



# xWDM pro Metropolitní sítě

**Ing. Jaromír Šíma**

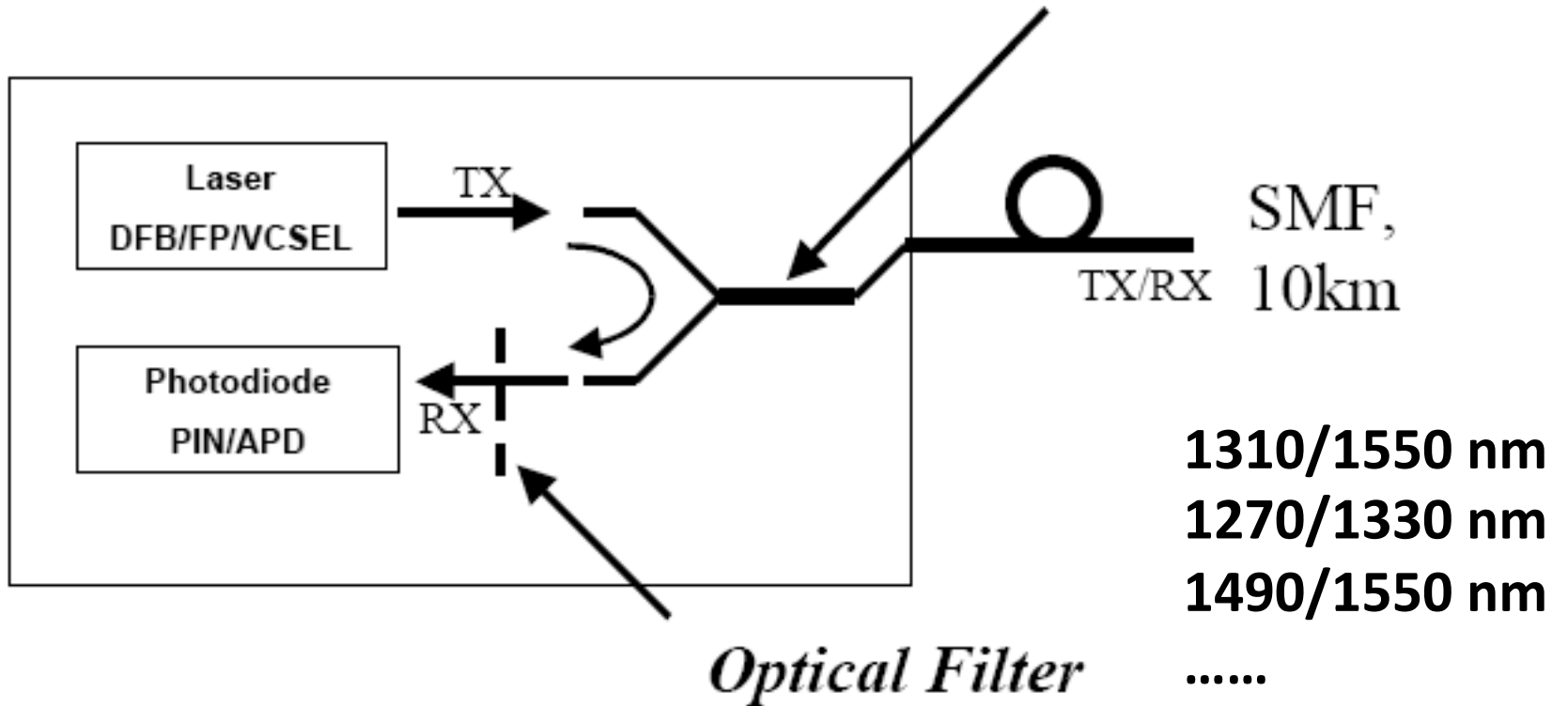
Kam kráčí telekomunikačné siete 2018 Senec



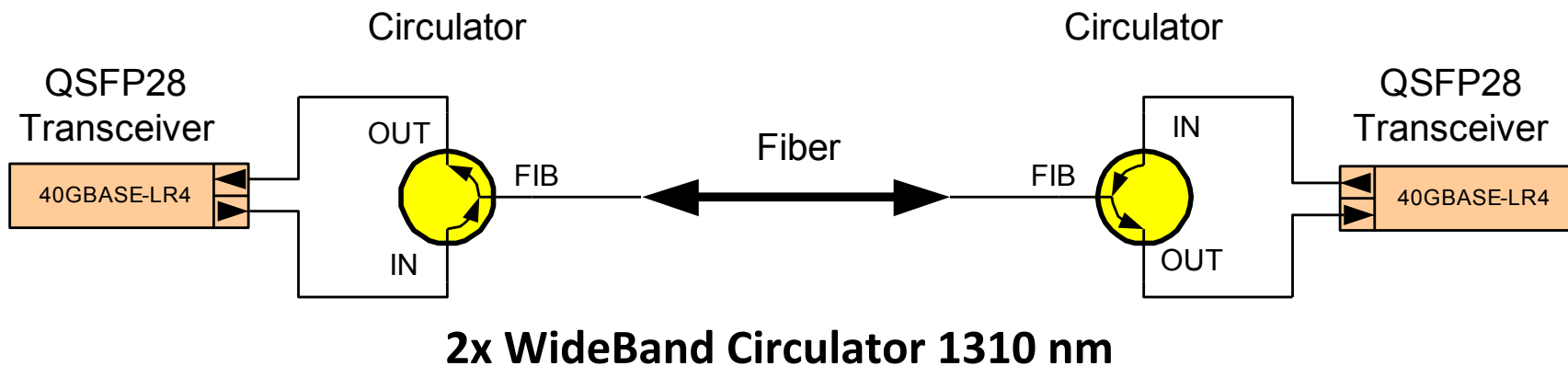
# Kapacita optických vláken

- **Optický Cirkulátor**
  - **Coupler/Splitter 50:50 %**
- } **obousměrný přenos  
na stejné vlnové délce**
- **WDM – dvě až tři vlnové délky**
    - 850/1300 nm, 1310/1550 nm, 1310/1490/1550 - BiDi
  - **WWDM – typicky 4 kanály**
    - Např 10GBASE-LX4, 40GBASE-LR4, 100GBASE-LR4
  - **CWDM – pro SM vlákna, až 18 kanálů á 20nm**
  - **DWDM, desítky kanálů, odstup 100 GHz, 50 GHz, ...**

# BiDi u transceiveru

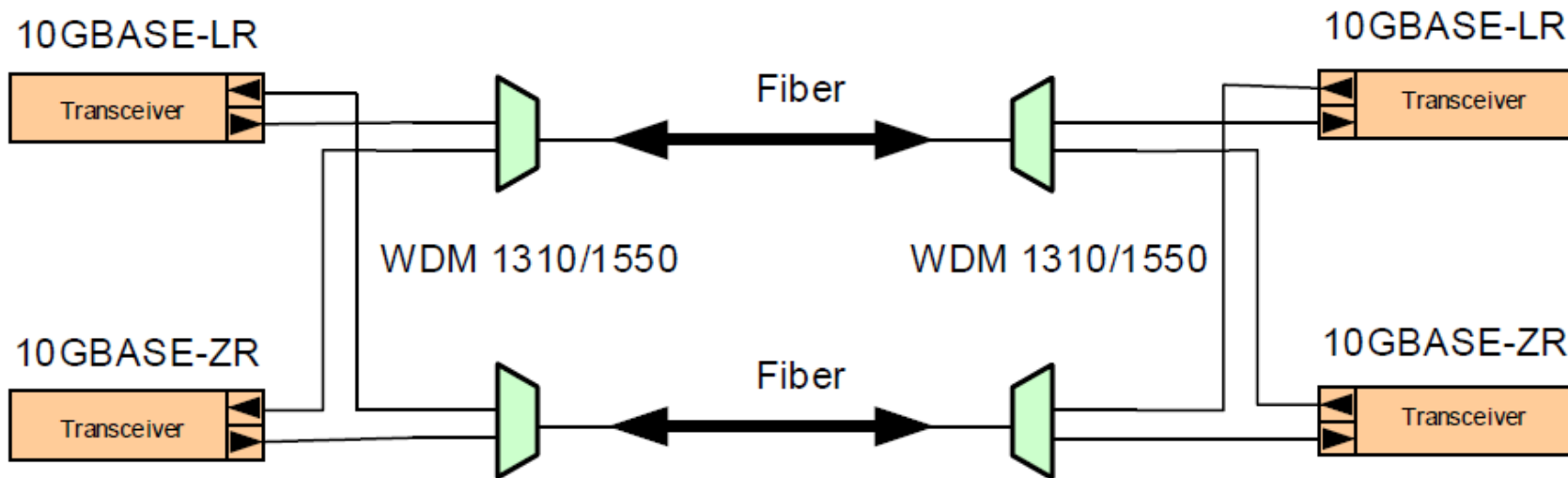


# Optický Cirkulátor – „BiDi 40/100G“



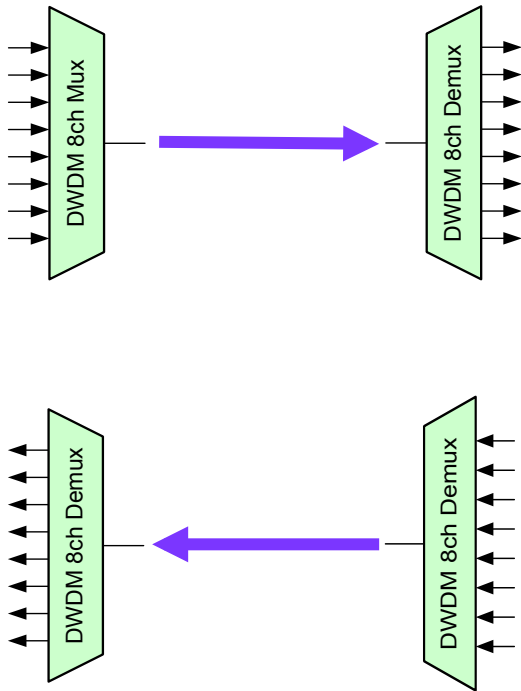
- **40GBASE-LR4, 40GBASE-ER4**
  - vlnové délky 1270 / 1290 / 1310 / 1330 nm
- **100GBASE-LR4, 100GBASE-ER4**
  - vlnové délky 1295,56 / 1300,05 / 1304,58 / 1309,14 nm
- **100GBASE-CWDM4 nebo 100GBASE-CLR4**
  - vlnové délky 1270 / 1290 / 1310 / 1330 nm

# WDM filtr 1310/1550

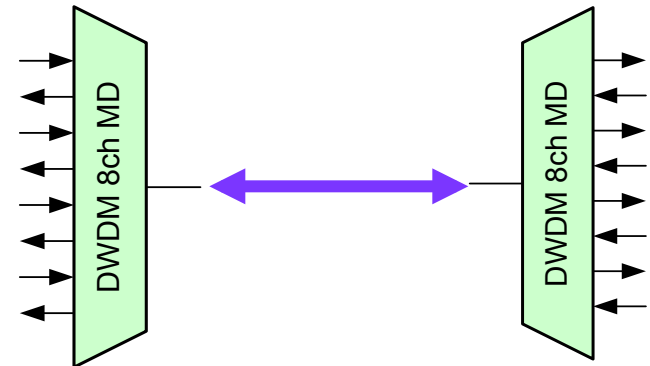


# WDM Multiplexer a Demultiplexer

## Dvě vlákna – Mux + Demux

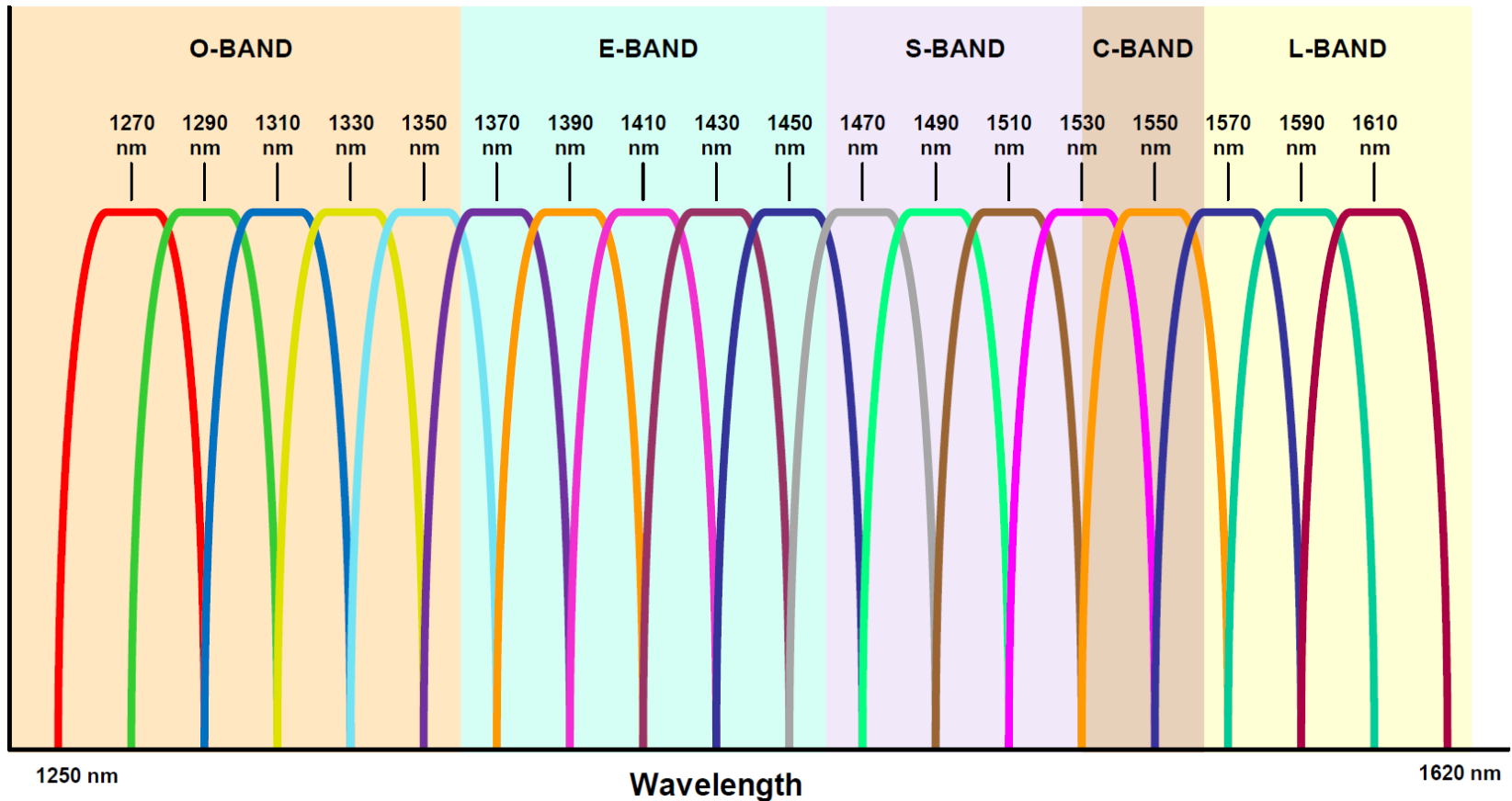


## Jedno vlákno – Mux/Demux



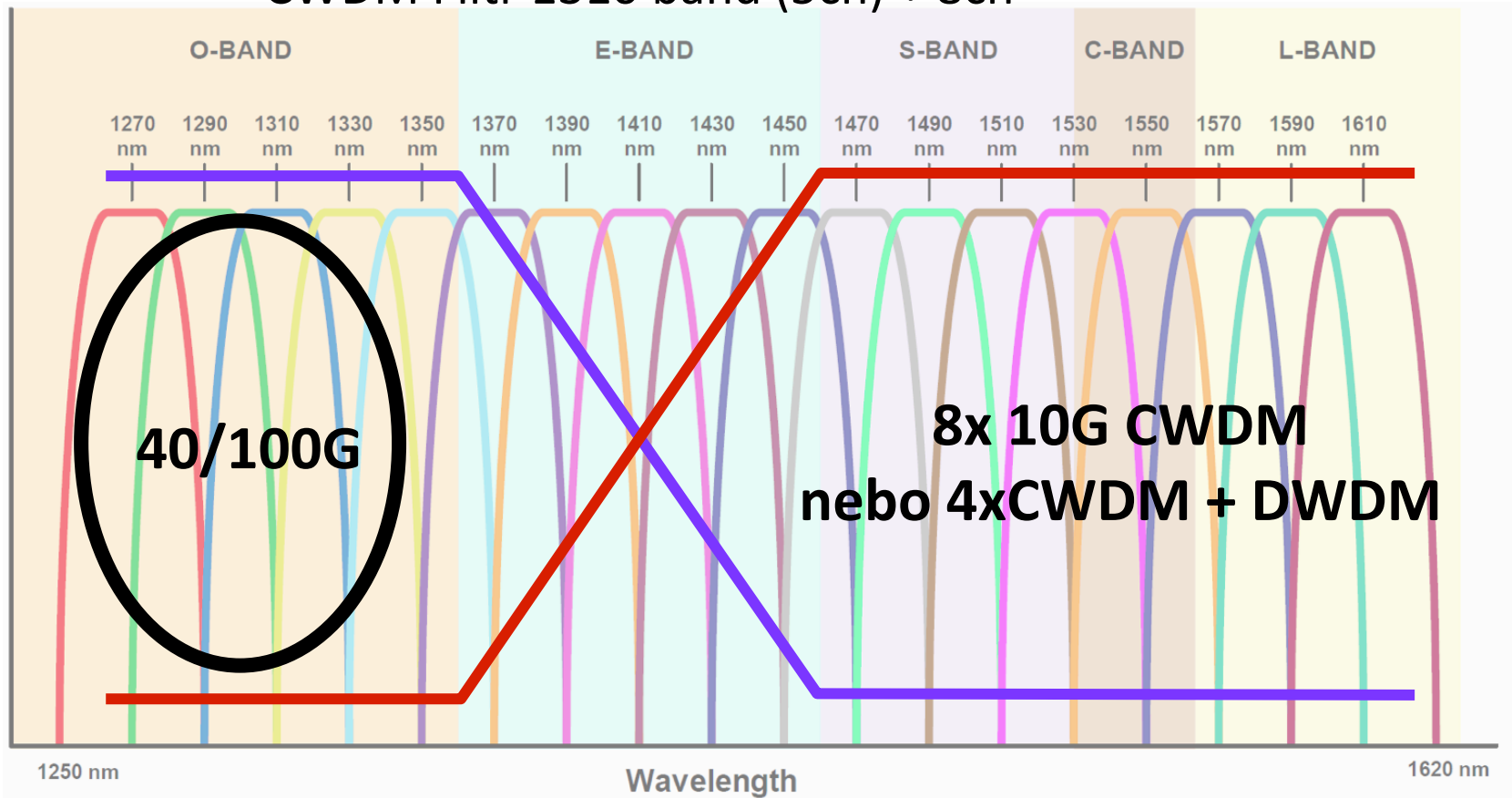
# Spektrum vlákna – CWDM kanály

## CWDM - 18 kanálů s odstupem 20nm



# Aplikace 8x CWDM + 40/100G LR4

CWDM Filtr 1310 band (5ch) + 8ch

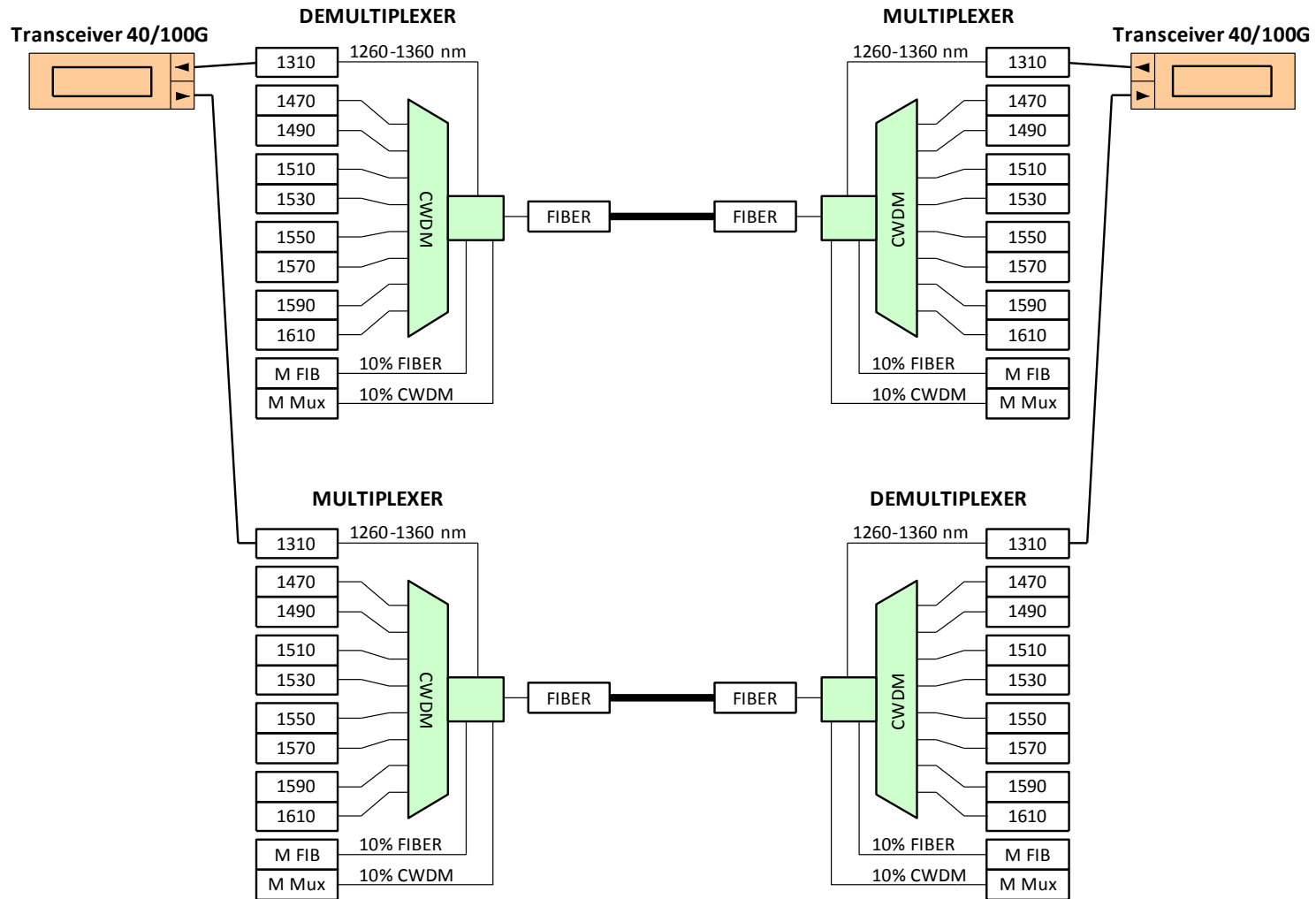


40/100G

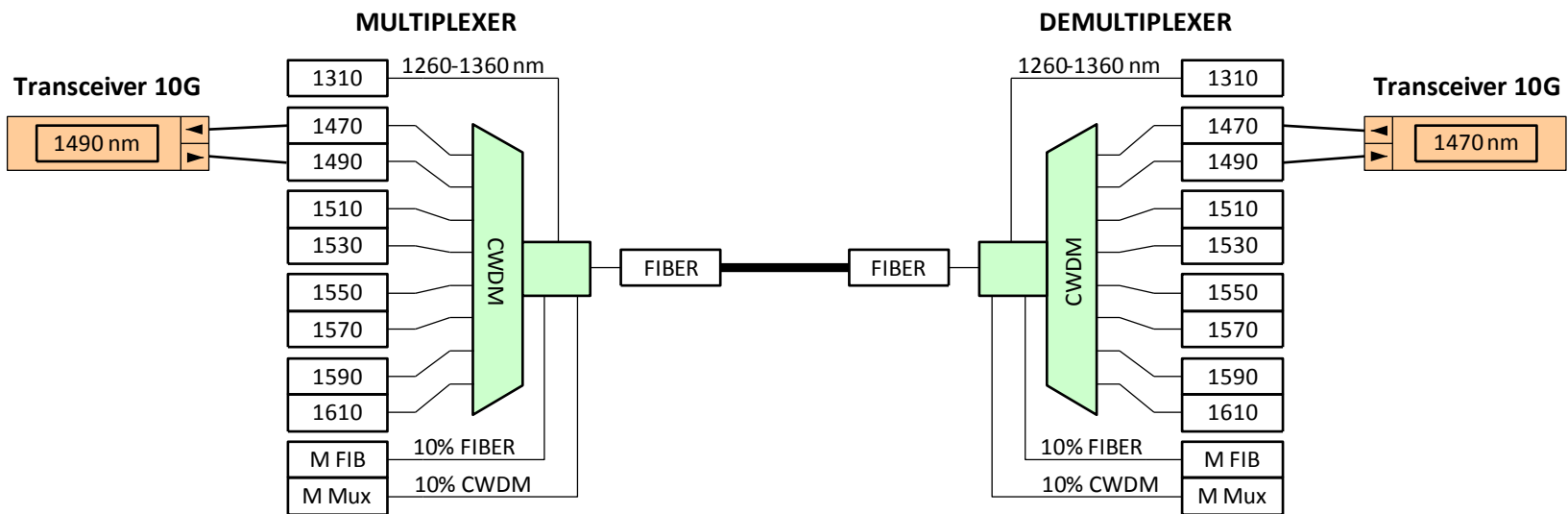
8x 10G CWDM  
nebo 4xCWDM + DWDM



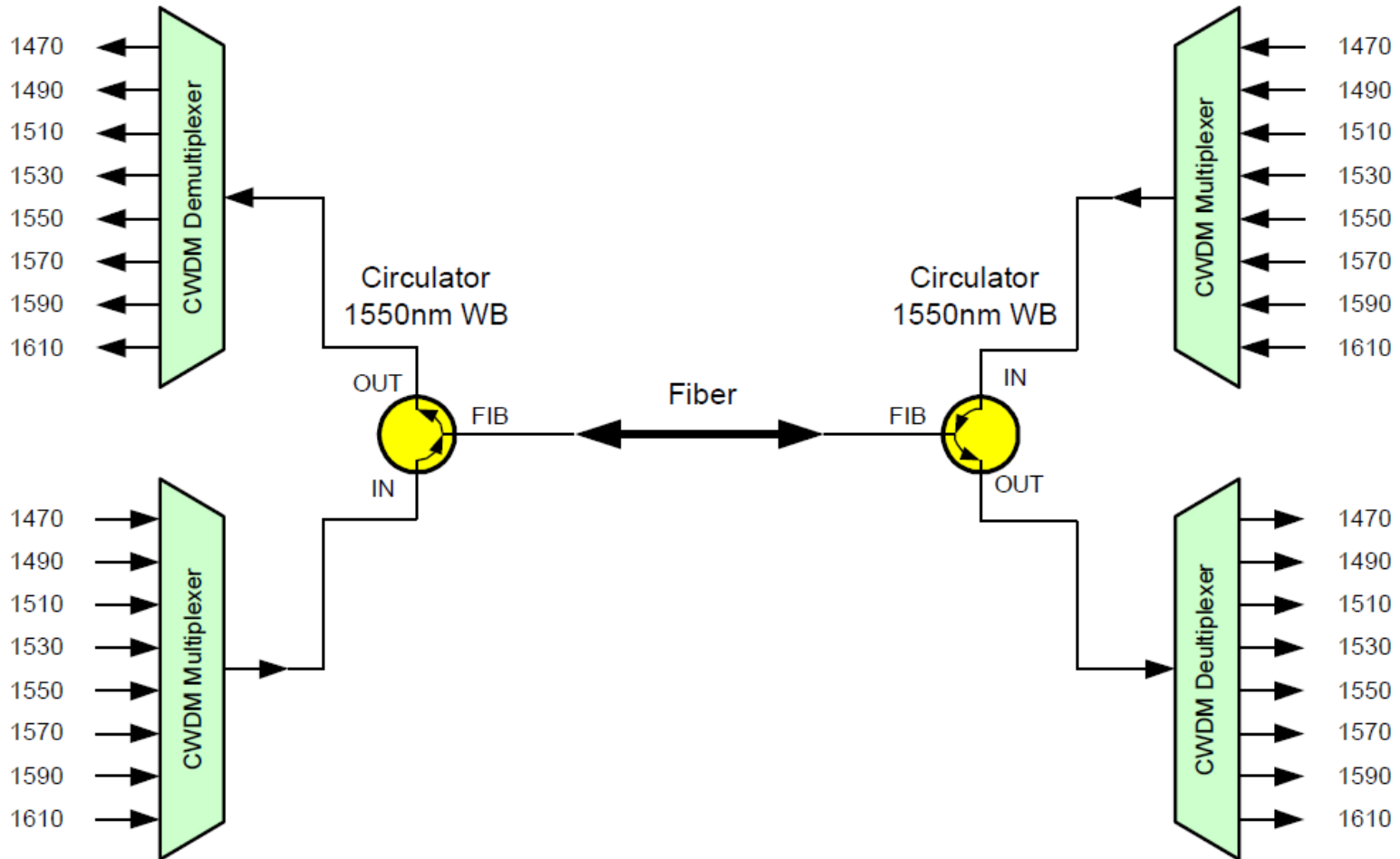
# CWDM Cross Connect – 2 vlákna



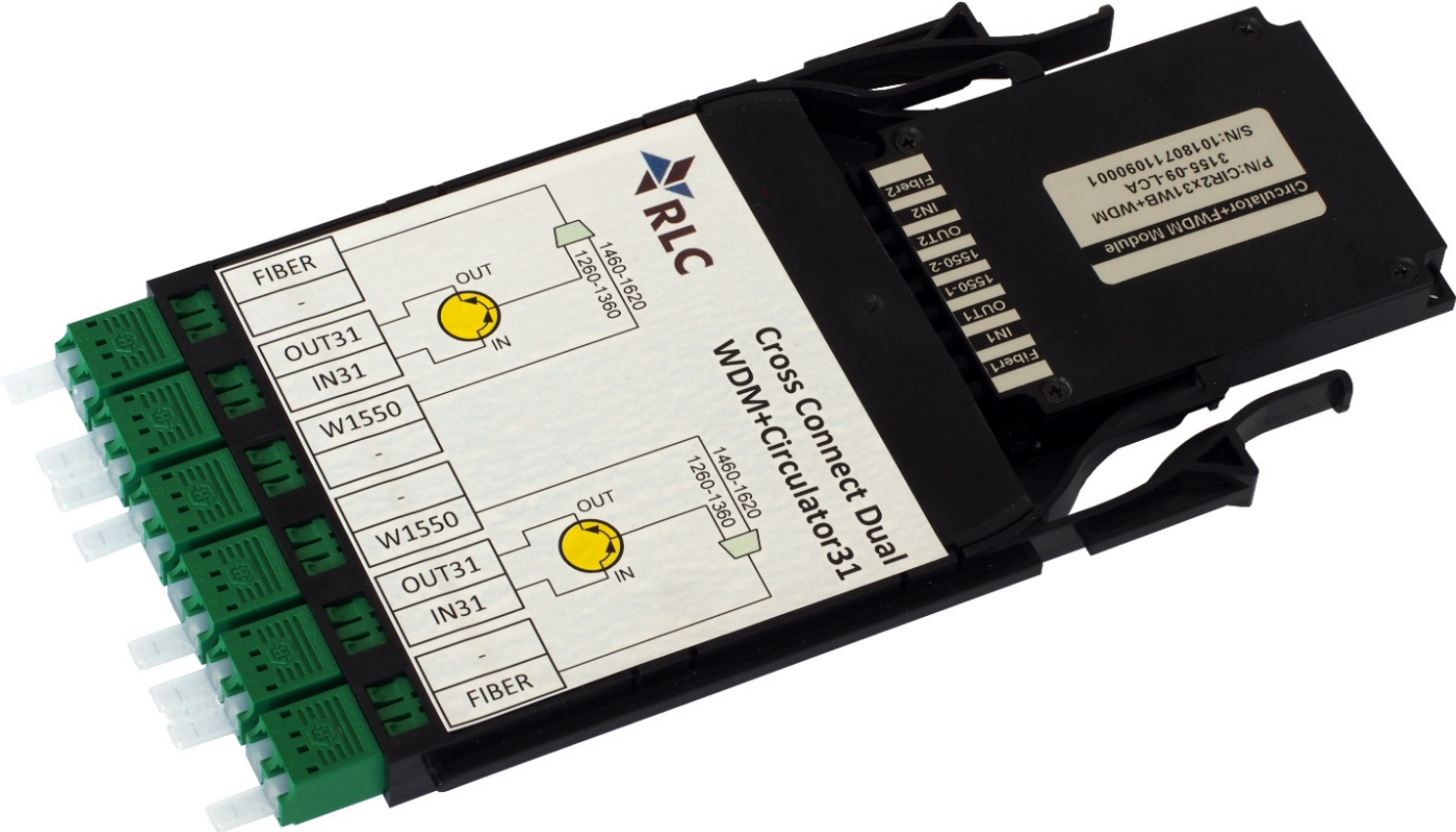
# CWDM Cross Connect – 1 vlákno



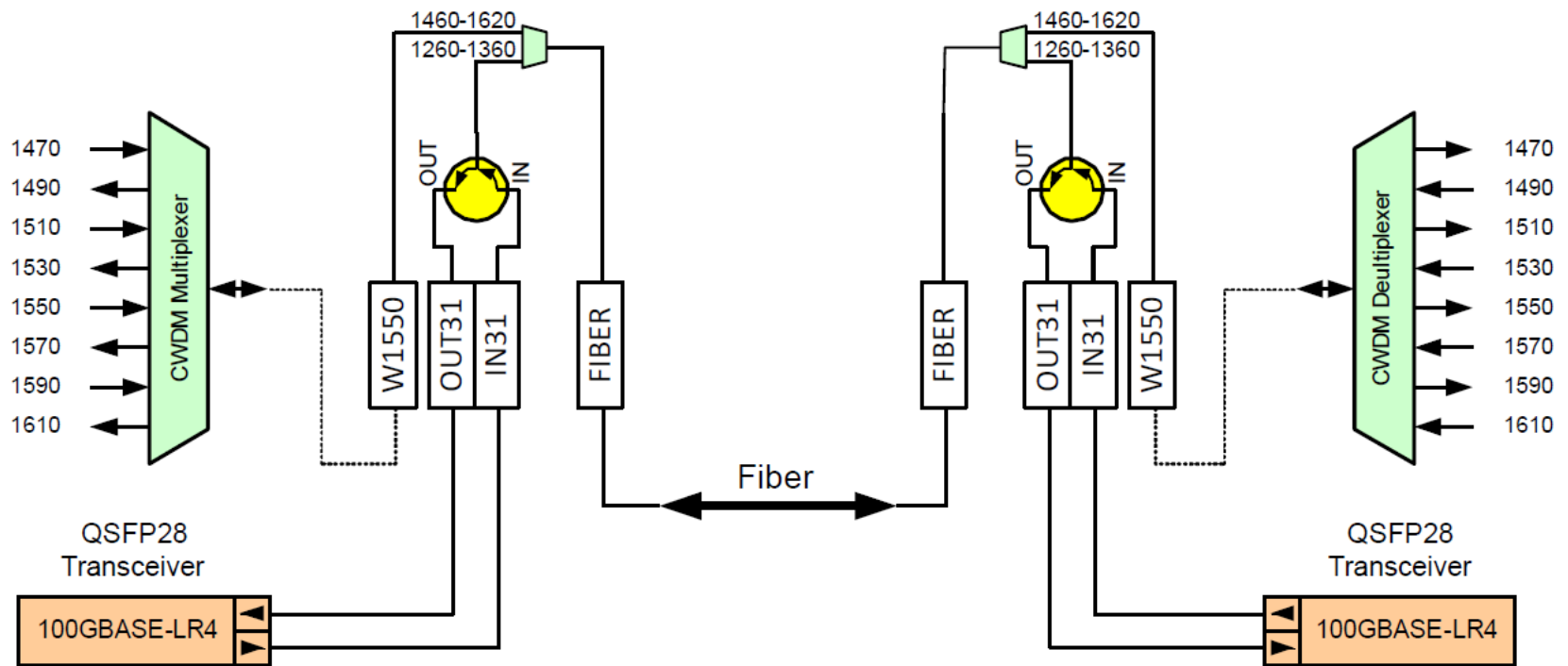
# CWDM a Cirkulátor



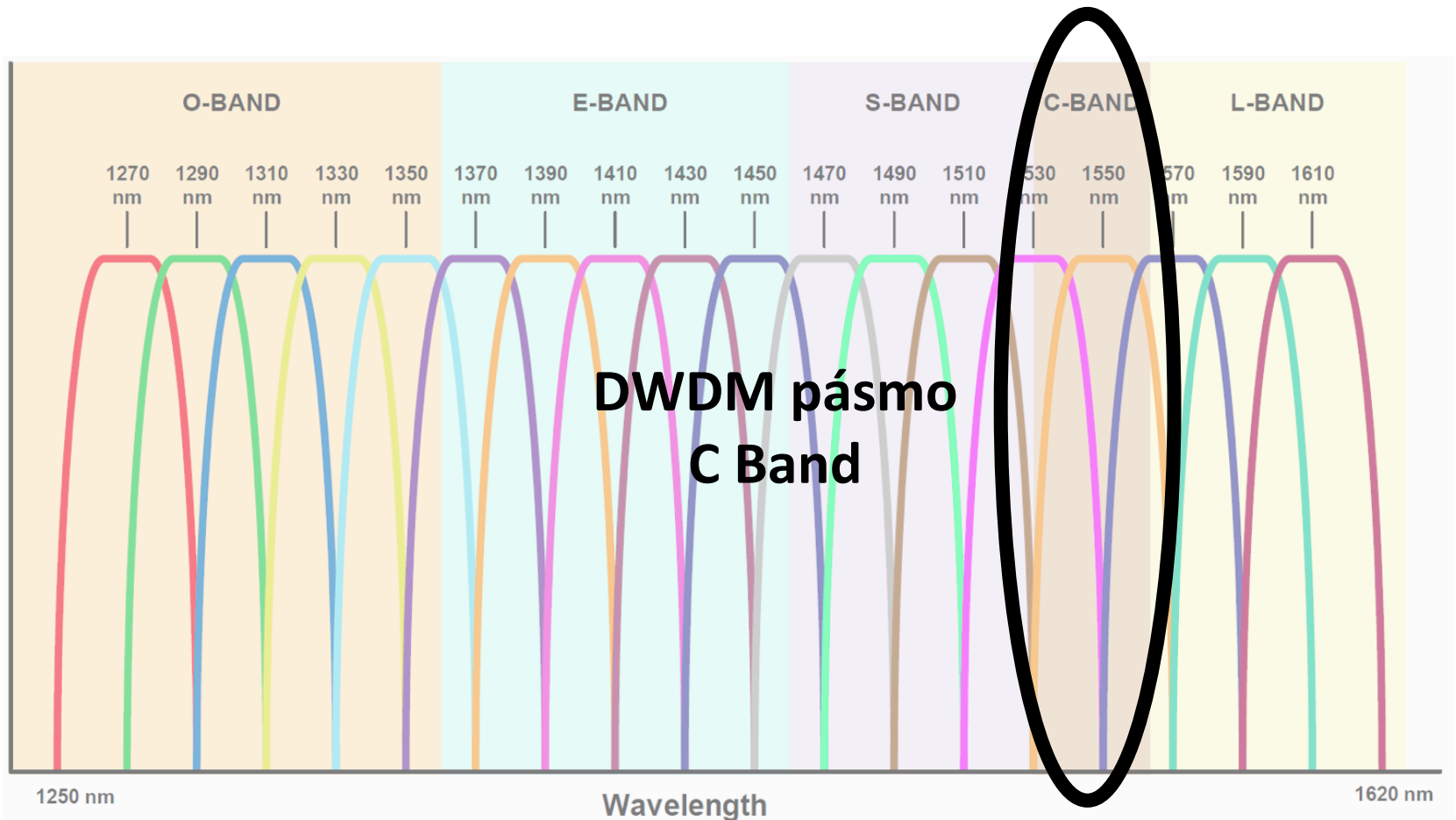
# Dual WDM+Circulator 31



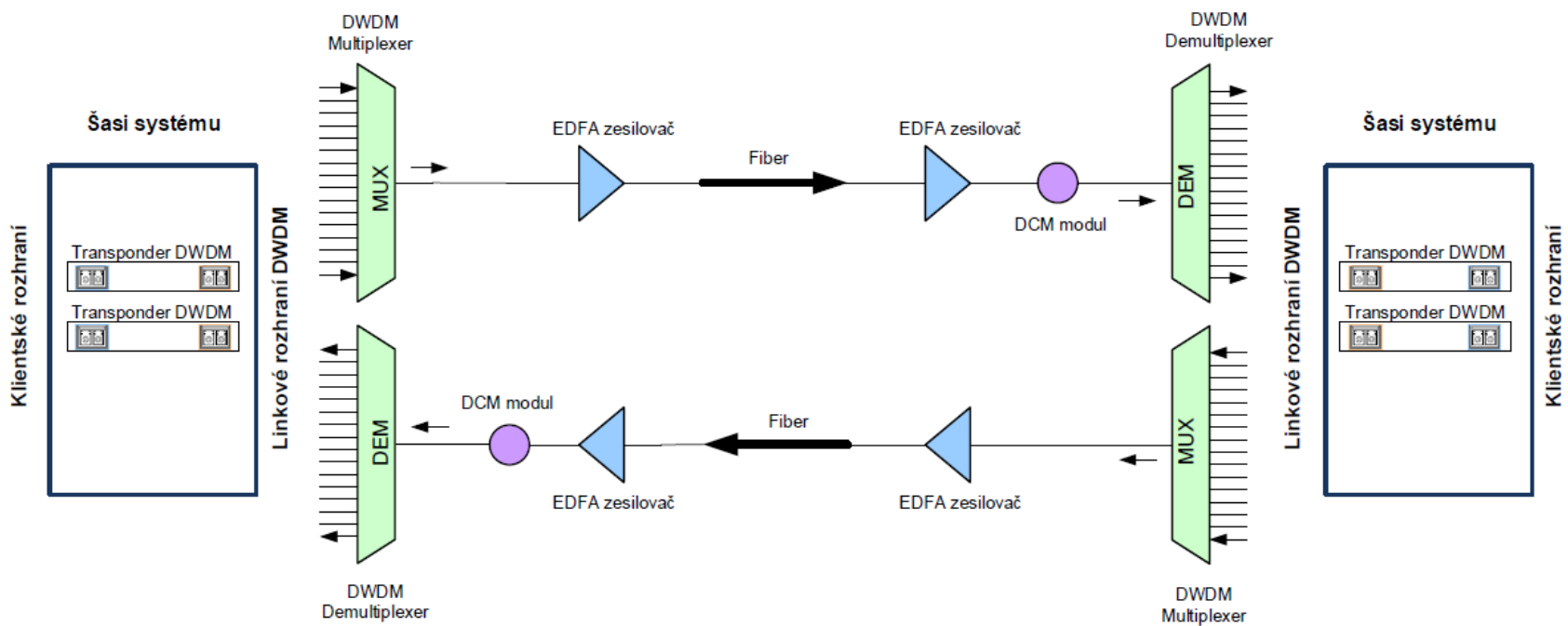
# CWDM a Cirkulátor



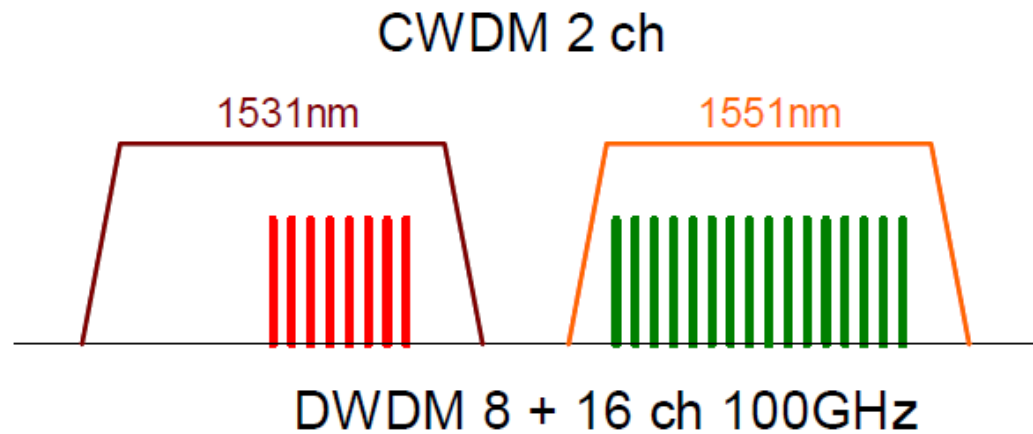
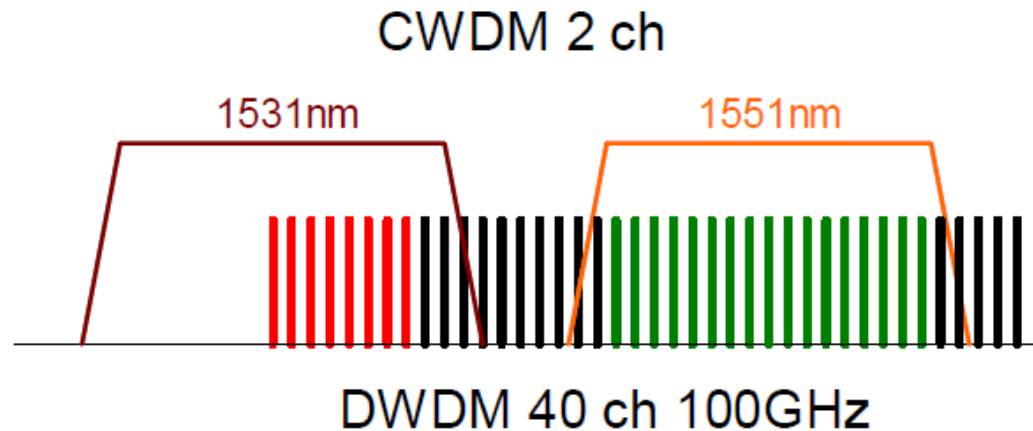
# Spektrum singlemode vlákna - DWDM



# DWDM systém

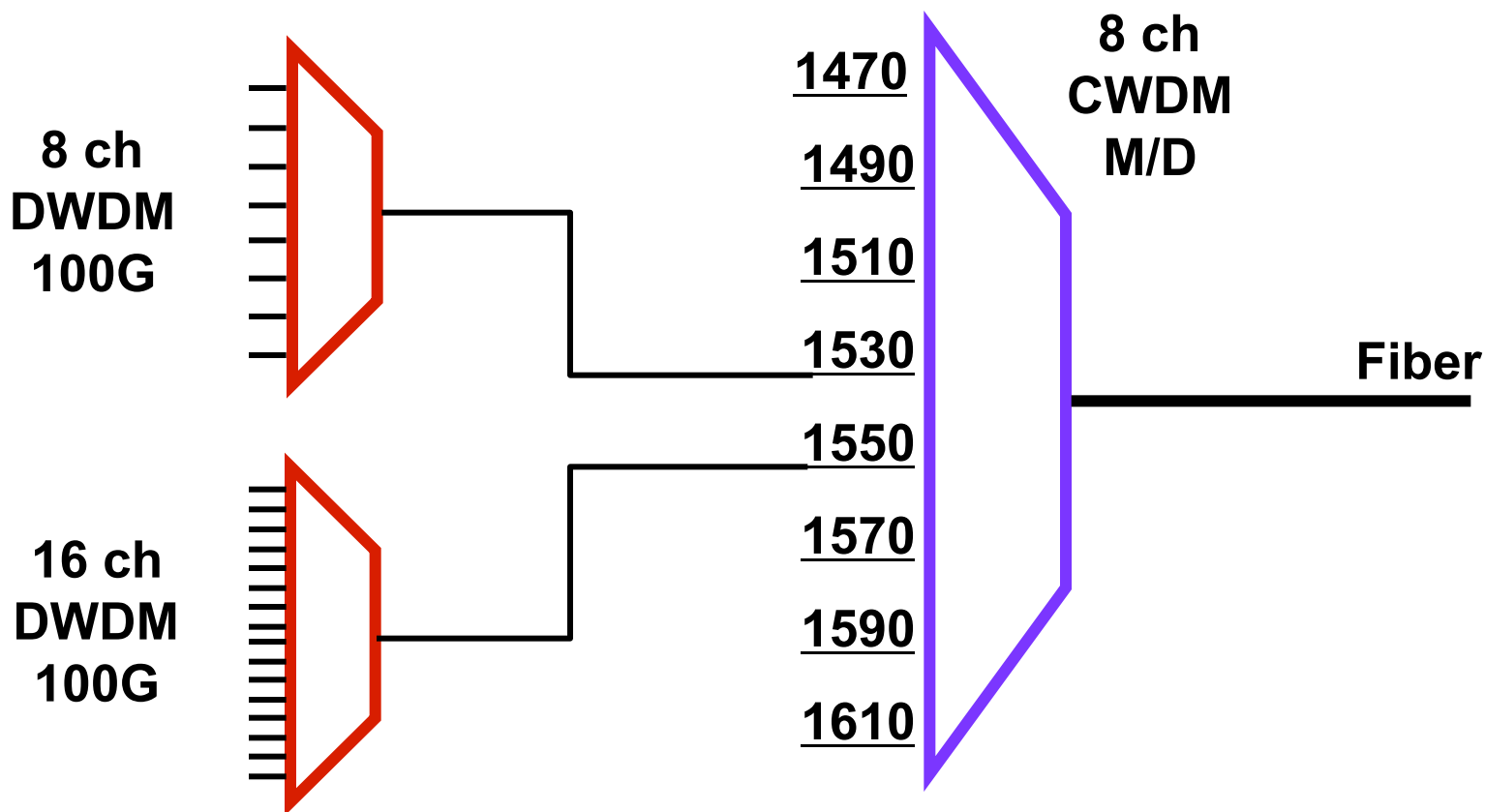


# Kombinace CWDM + DWDM





# Kombinace CWDM + DWDM





**Děkuji za pozornost**

**bližší info na stánku nebo [sima@rlc.cz](mailto:sima@rlc.cz)**

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**Kam kráčí telekomunikační sítě 2016 Olomouc**

