

# POWER Block Course

## Assignment 2: System management

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*(Submission deadline: 04.11.2016, 23:59 CET)*

### General Rules

The assignment solutions have to be submitted at:

<https://www.dcl.hpi.uni-potsdam.de/powersubmit/>

Our automated submission system is intended to give you feedback about the validity of your file upload. A submission is considered as accepted if the following rules are fulfilled:

- You did not miss the deadline.
- Your file upload can be decompressed with a zip / tar decompression tool.
- Your program runs without expecting any kind of keyboard input or GUI interaction.

If something is wrong with your submission, you will be informed via email (console output, error code). Re-uploads of corrected solutions are possible until the deadline.

**All tasks must be submitted accordingly in order to pass the assignment. You are expected to explain your solution in the oral exam.**

### Assignment 2

The second assignment covers the concepts of the hardware management console (HMC). The HMC is used to configure, provision and manage a system. As shown in the plenum login to the HMC GUI via web browser with your FSOC account and proceed with the following task.

#### Task 2.1: Discover the capabilities and features of your POWER8 server

IBM Power Systems are using a very sophisticated and advanced virtualization technology that has been derived from the IBM mainframe technology more than 40 years ago. Due to the ripeness this technology is extremely efficient when compared with other platforms. It is based on the POWER Hypervisor and the PowerVM software. The POWER Hypervisor is built-into the server system by default. The IBM PowerVM software provides all the tools that are necessary to install and manage virtual machines (Logical Partitions = LPARs).

Login to the HMC-Management Console (192.168.42.251) with your FSOC account, select our POWER system and find out the following information:

1. Are all the installed CPU cores assigned?
2. Can your system have more than one Shared Processor Pool? (Redbook PDF p.133 sqq.)

Study following documentation about POWER System Virtualisation:

<https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Power%20System>

[ms/page/Understanding%20PowerVM%20Hypervisor%20Memory%20Usage](#) / (Redbook PDF p.133 sqq.)

3. Why is a part of the total memory reserved?  
(You may use the online-help from the HMC GUI to find the answer)
4. What is contained in the reserved memory area?  
(Remember that there is a POWER Hypervisor, how does memory virtualization work ... etc.)
5. Draw a diagram of your IBM Power System's server layout and all the PCI slots of the system.
6. What type of PCI adapter is installed in each individual slot?  
(PCI slots are identified through a location code; P=planar; C=slot number)
7. Please pick one Fibre Channel or Ethernet adapter
8. Find out which IBM feature code this particular adapter has?  
(IBM uses feature codes to specify all the components that are installed in a server system. By using these feature codes you can find out more details)
9. Single Root I/O Virtualization (SR-IOV) is a PCI standard that allows virtualization of Ethernet adapters. Is your system capable of SR-IOV? (see Capabilities) Write a short paragraph explaining the SR-IOV approach! (Redbook PDF p.140 sqq.)
10. Memory Mirroring is a functionality of IBM Power Systems that makes the POWER Hypervisor and the overall system more reliable against failures. Is your system using Memory Mirroring? Write a short paragraph explaining Memory Mirroring!  
(Redbook PDF p. 67 sqq.)

Submit a .txt file with the answers to the questions.

### **Task 2.2: Repair and boot your own LPAR**

We have created a Logical Partition with CentOS installed. However the disk is not assigned to your LPAR. You should see your LPAR and two VIOs (hpi-v1, hpi-v2). Please solve the following steps to complete this task.

- Connect your LPAR redundant (via both VIOs with the boot disk)
- Boot your LPAR and check the hostname (centos-course—XX)
  - o Should match your power.courseXX account number (without leading zeros)
- Change desired processing units to 0.3 and memory to 3077 MB
- Submit your partitionname as assignment 2.2 into the submission system