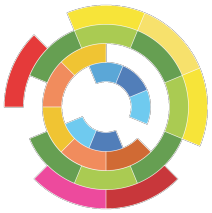

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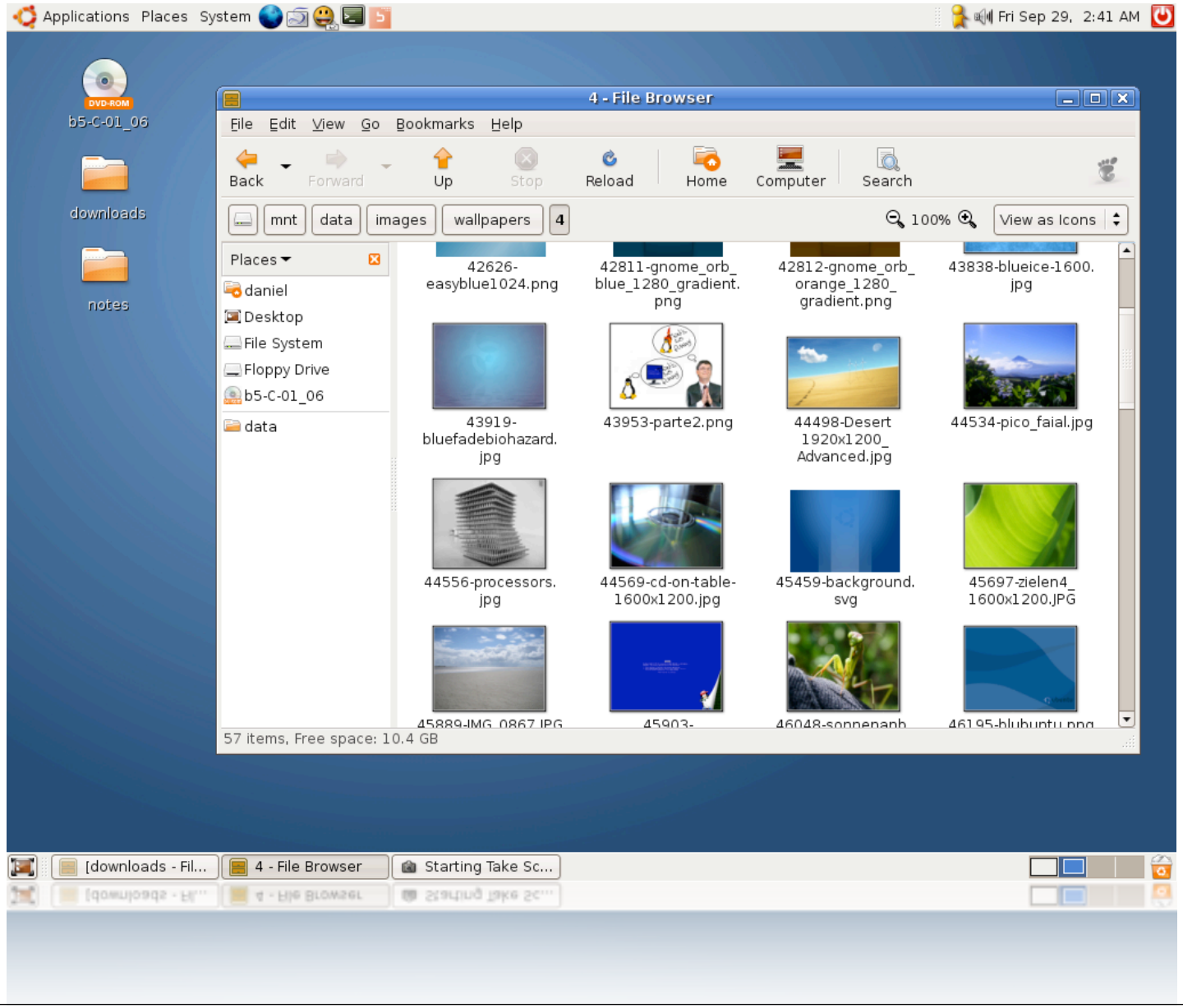
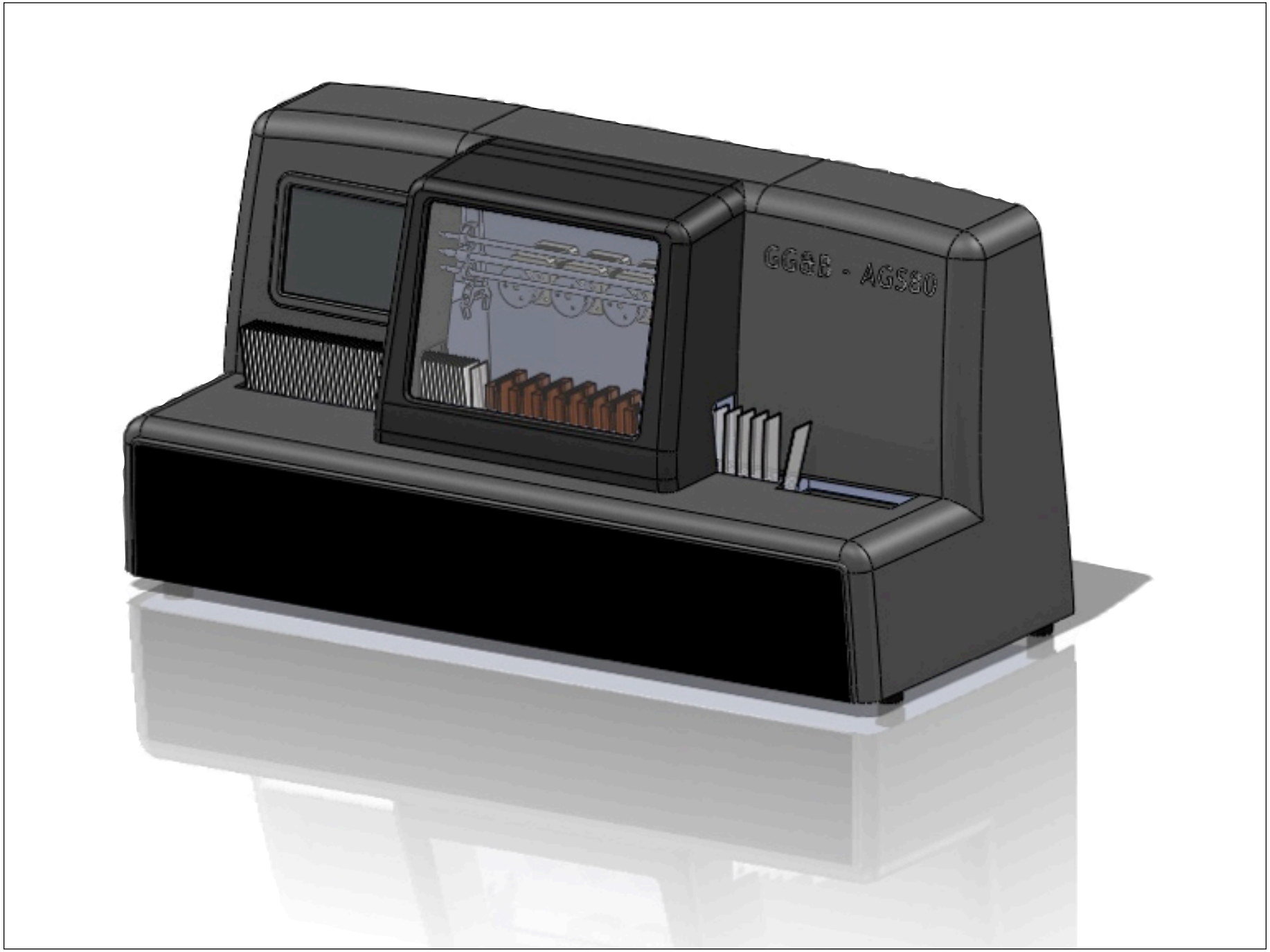
center of the engineering universe

Using Debian in Embedded Systems

Ryan Kuester
Independent Consultant

rkuester@insymbols.com


Applications Places System
Fri Sep 29, 2:41 AM
b5-C-01_06
downloads
notes
4 - File Browser
File Edit View Go Bookmarks Help
Back Forward Up Stop Reload Home Computer Search
mnt data images wallpapers 4
100% View as Icons
Places
daniel
Desktop
File System
Floppy Drive
b5-C-01_06
data
42626-easyblue1024.png
42811-gnome_orb_blue_1280_gradient.png
42812-gnome_orb_orange_1280_gradient.png
43838-blueice-1600.jpg
43919-bluefadebiohazard.jpg
43953-parte2.png
44498-Desert 1920x1200_Advanced.jpg
44534-pico_faial.jpg
44556-processors.jpg
44569-cd-on-table-1600x1200.jpg
45459-background.svg
45697-zielen4_1600x1200.JPG
57 items, Free space: 10.4 GB
[downloads - Fil...
4 - File Browser
Starting Take Sc...


GGBR - AGS80


ECHOMETER MODEL M
ACOUSTIC LIQUID LEVEL INSTRUMENT
OPERATE SAFELY AT ALL TIMES
OPERATING INSTRUCTIONS SUMMARY
REFER TO OPERATORS MANUAL FOR FURTHER INSTRUCTIONS
ECHOMETER COMPANY
501 OTTO LANE
WICHITA FALLS, TX 76302 USA
TELEPHONE: 940/767-4334
FAX: 940/723-7507
E-MAIL: INFO@ECHOMETER.COM
ECHOMETER
ECHOMETER COMPANY
WICHITA FALLS, TEXAS
MODEL M
SERIAL NO.
BATTERY CHARGER
POWER
OFF
TEST
REMOTE FIRE
UPPER COLLARS
LOWER COLLARS
GAIN
GAIN
CHART DRIVE
OFF
INPUT


SALT
500
CACL
8.5

Isn’t Debian a desktop operating system?

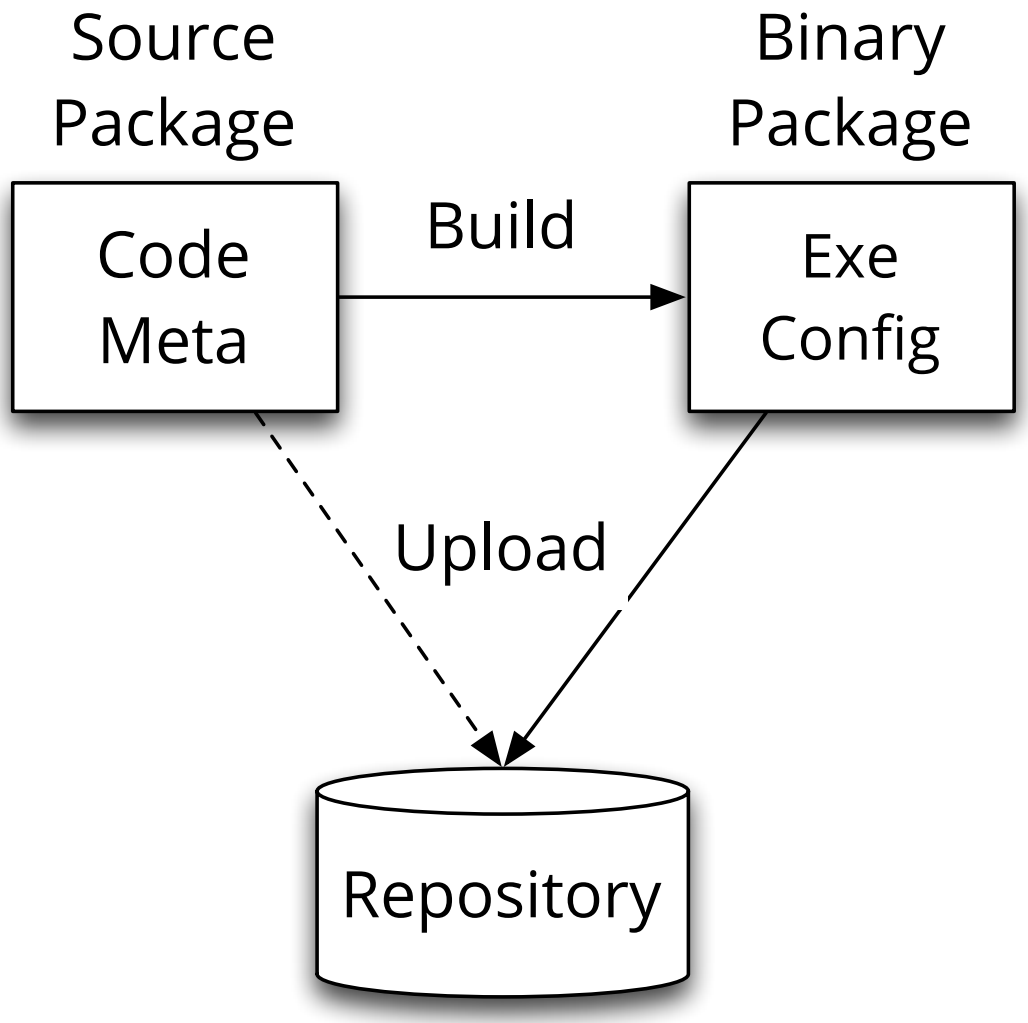
Yes, but not so different from your embedded OS

A way of organizing and deploying software

Take a universe of available software

Configure the subset you want

Compose it into a filesystem


Source
Package
Binary
Package
Code
Meta
Build
Exe
Config
Upload
Repository

Demonstration

Look at a package

Look at a repository

What if instead...

Build packages with an ARM toolchain

Install into a directory

Post-process that directory into a flash image

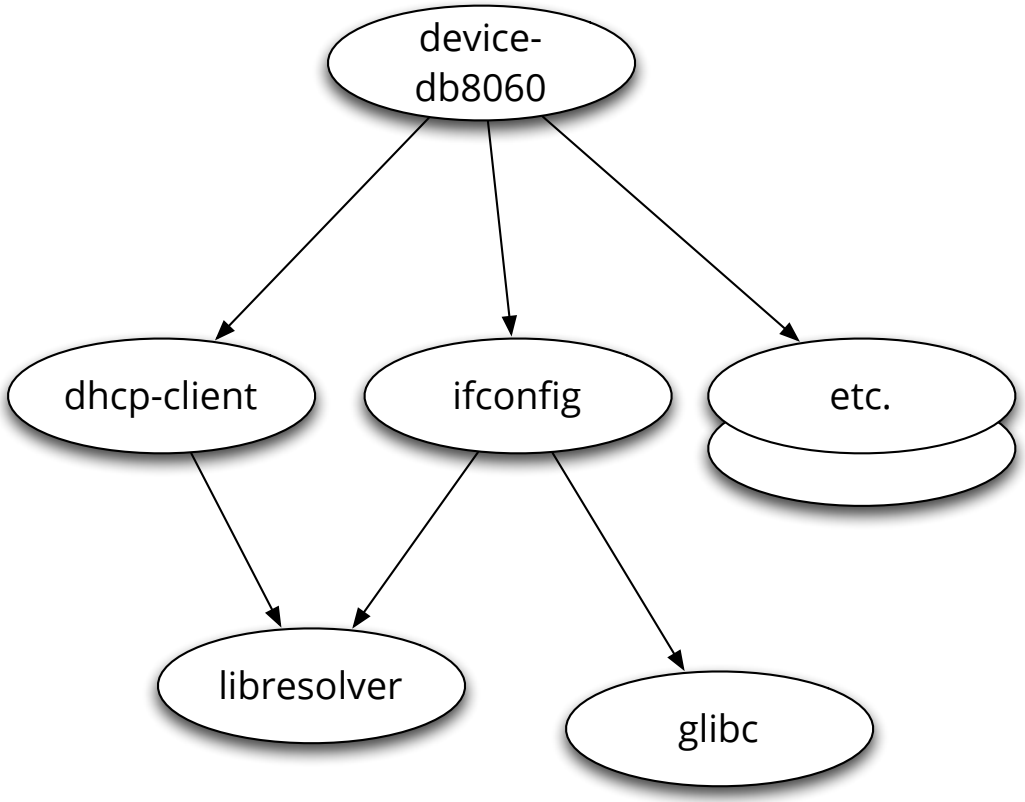
Choose our packages

Could list them…

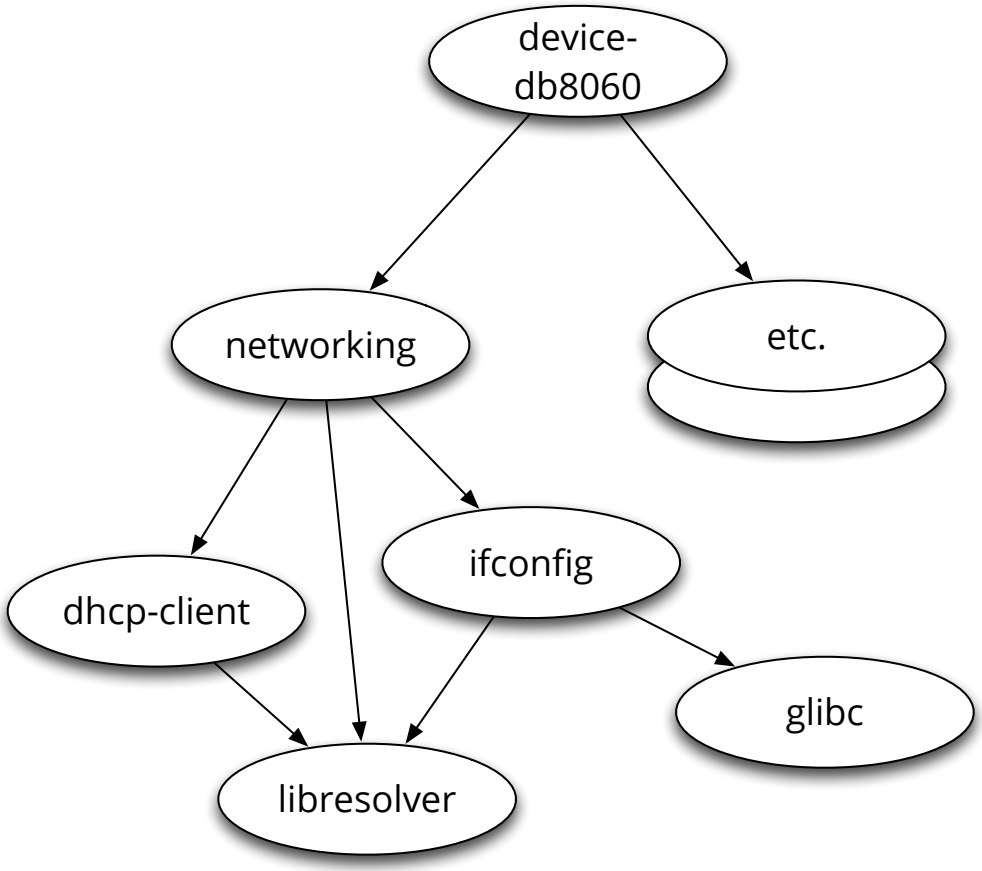
Something smarter: utilize dependency system

Create an empty package with dependencies

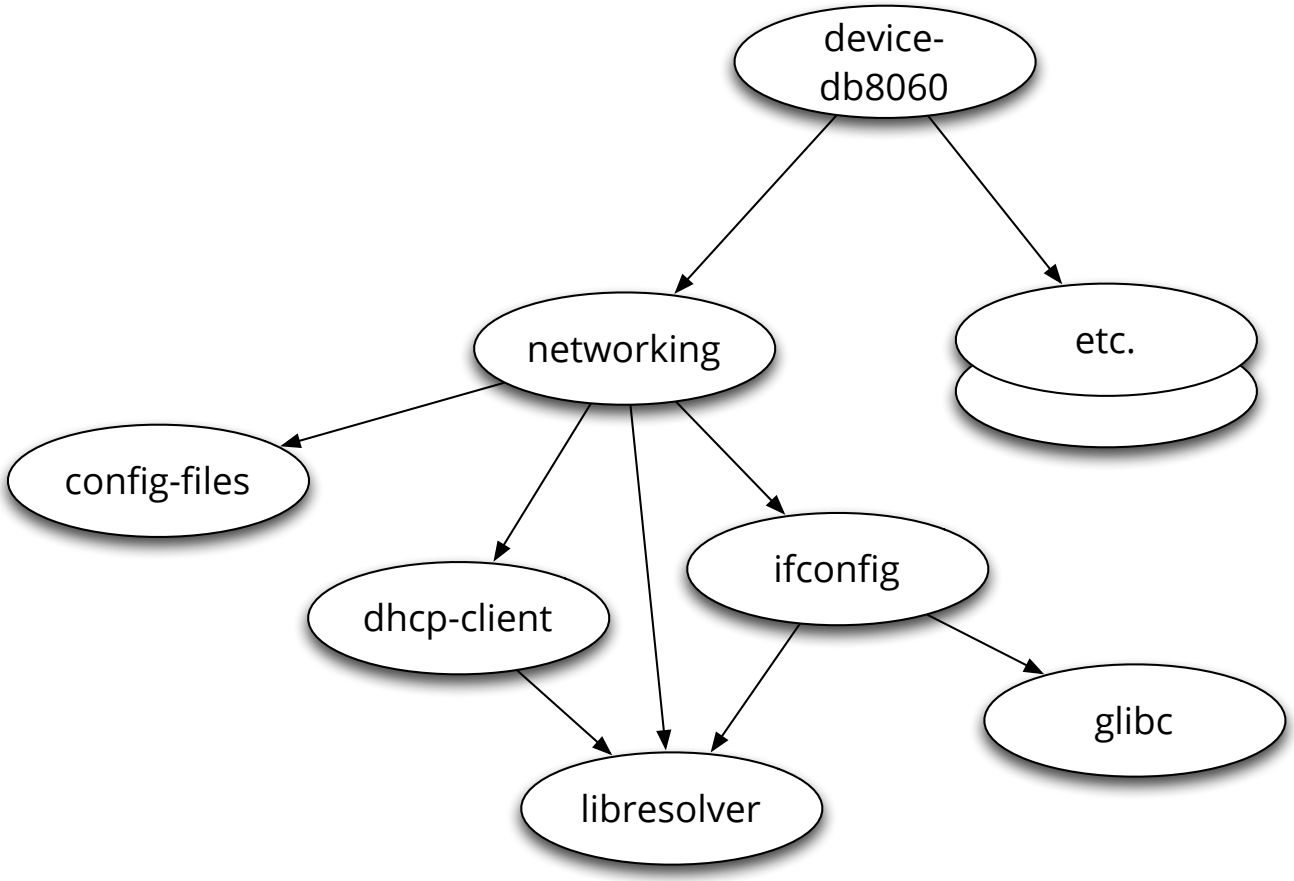
Utilize the dependency system



Utilize the dependency system



Use for configuration too



Demonstration

Look at composition tools

Build for DragonBoard

Problem Solved #1
Software availability

Debian builds for x86, amd64, armel, powerpc, mips, etc.

Over 20,000 packages

Problem Solved #2
Incremental field updates

Target runs the same tools

Works with same set of transport mechanisms as our workstation: http, ftp, file, https + certificates

Demonstration

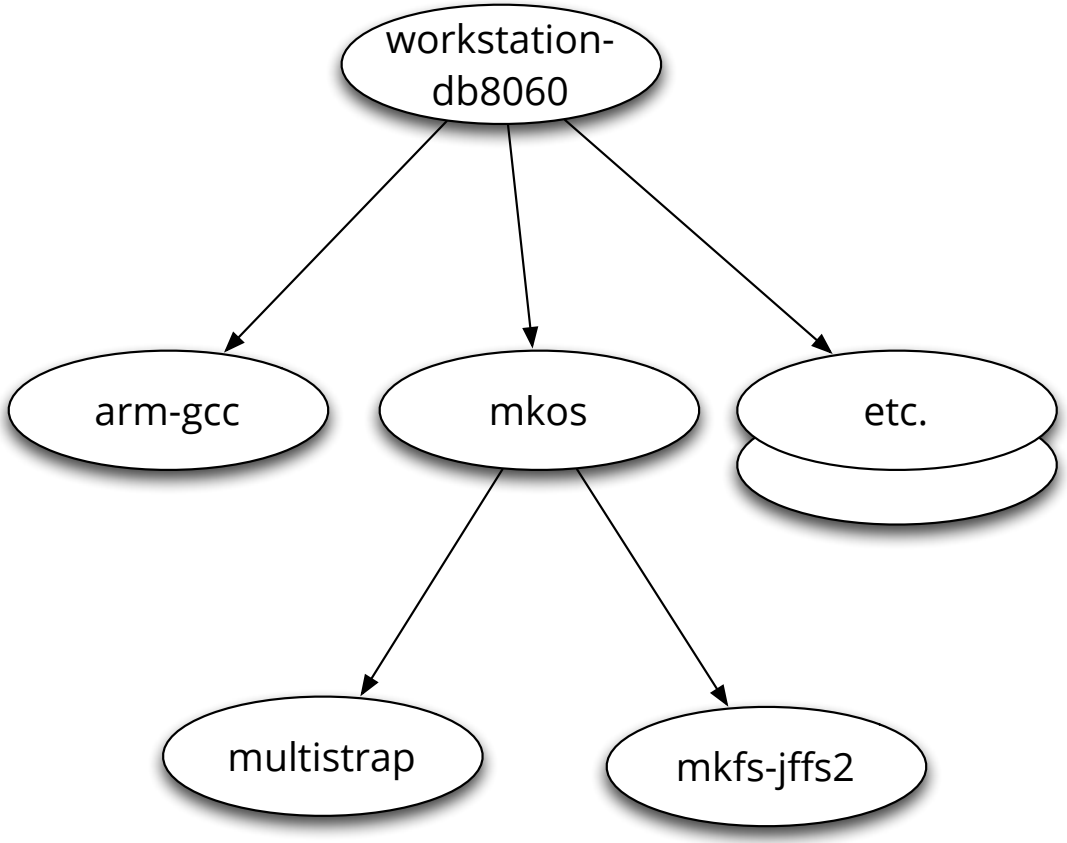
Add a package on the target

Problem Solved #3
Workstation configuration

Take dependency tree idea back to workstation

Use empty package to list tools

Tree on workstation



We're getting a lot for `free'...

Problem solved #1: software availability

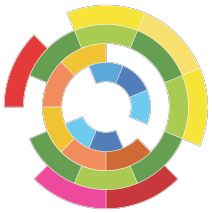
Problem solved #2: incremental field updates

Problem solved #3: workstation configuration

Requirements

Base system is ~40 MiB on compressed storage

Requires at least 32 MiB of RAM



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