CELF Open Test Lab

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CELF Test Lab

- Shared resource for CELF members and open source community
- Goal is to support 4 use cases:
  - Regression testing (multi-version testing)
  - Multi-platform testing
  - Remote Interactive testing
  - Private testing
Vision

• Show community developers trouble spots that affect embedded use of Linux
  – e.g. Size growth of kernel over time
• Allow vendors to show off supported features to customers
  – e.g. power management or realtime performance
• Support developers who can’t get access to hardware
  – e.g. community developer wants to test project on multiple architectures
• Provide embedded developers easy access to tests to check their own work
  – e.g. corporate developer wants to check that no system calls are broken due to kernel changes

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CELF Test Lab Info

• Defines an architecture for host-target style testing (not found in other test systems)
• Uses 3-tier architecture
  – Server
  – Host
  – Target
Lab Diagram
Server

- Server provides test materials and test scheduling
- Has web interface showing:
  - test systems
  - test tasks (current jobs)
    - test results
  - test software
    - OpenEmbedded software
    - individual test suites
- Allows users to schedule jobs, check job status, examine results
Host

- Downloads and executes test from the server
- Provides network services to target
- Can be in lab, or remote machine (satellite node)
- Has web interface for examining:
  - target status
  - installed tests
  - locally-scheduled jobs
- Performs software builds and controls target
Target

• Is actual target board
• Required features for automation:
  – ability to load new kernel without manual steps
  – ability to reboot board without manual steps
  – way to login to target from host (serial console is strongly preferred)
• Normal setup:
  – tftp boot kernel from host
  – nfs root filesystem mounted on host
  – console over serial port
  – programmatic control of power
Interconnections Detail

• One server, residing in San Jose
• Hosts can be internal or external
• Multiple targets per host
• Each target has:
  – network connection to host
  – serial connection to host
  – power controlled from host
CELFL Test Lab
Protocols

• In order to support corporate developers, only HTTP is used between host and server
  – Only protocol guaranteed to work through corporate firewalls
  – Still need to work on OpenEmbedded build using only HTTP (outstanding issue)

• Interactive testing (accessing boards in lab) uses ssh
  – Corporate developers need outbound ssh
  – May need to write web interface to in-lab ssh
Status

• Basic lab infrastructure is set up
  – Recently moved to new facility in San Jose
  – 1 Server, 2 hosts, 6 targets, +supporting equipment

• Supported features:
  – Tests can be scheduled to run on multiple boards
  – Can schedule a recurring test (specify repeat interval)
  – Builds OpenEmbedded distribution from scratch
Issues

• Not many boards right now
  – Working on satellite host/target support
• Have a few tests:
  – LTP - Linux Test Project
  – printk-times test
• Plan to expand tests in coming months
Satellite Nodes

- Not supported yet - work in progress
- Will be able to register your host/target with the lab
  - Can register for part-time use (e.g. at night)
- Host polls server for jobs, and runs them on target
- Can schedule local jobs through local interface
Test Lab Demo

• Demonstration of running a test in the lab
  – Web Interface
    • Requesting a test
    • Examining test results
  – Interactive use
    • ssh and target
  – Bloatwatch results
What’s next?

• Reservation system for interactive use
• Need to populate tests specific to CELF requirements
• Need more systems - Satellite nodes
• Integration with other Linux automated test systems.
What can you do?

• We want to test satellite host software by the end of the year.
• Are looking for volunteers with host/target systems to be “guinea pigs”
• Please contact me, or join the mailing list:
  – opentestlab@tree.celinuxforum.org
Resources

• Lab information: http://tree.celinuxforum.org/CelfPubWiki/OpenTestLab
• Lab web site: http://testlab.celinuxforum.org/
• Lab wiki: http://testlab.celinuxforum.org/otlwiki
• Lab mailing list: http://tree.celinuxforum.org/mailman/listinfo/opentestlab
Thanks!

Questions and Answers.