

zPCR Capacity Sizing Lab

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IBM

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zPCR Capacity Sizing Labs

- Part 1 - Intro and Overview
 - zPCR Introduction
 - Includes Advanced Mode Update
- Part 2 – Hands-on Lab
 - 1 Exercise to demonstrate the use of Advanced Mode functions in zPCR
 - 6 Tasks
 - 2 Additional Analysis to Try (Including SMT Benefit)
 - Use as a refresher

zPCR Capacity Sizing Lab

Part 1 Introduction and Overview

John Burg
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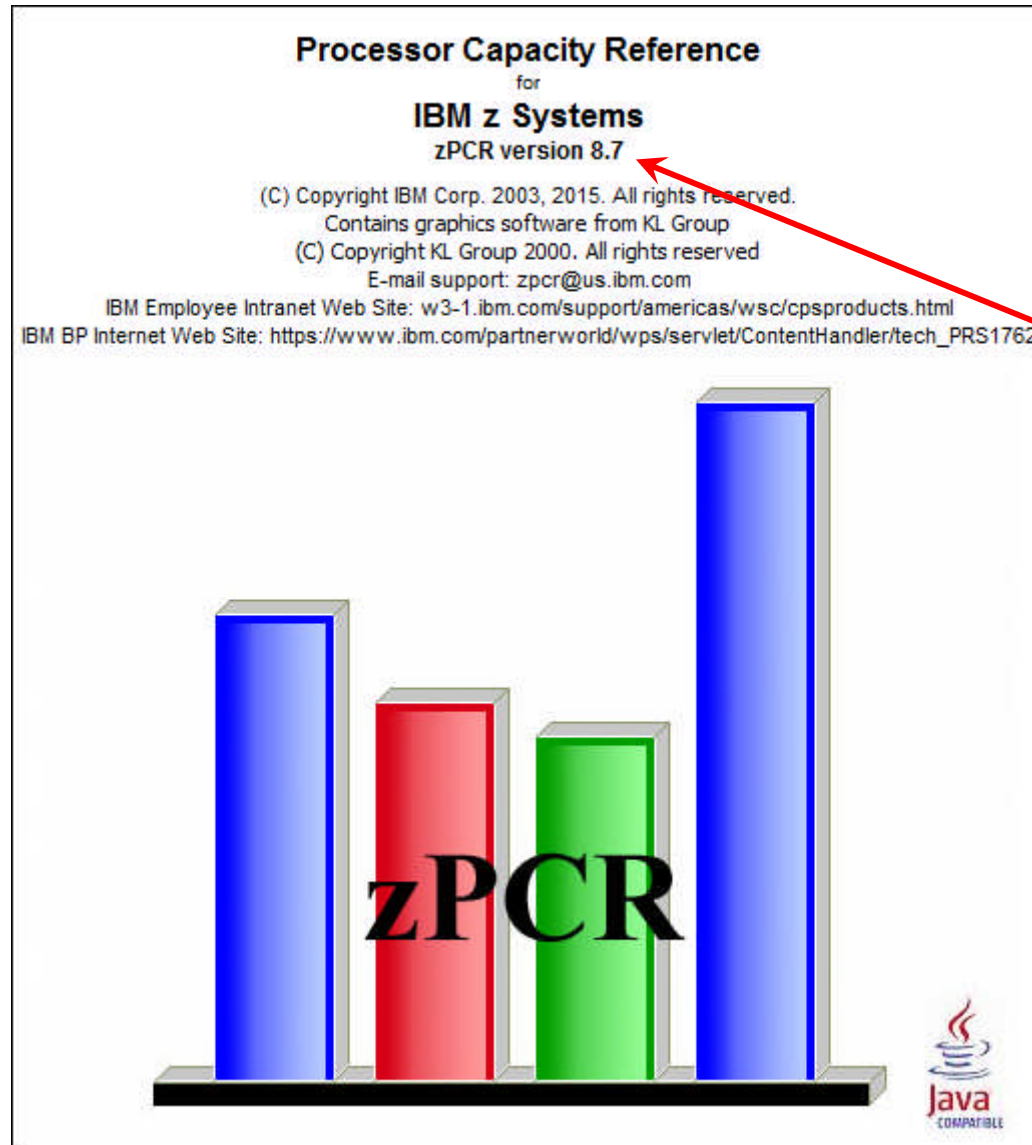
Agenda

- Introducing zPCR
- LSPR Background
- MIPS Tables vs. zPCR LPAR Configuration Capacity Planning
- zPCR Basic / Advanced Mode
- zPCR Preferences
- zPCR Execution Flow
- EDF Files
- zPCR Output
- Where to get more Information
- Summary

Introducing zPCR

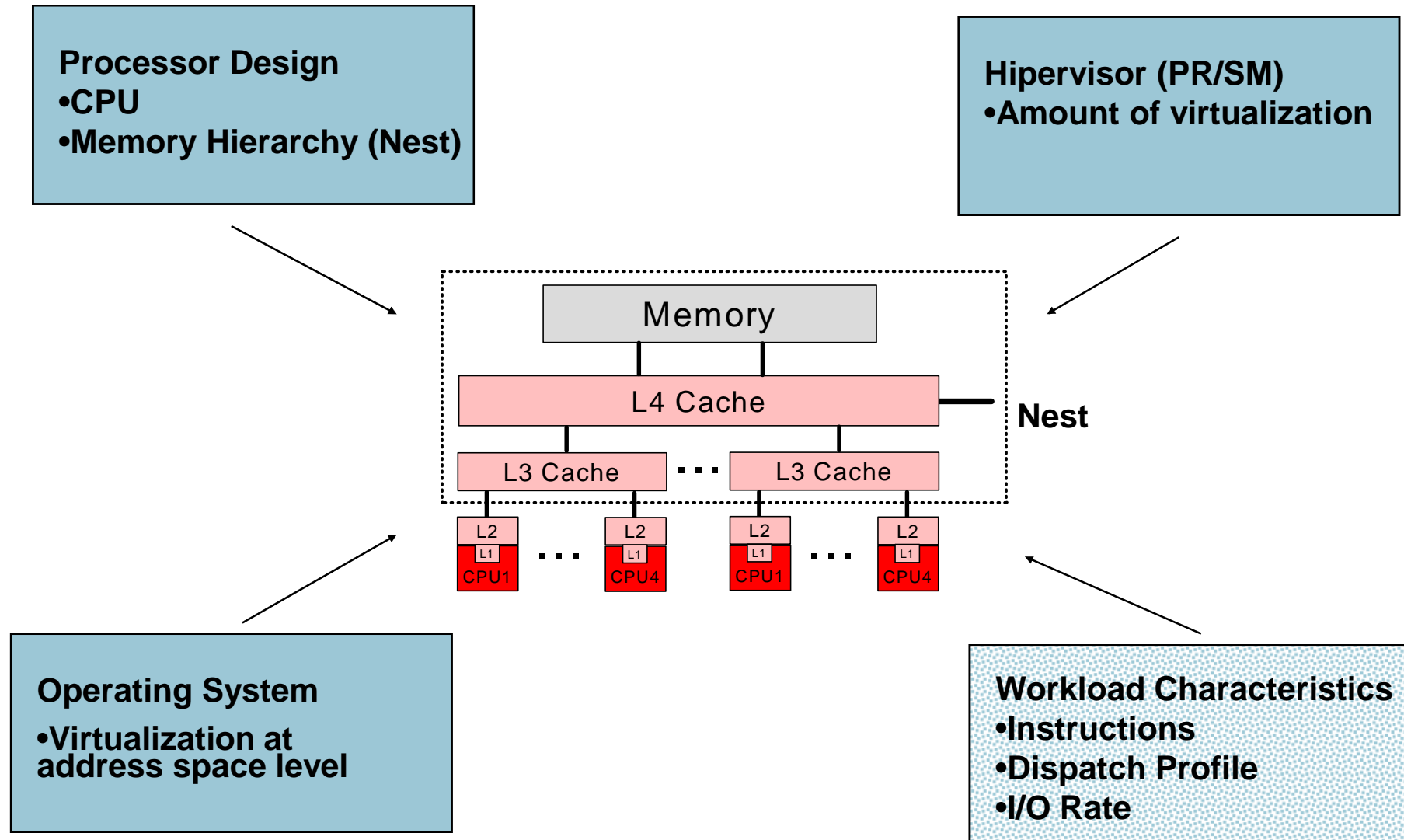
- Provides capacity relationships for System z processors, considering
 - LPAR configurations
 - SCP/workload environment
 - Use of specialty CPs (zAAP, zIIP, IFL, and ICF)
- Based on IBM Large Systems Performance Reference (LSPR)
- The IBM tool to properly size mainframe upgrades
 - Expected accuracy of $\pm 5\%$
- A PC based tool written in Java for Windows XP/Win 7
 - “As Is”, no charge tool available from the web
 - Available to customers
- New Processor Announcements available in zPCR for:
 - IBM Account Teams - at Announcement
 - Customers - generally within 30 days after Announcement

zPCR Logo Window



Version
Identification

Today's z Systems Capacity Planning



Introduction to LSPR

- A set of representative SCP/workload environments
 - SCPs: z/OS, z/VM, and Linux on System z
 - Workload categories: Low ← Relative Nest Intensity → High
 - A methodology focused on processor capacity
 - No significant external constraints
 - Equivalent (reasonably high, e.g. $\geq 90\%$) processor utilization
- A metric to communicate the results
 - ITR: Internal Throughput Rate
 - Transactions or Jobs per processor busy second
- Information stored on the web
 - <https://www.ibm.com/servers/resourceink/lib03060.nsf/pages/lspindex?OpenDocument>

LSPR Benchmarks

- LSPR data is built from a set of benchmarks running representative workloads
- Over time, LSPR benchmarks are changed to reflect changes in processor architecture, operating system capabilities, and new patterns for production workloads
 - **LSPR tables are labeled based on the z/OS operating system level used at time of the benchmark**
- Cannot directly compare relative processor capacity across different versions of LSPR benchmarks

LSPR Workload Categories

- Various combinations of workload primitives are measured on which the new workload categories are based
 - Applications include CICS, DB2, IMS, OSAM, VSAM, WebSphere, COBOL, utilities
- **Low** (relative nest intensity)
 - Workload curve representing light use of the memory hierarchy
 - Similar to past high scaling workload primitives
- **Average** (relative nest intensity)
 - Workload curve expected to represent the majority of customer workloads
 - Similar to the past LoIO-mix curve
- **High** (relative nest intensity)
 - Workload curve representing heavy use of the memory hierarchy
 - Similar to the past DI-mix curve
- zPCR extends published categories
 - **Low-Avg**
 - 50% Low and 50% Average
 - **Avg-High**
 - 50% Average and 50% High

LSPR Tables

- Multi-image (MI) Processor Capacity Ratio table
 - Median complex LPAR configuration for each model based on customer profiles
 - Most representative for vast majority of customers
 - Same workload assumed in every partition
 - z/OS data is presented
 - Capacity values considered representative for z/VM and Linux
 - Used for “high level” sizing, e.g. “MIPS Tables”
 - Used to develop the MSU rating

MIPS Tables vs zPCR

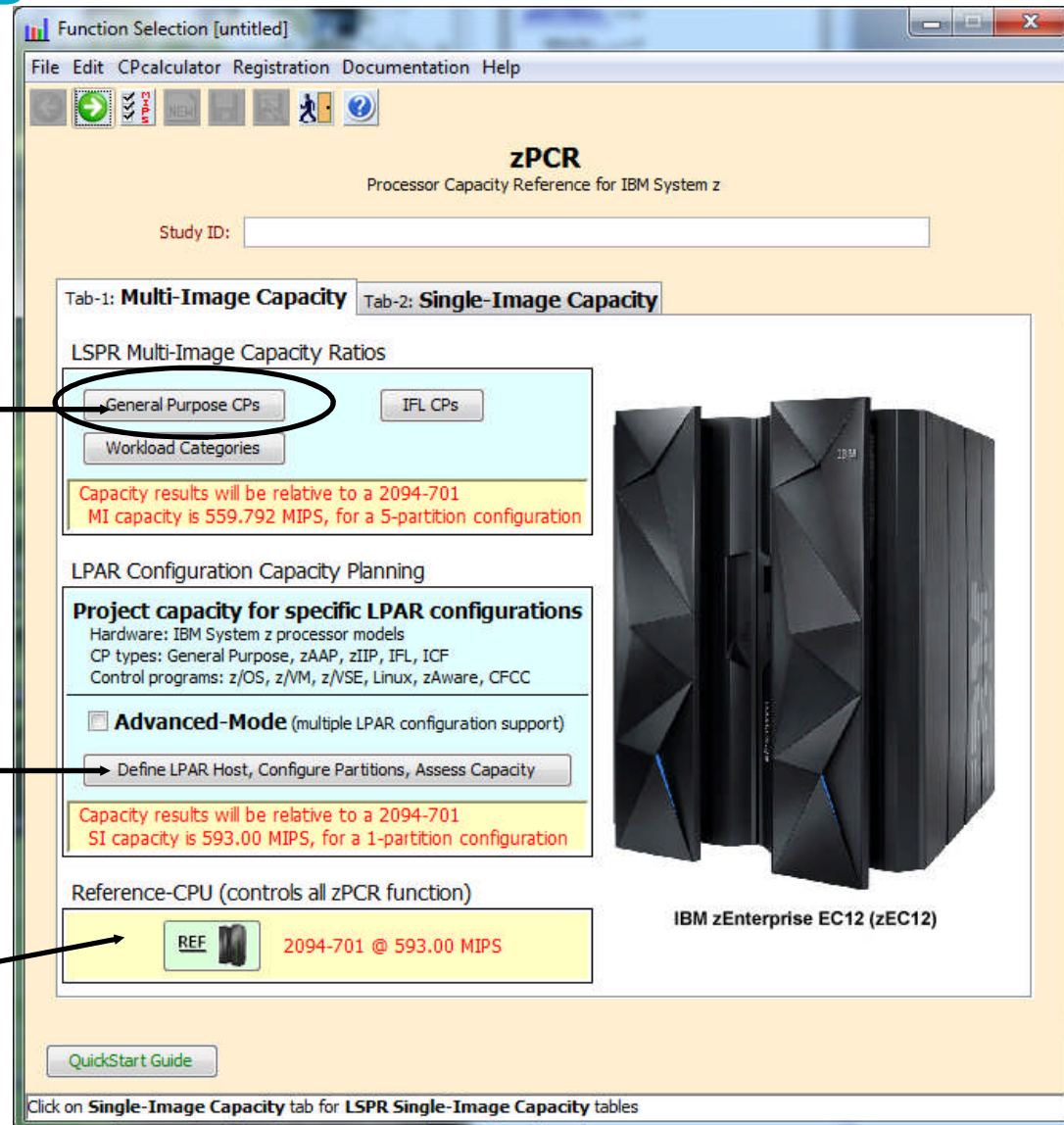
- MIPS Tables
 - Adequate for Business Planning
 - High level sizing for hardware and software budget planning
 - Based on “averages”
 - Must be referenced to a specific set of LSPR benchmarks or invalid
- zPCR Sizing - LPAR Configuration Capacity Planning
 - Detailed Capacity Sizing based on:
 - Specific LPAR configuration (number, weights, and logical processors)
 - Specific SCP/workload mix
 - Specific use of specialty engines (zAAP, zIIP, IFL, and ICF)
 - Built around concept of a Reference CPU

zPCR Home Page

MIPS Table
LSPR Multi-Image

zPCR LPAR
Configuration
Capacity Planning

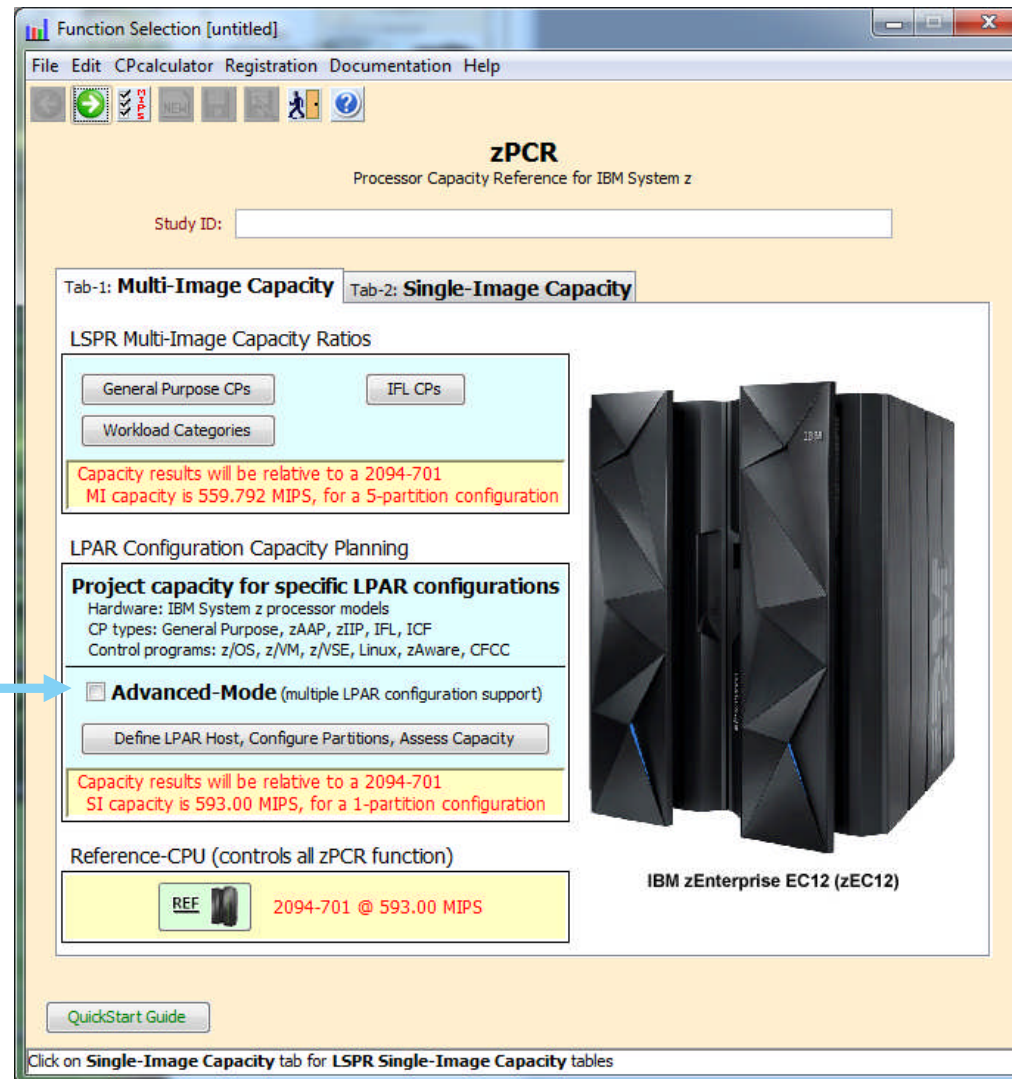
Setting the
Reference
Processor



zPCR Basic Mode and Advanced Mode

- zPCR can be run in 2 Modes:
 - Basic Mode
 - Operates on 1 processor configuration at a time
 - Advanced Mode
 - Operates up to 10 processor configurations at a time
 - Shows Capacity Comparisons between 2 LPAR configurations
 - More efficient than running zPCR multiple times
 - Manually comparing the results
 - Recommended Mode

Introducing zPCR– Advanced Mode



zPCR Advanced Mode

- Provides Capacity Comparisons between 2 processor configurations
 - The “Configuration #1” Vs (“Configuration #2, Configuration #3...Configuration #10)
 - More efficient than running zPCR multiple times and manually comparing the results
 - Ability to drag & drop RMF partition reports, zPCR files and EDF* files onto “Configuration #”
- Recommended when comparing capacity changes including:
 - Changing the LPAR host processor family
 - Changing the LPAR host processor’s CP configuration
 - Changing the way that one or more partitions are defined, (e.g. weights, LCPs, SEs)
 - Adding one or more new partitions
 - Deleting one or more current partitions
- For Capacity Comparisons to be useful, configurations being compared should both contain some or all of the same partitions
 - (i.e., in terms of partition type, name, SCP, and workload)

* Note: EDF (Enterprise Data Files) were introduced with zPCR 7.x and are created using CP3KEXTR for z/OS and CP3KVMXT for z/VM

Advanced Mode Function

- Multiple processor configurations
 - Up to ten can be defined (with v8.7)
- Several additional functions are available
 - *LPAR Host / Partition Comparison Reports*
 - Compares capacity results between LPAR configurations
 - *Margin of Error Consideration*
 - Shows the effect on capacity when $\pm 5\%$ margin-of-error is applied
 - *Optimize SHR LCPs*
 - Optimizes LCPs
 - *LPAR Host Capacity Summary*
 - Summarizes MIPS by pool type for Current and all Alternates
- All capacity values based on a single Reference-CPU setting
 - 1-way processors only

Reference CPU and Typical

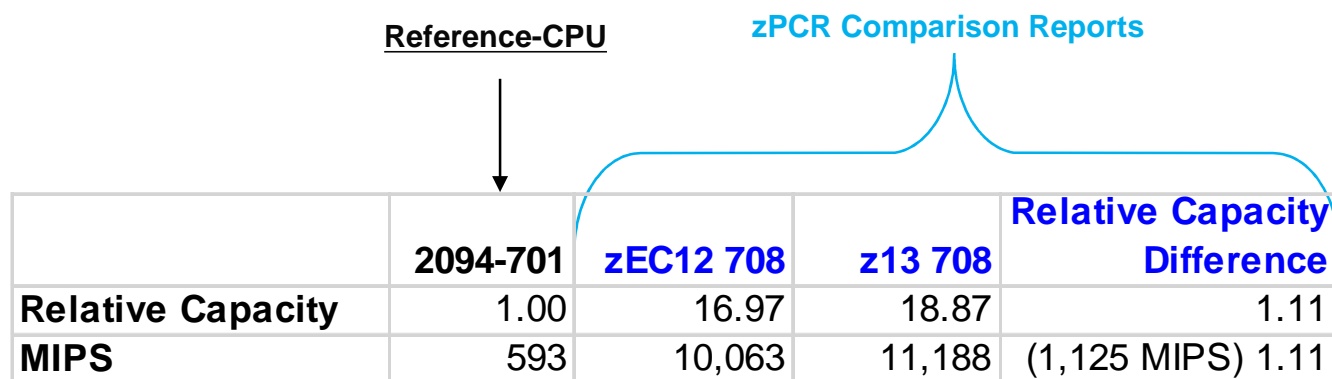
Reference Processor

- Used to scale the capacity all of the LSPR processors relative to this processor
 - Must be set to any IBM System z 1-way model (GCP model)

“Typical”

- 2094-701
 - 593 MIPS
- IBM recommended and widely accepted in the Industry

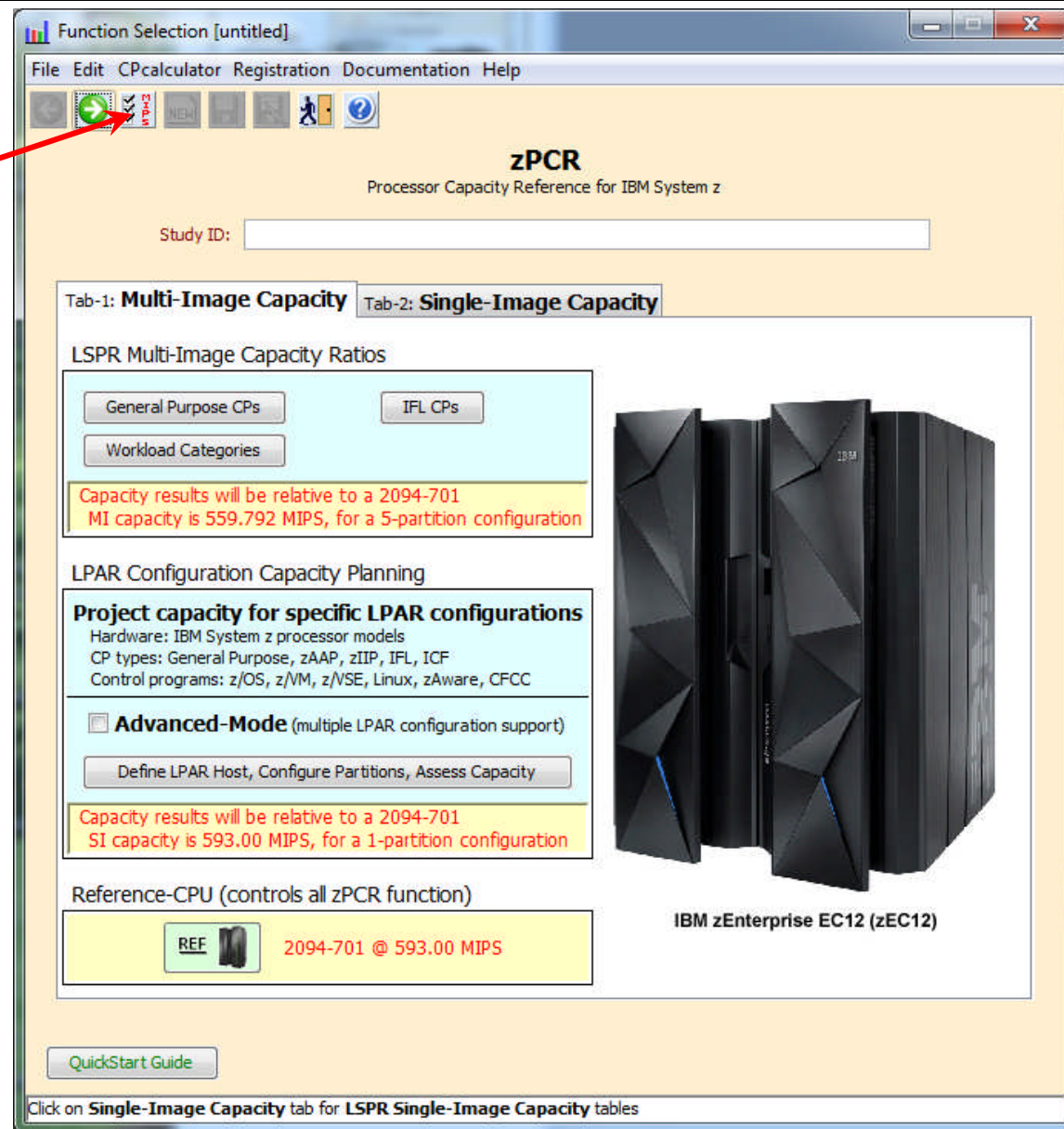
It is critical all capacity being compared be obtained using a consistent Reference-CPU metric



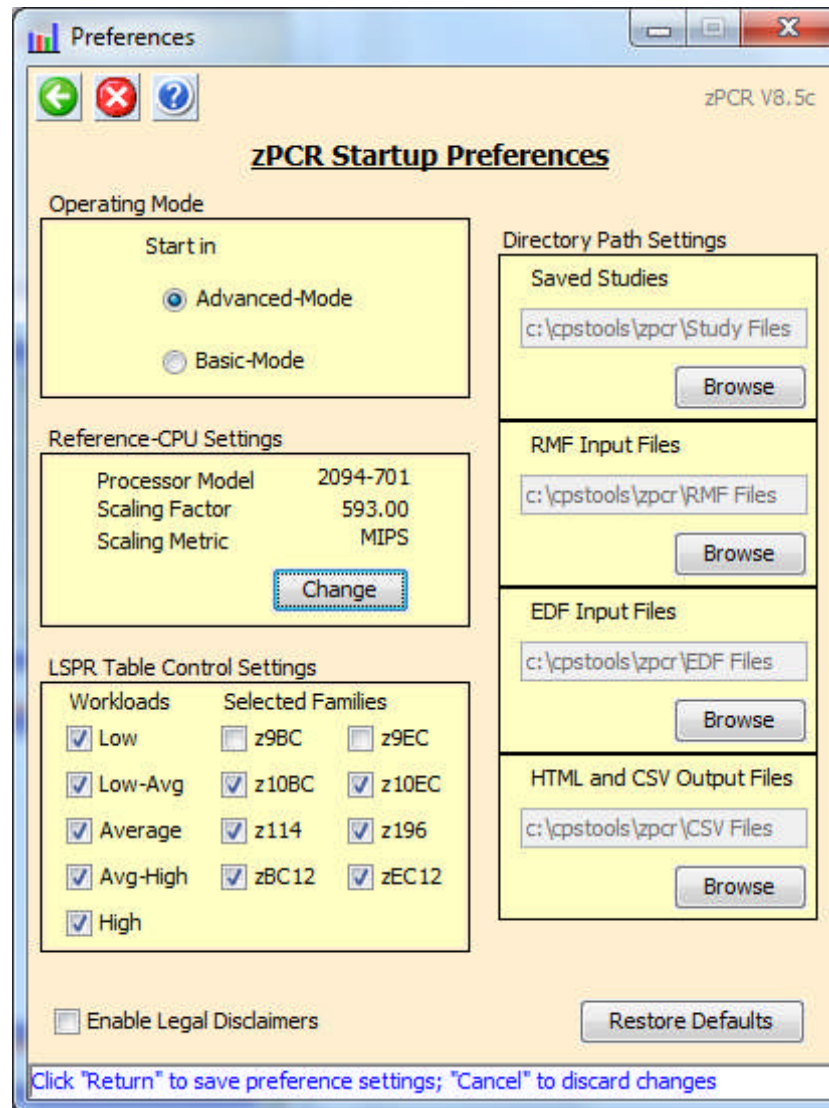
	2094-701	zEC12 708	z13 708	Relative Capacity Difference
Relative Capacity	1.00	16.97	18.87	1.11
MIPS	593	10,063	11,188	(1,125 MIPS) 1.11

zPCR Function Selection Window

Set “Startup”
preferences



Default zPCR Startup Preferences



The image shows the 'zPCR Startup Preferences' dialog box. It has a title bar 'Preferences' and a version indicator 'zPCR V8.5c'. The dialog is divided into several sections: 'Operating Mode' with 'Start in' options 'Advanced-Mode' (selected) and 'Basic-Mode'; 'Reference-CPU Settings' with 'Processor Model' 2094-701, 'Scaling Factor' 593.00, 'Scaling Metric' MIPS, and a 'Change' button; 'LSPR Table Control Settings' with 'Workloads' (Low, Low-Avg, Average, Avg-High, High) and 'Selected Families' (z9BC, z9EC, z10BC, z10EC, z114, z196, zBC12, zEC12) all checked; 'Directory Path Settings' with 'Saved Studies', 'RMF Input Files', 'EDF Input Files', and 'HTML and CSV Output Files' each having a text field and a 'Browse' button; and an 'Enable Legal Disclaimers' checkbox. A 'Restore Defaults' button is at the bottom right. A footer note says 'Click "Return" to save preference settings; "Cancel" to discard changes'.

Preferences

zPCR V8.5c

zPCR Startup Preferences

Operating Mode

Start in

☒ Advanced-Mode

☐ Basic-Mode

Reference-CPU Settings

Processor Model 2094-701

Scaling Factor 593.00

Scaling Metric MIPS

Change

LSPR Table Control Settings

Workloads	Selected Families	
<input checked="" type="checkbox"/> Low	<input type="checkbox"/> z9BC	<input type="checkbox"/> z9EC
<input checked="" type="checkbox"/> Low-Avg	<input checked="" type="checkbox"/> z10BC	<input checked="" type="checkbox"/> z10EC
<input checked="" type="checkbox"/> Average	<input checked="" type="checkbox"/> z114	<input checked="" type="checkbox"/> z196
<input checked="" type="checkbox"/> Avg-High	<input checked="" type="checkbox"/> zBC12	<input checked="" type="checkbox"/> zEC12
<input checked="" type="checkbox"/> High		

Directory Path Settings

Saved Studies

c:\cpstools\zpcr\Study Files

Browse

RMF Input Files

c:\cpstools\zpcr\RMF Files

Browse

EDF Input Files

c:\cpstools\zpcr\EDF Files

Browse

HTML and CSV Output Files

c:\cpstools\zpcr\CSV Files

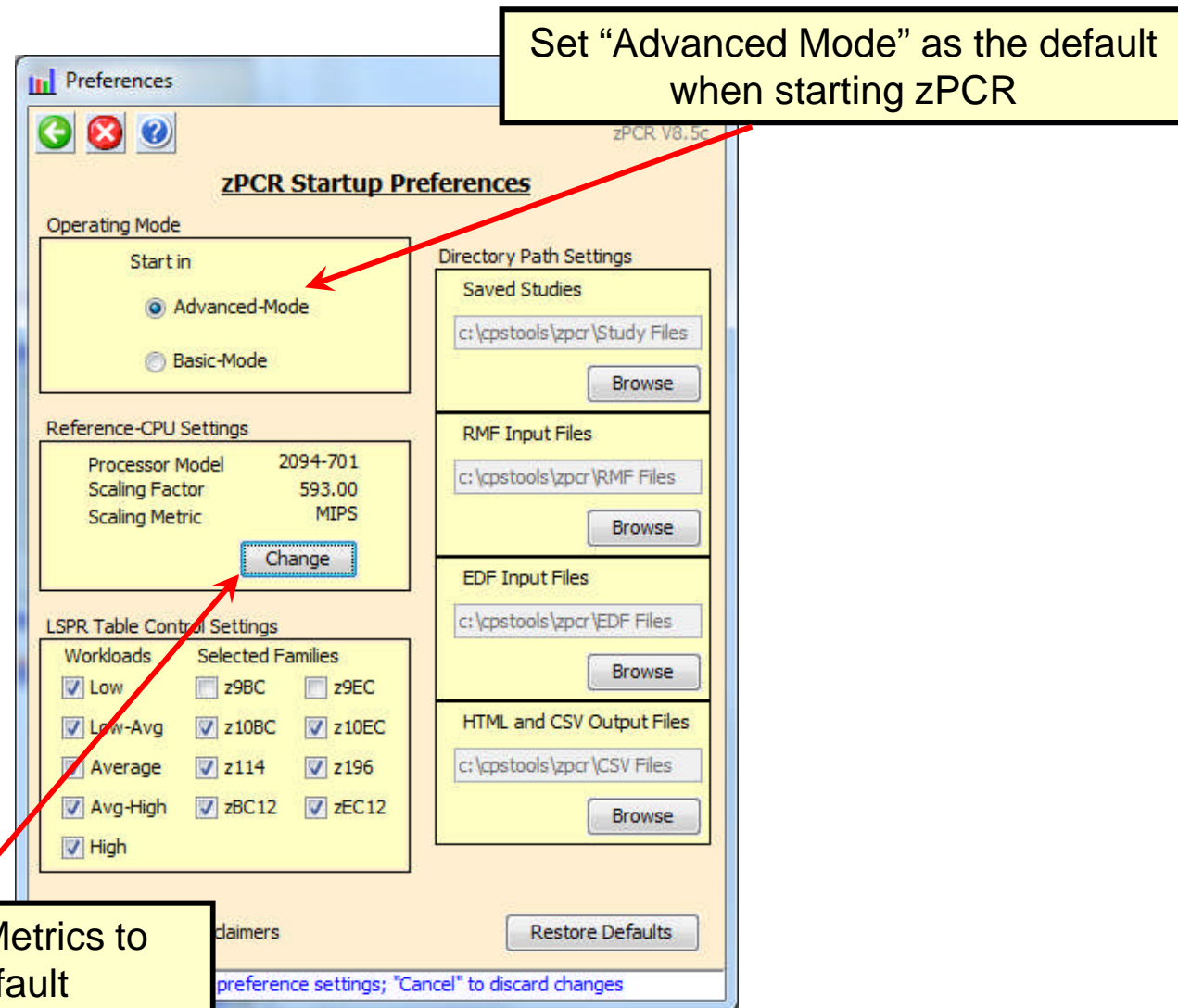
Browse

☐ Enable Legal Disclaimers

Restore Defaults

Click "Return" to save preference settings; "Cancel" to discard changes

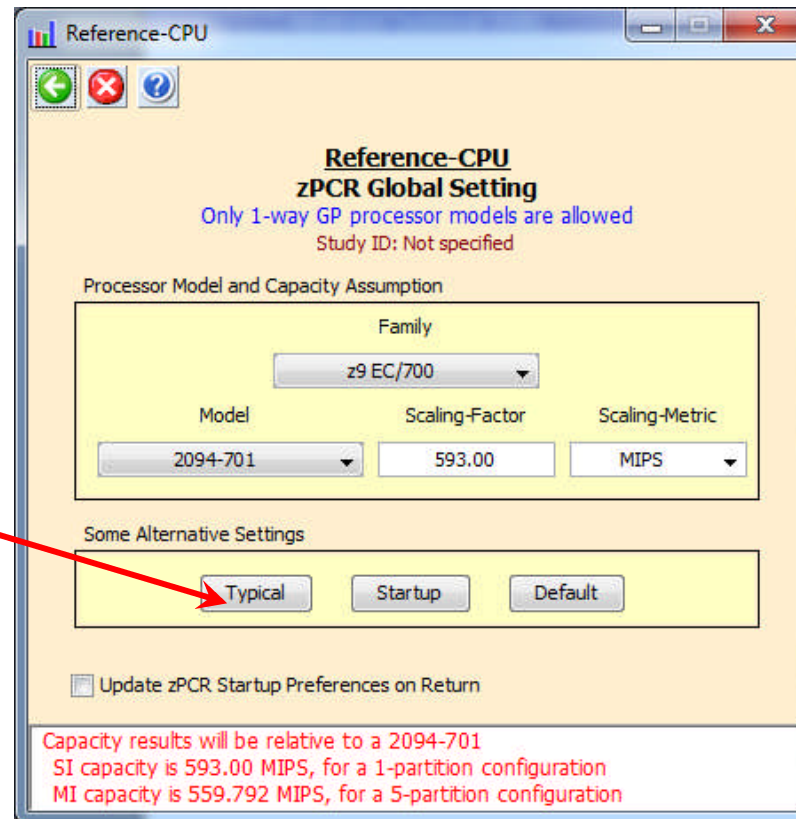
Recommended zPCR Startup Preferences



Reference CPU

- Reference Processor Window
 - The **Reference-CPU** window is accessed primarily from the **Function Selection** window by clicking the **Reference-CPU** button

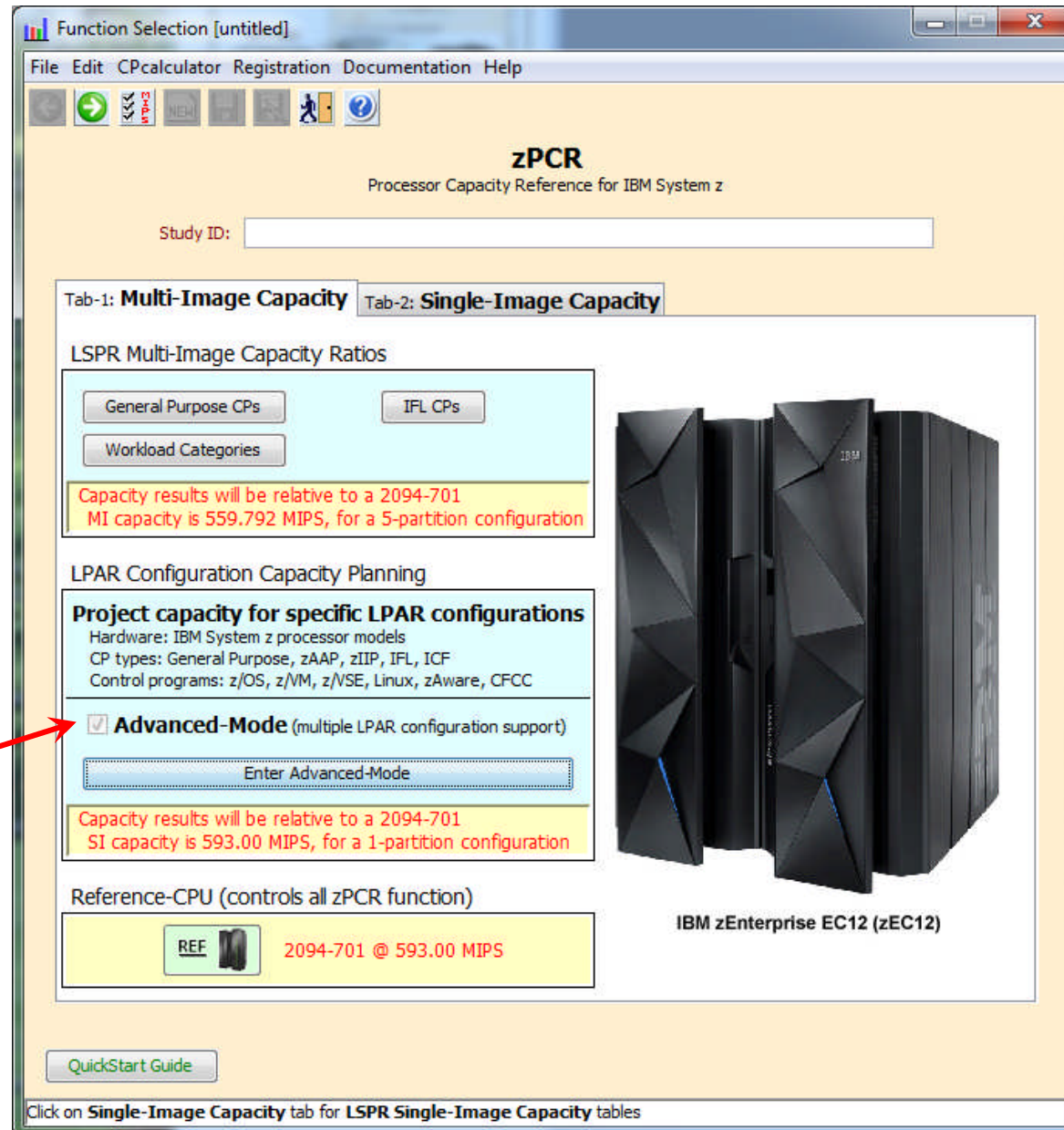
Select “Typical”



The screenshot shows the 'Reference-CPU' window with the following settings:

- Reference-CPU**
zPCR Global Setting
Only 1-way GP processor models are allowed
Study ID: Not specified
- Processor Model and Capacity Assumption**
 - Family: z9 EC/700
 - Model: 2094-701
 - Scaling-Factor: 593.00
 - Scaling-Metric: MIPS
- Some Alternative Settings**
 - ☒ Typical
 - ☐ Startup
 - ☐ Default
- ☐ Update zPCR Startup Preferences on Return
- Capacity results will be relative to a 2094-701
SI capacity is 593.00 MIPS, for a 1-partition configuration
MI capacity is 559.792 MIPS, for a 5-partition configuration

zPCR Function Selection Window



Function Selection [untitled]

File Edit CPcalculator Registration Documentation Help

zPCR
Processor Capacity Reference for IBM System z

Study ID:

Tab-1: **Multi-Image Capacity** Tab-2: **Single-Image Capacity**

LSPR Multi-Image Capacity Ratios

General Purpose CPs IFL CPs

Workload Categories

Capacity results will be relative to a 2094-701
MI capacity is 559.792 MIPS, for a 5-partition configuration

LPAR Configuration Capacity Planning

Project capacity for specific LPAR configurations
Hardware: IBM System z processor models
CP types: General Purpose, zAAP, zIIP, IFL, ICF
Control programs: z/OS, z/VM, z/VSE, Linux, zAware, CFCC

☒ **Advanced-Mode** (multiple LPAR configuration support)

Enter Advanced-Mode

Capacity results will be relative to a 2094-701
SI capacity is 593.00 MIPS, for a 1-partition configuration

Reference-CPU (controls all zPCR function)

REF 2094-701 @ 593.00 MIPS

IBM zEnterprise EC12 (zEC12)

QuickStart Guide

Click on **Single-Image Capacity** tab for LSPR Single-Image Capacity tables

Select "Advanced-Mode" check box and press "Enter Advanced-Mode"

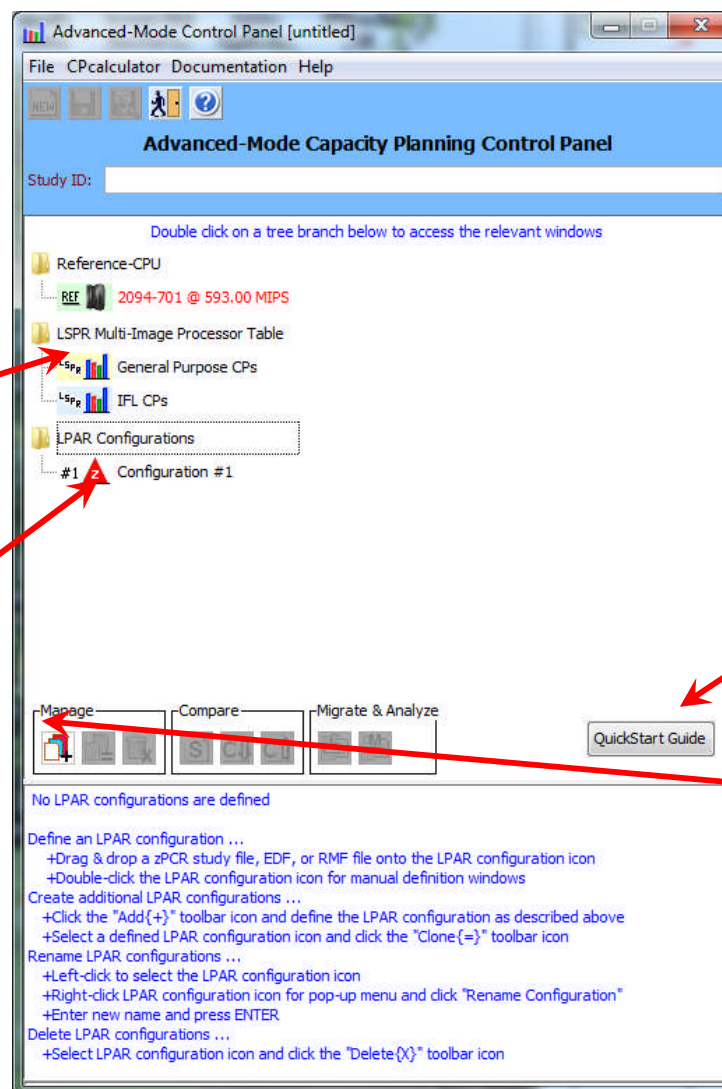
zPCR Advanced-Mode Capacity Planning Control Panel

View Multi-Image LSPR table

View “QuickStart” Guide

LPAR Configurations Right “click” to rename up to 20 characters

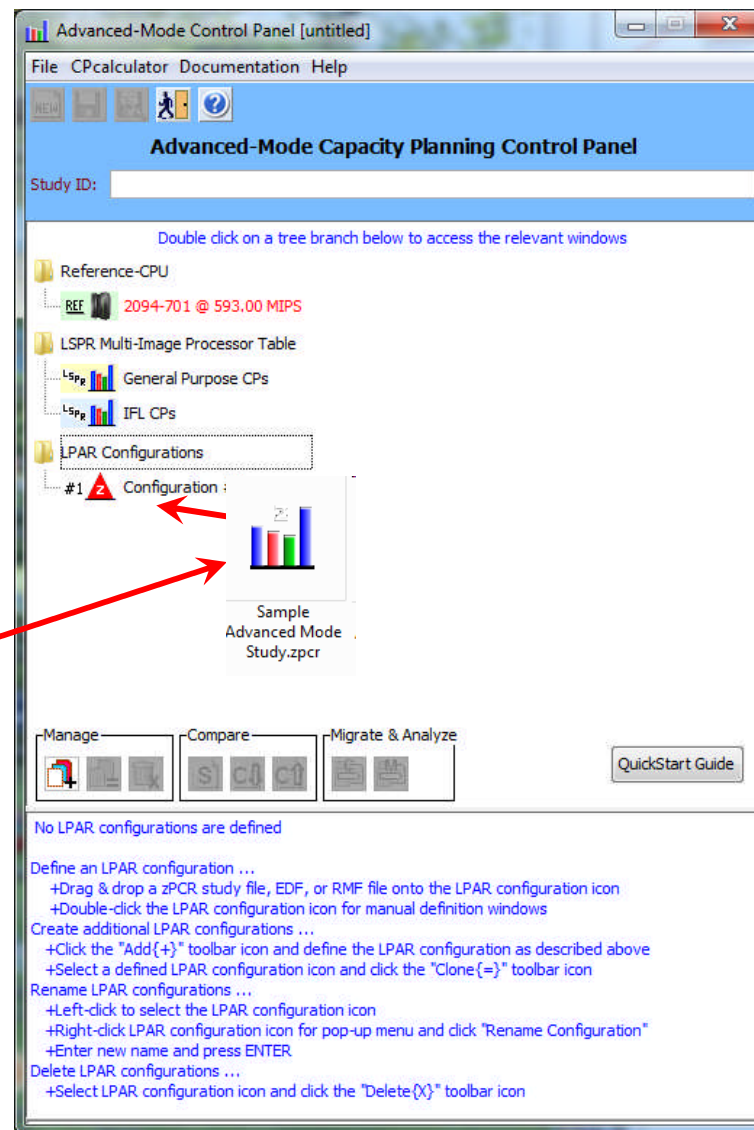
Manage Multiple Configurations



You may drag and drop zPCR study files, RMF reports or EDFs onto the LPAR Configurations planning area or use the file drop down to load zPCR study files.

zPCR Advanced-Mode Capacity Loading a file via Drag and Drop

Browse Windows Explorer to find the file then “drag” it to the zPCR Advanced Mode” window and “drop” it on Current



zPCR Advanced-Mode Capacity Renaming the configuration step 1

Select “Configuration #1”, Right Click, Click on “Rename Configuration”

The screenshot shows the 'Advanced-Mode Capacity Planning Control Panel' window. The 'Study ID' is 'Sample zPCR Study'. The tree view on the left shows the following structure:

- Reference-CPU
 - REF 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - Lspp General Purpose CPs
 - Lspp IFL CPs
- LPAR Configurations
 - #1 Configuration #1

A red arrow points from the instruction box to the 'Configuration #1' entry. A 'Rename Configuration' button is visible next to it.

At the bottom, there are three groups of icons: 'Manage' (with icons for adding, deleting, and saving), 'Compare' (with icons for comparing configurations), and 'Migrate & Analyze' (with icons for migration and analysis). A 'QuickStart Guide' button is also present.

The main table displays the details for 'Configuration #1' (ABC Production on IBM z9-EC, z10 EC/700 LPAR Host: 2097-E26/700):

Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	866	11,416

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

zPCR Advanced-Mode Capacity Renaming the configuration step 2

Type over
“Configuration #1”
with “z10 2097 E26”
and Press Enter

Advanced-Mode Control Panel [I:\...Sample Advanced Mode Study.zpcr]

File CPcalculator Documentation Help

Advanced-Mode Capacity Planning Control Panel

Study ID: Sample zPCR Study

Double click on a tree branch below to access the relevant windows

- Reference-CPU
 - REF 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - LSPR General Purpose CPs
 - LSPR IFL CPs
- LPAR Configurations
 - Configuration #1**

Manage Compare Migrate & Analyze QuickStart Guide

#1	Configuration #1 ABC Production on IBM z9-EC z10 EC/700 LPAR Host: 2097-E26/700					
Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	808	11,416

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

zPCR Advanced-Mode Capacity Planning Control Panel

Configuration
Renamed

Configuration
Summary

Advanced-Mode Control Panel [I:\...Sample Advanced Mode Study.zpcr]

File CPcalculator Documentation Help

NEW Save Print Run Help

Advanced-Mode Capacity Planning Control Panel

Study ID: Sample zPCR Study

Double click on a tree branch below to access the relevant windows

- Reference-CPU
 - REF 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - LSPR General Purpose CPs
 - LSPR IFL CPs
- LPAR Configurations
 - #1 z10 2097-E26

Manage Compare Migrate & Analyze QuickStart Guide

z10 2097-E26 ABC Production on IBM z9-EC z10 EC/700 LPAR Host: 2097-E26/700						
CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	808	11,418

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

zPCR Advanced-Mode Capacity Planning Control Panel

1 Select
2 then Click on Clone

Advanced-Mode Capacity Planning Control Panel

Study ID: Sample zPCR Study

Double click on a tree branch below to access the relevant windows

- Reference-CPU
 - REF 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - LSPR General Purpose CPs
 - LSPR IFL CPs
- LPAR Configurations
 - #1 z10 2097-E26

Manage Compare Migrate & Analyze

QuickStart Guide

z10 2097-E26 ABC Production on IBM z9-EC z10 EC/700 LPAR Host: 2097-E26/700						
Pool	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	888	11,418

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

zPCR Advanced-Mode Capacity Planning Control Panel

1) Select 2 Configurations then
2) Click on Comparison Report

Note “Down Arrow” compares Bottom Configuration (#3) Relative to Top Configuration (#1)

“Up Arrow” compares Top Configuration (#1) Relative to Bottom Configuration (#3)

The screenshot shows the 'Advanced-Mode Capacity Planning Control Panel' for a study named 'Sample zPCR Study'. The tree view on the left lists the following configurations:

- Reference-CPU: 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - General Purpose CPs
 - IFL CPs
- LPAR Configurations
 - #1 z10 2097-E26
 - #2 z10 2097-E40
 - #3 z196 2817-M15

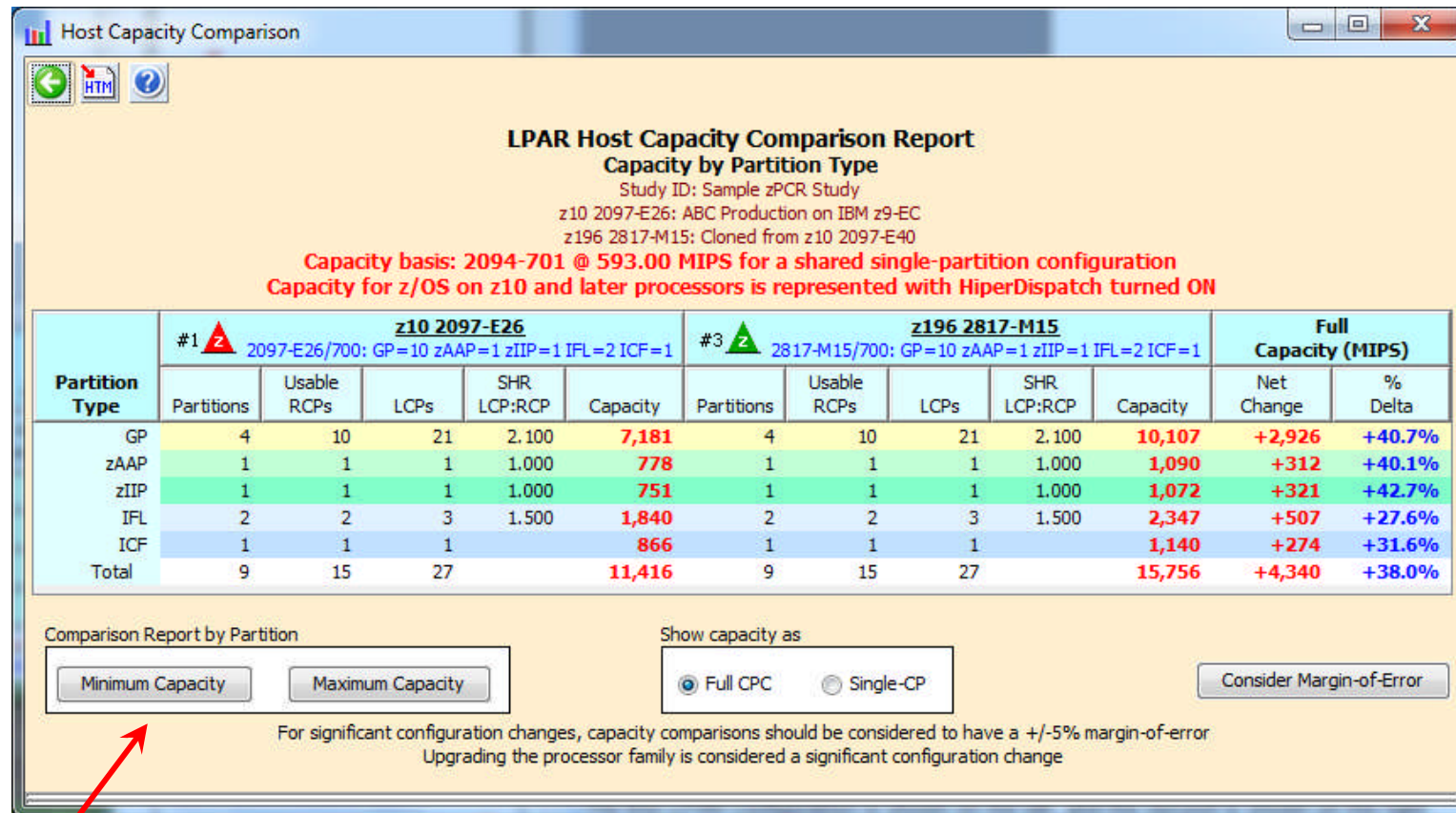
At the bottom, the 'Compare' section shows three icons: a down arrow (selected), an up arrow, and a double arrow. The 'Migrate & Analyze' section is also visible.

The comparison table below shows the results for configuration #1 (z10 2097-E26) relative to configuration #3 (z196 2817-M15):

Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	866	11,416

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

Host Capacity Comparison Report





Click "Minimum Capacity" to get Partition Capacity Comparison Report

Minimum Capacity is Partition Capacity when weights are being enforced

Partition Minimum Capacity Comparison Report

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
z10 2097-E26: ABC Production on IBM z9-EC
z196 2817-M15: Cloned from z10 2097-E40

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Partition Identification List of All Included Partitions With Unique ID Metrics				#1  z10 2097-E26 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							#3  z196 2817-M15 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							Full Capacity (MIPS)	
				Partition Definition					Minimum Capacity	Partition Definition					Minimum Capacity	Net Change	% Delta		
Type	Name	SCP	Workload	LP #	Mode	LCPs	Weight%	CAP		LP #	Mode	LCPs	Weight	Weight%				CAP	
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%	3,867	1	SHR	10	700	53.23%		5,407	+1,540	+39.8%		
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%	2,210	2	SHR	6	400	30.42%		3,107	+897	+40.6%		
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%	778		SHR	1	400	100.00%		1,090	+312	+40.1%		
GP	LP-03	z/OS-1.9*	Avg-High	3	SHR	4	15.21%	1,030	3	SHR	4	200	15.21%		1,485	+455	+44.2%		
zIIP	LP-03	z/OS-1.9*	Avg-High		SHR	1	100.00%	751		SHR	1	200	100.00%		1,072	+321	+42.7%		
GP	LP-04	z/VM	High/LV	4	SHR	1	1.14%	75	4	SHR	1	15	1.14%	<input checked="" type="checkbox"/>	108	+33	+44.0%		
IFL	LP-05	Linux	Low/L	5	SHR	2	88.89%	1,635	5	SHR	2	200	88.89%		2,087	+452	+27.6%		
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%	204	6	SHR	1	25	11.11%		261	+57	+27.9%		
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a	866	7	DED	1	n/a		1,140	+274	+31.6%			

Change Controls

Commit Changes Undo Changes Optimize SHR LCPs Consider Margin-of-Error

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.

zPCR Margin of Error

- A new processor capacity expectation should normally be considered as having a margin of error of up to +5% or - 5%
 - The full $\pm 5\%$ margin of error should be considered when:
 - The LPAR host processor family is changed
 - Very significant changes are made to the LPAR host CP configuration
 - Significant changes are made to the partition configuration
 - The margin of error is due to factors that include variability in workload/instruction mix and processor utilization
 - When changes are minor, the margin-of-error should be less

Partition Capacity Comparison Report

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
z10 2097-E26: ABC Production on IBM z9-EC
z196 2817-M15: Cloned from z10 2097-E40

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Partition Identification List of All Included Partitions With Unique ID Metrics				#1 z10 2097-E26 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							#3 z196 2817-M15 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							Full Capacity (MIPS)	
Type	Name	SCP	Workload	Partition Definition					Minimum Capacity	Partition Definition					Minimum Capacity	Net Change	% Delta		
LP #	Mode	LCPs	Weight%	CAP	LP #	Mode	LCPs	Weight%	CAP	LP #	Mode	LCPs	Weight%	CAP	LP #	Mode	LCPs	Weight%	CAP
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%		3,867	1	SHR	10	700	53.23%	<input type="checkbox"/>	5,407	+1,540	+39.8%	
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%		2,210	2	SHR	6	400	30.42%	<input type="checkbox"/>	3,107	+897	+40.6%	
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%		778		SHR	1	400	100.00%	<input type="checkbox"/>	1,090	+312	+40.1%	
GP	LP-03	z/OS-1.9*	Avg-High	3	SHR	4	15.21%		1,030	3	SHR	4	200	15.21%	<input type="checkbox"/>	1,485	+455	+44.2%	
zIIP	LP-03	z/OS-1.9*	Avg-High		SHR	1	100.00%		751		SHR	1	200	100.00%	<input type="checkbox"/>	1,072	+321	+42.7%	
GP	LP-04	z/VM	High/LV	4	SHR	1	1.14%	✓	75	4	SHR	1	15	1.14%	<input checked="" type="checkbox"/>	108	+33	+44.0%	
IFL	LP-05	Linux	Low/L	5	SHR	2	88.89%		1,635	5	SHR	2	200	88.89%	<input type="checkbox"/>	2,087	+452	+27.6%	
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%		204	6	SHR	1	25	11.11%	<input type="checkbox"/>	261	+57	+27.9%	
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a		866	7	DED	1	n/a		<input type="checkbox"/>	1,140	+274	+31.6%	

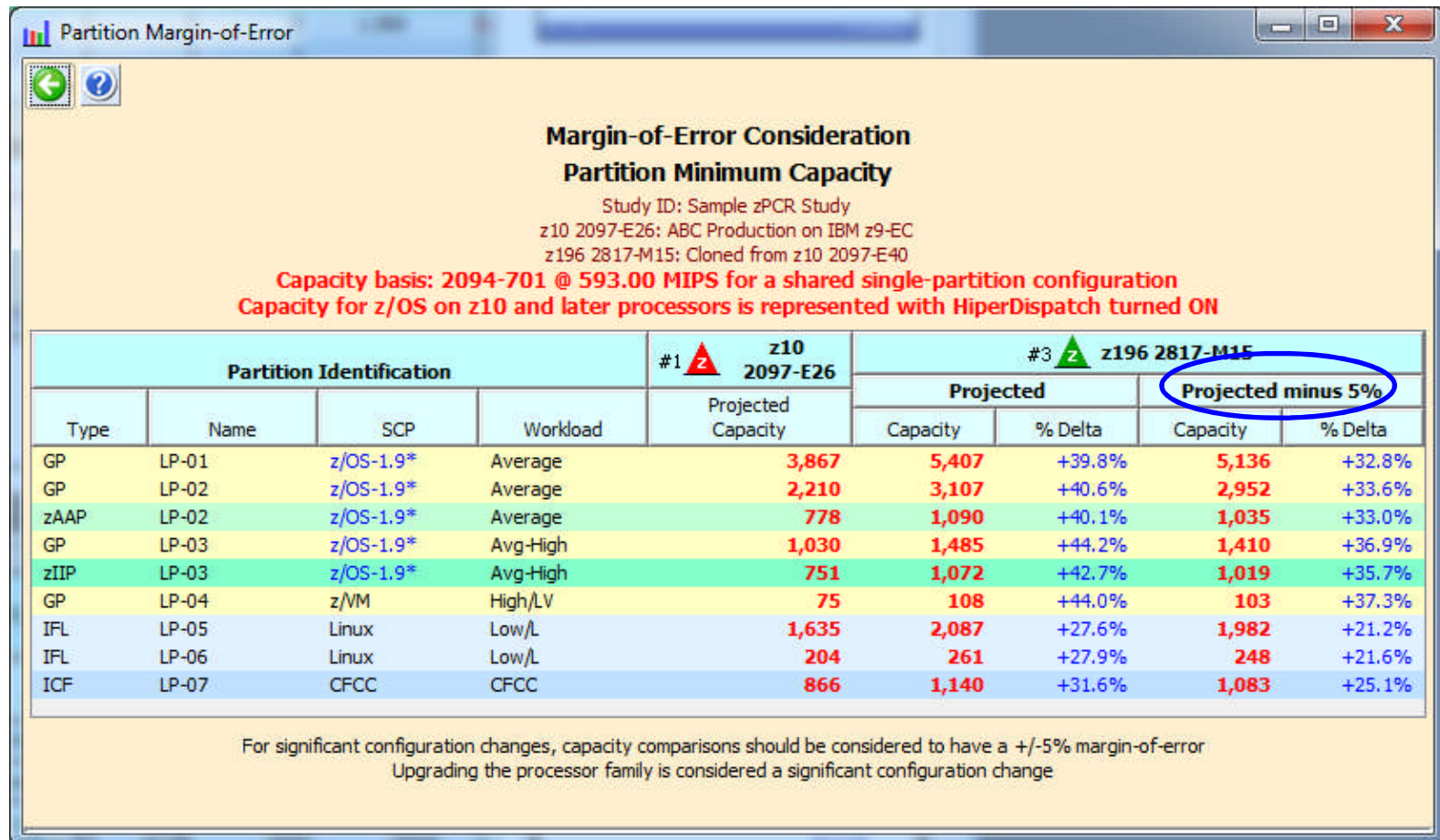
Change Controls

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.

Margin-of-Error

Margin of Error Report



Optimize Shared Logical Processors

- When migrating to a new processor evaluate the weights & logical processors needed
 - If Hard Capping partitions, evaluate amount of capacity required to be guaranteed
- Operating System impact on Logical Processors needs to be reviewed
- Level of optimization for LCP Count Assignment can be chosen as follows
 - **Moderate:**
 - When the weight percent indicates number of logical CPs greater than or equal to 2.6
The exact number of logical CPs plus 1 (rounded up to the nearest whole number) will be assigned
 - When the weight percent indicates number of logical CPs should be less than 2.6
The exact number of logical CPs (rounded up to the nearest whole number) will be assigned
 - **Minimal:**
 - The weight percent is used to determine the exact number of logical CPs (rounded up to the nearest whole number) will be assigned

Partition Capacity Comparison Report

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
z10 2097-E26: ABC Production on IBM z9-EC
z196 2817-M15: Cloned from z10 2097-E40

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Partition Identification List of All Included Partitions With Unique ID Metrics				#1 z10 2097-E26 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						#3 z196 2817-M15 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						Full Capacity (MIPS)		
				Partition Definition					Minimum Capacity	Partition Definition					Minimum Capacity	Net Change	% Delta	
Type	Name	SCP	Workload	LP#	Mode	LCPs	Weight%	CAP		LP#	Mode	LCPs	Weight	Weight%	CAP			
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%		3,867	1	SHR	10	700	53.23%	<input type="checkbox"/>	5,407	+1,540	+39.8%
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%		2,210	2	SHR	6	400	30.42%	<input type="checkbox"/>	3,107	+897	+40.6%
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%		778		SHR	1	400	100.00%	<input type="checkbox"/>	1,090	+312	+40.1%
GP	LP-03	z/OS-1.9*	Avg-High	3	SHR	4	15.21%		1,030	3	SHR	4	200	15.21%	<input type="checkbox"/>	1,485	+455	+44.2%
zIIP	LP-03	z/OS-1.9*	Avg-High		SHR	1	100.00%		751		SHR	1	200	100.00%	<input type="checkbox"/>	1,072	+321	+42.7%
GP	LP-04	z/VM	High/LV	4	SHR	1	1.14%	✓	75	4	SHR	1	15	1.14%	<input checked="" type="checkbox"/>	108	+33	+44.0%
IFL	LP-05	Linux	Low/L	5	SHR	2	88.89%		1,635	5	SHR	2	200	88.89%	<input type="checkbox"/>	2,087	+452	+27.6%
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%		204	6	SHR	1	25	11.11%	<input type="checkbox"/>	261	+57	+27.9%
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a		866	7	DED	1	n/a		<input type="checkbox"/>	1,140	+274	+31.6%

Change Controls

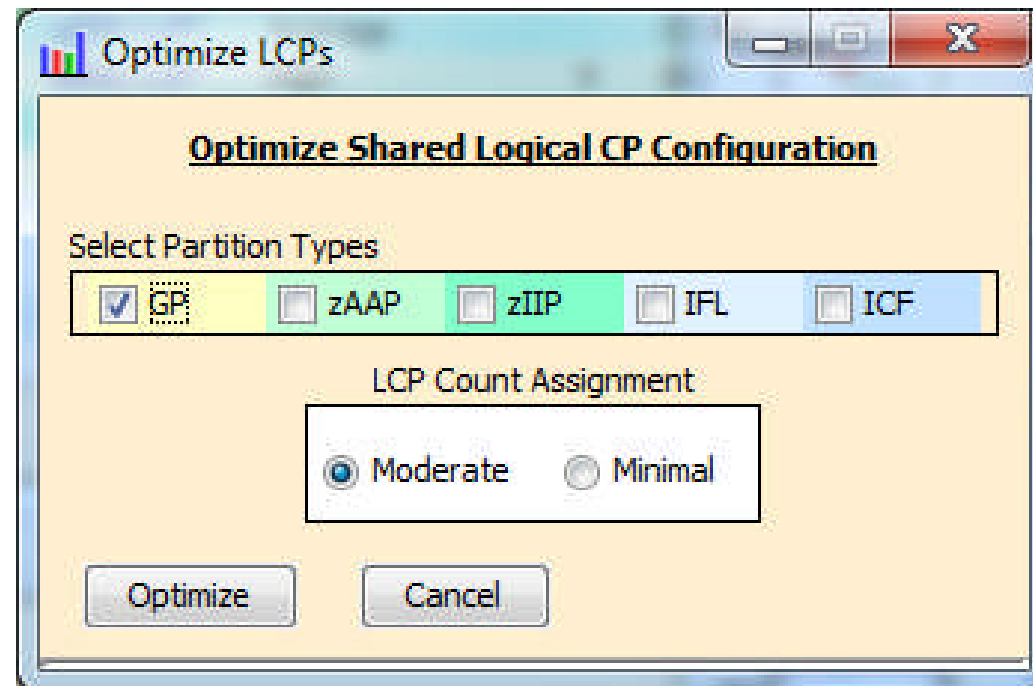
Commit Changes Undo Changes **Optimize SHR LCPs** Consider Margin-of-Error

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.

"Optimize" SHR LCPs

Optimize Share LCP Configuration



Commit the Changes

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
z10 2097-E26: ABC Production on IBM z9-EC
z196 2817-M15: Cloned from z10 2097-E40

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Partition Identification List of All Included Partitions With Unique ID Metrics				#1 z10 2097-E26 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							#3 z196 2817-M15 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1							Full Capacity (MIPS)	
				Partition Definition					Minimum Capacity	Partition Definition					Minimum Capacity	Net Change	% Delta		
Type	Name	SCP	Workload	LP#	Mode	LCPs	Weight%	CAP		LP#	Mode	LCPs	Weight	Weight%	CAP				
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%	3,867		1	SHR	7	700	53.23%		5,566	+1,699	+43.9%	
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%	2,210		2	SHR	5	400	30.42%		3,154	+944	+42.7%	
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%	778			SHR	1	400	100.00%		1,106	+328	+42.2%	
GP	LP-03	z/OS-1.9*	Avg-High	3	SHR	4	15.21%	1,030		3	SHR	2	200	15.21%		1,473	+443	+43.0%	
zIIP	LP-03	z/OS-1.9*	Avg-High		SHR	1	100.00%	751			SHR	1	200	100.00%		1,112	+361	+48.1%	
GP	LP-04	z/VM	High/LV	4	SHR	1	1.14%	75	✓	4	SHR	1	15	1.14%	✓	110	+35	+46.7%	
IFL	LP-05	Linux	Low/L	5	SHR	2	88.89%	1,635		5	SHR	2	200	88.89%		2,088	+453	+27.7%	
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%	204		6	SHR	1	25	11.11%		261	+57	+27.9%	
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a	866		7	DED	1	n/a			1,140	+274	+31.6%	

Change Controls

Commit Changes Undo Changes Optimize SHR LCPs Consider Margin-of-Error

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single click a "selection field" for drop-down list; Double click a "key-in field" to open.

Commit, Undo Changes, or
change by hand (any white area)

SMT Support in zPCR

Partition Detail Report

Graph Documentation

zPCR V8.7

Partition Detail Report
Based on LSPR Data for IBM z Systems Processors
Study ID: Not specified
#5 For Presentation
Description: Cloned from Proposed 2964-707 with IFL
z13/700 Host = 2964-N30/700 with 10 CPs; GP=7 zIIP=2 IFL=1
11 Active Partitions: GP=8 zIIP=2 IFL=1
Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Include ✓	Partition Identification				Partition Configuration				Capping		Partition Capacity		
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	✓	ABS	Minimum	Maximum
<input checked="" type="checkbox"/>	1	GP	CICSA	z/OS-2.1	Average	SHR	3	340	34.00%	<input type="checkbox"/>		3,347	4,219
<input checked="" type="checkbox"/>		zIIP	CICSA	z/OS-2.1	Average	SHR	2	100	50.00%	<input type="checkbox"/>		1,552	3,104
<input checked="" type="checkbox"/>	2	GP	BATCHA	z/OS-2.1	Average	SHR	2	195	19.50%	<input type="checkbox"/>		2,021	2,962
<input checked="" type="checkbox"/>	3	GP	BATCHB	z/OS-2.1	Average	SHR	2	32	3.20%	<input type="checkbox"/>		332	2,962
<input checked="" type="checkbox"/>	4	GP	TESTB	z/OS-2.1	Average	SHR	2	12	1.20%	<input type="checkbox"/>		124	2,962
<input checked="" type="checkbox"/>	5	GP	TESTIMS	z/OS-2.1	Average	SHR	2	36	3.60%	<input type="checkbox"/>		373	2,962
<input checked="" type="checkbox"/>	6	GP	CICSB	z/OS-2.1	Average	SHR	3	297	29.70%	<input type="checkbox"/>		2,923	4,219
<input checked="" type="checkbox"/>		zIIP	CICSB	z/OS-2.1	Average	SHR	2	100	50.00%	<input type="checkbox"/>		1,552	3,104
<input checked="" type="checkbox"/>	7	GP	IMSA	z/OS-2.1	Average	SHR	2	73	7.30%	<input type="checkbox"/>		757	2,962
<input checked="" type="checkbox"/>	8	GP	TESTCICS	z/OS-2.1	Average	SHR	2	15	1.50%	<input type="checkbox"/>		155	2,962
<input checked="" type="checkbox"/>	9	IFL	TESTLNX	z/VM	Average/LV	SHR	1	100	100.00%	<input type="checkbox"/>		1,746	1,746

Table View Controls

Display zAAP/zIIP/IFL Partitions
☒ With Associated GP ☐ Separate by Pool

Show
☒ All Partitions ☒ GP ☐ zAAP ☒ zIIP
☐ Includes Only ☒ IFL ☐ ICF

Capacity Summary by Pool

CP Pool	Real CPs	LPs	DED LCPs	SHR		Sum of Weights	Capacity Totals
				LCPs	LCP:RCP		
GP	7	8		18	2.571	1,000	10,033
zAAP							
zIIP	2	2		4	2.000	200	3,104
IFL	1	1		1	1.000	100	1,746
ICF							
Totals	10	11	0	23			14,883

Add SMT Benefit to Capacity Results

Host Summary Modify SCP/Workload LCP Alternatives zAAP/zIIP Loading

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.

Add SMT Benefit

SMT Support in zPCR

Partition Detail Report
Based on LSPR Data for IBM z Systems Processors
Study ID: Not specified
#5 For Presentation
Description: Cloned from Proposed 2964-707 with IFL
z13/700 Host = 2964-N30/700 with 10 CPGs; GP=7 zIIP=2 IFL=1
11 Active Partitions: GP=8 zIIP=2 IFL=1
Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HyperDispatch turned ON

Include	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	ABS	SMT Benefit	Minimum	Maximum
<input checked="" type="checkbox"/>	1	GP	CICSA	z/OS-2.1	Average	SHR	3	340	34.00%				3,347	4,219
<input checked="" type="checkbox"/>		zIIP	CICSA	z/OS-2.1	Average	SHR	2	100	50.00%			25%	1,940	3,880
<input checked="" type="checkbox"/>	2	GP	BATCHA	z/OS-2.1	Average	SHR	2	195	19.50%				2,021	2,962
<input checked="" type="checkbox"/>	3	GP	BATCHB	z/OS-2.1	Average	SHR	2	32	3.20%				332	2,962
<input checked="" type="checkbox"/>	4	GP	TESTB	z/OS-2.1	Average	SHR	2	12	1.20%				124	2,962
<input checked="" type="checkbox"/>	5	GP	TESTIMS	z/OS-2.1	Average	SHR	2	36	3.60%				373	2,962
<input checked="" type="checkbox"/>	6	GP	CICSB	z/OS-2.1	Average	SHR	3	297	29.70%				2,923	4,219
<input checked="" type="checkbox"/>		zIIP	CICSB	z/OS-2.1	Average	SHR	2	100	50.00%			25%	1,940	3,880
<input checked="" type="checkbox"/>	7	GP	IMSA	z/OS-2.1	Average	SHR	2	73	7.30%				757	2,962
<input checked="" type="checkbox"/>	8	GP	TESTCICS	z/OS-2.1	Average	SHR	2	15	1.50%				155	2,962
<input checked="" type="checkbox"/>	9	IFL	TESTLNX	z/VM	Average/LV	SHR	1	100	100.00%			20%	2,095	2,095

Table View Controls
Display zAAP/zIIP/IFL Partitions
☒ With Associated GP ☐ Separate by Pool
Show: ☒ All Partitions ☒ GP ☐ zAAP ☒ zIIP ☐ Includes Only ☒ IFL ☐ ICF

Capacity Summary by Pool

CP Pool	Real CPGs	LPs	DED LCPs	SHR LCPs	Sum of Weights	SMT Benefit	Capacity Totals
GP	7	8	18	2,571	1,000		10,033
zAAP							
zIIP	2	2	4	2,000	200	25%	3,880
IFL	1	1	1	1,000	100	20%	2,095
ICF							
Totals	10	11	0	23			16,009

☐ Clear all SMT Benefit values when Hiding

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
When displaying default SMT Benefit value, margin-of-error is +/-10%; Larger SMT Benefit values, margin-of-error will be greater
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.
Capacity Values include SMT Benefit for one or more zIIP and/or IFL partitions

2. SMT Benefit and Capacity

1. SMT Benefit % selection

Global SMT
zPCR V8.7

SMT Benefit Set by Partition Type

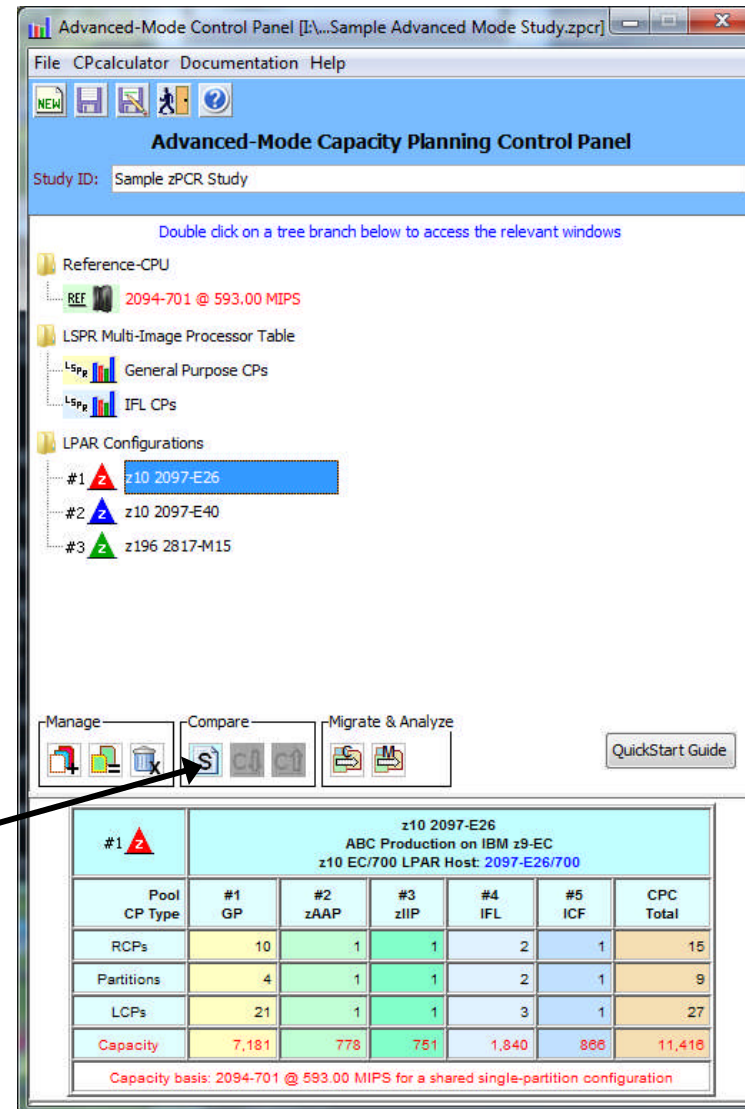
	On Return, Set All Partitions of Type	SMT Benefit
<input checked="" type="checkbox"/>	zIIP	25%
<input checked="" type="checkbox"/>	IFL	20%

3. SMT Display Controls

Show Host Capacity Summary

- Click on the **Host Capacity Summary** icon  to view the report.

Click Host Capacity Summary



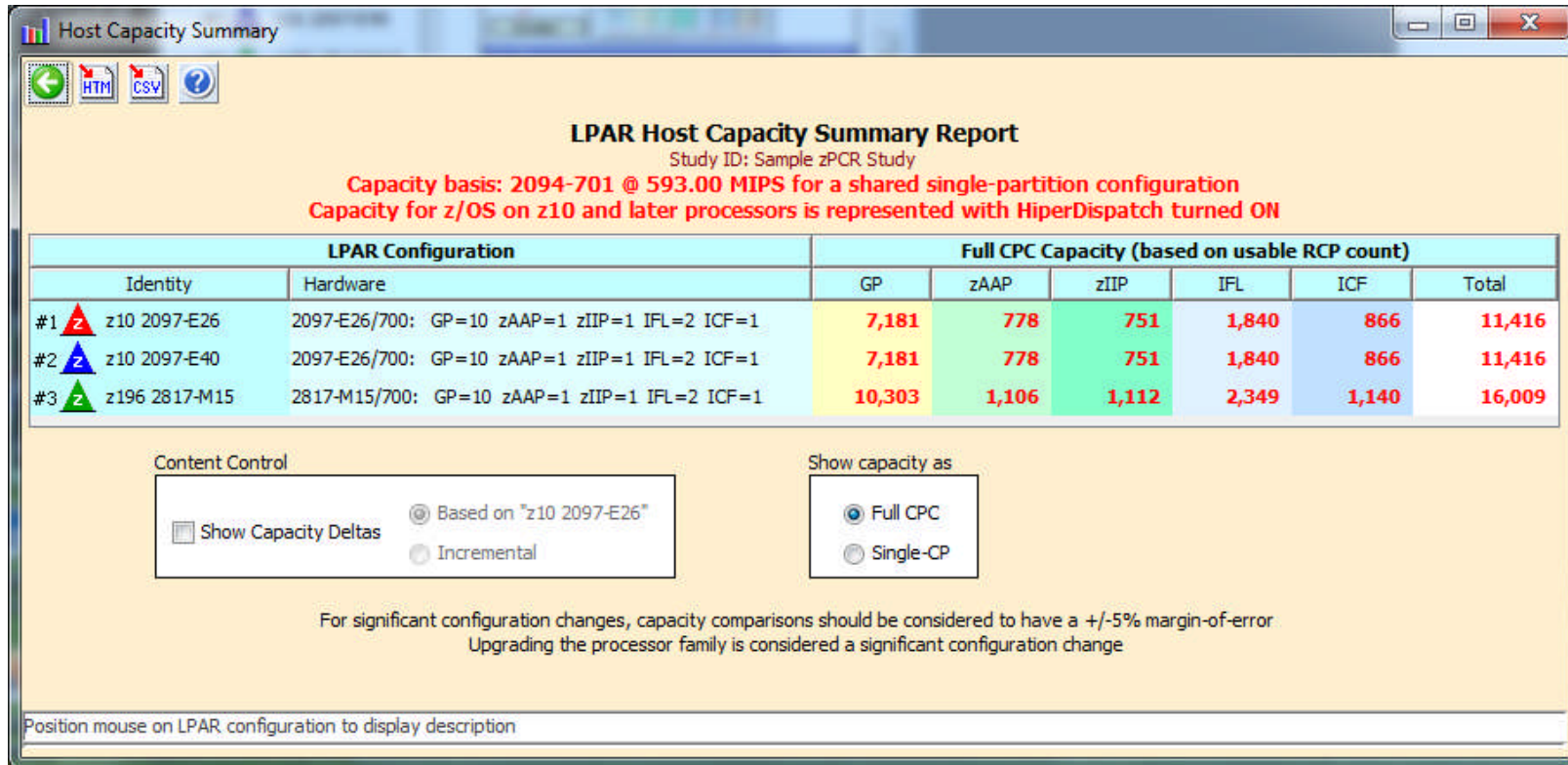
The screenshot shows the 'Advanced-Mode Capacity Planning Control Panel' for 'Sample zPCR Study'. The left tree view shows the hierarchy: Reference-CPU, LSPR Multi-Image Processor Table, General Purpose CPs, IFL CPs, and LPAR Configurations. Under LPAR Configurations, LPAR #1 (z10 2097-E26) is selected. The bottom section displays the 'Host Capacity Summary' for LPAR #1, showing a table of resources and their capacities.

Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	800	11,416

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

Host Capacity Summary




- For each defined LPAR configuration, its icon and name are provided, along with the processor model information and number of real CPs configured to each pool
 - To display the description field of any LPAR configuration, place the mouse pointer anywhere on that row
- Click on the **Return** to take you back at the **Advanced-Mode Control Panel**



Host Capacity Summary

LPAR Host Capacity Summary Report
Study ID: Sample zPCR Study

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

LPAR Configuration		Full CPC Capacity (based on usable RCP count)					
Identity	Hardware	GP	zAAP	zIIP	IFL	ICF	Total
#1  z10 2097-E26	2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1	7,181	778	751	1,840	866	11,416
#2  z10 2097-E40	2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1	7,181	778	751	1,840	866	11,416
#3  z196 2817-M15	2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1	10,303	1,106	1,112	2,349	1,140	16,009

Content Control: ☐ Show Capacity Deltas ☒ Based on "z10 2097-E26" ☐ Incremental

Show capacity as: ☒ Full CPC ☐ Single-CP

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Position mouse on LPAR configuration to display description

Save and Exit

Advanced-Mode Capacity Planning Control Panel

Study ID: Sample zPCR Study

Double click on a tree branch below to access the relevant windows

- Reference-CPU
 - REF 2094-701 @ 593.00 MIPS
- LSPR Multi-Image Processor Table
 - LSPR General Purpose CPs
 - LSPR IFL CPs
- LPAR Configurations
 - #1 z10 2097-E26
 - #2 z10 2097-E40
 - #3 z196 2817-M15

Manage Compare Migrate & Analyze QuickStart Guide

z10 2097-E26 ABC Production on IBM z9-EC z10 EC/700 LPAR Host: 2097-E26/700						
Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CPC Total
RCPs	10	1	1	2	1	15
Partitions	4	1	1	2	1	9
LCPs	21	1	1	3	1	27
Capacity	7,181	778	751	1,840	866	11,416

Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration

Exit zPCR

Save Study

3 Ways to Input Data into zPCR

- 1 Manually
 - For “what if” when no processor/system exists

- 2 RMF
 - When processor/system exists

- 3 EDF File
 - When processor/system exists
 - Recommended because of CPU MF input

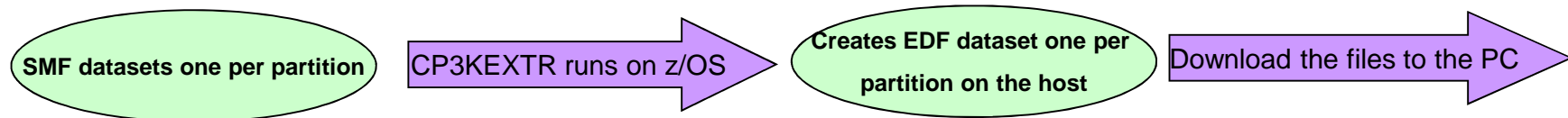
EDF Input for zPCR

CP3KEXTR and CP3KVMXT
have been recently
updated to support z13s

z/OS

Turn on CPU MF to start SMF 113 recording (primary partitions)

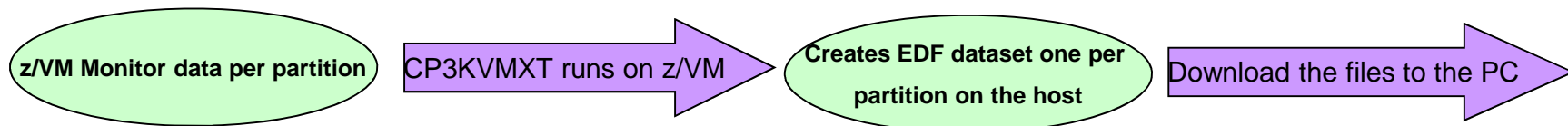
Post process SMF data with CP3KEXTR to produce EDF



z/VM

Enable Monitor to record CPU MF data (primary partitions)

Post process Monitor data with CP3KVMXT to produce EDF



z/OS EDF Input

z/OS on System z

Turn on CPU MF to start SMF 113 recording (primary partitions)

Post process SMF data with CP3KEXTR to produce EDF

Get zPCR CP3KEXTR here: <http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS4229>

Windows PC with zPCR installed

Download EDF (1 per partition) to PC

In zPCR, Get Host and Partitions from EDF

Load EDF(s)

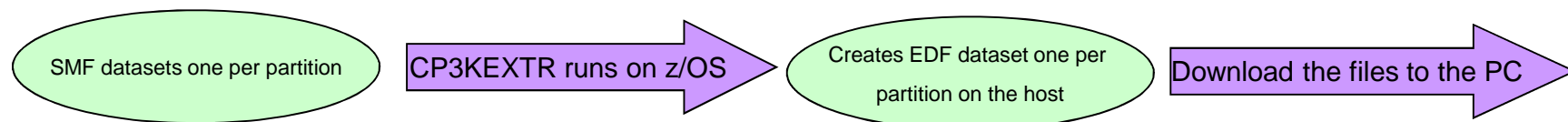
Select (or drag) all Processor Partitions simultaneously ← Gets CPU MF and
Parked Engines
for all partitions
at the same time

Select a representative interval

Show LPAR Host and its partition configuration

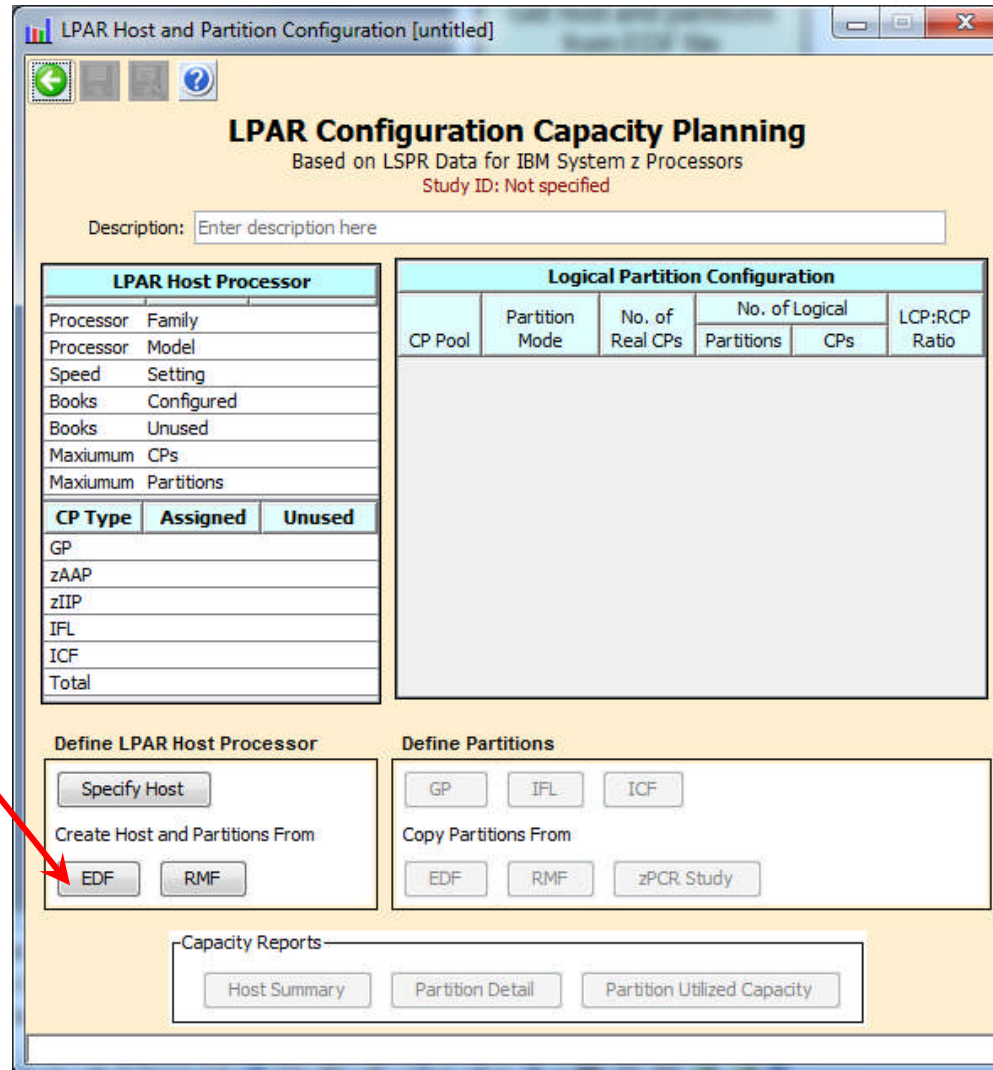
Create LPAR Configuration

Partitions with SMF 113s will assign “CPU MF” workload



Load the EDF files into zPCR

Get host and partitions
from EDF file



The screenshot shows the 'LPAR Host and Partition Configuration [untitled]' window. The title bar includes standard window controls. The main area is titled 'LPAR Configuration Capacity Planning' with a subtitle 'Based on LSPR Data for IBM System z Processors' and a red note 'Study ID: Not specified'. Below this is a 'Description:' field with the placeholder 'Enter description here'. The interface is divided into two main sections: 'LPAR Host Processor' and 'Logical Partition Configuration'. The 'LPAR Host Processor' section contains a table with fields for Processor Family, Model, Speed Setting, Books Configured, Books Unused, Maximum CPs, and Maximum Partitions. Below this is a table with columns 'CP Type', 'Assigned', and 'Unused', listing GP, zAAP, zIIP, IFL, ICF, and a Total row. The 'Logical Partition Configuration' section is a large empty table with columns for CP Pool, Partition Mode, No. of Real CPs, No. of Logical Partitions, Logical CPs, and LCP:RCP Ratio. At the bottom, there are two panels: 'Define LPAR Host Processor' with a 'Specify Host' button and a 'Create Host and Partitions From' section containing 'EDF' and 'RMF' buttons; and 'Define Partitions' with buttons for GP, IFL, and ICF, and a 'Copy Partitions From' section containing 'EDF', 'RMF', and 'zPCR Study' buttons. A red arrow points from the 'EDF' button in the 'Create Host and Partitions From' section to the text box on the left. At the very bottom, a 'Capacity Reports' section contains buttons for 'Host Summary', 'Partition Detail', and 'Partition Utilized Capacity'.

LPAR Host Processor	
Processor	Family
Processor	Model
Speed	Setting
Books	Configured
Books	Unused
Maximum	CPs
Maximum	Partitions

CP Type	Assigned	Unused
GP		
zAAP		
zIIP		
IFL		
ICF		
Total		

Logical Partition Configuration					
CP Pool	Partition Mode	No. of Real CPs	No. of Logical Partitions	Logical CPs	LCP:RCP Ratio

Define LPAR Host Processor

Specify Host

Create Host and Partitions From

EDF RMF

Define Partitions

GP IFL ICF

Copy Partitions From

EDF RMF zPCR Study

Capacity Reports

Host Summary Partition Detail Partition Utilized Capacity

Load the EDF files into zPCR – Select an Interval

Select an interval

Sort on GP Pool Utilization

EDF Interval Selection

EDF File Name: I:\zpcr\Task 1.edf

Relative Interval Number	CPC ID	GP Processor Model	Date	Time	Interval Length	Number of Active Partitions	Includes CPU-MF	Pool 1 GP Pool Utilization
12.	CPC00001	2817-707	2012-09-15	10:44:00	00:15:00	8	✓	100.00%
10.	CPC00001	2817-707	2012-09-15	10:14:00	00:15:00	8	✓	100.00%
8.	CPC00001	2817-707	2012-09-15	09:44:00	00:15:00	8	✓	99.99%
7.	CPC00001	2817-707	2012-09-15	09:29:00	00:15:00	8		99.99%
13.	CPC00001	2817-707	2012-09-15	10:59:00	00:15:00	8		99.98%
11.	CPC00001	2817-707	2012-09-15	10:29:00	00:15:00	8		99.98%
9.	CPC00001	2817-707	2012-09-15	09:59:00	00:15:00	8		99.98%
14.	CPC00001	2817-707	2012-09-15	11:14:00	00:15:00	8	✓	99.97%
6.	CPC00001	2817-707	2012-09-15	09:14:00	00:15:00	8	✓	99.97%
15.	CPC00001	2817-707	2012-09-15	11:29:00	00:15:00	8		99.95%

Table View

☐ Show All Pools Number of intervals: 16

Load EDF Show Partitions

Click on a row to select interval for which zPCR partition definitions are to be created

CPU MF
(SMF 113)
data available

LPAR Configuration from EDF for Chosen Interval

Click "Create LPAR Configuration"

Create LPAR Configuration from EDF

z/OS SMF Data Set Name: ZPCRLAB.CPUMFSMF
 Extract Version: CP3KEXTR11/16/12
 EDF File Name: I:\zpcr\Task 1.edf
 Interval #12: Date=2012-09-15 Time=10:44:00 Length=00:15:00
 CPC ID: CPC00001; GP Processor Model = 2817-707
 z196 Host = 2817-M15/700 with 7 CPs: GP=7

Create Active Study
 LPAR Host as specified above
 Partition Configuration as specified below

Create LP	LP is Active	LP from EDF	Partition Identification					Partition Configuration				HiperDispatch		CPU-MF		Method Used	
			No.	Type	Name	SCP	Assigned Workload	Mode	LCPs	Weight	Weight %	CAP	Active	Parked	RNI		Workload Assignment
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	GP	CICSA	z/OS-1.13	Average	SHR	7.0	340	34.0%		<input checked="" type="checkbox"/>	4.0	0.88	Average	CPU-MF
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	GP	BATCHA	z/OS-1.13	Average	SHR	7.0	195	19.5%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	GP	BATCHB	z/OS-1.13	Average	SHR	2.0	32	3.2%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	GP	TESTB	z/OS-1.13	Average	SHR	2.0	12	1.2%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	GP	TESTIMS	z/OS-1.13	Average	SHR	5.0	36	3.6%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6	GP	CICSB	z/OS-1.13	Average	SHR	7.0	297	29.7%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7	GP	IMSA	z/OS-1.13	Average	SHR	5.0	73	7.3%						Default
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8	GP	TESTCICS	z/OS-1.13	Average	SHR	2.0	15	1.5%						Default

☒ When copying partitions into zPCR remove Parked LCPs from the LCP Count

Note: One or more partitions have "Parked" LCPs. The LCP count for HiperDispatch partitions should be reduced by the number of "Parked" LCPs

Click on "Copy LP" checkbox to select partitions to be copied to the active study

Output Options

- Types
 - CSV
 - HTML
- Processed by
 - Spreadsheets (HTML and CSV)
 - Word Processors (HTML)
 - Browsers (HTML)

Output Results

Output to
HTML file

Output to CSV
file

Partition Detail Report
Graph Documentation

Partition Detail Report
Based on LSPR Data for IBM System z Processors
Study ID: Sample zPCR Study

#1 z10 2097-E26
Description: ABC Production on IBM z9-EC

z10 EC/700 Host = 2097-E26/700 with 15 CPs: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1
9 Active Partitions: GP=4 zAAP=1 zIIP=1 IFL=2 ICF=1
Capacity basis: 2094-701 @ 593.00 MIPS for a shared single-partition configuration
Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Include	Partition Identification					Partition Configuration					Partition Capacity	
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	CAP	Minimum	Maximum
<input checked="" type="checkbox"/>	1	GP	LP-01	z/OS-1.9*	Average	SHR	10	700	53.23%		3,867	7,264
<input checked="" type="checkbox"/>	2	GP	LP-02	z/OS-1.9*	Average	SHR	6	400	30.42%		2,210	4,359
<input checked="" type="checkbox"/>		zAAP	LP-02	z/OS-1.9*	Average	SHR	1	400	100.00%		778	778
<input checked="" type="checkbox"/>	3	GP	LP-03	z/OS-1.9*	Avg-High	SHR	4	200	15.21%		1,030	2,708
<input checked="" type="checkbox"/>		zIIP	LP-03	z/OS-1.9*	Avg-High	SHR	1	200	100.00%		751	751
<input checked="" type="checkbox"/>	4	GP	LP-04	z/VM	High/LV	SHR	1	15	1.14%	<input checked="" type="checkbox"/>	75	75
<input checked="" type="checkbox"/>	5	IFL	LP-05	Linux	Low/L	SHR	2	200	88.89%		1,635	1,840
<input checked="" type="checkbox"/>	6	IFL	LP-06	Linux	Low/L	SHR	1	25	11.11%		204	920
<input checked="" type="checkbox"/>	7	ICF	LP-07	CFCC	CFCC	DED	1	n/a			866	866

Table View Controls

Display zAAP/zIIP/IFL Partitions
☒ With Associated GP ☐ Separate by Pool

Show GP Pool Specialty Pools
☒ All Partitions ☒ GP ☒ zAAP ☒ zIIP
☐ Includes Only ☒ IFL ☒ ICF

Capacity Summary by Pool

CP Pool	RCPs	Partitions	LCPs	SHR LCP:RCP	Capacity
GP	10	4	21	2.100	7,181
zAAP	1	1	1	1.000	778
zIIP	1	1	1	1.000	751
IFL	2	2	3	1.500	1,840
ICF	1	1	1	All DED	866
Totals	15	9	27		11,416

Host Summary Modify SCP/Workload LCP Alternatives zAAP/zIIP Loading Calibrate Capacity

For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error
Upgrading the processor family is considered a significant configuration change

Input fields have white background; Single-click a "selection field" for drop-down list; Double click a "key-in field" to open.

Single Spot on the Web to Get More Information

- zPCR Getting Started Page

<http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381>

- Contains:

- Downloadable Code
 - zPCR Users Guide
 - External File Layout documentation
 - Links to both CP3KEXTR and CP3KVMXT
 - Link to enabling CPU MF information

- Technical Support Information

- Training materials in .avi format (voice over foils)
 - zPCR Demonstration
 - 5 sections (wmv files)
 - Fundamentals
 - LPAR planning (basic and Advanced mode)
 - Education Exercises
 - 1 Advanced Mode Exercise for z10 to z196
 - Special Notices and FAQs

- Q&A and defect support are available through email: zpcr@us.ibm.com

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www.ibm.com/support/techdocs



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Back Up

Acknowledgements

- Many people contributed to this presentation including:

John Fitch

Gary King

Jim Shaw

Brad Snyder

John Burg

Kathy Walsh

Example of Using zPCR Favorites Support

LSPR Capacity Ratio Table

Workload Graph Help

z/OS-1.13 LSPR Data (07/23/2013)

LSPR Multi-Image Capacity Ratios
General Purpose CPUs
 Values are applicable for z/OS; representative of z/VM and Linux
 Capacity basis: 2094-701 @ 559.792 MIPS for a typical multi-partition configuration
 Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

Processor	Features	Flag	MSU	LSPR Workload Category				
				Low	Low-Avg	Average	Avg-High	High
zEnterprise 196/700								
2817-701	1W	=	150	1,195	1,199	1,202	1,176	1,151
2817-702	2W	=	281	2,325	2,298	2,272	2,192	2,117
2817-703	3W	=	408	3,431	3,370	3,311	3,178	3,055
2817-704	4W	=	531	4,513	4,415	4,320	4,134	3,964
2817-705	5W	=	650	5,576	5,435	5,300	5,062	4,845
2817-706	6W	=	766	6,620	6,430	6,251	5,962	5,699
2817-707	7W	=	879	7,645	7,403	7,175	6,835	6,526
2817-708	8W	=	988	8,652	8,352	8,072	7,682	7,328
2817-709	9W	=	1,091	9,640	9,278	8,943	8,503	8,105
2817-710	10W	=	1,191	10,611	10,183	9,788	9,300	8,858
2817-711	11W	=	1,286	11,565	11,066	10,609	10,072	9,587
2817-712	12W	=	1,381	12,501	11,929	11,407	10,822	10,294
2817-713	13W	=	1,473	13,420	12,770	12,181	11,549	10,979
2817-714	14W	=	1,562	14,323	13,592	12,932	12,254	11,643
2817-715	15W	=	1,648	15,209	14,394	13,662	12,937	12,286
2817-716	16W	=	1,731	16,080	15,177	14,371	13,601	12,909
2817-717	17W	=	1,816	16,945	15,956	15,076	14,260	13,528
2817-718	18W	=	1,899	17,805	16,730	15,778	14,916	14,144
2817-719	19W	=	1,983	18,660	17,500	16,476	15,569	14,756
2817-720	20W	=	2,064	19,510	18,266	17,171	16,217	15,365
2817-721	21W	=	2,144	20,355	19,027	17,862	16,863	15,969
2817-722	22W	=	2,224	21,194	19,784	18,550	17,504	16,570
2817-723	23W	=	2,306	22,029	20,537	19,234	18,142	17,168
2817-724	24W	=	2,388	22,859	21,285	19,915	18,777	17,762

Processor models in table = 1,064; In this view = 953; Currently selected = 1

Provisional Reference-CPU Workload Categories Copy Selected to Favorites Table Controls

Provisional Reference-CPU is active
 Select multiple processors with **Ctrl+LeftClick** or **Shift+LeftClick**; For flag explanation, position mouse on indicator

LSPR Table Control

Settings Help

Processors Displayed

☐ All Families
☒ Selected Families
☐ Favorites

Selected Families

☒ z9-BC ☒ z9-EC
☒ z10-BC ☒ z10-EC
☒ z114 ☒ z196
☒ zBC12 ☒ zEC12

Favorites

1 2817-708

Move Selected Processor

↑ ↓ ↶ ↷

zPCR Favorites Support

Workload Graph Help

z/OS-1.13 LSPR Data (07/23/2013)

LSPR Multi-Image Capacity Ratios
Favorite CPUs
 Values are applicable for z/OS; representative of z/VM and Linux
 Capacity basis: 2094-701 @ 559.792 MIPS for a typical multi-partition configuration
 Capacity for z/OS on z10 and later processors is represented with HiperDispatch turned ON

zPCR V8.5c

Processor	Features	Flag	MSU	LSPR Workload Category				
				Low	Low-Avg	Average	Avg-High	High
2827-7xx I10	10W IFL	=		13,552	12,829	12,179	11,460	10,821
2827-7xx I11	11W IFL	=		14,751	13,926	13,188	12,399	11,699
2827-7xx I12	12W IFL	=		15,924	14,994	14,166	13,308	12,548
2827-7xx I13	13W IFL	=		17,085	16,046	15,126	14,200	13,381
2827-506	6W	=	409	3,571	3,441	3,320	3,142	2,982
2827-507	7W	=	470	4,129	3,968	3,820	3,613	3,427
2827-508	8W	=	530	4,679	4,486	4,308	4,073	3,863
2827-509	9W	=	588	5,221	4,993	4,784	4,524	4,290

Processor models in table = 1,064; In this view = 8; Currently selected = 8

Provisional Reference-CPU Workload Categories Copy Selected to Favorites Table Controls

Global Reference-CPU is active; double click any processor row to set it as a Provisional Reference-CPU
 Select multiple processors with **Ctrl+LeftClick** or **Shift+LeftClick**; For flag explanation, position mouse on indicator

LSPR Table Control

Settings Help

Processors Displayed

- ☐ All Families
- ☐ Selected Families
- ☒ Favorites

Selected Families

- ☐ z9-BC ☐ z9-EC
- ☒ z10-BC ☒ z10-EC
- ☒ z114 ☒ z196
- ☒ zBC12 ☒ zEC12

Favorites

1	2827-7xx I10
2	2827-7xx I11
3	2827-7xx I12
4	2827-7xx I13
5	2827-506
6	2827-507
7	2827-508
8	2827-509

Move Selected Processor

⏪ ⏩ ⏴ ⏵

What is new in zPCR V8.7 includes:

- The IBM z Systems z13 Processor Family has been added
- LSPR data is now based on z/OS 2.1
- z13 Symmetric Multi-Threading (SMT)
 - z13 LSPR zIIP and IFL capacity can be displayed including SMT Benefit
 - Default SMT Benefit: zIIPs 25%, IFLs 20%
- Absolute Capping may be manually specified for z13, zEC12, or zBC12
- In Advanced-Mode, number of LPAR configurations has been increased from 7 to 10

zPCR Capacity Sizing Lab

Part 2 Hands-on Lab

John Burg

Brad Snyder

IBM

March 4, 2015

Session Number 16798



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Agenda

- Lab Exercise Introduction
- Lab Exercise

Overview of Lab Exercise

- XYZ Corporation Background
 - Currently has System z196
 - 2817-707 (7 way GCPs)
 - Customer views it as having 7,164 MIPS from last zPCR
 - Machine averages 100% busy during peak

- Plan being developed to replace with zEC12
 - Must have at least 36%+ additional capacity
 - at least 9,743 MIPS
 - Prefer a z13 2964-7xx but would consider a sub-capacity z13 2964-6xx

Lab Exercise – Tasks to Complete

- Task 1 – Load EDF containing the latest RMF/SMF data
 - Including SMF 113s
- Task 2 – Rename the configuration
- Task 3 - Save the current study in Advanced-Mode
 - e.g. task2.zpcr
- Task 4 - Find an appropriate z13 700 replacement processor
- Task 5 - Model the intended z13 LPAR host using Advanced Mode
- Task 6 - Review the Capacity results and save the Study
 - Use a different file name than Task 3, e.g. task6.zpcr

- Additional Analysis To Try
 - A. Model a z1312 600 as an alternative
 - B. Add 1 IFL partition running Linux for System z under z/VM and 1 zIIP partition with 2 zIIPs (CICSA) on z13 700
 - Add SMT Benefit – use 20% IFL default and 25% zIIP default

The purpose of this lab is to enable familiarization and skill in executing zPCR Advanced Mode, and it may not necessarily reflect capacity sizing best practices