DYMO on Gumstix

By,
Adarshini Srikantappa
Gayatri Tribhuvan
Overview

- What was proposed?
- What has been done?
- Future Enhancements: Team Project
Initial Proposal

- To get Dymo protocol running on the Gumstix (one Gumstix at least)

- Then, to get it running on multiple nodes (Gumstix’s)
Procedure

1. Building Gumstix buildroot.
2. Flashing the Gumstix.
3. NIST-DYMO : chosen DYMO protocol.
4. Running NIST-DYMO on Host.
5. Cross compilation of NIST-DYMO.
6. Porting NIST-DYMO on gumstix.
4. Running the protocol on Host

3 warnings: (Definitions not found in 2.6.20-16 version of Linux, but found in 2.4)

- Undefined `ip_rt_ioctl`
- Undefined `exit_mm`
- Undefined `__in_dev_get`
root@roshini:/home/adi/Desktop/nist-dymo# make
make -C /lib/modules/2.6.20-16-generic/build SUBDIRS=/home/adi/Desktop/nist-dymo
make[1]: Entering directory `/usr/src/linux-headers-2.6.20-16-generic'
  Building modules, stage 2.
  MODPOST 1 modules
WARNING: "ip_rt_ioctl" [/home/adi/Desktop/nist-dymo/nist-dymo.ko] undefined!
WARNING: "exit_mm" [/home/adi/Desktop/nist-dymo/nist-dymo.ko] undefined!
WARNING: "__in_dev_get" [/home/adi/Desktop/nist-dymo/nist-dymo.ko] undefined!
make[1]: Leaving directory `/usr/src/linux-headers-2.6.20-16-generic'
root@roshini:/home/adi/Desktop/nist-dymo#
Installing and loading single kernel modules

- Modify Makefile to support single module compilation.

*Loading single Module:*
- Insmod.
- Modprobe.
- Used to load Linux kernel modules that are not loaded by default.
- Example: Netfilter module.
5. Cross Compilation: Changing the Makefile

- Virtual environment on host to make protocol run on Gumstix.
- Modify Makefile according to Gumstix configuration (arm Linux)
6. Porting the protocol

- Cannot proceed with the porting of DYMO protocol due to the 3 warnings.
What can be done?

- Define equivalent entities to `ip_rt_ioctl`, `exit_mm`, `__in_dev_get`, to suit the current kernel version.
A Brief Survey

- Manos Antonakakis, from Georgia Institute of Technology
- Has carried out a mobile ubiquitous project using DYMO on Gumstix.
- Further contact with him can open opportunities to enhancements.
Future enhancements: Team Project

- Port to Gumstix by resolving warnings.
- Create a multihop environment.
- Add the location aided module
THANK YOU.
Questions?