YANG model for management of Network Tester

- IETF116 Hackathon
- March 25-26, 2023
- Online



The project

Specification:

* <u>draft-ietf-bmwg-network-tester-cfg-02</u>

Client side:

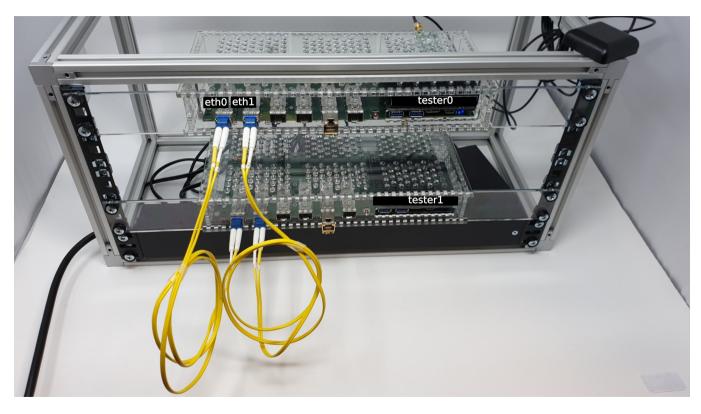
* Test script - rfc2544-benchmark (Python)

Device side:

- * Software YANG/NETCONF server instrumentation code (C)
- * Firmware (<u>Verilog</u>)
- * Hardware off-the-shelf FPGA module Ultra96 + 6x SFP+ network programmability kit shield (<u>KiCAD</u>, <u>Walk-through</u>)

Network testers

+		+
eth0		eth1
+-< TG	tester0	TA <-+
1 1		
+		+
1	++	
+	-> DUT >-	+
	++	
+		+
eth0		eth1
+-< TG	tester0	x
1 1		
+		+
++		
DUT		
++		
+		+
1 1		
+-> TA	tester1	
1		
		1.



Devices Under Test - DUTs



Results

- * DUT0 https://github.com/lightside-instruments/rfc2544-benchmark
- * DUT1 https://github.com/lightside-instruments/rfc2544-benchmark/tree/dut1-sfp-ge-t-1000bast-tsfp
- * DUT2 https://github.com/lightside-instruments/rfc2544-benchmark/tree/dut2-tl-sg105e
- * DUT3 https://github.com/lightside-instruments/rfc2544-benchmark/tree/dut3-tl-sg105e-qos-50-percent-bandwitdh

Design and implementation

```
NETCONF Server (Model (YANG), Implementation Generator module (\underline{C}), Analyzer module (\underline{C}))
TRAFFIC-GENERATOR-SW (C)
                                         TRAFFIC-ANALYZER-SW (C)
Socket API
                                          Socket API
Kernel
        Sync ->{RTCLOCK}(Verilog)
                                              Kernel
 DMA
                                            DMA
  | [AXI]
                                              [AXI]
 MAC TRAFFIC-GENERATOR-HW (C, Verilog)
                                           MAC
                                                   TRAFFIC-ANALYZER-HW (C, Verilog)
   GMII MUX
      | [GMII]
                                                  | [GMII]
     PHY
                                                 PHY
    SFP+ TX
                                                SFP+ RX
```

* - underlined text has links to repositories

Mobile lab with DUT - front



Mobile lab with DUT – back



The End