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<table>
<thead>
<tr>
<th>AlphaBlox*</th>
<th>GDPS*</th>
<th>RACF*</th>
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<tr>
<td>APPN*</td>
<td>HiperSockets</td>
<td>Redbooks*</td>
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<td>HyperSwap</td>
<td>Resource Link</td>
<td>TotalStorage*</td>
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<td>RETAIN*</td>
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<td>REXX</td>
<td>VTAM*</td>
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<td>DB2*</td>
<td>IBM logo*</td>
<td>RMF</td>
<td>WebSphere*</td>
</tr>
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<td>IMS</td>
<td>S/390*</td>
<td>xSeries*</td>
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<td>Language Environment*</td>
<td>Scalable Architecture for Financial Reporting</td>
<td>z9*</td>
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<tr>
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<td>Lotus*</td>
<td>Sysplex Timer*</td>
<td>z10</td>
</tr>
<tr>
<td>DirMaint</td>
<td>Large System Performance Reference™ (LSPR™)</td>
<td>Systems Director Active Energy Manager</td>
<td>z10 BC</td>
</tr>
<tr>
<td>DRDA*</td>
<td>Multiprise*</td>
<td>System/370</td>
<td>z10 EC</td>
</tr>
<tr>
<td>DS6000</td>
<td>MVS</td>
<td>System p*</td>
<td>z/Architecture*</td>
</tr>
<tr>
<td>DS8000</td>
<td>OMEGAMON*</td>
<td>System Storage</td>
<td>zEnterprise</td>
</tr>
<tr>
<td>ECKD</td>
<td>Parallel Sysplex*</td>
<td>System x*</td>
<td>z/OS*</td>
</tr>
<tr>
<td>ESCON*</td>
<td>Performance Toolkit for VM</td>
<td>System z</td>
<td>z/VM*</td>
</tr>
<tr>
<td>FICON*</td>
<td>PowerPC*</td>
<td>System z9*</td>
<td>z/VSE</td>
</tr>
<tr>
<td>FlashCopy*</td>
<td>PR/SM</td>
<td>System z10</td>
<td>zSeries*</td>
</tr>
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zPCR Capacity Sizing Labs

- **Part 1 - Intro and Overview**
  - zPCR Introduction
  - Includes Advanced Mode Update
  - What’s new up through zPCR V8.1 in Back Up

- **Part 2 – Hands-on Lab**
  - 1 Exercise to demonstrate the use of Advanced Mode functions in zPCR
    - 6 Tasks
    - 2 Additional Analysis to Try
  - Use as a refresher
zPCR Capacity Sizing Lab – Part 1
Introduction and Overview

SHARE - Session 13097

February 7, 2013

John Burg

Materials created by John Fitch and Jim Shaw

IBM
Agenda

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

- Provides capacity relationships for System z processors, considering
  - LPAR configurations
  - SCP/workload environment
  - Use of specialty CPs (zAAP, zIIP, IFL, and ICF)

- Based on IBM Large Systems Performance Reference (LSPR)

- The IBM tool to properly size mainframe upgrades
  - Expected accuracy of ±5%

- A PC based tool written in Java for Windows XP/Win 7
  - “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
New Day Dawning in System z Capacity Planning

Processor Design
- CPU
- Memory Hierarchy (Nest)

Hipervisor (PR/SM)
- Amount of virtualization

Operating System
- Virtualization at address space level

Workload Characteristics
- Instructions
- Dispatch Profile
- I/O Rate
Introduction to LSPR

- A set of representative SCP/workload environments
  - SCPs: z/OS, z/VM, and Linux on System z
  - Workload categories: Low \(\leftrightarrow\) Relative Nest Intensity \(\rightarrow\) High
  - A methodology focused on processor capacity
  - No significant external constraints
  - Equivalent (reasonably high, e.g. \(\geq 90\%\)) processor utilization

- A metric to communicate the results
  - ITR: Internal Throughput Rate
  - Transactions or Jobs per processor busy second

- Information stored on the web
LSPR Benchmarks

- LSPR data is built from a set of benchmarks running representative workloads

- Over time, LSPR benchmarks are changed to reflect changes in processor architecture, operating system capabilities, and new patterns for production workloads
  
  - LSPR tables are labeled based on the z/OS operating system level used at time of the benchmark

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

- Various combinations of workload primitives are measured on which the new workload categories are based
  - Applications include CICS, DB2, IMS, OSAM, VSAM, WebSphere, COBOL, utilities

- **Low** (relative nest intensity)
  - Workload curve representing light use of the memory hierarchy
  - Similar to past high scaling workload primitives

- **Average** (relative nest intensity)
  - Workload curve expected to represent the majority of customer workloads
  - Similar to the past LoIO-mix curve

- **High** (relative nest intensity)
  - Workload curve representing heavy use of the memory hierarchy
  - Similar to the past DI-mix curve

- zPCR extends published categories
  - **Low-Avg**
    - 50% Low and 50% Average
  - **Avg-High**
    - 50% Average and 50% High
LSPR Tables

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

- **MIPS Tables**
  - Adequate for Business Planning
    - High level sizing for hardware and software budget planning
    - Based on “averages”
  - Must be referenced to a specific set of LSPR benchmarks or invalid

- **zPCR Sizing - LPAR Configuration Capacity Planning**
  - Detailed Capacity Sizing based on:
    - Specific LPAR configuration (number, weights, and logical processors)
    - Specific SCP/workload mix
    - Specific use of specialty engines (zAAP, zIIP, IFL, and ICF)
  - Built around concept of a Reference CPU
zPCR Home Page

MIPS Table
LSPR Multi-Image
zPCR LPAR Configuration Capacity Planning
Setting the Reference Processor
zPCR Basic Mode and Advanced Mode

- zPCR can be run in 2 Modes:
  - Basic Mode
    - Operates on 1 processor configuration at a time
  - Advanced Mode
    - Operates up to 7 processor configurations at a time
    - Shows Capacity Comparisons between 2 LPAR configurations
    - More efficient than running zPCR multiple times
      - Manually comparing the results
    - Recommended Mode
Introducing zPCR– Advanced Mode
zPCR Advanced Mode

- Provides Capacity Comparisons between 2 processor configurations
  - The “Configuration #1” Vs (“Configuration #2, Configuration #3…Configuration #7)
  - 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”

- Recommended when comparing capacity changes including:
  - Changing the LPAR host processor family
  - Changing the LPAR host processor’s CP configuration
  - Changing the way that one or more partitions are defined, (e.g. weights, LCPs, SEs)
  - Adding one or more new partitions
  - Deleting one or more current partitions

- For Capacity Comparisons to be useful, configurations being compared should both contain some or all of the same partitions
  - (i.e., in terms of partition type, name, SCP, and workload)

* Note: EDF (Enterprise Data Files) are new with zPCR 7.x and are created using CP3KEXTR for z/OS and CP3KVMEXT for z/VM
Advanced Mode Function

- **Multiple processor configurations**
  - Up to seven can be defined

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

- **All capacity values based on a single Reference-CPU setting**
  - 1-way processors only
Reference CPU and Typical

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

**“Typical”**
- 2094-701
  - 593 MIPS
  - IBM recommended and widely accepted in the Industry

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

<table>
<thead>
<tr>
<th>Reference-CPU</th>
<th>z196 708</th>
<th>zEC12 708</th>
<th>Relative Capacity Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2094-701</td>
<td>13.61</td>
<td>16.97</td>
<td>1.25</td>
</tr>
<tr>
<td>Relative Capacity</td>
<td>1.00</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>MIPS</td>
<td>593</td>
<td>8,072</td>
<td>(1,991 MIPS) 1.25</td>
</tr>
</tbody>
</table>
Set “Startup” preferences
Default zPCR Startup Preferences

- **Startup Preferences**

  - **Processor Model**: 2094-701
  - **Scaling Factor**: 1.000
  - **Scaling Metric**: (ITR Ratio)

  - **zPCR Operating Mode**
    - **Start in**
      - Advanced-Mode
      - Basic-Mode

  - **Workload Category Display List**
    - Low
    - Low-Avg
    - Average
    - Avg-High
    - High

  - **Directory path for Saved Studies**
    - Current directory
      - `C:\zPCR.9\Study Files`

  - **Directory path for RMF Reports**
    - Current directory
      - `C:\zPCR.9\RMF Files`

  - **Directory path for EDFs**
    - Current directory
      - `C:\zPCR.9\EDF Files`

  - **Directory path for CSV files**
    - Current directory
      - `C:\zPCR.9\CSV Files`

  - **Click "Return" to save preference settings; "Cancel" to discard changes**
Recommended zPCR Startup Preferences

Set “Reference-CPU” Metrics to “Typical” as the default

Set “Advanced Mode” as the default when starting zPCR
Reference CPU continued…

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

Select “Typical”
Select “Advanced-Mode” check box and press “Enter Advanced-Mode”
zPCR Advanced-Mode Capacity Planning Control Panel

View Muli-Image LSPR table

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

Manage Multiple Configurations

View “QuickStart” Guide

You may drag and drop zPCR study files, RMF reports or EDFs onto the LPAR Configurations planning area or use the file drop down to load zPCR study files.
zPCR Advanced-Mode Capacity
Loading a file via Drag and Drop

Browse Windows Explorer to find the file then “drag” it to the zPCR Advanced Mode” window and “drop” it on Current.
zPCR Advanced-Mode Capacity Renaming the configuration step 1

Select “Current”, Right Click, Click on “Rename Configuration”
zPCR Advanced-Mode Capacity Renaming the configuration step 2

Type over “Current” with “z10-2097 E26” and Press Enter
zPCR Advanced-Mode Capacity Planning Control Panel

Configuration Renamed

Configuration Summary
zPCR Advanced-Mode Capacity Planning Control Panel

1 Select
2 then Click on Clone
zPCR Advanced-Mode Capacity Planning Control Panel

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

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

“Up Arrow” compares Top Configuration (#1) Relative to Bottom Configuration (#3)
Click “Minimum Capacity” to get Partition Capacity Comparison Report

Minimum Capacity is Partition Capacity when weights are being enforced
Partition Minimum Capacity Comparison Report

![Partition Capacity Comparison Report](image)

**Partition Identification**

- **List of All Included Partitions**
- **With Unique ID Metrics**

**Partition Capacity Comparison Report**

Based on Partition Minimum Capacity

- **Study ID:** Sample zPCR Study
- **z10 2097-E26:** 10-EC Configuration
- **z196 2817-M15:** Cloned from Alt-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.

**Change Controls**

- **Commit Changes**
- **Undo Changes**
- **Optimize SHR:LCPs**

*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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Input fields have white background; Single-click a “selection field” for drop-down list; Double-click a “key-in field” to open.
A new processor capacity expectation should normally be considered as having a margin of error of up to +5% or -5%.

- The full ±5% margin of error should be considered when:
  - The LPAR host processor family is changed
  - Very significant changes are made to the LPAR host CP configuration
  - Significant changes are made to the partition configuration

- The margin of error is due to factors that include variability in workload/instruction mix and processor utilization

- When changes are minor, the margin-of-error should be less
Partition Capacity Comparison Report

![Partition Capacity Comparison Report](image)

The report compares the partition capacity based on partition minimum capacity. It includes details such as partition identification, workload, workloads, and capacity measurements. The report highlights the margin-of-error for significant configuration changes.

**Margin-of-Error**

- Consider Margin-of-Error
# Margin of Error Report

## Partition Minimum Capacity

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

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>SCP</th>
<th>Workload</th>
<th>Projected Capacity</th>
<th>Projected minus 5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP</td>
<td>LP-01</td>
<td>z/OS-1.9&quot;</td>
<td>Average</td>
<td>3,865</td>
<td>5,500 (+42.3%)</td>
</tr>
<tr>
<td>GP</td>
<td>LP-02</td>
<td>z/OS-1.9&quot;</td>
<td>Average</td>
<td>2,207</td>
<td>3,121 (+41.4%)</td>
</tr>
<tr>
<td>zAAP</td>
<td>LP-02</td>
<td>z/OS-1.9&quot;</td>
<td>Average</td>
<td>782</td>
<td>1,099 (+40.5%)</td>
</tr>
<tr>
<td>GP</td>
<td>LP-03</td>
<td>z/OS-1.9&quot;</td>
<td>High</td>
<td>968</td>
<td>1,433 (+48.0%)</td>
</tr>
<tr>
<td>zIP</td>
<td>LP-03</td>
<td>z/OS-1.9&quot;</td>
<td>High</td>
<td>709</td>
<td>1,034 (+45.8%)</td>
</tr>
<tr>
<td>GP</td>
<td>LP-04</td>
<td>z/VM</td>
<td>High/LV</td>
<td>76</td>
<td>110 (+44.7%)</td>
</tr>
<tr>
<td>ICF</td>
<td>LP-07</td>
<td>CFCC</td>
<td>CFCC</td>
<td>866</td>
<td>1,138 (+31.4%)</td>
</tr>
<tr>
<td>IFL</td>
<td>LP-05</td>
<td>Linux</td>
<td>Average/L</td>
<td>1,547</td>
<td>2,031 (+31.3%)</td>
</tr>
<tr>
<td>IFL</td>
<td>LP-06</td>
<td>Linux</td>
<td>Average/L</td>
<td>193</td>
<td>254 (+31.6%)</td>
</tr>
</tbody>
</table>

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Optimize Shared Logical Processors

- When migrating to a new processor evaluate the weights & logical processors needed
  - If Hard Capping partitions, evaluate amount of capacity required to be guaranteed

- Operating System impact on Logical Processors needs to be reviewed

- Level of optimization for LCP Count Assignment can be chosen as follows
  - Moderate:
    - When the weight percent indicates number of logical CPs greater than or equal to 2.6
      - The exact number of logical CPs plus 1 (rounded up to the nearest whole number) will be assigned
    - When the weight percent indicates number of logical CPs should be less than 2.6
      - The exact number of logical CPs (rounded up to the nearest whole number) will be assigned
  - Minimum:
    - The weight percent is used to determine the exact number of logical CPs (rounded up to the nearest whole number) will be assigned
### Partition Capacity Comparison Report

The Partition Capacity Comparison report is based on partition minimum capacity and is used to compare the capacity of different partitions. The report includes the following details:

- **Study ID**: Sample zPCR Study
- **Configuration**: z10 2097-E26: 10-EC Configuration
- **z196 2817-M15**: Cloned from Alt-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.

#### Table: Partition Comparison

<table>
<thead>
<tr>
<th>Partition Identification</th>
<th>z10 2097-E26</th>
<th>z196 2817-M15</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td><strong>Name</strong></td>
<td><strong>Workload</strong></td>
</tr>
<tr>
<td>GP</td>
<td>LP-01</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>LP-02</td>
<td>Average</td>
</tr>
<tr>
<td>zAAP</td>
<td>LP-03</td>
<td>Average</td>
</tr>
<tr>
<td></td>
<td>GP-04</td>
<td>High/LV</td>
</tr>
<tr>
<td>zIIP</td>
<td>GP-07</td>
<td>CFCC CFCC</td>
</tr>
<tr>
<td>IFL</td>
<td>LP-05</td>
<td>Average/L</td>
</tr>
<tr>
<td>IFL</td>
<td>LP-06</td>
<td>Average/L</td>
</tr>
</tbody>
</table>

#### Change Controls

- **Commit Changes**
- **Undo Changes**
- **Optimize SHR LCPs**

---

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

---

“Optimize” SHR LCPs
Optimize Share LCP Configuration

Select Partition Types:
- GP
- zAAP
- zIIP
- IFL
- ICF

LCP Count Assignment:
- Moderate
- Minimal

Optimize / Cancel
Commit the Changes

Commit, Undo Changes, or change by hand (any white area)
Click on the **Host Capacity Summary** icon to view the report.
Host Capacity Summary

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

Exit zPCR
3 Ways to Input Data into zPCR

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

- **2 – RMF**
  - When processor/system exists

- **3 - EDF File**
  - When processor/system exists
  - Recommended because of CPU MF input
EDF Input for zPCR

**z/OS**

Turn on CPU MF to start SMF 113 recording (primary partitions)
Post process SMF data with CP3KEXTR to produce EDF

- SMF datasets one per partition
- CP3KEXTR runs on z/OS
- Creates EDF dataset one per partition on the host
- Download the files to the PC

**z/VM**

Enable Monitor to record CPU MF data (primary partitions)
Post process Monitor data with CP3KVMXT to produce EDF

- z/VM Monitor data per partition
- CP3KVMXT runs on z/VM
- Creates EDF dataset one per partition on the host
- Download the files to the PC
z/OS EDF Input

z/OS on System z

Turn on CPU MF to start SMF 113 recording (primary partitions)
Post process SMF data with CP3KEXTR to produce EDF
Get zPCR CP3KEXTR here:  http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS4229

Windows PC with zPCR installed

Download EDF (1 per partition) to PC
In zPCR, Get Host and Partitions from EDF
Load EDF(s)
   Select (or drag) Processor Partitions simultaneously
Select a representative interval
Show LPAR Host and its partition configuration
Create LPAR Configuration
Partitions with SMF 113s will assign “CPU MF” workload
Partitions with SMF 74s will show “DASD I/O” workload

SMF datasets one per partition
CP3KEXTR runs on z/OS
Creates EDF dataset one per partition on the host
Download the files to the PC

Gets CPU MF and Parked Engines for all partitions at the same time
Load the EDF files into zPCR

Get host and partitions from EDF file
Load the EDF files into zPCR – Select an Interval

Select an interval

DASD I/O data available

Sort on GP Pool Utilization

CPU MF (SMF 113) data available

<table>
<thead>
<tr>
<th>Relative Interval Number</th>
<th>CPC ID</th>
<th>GP Processor Model</th>
<th>Date</th>
<th>Time</th>
<th>Interval Length</th>
<th>Number of Active Partitions</th>
<th>Available Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>CECAAA</td>
<td>2097-713</td>
<td>2010-09-27</td>
<td>11:00:00</td>
<td>01:00:00</td>
<td>4</td>
<td></td>
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</table>

Click on a row to select interval for which zPCR partition definitions are to be created.
LPAR Configuration from EDF for Chosen Interval

Click “Create LPAR Configuration”
Output Options

- **Types**
  - CSV
  - HTML

- **Processed by**
  - Spreadsheets (HTML and CSV)
  - Word Processors (HTML)
  - Browsers (HTML)
Output Results

Output to HTML file

Output to CSV file
Single Spot on the Web to Get More Information

- zPCR Getting Started Page
  http://www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381
  - Contains:
    - Downloadable Code
    - zPCR Users Guide
    - External File Layout documentation
    - Links to both CP3KEXTR and CP3KVMXT
    - Link to enabling CPU MF information

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

- Q&A and defect support are available through email: zpcr@us.ibm.com
Techdocs provides the latest ATS technical collateral
www.ibm.com/support/techdocs
System z Social Media

- System z official Twitter handle:
  - @ibm_system_z

- Top Facebook pages related to System z:
  - Systemz Mainframe
  - IBM System z on Campus
  - IBM Mainframe Professionals
  - Millennial Mainframer

- Top LinkedIn Groups related to System z:
  - Mainframe Experts Network
  - Mainframe
  - IBM Mainframe
  - System z Advocates
  - Cloud Mainframe Computing

- Leading Blogs related to System z:
  - Evangelizing Mainframe (Destination z blog)
  - Mainframe Performance Topics
  - Common Sense
  - Enterprise Class Innovation: System z perspectives
  - Mainframe
  - MainframeZone
  - Smarter Computing Blog
  - Millennial Mainframer

- YouTube
  - IBM System z
Summary

- **zPCR models your unique 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**

It's QUESTION TIME!!
Back Up
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.
Acknowledgements

- Many people contributed to this presentation including:
  
  John Fitch
  Gary King
  Jim Shaw
  Brad Snyder
  Kathy Walsh
What is new in zPCR V8.1…

- The IBM zEnterprise EC12 (zEC12) processor family has been added, with 161 General Purpose models and 101 IFL models. Various book configurations provide up to 101 real CPs, which can be configured as General Purpose, zAAP, zIIP, IFL, or ICF engines. The processor designation is 2827-XXX.

- LSPR data for z/OS is now based on z/OS-1.13 (formerly z/OS-1.11)
  - For zEC12, z196, z114, and z10 processors, z/OS LSPR data represents HiperDispatch turned on. This means that capacity results for defined LPAR configurations on these processor families also are assumed to represent HiperDispatch turned on.
  - zEC12 and z196 processors can be sized at Full Capacity (default) or in Power Saving Mode. In the LSPR tables, capacity values and MSU ratings for either can be displayed.
  - CFCC data is not displayed in any LSPR table, but is included for the purpose of sizing partitions running it. CFCC v18 capacity data now represents z196 as well as zEC12.

- LSPR Capacity Ratio tables
  - The LSPR Multi-Image Table includes all IBM System z processor families and models, for up to 101 General Purpose CPs or 101 IFLs.
  - The LSPR Single-Image Table includes all IBM System z processor families and models for up to 99 CPs (the maximum supported by z/OS). The tables for Linux and z/VM have been removed, since there were significant restrictions on the number of CPs that could be shown.
What is new in zPCR V8.1 continued…

- **LPAR Configuration Capacity Planning** function.
  - Adjustment to some algorithms and tables has occurred, for the purpose of more accurately projecting partitioned capacity. This change along with the LSPR change of moving to z/OS-1.13 will likely have some effect on capacity results from those of previous zPCR versions.
  - The zPCR restriction of 32 logical CPs for Linux partitions has been removed. Any legitimate Linux LCP configuration (GP or IFL) up to 101-way can now be defined.
  - On the LPAR Host Summary window, the estimates for LPAR Management Time have been revised downward to better represent that of contemporary processors.
  - zAware can now be configured to an IFL or GP partition as an additional SCP type.

- **Capacity results from zPCR v8.1 should not be compared to those of previous zPCR versions**
  - Capacity comparisons should always be made using the same zPCR version
    - Such comparisons will remain substantially unchanged regardless of the version being used.
What is new in zPCR C V7.9b…

- **LPAR Configuration Capacity Planning** function:
  - zPCR algorithms for multi-book configurations have been updated.
    - Partition capacity results for multi-book systems will be higher than those from previous zPCR versions.
    - The largest improvements will be seen on 4-book processors, 2 and 3 book processors improvements will be less

- **Advanced-Mode** – The number of LPAR configurations defined has been increased from 6 to 7

- **LSPR Capacity Ratio tables** now default to showing all 5 LSPR workload categories

- **EDF** input for z/VM partitions:
  - CPU-MF counter data from z/VM is now recognized by zPCR
  - Will be used to make the workload assignment for the partition.

- **RNI calculation** – Minor change for z196 and z114 processors

- **Capacity results from zPCR v7.9b should not be compared to those of previous zPCR versions**
  - Capacity comparisons should always be made using the same zPCR version
    - Such comparisons will remain substantially unchanged regardless of the version being used.
zPCR Capacity Sizing Lab – Part 2 Hands-on Lab

SHARE - Session 12674

February 7, 2013

John Burg
Brad Snyder
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 z196
    - 2817-707 (7 way GCPs)
    - Customer views it as having 7,127 MIPS from last zPCR
    - Machine averages 100% busy during peak

- **Plan being developed to replace with zEC12**
  - Must have at least 20%+ additional capacity
    - at least 8,553 MIPS
  - Prefer a 2827-7xx but would consider a sub-capacity 2827-6xx
Lab Exercise – Tasks to Complete

- Task 1 – Load EDF containing the latest RMF/SMF data
  - Including SMF 113s
- Task 2 – Rename the configuration
- Task 3 - Save the current study in Advanced-Mode
  - e.g. task2.zpcr
- Task 4 - Find an appropriate zEC12 700 replacement processor
- Task 5 - Model the intended zEC12 LPAR host using Advanced Mode
- Task 6 - Review the Capacity results and save the Study
  - Use a different file name than Task 3, e.g. task6.zpcr

- Additional Analysis To Try
  - A. Model a zEC12 600 as an alternative
  - B. Add 1 IFL partition running Linux for System z under z/VM to zEC12 700

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