



## IBM PowerVM Lx86 Release Notes for release 1.4.0.0







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**Note**

Before using this information and the product it supports, read the information in “Notices” on page 6.

**Sixth Edition (April 2010)**

This edition applies to the version 1.4.0.0 of IBM PowerVM Lx86 and to all subsequent releases and modifications until otherwise indicated in new editions.

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## IBM PowerVM Lx86 Release Notes for release 1.4.0.0

These release notes are for IBM® PowerVM™ Lx86 for x86 Linux® Applications (PowerVM Lx86) release 1.4.0.0. They are a supplement to the IBM PowerVM Lx86 Administration Guide.

Pentium®

Java™

Windows®

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### Product and Support references for PowerVM Lx86

PowerVM Lx86 is offered as a standard feature with the purchase of all PowerVM Editions. For the most current information regarding IBM products, consult your IBM representative or reseller, or visit the IBM worldwide contacts page:

<http://www.ibm.com/planetwide/us/>

or

<http://www.ibm.com/planetwide/>

For more detailed information on PowerVM Lx86, visit PowerVM Lx86 for x86 Linux applications:

<http://www.ibm.com/systems/power/software/linux/>

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[http://www.ibm.com/developerworks/linux/lx86/index.html?S\\_TACT=105AGX03](http://www.ibm.com/developerworks/linux/lx86/index.html?S_TACT=105AGX03)

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[https://isvwebcast.on.raindance.com/confmgr/view\\_stored\\_doc.jsp?docId=92214445597031436579261482246](https://isvwebcast.on.raindance.com/confmgr/view_stored_doc.jsp?docId=92214445597031436579261482246) (pAVE is the prior name for the PowerVM Lx86 product)
- Read the IBM Redpaper Getting started with PowerVM Lx86:  
<http://www.redbooks.ibm.com/redpapers/abstracts/redp4298.html>
- Join the discussion and ask questions at the developerWorks forum on PowerVM Lx86 for x86 Linux applications: [https://www.ibm.com/developerworks/forums/dw\\_forum.jsp?forum=1058](https://www.ibm.com/developerworks/forums/dw_forum.jsp?forum=1058)
- Learn more at **IBM Linux->Linux on Power systems including System p® and System i®**: <http://www-03.ibm.com/systems/power/software/linux/>
- Learn more at Linux on System p: <https://www.ibm.com/systems/p/linux/index.html>

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## Changes in the 1.4.0.0 release

The 1.4.0.0 release adds the following improvements to PowerVM Lx86:

- Support for RHEL 5.5.
- Support for POWER® 7 processors. Note that RHEL5 only supports POWER7™ in POWER6® Compatibility Mode. Customers will need to use SLES11 to take full advantage of POWER7. PowerVM Lx86 supports POWER6 Compatibility mode on POWER7.
- Visibility of POWER processes in the VxE /proc filesystem. This feature is off by default and enabled via a switch in the config file. See the Admin Guide for more details.
- General performance improvements.
- Additional bug fixes.

The 1.4.0.0 release removes the following:

- Support for POWER5™.
- Support for RHEL 4.4 and RHEL 4.5

The 1.3.1.0, 1.3.2.0 and 1.4.0.0 releases do not support the following features:

- Support for SLES 9 SP3 and SP4. Customers wanting to use SLES 9 will need to use PowerVM Lx86 version 1.3.0 or earlier.

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## Registration Codes for Novell SUSE Linux Enterprise Server

The SUSE Linux Enterprise Server subscription for the PowerPC® architecture includes a registration code for PowerPC hosts. Additionally, starting September 28, 2009 a second registration code, to be used exclusively for x86 architecture virtual machines hosted on PowerPC hardware via the PowerVM hypervisor, is included.

Customers wishing to deploy x86 virtual machines need to make use of the second registration code to register their x86 guests with the Novell Customer Center to receive updates, while continuing to use the PowerPC code to register their PowerPC hosts.



Customers lacking the second registration code to be used with x86 guests should follow the instructions here:

<http://www.novell.com/support/documentLink.do?externalID=7004469>

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## Administration Guide documentation updates

This section details updates to the Administration Guide for PowerVM Lx86 1.4.0.0.

### Update 1: SE Linux and installation to non-default locations

This is an addition to Chapter 7, SE Linux support with PowerVM Lx86, on page 47 of the Administration Guide.

#### SE Linux and installation to non-default locations:

If the x86 World or the PowerVM Lx86 binaries are installed into somewhere other than the default locations, and SE Linux is to be used for translated x86 processes, the directories containing PowerVM Lx86 and the x86 World must be accessible by all restricted SE Linux domains. For example, if the x86 World is installed into /mnt/i386, please set the file context of these directories as follows:

```
chcon -t root_t /mnt
```

```
chcon -t root_t /mnt/i386
```

If these directories are not accessible by restricted SE Linux domains, some translated daemon processes may fail to start when SE Linux is set to enforcing mode.

### Update 2: Running the automated installer

This is an addition to the "Examples of usage" section on page 19 of Chapter 5, Running the automated installer, of the Administration Guide:

Uninstall PowerVM Lx86 and the x86 World:

```
% installer.pl --uninstall Lx86 --uninstall x86world
```

When installing a particular x86 World distro using the --distro option, to find the list of valid arguments for the distribution, please type:

```
% installer.pl --help
```

### Update 3: Naming of RHEL5 Advance Platform

The Administration Guide refers to RHEL5 AS when it should be RHEL5 Advanced Platform (AP.)

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## Upgrading and reinstallation options for previous installations of PowerVM Lx86

The 1.4.0.0 release supports upgrading from all previously released versions of PowerVM Lx86, including all 1.1.x, 1.2.x, and 1.3.x versions. Note that if you choose to upgrade the PowerVM Lx86 binary from a previous 1.1.x or 1.2.x installation, you will be prompted to update the location of the PowerVM Lx86

binaries and associated log files to locations that use the new `powervm-lx86` directory and file naming conventions. You can use the existing directory locations, but the product binaries and log file will use the new naming convention.

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## PowerVM Lx86 CD and package structure

The PowerVM Lx86 CD structure is:

- `powervm-lx86-<release_version>-<build_number>.tgz`
- `powervm-lx86-release-notes-<release_version>.txt`
- `powervm-lx86-release-notes-<release_version>.pdf`

The PowerVM Lx86 directory structure within the tar file is:

- `powervm-lx86-installer-<release_version>-<build_number>/installer.pl`
- `powervm-lx86-installer-<release_version>-<build_number>/lib/`
- `powervm-lx86-installer-<release_version>-<build_number>/resources/`
- `powervm-lx86-installer-<release_version>-<build_number>/doc/`

To install PowerVM Lx86, copy `powervm-lx86-<release_version>-<build_number>.tgz` to the local machine, extract it and then, as root, run the `powervm-lx86-installer-<release_version>-<build_number>/installer.pl` script.

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## Documentation location

The PowerVM Lx86 Administration Guide and the PowerVM Lx86 Release Notes can be found in the following location in the tgz file:

```
powervm-lx86-installer-<release_version>-<build_number>/doc
```

which is a symlink to `powervm-lx86-installer-<release_version>-<build_number>/resources/doc/RO`

After installation, the PowerVM Lx86 Administration Guide and Release Notes can be found here:

```
<PowerVM Lx86 install location>/doc
```

which is a symlink to `<PowerVM Lx86 install location>/installer/resources/doc/RO`

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## Reporting a failure

If a Linux x86 application fails while being translated, an error is displayed. In addition, an error log is created in the `/var/opt/powervm-lx86/log` directory. You can change the location of the default log directory during installation. Log files are created for each running process that encounters an error.

Report the error to IBM Support. Include a description of the failure and what events preceded the failure. Also include details of the POWER hardware and the operating system running on the POWER system.

**Note:** The reported error may be caused by an issue with the Linux x86 application being executed and may not be a problem with PowerVM Lx86.

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## Performance notes

### Performance overview

There are various architectural differences between x86 and Power which can impact performance of translated applications, for example, translating dynamically generated code like Java bytecode is an ongoing translation process, which can be expected to impact the performance of x86 Java applications which are using an x86 Java virtual machine. Floating point intensive applications may have some performance penalties. Finally, translating multi-threaded applications can incur an additional performance overhead as the translator works to manage shared memory accesses.

### LPAR Mobility

PowerVM Lx86 tunes itself to the processor it is started on. If PowerVM is started in an LPAR on a POWER6 machine and that LPAR is subsequently migrated whilst active to a POWER7 machine there will be a significant performance impact. This impact can be avoided by restarting PowerVM Lx86 after migrating from POWER6 to POWER7.

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## Functionality notes

### Memory limit defaults to off in 1.3.2.0 and 1.4.0.0

In this release of PowerVM Lx86 the memory limit default is set to off to maximize performance of applications being translated.

If you want to limit the amount of memory used by Lx86, please read the Administration Guide section describing the use of the `MEMORY_MONITOR_TRIGGER_RATIO` in the configuration file.

### Increased memory required by Oracle database

Oracle database makes accurate calculations based on the number of CPUs and the amount of memory in the system in order to expand and make the fullest use of the system resources. Oracle database estimates the total overhead of these processes to be 40MB. As PowerVM uses additional memory Oracle database will underestimate the amount of memory a given configuration will use and thus cause an out of memory condition. The database creates more processes when more CPUs are available, thus the overhead becomes more apparent on systems with a large number of reported CPUs. Therefore, when configuring the memory available to the system it is important to take this extra overhead into consideration. It is recommended to add an extra 700MB per CPU (count as reported in `/proc/cpuinfo`) to cover the overhead of PowerVM. This can be solved by:

- Reducing the number of CPUs visible to Oracle database. On POWER7 one approach to this is to run the CPUs in SMT-2 mode rather than the default SMT-4 mode. For example, running Oracle database 10g on a 16-core POWER7 in SMT-4 mode with 64 h/w threads available the total extra overhead will be  $700\text{MB} * 64 = 45\text{GB}$ . In SMT-2 mode, with 32 h/w threads available, the overhead will be half that; around 22GB.
- Increasing the available RAM, such that the total amount of RAM is sufficient to hold the PowerVM overhead.

## Known issues

There are some known issues with PowerVM Lx86. This section details those issues and any workarounds that are available.

### **nscd service fails when SE Linux is enabled in the x86 World and set to enforcing**

On RHEL 4.x systems, when SE Linux is enabled on the Power system and set to enforcing mode (rather than permissive mode or turned off) and SE Linux is enabled in the PowerVM Lx86 configuration file, the x86 nscd service will fail to start. This is under investigation.

### **SE Linux file attributes in x86 World archives**

If an x86 World archive is created on a system with SE Linux disabled, when extracting the x86 World archive onto a system with SE Linux enabled, the SE Linux file attributes will be incorrect. Similarly, if an x86 World is installed onto a system with SE Linux disabled and SE Linux is subsequently enabled, the filesystem labels will need to be corrected. To fix this issue relabel the filesystem using the **restorecon** command in a translated x86 shell. For example by executing the command **restorecon -R /**. Note that this command may take some time to complete.

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