary and alternate sysplex CDS's

How to implement if it is not SSD capable ?

To format for SSD Capable Sysplex couple datasets, use the following items in format utility
NAME(SSTATDET) NUMBER(1)

Make the new sysplex CDSes used by the sysplex using SETXCF commands

Parallel Sysplex Update & WSC z/OS Hot Topics

Part1 : Parallel Sysplex Update

Part2 : WSC z/OS Hot Topics

Meral Temel
z/OS Technical Engagement Leader
IBM z Washington Systems Center

Meral.temel@ibm.com

Agenda

- z/OS Release Overview
  - z/OS Support Summary
  - z/OS 3.1 Release Overview
- z/OS Versions & Continuous Delivery
- IBM z Content Solution Center & GitHub
- z16 & z/OS Highlights
- AI on z/OS
- IBM Resilience Dashboard
- Dedicated Memory
- z/OS Installation & Packaging
- z/OSMF Hot Items
  - z/OSMF Sysplex Management
  - z/OSMF Workflows
  - z/OSMF Management Service Catalog
  - z/OSMF SCA

z/OS Support Summary

- ✓ *Preview Feb 2019- GA announced July 2019 - GA Sep 2019*
- ✓ *Preview Feb 2021- GA announced July 2021- GA Sep 2021*
- ✓ *Preview Feb 2023- GA announced August 2023 - GA Sep 2023*

- ✓ *'Nothing has changed here with Continuous Delivery.'*
- ✓ *z/OS 3.1 ---- > No V no R in name … Just 3.1*
- ✓ *z/OS 3.1 has new program number 5655-ZOS.*

Release	z10 EC z10 BC WdfM	z196 Z114 WdfM	zEC12 zBC12 WdfM	z13 Z13s WdfM	z14 ZR1 WdfM	z15	z16	End of Service	Extended Defect Support
z/OS V2.2	X	X	X	X	X	X	X	9/20	9/23[2]
z/OS V2.3			X	X	X	X	X	9/22	9/25[2]
z/OS V2.4			X	X	X	X	X	9/24[1]	9/27[2]
z/OS V2.5				X	X	X	X	9/26[1]	9/29[2]
z/OS 3.1					X	X	X	9/28[1]	9/31[2]

Notes:

[1] - All statements regarding IBM's plans, directions, and intent are subject to change or withdrawal without notice.

[2] - Extended support dates are projected and are subject to change or withdrawal without notice.

WdfM - Server has been withdrawn from Marketing

Legend

Defect support provided with IBM Software Support Services for z/OS
Generally supported

z/OS 3.1 Release Overview

Usability and Skills
z/OSMF File compare utility, upload/download, Security Configuration assistant, Sysplex Mgmt and CFRM Policy Editor (CF structure sizing), Release Upgrade, ServerPac improvements…

Application Development
Artificial Intelligence, z/OS Container Extensions, Red Hat OpenShift, z/OS Containers, JSON Parser improvements, ISPF member generations, ABO, Java 11, Node.js, Python, Go, Enhanced zIIP usage

Enhancing Security
RACF DB encryption, RACF custom fields, ICSF/Crypto, zACS monitor, compliance support, GIMZIP code package signing/validation, z/OS Validated Boot…

Scalability & Performance
Greater than 4TB memory, Dedicated Memory Pools, RMF UI improvements, CF performance and scalability…

Data Serving & Storage
Cloud Data Access, EzNoSQL APIs, DFSMSrmm z/OSMF plug-in, simplified Catalog recovery & management, DFSMShsm & SMS enhancements, NFS Server enhancements, Union File System, Data Set File System…

Availability
Anomaly Mitigation, PFA and RTD improvements, System Recovery Boost, XCF Notepad resiliency…

Systems Management
AI infused z/OS, JES2 expanded policy support, Change Tracker, z/OS System Provisioning Service, z/OS Management Services Catalog, zWIC, SDSF new displays…

Networking
zERT, RDMA over ROCE 3, SyslogD, FTP security…

z/OS Announcements & Continuous Delivery
GitHub: z/OS Education Assistance

z/OS Version & CD Announcement Letters

IBM z/OS 3.1 GA Announcement	8 August 2023
Preview: IBM z/OS 3.1	28 Feb 2023
IBM z/OS V2.5 2Q 2023 enhancements	20 June 2023
IBM z/OS V2.5 1Q 2023 enhancements	21 March 2023
IBM z/OS V2.5 4Q 2022 enhancements	15 November 2022
IBM z/OS V2.5 3Q 2022 enhancements	20 September 2022
IBM z/OS V2.5 2Q 2022 enhancements	21 June 2022
IBM z/OS V2.5 1Q 2022 enhancements	15 Mart 2022
IBM z/OS V2.5 4Q 2021 enhancements	23 November 2021
z/OS 2.5 GA Date : 30 September 2021	
IBM z/OS V2.5 GA Announcement	27 July 2021
Preview IBM z/OS V2.5 Announcement	2 March 2021

Planned Availibility Date: September 29, 2023

At the end of each announcement, you can find links previous ones

IBM Continuous Delivery Model Announcement

IBM z/OS Continuous Delivery Redpaper

In this presentation

(2.4CD XQ20XX) – 2.5 Base items that were rolled back to 2.4 as z/OS 2.4 CD

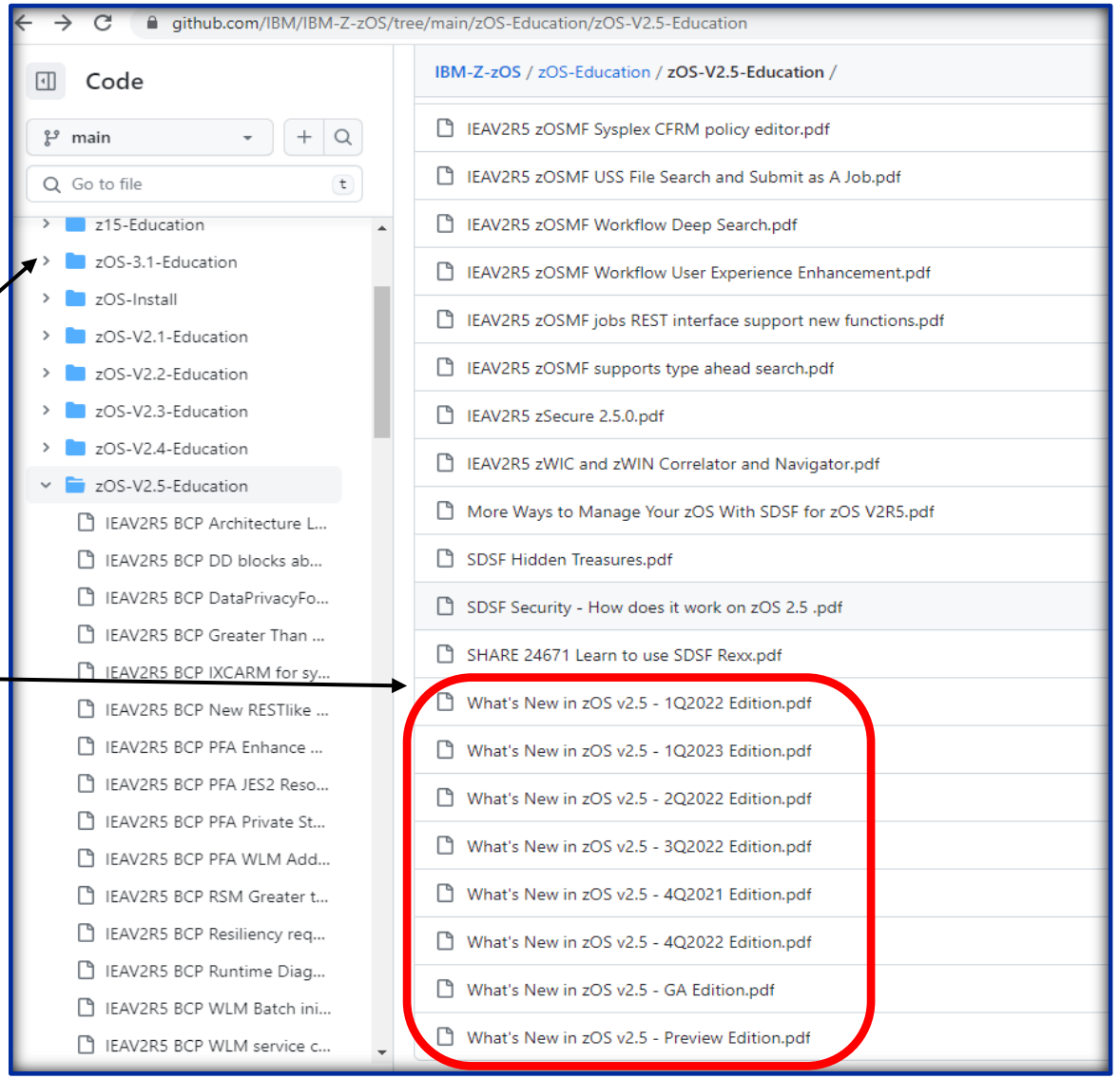
(CD XQ20XX) – 3.1 Base items that were rolled back to 2.5 as z/OS 2.5 CD

z/OS Version & CD Announcement Letters – GitHub For Presentations
IBM z/OS Education Assistance

- Check GitHub for presentation version of these announcements .
- You can see all changes with Continuous delivery in latest version
- What's new 3.1 GA and preview edition pdfs. +80 specific topic files
- 86 pdfs about details of the items related to V2.5

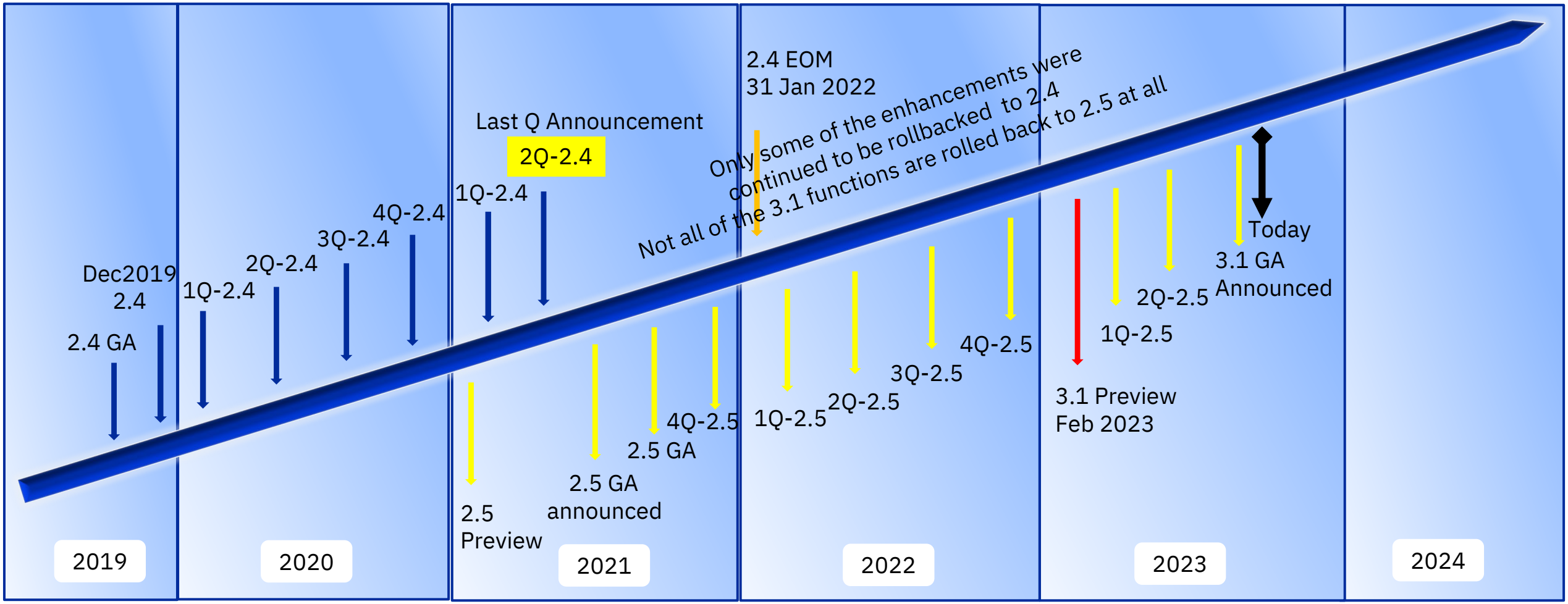
z/OS github entry
(https://github.com/IBM/IBM-Z-zOS/tree/main/zOS-Education/zOS-V2.5- Education)

z/OS github entry
(https://github.com/IBM/IBM-Z-zOS/tree/main/zOS-Education/zOS-3.1- Education)



z/OS Versions & CD Enhancements

How can I continue to get the latest enhancements ? ? 2.5 or 3.1 ? Benefit of being in current release!!!



z/OS 3.1 Ordering - Critical Dates

September 19, 2023 -> z/OS 3.1 ordering begins

September 29, 2023 -> z/OS 3.1 general availability

If you decide on moving forward with z/OS 3.1 ,in addition to what is new in z/OS 3.1 , you will continue to get benefit more and will continue get several new functions, enhancements that are being developed for z/OS NEXT release in future months with Continuous Delivery

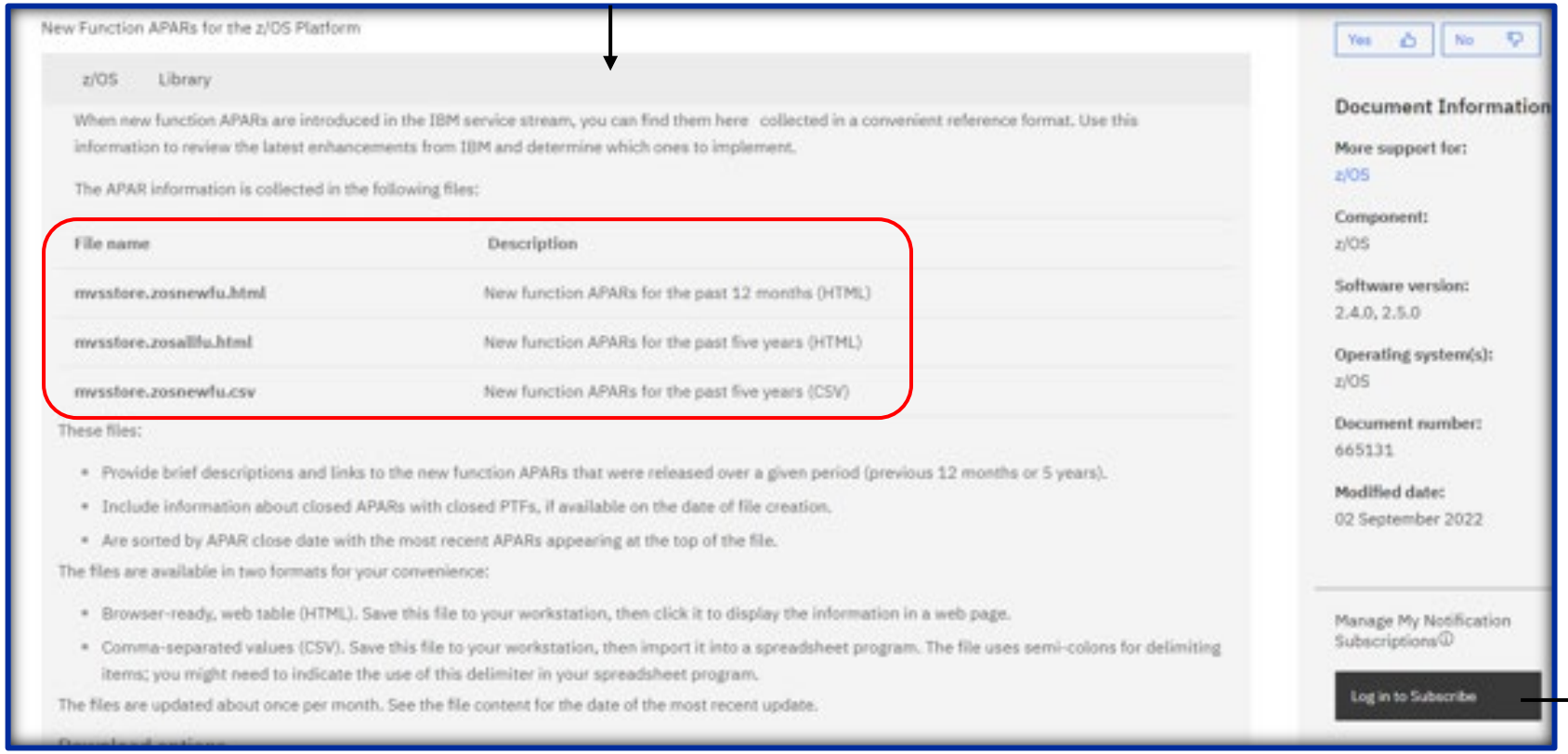
*z/OS V2.5 Q22023 was the **last CD Quarterly Announcement** for z/OS V2.5*

*There will be new **z/OS 3.1 Q42023 Continuous Delivery Announcement** in 4 th Quarter that will contain items from **z/OS NEXT!***

January 2024 -> Ordering complete for z/OS V2.5

z/OS Continuous Delivery

z/OS embraces continuous delivery through new function APARs
- Get weekly emails when APARs close with My Notification: start at
- https://www.ibm.com/support/entry/portal/support
- Look on the web, updated monthly:
- https://www-03.ibm.com/systems/z/os/zos/installation/zosnfapars.html


New Function APARs for the z/OS Platform

z/OS Library

When new function APARs are introduced in the IBM service stream, you can find them here collected in a convenient reference format. Use this information to review the latest enhancements from IBM and determine which ones to implement.

The APAR information is collected in the following files:

File name	Description
mvsstore.zosnewfu.html	New function APARs for the past 12 months (HTML)
mvsstore.zosallfu.html	New function APARs for the past five years (HTML)
mvsstore.zosnewfu.csv	New function APARs for the past five years (CSV)

These files:

- Provide brief descriptions and links to the new function APARs that were released over a given period (previous 12 months or 5 years).
- Include information about closed APARs with closed PTFs, if available on the date of file creation.
- Are sorted by APAR close date with the most recent APARs appearing at the top of the file.

The files are available in two formats for your convenience:

- Browser-ready, web table (HTML). Save this file to your workstation, then click it to display the information in a web page.
- Comma-separated values (CSV). Save this file to your workstation, then import it into a spreadsheet program. The file uses semi-colons for delimiting items; you might need to indicate the use of this delimiter in your spreadsheet program.

The files are updated about once per month. See the file content for the date of the most recent update.

Yes No

Document Information

More support for:
z/OS

Component:
z/OS

Software version:
2.4.0, 2.5.0

Operating system(s):
z/OS

Document number:
665131

Modified date:
02 September 2022

Manage My Notification Subscriptions

Log in to Subscribe

Subscribe

z/OSMF,SDSF,DFSMS are one of the first implementers of CD!
All z/OS Components are participating in CD!

z/OS Continuous Delivery

Mvstore.zosnewfu.html -> New Function APAR for last 12 months
A sample part of html is as below : When you click on APAR number , you can see details of APAR .

2023/05/10	PH53409	568851500	DB2 ADMIN TOOL MVS	D10/U191758	NEW MASKING SERVICE/STORED PROCEDURE
2023/05/09	OA63657	568505101	ICSF/MVS	7C0/ 7C1/ 7D0/ 7D1/ 7D2/	NEW FUNCTION
2023/05/09	OA63657	568505101	ICSF/MVS	7C0/ 7C1/ 7D0/ 7D1/ 7D2/	NEW FUNCTION
2023/05/09	OA64564	5752SCCDE	ZCX SERVER	7C0/	NEW FUNCTION
2023/05/09	OA64564	5752SCCDE	ZCX SERVER	7C0/	NEW FUNCTION
2023/05/09	PH51531	694235B00	GDPS	440/ 450/ 460/	NEW FUNCTION - GDPS LCP Manager (MM) CAPTURE perfor
2023/05/08	OA63164	565506805	SYSTEM SSL	450/ 451/ 45J/	NEW FUNCTION
2023/05/08	OA63164	565506805	SYSTEM SSL	450/ 451/ 45J/	NEW FUNCTION
2023/05/08	PH54099	5737B1610	AD MAINFRAME	611/	ROLL UP OF ALL EXISTING FIXES FOR IBM AD CONNECT
2023/05/04	OA64328	57525C133	ZACS AUTH CODE SCAN	7C0/ 7DJ/	NEW FUNCTION

IBM Z Content Solutions Center

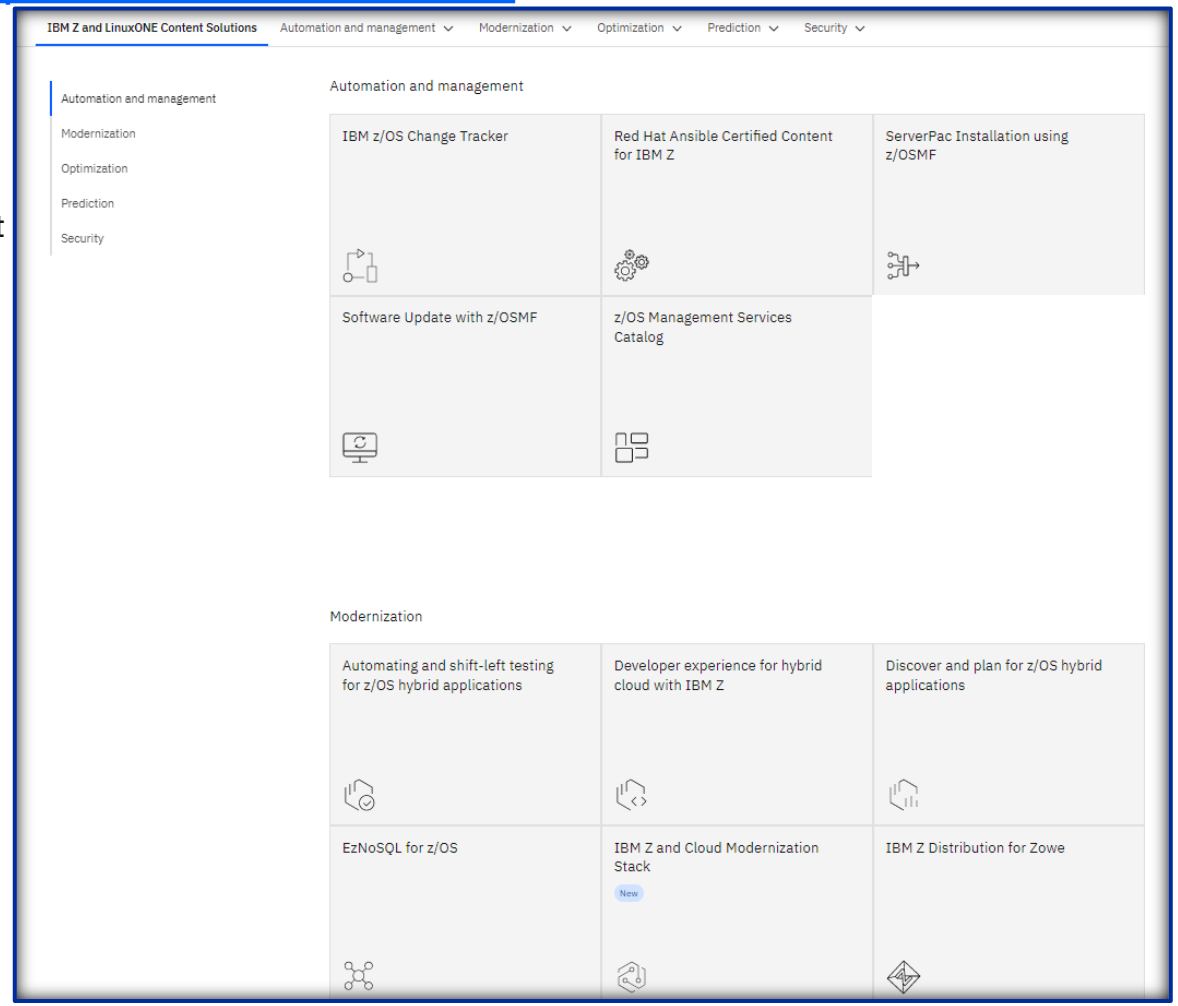
Documentations are always hot topic ...
Here are nice capabilities...

IBM z Content Solutions Center

More than a year! Have you checked ? Great Place! Single Engaging place for everything you need to understand and use functions and products! https://www.ibm.com/support/z-content-solutions/

- A content solution helps you get started and provides a **single engaging place for everything** you need to understand and use a product or function. This can include product libraries in IBM Documentation, videos, workflows, Redbooks, and more. Visit this page often to find the latest content solutions

- Several of the existing items will be refered in this presetation

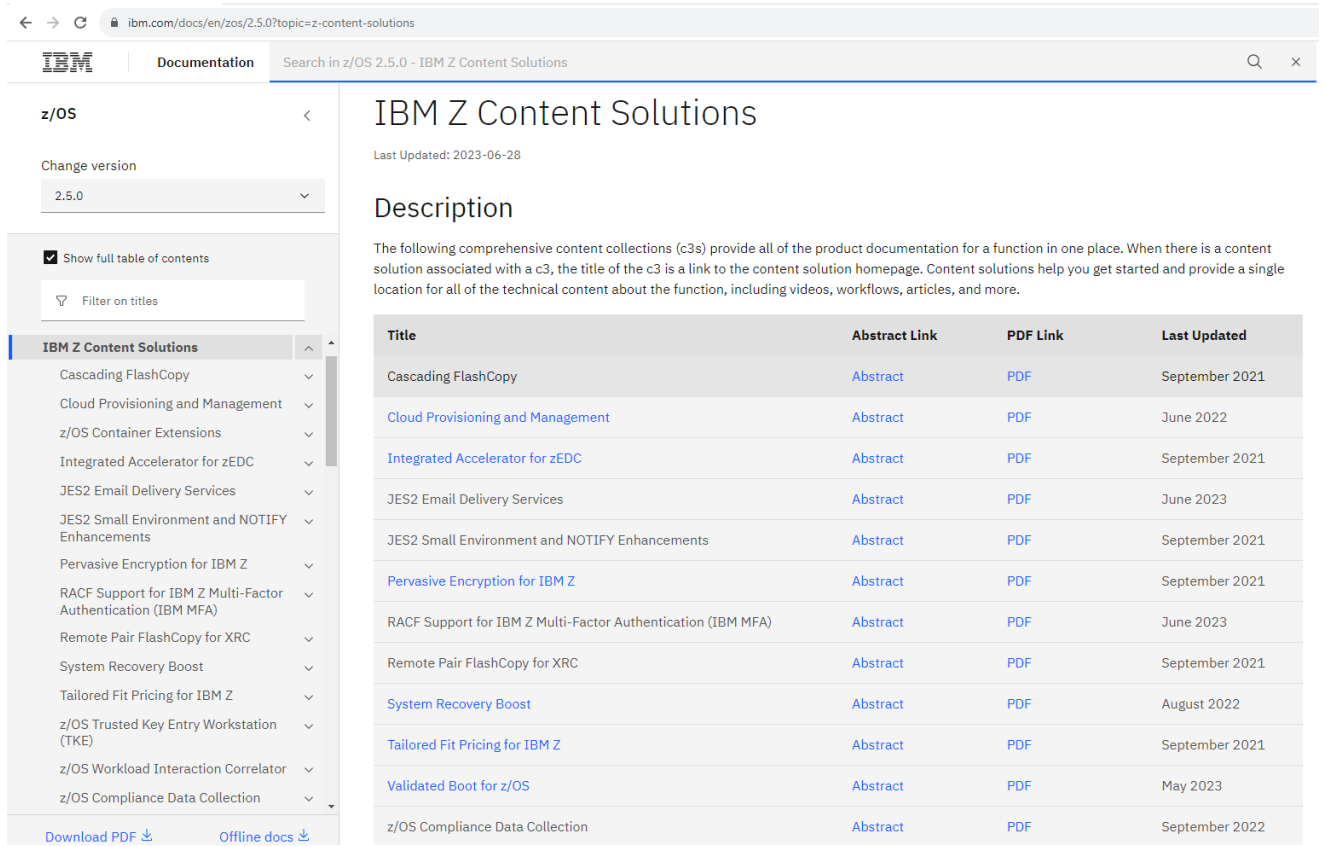


PDF version of IBM z Content Solutions' function specific all docs

The following **comprehensive content collections (c3s)** provide all of the product documentation for a function in one place. When there is a content solution associated with a c3, the title of the c3 is a link to the content solution homepage.

Content solutions help you get started and provide a single location for all of the technical content about the function, including videos, workflows, articles, and more.

https://www.ibm.com/docs/en/zos/2.5.0?topic=z-content-solutions



IBM Documentation for z/OS (DOC4Z)- SOD from 3.1 GA Announcement

IBM intends to deliver a new component called DOC4Z on z/OS to replace Knowledge Center for z/OS (KC4Z). DOC4Z is a web application that provides IBM product publication content to web browser clients directly from a local z/OS server system. IBM also intends to provide IBM Documentation APIs for clients to programmatically interact with DOC4Z.

IBM z16 & z/OS

IBM z16 Highlights - z/OS zHW Support

IBM **z16 (3931) Model A01** Functions & Features

One hardware model, Five Features, 1-4 19” Frame System
Up to 85 user partitions, 32 TB per partition, 200 CPUs/zIIPs/IFLs per partition, up to 224 Pus -Up to 16 TB per z/OS LPAR with z/OS V2.5
•2 CP chips on a Dual Chip Module (DCM), 5.4 GHz •L1 Private 128K i & 128K d •L2 n/a •L3 Shared 32 MB / core, 192 MB effective shared •L4 n/a
256 GB HSA, 40 TB maximum, 10 TB per drawer
Channel Subsystem scalability •Up to six (6) Channel Sub Systems (CSSs) •4 Subchannel Sets per CSS
HiperDispatch Enhancements
IBM Z Integrated Accelerator for AI
Hardware Instrumentation Services (CPUMF)
New machine instructions
Crypto Express8S
OSA Express7S 1.2

(z/OS support in blue)

IBM System Recovery Boost
Coupling Express2 LR 10Gb (CX6-DX) PCIe adapter
CF Level 25 •Retry buffers for cache and lock commands •Cache residency time metrics •Scalability improvements •Request latency/performance improvements
ICA-SR 1.1 Max ICA SR per CEC 48 adapters/96ports (same as z15)
Max ICP CHPIDs per CEC – 64
10 GbE and 25 GbE RoCE Express 3 SR and LR (CX6-DX)
FICON Express 32S
zHyperLink® Express1.1 • Maximum 16 Adapters /32 ports
IBM Flexible Capacity for Cyber Resilience
Validated Boot

- ***Industry First AI-Onchip***
- ***Hybrid Cloud***
- ***Industry First Quantum Safe Ready Platform***

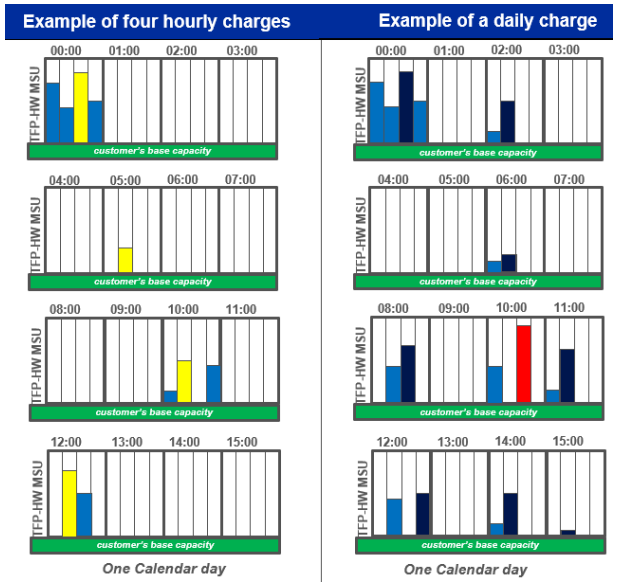
IBM z16 Highlights - Overview

- Up to 16 TB of memory per z/OS instance used by select middleware
- 20 new instructions to help improve COBOL and AI applications, including instructions to leverage a new AI accelerator
- A new level of coupling facility support, CFLEVEL 25, which provides: (More Details in Next Slides…)
- For z16, additional recovery process boosts added **(CD 2Q2022)**
  - Client-selected middleware starts and restarts
  - SVC dump processing
  - HyperSwap configuration load and reload
- Flexible Capacity for Cyber Resiliency is a new Capacity on Demand (CoD) offering available on IBM z16 machines that allows processing capacity flexibility between an organization's primary site and alternate data centers
- IBM Z Integrated Accelerator for AI is designed to provide machine learning acceleration with high throughput and low latency
  - IBM Deep Learning Compiler (DLC) enables deep learning models to be deployed on IBM Z, exploiting the IBM Integrated Accelerator for AI.
  - IBMZ Deep Neural Network library (zDNN) is a software library that provides high-level C APIs, which enable simplified exploitation of the IBM Z Integrated Accelerator for AI by AI frameworks and libraries.
- ICSF Support For New CEX8 Coprocessor, New Quantum Safe Algorithms (Kyber& Dilithium8,7)
- z/OS IBM z16 Upgrade Workflow provided in PTF on V2.2 and higher to help position z/OS for use on IBM z16 server

TFP HW Solution
More than a Capacity Management Item

TFP – HW

- Improved and more predictable response times with lower latency (especially when compared to a public cloud solution)
- Faster transaction processing, with shorter spikes of high use
- Higher number of active processor engines have a positive n-way effect (higher parallelization) and delivers more cache, less contention, and overhead
- Optimized workload handling under customer-defined use thresholds
- Improved insight for future capacity planning
- Improved balance between physical and logical Central Processor (CPs)
- Reduced Processor Resource/System Manager (PR/SM) logical partitions (LPAR) management, less overhead



Tailored Fit Pricing Ease of Use Features

- A new IEASYSxx parameter (SOLUT=) to identify an LPARs solution ID which helps with reporting on TFP
- The solution ID is passed through to SCRT in the SMF records captured about an LPAR
- This should reduce the manual updates needed in SCRT when reporting on Tailored Fit Solutions. SCRT 28.2.0 includes this support

https://www.ibm.com/support/z-content-solutions/tailored-fit-pricing/

- Needs TFP-SW to be used
- TFP HW is more than a capacity management
- It is an insure for abnormal situations
- It can help improve resiliency of systems

z16 and z/OS Sysplex Enhancements

IBM z16 Highlights – Sysplex Enhancements for CF LEVEL 25

z/OS Parallel Sysplex enhancements for the IBM z16 CFLEVEL 25 (CD 2Q2022)

- A new level of coupling facility support, CFLEVEL 25, which provides :
  - CF cache and lock structure resiliency improvements
  - CF cache structure object residency time monitoring and metrics
  - CF latency and scalability enhancements

IBM z16 Highlights – Sysplex Enhancements for CF LEVEL 25

CF cache and lock structure resiliency improvements

IBM z16 CFLEVEL 25 provides improved resiliency support for CF cache and lock structure usage.

The CF now implements a functional retry buffer capability that applies to the subset of CF cache and lock commands that cannot always be safely retried when an interface control check (IFCC) or other link-related error interrupts the normal request flow to or from the CF image. Retry buffers make it possible for z/OS to always determine the outcome of such CFoperations following a transient link error, avoiding any ambiguities related to the CF structure updates made by those requests.

z/OS now makes use of CF retry buffers to improve the resiliency of these CF structure operations without requiring any software updates by the user function that is exploiting the CF structure for its data- sharing purposes.

With the PTFs for APAR OA60275, the z/OS operating system support for retry buffer enhancements is available on z/OS 2.2 and later.

Additionally, IBM z16 CFLEVEL 25 provides lock structure exploiters with the new capability to dedicate a subset of lock structure record data entries that are reserved for recovery use only. Exploiters may reserve these record data entries and thereby ensure that even when all the normal record data entries in a lock structure have been used up, the special pool of dedicated recovery-use entries remain available for use in recovering from this structure-full condition.

With the PTFs for APAR OA60650, the z/OS operating system support for reserved lock structure record data entries is available on z/OS 2.3 and later.

IBM z16 Highlights – Sysplex Enhancements for CF LEVEL 25

CF cache structure object residency time monitoring and metrics

New CF cache structure monitoring and metrics are provided for IBM z16 CFLEVEL 25 coupling facilities. These metrics provide cache structure exploiters with **additional cache object information** that can be used to provide **improved cache management**, either directly by the exploiter or through improved cache usage reporting by the exploiter.

New storage class statistics are provided to report on cache directory entry and data area "**residency times**", defined as the average time between when a cache directory entry or its associated data area is first created until the time that those cache structure resources are reclaimed for use to satisfy a more-current cache structure request.

Residency time metrics can be used to provide insights into the overall cache effectiveness for CF cache structures.

With the PTFs for APAR OA60650, the z/OS operating system support for cache structure object residency time metrics is available on z/OS 2.3 and later.

System Recovery Boost

System Recovery Boost

System Recovery Boost support

IPL and Shutdown boost

- Speed boost –run the general-purpose processors at full speed if they are running sub-capacity normally
- zIIPboost –allow general purpose work to run on the available zIIPs for increased capacity
- Up to 60 minutes of boost at IPL and up to 30 minutes of boost at shutdown

Sysplex Recovery (2.4CD 3Q2020)–support for recovery process boosts

- Sysplex partitioning –boost surviving systems for recovery
- CF structure recovery –boost systems participating in structure recovery
- CF data sharing member recovery –boost all systems recovering
- Hyper Swap –boost systems participating in HyperSwap processing
- Up to 30 minutes per LPAR per Day

For z16, additional recovery process boosts added **(CD 2Q2022)**

- Client-selected middleware starts and restarts
- SVC dump processing
- HyperSwap configuration load and reload

System Recovery Boost

- For z16, additional recovery process boosts added **(CD 2Q2022)**
  - Client-selected middleware starts and restarts
  - SVC dump processing
  - HyperSwap configuration load and reload

z/OS System Recovery Boost Summary

Stage	Boost Class[2]	Description	Duration	Usage	Trigger
1	IPL Boost and Shutdown Boost z15, z16	IPL / Startup ShutDown GDPS® Enhancements[3] Standalone Dump	60 minutes At most 30 mins N/A Dump time or max 60 mins	Once per LPAR Once per LPAR N/A Speed boost only	IPL PROC IEASDBS GDPS Script IPL SADMP
2	Recovery Process z15, z16	Sysplex Partitioning Recovery CF Structure Recovery CF DataSharing Member Recovery Hyperswap Recovery	2 mins 1 min per structure 1 min per lock structure 2 mins	30 mins in 24 hours per eligible LPAR Shared Among Invocations Only 2 Reserved zIIPs brought online	Automatic Automatic Automatic Automatic
3	Recovery Process z16	SVC DUMP Middleware Start/Stop/Recycle Hyperswap load boost	2 mins[1] 5 mins 2 mins		CHNGDUMP RPBMINSZ= WLM Policy Automatic

[1] In order to see a benefit from zIIP Boost, you will need to turn on dump optimization, via the CHNGDUMP SET,SDUMP,OPTIMIZE=YES command.
[2] WLM will implicitly set all single-period importance 1 or 2 work as CPU Critical for all boost classes for duration of boost
[3] GDPS provides configuration and orchestration parallelization, no SRB related activities

Validated Boot For z/OS

Validated Boot

Validated Boot for z/OS (CD 2Q2023)

- z16 and z/OS are providing a solution for Validated Boot for z/OS, which will allow IPL-time validation of digital signatures for certain z/OS executables

- It uses digital signatures to provide an IPL-time check that the z/OS system, including z/OS nucleus and LPA load module executables, is intact, untampered with, and originates from a trusted source from the time at which it was built and signed.(Digital Signatures for z/OS Software Packages via GIMZIP)

- It works together with the Digital Signatures for z/OS Software Packages via GIMZIP support, which uses digital signatures to validate the delivery of code packages from the software vendor to the client

- This enables the detection of subsequent unauthorized changes to those software executables, whether those changes be accidental or malicious in nature.

- Designed to meet standards such as the National Information Assurance Program (NIAP) Protection Profiles 4.3.

- CLPA is always enforced for Validated Boot for z/OS

AI on z/OS
AI-infused OS, AI System Services
Now AI on everywhere...

AI-Infused Operating System – z/OS 3.1

Never too late to jump into AI topics as
z/OS System programmer – if not already done
with your AI experts or your own.
AI on z is there for many years.
Now much stronger and wider – inside OS and as AI System Services

AI on z Adoption Journey

AI on z/OS –New materials to help jump start your AI adoption journey

Journey to AI on IBM zSystems and LinuxONE content solution → Guidance on identifying use cases, available solutions, recent developments and more.
https://www.ibm.com/support/z-content-solutions/journey-to-ai-on-z/

AI on IBM Z and LinuxONE community →
Read recent blogs and announcements
Engage with subject matter experts on the latest topics around AI on IBM Z
https://ibm.biz/BdPBud

Client Engineering for Systems Workshop →
Learn about analytics and AI technologies and solutions on IBM Z and where you are in your AI Journey
Each workshop is tailored to fit your needs
Contact ce4s@ibm.comor your local IBM Client Engineering team to find out more
https://ibm.biz/aionz-workshop

AI Framework For z/OS

AI-Infused Operating System – z/OS 3.1

- ✓ ***Optimize IT processes***
- ✓ ***Simply Management***
- ✓ ***Improve Performance***
- ✓ ***Reduce Skill Requirements***

✓ ***Allows users to control and manage AI Capabilities without a need for additional AI and data science skills***

Capabilities are planned to be delivered iteratively and will provide optimization of IT processes, enable intelligent operations, and strengthen the IBM strategic direction of providing intelligent infrastructure.

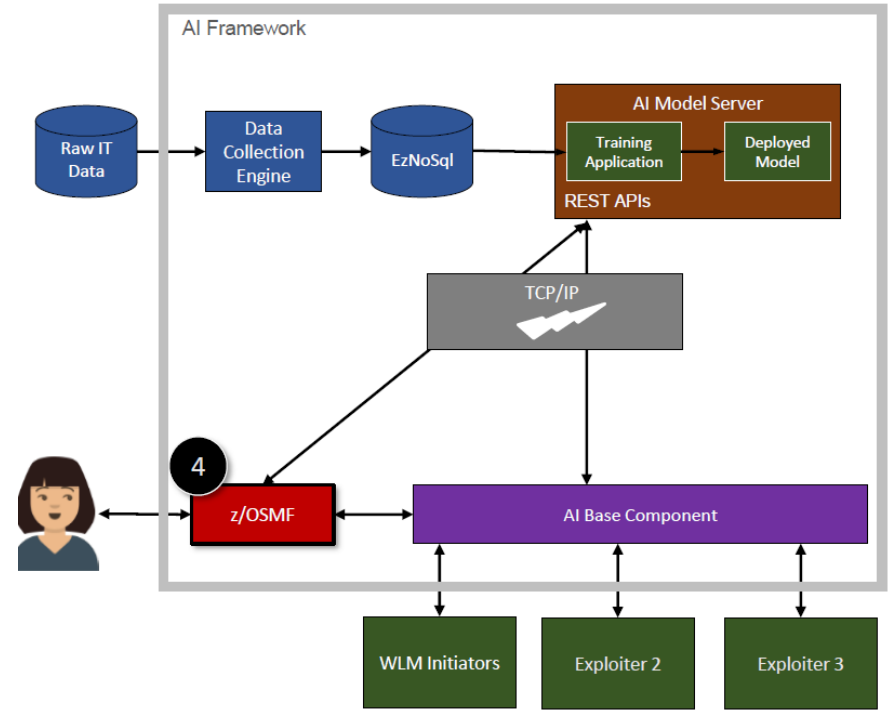
AI Framework For z/OS 3.1

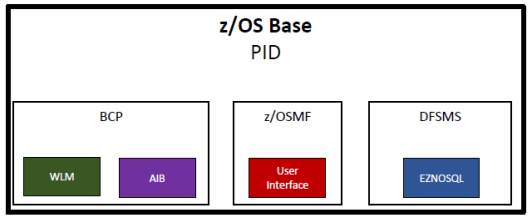
The AI Framework consist of

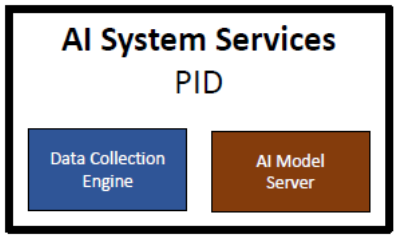
- Data collection engine (Included in new **AI System Services** Product)
- AI model server (Included in new **AI System Services** Product)
- AI base component (New **AI Base Component AIB** in z/OS **)**

- A modern user interface, and providers that can plug into the framework for expandable future use cases. (New z/OSMF Plug-in)

- New **z/OSMF workflows** for configuration of the AI framework.







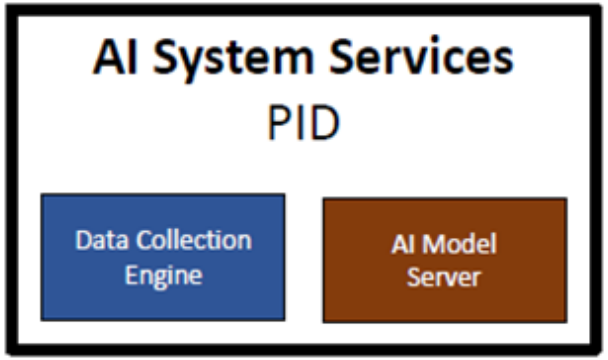
- z/OS 3.1 contains enhancements to WLM as first exploiter of AI Framework

AI System Services

- ***AI System Services for z/OS new product announced in same day as z/OS 3.1***

  Anouncement : https://www.ibm.com/docs/en/announcements/ai-system-services-zos?region=US

- ***One of the Key component of AI framework, delivers foundational AI Capabilities***



AI- Powered WLM in z/OS 3.1

- IBM is augmenting WLM with AI to optimize the management of IBM Z workloads. These iteratively delivered capabilities will allow z/OS to intelligently predict upcoming batch workload and react by allocating an appropriate number of initiators. This is designed to optimize system resources and batch management, thus eliminating overhead from manual fine-tuning and trial-and-error approaches.

- AI-powered WLM is the initial use case leveraging the AI Framework for IBM z/OS.

- AI-Powered WLM, designed to **intelligently predict upcoming batch workload** and react accordingly for optimized system resources is **the first to leverage the AI System Services**.

Python AI Toolkit For z/OS & IBM SMF Explorer with Phyton

Python AI Toolkit For z/OS & IBM SMF Explorer with Phyton

IBM SMF Explorer with Python (CD 4Q2022)

Data access and analysis toolkit designed to help access SMF data and extract insights in an easy and modern way
Leverages state-of-the-art technologies like JupyterNotebooks and Python
Understand, interpret SMF data and unlock value from it even with limited z/OS skills

https://ibm.github.io/IBM-SMF-Explorer/
Hot Topics Blog -How to turn your SMF data into valuable insights without z/OS expertise

Python AI Toolkit for IBM z/OS

- Industry leading AI Python packages available on z/OS
- Unlocks verified open-source software with supply chain security
- Familiar, flexible, and agile package installation process leveraging PyPi

IBM Z Content Solutions | Journey to open data analytics

z/OS is enhanced to allow IBM Open Enterprise SDK for Python to be zIIP enabled.

With IBM Open Enterprise SDK for Python on z/OS, advanced data analysis can be performed, with popular Python packages, natively on z/OS where the data is stored. zIIP enablement of Python on z/OS provides a competitive option for running Python workloads, and **up to 70%** of Python will be eligible to run on a zIIP.
This support is available with the PTFs for APARs PH52983 and OA63406 on z/OS V2.4 and later.

IBM Dashboard For Resilience (SOD)

Resilience Dashboard

IBM intends to deliver a new dashboard for resiliency.

This solution will be a z/OSMF plug-in that is expected to provide clients with capabilities to summarize their resiliency posture.

The solution will help enable clients to proactively address resiliency deficiencies and to help to do better planning for future improvements on the resilience of their business environment.

This is a Statement of Direction. (SOD)

- *You may reach out to me (meral.temel@ibm.com) to have you contact with Anastasiia and her team , they like to hear your feedbacks and ideas*

Resilience Dashboard

System Currency

LPAR A

Insights summary

Resiliency features implemented

All resiliency features

Data table description

Export

Name	Status	Category	Requirements
z/OS Automatic Restart Manager	Not implemented	Faster recovery after failure occurs	z/OS 2.5 or later
Description: z/OS® Automatic Restart Manager (ARM) is a z/OS recovery function that can improve the availability of your queue managers. When a job or task fails, or the system on which it is running fails, ARM can restart the job or task without operator intervention. **IPL Required?:** Yes **Dynamic info 2:** Dynamic info **Dynamic info 3:** Dynamic info **Dynamic info 4:** Dynamic info **Dynamic info 5:** Dynamic info **Dynamic info 6:** Dynamic info			
Sysplex Failure Management	Implemented	Faster recovery after failure occurs	z/OS 3.1 - Upgrade available
System Status Detection Partitioning Protocol	Implemented	Faster recovery after failure occurs	-
System Managed Duplexing	Not implemented	Faster recovery after failure occurs	z/OS 2.5 or later
Message Flood Automation	Implemented	Failure avoidance	-

Resilience Dashboard

Best Practices / Sysplex A

Sysplex A

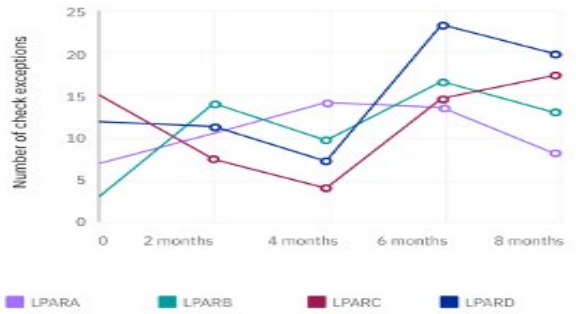
Use this view to evaluate health check information at a Sysplex level

[redacted]

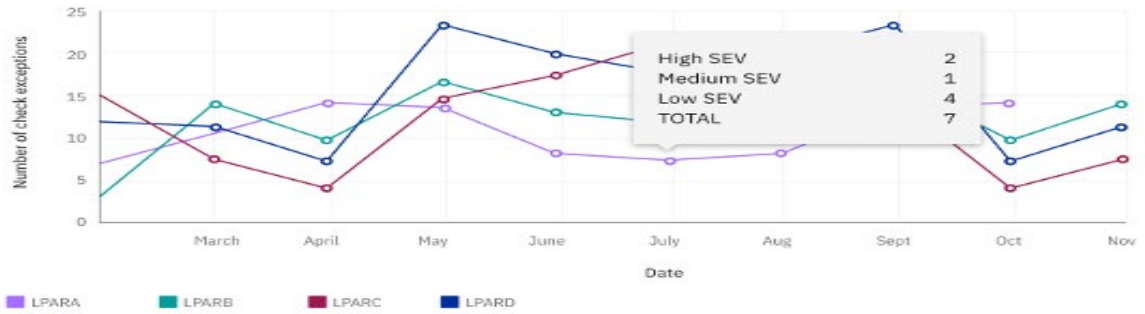
Insight summary

Health Check Summary →

Deviation
over the last 2 months



Health check exception trend
over 1 year



Search for LPARs

Export

Name	Health checks summary	Exception deviation	Exception health check severity	PFA Checks	GDPS summary	GDPS exception deviation
LPAR A	1 Success 3 Exception 10 Disabled	↑ 1 Exception	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	– No change
LPAR B	1 Success 3 Exception 10 Disabled	↓ 1 Exception	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	↑ 3 Exception
LPAR B	1 Success 3 Exception 10 Disabled	– No change	1 High severity 2 Medium severity 0 Low severity	4 Active 5 Inactive	1 Success 3 Exception 10 Disabled	↑ 2 Exception

z/OS 3.1 Dedicated Memory

Dedicated Memory

Utilization of >4T for applications that do not exploit 2G frames

- **Installations that are concerned about applications with irregular or unpredictable memory usage**
  SVC Dump capture for example - Mitigate Distruptions from SVCDUMP
- **Installations that want to preferentially assign memory to certain applications that exploit high virtual storage**
  zCX containers
- **Installations that want to exploit >4T of memory**

- Once assigned locally managed within AS
- It is restricted to High Virtual Private but it can be used by all frame types 4K,1MB fixed,1MB pagable and 2GB
- Never paged/stolen – address space owns the memory until end of job step, regardless of whether it actually uses the memory

Dedicated Memory

New Parmlib Member IARPRM

```
VIEW       SYS1.[redacted]ARMLIB(IARPRMZ4) - 01.02
****** ***************************** Top of Data **
000100 DMEM(1024G)
****** ***************************** Bottom of Data
```

New IEASYS Parm RSM

```
000010 IZU=Z1,
000050 LFAREA=(1M=(1048576,43008),2G=(1124,120)),
000060 RSM=Z4,
000061 SMFLIM=Z4,
```

Usage Display

```
-ro z4,f axr,iaxdmem dmem
 IAR067I DEDICATED MEMORY V1.0
    1.0TB : TOTAL SIZE
    0.0GB : OFFLINE SIZE
  828.0GB : UNASSIGNED
   18.0GB : SYSTEM USE
```

On Top Of 4 TB

```
RO Z4,D M=STOR
IEE174I 10.41.44 DISPLAY M 145
REAL STORAGE STATUS
ONLINE-NOT RECONFIGURABLE
    0T-5T
ONLINE-RECONFIGURABLE
    NONE
ONLINE-DEDICATED MEMORY
    5T-6T
PENDING OFFLINE
    NONE
 0M IN OFFLINE STORAGE ELEMENT(S)
 0M UNASSIGNED STORAGE
STORAGE INCREMENT SIZE IS 16G
```

Dedicated Memory

DUMPSRV Usage Sample

```
          -ro z4,f axr,iaxdmem dmem,jobname=dumpsrv
S0051343   IAR069I DEDICATED MEMORY V1.0
           JOBNAME=DUMPSRV  ASID=0005
              64.0GB : ASSIGNED
              15.9GB : IN USE
              15.9GB : MAX IN USE
           PAGEABLE 4K STATISTICS
               1.0GB : IN USE FOR PAGEABLE 4K PAGES
               2.5GB : MAX IN USE FOR PAGEABLE 4K PAGES
           PAGEABLE 1M STATISTICS
              14.9GB : IN USE FOR PAGEABLE 1M PAGES
              14.9GB : MAX IN USE FOR PAGEABLE 1M PAGES
           FIXED 1M STATISTICS
               0.0MB : IN USE FOR FIXED 1M PAGES
               0.0MB : MAX IN USE FOR FIXED 1M PAGES
           FIXED 2G STATISTICS
               0.0GB : IN USE FOR FIXED 2G PAGES
               0.0GB : MAX IN USE FOR FIXED 2G PAGES
           DAT TABLE STATISTICS
               5.5MB : IN USE FOR DAT TABLES
```

z/OS Installation & Packaging

z/OSMF ServerPac – z/OS Portable Software Instance

z/OSMF Software Management Installation of z/OS 3.1 ServerPac

- Uses a simplified web-based GUI replacing the ISPF CustomPac Dialog
  - Manages allocation and placement of data sets, cataloging, and deployment in z/OSMF Software Management
  - Customization and verification is done in z/OSMF Workflows
  - Data set merge and disconnect Master Catalog on driving system . **(CD)**
  - Remove temporary catalog aliases are supported **(CD 4Q2022)**
  - REST APIs to run missing critical updates, missing FIXCAT updates, and software update search **(CD 4Q2022)**

- New Portable Software Instance Package signing –IBM plans to ship z/OS 3.1 ServerPac and PTF's with a signature that clients can verify. This will provide a means to verify the integrity of software. **(CD 1Q2023)**

- IBM (and participating major ISVs) deliver z/OSMF Portable Software Instances as a common installation method for z/OS stack software.

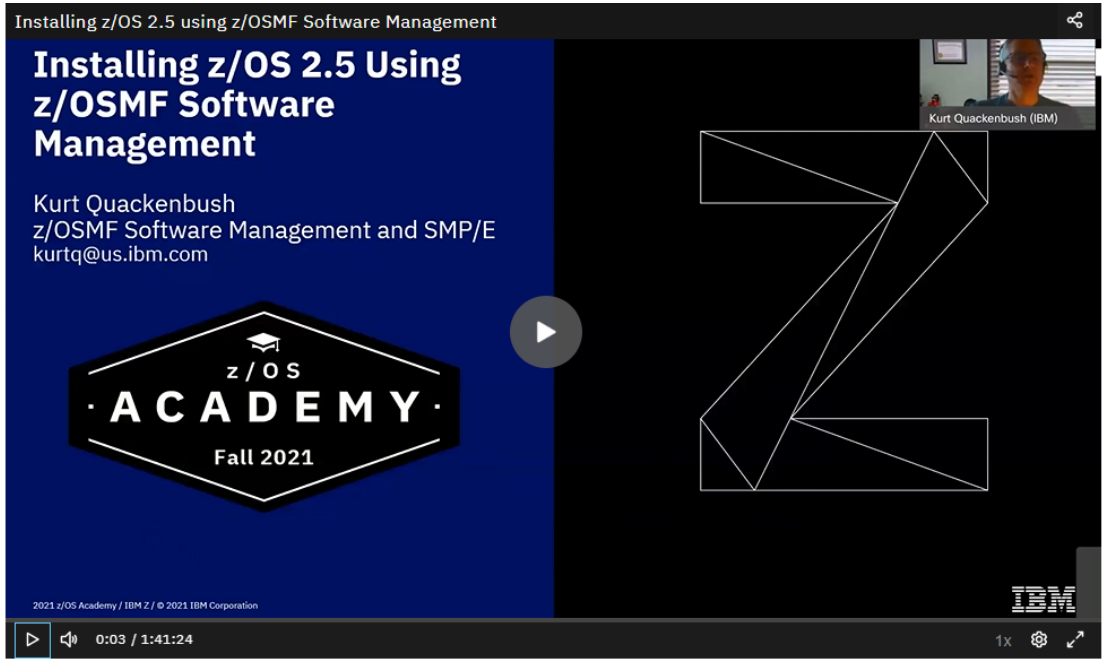
  - IBM z/OS, IMS, Db2, and CICS Transaction Server and associated products, all can be installed with z/OSMF today. CBPDO remains available and is unchanged.
  - z/OS 3.1 ServerPac is only provided as a z/OSMF Portable Software Instance
    - z/OSMF is a driving system requirement for all IBM ServerPacs. . **(CD)**

As stated in Software Announcement 222-214, dated June 21, 2022, the CustomPac Dialog installation method choice from Shopz was removed on July 10, 2022. As a result, any ServerPac for z/OS, IBM CICS, IBM Db2, IBM IMS, or program products ordered through Shopz are packaged and installable only with z/OSMF.

Installing z/OS 3.1 ServerPac Using z/OSMF

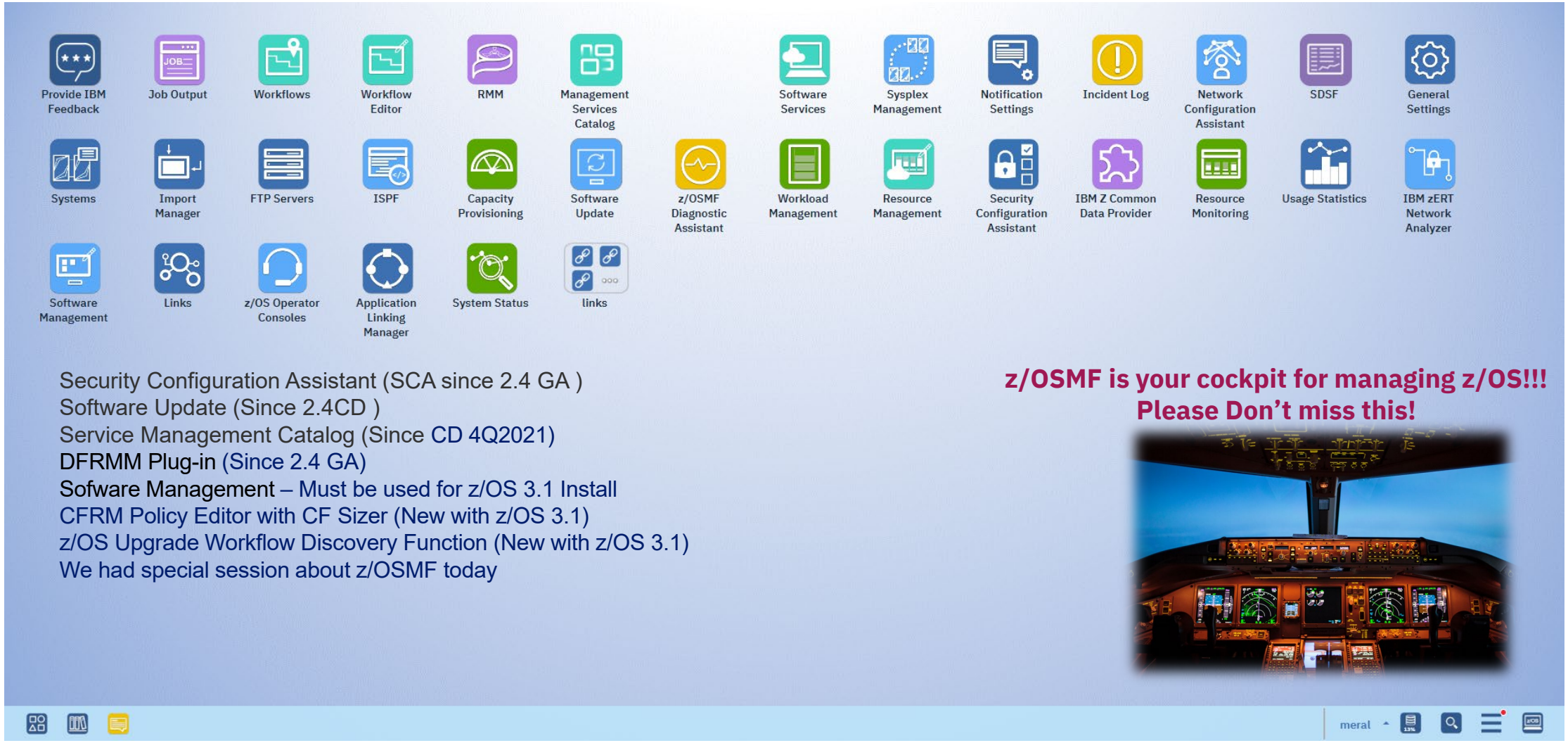
- Easy To Install z/OS Using z/OSMF
- Highly recommend to watch this if 3.1 will be your first usage of z/OSMF to install z/OS !
- z/OSMF will be the only option to install z/OS 3.1 as ServerPac . No CustomDiaglog. And it is easy !

Installing z/OS 2.5 using z/OSMF Software Management



Special Section For z/OSMF

Special About z/OSMF



Security Configuration Assistant (SCA since 2.4 GA)
Software Update (Since 2.4CD)
Service Management Catalog (Since CD 4Q2021)
DFRMM Plug-in (Since 2.4 GA)
Sofware Management – Must be used for z/OS 3.1 Install
CFRM Policy Editor with CF Sizer (New with z/OS 3.1)
z/OS Upgrade Workflow Discovery Function (New with z/OS 3.1)
We had special session about z/OSMF today

z/OSMF is your cockpit for managing z/OS!!!
Please Don't miss this!

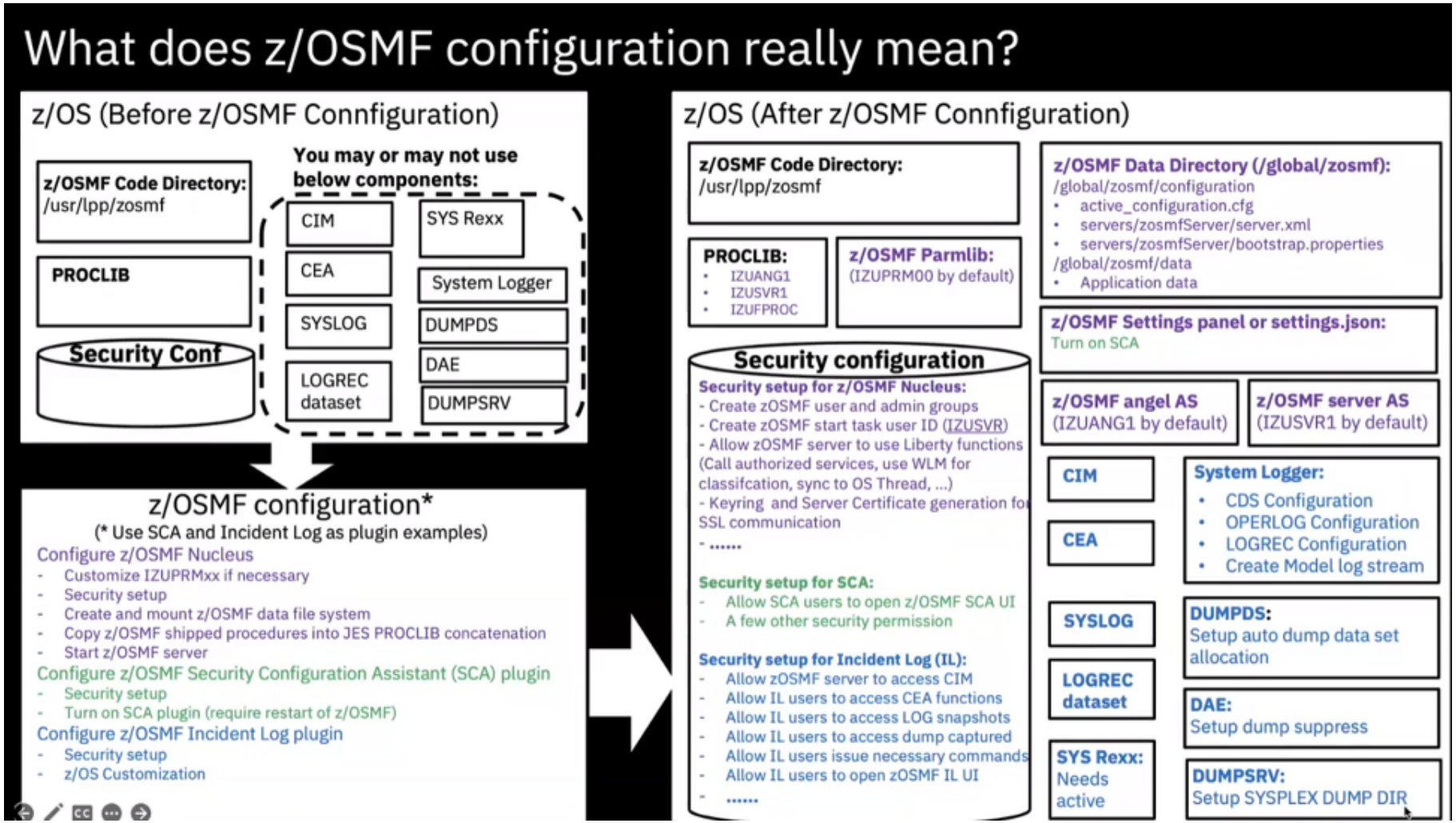
Special For z/OSMF - Easy To Configure!

Easy To Configure

Amazing video about how to configure and recommendations

[z/OSMF community Guild Session 11 – Configuration Oveview & Recommendations]

One slide – That shows everything in a very smart way!

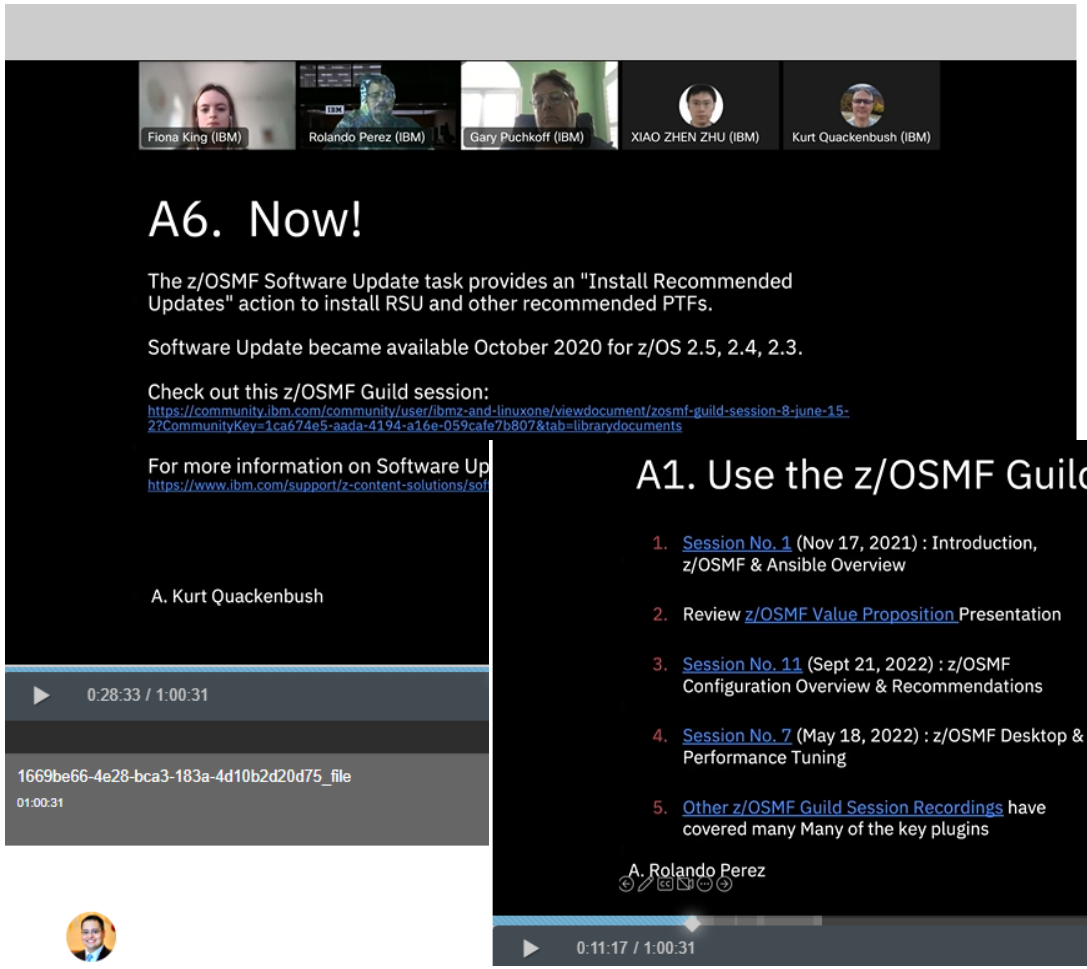


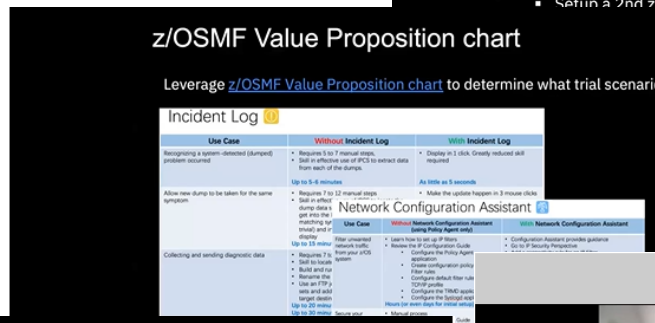
[z/OSMF One Stop Hub (https://ibm.github.io/zOSMF/)]

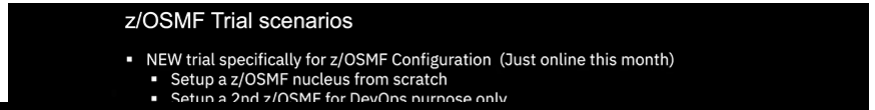
Special For z/OSMF

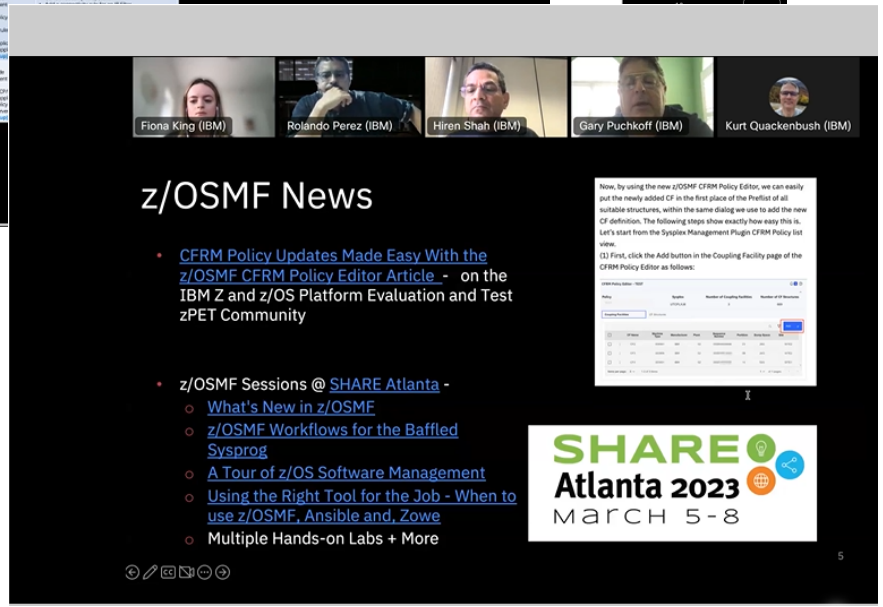
Ask z/OSMF anything

z/OSMF community Guild Session 15 – Ask z/OSMF anything - February 2023









Special For z/OSMF - Community Guild Web Page

[z/OSMF Community Guild Web page]

Amazing & Very Useful
Easy to understand
Easy to take action!
Recording Sessions

z/OSMF Management Services Catalog
Have you tried ?
Not yet ?, if you haven't, you are missing a great capability, please evaluate it !

z/OSMF –Management Services Catalog Updates

Available since CD 4Q2021

z/OS Management Services Catalog in z/OSMF leverages the power of z/OSMF workflows to enable system programmers to run services that help complete z/OS management tasks faster and with fewer errors.

- **Experienced z/OS system programmers will be able to create a catalog of customized services, each written with unique institutional knowledge, protocols, and processes.**
- **These services can then be run by less experienced colleagues.**
- An initial set of services to help z/OS system programmers of all skill levels get started, demonstrate accepted practices, and simplify information sharing.

Capabilities:

- Powerful graphical interface for creating new services, editing existing and sample services, and running services on z/OS
- Capability to view all services performed by the team, which can be used for audits
- z/OS Management Services Catalog is designed to transform how z/OS systems programmers manage their z/OS environments. With the ability to translate z/OS management processes into modern services, system programmers can independently complete tasks efficiently and with fewer errors. With z/OS 3.1, z/OS Management Services Catalog provides the following abilities to help z/OS system programmers create, submit, run, and manage their services
- **Sample services that provide step-by-step guidance for completing z/OS management tasks**

z/OSMF - Management Services Catalog

- No more need to prepare common procedure directory

- Useful for new team members for experienced Sysprogs as well

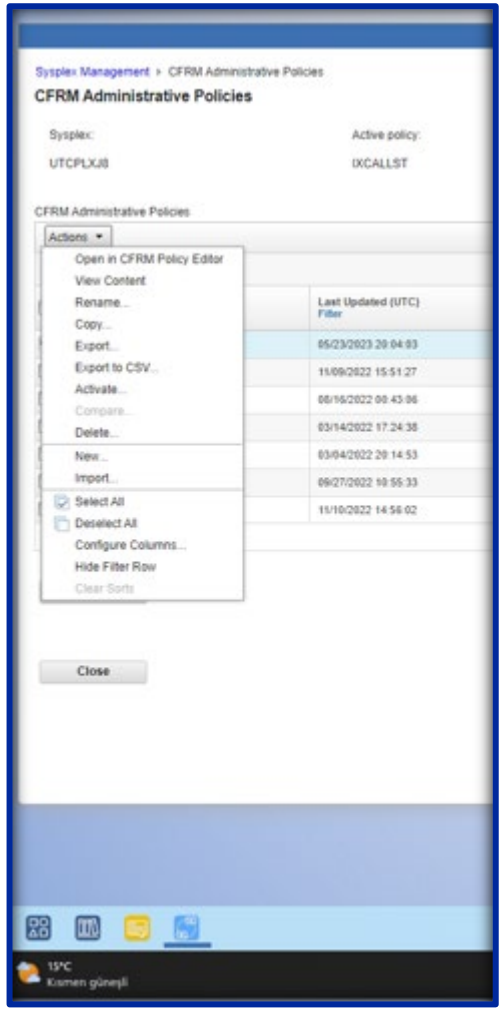
Sample Services:

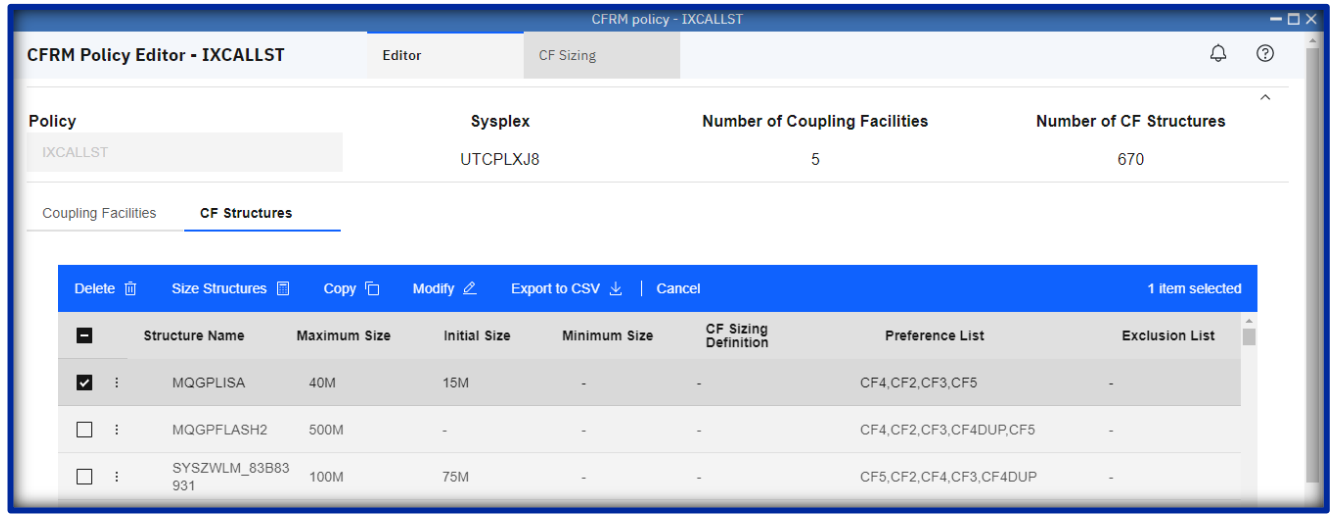
- Remove expired certificates from keyring.
- Add load library to LNKLST.
- Create a zFS z/OS File System.
- Rename a zFS file system.
- Expand a zFS file system.
- Encrypt a zFS file system.
- Mount a zFS file system.
- Unmount a zFS file system.
- List attributes of a RACF user ID.
- Delete a RACF user ID.
- Create a RACF digital certificate.
- Delete an alias from a catalog.
- Replace an SMP/E RECEIVE ORDER certificate.

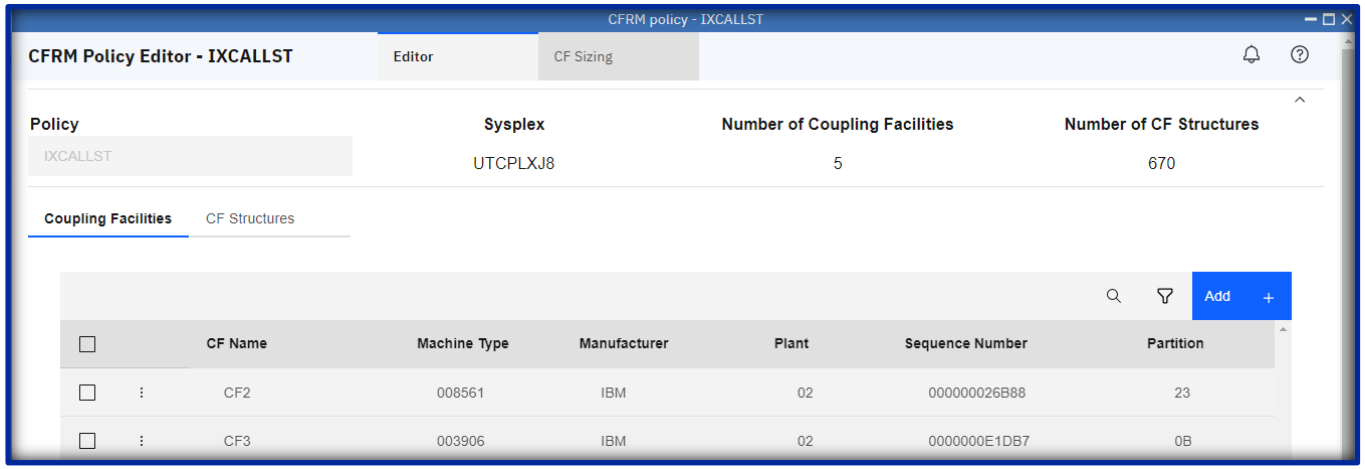
Learn more about services on the z/OS Management Services Catalog content solution/support/z-content-solutions/management-services).

z/OSMF Sysplex Management

z/OSMF - Sysplex Management – CFRM Policy Editor Enhancements



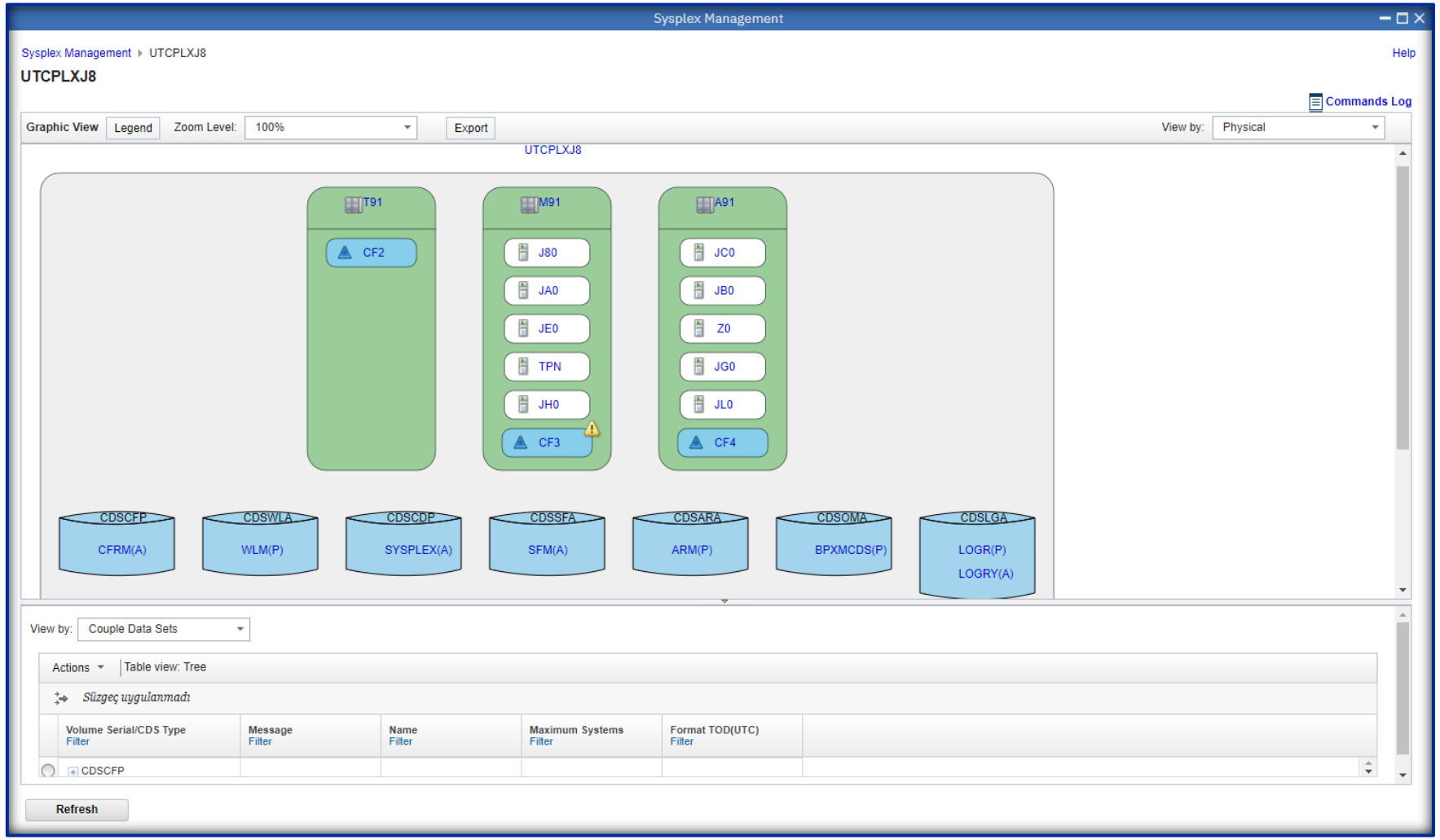




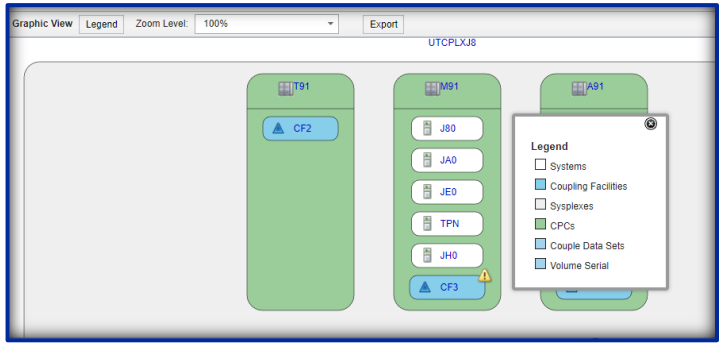
Several Enhancements were delivered via CDs

z/OS 3.1 - The CFRM Policy Editor supports a new integrated CF structure sizing capability, designed to calculate CF structure sizes

z/OSMF -Sysplex Management – Graphical View



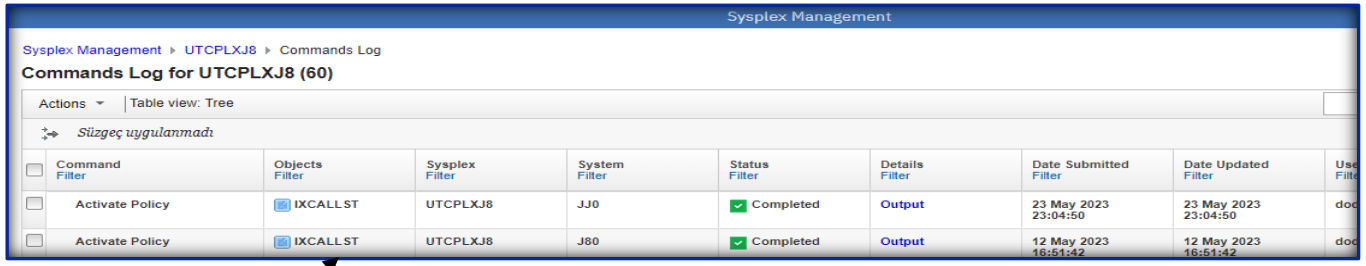
Changable Legend

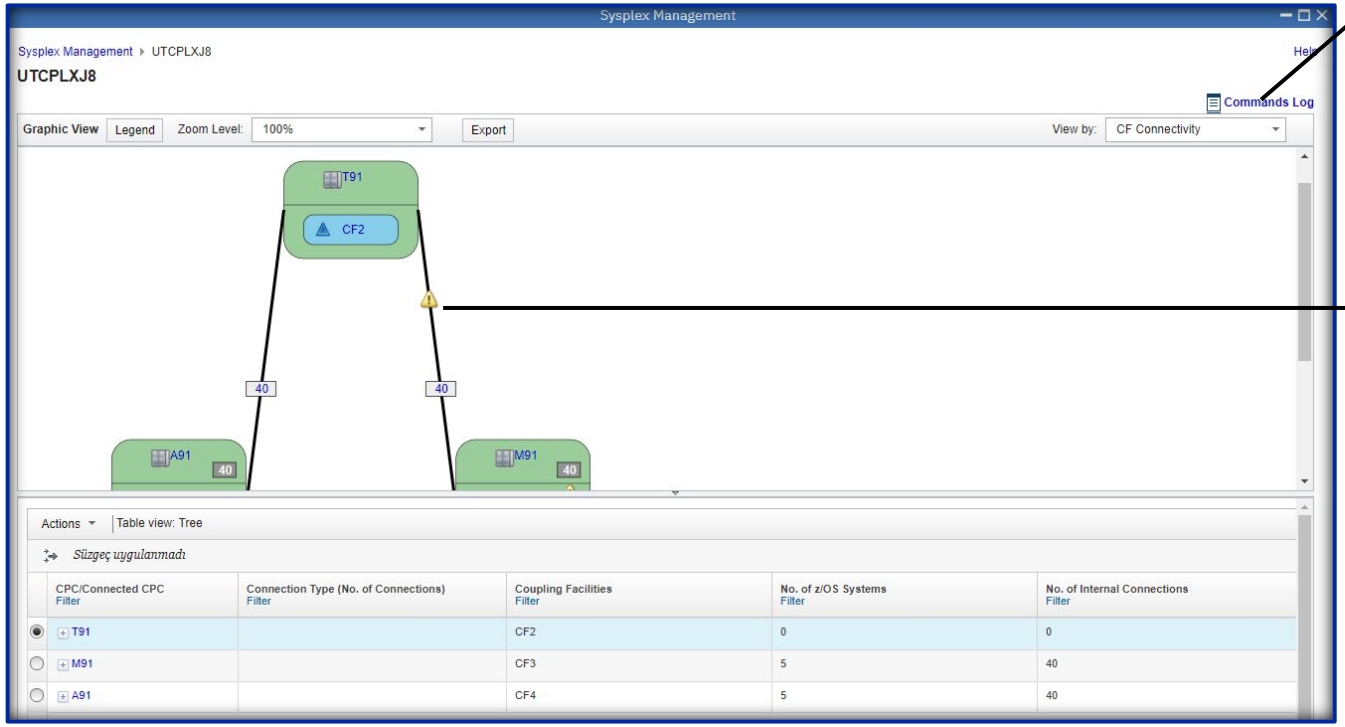


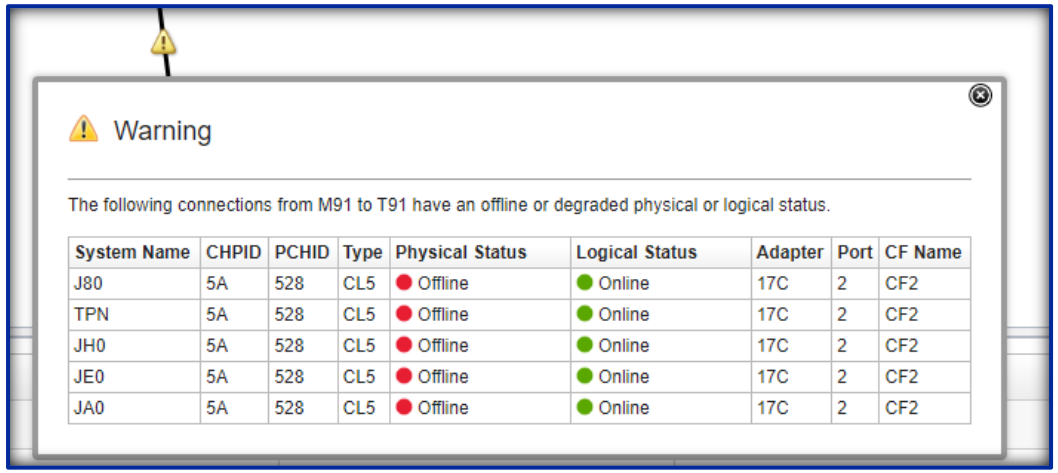
No need to try to draw diagram of CECs,LPARs seperate anymore to share internally in your organization....

«Just take screen shot of this panel»

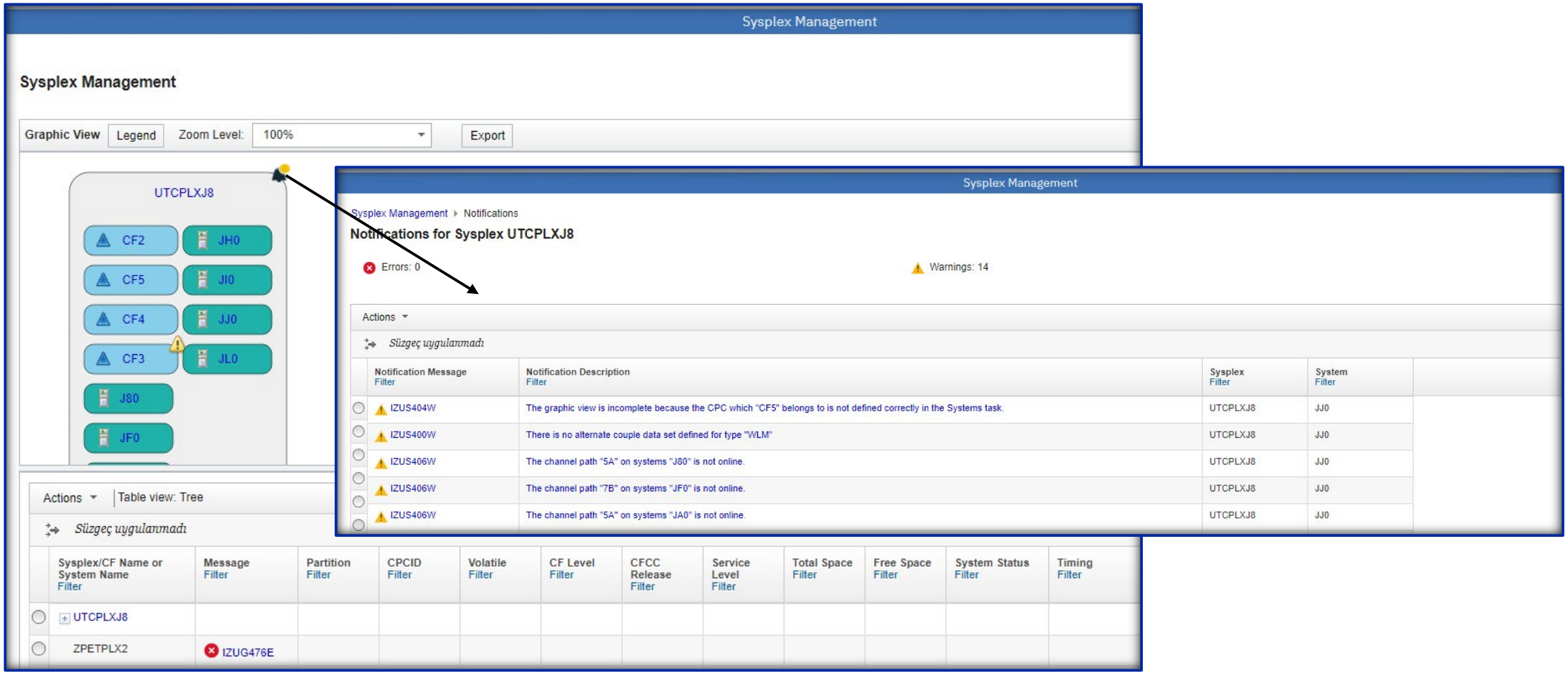
z/OSMF - Sysplex Management – Connection Status Information



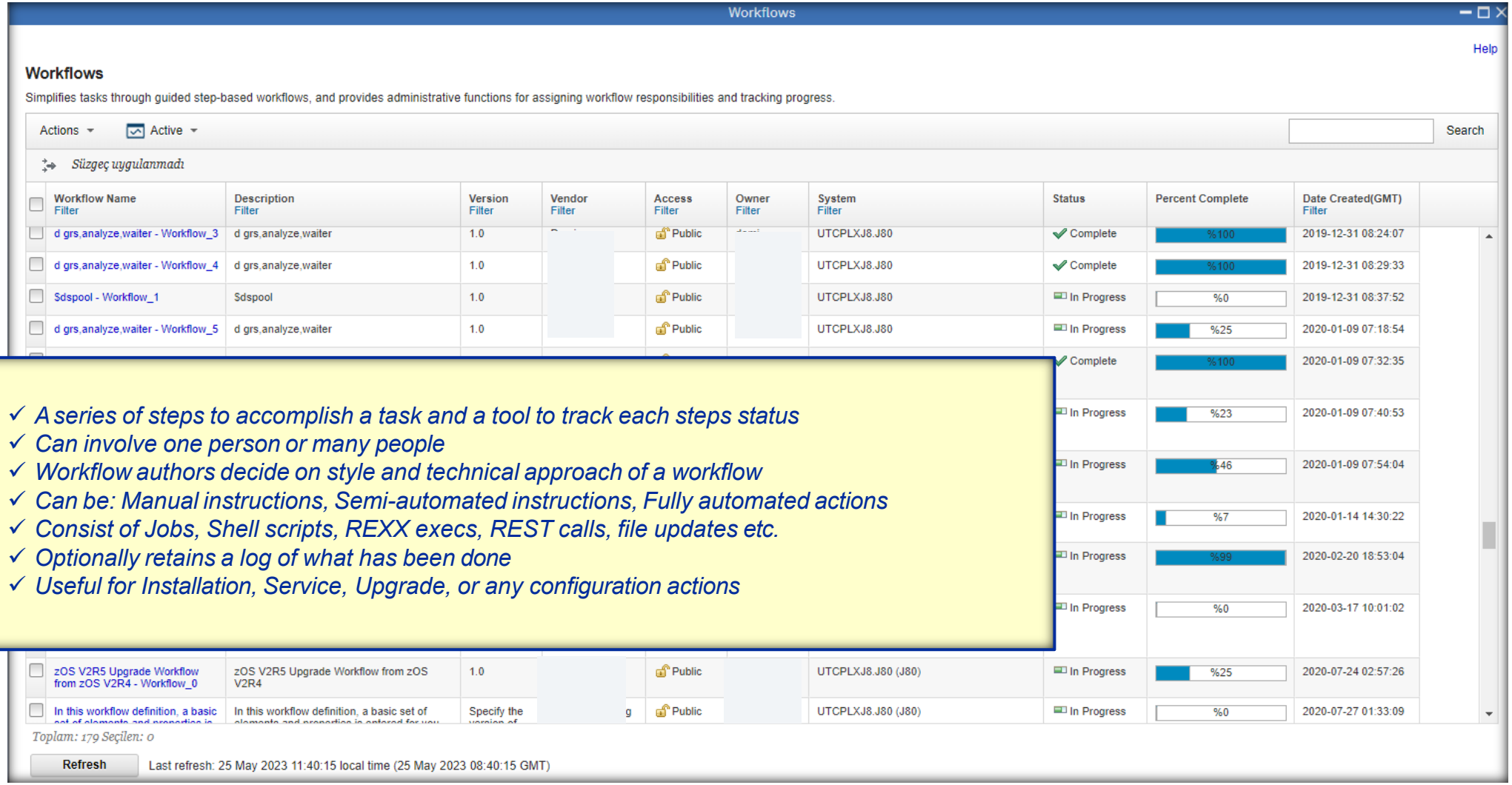




z/OSMF - Sysplex Management – Notification



z/OSMF Workflows

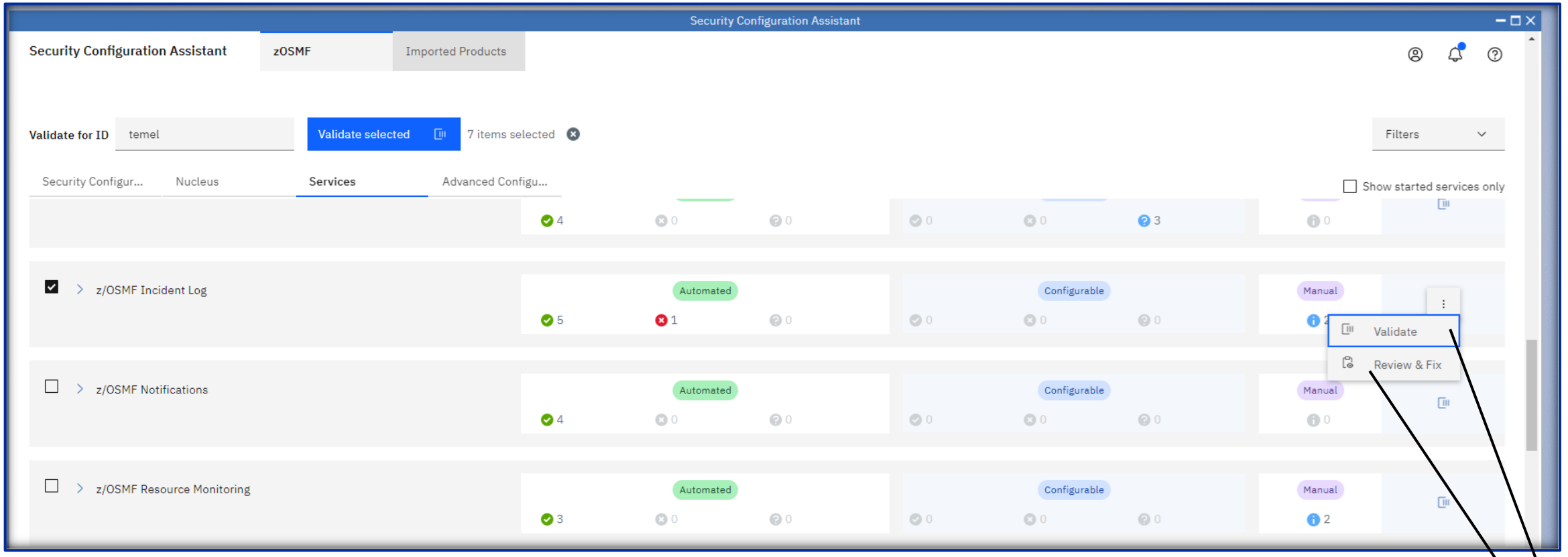


- ✓ *A series of steps to accomplish a task and a tool to track each steps status*
- ✓ *Can involve one person or many people*
- ✓ *Workflow authors decide on style and technical approach of a workflow*
- ✓ *Can be: Manual instructions, Semi-automated instructions, Fully automated actions*
- ✓ *Consist of Jobs, Shell scripts, REXX execs, REST calls, file updates etc.*
- ✓ *Optionally retains a log of what has been done*
- ✓ *Useful for Installation, Service, Upgrade, or any configuration actions*

z/OSMF SCA
Security Configuration Assistant

z/OSMF – SCA – Security Configuration Assistant

It exits since 2.4 GA!. VERY Useful Capability !



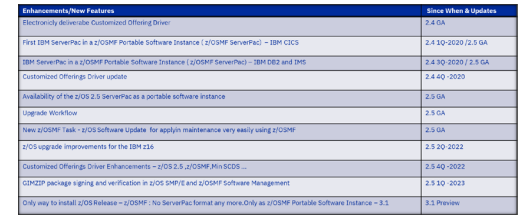
Pop Up panels

Table View of New Functions

With z/OS Continuous delivery , several of the new functions for the new release are available to clients.

It might be easier for you to see all enhancements related to one component or one area in table view. You can use these tables

- To get some of the enhancements history easily
- If you have already installed maintenance but not have time to check , you can use these tables to check whether you have done necessary actions to make use of these enhancements
- You will also see how long they have been there, so that , you may take this time as trigger item for you to not to be late on using them
- It is been arranged based on components, parts of z/OS , so that , you can handle in one shot, easily and with history behind; makes it easier for you to do the planning to start implementing them.
- With history behind, you may get better understanding easily some of the enhancement that is refering to previous enhancements on same component with all history as item in a table view.
- We will keep these up to date for each Quarterly announcements and special announceents as well
- To differentiate easier the new release functions
- **At the end of the presentation, you can see these tables**.



Enhancements/New Features	Since When & Updates
Electronicly deliverabe Customized Offering Driver	2.4 GA
First IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) – IBM CICS	2.4 3Q-2020 / 2.5 GA
IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) - IBM DB2 and IMS	2.4 3Q-2020 / 2.5 GA
Customized Offerings Driver update	2.4 4Q -2020
Availability of the z/OS 2.5 ServerPac as a portable software instance	2.5 GA
Upgrade Workflow	2.5 GA
New z/OSMF Task - z/OS Software Update for applyin maintenance very easily using z/OSMF	2.5 GA
z/OS upgrade improvements for the IBM z16	2.5 2Q -2022
Customized Offerings Driver Enhancements – z/OS 2.5 ,z/OSMF, Min SCDS ...	2.5 4Q -2022
GIMZIP package signing and verification in z/OS SMP/E and z/OSMF Software Management	2.5 1Q -2023
Only way to install z/OS Release – z/OSMF : No ServerPac format any more.Only as z/OSMF Portable Software Instance – 3.1	3.1 Preview

THANK YOU!

BACKUP SLIDES

Table View Of New Functions – Installation & Packaging

Enhancements/New Features	Since When & Updates
Electronicly deliverabe Customized Offering Driver	2.4 GA
First IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) – IBM CICS	2.4 1Q-2020 /2.5 GA
IBM ServerPac in a z/OSMF Portable Software Instance (z/OSMF ServerPac) – IBM DB2 and IMS	2.4 3Q-2020 / 2.5 GA
Customized Offerings Driver update	2.4 4Q -2020
Availability of the z/OS 2.5 ServerPac as a portable software instance	2.5 GA
Upgrade Workflow	2.5 GA
New z/OSMF Task - z/OS Software Update for applyin maintenance very easily using z/OSMF	2.5 GA
z/OS upgrade improvements for the IBM z16	2.5 2Q-2022
Customized Offerings Driver Enhancements – z/OS 2.5 ,z/OSMF,Min SCDS …	2.5 4Q -2022
GIMZIP package signing and verification in z/OS SMP/E and z/OSMF Software Management	2.5 1Q -2023
Validated Boot For z/OS	2.5 3Q -2023
Only way to install z/OS Release as Serverpac– z/OSMF : ServerPac format only as z/OSMF Portable Software Instance – 3.1	3.1

Table View Of New Functions – Installation & Packaging

Enhancements/New Features	Since When & Updates
Enhanced z/OSMF z/OS Upgrade Workflow – Discovery Function	3.1
Invoking Upgrade Related HCs from z/OS Upgrade Workflow	3.1
Generating a Universally Unique Identifier (UUID) during the installation and deployment of z/OS, correlating the UUID with the z/OSMF Software Management software instance. (How do I know which SMP/E CSI represents my running z/OS system)	3.1
AI Framework For z/OS	3.1

Table View of new functions

Parallel Sysplex

Enhancements/New Features	Since When & Updates
Logger support for single-system logger	2.4 GA
Dynamic activation of I/O configurations for stand-alone Coupling Facilities	2.4 GA
XCF Transport Classes simplification	2.4 GA
Automatic Restart Manager (ARM) support for restarting a system task	2.4 2Q-2020 / 2.5 GA
Coupling Facility (CF) monopolization avoidance	2.4 2Q-2020 / 2.5 GA
System Recovery Boost sysplex recovery enhancements	2.4 3Q-2020 / 2.5 GA
XCF note pad resiliency enhancements	2.5 4Q-2021 / 2.5 GA
Parallel Sysplex z16 Support –z16 Coupling & Parallel Sysplex Enhancements	2.5 2Q-2022
CF latency and scalability enhancements (z16)	2.5 2Q-2022
CF cache and lock structure resiliency improvements (z16 CF Level 25)	2.5 2Q-2022
CF cache structure object residency time monitoring and metrics (z16 CF Level 25)	2.5 2Q-2022
System Recovery Boost sysplex recovery enhancements (z16 only updates)	2.5 2Q-2022
CF Sizer in z/OSMF CFRM Policy Editor	3.1

Table View of new functions

RSM/VSM Memory

Enhancements/New Features	Since When & Updates
SMFLIMxx assembler exits support	2.4 GA
Removal of user key common storage	2.4 GA
Restricted Use Common Service Area (RUCSA) feature	2.4 GA
z/OS UNIX and POSIX memory-map 64-bit support	2.4 1Q-2020 / 2.5 GA
IBM JES2 memory usage enhancements	2.5 GA
Data set open limit relief	2.5 GA
RSM support for more than 4 TB of real memory – Up To 16 TB	2.5 GA / 2.5 2Q-2022
Dedicated Real memory pools	3.1 GA

Table view of new functions - z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 1/3	Since When & Updates
TFP ease of use SOLUT Parameter	2.4 2Q-2021 / 2.5 GA
WLM batch initiator enhancements	2.5 GA
WLM Policy Advisor (z/OSMF)	3.1
AI-powered WLM	3.1
IBM z/OS Workload Interaction Correlator	2.4 1Q-2021 / 2.5 GA
New entitlement structure for IBM z/OS Workload Interaction Correlator	2.5 4Q-2021
z/OS Workload Interaction Navigator Inspector support	2.5 1Q-2023
zWIC I/O data-IOS Support (z/OS component exploitation of z/OS Workload Interaction Correlator is planned to be extended to include I/O Supervisor (IOS), providing clients with 5-second synchronized, micro-summary, enriched I/O data)	3.1

Table view of new functions - z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 2/3	Since When & Updates
zHyperWrite - Uncaptured Volume I/O Statistics	2.4 GA
zHyperLink write statistics	2.4 2Q-2020 / 2.5 GA
Faster Db2 active log writes with Media Manager parallel write support using zHyperLink	2.5 4Q - 2021
DFSMS zHyperLink write support for multivolume data sets	2.5 4Q -2022
zHPF VTOC I/O performance	2.4 2Q-2020 /2.5 GA
RMF System Recovery Boost Support Enhancements	2.4 3Q-2020 / 2.5 GA
RMF CF monopolization avoidance support	2.4 3Q-2020 / 2.5 GA
RMF storage class memory (SCM) busy percentage on a z15	2.4 3Q-2020 / 2.5 GA
RMF ICSF, Cyrpto HW Support	2.4 2.4 Q4-2020 / 2.5 GA
New Healtcheck- Verify the HTTPS (AT-TLS) configuration of the RMF Distributed Data Server (DDS)	2.4 4Q -2020 / 2.5 GA

Table view of new functions - z/OS Performance General & WLM & RMF & Monitoring & Analysing Enhancements

Enhancements/New Features 3/3	Since When & Updates
RMF - enhanced the Transport Class in XCF Singaling Report,more performance statistics	2.4 1Q-2021 /2.5 GA
RMF and z/OS ADG (Advance Data Gatherer) –New	2.5 GA
RMF and ADG optimizes CF data collection	2.5 GA
RMF and z/OS ADG z16 Support	2.5 2Q-2022
IBM SMF Explorer with Python	2.5 4Q-2022
z/OS Data Gatherer SMF REST Services (z/OSMF)	2.5 4Q-2022
RMF (The priced feature) plans to be enhanced with a new, modern, web-based user interface supporting Monitor III Metrics and Reports	3.1
The RMF Distributed Data Server (DDS) intends to be enhanced to increase security and the use of 64-bit for memory constraint relief	3.1
WLM Implicit Long-Term CPU Protection	3.1

Table view of new functions - z/OS Anomaly Mitigation PFA , HZR, ...

Enhancements/New Features	Since When & Updates
z/OS anomaly mitigation	2.5 GA
New Runtime Diagnostics event for detecting and diagnosing active SLIP PER traps	2.5 1Q -2022
Reduce the impact of first failure data capture (FFDC) on a system	2.4 GA
z/OS Diagnostics Analyzer – Sensitive Data	2.4 3Q 2020 / 2.5 GA
MEMLIMIT diagnostics for CICS and Java	2.5 2Q-2022
zAIOps and Runtime Diagnostics integration	3.1
Predictive Failure Analysis (PFA) migration to Semeru 11	3.1

Table View of new functions

BCPii - Enhancements/New Features	Since When & Updates
BCPii LPAR group control support	2.4 GA
A new z/OS BCPii API named HWIREST	2.4 2Q 2021 / 2.5 GA
BCPii HWIREST support for commands from ISV and TSO/E REXX environments	2.5 1Q 2022

zERT- Enhancements/New Features	Since When & Updates
IBM zERT Network Analyzer database administration enhancements	2.4 1Q-2020 / 2.5 GA
BM zERT aggregation recording interval	2.4 2Q-2020/ 2.5 GA
zERT policy-based enforcement	2.5 GA
zERT Network Analyzer z/OSMF plug-in is enhanced to support the use of passphrases as an authentication credential for the network analyzer's Db2 user ID on the plug-in's database settings panel.	2.5 2Q -2022

Table View of new functions

Enhancements/New Features	Since When & Updates
Application transparency for unplanned outages affecting zFS file systems shared in a sysplex environment (New Mount Option)	2.4 GA
BPXWMIGF for zFS to ZFS (Files that are in use by the application during the movement process are automatically and transparently moved to the target file system without affecting the application)	2.4 GA
Faster mount of zFS file systems (IPL Time Enhancement)	2.5 GA
wildcard character in the aggregate name on the **zfsadm chaggr**	2.5 GA
Warning Capabillity on z/OS UNIX system limits (Change in default of LIMMSG keyword in BPXPRMxx)	2.5 GA
df utility provide the file system size in megabyte increments, instead of bytes, optionally	2.5 GA
New OVIEW utility	2.5 GA
BPXCOPY utility is enhanced to enable file tagging where the target z/OS UNIX file can be tagged with a CCSID	2.5 GA
rm utility with new options protect from recursively deleting files	2.5 GA
BPXBATCH facility has been enhanced with two new keywords, PGMRC and SHRC, to get the proper return code for the submitted job	2.5 GA
Updates in BPXPRMXX syntax checker, to validate ZFS parameters on the ROOT and MOUNT statements, (validation prior to re-IPLing)	2.5 GA
UNIX component trace (SYSOMVS CTRACE) buffer size limit has increased from a maximum of 64 M to 2047 M for improved service	2.5 GA
z/OS UNIX SMF recording function (__smf_record()) has been enhanced to provide extended SMF record support	2.5 GA
NEW ! Data Set File System	2.5 2Q- 2022
su auditing capability by issuing SYSLOGD message	z/OS 3.1 GA
date utility support for Julian date conversion	z/OS 3.1 GA
find utility enhancement to print filenames with a null character	z/OS 3.1 GA

Table view of new functions - z/OSMF Updates – MANY!

Enhancements/New Features	Since When & Updates
z/OSMF Files and Datasets Network Compression	2.4CD
z/OSMF Request Queueing	2.4CD
z/OSMF CEA Increased TSO Sessions	2.4CD
z/OSMF Improved configuration	2.4CD
z/OSMF Granular Configuration	2.4CD
z/OSMF Start Up Improvements	2.4CD
z/OSMF Updated Liberty	2.4CD
z/OSMF UI Type Ahead Search	2.4CD
z/OSMF Desktop Create Data Set	2.4CD
z/OSMF Desktop File and Data Sets Hot-links	2.4CD
z/OSMF Change Password API	2.4CD
z/OSMF ISPF Application Global Settings	2.4CD
z/OSMF Incident Log Diagnostic Viewing	2.4CD
IBM z/OSMF support for JSON Web Token	2.4CD
z/OSMF Remote REST APIs	2.4CD

Table view of new functions - z/OSMF Updates – MANY!

Enhancements/New Features	Since When & Updates
z/OSMF Dynamic Parmlib IZUPRMxx Update	2.4CD
REST Files & Dataset Update -Allocate Like another dataset, handling carriage returns automatically	2.4CD
REST Jobs - Spool Search options, improved spool codepage support, option to retrieve active jobs, return additional data	2.4CD
z/OSMF REST API for SYSLOG	2.5CD 1Q2022
z/OSMF REST API for System Symbols	2.5CD 1Q2022
z/OSMF Systems Task Improvements	2.5CD 2Q2022
z/OSMF Incident Log Support for HTTPs	2.5CD 4Q2021
z/OSMF Upload & Download files on Desktop	2.5CD 4Q2022
z/OSMF Browser Support for V2.5	2.5GA
z/OSMF Data Set and File Compare	2.5CD 1Q2022
REST Jobs Update -Remove dependency on CIM and CEA and replace with JES2	2.5CD 2Q2022
REST Jobs Update - Additional notification points when a job is submitted and when a job begins execution	2.5CD 4Q2022
Storage Management REST API -New APIs to retrieve data class or storage class available	2.5CD 4Q2021
Storage Management REST API -New API to add a volume to a storage group	2.5CD 4Q2022
REST Files & Dataset Update -Support for international characters in a data set or file name	2.5CD 4Q2021
REST Files & Dataset Update -Support for adding and removing USS symbolic links	2.5CD 2Q2022

Table view of new functions - z/OSMF Updates – MANY!

Enhancements/New Features	Since When & Updates
Workflow Update -Policy-based archive workflow management	2.5CD 1Q2022
Workflow Update - Signed workflow steps in support of running as another user	2.5CD 1Q2022
Workflow Update - Catch-all workflow archive policy	2.5CD 1Q2022
z/OSMF Usage - Ability to perform data set and USS file operations directly from the desktop	2.5CD -4Q2021
z/OSMF Usage -Copy, Rename, Change File Permissions, Update Attributes	2.5CD -4Q2021
Many new REST APIs related to several components of z/OS	z/OS 3.1 and nearly all CDs
z/OSMF Sysplex Management – CF structure sizing capability (CF Sizer)	z/OS 3.1

zFS & Unix System Services Updates

Enhancements/New Features	Since When & Updates
Application transparency for unplanned outages affecting zFS file systems shared in a sysplex environment (New Mount Option)	2.4 GA
BPXWMIGF for zFS to ZFS (Files that are in use by the application during the movement process are automatically and transparently moved to the target file system without affecting the application)	2.4 GA
Faster mount of zFS file systems (IPL Time Enhancement)	2.5 GA
wildcard character in the aggregate name on the **zfsadm chaggr**	2.5 GA
Warning Capabillity on z/OS UNIX system limits (Change in default of LIMMSG keyword in BPXPRMxx)	2.5 GA
df utility provide the file system size in megabyte increments, instead of bytes, optionally	2.5 GA
New OVIEW utility	2.5 GA
BPXCOPY utility is enhanced to enable file tagging where the target z/OS UNIX file can be tagged with a CCSID	2.5 GA
rm utility with new options protect from recursively deleting files	2.5 GA
BPXBATCH facility has been enhanced with two new keywords, PGMRC and SHRC, to get the proper return code for the submitted job	2.5 GA
Updates in BPXPRMXX syntax checker, to validate ZFS parameters on the ROOT and MOUNT statements, (validation prior to re-IPLing)	2.5 GA
UNIX component trace (SYSOMVS CTRACE) buffer size limit has increased from a maximum of 64 M to 2047 M for improved service	2.5 GA
z/OS UNIX SMF recording function (__smf_record()) has been enhanced to provide extended SMF record support	2.5 GA
NEW ! Data Set File System	2.5 2Q- 2022
su auditing capability by issuing SYSLOGD message	2.5 2Q- 2023
date utility support for Julian date conversion	2.5 2Q- 2023
find utility enhancement to print filenames with a null character	2.5 2Q- 2023

zFS & Unix System Services Updates

Enhancements/New Features	Since When & Updates
grep –r/-R to search directories recursively	3.1
New utilities **readlink** and **banner**	3.1
OpenSSH 8.4p1 (Previously it was OpenSSH 7.6p1)	3.1
XML Toolkit V1.11 included in z/OS Base	3.1
The Xerxes and Xalan XML parsers can now be used within the z/OS Operating system	3.1

Table View of new functions

SDSF

SDSF Enhancements/New Features	Since When
SDSF enhancements Extended Operator Console Display,OMVS options,Link pack directory,Coupling (XCF) members and groups, JES2 Subsystems,JES2 resource monitor alerts,Enqueue by data sets,WLM policy information,SC,RC,RG,Workloads, Job memory objects,Job DD names,JES2 Checkpoint information	2.4 GA
SDSF Recover Boost Support	2.4 3Q-2020 / 2.5 GA
SDSF Several New Enhancements with 2.5 GA	2.5 GA
Key new feature Module Fetch Monitoring Planned to show modules fetched, where, when and who	3.1 GA
Key new feature Significant Event logging Indication of events such as volumes coming on and offline, actions etc	3.1 GA
z/OS 3.1 many new Primary Displays Planned, vieable field	3.1 GA
The browser-based UI (in z/OSMF) is planned to be updated to continue to match function with ISPF	3.1 GA
SDSF is planned to be enabled for the Security Configuration Assistant of z/OSMF to ease security settings	3.1 GA

RMF – Dedicated Memory

```
                          RMF V3R1    Storage Frames                        Line 1
Command ===>                                                              Scroll ===

Samples: 60        System: RSB6   Date: 08/09/23   Time: 10.06.00   Range: 60

           Service      -- Frame Occup.--  - Active Frames -  AUX     PGIN D
Jobname  C Class     Cr TOTAL   ACTV   IDLE   WSET FIXED    DIV SLOTS RATE M

IZUSVRB6 S STCMD        166K   166K      0   166K  1454      0     0    0 N
ZFS      S SYSSTC       158K   158K      0   158K 65037      0     0    0 Y
OMD6DS   S MONITORSS    157K   157K      0   157K  2512     98     0    0 N
M5TEDS   S MONITORS    93216  93216      0  93216  2228     33     0    0 N
OMDADS   S MONITORSS   88056  88056      0  88056  2210      0     0    0 N
```

```
                          RMF V3R1    Storage Memory Objects          Line 1 of 458
Command ===>                                                        Scroll ===> CSR

Samples: 60        System: RSB6   Date: 08/09/23   Time: 10.06.00   Range: 60     Sec

----MemObj----  ---Frames---  -1MB Frames-  --1MB Fixed-  -2GB Fixed-  --DedicatedM-
Fixed 1M      0 Shared 17613 Total   23984 Max          0 Max        16 Initial      0
Fixed 2G      1 Common   135K %Used    30.7 Common       0 %Used   37.5 Online       3
Shared       25 %Used     3.0 %UsedP    2.6 %Used     0.0               Total        3
Common      270                                                        Free         0
-------------------------------------------------------------------------------------
           Service          --Memory Objects-  --1M Frames-  2G-Fr -------Bytes-------
Jobname  C Class     ASID Total   Comm    Shr Fixed Pgable Fixed Total   Comm    Shr

TCPIP    S SYSSTC    0383   963      6      1     0      0     0 1018G 2850M   992G
IZUSVRB6 S STCMD     0413   787      0      2     0    348     0 22.7G     0   304M
ZFS      S SYSSTC    0031   555     33      0     0      8     0 2747M 33.0M     0
OMD6DS   S MONITORS 0405   234      0      0     0      1     0  627M     0     0
```

SDSF Updates

73 main panels

MENU V2R5M0 UTCPLXJ8 J80		
NAME	Description	Group
DA	Active users	Jobs
I	Input queue	Jobs
O	Output queue	Output
H	Held output queue	Output
ST	Status of jobs	Jobs
JG	Job groups	JES
SYM	System symbols	System
LOG	System log	Log
SR	System requests	Log
MAS	Members in the MAS	JES
JC	Job classes	JES
SE	Scheduling environments	WLM
RES	WLM resources	WLM
ENC	Enclaves	WLM
PS	Processes	OMVS
SYS	System information	System
ENQ	Enqueues	System

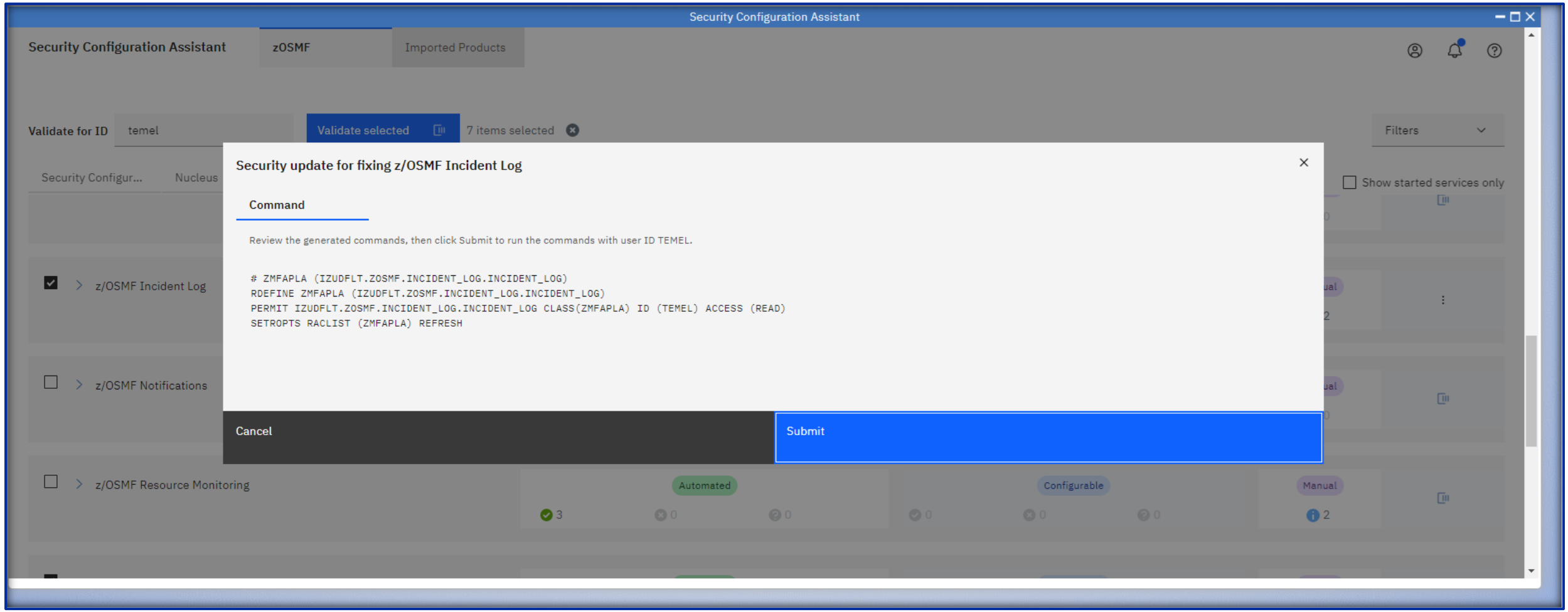
MENU V2R5M0 UTCPLXJ8 J80	
NAME	Description
ENQC	Enqueue contention
ENQD	Enqueued data sets
DYNX	Dynamic exits
AS	Address space memory
INIT	Initiators
PR	Printers
PUN	Punches
RDR	Readers
LINE	Lines
NODE	Nodes
SO	Spool offload
SP	Spool volumes
NS	Network servers
NC	Network connections
RM	Resource monitor
CK	Health checker
LNK	Link list data sets

NAME	Description
LPA	Link pack data sets
APF	APF data sets
PAG	Page data sets
PARM	Parmlib data sets
PROC	Proclib data sets
SSI	Subsystem information
CFC	CF connections
CFS	CF structures
VMAP	Virtual storage map
SMSG	SMS storage groups
SMSV	SMS volumes
FS	File systems
CSR	Common storage remainin
GT	Generic tracker
NA	Network activity
DEV	Device activity
EMCS	Extended consoles

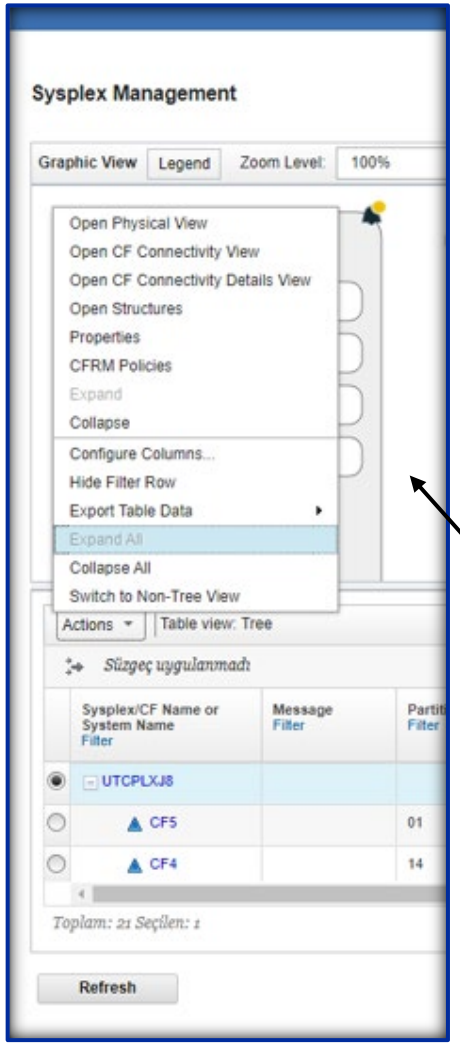
NAME	Description
BPXO	OMVS options
LPD	Link pack directory
XCFM	XCF groups and members
WLM	WLM policy data
SRVC	Service classes
REPC	WLM report classes
RGRP	WLM resource groups
WKLD	WLM workloads
RMA	Resource monitor alerts
JES	Job entry subsystems
JRI	JES resource information
JRJ	JES resource by job
LLS	Link list sets
MEM	Memory contents
CFD	Couple data sets
SVC	SVC routines
SYSP	System parameters
CS	Common storage subpools
PC	PC routines
AD	Address space diagnostic
ULOG	User session log
HELP	SDSF help facility

z/OSMF – SCA – Security Configuration Assistant

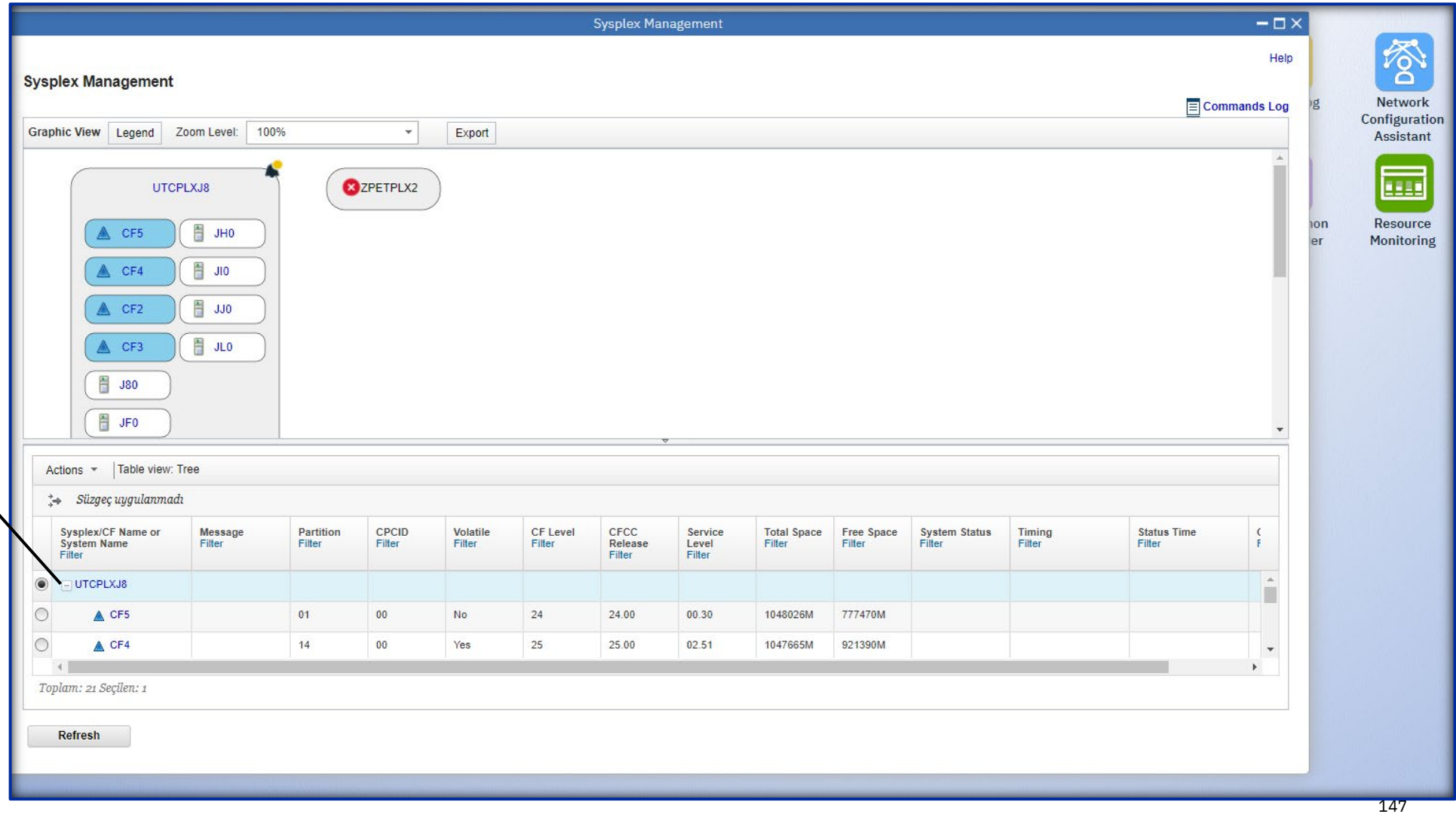
VERY Useful Capability ! Fix automaticly



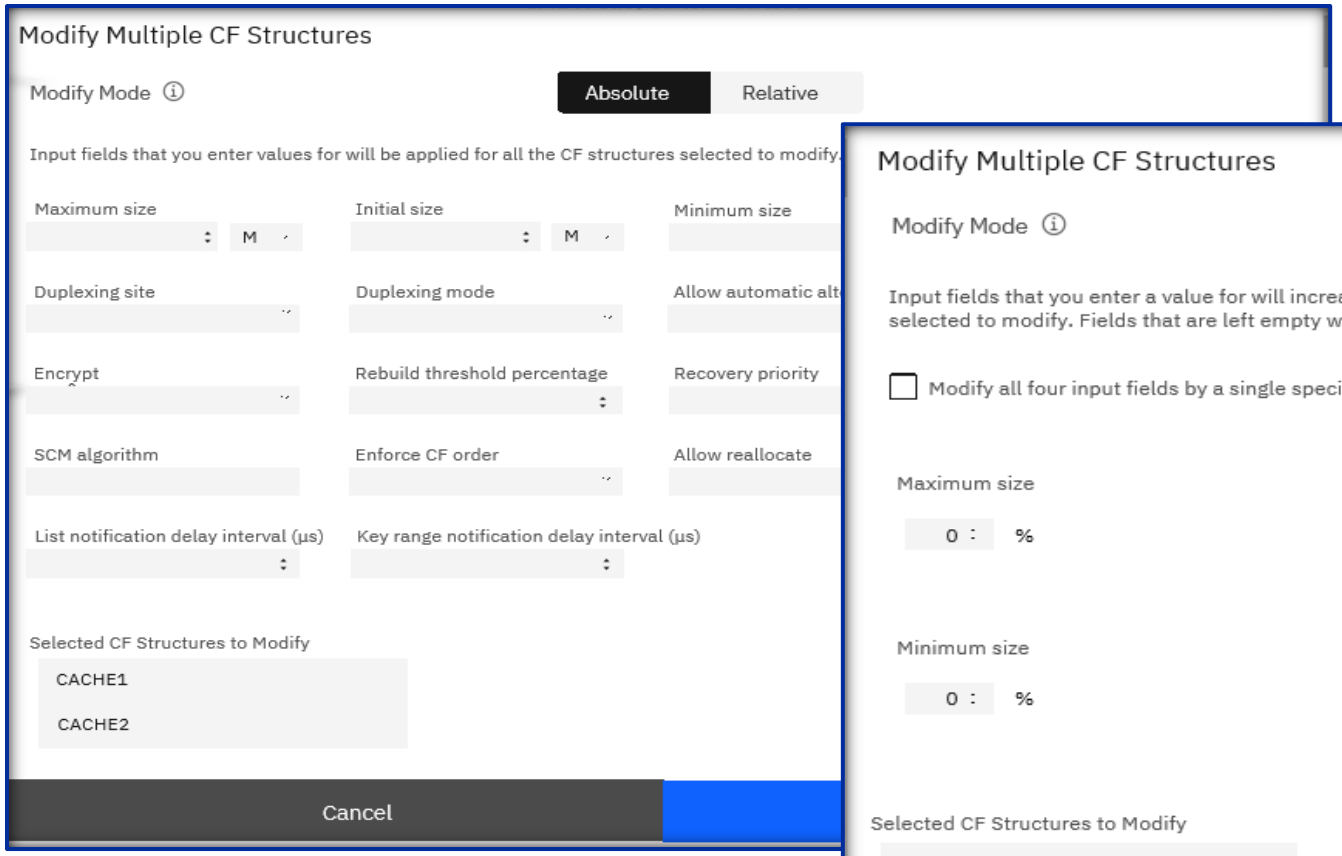
z/OSMF - Sysplex Management

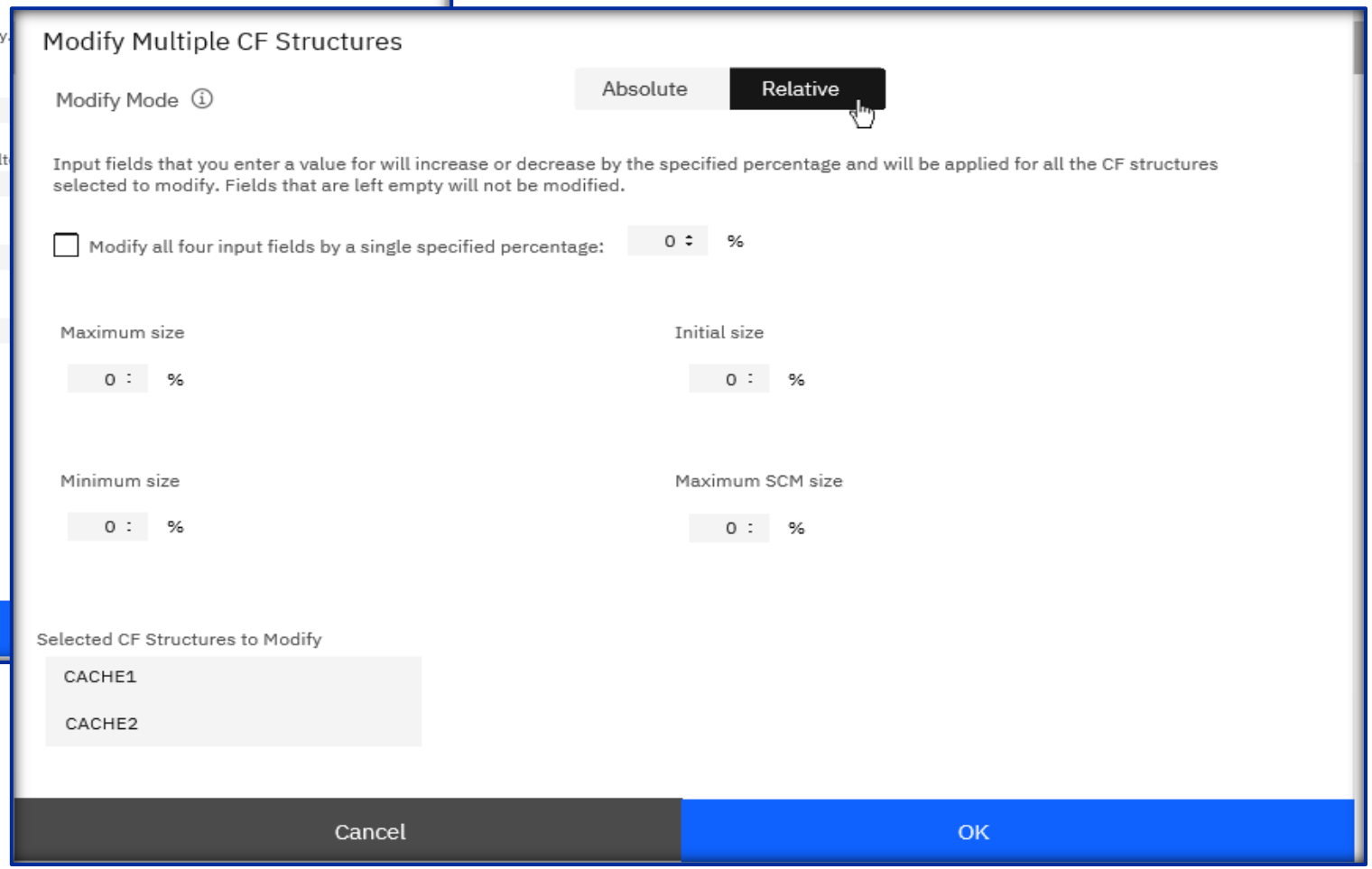


Actions



z/OSMF - Sysplex Management – CFRM Policy Editor





THANK YOU!

BACKUP SLIDES

Some older ones that can be of interest

Coupling Facility (CF) monopolization avoidance z/OS 2.4 Q2 2020

When CF requests directed to a single structure consume a disproportionate share of CF resources, workloads targeting other structures may be starved of resources and unable to achieve acceptable service times and throughput. The degradation can affect critical system components and middleware applications across the entire sysplex. APAR OA56774 exploits new function introduced by coupling facility control code level (CFLEVEL) 24 on z15 servers to prevent a runaway sysplex application from monopolizing a disproportionate share of CF resources.