



IBM PowerVM Lx86 Release Notes for release 1.2.2.0





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These release notes are for IBM® PowerVM Lx86 for x86 Linux® Applications (System p™ AVE) release 1.2.2.0. They are a supplement to the IBM PowerVM Lx86 Administration Guide.

Note: Before using this information and the product it supports, read the information in the Notices section.

This edition applies to the version 1.2.2.0 of IBM PowerVM Lx86 and to all subsequent releases and modifications until otherwise indicated in new editions.

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Improvements in the 1.2.2.0 update release

The 1.2.2.0 update release adds RHEL 4.7 to the list of supported operating systems of PowerVM Lx86.

Administration Guide documentation updates

Disk space requirements update

This is an update to the installation media requirements in Chapter 3 on page 11 of the IBM PowerVM Lx86 Administration Guide:

Disk space for RHEL 4.7

- 10 GB disk space for software for a full installation; 1.2 GB disk space for software for a minimal installation
- 2.4 GB disk space for the /tmp directory for a full installation; 400 MB disk space for the /tmp directory for a minimal installation

Disk space for SLES10 SP2

- 3.4 GB disk space for software for a full installation; 1 GB disk space for software for a minimal installation
- 1 GB disk space for the /tmp directory for a full installation; 300 MB disk space for the /tmp directory for a minimal installation

Installation media requirements update

This is an update to the installation media requirements in Chapter 3 on pages 12 and 13 of the IBM PowerVM Lx86 Administration Guide:

For Red Hat Enterprise Linux (RHEL) 4.7, the installation requires the following CD, DVD or ISO images:

RHEL version 4.7 for x86 CDs 1 - 5; an example is RHEL4.7-i386-AS-disc{1- 5}.iso

or

RHEL version 4.7 for x86 DVD; an example is RHEL4.7-i386-AS-DVD.iso

For SUSE Linux Enterprise Server (SLES) 10 SP2, the installation requires the following CD, DVD or ISO images:

SLES Version 10 SP2 for x86 CDs 1 - 4; an example is SLES-10-SP2-CD-i386-GM-CD{1-4}.iso

or

SLES Version 10 SP2 for x86 DVDs 1 - 2; an example is SLES-10-SP2-DVD-i386-GM-DVD{1-2}.iso

Other required POWER™ software update

This is an addition to Table 1. Perl requirements for PowerVM Lx86 installer in Chapter 3 on page 12 of the IBM PowerVM Lx86 Administration Guide:

Power OS	Perl version required
RHEL 4.7	perl-5.8.5-36.RHEL4
SLES 10 SP2	perl-5.8.8-14.7

This is an addition to Table 2. libstdc++.so.6 version required for PowerVM Lx86 in Chapter 3 on page 12 of the IBM PowerVM Lx86 Administration Guide:

Power OS libstdc++	Package required
RHEL 4.7	libstdc++-3.4.6-9
SLES 10 SP2	libstdc++-64bit

Product renaming to PowerVM Lx86

PowerVM Lx86 was known as System p Application Virtual Environment (System p AVE) in earlier releases. In the 1.2.2.0 update release, product binaries, files and error messages still use the System p AVE, p AVE and p-ave naming conventions. The US English installer has been updated to use the new PowerVM Lx86 naming convention.

PowerVM Lx86 CD and tar file structure

The PowerVM Lx86 CD structure is:

- p-ave-1.2.2.0-1.tgz
- powervm-lx86-release-notes-1.2.2.0.txt
- powervm-lx86-release-notes-1.2.2.0.pdf

The PowerVM Lx86 directory structure within the tar file is:

- p-ave-installer-1.2.2.0-1/installer.pl

- p-ave-installer-1.2.2.0-1/lib/
- p-ave-installer-1.2.2.0-1/resources/
- p-ave-installer-1.2.2.0-1/doc/

To install PowerVM Lx86, copy p-ave-1.2.2.0-1.tgz to the local machine before extracting it and then run the p-ave-installer-1.2.2.0-1/installer.pl script.

Documentation location

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

/p-ave-installer-1.2.2.0-1/doc/

which is a symlink to /p-ave-installer-1.2.2.0-1/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

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/p-ave/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.

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.

Performance

General 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™ byte codes 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. And finally, translating multi-threaded applications can incur an additional performance overhead as the translator works to manage shared memory accesses.

Updates in this release

The 1.2.0.0 release contains several performance improvements over the 1.1.0.0 release, namely:

- Improved Java performance

- Significantly enhanced floating-point performance on Power6 systems
- General improvements to application performance
- Multiple defect fixes

OS support

The 1.2.2.0 update release adds RHEL 4.7 support to the list of support operating systems already supported by the 1.2.1.0 release.

The 1.2.1.0 update release previously added SLES 10 SP2 to the list of supported operating systems already supported by the 1.2.0.0 release.

The 1.2.0.0 release previously made two changes to the supported operating systems:

1. RHEL 4.6 and SLES 9 SP4 were added to the list of supported operating systems.
2. The requirements for which x86 World OS distribution can be supported on a corresponding Power OS have been relaxed. The new requirements state that any x86 World OS distribution can be installed on any corresponding Power OS as long as the x86 World OS minor version is not newer than the Power OS minor version.

The supported OS combinations for the 1.2.2.0 update release are:

Table 2. Supported OS combinations

Power OS distribution	Supported x86 World OS distribution
RHEL 4.4	RHEL 4.3
	RHEL 4.4
RHEL 4.5	RHEL 4.3
	RHEL 4.4
	RHEL 4.5
RHEL 4.6	RHEL 4.3
	RHEL 4.4
	RHEL 4.5
	RHEL 4.6
RHEL 4.7	RHEL 4.3
	RHEL 4.4
	RHEL 4.5
	RHEL 4.6
	RHEL 4.7
SLES 9 SP3	SLES 9 SP3
SLES 9 SP4	SLES 9 SP3
	SLES 9 SP4
SLES 10	SLES 10

SLES 10 SP1	SLES 10 SLES 10 SP1
SLES 10 SP2	SLES 10 SLES 10 SP1 SLES 10 SP2

Note: Only x86 RHEL 4 Application Server (AS) is supported by the installer. RHEL 4.3 on Power is not supported by PowerVM Lx86. RHEL 4.3 is supported as an x86 World environment on RHEL 4.x for Power. RHEL 5 is not supported in this release.

For SLES 10.x the minimal package set is equivalent to a 'Server Base + Novell AppArmor' installation using YaST2 and the full package set is equivalent to selecting all packages using YaST2, except the agfa-fonts package. This package can be installed separately after installing PowerVM Lx86 and will require the user to agree to the license terms.

For RHEL 4.x the minimal package set is equivalent to a 'minimal' installation using anaconda and the full package set is equivalent to selecting all packages using anaconda.

Note: The RHEL 4.x minimal package set does not include system-config-packages, the default package management tool for RHEL. The Administration Guide contains details of how to manage packages on RHEL.

Java support

Support is provided for Sun Java SE 6.0 (version 1.6), Java SE 5.0 (version 1.5), 1.4 and 1.3. Support is also provided for IBM Java 1.6 (SR2 only), 1.5, 1.4, and 1.3 and BEA JRockit 5 and 6.

Globalized error messages and installation text

Product renaming to PowerVM Lx86

The installer has been updated to include the new PowerVM Lx86 naming convention, but this change has only been made to the US English installation text. Installing on a non-English system will use the System p Application Virtual Environment and System p AVE naming convention as used in the 1.1.0.0 release.

Error messages in the 1.2.2.0 update release use the System p AVE, p AVE and p-ave naming conventions used in the 1.1.0.0 release.

Viewing the installation log files - logviewer

A script called logviewer is provided to allow the PowerVM Lx86 installation log files to be viewed in terminals with non-English locales.

The installation log file is stored in the UTF-8 encoding to support different locales. Although the log file contains the complete character information, it cannot be viewed in a terminal until it has been transcoded into the encoding specified by the current locale.

Description

logviewer reads a p-ave log file (stored in the UTF-8 encoding) and transcodes it to the encoding specified in the current locale. Logviewer behaves in a similar way to cat, taking files on stdin or as arguments and returning them to stdout. If you invoke logviewer without any arguments it will wait for input from stdin. You may specify the option `—more` or `—less` to have the output piped to the more or less command line programs respectively.

Location

<PowerVM Lx86 install location>/installer/resources/bin/RO/logviewer

Usage

logviewer [`—help`]

logviewer /tmp/p-ave_install_XXXXXX.log

logviewer [`—more` | `—less`] /tmp/p-ave_install_XXXXXX.log

General application issues

There are no known applications issues with this release.

If a hang or failures occurs with an application, report any issues to IBM Support.

Other known issues

Access times on directories

As part of the operation of PowerVM Lx86, access times of directories may be updated more regularly than normally expected by a running x86 application due to the 'jailing' mechanism. This is not expected to have an impact on any applications. This will not be addressed in a future release.

Argument lengths

The PowerVM Lx86 'jailing' mechanism adds the X86WORLD_ROOT (e.g. /i386) string to some system call arguments. This reduces the maximum length of arguments that can be made by a translated x86 application. This will not be addressed in a future release.

UTF-8 console

If the installer is run from a console that doesn't support UTF-8, some characters might be shown incorrectly. This will not be addressed in a future release.

Configuration file comments

The configuration file (/etc/opt/p-ave/config) does not support # style comments or leading spaces. Only configuration switches can be entered in the file, one at the start of each line.

Limitations with escapes

It is not possible to move an existing escape directory or file from within the x86 World, for example by using the `mv` command. To move an escape, delete the

escape (by deleting the symlink file in the x86 World from a Power shell), move the underlying Power file or directory, and then use linkx86 to create a new escape to the file or directory.

gdb support

This release has support for the x86 command line debugging tool gdb in addition to strace, ltrace and coredump support.

It is possible to debug an x86 application from within a translated x86 gdb session. It is also possible to attach a translated x86 gdb to a running x86 process.

Note: Hardware watchpoints are not supported by PowerVM Lx86. When running gdb under translation you may see the following message:

“Couldn’t write debug register: Input/output error.”

This message is not fatal and is expected behaviour for the translator.

gdb support on RHEL 4.3

The version of gdb included in the RHEL 4.3 x86 World will fail to run a multi-threaded application. This can be worked around by updating the gdb rpm to gdb-6.3.0.0-1.132.EL4.i386 or later.

Coredump support

Core dumps of simple applications (single threaded applications and those that do not register signal handlers) may produce inaccurate core files. Set the EXTRA_DEBUG_SUPPORT_FROM_START switch to y in the configuration file or as an environment variable and retry the application to generate an accurate core file. This is not required for the majority of applications. See the examples below:

From within the /etc/opt/p-ave/config file:

EXTRA_DEBUG_SUPPORT_FROM_START=y

From the environment, set the following variable:

P_AVE_CFG_EXTRA_DEBUG_SUPPORT_FROM_START=y

User management

Only the /etc/passwd file and NIS are supported name space registries for user management with this release. All others, including LDAP, are unsupported at this time.

Stopped and zombie processes

If a translated x86 process is stopped, the process will not appear in the x86 /proc entries. The process is still running on the system and will be visible from a Power shell, but will not be visible to x86 tools such as ps and top. If the process is *continued*, it will reappear in the x86 /proc entries and will be visible to the x86 ps and top commands again.

Local X11 display on RHEL 4 and SLES 9

Graphical applications may not work when running on the local X11 display or using VNC due to an error in the X server and VNC Server. Running on the local X display may also require the command *xhost +* to be run from within a Power

shell before running the translated applications. Also, ensure that the display is set to a defined network name, for example, DISPLAY=localhost:0.0, not DISPLAY=:0.0. If you want to use a local display and connect directly to the local X server (rather than via TCP), an escape can be created for the .X11-unix socket directory. Use linkx86 to create the socket from a Power shell by typing the following command:

```
linkx86 /tmp/.X11-unix
```

Colors in X11 applications

Some graphical applications, such as Adobe® Macromedia Flash, may display colours incorrectly when run under translation if displayed on a local Power X server.

Root user and root password

In a translated x86 shell, if the user is running as root, then the user has the same privileges as root in the Power environment.

This is an expected behavior of the x86 environment.

If an escape is created from the x86 World to the Power filesystem (which can only be carried out by the Power root user), then a root user in the x86 environment can access Power file system as the root user.

The user id support within PowerVM Lx86 defaults to using the Power password for the root user in the x86 World. Only if PowerVM Lx86 is explicitly setup to use separate passwords for the x86 World and Power system will the user be prompted for a root password for the x86 World.

Mount support

Using mount from an x86 shell or application

If a directory or device is mounted from within a translated shell, then the directory must only be unmounted from within a translated shell.

Unmounting the directory in a Power shell will cause the unmount to occur, but the device may still appear to be mounted. This must then be explicitly cleared.

Using mount from a Power shell

If a directory or device is mounted from a Power shell, then the directory must only be unmounted from a Power shell.

Using NFS mounts within a translated shell or application

Mounting NFS folders from an x86 shell is not supported. Mount the NFS folders from a Power shell to a mount point that is visible to the x86 World.

System resource conflicts

Certain system resources are shared between PowerVM Lx86 and the Power environment. By default, PowerVM Lx86 and the Power environment use the same IP address. Attempts to bind to a certain port by a translated application will fail if that port is already used by a Power application.

For example, if a Power version of apache (httpd) is using port 80, an x86 instance of apache (httpd) will be unable to use that port. This can be resolved by running one of the apache instances on a different port number.

Disk performance

Disk performance may be slower on disks formatted using reiserfs than with ext2 or ext3. ext3 should be used as the default disk format for PowerVM Lx86.

Out of memory

If an x86 application uses up all of the available memory, PowerVM Lx86 may exit with an error.

Accuracy of floating-point instructions

Due to the precision differences in floating point hardware implementations between the x86 and native Power systems, the precise results of floating point instructions may not be the same as running the application natively on x86 hardware.

Notices

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Softfloat

This C source fragment is part of the SoftFloat IEC/IEEE Floating-point Arithmetic Package, Release 2b.

Written by John R. Hauser. This work was made possible in part by the International Computer Science Institute, located at Suite 600, 1947 Center Street, Berkeley, California 94704. Funding was partially provided by the National Science Foundation under grant MIP-9311980. The original version of this code was written as part of a project to build

a fixed-point vector processor in collaboration with the University of California at Berkeley, overseen by Profs. Nelson Morgan and John Wawrzynek. More information is available through the Web page ``http://www.cs.berkeley.edu/~jhauser/ arithmetic/SoftFloat.html'``.

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queue.h

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