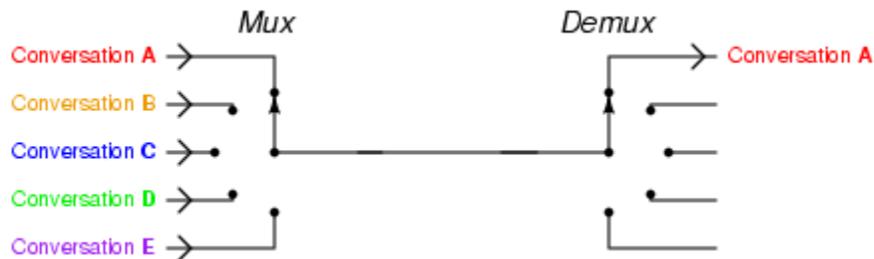


zTidBits #23 (Fiber Channel Multiplex/Demultiplex)

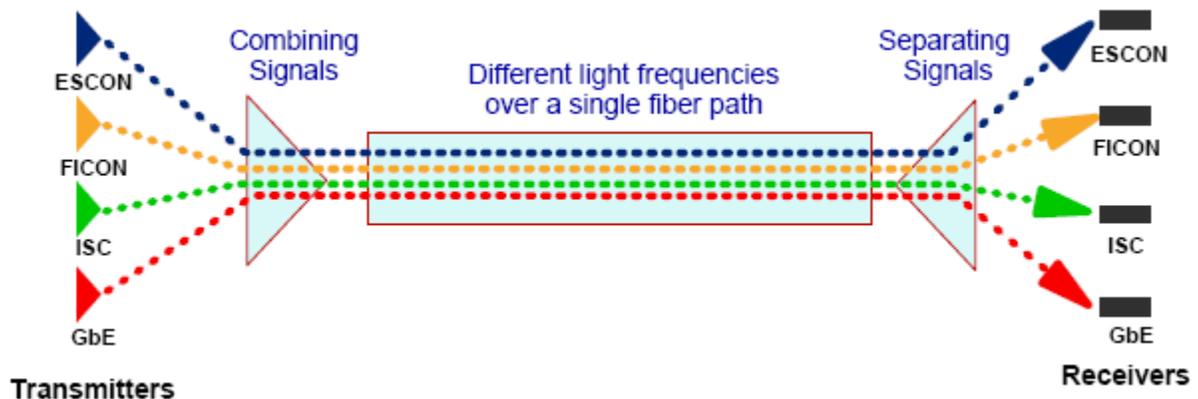
General Multiplexing - DeMultiplexing (Brief look at how 'Fibre' Channels work).



It selects one of many digital (light) data sources and outputs that source into a single channel.

Amongst many reasons, use for multiplexers is cost savings by connecting a multiplexer and a **demultiplexer** (or **demux**) together over a single channel (by connecting the multiplexer's single output to the demultiplexer's single input). The image above demonstrates this. In this case, the cost of implementing separate channels for each data source is more expensive than the cost and inconvenience of providing the multiplexing/demultiplexing functions. In an [analogy](#), consider the merging behavior of [commuters](#) crossing a narrow bridge, vehicles will take turns using the few available lanes. Upon reaching the end of the bridge they will separate into separate routes to their destinations.

Z uses Wave Division Multiplexing (WDM) - a technique used to transmit several independent bit streams over a single fiber link, see figure below. It is an approach to opening up the conventional optical fiber bandwidth by breaking it up into many channels, each at a different optical wavelength (a different color of light). Each wavelength can carry a signal at any bit rate less than an upper limit defined by the electronics, typically up to several gigabits per second (2.7 GBs).



Because the actual signal bandwidth that the electronics can handle over one

wavelength is such a small fraction of the inter-channel spacing, the signals do not interfere with one another and can therefore be multiplexed into a single fiber using a passive grating multiplexor.

How does STI-Multiplexing work with z9's Redundant I/O Interconnect. It's accomplished by the facilities of the Self-Timed Interconnect Multiplexer (STI-MP) card. Each STI-MP card is connected to an STI jack located in the MBA fanout card of a book. STI-MP cards are half-high cards and are interconnected with cards called STI-A8 and STI-A4, allowing Redundant I/O Interconnect in case the STI connection coming from a book ceases to function, as is the case when, for example, a book is removed.

A conceptual view of how Redundant I/O Interconnect is shown:

