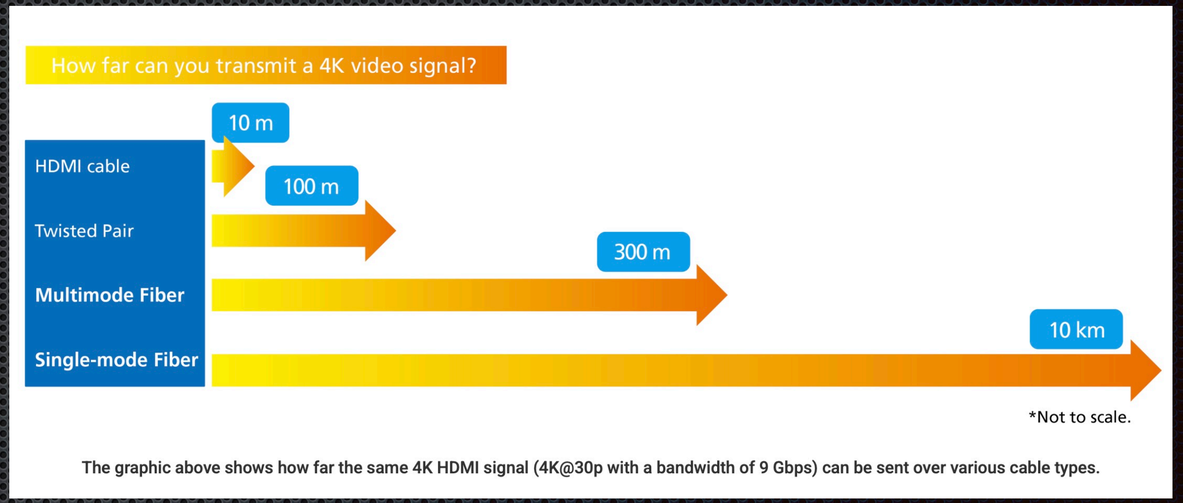
Longer Transmission Distances

Fiber optics can transmit data effectively over several miles. Using single-mode fiber can extend this range up to 25 miles without losing signal quality. This capability reduces reliance on repeaters, simplifying network design and setup.

In terms of photons versus electrons, the light in fiber optic cables travels at roughly two-thirds the speed of light, while electrons in copper cables barely reach one percent of that speed.

This immense speed advantage has an extreme effect on potential distances. While copper cables are mostly limited to a 330 feet standard distance, fiber optic cables can extend large bandwidth content over extremely long distances in a small diameter.

Multimode fiber can triple this distance for a 4K HDMI signal, for example, and depending on the kind of cable, the wavelength, and the rest of the network, single-mode fiber can extend the same signal up to 12.4 miles.



The graphic above shows how far the same 4K HDMI signal (4K@30p with a bandwidth of 9 Gbps) can be sent over various cable types.

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