Tales From the Field: L1 Issues

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Who am I?

Texan
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Napoleon Complex
Why Are We Still Talking About L1?

Never Stopped Dealing With L1

Traditional vendors hid them effectively by \{black, white\} listing them

Open Networking, all facets are open

Even warts

Who owns L1?

Closing Your Eyes Doesn’t Make the Problem Go Away

Same is True with NOSes and Hardware
Whatcha Talkin ‘bout Willis?
Switch Examples

“Optimized” I2C bus → “Optimized” BIOS/CPLD

Having to “cold reset” the ASIC on every reboot

Not handling a proper shutdown command

Fix requires removing battery and shorting capacitors
Pluggable Examples

Out-of-spec behavior (either defined or ill-defined in spec) only seen in “certain” hardware combinations

Some pluggables taking more than 1 I2C address (X num on same box can lead to I2C bus hang...No Bueno)

Incorrect EEPROM programming
NOS Examples

Not recognizing media types reliably

Not following the standard link settings

EXTREMELY problematic in 25/100G settings

Not reading the extended link settings option

Punting on L1 altogether
Putting out 100G spec **BEFORE** 25G spec
So... Who Owns L1?

Tenant of Open Networking is that a user can change out any portion of the stack at any time.

**Implies**

Switch, pluggable, and NOS have equal ownership in Open Networking.

If *only* we had a way to independently verify a switch with these pluggables running on this NOS actually interoperated... *hmmm*