



WDM C-Band Channel Plan for 100G nR4

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Previously, there have been multiple presentations on WDM PICs for nR4

- ▶ Martin_01_0712: advantages of using WDM PICs
 - Low power
 - Compact size
 - Low-cost transceiver
 - Low-cost interconnect
- ▶ Weirich_01_0712: wdm cost reduction through integration
 - Reduction of manual assembly
 - Improved manufacturing yields and uniformity
 - Improved robustness
- ▶ Martin_02_0912: silicon photonics WDM solutions reduce cost
 - Low-cost FTTH-style laser;
 - Electronics-style, non-hermetic packages
 - Reduction in number of piece parts.
- ▶ Martin_01_0912: recommendation for a C-Band wavelength plan
 - C-Band scales to 8, 16 or 32 channels
 - Leverages a large, embedded base of industry experience
 - Broad base of component suppliers.

Some of the advantages of C-Band



- ▶ Supports a wide range of channel plans
- ▶ Migrates easily to 400G and 1.6T
- ▶ 15 years industry experience
- ▶ Installed base of > 1m line cards
- ▶ Supported by multiple technologies

C-Band Channel Plan Objectives



- ▶ Use 100 GHz grid, but wider spacing
- ▶ Design from the beginning to scale to 8, 16, and 32 channels
- ▶ Spacing considerations:
 - Temp range of 0-70 degrees C
 - Designs options without TECs

Straw Proposal for C-Band Channel Plan

Channel	4 ch	8 ch	16 ch
0	1523	1523	1523
1	1531	1531	1527
2	1539	1539	1531
3	1547	1547	1535
4		1555	1539
5		1563	1543
6		1571	1547
7		1579	1551
8			1555
9			1559
10			1563
11			1567
12			1571
13			1574
14			1579
15			1583

Migration Path To 400G

- ▶ 1000 GHz channel separation
 - Best tradeoff for 4 channels
 - No TECs required to support full temp range
 - Fits at least 2 channels within same laser gain spectrum
 - Low power for either QSFP or CFP4 package
- ▶ 1000 GHz also works for 8 ch 400G
 - Add four more channels
 - Double the speed
 - OIF already working on CEI-56G VSR
 - Modulators and detectors already support 56 G
 - May also consider duo-binary or PAM4
- ▶ 16 Channel 400G Option (backup)
 - 500 GHz spacing to stay in C-Band
 - 16 lasers: two arrays of 8 lasers
 - Temp scheme a little tougher, but electronics might be easier

Summary



- ▶ IEEE needs a roadmap to 400G and 1.6T
- ▶ C-Band is the best choice for that roadmap
- ▶ It offers immense flexibility for expansion
- ▶ Invitation to join C-Band ad hoc