zPCR News

Processor Capacity Reference for IBM System z

zPCR for IBM Customers

Click here to review change history

zPCR is a product of Capacity Planning Support (CPS), part of IBM's Advanced Technical Skills (ATS). The tool can be obtained from the following website:

www.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/PRS1381

Contact Address

Support concerning zPCR function, usability, satisfaction, etc. is available as follows:

- Email: **zpcr@us.ibm.com**

Registration

Registration is necessary before using zPCR. You will be prompted the first time that zPCR (or other CPS tool) is initialized. The purpose of registration is:

1. Obtain an Email contact should important information relative to zPCR need dissemination
2. Understand usage for the purpose of justifying resources to build and maintain these tools.

Registration requires access to an IP address. In certain instances, installation firewalls would need to be updated to allow internet access, per the table below. Alternatively, an email registration process is available.

	IP Address	Port
CPS Registration	**63.90.229.134**	**5316**

Java Runtime Environment

zPCR requires the IBM Java runtime environment (another CPS tool, SoftCap, has the same requirement). The IBM JRE supporting this tool is independent of any other installed Java environment (Sun or otherwise). There is no way to configure this tool to use anything other than the IBM JRE.

For **IBM Customers**, the required IBM Java runtime environment can be obtained by installing either the **zPCR** package file that includes Java or the **SoftCap** package file that includes Java. If the IBM Java runtime environment has already been installed via one of these packages, the other tool can be installed using the package that excludes Java. Two **zPCR** installation packages are available on your Web site:

1. **zPCRczj.exe** zPCR tool plus the required IBM Java runtime (~64MB)
2. **zPCRczip.exe** zPCR tool only (~9MB)

If you do not already have the required IBM Java runtime installed, you should download the larger package. The Java runtime, supporting both of the CPS tools, will automatically be installed as **zPCR** is being installed.

If the required IBM Java runtime is already installed on your PC, you can download and install the "Tool-only" package.

Should the release requirement for the IBM Java runtime environment ever change, the larger package will be needed. In this case, it is recommended that you uninstall any previous IBM Java runtime environment prior to installing the new one.

Note: When other Java runtime environments have been installed and configured with Java security enabled, a fresh install of CPS Java may fail to execute properly. This has been observed in a very small number of CPS Java installations. Should this situation occur, one possible solution is to: 1) uninstall the

other Java, 2) uninstall zPCR or SoftCap, whichever was used to install CPS Java, 3) re-install zPCR or SoftCap, whichever was used to install CPS Java, and 4) re-install the other Java.

Installation Tips, Usage Notes, and Problem Solutions

1. The currently supported environment is Windows XP or Windows 7. This tool should function under the Vista or Windows 2000; however, if running under these environments, reported problems will be addressed only if they can be recreated under Windows XP.
2. Users must have Windows administrator authority to install this tool in order to update the Windows registry.
3. The IBM Java runtime environment requires a minimum of 512MB of memory in order to run smoothly.
4. A monitor resolution of 1024x768 or higher is required. Some windows may require the entire vertical or horizontal dimension at this resolution (see next item).
5. The Windows task bar, if set to ***Always on Top***, some windows may not be entirely visible without moving it. This situation can be corrected by going to Windows task bar properties and un-checking ***Keep the taskbar on top of other windows***.
6. Erratic Behavior and Abend Situations: Most of the reported execution problems have been traced to outdated graphics drivers and Java activities that invoke "Hardware acceleration". To identify this as the problem, you should turn "Hardware acceleration" off (go to ***Desktop properties***, click on the ***Settings*** tab, click the ***Advanced*** button, click the ***Troubleshoot*** tab, and move the slider to "***None***"). If this solves the problem, you can try to find a more current graphics adapter driver version, or continue to run with the accelerator slider at a reduced setting.

Documentation

Available from your CPS tools distribution site:

- ***zPCR User's Guide*** in PDF format
- ***Introduction to zPCR*** (visuals and voice recording)
- ***zPCR Demonstration*** video
- ***zPCR Exercises*** book
- ***Introduction to LPAR Controls*** video
- ***Introduction to IBM's LSPR*** video

Included with the zPCR package distribution materials:

- ***zPCR Online Guide*** (User's Guide without screen captures)
- ***LSPR Document*** (SC28-1187)
- ***LSPR FAQ*** (concerning assumptions for the LSPR Multi-Image and Single-Image tables)
- ***About Workloads*** paper discusses LSPR workloads and mix considerations
- ***QuickStart Guide*** provides step-by-step instructions for defining LPAR configurations and making capacity comparisons thereof.

Disclaimer

The performance data contained in this tool was derived by IBM in a controlled environment. A customer's actual performance results may vary significantly. Accordingly, IBM provides no representations or assurances that a customer will obtain the same or similar results.

Current Version / Recent Change History

C6.3a (02/15/2010) Customer version available

- All capacity results will remain identical to the previous customer version C6.1c. Interim changes all relate to function, appearance, and output capability.

V6.3a (02/15/2010)

- Appearance for some of the HTML output has been improved. Excessive white space for some titles has been removed. Exception conditions will relate the same red background as seen in the related window.
- Minor changes and corrections.

V6.3 (01/29/2010)

- ***Reference-CPU*** controls have been restructured.
  - A single (global) ***Reference-CPU*** window replaces the independent ***SI Reference-CPU*** and ***MI Reference-CPU*** windows.
  - The ***Reference-CPU*** processor is limited to 1-way models. However, when viewing ***LSPR Processor Capacity Ratios*** tables, a ***Provisional Reference-CPU*** processor model can be temporarily assigned as any processor in the table, with any reasonable scaling-factor/metric. When exiting the LSPR table, the original (global) ***Reference-CPU*** settings are restored.
  - The ***Reference-CPU*** scaling-factor is now interpreted as the productive capacity of a 1-partition configuration for all zPCR function. Previously, for ***LPAR Configuration Capacity Planning*** purposes, it was interpreted as the capacity for the entire CEC, without regard to partitioning cost. It also serves to anchor the ***LSPR Single-Image Processor Capacity Ratios*** table.
  - To anchor the ***LSPR Multi-Image Processor Capacity Ratios*** table, the ***Reference-CPU*** scaling factor is multiplied by 0.944, which is the differential between 1-partition capacity and 5-partition capacity (as represented in this table).
  - The default ***Reference-CPU*** processor will continue to be the 2094-701. The typical scaling-factor setting will be 602 MIPS (representing the capacity of a 1-partition configuration).

  Benefits of this change include:
  - Capacity values shown in the ***LSPR Multi-Image Processor Capacity Ratios*** table are always related appropriately to those in the ***LSPR Single-Image Processor Capacity Ratios*** table.
  - Capacity results from the ***LPAR Configuration Capacity Planning*** function are now appropriately related to those in the ***LSPR Multi-Image Processor Capacity Ratios*** table.

  Note: When started, zPCR will display a ***Reference-CPU Realignment*** PDF summarizing the ***Reference-CPU*** change. A dialog provided can be used to discontinue this action on subsequent zPCR invocations. The PDF will remain available under **Documentation** on the menu-bar of the ***Function Selection*** window and the ***Advanced-Mode Control Panel*** window.

  For those who wish to derive ***LPAR Configuration Capacity Planning*** function results identical to those of previous zPCR versions, refer to the ***Reference-CPU Realignment*** PDF mentioned above.
- zPCR study files: When loading a previous zPCR study, the ***MI Reference-CPU*** setting is ignored, and the ***SI Reference-CPU*** setting is used as the new global ***Reference-CPU*** setting. Starting with zPCR v6.3, study files created will no longer include a ***MI Reference-CPU*** setting.
- Other changes.
  - In ***Advanced-Mode***, the number of LPAR configurations that can be defined and compared has been increased to 4. Configuration names assigned are ***Current***, ***Alt-1***, ***Alt-2***, and ***Alt-3***.
  - The ***LSPR Single-Image Processor Capacity Ratios*** table is no longer available in ***Advanced-Mode***, since the ***LSPR Multi-Image Processor Capacity Ratios*** table is the preferred view for generalizing on processor model capacity. The ***LSPR Single-Image Processor Capacity Ratios***

tables continue to be accessible in basic-mode (note that z/VM and Linux LSPR data can only be accessed from the single-image tables.

- The ***LSPR Multi-Image Processor Capacity Ratios*** table for z/OS-1.8 has been removed; only the table for the latest LSPR data will be provided (currently z/OS-1.9).
- Buttons and dropdown lists relating to documentation have been removed. All documentation items can now found under **Documentation** on the ***Function Selection*** window and ***Advanced-Mode Control Panel*** window menu bar.
- ***zPCR User's Guide*** and ***Online Help*** have been updated to reflect these changes.
- ***QuickStart Guide*** has been updated to reflect these changes.

V6.2a (12/11/2009)

- ***LSPR Multi-Image Capacity Ratios*** table: Corrected problem that prevented creation of HTML output.
- ***LPAR Configuration Capacity Planning*** function:
  - ***Partition Detail Report*** and ***Utilized Capacity Report*** windows: Added output capability for CSV format.
  - ***Host Summary Report*** and ***Partition Detail Report*** windows: All ***Note***, ***Warning***, and ***Error*** messages generated for the LPAR configuration are now displayed on both windows. These messages are no longer displayed on the ***LPAR Host and Partition Configuration*** window.
- ***Advanced-Mode***, ***Host Capacity Summary*** and ***Host Capacity Comparison*** windows:
  - Corrected ***Single-CP*** capacity results to divide by the number of real CPs that can actually be used in the pool rather than the number configured to the host. Table headings are updated to reflect this.
  - An indicator (*) and message line are now posted whenever some real CP capacity cannot be consumed due to the LCP configuration and capping assignments.
  - Corrected problem where HTML output always reflected ***Full Capacity*** regardless of ***Single-CP*** radio button setting.

V6.2 (11/30/2009)

- Support has been removed for the following items:
  - The ***OS/390 LSPR Single-image Capacity Ratios*** table. Therefore, support for G6 and prior processors is no longer available.
  - The ***Combined (z/OS-1.4) LSPR Single-image Capacity Ratios*** table (which was, in part, based on the OS/390 table above).
  - ***Legacy Plan*** of the ***LPAR Configuration Capacity Planning*** function (meaning that LPAR configurations can no longer be defined on G6 and prior processor models). Previous saved studies for a Legacy plan cannot be loaded.
  - User-defined z/OS workload mixes are no longer allowed. User-defined mixes loaded from previous studies will need to be reassigned.

    When viewing ***LSPR Capacity Ratios*** tables workloads are limited to the measured workload primitives, and for z/OS the suggested workload mixes. In the ***LPAR Configuration Capacity Planning*** function, for z/OS, Linux, and z/VM, workloads are limited to the measured workload primitives and the z/OS suggested workload mixes.
- ***LPAR Configuration Capacity Planning*** function enhancements
  - **z/OS version identification**: When specifying z/OS as the SCP for a partition, any contemporary version can be specified. Since zPCR only has access to published LSPR data, when the selected z/OS version is not one of those published, the most representative one will be used. For example, if z/OS-1.10 is selected, the z/OS-1.9 LSPR data will be applied, and capacity results will be identical to those if z/OS-1.9 had been selected. When selecting the SCP for partitions, measured

Note: In zPCR, only z/OS can be represented for partitions using a unique version. With z/OS, LCP limitations are enforced based on the version specified. The selection of the other SCPs (Linux, z/VM, z/VSE, or CFCC) for a partition can only be considered as a reasonable representation of contemporary releases for that operating system.

- **Making comparisons**: Capacity comparisons can now be conveniently made in advanced-mode. Therefore, the former ***LPAR Comparison Report*** window (accessed from the ***LPAR Detailed Capacity Report*** window) has been revamped for the purpose of comparing consumed capacity (obtained from RMF via partition utilization values) to the weighted capacity of the LPAR configuration. The updated window, now called the ***Utilized Capacity Report***, can be accessed from the ***LPAR Host and Partition Configuration*** window. It can only be viewed when the entire configuration, including the LPAR host are input from RMF. If the LPAR host or the partition configuration is subsequently changed, the window can no longer be displayed, since the comparison is no longer meaningful. Columns have been re-titled to be specific to this function, and no input fields are provided.
- **Window names**:
  - The name of the ***LPAR Summary Report*** window is changed to ***Host Summary Report***. It is accessed from the ***LPAR Host and Partition Configuration*** window by clicking the **Host Summary** button.
  - The name of the ***LPAR Detailed Capacity Report*** window is changed to ***Partition Detail Report***. It is accessed from the ***LPAR Host and Partition Configuration*** window by clicking the **Partition Detail** button.

- ***Advanced-Mode*** enhancements
  - **LPAR configurations**: The number of LPAR configurations that can be defined and compared has been increased to 3. Configuration names assigned are ***Current***, ***Alt-1***, and ***Alt-2***.
  - **Compare toolbar icons and their related windows**:
    - A ***Summary*** tool bar icon provides access to a new ***Host Summary Report*** window. One row appears for each defined LPAR configuration, showing capacity projections by CP pool and for the overall host.
    - ***Compare Down*** and ***Compare Up*** toolbar icons provide access to the current ***Host Capacity Comparison*** window and the ***Partition Capacity Comparison*** windows. These icons are activated whenever two of the defined LPAR configurations have been selected. ***Compare Down1*** compares the LPAR configuration lowest on the tree to the one above. Compare Up makes the comparison in the opposite direction. Therefore, any defined LPAR configuration may be compared to any other defined LPAR configuration.
  - **Single-CP capacity Comparisons**:
    - Capacity projections on the ***Host Summary Report*** window can be displayed as ***Full*** capacity (default) or ***Single-CP*** capacity.
    - Capacity projections on the ***Host Capacity Comparison*** window can be displayed as ***Full*** capacity (default) or ***Single-CP*** capacity. When displaying Single-CP capacity, the ***Comparison Report by Partition*** buttons will be disabled.
- The **Return** and **Cancel** buttons have been removed from most windows in favor of the **Return** and **Cancel** toolbar icons.
- When saving a zPCR study, the **File save as …** dialog will now display the current file name, which can then be easily modified. If it is a new study, ***Untitled*** will be displayed.
- A new ***Quick Start Guide*** is included with the package, providing step-by-step instructions for defining and comparing two LPAR configurations in advanced-mode. Click the **Quick Start Guide** button on the ***Function Selection*** window.
- ***zPCR User's Guide*** and online help have been updated to reflect these enhancements and changes.

C6.1c (10/05/2009) Customer version available

V6.1c (10/05/2009)

- Advanced-mode study files created with this version will not be backward compatible to any previous zPCR version. This change was necessary to prevent the inadvertent loading of an advanced-mode study file with a zPCR version prior to advanced-mode capability. Basic-mode study files will continue be backward compatible (within 1 generation of zPCR versions).
- Problems corrected:
  - In advanced-mode, certain partition configuration definition changes for the ***Alternate*** configuration can be tested from the ***Partition Capacity Comparison*** window. Under certain circumstances, if **Undo** was clicked, the original settings would be lost causing the partition configuration to differ from that expected. Also, if the window was closed by clicking **Return** on the ***Host Capacity Comparison*** window, uncommitted changes were not being reset.
  - Obtaining partition configurations from RMF:
    - When IRD is active, partition logical CP counts are reported with fractional values. zPCR does recognize that IRD is active. Previously, the logical CP counts were simply being rounded; now they will be rounded up to the next whole number.
    - When RMF intervals were sorted (based on utilization), the selection of a row did not always load the desired interval.
    - When the RMF intervals are sorted, the sort order will now be descending (highest utilization at the top).
  - The ***Notice*** presented when checking ***Enable zAAP on zIIP Capability*** has been updated.
- On the ***Advanced-Mode Control Panel*** window, there is currently no **File→Load** capability on the menu-bar. This will be implemented in a future release. In the mean time, use **File→New** and then drag the intended study file to the ***Current*** LPAR configuration. Alternatively, start a fresh zPCR invocation, and use **File→Load** from the ***Function Selection*** window.

C6.1b (09/25/2009) Customer version, includes new ***Advance-Mode*** function and all updates/changes since version V5.4 (04/30/2009). There are no changes that affect capacity results obtained from C5.4 or C5.4a.

V6.1b (09/04/2009)

- Problems that have been corrected:
  - Installation of zPCR v6.1a would uninstall any/all previous zPCR versions. With v6.1b, previous zPCR versions will remain intact except when installing v6.1b to the same directory, in which case the v6.1a install files will be replaced by the newer ones.
  - A user-defined ***Preferences*** setting for ***Current directory*** was not being recognized in basic-mode.
  - With a basic-mode study underway, dragging an advanced-mode study to the ***Function Selection*** window failed to respond correctly to the intermediate dialog offering the chance to save the basic-mode study before continuing.
  - Using **File→Load** from the menu-bar, when ***Advanced-Mode*** was unchecked, failed to load the Alternate (2nd) LPAR configuration from an advanced-mode saved study.
  - ***Partition Capacity Comparison*** window produced a zero length HTML file when there were no comparable partitions between the two LPAR configurations.
  - If the weight assigned to a zAAP was changed from that of its associated GP partition (possible for z9 and z10 only), it would get reassigned back to the GP weight if the ***LPAR Host*** window was opened and **Return** was subsequently clicked.
- ***Advanced Mode Control Panel*** window menu-bar: Documentation items that were previously available under ***Help*** now appear under ***Documentation***.

- Advanced-Mode ***Partition Capacity Comparison*** windows: There must be at least one partition that is comparable between the LPAR configurations in order to display these windows.

V6.1a (08/18/2009)

- Support for "***zAAP on zIIP***" capability has been added. In the ***LPAR Configuration Capacity Planning*** function, when defining the LPAR host as a z9 or z10, an ***Enable "zAAP on zIIP" capability*** checkbox will appear. When checked, the zAAP real CP count will be set to zero and disabled. If desired, zIIP real CPs can be defined, replacing former zAAPs. Partitions with zAAP LCPs defined will have their ***Include*** unchecked, until the zAAP LCPs are removed and, optionally, zIIP LCPs are assigned. Nonstandard configuration rules (i.e., zIIP real CPs > GP real CPs) are enforced.
- ***LPAR Configuration Capacity Planning*** function: Corrected ***LPAR Host*** definition problem when a z10-BC, z9-BC, or z890 model was entered, and subsequently changed to another model in the same family.

  Note: Changing the ***LPAR Host*** definition does not currently trigger the LPAR configuration change counter; therefore, if that is the only LPAR configuration change, the prompt to "save a study" when exiting zPCR will not appear. This will be fixed in a later zPCR version.
- ***Advanced-Mode*** and ***Partition Capacity Comparison*** windows: An **Optimize SHR LCPs** button has been added, to adjust the shared partition LCPs down to the minimum required to accommodate its relative weight. An intermediate window requests which CP pools are to be affected and the level of optimization desired. LCP changes are applied to the LPAR configuration are temporary until explicitly committed.
- ***Advanced-Mode*** and ***User-Defined Workload Mixes***: When loading basic-mode studies that have user mixes defined, if the user mix name is already defined in the active study, a dialog will appear, and the mix from the former study will be discarded.
- ***Basic-Mode*** and the ***Function Selection*** window: After using **File** ➔ **Load** on the menu bar, **Load** was being deactivated when it should have remained active.
- ***LSPR Processor Capacity Ratios*** tables: Corrected problem with response time graphs, where the X-axis annotation and grid lines failed to appear.
- ***LPAR Configuration Capacity Planning*** function, ***Legacy Plan*** (available only in basic-mode): ITR values for the z/VM and Linux workloads have been updated to carry more significant digits, which could result in subtle capacity changes for a study.
- ***zPCR User's Guide*** and online help are updated to reflect the changes.

C5.4a (08/18/2009) Customer version, updated from version C5.4 (05/14/2009).

Notice for IBMers and BPs: Customer version C6.xx can be expected 4th quarter 2009.

- Support for "***zAAP on zIIP***" capability has been added. In the ***LPAR Configuration Capacity Planning*** function, when defining the LPAR host as a z9 or z10, an ***Enable "zAAP on zIIP" capability*** checkbox will appear. When checked, the zAAP real CP count will be set to zero and disabled. If desired, zIIP real CPs can be defined, replacing former zAAPs. Partitions with zAAP LCPs defined will have their ***Include*** unchecked, until the zAAP LCPs are removed and, optionally, zIIP LCPs are assigned. Nonstandard configuration rules (i.e., zIIP real CPs > GP real CPs) are enforced.
- ***LPAR Configuration Capacity Planning*** function: Corrected ***LPAR Host*** definition problem when a z10-BC, z9-BC, or z890 model was entered, and subsequently changed to another model in the same family.

  Note: Changing the ***LPAR Host*** definition does not currently trigger the LPAR configuration change counter; therefore, if that is the only LPAR configuration change, the prompt to "save a study" when exiting zPCR will not appear. This will be fixed in a later zPCR version.
- ***LSPR Processor Capacity Ratios*** tables: Corrected problem with response time graphs, where the X-axis annotation and grid lines failed to appear.

- ***LPAR Configuration Capacity Planning*** function, ***Legacy Plan*** (available only in basic-mode): ITR values for the z/VM and Linux workloads have been updated to carry more significant digits, which could result in subtle capacity changes for a study.
- ***zPCR User's Guide*** and online help are updated to reflect the changes.

V6.1 (07/16/2009)

- ***Advanced-Mode*** and ***LPAR Configuration Capacity Planning*** function
  - Corrected problem on ***Partition Capacity Comparison*** window where changes to the ***Alternate*** LPAR configuration were not being considered temporary as documented. With v6.1, the **Commit** button must be depressed to convert change status from temporary to permanent.
  - Headings on the ***Host Capacity Comparison*** and ***Partition Capacity Comparison*** windows are updated. **Consider Margin-of-Error** button displays widow showing potential capacity range.
  - The ***Host Capacity Range*** and ***Partition Capacity Range*** windows have been renamed and reformatted. They are now called the ***Host Margin-of-Error*** and ***Partition Margin-of-Error*** windows. They now reflect the ***Current*** and ***Alternate*** projected capacity values as well as the ***Alternate*** with the margin-of-error applied. The capacity ***% Delta*** against the ***Current*** for both ***Alternate*** columns is also displayed.
  - The study file ID is now reflected on the ***Advanced-Mode Control Panel*** window. The study file ID has been removed from all the ***LPAR Host and Partition Configuration*** windows, since, in advanced-mode, studies can only be saved in that mode. The study file ID has also been removed from all the ***Capacity Comparison Report*** windows.
  - When using a basic-mode study file to define either of the LPAR configurations, the study file ID will be posted in the LPAR configuration description field.
  - Corrected problem where LPAR Host and Partition Configuration was displayed inappropriately.
- ***Advanced-Mode*** and ***Multi-Image LSPR Processor Capacity Ratios*** table.
  - Corrected problem where, under certain conditions, the ***MI Reference-CPU*** settings were not getting adjusted when the ***SI Reference-CPU*** settings were changed.
  - Corrected problem where the number of decimal places being displayed was not correctly set when the Reference-CPU scaling factor was changed.
- ***zPCR User's Guide*** and online help have been updated.

V6.0 (07/06/2009)

- The ***LPAR Configuration Capacity Planning*** function has been enhanced:
  - A new ***Advanced-Mode*** capability has been implemented. In ***Advanced-Mode***, multiple LPAR configurations (currently limited to two) can be created and analyzed within a single zPCR invocation. A new ***Advanced-Mode Control Panel*** window is added, providing "tree structure" access to the LPAR configurations as well as the most recent ***LSPR Processor Capacity Ratios*** tables and the ***SI Reference-CPU*** settings.
  - Each LPAR configuration is identified with a unique name and icon. A configuration description field is also added for each. The 1st configuration is considered the current one (name = ***Current***) and the 2nd configuration would be considered as the alternate or replacement (name = ***Alternate***).
  - Only ***Contemporary plans*** can be done in ***Advanced-Mode***. Once a study is started in ***Advanced-Mode***, it will forever be an ***Advanced-Mode*** study.
  - Using drag and drop with a z***PCR Study File*** or an ***RMF.txt*** file new configurations can be defined and existing configurations can be modified.
  - The ***SI Reference-CPU*** is now managed primarily from the new window. This setting applies to the LPAR configurations defined, as well as the ***LSPR Single-Image Processor Capacity Ratios*** table. The ***MI Reference-CPU*** setting, used when viewing the ***LSPR Multi-Image Processor Capacity***

Ratios table, is automatically synchronized with the ***SI Reference-CPU*** setting based on information in the ***LSPR FAQ*** document.

- A quick summary of either LPAR configuration can be displayed in a panel at the bottom of the new window by clicking its icon.
- New windows comparing capacity for the 2nd LPAR configuration (***Alternate***) back to the 1st (***Current***) are available.
  - Comparison by partition type, and for the CEC as a whole
  - Comparison of individual partitions: For the 2nd configuration, certain metrics (LCPs, Weight, and Capping) can be modified to determine the effect on capacity results. To permanently include any changes made, a **Commit** button is available. To undo any changes, an **Undo Changes** button is available.

- zPCR ***Saved Study Files***
  - Study files will now be primarily LPAR configuration oriented. In addition to all ***LPAR Configuration Capacity Planning*** inputs, only the ***MI*** and ***SI Reference-CPU***s and any user defined workload mixes are saved. Information concerning the workload names displayed on the ***LSPR Processor Capacity Ratios*** tables is no longer retained. Note that customization can be used to establish the workloads list to be used at zPCR invocation.
  - Any workload list existing in an older zPCR study file will be ignored when the study is loaded.
  - In ***Advanced-Mode***, studies are saved in advanced-mode format, which may include multiple LPAR configurations.
- ***PRN file*** and ***Clipboard*** output changes:
  - The primary windows in the ***LPAR Configuration Capacity Planning*** function now have HTML output capability. PRN file and Clipboard output is no longer supported for these windows.
  - For the ***LSPR Processor Capacity Ratios*** tables, ***PRN file*** and ***Clipboard***, as well as HTML output, continue to be supported.
- (Temporary restriction) ***Advanced-Mode*** cannot be initiated while the ***zAAP Capacity Estimator*** function is active. A 2nd zPCR invocation can be used if both are needed at the same time.
- ***zPCR User's Guide*** and online help have been updated.

C5.4 (05/14/2009) Customer version available

V5.4 (04/30/2009)

- GP/zAAP/zIIP capacity and the ***LPAR Configuration Capacity Planning*** function
  - Algorithms supporting zAAP and zIIP LCPs associated with GP partitions have been revised, based primarily on general observation with some benchmark experience. For larger N-way processors, GP, zAAP, and zIIP capacity may be improved, depending on the LPAR configuration defined. For smaller configurations, capacity results will likely differ by a small amount over those from previous zPCR versions. Since capacity results may differ, former zPCR studies should be reassessed with this zPCR version if new capacity comparisons are intended.
  - zAAP and zIIP LCPs defined to a partition, while considered individually, are now treated identically for capacity planning purposes. Capacity results for zAAP and zIIP CPs must be viewed as "reasonable approximations", since there are many variables concerning their usage that are not considered by zPCR.
  - For the ***zAAP Capacity Estimator***, GP and zAAP capacity results are coordinated with those of zPCR's ***LPAR Configuration Capacity Planning Function***.
- PC hardware requirements for zPCR revised
  - PC memory: Minimum = 512MB; Suggested = 768MB or better
  - Display resolution: Minimum = 1024x768; Suggested = 1280x1024 or higher.

- ***zPCR User's Guide*** and online help have been updated.

C5.3c (04/16/2009) Customer version available

V5.3c (04/15/2009)

- ***LPAR Configuration Capacity Planning*** function: A problem was corrected concerning when zAAPs or zIIPs were added to a configuration that had just been migrated from an older host, the zAAP or zIIP capacity values were not being recalculated correctly. If the updated study was saved, and subsequently reloaded, capacity results were correct.
- LPAR ***Detailed Report*** window - corrected problem where clipboard output was incomplete.
- LPAR ***Capacity Comparison Report*** window
  - When opened, this window now honors the ***Table View*** settings on the parent ***Detailed Report*** window.
  - Changes were made to allow input fields to better conform to national language standards.

V5.3b (03/19/2009)

- A ***zPCR study*** can now be loaded by double-clicking on a zPCR study file. Note, however, this does not work using a Lotus Notes attachment and may not work with attachments carried by other mail applications.
- ***HTML output*** is now available for the ***LSPR Processor Capacity Ratios*** tables and for the LPAR ***Detailed Report*** window (from the menu-bar, click **File** ➔ **HTML**). This initial HTLM implementation is primarily intended for evaluation, before the remaining windows are converted.
- The ***zAAP Capacity Estimator*** function has been restored.
  - The ***SI Reference-CPU*** can now be set within this function.
  - GP and zAAP capacity results are coordinated with those of zPCR's ***LPAR Configuration Capacity Planning Function***.
  - For the resulting combined GP and zAAP configuration, GP capacity is now based on the estimated zAAP utilization. Previously, GP capacity was based on the zAAP utilization being 100%, regardless of the estimated zAAP utilization.
- Fixed minor problem reading certain RMF data formats.

C5.3a (03/04/2009) Customer version available

V5.3a (02/27/2009)

- ***Drag and Drop*** support added for zPCR study files and RMF files
  - Load a ***zPCR study***
    - The study file can dropped on the zPCR desktop icon.
    - The study file can be dropped on the Function Selection window.
  - Load RMF configuration information into ***LPAR Configuration Capacity Planning*** function:
    - The RMF file can dropped on the ***Get Host and Partitions from RMF*** button.
    - The RMF file can dropped on the (***Get Partitions from***) ***RMF*** button.
  - Load partitions from a zPCR study into the ***LPAR Configuration Capacity Planning*** function:
    - The study file can dropped on the (***Get Partitions from***) ***Previous zPCR Study*** button.
- ***LPAR Configuration Capacity Planning*** function
  - Minor adjustments to the algorithms supporting zAAP and zIIP LCPs associated with GP partitions have been made. In a few cases involving small partitions on large processors, capacity results may differ by a small amount over those from previous zPCR versions.
  - User-defined mixes may now be specified for z/OS-1.8 as well as z/OS-1.9. Note that user-defined mixes are in common between the two z/OS releases.

  - The ***CPUi-Mix*** workload (100% ***CB-L***) is now included for z/OS-1.9. It is added to provide a consistent set of workload names available for z/OS, z/VM, and Linux, when defined to a partition. ***CPUi-Mix*** is not available in LSPR tables; reference ***CB-L*** instead.
- The ***zAAP Capacity Estimator*** has been disabled while zAAP/zIIP capacity algorithms are being re-evaluated. In the mean time, the ***LPAR Configuration Capacity Planning*** function should be used to assess the capacity for configurations that are to include zAAP and/or zIIP engines.

V5.3 (02/02/2009)

Notice: Starting with version 5.3, zPCR requires the IBM Java2 v6.0 runtime environment. An upgrade to CPS Java v6.0 will be required.

Java v6.0 Upgrade: Effective on the date of this release, all CPS PC-based tools will have updated versions to use the new IBM Java v6.0 runtime environment. Note that:

- The new CPS tool versions will only function under Java v6.0.
- The old CPS tool versions will not function under Java v6.0.
- Only one version of CPSJava can be installed. Java v6.0 will now be that version.

Therefore, for the CPS tools that you use, **it is necessary to upgrade all CPS tools at the same time that you upgrade to Java v6.0**. To assure that all of your installed tools will function if needed, do not install any of the new packages until all are available and have been downloaded to your PC. At that time, install the CPSJAVA package and then each of the necessary tools before attempting to use them. Obtaining CPSJava: IBM employees should download the CPSJava package; Business-Partners should download the zPCR package that includes CPSJava.

Changes:

- ***Multi-Image*** and ***Single-Image LSPR Capacity Ratios*** windows
  - The format of the ***LSPR Tables and Processor Families*** window (accessed via the **Processor Families** button) has been improved. This table is intended to show what LSPR releases support each processor family, and to select the specific families to be revealed in any specific LSPR table. has been added, which provides the ability to limit the processor families to those of interest.
- ***LPAR Configuration Capacity Planning*** function correction
  - For both z/VM and Linux, when assigned to a partition, in addition to the LSPR workload primitives, any of the z/OS-1.9 suggested workload mix names can now be selected. The name will be appended with a /LV for z/VM with Linux guests and a /L for Linux native. When used, actual z/OS ITR data will be applied. This allows for assignment of various workload types ranging from CPU-Intensive to Transaction Intensive. In addition, a new CPUi-Mix workload is provided, used to represent workloads that are even more CPU intensive than LoIO-Mix. This capability is primarily intended to facilitate zPSG application sizing when trying to fit the application into an IFL partition using zPCR.
  - While reading partition definition data from RMF, changes to the ***SCP***, ***Workload***, or ***DASD I/O per Second*** fields were not being interpreted correctly. Also miscellaneous minor fixes relating to reading RMF.

C5.2b (11/17/2008) Customer version available

V5.2b (11/04/2008)

- ***LPAR Configuration Capacity Planning*** function
  - The number of zAAP and zIIP logical CPs assigned to any individual GP partition are currently limited to 16. This limitation is necessary because no supporting benchmark data for large zAAP/zIIP logical CP configurations is available, with which to validate zPCR algorithms.
- ***Users Guide*** and online help have been updated.
- ***Workloads*** document has been updated
  - Now includes discussion for z/OS-1.9 LSPR data

  - Considerations for z10 Upgrades discussion added. Highlights are extracted below.
- Miscellaneous minor corrections/changes.

V5.2a (10/27/2008)

- ***Workloads*** window – Corrected problem when loading the default SCP/workload list
- ***Multi-Image LSPR Capacity Ratios*** window
  - The ***About Setting the SI Reference-CPU*** window can now be retained on the desktop for reference when working with functions that involve the ***SI Reference-CPU***. The indicated setting will be dynamically adjusted if the ***MI Reference-CPU*** setting is changed.

V5.2 (10/21/2008)

- New **IBM System z10 Business Class** processors (2098) are added
- **LSPR data for z/OS is uplifted to z/OS-1.9** (Multi-Image and Single Image tables)
  - Tables include all IBM System z processors.
  - The z10-BC family is included only in the z/OS-1.9 tables.
  - Single-Image ITRs are included for up to 64 CPs
  - All z10 capacity data for z/OS assumes that HiperDispatch is turned on.
  - Includes z/VM (WASDB/LVm) and Linux (WASDB/L) data for all System z families, through 16-way.

    Note: All previous LSPR tables remain available in zPCR. There are now 2 Multi-Image tables, one for z/OS-1.9 and one for z/OS-1.8.
- ***MI*** and ***SI Reference-CPU*** settings
  - A **Typical Setting** button has been added which can be used to set the capacity metrics in terms of the MIPS values suggested in the **LSPR FAQ** document, which has been updated.
  - For the ***MI Reference-CPU***, separate default and typical settings are carried for the z/OS-1.9 and the z/OS-1.8 tables. If any other processor, scaling-factor, or scaling metric setting is made, it will be applied equally to both tables.
- ***Preferences*** (customization settings)
  - The ***MI Reference-CPU*** can be customized to a single setting. ***Default Setting*** and ***Typical Setting*** will cause the suggested metrics for each Multi-Image table to be loaded when zPCR is started. Any other metric assignment will be applied equally to both MI tables when zPCR is started.
- ***LSPR Multi-Image*** and ***Single-Image Capacity Ratios*** table windows
  - A **Processor Families** button has been added, which provides the ability to limit the processor families to those of interest. Control settings are applied to both the z/OS-1.9 and z/OS-1.8 (MI and SI) tables, and are remembered within a zPCR invocation. When viewing these tables, radio buttons are available to switch between ***My Choices*** and ***All*** processor families.
- ***LPAR Configuration Capacity Planning*** function
  - z/OS partitions on z10-EC or BC hosts can only be modeled with z/OS-1.8 or later. Older System z processors can be modeled with any currently supplied z/OS LSPR data.
  - With z/OS-1.9, partitions can be defined with up to 64 LCPs (including combinations of GP, zAAP, and zIIP). z/OS-1.8 partitions are limited to 32 CPs.
  - On the ***Detailed Report*** window, the **Convert z/OS to 1.8** button has been changed to be the **Modify SCP/Workload** button. This button provides global editing capability across all GP partitions (and associated zAAP/zIIP partitions) for the SCP and/or workload assigned. The effects on capacity resulting from the changes can be viewed without committing the changes to the LPAR configuration. Some uses for this capability include:
    1. Change older versions of z/OS assigned to partitions to z/OS-1.8 or later, so that z10 LPAR hosts can be modeled.

2. Change all partitions to another workload to test the effect on the capacity relationship between two processors.

- For z/OS partitions on z10 processors, capacity results assume that HiperDispatch is turned on.

- ***Users Guide*** and online help have been updated.
  - New ***LSPR Tables and Processor Families*** window.
  - New ***Modify Partitions*** window.
  - Discussion concerning ***Reference-CPU*** settings and the new **Typical Settings** button.

C5.1e (08/27/2008) Customer version available

V5.1e (08/25/2008)

- ***LPAR Configuration Capacity Planning*** function:
  - The ***SI Reference-CPU*** is now limited to 1-way processors (this function only) as has previously been recommended. If a previous study is loaded where the ***SI Reference-CPU*** is not a 1-way, it will need to be changed before the ***LPAR Configuration Capacity Planning*** function can be entered. The ***Calibrate*** function can be used to adjust the ***SI Reference-CPU*** scaling-factor so that capacity results will be relative to any specific N-way model's LPAR configuration rated at the desired capacity setting.
  - Capacity data for **z/VSE** and **CFCC** on the z10 2097/400, /500, and /600 are lowered slightly (less than 1%). Studies with z/VSE and/or CFCC defined to partitions on these z10 models will have slightly different capacity results than with previous zPCR versions.
- ***zAAP Capacity Estimator***: A problem where an invalid number of CPs could be configured on the current configuration has been corrected.
- ***Users Guide*** and online help have been updated
  - Improving naming consistency for various windows and functions
  - Text concerning the ***SI Reference-CPU*** now being limited to 1-way processor models for the ***LPAR Configuration Capacity Planning*** function.
- ***Workloads Document***
  - This document has been largely restructured. Descriptions of LSPR workload primitives are unchanged.
  - From the ***Workloads*** window, when one of the suggested workloads has been selected, the **Describe** button will now present the discussion concerning these workload mixes.
  - ***Workload Selection Assistant*** now includes a button to access discussion concerning the suggested workload mixes.
- Miscellaneous minor fixes and improvements

C5.1d (07/10/2008) Customer version available

V5.1d (07/03/2008)

- ***Workloads*** window: A new z/OS workload mix called ***DI-Mix*** (Data Intensive) has been added to complement the suggested workload mixes already carried in zPCR. ***DI-Mix*** has been defined for each set of LSPR data (z/OS-1.8. z/OS-1.6, z/OS-1.4, and OS/390).

  Note: If a zPCR study file is created with the new ***DI-Mix*** workload defined to an LSPR processor table or assigned to a partition, it cannot be loaded with zPCR versions prior to v5.1d.
- ***LPAR Configuration Capacity Planning*** function
  - A minor algorithm change has been made that will somewhat affect the capacity assigned to small N-way partitions (up to 3-way) running z/OS-1.8 on z10 processors only.

- For zPCR versions starting with version 5.1, ***Legacy Plan*** capacity results for S/390 partitions defined with z/VM, z/VSE, Linux, and CFCC were slightly incorrect (System z processor results were not affected). Any previous ***Legacy Plan*** study done with S/390 partitions that included these workloads should be rerun.

  Note: This ***Legacy Plan*** problem does not apply to any Business-Partner or Customer distributed version of zPCR.

V5.1c (06/27/2008)

Note: **Capacity results generated with zPCR v5.1c will be identical to those from v5.0d**. Changes in v5.1, v5.1a, and v5.1c involve improved appearance for several windows and the restructure of underlying tables and logic. zPCR v5.1a will be made available to Customers at a later date.

- ***Workloads*** window and ***LSPR Single-Image Processor Capacity Table***: Corrected problem where certain non-z/OS workloads were incorrectly identified as z/OS workloads.
- ***LPAR Configuration Capacity Planning*** function:
  - Corrected problem where the LPAR host family was restored to a default value when one left the LPAR planning function and subsequently returned. The problem did not occur if a previous study was loaded, or if the current study was saved before returning to the LPAR planning function.
  - **z/VSE** replaces the **VSE/ESA** SCP identifier. Existing zPCR studies with VSE/ESA identified as the SCP for a partition will be automatically changed to z/VSE when the study is loaded.

V5.1a (06/18/2008)

- ***LSPR Multi-Image Processor Capacity Table***: Corrected problem where processor models that are not valid could be selected as the ***MI Reference-CPU***.
- ***LPAR Configuration Capacity Planning*** function
  - ***LPAR Host Definition*** window has been restructured to improve appearance and usability.
  - For ***nonstandard zAAP or zIIP configurations***, the number of specialty engines that can be defined is now limited to reasonable values.
  - With a ***Legacy Plan***, the 2094-701 may now be set as the ***SI Reference-CPU*** to provide capacity values that are consistent with a ***Contemporary Plan***. The 2094-701 remains unavailable as the ***SI Reference-CPU*** for the ***Combined LSPR Table***, since there is no supporting z/OS-1.4 LSPR data.
  - Problem corrected: If a user-defined workload mix was assigned to a partition, and the contents of that mix was subsequently changed, the partition capacity results failed to be recalculated based on the new mix.
- Various minor formatting corrections and improvements for the LPAR report windows.

V5.1 (06/02/2008)

- The ***MI Reference-CPU*** scaling factor default has been changed from 1.000 to 0.944 to correspond with information contained in the LSPR FAQ document. Therefore, the default ***LSPR Multi-image Processor Capacity Table*** will match the information on the LSPR public web site.
- The ***Workloads*** window has been redesigned. This window serves the same function as previously, but is more efficiently organized. The associated ***Define Workload Mix*** and ***View Workload Mix*** windows are also updated.
- The default workloads displayed in both of the ***LSPR Processor Capacity Tables*** have been changed to specify the zPCR suggested workload mixes and the LSPR default mix (LSPR-Mix), rather than focusing on LSPR workload primitives. The workloads displayed can be changed via the ***Workloads*** window, and can also be customized via the ***Preferences*** window.
- ***LPAR Configuration Capacity Planning*** function windows:
  - ***LPAR Host*** specification window has been restructured.

  - When large numbers of partitions are configured, the ***Detail Report*** and ***Comparison Report*** windows can be stretched vertically to reveal more of the configuration. The depth of these windows, as last displayed, will now be remembered within the zPCR invocation.
  - Text changes to some headings and format improvements on the ***Define Partitions***, ***Summary***, ***Detailed Report*** and ***Capacity Comparison Report*** windows have been made to improve readability. Clipboard and PRN outputs are updated accordingly.
- ***LPAR Capacity Comparison Report*** window: When using partition utilizations as ***Adjust*** values, the related ***Cap-A*** values should be determined by modeling the exact LPAR configuration involved. The ***Cap-A*** values entered should be those summed for CP pool applicable to the partition. Previous documentation suggested that capacity values from the ***Single-Image LSPR Processor Table*** could be used. Changes to correct this include:
  - When loading partitions into zPCR using RMF data, ***Cap-A*** values on the ***Capacity Comparison Report*** window are now determined by modeling the exact LPAR configuration represented by the selected RMF interval. ***Cap-A*** values will be those summed for the CP pool applicable to each partition. Partition utilization values will be assigned to the ***Adjust*** column.
  - The ***User's Guide*** and ***On-line Help*** have been updated to fully document use of the current capacity input fields. Separate sections discuss how the current capacity fields are populated when porting partitions from RMF, and also considerations on how to populate the fields manually.
- The ***Customization*** capability has been renamed to ***Preferences***. In addition, to setting startup defaults via the usual window, the preferred MI and SI Reference-CPU settings can be changed from the ***Reference-CPU*** window, and the preferred Workloads list setting can be changed from the ***Workloads*** window.
- ***User's Guide*** and ***Online Help*** have been updated to reflect all the changes.
- Corrections
  - RMF report processing has been updated to handle all reported problems to date
  - Occasionally, when clicking **Return**, some zPCR windows, would be hidden beneath other application windows.
  - When a current zPCR study contained inputs on the ***Comparison Report*** window, an attempt to ***Load another zPCR study*** would fail (the study could always be loaded in a fresh invocation of zPCR).
  - When a ***New Study*** was initiated during a zPCR invocation, the SI LSPR table radio buttons on the ***Function Selection*** window (***Single-Image*** tab) are reset, but the underlying table pointers were not.
  - With the ***LPAR Configuration Capacity Planning*** function, inputs on the ***Comparison Report*** window are now preserved in all cases except when the ***SI Reference-CPU*** processor model is changed. If only the ***SI Reference-CPU*** scaling-factor is changed, the ***Capacity-A*** values entered on the ***Comparison Report*** window are adjusted in proportion to the scaling-factor change.
  - Changing the ***MI Reference-CPU*** setting was causing inputs on the ***LPAR Comparison Report*** window to be changed. Only the ***SI Reference-CPU*** should affect these numbers.

C5.0d (03/28/2008) Customer version available

V5.0d (03/26/2008)

- ***Multi-Image LSPR Processor Capacity Table*** – minor adjustments to MI ITRRs for a few z10 processor models, such that zPCR results (LSPR-Mix workload) will align exactly with IBM pricing MIPS (previous version presented a few of the larger N-way models with a difference of ±1 MIPS).
- ***LPAR Configuration Capacity Planning*** function
  - On the ***Capacity Comparison Report*** window, the **Transfer Capacity** button has been corrected to ignore partitions that are not currently included.

  - On the ***Calibrate*** window (accessed via ***SI Reference-CPU*** window from ***Summary*** or ***Detailed Report*** window), the current LPAR host model assumed is now correctly displayed.
- ***z/VM*** and the ***LPAR Configuration Capacity Planning*** function
  - There is only 1 z/VM LSPR workload (***WASDB/LVm***), as compared to the z/OS sample of 5.
  - N-way scaling for the z/VM LSPR workload on z10 varies considerably from that of the z/OS workloads, being considerably lower for larger N-way partitions. Therefore, with the ***LPAR Configuration Capacity Planning*** function, when z/VM is assigned to a large N-way partition, its capacity can appear significantly diminished, when compared to that of the z/OS workloads.
  - Whenever the SCP is changed to z/VM for a partition with 5 or more logical CPs assigned, a notice will appear, with a link to the z/VM performance web site. Review the information on this web site for insight on what capacity your z/VM workload(s) might actually see.

C5.0b (03/14/2008) Customer version available

V5.0b (03/05/2008)

- ***LPAR Configuration Capacity Planning*** function – a ***Calibrate*** capability has been added to automatically adjust the ***SI-Reference-CPU*** scaling-factor such that the current LPAR host processor's capacity result will be a desired rating. This is useful to associate a specific capacity rating for a currently installed machine, while retaining a 1-way processor as the ***SI Reference-CPU*** as suggested in the User's Guide.
- The ***zAAP Capacity Estimator*** function has been restored, and is fully functional for the new System z10 processors.
- The ***zPCR User's Guide*** and ***Online Help*** have been updated to reflect the above changes.
- On the ***Workloads window***, the ***Linux EAS-AS-L*** workload description has been updated.
- The ***LSPR Document*** has been replaced with an updated version that corrects MSU ratings listed for a few IBM System z9 models. MSU ratings presented by zPCR itself are not affected.

V5.0a (02/26/2008)

- Official version of zPCR that supports **IBM System z10 processors** per items discussed under zPCR v5.0 below. (V5.0 was a controlled release).
- Additional changes / corrections
  - Adjusted zAAP/zIIP algorithms for z/OS-1.8 on System z10 to be consistent with those for GP partitions
  - Corrected problem with Change z/OS to 1.8 button where results were not being recalculated.
  - Corrected problem transferring zAAP/zIIP SCP partition information from RMF for pre-z10 processor models.

V5.0 (02/26/2008)

- **LSPR tables updated for IBM System z10 Enterprise Class processor family announce**
  - New z/OS-1.8 ITR data supporting the IBM System z10 family. Table includes all IBM System z processors. A new batch workload has been added, called ODE-B, replacing the CB-J workload that was included with z/OS-1.6.

    Note: z/OS LSPR data for the z10 includes only z/OS-1.8. Therefore neither z/OS-1.6 nor z/OS-1.4 ITR ratios can be presented for z10 processor models. Previous z/OS versions still can be modeled on all older System z processor models.
  - z/VM data added, supporting the IBM System z10 (WASDB/LVm workload only) for up to 16-way.
  - Linux data supporting the IBM System z10 (WASDB/L and EAS-AS/L) for up to 16-way.

- ***Function Selection*** window; ***Multi-Image Capacity*** tab: This ITR ratio table has been upgraded to z/OS-1.8. It presents relative capacity for typical LPAR configurations representative of each N-way model up to 64 CPs. All partitions are assumed to be running z/OS-1.8 and the same LSPR workload primitive or mix.
- ***Function Selection*** window; ***Single-Image Capacity*** tab
  - z/OS-1.8 ITRR table has been added, supporting up to 32 General Purpose CPs. z/OS-1.6, z/OS-1.4, Legacy (OS/390), and Combined (z/OS-1.4) ITRR tables remain. Note that the Combined ITRR table does not include z10 processors, since there is no way to determine z/OS-1.4 capacity for those models.
  - The naming convention for the various versions of LSPR SI ITRR data has been restructured to better emphasize the level of z/OS represented. Improved descriptions for these tables include: 1) processor families supported, 2) what z/OS releases are represented, and 3) whether z/VM and/or Linux workloads are included.
  - A common **Workloads** button is now provided at the bottom of the group box, applying to the LSPR data currently selected.
- Default ***SI Reference-CPU*** is now the **2094-701** set with a scaling-factor of 1.00.
- ***Workloads*** window – User-defined workloads can now be created for z/OS-1.8. User-defined workload mixes for z/OS-1.6 (and prior) are no longer supported. When loading a study that includes partitions referencing a user-defined mix for older z/OS releases, the partition's workload will be changed to "unknown".
- ***LPAR Configuration Capacity Planning*** function changes due to z/OS-1.8 LSPR limitation for z10 processors. All z/OS capacity comparisons concerning z10 processors must be made with z/OS-1.8. Therefore …
  - The **SI Reference-CPU** cannot be assigned as a z10 model unless all z/OS partitions are z/OS-1.8.
  - The **LPAR host** cannot be defined as a z10 model unless all z/OS partitions are z/OS-1.8.

  Note: Special function has been added to detect attempts to change to z10 processors, and to ease the conversion of z/OS partitions to 1.8. Comparisons of z10 z/OS-1.8 capacity data to older z/OS releases on other processor models will increase the margin of error, since multiple changes are being represented.
- ***CPcalculator*** functions have been updated to support new IBM System z10 processors.
  - ***Workload Selection Assistant***

  Note that the ***zAAP Capacity Estimator*** function is not available with this version.
- Problems that have been addressed
  - ***National Language support***:
    1. Error when loading a study if the path name contained locale specific characters
    2. Error when loading a study if certain text fields (i.e., Customer name) contain local-specific characters
  - Corrected a problem that prevented results when a z9 EC 400/500/600 processor was configured with a non-standard zAAP and/or zIIP configuration.
  - Miscellaneous minor fixes and improvements.
- The ***User's Guide*** and ***Online Help*** have been updated to reflect the changes in zPCR v5.0.