

Datacenter Fiber and Cable Standards Insights

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Supporters

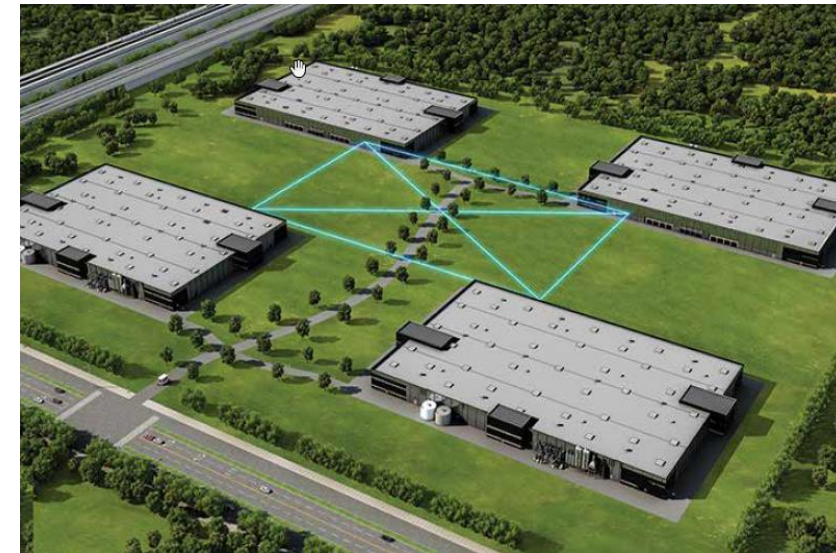
- Earl Parsons, Commscope
- Mabud Choudhury, OFS
- Flavio Marques, Furukawa Electric

Introduction

- For datacenter links typically found on large datacenter campuses and less than 2 km, more insight is required to understand deployment conditions and determine how they may impact channel models
- Knowing which fiber and cable standards DC operators usually reference or specify may help in that understanding
- Understanding typical cable lengths which are spliced or connected together in these links may also inform channel model decisions

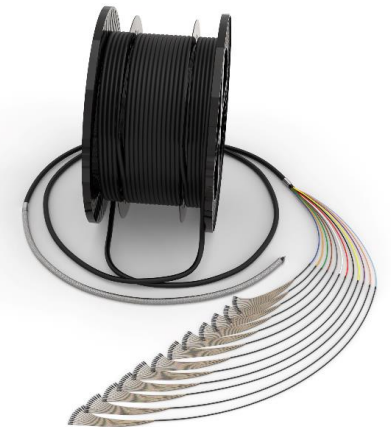
Fiber Standards typically specified in DC builds

- Data collected thus far indicates that either ITU-T G.652D, G.657A1 or G.657 A2 fibers are typically specified in single mode datacenter builds. IEC 60793-2-10 is usually specified in multimode links.
- ITU-T G.657A fiber is often preferred to ensure better performance in case of tight bends encountered during cable routing.
- These cables have been as large as 6912 fibers per cable.
- Even if G.652D is specified, cable manufacturers may choose G.657A fibers to achieve cable performance requirements.
- All G.657A1 and A2 fibers are G.652 compliant.



Cable Standards typically specified in DC builds

- Cable standards specified in datacenter builds can vary greatly between operators and regions.
- The majority of these cables are indoor or indoor/outdoor designs which adds fire safety requirements.
- Varied campus topologies dictate different cabling solutions.
- Pre-connectorized cables are often used to reduce field labor times.
- Single cable links (no concatenation) are the norm to avoid splicing time and cost on site.
- In North America, ANSI/TIA 568, ICEA, NEC (for US, Mexico, Costa Rica), and CEC (Canada) are typically referenced in cabling standards.
- In EMEA, ISO/IEC 11801, EN (CEN and CENELEC), ATEX, IEC Ex, IEC, CPR and ROHS are typically specified.
- More information needed for APAC.



Conclusions and Questions

- ITU-T G.652D and G.657A are usually specified in DC builds and both should be taken into consideration when developing channel models
- Concatenation of fibers for links of 2 km and less is unlikely
- Better insight into what chromatic dispersion penalties are acceptable for future links will help to optimize any new constraints on current specifications
- More data on expected DR/FR split for future speeds may impact future proposed solutions
- Exploring the viability of wavelength grids between CWDM and LWDM spacing that would allow uncooled lasers may also be impactful

Thanks!