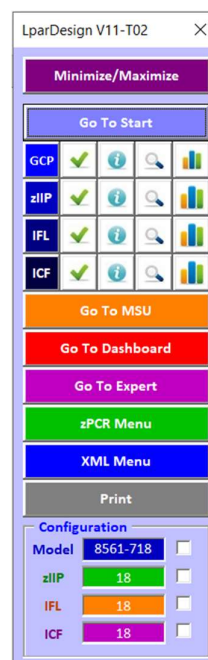


# LPARDesign

## USER'S GUIDE

### Version V11-T02




Doc : LPARDesign-HD-zPCR-V11-T02\_UserGuide.docx  
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## 1. PURPOSE OF THE DOCUMENT.

This document explains how to use the LPARDesign Tool.

This tool helps in configuring LPARs for all processor type (HiperDispatch® eligible).

It provides the calculation of the number of HighShare, MediumShare and LowShare LPs when HiperDispatch® is available on the studied machine.

## 2. DISCLAIMER OF WARRANTIES:

*The following [enclosed] macro is sample code created by Alain Maneville - IBM France.*

*This sample macro is not part of any standard IBM product and is provided to you solely for assisting you in the PR/SM LPAR Configuration*

*The code is provided "AS IS", without warranty of any kind. IBM shall not be liable for any damages arising out of your use of such sample code, even if you have been advised of the possibility of such damage*

***Support:** Support will be provided on a "best effort" basis. Send the spreadsheet for an analysis to [alain\\_maneville@fr.ibm.com](mailto:alain_maneville@fr.ibm.com)*

## 3. ACKNOWLEDGEMENTS:

I would like to thank the following people for their help and contribution to this worksheet

**Thierry DELERIS** – A customer from BPCE-IT (France).

He wrote the code of the DASHBOARD worksheet and did a great job for the zPCR link feature, the Task bar and more!.

**Robert VAUPEL** - STSM, z/OS Workload and Performance Management.

He helped me understand the HiperDispatch® Algorithms and LP spread in VH, VM and VL.

The new worksheet CONFIG-MSU comes from him.

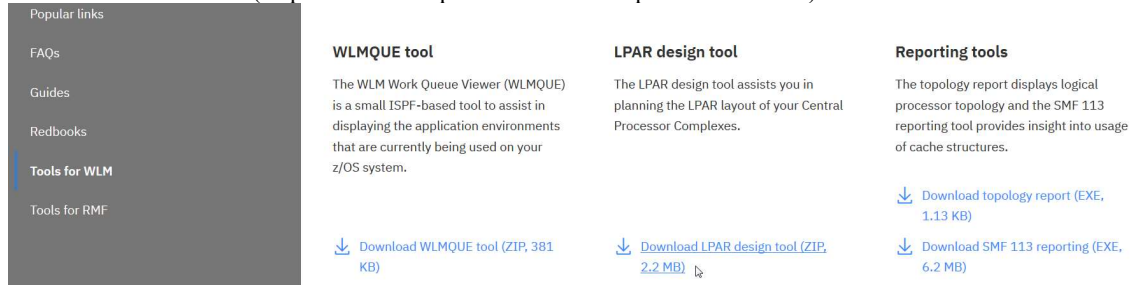


## 4. HOW TO GET THE PRODUCT – IMPORTANT NOTICE:

### 4.1 From the IBM WLM WEB Site (as of October 2018)

<https://www.ibm.com/it-infrastructure/z/zos-workload-management>

Go down to this section (skip the Featured products and More products sections)



The screenshot shows a sidebar with 'Popular links' including FAQs, Guides, Redbooks, 'Tools for WLM' (highlighted), and 'Tools for RMF'. The main content area is divided into three columns:

- WLMQUE tool**: The WLM Work Queue Viewer (WLMQUE) is a small ISPF-based tool to assist in displaying the application environments that are currently being used on your z/OS system. Below it is a link: 'Download WLMQUE tool (ZIP, 381 KB)'.
- LPAR design tool**: The LPAR design tool assists you in planning the LPAR layout of your Central Processor Complexes. Below it is a link: 'Download LPAR design tool (ZIP, 2.2 MB)'.
- Reporting tools**: The topology report displays logical processor topology and the SMF 113 reporting tool provides insight into usage of cache structures. Below it are two links: 'Download topology report (EXE, 1.13 KB)' and 'Download SMF 113 reporting (EXE, 6.2 MB)'.

 [Download LPAR design tool \(ZIP, 2.2 MB\)](#)






And click on

### 4.2 From Github

Due to a change in IBM's way of managing WEB sites, the product is now available on the GitHub Web site at the URL:

<https://github.com/AlainManeville/z-OS-LPARDesign>

You will get this page :

AlainManeville Add files via upload		Latest commit c0118b4 4 minutes ago
 LPARDesign-Extended-V01-T01.xlsm	Add files via upload	4 minutes ago
 LPARDesign-Extended-V01-T01_UserGuide.pdf	Add files via upload	4 minutes ago
 LPARDesign-HD-zPCR-V11-T01_IBM.xls	Add files via upload	6 minutes ago
 LPARDesign-HD-zPCR-V11-T01_UserGuide.pdf	Add files via upload	6 minutes ago
 README.md	Update README.md	9 minutes ago

Then, Click on the LPAR Design Hyperlink for the spreadsheet **AND** the User's Guide to download them.



## **5. CHANGES IN THIS RELEASE.**

### **5.1 What's new in V11T02**

#### **5.1.1 EXPERT recommendation (Rules#3 for GCP)**

There is a new way of proposing a configuration enhancement for this rule.  
The current way is proposing an enhancement to have one more VH but removes some LPs  
The new way is to propose adding a VH in keeping the same number of LP.

#### **5.1.2 Support for zPCR 9.4a**

zPCR 9.4a is supported in this release

### **5.2 What's new in V11T01**

The V11-T01 version is a major redesign of the tool.

#### **5.2.1 Support for z15-T02 (8562)**

The z15-T02 (8561) is supported in this release

#### **5.2.2 Support for zPCR 9.4**

zPCR 9.4 is supported in this release

#### **5.2.3 Support of ICF configuration (standalone definition or imported from zPCR)**

The ICF configuration is now imported or exported to/from zPCR.  
This will make the link to and from zPCR totally transparent as the ICF (even not HD eligible) are now included.

#### **5.2.4 Dashboard environment Enhancement**

When LPAR have DED LPs the color has been changed in dark green  
When LPAR do not have zIIP allocation, the color has been changed to dark grey  
ICF is now included in the Dashboard

#### **5.2.5 Task Bar Enhancement**

The Task Bar includes the ICF buttons  
The Task Bar includes the XML menu which is now operative

#### **5.2.6 XML file creation for comparison purpose**

This was a long-time request. You can now save your LPARDesign studies and load them in a new spreadsheet – LPARDesign Extended to compare the configurations.  
LPARDesign Extended is a companion Tool and has its own macro and User's Guide.

### **5.3 What's new in V10T01?**



### **5.3.1 Support of the new IBM Z - z15 (machine type 8561)**

The machine type 8561, the new z15 is supported in this release.

### **5.3.2 New way of acquiring the tool.**

See chapter 4 for this new way.

### **5.3.3 Support of zPCR 9.3**

zPCR 9.3 is now supported in this version.

### **5.3.4 Export LPARDesign study in XML format for COMPARE purpose.**

This is for future use. It will help comparing various flavors of the configuration.

### **5.3.5 EXPERT recommendations accuracy**

The Guaranteed number of Physical Processors has been enhanced for more accuracy in having 3 digits after the coma. This improve the accuracy of the EXPERT recommendations when computing the recommended new Weight.

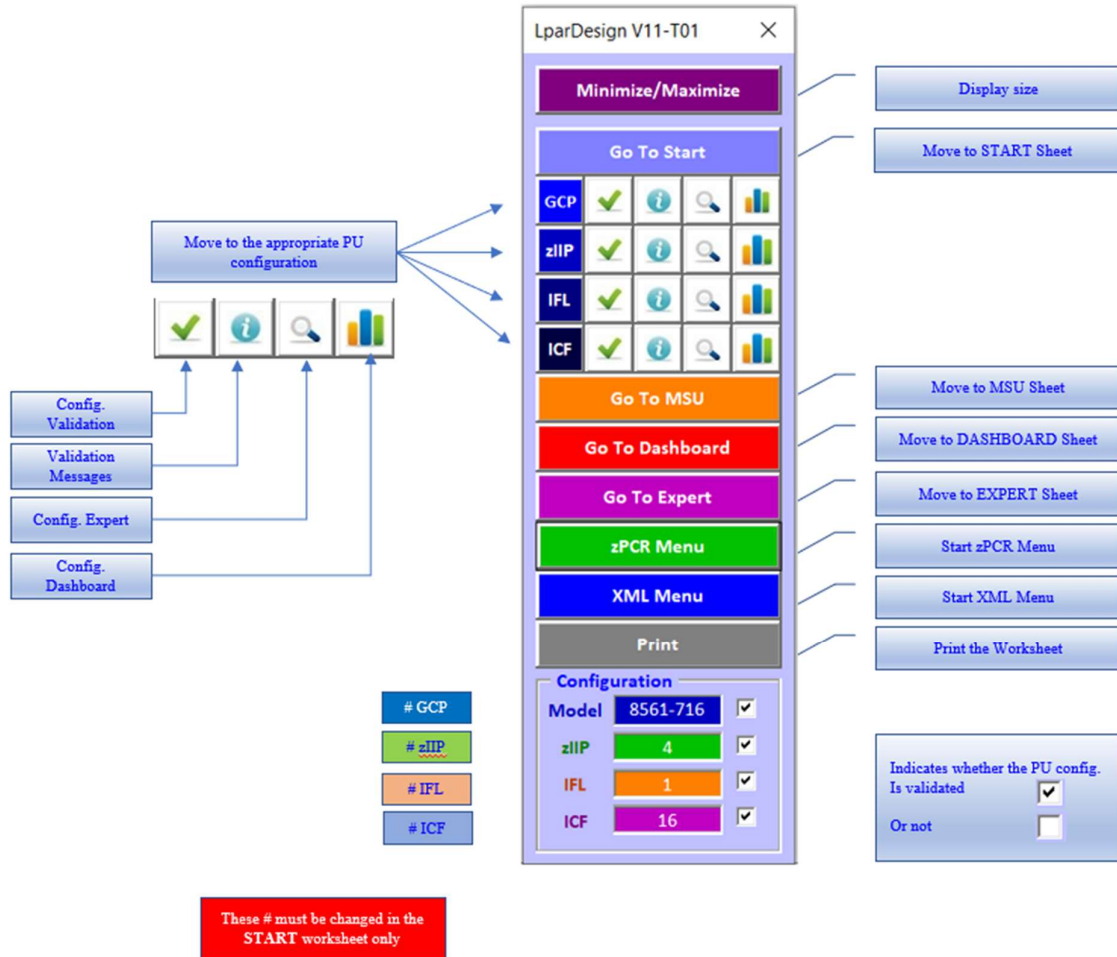


## 6. THE NAVIGATION AND ACTION BAR.

To make things simpler and easier, a new navigation and action BAR is provided. It is available when you open the spreadsheet and stays until you close it.

You can move it anywhere in the worksheets (you will do that when first opening the product).

### 6.1 BAR Functions.



It is now easier when you are in a particular PU configuration to view the EXPERT or the DASHBOARD. At any time, you can see your general configuration, validate it and check it.

**Again, any change in the number of PU must be done in the START worksheet!**

Sliding the mouse pointer to one of the icons shows its function:

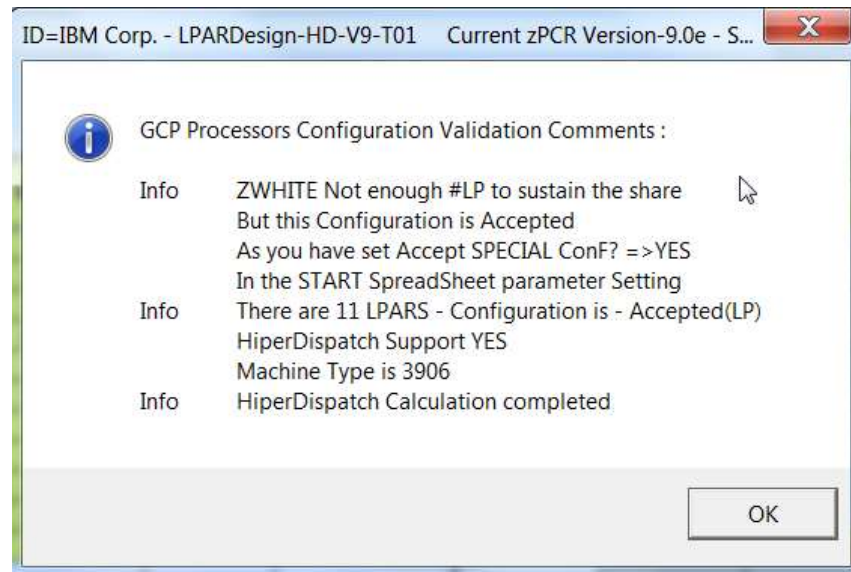





## 7. MANAGEMENT OF MESSAGES.

All the messages (validation, error and so on) will be now displayed in a single box. This prevent to have to click "OK" after each message.

An example in given in this picture:

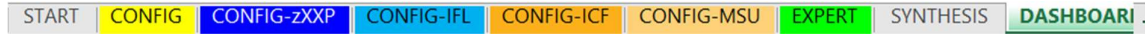


At any time, you can review these messages for a particular PU type by clicking on the  Icon.



## 8. A BRIEF VIEW OF THE SPREADSHEET.

The spreadsheet is now composed of 9 worksheets:



### 8.1 The START worksheet:

This worksheet is opened automatically when you start the workbook.

You must use it to set the number of GCP, zIIP and IFL and to set your “special configurations” parameter. Then you can specify a “Study ID” that will be used in the spreadsheet or in the zPCR study.

**The only way to change the value of GCP, zIIP and IFL is to go back to the START worksheet.**

You can go to this START worksheet by clicking on the

Go To Start

button on the navigation Bar.


A check of a mix of these processors will be done before you can go to the various LPAR Definition.

Other functions provided are:

- Create a copy (so you can always have a basic version of the tool)
- Save as (to save you work)
- The navigation Bar will let you go to others functions for this particular PU or to other functions..

### 8.2 The CONFIG worksheet:

This worksheet helps you define:

- The LPARs characteristics for the GCP (as you would do on the HMC)
- Validation of the LPAR configuration and Calculation of the HiperDispatch® processor in HighShare, MediumShare and LowShare LPs using the navigation Bar  icon.

Note : The Machine type and model are now changed only in the START worksheet.

Other functions provided are:

- Delete LPAR(s)
- Create a **.zPCR** study file or update an LPARDesign spreadsheet with an existing **.zPCR** study file.
- The navigation Bar will let you go to other functions for this particular PU or to other functions.
- Sorting (ascending and descending) of selected columns.

### 8.3 The CONFIG-MSU worksheet:

This worksheet helps you define:

- The DEFINED CAPACITY values for a single LPAR.
- A GROUP CAPACITY value for a set of LPARs.

The calculations and information provided are explained in the spreadsheet usage section specific to this spreadsheet.



## 8.4 The CONFIG-ZXXP worksheet:

This worksheet helps you define:

- The LPARs characteristics for the zIIP (as you would do on the HMC).

Other functions provided are in the navigation BAR:



## 8.5 The CONFIG-IFL worksheet:

This worksheet helps you define:

- The LPARs characteristics for the IFL (as you would do on the HMC).

Other functions provided are in the navigation BAR:



## 8.6 The CONFIG-ICF worksheet:

This worksheet helps you define:

- The LPARs characteristics for the ICF (as you would do on the HMC).
- Note: ICF are not eligible PU for HiperDispatch® - this configuration is there to fully support a zPCR study


Other functions provided are in the navigation BAR:



## 8.7 The EXPERT worksheet:

This worksheet might help you optimizing your current configuration for:

- GCP, zIIP and IFL.

You choose the EXPERT recommendations you want by clicking on the appropriate button on the top of the worksheet or directly  in the navigation BAR.



## 8.8 The SYNTHESIS worksheet:


This worksheet shows the HiperDispatch® effects for the GCP, zIIP and IFL.



## 8.9 The DASHBOARD worksheet

This worksheet provides a view of the processor layout for:

- GCP, zIIP, IFL and ICF.

You choose the DASHBOARD you want by clicking on the appropriate button on the top of the worksheet or directly  in the navigation BAR.



## 8.10 The Tables and SINET worksheets.

These are management worksheets. **Do not alter them!**



## 9. SPREADSHEET USAGE.

**ONLY CELLS IN YELLOW SHOULD BE FILLED.  
USE THE navigation BAR TO NAVIGATE WITHIN WORKSHEETS.  
CONFIGURATION DATA MUST BE CHANGED IN THE START WORKSHEET**

When you open the workbook, you are automatically directed to the START worksheet.  
Important changes have been done in this release, the START worksheet is now the only place to change the configuration of the PU.  
The navigation BAR is displayed too. You can move it anywhere if needed.


### 9.1 START SPREADSHEET Usage.

**This macro evaluates the LPAR definition for HD eligible processors**

---

To create a copy of this spreadsheet  *Optional but recommended*

---



**To start**

**Accept SPECIAL Conf ?**

2 - Change Configuration	
Machine-Type	8561-718
#zIIP	18
#ICF	18
#IFL	18

==> Not HD Eligible

---

To save results =====>

You can specify an identification of you study that will be set in the ID= field of the various titles. You can change it using the  button.  
The LPARDesign version and the current zPCR version are displayed in the first row of the sheet.

#### 9.1.1 Specifying the Machine type (GCP) and/or #zIIP and/or #IFL and/or ICF.

This is now the place you do these specifications. If you want to change them, you must go back to this spreadsheet by clicking on the  button on the navigation BAR.

#### 9.1.2 Accept SPECIAL Conf? YES or NO.

**Accept SPECIAL Conf ?**

PR/SM accepts configurations where the number of the HMC defined LPs is not consistent with the number of LPs needed to sustain the share of the LPAR.

This might happen in some Ksys GDPS LPAR configuration or if the customer defines “White Space” LPARs.

To inform the process that you will accept special configurations, just say YES in the proposed choices.

The effects of saying “YES” will be explained in the CONFIG sheet usage.

To run with the regular process, say “NO”.



### 9.1.3 Set / Change the Configuration for GCP, zIIP, ICF and IFL

You can now specify all the full configuration in terms of Machine-Type (GCPs), zIIPs and IFLs. Some validations are done to check the health of these settings (for example, do not specify zIIPs for an IFL only machine).

The following cells should be filled:

2 - Change Configuration	
Machine-Type	8561-718
#zIIP	18
#ICF	8
#IFL	18

==> Not HD Eligible


All the fields are lists so you can use the button on the right of the fill area to scroll within them.

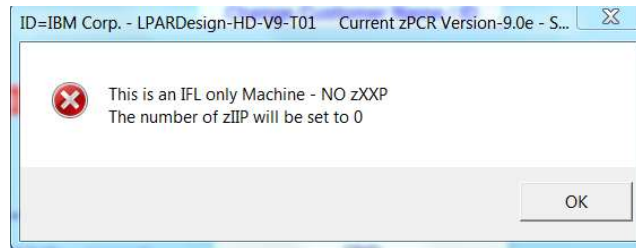
Note: for IFL only machines (Like EMPEROR), you will find machines where the type ends by **00**. For example, 2964-7**00** or 3906-4**00** – this means that NO GCP are available for this machine as it is an IFL only machine.

Example of an IFL only machine selection:

2 - Change Configuration	
Machine-Type	3906-700
#zIIP	25
#IFL	25

Here you have chosen a 3906-7**00** which contains NO GCP.

With this very configuration, suppose now that you press the  Icon for the IFL configuration validation. As you have left 25 zIIPs, you will get an error message:



After pressing OK, the number of zIIP will be set to 0 and the Change Configuration will look like:


2 - Change Configuration	
Machine-Type	3906-700
#zIIP	0
#IFL	25

Of course, you can mix [GCP / zIIP], ICF and IFLs.




### 9.1.3.1 *Notes on LinuxONE machine support :*

To make the spreadsheet easy and efficient, LinuxONE machine will be only supported as **IFL only machine** executing z/VM as virtualization software.

When you are done with all these settings **it is mandatory to click the**  **Icon**. This will check your settings and will bring you to the CONFIG (GCP) worksheet or, if you have an IFL only machine to the CONFIG-IFL worksheet.

### 9.1.4 Always keep a fresh copy of the initial spreadsheet

It is recommended to always have a fresh copy of the initial spreadsheet – so the

A rectangular button with a light blue border and the text "Create a copy..." in a dark blue font.

button is useful for that.



## 9.2 CONFIG SPREADSHEET Usage.


### 9.2.1 Define the basic LPAR GCP configuration.

There is a cell 

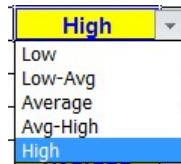
#LPARs	11
--------	----

 containing the number of currently defined LPARs. We did that because of the IFL and ICF configuration, so we needed to check that the number of LPARs (GCP+IFL+ICF) does not exceed the total number of LPAR supported by the machine. Just fill the cells in yellow as you would fill the definition at the HMC.

Here is the new layout of the CONFIG spreadsheet before the validation.

ID=IBM Corp. - LPARDesign-HD-V9-T03														Current zPCR Version-9.2a - SpecCf=YES														LPAR DEFINITION (CP) TOLERATION%=-													
CFG-LP-VALID?		NO				vMachine		25		Shared-Pool		23		<div>Configuration Validation</div> <div>Delete selected LPAR</div> <div></div>																											
Machine-type		3906-725				#PhyProc		25		Ded-Pool		2																													
MSU		3 644				#LPs (non-ICF, non-DED)		36																																	
Total Weight		2 415				Ratio LP/PP (base)		1.57																																	
Max LPAR		85				LSPP-AVG-V2R2-MI		31 084																																	
						#LPARS		11																																	
LPARNAME		WEIGHT		#LP		#SHARE (by Pool)		RESERVED		Guaranteed #PP		Wkld LSPR		MinReq#LP		Check#LP		HD-HIGH#		HD-MED#		HD-MED%		HD-LOW#		#Active LPs		#Report LPs													
⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆		⬆ ⬇ ⬆													
ZWHITE		500		2								Average																													
Z015		196		3								Average																													
W3906		142		2								Low																													
W022		DED		2								Average																													
W021		58		2								Average																													
W020		300		8								Average																													
W017		302		4								Average																													
W014		242		3								Low-Avg																													
W013		60		1								Average																													
S019		300		3								Average																													
LPAR8CHR		315		8								Average																													

Note: The **Wkld LSPR** column is filled manually or automatically when you import a zPCR study. You can choose (manually) your setting in the following list:



The CPC has already been chosen in the START worksheet. You just must configure the LPARs with their name, Weight (Weight value or **DED** for dedicated LPs) and number of LPs as you would do in the HMC definition.

### 9.2.2 Validating the configuration – with **Accept SPECIAL Conf ?** **NO**

This is the regular way of validating the configuration.

Then click on the **Configuration Validation** button (old way) or in the Icon for GCP.

This will check that the parameters are correctly set.

If errors occur, an error box is displayed; the Check/LP column is filled with the specific error.

The **CFG-LP-VALID?** **NO** is set to NO

You then must correct the errors; rerun the validation until you have **CFG-LP-VALID?** **YES** displayed.

Note: starting with the z13 machine, a cell is displayed. So now, we have 4 possible values: 30, 40, 60 or 85 LPARs.

The cell 

Max LPAR	85
----------	----

 gives the maximum number of LPAR than can be defined in the machine.






### 9.2.3 Validating the configuration – with: **Accept SPECIAL ConF ? YES**

In this case, you will accept configurations **where** the number of HMC defined LPs is **not consistent** with the number of LPs needed to sustain the share of the LPAR.

The process of validating this kind of configuration has been added and is as follow:

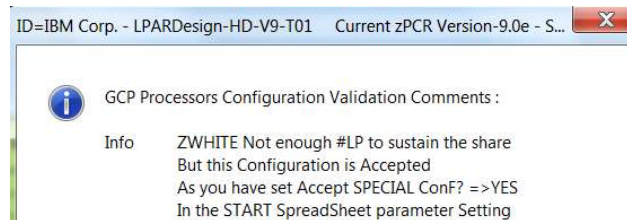
- If the number of defined LPs is less than the number of LPs required to sustain the share of the LPAR, a message will be displayed, BUT, the configuration will be accepted.
- Let's take this example with a focus on the **ZWHITE** LPAR:

ID=IBM Corp. - LPARDesign-HD-V9-T03															Current zPCR Version-9.2a - SpecCfg=YES										LPAR DEFINITION (CP)									
CFG-LP-VALID?		YES						vMachine		Shared-Pool																								
						#PhyProc		25		23																								
Machine-type		3906-725				#LPs (non-ICF, non-DED)		36		Ded-Pool																								
MSU		3 644				Ratio LP/PP (base)		1.57		2																								
Total Weight		2 415				LSR-AVG-V2R2-MI		31 084																										
Max LPAR		85				#LPs		11																										
															Configuration Validation																			
															Delete selected LPAR																			

We see that ZWHITE LPAR has a Weight of 500 which gives a %Share of 20.7% of the Shared Pool and thus needs a Minimum Required #LP of 5.

But only 2 LP are defined, and this is done on purpose.

During the process, the following pop-up message will be displayed:



The LPAR definition will be accepted and the Guaranteed#PP (a key value for HiperDispatch® computing) will be replaced by the number of LPs set in the #LP column.


To reflect this “acceptation” the Guaranteed#PP column is set to bold and blue and the Check#LP column will receive the value **OK(a)**.

After the validation, the regular HiperDispatch® process can carry on but it will use the “replaced” value in Guaranteed#PP.




























## 9.2.4 Sorting selected columns.

The capability of sorting selected columns is there:

These columns have the buttons  in their header. Sort can be Ascending or Descending depending on the button you push.

Only columns that have these buttons can be sorted. The following picture shows what columns you can sort on the CONFIG sheet.

ID=IBM Corp. - LPARDesign-HD-V9-T03										Current zPCR Version-9.2a - SpecCfg=YES				LPAR DEFINITION (CP)															
CFG-LP-VALID?		YES		#PhyProc		25		Shared-Pool		23		<div>Configuration Validation</div> <div>Delete selected LPAR</div> <div></div>																	
Machine-type		3906-725		#LPs (non-ICF, non-DED)		36		Ded-Pool		2																			
MSU		3 644		Ratio LP/PP (base)		1.57		2																					
Total Weight		2 415		LSPR-AVG-V2R2-MI		31 084																							
Max LPAR		85		#LPARS		11																							
										HD supported on 3906																			
LPARNAME		WEIGHT		#LP		%SHARE (By Pool)		RESERVED		Guaranteed #PP		Wkid LSPR		MinReq#LP		Check#LP		HD-HIGH#		HD-MED#		HD-MED%		HD-LOW#		#Active LPs		#Report LP	
 		 		 		 		 		 		 		 		 				 		 		 					

Note: sorting on the CONFIG sheet will sort (on the same column name) the related column on the other two sheets:

CONFIG-zXXP – because the LPARNAME is derived from the CONFIG sheet

CONFIG-MSU – because the LPARNAME, #LP and Weight are derived from the CONFIG sheet



### 9.2.5 Explanation of some columns.

**%SHARE  
(By Pool)** - gives the %SHARE of the LPAR (by pool of LP, Shared / DEDicated)

**Guaranteed  
#PP** - This is: “%SHARE x #of Physical processors (shared pool)” – a fundamental metric for the HiperDispatch calculation.

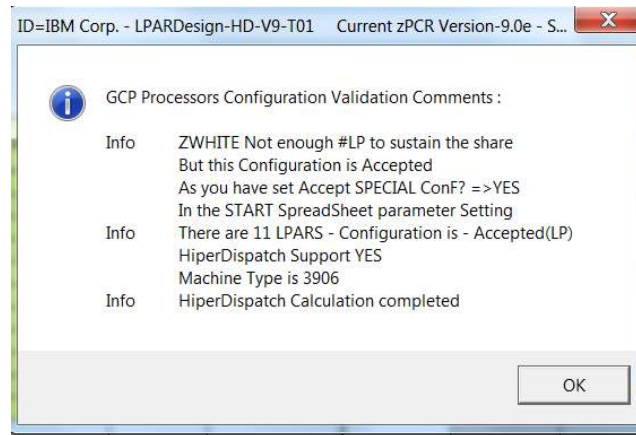
Note: with **Accept SPECIAL Conf ?** **YES** this value is not calculated but replaced by the number of defined LPs.

**MinReq#LP** - This gives the minimum number of LP needed to sustain the %SHARE.

Note: with **Accept SPECIAL Conf ?** **YES** and if there are less defined LPs than required, this column will

have the value: **Check#LP**  
**OK(a)**

Note that now all the messages are in a single Box:



All the message boxes display the current supported zPCR Version.

The **RESERVED** column is currently used to display information messages like “rules” for a specific machine (for the GCP processing at that time).



## 9.2.6 Computing the HiperDispatch® number of LPs.

Just push the appropriate button or Icon and the following columns will be filled with the calculated values.

HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LPs
----------	---------	---------	---------	-------------	-------------

**HD-HIGH#:** #of HighShare LPs or **VH**

**HD-MED#:** #of MediumShare LPs or **VM**

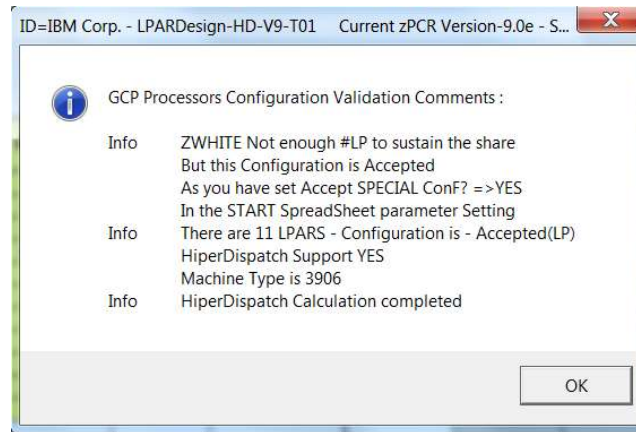
**HD-MED%:** Entitlement of the MediumShare LPs

**HD-LOW#:** #of LowShare LPs or **VL**.

**#Active LPs:** This is the number of real life active LPs considering that WLM will always “UnPark” a LowShare LP in a 2 LP configuration with a MediumShare LP and a LowShare LP. This number can be compared to the number of LP you initially set for the LPAR to evaluate the HiperDispatch® effect.

**#Report LP:** The sum of VH and VM according to the basic HiperDispatch® LP spread calculation. This number is the one reported by RMF but remember that on a 2 LP configuration the second LP is always UnParked.

When the calculation is completed you will receive this pop-up box:



Otherwise, error messages will be sent.

The colors of the LP entitlement have been set to highlight HighShare LPs or MediumShare LPs that have an entitlement of 100% as shown in the below picture:

CFG-LP-VALID?	YES
Machine-type	8561-718
MSU	3 213
Total Weight	1 600
Max LPAR	85

HD supported on 8561								
LPARNAME	WEIGHT	#LP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LP
⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇	⬆ ⬇
W013	142	2	0	2	71.0%	0	2	2
W014	242	3	1	2	71.0%	0	3	3
W015	196	3	1	1	96.0%	1	2	2
W017	302	4	2	2	51.0%	0	4	4
W018	60	2	0	1	60.0%	1	2	1
W019	300	3	3	0	N/A	0	3	3
W020	300	5	2	1	100.0%	2	3	3
W021	58	2	0	1	58.0%	1	2	1
W022	DED	2	2	0	N/A	0	2	2

LPAR W020 has 2 VH LPs, 1 VM@100% and 2 VL - so you can see the way the cells are colored. In this case, a VM is needed to be the anchor point of future UnParked VLs

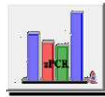



A warning message will be displayed in the Check#LP column if the number of VL is > 2 as shown in this example:

LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	RESERVED	Guaranteed #PP	Wkld LSPR	MinReq#LP	Check#LP
W3906	142	2	5.9%		1.35	Low	2	OK
W014	242	3	10.0%		2.30	Low-Avg	3	OK
Z015	196	3	8.1%		1.87	Average	2	OK
W017	302	4	12.5%		2.88	Avg-High	3	OK
ZWHITE	500	2	20.7%		2.00	High	5	OK(a)
S019	300	3	12.4%		2.86	Average	3	OK
W020	300	8	12.4%		2.86	Average	3	#VL>2
W021	58	2	2.4%	New 3906 Rule	0.55	Average	1	OK
W022	DED	2	100.0%		2.00	Average	2	OK
W013	60	1	2.5%		0.57	Average	1	OK
LPAR8CHR	315	8	13.0%		3.00	Average	3	#VL>2

LPARs W020 and LPAR8CHR have this warning.

### 9.2.7 Linking to zPCR.



When the button  is pressed, this will create a .zpcr study file from the LPARDesign spreadsheet or will update the current LPARDesign spreadsheet with an existing .zpcr study file. See the chapter [LINK with zPCR](#) for more information.



Or you can use the  button in the Task Bar to call the zPCR link.



### 9.2.8 Deleting LPARs.

A button **Delete selected LPAR** is provided to properly delete selected LPAR. This was a long term requirement as it is not allowed to delete an LPAR with just deleting the EXCEL row containing this LPAR: after manual deletion, the number of row was less than expected and this was producing errors in the spreadsheet.

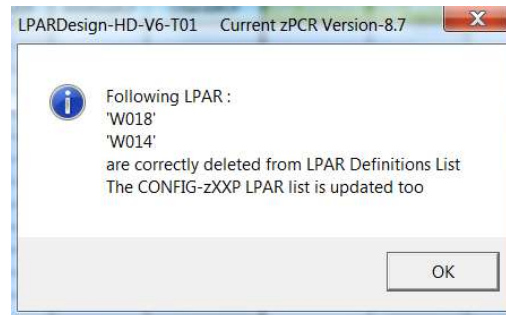
To delete LPAR(s):

- Select the LPAR(s) you want to delete
- If you want to delete more than one LPAR , select the first one, **keep the CTRL key pressed**, then select the other LPARs.

In this scenario, LPARs W014 and W018 are selected:

LPARNAME	WEIGHT	#LP
W013	142	2
W014	242	3
W015	196	3
W017	302	4
W018	60	2
W019	300	3
W020	300	5
W021	58	2
W022	DED	2

Then press the **Delete selected LPAR** button and you will get the following message box:



Note that the deletion has been done in the CONFIG-zXXP and the CONFIG-MSU too.

**Never delete a row in any Worksheet!**



### 9.3 CONFIG-MSU SPREADSHEET Usage.

#### 9.3.1 General usage notice:

As usual the LPAR's Name, #LCP and Weight are taken from the CONFIG spreadsheet, so only the yellow columns named:

Defined Capacity Limit

Capacity Group Name

Capacity Group Limit [MSU]

have to be filled to use this part of the tool.

Definitions					
Lpars	LCPs	Weight	Defined Capacity Limit	Capacity Group Name	Capacity Group Limit [MSU]

One possibility on modern z Systems with z/OS is to control the MSU consumption with the help of group capping. Group capping provides the fact that partitions can consume more MSU during a capping phase when other partitions of the same capacity group do not require their capacity share. On the other hand it is often difficult to understand how the partitions are being capped especially when group capping and individual defined capacity limits are combined. The Config-MSU tab provides some assistance in identifying the capping mechanism for the partitions under the assumption that all partitions request their capacity share during the capping phase. Figure 1 shows an example for an environment with 6 partitions from which 5 belong to a capacity group GRP1, and two of these partitions have individual defined capacity limits.

Definitions							CEC/LCP based			Group Calculations								Result	
Lpars	LCPs	Weight	Defined Capacity Limit	Capacity Group Name	Capacity Group Limit [MSU]	Share [%]	MSU at Weight	Theoretical Usable MSU	Total Group Weight	Group Share [%]	Group Share [MSU]	Possibly Donated MSU	Total Donated MSU	Possible Group Receiver	Group Receiver Share [%]	Received Donated MSU	Maximum Consumable MSU	Comment	
SYS1	10	500		GRP1	1,000	40.0%	476.4	1,191.0	1,050	47.6%	476.2		81.0	YES	76.9%	62.3	538.5	cap pattern or negative phantom weight	
SYS2	5	250	200	GRP1	1,000	20.0%	238.2	595.5	1,050	23.8%	238.1	38.1					200.0	positive phantom weight	
SYS3	2	150	100	GRP1	1,000	12.0%	142.9	238.2	1,050	14.3%	142.9	42.9					100.0	positive phantom weight	
SYS4	2	100		GRP1	1,000	8.0%	95.3	238.2	1,050	9.5%	95.2		81.0	YES	15.4%	12.5	107.7	cap pattern or negative phantom weight	
SYS5	1	50		GRP1	1,000	4.0%	47.6	119.1	1,050	4.8%	47.6		81.0	YES	7.7%	6.2	53.8	cap pattern or negative phantom weight	
SYS6	4	200	100			16.0%	190.6	476.4									100.0	positive phantom weight	

Figure 1 CONFIG-MSU Example

#### 9.3.2 LPAR and Capacity Definitions

Definitions						Share [%]
Lpars	LCPs	Weight	Defined Capacity Limit	Capacity Group Name	Capacity Group Limit [MSU]	
SYS1	10	500		GRP1	1,000	40.0%
SYS2	5	250	200	GRP1	1,000	20.0%
SYS3	2	150	100	GRP1	1,000	12.0%
SYS4	2	100		GRP1	1,000	8.0%
SYS5	1	50		GRP1	1,000	4.0%
SYS6	4	200	100			16.0%

The definitions part shows the defined LPARs, the number of logical processors (LCPs) per partition, and the weight of each partition. The weight determines the "Share [%]" each partition has from the CEC. The Capacity definitions encompass a possible Defined Capacity Limit for each partition, the Group name if the partition belongs to a capacity group and the Capacity Limit of the Group.





Figure 2 CONFIG-MSU Definitions

Share [%]	CEC/LCP based	
	MSU at Weight	Theoretical Usable MSU
40.0%	476.4	1,191.0
20.0%	238.2	595.5
12.0%	142.9	238.2
8.0%	95.3	238.2
4.0%	47.6	119.1
16.0%	190.6	476.4

The next part of the spreadsheet converts the weight definition into an MSU value. MSU at Weight tells how much MSU are guaranteed to the partition by its weight definition. The theoretical usable MSU value describes how many MSU can be consumed when all LCPs of the partition are used to 100%.

Figure 2 Usable MSU for each partition

### 9.3.3 Group Calculation

Group Calculations							
Total Group Weight	Group Share [%]	Group Share [MSU]	Possibly Donated MSU	Total Donated MSU	Possible Group Receiver	Group Receiver Share [%]	Received Donated MSU
1,050	47.6%	476.2		81.0	YES	76.9%	62.3
1,050	23.8%	238.1	38.1				
1,050	14.3%	142.9	42.9				
1,050	9.5%	95.2		81.0	YES	15.4%	12.5
1,050	4.8%	47.6		81.0	YES	7.7%	6.2

Figure 3 Group Calculations

Figure 4 depicts group related metrics. For distributing the MSU within a group it is necessary to understand the total weight of all partitions within the group as well as the share of each partition within the group. The group share is expressed as a percentage value and a MSU value.

If a partition has a defined capacity limit which is smaller than its Group share, the partition is not able to consume all of the MSU which it is entitled to by the group definition. The MSU which it is not able to use can potentially be donated to other partitions when group capping and individual capping is in effect for the partition. The "Total Donated MSU" can now be distributed between the receiver partitions. Each receiver has a share based on its weight and receives the corresponding portion of the total donated MSU.

Result	
Maximum Consumable MSU	Comment
538.5	cap pattern or negative phantom weight
200.0	positive phantom weight
100.0	positive phantom weight
107.7	cap pattern or negative phantom weight
53.8	cap pattern or negative phantom weight
100.0	positive phantom weight

The result section now tells how much MSU each partition can consume under the assumptions that all partitions use their share and that all capping limits are being reached. The Comment column then displays which capping technology is being used.

Figure 4 Group Capping Results

Notice: Starting with zEC12 GA2 and z/OS 2.1 the **cap pattern technology has been replaced by a negative phantom weight technology**, therefore which technology is being used depends on the hardware and software level.





### 9.3.4 Other buttons functions:

Clear Definitions

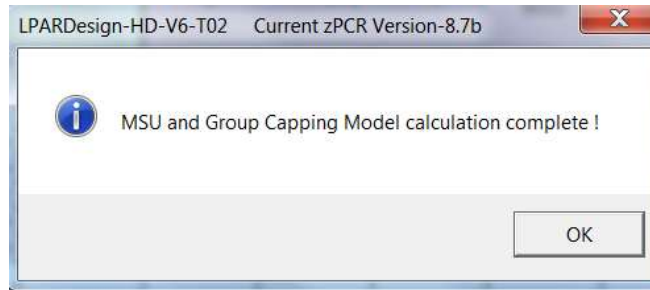
This will clear de MSU definitions (Yellow columns)

Clear Calculations

This will clear the calculation part after a partial modification of the definitions

Calculate

When the definitions are ok, press this button to calculate them. The following information box will appear:



### 9.3.5 Explanation of this tab header:

The LPAR configuration is taken from the CONFIG tab.

DEDicated processors may exist in the definition – if it is the case this particularity is shown in the Shared Pool cell when the number of physical processor in the Shared Pool is different from the number of physical processors of the actual physical machine.

This is shown in the following example:

CEC	2964-712	PCPs	12	MSU	1 891	Total Weight	1 000	Shared Pool	10
-----	----------	------	----	-----	-------	--------------	-------	-------------	----

The definitions of this example are:

Definitions					
Lpars	LCPs	Weight	Defined Capacity Limit	Capacity Group Name	Capacity Group Limit [MSU]
W013	3	300		GRP1	1 000
W014	3	200	200	GRP1	1 000
W015	2	200	100	GRP1	1 000
W017	2	140		GRP1	1 000
W018	2	10		GRP1	1 000
W019	2	DED			
W020	2	100	100		
W021	2	50	100		

The physical machine has 12 PCP

But we have an LPAR (W019) with 2 DEDicated PCP

So the Shared Pool is 10 PCP

Note#1: The Weight cell format of the DEDicated LPAR is in red.

Note#2: sorting on the CONFIG sheet will sort (on the same column name) the related column on two other worksheets:






CONFIG-zXXXP – because the LPARNAME is derived from the CONFIG sheet

CONFIG-MSU – because the LPARNAME, #LP and Weight are derived from the CONFIG sheet



## 9.4 CONFIG-ZXXP SPREADSHEET Usage.

### 9.4.1 Only zIIP are supported in this release.

Once you are done with the CP configuration you can use the      set of Icons to be directed to the zIIP configuration spreadsheet if needed.

**The LPAR NAMES are automatically filled.**

**Never delete an LPAR in this sheet – do it from the CONFIG sheet and use the “Delete selected LPAR” button**

**Remember:** The number of zIIP has been filled in the START spreadsheet and can be seen in

zIIP#Procs	25
------------	----

If you want to change it, go back to the START spreadsheet.



Note that the rule concerning the total number of zIIP is enforced and checked (2 zIIP / 1 GCP).

**It is not the standard rule which is based on the number of purchased CP, but we cannot know what this number is.**

Then fill the Weight (Weight value or DED for dedicated zIIP) and number of LPs for each LPAR.

Clear the cells (Weight and number of LP) for the LPARs that are not concerned by the zIIP configuration.

**NEVER clear the LPAR name.**

Then, click on the  button (old way) or the  Icon for zIIP. This will check the configuration and calculate the HiperDispatch® number of LPs.

If errors occur, an error box is displayed and character “E” is set on the Error column of the current LPAR:  
Example of error – the machine has **25** physical zIIP, but one has defined **26** LP in the W020 LPAR:

zIIP			%SHARE by pool	Guaranteed# PP	HD supported on 3906					#Act-LPs	Error	Information
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#				
W3906	142	2	6%	1.35	0	2	67.6%	0	2			
W014	242	3										
Z015	196	3										
W017	302	4										
ZWHITE	500	2										
S019	300	2										
W020	300	26										
W021	58	2										
W022	DED	2										
W013	60	1										
LPAR8CHR	315	8										

ID=IBM Corp. - LPARDesign-HD-V9-T01 Current zPCR Version-9.0e - S...

**IIP Processors Configuration Validation Comments :**

Info ZIIP INITIAL Configuration Routine Ended : Successfully

Info ZWHITE Not enough #LP to sustain the share

But this Configuration is Accepted

As you have set Accept SPECIAL Conf? =>YES

In the START SpreadSheet parameter Setting

Info W020 ZIIP LP number(26) is higher than the ZIIP PP number (25) Please correct these values

Info ZIIP FINAL Configuration Routine Ended : with error

OK



The column named **#Act-LPs** has the same meaning that the one in the CONFIG spreadsheet.

The zXXP configuration is checked in two phases:

- One for the Configuration Validation (e.g.: LP numeric and so on). Its name is “Initial Configuration”.
- One for the HiperDispatch® Configuration calculation. Its name is “Final Configuration”.

A new **Information** column has been added to provide specific information for a specific machine rule.

Note#2: sorting on the CONFIG sheet will sort (on the same column name) the related column on two other worksheets:

**CONFIG-zXXP** – because the LPARNAME is derived from the CONFIG sheet

**CONFIG-MSU** – because the LPARNAME, #LP and Weight are derived from the CONFIG sheet

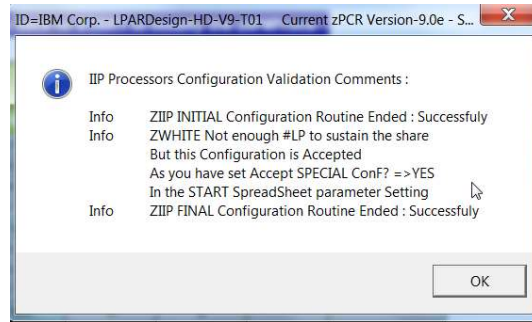


## 9.4.2 Support for Special Configuration for zIIPs:

This is the same rule than for GCP configuration.

If you want to set a number of zIIP LPs that is below the number of required zIIP LPs, you can do it by selecting **Accept SPECIAL Conf ?** **YES** in the START spreadsheet (this information will be the same for both GCP and zIIP).

When you are in the situation where the number of zIIP LPs is below the number of required LPs and you have selected this option, you will have this message box(read the information for the ZWHITE LPAR) :



And the target LPAR will have its number of guaranteed LP in bold/blue as shown below for the ZWHITE LPAR :

zIIP			%SHARE by pool	Guaranteed# PP	HD supported on 3906						
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs	Error	Information
W3906	142	2	6%	1.35	0	2	67.6%	0	2		
W014	242	3	10%	2.30	1	2	65.2%	0	3		
Z015	196	3	8%	1.87	1	1	86.7%	1	2		
W017	302	4	13%	2.88	2	1	87.6%	1	3		
ZWHITE	500	2	21%	<b>2.00</b>	2	0	N/A	0	2	OK(a)	
S019	300	3	12%	2.86	2	1	85.7%	0	3		
W020	300	8	12%	2.86	2	1	85.7%	5	3	#VL>2	
W021	58	2	2%	0.55	0	2	27.6%	0	2		New 3906 Rule
W022	DED	2	100%	2.00	2	0	N/A	0	2		
W013	60	1	2%	0.57	0	1	57.1%	0	1		
LPAR8CHR	315	8	13%	3.00	2	1	100.0%	5	3	#VL>2	

In the error column, the characters **OK(a)** will be displayed too.

The recommendation on the number of VL is displayed too (as for W020 and LPAR8CHR LPARs).



## 9.5 THE CONFIG-IFL SPREADSHEET USAGE.

As for GCPs, just fill the cells in yellow.

Remember that the number of IFLs has been set in the START spreadsheet. This is the only place to change it. Here is the layout of the spreadsheet:

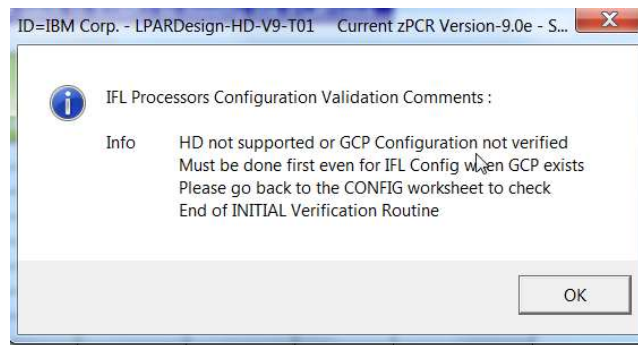
ID=IBM Corp. - LPARDesign-HD-V9-T03 Current zPCR Version-9.2a - SpecCfg=YES LPAR DEFINITION (IFL)												
CFG-LP-VALID?	NO	IFL-Shared-Pool	23	Configuration Validation		Delete selected LPAR						
Machine-type	3906-725	IFL-DED-Pool	2									
IFL#Procs	25	IFL-Weight	2415									
Max LPAR	85	IFL-Valid?	NO	Go back to START to modify the IFL#Procs								
		IFL-#LPARs	11									
IFL												
LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	Guaranteed #PP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs	Error	Information	
ZVM11	315	8										
ZVM4	302	4										
ZVM6	300	3										
ZVM7	300	8										
ZVM2	242	3										
ZVM5	500	2										
ZVM9	DED	2										
ZVM3	196	3										
ZVM1	142	2										
ZVM10	60	1										
ZVM8	58	2										

You must specify the **LPAR Name** as it cannot be copied from somewhere else (as for zIIP).

The configuration validation is done in two steps as for zIIP (INITIAL and FINAL).

As for GCPs you can properly delete an LPAR.

If you have GCPs too, **you must validate the GCP configuration before validating the IFL configuration** otherwise you will get this error message:



Note: depending on the way you have entered the number of IFL, you will be automatically directed to this IFL configuration spreadsheet – this is the case for an IFL only configuration.



Here is the spreadsheet after having click on the

Configuration Validation

button (old way) or in the




ID=IBM Corp. - LPARDesign-HD-V9-T03 Current zPCR Version-9.2a - SpecCfg=YES LPAR DEFINITION (IFL)											
CFG-LP-VALID?	YES		IFL-Shared-Pool	23							
Machine-type	3906-725		IFL-DED-Pool	2							
IFL#Procs	25		IFL-Weight	2415							
Max LPAR	85		IFL-Valid?	YES							
			IFL-#LPARs	11							
IFL			HD supported on 3906								
LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	Guaranteed #PP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs	Error	Information
ZVM11	315	8	13.0%	3.00	2	1	100.0%	5	3	#VL>2	
ZVM4	302	4	12.5%	2.88	2	1	88.0%	1	3		
ZVM6	300	3	12.4%	2.86	2	1	86.0%	0	3		
ZVM7	300	8	12.4%	2.86	2	1	86.0%	5	3	#VL>2	
ZVM2	242	3	10.0%	2.30	1	2	65.0%	0	3		
ZVM5	500	2	20.7%	2.00	2	0	N/A	0	2	OK(a)	
ZVM9	DED	2	100.0%	2.00	2	0	N/A	0	2		
ZVM3	196	3	8.1%	1.87	1	1	87.0%	1	2		
ZVM1	142	2	5.9%	1.35	0	2	67.5%	0	2		
ZVM10	60	1	2.5%	0.57	0	1	57.0%	0	1		
ZVM8	58	2	2.4%	0.55	0	1	55.0%	1	2		

All the rules and error messages are the same as for GCP.

### 9.5.1 Sorting selected columns.

We have introduced the capability of sorting selected columns.

These columns have the buttons  in their headers. Sort can be ascending or descending depending on the button you push.

Only columns that have these buttons can be sorted. The following picture shows what columns you can sort on the CONFIG-IFL sheet.

ID=IBM Corp. - LPARDesign-HD-V9-T03 Current zPCR Version-9.2a - SpecCfg=YES LPAR DEFINITION (IFL)											
CFG-LP-VALID?	YES		IFL-Shared-Pool	23							
Machine-type	3906-725		IFL-DED-Pool	2							
IFL#Procs	25		IFL-Weight	2415							
Max LPAR	85		IFL-Valid?	YES							
			IFL-#LPARs	11							
IFL			HD supported on 3906								
LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	Guaranteed #PP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs	Error	Information





## 9.6 THE CONFIG-ICF SPREADSHEET USAGE.

For the link with zPCR to be complete, the transfer of the ICF configuration that might be include in a zPCR study is available.

ICFs are not HiperDispatch® eligible, so a simple calculation is done in this spreadsheet.

ID=IBM Corp - LPARDesign V11-T01 Current zPCR Version-9.4 - SpecCfg=YES LPAR DEFINITION (ICF)											
CFG-LP-VALID?	YES	ICF-Shared-Pool	4	Configuration Validation	Delete selected LPAR						
Machine-type	8561-718	ICF-DED-Pool	14								
ICF#Procs	18	ICF-Weight	400	Go back to START to modify the ICF#Procs							
Max LPAR	85	ICF-Valid?	YES								
		ICF-#LPARs	9								

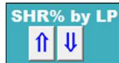
  

ICF (%Share Only Calculation)											
LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	Guaranteed #PP	DED#	SHR#	SHR% by LP	Reserved	#Act-LPs	Error	Information
ICF1	200	2	50.0%	2.000	0	2	100.0%		2		
ICF2	150	2	37.5%	1.500	0	2	75.0%		2		
ICF3	50	2	12.5%	0.500	0	2	25.0%		2		
ICF4	DED	3	21.4%	3.000	3	0	N/A		3		
ICF5	DED	2	14.3%	2.000	2	0	N/A		2		
ICF6	DED	2	14.3%	2.000	2	0	N/A		2		
ICF7	DED	2	14.3%	2.000	2	0	N/A		2		
ICF8	DED	2	14.3%	2.000	2	0	N/A		2		
ICF9	DED	3	21.4%	3.000	3	0	N/A		3		

Here we have a %Share by pool (DED or Shared)

The Guaranteed #PP is available to check if the correct number of LP has been set to sustain the Share.

Of course, all the usual error messages are available and the calculations are compliant with the "Accept Special Config" rules.



Note the **SHR% by LP** column: it shows what is the %Share for each LP of the LPAR.

In the previous example, we can see that LPAR ICF1 has a Guaranteed #PP of 2 and we have set 2 LPs, So each LP will have a %Share of 100% - In this case we set a color in the cell.

LPAR ICF2 has a Guaranteed #PP of 1.5 and we have set 2 LPs. So each LP will have  $(1.5/2)*100$  giving 75% of %Share.

This is a usual calculation in horizontal mode.

### 9.6.1 Sorting selected columns



You can sort the data using the **Sort** buttons (ascending and descending)



## 9.7 SYNTHESIS SPREADSHEET Usage.

The result of the HiperDispatch® activation can be viewed in the SYNTHESIS spreadsheet as shown below.

ID=IBM Corp. - LPARDesign-HD-V9-T01 Current zPCR Version-9.0e - SpecCfg=YES SYNTHESIS			
HiperDispatch Effect - GCP			
	W/O HD		W/ HD
#LP (Shared Pool Only)	36		24
LP/PP ratio (Shared Pool Only)	1.57		1.04
Global Statistics			
LPAR Statistics			
#LPAR-TOTAL		11	
#LPAR w/HighShare LP (Total)		8	
#LPAR w/DED LP		1	
LP Statistics			
#HighShare LP (Total)		14	
#HighShare LP (DED)		2	
#MediumShare LP		12	
#LowShare LP		12	

HiperDispatch Effect - IFL			
	W/O HD		W/ HD
#LP (Shared Pool Only)	36		24
LP/PP ratio (Shared Pool Only)	1.57		1.04
Global Statistics			
LPAR Statistics			
#LPAR IFL TOTAL		11	
#LPAR w/HighShare LP (Total)		8	
#LPAR w/DED LP		1	
LP Statistics			
#HighShare LP (Total)		14	
#HighShare LP (DED)		2	
#MediumShare LP		12	
#LowShare LP		12	

HiperDispatch Effect - zIIP			
	W/O HD		W/ HD
#LP (Shared Pool Only)	38		26
LP/PP ratio (Shared Pool Only)	1.65		1.13
Global Statistics			
LPAR Statistics			
#LPAR with zIIP		11	
#LPAR w/HighShare LP (Total)		8	
#LPAR w/DED LP		1	
LP Statistics			
#HighShare LP (Total)		14	
#HighShare LP (DED)		2	
#MediumShare LP		12	
#LowShare LP		26	

With these numbers, you can figure out how many VH, VM and VL you have.  
You can see the HiperDispatch® effect on the number of actual active LPs.





## 9.8 EXPERT SPREADSHEET Usage.

EXPERT is available for CGP, zIIP and IFL. The layout is as follow:





You can have a direct access to a particular EXPERT Note in using the  Icon on the navigation BAR.

When the note advises you to increase a Weight, you will now have the amount of this increase. Obviously, the calculation can only be done at constant Total Weight – so if you increase the Weight to xx for an LPAR, you must decrease the Weight from xx for another LPAR.

Here is an example of what is provided in this specific case:

LPAR	Suggested Improvement Notes - GCP - Machine Type = 3906
W3906	(R1-GCP) - Due to the 0.5 rule, a small increase of the Weight could lead to have a Full VH Your current Guaranteed#PP is 1,35 - raising it to 1.5 would give you 1-VH and 1-VM@50% The New Weight should be : 158 - The current Weight is : 142 - So you must decrease another Lpar Weight by : 16 to keep Total Weight(2415) constant

### 9.8.1 EXPERT Notes for GCP.

When you push the  button (old way), or the  Icon, you may (or not) have advices on how to optimize your current configuration.

Here are the current rules used to provide these advices:

#### 9.8.1.1 The rules used for advices in GCP:

Rule#1:

If you have 1 VH and the decimal part is between 0.35 and less than 0.5, you can have 1VH and 1 VM@50% if you raise your Weight to have the decimal part to at least 0.5. Otherwise, you will have two VM.

- On z13, this rule is no longer valid: a new way of calculating the spread of LPs has been provided for an LPAR which has 1VH and 1VM@x%.
- On z13, whatever the x% is, you will get 2VH@ $[(1+x)/2]\%$ .

On z14, the 1.5 rule is back.

Rule#2:

Same than Rule#1, with more than 1 VH.

Otherwise, one VH will be moved to the VM pool.



## Rule#3:



If the decimal part is higher than 0.80 (meaning that you are not far from having a new VH), a small increase in the Weight could lead to have a new VH.

There is now (V11T02) two ways of using this rule:

The current way where you can have one more VH, but removing some LPs

The new way where you can have one more VH AND keeping the same number of LP.

Let see in an example: suppose you have this configuration:

LPARNAME	WEIGHT	#LP	%SHARE (By Pool)	RESERVED	Guaranteed #PP	Wkld LSPR	MinReqLP	CheckLP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LPs
W013	142	2	8.9%		1,420	High	2	OK	0	2	71.0%	0	2	2
W014	250	3	15.6%		2,500	Avg-High	3	OK	2	1	50.0%	0	3	3
W015	196	3	12.3%		1,960	High	2	OK	1	1	98.0%	1	2	2
W017	302	4	18.9%		3,020	Avg-High	4	OK	2	2	51.0%	0	4	4
W018	60	2	3.8%		0,600	Average	1	OK	0	1	80.0%	1	2	1
W019	300	3	18.8%		3,000	High	3	OK	3	0	N/A	0	3	3
W020	300	6	18.8%		3,000	Average	3	EVLD=2	2	1	100.0%	3	3	3
W021	50	2	3.1%		0,500	Avg-High	1	OK	0	1	50.0%	1	2	1
W022	DED	2	100.0%		2,000	Average	2	OK	2	0	N/A	0	2	2

LPAR W015 has an entitlement of 1.960 CP which provides 1 VH and 1 VM@96%

Now let see what is recommended by the EXPERT process:

<b>W015</b>	(R3-GCP-base-Less Flexibility) - You have 1-VM with an entitlement of 96%" Your current Guaranteed#PP is 1,96 - raising the Weight AND REMOVING 1-LP would give you 2-VH but with LESS FLEXIBILITY" The New Weight should be : 200 - The current Weight is : 196 - So you must decrease another Lpar Weight by : 4 to keep Total Weight(1600) constant
	OR ----- (R3-GCP-new-FULL FLEXIBILITY) - You have 1-VM with an entitlement of 96%" Your current Guaranteed#PP is 1,96 - raising the Weight would give you 2-VH KEEPING the flexibility" The New Weight should be : 250 - The current Weight is : 196 - So you must decrease another Lpar Weight by : 54 to keep Total Weight(1600) constant [+] NOTE - You have 1VM and 1VL When ALL VIs will be UnParked, each VM and VL will have an entitlement of 48%

So now you have the choice of being flexible or not in implementing this recommendation.

## Rule#4:

It is the opposite on Rule#3.

If the decimal part is lower than 0.05 (meaning that you potentially burn an existing VH), decreasing the Weight could lead to have a VH.

## Rule#5:

This is just a warning to remember you that if you have defined 2 LPs and you do not have a VH, the second LP (which is a VL) will always be Unparked.

This rule applies to all machines but the z14.

## Rule#6:

This is just a warning to remember you that if you have an integer number of VH and you have defined more LPs than VHs (so having VL), one VH will be in fact a VM@100%.

## Rule#7:

This is to alert that you have specified less LPs than needed but you have set ACCEPT SPECIAL CONFIG to YES.

This will influence the HiperDispatch® calculation of VH, VM and VL for the other LPARs.

This is the case for what we call WHITE SPACE LPARs.

## Rule#8:

The number of LP must be set properly for not having so much VL. A best Practice document is available as a TechDoc TD106388. This Rule warns you if you are above the recommendation of this Best practice.

Here is a partial example of what is produced:

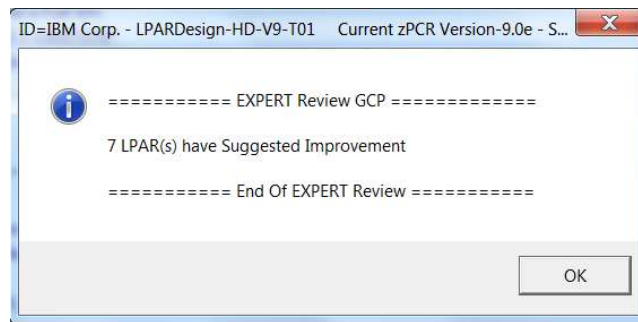


LPAR	Suggested Improvement Notes - GCP - Machine Type = 3906
<b>W3906</b>	(R1-GCP) - Due to the 0.5 rule, a small increase of the Weight could lead to have a Full VH Your current Guaranteed#PP is 1,35 - raising it to 1.5 would give you 1-VH and 1-VM@50% The New Weight should be : 158 - The current Weight is : 142 - So you must decrease another Lpar Weight by : 16 to keep Total Weight(2415) constant
<b>W014</b>	No special Comment or Advice for this LPAR
<b>Z015</b>	(R3-GCP) - You have 1-VM with an entitlement of 87% Your current Guaranteed#PP is 1,87 - raising the Weight and removing 1-LP would give you 2-VH but with less flexibility" The New Weight should be : 210 - The current Weight is : 196 - So you must decrease another Lpar Weight by : 14 to keep Total Weight(2415) constant [+] NOTE - You have 1VM and 1VL When ALL Vls will be UnParked, each VM and VL will have an entitlement of 43,33%
<b>W017</b>	(R3-GCP) - You have 1-VM with an entitlement of 88% Your current Guaranteed#PP is 2,88 - raising the Weight and removing 1-LP would give you 3-VH but with less flexibility" The New Weight should be : 315 - The current Weight is : 302 - So you must decrease another Lpar Weight by : 13 to keep Total Weight(2415) constant [+] NOTE - You have 1VM and 1VL When ALL Vls will be UnParked, each VM and VL will have an entitlement of 43,81%
<b>ZWHITE</b>	(R7-GCP) - The number of specified LP is not sufficient but accepted However, this LPAR will influence the total WEIGHT and thus the HiperDispatch spread in VH, VM and VL for the others LPARs

The Rule number of the advices is shown in the ligne.

If no advice is found you will have the text “[No special Comment or Advice for this LPAR](#)”.

A final pop-up window will show you how many LPARs have advices:




Note : This facility is only available if you have a valid configuration.



## 9.9 EXPERT Notes for zIIPs.

EXPERT notes are provided for the zIIPs configuration in clicking on the

[Click for EXPERT NOTES - zIIP](#)

button (old way) or clicking on the  Icon on the navigation BAR

Mots of the rules are quite the same as for the GCPs.

Here are some specific rules for zIIP:

Rule#9-zIIP:

Informes that the %Share of the zIIP for this LPAR is low (as shown for LPAR W020).

The message is currently triggered if the %Share is less than 5%.

Rule#10-zIIP:

The number of LP must be set properly. A best Practice document is available as a TechDoc TD106388. This Rule warns you if you are above the recommendation of this Best practice.

Here is a partial example of what is provided:


LPAR	Suggested Improvement Notes - zIIP - Machine Type = 3906
W020	<p>(R3-zIIP) - You have 1-VM with an entitlement of 85,7%  Your current Guaranteed#PP is 2,86 - raising the Weight and removing 5-LP would give you 3-VH but with less flexibility"  The New Weight should be : 315 - The current Weight is : 300 - So you must decrease another Lpar Weight by : 15 to keep Total Weight(2415) constant  (R10-zIIP) - *WARNING* - The number of VL (5) is above the IBM Best Practice  See: <a href="http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/TD106388">http://www-03.ibm.com/support/techdocs/atsmastr.nsf/WebIndex/TD106388</a> - for this Best Practice</p> <p>[+] NOTE - You have 1VM and 5VL  When ALL Vls will be UnParked, each VM and VL will have an entitlement of 14,29%</p>
W021	<p>(R9-zIIP) - the %SHARE is very low 2,4%  This might lead to an ineffective use of the zIIP</p>
W022	No special Comment or Advice for this LPAR
W013	<p>(R9-zIIP) - the %SHARE is very low 2,5%  This might lead to an ineffective use of the zIIP</p>

## 9.10 EXPERT Notes for IFL.

EXPERT notes are provided for IFL when you press the

[Click for EXPERT NOTES - IFL](#)

button (old way) or

clicking on the  Icon on the navigation BAR.

The rules **are the same as** for GCPs.



## 9.11 DASHBOARD SPREADSHEET Usage.

This graphic is generated when you push the button related (if appropriate) to the PU type you select. We have 4 types : GCP, zIIP, IFLs and ICFs as shown below.

You can go directly to the appropriate DASHBOARD using the  Icon on the navigation BAR.

ID=IBM Corp - LPARDesign V11-T01 Current zPCR Version-9.4 - SpecCfg=YES DASHBOARD For GCP Processors																												
GCP		zIIP																										
IFL		ICF																										
				Legend : <div><div></div> LP High</div> <div><div></div> x% LP Medium or SHR with x% of Share</div> <div><div></div> LP Low</div> <div><div></div> x% LP Low Always Unparked with a Share of x%</div> <div><div></div> LP DED</div>																								
LPAR Name		% Share	Guarant #PP	LP01	LP02	LP03	LP04	LP05	LP06	LP07	LP08	LP09	LP10	LP11	LP12	LP13	LP14	LP15	LP16	LP17	LP18	LP19	LP20	LP21	LP22	LP23	LP24	LP25

The first lines show a legend explaining the colors of the different LPs assignments.

The following lines (by LPARs) gives the layout of each LPAR:

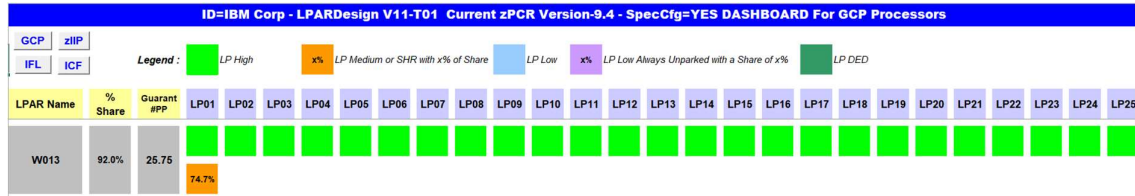
LPAR Name	% Share	Guarant #PP	LP01	LP02	LP03	LP04	LP05	LP06	LP07	LP08	LP09	LP10
W013	8.9%	1.42	71.0%	71.0%								
W014	15.1%	2.42		71.0%	71.0%							
W015	12.3%	1.96		96.0%								
W017	18.9%	3.02			51.0%	51.0%						
W018	3.8%	0.60	30.0%	30.0%								
W019	18.8%	3.00										
W020	18.8%	3.00			100%							
W021	3.6%	0.58	29.0%	29.0%								
W022	DED	2.00										

For example, we can see that:

- LPAR W013 has 2 VM@71%
- LPAR W014 has 1 VH and 2VM@71%
- LPAR W015 has 1VM@96% and 1VL
- LPAR W018 has 1VM30% and a VL@30% always unparked
- LPAR W020 has 2VH, 1VM@100% and 2VL.
- LPAR W022 has 2 DED LPs – The color is in dark grey.



The graphic is not limited to 25 LPs (LP0 to LP25) as shown in the above first picture, if you have more than 25 defined LPs you will get this layout:



The W013 LPAR was defined with 26 LPs – so a second line is started for the 1 remaining LP (and son on) .

### 9.11.1 DASHBOARD for zIIP enhancement.

When an LPAR does not have a zIIP allocation, this LPAR will be in dark grey color in the DASHBOARD

LPAR Name	% Share	Guarant #PP	LP01	LP02	LP03	LP04	LP05	LP06
W013	8.9%	1.60	Green	59.8%				
W014	15.1%	2.72	Green	Green	72.2%			
W015	12.3%	2.21	Green	60.3%	60.3%			
W017	18.9%	3.40	Green	Green	69.9%	69.9%		
W018	3.8%	0.68	33.8%	33.8%				
W019	18.8%	3.00	Green	Green	Green			
W020	18.8%	3.38	Green	Green	68.8%	68.8%	Blue	
W021	3.6%	0.65	32.6%	32.6%				
W022	0.0%	0.00						

LPAR W022 does not have a zIIP allocation



## 10. LINK with zPCR.

### 10.1 General considerations on this feature.

This feature helps creating a zPCR Basic study file from LPARDesign or to upload in LPARDesign an existing zPCR Basic study file.



To use this function click on the button located in the CONFIG worksheet.

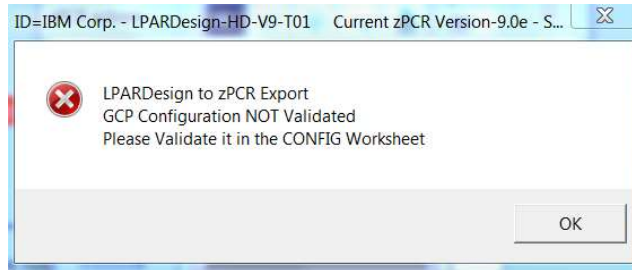


Or use the Icon on the navigation BAR.

To generate a reliable zPCR Basic study file, you need to have your GCP, IFL and zIIP configurations validated. As you know, every time the spreadsheet is loaded, the cells containing the configurations validations status are set to NO, so, **all the configurations validations MUST BE DONE**.

If you do not perform this process, you will have the following error messages:

Example for GCP:



### 10.2 Current limitations of the link to zPCR feature.

#### 10.2.1 Specifying an LPAR with unsufficient number of LPs to sustain the share

This could lead to have a problem when this LPARDesign study is exported to zPCR. zPCR requires that you set at least one LP, but you will face the problem that you do not have sufficient LPs to sustain the share.

In this case you will have this zPCR message:

Note: A partition's weight indicates more capacity than its LCPs can provide; Unusable capacity is redistributed to other partitions within the CP pool

#### 10.2.2 Processors type.

HiperDispatch® is available on the z/OS operating system on GCP, zIIP and IFL processors types.

To make the study with zPCR easier, we have added the support of the ICF, even if ICF are not HiperDispatch® eligible.

#### 10.2.3 Reference CPU.



2094-701 @ 593,00 MIPS

We use as a reference CPU.

Again, you might be led to change this default.

#### 10.2.4 zPCR Version.





The LPARDesign code is usually in sync with the last zPCR version. The current supported version is displayed in the message boxes. zPCR usually allows that a study with the n-1 version to be uploaded.

### 10.2.5 z/OS Version.

In this current release of LPARDesign we have set the z/OS Version to the LSPR Version so z/OS V2R3.

## 10.3 Using the zPCR EXPORT feature.

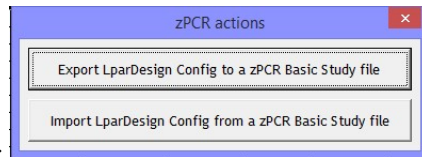
This feature export the current LPARDesign definition to a zPCR Basic study file.



After all configurations have been checked, click on the button or use



in the Task Bar.



This box is displayed :

Click on the **Export LparDesign Config to zPCR Basic study file** button.

Then and according to your CPU Model this information box is displayed:

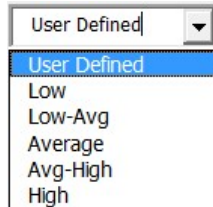
Export LparDesign Config to zPCR Study file	
zPCR Version	9.4
Machine Type selected	8561-718
Hardware Model	Max71
z/OS Version for each LPAR	z/OS-2.3
Workload Type for each LPAR	User Defined
zAAP Loading %	0
zIIP Loading %	100
zIIP SMT Enabled and %	25
IFL SMT Enabled and %	25
VM Version for each LPAR	z/VM-7.1
VM Workload Type for each LPAR	Average
<b>Select Export File</b> <b>Cancel</b>	

Note: In certain situations, you might have to properly set the actual Hardware Model.





A field is displayed where you can select how you will process the setting of your workload characterisation:  
If you select “User Defined” the export will take what you have set in the CONFIG spreadsheet.  
Otherwise, you can choose a workload characterisation in the list:



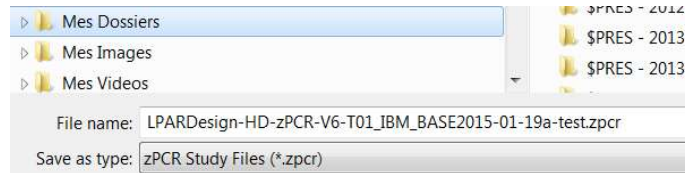
In this case, **all the workload will have this characterisation** set in the zPCR study file.

You have to select these useful informations to create a proper zPCR Basic study File:

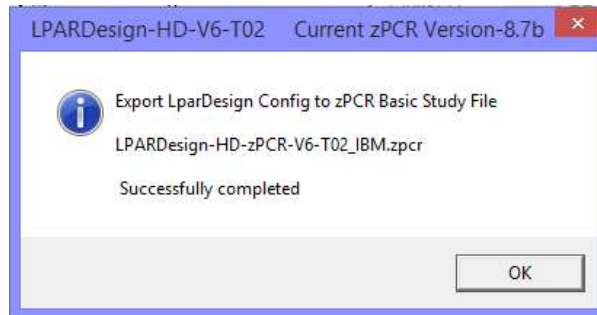
- The Hardware Model
- The z/OS or zVM version
- The workload type
- The zIIP Loading %

Then you have to select the name of the zPCR study file.

By default, we propose the current LPARDesign file name with a suffix of **.zpcr** as shown below:



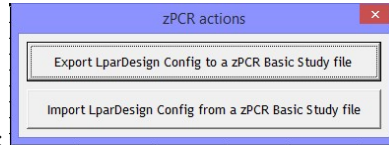
You can select the folder and the file name. Then select SAVE and you will receive this message box specifying your choices:



## 10.4 Using the zPCR IMPORT feature.



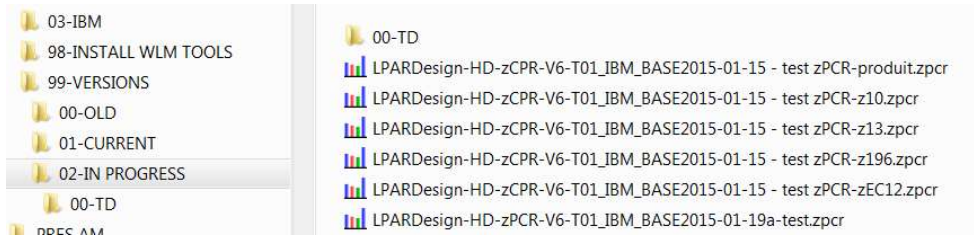
Click on the  button or use  in the Task Bar.



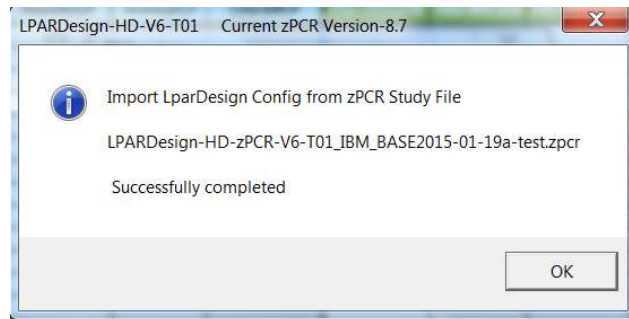
This box is displayed :

Click on the **Import LparDesign Config from zPCR Basic study file** button.

The Windows file selection appears an select your zPCR Basic study file:



Click Open and your zPCR Basic Study File will be uploaded in the LPARDesign spreadsheet.  
A message box will appear to show you file selection:



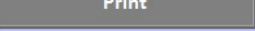
You are now in LPARDesign again and have to run all the appropriate function to validate your configuration.

*Note : As zPCR only take into account active LP, if you Export to zPCR a configuration and then Import from zPCR the preceding exported zPCR file you could see some differences in the number of LP per Lpar. So be careful.*

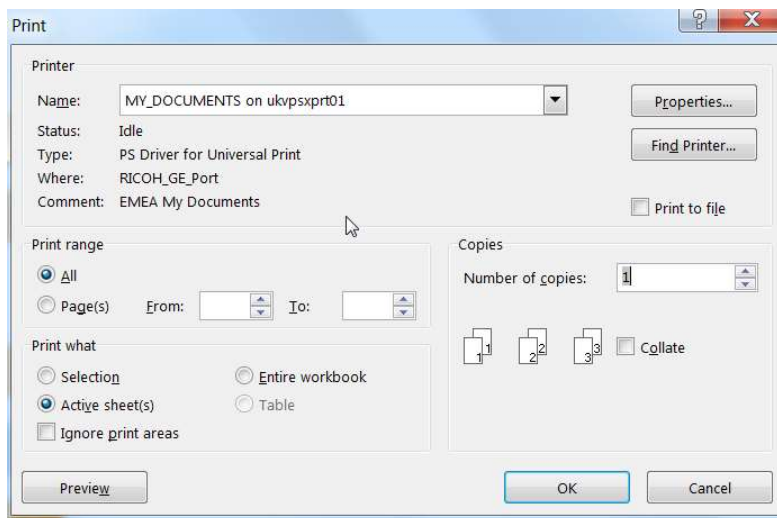


## 11. PRINTING THE SHEETS.

The print parameters have been set for most of the sheets to provide a common layout.

You print the sheet in displaying it and selecting the  button in the action bar. Some sheets like **SINET** and **Tables** cannot be printed using this button.

When you hit the Print Button you will have the standard pop-up:



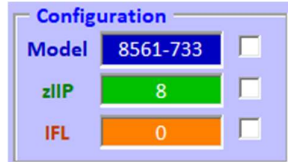
You can change the Printer Name, check the output using the Preview button or print directly the sheet.



## 12. FAQ, COMMON MISTAKES AND RELEASE RECOMMENDATIONS.

### 12.1 FAQ

**Q1 – When I open the workbook, the GCP, zIIP or IFL VALIDATION is set to NO.**



R1 – This is the standard behavior. The Config Validation must be done after an open (re-open) of the workbook, which is why these fields are forced to NO. This is for data consistency.

**Q2 – I want to calculate the HiperDispatch® LP configuration for zIIP, but the tool says that the configuration does not support HiperDispatch® or the GCP configuration has not been verified.**

R2 – When you have zIIPs, you must go first to the CONFIG spreadsheet, run the Config Validation and HiperDispatch® for GCP, and then go to the CONFIG-zXXP spreadsheet to be able to run the calculation.

version will include them, as information only – so that the Import / Export from/to zPCR will be easier.

**Q3 – zPCR Version.**

In the spreadsheet, the zPCR version is “hard coded”. But as soon as a new zPCR version is available, the spreadsheet is updated and uploaded on the WLM Web Site.

**Q4 – I am not an IBM employee, so how am I informed that a new version of zPCR is available?**

To have the latest version go to the following URL:

[http://www-03.ibm.com/systems/z/os/zos/features/wlm/WLM\\_Further\\_Info\\_Tools.html](http://www-03.ibm.com/systems/z/os/zos/features/wlm/WLM_Further_Info_Tools.html)

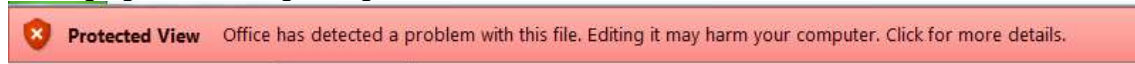
and click on the LPAR Design HyperLink.

Or send a mail to [alain\\_maneville@fr.ibm.com](mailto:alain_maneville@fr.ibm.com)

**Q5 – When I open the spreadsheet I have security messages – how can I get rid of them?**

This almost happens when you open a new version for the first time.

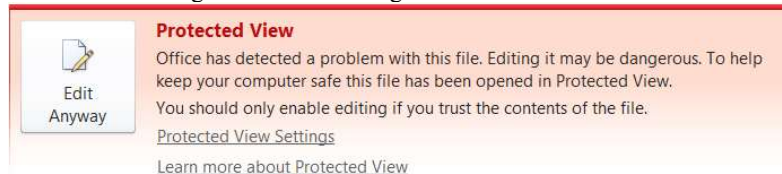
You might get the following message:



What you must do now is simple:

Click on the “click for more details” area.

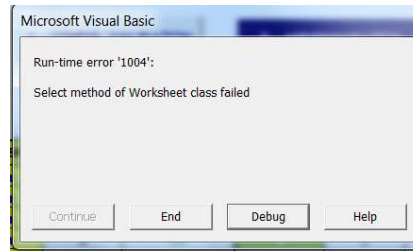
You will get this other message:



Then click on “Edit Anyway”

You will have this VB error message:





Then click on “End”  
Save the spreadsheet  
Re open it and all should be fine now.



## 12.2 COMMON MISTAKES.

**M1 – Do not delete the remaining rows in the CONFIG, CONFIG-IFL or CONFIG-ZXXP worksheets even if you have less than 30, 40, 60 or 85 LPARs (which is mostly the case). If you do so, it can generate error if a new calculation is required.**

- You have the **DELETE LPAR** feature that will help you to properly delete unwanted LPARs.

**M2 –** Even if you do not have zIIP, set the number of LP to zero or let it blank or set the Weight to zero or let it blank and validate the configuration if you want to use the zPCR link. Otherwise you will get an error message.

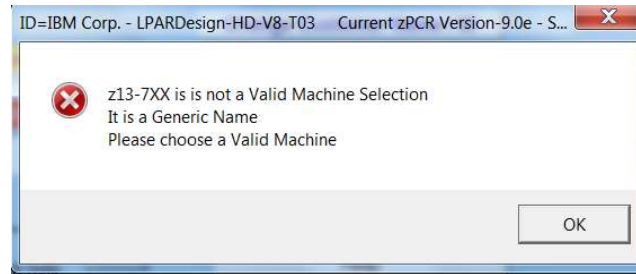
**M3 –** Never delete a row in the spreadsheet.

They will be cleaned automatically and remember that you have now the **DELETE LPAR** feature.

**M4 –** Try to use a fresh copy of the spreadsheet – use the Create a Copy feature and/or the Save as feature.

**M5 –** If no zIIP are to be use, set 0 in the #zIIP in the START spreadsheet.

**M6 –** In the list of available machines, you might find generic names like “Systems z13s” or z13-4XX. Those are NOT machines that you can select, they are pointers in the list to help you find faster the machine you want. If you select these generic names, you will get this pop-up message:



- For **IFL only machines** with no GCP, select machine like z13-400, zEC12-700. “00” means NO GCP.

**M7 –** When I change the CPU Type / # of processors and so on nothing changes:

Starting with V9-T01, we have introduced an “action bar” that makes travelling in the sheets easier.

So, after a change in the START sheet, **you must use one of the “travel” buttons (GCP, IFL, zIIP)** to go to the appropriate sheet. This will, under the cover, checks the changes you have made and modify (if checks are ok) the configuration. If you travel in just clicking in the sheet name (in the workbook), some changes might not be done.

**M8 –** Rounding

Sometimes, the rounding of the result of a division (e.g.: Weight/Total\_Weight) then multiplied by another number might give potential wrong information.

This is sometimes the case when calculating the number of guaranteed Physical Proc.

These rare cases happen in the EXPERT sheet when calculating the new Weight of a recommendation.

In this case, send a mail to the support and we will figure out how we can fix this case.

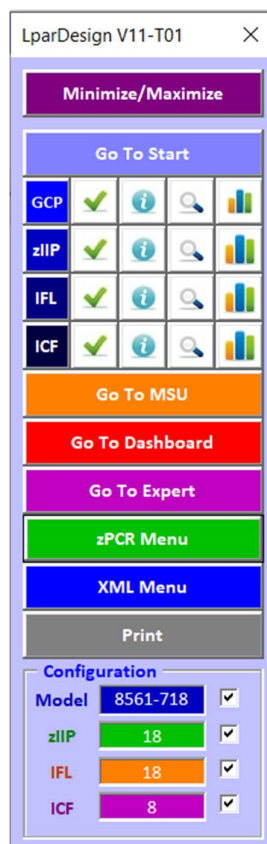


## 12.3 RELEASE RECOMMENDATIONS:

**R1** – Use the new navigation BAR to “walk” within the different worksheets. Use the actions buttons to validate the configuration, see the messages, see the EXPERT advices and the DASHBOARD layouts.

Note : the previous actions are not available in the CONFIG-MSU worksheet as they are not appropriate in the sheet.

Here is it again:



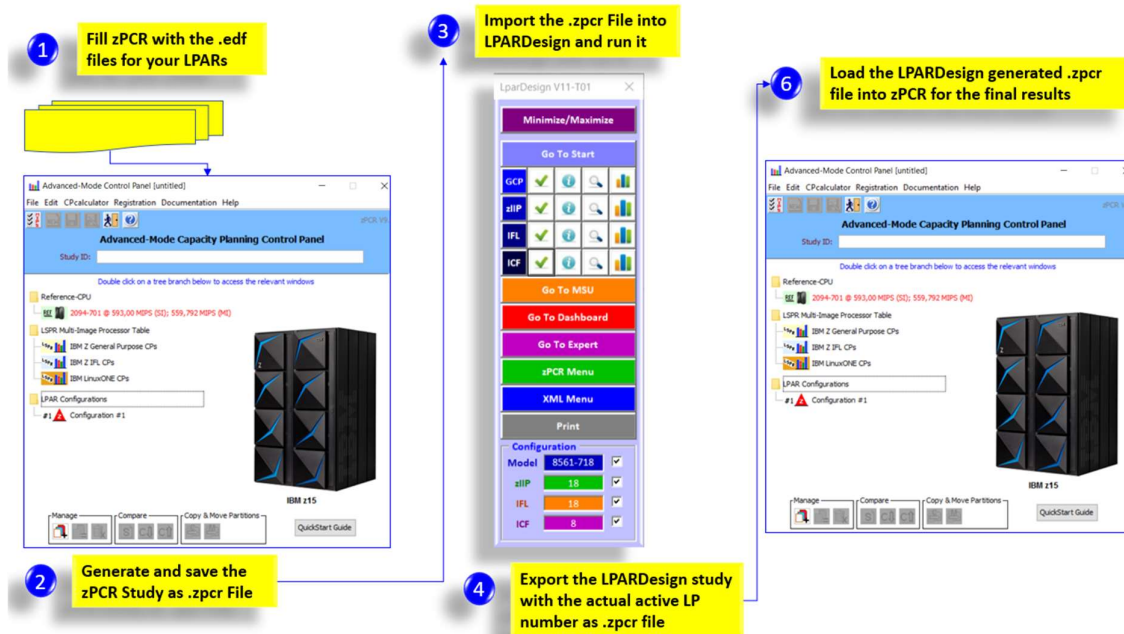
If you want to change the Configuration Go to Start – other Icons are fast access when you work in a specific PU type.

To read some spreadsheet easier, you can use the Minimize/Maximize button to “make room”. When in Minimize configuration, the BAR will only use this space:

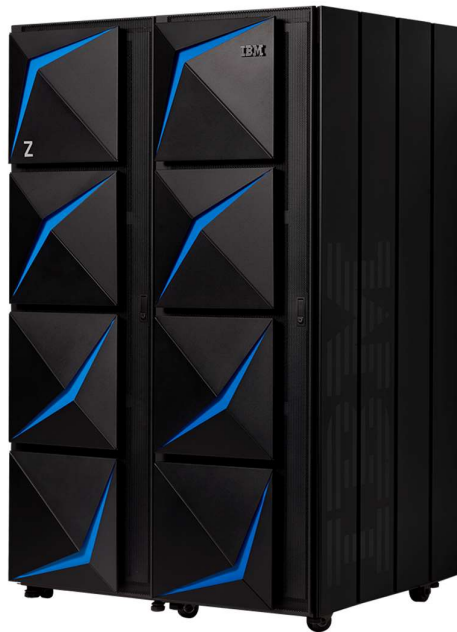


### 13. RECOMMENDED USAGE WORKFLOW

To make the study as simple as possible and to minimize the manual data entries (like LPAR Name, Weight, #LP, Workload characterization), its is recommended to use this worrflow:







END OF DOCUMENT - Lpardesign-HD-Zpcr-V11-T02\_Userguide.Docx

