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# LPARDesign


## USER'S GUIDE

### Version V7-T01


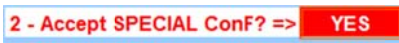
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Doc : LPARDesign-HD-zPCR-V7-T01\_UserGuide.docx  
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## 1. PURPOSE OF THE DOCUMENT.

This document explains how to use the LPARDesign Tool.

This tool helps in configuring LPARs for all processor type (HiperDispatch eligible or not).

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 the purpose of 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 Informatique Banques Populaires:

He wrote the code of the DASHBOARD worksheet and did a great job for the zPCR link feature.

**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.

**Peter MAILAND** - RMF Test and Development:

He gave useful EXCEL advices and help on maintaining compatibility between various EXCEL releases.

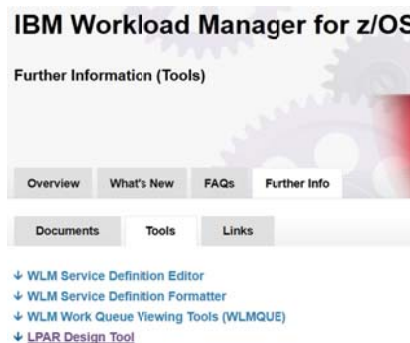
**Horst SINRAM** - z/OS Workload Management & System z Capacity Management:

He is a good "beta tester" and the guy that put the product on the WLM Web Site.

## 4. HOW TO GET THE PRODUCT:

The product is available on the WLM Web site at the 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)



Click on the LPAR Design Hyperlink

## 5. CHANGES IN THIS RELEASE.

### 5.1 What's new in V7T01?

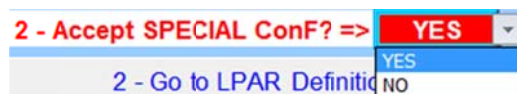
#### 5.1.1 Support of special configuration.

There are cases where the configuration validation process in the spreadsheet is too restrictive compared to what PR/SM allows:

- For example, some configurations have defined less LPs than the minimum required. This can be seen in the Ksys LPARs of some GPDS configurations or if the customer wants to define “White Space” LPARs.

The bottom line is that LPARDesign should accept these configurations as PR/SM does!

A new knob has been added to specify if you allow or not this special configuration:



A precise explanation on how to use this new feature is done in the “START” and “CONFIG” sheets specific usage.

#### 5.1.2 Support of zPCR 8.7g.

z/OS V2R2 can be set in the zPCR Export procedure.

#### 5.1.3 Import or Export of the study identification.

The Study ID (or customer name) is now exported into the target zPCR file or imported from the source zPCR file and set as appropriate.

### 5.2 What's new in V6T03?

#### 5.2.1 Change in VH, VM computing when 1VH and 1VM

New - This is related to the z13 only (machine type 2964).

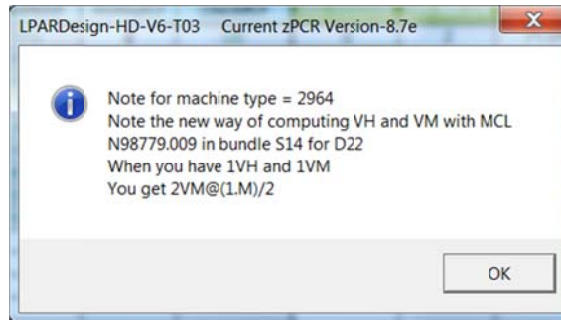
MCL N98779.009 which was released in bundle S14 for D22 propose a new way of computing the VH, VM in a situation, and only in this situation where you have 1 VH and 1 VM.

The design point of PR/SM for assigning the guaranteed share of an LPAR to physicals results in assigning the VHs first (grouped together across all LPARs) and then assigning the VMs (such that the VM pool comes after all the physical VHs). Because VHs and VMs within an LPAR are not collocated, the VHs and VMs within an LPAR **can be very far away from each other**. On z13 when the CEC crosses drawers, **small LPARs with 1.5-2 CPUs of guaranteed share** were getting a VH in 1 node and the VM tended to be cross node or cross drawer, which made the small LPAR run very inefficiently on z13.

So now, when the number of guaranteed #CP for the LPAR is in the form 1.M, there is no more the limit of  $M \geq 0.5$  to have a VH and a VM@M%.

Whatever M is in this situation you will get 2 VM@(1+M)/2.

There will be a temporary message box that will inform you of this change in the CONFIG and in the CONFIG-zXXP spreadsheet:



This valid for GCP and zIIPs

The EXPERT spreadsheet has been updated to reflect this change related to the recommendation in this particular situation because when you have 1.M, whatever M is you will always have 2VM.

To show this change, the font of the characters have been set to bleu and bold as shown in this picture. This means that this LPAR is a target of this new way of computing:

ID=IBM Corp. - LPARDesign-HD-V6-T03 Current zPCR Version-8.7e LPAR DEFINITION (CP) TOLERATION%=0														
CFG-LP-VALID?	YES		vMachine	18	Shared-Pool	16	1 - CONFIG. VALIDATION		2 - HIPERDISPATCH		Delete selected LPAR		Go To DASHBOARD	
Machine-type	2964-718		#PhyProc	18			PRINT		3 - GoTo ZXXP		Go To EXPERT			
MSU	2 584		#LPs (non-ICF, non-DED)	24			HD supported on 2964							
Total Weight	1 600		Ratio LP/PP (base)	1.50										
Max LPAR	85		LSPP-AVG-VIR13-MI	21 579										
LPARNAME	WEIGHT	#LP	%SHARE (by pool)	"MIPS"	GuaranteedPP#	Share%/LP	MinReqLP	CheckRPL	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LPs
W013	142	2	8.9%	1 702	1.42	71%	2	OK	0	2	71.0%	0	2	2
W014	242	3	15.1%	2 901	2.42	81%	3	OK	1	5	84.0%	0	3	3
W015	196	3	12.3%	2 350	1.96	65%	2	OK	0	2	98.0%	1	2	2
W017	302	4	18.9%	3 620	3.02	76%	4	OK	2	2	80.0%	0	4	4
W018	60	2	3.8%	719	0.60	30%	1	OK	0	1	60.0%	1	2	1
W019	300	3	18.8%	3 597	3.00	100%	3	OK	1	0	NA	0	3	3
W020	300	5	18.8%	3 597	3.00	60%	3	OK	2	1	100.0%	2	3	3
W021	58	2	3.6%	695	0.58	29%	1	OK	0	1	58.0%	1	2	1
W022	DED	2	11.1%	2 398	2.00	100%	2	OK	2	0	NA	0	2	2

If you look at LPAR W015, you will notice that the row/column relatde to its HiperDispatch entitlement (HD-MED and HD-MED%) are in bleue.

### 5.2.1.1 Example:

Before this MCL

If you have a guaranteed #CP of 1.6 – you had 1VH and 1VM@60%.

After this MCL

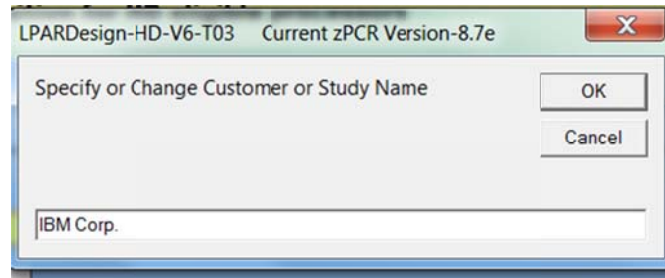
If you have a guaranteed #CP of 1.6 – you will have 2VM@80%.

### 5.2.2 Support of zPCR 8.7f

New - Support of the zPCR Version 8.7f.

### 5.2.3 Add an identification to the titles of the spreadsheet.

New - When printing the sheets, it is better to have an identification that can be a customer or a study name. When starting the spreadsheet, you will get this message box:



We take the previous identification, or you can change it at that time.

But if during the usage, you need to set another identification, you can go back to to START sheet and use the

**Change Customer Name / ID**

button and specify another name.

This will refresh all the titles in the spreadsheets.

The titles are now I the following format (example for the zXXP configuration sheet):

**ID=IBM Corp. - LPARDesign-HD-V6-T03 Current zPCR Version-8.7e LPAR DEFINITION (zXXP)**

ID= reflect the name that you have specified.

### 5.3 What's new in V6T02?

New - Support of the zPCR Version 8.7b

New – A new spreadsheet “CONFIG-MSU” has been added to help understanding the MSU configuration. The usage of this spreadsheet is explained in the SpreadSheet Usage section related to CONFIG-MSU.

### 5.4 What's new in V6T01?

New - Support of the new IBM System z machine: z13 – 2964 models (4xx to 7xx).

New - Support of 85 LPARs in this machine:

- The number of supported LPAR is now in the CONFIG sheet.

- No more zAAP support – the code has been modified to reflect this change with errors and information messages.

- The number of zIIPs can be up to twice the number of GCP.

New - zPCR 8.7 is supported for Import and Export. The default z/OS version is now set to z/OS V2R1. The zAAP Loading % box has been removed when on a z13.

New - A new button has been added in the CONFIG sheet to properly delete LPAR(s) so that the spreadsheet is not damaged due to manual deletion.



## 6. A BRIEF VIEW OF THE SPREADSHEET.

The spreadsheet is composed of 9 worksheets:



### 6.1 The START worksheet:

This worksheet is opened automatically when you start the workbook.

You must use it to specify the toleration percentage.

Then you can specify a “Study ID” that will be used in the spreadsheet or in the zPCR deck.

Starting with V7-T01, you can now specify if you accept special configurations

Others functions provided are:

- Create a copy (so you can always have a basic version of the tool)
- Save as (to save you work)
- Go To LPAR definition – brings you to the CP LPAR definition.
- Print the worksheet.
- Help (display the HELP worksheet – basic information only).

### 6.2 The CONFIG worksheet:

This worksheet helps you defining:

- The CPC
- The LPARs characteristics (as you would do on the HMC)
- Validation of the LPAR configuration
- Calculation of the HiperDispatch processor in HighShare, MediumShare and LowShare LPs.

Others functions provided are:

- Print the worksheet.
- Go To ZXXP (zAAP and zIIP definition and calculation).
- Go To EXPERT – for advices on how to potentially optimize you current configuration
- Delete LPAR(s)
- Create a *.zPCR* study file or update an LPARDesign spreadsheet with an existing *.zPCR* study file.

### 6.3 The CONFIG-MSU worksheet:

This worksheet helps you defining:

- 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.

### 6.4 The CONFIG-ZXXP worksheet:

This worksheet helps you defining:

- The LPARs characteristics of the zXXP (as you would do on the HMC).

Others functions provided are:

- Print the worksheet.
- Go To EXPERT – for advices on how to potentially optimize you current configuration.

### 6.5 The EXPERT worksheet:

This worksheet might help you optimizing you current configuration.

Others functions provided are:

- Print the worksheet.
- Go back to the CONFIG Worksheet to evaluate the advices.

## **6.6 The SYNTHESIS worksheet:**

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

Others functions provided are:

- Print the worksheet.

## **6.7 The DASHBOARD worksheet**

This worksheet provides a view of the processor layout.

Starting with the z13 machine, the zAAP configuration will not be displayed as there is no more zAAP support in this machine.

## **6.8 The HELP worksheet:**

This worksheet provides a basic help to use the tool.

Others functions provided are:

- Print the worksheet.

## **6.9 The SINET worksheet:**

This worksheet is for internal use only.

## 7. SPREADSHEET USAGE.

**ONLY THE CELLS IN YELLOW SHOULD BE FILLED.**

When you open the workbook, you are automatically directed to the START spreadsheet.

### 7.1 START SPREADSHEET Usage.

You can now set an identification of you study that will be set in the ID= field of the various titles. You can change it using the [Change Customer Name / ID](#) button. The LPARDesign version and the current zPCR version are displayed in the first row of the sheet.

#### 7.1.1 Toleration %:

**1 - Choose Toleration % ==> 0.00**

You just need to choose the Toleration percentage (if needed) in the list. This toleration% could be set to get rid of the following situation:

Suppose that the number of guaranteed physical processors is 9.03 and you have defined 9 LPs for the LPAR. The strict application of the rule would lead to require 10 LPs in the LPAR. The “toleration percentage” allows now to specify until what percentage you consider that one should keep the number of LPs defined for the LPAR and NOT apply the strict rule. The values are in the 0.00 to 0.10 range. A value of 0.00 means that you want to apply the strict rule.

#### 7.1.2 Accept SPECIAL ConF? YES or NO

**2 - Accept SPECIAL ConF? => NO**

This feature is new with V7-T01. PR/SM accepts configurations where the number of 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”.

**It is recommended to always have a fresh copy of the initial spreadsheet – so the Create a copy button is useful for that.**

## 7.2 CONFIG SPREADSHEET Usage.

### 7.2.1 Define the CPC and the basic LPAR configuration.

CFG-LP-VALID?	NO	#PhyProc	18	Machine	Shared-Pool	1 - CONFIG. VALIDATION		
Machine-type	2964-718	#LPs (non-ICF, non-DED)	24			PRINT		
MSU	2 584	Ratio LP/PP (base)	1.50					
Total Weight	1 600	LSPR-AVG-V1R13-MI	21 579					
Max LPAR	85							
LPARNAME	WEIGHT	#LP	%SHARE(by pool)	"MIPS"	Guaranteed#PP	NON-HD Share%/LP	MinReq#LP	Check#LP
W013	142	2	8.9%	1 702	1.42	71%	2	OK
W014	242	3	15.1%	2 901	2.42	81%	3	OK
W015	196	3	12.3%	2 350	1.96	65%	2	OK
W017	302	4	18.9%	3 620	3.02	76%	4	OK
W018	60	2	3.8%	719	0.60	30%	1	OK
W019	300	3	18.8%	3 597	3.00	100%	3	OK
W020	300	5	18.8%	3 597	3.00	60%	3	OK
W021	53	2	3.6%	695	0.58	29%	1	OK
W022	DED	2	11.1%	2 398	2.00	100%	2	

Choose the CPC in the Machine type list; 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.

### 7.2.2 Validating the configuration – with **2 - Accept SPECIAL ConF? => NO** :

This is the regular way of validating the configuration.

Then click on the **1 - CONFIG. VALIDATION** button.

This will check that the parameters are correctly set.

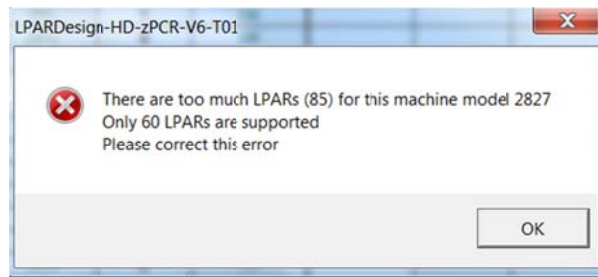
If errors occur, an error box is displayed; the Check/LP column is filled with the specific error.

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

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

Note: starting with the z13 machine, a new cell **Max LPAR** **85** is displayed. So now, we have 3 possible values: 30, 60 or 85 Lpars.

So a new check has been added to verify that the number of defined LPARs is in the rule of the machine. If not, the following error text box will be displayed:



**7.2.3 Validating the configuration – with:** 2 - 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 S024 LPAR:

CFG-LP-VALID?	YES	#PhyProc	25	Shared-Pool	23
Machine-type	2964-725	#LPs (non-ICF, non-DED)	29		
MSU	3 313	Ratio LP/PP (base)	1.26		
Total Weight	2 415	LSPR-AVG-Y1R13-MI	28 130		
Max LPAR	85				

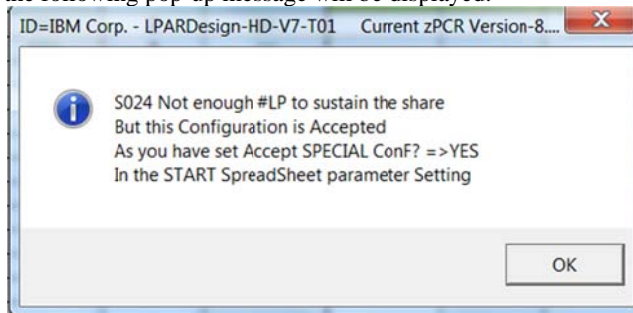
  

LPARNAME	WEIGHT	#LP	%SHARE(by pool)	"MIPS"	Guaranteed#PP	NON-HD Share%/LP	MinReq#LP	Check#LP
W013	142	2	5.9%	1 522	1.35	68%	2	OK
W014	242	3	10.0%	2 593	2.30	77%	3	OK
Z015	196	3	8.1%	2 100	1.87	62%	2	OK
W017	302	4	12.5%	3 236	2.88	72%	3	OK
W018	60	2	2.5%	643	0.57	29%	1	OK
S019	300	3	12.4%	3 215	2.86	95%	3	OK
W020	300	5	12.4%	3 215	2.86	57%	3	OK
W021	58	2	2.4%	622	0.55	28%	1	OK
W022	DED	2	8.0%	2 250	2.00	100%	2	OK
S024	500	1	20.7%	5 358	1.00	100%	5	OK(a)
S025	315	4	13.0%	3 376	3.00	75%	3	OK

One can see that LPAR S024 has a Weight à 500 which gives a %Share of 20.7% of the Shared Pool and thus needs a Minimum Required #LP of 5.

But only 1 LP is 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 from the #LP column.

To reflect this "acceptation" the font of the Guaranteed#PP column is set to bold and bleu 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.

## 7.2.4 Explanation of some columns.

**%SHARE(by pool)**

- gives the %SHARE of the LPAR (by pool of LP, shared / DEDicated)

**"MIPS"**

- This is for information only (computed as %SHARE x MIPS of the Machine)

**Guaranteed#PP**

- This is %SHARE x #of Physical processors (shared pool) – a fundamental metric for HiperDispatch calculation.

Note : with **2 - 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 to sustain the %SHARE. This value is calculated according to the *toleration percentage* you have set in the START worksheet.

If the toleration percentage is in effect for this LPAR (meaning that the number of required LP is higher than the number of defined LPs but we “tolerate” this, the **Check#LP** column will show **\*OK\***.

In the other cases, just **OK** is displayed.

Note : with **2 - Accept SPECIAL Conf? => YES** and if there are less defined LPs than required, this column

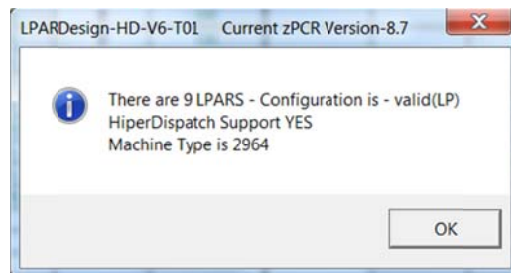
will have the value : **Check#LP**  
**OK(a)**

**Important Note: After any changes in the configuration, you must run the**

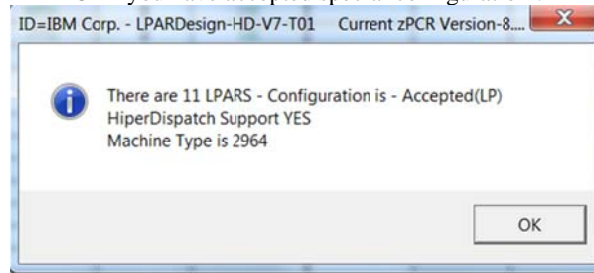
**1 - CONFIG. VALIDATION**

**again!**

When you have hit the Config Validation button and the configuration is correct, you will receive this message box:



Or if you have accepted special configuration :



Starting with the z13 machine, all the message boxes have been enhanced to display the current supported zPCR Version.

The machine type is displayed too.

## Computing the HiperDispatch number of LPs.

Just push the **2 - HIPERDISPATCH** button and the following fields will be filled if the machine is HiperDispatch eligible.

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

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

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

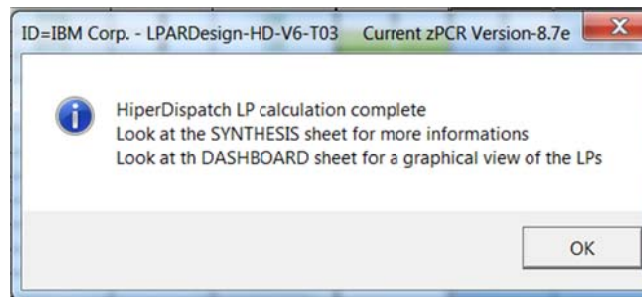
**HD-MED%:** Entitlement of the MediumShare LPs

**HD-LOW#:** #of LowShare LPs

**#Active LPs:** This is the number of real life active LPs taking into account 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 HD-HIGH and HD-MED 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 received this pop up box:

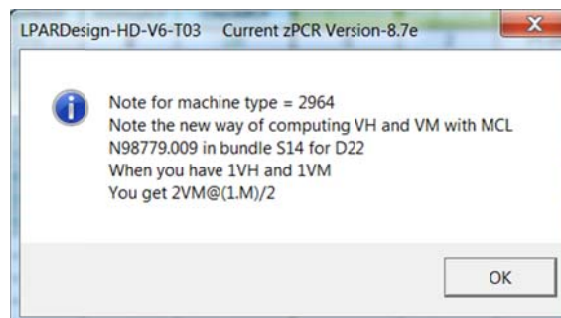


Otherwise, error messages will be sent.

Starting with machine type = 2964, a new way of calculating the spread of LPs has been provided for an LPAR which has 1VH and 1VM@x%.

Now whatever the x% is, you will get 2VH@ $[(1+x)/2]$ %.

There will be a temporary message box stating that inform you of this change:





The colors of the LP entitlement have been set to show LPARs that have been targets of this change too:

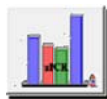
ID=IBM Corp. - LPARDesign-HD-V6-T03 Current zPCR Version-4.7e LPAR DEFINITION (CP) TOLERATION%=0															
CFG-LP-VALID?	YES			vMachine	18	Shared-Pool		16		1 - CONFIG. VALIDATION		2 - HIPERDISPATCH			
Machine-type	2964-718			#PhyProc	24					Delete selected LPAR		Go To DASHBOARD			
MSU	2 584			#LPs (non-ICF, non-DED)	1.50					PRINT		3 - GoTo ZXP			
Total Weight	1 600			Ratio LP/PP (base)	21 579							Go To EXPERT			
Max LPAR	85			LSPR-AVG-V1R13-MI											
HD supported on 2964															
LPARNAME	WEIGHT	#LP	%SHARE (by pool)	"MIPS"	GuaranteedPP	Share%/LP	NON-HD	MinReqLP	CheckLP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LPs
W013	142	2	8.9%	1 702	1.42	71%	2	OK	0	2	71.0%	0	2	2	2
W014	242	3	15.1%	2 901	2.42	81%	3	OK	1	2	71.0%	0	3	3	3
W015	196	3	12.3%	2 350	1.96	65%	2	OK	0	2	98.0%	1	2	2	2
W017	302	4	18.9%	3 620	3.02	76%	4	OK	2	2	51.0%	0	4	4	4
W018	60	2	3.8%	719	0.60	30%	1	OK	0	1	60.0%	1	2	1	1
W019	300	3	18.8%	3 597	3.00	100%	3	OK	3	0	N/A	0	3	3	3
W020	300	5	18.8%	3 597	3.00	60%	3	OK	2	1	100.0%	2	3	3	3
W021	58	2	3.6%	695	0.58	29%	1	OK	0	1	58.0%	1	2	1	1
W022	DED	2	11.1%	2 398	2.00	100%	2	OK	2	0	N/A	0	2	2	2

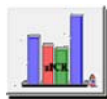
The colors of the LP entitlement have been set to highlight HighShare LPs or MediumShare LPs that have an entitlement of 100% as shown in the below picture:

CFG-LP-VALID?		YES						
Machine-type	2964-718							
MSU	2 584							
Total Weight	1 600							
Max LPAR	85							
HD supported on 2964								
LPARNAME	WEIGHT	#LP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Active LPs	#Report LPs
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 and 1 VM@100% - so you can see the way the cells are colored.

### 7.2.5 Linking to zPCR.



When the button  is pressed, this will create a .zpcr study file from the LPARDesign spreadsheet or to update the current LPARDesign spreadsheet with an existing .zpcr study file. See the chapter LINK with zPCR for more informations.



## 7.2.6 Deleting LPARs.

A button **Delete selected LPAR** is provided to properly delete selected LPAR. This was a long term requirement and it was 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. You were able to erase the cell containing the LPAR name, but if it was not the last one, you had to do some cut/paste operation for your LPAR to stay without “holes” between them.

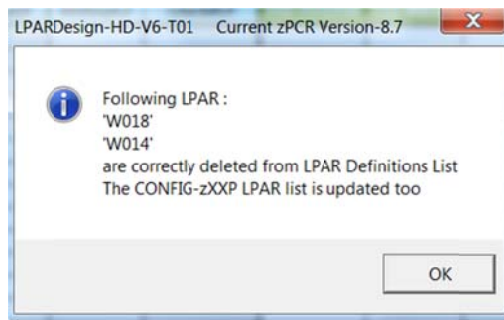
To delete LPAR(s):

- 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 too.

## 7.2.7 Other button.

**Go To DASHBOARD**

**Go To EXPERT**

brings you to the selected sheets. The usage of these sheets needs a validated configuration and HiperDispatch calculation.

### 7.3 CONFIG-MSU SPREADSHEET Usage.

#### 7.3.1 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	1,054	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	1,054	23.9%	238.1	38.1					200.0	positive phantom weight
SYS3	2	150	100	GRP1	1,000	12.0%	142.9	238.2	1,054	14.3%	142.9	42.9					100.0	positive phantom weight
SYS4	2	100		GRP1	1,000	8.0%	95.3	238.2	1,054	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	1,054	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

#### 7.3.2 LPAR and Capacity Definitions

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

### 7.3.3 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

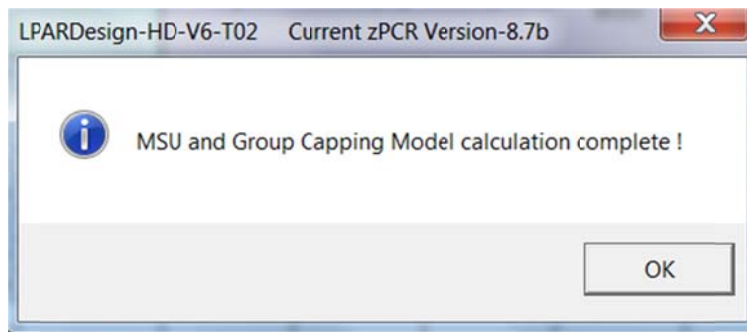
Notice: Starting with zEC12 GA2 and z/OS 2.1 the **cap pattern technology has been replaced by a negative phantom weight technology**, therefore which technology is being used depends on the hardware and software level.

**7.3.4 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:



**7.3.5 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:

<b>CEC</b>	<b>2964-712</b>	<b>PCPs</b>	<b>12</b>	<b>MSU</b>	<b>1 891</b>	<b>Total Weight</b>	<b>1 000</b>	<b>Shared Pool</b>	<b>10</b>
------------	-----------------	-------------	-----------	------------	--------------	---------------------	--------------	--------------------	-----------

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: the Weight cell format of the DEDicated LPAR is in red.

## 7.4 CONFIG-ZXXP SPREADSHEET Usage.

### 7.4.1 Support on machines before z13.

Once you are done with the CP configuration you can use the **3 - GoTo ZXXP** button to be directed to the zAAP/zIIP configuration spreadsheet if appropriate.

**The LPAR names are automatically filled.  
Never delete an LPAR in this sheet – do it from the CONFIG sheet**

You just have to fill:

zAAP#Procs	2
zIIP#Procs	2

with the correct number of these specialty engines.

Note that the rule concerning the total number of zAAP/zIIP is enforced and checked.

**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 zAAP/zIIP) and number of LPs for each LPAR for each type of specialty engines.

Clear the cells (weight and number of LP) for the LPARs that are not concerned by the specialty engines.

**Do not clear the LPAR name.**

Then, click on the **1 - Config. Validation** button.

This will check the configuration and calculate the HiperDispatch number of LPs (if HiperDispatch is supported on the machine).

If errors occur, an error box is displayed and character “E” is set on the last column of the current LPAR:

Example of error – the machine has 4 physical zAAP, but one has defined 6 LP in the LPAR:

The screenshot displays the LPARDesign configuration interface. At the top, there are several control buttons: '1 - Config. Validation', '3 - GoTo ZXXP', 'PRINT', and 'Go To EXPERT'. Below these are configuration parameters for zAAP and zIIP, with values 2 for both. A table of LPARs is shown with columns for LPARNAME, WEIGHT, #LP, %SHARE by pool, Guaranteed #PP, and HD support metrics. LPAR W018 is highlighted in yellow, and its #LP value of 6 is circled in red. An error dialog box is open over W018, stating: 'W018 ZAAP LP number(6) is higher than the ZAAP PP number (4) Please correct these values'. The dialog box has an 'OK' button.

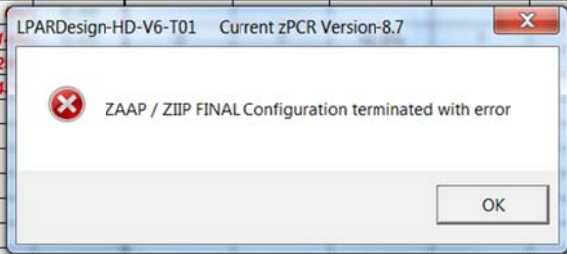
CFG-LP-VALID?	YES
Machine-type	2827 718
zAAP#Procs	2
zIIP#Procs	2

zAAP-Shared-Pool	3
zAAP-DED-Pool	1
zAAP-Weight	700
zAAP-Valid?	YES

zAAP	%SHARE by pool	Guaranteed #PP	HD supported on 2827					
LPARNAME	WEIGHT	#LP	HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs	
W013	0	0	0%	0.00			0	
W014	0	0	0%	0.00			0	
W015	DED	1	100%	1.00	1	0	N/A	0
W017	35	1	5%	0.15	0	1	15.0%	0
W018	65	6	9%	0.28				1
W019	0	0	0%	0.00				
W020	100	2	14%	0.43				
W021	200	2	29%	0.86				
W022	300	2	43%	1.29				

A popup message and the letter “E” will be issued to show where the error is found.

zAAP			%SHARE by pool	Guaranteed #PP	HD supported on 2827				
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs
W013	0	0	0%	0.00					0
W014	0	0	0%	0.00					0
W015	DED	1	100%	1.00	1	0	N/A	0	1
W017	35	1	5%	0.15	0	1	15.0%	0	1
W018	65	6	9%	0.28					0
W019	0	0							0
W020	100	2	1						2
W021	200	2	2						2
W022	300	2	4						2

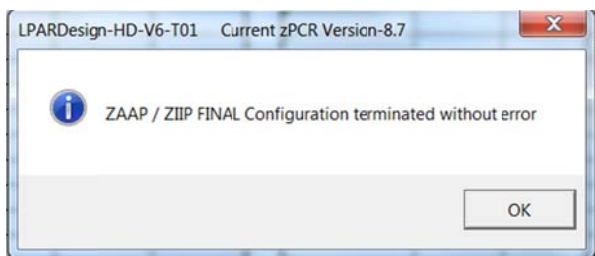
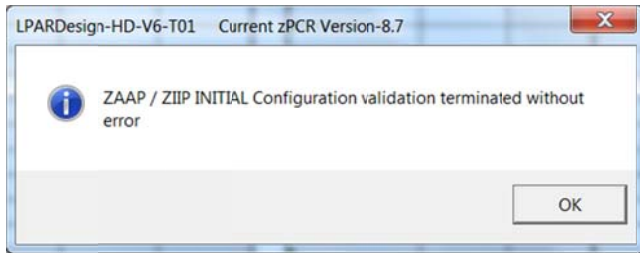


The column named #Act-LPs has been added in V04T00. See “What’s new in V04T00” for an explanation of this column.

Starting with V5, 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”

That is why you will receive two completion messages, one for each phase:





### 7.4.2 Support on the z13 machines.

There is no more zAAP support on machines starting with the z13.

As the spreadsheet must be usable on previous machines, some modifications have been provided be flexible in the zAAP management.

When a z13 machines (machine type 2964) is selected on the CONFIG sheet, the cell containing the number of zAAP, the cell above the LPARNAME and the cell above the HiperDispatch LP spread are greyed in the CONFIG-zXXP sheet as shown below:

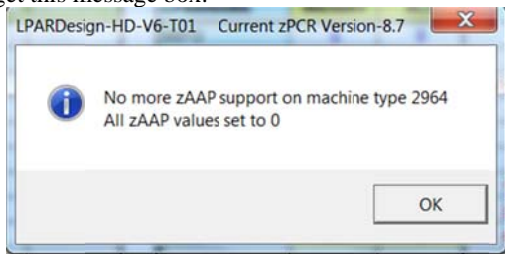
CFG-LP-VALID?	YES	zAAP-Shared-Pool	0	1 - Config. Validation
Machine-type	2964-718	zAAP-DED-Pool	0	PRINT
zAAP#Procs	0	zAAP-Weight	0	Go To EXPERT
zIIP#Procs	4	zAAP-Valid?	NO	

NO zAAP Support			%SHARE by pool	Guaranteed #PP	NO zAAP Support				
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs
W013									
W014									
W015									
W017									
W018									
W019									
W020									
W021									
W022									

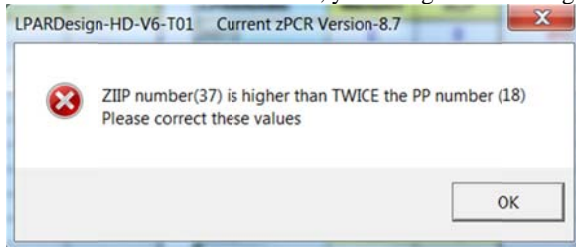
If you have (from a previous study) set values in the zAAP Weight / #LP they are all erased.

If you have to use zIIP, do the normal operations, when you press the **1 - Config. Validation** button you will get this message box:



followed by the regular messages for the zIIP Management.

Another feature has been provided too as the number of zIIP can be up to twice the number of GCP. If you define more zIIP than that rule, you will get this message box:



in this scenario the machine was a 2964-718.

As for GCP, the new way of computing the LP spread on z13 is set with the same message box that GCP.

### 7.5 SYNTHESIS SPREADSHEET Usage.

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

LPARDesign-HD-zPCR-V5-T02 SYNTHESIS			
<b>HiperDispatch Effect - CP</b>			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	24	21	
LP/PP ratio (Shared Pool Only)	1.50	1.31	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR-TOTAL	9		
#LPAR w/HighShare LP (Total)	6		
#LPAR w/DED LP	1		
<b>LP Statistics</b>			
#HighShare LP (Total)	11		
#HighShare LP (DED)	2		
#MediumShare LP	10		
#LowShare LP	5		

LPARDesign-HD-zPCR-V5-T02 SYNTHESIS			
<b>HiperDispatch Effect - zAAP</b>			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	8	6	
LP/PP ratio (Shared Pool Only)	2.67	2.00	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR with zAAP	5		
#LPAR w/HighShare LP (Total)	1		
#LPAR w/DED LP	1		
<b>LP Statistics</b>			
#HighShare LP (Total)	1		
#HighShare LP (DED)	1		
#MediumShare LP	6		
#LowShare LP	2		

LPARDesign-HD-zPCR-V5-T02 SYNTHESIS			
<b>HiperDispatch Effect - zIIP</b>			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	12	9	
LP/PP ratio (Shared Pool Only)	4.00	3.00	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR with zIIP	6		
#LPAR w/HighShare LP (Total)	1		
#LPAR w/DED LP	1		
<b>LP Statistics</b>			
#HighShare LP (Total)	1		
#HighShare LP (DED)	1		
#MediumShare LP	6		
#LowShare LP	6		

**Note: Do not forget to clean/update the value in the CONFIG-zXXP spreadsheet before using the results of this spreadsheet otherwise the results may be wrong; they are related to the sample given.**

When on a z13 machine, the layout is different because there is no more zAAP support. The sheet looks like that:

LPARDesign-HD-V6-T01 Current zPCR Version-8.7 SYNTHESIS			
<b>HiperDispatch Effect - GCP</b>			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	24	21	
LP/PP ratio (Shared Pool Only)	1.50	1.31	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR-TOTAL	9		
#LPAR w/HighShare LP (Total)	6		
#LPAR w/DED LP	1		
<b>LP Statistics</b>			
#HighShare LP (Total)	11		
#HighShare LP (DED)	2		
#MediumShare LP	10		
#LowShare LP	5		


NO zAAP Support			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	N/A	N/A	
LP/PP ratio (Shared Pool Only)	N/A	N/A	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR with zAAP	N/A		
#LPAR w/HighShare LP (Total)	N/A		
#LPAR w/DED LP	N/A		
<b>LP Statistics</b>			
#HighShare LP (Total)	N/A		
#HighShare LP (DED)	N/A		
#MediumShare LP	N/A		
#LowShare LP	N/A		

LPARDesign-HD-V6-T01 Current zPCR Version-8.7 SYNTHESIS			
<b>HiperDispatch Effect - zIIP</b>			
	W/O HD	W/ HD	
#LP (Shared Pool Only)	9	9	
LP/PP ratio (Shared Pool Only)	3.00	3.00	
<b>Global Statistics</b>			
<b>LPAR Statistics</b>			
#LPAR with zIIP	6		
#LPAR w/HighShare LP (Total)	1		
#LPAR w/DED LP	1		
<b>LP Statistics</b>			
#HighShare LP (Total)	1		
#HighShare LP (DED)	1		
#MediumShare LP	6		
#LowShare LP	3		



## 7.6 EXPERT SPREADSHEET Usage.

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

Here are the current rules used to provide these advices:

### 7.6.1 The rules used for advices:

Rule#1:

If you have 1 VH and the decimal part is between 0.4 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%.

Now whatever the x% is, you will get 2VH@ $[(1+x)/2]$ %.

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 0.89 (meaning that you are not far from having a new VH), a small increase in the Weight could lead to have a new VH.

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.

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%.

Note: this sheet has been enhanced to support up to 85 LPARs.

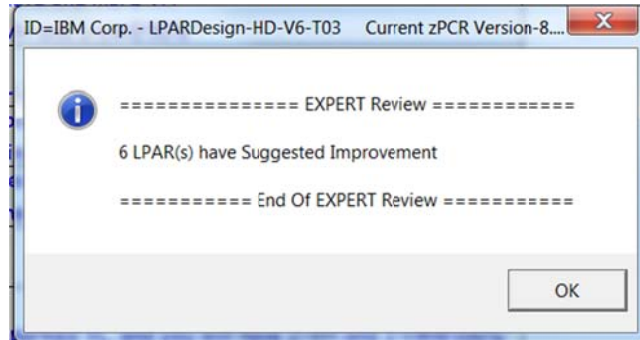
Here is an example of what is produced:

ID=IBM Corp. - LPARDesign-HD-V6-T03 Current zPCR Version-8.7e EXPERT	
<a href="#">Click for EXPERT NOTES</a>	
LPAR	Suggested Improvement Notes - GCP - Machine Type = 2964
W013	No special Comment or Advice for this LPAR
W014	(R2) - Due to the 0.5 rule, a small increase of the Weight could lead to have one more VH Your current Guaranteed#PP is 2,42 - raising it to 2.5 would give you 2-VH and 1-VM@50%"
W015	(R3) - 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"
W017	(R4) - Due to the 0.5 rule, One potential VH has been moved to the VM pool - You have 2-VM with an entitlement of 52% Your current Guaranteed#PP is 3,02 - decreasing the Weight and removing 1-LP would give you 3-VH but with less
W018	(R5) - Due to the "at least 2 LP rule", the first VL will be always Unparked Your current Guaranteed#PP is 0,6 - you will have 2-VM with an entitlement of 30% and so 2 Active LP
W019	No special Comment or Advice for this LPAR
W020	(R6) - You have a potential entitlement of 3-VH But as you have 2-VL, one VH is moved to the VM pool to fuel future Unparked VL, and you will have 2-VH and 1-VM@100%"
W021	(R5) - Due to the "at least 2 LP rule", the first VL will be always Unparked Your current Guaranteed#PP is 0,58 - you will have 2-VM with an entitlement of 29% and so 2 Active LP
W022	No special Comment or Advice for this LPAR

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



Note : This facility is only available if you machine supports HiperDispatch and if you have a valid configuration.

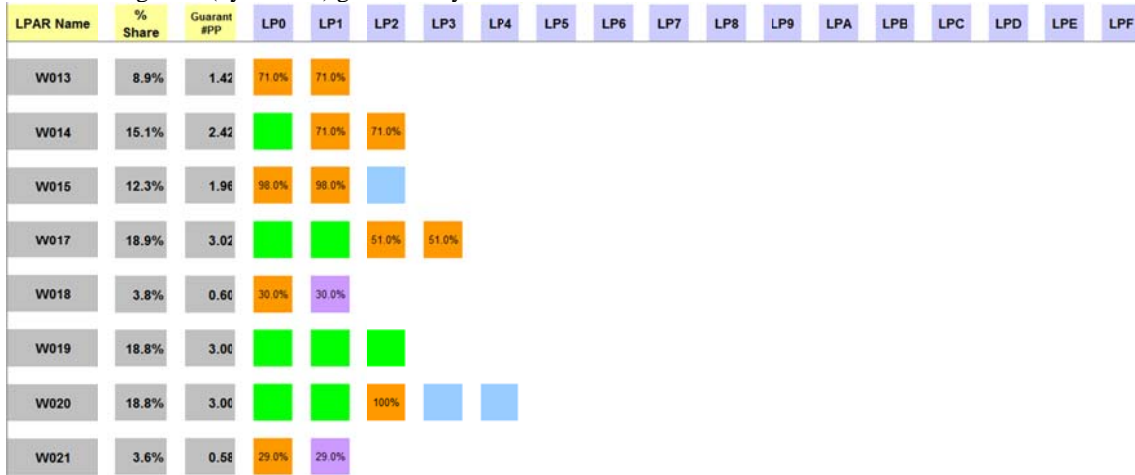
### 7.7 DASHBOARD SPREADSHEET Usage.

This graphic is automatically generated when you push the 2 - HIPERDISPATCH button.



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

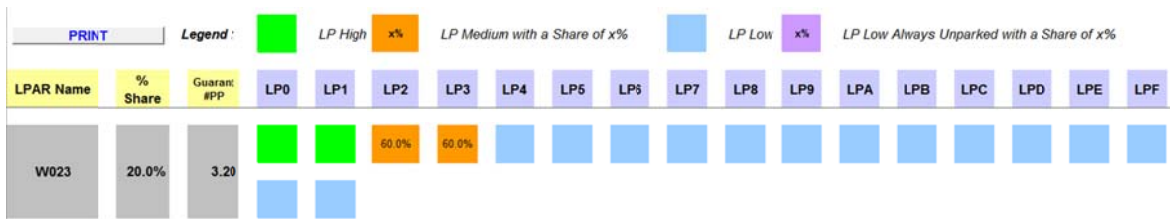
The following lines (by LPARs) gives the layout of each LPAR:



For example, we can see that:

- LPAR W013 has 2 VM@71%
- LPAR W014 has 1 VH and 2VM@71%
- LPAR W015 has 2VM@98% and 1VL
- LPAR W018 has 1VM30% and a VL@30% always unparked
- LPAR W020 has 2VH, 1VM@100% and 2VL and so on.

The graphic is not limited to 16 LPs (LP0 to LPF as shown in the above picture), if you have more that 16 defined LPs you will get this layout:



The W023 LPAR was defined with 18 LPs – so a second line is started for the 2 remaining LPs .

There are 3 buttons to have the same functions for zIIP and zAAP processors as well as for GCP processors:

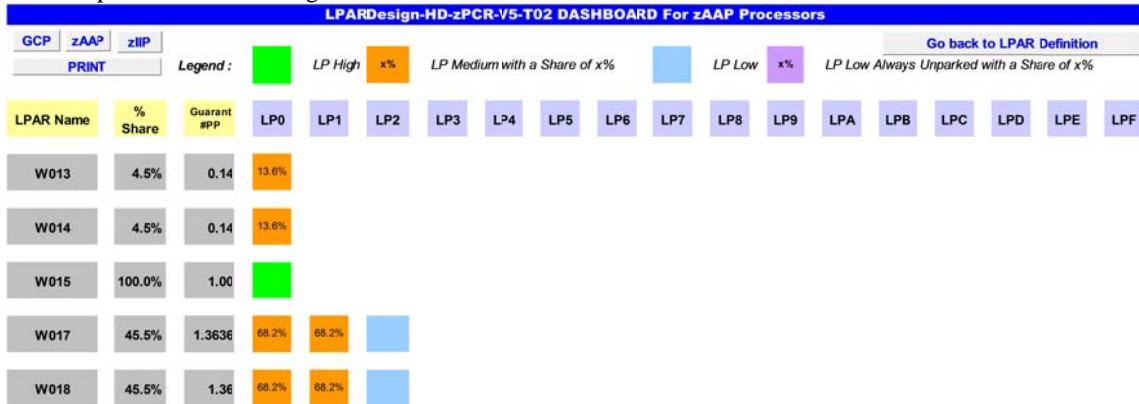


Clicking on one of them gives the appropriate LP layout according to its type.

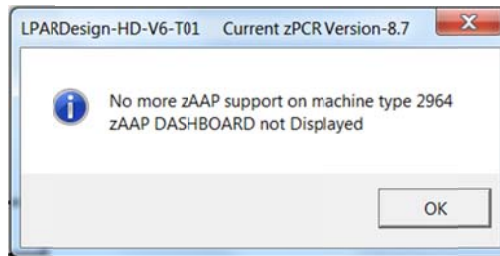
The worksheet looks like that now:



An example for a zAAP configuration is shown below



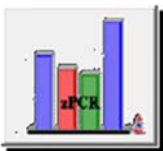
Starting with the z13 machine, if you press the **zAAP** button, you will get the message box :



## 8. [LINK with zPCR.](#)

### 8.1 General considerations on this feature.

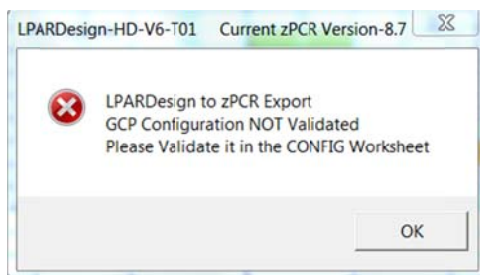
Code has been added to help creating a zPCR Basic study file from LPARDesing or to upload LPARDesign with an existing zPCR Basic study file.



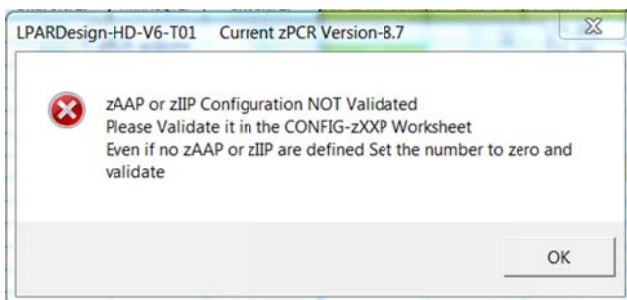
To use this function click on the  button located in the CONFIG worksheet.

To generate a reliable zPCR Basic study file, you need to have your GCP, zAAP 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:

For GCP:



For zAAP and/or zIIP:



This means that even if you do not have zAAP or zIIP you must code a value of "0" and run the validation.

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

#### 8.2.1 Processors type.

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

So, we cannot currently generate configurations with ICFs and IFLs.

You have to add them manually.

For z/VM using IFL, plans are in place to add this feature in the next version

## 8.2.2 Reference CPU.

### Reference-CPU

We use  2094-701 @ 593,00 MIPS as a reference CPU.  
Again, you might be led to change this default.

## 8.2.3 zPCR Version.

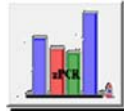
The LPARDesign code is usually in sync with the last zPCR version. The current supported version is displayed in the message boxes. zPCR usually allows that a study with the n-1 version to be uploaded.

## 8.2.4 z/OS Version.

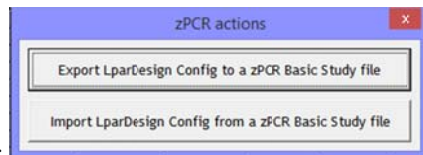
In this current release of LPARDesign we have set the z/OS Version to the LSPR Version so z/OS V2R1.

## 8.3 Using the zPCR EXPORT feature.

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



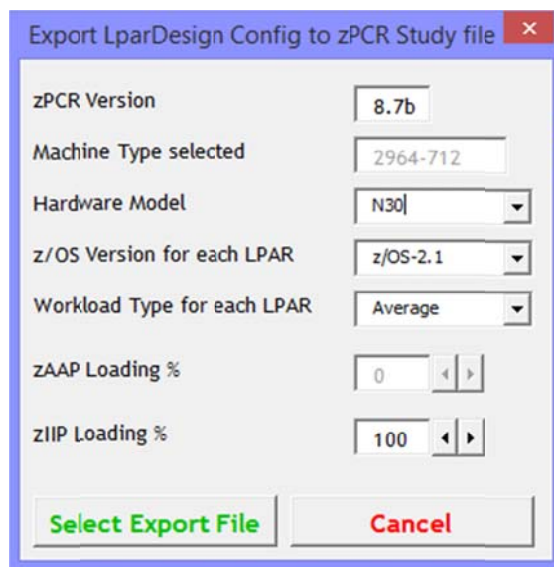
After all configurations have been checked, click on the  button.



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:



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

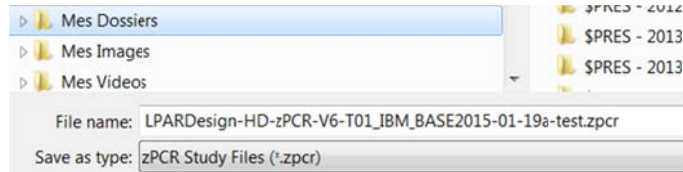
- The Hardware Model
- The z/OS version
- The workload type



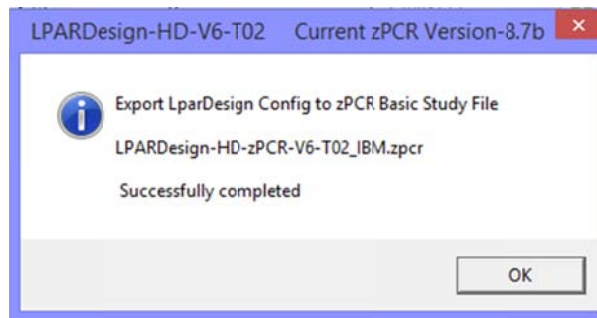
- The zAAP Loading % has been disabled in this case because the machine is a z13 (2964)
- The zIIPP Loading %

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:



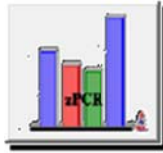
You can select the folder and the file name. Then select SAVE and you will receive this message box specifying your choices:



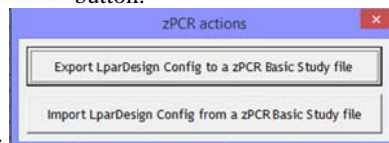
Note :

- When in zPCR, do not forget to reconfigure the ICF or IFL is appropriate.
- Only zPCR 8.7 and higher supports the z13 (2964) machine with 85 LPARs.

## 8.4 Using the zPCR IMPORT feature.



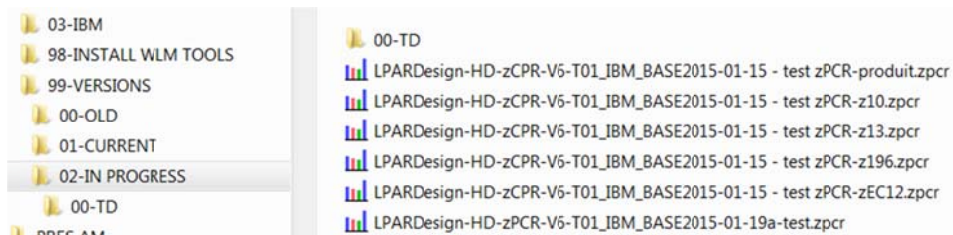
Click on the  button.



This box is displayed :

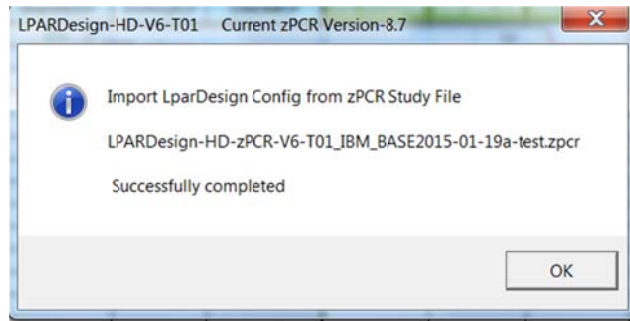
Click on the **Import LparDesign Config from zPCR Basic study file** button.

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*

*Note : No ICF nore IFL will be imported.*



## 9. FAQ and Common Mistakes.

### 9.1 FAQ

**Q1 - When I open the workbook, the CFG-LP VALID is set to NO.**

R1 – This is normal behavior. The Config Validation must be done after an open (re-open) of the workbook, which is why the field is forced to NO.

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

R2 – You must go back 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.

**Q3 – I do not want to use the toleration capability – how can I disable it?**

R3 – If you want to apply the strict rule (disable the toleration), you just have to set it to 0.00.

**Q4 – zPCR IFL or ICF not in the configuration.**

This is normal because these processors are not managed by HiperDispatch.

**Q5 – 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.

**Q6 – 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)

### 9.2 COMMON MISTAKES.

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

- Starting with this LPARDesign release you have the DELETE LPAR feature that will help you to properly delete unwanted LPARs.

**M2 –** Never delete column D, E, F as they contain formulas that I cannot protect individually.

**M3 –** Even if you do not have zIIP or zAAP, set the number of LP to zero and validate the configuration if you want to use the zPCR link. Otherwise you will get an error message.

**M4 –** Never delete a row in the spreadsheet.

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

**M5 –** Try to use a fresh copy of the spreadsheet – use the Create a Copy feature and/or the Save as feature.

**M6 –** If no zAAP/zIIP are to be use, make sure that your current copy of the spreadsheet has a 0 value in the zAAP#Proc or zIIP#Proc in the CONFIG-zXXP sheet.

## 10. SUMMARY OF CHANGES IN PREVIOUS RELEASES.

### 10.1 What's new in V5T04?

zPCR version 8.4a is supported for export

### 10.2 What's new in V5T03?

#### 10.2.1 Fixes and miscellaneous enhancements.

#1 – When whether the number of zAAP or zIIP was 0, there were a bad cleaning of some column resulting in a VBA error.

### 10.3 What's new in V5T02?

#### 10.3.1 New feature#1 - Support of zBC12 model 2828.

#### 10.3.2 New feature#2 – Support of zIIP and zAAP in the DASHBOARD worksheet.

See the chapter DASHBOARD SPREADSHEET Usage for more informatins.

#### 10.3.3 New feature#3 – link with zPCR.

One can create a .zPCR study file from LPARDesign or create a LPARDesign spreadsheet from a .zPCR study file.

See the chapter LINK with zPCR for more informations.

*Note : This code has been developed by Mr Thierry Deleris a customer from Informatique Banques Populaires.*

#### 10.3.4 New feature#4 – File name setting while copying or saving.

In the START spreadsheet, when using the  or  buttons, the file name is provided as the current workbook name suffixed by “\_Copy” or “\_Final”.

Exemple for “Create a copy”, the file name will be “LPARDesign-HD-zCPR-V5-T02\_Copy.xls”, assuming that “LPARDesign-HD-zCPR-V5-T02” is the current workbook name

#### 10.3.5 Fixes and miscellaneous enhancements.

#1 - If there were “holes” in the zXXP definition, the process was stopped. This fix fills the WEIGHT and the #LP with “0” so that the process can continu.

#2 - The #ACT-LPs column was hidden in the zIIP configuration – it is now shown as well as the Error Column.

#3 - zAAP/zIIP – error checking if the WEIGHT was not numéric or not “DED” and/or the Number of LPs was not numeric. Associated error messages are provided.

#4 - A check on the correct number of LPAR defined according to the Model is now done. For exemple if you select a z114, you cannot define more then 30 LPARs. An associated error message is provided.

#5 - In the CONFIG spreadsheet, more validity checks are provided:

- The number of DEDicated LP must not be greater than the number of physical LP. For example if your machine is a 2827-728, the sum of DEDicated LP must not be greater than 28.
- The number of LPs (non-DEDicated) defined in an LPAR must not be greater than the one of the Shared Pool. For example, suppose you have a 2827-728 machine and you define some LPARs with DEDicated LP. The sum of these LPs is 18. There are now 28-18=10 LPs remaining in the

Shared Pool. So, an LPAR (having its LPs defined in the Shared Pool) should not be able to use more than those 10 LPs.

#6 - In the case where you make a copy of an existing spreadsheet to use for a new configuration and the number of LPAR in the new configuration is less than the original one, all the "not used" cells are cleaned.

#7 - In the CONFIG worksheet a check is performed to ensure that the LPAR Name is unique. This could lead to some problem when creating the zPCR study file.

## 10.4 What's new in V4T00?

### 10.4.1 Update for zXXP LPs.

The information about the number of active LPs was missing in the zXXP part of the spreadsheet. It is the same rule as for CPs.

It has been added (example for zAAP) into the column named **#Act-LPs**:

CFG-LP-VALID?	YES	zAAP-Shared-Pool	11	1 - Config. Validation					
Machine-type	2827-712	zAAP-DED-Pool	1	PRINT					
zAAP#Procs	12	zAAP-Weight	2400						
zIIP#Procs	9								
zAAP			%SHARE by pool	Guarantee d#PP	HD supported on 2827				
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	#Act-LPs
W013	300	3	13%	1.38	0	2	68.8%	1	2
W014	200	2	8%	0.92	0	1	91.7%	1	2
W015	100	1	4%	0.46	0	1	45.8%	0	1
W017	500	4	21%	2.29	1	2	64.6%	1	3
W018	600	6	25%	2.75	2	1	75.0%	3	3
W019	700	4	29%	3.21	2	2	60.4%	0	4
W020	DED	1	100%	1.00	1	0	N/A	0	1
W021									

As for the CP, this column shows the actual number of LPs that will be activated.

If you look at LPAR W014, the calculation of the number of LP gives:

- 0 VH
- 1 VM
- 1 VL


The VL LP will be always UnParked, so the Active number of LP will be always 2. The two LPs will have an entitlement of  $91.70\% / 2 = 45.85\%$ .


### 10.4.2 New EXPERT Worksheet.

This worksheet might help you optimize you current configuration.

In this version, it is related to CP configuration only.

To use it, go directly to the EXPERT worksheet, or use button located in the CONFIG worksheet.


When in the EXPERT worksheet press the  button to get some advices on how to potentially optimize the parameters defined to get more of HiperDispatch.

The results of the EXPERT Worksheet are resets every time that you make a change in the configuration (so every time you push the  button in the CONFIG Worksheet)

To propose these advices, I have used 6 rules that are described in the EXPERT spread sheet usage paragraph later in this documentation.

### 10.4.3 New DASHBOARD Worksheet.

The new DASHBOARD Worksheet is a graphical representation of the layout of the LP assignments.

It is built automatically when pushing the  button.


It can be seen as an information on how WLM builds affinity node (if applicable and accroding to your CPU model).

*Note : This code has been developed by Mr Thierry Deleris a customer from Informatique Banques Populaires.*

### 10.5 What's new in V3T00?

Added support of zEnterprise EC12 machine type "2827".

The MIPS used are those provided for z/OS V1R13 LSPR (this is for information only – use zPCR for the correct number of MIPS the LPAR will have)

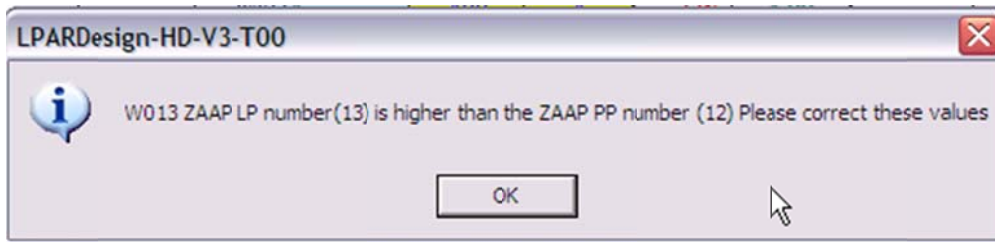
A new check is made on the number of zAAP/zIIP according to the number of **Installed CP** (the machine model you chose in the  cell). **It is not the standard rule which is based on the number of purchased CP, but I cannot know what this number is.**

If you have set a number of zAAP/zIIP that is higher than the number of Installed CP, you will have the following error:

LPARDesign-HD-V3-T00									
CFG-LP-VALID?	NO		zAAP-Shared-Pool	12	1 - Config. Validation				
Machine-type	2827-712		zAAP-DED-Pool	0	PRINT				
zAAP#Procs	12		zAAP-Weight	1200					
zIIP#Procs	12								
zAAP			%SHARE by pool	Guarantee d#PP	HD supported on 2827				
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#	
W013	400	13	33%	4.00					E
W014	400	4	33%	4.00	4	0	N/A	0	
W015	400	4	33%	4.00	4	0	N/A	0	

In this error case, you have set **13** LPs for the W013 LPAR which is higher than the number of Installed CP which is **12** (your machine is a 2827-712).

The pop up message will be:

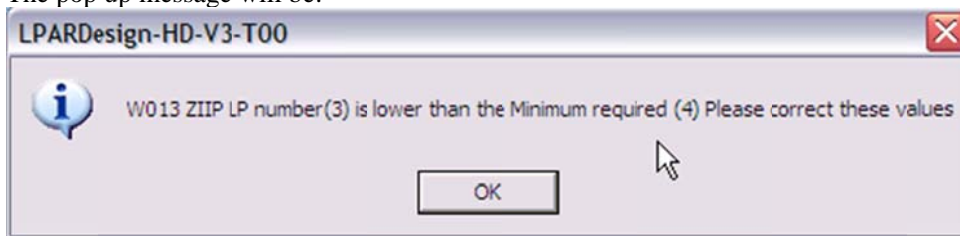


Another new check is done (it was missing) to ensure that you have set the minimum number of LPs to sustain you %share.

In this error case you have set 3 LPs but this is not enough to sustain you %share which requires a minimum number of LPs that is 4:

CFG-LP-VALID?	NO	zIIP-Shared-Pool	12					
		zIIP-DED-Pool	0					
		zIIP-Weight	1200					
zIIP			%SHARE by pool	Guarantee d#PP	HD supported on 2827			
LPARNAME	WEIGHT	#LP			HD-HIGH#	HD-MED#	HD-MED%	HD-LOW#
W013	400	3	33%	4.00	3	1	100.0%	-1
W014	400	4	33%	4.00	4	0	N/A	0
W015	400	4	33%	4.00	4	0	N/A	0

The pop up message will be:



### 10.6 What's new in V2T10?

Added support of zEnterprise 114 machine type "2818". The MIPS used are those provided for z/OS V1R11 LSPR.

### 10.7 What's new in V2T09c?

Worksheet cells protections to avoid typing errors that could delete the formulas.  
MIPS table updated with the latest values (September 22nd).

### 10.8 What's new in V2T09b?

Update of the Mips/MSU table with the last published official values. The MIPS used are for information only (use zPCR to evaluate the new machine). These MIPS are those from LSPR AVG V1R11 MI.

### 10.9 What's new in V2T09a?

Fix a problem related to the calculation on the number of Active LP.

Redesign of the HIPERDISPATCH button – it was grey out, that was confusing.

**2 - HIPERDISPATCH**

The new layout is now:

## 10.10 What's new in V2T09?

Added support of zEnterprise 196 machine type “2817”. The MIPS used are those provided for z/OS V1R11 LSPR.

## 10.11 What's new in V2T08c?

Fix a problem related to the application of APAR OA24272 that states that we try to have at least 2 active LPs (meaning that we always try to un-park the first LowShare LP). That was ok with 2 LP defined in the LPAR but there was an error if more than 2 LPs were defined. This relate to the Number Of Active LPs column.

## 10.12 What's new in V2T08b?

Fix a problem related to the format of the field of the HD-HIGH#, HD-MED#, HD-MED% and HD-LOW# column for the zXXP configuration. For example, if the value of HD-MED# was 1, 100% was displayed starting with the 9<sup>th</sup> LPAR.

## 10.13 What's new in V2T08a?

### 10.13.1 Calculation of the number of Active LPs – column **#Active LPs**

This number was right according to the rule of spreading HighShare, LowShare and MediumShare LP. However, in real life, when you have a 2 LP configuration where the number of guaranteed LP is less than 1, meaning that you have 1 MediumShare LP and 1 LowShare LP, the LowShare LP is always “unparked”. So the actual (real life) number of active LPs in the previous case should be 2 and not 1.

The HiperDispatch effect LP/PP ratio uses now this number.

[The use of this number is recommended for a zPCR study.](#)

### 10.13.2 Add of a new column named: **#Report LPs**

It will indicate the number of LPs that you will see “active” in the CPU ACTIVITY REPORT of the LPAR, meaning that it is the sum of HighShare LPs and MediumShare LPs. The LowShare are considered “unparked” at first.

### 10.13.3 Fixes

- The HiperDispatch button will not be printed.
- Correction of the zAAP/zIIP synthesis report – when there is no zXXP, “N/A” is written in the appropriate cells.

- Correction of the layout of the synthesis worksheet – some users were confused with the column

**W/O HD** **W/ HD**. They relate to the HiperDispatch effect only report.

For the Global Statistic report the single value is related to the name of the column in the left (No W/O or W HD meaning).

- The spreadsheet is delivered with a toleration% of 0% and 0 zAAP / 0 zIIP.

## 10.14 What's new in V2T08?

### 10.14.1 zAAP and zIIP Configuration.

This version includes the configuration and HiperDispatch calculation for zAAP and zIIP specialty engines.

### 10.14.2 Configuration toleration option.

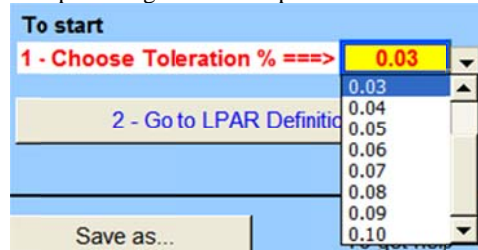
Some customers have required that a “toleration percentage” could be set to get rid of the following situation:

Suppose that the number of guaranteed physical processors is 9.03 and you have defined 9 LPs for the LPAR. The strict application of the rule would lead to require 10 LPs in the LPAR. The “toleration percentage” allows now to specify until what percentage you consider that one should keep the number of LPs defined for the LPAR and NOT apply the strict rule.

The specification of this percentage is in the START worksheet. The values are in the **0.00** to **0.10** range.

A value of 0.00 means that you want to apply the strict rule.

You choose a value for the toleration percentage on the list provided on the START as follow:







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