

# TNE30019/TNE80014 – Unix for Telecommunications

## Installing Software on Unix Systems

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## Installing Programs From Source

### Software source online

- Download source tarball (Unix version of zip file)
- Contains complete source code and Makefiles
- So do we simply type:  
`make`

### Compiling from source is more difficult

- Cross-platform compatibility
- Some things are done differently on different hardware types/OS implementations
- Source code contains all of these variations
- How do we know which segments of code to compile?

### Standard technique

`configure; make; make install`

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## Outline

- Unix software installation in general
- Software installation
  - Compile from source
  - Pre-compiled
- Package management on FreeBSD

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## Application Building/Installation

### `configure`

- Shell Script
- Tests your system (OS/hardware type)
- Locates system shared libraries and tools needed to build
- Determines parameters to build application on your system
- Determines where to install application on your computer
- Generates Makefiles specifically for your computer
- For C code generates `config.h` with `#define`

### `make`

Builds application for your computer

### `make install`

Copies generated executables, man pages and other files to system for general use, e.g. to `/usr/local/{bin,lib,man,share}`

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## Installing Programs From the Source – Ports Tree

- Source code downloaded from application site may not compile/work optimally on your system (without patches)

### FreeBSD comes with source code for many tools

- It's called **ports tree**
  - Can build any application from source
  - Automatically applies minor patches to fix small bugs and/or make usage simpler
  - Automatically get/update to latest version deemed stable
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- Some Linux distros have similar feature, e.g. **Gentoo**
  - Versions in ports tree lag, not the latest and greatest

## Installing Programs – Pre-compiled applications

### Most distros have tool for downloading and installing applications

- FreeBSD – pkg
- Debian Linux – aptget
- Redhat – rpm
- OpenSuSE – zypper

### Advantages

- Much faster to install than compile from source
- Will automatically install dependencies
- Stable versions with all necessary patches

## Installing Applications on FreeBSD – Compile from source

### Searching for applications

```
cd /usr/ports
make search <search_name>
or:
http://www.freebsd.org/ports
```

### Installing

```
cd /usr/ports/<application_name>
make
make install
```

Need to regularly update ports tree so latest versions of applications will be installed

## Installing Applications on FreeBSD – Pre-compiled

### New system

```
pkg install <application_name>
```

- Will download and install pre-compiled packages
- Downloads and installs dependencies

### Upgrading using pkg

```
pkg upgrade
```