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HCD z/VM and HCM support for zEC12 and zBC12

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With APAR VM65239 the support for two new processors - IBM zEnterprise EC12 server (zEC12) and IBM zEnterprise BC12 server (zBC12) - is available as well as new HCD functionality like support for Peripheral Component Interconnect Express (PCIe) adapters and Physical Network Ids (PNET IDs).

1.0 HCD z/VM 6.2:

Exploitation support for the IBM zEnterprise EC12 server (zEC12) and IBM zEnterprise BC12 server (zBC12).

The new processors are defined with

- type 2827 model : H20, H43, H66, H89, HA1.
- type 2828 model : H06, H13.

For a list of all supported processor types/models and their capabilities see the 'Supported Hardware Report' in HCD.

The following enhancements are introduced with this APAR:

- PCIe functions
- New CHPID attribute (PNET ID)
- New/changed reports

1.1 PCIe functions:

To support PCIe functions, HCD has added the FUNCTION keyword to its I/O configuration statements, which can be migrated into an IODF. A PCIe function is specified with the FUNCTION statement which contains following keywords:

FID	Identifies the PCIe function within the processor configuration	mandatory	three hexadecimal characters (valid range X'000' - X'0FF')
UNIT	Identifies the PCIe function type	optional	Valid unit types: ROCE (default) ZEDC-EXPRESS
PCHID	Identifies the PCIe adapter card which provides the specified function by specifying the slot of the card in the I/O drawer	optional	three hexadecimal characters
VF	Identifies the PCIe virtual function number	optional	up to two decimal digits
PNETID	Identifies the physical network Ids (only valid for ROCE)	optional	(pnetid1,,pnetid4) up to four 16-character alphanumeric physical network IDs
PART	Specifies the access and candidate lists of partitions	mandatory	access list: limited to one partition

	entitled to use the PCIe function.		candidate list : number of partitions not limited
DESC	Specifies a description of the PCIe function	optional	up to 32 characters

The following example defines a PCIe function of type ROCE.

FUNCTION FID=051,UNIT=ROCE,PCHID=53A, *
PNETID=(PNET01,,PNET03), *
PART=((LP01),(LP03,LP05,LP07)), *
DESC='function description'

<u>Migration considerations:</u>

The UNIT and DESC keyword are unknown to IOCP and have to be specified with *\$HCD\$, if used to call IOCP.

It is necessary during IOCP data set build to work with extended migration which generates the additional keywords *\$HCD\$ (HCD profile: MIGRATE_EXTENDED = YES) otherwise a problem may occur when re-migrating the IOCP data set because the PCIe Unit parameter is unknown and defaulted to 'ROCE'.

Sample:

```
FUNCTION FID=051, PART=((LP01), (LP03, LP05, LP07)),
PNETID=(PNET01, PNET03,), PCHID=53A

*$HCDC$
UNIT=ROCE

*$HCDC$
DESC='function description'
FUNCTION FID=005, VF=1, PART=((LP14), (LP01)), PCHID=105

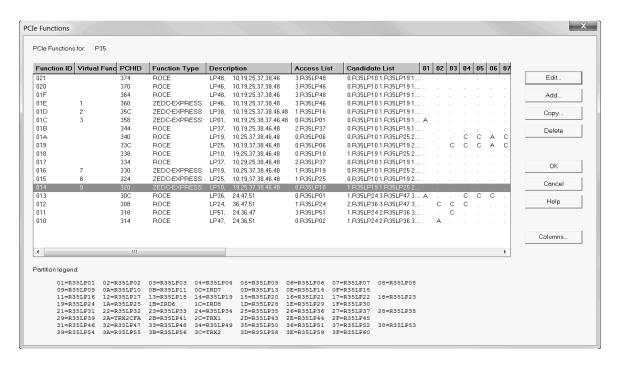
*$HCDC$
UNIT=ZEDC-EXPRESS

*$HCDC$
DESC='myDescription'
```

PCIe support in HCM

 ${\tt HCM}$ introduces a new dialog where users can define ${\tt PCIe}$ functions and assign them to LPARs.

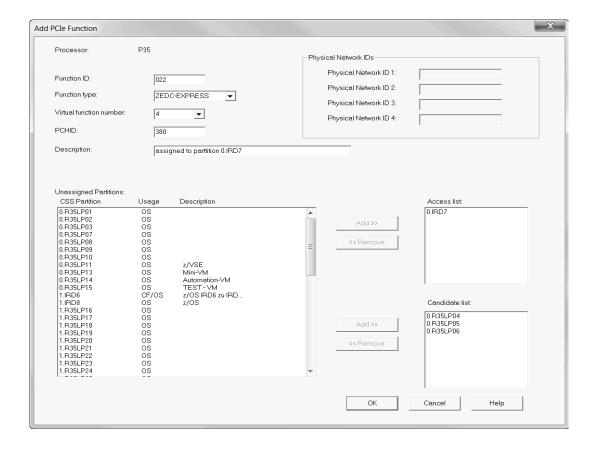
To define, delete or change PCIe functions, click on the **Edit...** button in the **Processor** dialog to display the **Edit Processor** dialog. Then click on the **PCIe...** button to open the PCIe Functions dialog



The PCIe Functions dialog shows the existing PCIe functions defined in the currently accessed IODF.

This dialog offers all required actions to manage PCIe functions in your configuration. Select any of the listed PCIe functions to either edit, copy or delete it.

To define new PCIe functions, you can use either the Add... or Copy... button.



1.2 New CHPID attribute:

The CHPID statement has been enhanced to support the new optional operand PNET ID which is only applicable for CHPID type OSD and IQD. IQD only accepts one Physical Network Id.

If the target processor type does not support PNET ID values, the CHPID statement will be processed with the PNET ID value being ignored.

Note:

HCD will not automatically adapt different Physical Network Id specifications for the same PCHID value on multiple PCIe functions.

Input statements have to be consistent; otherwise error message CBDG578I would be given when the production IODF is being built.

Sample:

```
CHPID PATH=(CSS(0),11),PARTITION=((LP01),(LP04),REC),
PCHID=041,PNETID=(,NET11,NET2,),TYPE=OSD
*$HCDC$
DESC='myDescription'
```

1.3 Reports:

HCD provides following two new reports as part of the 'Channel Subsystem Summary Report':

 The 'PCIe Function Summary Report' displays the partitions in the access and candidate lists which are entitled to access the available PCIe functions.

• The 'PCHID Summary Report' as part of the CSS Summary Report lists all defined channel paths and PCIe functions sorted by their defined PCHID values or, as applicable, by their HCA adapter / port Ids.

PCHID SUMMARY REPORT

TIME: 10:57 DATE: 2013-06-11 PAGE A- 11

PROCESSOR ID PROCNEW1 TYPE	2827 MODEL HA1	CONFIGURATION	MODE: LPAR		
CHPID PCHID VF FID TYPE	SWITCH CSS Numbers	PNET-1	PNET-2	PNET-3	PNET-4
010 1 001 ZEDC-EXPRES	S 1 2	A12345		C223344	
TOTALS FOR CHANNEL CARD TYPES EXTERNAL CHPIDS CFP CIB FC FCP OSC OSD OSE O	INTERNAL CHPIDS SN ICP IQD	PCIE FUNCTIONS ROCE ZEDC			
2 0 0 0 0 4 1	0 0	2 3			

The 'PCIe compare report' (which is a part of the IODF compare reports) allows to compare PCIe changes. The IODF compare report can be limited to the 'PCIe Compare Report' by the limit string CF.

e.g. PARM='COMPARE, AB, CL, CF, PROCNEW1, LPAR1, PROCNEW1, LPAR1'

PCIe Function Compare Report TIME: 14:58 DATE: 2013-06-11 PAGE A - 2

New IODF name: IODFA1 WORKIODF A Old IODF name: IODFA2 WORKIODF A

į	PROC	FID	New IODF	Old IODF	Description
į	PROCNEW1	001	Added		
!			112 ZEDC-EXPRESS 1		! Physical Channel ID (PCHID) ! Function Type ! Virtual Function ID (VF) ! Function Description
į			>> LPAR1		Partition in Access List
į	PROCNEW1	020		Deleted	
!				ZEDC-EXPRESS 1	Physical Channel ID (PCHID) Function Type Virtual Function ID (VF) Function Description
į				>> LPAR1	Partition in Access List

2.0 z/VM 5.4 HCD

Exploitation support for the IBM zEnterprise EC12 server (zEC12) and IBM zEnterprise BC12 server (zBC12).

The new processors are defined with

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- type 2828 model : H06, H13.

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The following enhancements are tolerated with this APAR:

- PCIe functions
- New CHPID attribute (PNET ID)

2.1 Three scenarios need to be distinguished:

2.1.1 Scenario 1:

A work or production IODF with zEC12 GA2 or zBC12 processors does neither contain

- PCIe functions nor
- CHPIDs with PNET ID attributes.

Full support is available, including updates of a the work IODF, generation of reports, build production IODF, and all kinds of dynamic activates.

2.1.2 Scenario 2:

A production IODF with zEC12 GA2 or zBC12 processors contains

- PCIe functions and / or
- CHPIDs with PNET ID attributes

for the processor to be activated (in the active IODF or in the target IODF, or both).

- It is possible to perform a software-only activate or software activate with hardware validation.
 - A warning message CBDG593I (MSGCBDG593) will be issued:
 - "Processor @1 has PCIe functions or CHPIDs with PNET ID which are unknown to the HCD version or OS version. Both will be ignored.".
- A full dynamic activate is not possible. If it is attempted, message CBDG592I (MSGCBDG592) is given:
 - "Processor @1 contains PCIe functions or CHPIDs with PNET ID, unsupported by the current HCD/OS version. Action is not possible.".
- When generating an IOCP deck or issuing several reports, the unsupported objects are ignored and CBDG593I is issued.

2.1.3 Scenario 3:

A work IODF with zEC12 GA2 or zBC12 processors contains

- PCIe functions and / or
- CHPIDs with PNET ID attributes

for the processor to be activated.

- It is not possible to update the IODF or to build a production IODF. In both cases, message CBDG592 is issued (MSGCBDG592).
- \bullet This IODF must be maintained and activated on a z/VM 6.2 with VM65239 or z/OS V2R1 HCD system with OA39234 installed.