

# The Two C's

Why we need a common host-budget for the  
Next Generation 100G Host/Module Interface

Dan Dove

Applied Micro

Next Generation Optical Study Group – CAUI-4 ad hoc

19 Aug 2012





# Assertions

---

- It is in the best interest of the Industry to have a common host budget for optics and copper modules
- Multiple Specs lead to multiple host interface compliance parameter sets which lead to
  - Incompatibility between 10dB modules and >10dB hosts
  - Incompatibility between copper cables and >10dB hosts
- Its not necessary for the IEEE to spec new compliance parameters for >10dB hosts.
  - If a system designer wants >10dB host budget;
    - They own the increase to transmit and receiver circuitry necessary to compensate for their additional loss
    - They own the necessary cost/benefit of maintaining compliance parameters at the host compliance interface
    - Their additional requirements do not impact module power, cost, compatibility

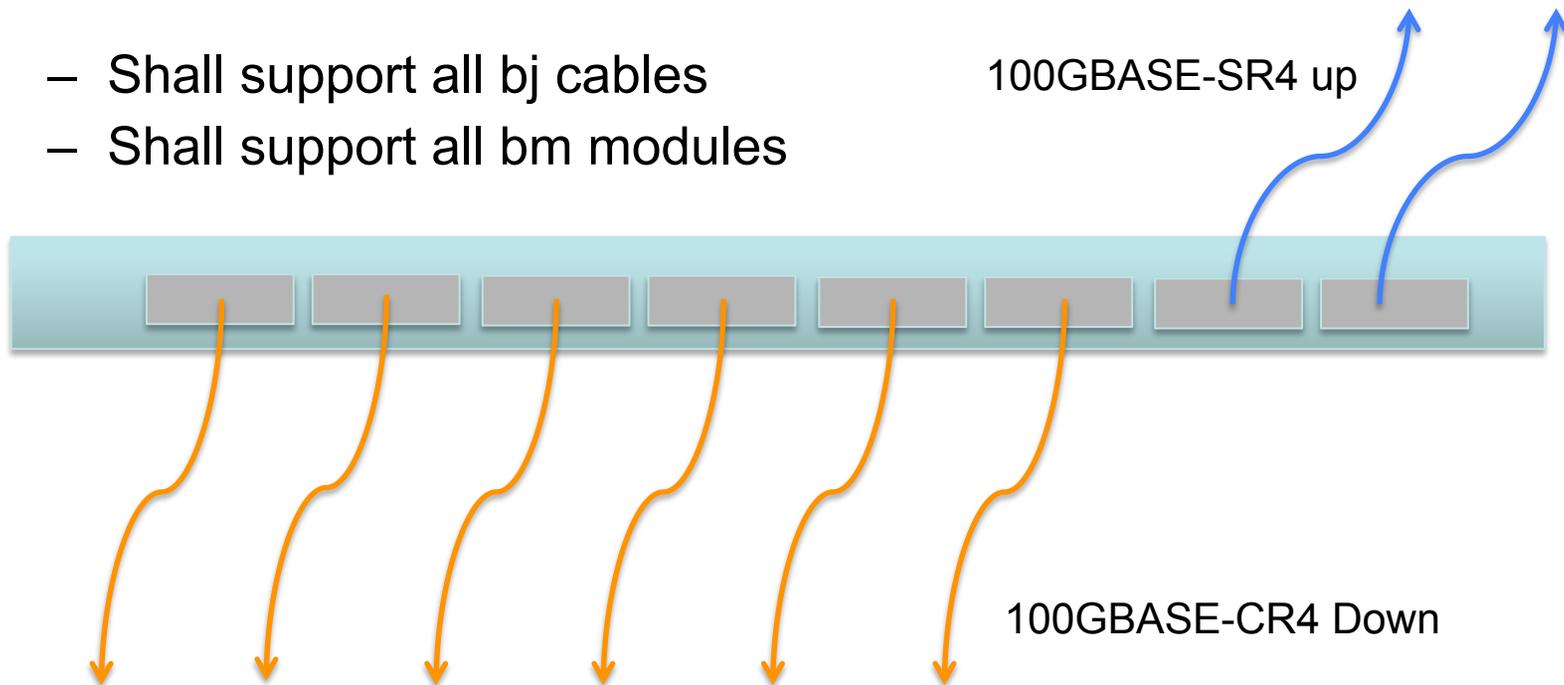




# Compliance and Compatibility

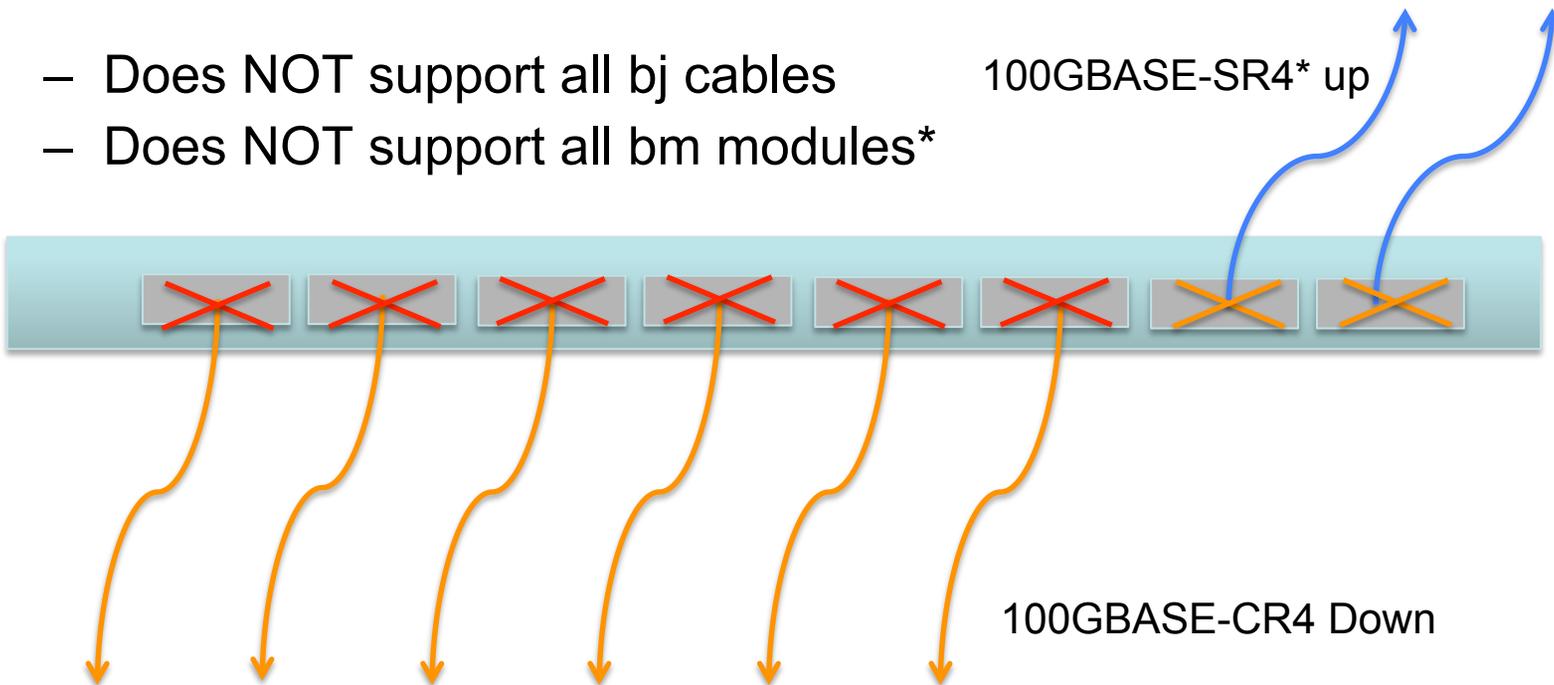
---

- Purchase a switch with MSA modular interface (10dB host budget)
  - IEEE 802.3bj copper support
  - IEEE 802.3bm optical support
  - Shall support all bj cables
  - Shall support all bm modules



# Customer Confusion

- Purchase a switch with MSA modular interface (>10dB host budget – An invisible spec to end users)
  - IEEE 802.3bj copper support? It looks just like the other product
  - IEEE 802.3bm optical support? It looks just like the other product
  - Does NOT support all bj cables
  - Does NOT support all bm modules\*





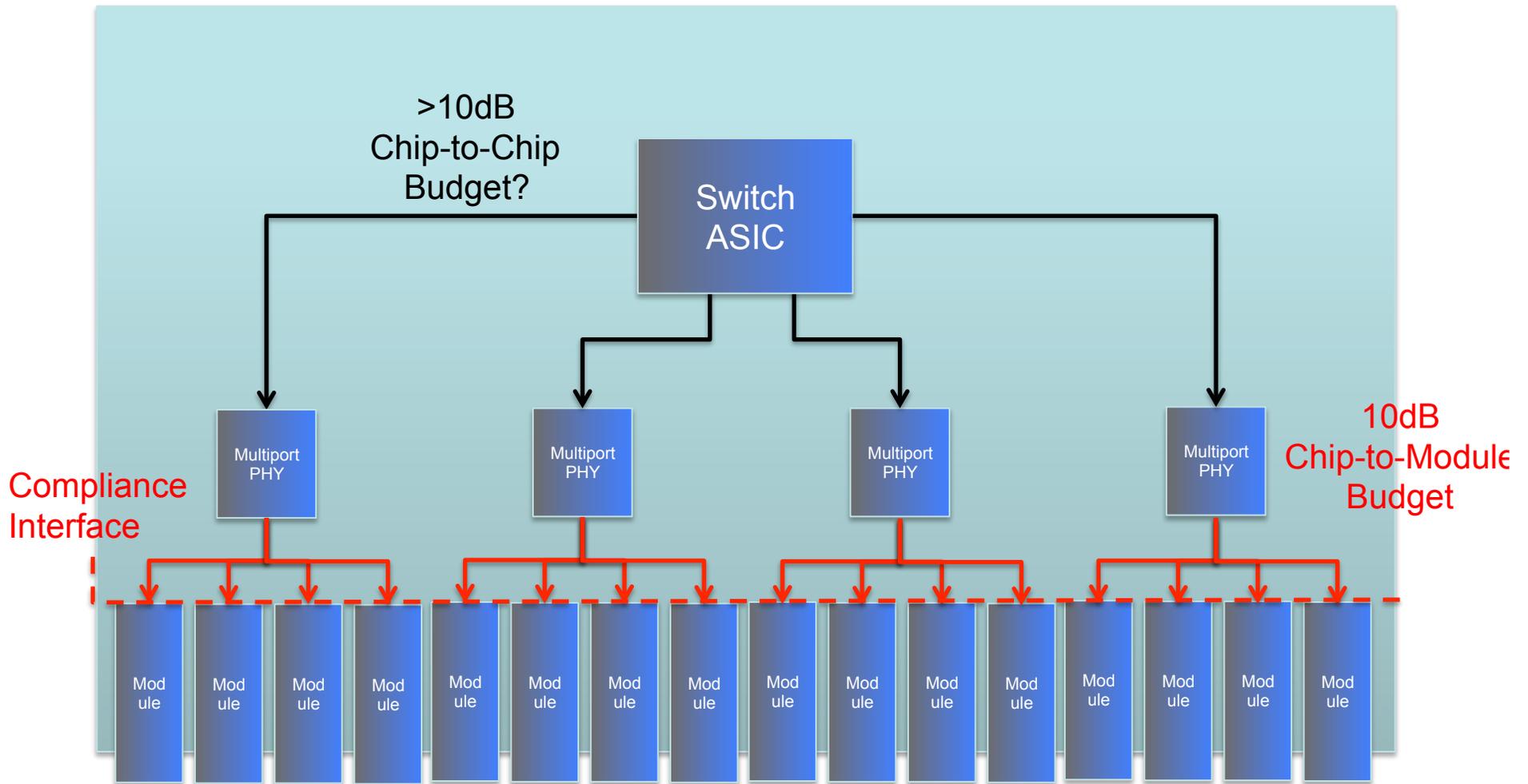
# Customer Confusion

---

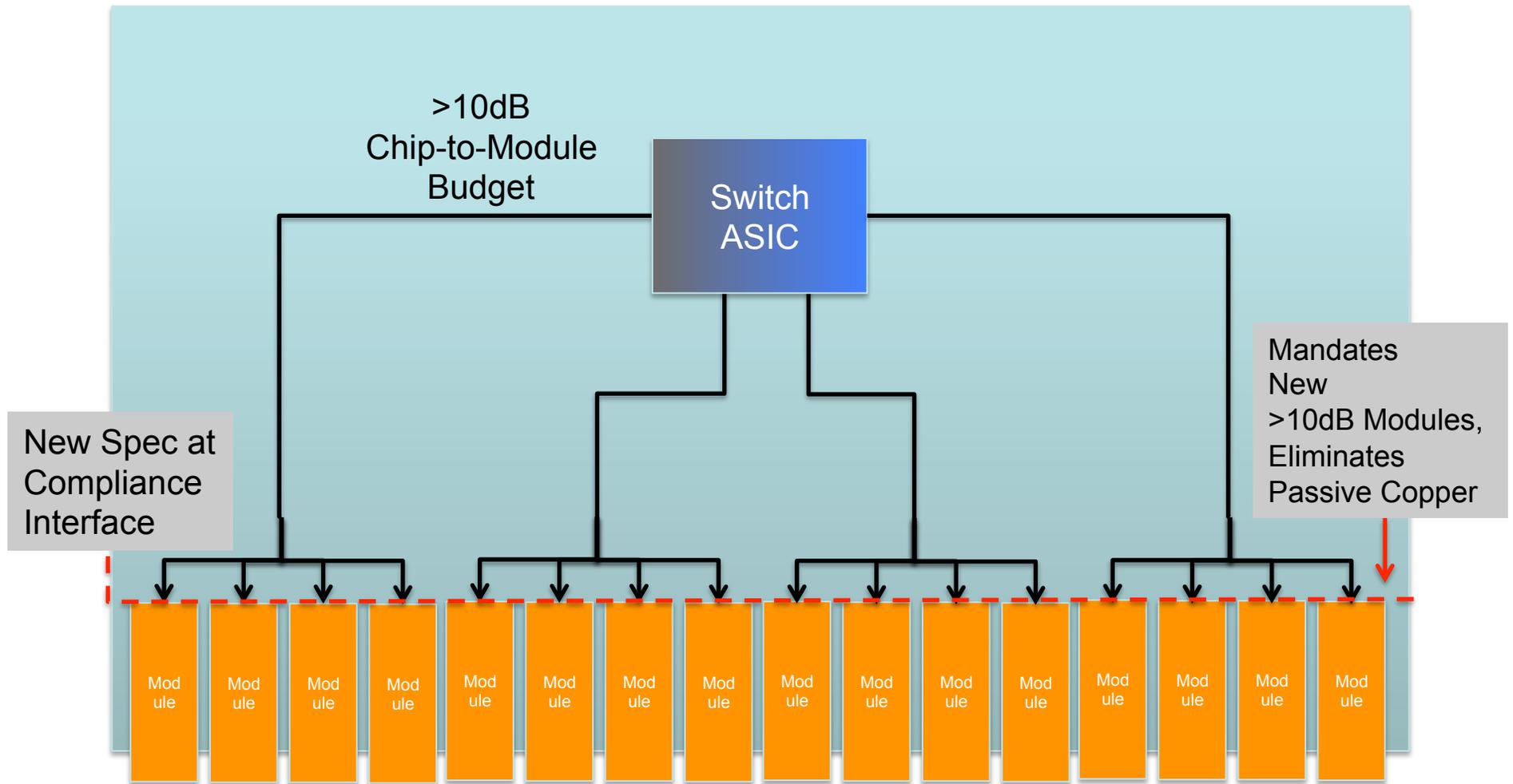
- *Why do my old modules not work in my new switch?*
- *Why do my old cables not work in my new switch?*
- *Why do we have two identical switches that have the exact same macro-functionality, but different compatibility?*
- *How do we identify the compatibility matrix for a list of switches, transceivers and cables when they all have the same IEEE 802.3bm and IEEE 802.3bj labels?*
  - *We expect that SR4 and LR4 would not interoperate because they are different names, but we would expect two SR4 transceivers to work in the same switch*
  - *We expect the same SR4 CFP2 transceiver to work in different compliant switches*
- *Why did the IEEE define two different specifications for the same interface?*



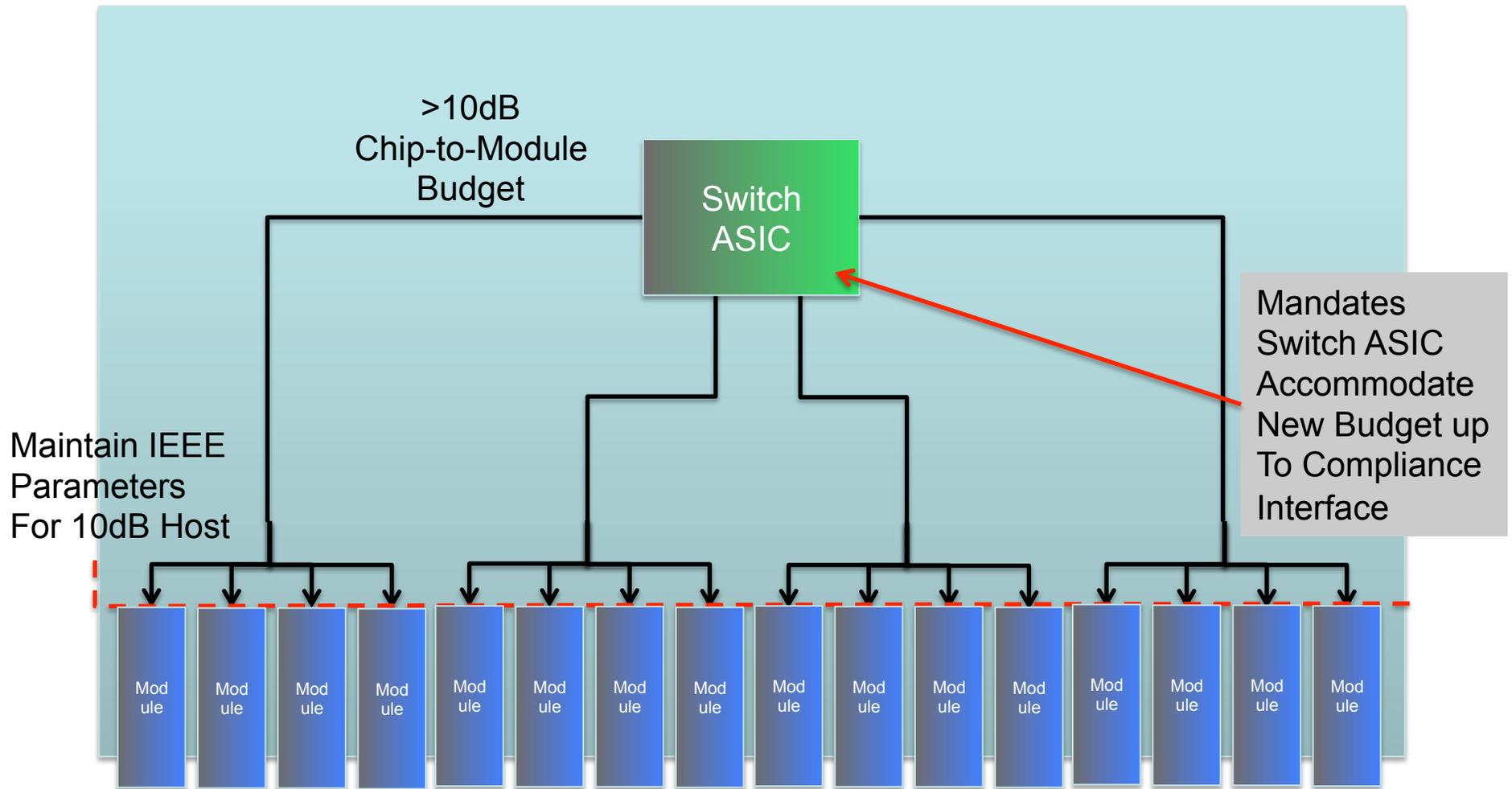
# Do We Need Two Interfaces?

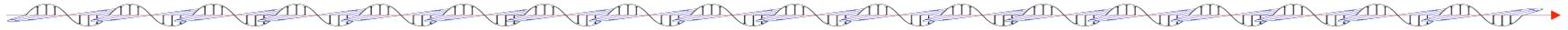


# Do We Need Two Interfaces?



# Do We Need Two Interfaces?



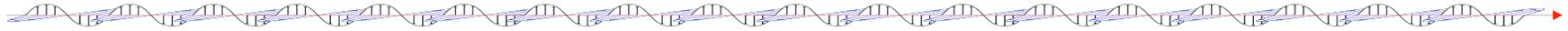


# Observations

---

- IEEE doesn't specify host budget, but rather uses an assumed host budget to specify electrical parameters at compliance point (host/module connector)
- IEEE doesn't specify host budget implementations
  - Implementer can choose lower host budget and remain compliant
  - Implementer can choose higher host budget, and with accommodations in design, remain compliant
    - Accommodations are based on cost/complexity tradeoffs by implementer rather than imposed upon entire industry
- When multiple parametric compliance sets are established, confusion reigns and the ultimate result is that for general applications, Highest Common Denominator is virtually mandated
  - Customers would demand >10dB modules to ensure compatibility with all host types
    - Higher Module Power, Cost – perhaps lower density as a result
    - Copper Cable support might mandate active cables



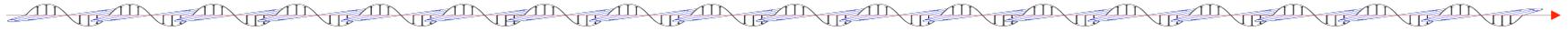


# Conclusions

---

- It is in the best interest of the Industry to have a common host budget for optics and copper modules
- Multiple Specs lead to multiple host interface compliance parameter sets which lead to
  - Incompatibility between 10dB modules and >10dB hosts
  - Incompatibility between copper cables and >10dB hosts
- Its not necessary for the IEEE to spec new compliance parameters for >10dB hosts.
  - If a system designer wants >10dB host budget;
    - They own the increase to transmit and receiver circuitry necessary to compensate for their additional loss
    - They own the necessary cost/benefit of maintaining compliance parameters at the host compliance interface
    - Their additional requirements do not impact module power, cost, compatibility





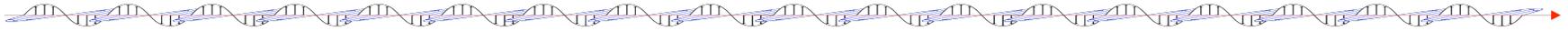
# The Two C's

---

**Compliance & Compatibility**  
Or  
**Customer Confusion**

**I choose the former!**





---

# Q&A

