

eCOS – Gforth pt.2

Development

- Host system – Updated to Fedora 14 with x86_64 arch.
- Development system – KVM virtual system updated to Fedora 14 with i386.
- Target Utility – RedBoot that has Gforth as a command [do_gforth()]. RedBoot supports C-like `main(int argc, char* av[])` command line structure.

Problems

- eCOS Configuration – Adding Gforth to eCOS package directory structure.
- Forth Source Blocks/Files. Booting from Floppy/USB Thumb-drive does not support file-systems.
- Loading of Forth blocks using RedBoot command, load.

The Problems

- eCOS configuration currently does not support an x86_64 host. With time it can be ported.
- The aim is to boot from a USB Flash drive, but eCos does not support host USB, only slave USB. There are USB stacks, but need to be ported to eCOS.
- Forth screens can not be read in from USB Flash drive. They must be loaded, via the RedBoot “load” command to memory.

The Problems

- In Gforth, there are Forth source files (.fs) that eCOS can not support.

Gforth under eCOS/RedBoot

- RedBoot does not run with eCOS scheduling. It is started from within the `cyg_start()` function. This is a good thing. (see below)
- Gforth will run as a RedBoot command.

HAL Startup Procedure

`cyg_start()`

`cyg_prestart()`

`cyg_package_start()`

`cyg_user_start()`

Start the scheduler

Gforth under eCOS/RedBoot

- Gforth will run as the highest priority task. This allows examining other lower priority tasks while eCOS scheduling is suspended.
- The eCOS scheduling of Gforth user tasks will be resumed at the Gforth prompt using as yet an unknown Forth command.
- To suspend eCOS scheduling, the user can simply press control-C. This will resume the Gforth task and suspend the user tasks.

Gforth under eCOS/RedBoot

- The user tasks can be examined for a variety of aspects such as task stack usage, priority, next Forth word to be executed, debugging a task.

The Solutions

- Getting Redboot to boot with KVM just needs work and time. Solved!
- Booting RedBoot from GRUB nows boots consistently.
- There are people attempting to integrate host USB to eCOS. Search the Web for suitable USB host stack. This includes OTG (On The Go)

eCOS Capabilities

- Dynamic libraries.
- PCI configuration, ...
- USB slave.
- Virtual development on PC for applications.
- Porting to target processor involves drivers only.

The New Excuse

I'm Fixing Other People's
“Big Wheels”
Except Mine!