zPCR Capacity Sizing Lab

SHARE - Sessions 10885 / 10880

March 15, 2012

John Burg

Materials created by John Fitch and Jim Shaw

IBM

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zPCR Capacity Sizing Labs

- **Part 1 - Intro and Overview**
  - zPCR Introduction with C V7.7
  - Includes Advanced Mode Update
  - What's new in zPCR V7.7a
- **Part 2 – Hands-on Lab**
  - 1 Exercise to demonstrate the use of Advanced Mode functions in zPCR
    - 6 Tasks
    - 2 optional specialty engine considerations
  - Use as a refresher

zPCR Capacity Sizing Lab – Part 1 Introduction and Overview

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Agenda

- **Introducing zPCR**
- **LSPR Background**
- **MIPS Tables Vs. zPCR LPAR Configuration Capacity Planning**
- **zPCR Basic Mode**
- **zPCR Advanced Mode**
- **Update on zPCR C V7.7a**
- **Where to get more Information**
- **Summary**

Introducing zPCR

- **Provides capacity relationships for System z processors, considering**
  - LPAR configuration
  - 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 ±5%
- **A PC based tool written in Java for Windows XP/Win 7**
  - Available to customers since 10/2005
  - “As Is”, no charge tool available from the web
- **New Processor Announcements available in zPCR for:**
  - IBM Account Teams - at Announcement
  - Customers - generally within 30 days after Announcement

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
  - Current LSPR workload categories: Low, Average, High
  - zPCR extends published categories
    - Low-Avg
    - Avg-High
  - A methodology focused on processor capacity
  - No significant external constraints
  - Equivalent (reasonably high, e.g. >= 95%) 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/resourcelink/lib03060.nsf/pages/lsprindex?OpenDocument**

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**

RNI-based LSPR Workload Decision Table

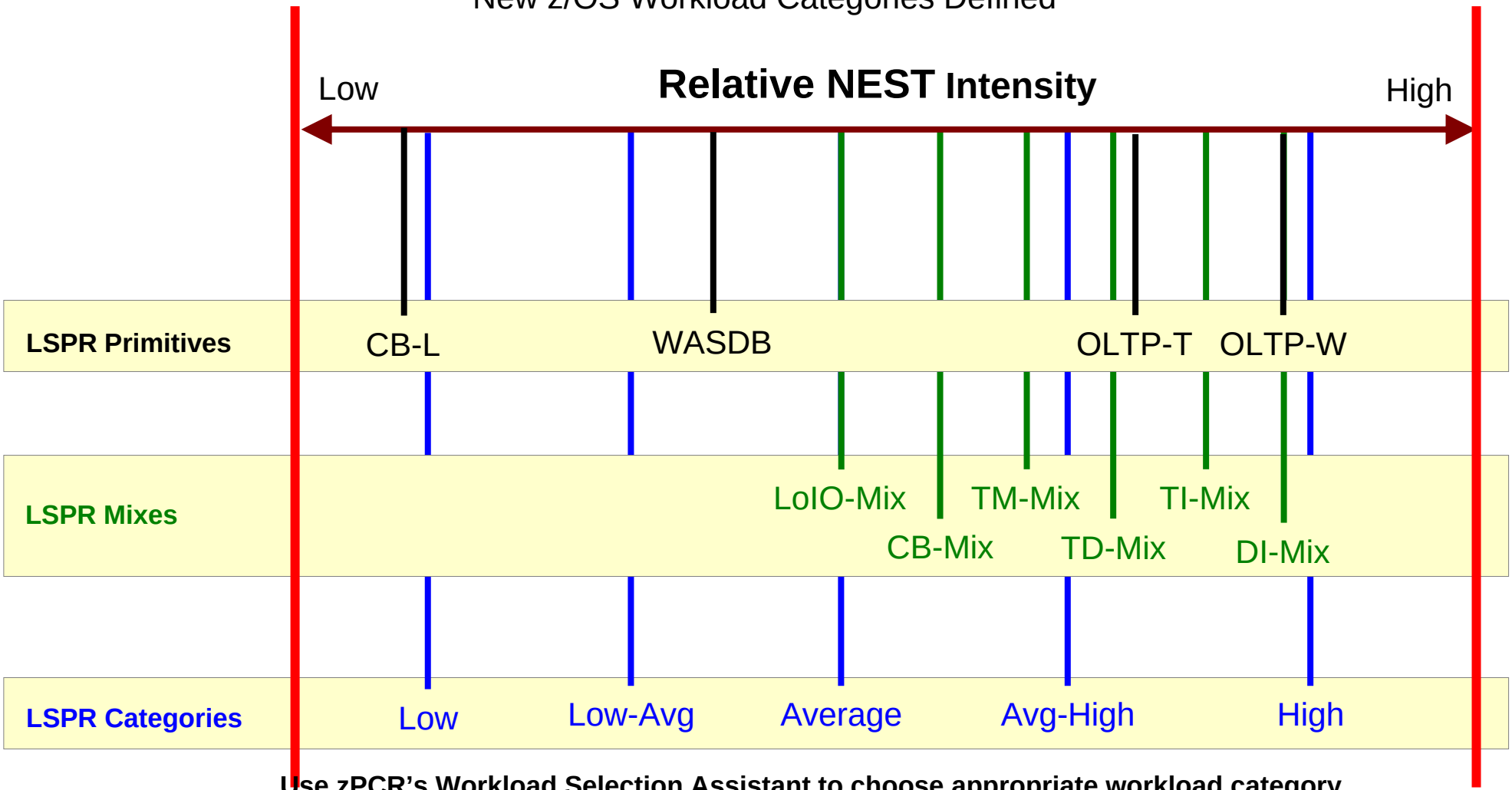
L1MP	RNI	LSPR Workload Match
<3%	>= 0.75 < 0.75	AVERAGE LOW
3% to 6%	>1.0 0.6 to 1.0 < 0.6	HIGH AVERAGE LOW
>6%	>=0.75 < 0.75	HIGH AVERAGE

Notes: applies to z10, z196 and z114 CPU MF data
table may change based on feedback

zPCR Workload Characterization for z/OS

"Scope of Work" Definition Change

New z/OS Workload Categories Defined



Use zPCR's Workload Selection Assistant to choose appropriate workload category

Automated with EDF input into zPCR

Note: Workload selection is automated in zCP3000

LSPR Data

- 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
- Cannot directly compare relative processor capacity across different versions of LSPR benchmarks

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 only
  - Used for “high level” sizing
  - Used to develop the MSU rating
- Single-image (SI) Processor Capacity Ratio table
  - One z/OS partition equal in size to N-way of model (limit to max CPs supported by SCP version)
  - Representative for truly single image z/OS cases
  - Used as the base for zPCR LPAR Configuration Capacity Planning

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

What is new in zPCR C V7.7a

Available since February 22, 2012

- ***LPAR Configurations from EDF***
  - Workload Assignment for z/OS partitions:
    - When ***CPU MF (SMF 113s)*** data is captured, it will now be used to assign the workload category
      - no longer the former ***CPU-MF Hint***.
    - Or if just the ***DASD I/O Rate (SMF 74s) data*** is captured, it will be used to assign the workload category
    - Else all remaining partitions (z/OS or otherwise) will be assigned the default workload category for that SCP.
      - Where ***DASD I/O Rate*** is known, manual input will provide a more appropriate workload category selection.
  - A ***Remove Parked LCPs from Partition LCP Count*** checkbox is now provided.
    - If checked (the default), all parked z/OS LCPs will be removed when the configuration is transferred into zPCR
    - Utilize for HD=YES partitions
  - When generating ***EDF*** for input for zPCR, be sure that the most recent version of the CP3KEXTR program is being used.
    - http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS4229

- ***LPAR configurations from RMF***
  - Workload Assignment
    - For all partitions, the default workload category for that SCP will be assigned.
    - For z/OS partitions where DASD I/O Rate may be known, manual input will provide a more appropriate workload category selection.
  - A ***Remove Parked LCPs from Partition LCP Count*** checkbox is now provided. If checked (the default), all parked z/OS LCPs will be removed when the configuration is transferred into zPCR.
    - Utilize for HD=YES partitions
    - For RMF 1.10 and higher

What is new in zPCR C V7.7a …

- ***Advanced-Mode***:
  - A new *Migrate & Analyze* function has been added**.**
    - The user selects the LPAR configuration that is the target for migrations and clicks the toolbar icon.
      - The ***Copy Partitions: Receiving LPAR Configuration*** window is opened.
      - The LPAR configurations from which partitions are to be copied is then selected.
      - As additional partitions are copied to the ***Receiving Configuration***, ***Minimum Capacity*** values are recomputed and compared to the original values for the entire configuration.
        - > Changes to the original partitions can also be made.
    - Useful for consolidation of LPARs

- ***LPAR Configuration Capacity Planning*** function
  - Metrics driving algorithms for ***CFCC*** have been changed, based on recent ***CFCC*** benchmarks.
  - This change should result in somewhat improved CFCC capacity results for all processor families
    - Particularly z196 and z114 processors.

What is new in zPCR C V7.7 …

- ***Host Capacity Summary*** window (***Advanced-Mode***) enhancement:
  - A new checkbox is provided to add table rows presenting the capacity percent deltas between LPAR configurations.
  - The deltas can all be relative to the 1st LPAR configuration,
    - or calculated incrementally, progressing through each LPAR configuration..

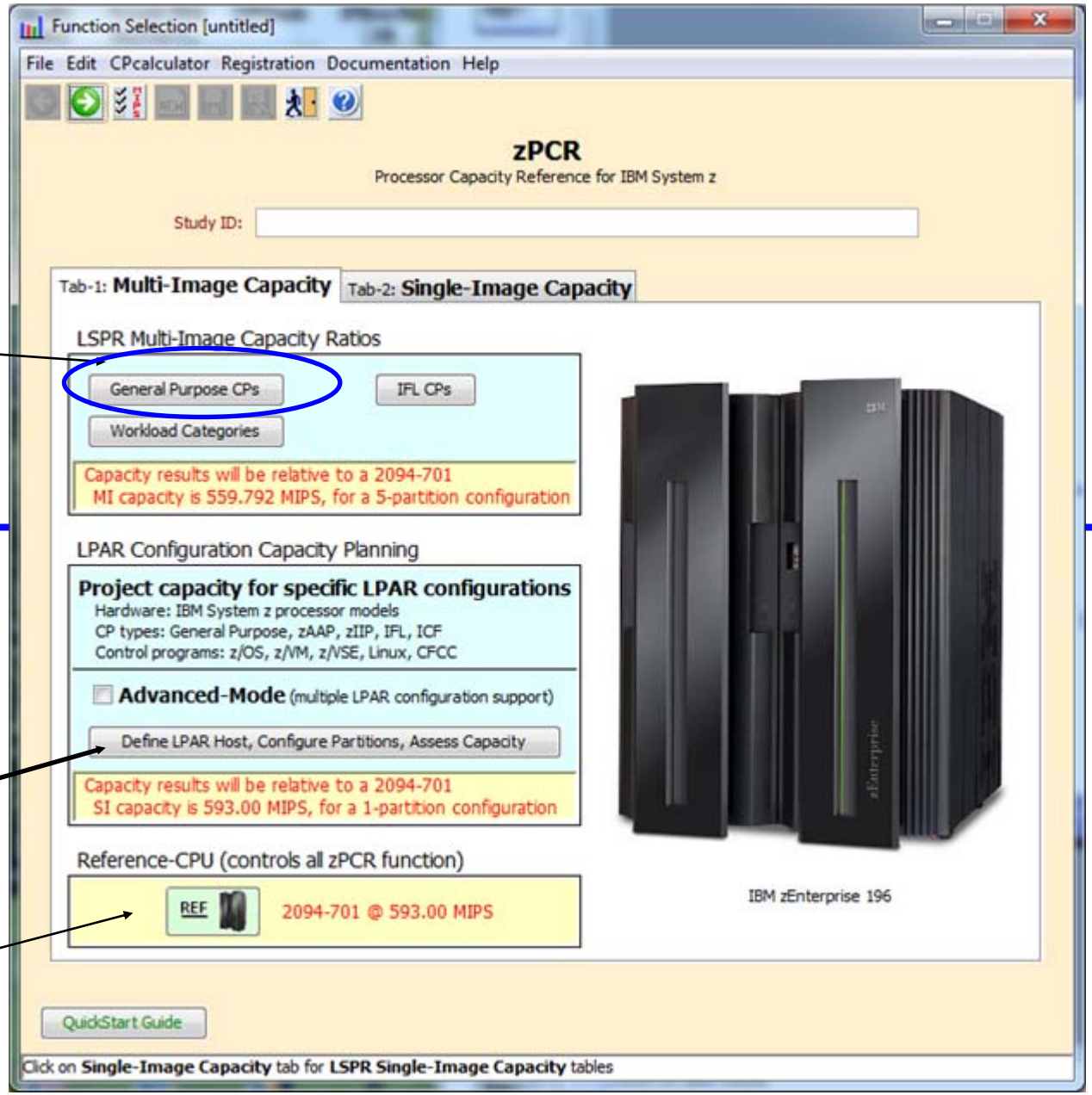
zPCR 7.7 “Basic Mode” Capacity Sizing Tool

MIPS Table

LSPR Multi-Image

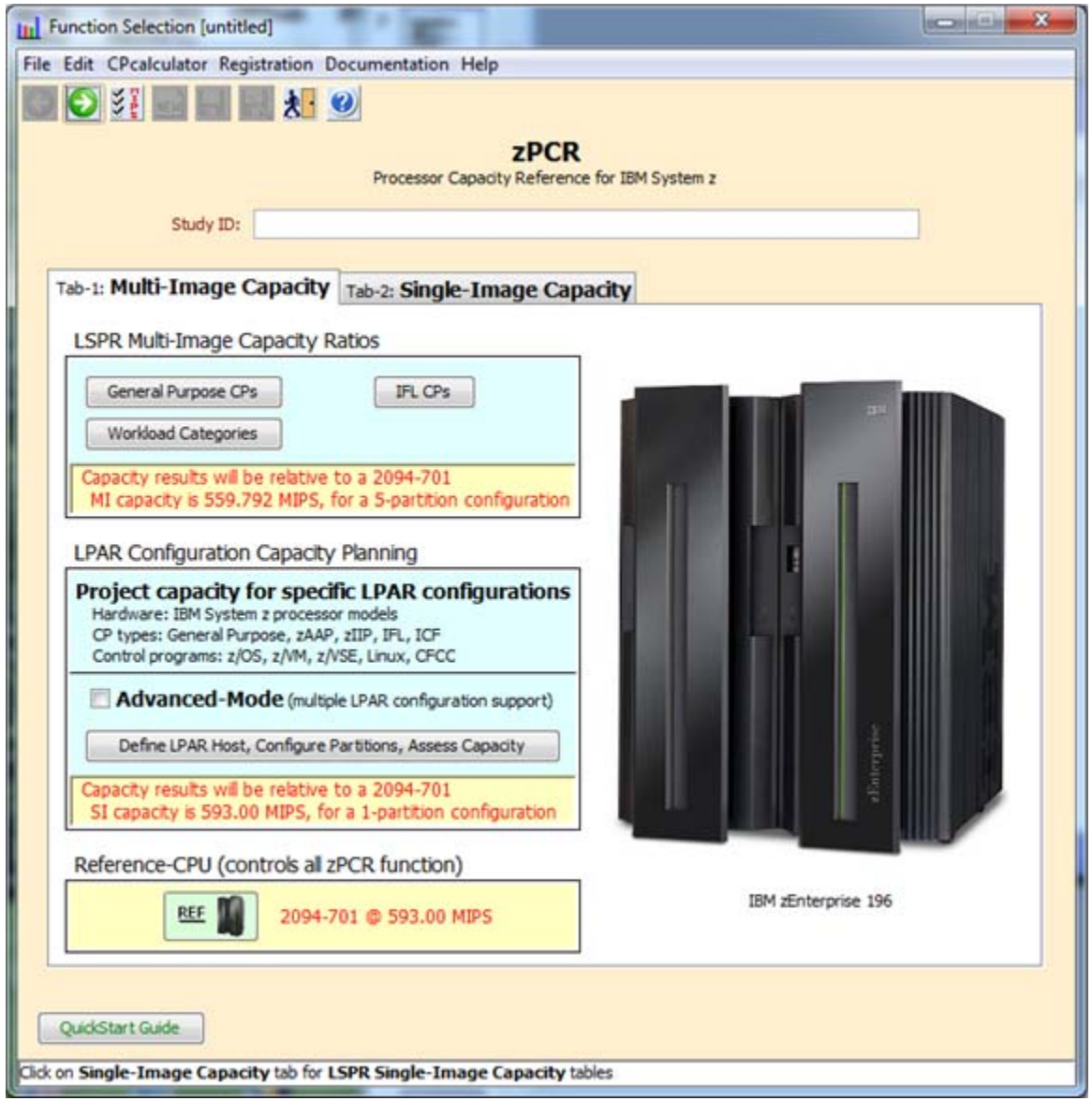
zPCR LPAR Configuration Capacity Planning

Built on LSPR Single-Image MIPS Table



Introducing zPCR C V7.7a – Advanced Mode

Available for Customers since February 22, 2012



zPCR Advanced Mode

- **Provides Capacity Comparisons between 2 LPAR configurations**
  - The "Current" Vs "Alternate" (Alt-1, Alt-2, Alt-3, Alt-4, Alt-5)
    - User can rename these to what ever they wish up to 20 characters
  - 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 "Current" & "Alternate"
- **Is recommended when comparing capacity changes that include:**
  - 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) are new with zPCR 7.x and are created using CP3KEXTR for z/OS and CP3KVMEXT for z/VM

Summary of Advanced Mode function

- **Multiple LPAR configurations (currently limited to six) can be defined**

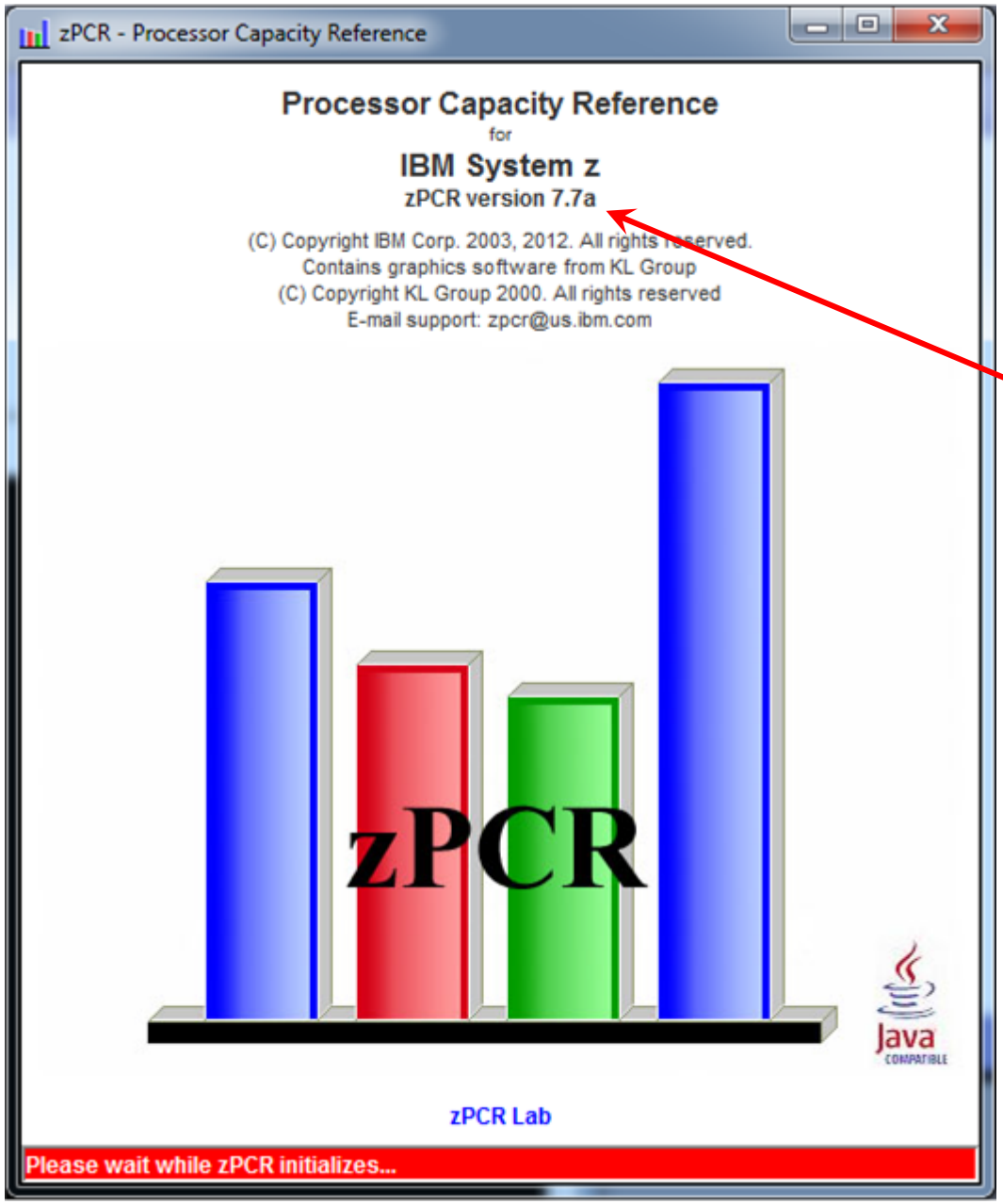
- **Several additional windows and functions are available**
  - *LPAR Host / Partition Comparison Reports*- To compare capacity results between LPAR configurations
  - *Margin of Error Consideration* - To show the effect on capacity when ±5% margin-of-error is applied
  - *Optimize SHR LCPs* – To optimize LCPs
  - *LPAR Host Capacity Summary* – To show summary of MIPS by pool type for Current and all Alternates

- **All capacity values are based on a single Reference-CPU setting**
  - The MI and SI tables will be viewed using Reference-CPU settings that are consistent between them
  - The MI Reference-CPU setting is based on the Reference-CPU setting as specified in the LSPR FAQ
  - 1-way processors only

- **The Reference-CPU can be calibrated for the first LPAR configuration only to produce a desired capacity result**

- **The Workloads window, used to customize the MI table view, must be accessed from either of the LSPR Processor Capacity Ratios tables,**
  - since the Function Selection window is no longer accessible

zPCR Logo Window



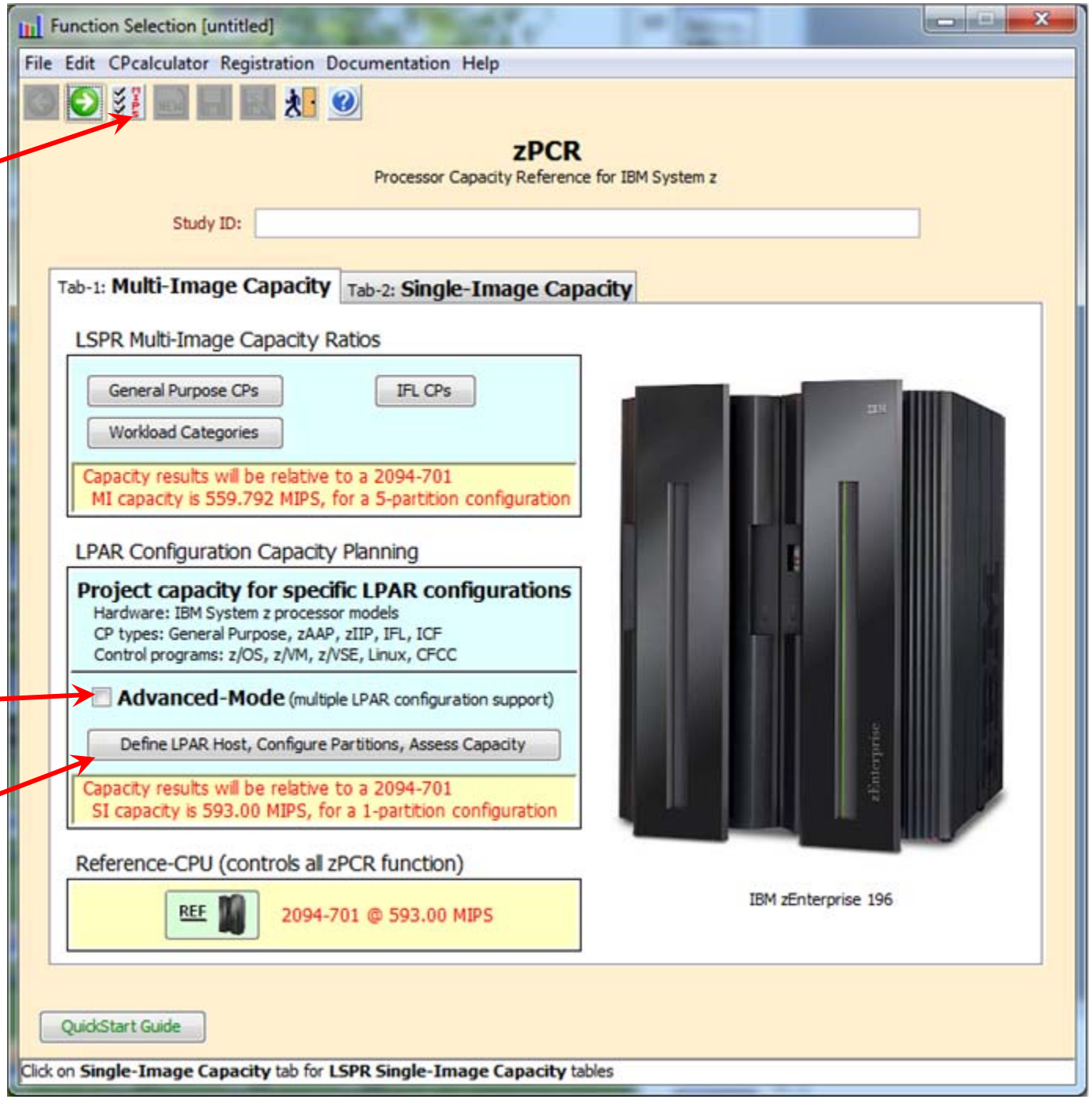
Version Identification

zPCR Function Selection Window

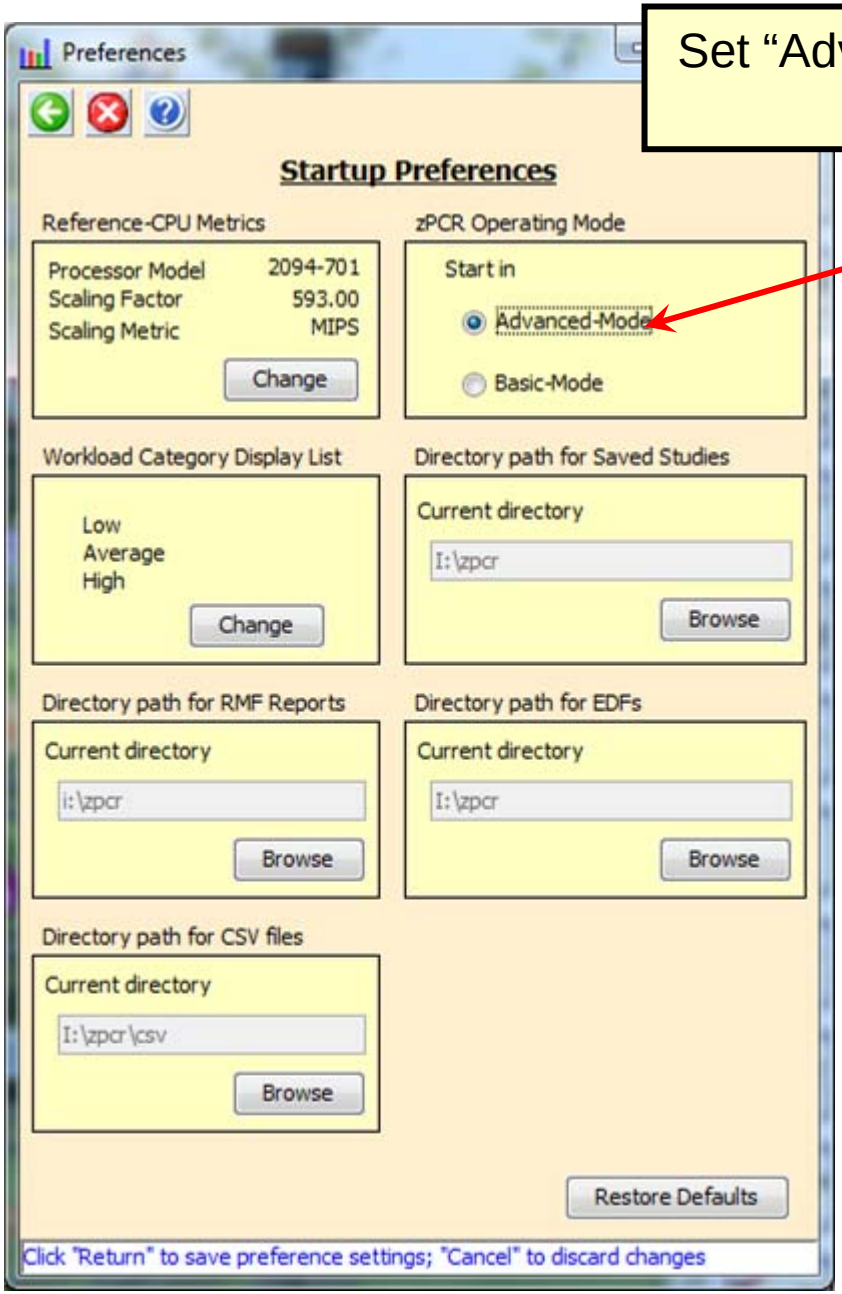
Set “Startup” preferences

Select “Advanced-Mode” check box

Press **Enter** **Advanced-Mode**

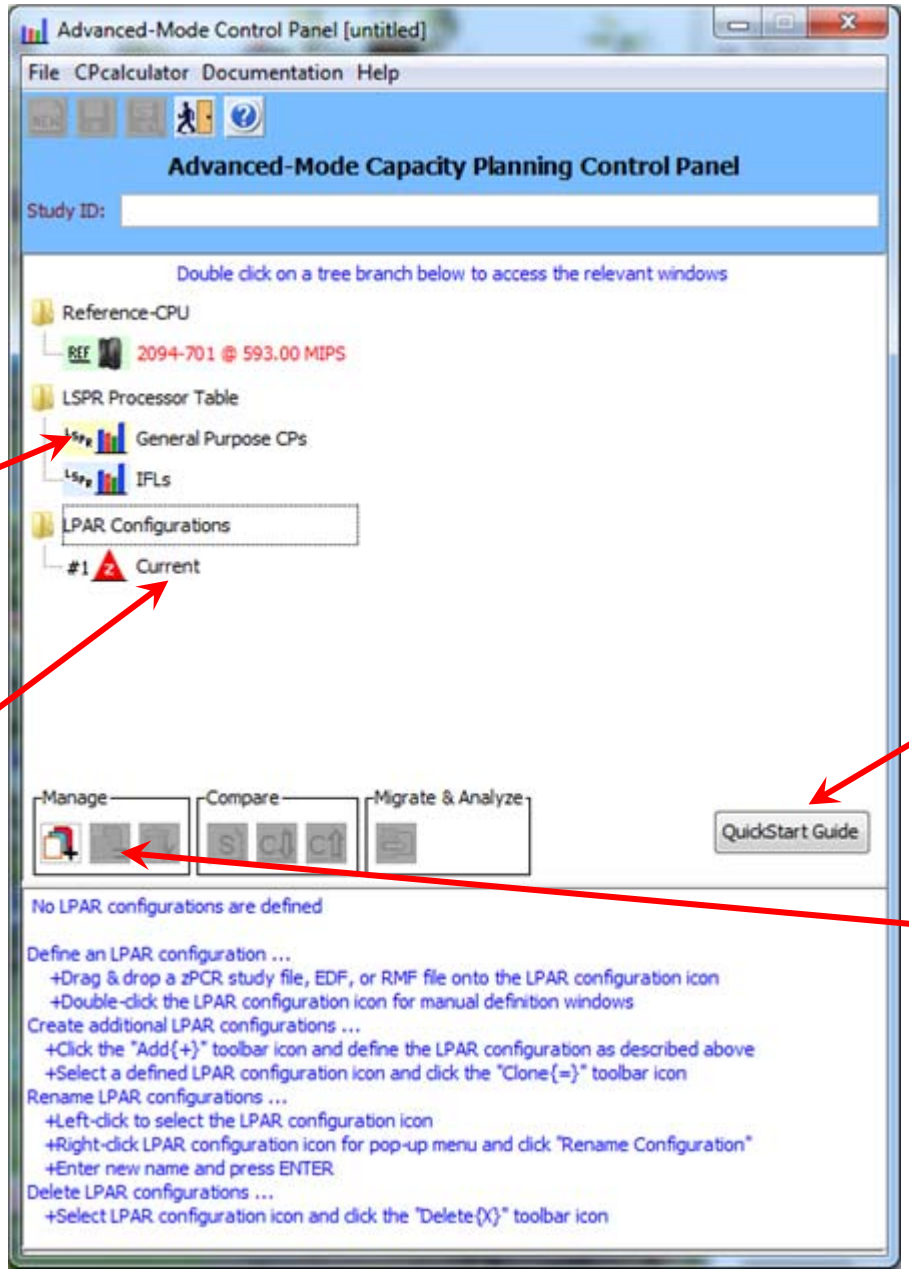


zPCR Startup Preferences



Set “Advanced Mode” as the default when starting zPCR

zPCR Advanced-Mode Capacity Planning Control Panel



View Muli-Image LSPR table

View "QuickStart" Guide

LPAR Configurations Right "click" to rename up to 20 characters

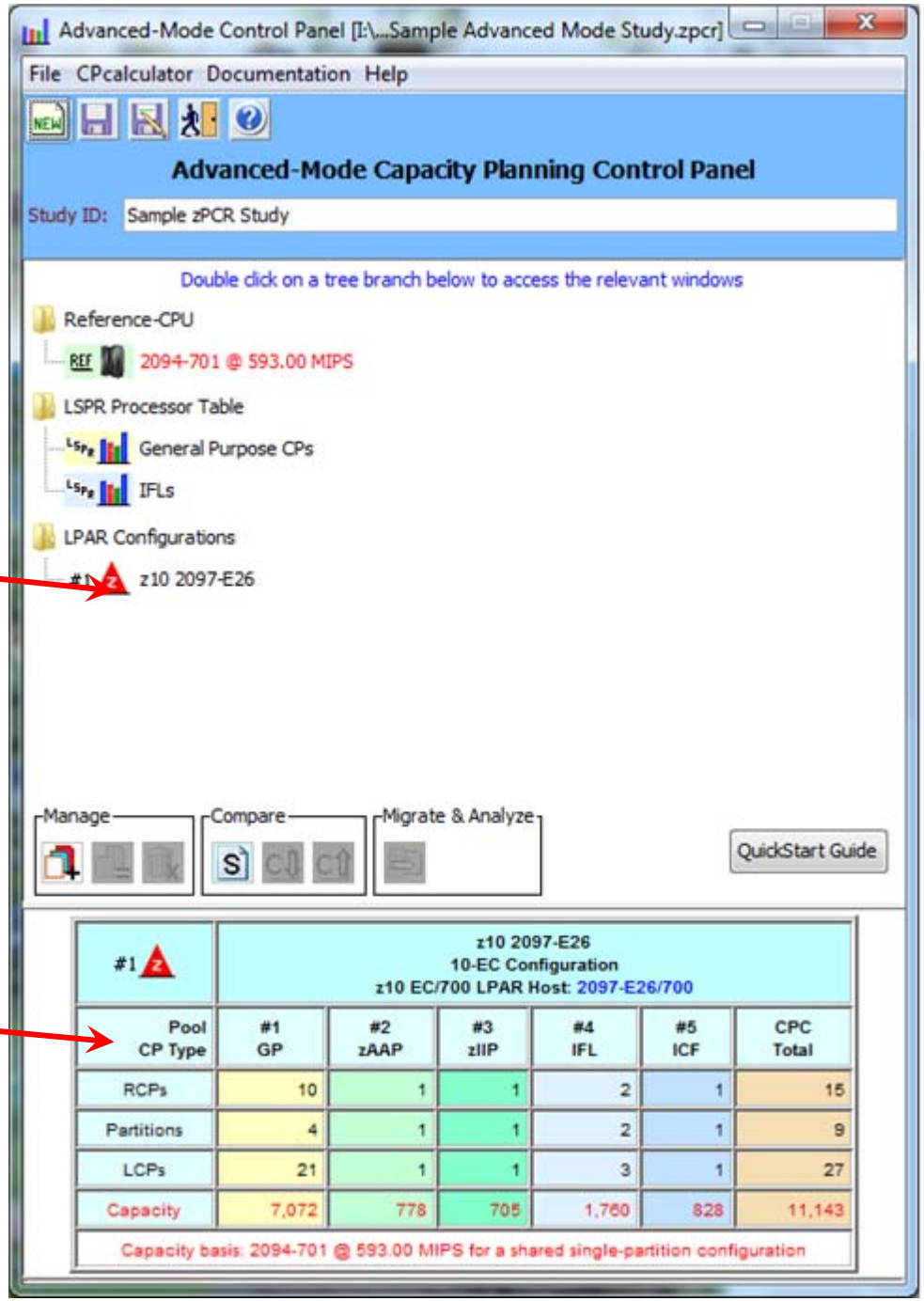
Manage Multiple Configurations

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 Planning Control Panel

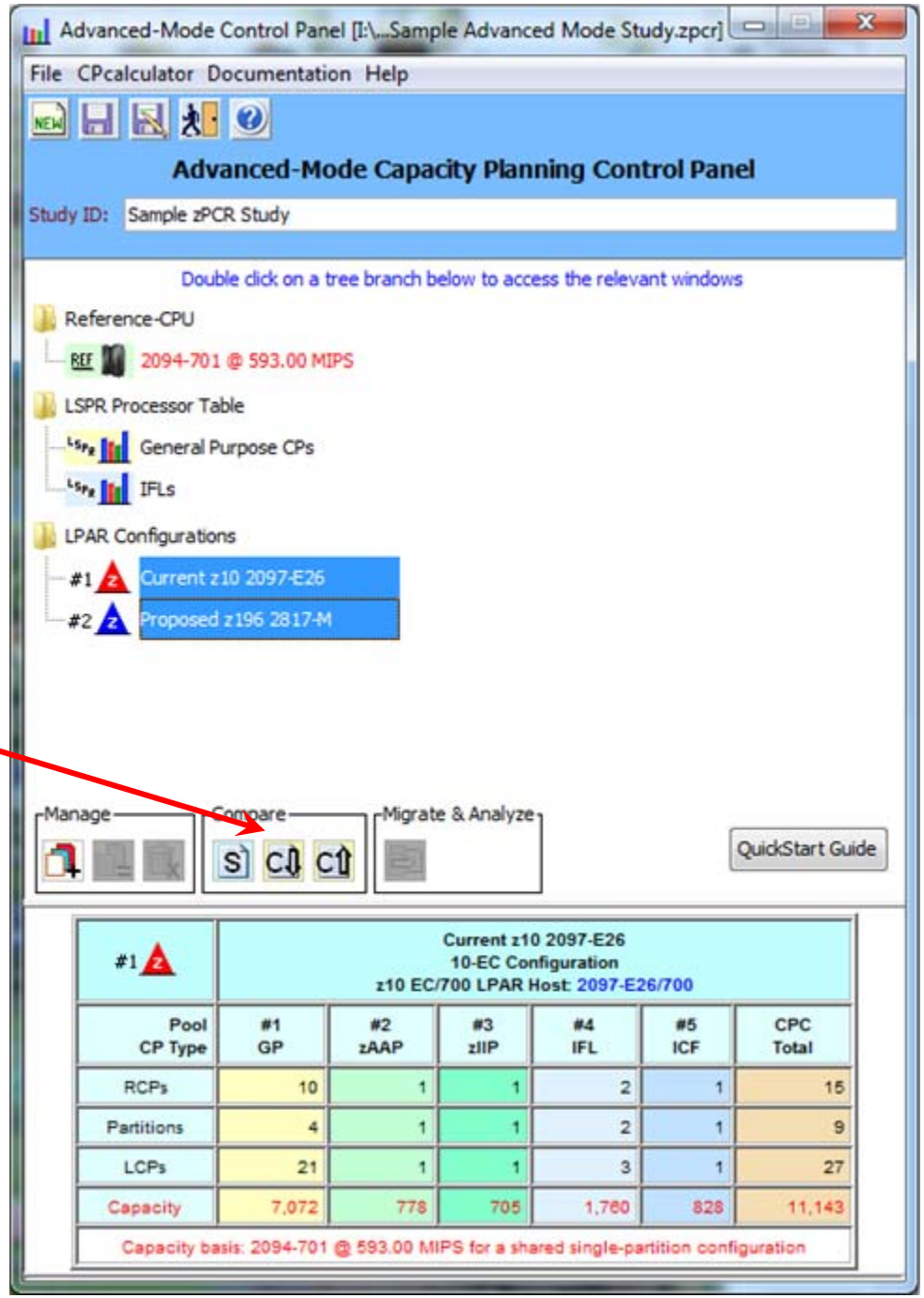
Configuration Renamed

Configuration Summary

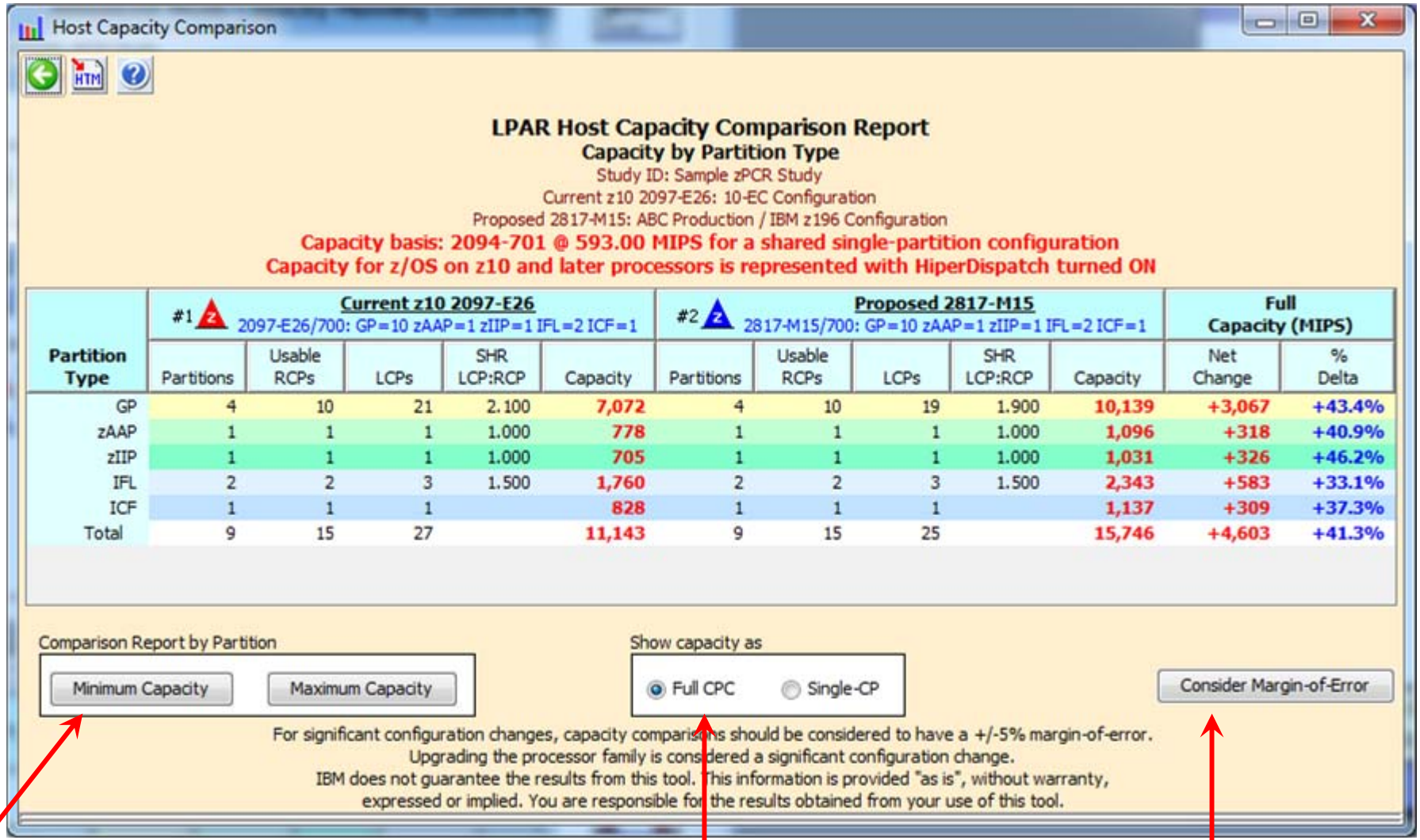


zPCR Advanced-Mode Capacity Planning Control Panel

Comparison Report



Host Capacity Comparison Report



Partition Type	#1 Current z10 2097-E26 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1					#2 Proposed 2817-M15 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1					Full Capacity (MIPS)	
	Partitions	Usable RCPs	LCPs	SHR LCP:RCP	Capacity	Partitions	Usable RCPs	LCPs	SHR LCP:RCP	Capacity	Net Change	% Delta
GP	4	10	21	2.100	7,072	4	10	19	1.900	10,139	+3,067	+43.4%
zAAP	1	1	1	1.000	778	1	1	1	1.000	1,096	+318	+40.9%
zIIP	1	1	1	1.000	705	1	1	1	1.000	1,031	+326	+46.2%
IFL	2	2	3	1.500	1,760	2	2	3	1.500	2,343	+583	+33.1%
ICF	1	1	1		828	1	1	1		1,137	+309	+37.3%
Total	9	15	27		11,143	9	15	25		15,746	+4,603	+41.3%

Comparison Report by Partition

Show **Full** or **Single-CP** capacity

Margin-of-Error

Margin-of-Error Report

Host Margin-of-Error

Margin-of-Error Consideration

LPAR Host Capacity

Study ID: Sample zPCR Study
Current z10 2097-E26: 10-EC Configuration
Proposed 2817-M15: ABC Production / IBM z196 Configuration

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 Type	#1 Current z10 2097-E26	#2 Proposed 2817-M15			
		Projected		Projected minus 5%	
	Projected Capacity	Capacity	% Delta	Capacity	% Delta
GP	7,072	10,139	+43.4%	9,632	+36.2%
zAAP	778	1,096	+40.9%	1,042	+33.9%
zIIP	705	1,031	+46.2%	980	+39.0%
IFL	1,760	2,343	+33.1%	2,226	+26.5%
ICF	828	1,137	+37.3%	1,080	+30.4%
Total	11,143	15,746	+41.3%	14,959	+34.2%

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.
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Partition Capacity Comparison Report

Partition Capacity Comparison

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
Current z10 2097-E26: 10-EC Configuration
Proposed 2817-M15: ABC Production / IBM z196 Configuration
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 Current z10 2097-E26: 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						#2 Proposed 2817-M15: 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						Full Capacity (MIPS)	
				Partition Definition						Partition Definition							
Type	Name	SCP	Workload	LP#	Mode	LCPs	Weight%	CAP	Minimum Capacity	LP#	Mode	LCPs	Weight	Weight%	CAP	Minimum Capacity	Net Change	% Delta
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%		3,841	1	SHR	8	700	53.23%		5,487	+1,646	+42.9%
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%		2,193	2	SHR	6	400	30.42%		3,113	+920	+42.0%
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%		778		SHR	1	400	100.00%		1,096	+318	+40.9%
GP	LP-03	z/OS-1.9*	High	3	SHR	4	15.21%		962	3	SHR	4	200	15.21%		1,429	+467	+48.5%
zIIP	LP-03	z/OS-1.9*	High		SHR	1	100.00%		705		SHR	1	200	100.00%		1,031	+326	+46.2%
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%		1,564	5	SHR	2	200	88.89%		2,082	+518	+33.1%
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%		195	6	SHR	1	25	11.11%		260	+65	+33.3%
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a		828	7	DED	1	n/a			1,137	+309	+37.3%

Change Controls

Commit | Undo | Optimize SHR LCPs

Consider Margin-of-Error

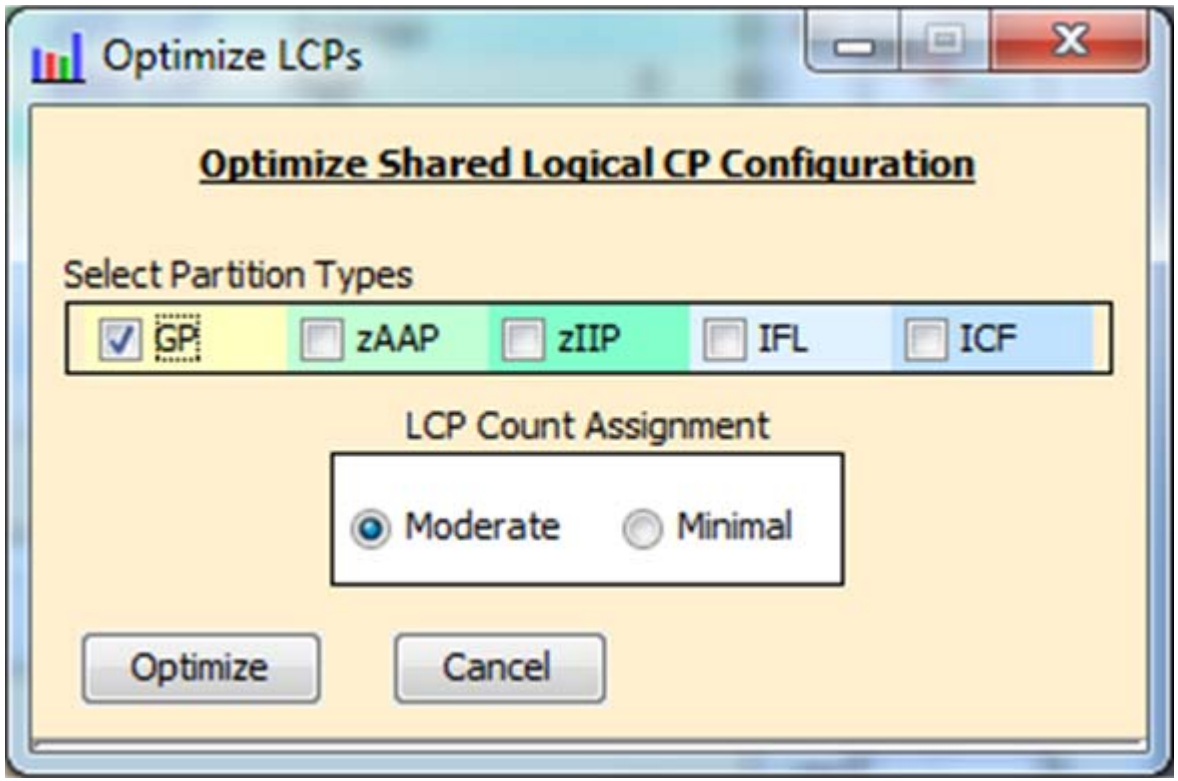
For significant configuration changes, capacity comparisons should be considered to have a +/-5% margin-of-error.
Upgrading the processor family is considered a significant configuration change.
IBM does not guarantee the results from this tool. This information is provided "as is", without warranty, expressed or implied. You are responsible for the results obtained from your use of this tool.

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

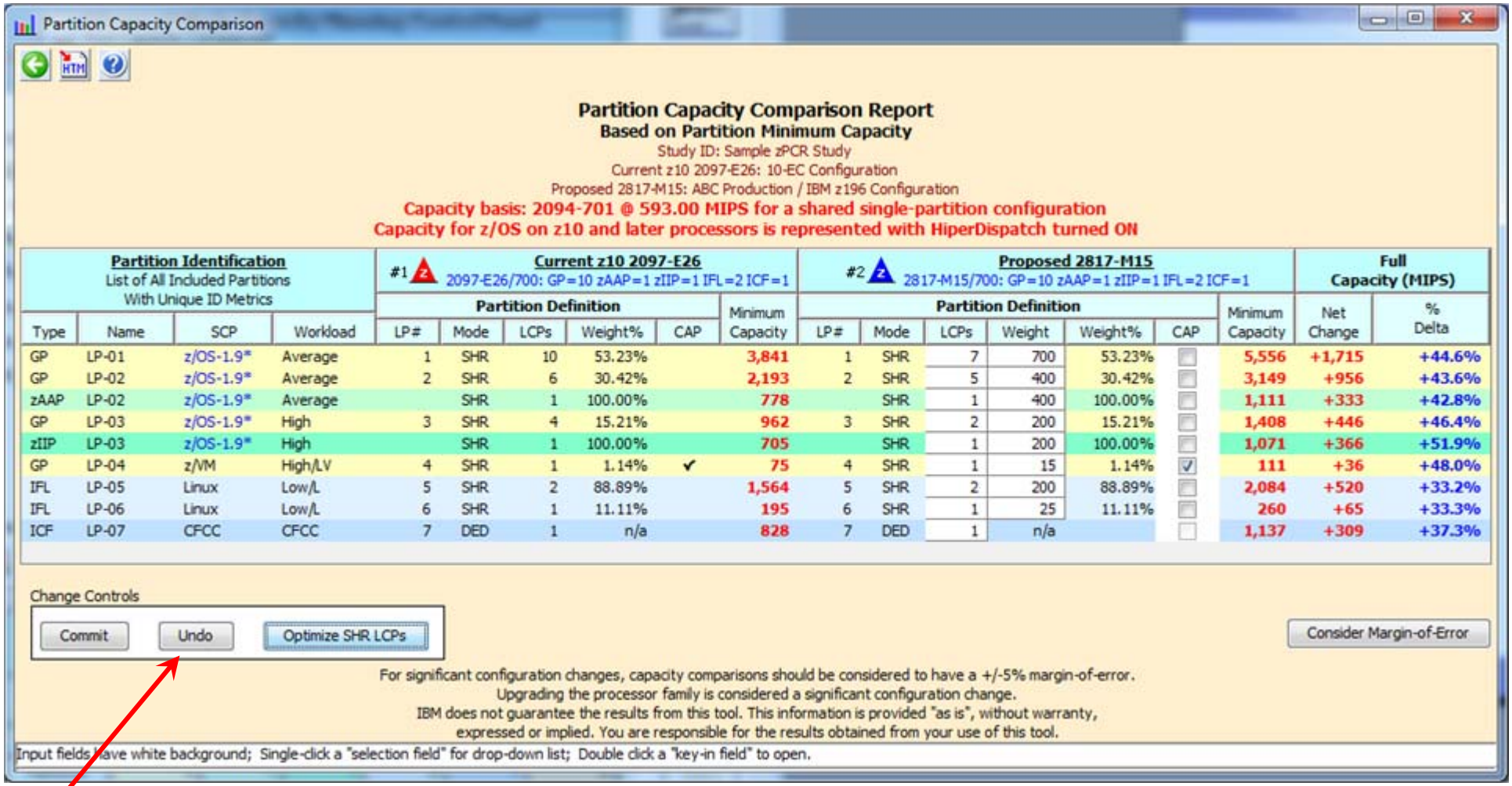
"Optimize" SHR LCPs

Margin-of-Error

Optimize Share LCP Configuration



Commit the Changes



Partition Capacity Comparison

Partition Capacity Comparison Report
Based on Partition Minimum Capacity
Study ID: Sample zPCR Study
Current z10 2097-E26: 10-EC Configuration
Proposed 2817-M15: ABC Production / IBM z196 Configuration
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 Current z10 2097-E26: 2097-E26/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						#2 Proposed 2817-M15: 2817-M15/700: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1						Full Capacity (MIPS)	
				Partition Definition					Minimum	Partition Definition						Minimum	Net	%
Type	Name	SCP	Workload	LP#	Mode	LCPs	Weight%	CAP	Capacity	LP#	Mode	LCPs	Weight	Weight%	CAP	Capacity	Change	Delta
GP	LP-01	z/OS-1.9*	Average	1	SHR	10	53.23%		3,841	1	SHR	7	700	53.23%		5,556	+1,715	+44.6%
GP	LP-02	z/OS-1.9*	Average	2	SHR	6	30.42%		2,193	2	SHR	5	400	30.42%		3,149	+956	+43.6%
zAAP	LP-02	z/OS-1.9*	Average		SHR	1	100.00%		778		SHR	1	400	100.00%		1,111	+333	+42.8%
GP	LP-03	z/OS-1.9*	High	3	SHR	4	15.21%		962	3	SHR	2	200	15.21%		1,408	+446	+46.4%
zIIP	LP-03	z/OS-1.9*	High		SHR	1	100.00%		705		SHR	1	200	100.00%		1,071	+366	+51.9%
GP	LP-04	z/VM	High/LV	4	SHR	1	1.14%	✔	75	4	SHR	1	15	1.14%	☑	111	+36	+48.0%
IFL	LP-05	Linux	Low/L	5	SHR	2	88.89%		1,564	5	SHR	2	200	88.89%		2,084	+520	+33.2%
IFL	LP-06	Linux	Low/L	6	SHR	1	11.11%		195	6	SHR	1	25	11.11%		260	+65	+33.3%
ICF	LP-07	CFCC	CFCC	7	DED	1	n/a		828	7	DED	1	n/a			1,137	+309	+37.3%

Change Controls

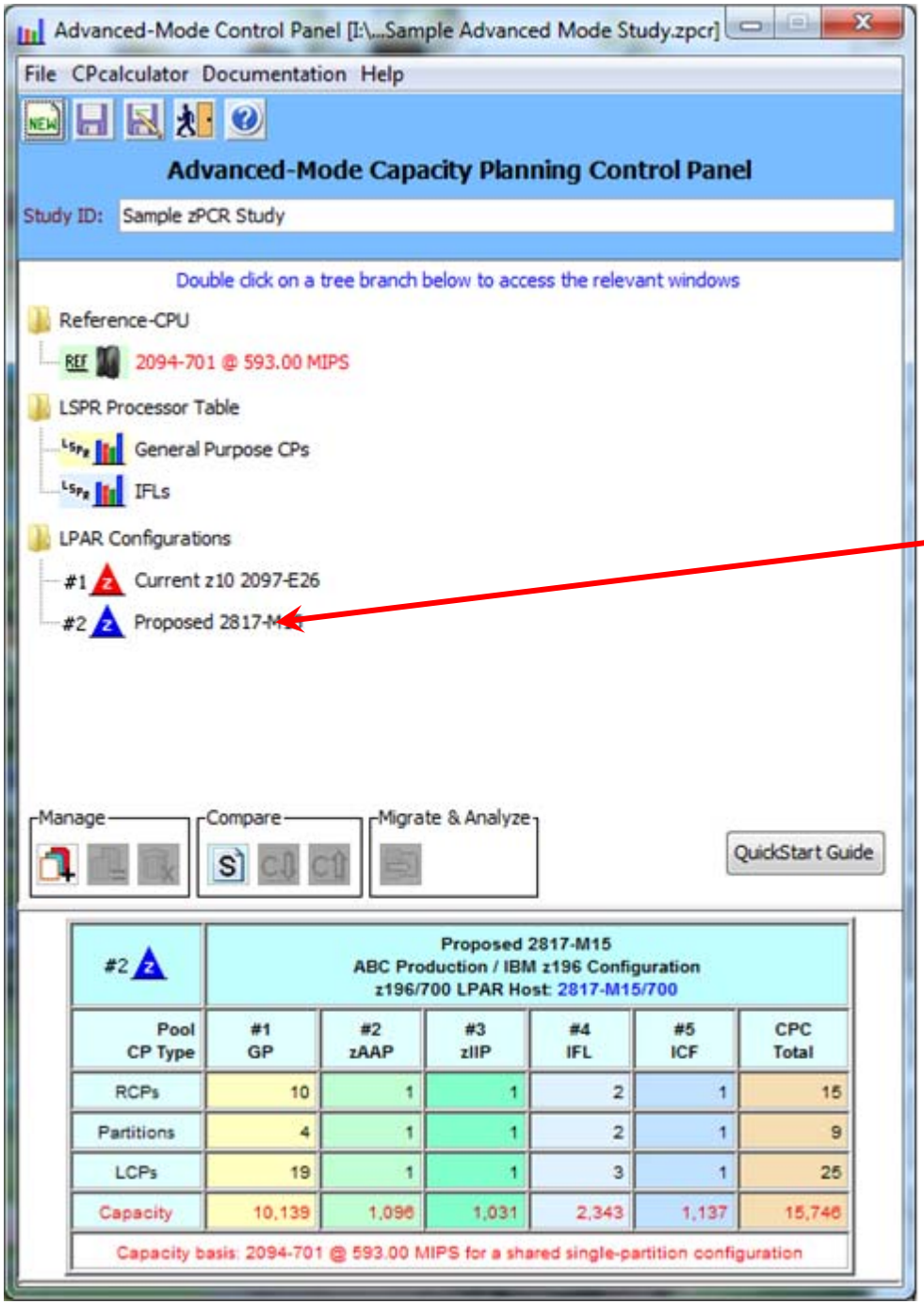
Commit | Undo | Optimize SHR LCPs | Consider Margin-of-Error

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.
IBM does not guarantee the results from this tool. This information is provided "as is", without warranty, expressed or implied. You are responsible for the results obtained from your use of this tool.

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

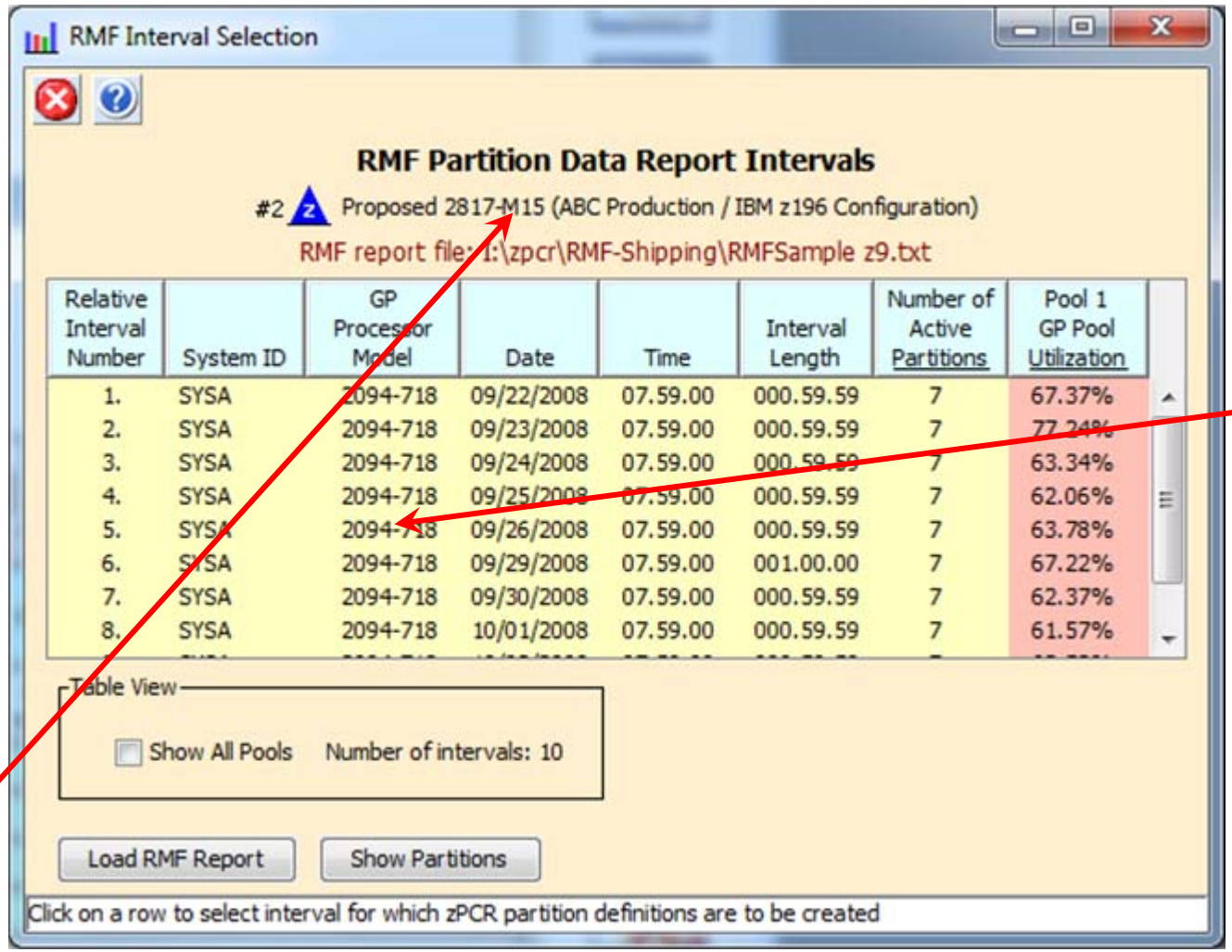
Commit or Undo Changes

Add additional partitions from RMF



Select “RMF” report and drag it onto the “Proposed 2817-M15” configuration

RMF Interval Selection

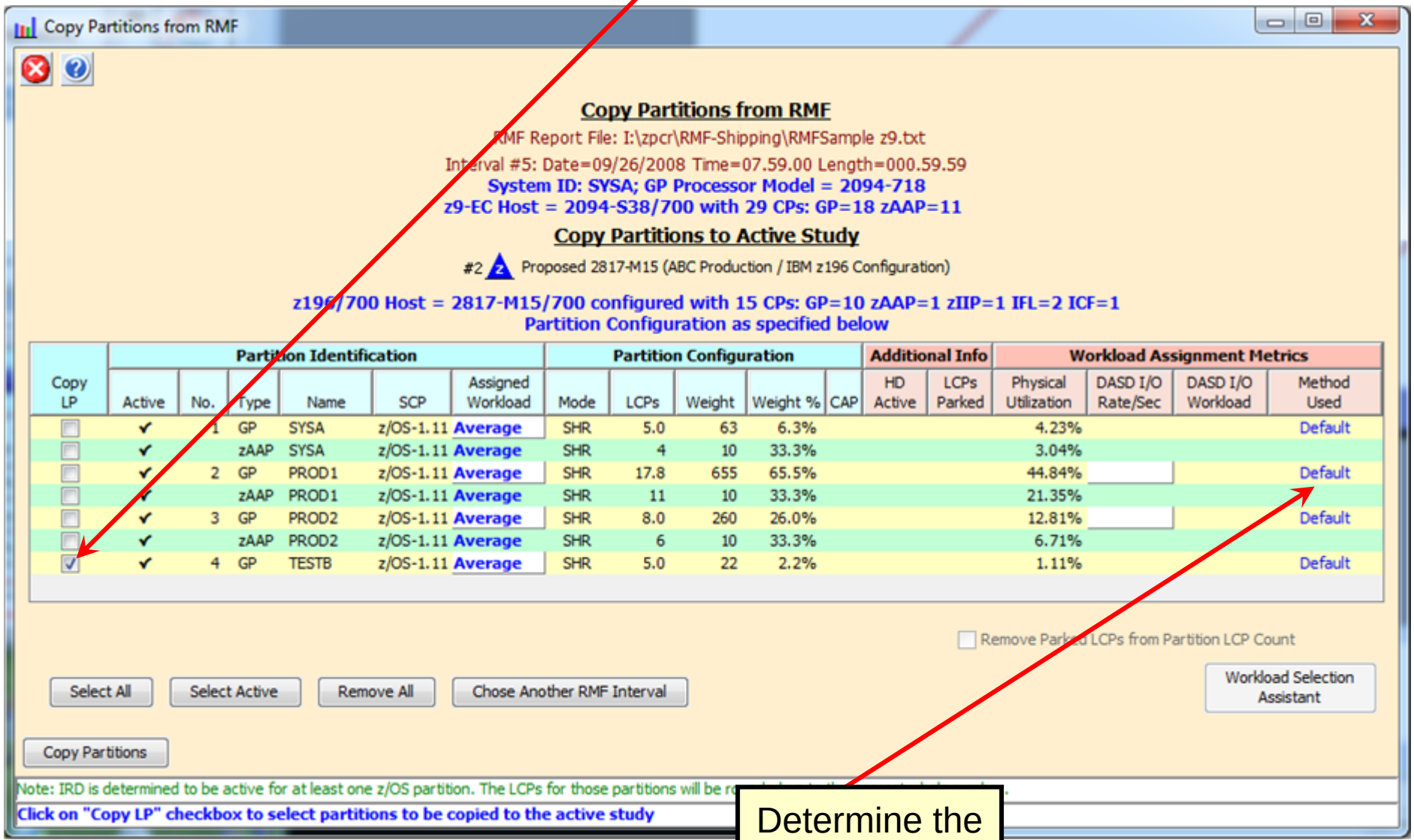


Select an interval

"Proposed 2817-M15" configuration

Get specific partitions from RMF

Select the partitions to be added. Note zAAP/zIIP partitions will always follow the GP partition.

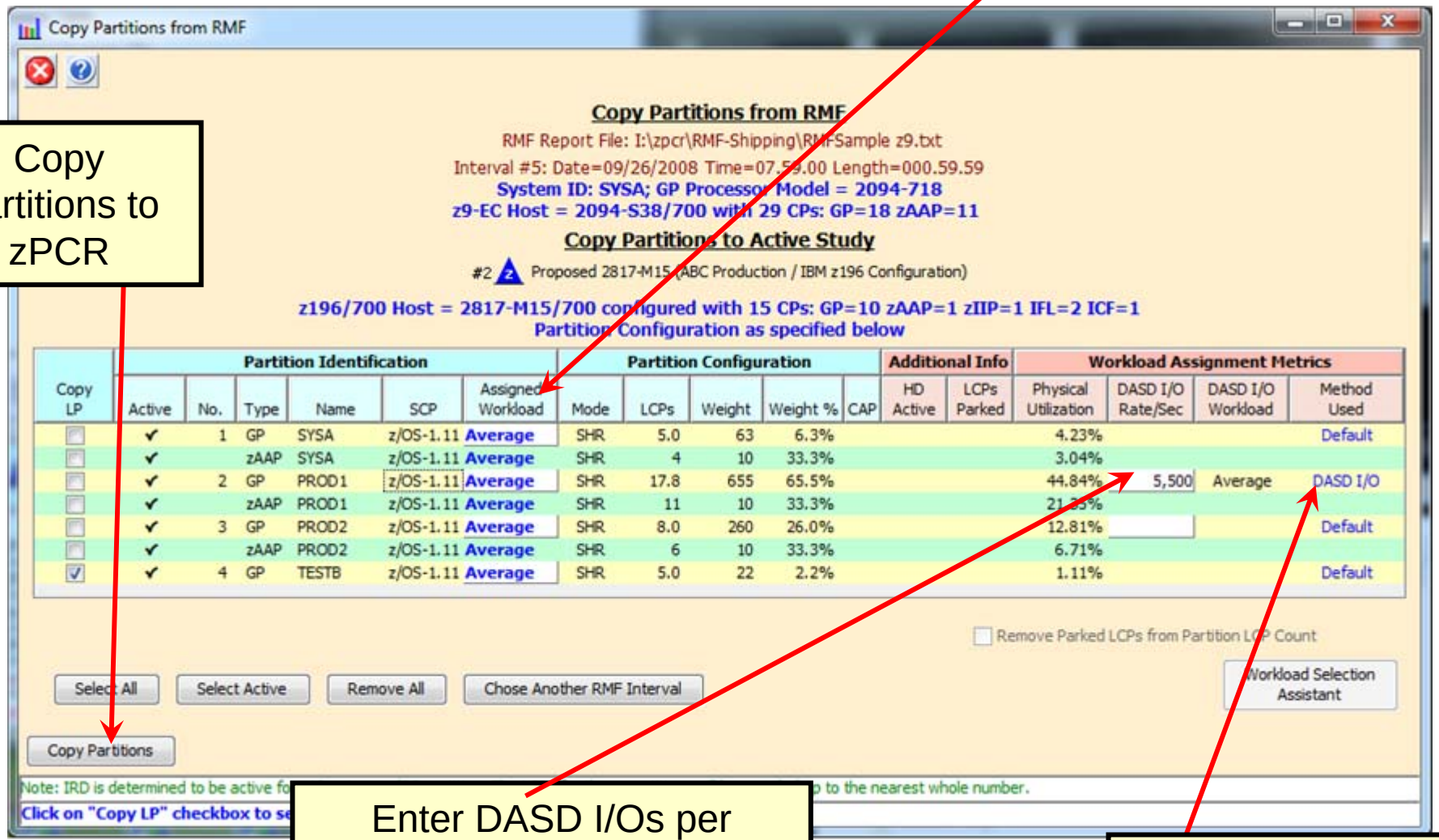


Determine the Workload

Determine the appropriate SCP/workloads

Workload assigned from the "Method" used

Copy partitions to zPCR

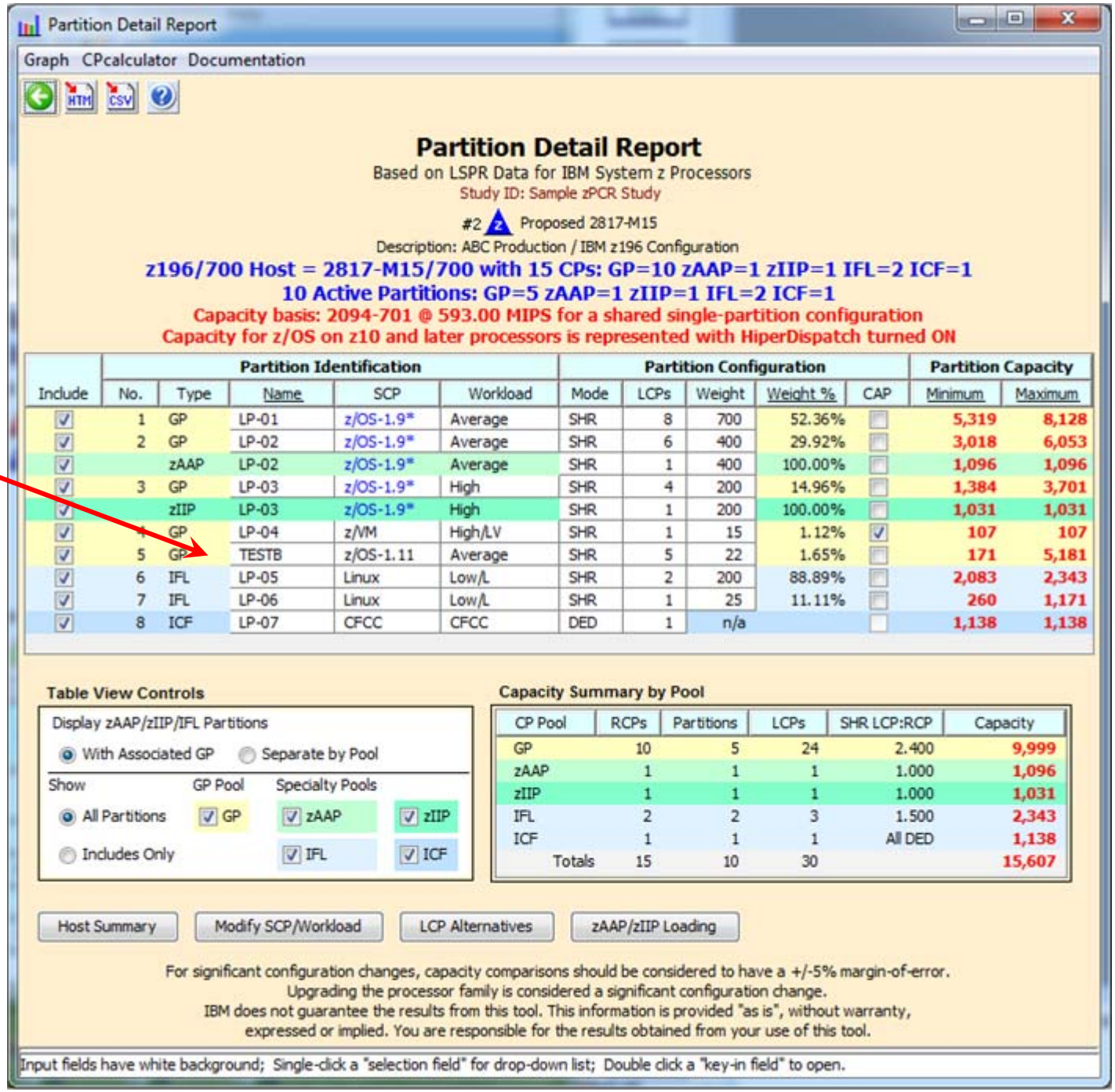


Enter DASD I/Os per Second from RMF Workload Activity Report

Method used is either "Default" or DASD I/O

Detail report with additional partitions added

Added partition from RMF



Partition Detail Report

Graph CPcalculator Documentation

Partition Detail Report

Based on LSPR Data for IBM System z Processors

Study ID: Sample zPCR Study

#2 Proposed 2817-M15

Description: ABC Production / IBM z196 Configuration

z196/700 Host = 2817-M15/700 with 15 CPs: GP=10 zAAP=1 zIIP=1 IFL=2 ICF=1

10 Active Partitions: GP=5 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
☑	1	GP	LP-01	z/OS-1.9*	Average	SHR	8	700	52.36%	☐	5,319	8,128
☑	2	GP	LP-02	z/OS-1.9*	Average	SHR	6	400	29.92%	☐	3,018	6,053
☑		zAAP	LP-02	z/OS-1.9*	Average	SHR	1	400	100.00%	☐	1,096	1,096
☑	3	GP	LP-03	z/OS-1.9*	High	SHR	4	200	14.96%	☐	1,384	3,701
☑		zIIP	LP-03	z/OS-1.9*	High	SHR	1	200	100.00%	☐	1,031	1,031
☑	4	GP	LP-04	z/VM	High/LV	SHR	1	15	1.12%	☑	107	107
☑	5	GP	TESTB	z/OS-1.11	Average	SHR	5	22	1.65%	☐	171	5,181
☑	6	IFL	LP-05	Linux	Low/L	SHR	2	200	88.89%	☐	2,083	2,343
☑	7	IFL	LP-06	Linux	Low/L	SHR	1	25	11.11%	☐	260	1,171
☑	8	ICF	LP-07	CFCC	CFCC	DED	1	n/a		☐	1,138	1,138

Table View Controls

Display zAAP/zIIP/IFL Partitions

With Associated GP / Separate by Pool

Show: All Partitions / Includes Only

GP Pool: GP

Specialty Pools: zAAP, zIIP, IFL, ICF

Capacity Summary by Pool

CP Pool	RCPs	Partitions	LCPs	SHR LCP:RCP	Capacity
GP	10	5	24	2.400	9,999
zAAP	1	1	1	1.000	1,096
zIIP	1	1	1	1.000	1,031
IFL	2	2	3	1.500	2,343
ICF	1	1	1	All DED	1,138
Totals	15	10	30		15,607

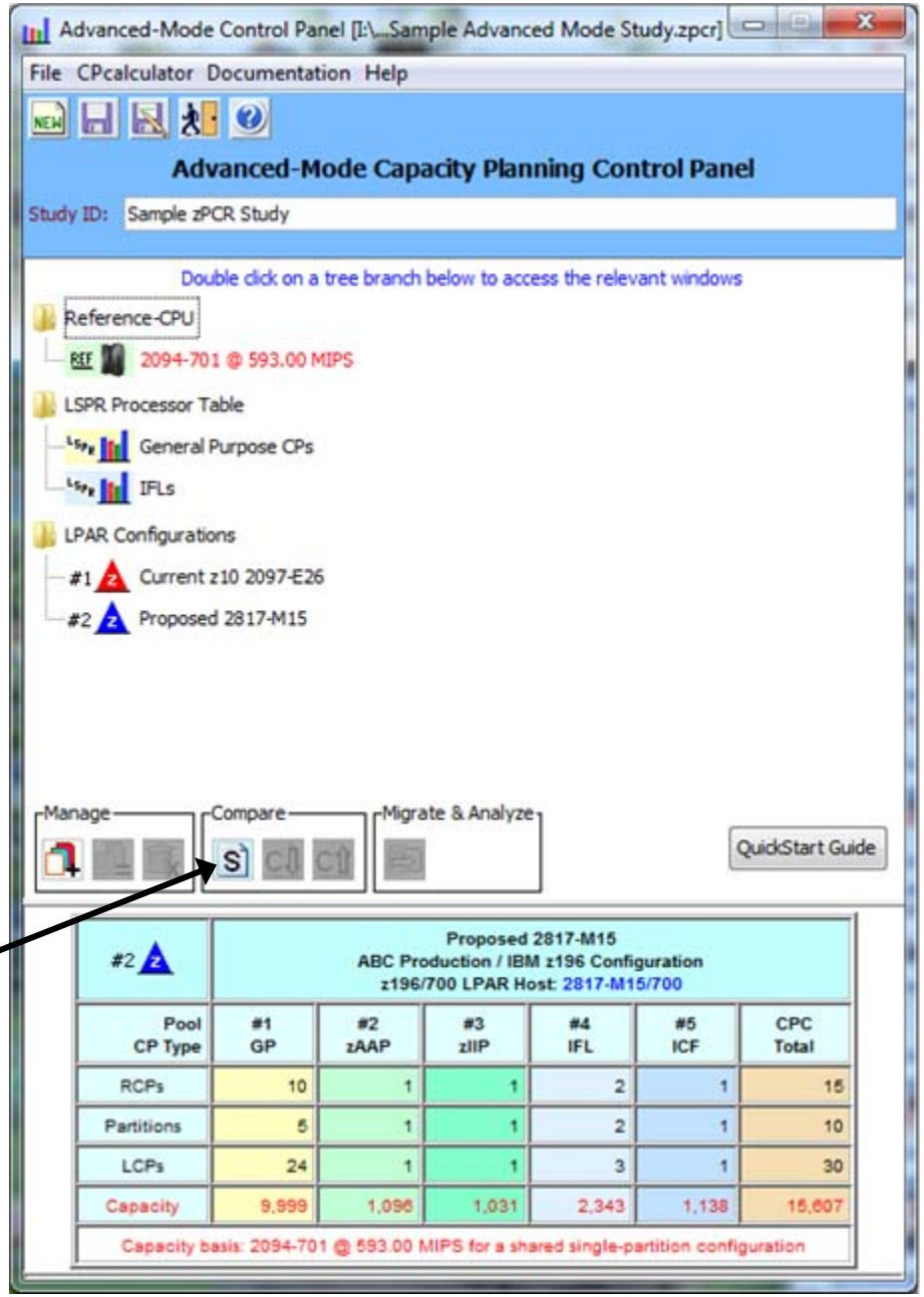
Host Summary | Modify SCP/Workload | LCP Alternatives | zAAP/zIIP Loading

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.
IBM does not guarantee the results from this tool. This information is provided "as is", without warranty, expressed or implied. You are responsible for the results obtained from your use of this tool.

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

Show Host Capacity Summary

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



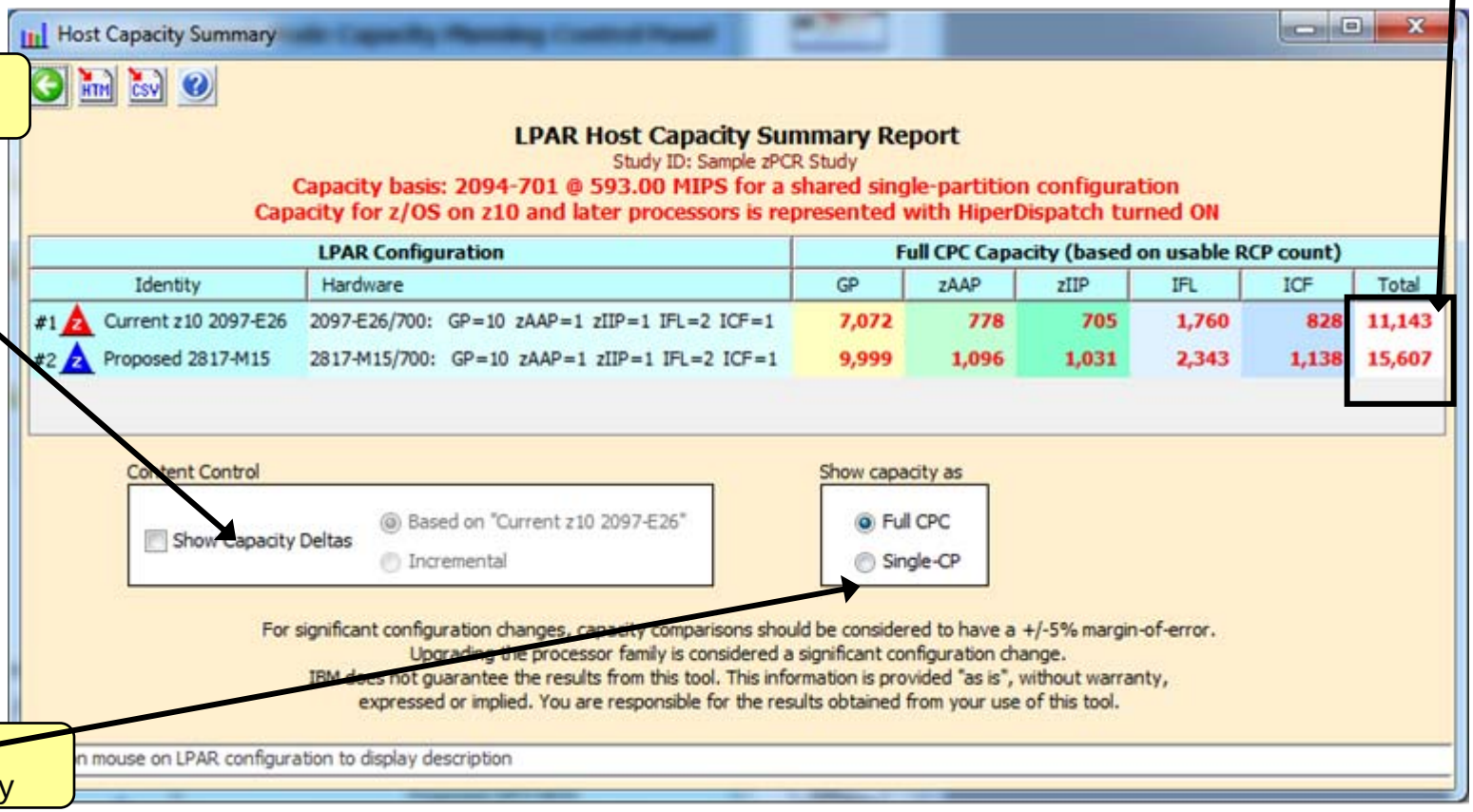
Click Host Capacity Summary

Host Capacity Summary

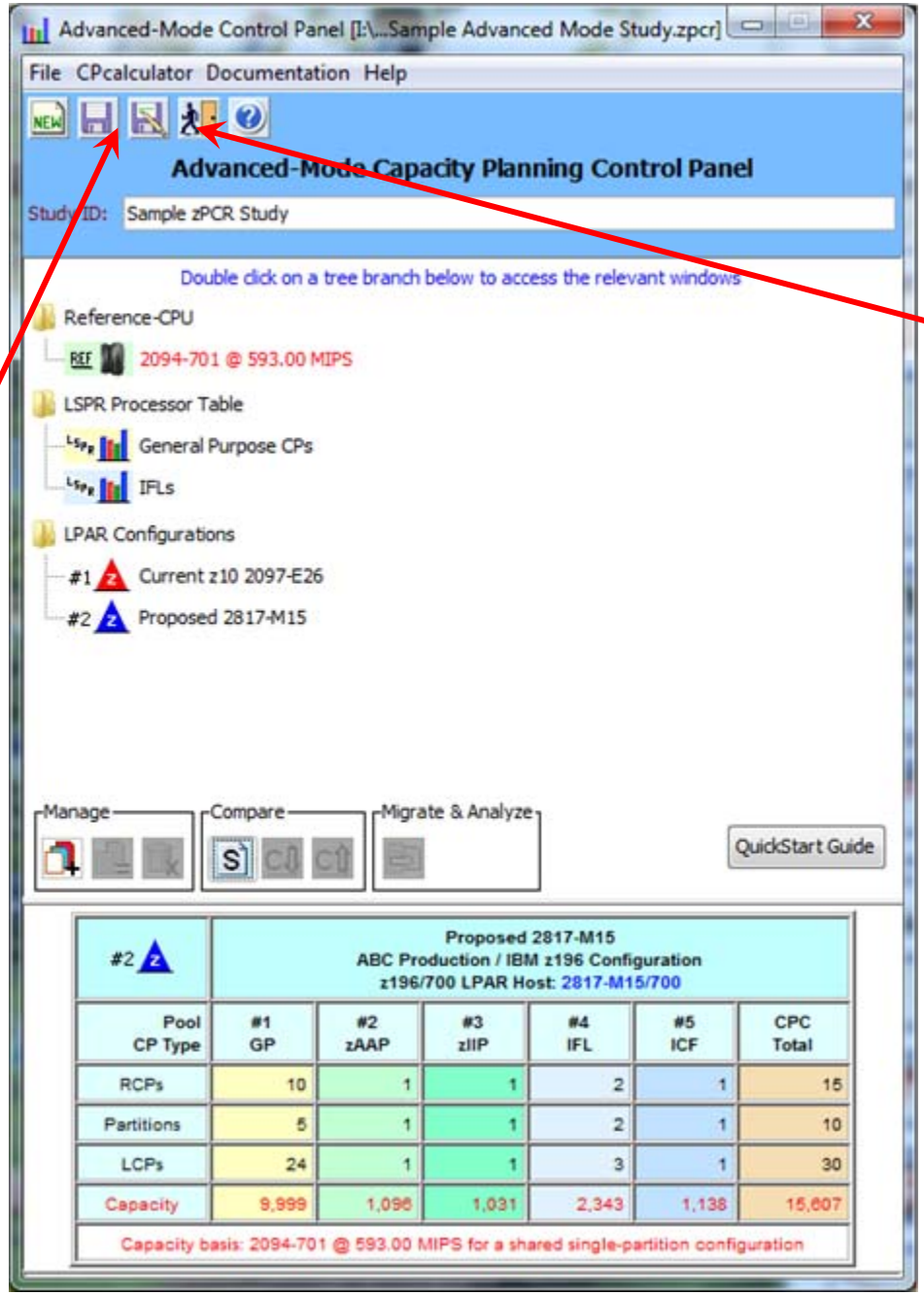
- For each defined LPAR configuration, its icon and name are provided, along with the processor model information and number of real CPs configured to each pool.
- To display the description field of any LPAR configuration, place the mouse pointer anywhere on that row.
- Capacity projections may be cycled between **Full** capacity and **Single-CP** capacity using the radio buttons. This is useful for revealing relative engine speed when comparing LPAR configurations where the host family is changed.
- Click on the **Return** to take you back at the **Advanced-Mode Control Panel**.

Sum of the capacity values

Show Capacity Deltas



Show **Full** or **Single-CP** capacity



Exit zPCR

Save Study

EDF Input for zPCR

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

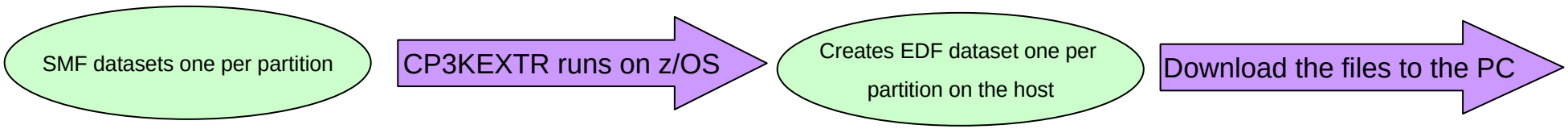
Load EDF(s)

Select a representative interval

Show LPAR Host and its partition configuration

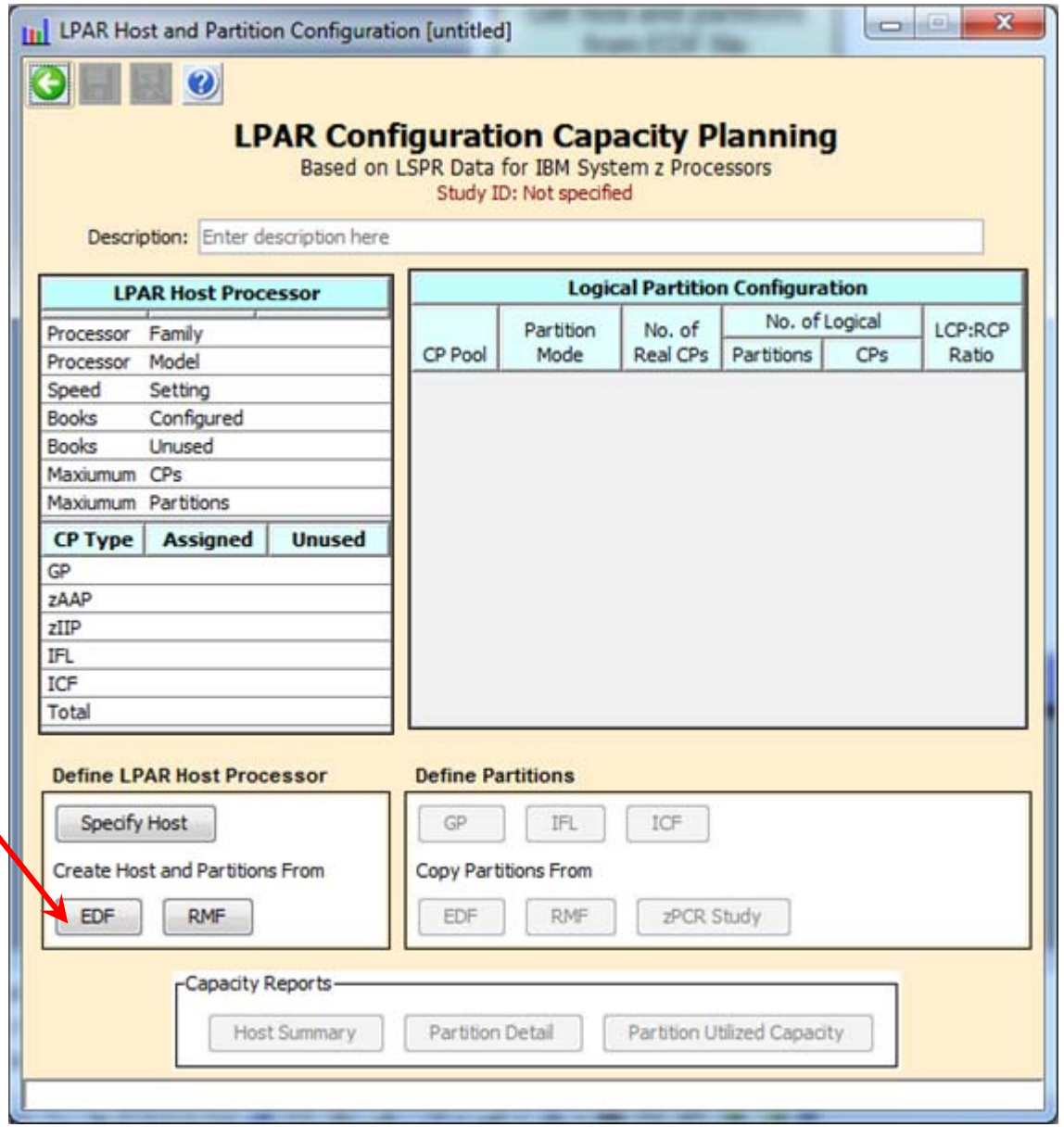
Create LPAR Configuration

- Partition workloads assigned based on DASD I/O or default
- Partitions with SMF 113 data will show “CPU MF” workload



Load the EDF files into zPCR

Get host and partitions from EDF file



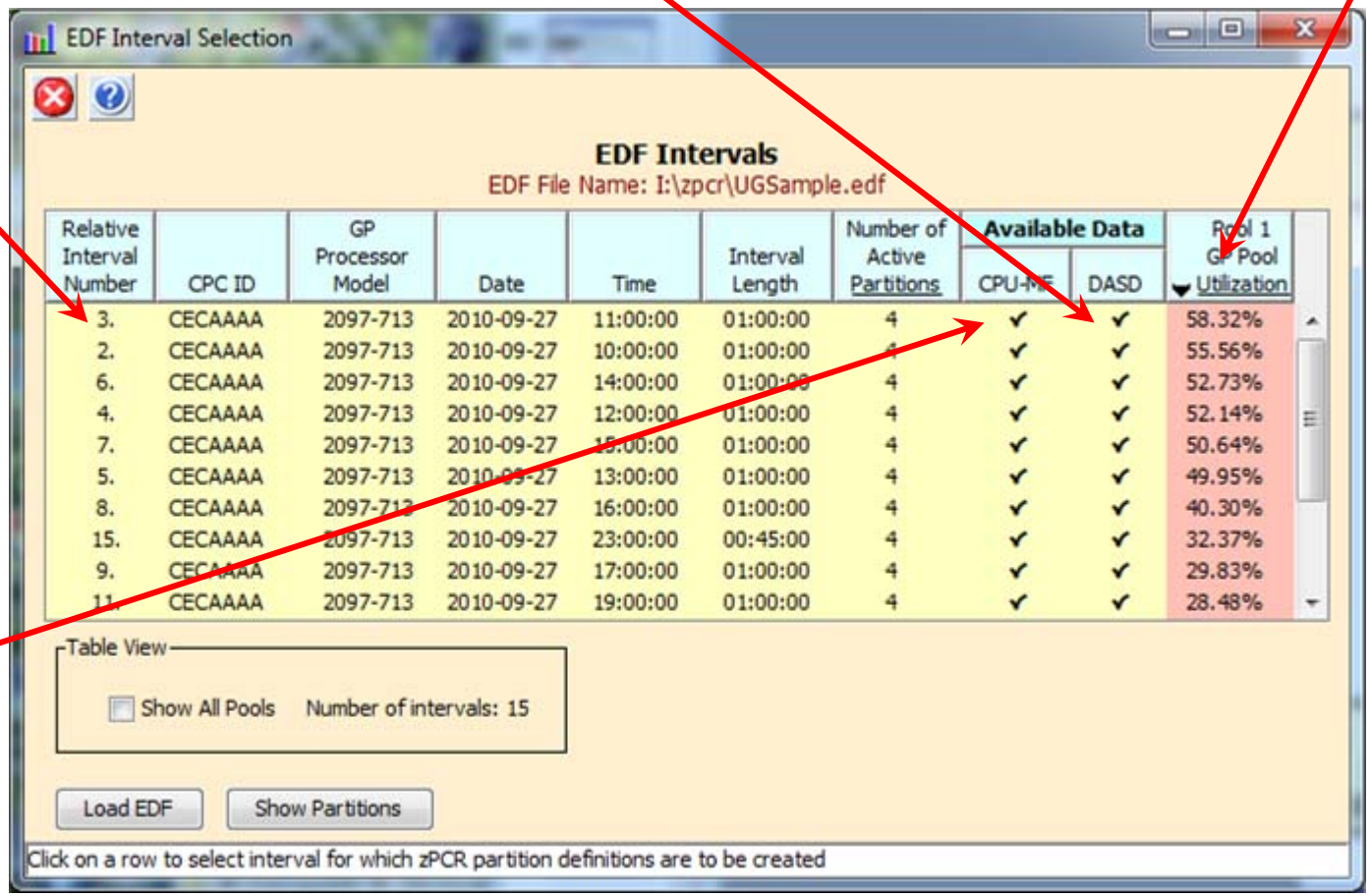
Load the EDF files into zPCR

Select an interval

DASD I/O data available

Sort on GP Pool Utilization

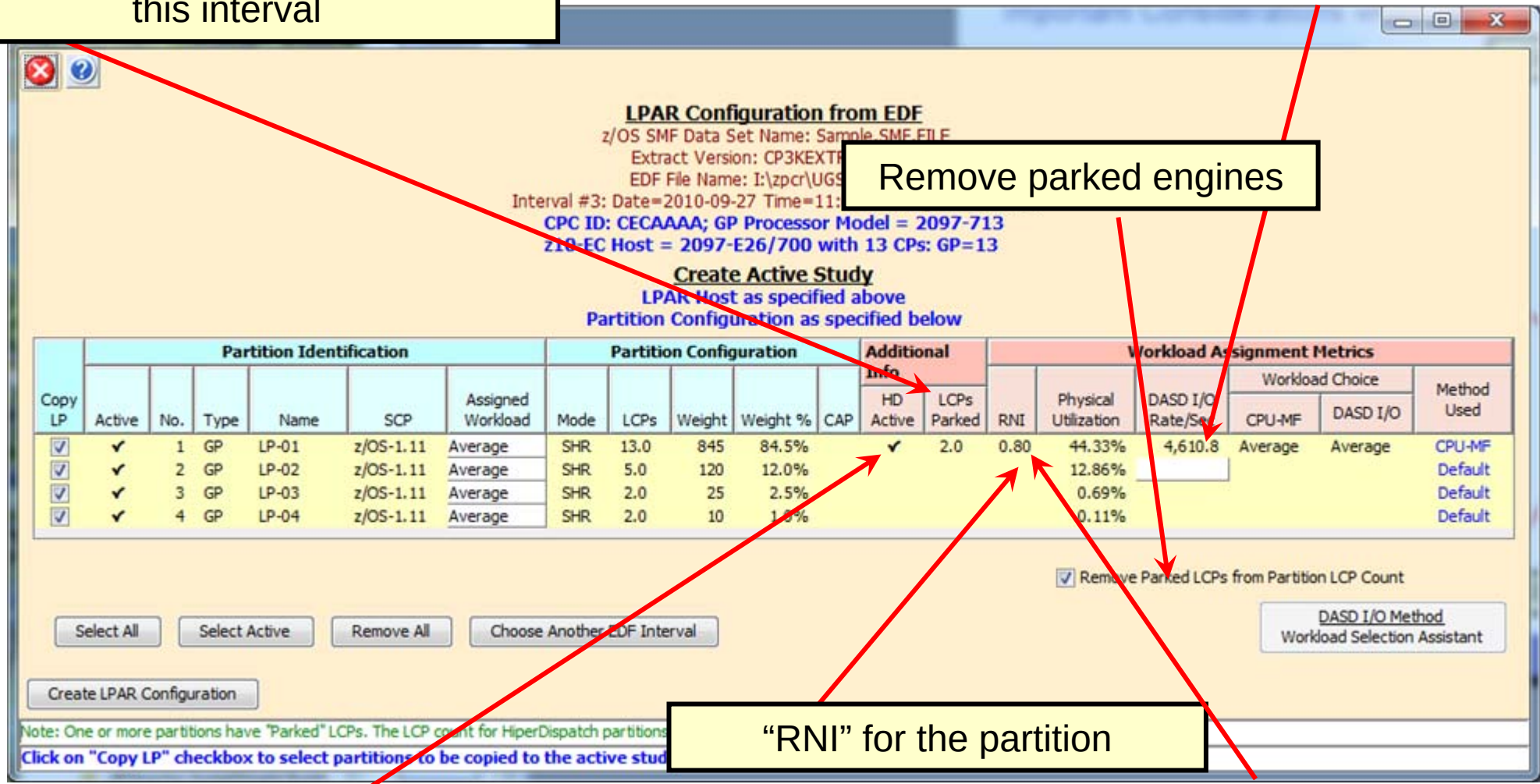
CPU MF (SMF 113) data available



Important Considerations when getting LPAR configuration metrics

2 Parked Engines for the partition in this interval

DASD I/Os per second from RMF 74s



LPAR Configuration from EDF

z/OS SMF Data Set Name: Sample SMF FILE
Extract Version: CP3KEXTR
EDF File Name: I:\zpcr\UGS
Interval #3: Date=2010-09-27 Time=11:
CPC ID: CECAAAA; GP Processor Model = 2097-713
z10-EC Host = 2097-E26/700 with 13 CPs: GP=13

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

Copy LP	Partition Identification: Active	No.	Type	Name	SCP	Assigned Workload	Partition Configuration: Mode	LCPs	Weight	Weight %	CAP	Additional Info: HD Active	LCPs Parked	Workload Assignment Metrics: RNI	Physical Utilization	DASD I/O Rate/Sec	Workload Choice: CPU-MF	Workload Choice: DASD I/O	Method Used
☑	✔	1	GP	LP-01	z/OS-1.11	Average	SHR	13.0	845	84.5%		✔	2.0	0.80	44.33%	4,610.8	Average	Average	CPU-MF
☑	✔	2	GP	LP-02	z/OS-1.11	Average	SHR	5.0	120	12.0%					12.86%				Default
☑	✔	3	GP	LP-03	z/OS-1.11	Average	SHR	2.0	25	2.5%					0.69%				Default
☑	✔	4	GP	LP-04	z/OS-1.11	Average	SHR	2.0	10	1.0%					0.11%				Default

☑ Remove Parked LCPs from Partition LCP Count

Select All | Select Active | Remove All | Choose Another EDF Interval | DASD I/O Method Workload Selection Assistant

Create LPAR Configuration

Note: One or more partitions have "Parked" LCPs. The LCP count for HiperDispatch partitions

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

Remove parked engines

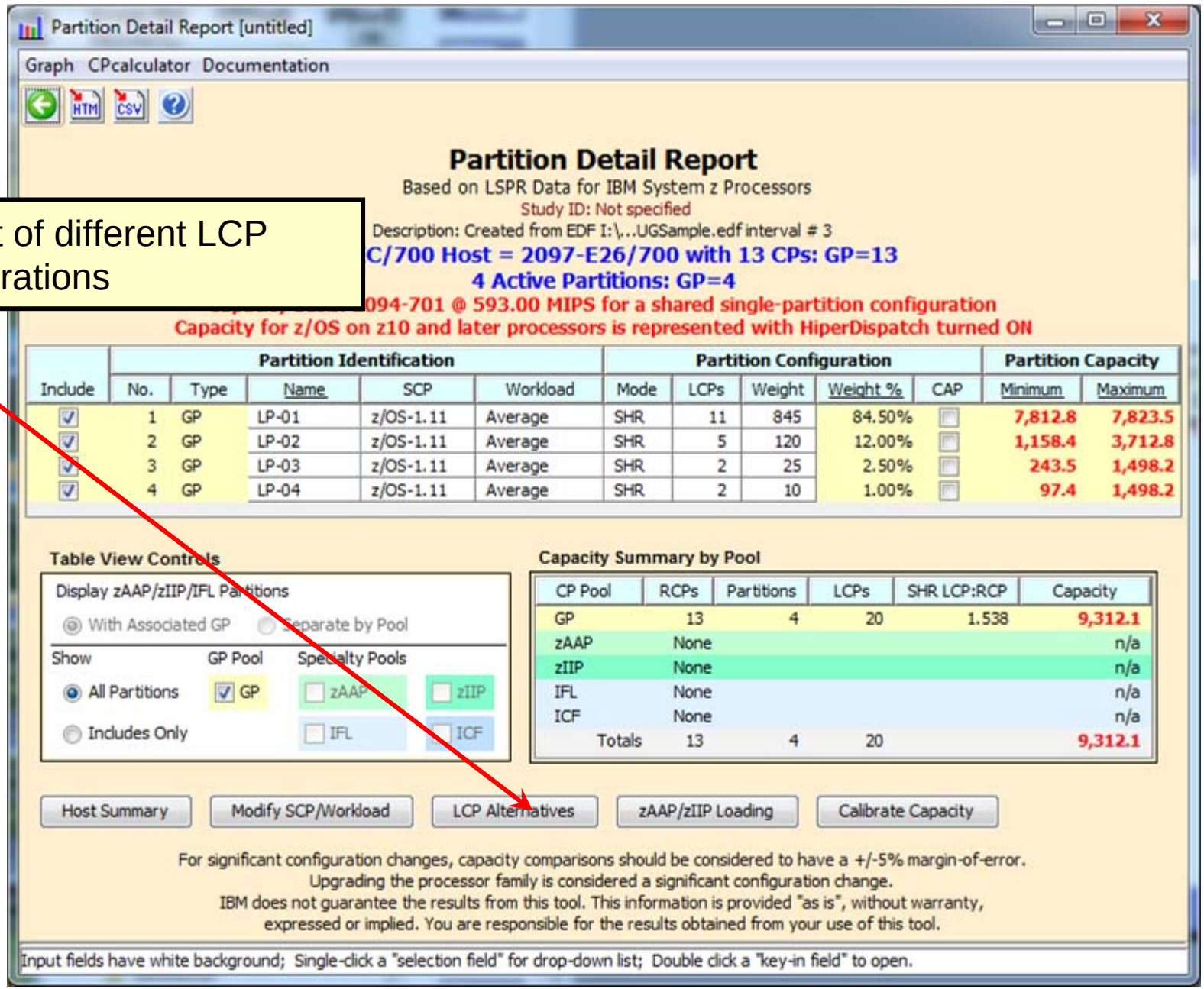
"RNI" for the partition

HiperDispatch active for the partition

Pass the mouse over the "RNI" to reveal the actual metrics used

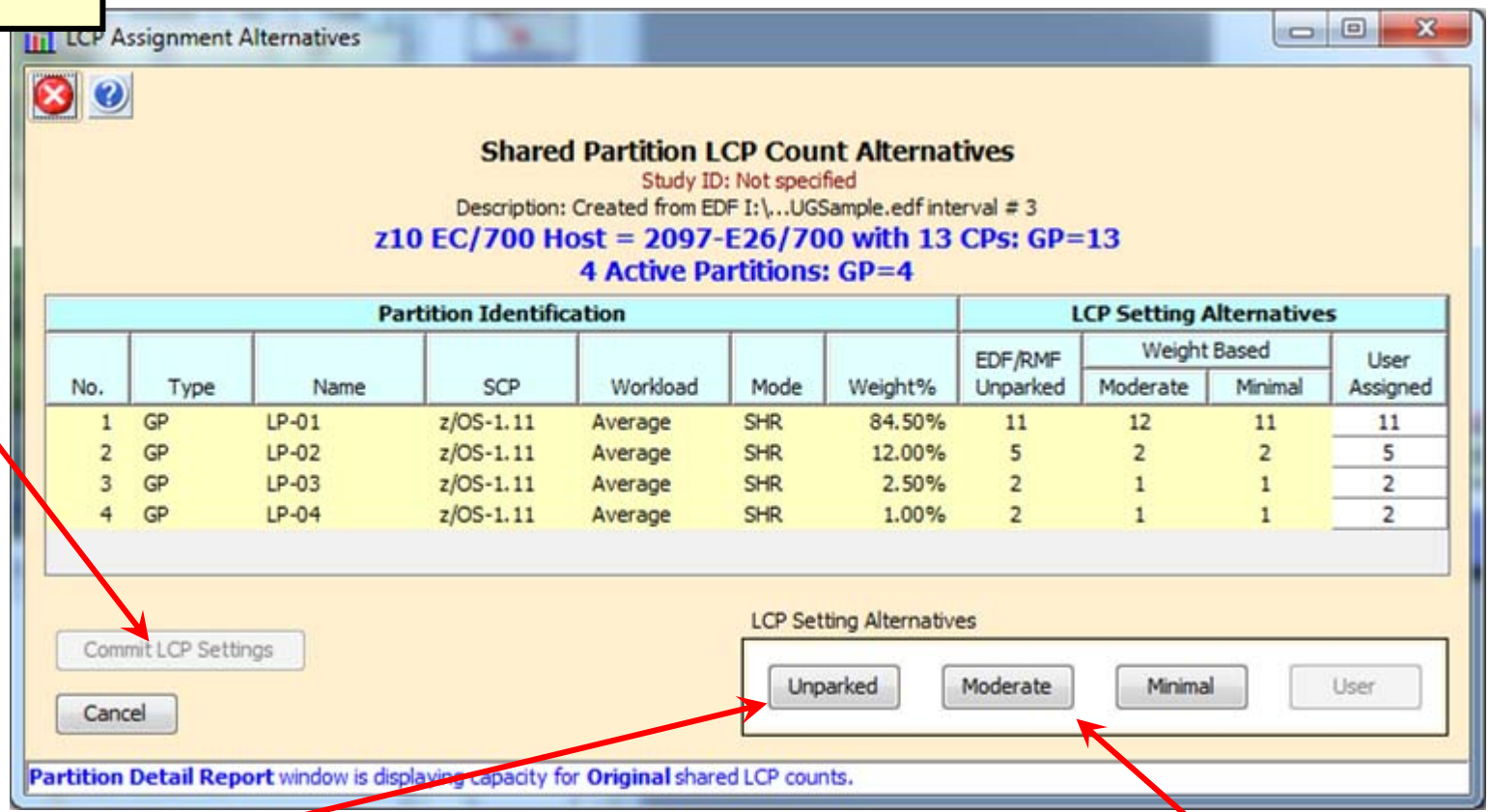
Additional Functions

Asses the impact of different LCP configurations



Asses the impact of different LCP Configurations

Commit changes

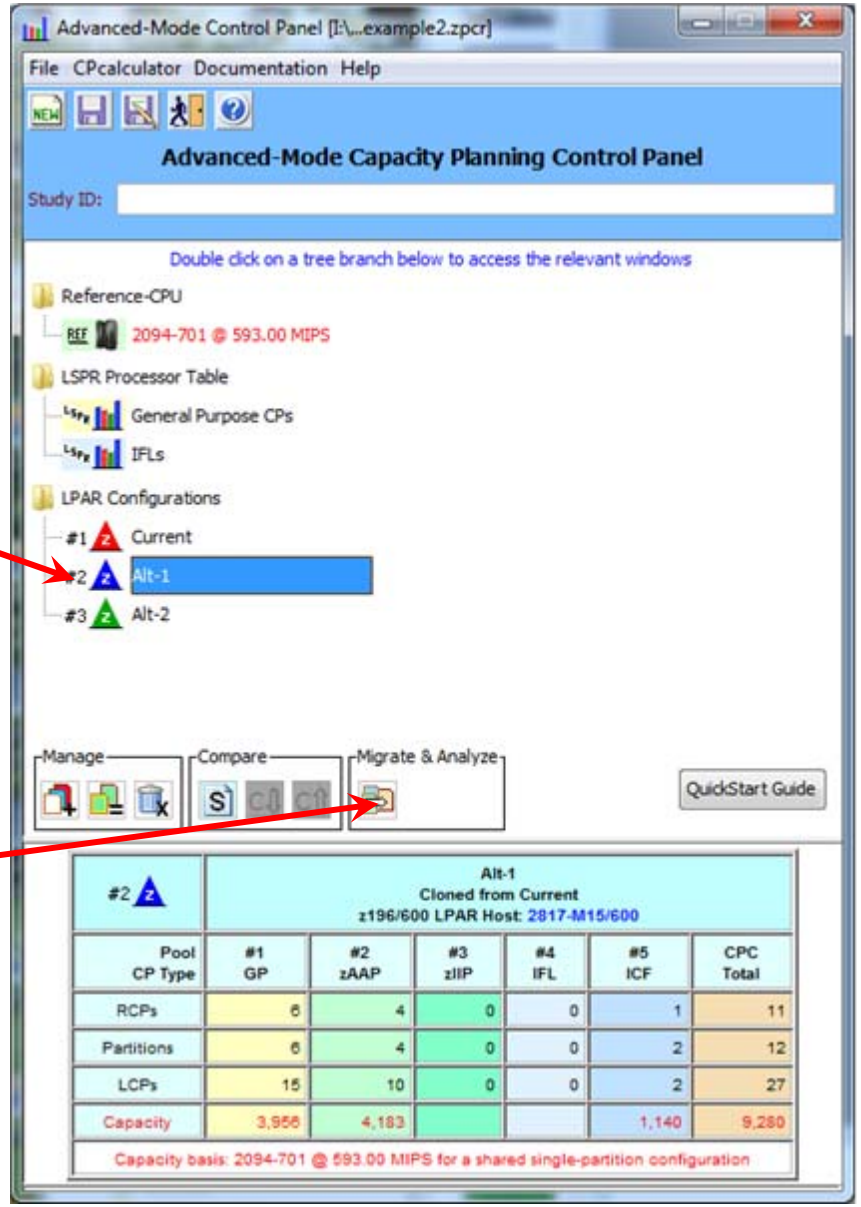


Apply “Parked” engines when available

Asses the impact of adjusting the LCPs based on weight

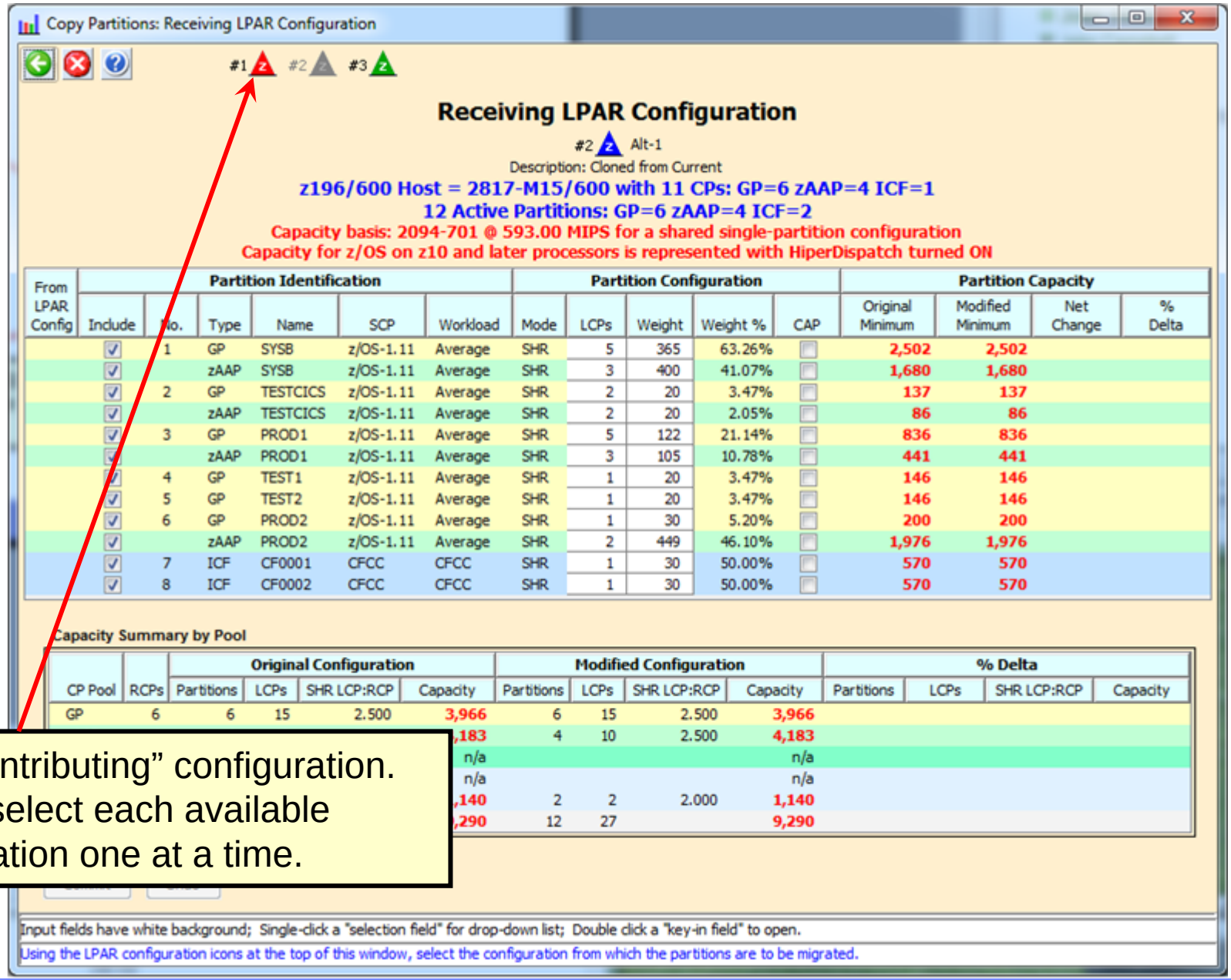
Migrate Partitions from an other configuration

Select “Receiving” configuration



Migrate partitions from existing configurations or create a new configuration

Receiving LPAR configuration



From LPAR Config	Include	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	CAP	Original Minimum	Modified Minimum	Net Change	% Delta
	✓	1	GP	SYSB	z/OS-1.11	Average	SHR	5	365	63.26%		2,502	2,502		
	✓		zAAP	SYSB	z/OS-1.11	Average	SHR	3	400	41.07%		1,680	1,680		
	✓	2	GP	TESTCICS	z/OS-1.11	Average	SHR	2	20	3.47%		137	137		
	✓		zAAP	TESTCICS	z/OS-1.11	Average	SHR	2	20	2.05%		86	86		
	✓	3	GP	PROD1	z/OS-1.11	Average	SHR	5	122	21.14%		836	836		
	✓		zAAP	PROD1	z/OS-1.11	Average	SHR	3	105	10.78%		441	441		
	✓	4	GP	TEST1	z/OS-1.11	Average	SHR	1	20	3.47%		146	146		
	✓	5	GP	TEST2	z/OS-1.11	Average	SHR	1	20	3.47%		146	146		
	✓	6	GP	PROD2	z/OS-1.11	Average	SHR	1	30	5.20%		200	200		
	✓		zAAP	PROD2	z/OS-1.11	Average	SHR	2	449	46.10%		1,976	1,976		
	✓	7	ICF	CF0001	CFCC	CFCC	SHR	1	30	50.00%		570	570		
	✓	8	ICF	CF0002	CFCC	CFCC	SHR	1	30	50.00%		570	570		

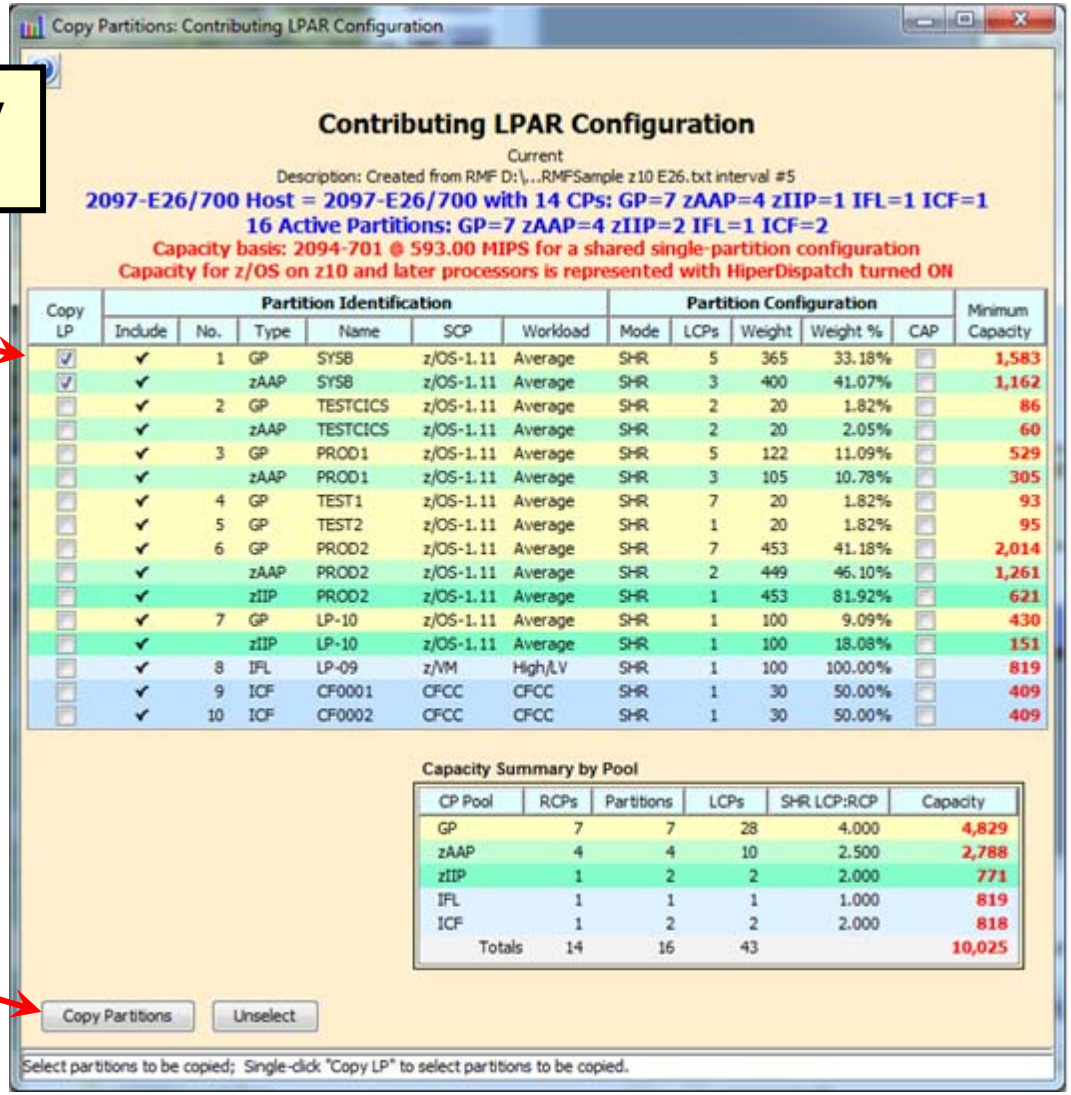
CP Pool	RCPs	Original Configuration				Modified Configuration				% Delta			
		Partitions	LCPs	SHR LCP:RCP	Capacity	Partitions	LCPs	SHR LCP:RCP	Capacity	Partitions	LCPs	SHR LCP:RCP	Capacity
GP	6	6	15	2.500	3,966	6	15	2.500	3,966				
					,183	4	10	2.500	4,183				
					n/a				n/a				
					n/a				n/a				
					,140	2	2	2.000	1,140				
					,290	12	27		9,290				

Select the “Contributing” configuration. You may select each available configuration one at a time.

Contributing LPAR configuration

Select the partitions that you wish to copy to the “Receiving” configuration.

“Copy” selected partitions.



Note: “Contributing” and “Receiving” windows will be displayed side by side.

Updated “Receiving” configuration

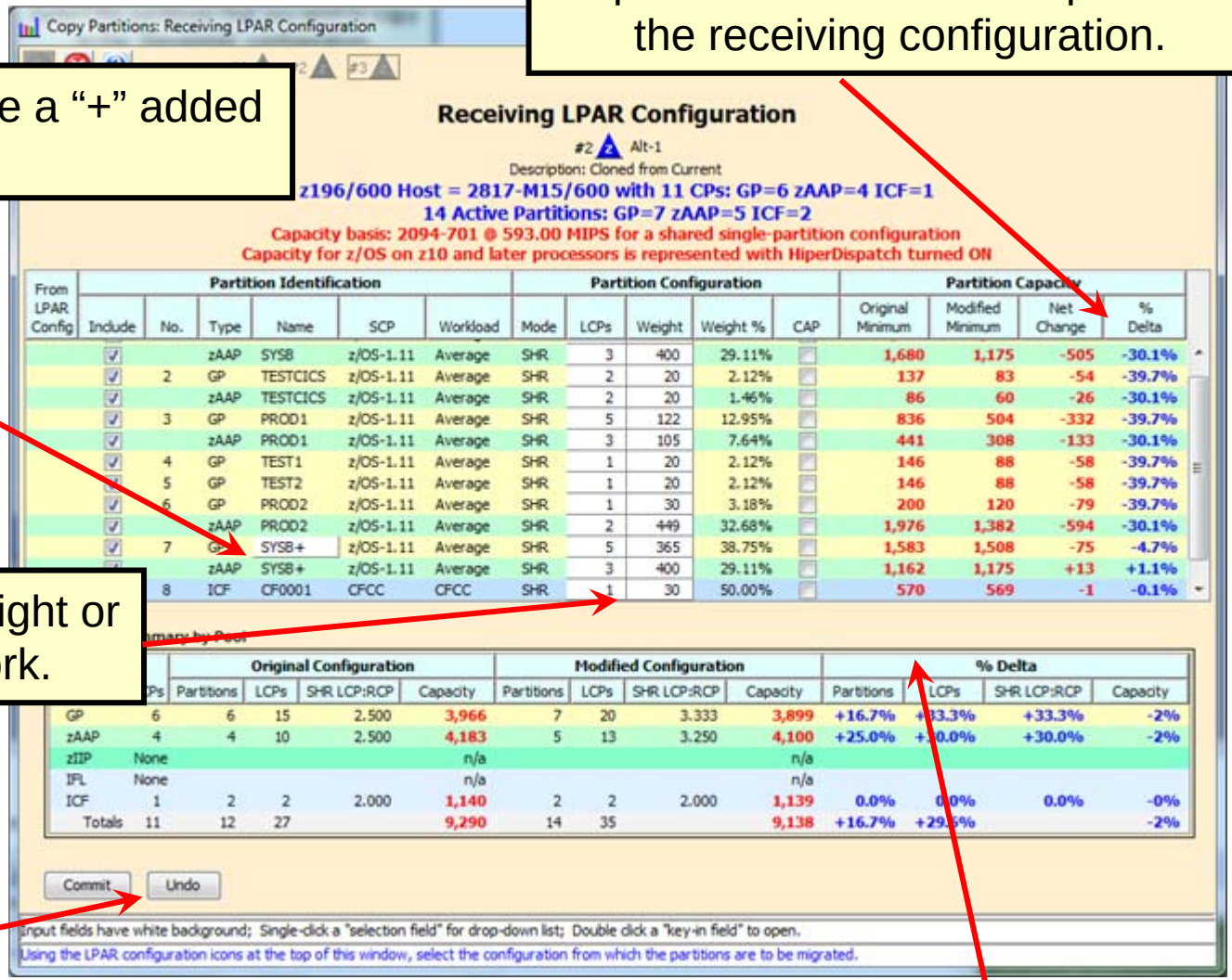
Delta and Net change fields are updated to reflect the impact on the receiving configuration.

“Duplicate” partitions will have a “+” added to their name.

You may also update any weight or LCPs to rebalance the work.

Commit and Undo changes.

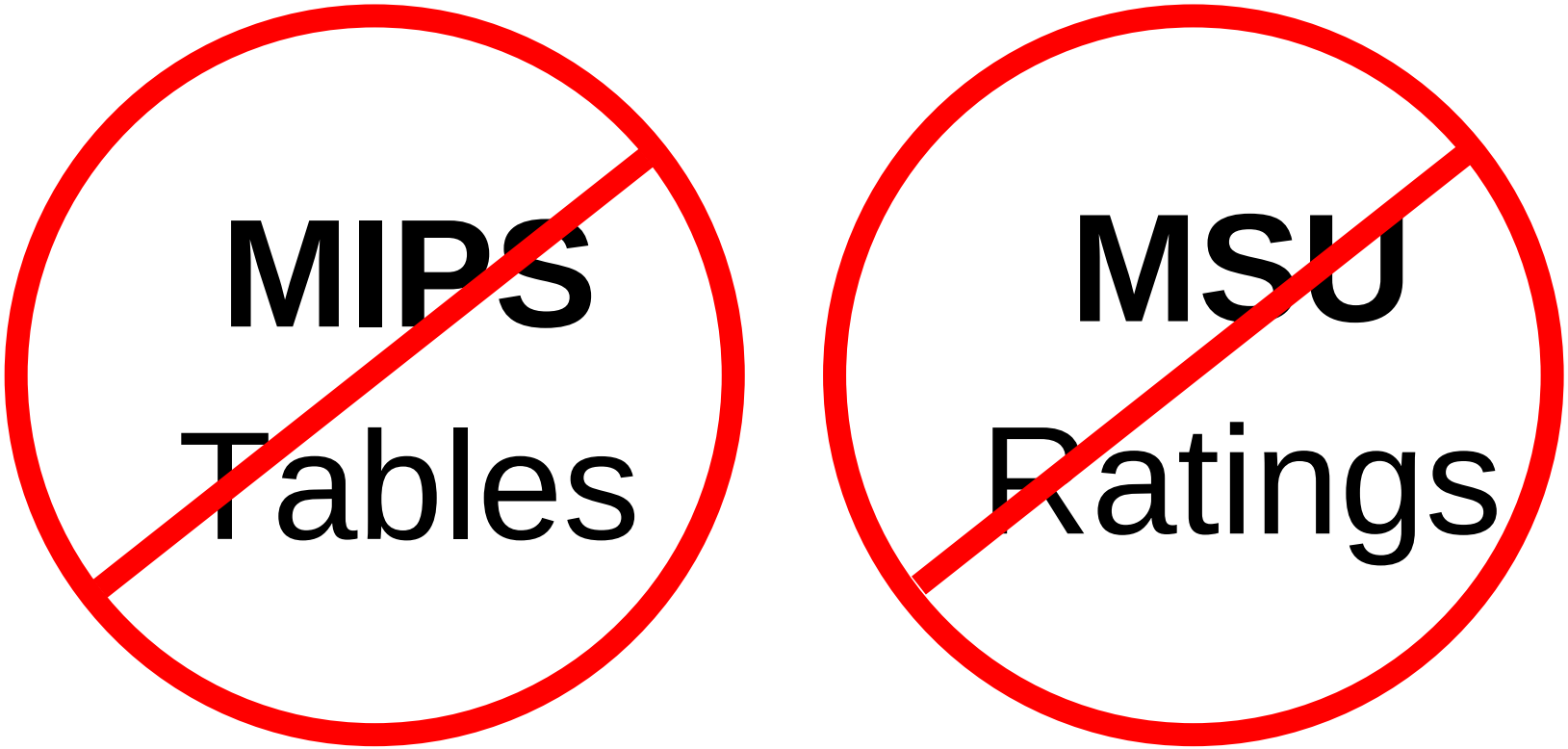
Percent delta impacts are shown for the various pools.



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
  - 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**

IBM System z Capacity Planning in a nutshell

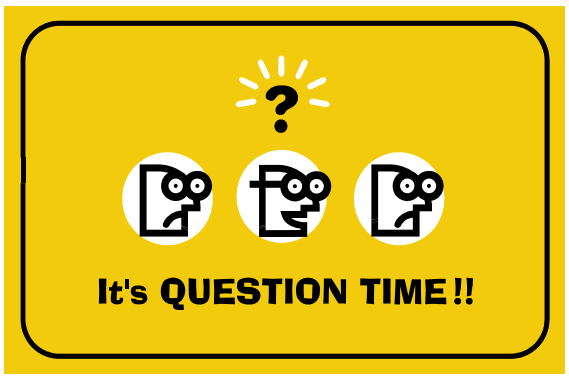


Don’t use “single-number tables” for capacity comparisons!

Use zPCR to model before and after configurations

Summary

- **zPCR models <u>your unique</u> Processor configuration**
  - Based on LPARS, weights, # of logical processors, workload mix and Specialty Engines
- **Built upon LSPR benchmarks**
- **Using zPCR is Easy**
- **Use zPCR to correctly size your processor**



Acknowledgements

- **Many people contributed to this presentation including:**

John Fitch

Gary King

Jim Shaw

Brad Snyder

Kathy Walsh

Thank You

for attending!

In Advanced-Mode, some zPCR functions are not available

- **You cannot return to the Function Selection window**
- **Basic-mode study files cannot be created**
  - Studies will be saved in Advanced-Mode format
- **The MI Reference-CPU cannot be set independently of the Reference-CPU**
  - While viewing the Multi-image table you may set a “temporary” Reference-CPU.

zPCR Capacity Sizing Lab – Part 2 Hands-on Lab

SHARE - Session 10880

March 15, 2012

John Burg

Materials created by John Fitch and Jim Shaw

IBM

Agenda

- Lab Exercise Introduction
- Lab Exercise

Overview of Lab Exercise

- **XYZ Corporation Background**
  - Currently has System z10 EC
    - 2097-707 (7 way GCPs)
    - Customer views it as having 5100 MIPS
    - Machine averages 92% busy during peak

- **Plan being developed to replace with z196**
  - Must have at least 20%+ additional capacity
    - at least 6150 MIPS

Lab Exercise – Tasks to Complete

- Task 1 - Create a model of the current LPAR Configuration
- Task 2 - Calibrate the model to XYZ Company's capacity designation
- Task 3 - Save the current study in Advanced-Mode
- Task 4 - Find an appropriate z196 replacement processor
- Task 5 - Model the intended LPAR host using Advanced Mode
- Task 6 - Review the Capacity results and save the Study
- Additional
  - Model 1 IFL in the proposed configuration
  - Model 1 zIIP in the proposed configuration
- Review Rename function

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