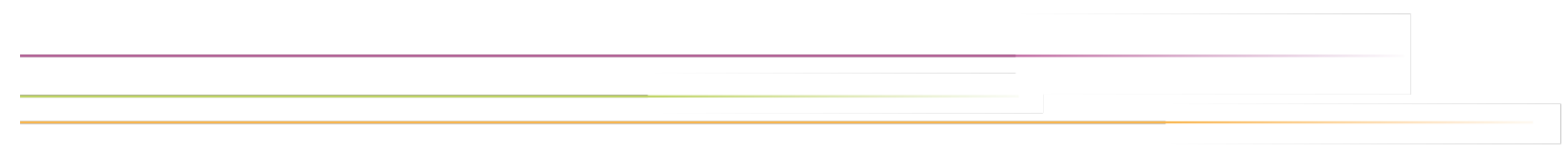


DFN

DFN  
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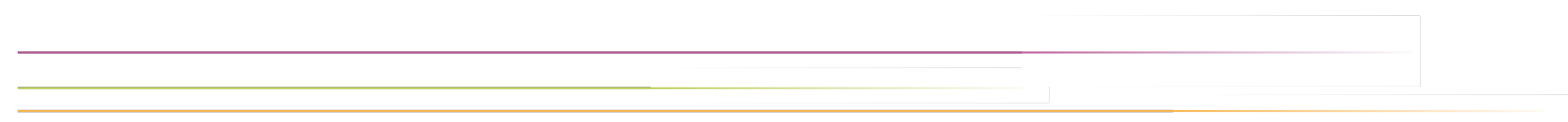


# DFN

## DMon : Network Service Monitoring @ DFN-NOC

SIG-NOC Dublin | 14-15.11.2023

Robert Stoy



## What is it?

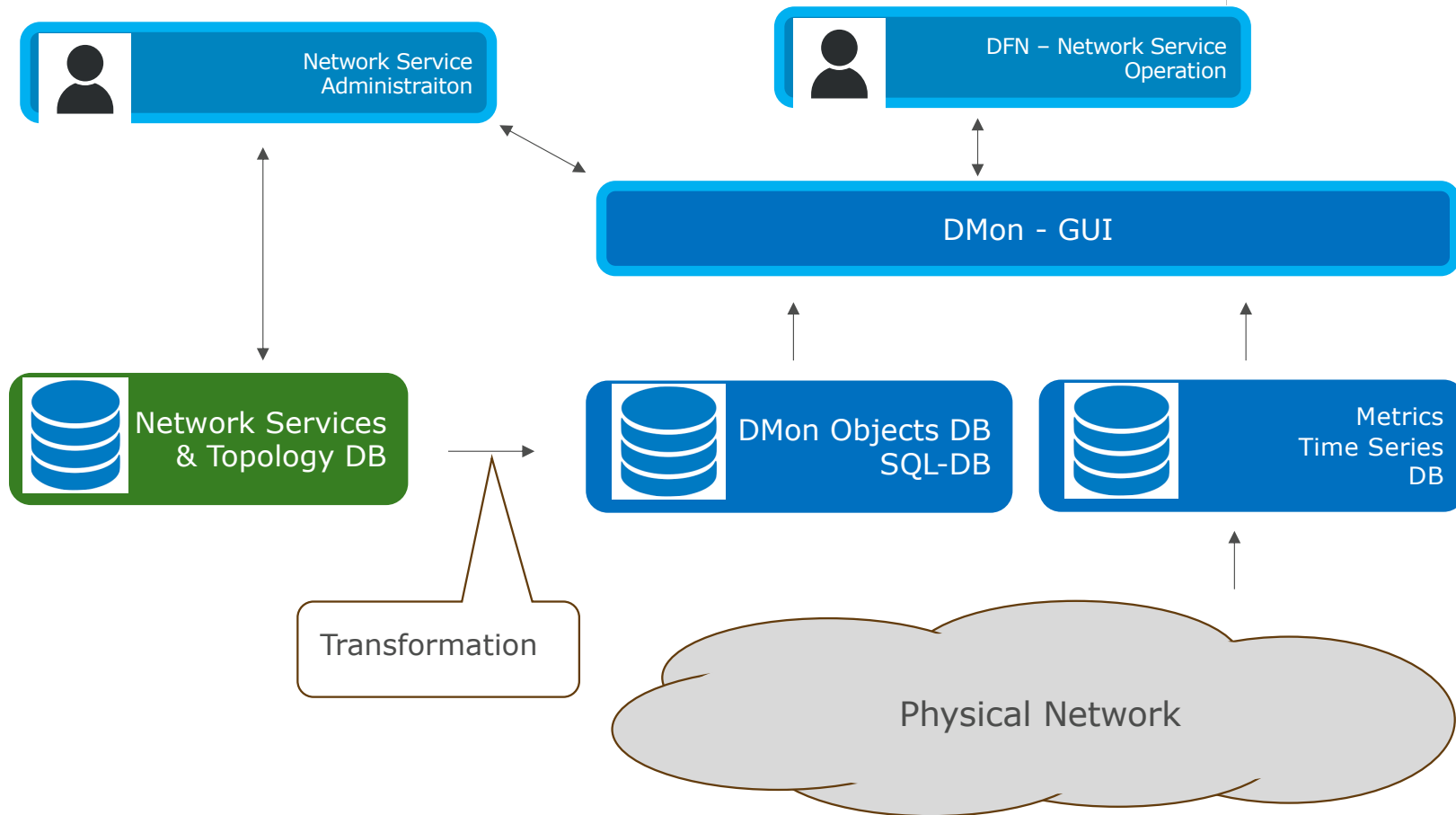
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# DFN

- **D**Mon : German: **Dienste** , English **Services**
- Initially replacement of Cacti and MRTG (Dashboards, Weathermaps, Graphs)  
(SNMP based Monitoring)
- Developed with SW-Engineers @ DFN-Hamburg (DFN-CERT)
- Provides
  - GUI for Network Services Department at DFN with initial focus on DFN-NOC requirements.
  - Interface to DFN ´s customer portal (Graphs on customer`s access Link Load)
  - Statistics for network reporting
  - Self Topology Learning through interface with Topology Database
- Extensions on the Roadmap: Streaming Telemetry, Partly Optical Monitoring: (Fiber Breaks, Optical VPN Traffic Load, ...)

# System Overview

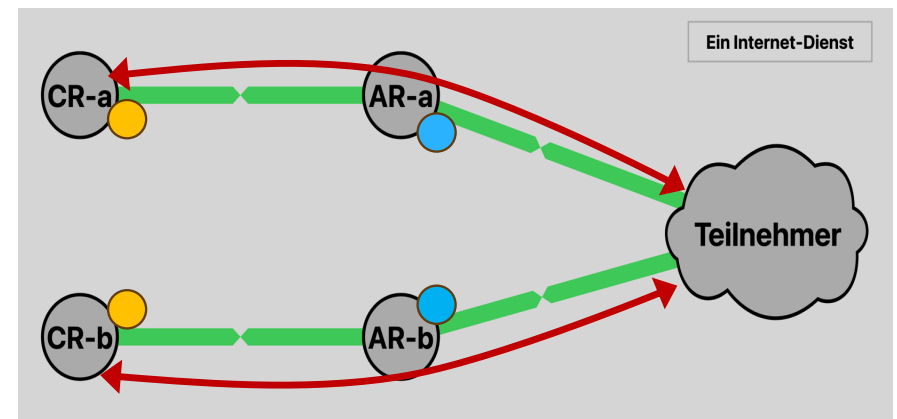
# DFN



# System Design Goals

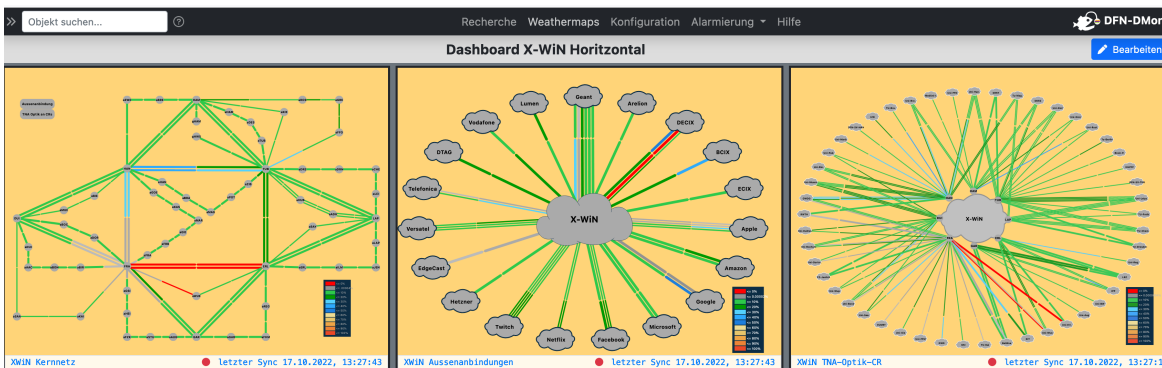
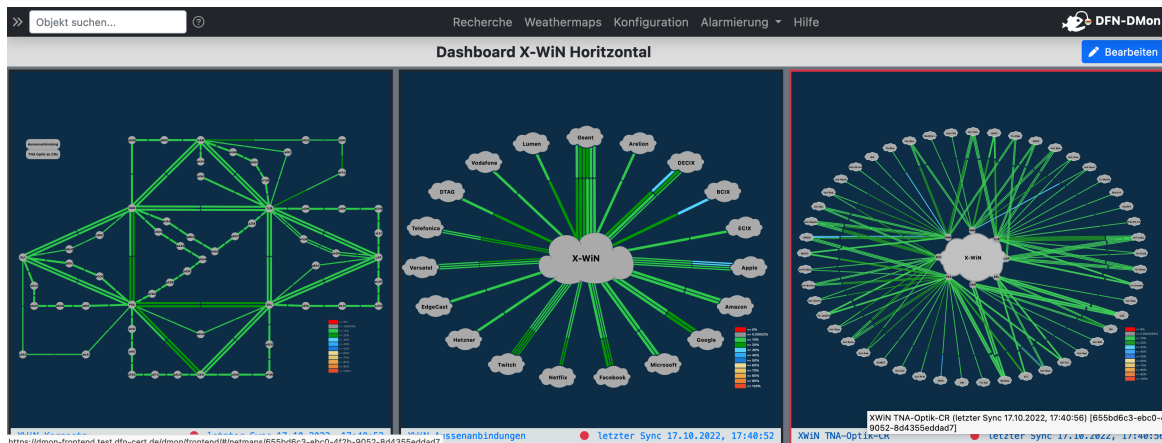
# DFN

- DMon DB : Modelling of all monitored Objects with dependencies
  - To provide very fast access to views on network services
  - To allow alarm feature to show fault impact and support root cause analysis
- GUI to provide
  - Very fast access
    - to all relevant monitored data on a **given network service**
    - to graphs directly from weathermap
  - Configuratuion utiltiy provides setup of
    - Dashboards of Weathermaps
    - Weathermaps designs
    - Savalbe selection of graphs,
    - Savable views on top-N graphs with filters



# Dashboard and Weathermaps

# DFN

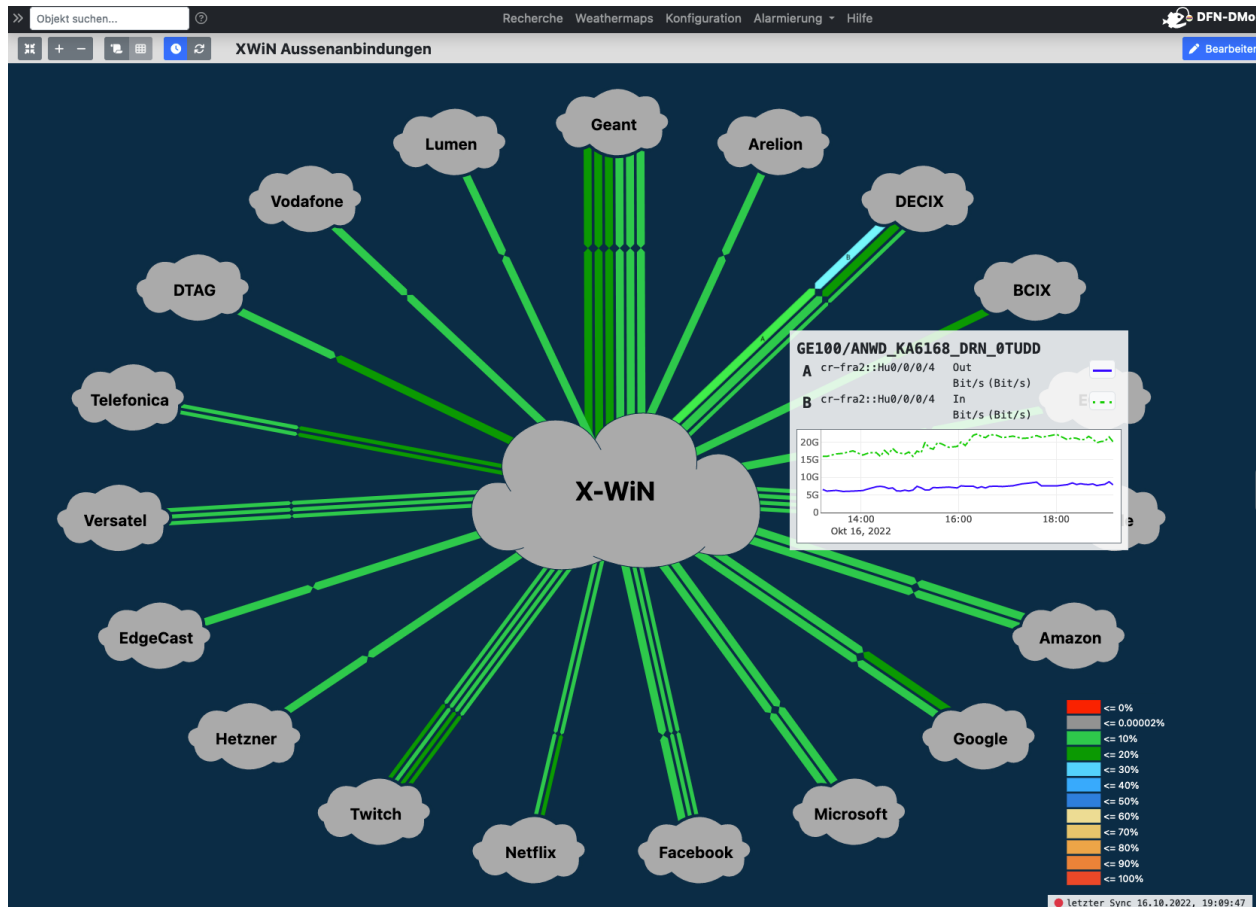


- ▶ Selection of Weathermaps in Dashboards  
Here: Typical Dashboard used @DFN-NOC
- ▶ Access WM from Dashboard

- ▶ Clear Alarm Display using Background Color

# Weathermap Functionality (I)

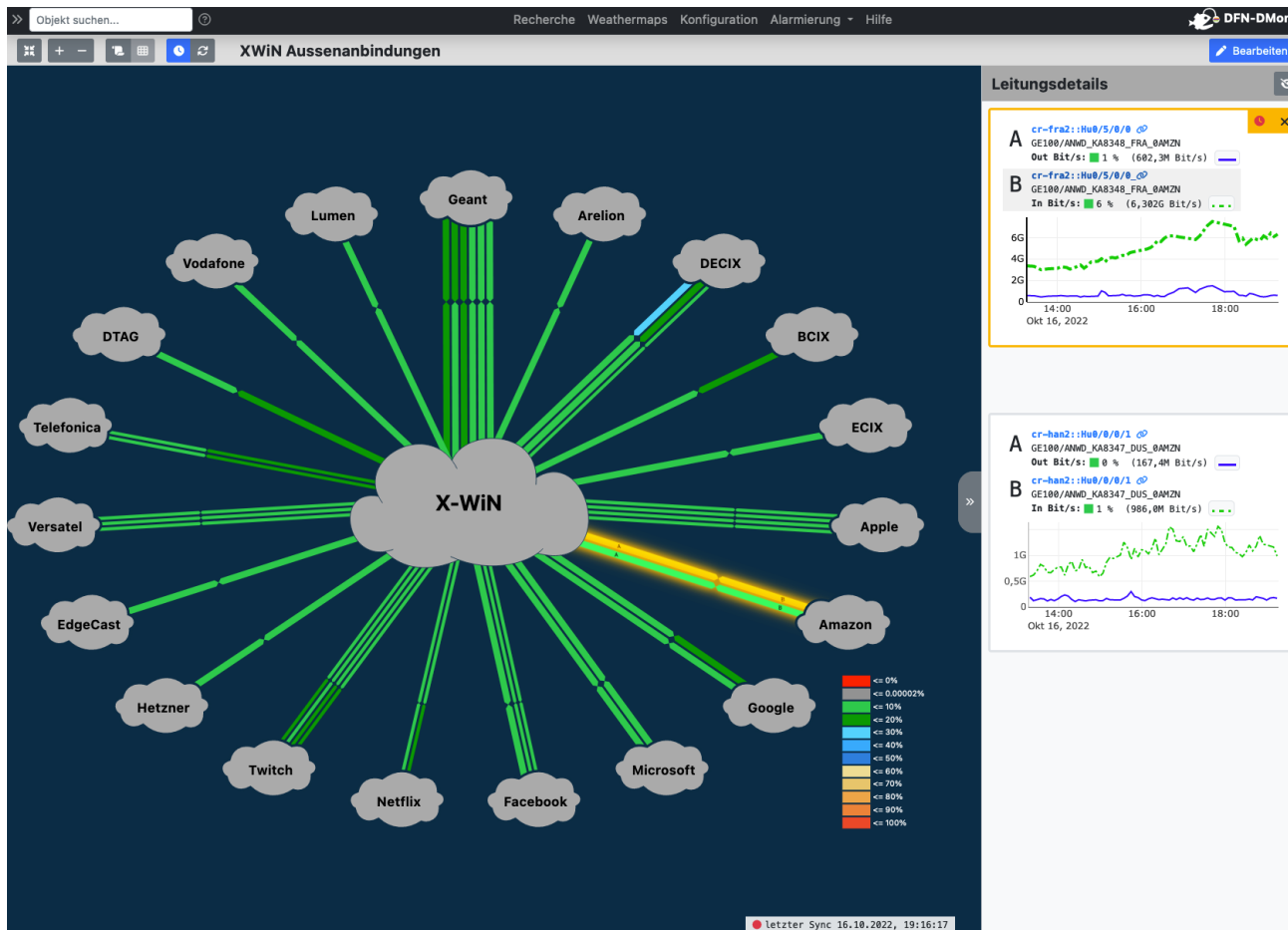
# DFN



- ▶ Weathermap shows configured Metrics (here link loads and Alarm state (if traffic is 0))  
Zeigt Auslastung und Fehlerzustände
- ▶ Pop-Up Graphs when hover on links

# Weathermap Functionality (II)

# DFN

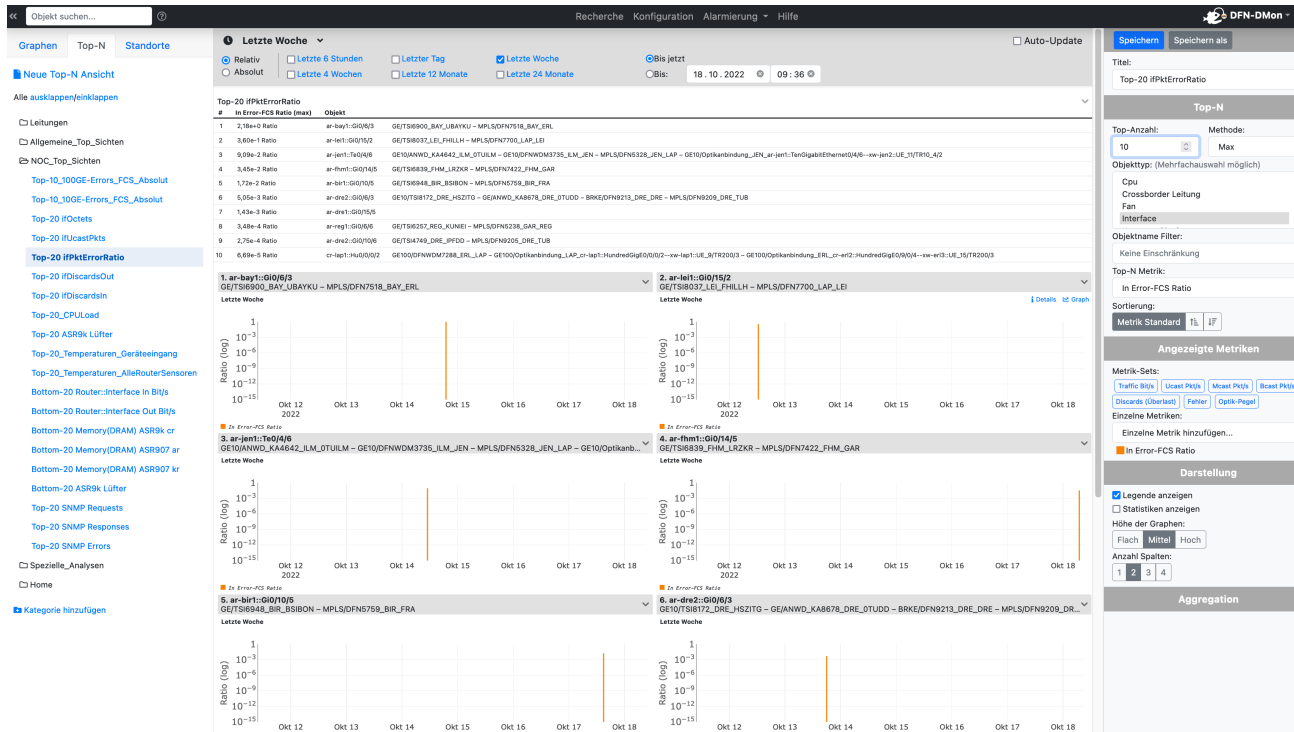


- ▶ Permanent View on one ore more Link Graphs
- ▶ From Link Graph access to research component to get deeper views in time and other link metrics.



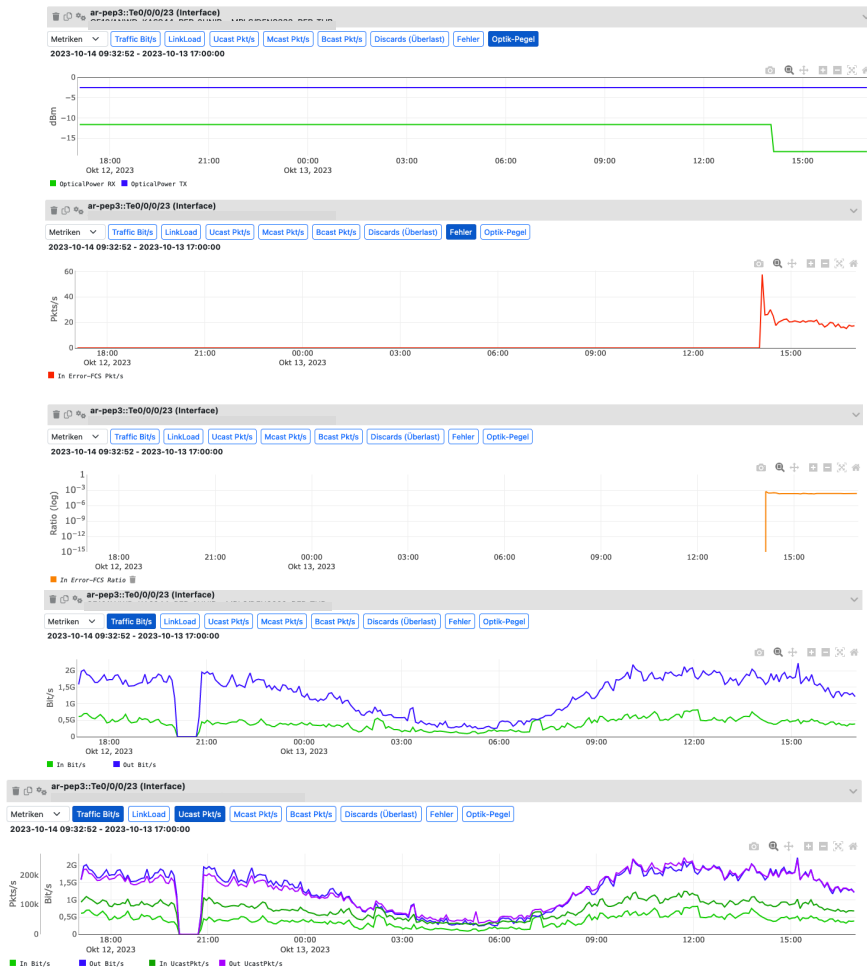
# Research Component

# DFN



- For Power Users: Fast text search on all measured objects (circuits, Router Interfaces, Power Supplies, etc)
- Left-Sidebar, provides
  - Access to manually configured Views
  - Automated views with configured filters and sortings
  - Pop Devices Views, learned from Topology DB
- Right-Sidebar
  - Toolbar that provides configuration options on object filters, metrics, sortings, graph arrangements.

# Typical Use Case : Fault Analysis



1) Alarm reports drop of optical Rx Power

2) Check if there are incoming CRC errors

3) Check on Impact to network service  
look at metric packet error ratio: here ca. 10<sup>-4</sup>

4) Look if there are drops in bitrate and packet rate

5) no big impact on overall service  
but impact on TCP on long high bandwidth paths.

=> customer is notified by NOC

