

Upgrading RPM on Linux (for PlayStation®2)

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This document describes the process by which you may upgrade the package management system of your Linux (for PlayStation®2) Kit. The package management system provided with the kit is RPM (v3.0.4), which was created by Red Hat, Inc. for their Red Hat Linux operating systems.

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Introduction

What are the benefits? Newer versions of RPM contain many changes, not the least of which is a new version of Berkeley DB, used for data storage, but also significant changes in the format of RPM packages themselves. Upgrading to a version of RPM greater than 3.0.5 will allow you to install software packages that have been built with the new package format, or require features that exist in newer versions of RPM.

It also provides you with the ability to use APT, ¹ which require at least RPM 4.0.2. This utility provides package downloads, automatic dependency resolution, and various other features beyond the scope of RPM.

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Feedback

Feedback is most certainly welcome for this document. Send your additions, comments and criticisms to the following email address : <mrich (at) users.playstation2-linux.com>.

Translations

There are currently no translations of this document available.

Procedure

Summary

- Back up all RPM data.
- Upgrade RPM to the versions provided (Linux (for PlayStation®2)).
- Convert the RPM data to the new DB format.
- Verify that your RPM data has been migrated correctly.

Back Up Your Critical Data

Back up your RPM database

It's extremely important that you backup your RPM database before attempting to upgrade RPM on your system. The RPM database contains all metadata corresponding to the installed software on your system, and upgrading from RPM 3.0.4³ to RPM 4.0.2 requires upgrading this database. *Depending on the current state of your database, this upgrade process could result in corrupting and/or losing data. You have been warned!* The good news is that any damage caused during upgrade can be both identified and repaired... provided that you have performed the backup described here.

As root execute the following

example:

```
bash# tar -zcvf /root/rpmdb-`date +%Y%m%d`-backup.tar.gz /var/lib/rpm
```

This will create an archive of your RPM database and store it as /root/rpmdb-<current date>-backup.tar.gz⁴.

Create A Recovery Path

As root execute the following

```
bash# rpm -qa --qf '%{name}-%{version}-%{release}.%{arch}.rpm\n' 2>&1 | sort > /root/rpmpkgs-`date +%Y%m%d`.lst
```

This will create a complete list of all the packages that are currently installed on your system and write it to /root/rpmpkgs-<current date>.lst⁵.

It is also a good idea to backup the rpm command itself. It will be needed in order to restore the old installation if the upgrade fails. For now it can be copied into /root, along with /usr/lib/rpm/rpmrc and /usr/lib/rpm/macros, which are also required.

As root execute the following

example:

```
bash# cp -a /bin/rpm /root/rpm
bash# cp -a /var/lib/rpm/{rpmrc,macros} /root/
```

Upgrading RPM

Now that you are all backed up, you can ... *ha! you thought you could fool me...* Go back and do the backup! I mean it!

Downloading the necessary files

Download the rpm files located in the RPM package in this project, they are:

rpm-python-4.0.2-2P.mipsel.rpm⁶

rpm-devel-4.0.2-2P.mipsel.rpm⁷

rpm-build-4.0.2-2P.mipsel.rpm⁸

rpm-4.0.2-2P.mipsel.rpm⁹

popt-1.6.2-2P.mipsel.rpm¹⁰

Optional Source Code

```
rpm-4.0.2-2P.src.rpm11
```

Checking the downloaded files

You should check the validity of the downloaded packages.

```
bash# rpm --checksig *.rpm
```

Installing the new packages

To install the new RPM packages correctly, you need to perform the following *exactly*.

```
bash# rpm -Uvh rpm-4.0.2-2P.mipsel.rpm rpm-build-4.0.2-2P.mipsel.rpm popt-1.6.2-2P.mipsel.rpm
```

Immediately after performing the upgrade, you need to rebuild your RPM database with the following command. *Do NOT execute any rpm commands between the command above and this command.* They must be executed consecutively.

```
bash# rpm --rebuilddb
```

Verifying the Installation

It is generally a good idea to verify that the upgrade was performed correctly before using the system, or attempting to upgrade or install any new software. Two steps are required to completely verify that the upgrade was successful.

- Verify the database integrity.
- Verify the database content.

RPM provides a builtin command to verify the integrity of the database. This will check that the database is working correctly, and is not corrupted. To verify the integrity of the upgraded database, execute the following command.

```
bash# rpm --verifydb
```

If it exits without error, then the upgrade was successful, and you have produced a valid database. If the verification failed, see the Section called *Repairing a Broken Installation* for information on recovering your data.

Although we have validated the database, it may still have lost package file data under certain conditions. To check the contents of the database execute the following with root permissions¹².

```
bash# rpm -qa --qf '%{name}-%{version}-%{release}.%{arch}.rpm\n' 2>&1 | sort | diff -u /root/<rpmpkgs filename> -
bash# rpm -qa1 | grep '(contains no files)' | wc -l
```

The first command should show you the difference in installed packages, which means it should return nothing at all. If there are differences, packages which exist in the new database and not in the `rpmpkgs` file will have a `+` preceding the line, and packages that exist in the `rpmpkgs` file but not in the new database will have a `-` preceding the line.

The results of the second command should be `'1'`. If it counts more than one package that contains no files, then your DB has lost some information, see the Section called *Repairing a Broken Installation*.

Repairing a Broken Installation

The Recovery Process

Different methods of repair are required depending on the point of failure. Repairing your system also very much depends on whether you performed the backup described at the beginning of this document. If you did not perform this backup, then go away, I can't help you... How many times did I warn you in this document? In other words, you're up the creek. Hope you still have the installation manual handy...

Determine at what point your `RPM` upgrade failed. The following are likely candidates:

- Package installation.
- Database upgrade.
- Database verification.
- Content verification.

Failed Package Installation

This failure is fairly easy to fix; if the `rpm` command failed during execution, simply restore the old RPM packages from the DVD, and submit a bug report¹³ to the *APT PS2 Linux*¹⁴ project page¹⁵ describing any resulting errors. The following will restore RPM from the DVD:

Note:

You will need to mount disc 2 from the Linux Kit. See the other documentation on the PlayStation®2 Linux Community¹⁶ site for instructions. Be sure to mount the DVD as a UDF filesystem.

```
bash# cd /mnt/cdrom/SCEI/RPMS
bash# rpm -Fvh rpm*.rpm
bash# rpm -Fvh popt*.rpm
```

Failed Database Upgrade

This failure is more difficult to fix. It is identified by either a failure during rebuild of the database, or when verifying the database. It generally results in a corrupted database (the worst case) or just invalid/missing data. You may even have a fully functional database that produces errors when operated upon. In any of these instances, the database is no longer functional and should be restored from the backup.

However (and this is the tricky part): the old database will not work with the new version of RPM that you've installed.

With the backup copy of the RPM (v3.0.4) binary that was made before performing the upgrade, it should be much easier to restore the old version of RPM. Otherwise you'll have to extract the RPM binary from the RPM package on the DVD--not pretty--with `rpm2cpio`. As it is, only the following is required to restore the system to normalcy:

```
bash# cd /mnt/cdrom/SCEI/RPMS
bash# /root/rpm -Fvh --force rpm*.rpm
bash# /root/rpm -Fvh --force popt*.rpm
```

This may leave some cruft behind from the RPM installation, but it shouldn't matter once the new RPM is properly installed (it's also easy enough to remove entirely).

Now that the original database is restored, and presumably working, it's not a bad idea to verify its integrity. The most likely cause of failure during the upgrade of the database is the content being migrated. Although other causes such as problems with the Berkeley DB libraries themselves or with RPM may exist, there isn't much to do about that except file bug reports.

To verify the database, try running `verifydb` on it.

```
bash# rpm --verifydb
```

Alternatively, you can try rebuilding the contents of the database from the source packages. See the Section called *Rebuilding your Database from Scratch*.

Rebuilding your Database from Scratch

It is actually surprisingly simple to rebuild your RPM database from scratch. However, it will require a little scripting know-how. This isn't difficult, though, since I've done all the hard work for you. First we will need the list of packages that you created in the the Section called *Create A Recovery Path* section. It's nearly impossible to exactly restore your RPM database without this information.

To rebuild the contents of your RPM database, simply iterate through the list of packages, installing just the database information from each package as we go. You could install the entire package, but that's unnecessary and a waste of time.

*Execute the following with root permissions:*¹⁷

Note:

As before, you will need to mount disc 2 from the Linux kit, see the other documentation on the PlayStation®2 Linux Community¹⁸ site for instructions. Be sure to mount the DVD as a UDF filesystem.

```
bash# files=`cat /root/rpmpkgs-<current date>.lst`
bash# for file in $files; do
> rpm -ivh --justdb $file
> done
```

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Notes

1. Advanced Package Tool, originally written for Debian. APT was ported for use on other Linux distributions; the version we are working with was ported for Connectiva, and is available from
2. <http://freshrpms.net/apt/>
2. <http://freshrpms.net/apt/>
3. The Linux (for PlayStation®2) 1.0 release version.
4. Where <current date> is the date the command was executed on.
5. Where <current date> is the date the command was executed on.
6. <http://www.playstation2-linux.com/files/apt/rpm-python-4.0.2-2P.mipsel.rpm>
7. <http://www.playstation2-linux.com/files/apt/rpm-devel-4.0.2-2P.mipsel.rpm>
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12. Where <current date> is the date the command was executed on.
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14. <http://www.playstation2-linux.com/projects/apt/>
15. *APT PS2 Linux* project is the home for this document
16. <http://www.playstation2-linux.com>
17. Where <current date> is the date the command was executed on.
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