



DYMO on Gumstix

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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-dym
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

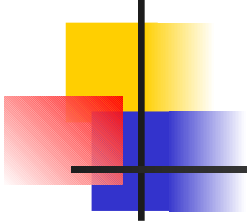


- Manos Antonakakis , from Georgia institute of technology
- Has carried out a mobile ubiquitous project using DYMO on Gumstix.
- Further contact with him can open opportunities to enhancements.

Future enhancements: Team Project



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



THANK YOU.
Questions?

