

# Performance Monitoring of DWDM-links

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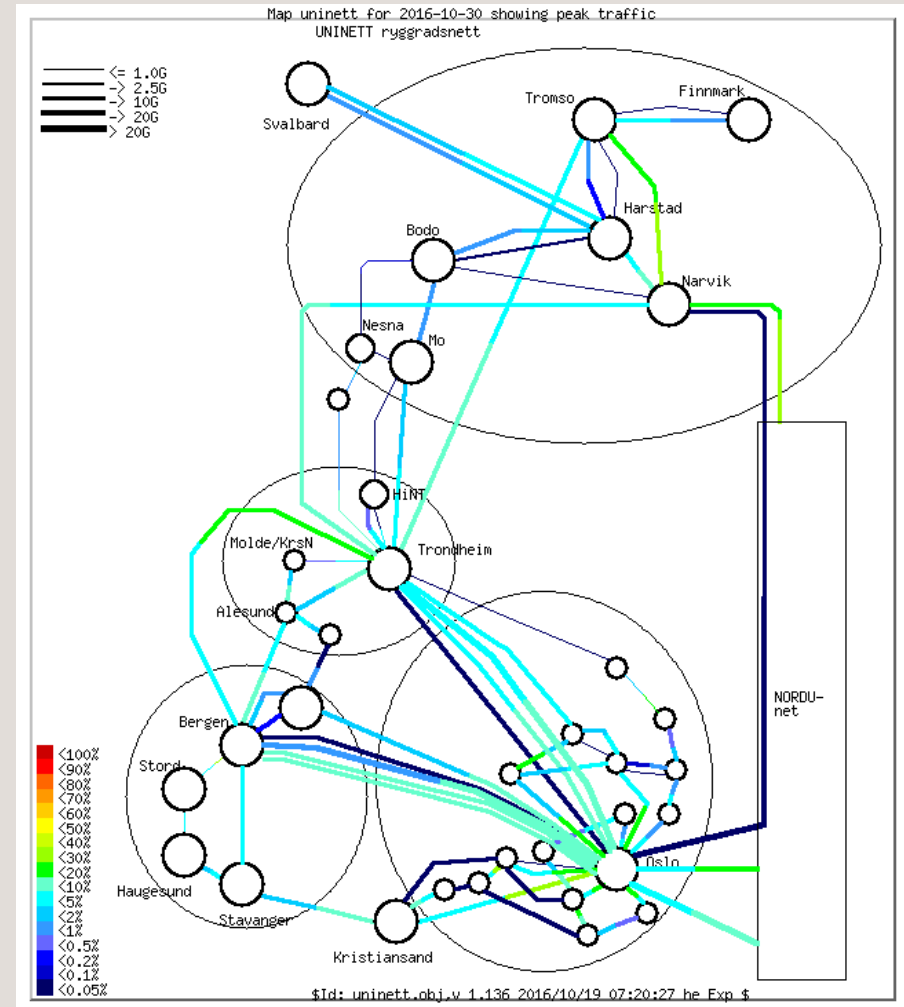


# Agenda

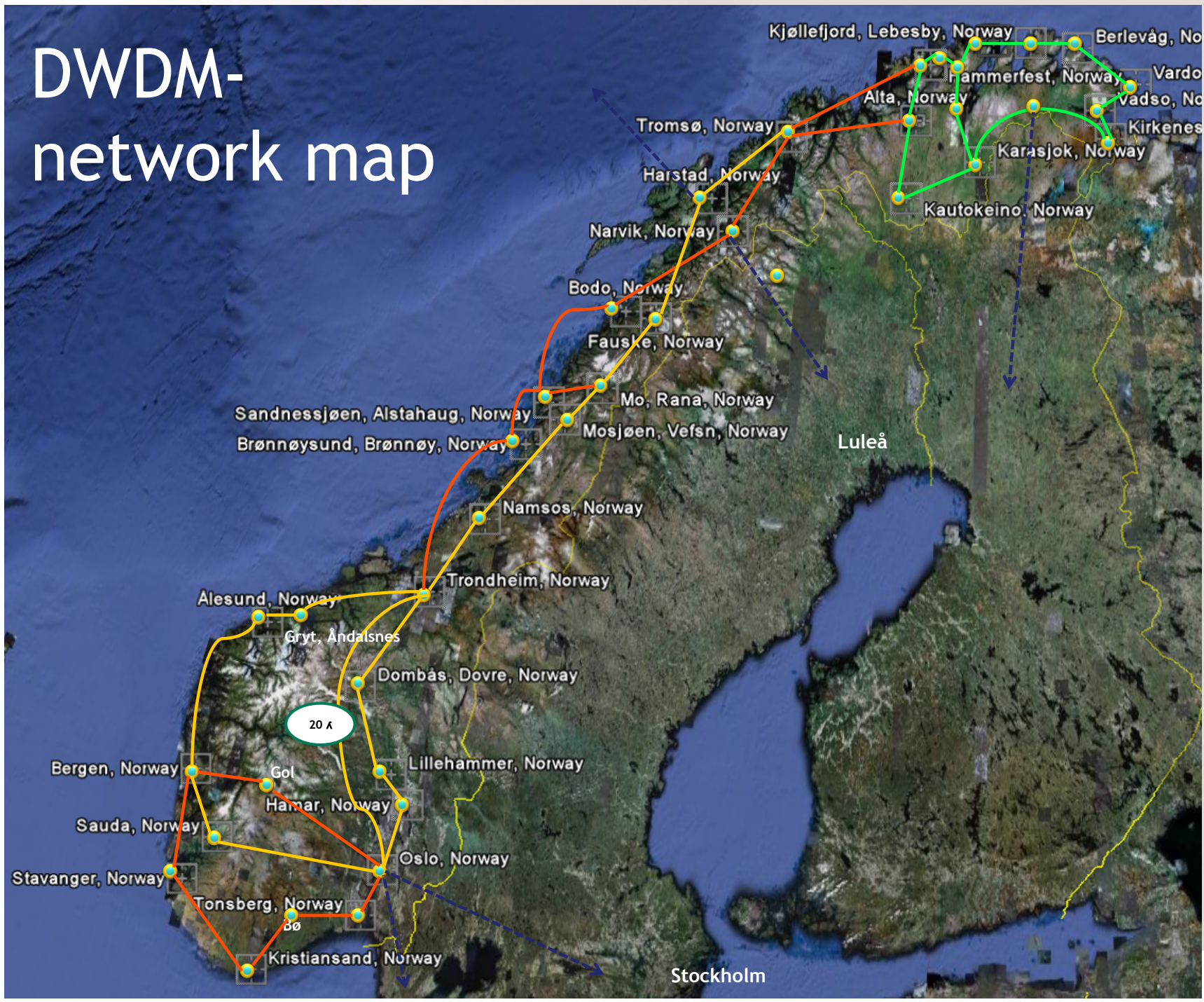
- General introduction of Uninett's network
- DWDM-PM, What is it?
- Why is it important?
- Who should we handle PM?

# Uninett, layer3 network map

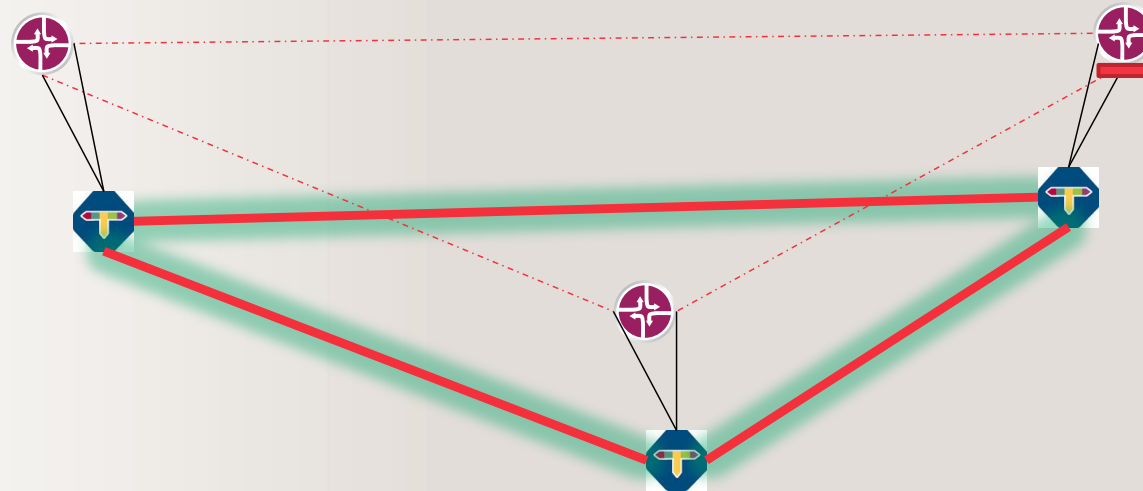
- 10s of locations
- More than 150 routers
- On transport level the routers are contacted via lightpaths  
100Gbit/s and 10Gbit/s
- Fully build redundant with at least two different trunks (links ) to each location.



# DWDM- network map



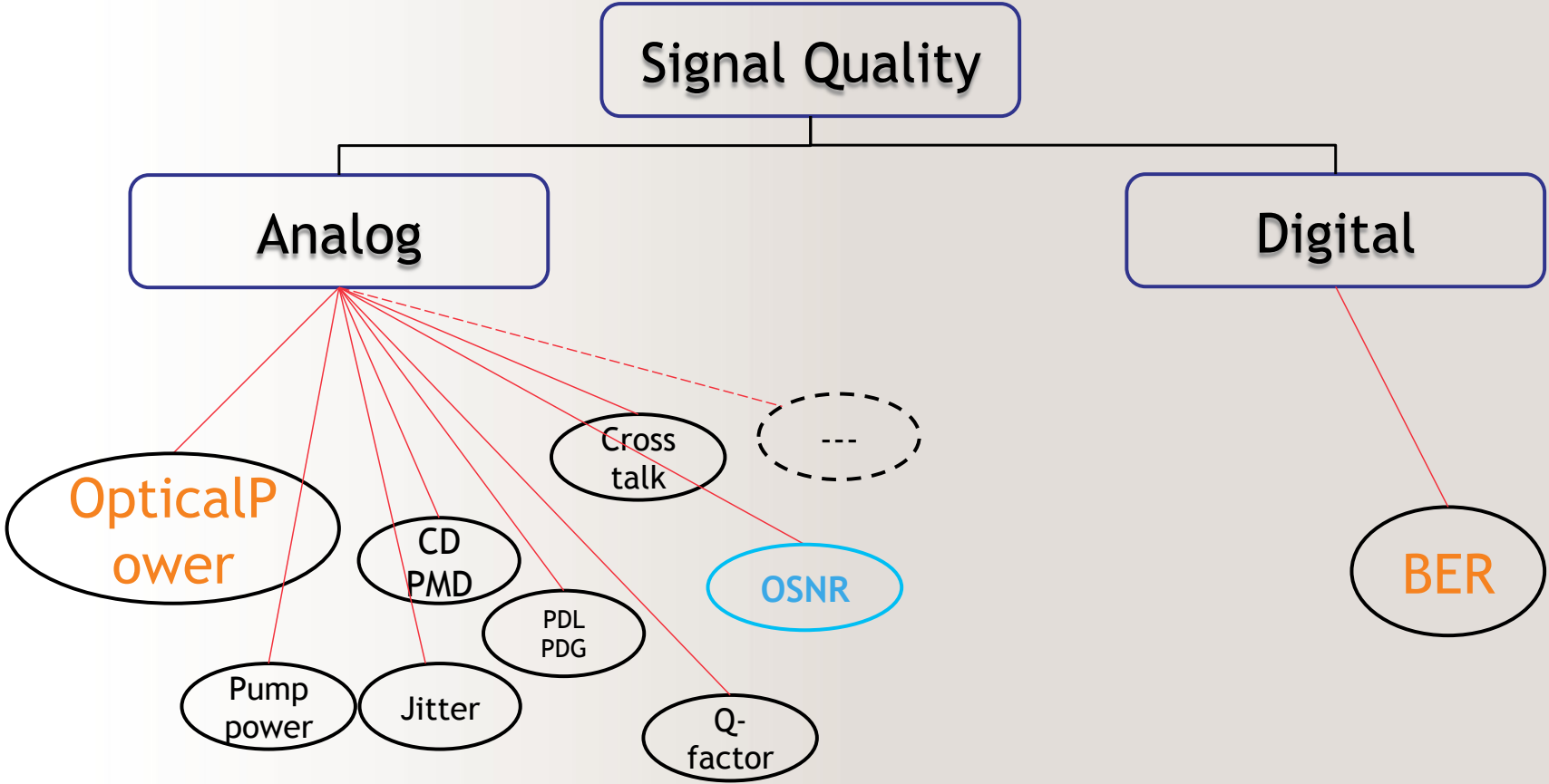
# Connections



- In transport network the routers are logically connected.
- The Physical connection goes through DWDM systems.
- Does performance in DWDM-level any influence on performance in layer 2 and 3?
  - Delay, jitter, packet loss, etc
- Could DWDM-PM data be used to deliver a better service on IP-layer?



# What is DWDM-PM?



# Why PM?

## ➤ To improve DWDM links quality

Continuously optimization of DWDM links.

- Proactive maintenance of the network to avoid network outage  
Detecting the problems before it causes any traffic disruption

Improving performance for deployed network and future deployments.

## ➤ Traffic engineering based on recorded PM

Rerouting of the traffic when BER crosses the threshold value

# How we do the performance monitoring?

## ➤ Short term solution

Direct SNMP based database query

Visualization through Graphite/Grafana

## ➤ Long term solution

SDN based performance monitoring



# Demo

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**Thanks**  
**!**