

White Rabbit Switch Testing

Healthy Hardware

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November 23, 2012

- 1 Status Report
- 2 White Rabbit Switch Tests
 - Pre-Test
 - The Bootstrap Test Procedure
 - Actual Testing
- 3 Testing Framework
- 4 White Rabbit Test-Bencher

Report Points

White Rabbit Switch Tests

The procedure used to detect failure in production.

Testing Framework

blabla

White Rabbit Test-Bencher

blabla

The first steps for production test are:

- FlyingProve done at the assembly company
- Visual inspection of the PCBs (SCB & Mini-BP)
- Electrical inspection of the PCBs

The Bootstrap Test Procedure

The test of the switch has been intended to be as flat as possible, this mean that we intend to test a component with the less dependency possible of other component.

However we need to have at least the following working:

- ARM (detected during the flashing stage)
- DDR (test during the flashing stage)
- Linux load using ethernet (TFTP/NFS)¹

¹Can be load directly using DDR in case ethernet fail

Actual Testing I

The testing procedure is a serie of scripts:

- 001-MD5 Checking.sh: Check MD5 of needed files
- 002-USB.sh: Check the USB (Not implemented)
- 003-FPGA Bridge.sh: CPU (EB1) i- \bar{c} FPGA (WB)
- 004-LED Checking.sh: LED of CPU & miniBP
- 005-FAN Checking.sh: FAN on/off and PWM speed
- 006-FPGA QDRIISstress.sh: Stress the QDDR test.
- 007-NF MT29F4G16.sh: NAND flash read/write full on (About 15m)
- 008-DF AT45DB642.sh: Dataflash all position (6m).
- 009-FPGA TempRetrieving.sh: Retrieve the temperature
- 010-Flashing.sh: Flash with the latest stable firmware

Actual Testing II

testing.sh

Declare various bash function in order to generate proper logging information

- S/N of the board
- Timestamp of each steps
- Error failure codes
- Logging history

SHW TOOL

Accessing to libswitchhw to test

- LEDs (GPIO, wishbone I2C)
- FANs (PWN fan, GPIO)
- Temperatures (wishbone I2C)

Actual Testing - Report

The following is an example of the log history for board 014 (v3.2)

/tftpboot/rootfs/alpha-pts/logs/output-032014_history.log

```
-----  
Fri Oct 12 12:24:08 CET 2012
```

```
001 > OK (00'02)  
002 > OK (00'00)  
003 > OK (00'10)  
004 > OK (00'52)  
005 > OK (00'52)  
006 > OK (00'13)  
007 > ERROR ( Sub0:OK Sub1:OK Sub2:OK Sub3:OK Sub4:50% Sub5:OK Sub6:OK) (22'40)  
008 > OK (02'47)  
009 > OK (00'14)  
010 > OK (04'51)
```

```
-----  
Fri Oct 12 13:46:14 CET 2012
```

```
007 > OK (22'24)
```


Conlusion

By doing these tests we improve the quality of the product:

- Checking the components
 - Checking the connection
 - Debugging the code (API)
 - Understanding better the sw/gw
- ⇒ **Improve client support**

Report

White Rabbit Test-Bencher I