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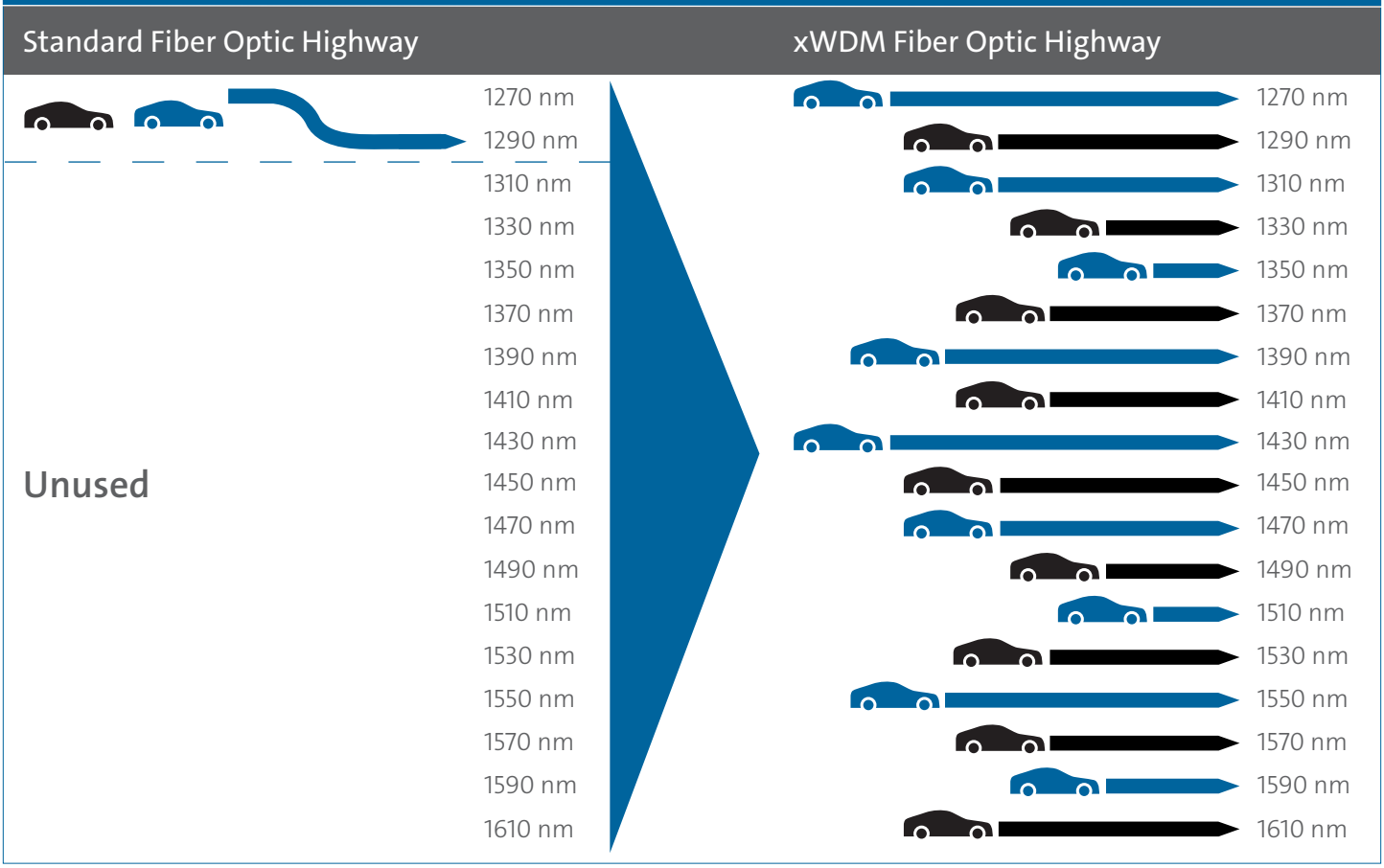
Getting More

Out of Your Existing Fiber Network

By Ashley Cates and Courtney Gates

Communications networks must evolve to keep up with increasing consumer demand for bandwidth. For network operators, this can mean making significant infrastructure investments to keep pace with consumer demand. Wavelength division multiplexing (WDM) is a welcomed alternative to traditional fiber infrastructure upgrades – it boosts network performance by optimizing existing fiber utilization.

Relating WDM to driving on the highway



What it means

If you think about your current network as a highway with only one open lane, WDM devices open all available highway lanes to allow traffic to flow more freely. Without WDM technology, you can only send one service down the single-lane fiber optic highway; however, with WDM technology, you can send multiple services down the fiber optic highway since there are multiple lanes. Due to the evolution of communication networks over the last 10 years, a major concern in today's connected world is fiber exhaust, where the demands for fiber exceed the amount of available fiber in the network.

WDM technology can alleviate fiber exhaust by requiring fewer fibers to transmit and receive multiple services. WDMs allow you to get more out of current infrastructure by utilizing the untapped capacity of existing fiber to deliver many services across the same network.

How it works

WDM technology maximizes the performance of an existing network by combining multiple transceiver device channels to transmit many signals over a single fiber. Services occupy specific wavelengths that are combined and divided with WDM technology. At the signal source, a multiplexer combines several service wavelengths for travel within an optical fiber. At the receiving device, a demultiplexer separates the service wavelengths. With multiple fiber "lanes," many services can travel on the same optical fiber highway; for example, voice, data, and video services can be combined via a multiplexer, travel down the same fiber highway and be demultiplexed once they reach their destination. By allowing individual services to be assigned discrete wavelengths within a single fiber, WDM systems improve functionality of networks.

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Where it's used

As fiber demands in fiber to the home (FTTH), Cable TV (CATV), and long-haul networks increase with the rise of more connected technology, network operators are being challenged to provide faster and more nimble networks. In many common communications spaces, operators leverage WDM technology to meet their evolving infrastructure needs. FTTH networks have relied on splitters and WDM devices for years. When evolving from a splitter-based PON to a next-generation PON, more micro-optic devices are required to ensure your network is future-ready. Transformation is occurring within HFC networks due to movement away from traditional RF cabling. CATV networks are currently capacity-constrained, which poses concern for network designers and installers. As the headend and the OSP transition to new network architectures, designers and installers can replace traditional coax with high-density fiber optic cabling, cross-connects, and WDM devices. Legacy long-haul architectures have consistently leveraged WDM technology throughout their optical infrastructure. These technologies have provided cost savings and allow operators to service metropolitan, long-haul, and submarine networks.

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Want to **get more**

out of your existing network with WDM technology?
Check out **Corning's webinar recording** on WDM, here.

Corning Optical Communications LLC • PO Box 489 • Hickory, NC 28603-0489 USA
800-743-2675 • FAX: 828-325-5060 • International: +1-828-901-5000 • www.corning.com/opcomm