cesnet Advanced Photonic Transmission Layer and its Services

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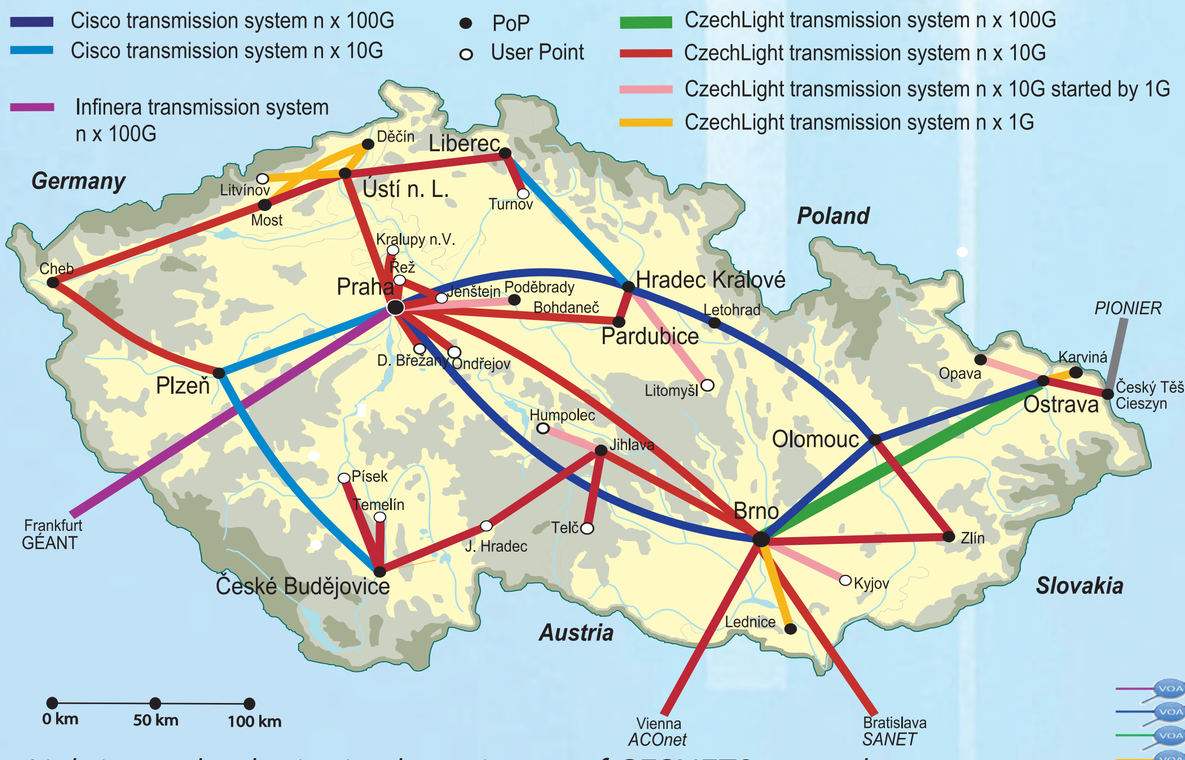


Lighting technologies in photonic part of CESNET2 network

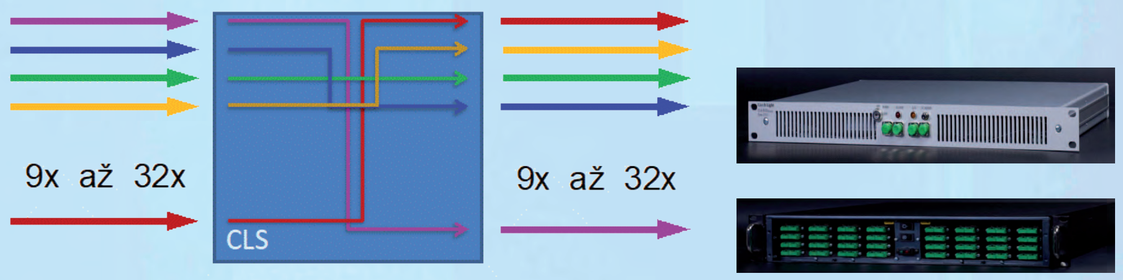
Photonic infrastructure

- Supports 10, 100 and 200 G speeds
- Tested in parallel with 300G single lambda

Open line transmission system: Czech Light™

- Amplifiers, VMUX, ROADM..
- Deployed in large networks since 2004, now 3760 km
- Designed by CESNET and commercially manufactured by various industrial partners
- **https://czechlight.cesnet.cz/en/**

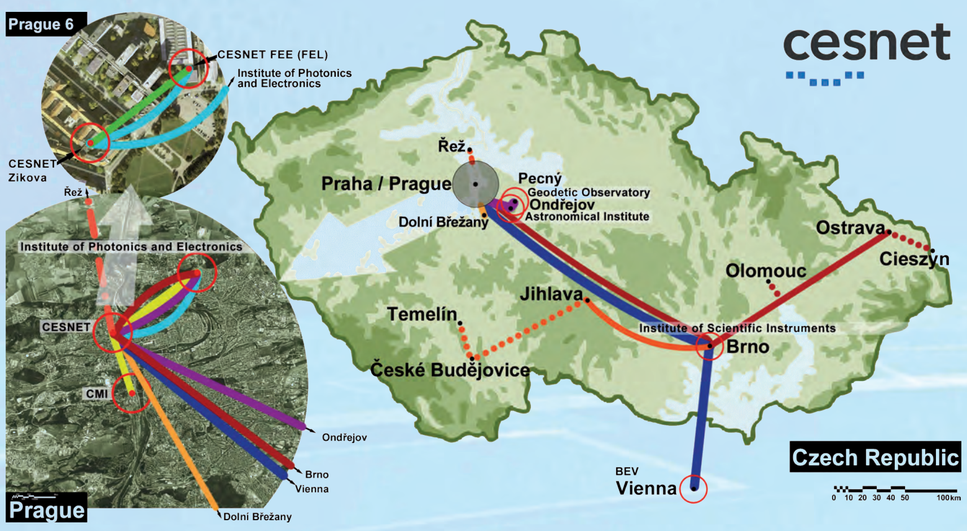
Support of legacy and meshed topologies



Low noise bidirectional amplifiers for T/F infrastructure, version with lasing prevention available, smart patchpannels, multicast versions available

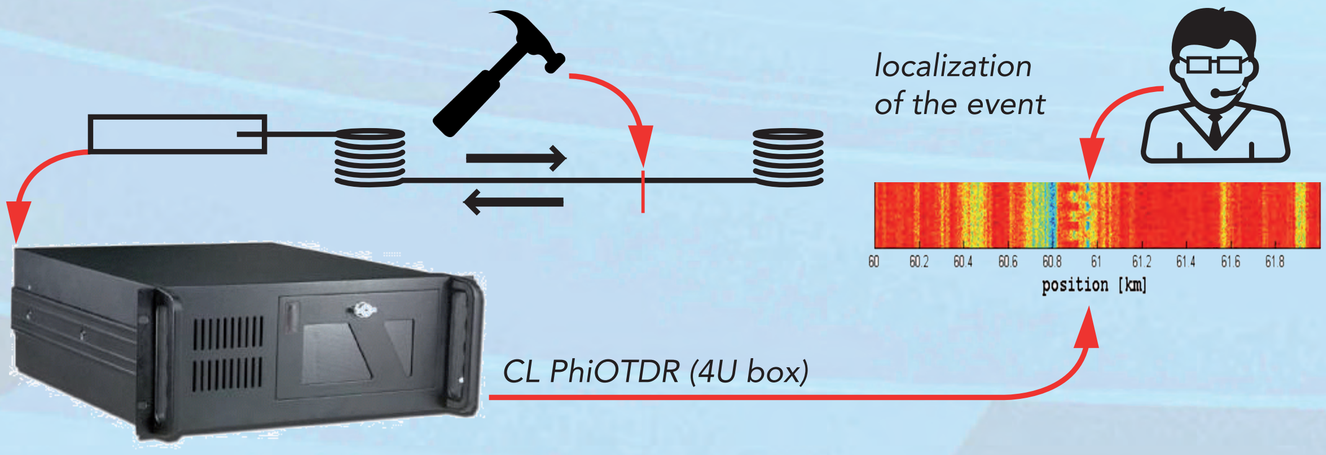
Time and Frequency Infrastructure

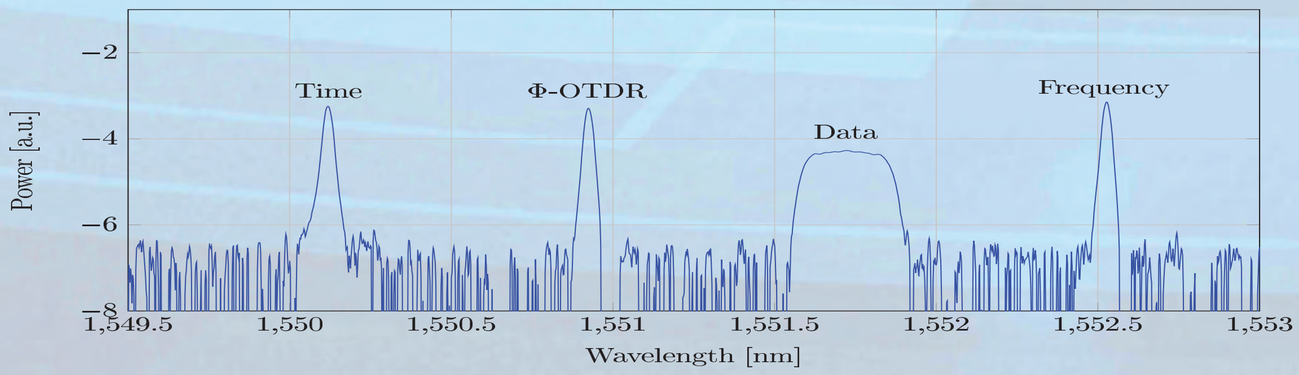
- Will overcome 1600 km in 2018
- Supports bidirectional transmission of time and frequency to cancel most of propagation fluctuations
- CLA BiDi NoLase developed to prevent and suppress lasing



Sensing: self protection of infrastructure

- Enables localization of vibrations at distances of tens of kms with accuracy of tens of meters
- Parallel operation with time data and frequency transmissions
- Vibrations sensing offers further utilization and opportunities
- Is realized from one end of the line
- Standard fibres used for sensing
- Award winning solution (SPIE Photonics Europe 2018)



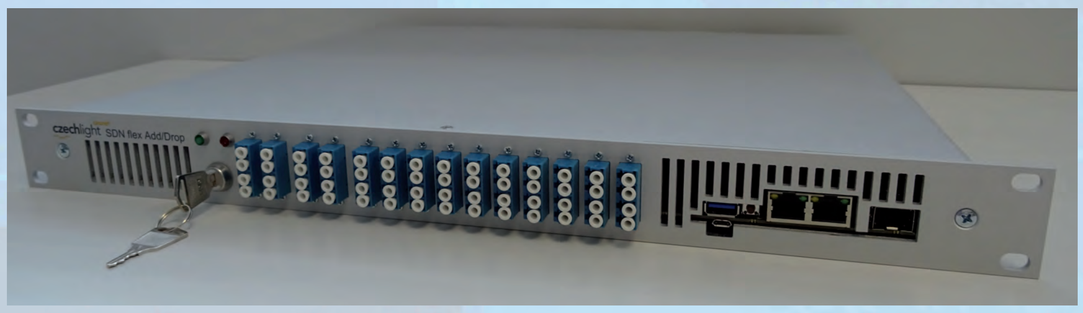


Parallel transmission of time, sensing, 100G data and ultrastable frequency

SDN FLEX ROADM

- Compact modular flexible solution
- 1U BOX per line degreee
- 1U BOX per ADD/DROP group
- Optimised for nodes of degre 2-8
- 20 Add/Drop for each Add/Drop group
- Integrated OCM and OSC
- Flexgrid, Colorless, Directionless
- Contentionless through Add/Drop groups
- SDN control with NETCONF & YANG
- Exporting all features of the optical layer
- SDN as a native approach
- Local element manager uses the same northbound APIs internally
- Introduced at OFC2018

CLA BiDi NoLase prevents and suppresses unwanted lasing in T/F transmissions



Latest SDN flex group of Czech Light™ devices

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