

***IBM eServer[®] i5 and iSeries[™]
Logical Partitioning FAQs***

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Logical Partitioning FAQs

This document contains useful information for planning and configuring your IBM eServer i5 with logical partitioning, along with references to URL and documentation. This information is provided based on the common questions that we have received. It is not meant to be a complete list of all the questions that we have received. Please use this information as appropriate during your initial planning process for deploying LPAR on eServer i5 systems. For additional assistance, please contact use through rchtsc@us.ibm.com. Additional information about AIX 5L™ and Linux support on eServer i5 will be added to this document at a later stage. We will update this document as we get more common questions.

What are the differences between LPAR on iSeries and eServer i5?

Logical partitioning functionality on eServer i5 contains a new POWER Hypervisor™ and a Hardware Management Console (HMC) will be required to partition your eServer i5. Additionally with the POWER Hypervisor, users will be able to benefit from uncapped processor partitioning with most models and the role for managing your LPAR environment by the primary partition on iSeries is now replaced by HMC with eServer i5. [Table 3](#) below summarizes various functional differences between iSeries and eServer i5 with links directly to information center articles. The tasks and configuration steps for creating and managing LPAR through HMC are substantially different so education is highly recommend.

Where can I get information on LPAR classes?

New classes that will feature POWER5 processor based servers will be available starting June 14 in Rochester. This is a 4 day class that will run throughout the year in Rochester. The class number is [AS530](#). Similar classes are also planned to be scheduled in EMEA with the first one planned to run in France on June 21 under the class code of AS530EU through IBM Learning Services.

Where can I get education on HMC?

HMC education is available online through IBM's resource link. <http://www.ibm.com/servers/resourcecenter>. Anyone, including customers, has access to this Web based education module. Detailed HMC education is also part of the LPAR class.

When do I need HMC?

HMC is required when you are implementing logical partitions, or enabling Capacity Upgrade on Demand offerings on your eServer i5. HMC is also required for activating a partition that is powered off and any dynamic LPAR (DLPAR) actions. HMC essentially replaces the functions performed by "Work with System Partitions" in service tools and options for enabling CUoD features within DST. These features are still available but only for iSeries offerings and not eServer i5.

Where can I find the ITSO presentation on LPAR?

The presentation and the lab exercise may be downloaded from the following site. Scroll down and read the README file that explains session folder naming scheme. The LPAR topic is under GL01.

ftp://www.redbooks.ibm.com/redbooks/2004_iSeries_Forum_Session_Files/

What is uncapped processor partitioning? Is it available only on eServer i5?

Uncapped processor partitioning is a new feature, enabled through the POWER Hypervisor and part of the shared processor pool. Uncapped mode indicates that the partition can automatically utilize any unused processing capacity available either in the shared processor pool, or from the system pool where partitions with dedicated CPU are not online. See [Shared Processing Pool](#) article for more information, including demos of uncapped processor partitioning. Uncapped mode is only available on eServer i5.

Is uncapped processor partitioning supported on all eServer i5 models?

With a few exceptions, uncapped processor partitioning is supported on all eServer i5 models. See [Matrix of eServer i5 models and LPAR Capabilities](#) below for more information.

Can I schedule resource movement with HMC?

HMC allows you to schedule resource movement for memory and full processors between partitions using the HMC scheduler. Unlike iSeries Navigator, you do not have a SCHEDULE button. You will need to go into HMC Management, HMC Configuration, Scheduled Operation, Select a Partition, and then use Dynamic Reconfiguration Option to schedule memory or CPU movement. Scheduling of partial processor or I/O movement such as tape adapters **is not** supported at the present time. More information on the planned enhancements and availability of the LPAR Toolkit will be made available soon.

Can I dynamically move resources with HMC?

Yes, you can dynamically move resources such as memory and processing units between partitions using the HMC or HMC scripts.

Do I need LPAR Validation Tool to plan for LPARs on eServer i5?

Yes, the LVT has been modified to include eServer i5, in addition to iSeries. You must [download](#) the tool to plan for your LPAR before a hardware order has been placed.

Can HMC perform the same tasks as SST and DST or iSeries Navigator?

HMC offers the capability start a 5250 session with any i5/OS partition, and this is done during the initial set up of the partitions. The 5250 session acts as your console where you can continue to perform DST or SST tasks such as disk configuration and so on. iSeries Navigator cannot run on HMC. You would still need to load this on any of your desktops. The HMC does replace all of the control panel functions previously provided by the Work with Partition Status service function such as forcing a dump or performing a delayed power off.

How many partitions are supported on eServer i5 today?

With the announcement, and depending on the model, the number of partitions that can be supported on a given configuration will vary. This is determined by the amount of processing units available in each of the configurations. Here are the details that will help you plan for number of partitions.

Table 1: Matrix of eServer i5 models and LPAR Capabilities

Model	Max CPUs	Max CPW	Max Processing Units	Max No. of LPARs	Shared Processor Pool	
					Capped	Uncapped
570-0920 (7470)	4	11700	400	40	Y	Y
570-0920 (7469)	4	11700	400	40	Y	Y
570-0919 (7489)	2	6000	200	20	Y	Y
570-0919 (7488)	2	6000	200	20	Y	Y
520-0905 (7457)	2	6000	200	20	Y	Y
520-0905 (7456)	2	6000	200	20	Y	Y
520-0904 (7455)	1	3300	100	10	Y	Y
520-0904 (7454)	1	3300	100	10	Y	Y
520-0903 (7453)	1	2400	100	10	Y	Y
520-0903 (7452)	1	2400	100	10	Y	Y
520-0902 (7459)	1*	1000	43	4	Y	N**
520-0902 (7458)	1*	1000	43	4	Y	N**
520-0901 (7451)	1*	1000	43	4	Y	N**
520-0900 (7450)	1*	500	22	2	Y	N**
520 Express Options	1*	1000	43	4	Y	N**
520 Express Option	1*	500	22	2	Y	N**

Note:

* The 500 and 1000 CPW points of model 520 have been structured to offer multiple price/performance points for the entry market. These configuration options are limited to the amount of processing units (22 or 43 respectively). A minimum of 10 processing units are required to enable a partition (i5/OS, Linux or AIX 5L).

** The partitions have to be defined in a shared processing pool, and as capped partitions. Uncapped processor partitions support require a minimum of 100 processing units in a pool and therefore uncapped option is not enabled for 500 and 1000 CPW configuration points for eServer i5.

Can I move processing units between partitions on model 520 with 500 CPWs?

No, since this configuration option only has 22 processing units and you need a minimum of 10 to IPL a partition, you do not have any additional processing units

to move around. However, if one of the partitions were shutdown, you can move the processing units into the functional partition.

Can I get Remote Control Panel on HMC?

No, you will need to have Operations Console or LAN console to access Remote Control Panel functions on eServer i5.

Do I need to have dedicated consoles for each partition?

No, you don't have to. The HMC could function as your console for several (up to 40 with this announcement) partitions but if your HMC is out of service, you need to understand that you cannot manage your partition or CUoD environment. It is recommended that you have a backup HMC in addition to connectivity to your i5/OS through Operations Console or LAN console. For example, HMC does not support Remote Control Panel functions. With an Operations Console or LAN Console, you have the capability to access the virtual control panel. You will need to plan for at least half (2 line WAN) of an IOA for Operations Console or an additional Ethernet adapter for LAN console.

Can I IPL a partition without an HMC?

Technically, the answer is yes but you might want to avoid this and we highly recommend that you do not disconnect your HMC. Partitions can be auto-started with a system IPL without an HMC installed, however this means that all of your partitions will be restarted. HMC must be reconnected to power on the partitions individually.

Do I need separate DVD for each partition with eServer i5?

The DVD in the system unit (CEC) is controlled by the same internal SCSI controller as the internal disk units. If a partition is defined using the CEC disk units, then the CEC DVD cannot be switched to other partitions. Each partition will need access to dedicated or switchable external media for install, save or restore functions.

Where can I get more information on HMC?

The eServer Hardware section of [information center](#) contains additional information on HMC. You can also access the information through the HMC within the Information Center and Setup Wizard folder.

What are the differences between HMC and Operations Console?

Yes, there are several functional differences which are highlighted here. This section lists key functions that are available on twinax, Operations Console and HMC. Although Operations Console and HMC overlap functions in a number of places, how you use these functions may help determine what is the appropriate choice.

What I/O requirements do I plan for consoles on eServer i5?

HMC plugs directly into an integrated LAN port. Operations Console requires a connection to a dedicated IOA (Input/Output Adapter) that is logically under an IOP (Input/Output Processor). The eServer i5 has fewer slots available in the main tower than the iSeries, and you may need to have an additional IOP for a LAN-connected Operation Console or a twinax console. This is not a concern for direct-connected Operations Console which is able to always use the async adapter that is shipped with the system.

Functional comparison of Operations Console and HMC

Table 2: Operations Console and HMC Comparison

Function	Twinax	Operations Console (functions apply to iSeries and eServer i5 unless stated)	HMC (all functions are for eServer i5 only)
Local 5250 access	Yes	Yes	Yes
Remote 5250 access	No	Yes	Yes (via passthru)
One console PC can manage many partitions/systems	No	Yes (LAN-only)	Yes
LPAR and CUoD managed with	No	Yes (iSeries only)	Yes
Graphical disk management available on	No	Via iSeries Navigator	No
Remote Control panel functions available	No	Yes (but no remote power on capability on eServer i5)	Yes
Requires IOP and dedicated IOA	Yes	Yes	No
Supported via LAN	No	Yes	Yes
Customer has to install software on console	No	Yes	No
Supports all languages supported by OS/400 and i5/OS	Yes	Yes	No (language support is limited)
EZSetup function available	No	Yes	No
Can be used for remote service	No	Yes	Yes – New Service Focal Point function

Comparing iSeries and eServer i5 LPAR Enhancements

Table 3: LPAR - Comparing iSeries and eServer i5

LPAR documentation	IBM eServer iSeries Information Center	IBM eServer Hardware Information Center
LPAR user interface	<ul style="list-style-type: none"> iSeries Navigator Dedicated service tools (DST) or system service tools (SST) LPAR API 	<ul style="list-style-type: none"> Hardware Management Console required to partition the server. LPAR DST/SST function not available. HMC remote command line
LPAR authority	Service Tools User IDs created using DST or SST: <ul style="list-style-type: none"> System partitions administration authority System partitions operations authority 	User roles created using the HMC: <ul style="list-style-type: none"> super administrator operator viewer product engineer service representative
Maximum number of partitions	Up to 32 270, 8xx, and 890 models. The maximum number of partitions supported depends on the number of processors in the server model with a minimum of 10 th per partition.	Up to 40 for IBM eServer i5 model 570 4-way Each partition requires a minimum of 0.10 processing units; up to 10 times the number of system processors. The maximum number of partitions supported depends on the number of processors in the server model or the number of processing units available on the uniprocessor server model.
Types of partitions	<ul style="list-style-type: none"> Primary partition Secondary partitions Shell partition 	<ul style="list-style-type: none"> No primary partition Partition profiles System profiles
Creating logical partitions	New logical partition available after an IPL of the entire system.	New logical partition and partition profile immediately available. Note: Dependent on the amount of memory available in the POWER Hypervisor.
Additional operating system support	Linux	<ul style="list-style-type: none"> AIX® Linux (new Linux kernel required)

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Sharing I/O resources with other operating system (formerly known as hosting)	Linux	<ul style="list-style-type: none"> • Linux • AIX
Scheduling of I/O resources, CPU and memory	<ul style="list-style-type: none"> • LPAR Toolkit • iSeries Navigator 	Limited functionality through HMC. Initially, only Memory and full CPU movement will be supported. Partial CPU movement or I/O movement is planned as future enhancement.
Minimum and maximum values	May be changed after an IPL of the system.	May be changed after an IPL of the partition. Note: Dependent on the amount of memory available in the POWER Hypervisor
Processors	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition. • May be shared among multiple partitions. 	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition. • May be shared among multiple partitions. • Shared mode of capped and uncapped. • Powered-off partitions using dedicated processors will have its processors available to shared processing pool for uncapped partitions capacity use.
Memory	<ul style="list-style-type: none"> • Dynamic: may be changed without a restart of the partition. • Memory assigned in increments of 1 MB. 	<ul style="list-style-type: none"> • Dynamic: may be changed without a restart of the partition. Larger increments may negatively effect how fast reductions can occur. • Memory can be assigned in increments of 16 MB.
5250 commercial processing workload (CPW)	Dynamic: may be changed without restarting the partition.	Dynamic: may be changed without restarting the partition. (command line interface required)
I/O	<ul style="list-style-type: none"> • Allocated at bus-level or IOP-level. • IOP may be switched among 	<ul style="list-style-type: none"> • IOP may be switched among partitions dynamically. • I/O resources allocated

	<p>partitions dynamically.</p> <ul style="list-style-type: none"> • Bus ownership or bus usage (shared or dedicated) changes occur dynamically. 	<p>at slot level.</p> <ul style="list-style-type: none"> • Bus ownership cannot be configured. All buses are effectively shared.
Virtual I/O	<p>A hosting partition (OS/400 partition) shares resources with a guest partition.</p> <p>A hosted partition (guest partition) receives resources from OS/400. Virtual I/O resources are devices owned by the hosting partition that provides I/O function to the guest partition. Virtual console, virtual disk unit, virtual CD, virtual tape, and virtual Ethernet are supported virtual I/O resources.</p>	<p>The virtual server partition is the logical partition that provides a virtual resource to other partitions on the system. The virtual client partition is the logical partition that uses the resources provided by the server partition. Logical partitions have virtual I/O slots. Increasing the number of slots requires a partition deactivation/reactivation. i5/OS logical partitions support up to 32,767 virtual I/O slots. Virtual I/O slots support virtual SCSI adapters, virtual serial adapters, and virtual Ethernet adapters. Virtual I/O adapters are defined when you create a logical partition. Virtual I/O adapters cannot be dynamically moved among logical partitions. You can change a virtual I/O adapter in a virtual I/O slot without requiring a restart of the logical partition.</p>
Configuration data	<p>Load source contains LPAR configuration data.</p>	<p>Service processor and HMC contain LPAR configuration data. HMC LPAR configuration data can be saved</p>
Console support	<ul style="list-style-type: none"> • iSeries Operations Console <ul style="list-style-type: none"> ○ Operations Console LAN ○ Operations Console Directly attached • Twinaxial console 	<ul style="list-style-type: none"> • HMC • iSeries Operations Console <ul style="list-style-type: none"> ○ Operations Console LAN ○ Operations Console Directly attached • Twinaxial console

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Virtual Ethernet	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition. • Up to 16 networks 	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition. • Up to 4,094 networks
Virtual OptiConnect	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition. • Single network. 	<ul style="list-style-type: none"> • Dynamic: may be changed without restarting the partition through Command Line Interface. • Single network.
HSL OptiConnect	<ul style="list-style-type: none"> • Dynamic: may be changed without a restart of the partition. • May be shared among multiple partitions. • Single network. 	<ul style="list-style-type: none"> • Dynamic: may be changed without a restart of the partition through Command Line Interface. • May be shared among multiple partitions. • Single network.
Main storage dumps	<ul style="list-style-type: none"> • System level dump • Partition dumps 	<ul style="list-style-type: none"> • Service processor dumps • Platform system dumps • Partition dumps
Fixes also known as program temporary fix (PTF) for hypervisor	Primary partition	<ul style="list-style-type: none"> • HMC • Service partition

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