

Global Networking Services

Parallel Fiber, a Data Center Operator's Perspective

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A Cloud Scale Data Center Operator's Perspective on Fiber Infrastructure

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- Robert Lucas – Bandwidth10

A Cloud Scale Data Center Operator's Perspective on Fiber Infrastructure

- All other things equal do we prefer to use a parallel fiber solution over a two fiber solution?
 - NO
- Are we deploying parallel fiber solutions?
 - YES
- Why are we deploying parallel fiber solutions?
 - Lowest overall interconnect cost including fiber, interfaces and power consumption
 - Future proofing the fiber infrastructure

Why Do We Use Parallel Fiber

- We are currently deploying 40Gb SM based parallel fiber solutions
- Taking into account the cost of the interfaces, the cost of the fiber infrastructure and the cost of power over a multi year period the use of a parallel fiber solution provides us the lowest overall cost solution
 - Average length between 100-200m
 - Maximum length between 200-300m
 - The fiber costs are based on a 12 fiber link
- We intend to keep deploying parallel fiber solutions until lower cost solutions are identified
- Even at cost parity we would prefer a parallel fiber solution as we would rather invest in a multi generation asset like fiber than a single generation asset like an interface

Looking Forward

- We plan on replacing server and associated networking equipment every three years
- The general location of the servers and networking equipment will stay the same for future generations so the fiber infrastructure can be reused
- If the fiber infrastructure is reused it will be considered a no cost input for the link cost comparisons
- A move to a two fiber solution could ironically increase the fiber costs as a MPO to LC breakout cable would be required
 - Assuming a 1 for 1 replacement or less of the 40Gb links
- Even if we are deploying a two fiber solution we may decide to deploy a parallel fiber solution to future proof the fiber infrastructure
 - Initial 400GE interfaces are likely to require parallel fiber
- We strongly prefer an interface to have a pigtail solution removing the need for a fiber jumper

Looking Forward to 100Gb

- We expect to be one of the first companies deploying 100GE based data center switches
- We can not hope that the LR4 cost reductions have been achieved when we need to make the transition to 100GE solutions
- The 100GE solution needs to be lower cost per bit than 40GE solutions on day 1
- Multiple companies have PSM4 solutions in development and availability should line up well with 100GE switches

Summary

- We are satisfied with our current parallel fiber deployments
- They are providing us the lowest overall interconnection costs
- We will continue to deploy parallel fiber solutions as long as they provide us the lowest overall interconnection costs
- We plan on using existing parallel fiber in future deployments
- Parallel fiber interfaces should use a fiber pigtail to remove the need for a MPO to MPO fiber jumper