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Usage Of zPCR Both In Performance Management And Capacity Planning Studies – Customer Experience

Meral Temel
Garanti Technology

2/3/2011
8532

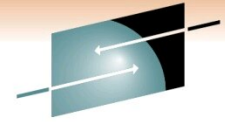


Agenda



- Who is GT
- GT Mainframe Configuration
- What Is zPCR ?
- LSPR Terms
- Step-By-Step z196 Upgrade zPCR Study
- z196 Upgrade Choosing Model Using zPCR
- Checking Results : z10 To z196 Upgrade IBM Analiz
- Moving From 3 LPAR To 5 LPAR Studies Using zPCR

WHO IS GT ?

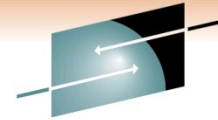


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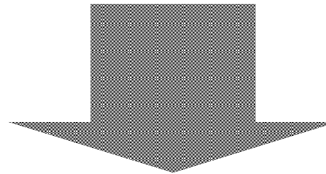
Who is GT ?



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- A wholly-owned subsidiary of Garanti Bank, the second largest private bank in Turkey owned by Doğuş Group and BBVA.
- One of the largest private internal IT service providers in Turkey
- Most up-to-date IT infrastructure
- Tightly integrated and fully in-house developed, custom-fit IT solutions
- Uninterrupted transaction capability and infrastructure security
- Well-reputed as a company of “firsts”
- Visionary and continuous investment in technology since 90’s

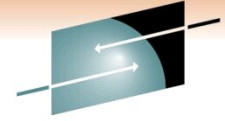


- Fast decision making and strong communication from top to down
- Centralized management reporting systems, enable management to take timely actions
- Advanced CRM applications
- Paperless banking



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Who is GT ?



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DOĞUŞ GRUBU

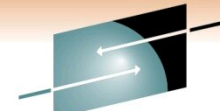


Şekerbank



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Who is GT ?



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Branch Network

- 795 Branches
- Presence in 72 Cities:
- 89% Geographic Coverage

Internet Banking

- ~1.3 MM Internet Bank Active Customers
- Recognized As Turkey's Best Internet Bank

Credit Cards

- >7,9 mn credit cards
- >355,000 POS devices
- Loyalty program for 9 banks

Contact Center

- >3.4 mn Calls/mo
- 2009 Sales >2,7 mn Products
- CTI & Workforce Man.
- World's 1st to receive
- "EFQM Award"

ATM

- 2,766 ATMs
- Cardless Transactions
- Coin Dispenser



Mobilebank

- 1st in the World to Allow Money Transfer Via SMS
- wap.garanti.com.tr --1st internet bank access via mobile in TR w/o application downloads or activations



GLOBAL
REPUTATION



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GT Is A Member Of ...



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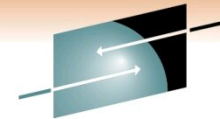
CMG



GDPS Design Council

zBLC

GT – Mainframe Configuration



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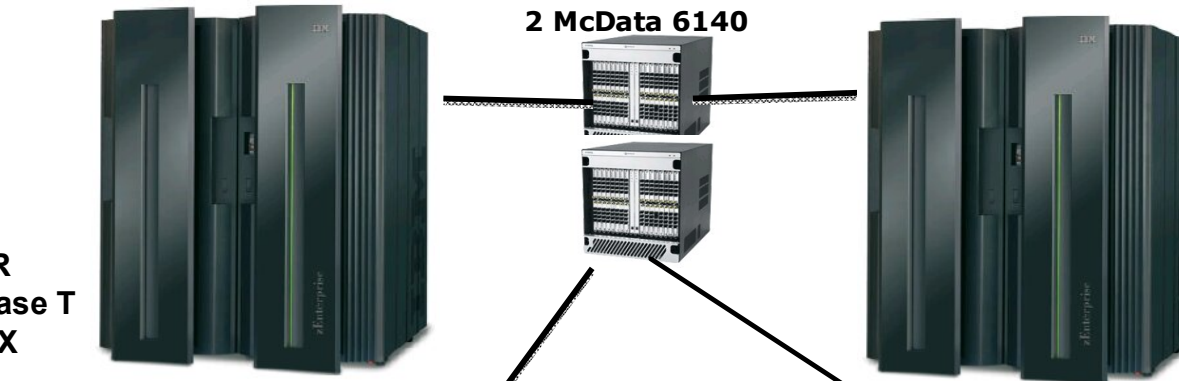
GAR2
IBM System z196 2817-717

GAR1
IBM System z196 2817-717

1816 MSU
17 GCP 1 zIIP
2 ICF
165 GB Memory
32 Ficon Exp8
Crypto Express3
6 Infiniband
5p OSAE3 GbE SR
3 p OSAE3 1000Base T
4 p OSAE3 GbE SX
4 ISC-3 link

1816 MSU
17 GCP 2 zIIP
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165 GB Memory
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6 Infiniband
5p OSAE3 GbE SR
3 p OSAE3 1000Base T
4 p OSAE3 GbE SX
4 ISC-3 link

2 McData 6140



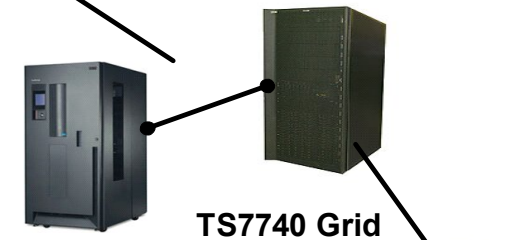
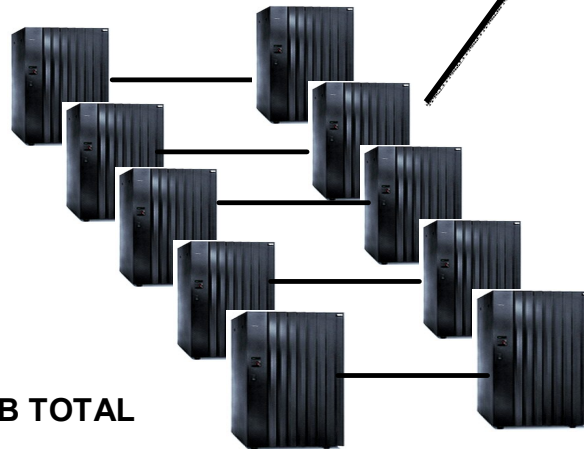
6 INFO4100 Printer

z/OS 1.10
CICS TS 3.2
DB2 V9

IRD
HiperDispatch
GCL

IBM TS7740 Virtual Tapes

134 TB TOTAL



DS8700 & DS8300 Turbo PPRC & XRC Primary DS8700 & DS8300 Turbo PPRC & XRC Primary

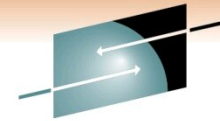
GDPS PPRC
Hyperswap Manager

IBM TS3500 Tape Libraries



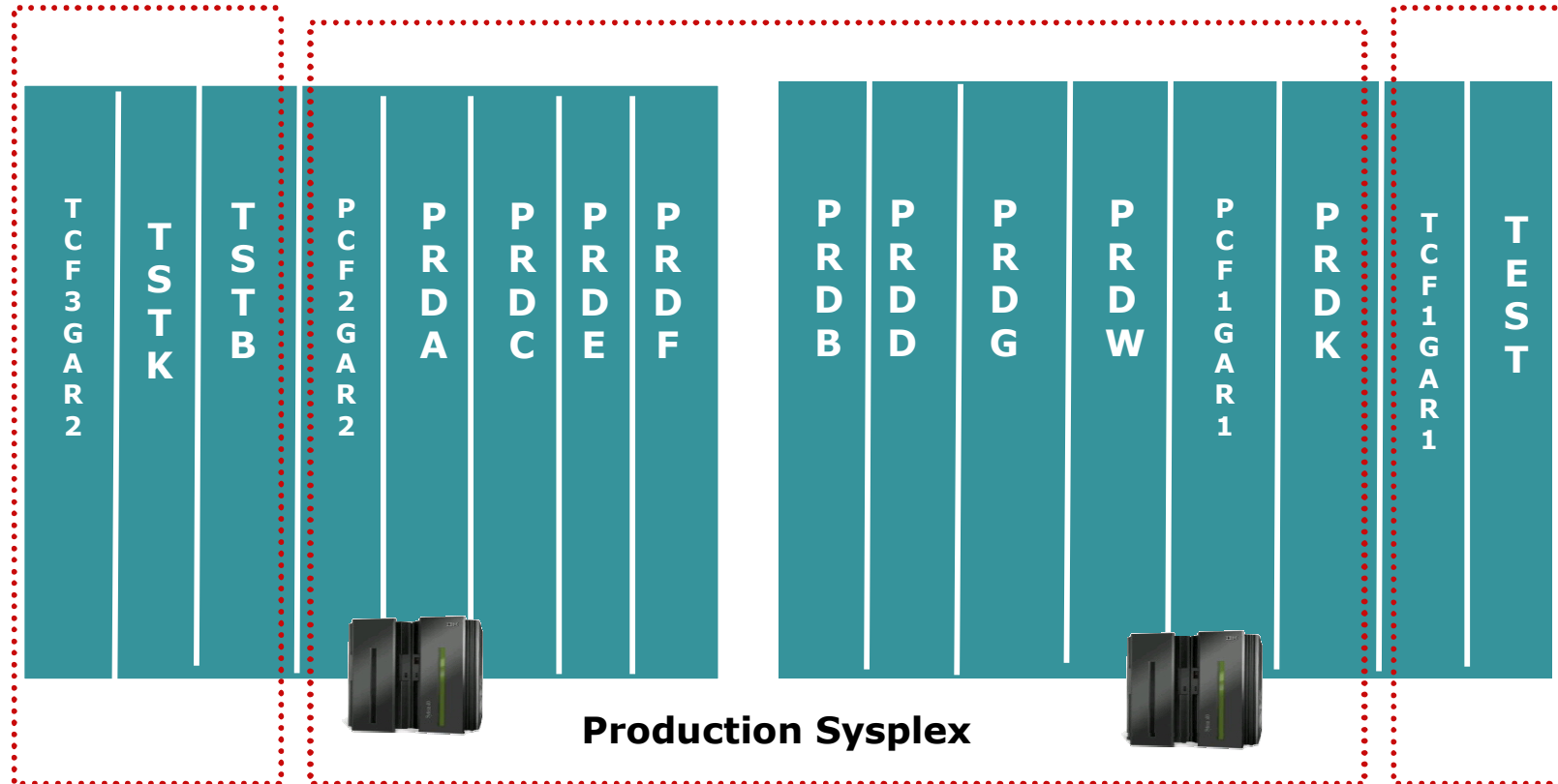
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GT- z/OS Configuration



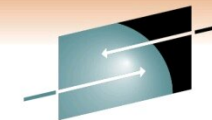
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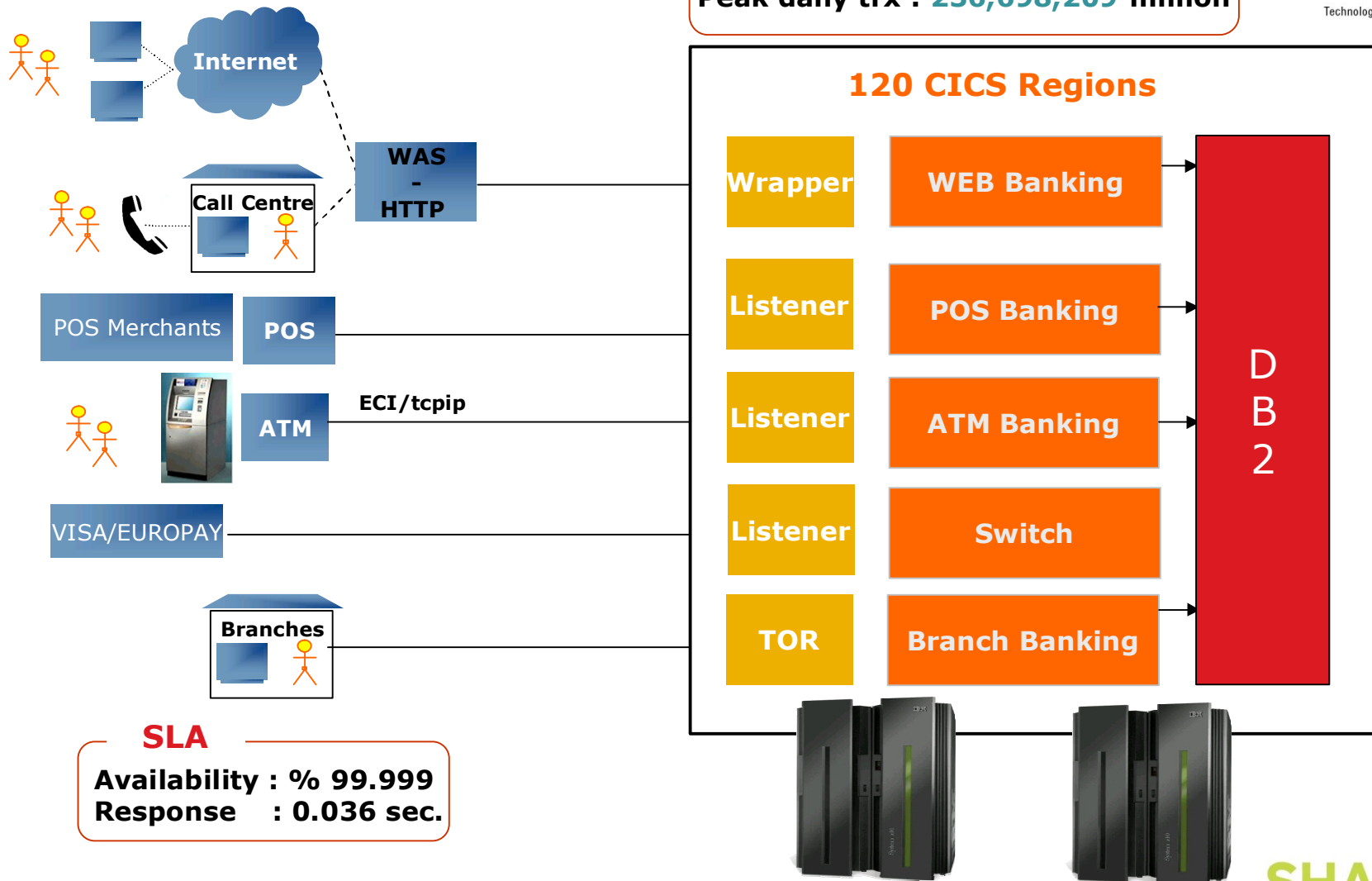
z/OS 1.10
DB2 V9
CICS TS 3.2

GT- CICS Configuration –TORs & AORs



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Average daily trx : 195 million
Peak daily trx : 236,698,209 million

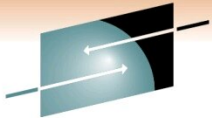


SLA
Availability : % 99.999
Response : 0.036 sec.

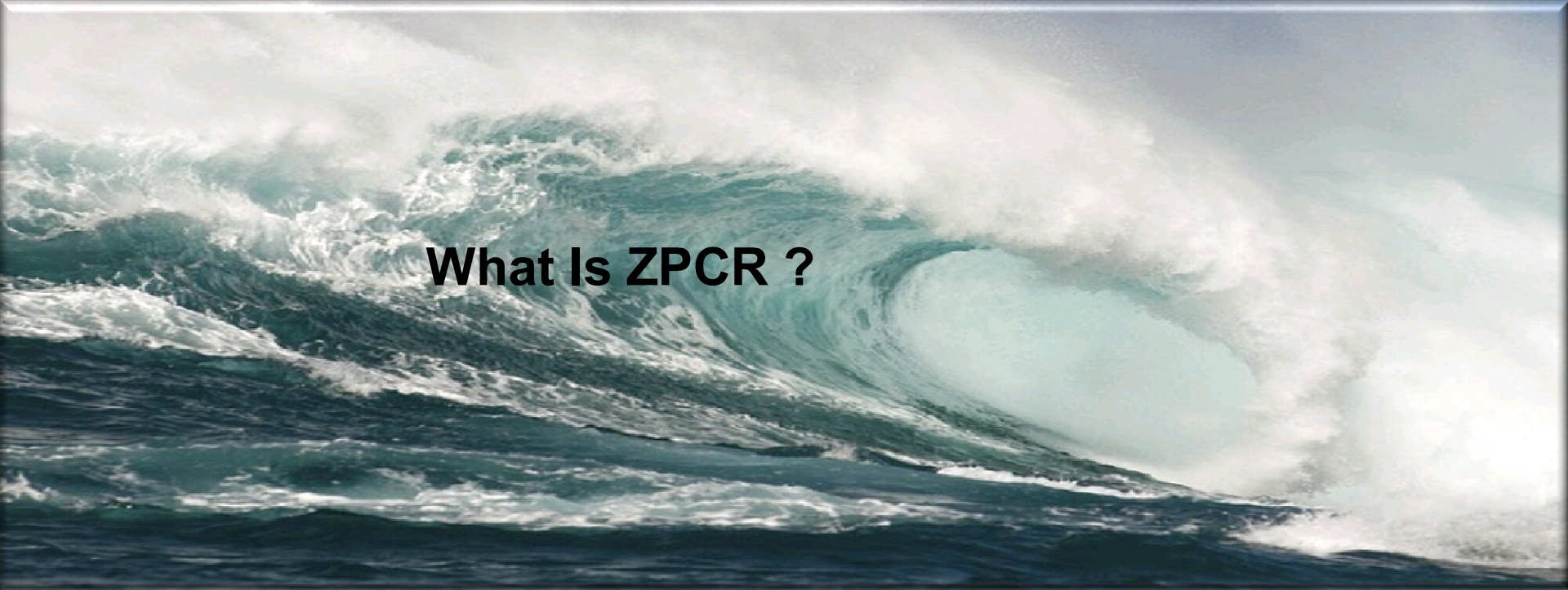


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ZPCR



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What Is ZPCR ?

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What Is ZPCR ?



PROVIDES CAPACITY RELATIONSHIPS FOR SYSTEM z PROCESSORS

BASED ON IBM LARGE SYSTEMS PERFORMANCE REFERENCE (LSPR)

IBM TOOL TO PROPERLY SIZE MAINFRAME UPGRADES

Expected accuracy of +5%

PC BASED TOOL WRITTEN IN JAVA FOR WINDOWS

MUST BE USED IN EACH UPGRADE PLANNING !!!

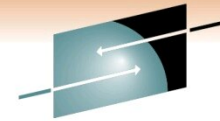
FREE !!!

AVAILABLE TO CUSTOMERS SINCE 10/2005!!!

When Do We Use zPCR ?



- Using zPCR Since It is Available To Customers
- In Every System z Upgrade We Have Done
- Using It In LPAR Configuration Change Planning Processes
 - Moving From 2 To 4/5 LPAR Configuration
 - Moving From 4 To 8 LPAR Configuration
- To Learn zIIPs Capacity In Terms Of MIPS
- How am I effected If I Deactivate Less Used Test LPARs During Peak Days ?



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How To Get zPCR ?

Download zPCR From IBM Tech Docs Website

<http://www-03.ibm.com/support/techdocs/atmastr.nsf/WebIndex/PRS1381>

Welcome [IBM Sign In] [Register]

Techdocs Library > Presentations & Tools >

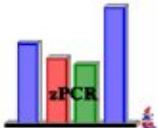
Getting Started with zPCR (IBM's Processor Capacity Reference)

Document Author: James Shaw Document ID: **PRS1381**
Additional Author(s): Kathy Walsh, John Fitch
Doc. Organization: Advanced Technical Skills Document Revised: 24/01/2011
Product(s) covered: z9 BC; z9 EC; z10; z10 BC; z10 EC; zEnterprise 196; zSeries 800; zSeries 890; zSeries 900; zSeries 990; zSeries

Abstract: This is the Getting Started page for those interested in using IBM's Processor Capacity Reference (zPCR) to capacity plan for IBM System z and eServer zSeries processors. It includes links for accessing related educational materials and downloading the tool itself.

If the tabs of this notebook don't work for you, try [this version](#) of the document.

Welcome | Download | Support | Education | Notices / FAQs



zPCR
Processor Capacity Reference for IBM System z

zPCR is a PC-based productivity tool under Windows. It is designed to provide capacity planning insight for IBM System z processors running LPAR configurations with various workload environments under z/OS, z/VM, and Linux. Capacity results are based on IBM's LSPR data supporting all IBM System z processors including the new zEnterprise196.

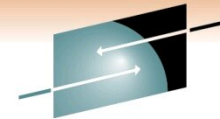
Information

What's new
Capacity Planning Tips using zPCR

Product Currency

Name	zPCR
Version	C7.2a

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How To Get zPCR ?

[Welcome](#) | [Download](#) | [Support](#) | [Education](#) | [Notices / FAQs](#)

This section provides download links for zPCR, documentation, and installation instructions.

Note: The currently supported **IBM Java runtime environment** must be installed in order to use zPCR. It is automatically installed with any version of the **zPCR with Java** package, **C5.3a** or later.

zPCR Package Currency	
Version	C7.2a
IBM Java version	Java 2 v6
Operating System	Windows XP/Win7
Change date	01/31/2011

zPCR including IBM Java Runtime

Download filename	ZPCRCZJ.EXE
Approximate size	80-85 MB


[Download zPCR with Java](#)

zPCR only (IBM Java Runtime required)

Download filename	ZPCRCZIP.EXE
Approximate size	9-10 MB

[Download zPCR](#)

zPCR Documentation (PDF)



Installing zPCR

First time users must install the **zPCR including IBM Java Runtime** version. Subsequent **zPCR** updates can be installed with the **zPCR only** version. After downloading, execute the **EXE** file from **Windows Explorer**, or with **RUN** under the Windows **START** button. Simply respond to the InstallShield prompts.

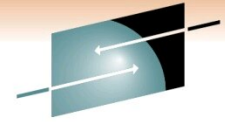
Windows users must have administrator authority in order to update the Windows registry.



Installation Key

An installation key is required to install **zPCR**. How do you get the key? It's contained in the **Introduction to zPCR** training materials. No one wants capacity planning mistakes being made because of a lack of training on the tool. So invest the hour it takes to get the key to better capacity plans and to **zPCR**.

LSPR TERMS



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LSPR Workload Categories



Please Send Your Data To IBM WSC. It will help everybody !!!

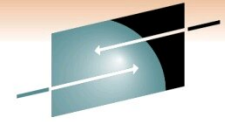
Knowledge Gain Is Still Evolving!

LSPR Workload Categories

Introduction

Historically, LSPR workload capacity curves (primitives and mixes) have had application names or been identified by a software characteristic. For example, past workload names have included CICS, IMS, OLTP-T, CB-L, LoIO-mix and TI-mix. However, capacity performance has always been more closely associated with how a workload uses and interacts with a particular processor hardware design. With the availability of CPU MF (SMF 113) data on z10, the ability to gain insight into the interaction of workload and hardware design in production workloads has arrived. The knowledge gained is still evolving, but the first step in the process is to produce LSPR workload capacity curves based on the underlying hardware sensitivities. Thus the LSPR introduces three new workload capacity categories which replace all prior primitives and mixes.

WORKLOAD CAPACITY PERFORMANCE IS SENSITIVE TO



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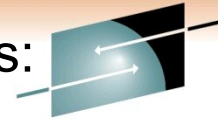
Instruction Path Length For A Transaction Or Job

Instruction Complexity(Microprocessor Design)

Memory Hierarchy Or Nest

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Workload Capacity Performance is sensitive to 3 MAJOR FACTORS:



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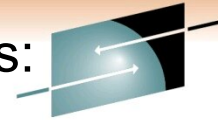
- Instruction Path Length for a transaction or job
 - ▶ Application dependent, of course
 - ▶ Generally invariant across processor designs
 - ▶ But can be sensitive to Nway (due to MP effects such as locking, work queue searches, etc)

2

- Instruction Complexity (Micro processor design)
 - ▶ Many design alternatives
 - Cycle time (GHz), instruction architecture, pipeline, superscalar, Out-Of-Order, branch prediction and more
 - ▶ Workload effect
 - May be different with each processor design
 - But once established for a workload on a processor, does not change very much

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Workload Capacity Performance is sensitive to 3 MAJOR FACTORS:



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3

■ Memory Hierarchy or "nest"

▶ Many design alternatives

- cache (levels, size, private, shared, latency, MESI protocol), controller, data buses

▶ Workload effect

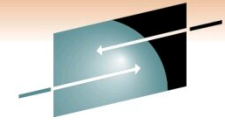
- Quite variable
- Sensitive to many factors: locality of reference, dispatch rate, IO rate, competition with other applications and/or LPARs, and more

▶ **Relative Nest Intensity**

- Activity beyond private-on-chip cache(s) is the most sensitive area
- Reflects activity distribution and latency to shared caches and memory
- Level 1 cache miss percentage also important
- Data for calculation available from CPU MF (SMF 113) starting with z10

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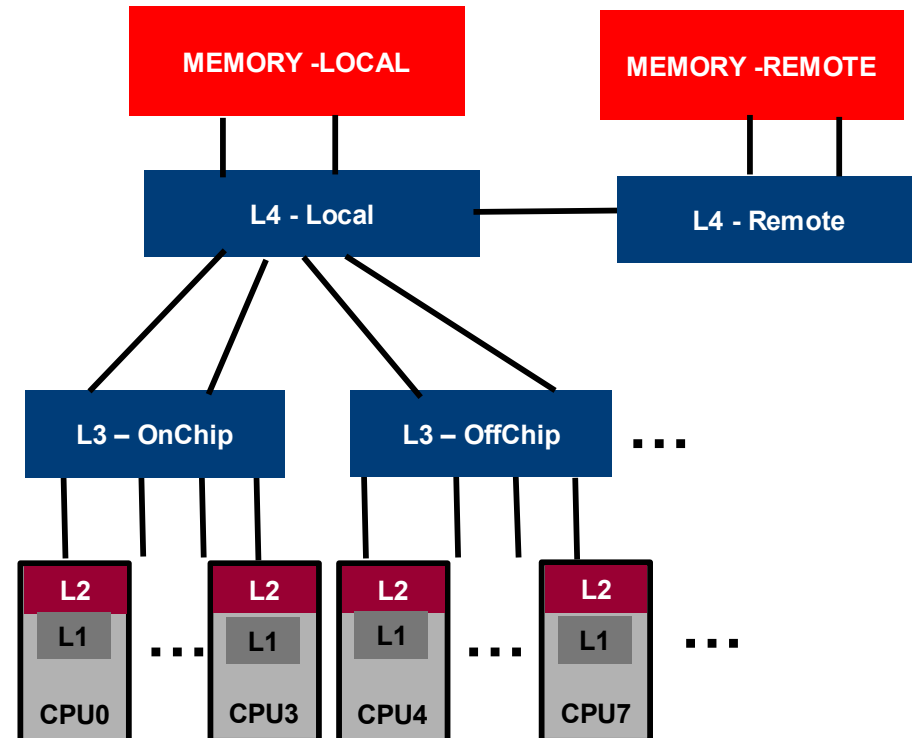
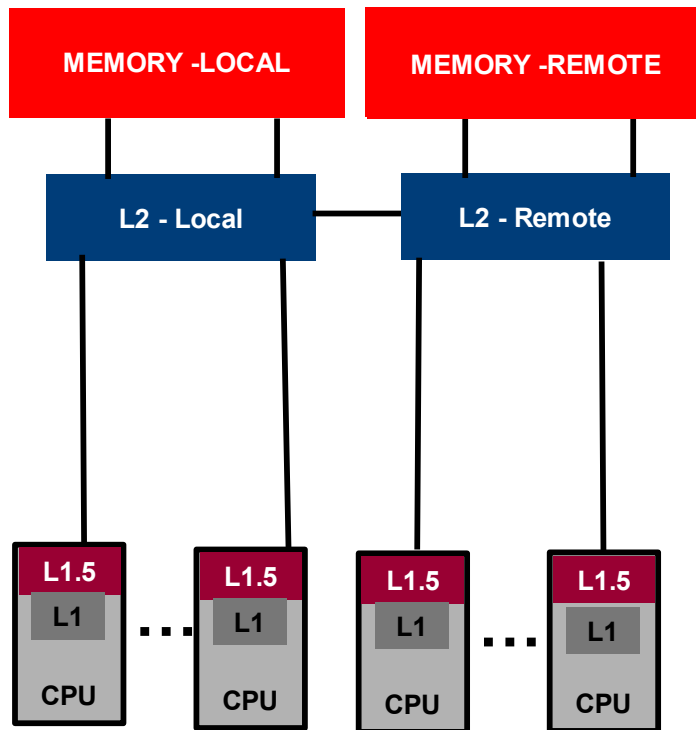
What Is RNI ?

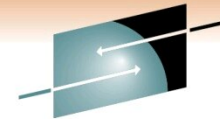


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z10

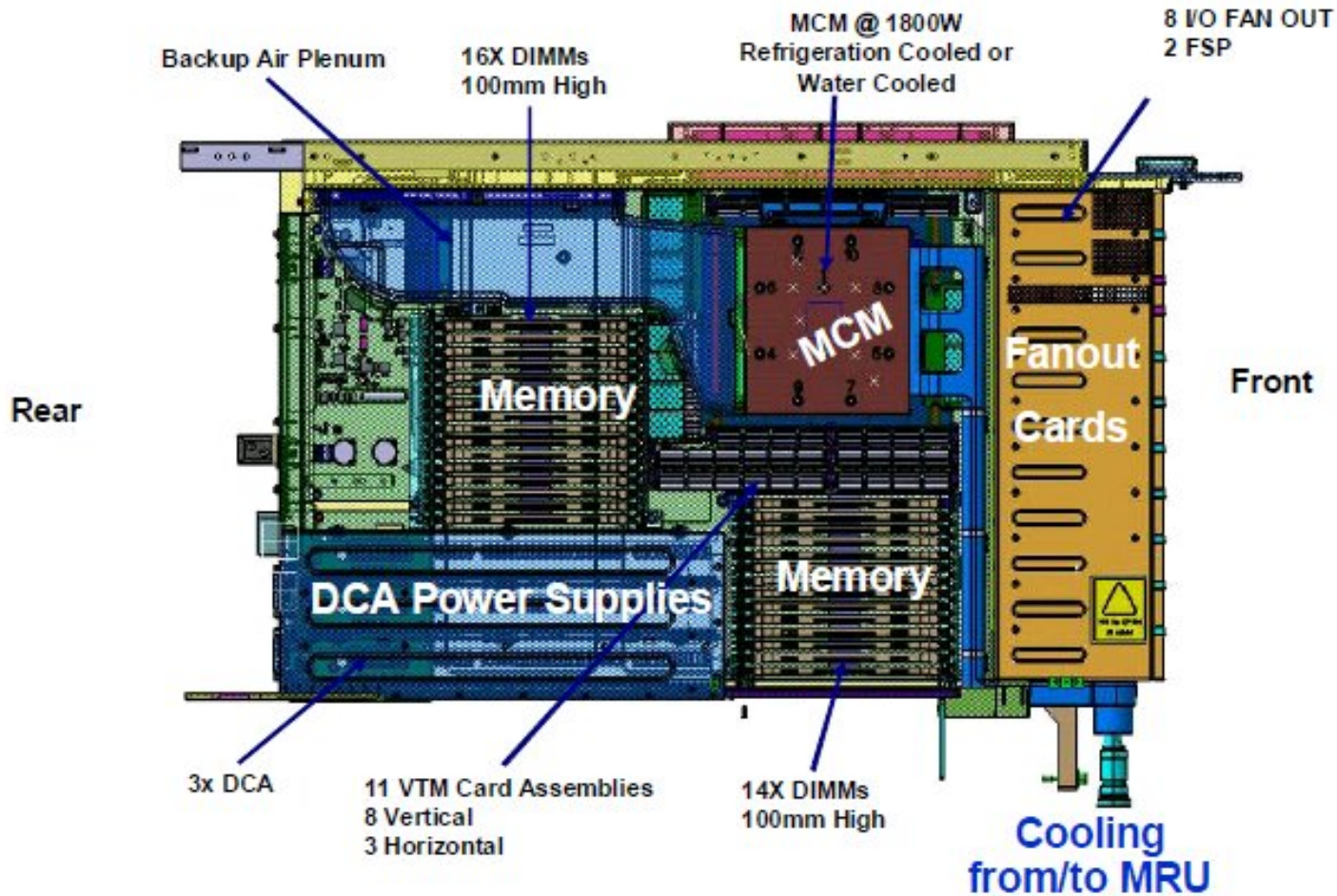
z196



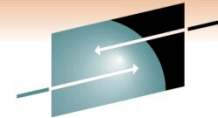


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What Is RNI ? – z196 Book

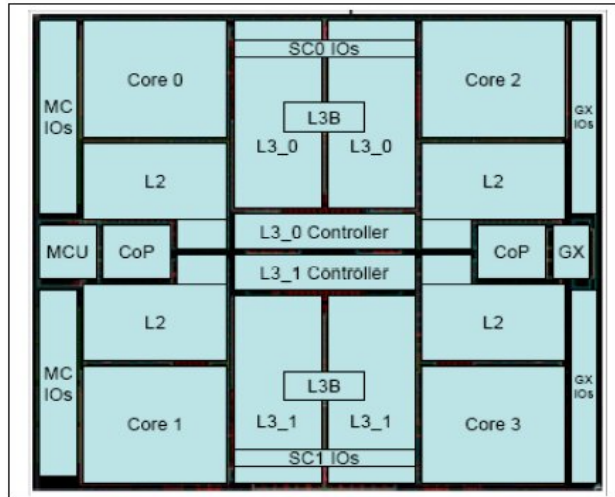


What Is RNI ? - z196 Book – Top To Down Approach



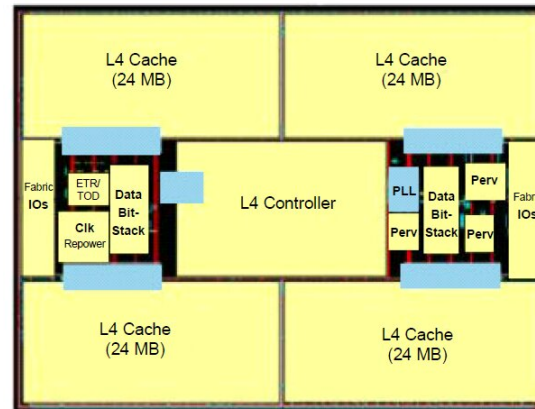
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Z196 Quad Core PU Chip



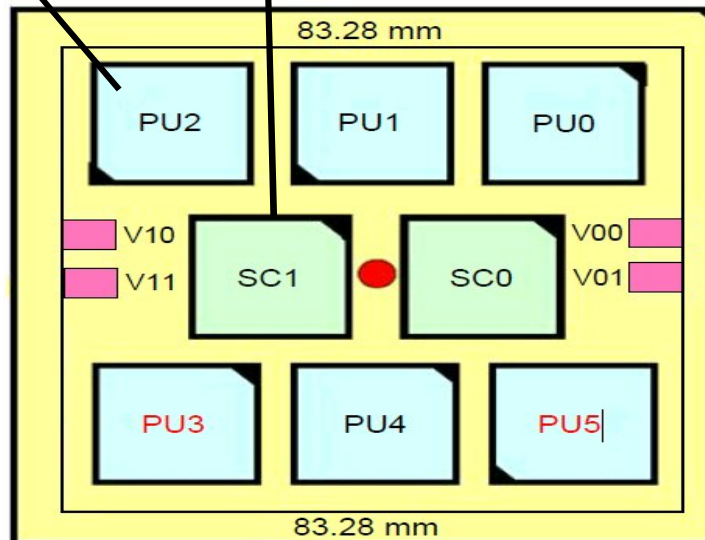
**In each PU chip
4 PCPs**

Z196 SC(Storage Controller) Chip – 96 MB



In each MCM 2 SC Chips

Z196 MCM



Book

**One Book
6 PU Chips**

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z10 & z196 Cache Distance - CPU Cycles & CPU Time

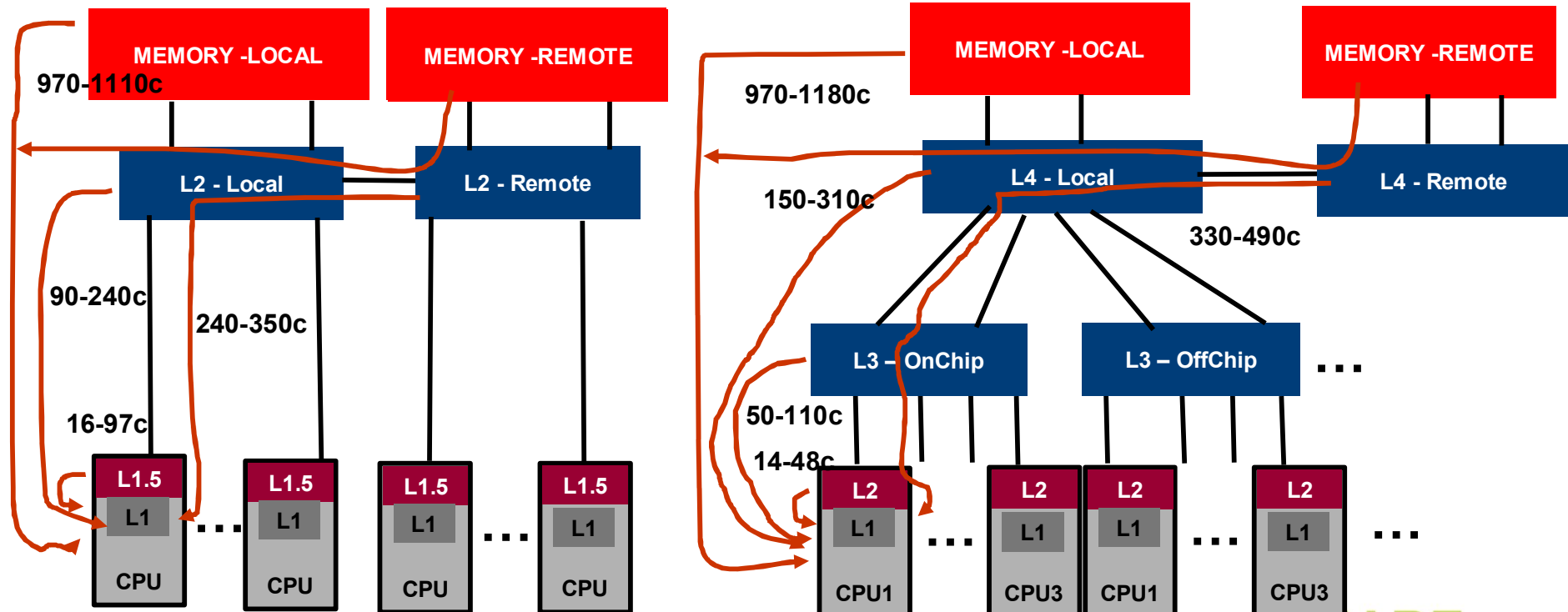


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Z10 Caches & Memory Latency	zG Caches & Memory Latency
L1 (CPU, 64K I/128K D)	L1 (CPU 64K I/ 64K-128K D)
L1.5 (CPU, 3M, 16-97c)	L2 (CPU, 1.5M, 14-48c)
-----N / A-----	L3 (Chip, 24M, 50-110c)
Local L2 (Book, 48M, 90-240c)	Local L4 (Book, 192M, 150-310c)
Remote L2 (Book, 240-350c)	Remote L4 (Book, 330-490c)
Memory (970-1110c)	Memory (970-1180c)

z10

z196



z10 & z196 Cache Distance - CPU Cycles & CPU Time

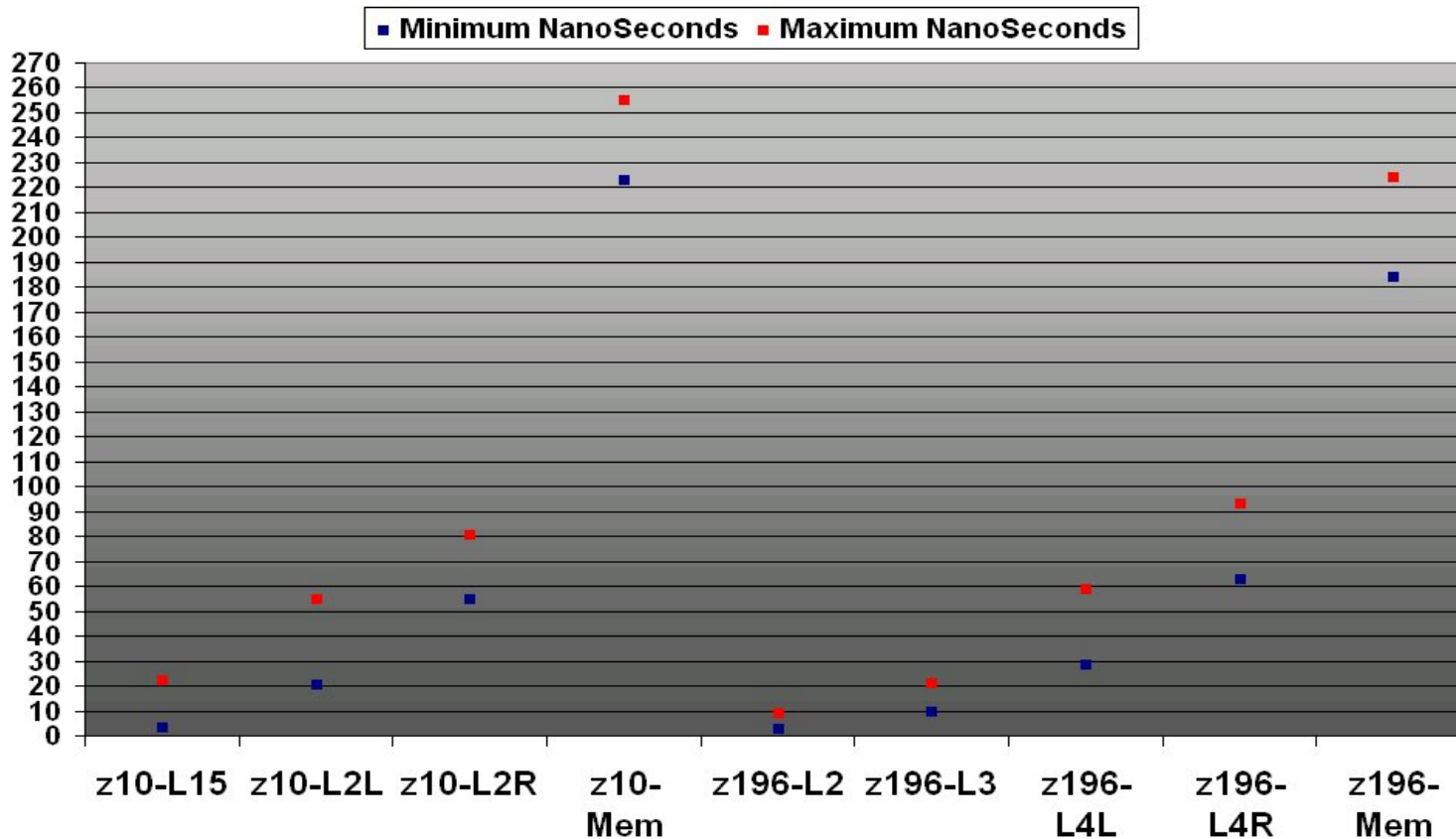


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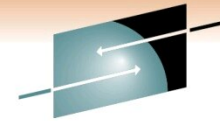
Z10 4.4 GHz 0.23 ns → 18 % → Z196 5.2 GHz 0.19 ns

Increase In Cycle Speed

Z10 & z196 Cache Distance In Terms Of NanoSeconds



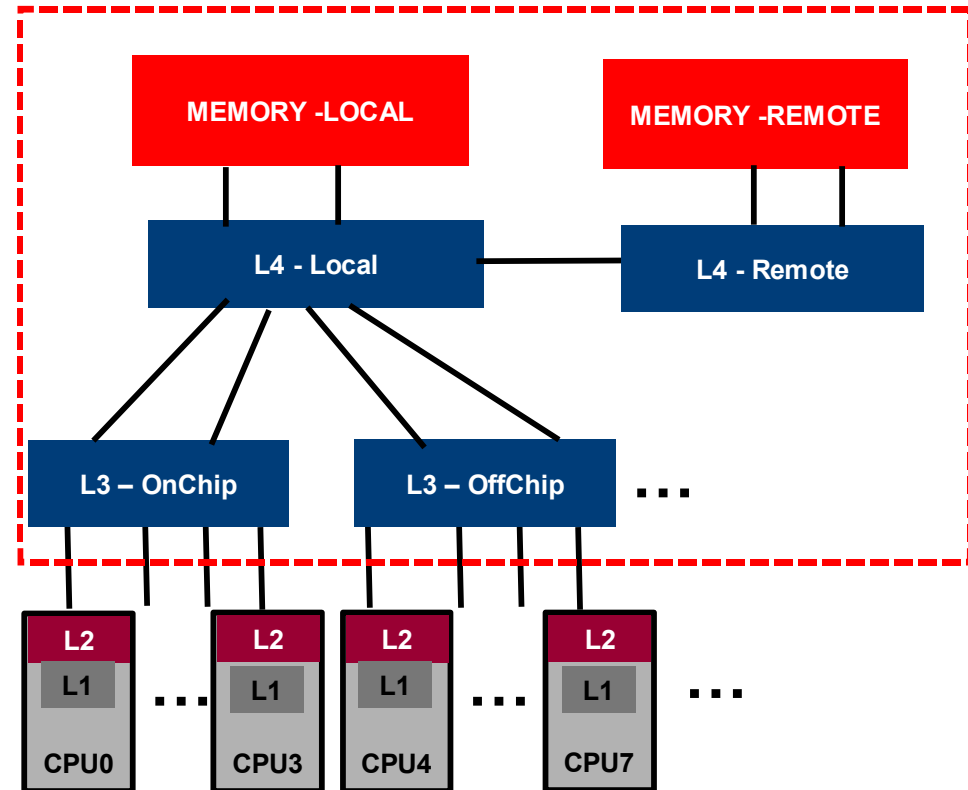
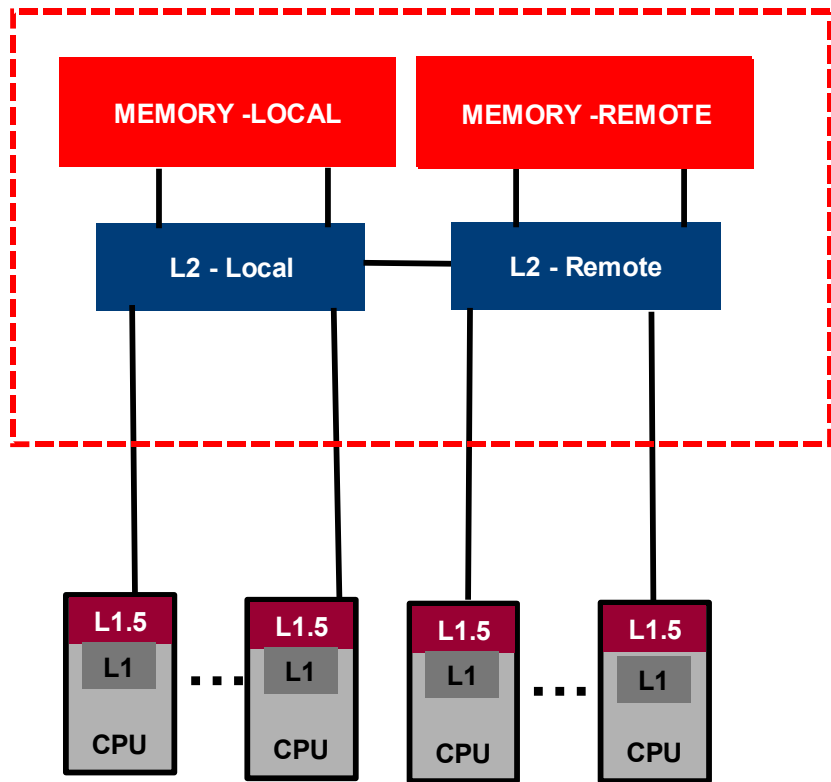
z10 & z196 NEST



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z10

z196



Relative Nest Intensity (RNI)



Indicates the level of activity to shared caches and memory

Calculating Relative Nest Intensity

The RNI of a workload may be calculated using CPU MF data. For z10, three factors are used:

- L2LP: percentage of L1 misses sourced from the local book L2 cache
- L2RP: percentage of L1 misses sourced from a remote book L2 cache
- MEMP: percentage of L1 misses sourced from memory.

These percentages are multiplied by weighting factors and the result divided by 100. The formula for z10 is:

$$\text{z10 RNI} = (1.0 \times \text{L2LP} + 2.4 \times \text{L2RP} + 7.5 \times \text{MEMP}) / 100.$$

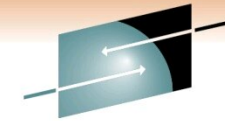
Tools available from IBM (zPCR) and several vendors can extract these factors from CPU MF data. For z196 the CPU MF factors needed are:

- L3P* percentage of L1 misses sourced from the shared chip-level L3 cache
- L4LP: percentage of L1 misses sourced from the local book L4 cache
- L4RP* percentage of L1 misses sourced from a remote book L4 cache
- MEMP: percentage of L1 misses sourced from memory

The formula for z196 is:

$$\text{z196 RNI} = 1.6 \times (0.4 \times \text{L3P} + 1.0 \times \text{L4LP} + 2.4 \times \text{L4RP} + 7.5 \times \text{MEMP}) / 100$$

Note these formulas may change in the future.

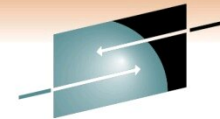


Relating Production Workloads to LSPR Workloads

For z10 and newer processors, the CPU MF data may be used to provide an additional “hint” as to workload selection. When available, this data allows the RNI for a production workload to be calculated. Using the RNI and another value from CPU MF, the L1 cache miss percentage, a workload may be classified as LOW, AVERAGE or HIGH RNI. This classification and resulting “hint” is automated in the zPCR tool. It is highly recommended to use zPCR for capacity sizing. For those wanting to create the “hint” by hand, the following table may be used for z10:

L1MP	RNI	Workload Hint
<3%	≥ 0.75	AVERAGE
	< 0.75	LOW
3% to 6%	> 1.0	HIGH
	0.6 to 1.0	AVERAGE
	< 0.6	LOW
$> 6\%$	≥ 0.75	HIGH
	< 0.75	AVERAGE

Note this table may change in the future.

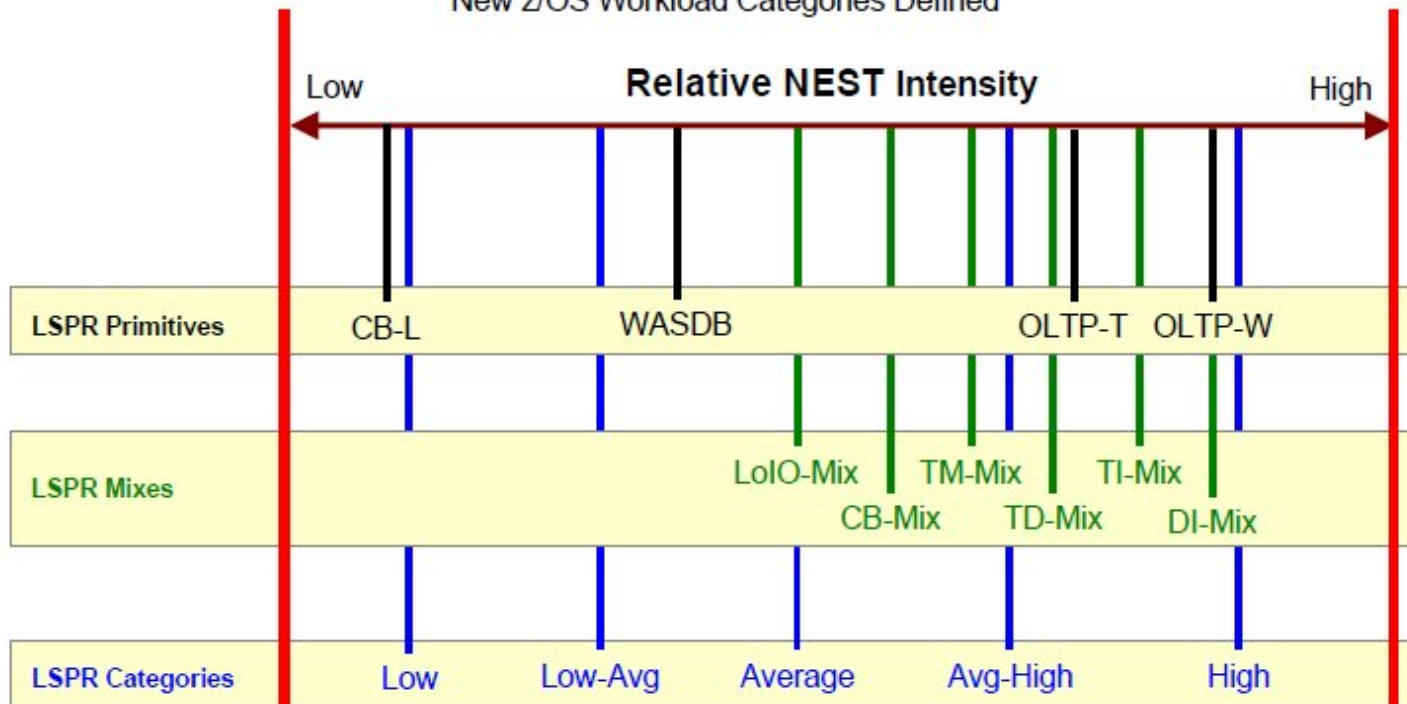


zPCR Workload Characterization

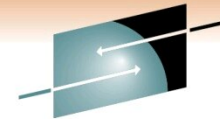
zPCR Workload Characterization for z/OS

“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




zPCR Workload Characterization

Define General Purpose Partitions

Based on LSPR Data for IBM System z Processors

Study ID: Study1

#2  z196gar2

Description: Cloned from Current

z196 Host = 2817-M32 / 700 with 20 CPs: GP=17 zIIP=1 ICF=2

12 Active Partitions: GP=7 zIIP=4 ICF=1

Include	Partition Identification					Partition Configuration					z/OS zIIPs
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	
<input checked="" type="checkbox"/>	1	GP	PRD2	z/OS-1.10*		SHR	12	291	17.83%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	2	GP	PRD4	z/OS-1.10*	Low	SHR	12	432	26.47%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	3	GP	PRD6	z/OS-1.10*	Low-Avg	SHR	15	710	43.50%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Average	SHR	12	113	6.92%	<input type="checkbox"/>	1

Partition Summary

CP Pool	LPs	RCPs	DED LCPs	SHR		Sum of Weights
				LCPs	LCP:RCP	
GP	7	17	0	57	3.353	1,632
zAAP	0	0	0	0	0.000	0
zIIP	4	1	0	4	4.000	1,546
IFL	0	0	0	0	0.000	0
ICF	1	2	2	0	0.000	0

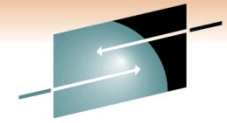
Name prefix

Move Partition

Add

Clone

Delete



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Choosing Interval For zPCR

Choose Your Peak Day

Choose Peak Interval Of Peak Day

If During Your Peak Days ,Hot Intervals Like 1400-1800, You Have One Or Two Intervals With High RNI, you are High RNI

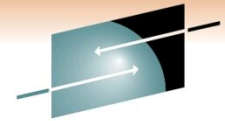
Choose High Utilized Intervals

IBM Use > 90 In Previous LPSRs ,but with new LSPR >95 Is Being Used

See Step-8 How To Choose Interval For zPCR

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1

zPCR V7.2a

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

z/OS-1.11 / General Purpose CPs Workloads

Capacity results will be relative to a 2094-701
MI capacity is 0.9440, 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, CFCC

Advanced-Mode (multiple LPAR configuration support)

Define LPAR Host, Configure Partitions, Assess Capacity

Capacity results will be relative to a 2094-701
SI capacity is 1.000, for a 1-partition configuration

Reference-CPU (controls all zPCR function)

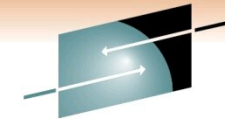
REF 2094-701 @ 1.000 {ITR Ratio}

QuickStart Guide

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

Latest Version 7.2a

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The screenshot shows the 'Function Selection [untitled]' window of the zPCR software. The title bar includes 'File Edit CPcalculator Registration Documentation Help' and 'zPCR V7.2a'. The main area is titled 'zPCR Processor Capacity Reference for IBM System z'. Below this is a 'Study ID:' input field. Two tabs are visible: 'Tab-1: Multi-Image Capacity' and 'Tab-2: Single-Image Capacity'. Under 'Multi-Image Capacity', there are buttons for 'z/OS-1.11 / General Purpose CPs' and 'Workloads'. A yellow box contains the text: 'Capacity results will be relative to a 2094-701 MI capacity is 0.9440, for a 5-partition configuration'. Under 'Single-Image Capacity', there is a section for 'Project capacity for specific LPAR configurations' with details on hardware, CP types, and control programs. A checkbox for 'Advanced-Mode (multiple LPAR configuration support)' is checked, and an arrow points to it from the text 'Click On Advanced-Mode'. Below this is an 'Enter Advanced-Mode' input field. A final yellow box states: 'Capacity results will be relative to a 2094-701 SI capacity is 1.000, for a 1-partition configuration'. On the right side of the interface, there is a 3D rendering of an IBM System z mainframe cabinet.

Click On
Advanced-Mode



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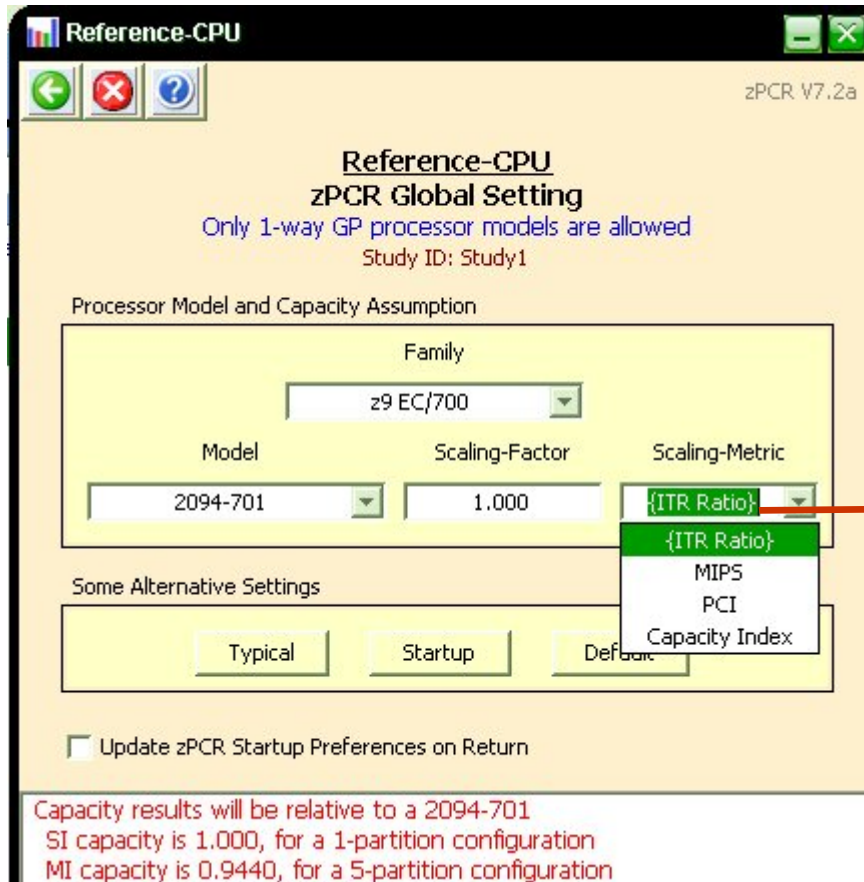
3

Click On Reference-CPU

Step-By-Step z196 Upgrade zPCR Study



4



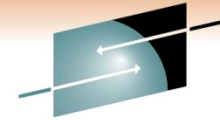
Starting With zPCR 7.0 ,the default value for 2094-701 Reference CPU scaling factor has Been changed from 602 MIPS To **593 MIPS**

Choose Which Scaling Metrics To Use

Recommend To Use ITR For Upgrade Plans LPAR Configuration Changes

Recommend To Use MIPS For CP and zIIP/zAAP MIPS

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LPAR Configuration Capacity Planning
Based on LSPR Data for IBM System z Processors
Study ID: Not specified
#1 **z** Current

Description:

LPAR Host Processor	
Processor Family	
Processor Model	
Speed Setting	
Books Configured	
Books Unused	
Maximum CPs	
Maximum Partitions	
CP Type	Assigned
GP	
zAAP	
zIIP	
IFL	
ICF	
Total	

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

Define LPAR Host Processor

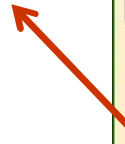
Specify Host

Create Host and Partitions From

Define Partitions

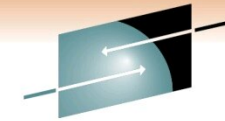
Copy Partitions From

Click On
EDF To LOAD
Edf File



Creating EDF File On MVS Is Explained In Next Slides

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EDF Interval Selection

zPCR V7.2a

EDF Intervals

#1 Current

Relative Interval Number	CEC ID	GP Processor Model	Date	Time	Interval Length	Number of Active Partitions	Available Data		Pool 1 GP Pool Utilization
							DASD I/O	CPU-MF	

Table View

Show All Pools Number of intervals: 0

Default SCP/Workload for Partitions

GP/zAAP/zIIP	z/OS	Average
IFL	Linux	Low/L
ICF	CFCC	CFCC

Load EDF Show Partitions

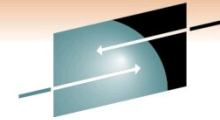
Click on a row to select interval for which zPCR partition definitions are to be created

Click On
LOAD EDF



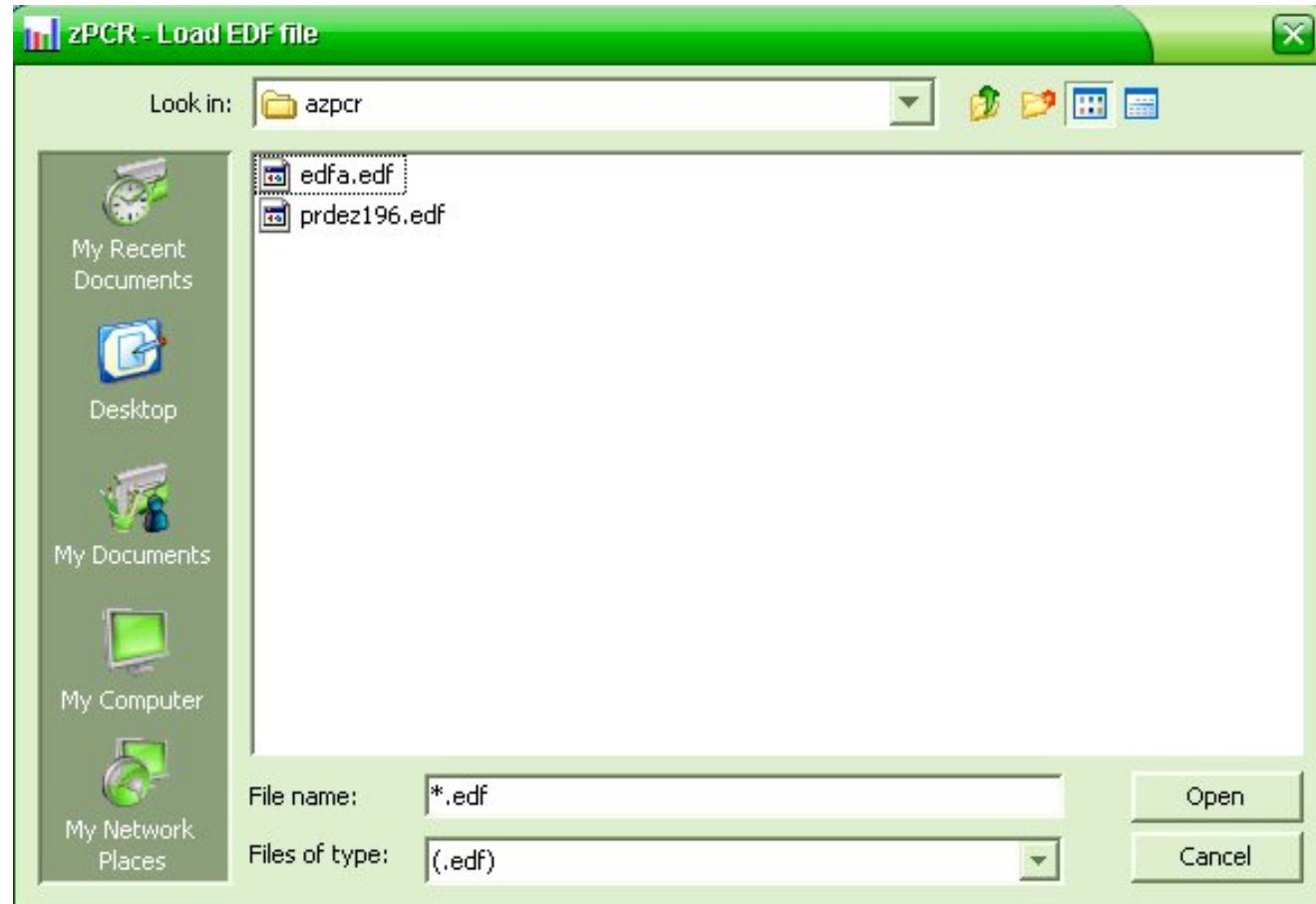
Step-By-Step z196 Upgrade zPCR Study

Select EDF File That You Have Downloaded From MVS

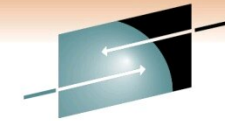


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Choose Interval with CEC util > 95 Or The Most High Utilized Interval

8

EDF Interval Selection
zPCR V7.2a

EDF Intervals
#1 Current
EDF File Name: C:\azpcr\edfa.edf

Relative Interval Number	CEC ID	GP Processor Model	Date	Time	Interval Length	Number of Active Partitions	Available Data		Pool 1 GP Pool Utilization
							DASD I/O	CPU-MF	
1.	CECDCEA	2097-724	2011-01-03	00:00:00	00:15:00	9	✓		92.32%
2.	CECDCEA	2097-724	2011-01-03	00:15:00	00:15:00	9	✓	✓	94.83%
3.	CECDCEA	2097-724	2011-01-03	00:30:00	00:15:00	9	✓	✓	99.57%
4.	CECDCEA	2097-724	2011-01-03	00:45:00	00:15:00	9	✓	✓	98.23%
5.	CECDCEA	2097-724	2011-01-03	01:00:00	00:15:00	9	✓	✓	99.57%
6.	CECDCEA	2097-724	2011-01-03	01:15:00	00:15:00	9	✓	✓	99.52%

Table View
 Show All Pools Number of intervals: 96

Default SCP/Workload for Partitions

GP/zAAP/zIIP	z/OS	Average
IFL	Linux	Low/L
ICF	CFCC	CFCC

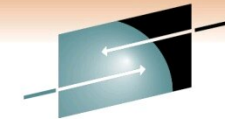
Load EDF Show Partitions

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

IBM Use > 90 In Previous LPSRs ,but with new LSPR >95 Is Being Used

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Create LPAR Configuration from EDF

zPCR V7.2a

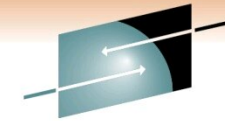
LPAR Configuration from EDF
 z/OS SMF Data Set Name: PGAR.DNTMP.WRK.PERF.ZP03
 CP3KEXTR Version: CP3KEXTR11/30/10
 EDF File Name: C:\azpcr\edfa.edf
 Interval #3: Date=2011-01-03 Time=00:30:00 Length=00:15:00
CEC ID: CECDCEA; GP Processor Model = 2097-724
z10-EC Host = 2097-E26/700 with 26 CPs: GP=24 ICF=2

Create Active Study
 #1 Current

LPAR Host as specified above
 Partition Configuration as specified below

Copy LP	Partition Identification					Partition Workload		Partition Configuration						Workload Assignment Metrics				
	Active	No.	Type	Name	SCP	Workload Assigned	CPU-MF Hint	Mode	LCPs		Weight	Weight %	CAP	HD Active	Method Used	Physical Utilization	DASD I/O Rate/Sec	RNI
									Defined	Parked								
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	GP	PRD2	z/OS-1.10*	Average	Low	SHR	12	6.4	291	17.8%		<input checked="" type="checkbox"/>	DASD I/O	17.21%	7,127.1	0.37
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2	GP	PRD4	z/OS-1.10*	Average		SHR	12		432	26.5%			Default	31.56%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	GP	PRD6	z/OS-1.10*	Average		SHR	15		710	43.5%			Default	31.23%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Average		SHR	12		113	6.9%			Default	14.14%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	5	GP	TCF2GAR2	z/OS-1.10*	Average		SHR	1		5	0.3%			Default	0.34%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	6	GP	TST2	z/OS-1.10*	Average		SHR	2		6	0.4%			Default	0.16%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	7	GP	TST3	z/OS-1.10*	Average		SHR	3		75	4.6%			Default	4.26%		
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	8	ICF	PCF2GAR2	CFCC	CFCC		DED	2		n/a				Default	99.99%		

Step-By-Step z196 Upgrade zPCR Study



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LPAR Host and Partition Configuration

zPCR V7.2a

LPAR Configuration Capacity Planning

Based on LSPR Data for IBM System z Processors
Study ID: Not specified

#1 Current

Description: Created from EDF C:\...edfa.edf

LPAR Host Processor		
Processor Family		z10-EC
Processor Model		2097-E26
Speed Setting		700
Books Configured		2
Books Unused		None
Maximum CPs		26
Maximum Partitions		60
CP Type	Assigned	Unused
GP	24	0
zAAP	0	0
zIIP	0	0
IFL	0	0
ICF	2	0
Total	26	0

Logical Partition Configuration					
CP Pool	Partition Mode	No. of Real CPs	No. of Logical		LCP:RCP Ratio
			Partitions	CPs	
GP	Dedicated	0	0	0	n/a
	Shared	24	7	57	2.375
zAAP	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
zIIP	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
IFL	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
ICF	Dedicated	2	1	2	n/a
	Shared	0	0	0	0.000
Totals		26	8	59	

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

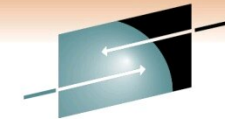
Capacity Reports

Host Summary Partition Detail Partition Utilized Capacity

Click On
Partition Detail

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Partition Detail Report

Based on LSPR Data for IBM System z Processors
Study ID: Study1

#1 Current

Description: Created from EDF C:\...edfa.edf

z10-EC Host = 2097-E26/700 with 26 CPs: GP=24 ICF=2

8 Active Partitions: GP=7 ICF=1

Capacity basis: 2094-701 @ 1.000 for a single partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON

Include	Partition Identification					Partition Configuration					Partition Capacity	
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	Minimum	Maximum
<input checked="" type="checkbox"/>	1	GP	PRD2	z/OS-1.10*	Avg-High	SHR	12	291	17.83%	<input type="checkbox"/>	4.224	11.845
<input checked="" type="checkbox"/>	2	GP	PRD4	z/OS-1.10*	Avg-High	SHR	12	432	26.47%	<input type="checkbox"/>	6.271	11.845
<input checked="" type="checkbox"/>	3	GP	PRD6	z/OS-1.10*	Avg-High	SHR	15	710	43.50%	<input type="checkbox"/>	10.088	14.493
<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Avg-High	SHR	12	113	6.92%	<input type="checkbox"/>	1.640	11.845
<input checked="" type="checkbox"/>	5	GP	TCF2GAR2	CFCC	CFCC	SHR	1	5	0.31%	<input type="checkbox"/>	0.070	0.949
<input checked="" type="checkbox"/>	6	GP	TST2	z/OS-1.10*	Average	SHR	2	6	0.37%	<input type="checkbox"/>	0.101	2.284
<input checked="" type="checkbox"/>	7	GP	TST3	z/OS-1.10*	Average	SHR	3	75	4.60%	<input type="checkbox"/>	1.260	3.428
<input checked="" type="checkbox"/>	8	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a		<input type="checkbox"/>	2.199	2.199

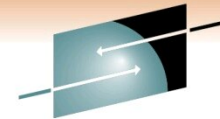
Table View

Display	Pools	
<input checked="" type="radio"/> All Partitions	<input checked="" type="checkbox"/> GP	<input type="checkbox"/> IFL
<input type="radio"/> Includes Only	<input type="checkbox"/> zAAP	<input checked="" type="checkbox"/> ICF
	<input type="checkbox"/> zIIP	

Capacity Summary by Pool

CP Pool	RCPs	Partitions	LCPs	Capacity
GP	24	7	57	23.655
zAAP	0	0	0	0.000
zIIP	0	0	0	0.000
IFL	0	0	0	0.000
ICF	2	1	2	2.199
Totals	26	8	59	25.853

Step-By-Step z196 Upgrade zPCR Study

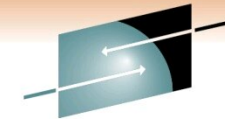


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The screenshot shows the zPCR software interface. The main window is titled "Advanced-Mode Capacity Planning Control Panel" and displays a tree view of LPAR configurations. The "Current" LPAR is selected. A "zPCR - Save study as" dialog box is open, showing the file name "Studyz10-z196-gar2|zpcr" and files of type ".zpcr". The dialog box also shows a list of files in the "Study Files" folder: "Sample Advanced Mode Study.zpcr" and "Sample Basic Mode Study.zpcr".

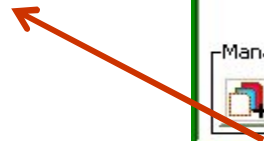
Step-By-Step z196 Upgrade zPCR Study



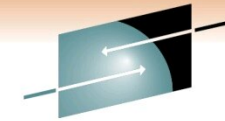
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Clone This configuration
To make model
z196



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Rename And Double Click

Double click on a tree branch below to access the relevant

Reference-CPU
REF 2094-701 @ 1.000 {ITR Ratio}

LSPR Processor Table
z/OS Multi-Image Capacity Ratios

LPAR Configurations
#1 z Current
#2 z196gar2

Manage Compare

LPAR Configuration Capacity Planning

Based on LSPR Data for IBM System z Processors
Study ID: Study1
#2 z196gar2

Description: Cloned from Current

LPAR Host Processor		
Processor Family	z10-EC	
Processor Model	2097-E26	
Speed Setting	700	
Books Configured	2	
Books Unused	None	
Maximum CPs	26	
Maximum Partitions	60	
CP Type	Assigned	Unused
GP	24	0
zAAP	0	0
zIIP	0	0
IFL	0	0
ICF	2	0
Total	26	0

Logical Partition Configuration					
CP Pool	Partition Mode	No. of Real CPs	No. of Logical		LCP:RCP Ratio
			Partitions	CPs	
GP	Dedicated	0	0	0	n/a
	Shared	24	7	57	2.375
zAAP	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
zIIP	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
IFL	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
ICF	Dedicated	2	1	2	n/a
	Shared	0	0	0	0.000
Totals		26	8	59	

#2 z196gar2	z10-EC LPAR Host: 2097-E26/700				
Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	
RCPs	24	0	0	0	
Partitions	7	0	0	0	
LCPs	57	0	0	0	
Capacity	25,483				

Define LPAR Host Processor
Specify Host
Create Host and Partitions From
EDF RMF

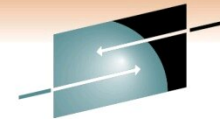
Define Partitions
GP IFL ICF
Copy Partitions From
EDF RMF zPCR Study

Capacity Reports
Host Summary Partition Detail Partition Utilized Capacity

Select Specify Host

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Select Model, CP numbers,...



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Then Click
Back Sign

LPAR Host Processor

Study ID: Study1

#2 z196gar2

Description: Cloned from Current

Family: z196/700 Model: 2817-M32/700

z196 Power

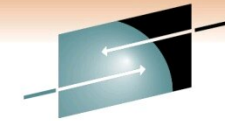
Full Saving

Configure Real CP Types

GP	zAAP	zIIP	IFL	ICF
17	0	1	0	2

Enable "zAAP on zIIP" capability

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Click On
To Do Changes
Like Weigh, LCP,
Workload, Add zIIP

LPAR Configuration Capacity Planning

Based on LSPR Data for IBM System z Processors
Study ID: Study1
#2 z196gar2

Description: Cloned from Current

LPAR Host Processor		
Processor Family		z196
Processor Model		2817-M32
Speed Setting		700
Books Configured		2
Books Unused		None
Maximum CPs		32
Maximum Partitions		60
CP Type	Assigned	Unused
GP	17	0
zAAP	0	0
zIIP	1	1
IFL	0	0
ICF	2	0
Total	20	0

Logical Partition Configuration					
CP Pool	Partition Mode	No. of Real CPs	No. of Logical		LCP:RCP Ratio
			Partitions	CPs	
GP	Dedicated	0	0	0	n/a
	Shared	17	7	57	3.353
zAAP	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
zIIP	Dedicated	0	0	0	n/a
	Shared	1	0	0	0.000
IFL	Dedicated	0	0	0	n/a
	Shared	0	0	0	0.000
ICF	Dedicated	2	1	2	n/a
	Shared	0	0	0	0.000
Totals		20	8	59	

Define LPAR Host Processor

Specify Host

Create Host and Partitions From

EDF RMF

Define Partitions

GP / zIIP IFL ICF

Copy Partitions From

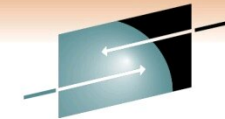
EDF RMF zPCR Study

Capacity Reports

Host Summary Partition Detail Partition Utilized Capacity

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Do Changes Like LCP & If you Have Any & Check CFs.



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Define General Purpose Partitions

Based on LSPR Data for IBM System z Processors
Study ID: Study1
#2 z196gar2
Description: Cloned from Current

z196 Host = 2817-M32/700 with 20 CPs: GP=17 zIIP=1 ICF=2
12 Active Partitions: GP=7 zIIP=4 ICF=1

Include	Partition Identification					Partition Configuration					z/OS zIIPs
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	
<input checked="" type="checkbox"/>	1	GP	PRD2	z/OS-1.10*		SHR	12	291	17.83%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	2	GP	PRD4	z/OS-1.10*	Low	SHR	12	432	26.47%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	3	GP	PRD6	z/OS-1.10*	Low-Avg	SHR	15	710	43.50%	<input type="checkbox"/>	1
<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Average	SHR	12	113	6.92%	<input type="checkbox"/>	1

Partition Summary

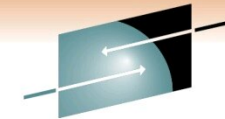
CP Pool	LPs	RCPs	DED LCPs	SHR		Sum of Weights
				LCPs	LCP:RCP	
GP	7	17	0	57	3.353	1,632
zAAP	0	0	0	0	0.000	0
zIIP	4	1	0	4	4.000	1,546
IFL	0	0	0	0	0.000	0
ICF	1	2	2	0	0.000	0

Name prefix:

Move Partition

Step-By-Step z196 Upgrade zPCR Study

Result Of Defining zIIP To LPARs



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Partition Detail Report

Based on LSPR Data for IBM System z Processors
Study ID: Study1

#2 z196gar2

Description: Cloned from Current

z196 Host = 2817-M32/700 with 20 CPs: GP=17 zIIP=1 ICF=2

12 Active Partitions: GP=7 zIIP=4 ICF=1

**Capacity basis: 2094-701 @ 1.000 for a single partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON**

Include	Partition Identification					Partition Configuration					Partition Capacity	
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	Minimum	Maximum
<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Avg-High	SHR	12	113	6.92%	<input type="checkbox"/>	1.661	16.931
<input checked="" type="checkbox"/>	5	GP	TCF2GAR2	CFCC	CFCC	SHR	1	5	0.31%	<input type="checkbox"/>	0.062	1.185
<input checked="" type="checkbox"/>	6	GP	TST2	z/OS-1.10*	Average	SHR	2	6	0.37%	<input type="checkbox"/>	0.100	3.198
<input checked="" type="checkbox"/>	7	GP	TST3	z/OS-1.10*	Average	SHR	3	75	4.60%	<input type="checkbox"/>	1.250	4.799
<input checked="" type="checkbox"/>	*1	zIIP	PRD2	z/OS-1.10*	Avg-High	SHR	1	291	18.82%	<input type="checkbox"/>	0.288	1.529
<input checked="" type="checkbox"/>	*2	zIIP	PRD4	z/OS-1.10*	Avg-High	SHR	1	432	27.94%	<input type="checkbox"/>	0.427	1.529
<input checked="" type="checkbox"/>	*3	zIIP	PRD6	z/OS-1.10*	Avg-High	SHR	1	710	45.92%	<input type="checkbox"/>	0.677	1.475
<input checked="" type="checkbox"/>	*4	zIIP	PRD8	z/OS-1.10*	Avg-High	SHR	1	113	7.31%	<input type="checkbox"/>	0.112	1.529
<input checked="" type="checkbox"/>	8	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a		<input type="checkbox"/>	3.027	3.027

Table View

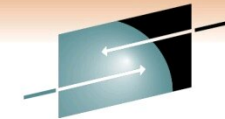
Display	Pools	
<input checked="" type="radio"/> All Partitions	<input checked="" type="checkbox"/> GP	<input type="checkbox"/> IFL
<input type="radio"/> Includes Only	<input type="checkbox"/> zAAP	<input checked="" type="checkbox"/> ICF
	<input checked="" type="checkbox"/> zIIP	

Capacity Summary by Pool

CP Pool	RCPs	Partitions	LCPs	Capacity
GP	17	7	57	23.967
zAAP	0	0	0	0.000
zIIP	1	4	4	1.504
IFL	0	0	0	0.000
ICF	2	1	2	3.027
Totals	20	12	63	28.498

Step-By-Step z196 Upgrade zPCR Study

After zIIP was Defined To LPARs



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Host Capacity Summary

zPCR V7.2a

LPAR Host Capacity Summary Report

Study ID: Study1

**Capacity basis: 2094-701 @ 1.000 for a single partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON**

LPAR Configuration			Full Capacity (based on usable RCP count)					
Identity	Hardware		GP	zAAP	zIIP	IFL	ICF	Total
#1 Current	2097-E26/700: GP=24 ICF=2		23.655				2.199	25.853
#2 z196gar2	2817-M32/700: GP=17 zIIP=1 ICF=2		23.967		1.504		3.027	28.498

Show capacity as

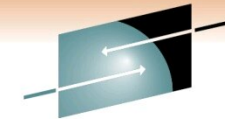
Full Single CP

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.
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Position mouse on LPAR configuration to display description

Step-By-Step z196 Upgrade zPCR Study

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Advanced-Mode Capacity Planning Control Panel

Study ID: Study1

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

- Reference-CPU
 - REF 2094-701 @ 1.000 {ITR Ratio}
- LSPR Processor Table
 - LSPR z/OS Multi-Image Capacity Ratios
- LPAR Configurations
 - #1 Current
 - #2 z196gar2

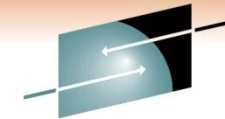
Click On Compare

Manage Compare QuickStart Guide

Pool CP Type	#1 GP	#2 zAAP	#3 zIIP	#4 IFL	#5 ICF	CEC Total
RCPs	17	0	1	0	2	20
Partitions	7	0	0	0	1	8

Step-By-Step z196 Upgrade zPCR Study

6% Capacity Increase



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Host Capacity Summary

zPCR V7.2a

LPAR Host Capacity Summary Report

Study ID: Study1

Capacity basis: 2094-701 @ 1.000 for a single partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON

LPAR Configuration		Full Capacity (based on usable RCP count)					
Identity	Hardware	GP	zAAP	zIIP	IFL	ICF	Total
#1 Current	2097-E26/700: GP=24 ICF=2	23.655				2.199	25.853
#2 z196gar2	2817-M32/700: GP=17 zIIP=1 ICF=2	24.394				3.039	27.433

Show capacity as

Full Single CP

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Position mouse on LPAR configuration to display description

CAPACITY PER CPU IS INCREASED BY 45% (23.65/24 versus 24.39/17)

Step-By-Step z196 Upgrade zPCR Study



LSPR TABLE In ResourceLink

[https://www-](https://www-304.ibm.com/servers/resourcelink/lib03060.nsf/pages/lspzOS11MIJuly2010?OpenDocument&pathID=)

[304.ibm.com/servers/resourcelink/lib03060.nsf/pages/lspzOS11MIJuly2010?OpenDocument&pathID=](https://www-304.ibm.com/servers/resourcelink/lib03060.nsf/pages/lspzOS11MIJuly2010?OpenDocument&pathID=)

IBM System z10 EC

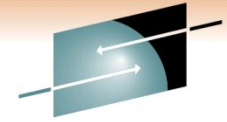
(System z9 2094-701 = 1.00)

Processor	#CP	PCI**	MSU***	Low*	Average*	High*
2097-724	24	14517	1748	30.90	25.93	22.36
2817-717	17	15076	1816	30.12	26.93	24.40

3.85 %

9.1 %

zPCR : 6% Capacity Increase

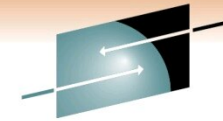


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Z196 Upgrade Choosing Model Using zPCR



z196 Upgrade Choosing Model Using zPCR

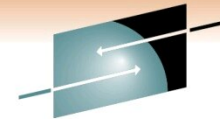


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Z196 Upgrade Choosing Model Using zPCR

- Repeat Creating New LPAR Config By Chaging Host Model In Previous Steps

- I Have Done These Using Four Different z196 Models



Z196 Upgrade Choosing Model Using zPCR

Host Capacity Summary

zPCR V7.1a

LPAR Host Capacity Summary Report

Capacity is based on a 2094-701 assumed at 1,0000 for a 1-partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON

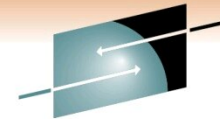
LPAR Configuration		Full Capacity (based on usable RCP count)					
Identity	Hardware	GP	zAAP	zIIP	IFL	ICF	Total
#1 Current	2097-E26/700: GP=20 zIIP=2 ICF=2	16,717		1,745		2,202	20,665
#2 Alt-1	2817-M32/700: GP=15 zIIP=2 ICF=2	19,210		2,668		3,020	24,898
#3 Alt-2	2817-M32/700: GP=16 zIIP=2 ICF=2	20,175		2,640		3,004	25,818
#4 Alt-3	2817-M32/700: GP=17 zIIP=2 ICF=2	21,616		2,614		2,987	27,217
#5 Alt-4	2817-M32/700: GP=18 zIIP=2 ICF=2	22,560		2,589		2,971	28,120

Show capacity as

Full Single CP

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Position mouse on LPAR configuration to display description



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Z196 Upgrade Choosing Model Using zPCR

Host Capacity Summary zPCR V7.1a

LPAR Host Capacity Summary Report
Capacity is based on a 2094-701 assumed at 1,0000 for a 1-partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON

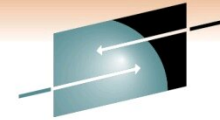
LPAR Configuration			Full Capacity (based on usable RCP count)					
Identity	Hardware		GP	zAAP	zIIP	IFL	ICF	Total
#1 Current	2097-E26/700: GP=20 ICF=2		17,018				2,225	19,243
#2 Alt-1	2817-M32/700: GP=15 ICF=2		19,598				3,050	22,648
#3 Alt-2	2817-M32/700: GP=16 ICF=2		20,559				3,034	23,593
#4 Alt-3	2817-M32/700: GP=17 ICF=2		22,007				3,017	25,024
#5 Alt-4	2817-M32/700: GP=18 ICF=2		22,949				3,001	25,950

Show capacity as
 Full Single CP

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Position mouse on LPAR configuration to display description

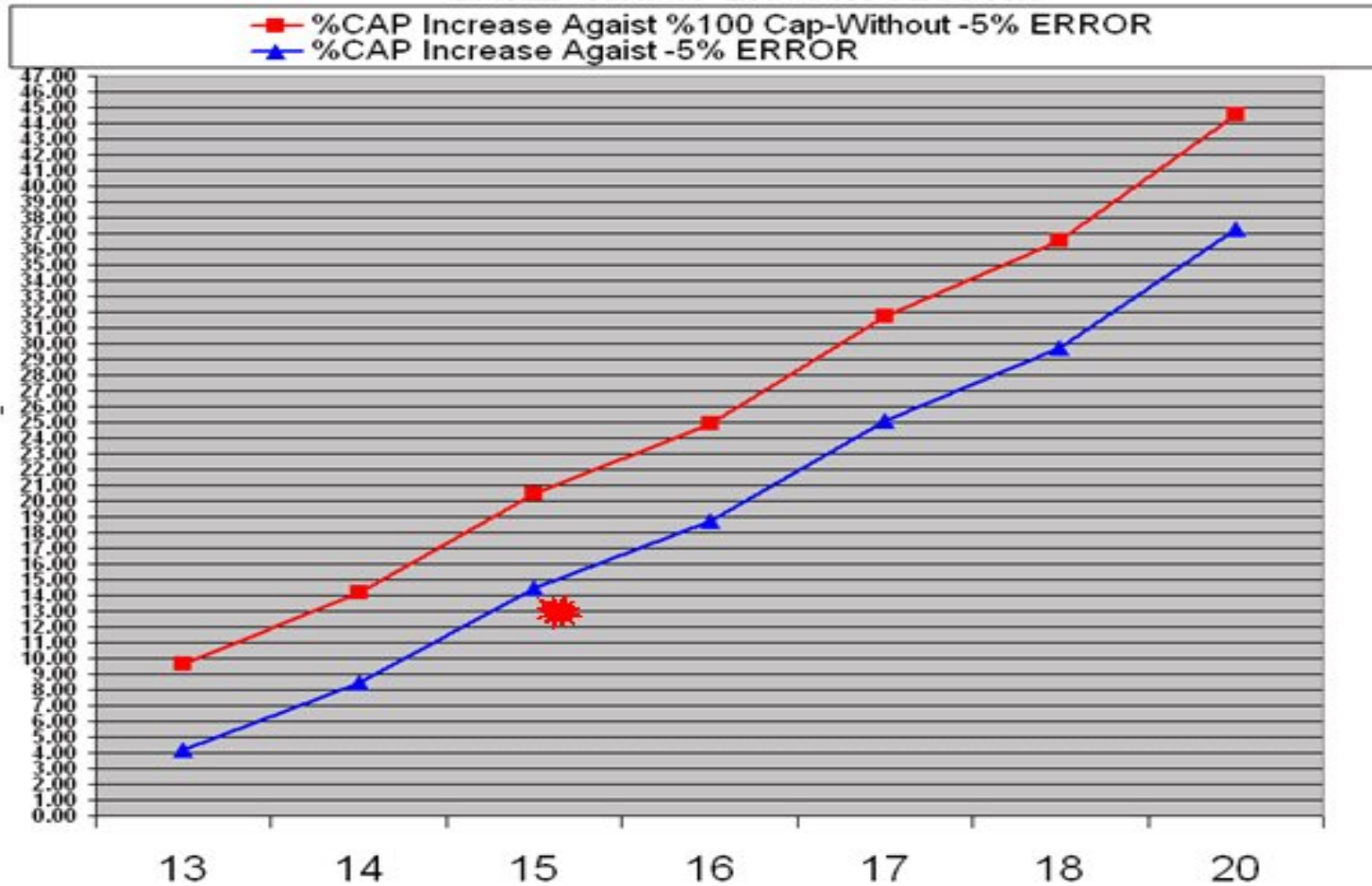
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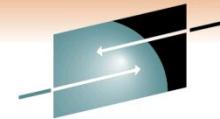


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Z196 Upgrade Choosing Model Using zPCR

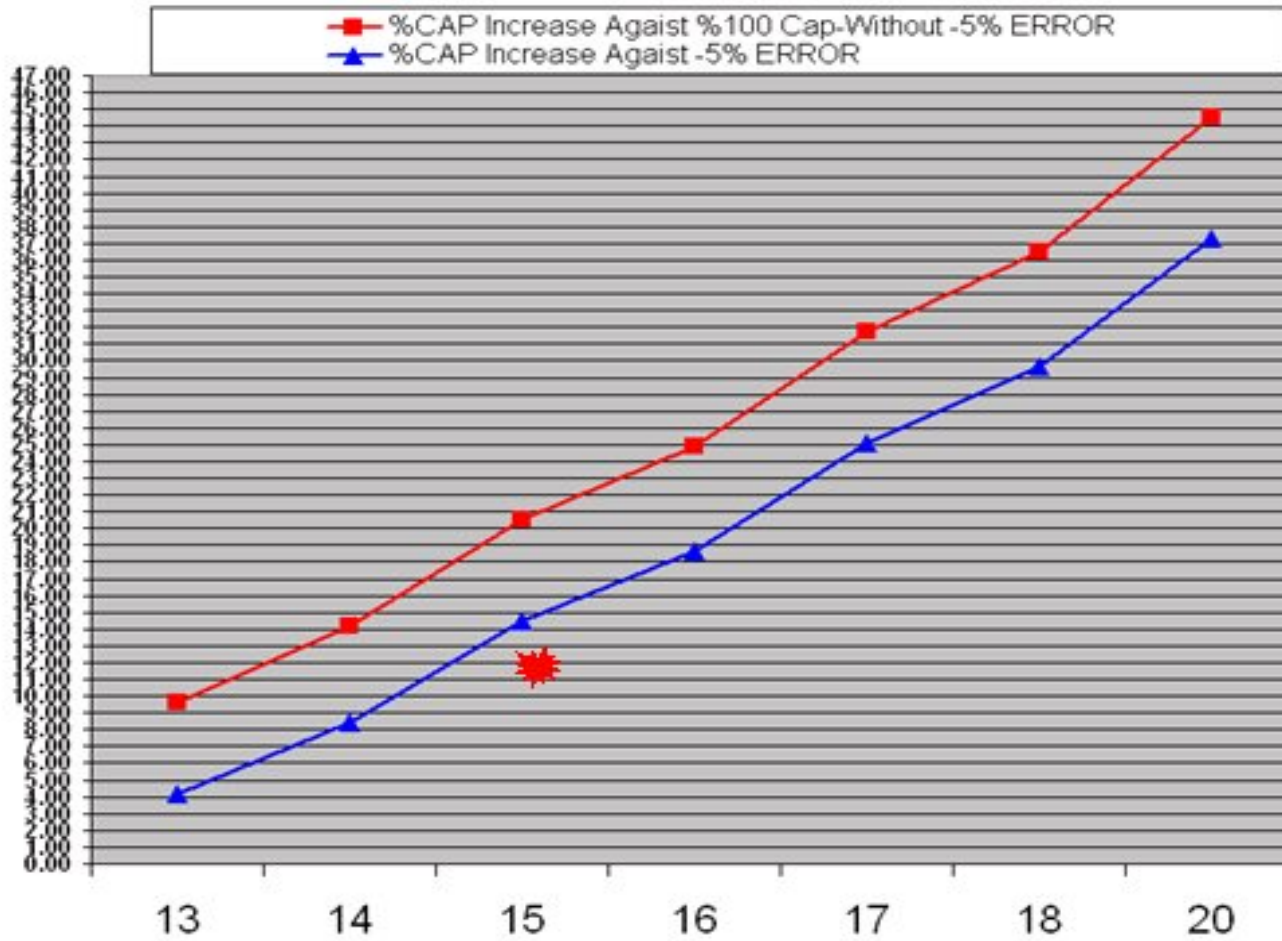
**GAR1 % CHANGE IN CAPACITY BETWEEN z10-720 AND z196 MODELS
BASED ON # OF z196 PROCESSORS**



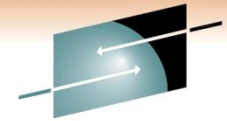


Z196 Upgrade Choosing Model Using zPCR

**GAR2 % CHANGE IN CAPACITY BETWEEN z10-720 AND z196
MODELS BASED ON # OF z196 PROCESSORS**



Z10 To z196 Upgrade IBM Analiz



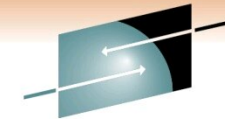
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Z10 To z196 Upgrade IBM Analiz Gary King & John Burg

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Z10 To z196 Upgrade IBM Analiz



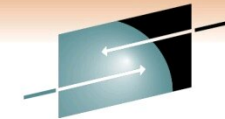
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z196 Serial 60E26 – PRDA, PRDC, PRDE, PRDF

Machine	SYSID	Mon	Day	SH	Hour	CPI	Prb State	Est Instr Cmplx CPI	Est Finite CPI	Est SCPL1M	L1MP	L15P / L2P	L3P	L2LP / L4LP	L2RP / L4RP	MEMP	Rel Nest Intensity	LPARCPU	Eff GHz	LSPR Wkld Hint	
z10 722	PRDA	NOV	22	P	TOTAL	11.52	35.1	3.77	7.75	129	6.0	67.3	0.0	19.4	3.0	10.4	1.04	269.3	4.4	HIGH	
z10 724	PRDA	JAN	3	P	TOTAL	10.04	44.1	3.51	6.53	126	5.2	67.8	0.0	19.1	2.8	10.3	1.03	247.6	4.4	HIGH	
z10 724	PRDA	JAN	17	P	TOTAL	9.99	43.4	3.54	6.46	131	4.9	68.4	0.0	17.7	3.2	10.8	1.06	298.4	4.4	HIGH	
						10.52	40.8	3.61	6.91	129	5.4	67.8	0.0	18.7	3.0	10.5	1.04	271.1			
z196 717	PRDA	JAN	31	P	TOTAL	6.83	43.5	2.73	4.10	81	5.1	56.9	22.7	10.4	5.6	4.5	1.06	105.6	5.2	HIGH	
z196 717	PRDA	FEB	1	P	TOTAL	6.86	48.3	2.84	4.03	81	5.0	57.7	23.0	12.3	1.2	5.8	1.08	98.2	5.2	HIGH	
						6.85	45.9	2.79	4.07	81	5.0	57.3	22.9	11.3	3.4	5.1	1.07	101.9			
						Relative Capacity Ratio					1.82										
z10 722	PRDC	NOV	22	P	TOTAL	12.98	30.5	3.80	9.18	149	6.1	60.7	0.0	24.5	2.6	12.2	1.22	372.2	4.4	HIGH	
z10 724	PRDC	JAN	3	P	TOTAL	12.24	33.3	3.75	8.49	143	6.0	62.8	0.0	23.2	2.1	11.9	1.17	342.2	4.4	HIGH	
z10 724	PRDC	JAN	17	P	TOTAL	11.59	31.3	3.65	7.94	140	5.7	63.4	0.0	23.0	2.3	11.4	1.14	428.6	4.4	HIGH	
						12.27	31.7	3.73	8.54	144	5.9	62.3	0.0	23.6	2.3	11.8	1.18	381.0			
z196 717	PRDC	JAN	31	P	TOTAL	8.31	34.1	3.25	5.06	82	6.2	54.5	27.4	10.2	2.3	5.6	1.10	224.9	5.2	HIGH	
z196 717	PRDC	FEB	1	P	TOTAL	6.40	29.8	3.01	3.38	70	4.8	58.3	24.5	8.2	5.4	3.6	0.92	247.3	5.2	AVG	
						7.36	31.9	3.13	4.22	76	5.5	56.4	26.0	9.2	3.9	4.6	1.01	236.1			
						Relative Capacity Ratio					1.97										
z10 722	PRDE	NOV	22	P	TOTAL	10.70	51.8	3.30	7.40	153	4.8	62.3	0.0	24.7	2.1	11.0	1.12	1015.1	4.4	HIGH	
z10 724	PRDE	JAN	3	P	TOTAL	8.84	49.3	3.20	5.64	120	4.7	66.7	0.0	22.4	2.0	8.9	0.94	884.4	4.4	AVG	
z10 724	PRDE	JAN	17	P	TOTAL	9.86	50.7	3.27	6.59	134	4.9	62.9	0.0	24.3	2.9	9.9	1.06	974.2	4.4	HIGH	
						9.80	50.6	3.26	6.54	136	4.8	63.9	0.0	23.8	2.3	9.9	1.04	957.9			
z196 717	PRDE	JAN	31	P	TOTAL	6.17	51.5	2.86	3.31	69	4.8	60.7	25.5	8.1	0.7	5.0	0.92	526.7	5.2	AVG	
z196 717	PRDE	FEB	1	P	TOTAL	6.11	50.5	2.92	3.18	67	4.8	61.5	25.0	7.8	0.7	5.0	0.91	472.7	5.2	AVG	
						6.14	51.0	2.89	3.25	68	4.8	61.1	25.2	7.9	0.7	5.0	0.92	499.7			
						Relative Capacity Ratio					1.89										
z10 722	PRDF	NOV	22	P	TOTAL	6.48	46.0	3.08	3.40	138	2.5	69.9	0.0	16.2	4.0	9.9	1.00	122.0	4.4	AVG	
z10 724	PRDF	JAN	3	P	TOTAL	7.19	18.9	3.54	3.64	143	2.5	67.3	0.0	17.4	4.3	11.0	1.10	246.9	4.4	AVG	
z10 724	PRDF	JAN	17	P	TOTAL	7.12	29.8	3.65	3.47	99	3.5	75.9	0.0	14.1	3.9	6.2	0.70	326.4	4.4	AVG	
						6.93	31.6	3.42	3.50	127	2.8	71.0	0.0	15.9	4.1	9.0	0.93	231.8			
z196 717	PRDF	JAN	31	P	TOTAL	5.11	27.7	3.04	2.07	58	3.6	68.5	16.2	10.8	1.4	3.1	0.71	72.3	5.2	AVG	
z196 717	PRDF	FEB	1	P	TOTAL	4.88	20.2	3.02	1.86	52	3.6	71.9	13.9	10.2	1.3	2.7	0.63	173.1	5.2	AVG	
						5.00	24.0	3.03	1.97	55	3.6	70.2	15.1	10.5	1.4	2.9	0.67	122.7			
						Relative Capacity Ratio					1.64										

Z10 To z196 Upgrade IBM Analiz



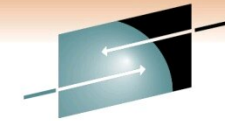
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z196 Serial 60E16 – PRDB, PRDD, PRDG, PRDW

Machine	SYSID	Mon	Day	SH	Hour	CPI	Prb State	Est Instr Cmplx CPI	Est Finite CPI	Est SCPL1M	L1MP	L15P / L2P	L3P	L2LP / L4LP	L2RP / L4RP	MEMP	Rel Nest Intensity	LPARCPU	Eff GHz	LSPR Wkld Hint
z10 722	PRDB	NOV	22	P	TOTAL	8.10	40.4	3.09	5.00	120	4.2	69.6	0.0	18.4	1.2	9.9	0.96	419.7	4.4	AVG
z10 722	PRDB	JAN	3	P	TOTAL	7.47	35.6	3.18	4.29	108	4.0	71.5	0.0	18.4	1.3	8.9	0.88	432.5	4.4	AVG
z10 722	PRDB	JAN	17	P	TOTAL	6.82	30.0	2.89	3.94	112	3.5	70.1	0.0	19.3	1.4	9.3	0.92	505.4	4.4	AVG
						7.46	35.3	3.05	4.41	113	3.9	70.4	0.0	19.0	1.3	9.3	0.92	452.5		
z196 717	PRDB	JAN	31	P	TOTAL	5.61	40.7	2.57	3.04	69	4.4	62.7	22.4	8.7	1.2	4.9	0.92	274.5	5.2	AVG
z196 717	PRDB	FEB	1	P	TOTAL	5.50	39.0	2.58	2.92	68	4.3	63.0	22.7	8.3	1.1	4.9	0.91	266.8	5.2	AVG
						5.56	39.9	2.58	2.98	69	4.4	62.9	22.6	8.5	1.2	4.9	0.92	270.7		
						Relative Capacity Ratio			1.59											
z10 722	PRDD	NOV	22	P	TOTAL	10.98	35.9	3.73	7.25	119	6.1	63.9	0.0	24.8	2.6	8.6	0.96	770.0	4.4	HIGH
z10 722	PRDD	JAN	3	P	TOTAL	9.97	38.7	3.67	6.30	107	5.9	66.9	0.0	23.3	1.9	7.9	0.87	679.5	4.4	AVG
z10 722	PRDD	JAN	17	P	TOTAL	9.65	41.9	3.62	6.03	109	5.5	66.4	0.0	23.6	1.9	8.1	0.89	691.2	4.4	AVG
						10.20	38.8	3.67	6.53	112	5.8	65.8	0.0	23.9	2.1	8.2	0.91	713.6		
z196 717	PRDD	JAN	31	P	TOTAL	7.90	40.2	3.40	4.51	68	6.6	57.8	25.9	11.6	0.6	4.2	0.88	516.9	5.2	HIGH
z196 717	PRDD	FEB	1	P	TOTAL	7.79	40.3	3.37	4.42	68	6.5	58.8	25.0	11.3	0.7	4.3	0.88	440.1	5.2	HIGH
						7.85	40.3	3.39	4.47	68	6.6	58.3	25.4	11.4	0.6	4.2	0.88	478.5		
						Relative Capacity Ratio			1.54											
z10 722	PRDG	NOV	22	P	TOTAL	9.10	30.9	3.28	5.82	137	4.2	67.1	0.0	20.9	2.0	10.0	1.01	512.6	4.4	HIGH
z10 722	PRDG	JAN	3	P	TOTAL	6.81	27.3	2.87	3.94	112	3.5	70.2	0.0	19.3	1.6	9.0	0.90	507.1	4.4	AVG
z10 722	PRDG	JAN	17	P	TOTAL	7.67	32.3	2.99	4.68	116	4.0	69.1	0.0	19.7	1.9	9.3	0.94	505.4	4.4	AVG
						7.86	30.2	3.05	4.81	122	3.9	68.8	0.0	20.0	1.8	9.4	0.95	508.4		
z196 717	PRDG	JAN	31	P	TOTAL	5.45	34.8	2.58	2.87	65	4.4	63.0	22.6	6.4	4.4	3.6	0.85	306.3	5.2	AVG
z196 717	PRDG	FEB	1	P	TOTAL	5.11	32.7	2.47	2.63	65	4.1	62.9	22.6	6.4	4.4	3.6	0.85	291.9	5.2	AVG
						5.28	33.7	2.53	2.75	65	4.2	63.0	22.6	6.4	4.4	3.6	0.85	299.1		
						Relative Capacity Ratio			1.76											
z10 722	PRDW	NOV	22	P	TOTAL	6.18	29.4	2.69	3.49	141	2.5	66.1	0.0	20.1	4.4	9.4	1.01	152.6	4.4	AVG
z10 722	PRDW	JAN	3	P	TOTAL	7.10	36.1	3.19	3.91	124	3.2	68.8	0.0	18.8	3.7	8.7	0.93	130.5	4.4	AVG
z10 722	PRDW	JAN	17	P	TOTAL	5.66	36.7	2.97	2.69	92	2.9	75.4	0.0	15.4	4.0	5.3	0.64	252.9	4.4	LOW
						6.31	34.0	2.95	3.36	119	2.8	70.1	0.0	18.1	4.0	7.8	0.86	178.7		
z196 717	PRDW	JAN	31	P	TOTAL	5.06	31.2	2.77	2.30	67	3.4	62.4	20.1	11.2	2.8	3.5	0.83	84.7	5.2	AVG
z196 717	PRDW	FEB	1	P	TOTAL	4.33	47.8	2.51	1.82	57	3.2	65.9	17.9	11.1	2.8	2.3	0.67	250.8	5.2	AVG
						4.70	39.5	2.64	2.06	62	3.3	64.2	19.0	11.1	2.8	2.9	0.75	167.8		
						Relative Capacity Ratio			1.59											

Z10 To z196 Upgrade IBM Analiz



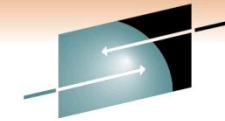
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Technology • Connections • Results

z196 Serial 60E26 – PRDA, PRDC, PRDE, PRDF

Machine	SYSID	Mon	Day	SH	Hour	CPSEC	IOSSCT	CPUDASD
z10 722	PRDA	NOV	22	P	TOTAL	82,673	2,807.4	29.45
z10 724	PRDA	JAN	3	P	TOTAL	76,005	2,708.0	28.07
z10 724	PRDA	JAN	17	P	TOTAL	90,144	3,087.9	29.19
						82,940	2,867.8	28.90
z196 717	PRDA	JAN	31	P	TOTAL	32,130	1,750.9	18.35
z196 717	PRDA	FEB	1	P	TOTAL	29,733	1,527.5	19.46
						30,932	1,639.2	18.91
								1.53
Relative Capacity Ratio								
z10 722	PRDC	NOV	22	P	TOTAL	114,524	3,625.7	31.59
z10 724	PRDC	JAN	3	P	TOTAL	104,854	3,382.7	31.00
z10 724	PRDC	JAN	17	P	TOTAL	130,235	4,368.8	29.81
						116,537	3,792.4	30.80
z196 717	PRDC	JAN	31	P	TOTAL	69,010	4,002.1	17.24
z196 717	PRDC	FEB	1	P	TOTAL	75,565	4,659.9	16.22
						72,287	4,331.0	16.73
								1.84
Relative Capacity Ratio								
z10 722	PRDE	NOV	22	P	TOTAL	318,118	9,164.5	34.71
z10 724	PRDE	JAN	3	P	TOTAL	280,657	9,768.1	28.73
z10 724	PRDE	JAN	17	P	TOTAL	303,089	8,881.7	34.13
						300,621	9,271.4	32.52
z196 717	PRDE	JAN	31	P	TOTAL	168,634	8,865.2	19.02
z196 717	PRDE	FEB	1	P	TOTAL	149,892	7,908.0	18.95
						159,263	8,386.6	18.99
								1.71
Relative Capacity Ratio								
z10 722	PRDF	NOV	22	P	TOTAL	34,969	1,558.8	22.43
z10 724	PRDF	JAN	3	P	TOTAL	73,622	2,605.4	28.26
z10 724	PRDF	JAN	17	P	TOTAL	97,968	3,809.7	25.72
						68,853	2,658.0	25.47
z196 717	PRDF	JAN	31	P	TOTAL	21,181	1,937.9	10.93
z196 717	PRDF	FEB	1	P	TOTAL	51,158	3,993.4	12.81
						36,170	2,965.7	11.87
								2.15
Relative Capacity Ratio								

Z10 To z196 Upgrade IBM Analiz



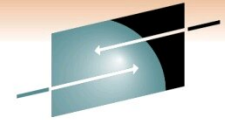
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z196 Serial 60E16 – PRDB, PRDD, PRDG, PRDW

Machine	SYSID	Mon	Day	SH	Hour	CPS/SEC	IO/S/SEC	CPUDASD
z10 722	PRDB	NOV	22	P	TOTAL	129,763	4,589.5	28.27
z10 722	PRDB	JAN	3	P	TOTAL	134,851	4,033.1	33.44
z10 722	PRDB	JAN	17	P	TOTAL	156,998	4,429.2	35.45
						140,537	4,350.6	32.39
z196 717	PRDB	JAN	31	P	TOTAL	86,317	4,072.4	21.20
z196 717	PRDB	FEB	1	P	TOTAL	83,126	4,191.8	19.83
						84,721	4,132.1	20.52
								1.58
Relative Capacity Ratio								
z10 722	PRDD	NOV	22	P	TOTAL	238,825	8,223.4	29.04
z10 722	PRDD	JAN	3	P	TOTAL	209,662	7,097.3	29.54
z10 722	PRDD	JAN	17	P	TOTAL	204,282	6,675.9	30.60
						217,589	7,332.2	29.73
z196 717	PRDD	JAN	31	P	TOTAL	151,222	8,922.4	18.07
z196 717	PRDD	FEB	1	P	TOTAL	136,912	7,478.2	18.31
						149,067	8,200.3	18.19
								1.63
Relative Capacity Ratio								
z10 722	PRDG	NOV	22	P	TOTAL	156,186	5,448.4	28.67
z10 722	PRDG	JAN	3	P	TOTAL	158,412	5,618.7	28.19
z10 722	PRDG	JAN	17	P	TOTAL	156,113	5,475.2	28.51
						156,904	5,514.1	28.46
z196 717	PRDG	JAN	31	P	TOTAL	93,835	5,730.8	16.37
z196 717	PRDG	FEB	1	P	TOTAL	89,523	5,927.4	15.10
						91,679	5,829.1	15.74
								1.81
Relative Capacity Ratio								
z10 722	PRDW	NOV	22	P	TOTAL	44,913	3,110.6	14.44
z10 722	PRDW	JAN	3	P	TOTAL	37,785	2,269.8	16.65
z10 722	PRDW	JAN	17	P	TOTAL	76,548	2,978.7	25.70
						53,082	2,786.4	18.93
z196 717	PRDW	JAN	31	P	TOTAL	24,670	2,632.2	9.37
z196 717	PRDW	FEB	1	P	TOTAL	76,980	6,333.9	12.15
						50,825	4,483.1	10.76
								1.76
Relative Capacity Ratio								

Z10 To z196 Upgrade IBM Analiz



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Summary

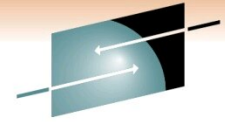
- **LSPR Multi Image Table**
 - Average Workload z10 722 Vs z196 717 – 1.44 Expectation
 - Average Workload z10 724 Vs z196 717 – 1.47 Expectation

- **z196 60E26**
 - Overall All LPARs CPU/DASD EXCP 1.78 Vs z10
 - Averaged 20% less busy than z10
 - Backing out Low Utilization Effect 10% = 1.62 Vs z10
 - ~12% better than z10 722 expectation 1.44
 - ~10% better than z10 724 expectation 1.47

- **z196 60E16**
 - Overall All LPARs CPU/DASD EXCP 1.71 Vs z10
 - Averaged 10% less busy than z10
 - Backing out Low Utilization Effect 5% = 1.63 Vs z10
 - ~ 13% better than expectation 1.44

- **Overall Estimate that the 2 z196s delivered ~10% better than Expectation**

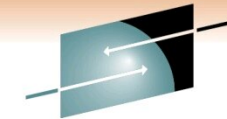
Moving From 3 LPAR To 5 LPAR Studies Using zPCR



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Moving From 3 LPAR To 5 LPAR Studies Using zPCR

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Moving From 3 To 5 LPAR – June 2008

zPCR (5.0b) - LPAR Capacity Report

Based on LSPR data for IBM System z processors

LPAR Host and Partition Capacity

LPAR Host = 2097-E26/700 configured with 18 CPs: GP=14 zIIP=2 ICF=2

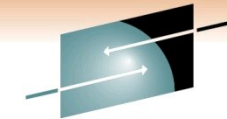
Partitions: Active=6 GP=4 zAAP=0 zIIP=1 IFL=0 ICF=1

Capacity is relative to a 2094-701 assumed at 1,00

Inc	LP Identification				LP Definition					LP Capacity		
	No	Type	Name	SCP	Workload	Mode	#LCPs	Weight	Weight%	Capping	Minimum	Maximum
Y	1	GP	PRD1	z/OS-1.8*	OLTP-W	SHR	14	715	72,0%		9,153	12,712
Y	2	GP	PRD7	z/OS-1.8*	OLTP-W	SHR	13	165	16,6%	Y	2,085	2,085
Y	3	GP	TCF1GAR1	CFCC	CFCC	SHR	1	8	0,8%		0,099	0,880
Y	4	GP	TST1	z/OS-1.8*	OLTP-W	SHR	4	105	10,6%	Y	1,522	1,522
Y	2	zIIP	PRD7	z/OS-1.8*	OLTP-W	SHR	2	165	100,0%		1,768	1,768
Y	5	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a			2,225	2,225

LPAR configuration capacity summary

4	Partitions in GP RCP pool	12,860
0	Partitions in zAAP RCP pool	0,000
1	Partitions in zIIP RCP pool	1,768
0	Partitions in IFL RCP pool	0,000
1	Partitions in ICF RCP pool	2,225
6	Partitions - combined total	16,852



Moving From 3 To 5 LPAR – June 2008

zPCR (5.0b) - LPAR Capacity Report

Based on LSPR data for IBM System z processors

LPAR Host and Partition Capacity

LPAR Host = 2097-E26/700 configured with 18 CPs: GP=14 zIIP=2 ICF=2

Partitions: Active=7 GP=5 zAAP=0 zIIP=1 IFL=0 ICF=1

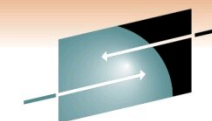
Capacity is relative to a 2094-701 assumed at 1,00

Inc	LP Identification				LP Definition						LP Capacity	
	No	Type	Name	SCP	Workload	Mode	#LCPs	Weight	Weight%	Capping	Minimum	Maximum
Y	1	GP	PRD1	z/OS-1.8*	OLTP-W	SHR	8	365	38,7%		5,192	7,665
Y	2	GP	PRD7	z/OS-1.8*	OLTP-W	SHR	13	165	17,5%	Y	2,175	2,175
Y	3	GP	TCF1GAR1	CFCC	CFCC	SHR	1	8	0,8%		0,104	0,872
Y	4	GP	TST1	z/OS-1.8*	OLTP-W	SHR	4	105	11,1%	Y	1,587	1,587
Y	5	GP	prd2	z/OS-1.8*	OLTP-W	SHR	8	300	31,8%		4,267	7,665
Y	2	zIIP	PRD7	z/OS-1.8*	OLTP-W	SHR	2	165	100,0%		1,767	1,767
Y	6	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a			2,225	2,225

LPAR configuration capacity summary

5	Partitions in GP RCP pool	13.324
0	Partitions in zAAP RCP pool	0,000
1	Partitions in zIIP RCP pool	1,767
0	Partitions in IFL RCP pool	0,000
1	Partitions in ICF RCP pool	2,225
7	Partitions - combined total	17,317

Moving From 3 To 5 LPAR – June 2008



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Adding 1 more LPAR To GAR1

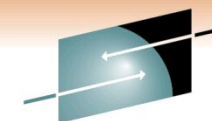
PRDB ITR 9,153

PRDB + New LPAR ITR = 5,192 + 4,267 = 9,454

TOTAL CEC Before : 12860 TOTAL CEC After : 13324

ZPCR ESTIMATION RESULTS			ACTUAL RESULTS
Prod LPARs Total	9,153 To 9,454	3.28 % Improvement	3.15 %
TOTAL CEC	12860 To 13324	3.60 % Improvement	3.32 %

Moving From 3 To 5 LPAR – June 2008



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zPCR (5.0b) - LPAR Capacity Report

Based on LSPR data for IBM System z processors

LPAR Host and Partition Capacity

LPAR Host = 2097-E26/700 configured with 16 CPs: GP=14 ICF=2

Partitions: Active=4 GP=3 zAAP=0 zIIP=0 IFL=0 ICF=1

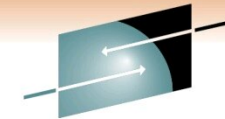
Capacity is relative to a 2094-701 assumed at 1,00

LP Identification				LP Definition							LP Capacity	
Inc	No	Type	Name	SCP	Workload	Mode	#LCPs	Weight	Weight%	Capping	Minimum	Maximum
Y	1	GP	PRD2	z/OS-1.8*	OLTP-W	SHR	14	968	96,8%		12,806	13,229
Y	2	GP	TST3	z/OS-1.8*	OLTP-W	SHR	2	18	1,8%	Y	0,285	0,285
Y	3	GP	TCF2GAR2	CFCC	CFCC	SHR	1	14	1,4%	Y	0,179	0,179
Y	4	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a			2,252	2,252

LPAR configuration capacity summary

3	Partitions in GP RCP pool	13,270
0	Partitions in zAAP RCP pool	0,000
0	Partitions in zIIP RCP pool	0,000
0	Partitions in IFL RCP pool	0,000
1	Partitions in ICF RCP pool	2,252
4	Partitions - combined total	15,522

Moving From 3 To 5 LPAR – June 2008



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zPCR (5.0b) - LPAR Capacity Report

Based on LSPR data for IBM System z processors

LPAR Host and Partition Capacity

LPAR Host = 2097-E26/700 configured with 16 CPs: GP=14 ICF=2

Partitions: Active=5 GP=4 zAAP=0 zIIP=0 IFL=0 ICF=1

Capacity is relative to a 2094-701 assumed at 1,00

Inc	LP Identification			LP Definition							LP Capacity	
	No	Type	Name	SCP	Workload	Mode	#LCPs	Weight	Weight%	Capping	Minimum	Maximum
Y	1	GP	PRD2	z/OS-1.8*	OLTP-W	SHR	8	488	48,8%		6,812	7,976
Y	2	GP	TST3	z/OS-1.8*	OLTP-W	SHR	2	18	1,8%	Y	0,282	0,282
Y	3	GP	TCF2GAR2	CFCC	CFCC	SHR	1	14	1,4%	Y	0,177	0,177
Y	4	GP	PRD1	z/OS-1.8*	OLTP-W	SHR	8	480	48,0%		6,700	7,976
Y	5	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a			2,252	2,252

LPAR configuration capacity summary

4	Partitions in GP RCP pool	13,971
0	Partitions in zAAP RCP pool	0,000
0	Partitions in zIIP RCP pool	0,000
0	Partitions in IFL RCP pool	0,000
1	Partitions in ICF RCP pool	2,252
5	Partitions - combined total	16,223

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Moving From 3 To 5 LPAR – June 2008

Adding 1 more LPAR To GAR2

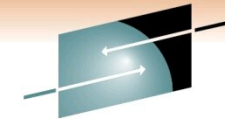
PRDA ITR 12,806

PRDA + New LPAR ITR = 6,812 + 6,700 = 13,512

TOTAL CEC Before : 13,270 TOTAL CEC After : 13,971

ZPCR ESTIMATION RESULTS				ACTUAL
Prod LPARs Total	12,806	To 13,512	5,51 % Improvement	5,30 %
TOTAL CEC	13,270	To 13,971	5,28 % Improvement	5.10 %

Scaling Metrics – MIPS Usage



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Partition Detail Report

Based on LSPR Data for IBM System z Processors

Study ID: Study1

#2  z196gar2

Description: Cloned from Current

z196 Host = 2817-M32/700 with 20 CPs: GP=17 zIIP=1 ICF=2

9 Active Partitions: GP=7 zIIP=1 ICF=1

**Capacity basis: 2094-701 @ 593.00 MIPS for a single partition configuration
z196 and z10 processor capacity for z/OS is represented with HiperDispatch turned ON**

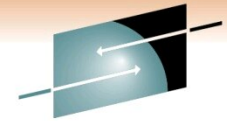
Include	Partition Identification				Partition Configuration					Partition Capacity		
	No.	Type	Name	SCP	Workload	Mode	LCPs	Weight	Weight %	Capping	Minimum	Maximum
<input checked="" type="checkbox"/>	1	GP	PRD2	z/OS-1.10*	Avg-High	SHR	12	291	17.83%	<input type="checkbox"/>	2,587	10,242
<input checked="" type="checkbox"/>	2	GP	PRD4	z/OS-1.10*	Avg-High	SHR	12	432	26.47%	<input type="checkbox"/>	3,841	10,242
<input checked="" type="checkbox"/>	3	GP	PRD6	z/OS-1.10*	Avg-High	SHR	15	710	43.50%	<input type="checkbox"/>	6,202	12,578
<input checked="" type="checkbox"/>	4	GP	PRD8	z/OS-1.10*	Avg-High	SHR	12	113	6.92%	<input type="checkbox"/>	985	10,046
<input checked="" type="checkbox"/>	5	GP	TCF2GAR2	CFCC	CFCC	SHR	1	5	0.31%	<input type="checkbox"/>	37	703
<input checked="" type="checkbox"/>	6	GP	TST2	z/OS-1.10*	Average	SHR	2	6	0.37%	<input type="checkbox"/>	59	1,897
<input checked="" type="checkbox"/>	7	GP	TST3	z/OS-1.10*	Average	SHR	3	75	4.60%	<input type="checkbox"/>	742	2,848
<input checked="" type="checkbox"/>	*4	zIIP	PRD8	z/OS-1.10*	Avg-High	SHR	1	113	100.00%	<input type="checkbox"/>	945	945
<input checked="" type="checkbox"/>	8	ICF	PCF2GAR2	CFCC	CFCC	DED	2	n/a		<input type="checkbox"/>	1,793	1,793

Table View

Display	Pools	
<input checked="" type="radio"/> All Partitions	<input checked="" type="checkbox"/> GP	<input type="checkbox"/> IFL
<input type="radio"/> Includes Only	<input type="checkbox"/> zAAP	<input checked="" type="checkbox"/> ICF
	<input checked="" type="checkbox"/> zIIP	

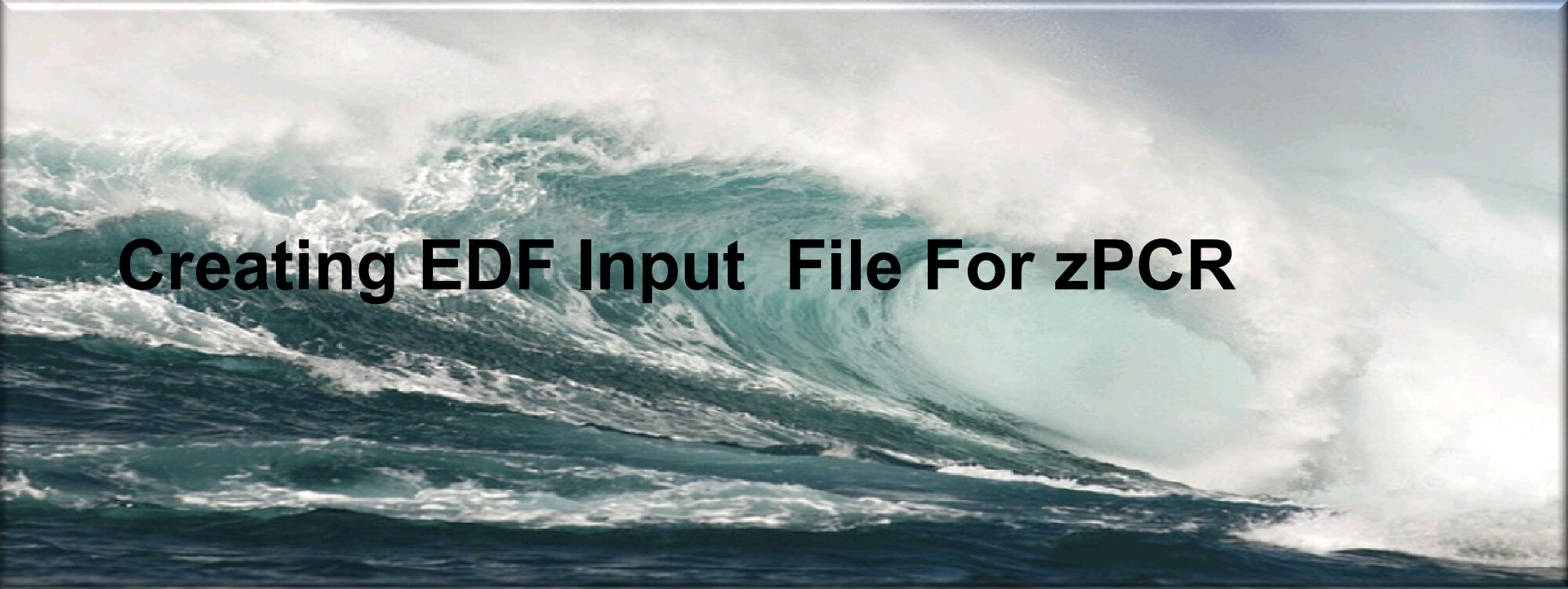
Capacity Summary by Pool

CP Pool	RCPs	Partitions	LCPs	Capacity
GP	17	7	57	14,453
zAAP	0	0	0	0
zIIP	1	1	1	945
IFL	0	0	0	0
ICF	2	1	2	1,793
Totals	20	9	60	17,190



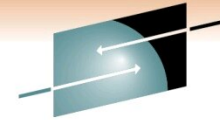
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Creating EDF Input File For zPCR



Creating EDF Input File For zPCR

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Creating EDF Input File For zPCR

CP3KEXTR Is Needed To Create EDF Files That Will Be used As Input To zPCR

Download CP3KEXTR



Approximate size	80-85 MB
Download zPCR with Java	
zPCR only (IBM Java Runtime required)	
Download filename	ZPCRCZIP.EXE
Approximate size	9-10 MB
Download zPCR	
zPCR Documentation (PDF)	
	
Download Quick Start Guide	
Download User's Guide	
Download External File Layout	
CP3KEXTR for zPCR	
Access CP3KEXTR Materials	



Installation Key

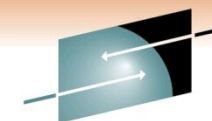
An installation key is required to install zPCR. How do you get the key? It's contained in the **Introduction to zPCR** training materials. No one wants capacity planning mistakes being made because of a lack of training on the tool. So invest the hour it takes to get the key to better capacity plans and to zPCR.

About CP3KEXTR

CP3KEXTR runs on a System z processor under z/OS. It reads SMF records to produce an **Enterprise Data File (EDF)**. A single EDF can be used to generate the entire LPAR configuration in zPCR or to copy partitions into an already defined configuration.

In zPCR, a partition's **DASD I/O** rate is used to estimate the workload assignment. For z10 processors or later, captured hardware data (**CPU-MF**) can also help to assess a partition's workload assignment. To use **DASD I/O** rate or **CPU-MF** information, a separate EDF must be generated for each desired partition. To use **CPU-MF**, it must have been turned on for the partition during the SMF measurement period.

Creating EDF Input File For zPCR



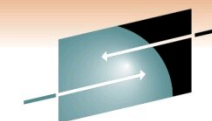
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IBM CPTOOLS PDS

```
Menu  Functions  Confirm  Utilities  Help
-----
VIEW  IMT3.CPSTOOLS.JCL
      Name      Prompt      Size      Created
-----
      $README          9      2005/02/08
      BCUMAP
      EDFI
      EXTRACT        76      2005/02/08
      EXTRAC2        61      2005/02/08
      EXTRAC3        27      2005/02/08
      EXTRA1         74      2010/12/14
      EXTRA5
      EXTRSMLL        58      2010/08/10
      PGNMAP
      ZOBJEXTR       2948      2005/02/08
      **End**
```

Creating EDF Input File For zPCR

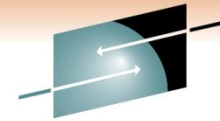


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JCL To Extract SMF Records For CP3EXTR Program

```
SDSF EDIT      TNPFMER2 (J0302550) JCLEDIT      Columns 00001 00072
*****      ***** Top of Data *****
000001 //TNPFMER2 JOB  SYS,ZEKE,CLASS=F,MSGCLASS=X,MSGLEVEL=(1,1),REGION=32M
000002 //SMFDMPA EXEC PGM=IFASMFDP
000003 //DUMPIN DD DSN=PSYS.TV04Y.SMFARC.G1248V00,DISP=SHR
000004 //DUMPOUT DD DSN=&&PAS,DISP=(,PASS),UNIT=SYSDA,
000005 //          SPACE=(CYL,(1900,590)),DCB=(LRECL=137,RECFM=VBA,BLKSIZE=1693),
000006 //          VOL=(,,99)
000007 //SYSPRINT DD SYSOUT=X
000008 //SYSIN DD *
000009 INDD(DUMPIN,OPTIONS(DUMP))
000010 OUTDD(DUMPOUT,TYPE(23,70,72,74,113))
000011 //MXGSRTA EXEC PGM=SORT
000012 //SORTIN DD DSN=&&PAS,DISP=(OLD,PASS)
000013 //SYSOUT DD SYSOUT=X
000014 //SORTOUT DD DSN=PGAR.DNTMP.WRK.PERF.ZPJ32,DISP=(NEW,CATLG),
000015 //          SPACE=(CYL,(1900,590)),DCB=(LRECL=32760,RECFM=VBS),
000016 //          VOL=(,,99)
000017 //SORTWK01 DD SPACE=(CYL,500)
000018 //SORTWK02 DD SPACE=(CYL,500)
000019 //SORTWK03 DD SPACE=(CYL,500)
000020 //SORTWK04 DD SPACE=(CYL,500)
000021 //SORTWK05 DD SPACE=(CYL,500)
000022 //SORTWK06 DD SPACE=(CYL,500)
000023 //SORTWK07 DD SPACE=(CYL,500)
000024 //EXITLIB DD DSN=SYS1.LINKLIB,DISP=SHR
000025 //SYSIN DD *
000026          SORT FIELDS=(11,4,CH,A,7,4,CH,A),EQUALS
000027          MODS E15=(ERBPPE15,36000,,N),E35=(ERBPPE35,3000,,N)
*****      ***** Bottom of Data *****
```

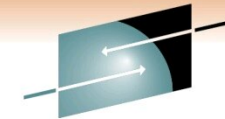


Creating EDF Input File For zPCR

JCL To Run Extract Program

```
SDSF EDIT      IMTEXTR  (J0303551) JCLEEDIT          Columns 00001
***** Top of Data *****
000001 //IMTEXTR  JOB      CLASS=F,NOTIFY=&SYSUID,
000002 // USER=IMT3,PASSWORD=
000003 //EXTR    EXEC     PGM=LOADER
000004 //PRINT001 DD      SYSOUT=*
000005 //SMFIN   DD      DISP=SHR,DSN=PGAR.DNTMP.WRK.PERF.ZPJ32
000006 //EDF001  DD      DISP=SHR,DSN=IMT3.CPSTOOLS.JCL(PRDEEDF)
000007 //PGN001  DD      DISP=SHR,DSN=IMT3.CPSTOOLS.JCL(PRDEPG)
000008 //BCU001  DD      DISP=SHR,DSN=IMT3.CPSTOOLS.JCL(PRDEBC)
000009 //SYSOUT   DD      SYSOUT=*
000010 //SORTWK01 DD      UNIT=SYSDA,SPACE=(CYL,(200))
000011 //SORTWK02 DD      UNIT=SYSDA,SPACE=(CYL,(200))
000012 //SORTWK03 DD      UNIT=SYSDA,SPACE=(CYL,(200))
000013 //SORTWK04 DD      UNIT=SYSDA,SPACE=(CYL,(200))
000014 //SYSIN001 DD      *
000015 ENT='GARANTI BANK'      ööö  YOUR COMPANY NAME
000016 SYSID=PRDE              ööö  JES SYSID
000017 DURATION=00:15        RMF/SMF DURATION FOR GATHER
000018 *                      DURATION >= RMF INTERVAL
000019 TIME=(00:00-24:00)      CONTINGUOUS PERIOD OF INTEREST
000020 DATE=(01/31/11-01/31/11) ööö  CONTINGUOUS DAYS
000021 PGN=GOAL
000022 BCU=AUTO
000023 *SHOWACT=NONE          SHOWACT=NONE REDUCES OUTPUT SIZE.
000024 *SORT=YES              IF RECORDS ARE IN SORTED ORDER
000025 *                      OMITTING SORT=YES WILL SPEED THINGS UP.
000026 /*
000027 //SYSLOUT  DD      SYSOUT=*
000028 //SYSLIN   DD      DISP=SHR,DSN=IMT3.CPSTOOLS.JCL(ZOBJEXTR)
***** Bottom of Data *****
```

Creating EDF Input File For zPCR

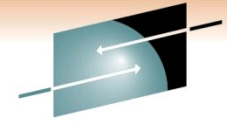


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Sample EDF File Content

```
VIEW          IMT3.CPSTOOLS.JCL(PRDEEDF) - 01.00          Columns 00001 00072
*****      ***** Top of Data *****
000001 HEAD  ENT=GARANTI BANK R70INT=15 SMFDSN=PGAR.DNTMP.WRK.PERF.ZPJ32
000002      SOURCE=CP3KEXTR11/30/10
000003 CEC  S  CECID=CEC0E26 CPUMOD=2817-717 SUPVR=LPAR VC=00 PR=20 SR=60E26 CPV=
000004      17 0 96 ICFV=2 2 2 0 96 ZIIPV=1 1 1 0 96 CPUMODV=2817-717 CMIND=1
000005      96 HWCMDV=2817-M32 HWIND=1 1 1 0 96
000006 SYS  S  SYSID=PRDE SCP=Z/OS VERSION=ZV011000 HPTSID=PPLEX NSAMPS=96 GL=1 W
000007      BIT=64 RMFV=RMF0750 PAR=1.81 RMFINT=1 DTSRC=RMF RMFINTL=15 SRM=466
000008      GMTOF=2:00 SYSN=PRDE DASDIO=7580.9 PAGE=0 CS=0 ES=0 CSAVAIL=0 ESAV
000009      SCPCS=0 SCPE=0 LPGRPN=N/A GAR2LMT LPL1=2 2 2 0 96 LPL3=2 2 2 0 96
000010      2 2 0 96 LPL5=2 2 2 0 96 LPL7=2 2 2 0 96 CECUTILV=72.2 24.7 99.6 1
000011      81.2 99 99.2 89.5 91.1 91.5 97.7 96.6 98.9 84.2 95.2 94.9 98.8 99.
000012      84.3 81.2 68.6 74.6 59.7 82.9 67.6 66.6 99.6 99.5 94.7 70.2 41.7 4
000013      30.1 30.4 31.3 24.7 32.9 40.5 66.8 69.5 74.1 72 71.7 69.3 65 64.3
000014      61.8 65.7 66.4 67.7 57.6 49.4 50.6 53 51.3 58.7 64.8 75.1 75.8 79.
000015      72.5 73.4 77.3 78.3 85.8 79.5 78.9 77.6 81.3 73.3 85.4 81.8 84.9 8
000016      80.6 70.9 85.6 69.1 62.7 44.3 65.4 52.1 55.9 48.9 77.4 82.8 77.5 7
000017      98.4 99.1 80 51.7 75.4 79.4 88.3 54.7 AINR=4.9 1.3 9.9 2.3 96 3.6
000018      3.4 4.4 3.6 5.8 3.4 4 3.4 6.7 2.6 3.2 2.5 3.3 2.5 2.9 1.7 2.3 1.7
000019      1.7 1.8 2.4 1.7 2 1.3 1.4 1.3 1.8 1.6 1.3 1.5 3.2 3.9 6.8 7.2 7 7
000020      7.1 7 7.1 6.9 7.4 7.5 6.8 5.8 5.3 5.3 5.3 5.3 5.6 6.4 7.3 7.7 7.9
000021      7.6 7.9 8 7.8 8 7.7 7.8 7.4 6.4 6.7 6.2 5.7 6.4 6.9 6.2 6 4.7 4.4
000022      2.9 4.1 3.5 4.3 3.3 3.4 2.8 8.2 7.4 4.6 2.1 4.4 5.1 7.7 2.8 AIN=12
000023      124.4 145.5 4.7 96 131.3 134.8 141.5 131.9 134.8 130.8 131.5 128.9
000024      132.8 133.5 131.7 128.9 128 129.2 129.5 127.9 126.4 127.4 125.6 12
000025      125.7 128 126.9 128.4 126.7 126.9 125.9 127.1 126 127.7 126.9 126.
000026      126.3 126.3 126.5 126 124.9 124.4 124.5 124.5 124.4 124.4 124.5 12
000027      124.5 124.4 124.5 124.5 124.4 124.5 124.5 124.4 124.4 124.4 124.5
000028      124.8 124.7 124.9 124.6 124.9 124.8 124.8 124.5 124.7 124.6 127.2
000029      127.6 127.4 127.3 127.6 130.5 130.9 131.5 130.1 131.9 129.2 133 13
000030      134.5 133.9 137.4 135 135.6 134.3 145.5 142.7 135.7 131.4 135.9 13
000031      143.1 132.2 BATCHV=3.7 0 18.6 4.3 96 7 11 17.5 8.3 10.9 6.9 7.7 5
```

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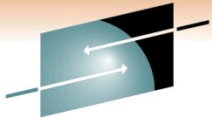
Special Thanks To

John Burg

Gary King

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