# **Optical: Passive Multiplexers (Mux, Muxes, Filters)**

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#### Overview

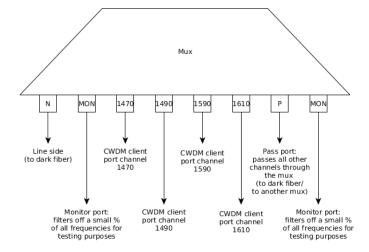
- · Passive muxes, as the name implies, are unpowered, unmonitored devices
- Sometimes called filters
- · Passive muxes allow you to combine and split apart many frequencies of light on one fiber pair

## **Details**

- Filtering technology
  - o Inside of a mux one of these three technologies is used to filter frequencies of light
    - Fiber Bragg Grating
    - Thin Film Filter
    - Arrayed Waveguide Grating
- Channels CWDM vs DWDM
  - o ITU
- Standards for channel width and numbering for each frequency
- In the c-band (DWDM, diagram here Optical: Dense Wavelength-Division Multiplexing (DWDM) Channels) this is typically 100GHz spacing for passive filters
- See Optical: Coarse Wavelength-Division Multiplexing (CWDM) Channels
- See Optical: Dense Wavelength-Division Multiplexing (DWDM) Channels

## **CWDM Example**

• Example diagram:



### Add/Drop Design Example

- · Example diagram
- In this example each location on the add/drop path has two circuits one east and one west (color coded)
- Each lateral is folded, so keep in mind that
  - A fiber cut on a lateral would take down the location served by the lateral AND all other locations served on the add/drop path would see
    one of their two paths go down

