



## Infor LN in an IBM LPM environment

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## About this guide

This document provides an overview of how Infor LN works in an IBM Live Partition Mobility (LPM) environment. This document can be used by technical people who want to know how Infor LN functions in an LPM environment and how LPM must be set up for Infor LN.

## Intended audience

The intended audience of this document is those with a technical background: technical decision makers, system managers, and technical implementation consultants.

## References

The following resources provide more detailed information on LPM and IBM PowerVM technologies.

- IBM PowerVM Live Partition Mobility  
<http://www.redbooks.ibm.com/abstracts/sg247460.html?Open>
- IBM PowerVM Virtualization Managing and Monitoring  
<http://www.redbooks.ibm.com/abstracts/sg247590.html?Open>

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# Chapter 1 Introduction

# 1

With Live Partition Mobility (LPM), you can move running IBM AIX® or Linux partitions from one physical IBM POWER6™ server to another without disruption. The movement of the partition includes everything that the partition is running, that is, all the hosted applications.

Infor and IBM worked together within a joined project to test Infor LN within an IBM LPM environment. These tests were carried out in the IBM benchmark center, Beaverton OR, in the United States. IBM delivered the hardware and the LPM expertise and carried out the system setup. Infor delivered Infor LN knowledge and carried out the testing. The test results showed that Infor LN works in an LPM environment.

This document gives a high-level description of LPM in general, the test configuration, how the setup is carried out, the executed tests, the test results, and an overview of the lessons learnt during the tests.

The intended audience of this document is those with a technical background: technical decision makers, system managers, and technical implementation consultants.

A live-captured WebEx demo, which shows an Infor LN migration within an IBM LPM environment, accompanies this document.

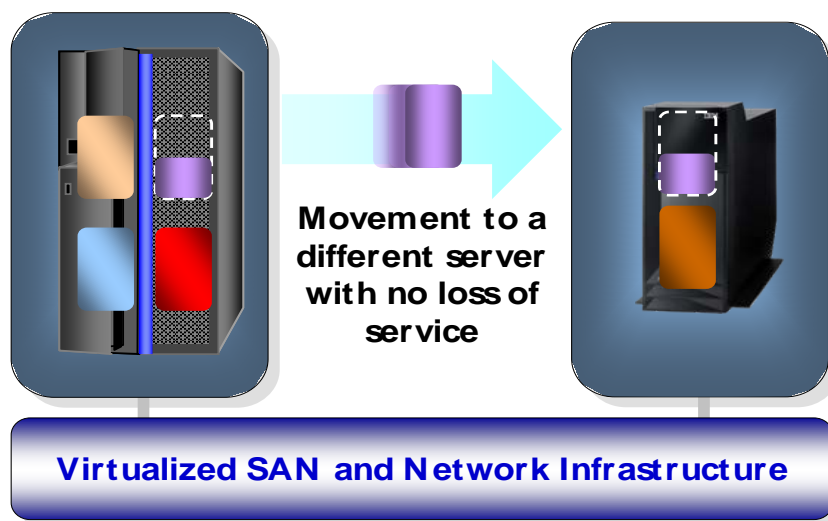




### Definition

With LPM, you can migrate partitions that are running AIX and Linux operating systems and their hosted applications from one physical server to another without disrupting the infrastructure services. The migration operation, which takes a relatively short time, maintains complete system transactional integrity. The migration transfers the entire system environment, including processor state, memory, attached virtual devices, and connected users.

LPM operation requires a virtual environment. The Disk IO subsystem and the network must be virtualized through a Virtual I/O Server (VIOS). The following figure shows the LPM operation:



LPM is the next step in the IBM Power Systems™ virtualization continuum. LPM can be combined with other virtualization technologies, such as logical partitions, Live Workload Partitions, and the SAN Volume Controller, to provide a fully virtualized computing platform that offers system and infrastructure flexibility.

## Benefits of LPM

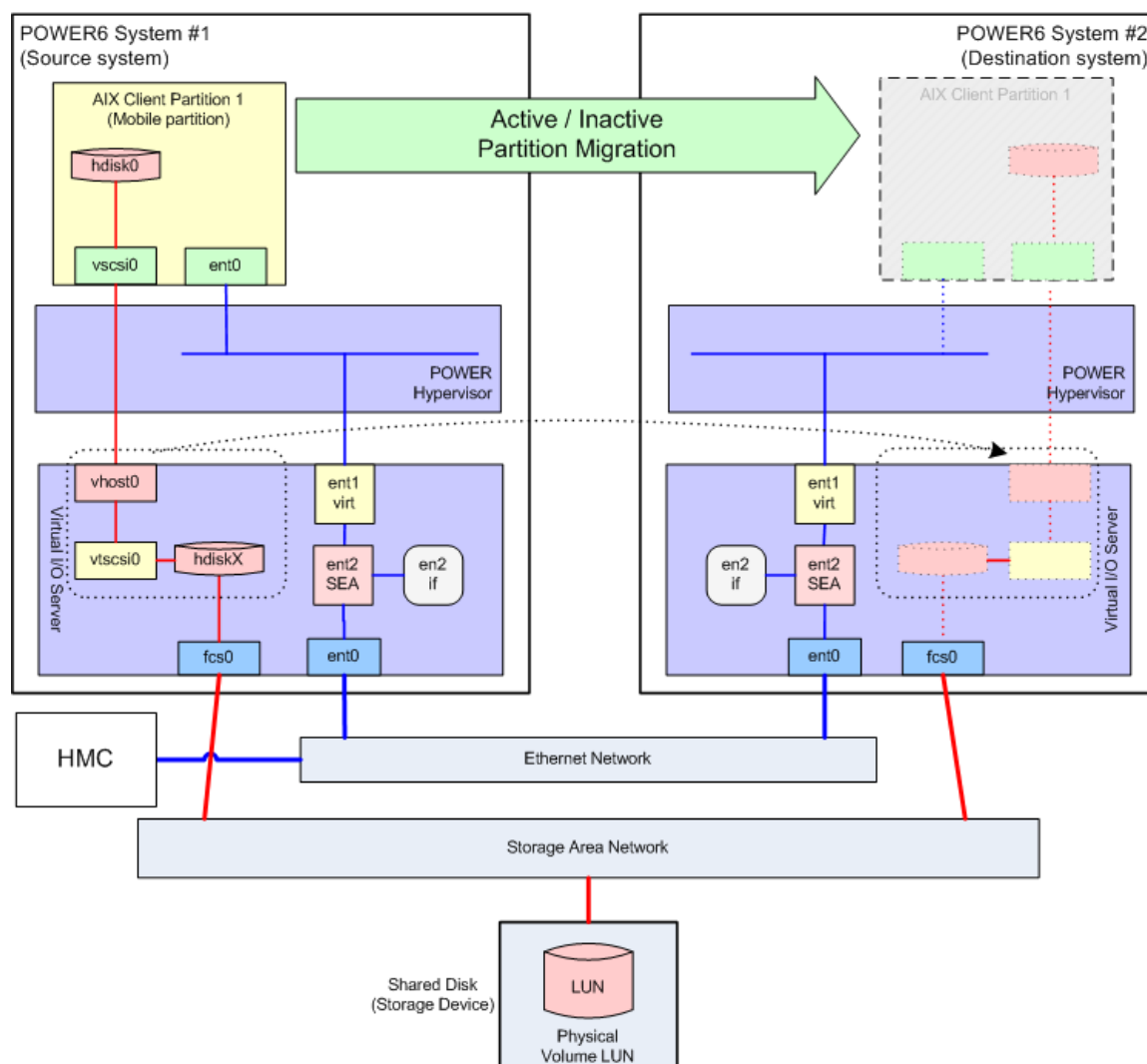
The following are possible advantages of the application in an LPM environment are:

- LPM helps you to meet increasingly stringent service-level agreements (SLAs) because you can proactively move running partitions and applications from one server to another.
- Partitions can be moved from servers to allow planned maintenance of the server without disrupting the service and disrupting users.
- Heavily used partitions can be moved to larger machines without interrupting the service or disrupting users.
- Partitions can be moved to the appropriate servers depending on workload demands; the utilization of the server-estate can be adjusted to maintain an optimal level of service to users at the optimal cost.
- Live Partition Mobility can be used as a mechanism for server consolidation because it provides an easy path to move applications from individual, stand-alone servers to consolidation servers. The consolidation of underutilized partitions out-of-hours allows unused servers to be shut down, which saves power and cooling expenditure.

## Architecture

This section shows you a simple configuration for LPM using a HMC and virtual SCSI disk. A single Virtual I/O Server partition is configured on the source destination systems.

“AIX Client Partition 1” is the source LPAR to be moved to another IBM Power system on the right. The source LPAR is configured with a virtual Ethernet connection and virtual SCSI disks. The virtual devices are serviced by the Virtual I/O server (VIOS) and the physical disk is on a storage subsystem through a SAN switch.



## General prerequisites

The following are the prerequisites for LPM:

- POWER6 or above.
- AIX 6.1.
- The memory and processor resources required to meet the mobile partition's current entitlements must be available on the destination server.
- The partition must not have any required dedicated physical adapters.
- The partition must not have any logical host Ethernet adapters.
- The partition must not be a VIOS.

- The partition must not be designated as a redundant error path reporting partition.
- The partition must not have any of its virtual SCSI disks defined as logical volumes in any Virtual I/O Server. All virtual SCSI disks must be mapped to LUNs visible on a SAN or iSCSI.
- The source system and the destination system must be connected to the same Hardware Management Console (HMC)
- All network traffic must be virtualized through VIOS (no dedicated adapters)
- A SAN device must be used as the storage device
- All SAN I/O must be virtualized through VIOS (no dedicated adapter)
- The source system and destination systems must be on the same subnet
- Dedicated IO adapters must be de-allocated prior to migration

## Operation Sequences

To prepare and activate LPM, complete the following steps.

**Note:** Inactive and active partition migrations follow the same four-step sequence.

### 1 Preparation

To prepare the infrastructure to support LPM, install all hardware and software components as described in the documentation.

### 2 Validation

Check the configuration and readiness of the source and destination systems. The destination server must have sufficient resources to host the moving partition.

### 3 Migration

Transfer of the partition state from the source to destination takes place. The HMC determines the appropriate type of migration to use based on the state of the mobile partition:

- If the partition is in the Not Activated state, the migration is inactive.
- If the partition is in the Running state, the migration is active.

### 4 Completion

Free unused resources on the source system and the HMC.

## Chapter 3 Testing Infor LN in an IBM LPM Environment

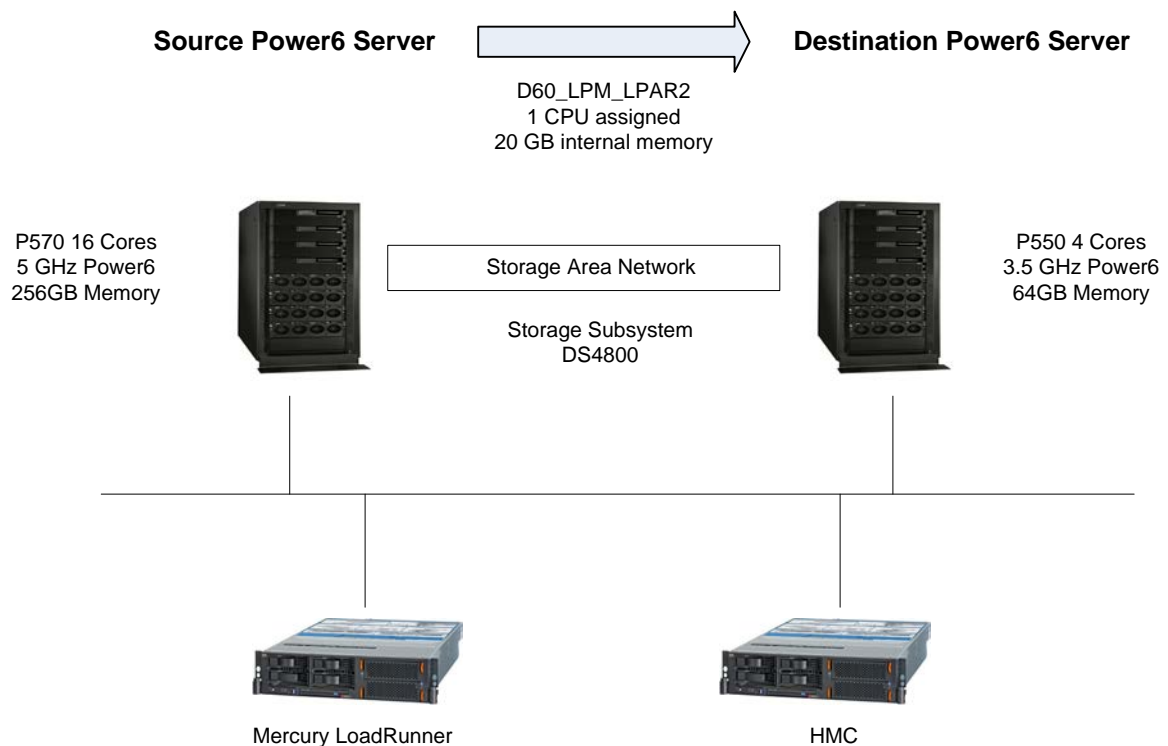
# 3

Infor LN does not require any code changes to work in an IBM LPM environment. The LPM technology is transparent for the used applications.

There are no specific actions taken regarding the installation and tuning.

### Test environment

The figure below shows the test environment:



The partition D60\_LPM\_LPAR2 is moved from the P570 to the P550 server. The HP LoadRunner server and the HMC server are connected to the same network.

HMC provides a standard interface to configure and manage partitioned systems, which are also known as LPAR or virtualized systems.

Using an HMC, you can manage the software configuration and operation of partitions in a server system, and monitor and identify hardware problems.

## Benchmark description

The Infor LN application was used during the migration. The user load was simulated through standard Infor LN benchmark kit, which is based on LoadRunner. Virtual users are used to put load on the benchmarked Infor LN system. A virtual user is a "C" program that sends API calls to the Infor LN virtual machine. A virtual user acts as a real user and uses the Infor Windows user interface. LoadRunner uses a controller system that controls all the virtual users and gathers the results. A host system runs the virtual users. Both the controller and host systems are Microsoft Windows systems. No Infor Windows user interface installation is required to simulate the users; the API calls handle the interfacing.

LoadRunner can measure the response time. This capability is used to measure the effect of the migration on the response times.

## Test scenarios

The LPM migration during the testing was an active migration. During the migration, 20 concurrent users were active. This user load was simulated through the Infor LN benchmark.

The 20 users logged on to partition D60\_LPM\_LPAR2. Before the migration, LPAR D60\_LPM\_LPAR2 was running on Server A. LPAR D60\_LPM\_LPAR2 was migrated to server B. During the migration, 20 users worked continuously with the Infor LN application.

## Test results

The migration with 20 concurrent Infor LN users took 12 minutes. The users were able to continue working during migration, except for the last 1.5 minutes. The response times were not affected by the migration during the first 10.5 minutes of the migration. The last 1.5 minutes were used by LPM to complete the migration and the final server synchronization. During this period, the application is blocked, users cannot work, and the response times are affected. This block period is normal LPM behavior.

We conclude that the migration was successful and finished within reasonable time.

## Lessons learned

The network bandwidth is very important in the LPM process. Operation coordination and all the memory content are transported between the source and destination systems. A network capacity of 1 gigabyte (GB) is required.

Source memory content will be copied to the destination. The larger the source memory footprint, the longer the mobility process.

Ensure that all the required versions of hardware, firmware, and software are in place.

If the correct components are not installed, the migration can take a long time.

It takes much longer to migrate a heavy-used partition than one which is less heavy used. We recommend that you keep the system activity below 50 percent during the migration.



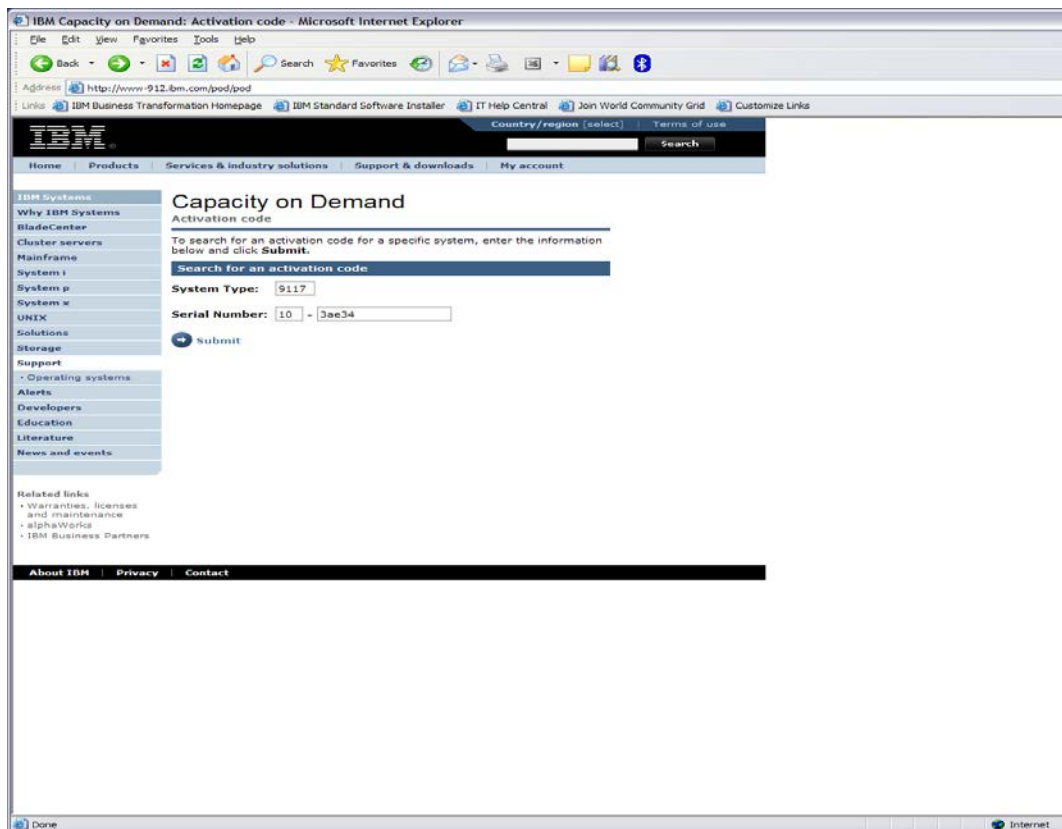


# Appendix A LPM Setup Guidelines

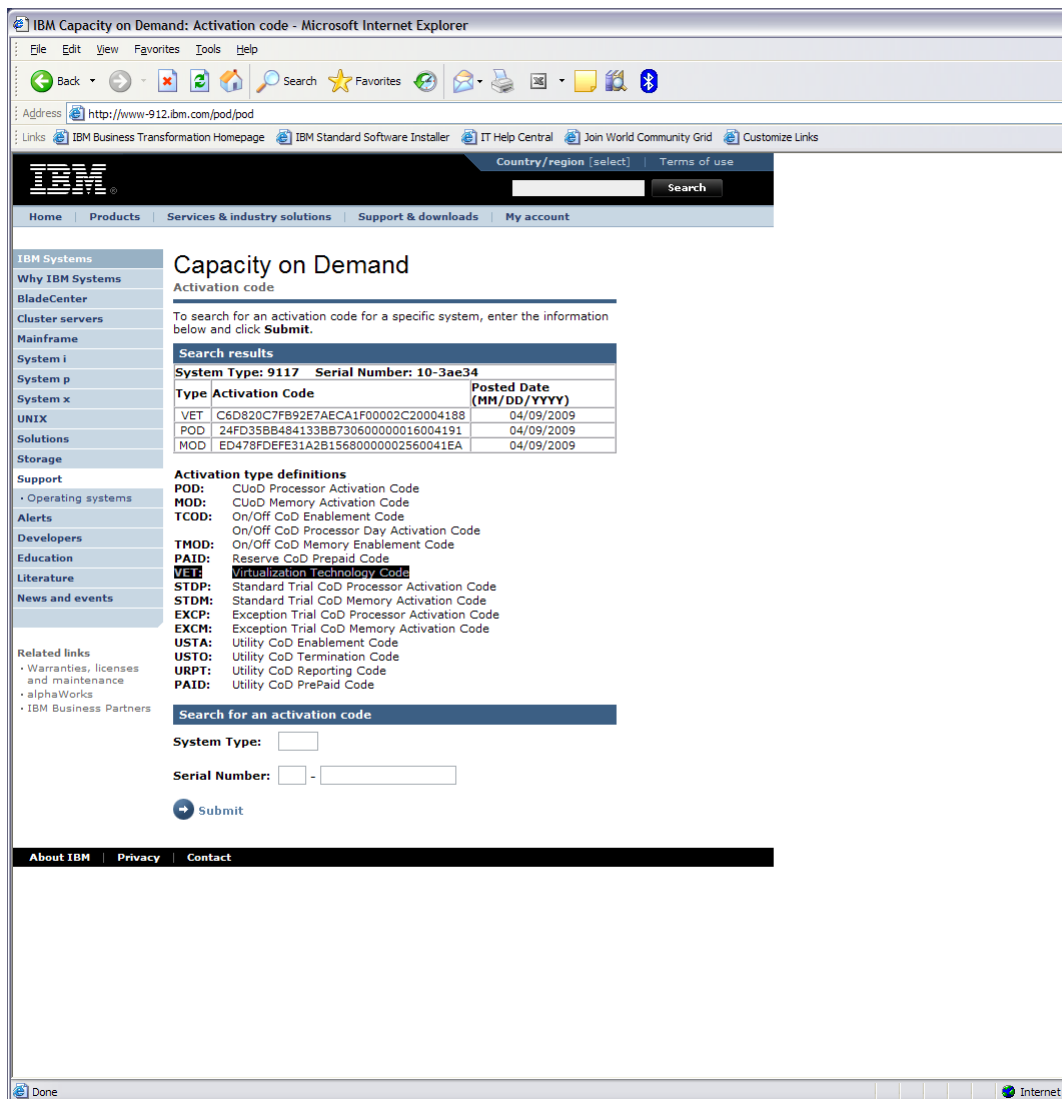
## A

### How to configure IBM systems to support LPM with Infor LN deployment

LPM is a licensed feature that requires IBM PowerVM Enterprise Edition. License code is based on the system serial number. The code can be found on the IBM Capacity on Demand Web site (<http://www-912.ibm.com/pod/pod>):



Enter the system information; a license page is displayed:



“VET” is the PowerVM license code. This code is then entered through the Advance System Management (ASMI) interface on the server. This interface can be accessed through the HMC. More information about ASMI is given later in this document.

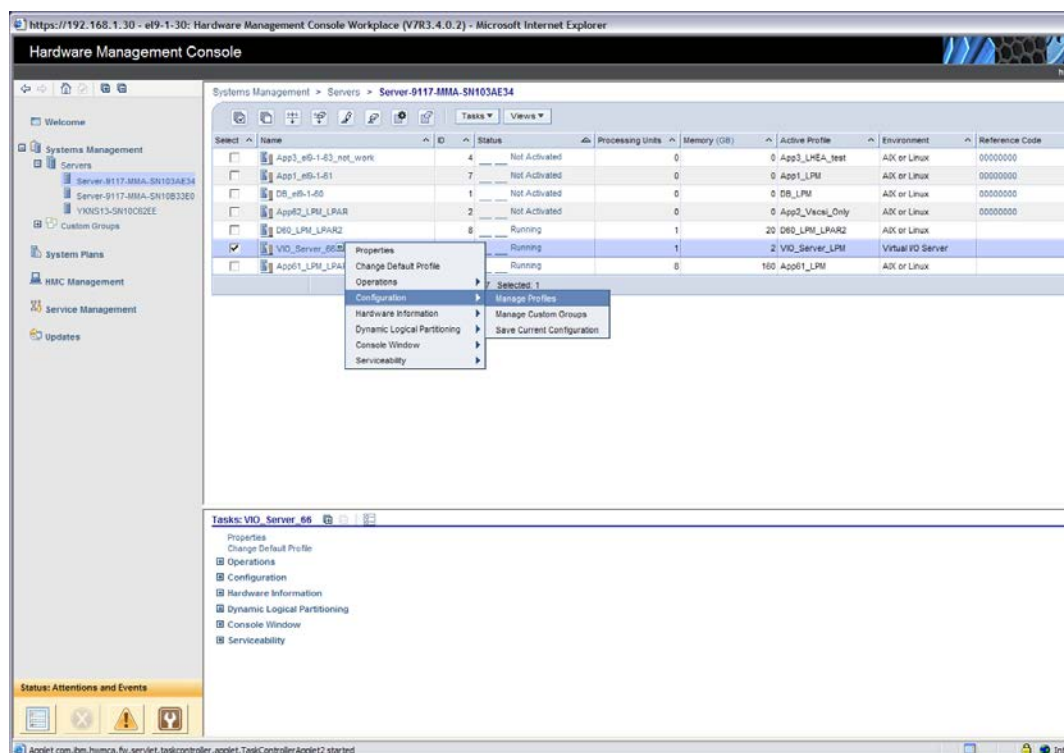
The Infor LN LPM test environment has the following components. This software stack on the LPAR will be moved to another hardware system by the LPM process. All running programs will be moved “live” so no or very little service interruption happens during the move.

- System firmware 340\_075
- HMC 7.3.4 with service pack 2.
- AIX 6.1 TL2
- VIOS v2.1.1.10-FP21
- Infor LN FP5
- DB2 9.7
- Oracle 10g

To support LPM, you must configure the VIOS. Besides meeting the requirements for the system firmware, Hardware Manager Console software, and AIX version 6.1, some VIOS functions must be enabled. This VIOS configuration process is started from the HMC GUI.

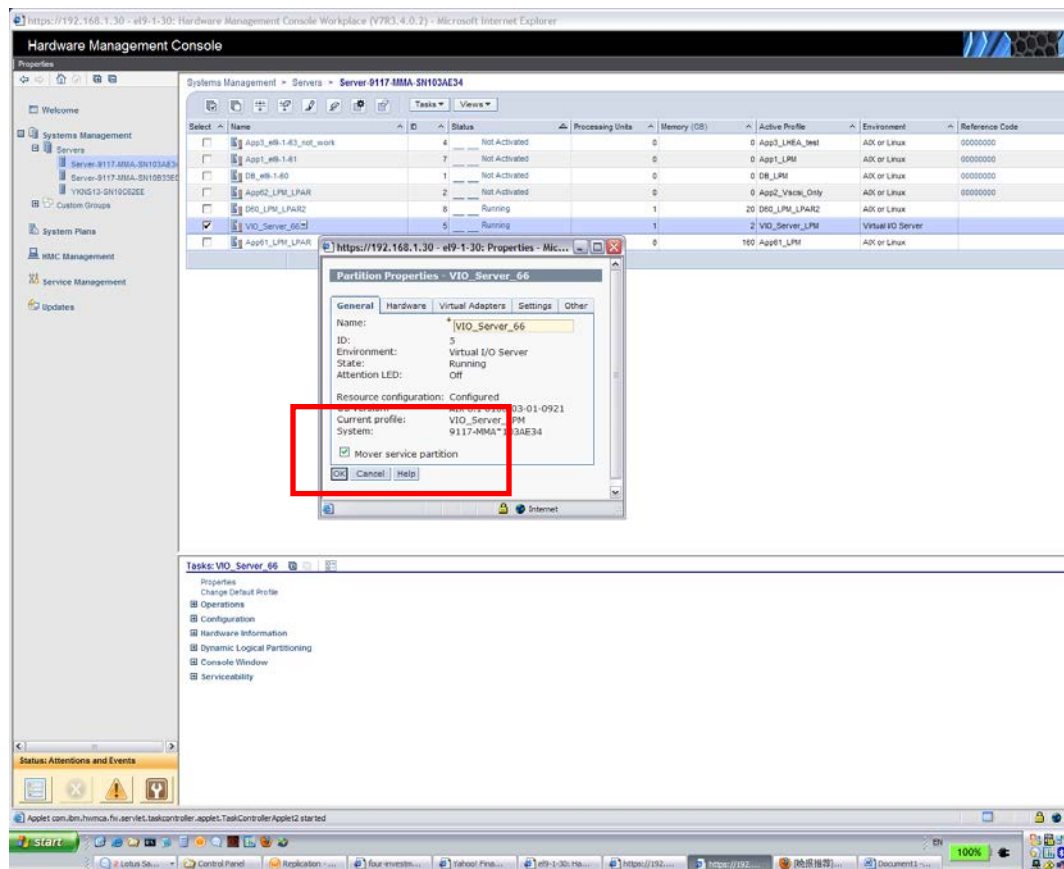
The following steps must be applied on both the VIO Servers involved in the LPM process, that is, the source and destination systems.

Select VIOS partition > Configure > Manage Profile.



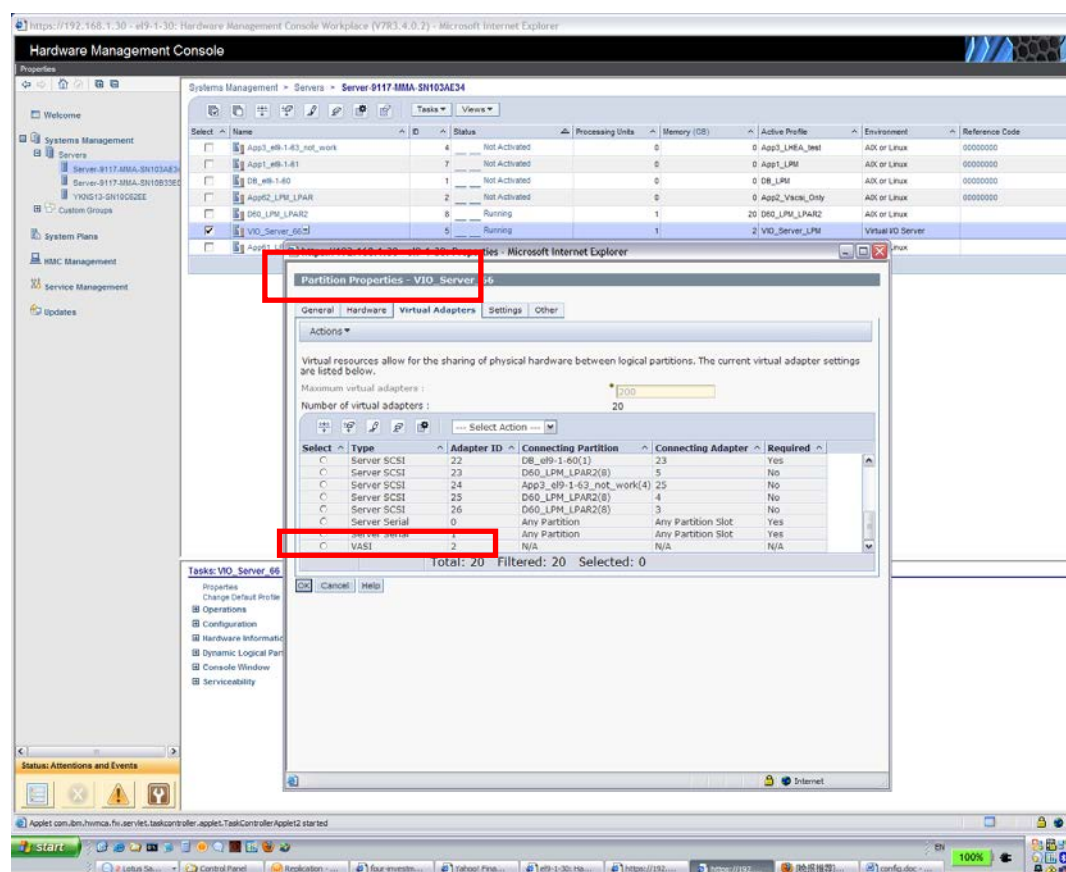
After you select the profile, click Property. In the Property panel, select the Mover service partition check box.

Mover service partition is a new attribute of the VIOS and enables the VIOS to asynchronously extract, transport, and install the partition state.



In the Property panel, click the Virtual Adapters tag to ensure the Virtual Asynchronous Services Interface (VASI) is available. This virtual device should be present automatically, and provides the communications between the source and destination VIOS. The source and destination mover service partitions use this virtual device to communicate with the POWER Hypervisor to gain access to the partition state.

The VASI is only required for active partition migration.

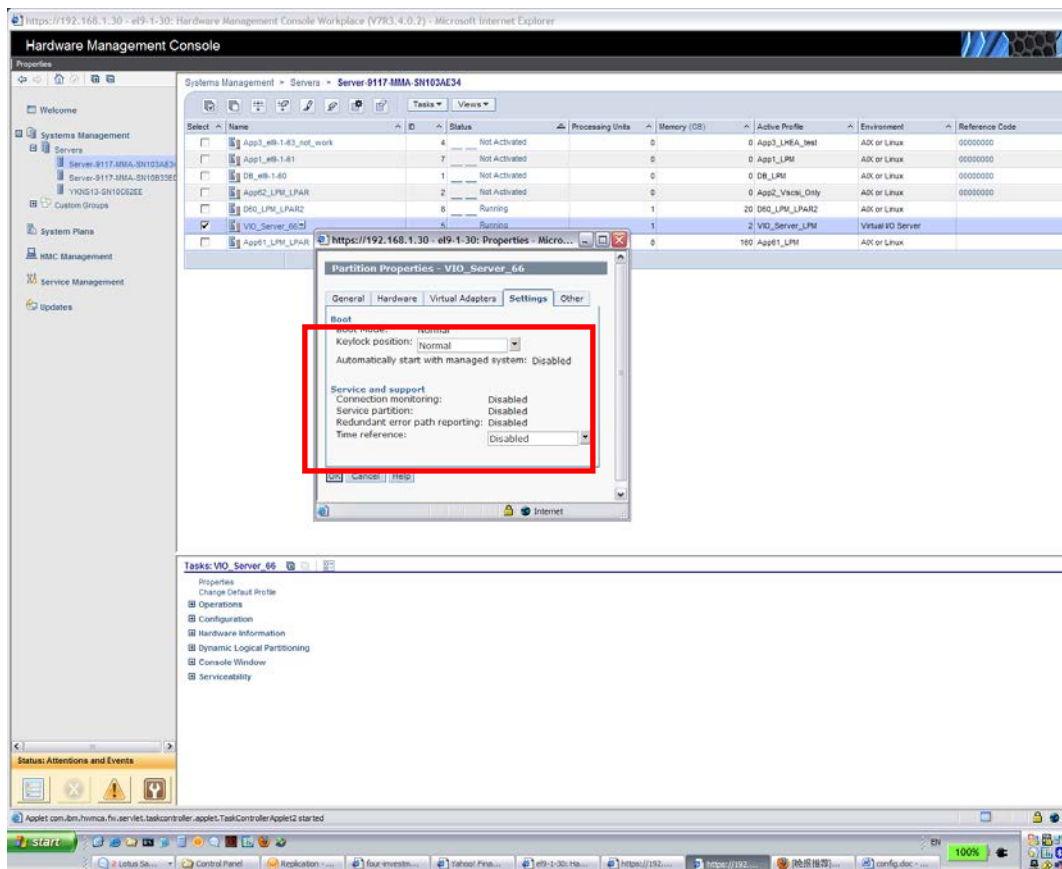


Time Reference (TRP) enables the POWER Hypervisor to synchronize the time of day for a partition as the partition moves from one managed system to another.

TRP is an optional component for LPM. The source and destination systems will synchronize the clocks while the mobile partition is moving from the source to the destination system.

In our Infor LN environment, TRP is disabled.

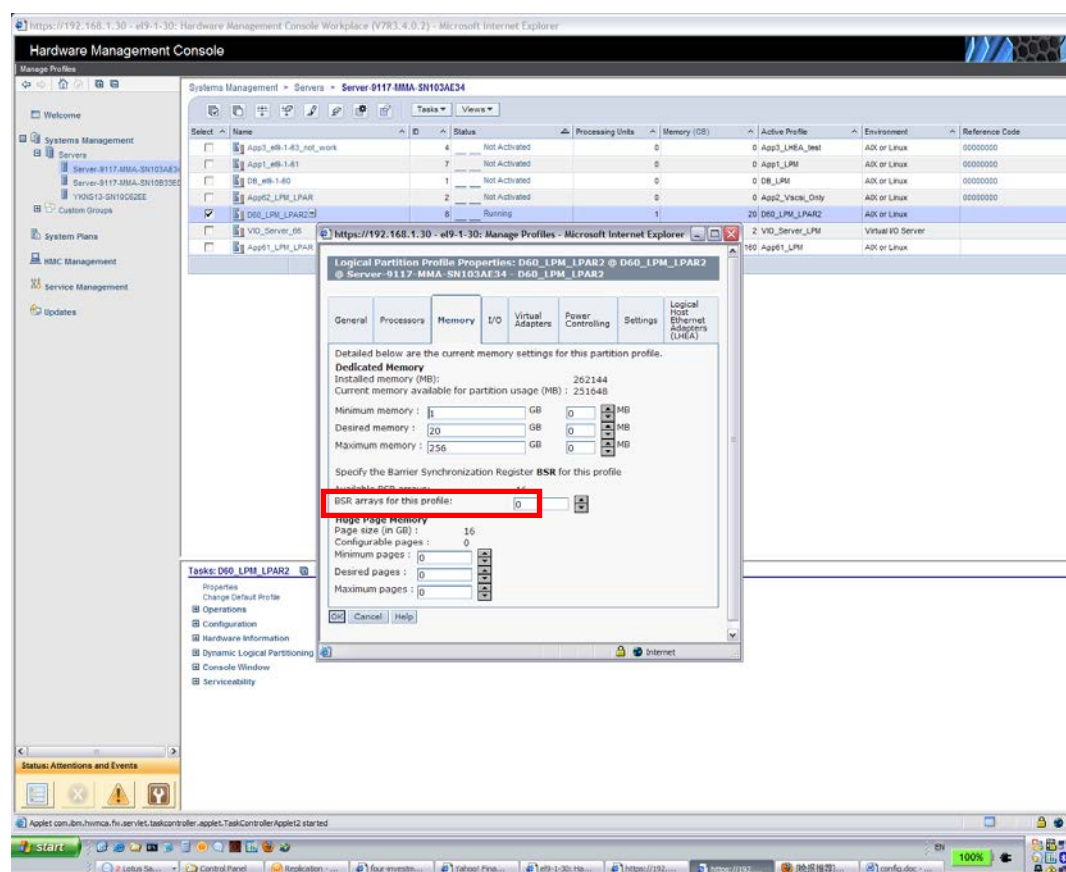
In the Property panel, click the Settings tag to ensure Time reference is disabled.



**Note:** The previous VIOS configurations must be applied on the source VIOS partition and the destination VIOS partition.

You can now configure the source logical partition (LPAR).

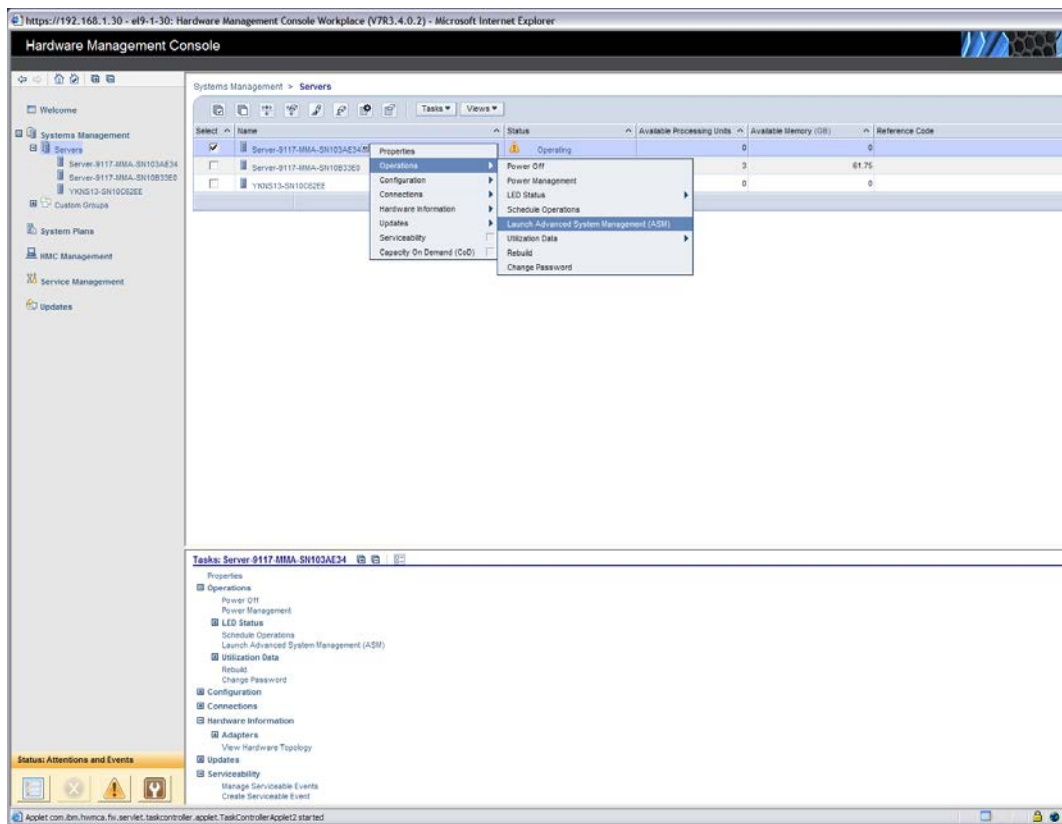
Barrier Synchronization Register array (BSR) is a logical facility to accomplish barrier synchronization between software tasks. To perform an LPM, you must set the value to 0.



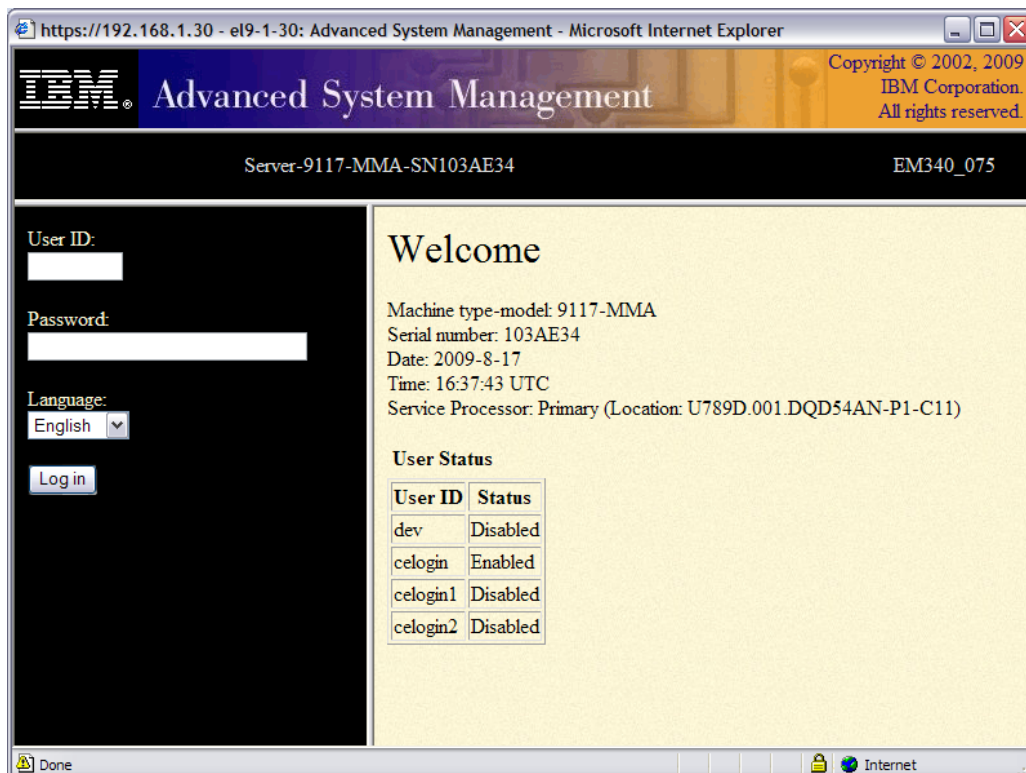
Memory on the system is configured in units of the Logical Memory Block (LMB) size. The LPM process requires that the LMB settings on both the source and destination systems have the same value. LMB is a system-based value and is configured through the Advanced System Management Interface (ASMI). ASMI can be accessed from the HMC GUI.

From the left navigation list, select Servers > select the server name > Operations > Launch Advanced System Management (ASMI).



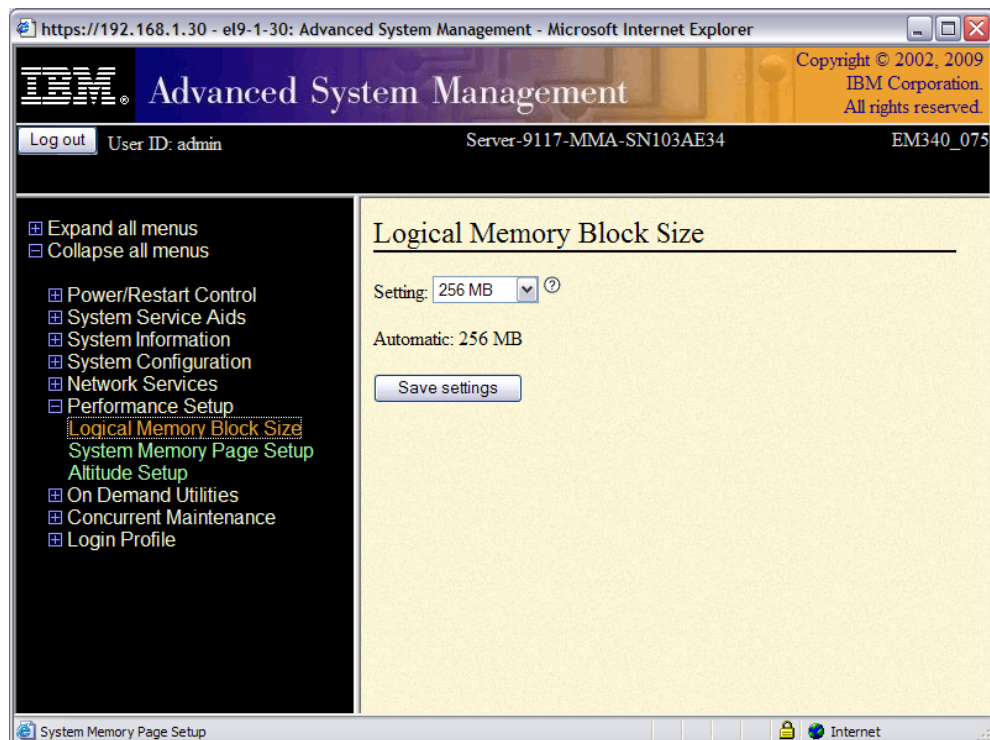


The system's ASMI panel is displayed:





From the left navigation panel, select Performance Setup > Logical Memory Block Size.

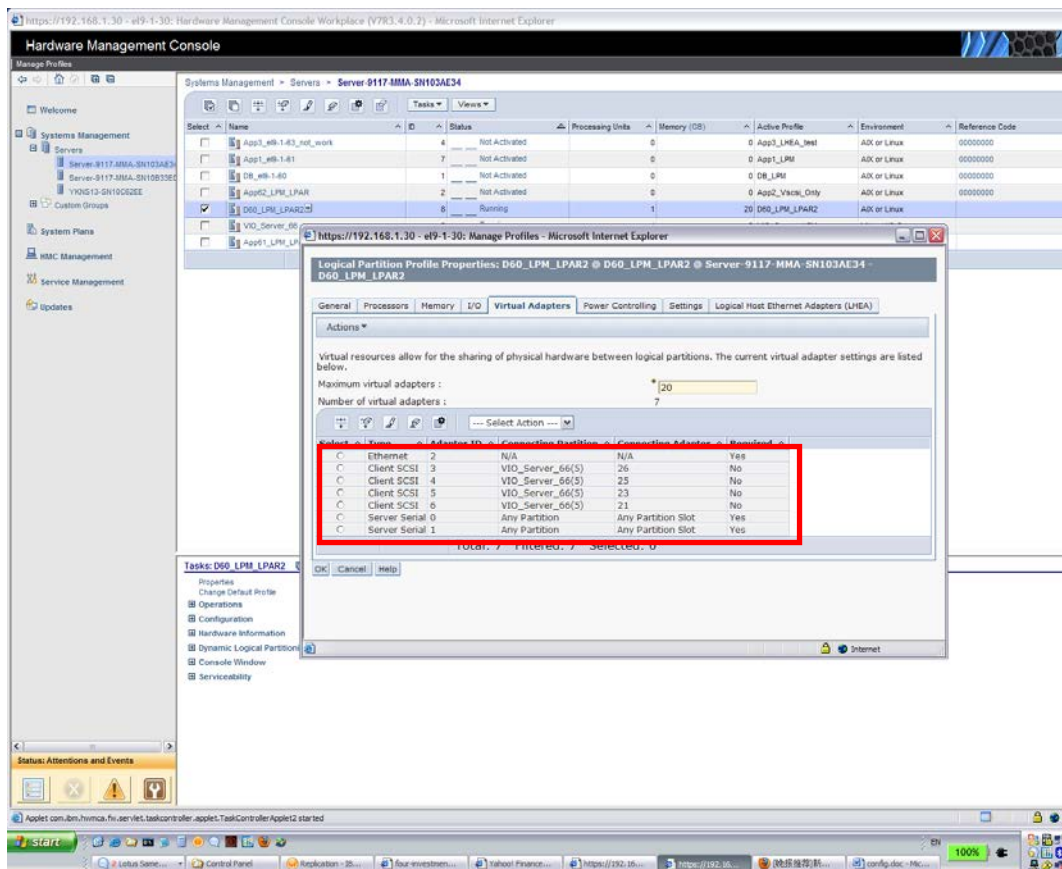


You must check the profile to ensure that no physical I/O adapters are used by the mobility LPAR. All adapters are virtual because LPM requires the mobile partition's Ethernet and SCSI.

To check the adapters using HMC, select LPAR > Configurations > Manage profiles > select the profile > Edit (Actions) > Virtual Adapters.

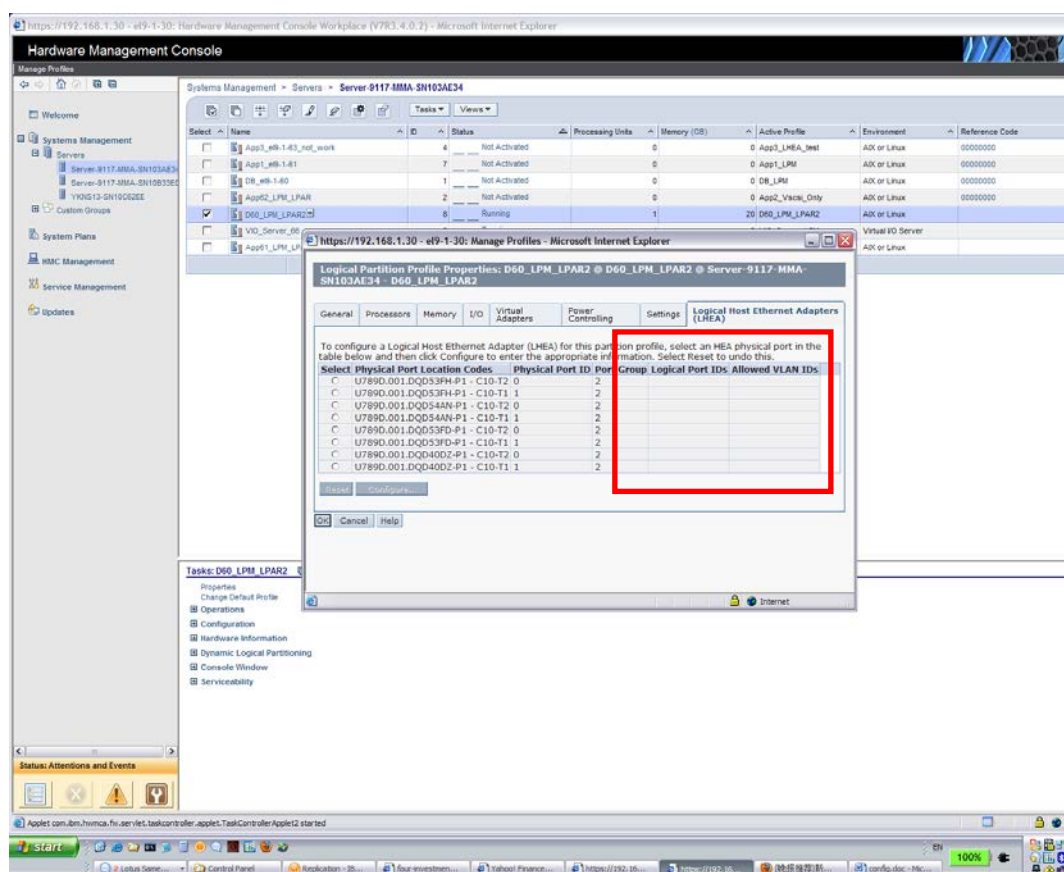
There should be at least one virtual Ethernet adapter and one "Client SCSI" adapter.

In an Infor LN LPM environment, the source partition has 4 "Client SCSI" virtual adapters to spread out the disk I/O traffic through multiple virtual SCSI adapters and improve I/O performance.



Select the LPAR > Configurations > Manage profiles > select the profile > Edit (Actions) > Logical Host Ethernet Adapters (LHEA).

A Logical Host Ethernet Adapters (LHEA) is a physical Ethernet adapter. For LPM, there should be no LHEA adapter in its profile.



All VIOS and LPAR configurations are completed, and there is no physical adapter used in the source LPAR.



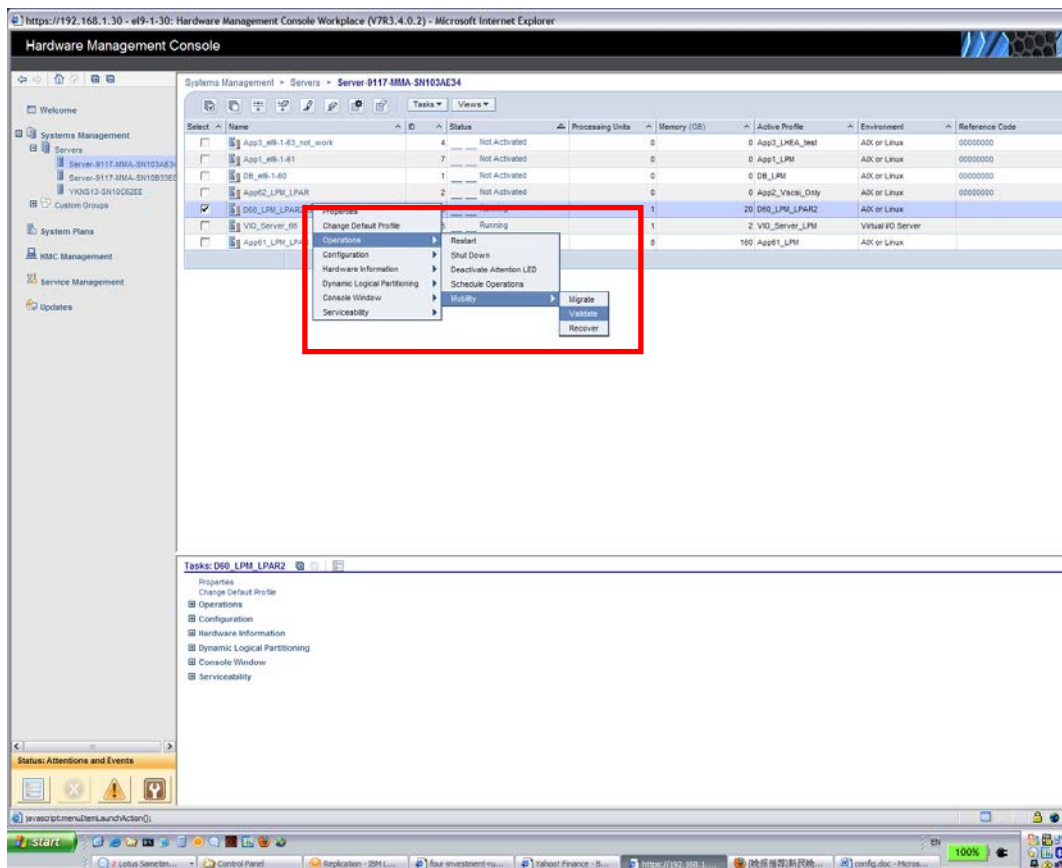
## Appendix B LPM Migration Steps

# B

This section describes the steps necessary to carry out a migration. You must first use HMC to launch a “Validate” process to ensure the LPAR is ready to be migrated.

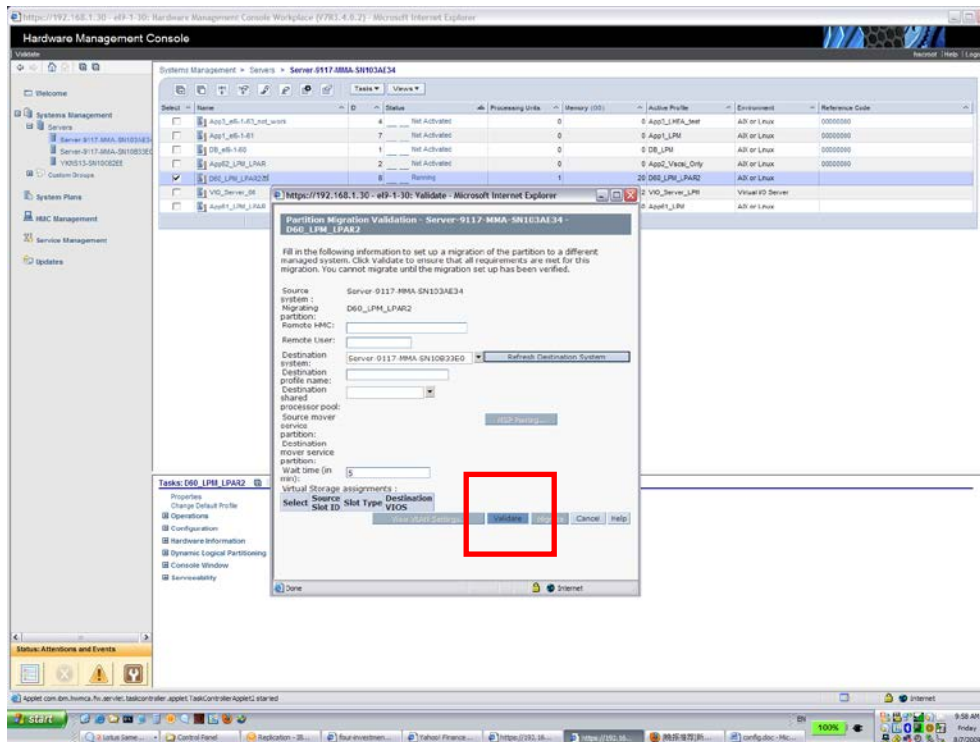
To start an LPM validation process:

- 1 Select the LPAR > Operations > Mobility-Validate:

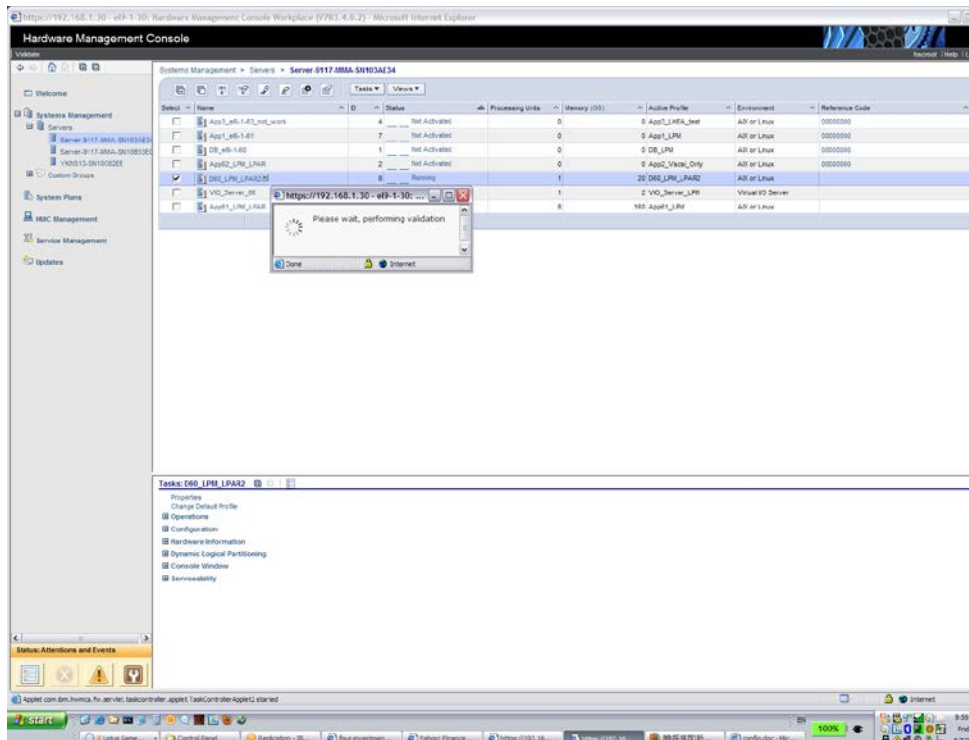


- 2 Click the Validate button:

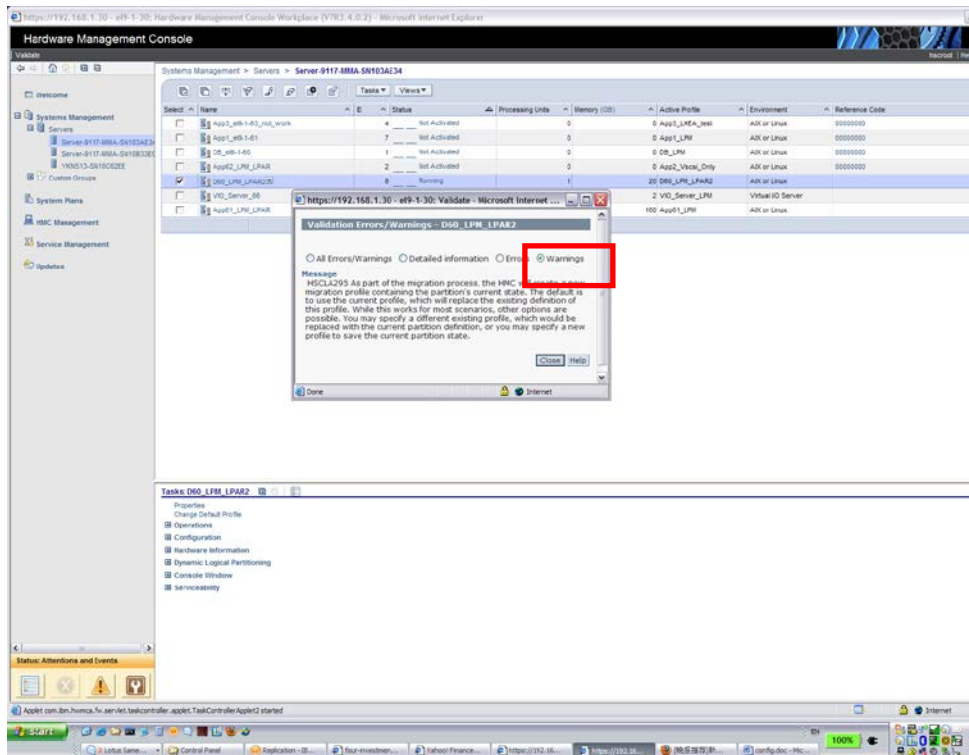
## LPM Migration Steps



3 A progress pop-up window is displayed:



- 4 The message that is displayed means that the LPAR's name will be kept the same on the destination server; it does not mean there is a problem. You can continue:



- 5 Click the Migrate button to start the LPM process:

