Installers and Package Managers

Definitions, Differences, Uses, Choices

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Installer: What is it?

Simply put, something which places files and/or directories somewhere.

Simple Installer

Unzip

Why? It extracts something somewhere.

More Elaborate Installer

Single-purpose executable or script

Copies files to user-selectable destination, may create configuration files, may create desktop objects, and may launch the application and/or readme and/or registration utility.

Intelligent Installer

WarpIN

Analogous to Windows Installer; successor to venerable IBM Installer

WarpIN Features

- Supports system configuration (CONFIG.SYS, WPS classes, WPS objects)
- Ability to undo system changes
- Checks package dependencies
- Can execute external programs for system configuration after install
- REXX support built in
- Maintains database of installed applications

Package Manager

Wikipedia defines a package manager as:

"... a collection of software tools to automate the process of installing, upgrading, configuring, and removing software packages for a computer's operating system in a consistent manner. It typically maintains a database of software dependencies and version information to prevent software mismatches and missing prerequisites."

Source - Package management system. (2013, August 5). In *Wikipedia, The Free Encyclopedia*. Retrieved September 12, 2013, from https://en.wikipedia.org/wiki/Package_management_system

Standard Package Manager

rpm (Red Hat Package Manager)

Checks prerequisites listed in the package to be installed, checks for existing versions (upgrade/downgrade), performs installation or removal.

Differences 1

Installer

- One-way (install)
- Usually ignorant of conflicts; prerequisites
- No package database

Package Manager

- Two-way (install/remove)
- Aware of conflicts & prerequisites
- Maintains database of installed applications (installed by it)

Differences 2

WarpIN

- Scriptable
- Can be used as a stub, providing self-installing packages
- Binary, OS/2-style INI package database
- Packaging can be tedious

rpm

- Not scriptable
- Used as a stand-alone application only
- BerkeleyDB package database
- Packaging more widely known

Differences 3

WarpIN

- Bundled with eCS
- User-friendly UI
- Destinations may be user-configurable at time of install

rpm

- Must be installed
- Commandline tool
- Destinations set in package, but package may be flagged as “relocatable”

Package Management Utility

Wrapper or supplement to a package manager, providing additional function (file repository locations; package download); front end to the package manager.

Standard Utility

yum (Yellowdog Updater, Modified)

What a Utility Does

- Maintains list of locations for obtaining packages (repositories, or repos)
- Allows enabling and disabling of configured repos
- Provides information on requested package(s) (version available, which repo, prerequisites, what the package does). This data is stored in the package metadata.

Differences

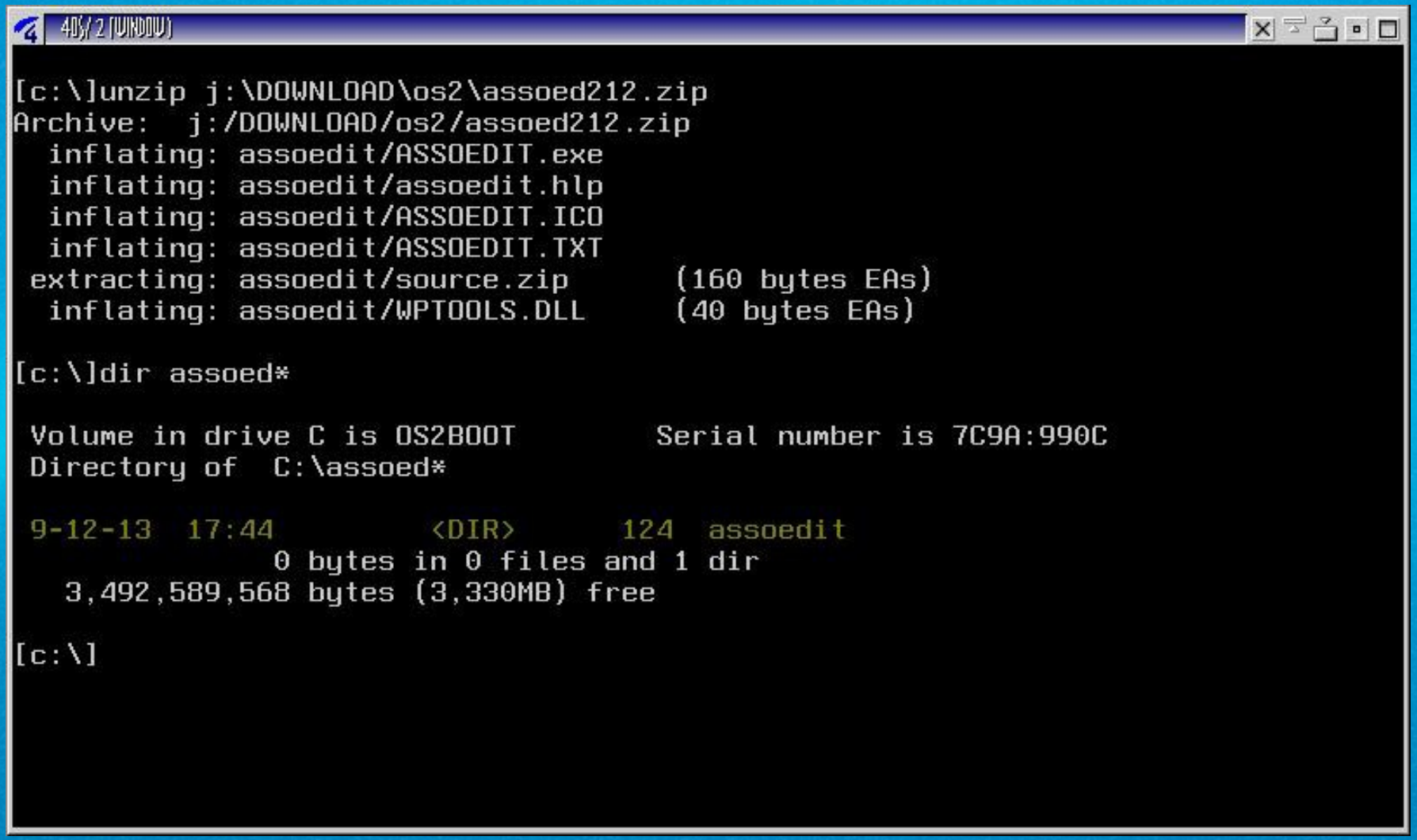
rpm

- Maintains database of applications installed by it
- Installs & removes packages
- Can query details of installed or locally available packages

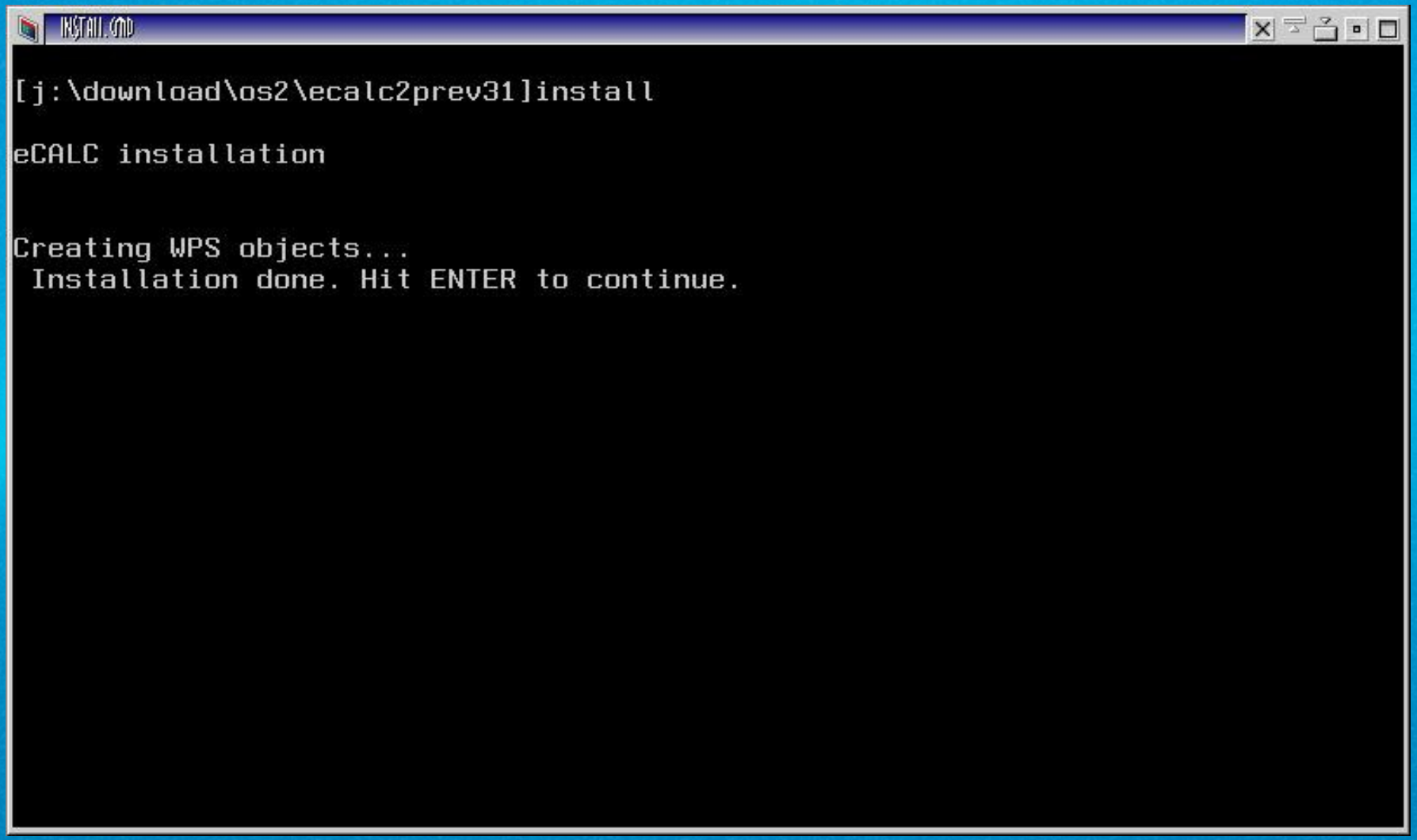
yum

- Maintains database of repos
- Does not install (calls rpm)
- Can query details of multiple packages, installed or not

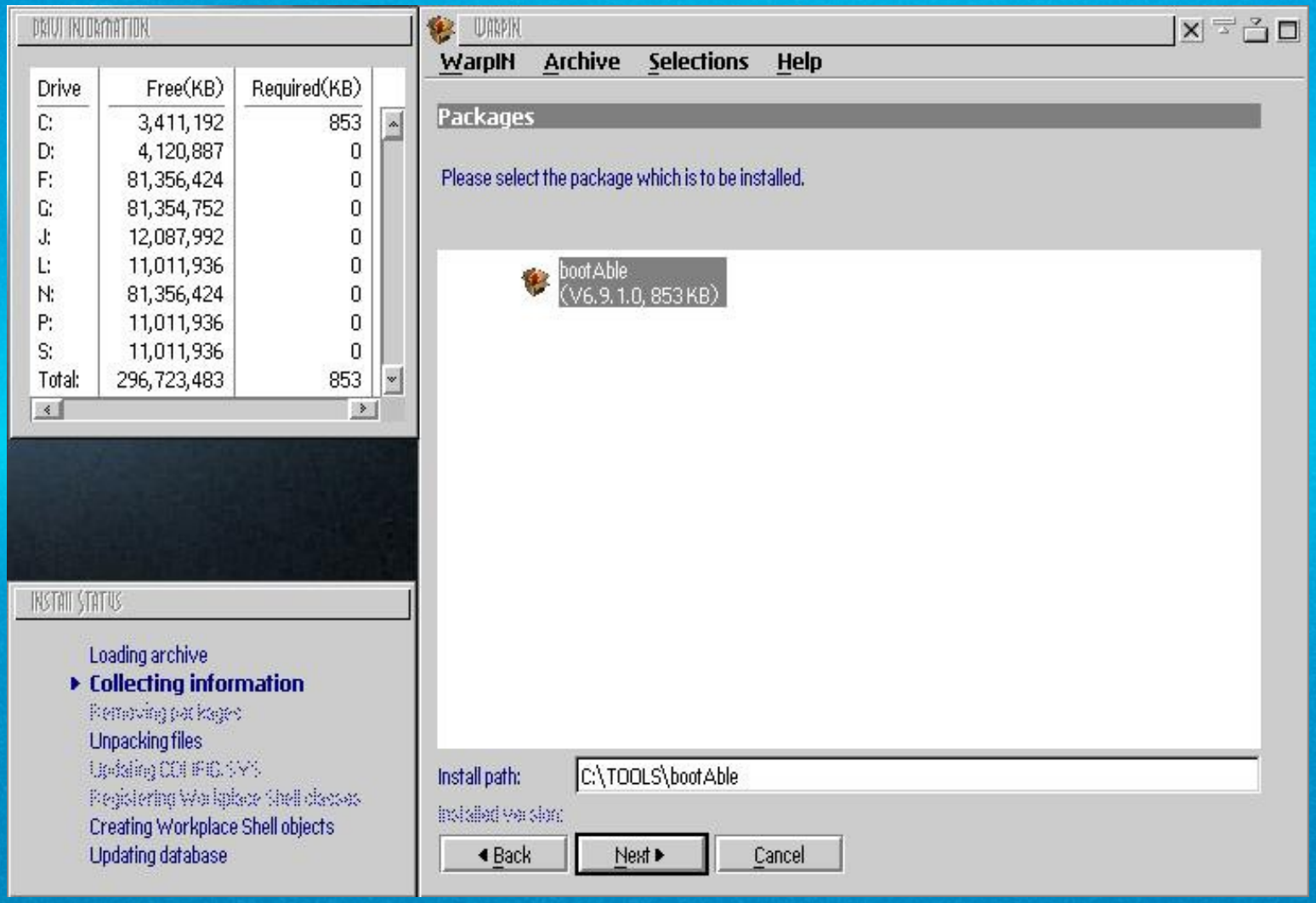
Example: Unzip



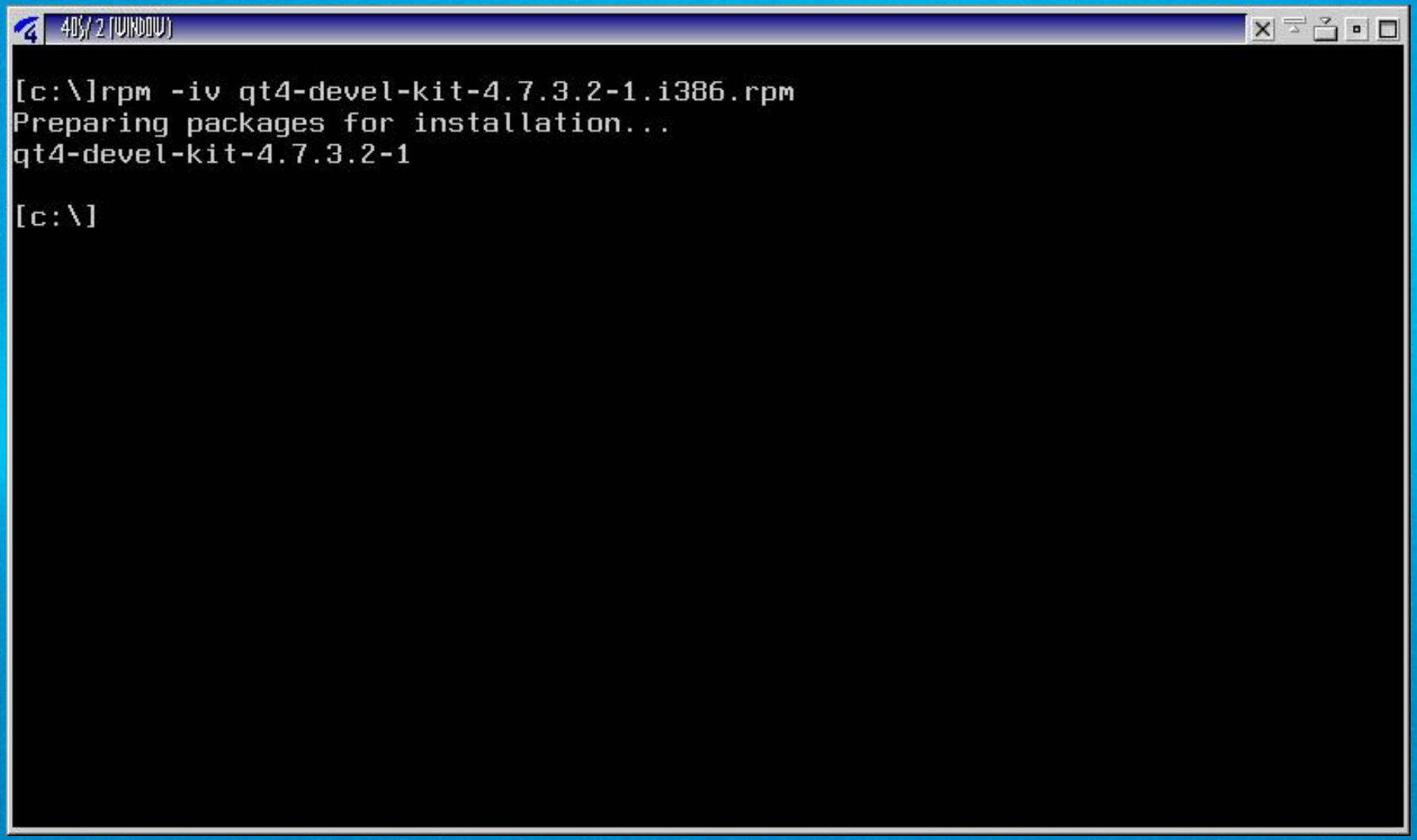
Example: REXX Installer



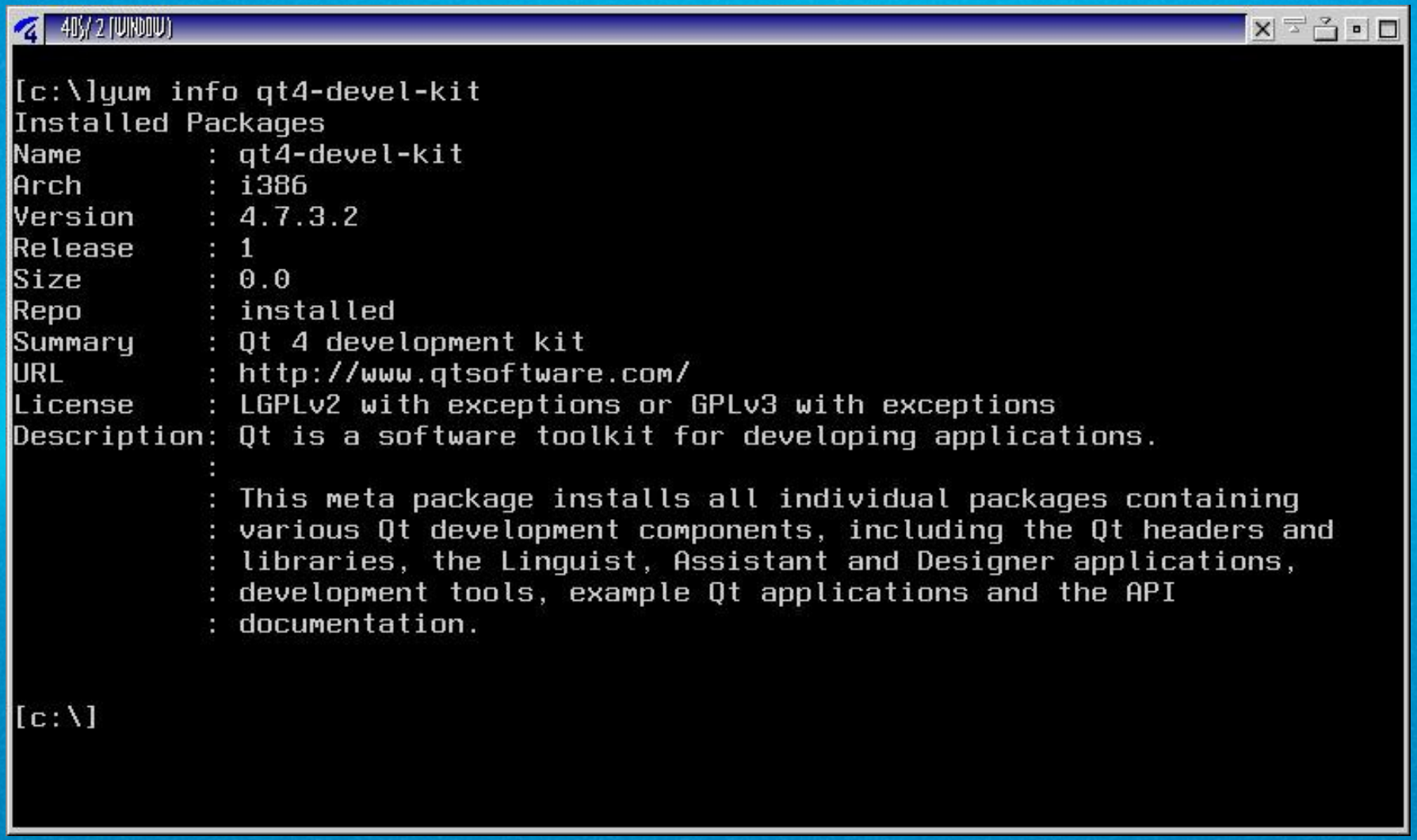
Example: WarpIN



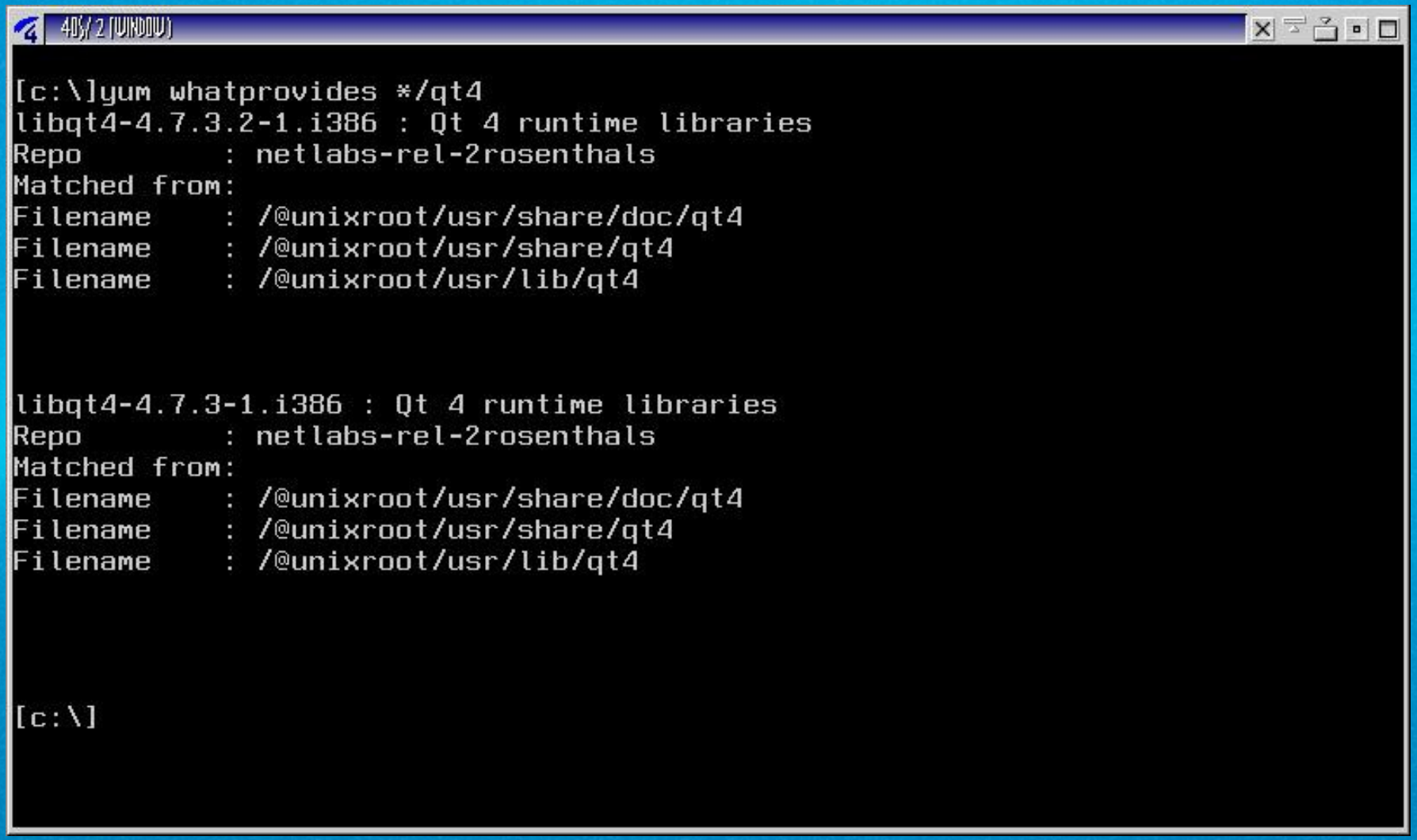
Example: rpm


[c:\]rpm -iv qt4-devel-kit-4.7.3.2-1.i386.rpm
Preparing packages for installation...
qt4-devel-kit-4.7.3.2-1
[c:\]

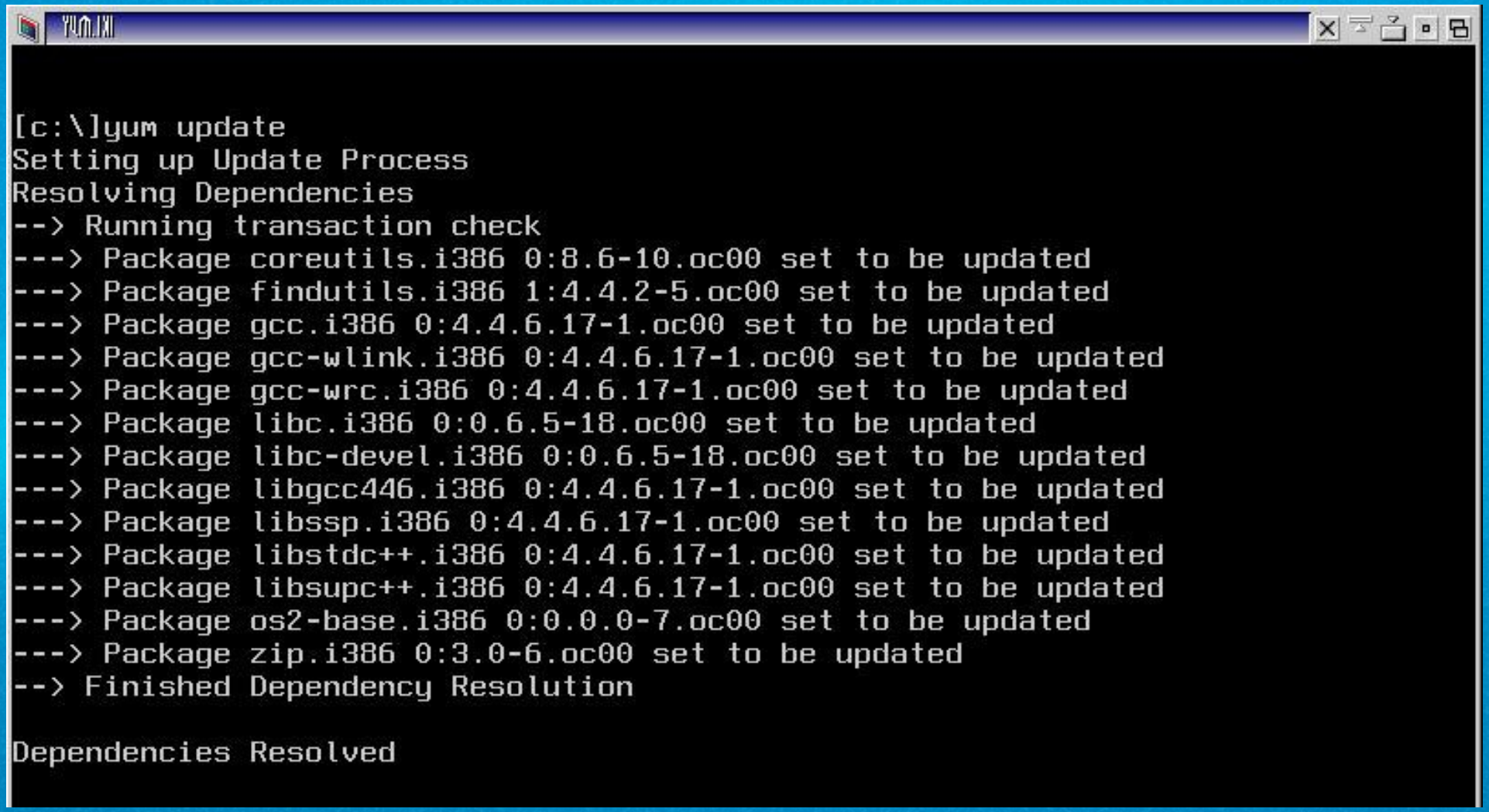
Example: yum info



Example: yum whatprovides



Example: yum update



Example: yum update

```
================================================================================
 Package         Arch     Version                Repository                 Size
================================================================================

Installing:
 libssp          i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals    7.1 k
     replacing  gcc-stack-protector.i386 4.4.6-15.oc00
 libstdc++       i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals    220 k
     replacing  gcc-stdc++-shared-library.i386 4.4.6-15.oc00
 libsupc++       i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals     37 k
     replacing  gcc-supc++-shared-library.i386 4.4.6-15.oc00
Updating:
 coreutils       i386     8.6-10.oc00            netlabs-rel-2rosenthals    5.2 M
 findutils       i386     1:4.4.2-5.oc00         netlabs-rel-2rosenthals    722 k
 gcc             i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals     14 M
 gcc-wlink       i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals    3.7 k
 gcc-wrc         i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals    3.7 k
 libc            i386     0.6.5-18.oc00          netlabs-rel-2rosenthals    927 k
 libc-devel      i386     0.6.5-18.oc00          netlabs-rel-2rosenthals     30 M
 libgcc446       i386     4.4.6.17-1.oc00        netlabs-rel-2rosenthals     25 k
 os2-base        i386     0.0.0-7.oc00           netlabs-rel-2rosenthals    6.2 k
 zip             i386     3.0-6.oc00             netlabs-rel-2rosenthals    321 k

Transaction Summary
================================================================================

Install       3 Package(s)
Upgrade      10 Package(s)

Total download size: 52 M
Is this ok [y/N]:
```

Example: yum repolist

FAQs

- How do I know which to use?

  The package will determine which tool is best suited for the job.

- How do I install yum?

  You need rpm, as yum by itself won't do much (and it has a dependency on rpm). To install rpm and yum, there is a WarpIN bootstrap. See: http://trac.netlabs.org/rpm/wiki/RpmInstall

FAQs

- Can WarpIN download new packages?

  No, WarpIN is a package manager, not a package management utility.

- Can WarpIN read my rpm database?

  No, WarpIN can only read its own database. WarpIN is unaware of any packages installed either by unzip or rpm.

FAQs

- Can rpm download packages?

  No, rpm is a package manager, not a package management utility.

- Can rpm read my WarpIN database?

  No, rpm can only read its own database. rpm is unaware of any packages installed either by unzip or WarpIN.

FAQs

- Can yum download packages?

  Yes.

- Can yum install packages?

  Not by itself, no. yum relies on rpm to handle installing and removing packages.

FAQs

- Can yum read my WarpIN and/or rpm database?

  No, but this is irrelevant. Yum only needs to maintain a database of repositories, not packages.

What's Still Needed for eCS?

Conflicts can occur when an application has been packaged in different ways, and package managers are mixed. A bridge between WarpIN and rpm would be a major improvement.

Conflict Example: Odin

Odin installed via unzip to O:\Libraries\Odin

Odin installed via yum install libodin, which installs to %UNIXROOT%\var\lib\odin

libodin is not relocatable:

```
[j:\]rpm -qpi libodin-0.8.9-1.i386.rpm | grep Relocations
Name        : libodin                      Relocations: (not relocatable)
```

Conflict Example: Odin

Result: Two separate installations

What's Still Needed for eCS?

FastestMirror plugin for yum. As Rosenthal & Rosenthal provides a US-based mirror of the both Netlabs repositories (experimental and release), users now must manually choose which to enable. FastestMirror would allow both sets of repositories to be enabled, and would test connecting to each, choosing the most responsive for that session.

References

- WarpIN – Netlabs, Jens Bläckman, Ulrich Möller, Paul Ratcliffe
- rpm – community, Red Hat
- yum – Seth Vidal
- rpm and yum for eCS – Netlabs, Yuri Dario