FIBERDYNE LABS
Fiber Optic
Networking Products

Application Note

Fiberdyne Gateway Solution (CWDM Optical Mux System)

Keywords

Application, CWDM, Gigabit Ethernet, 1000Base, Fiber-optics, Media Converter

Summary

This system multiplexes several Gigabit Ethernet links onto a single fiber or onto a fiber pair. Primarily, the Gateway is used in "campus/metro" environments, where the number of data streams exceeds the number of fibers, or where customers need more bandwidth from their existing equipment.
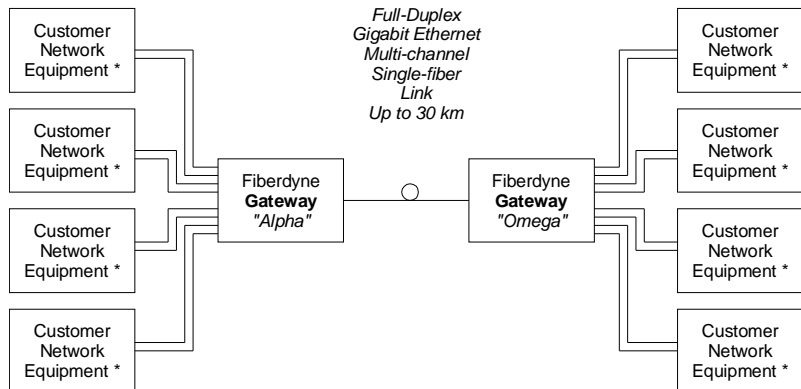
Scenario

Customers have discovered that using CWDMs can be less expensive than installing new fiber. Additionally, some users cannot acquire or install more fiber. Therefore, they must add signals (i.e. data streams) to their existing fiber. Multiplexing, using CWDMs, provides the solution.

Question

How does the new system work?

Notes/Answer

One to four, full-duplex, 1000Base links can be combined onto a single fiber. The Fiberdyne system will convert from any native media (e.g. 850 nm fiber) to single-mode fiber. Each converted link uses unique CWDM wavelengths. These wavelengths are multiplexed and, then, sent to the single fiber link. (For an explanation of CWDMs and multiplexing, see the Fiberdyne Application Note, "CWDM – an introduction.")

Full-Duplex Gigabit Ethernet Multi-channel Single-fiber Link Up to 30 km

Customer Network Equipment *

Fiberdyne Gateway "Alpha"

Fiberdyne Gateway "Omega"

* Note: Customer Equipment can be any mix of 1000Base-T, 1000Base-SX (850 nm) or 1000Base-LX (1310 nm)

Using the mux system, the customer can add links or increase bandwidth. Essentially, each pair of wavelengths is the equivalent of a pair of wires/fibers. As pictured above, this system replaces eight cables/fibers with one single-mode fiber. Optionally, if the customer splits data into four parallel streams (i.e. trunking), then bandwidth is increased four-fold.

The network equipment can be any Ethernet (IEEE Std 802.3) compliant equipment, with Gigabit (i.e. 1000Base) ports. Some examples include the Fiberdyne Intelligent Switch and the Fiberdyne Modular Intelligent Switch, each with the appropriate Gigabit Ethernet module.

The Fiberdyne Gateway Solution is not an individual product. Rather, it is a combination of other Fiberdyne products: Ethernet Electronics (e.g. switches and media converters) and CWDM Modules (e.g. mux, demux, add/drop, midpoint). Fiberdyne offers all of the components for a Gateway Solution, including cable assemblies, termination boxes, bulk cable, etc.