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# Tales From the Field: L1 Issues

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**OPEN HARDWARE.**

**OPEN SOFTWARE.**

**OPEN FUTURE.**



Who am I?



Texan

Occasional blogger\*

Napoleon Complex



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# 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

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# Whatcha Talkin 'bout Willis?



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# 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

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# 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

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# 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

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# Industry Examples



Putting out 100G spec **BEFORE** 25G spec

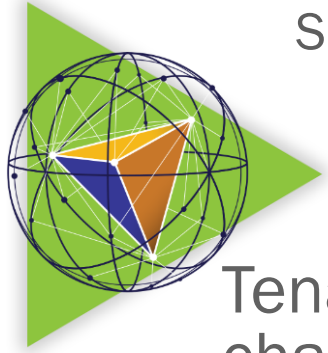
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So... Who Owns L1?



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

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