

## FreeBSD ports & packages

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## FreeBSD ports & packages - overview

- Different UNIX distributions use different package systems for distributing software
  - Debian GNU/Linux and Ubuntu use .DEB
  - SuSE, RedHat, Fedora use .RPM
  - etc..
- FreeBSD uses a simple format (.TGZ)
- Where do they come from ?

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## Installing software on FreeBSD

- Normally 3 ways to install software on FreeBSD:
  - from the « source »  
`./configure; make; make install`
  - from the port
  - from the package

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## The FreeBSD ports collection

- Described in detail at [http://www.freebsd.org/doc/en\\_US.ISO8859-1/books/handbook/ports.html](http://www.freebsd.org/doc/en_US.ISO8859-1/books/handbook/ports.html)
- The ports is a collection of « skeleton » instructions (Makefile, patches) to retrieve, configure, build and install software
- The ports collection contains instructions for over 16.000 software programs as of 2007, and it is still growing.

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## Installing software ...

- Open source software is shipped in source form; to be usable on a system:
  - 
  - 1. It must be unpacked
  - 2. It must be adapted to the system one is running on (« porting »)
  - 3. It may be compiled (source -> binary)
  - 4. It must be installed
  - 5. It may need to be configured

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## Installing software ...

- The ports system takes care of steps 1 - 4, and sometimes 5 (preconfiguration)
- The build and installation process might trigger the build and installation of other required software - this is known as « dependencies ».
  - For example, a graphics program might need a JPEG software library to be able to read and write JPEG images

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## From port to package

- Once the port is built, one can make a **package**
- A package is a pre-built port
- Packages can be installed...
  - from the network via FTP
  - from the FreeBSD CDROM
- Packages can be those built by the FreeBSD project or your own

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## Ports vs packages

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• <b>PACKAGES</b></li><li>• precompiled</li><li>• easy to install</li><li>• no need to have ports collection installed</li></ul> | <ul style="list-style-type: none"><li>• <b>PORTS</b></li><li>• more and better configuration control / options (for example Apache and PHP)</li><li>• local patches possible</li><li>• tuning options</li></ul> |
|--|---|

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## Installing packages

- `pkg_add [-r] <package name>`
- For instance:  
`pkg_add -r bash`
- This will attempt to install the bash package from the network
- Problems:
  - what if bash depends on other software ?
  - which version of bash ? 2 or 3 ?
- `pkg_add` will try to install dependencies, if they are available

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## Installing packages

- If you have the package on CD, and the CD is mounted, you can install it directly, for instance:  
`pkg_add /cdrom/packages/All/bash-3.1.10_1.tbz`
- If you know the URL (Link) to the package on the Internet, you could:  
`pkg_add ftp://ftp.freebsd.org/pub/FreeBSD/releases/i386/6.1-RELEASE/packages/All/bash-3.1.10_1.tbz`

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## Ports

- To install a port, you can search by name or keyword:  
`cd /usr/ports ; make search name=<name>`  
`cd /usr/ports ; make search key=<keyword>`
- Once you know where the port resides (its **category**), you can go to that directory, and install it:  
`cd /usr/ports/shells/bash3`  
`make`  
`make install`  
`make clean`
- That's it!

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## Ports

- If you want to build a **package**, you just need to type:  
`make package`
- ... from the directory where you built the port from.

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## Best of both worlds

- But what if...
  - you don't know in which category the port is located or which version you want;
  - you can't find up-to-date packages for the version of FreeBSD you are running (maybe it's a bit older) ;
  - you want to upgrade a package, but other packages depend on it ;
- For all the above reasons, it is strongly recommended to use a tool called **portupgrade**

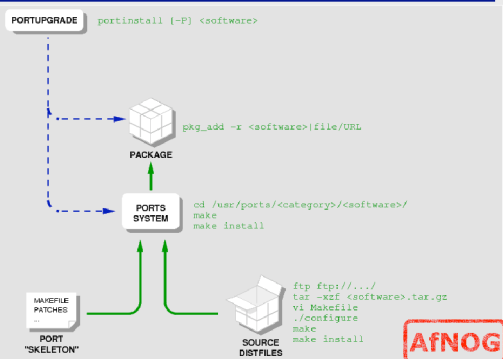
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## Portupgrade

- **Portupgrade** is a « meta » package manager. It sits on a layer above the ports and package system, and makes your life easier
- Portupgrade greatly simplifies package installation, upgrades.

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## The big picture



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## Installing portupgrade

- Portupgrade is itself a port, and can be installed as such, or as a package:

```
cd /usr/ports/sysutils/portupgrade
make
make install
make clean
```
- or

```
pkg_add -r portupgrade
```
- It can also be installed at system install time (via sysinstall)

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## Using portupgrade

- To install a program with portupgrade

```
portinstall <port name>
```
- For instance:

```
portinstall bash
```

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## Using portupgrade

- Portupgrade can be told to try and install a pre-built package, using the -P option, one or more times:
  - Try and install from a package, fallback to the port if the package isn't found:

```
portinstall -P <port name>
```
  - Try and install from a package, stop if it's not found:

```
portinstall -P -P <port name>
```

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## Using portupgrade

- To upgrade an already installed software package:

```
portupgrade <package name>
```

- For instance:

```
portupgrade apache
```

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## Questions ?

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