Multicasting in WDM and EONs

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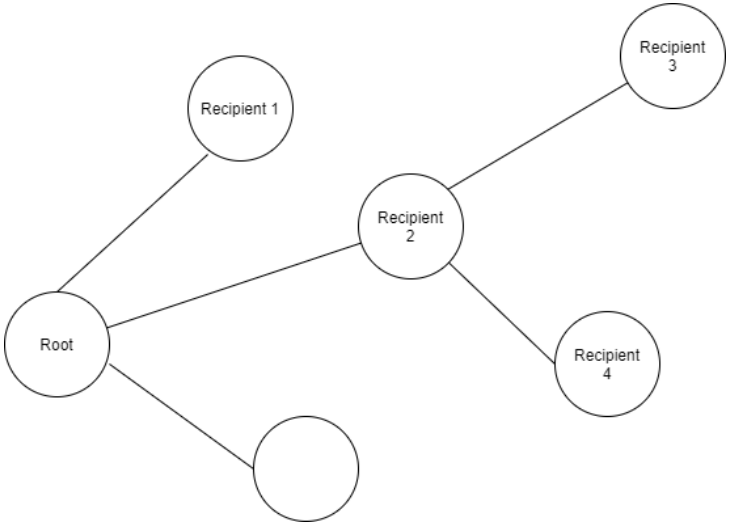
Introduction

1. Multicasting
2. WDM - Wavelength Division Multiplexing
3. EON - Elastic Optical Network

Multicasting

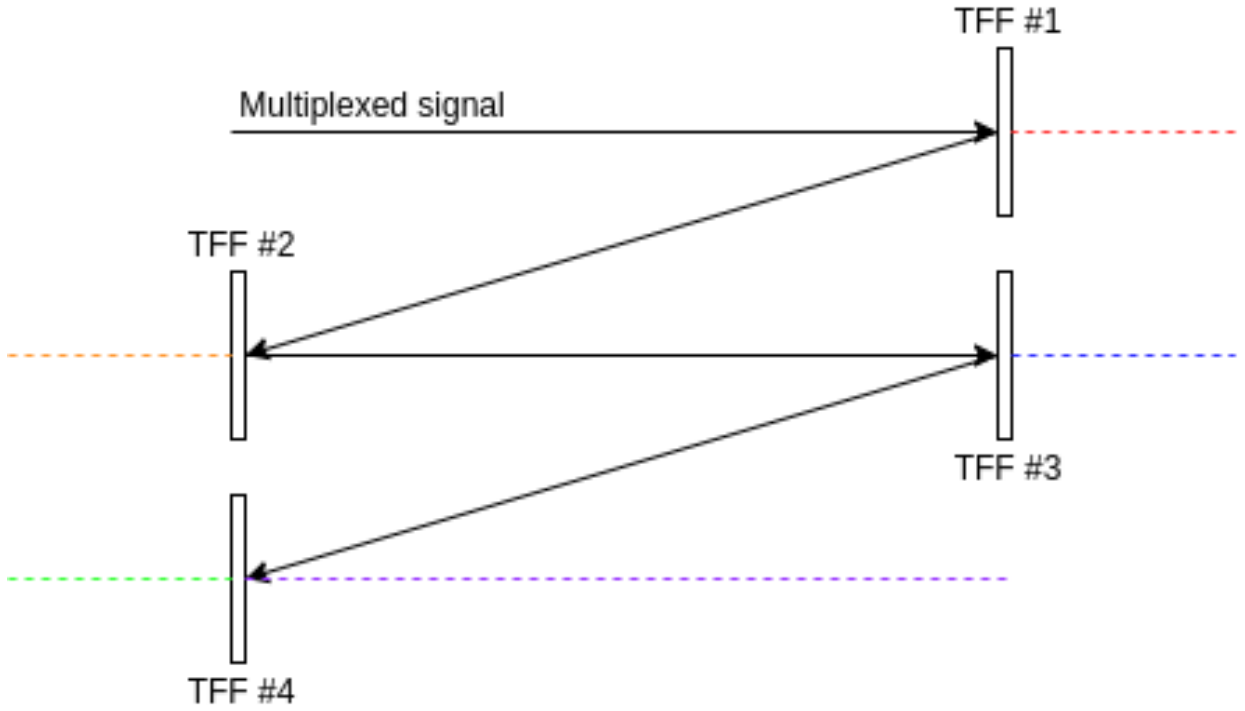
- routing scheme from root node to selected receiving nodes
- minimum Steiner or spanning tree
- different than unicasting to selected nodes



Wavelength Division Multiplexing

- technology that increases capacity of optical fibre
- light => electromagnetic wave => signal multiplexing
- 3 types:
  - normal (WDM), wavelengths 1310 nm and 1550 nm on one fiber
  - coarse (CWDM), wavelengths 1271 nm to 1611 nm with channel spacing 20 nm
  - dense (DWDM), wavelengths 1530 nm to 1565 nm with channel spacing 0.8/0.4 nm.
- thin film filters used for demultiplexing

Wavelength Division Multiplexing



Elastic Optical Network

- architecture paradigm with spectrum allocation depending on traffic demands
- WDM = fixed, EON = flexible
- increased channel capacity

Elastic Optical Network

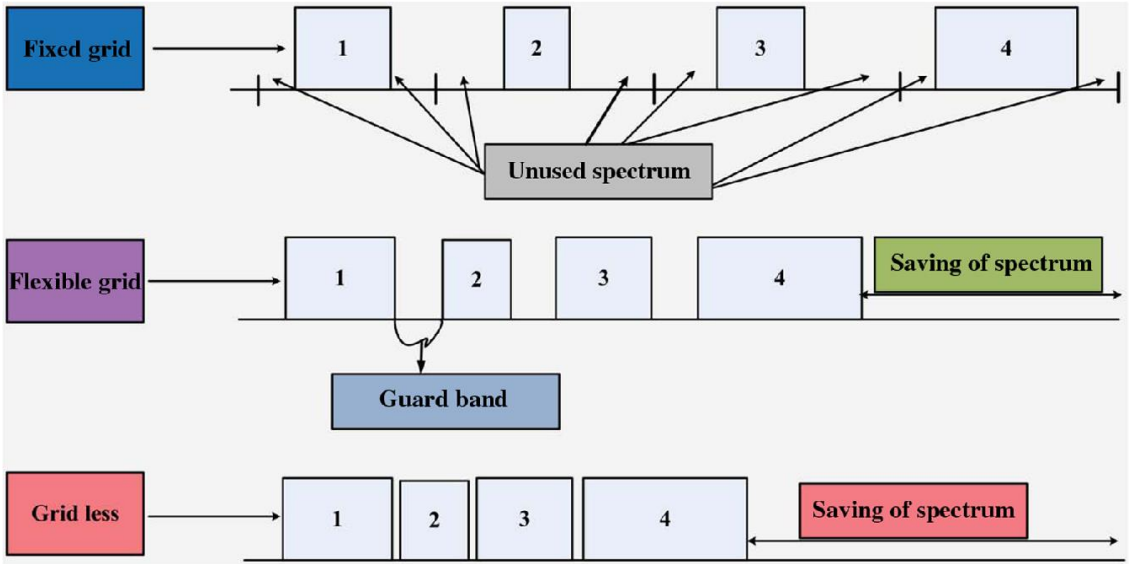


Fig. 1 Fixed grid, flexible grid, and grid less [1]

References

[1] Yadav Ujjwal, Jaisingh Thangaraj, “Review and analysis of elastic optical network and sliceable bandwidth variable transponder architecture”, Optical Engineering, 57(11), 110802 (2018)

[2] K. Walkowiak, Modeling and Optimization of Computer Networks, Wroclaw University of Technology, 2011