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VM Support in HCD

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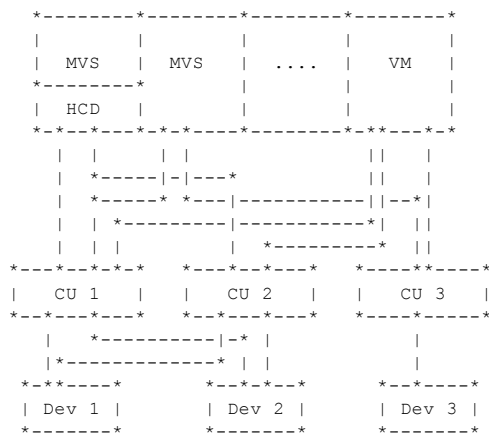
One subject, which has not been discussed in great detail up to now is the VM support in MVS/ESA HCD.

VM Considerations

Scenario 1: Lets take a look at the first scenario. Here we have an LPAR processor with multiple images (LPARs). One or more of these LPARs run VM. Using HCD, running on one of the MVS LPARs, you can define the configuration for the processor (CSS) as well as for all the operating systems, including the definition for the VM operating system. HCD accepts both the MVS and the VM I/O devices. In other words all devices supported by VM can be defined in the IODF by means of HCD. This ensures consistency between the MVS and VM operating systems when sharing common hardware equipment (I/O devices). If you are still using an HCPRIO file for your VM device definitions, you can use the HCPRIO file to migrate the VM device definitions into the IODF. Likewise, an HCPRIO file can be generated from the hardware/software definitions stored in the IODF.

However, if you are exploiting the device sensing capability of VM/ESA 1.2 or higher, you do not need to define the devices to the VM operating system in the IODF. Devices that can be sensed will be automatically recognized and initialized at IPL time by the VM operating system definitions. Only devices that can't be sensed need to be defined in the System Configuration File by means of an RDEVICE statement.

Figure 2. Scenario 1



Hardware changes can be made by means of the dynamic reconfiguration function. For instance, you can use HCD running in one LPAR to let the processor know about new or changed devices. Both MVS and VM will then pick up the changes. The VM operating system will be informed about the new devices, build the appropriate device control blocks and initialize the devices. Similar actions are done when adding or changing a channel path to the VM operating system. Changes to the device definitions can be made while VM is running by means of the SET RDEVICE command.

An additional consideration is that you can not make dynamic changes for the VM image itself that causes devices to be deleted, unless you have manually removed all the devices from the VM image, which the hardware change will delete.

Hardware change	VM/ESA 1.2 or higher	VM/ESA 2.1
Add CHPID to existing I/O CU	Issue VARY PATH to bring online	same
Add (new to Partition) Devices and Path brought ONLINE when CHPID VARY ON (in lpar mode)	Devices and Path brought ONLINE when CHPID VARY ON (in lpar mode)	same

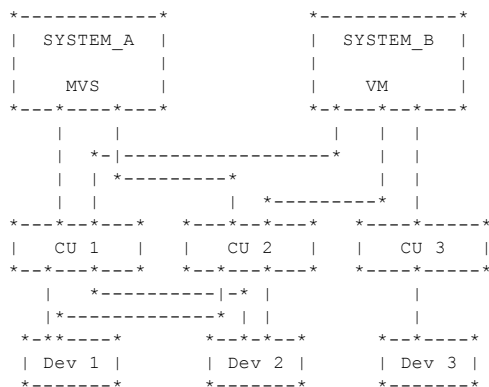
Add	VM is not	same
control	aware of	
unit	any	
	control	
	units	
Add	VM will	same if VM configuration parameter set to initialize
device	get IPI	devices when added
	add IO	
	MCH and	
	add	
	device	
Delete	You can	You can vary off device to VM, then vary
device	vary off	off subchannel, then delete rdevice block before HCD
	device,	does delete
	but when	
	HCD does	
	delete,	
	device	
	goes	
	boxed and	
	rdevice	
	block	
	stays	
	around	

Note: Prior to VM/ESA 1.2, you must perform an IPL to make the configuration changes effective.

Scenario 2: Here we have two processors in the complex. One processor runs MVS while the other runs VM. The entire configuration can be defined via HCD running on the MVS processor. Via HCD, you can define the configuration for the VM processor as far as the hardware and software is concerned. You use HCD on SYSTEM_A to create an IOCP file, representing the hardware configuration for the VM processor, and then use the IOCP command, passing the created IOCP file, to write an IOCDS on processor SYSTEM_B.

Of course, dynamic reconfiguration involving the VM processor can not be done since there is no way to inform the hardware on SYSTEM_B about configuration changes.

Figure 3. Scenario 2



Scenario 3: Here we have a processor that has one or more MVS guest machines.

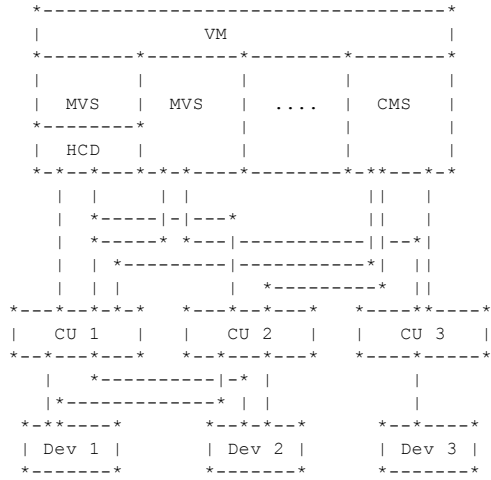
HCD running on one of the MVS guests can be used to define the hardware configuration for the VM processor. Using HCD, you can write the IOCDS representing the hardware configuration. You define the software definitions for the MVS guest machines as well as for the VM system.

Note: Virtual devices must be defined to VM as you did in the past. Such devices must also be defined in the IODF but just for the MVS operating system.

You can not use HCD for dynamic hardware changes while running under VM. You might only make software changes via HCD. However, certain changes can be done through VM commands. For example you could change the device numbers used for tape drives by performing a software activate and then issue VM commands to detach and re-attach the devices under the new device numbers.

new device numbers.

Figure 4. Scenario 3



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