



**BENOCS**

Stop guessing. Start  
knowing

# Deep insights through network visibility

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Use Cases for NRENs

2024

# Our Team



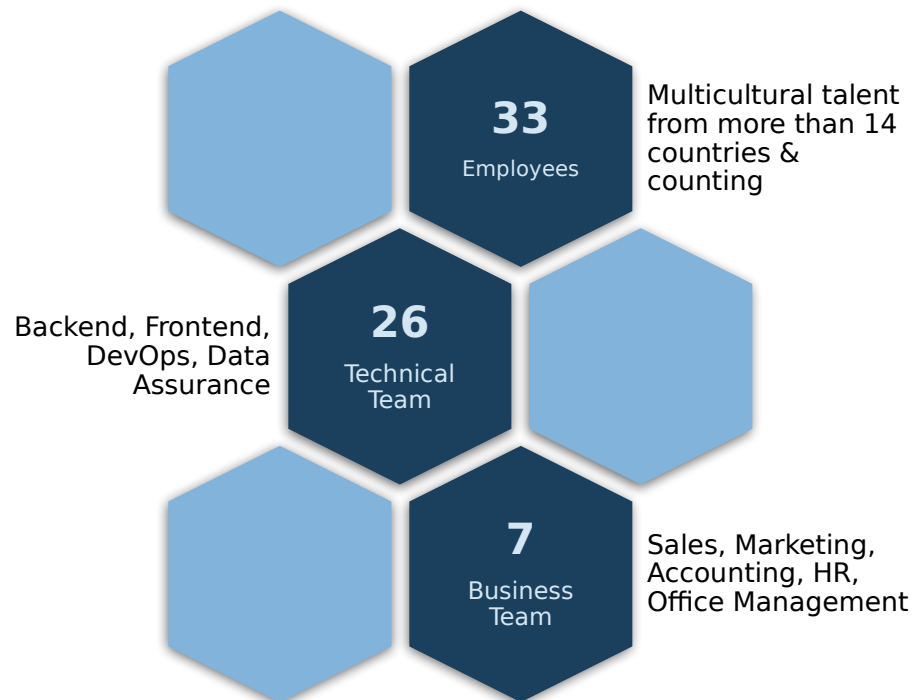
**Stephan Schroeder**  
Chief Executive Officer



**Ingmar Poes**  
Chief Technical Officer



**Phillip Urbanik**  
Chief Product Officer

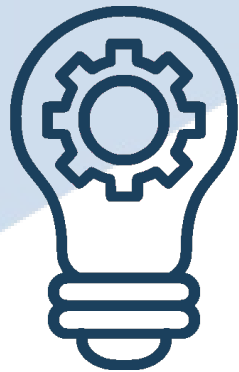


## Skills and Competencies

- 💡 Highly automated operation
- 💡 Massive data-processing at wire-speed
- 💡 Deep understanding of telco operator needs
- 💡 Close co-operation with universities

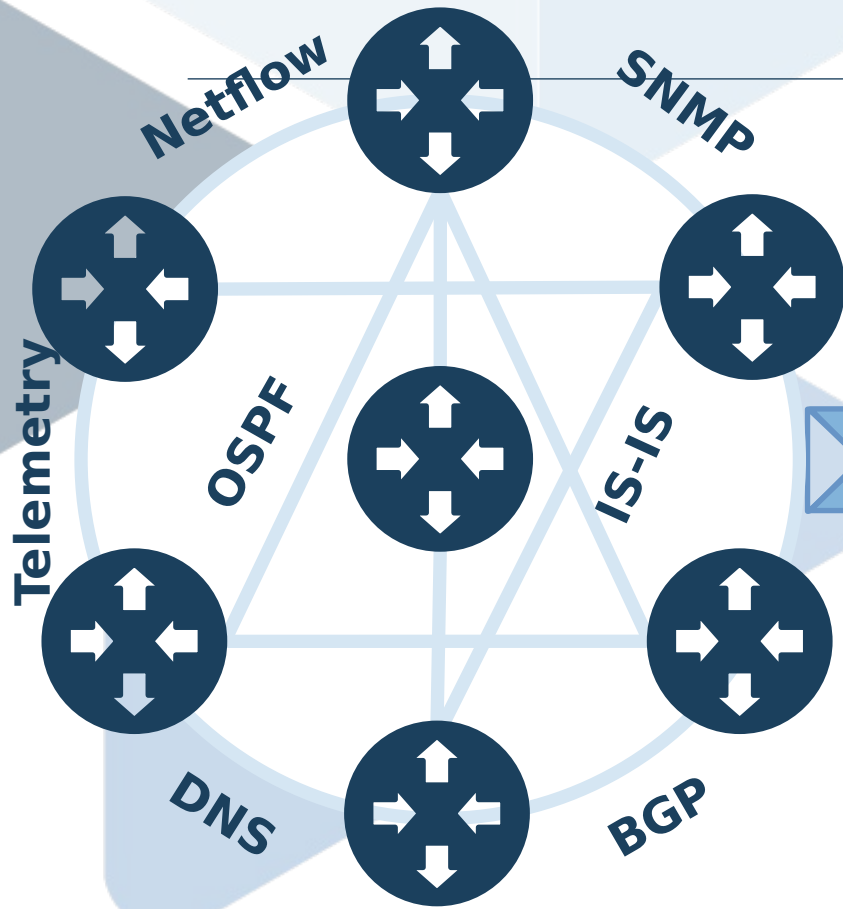
# Benefits of network intelligence

- ✓ Full Internet supply chain visibility
- ✓ Automated and intelligent solutions
- ✓ Traffic steering and optimization
- ✓ Strengthen customer/partner relationships

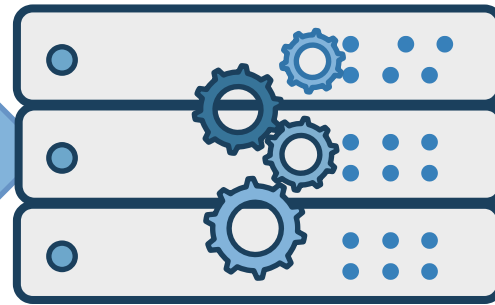


- ✓ Increased revenue
- ✓ Reduction in CapEx and OpEx
- ✓ Increased QoE and QoS
- ✓ Increased efficiency and productivity

# How we do it



## BENOCS CORE ENGINE



Our proprietary aggregation and cross correlation processes requires significantly less compute power compared to competitors

- Flow Explorer**: A screenshot showing network flow data with multiple line graphs and a table below.
- CDN Flow Director**: A screenshot showing a network diagram with nodes A, B, and C, and a central 'Director' box with numbered paths (1-7).
- Capacity Planner**: A screenshot showing two line graphs representing capacity usage over time, with a table below.
- Looking Glass**: A screenshot showing a detailed table of network data, likely IP addresses and their associated information.
- Anomaly Alerts**: A screenshot showing a line graph with a sharp spike, indicating an anomaly, with a table below.
- Application Identifier**: A screenshot showing logos for major streaming services: NETFLIX, STEAM, YouTube, TikTok, and Disney+.

PROTOCOL POOL ▶

PROCESSING ▶

NETWORK INTELLIGENCE



# Flow Explorer- Transform data to information

1 End-to-end flow

2 1-click filters

3 SNMP overlay

4 Data Export



# Raw Network Analyzer

1

Advanced Query filtering with 30 datapoints

2

Right click on the table to choose all 30 datapoints using "Select a column" option

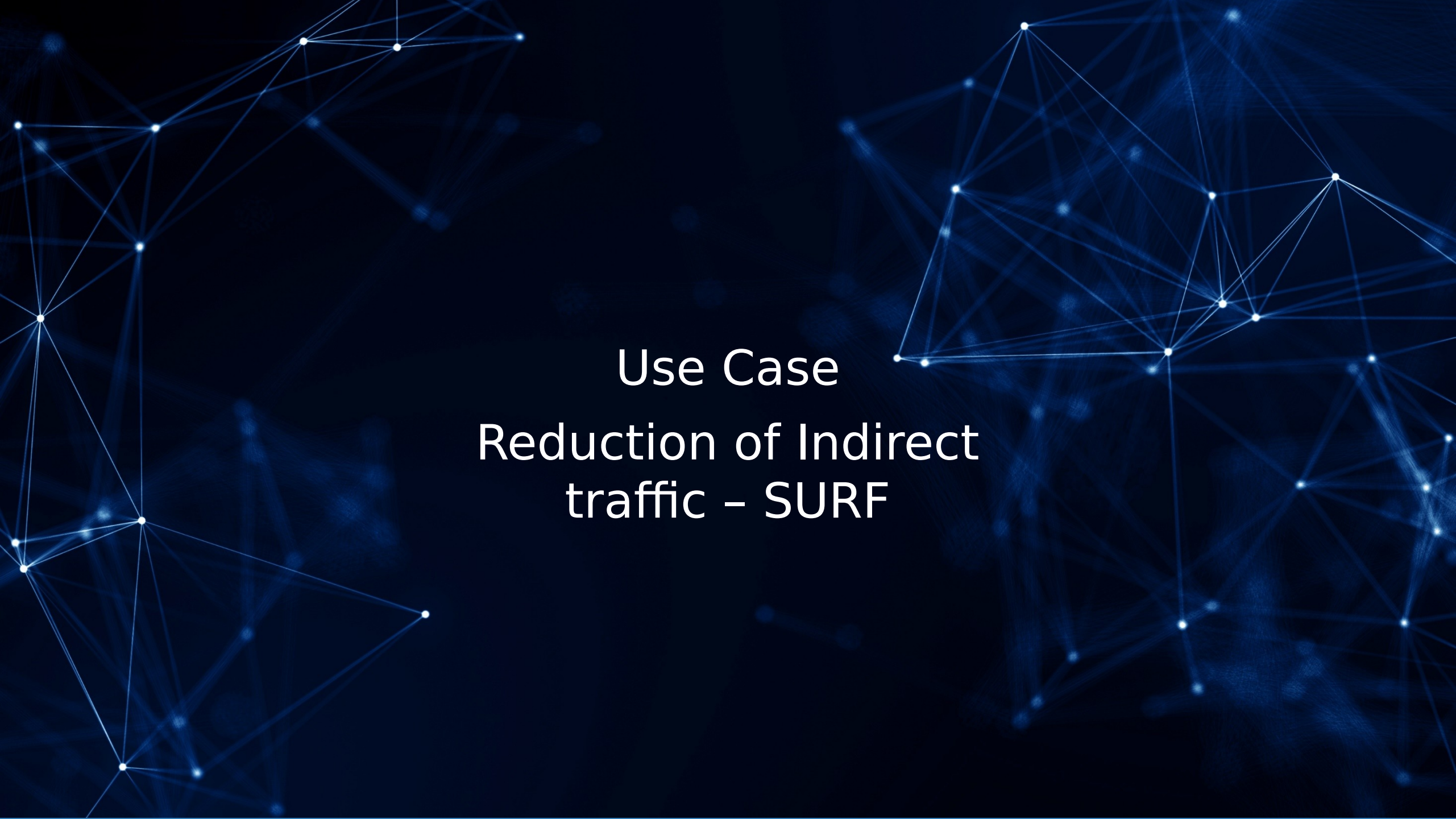
3

Clicking on the two dots below each column heading will group the table by that column

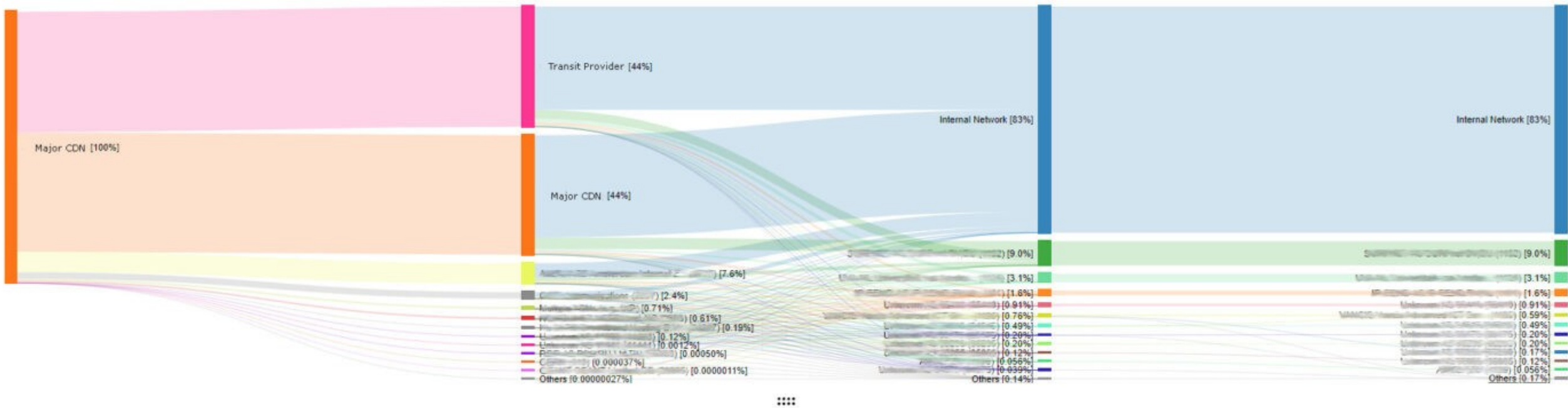
The screenshot displays the Raw Network Analyzer interface. At the top, there are date and time selection fields for 'Begin' (26.08.2024 13:30 UTC) and 'End' (26.08.2024 14:30 UTC). An 'Advanced query filter' dialog is open, showing a list of fields and two rules: 'Interface Type equals edge-facing' and 'Destination Port equals value 2906'. A blue circle with the number '1' is overlaid on the dialog. Below the filter is a large grey area representing a data visualization. At the bottom, a table lists network data with columns: InInterface Name, Source Subnet, Source Application, Source Infrastructure, Handover AS, Exporting Router, Bytes, Average Bps, and Max Bps. A red circle with the number '3' is overlaid on the 'Source Subnet' column header. A 'Select a column' dialog is open over the table, with a green circle and the number '2' overlaid on it. The table contains 8 rows of data, all with 'Netfix' as the source application and 'nflxvideo.net' as the source infrastructure.

	InInterface Name	Source Subnet	Source Application	Source Infrastructure	Handover AS	Exporting Router	Bytes	Average Bps	Max Bps
	bundle-ether3	2a00:86c0:2074::/48	Netfix	nflxvideo.net	2906		28.4 TB	63.1 Gbps	63.6 Gbps
	bundle-ether3	2a00:86c0:2075::/48	Netfix	nflxvideo.net	2906		28.1 TB	62.4 Gbps	64.5 Gbps
	-	2a00:86c0:2015::/48	Netfix	nflxvideo.net	2906		26.7 TB	59.3 Gbps	61.9 Gbps
	bundle-ether3	2a00:86c0:2014::/48	Netfix	nflxvideo.net	2906		26.6 TB	59.1 Gbps	60.3 Gbps
	bundle-ether2	2a00:86c0:2078::/48	Netfix	nflxvideo.net	2906		23.4 TB	52 Gbps	54.2 Gbps
	bundle-ether1	2a00:86c0:2079::/48	Netfix	nflxvideo.net	2906		22.9 TB	50.9 Gbps	53.9 Gbps
	bundle-ether3	45.57.74.0/24	Netfix	nflxvideo.net	2906		18.8 TB	41.7 Gbps	42.5 Gbps
	bundle-ether3	45.57.75.0/24	Netfix	nflxvideo.net	2906		18.6 TB	41.3 Gbps	42.2 Gbps





Use Case  
Reduction of Indirect  
traffic – SURF



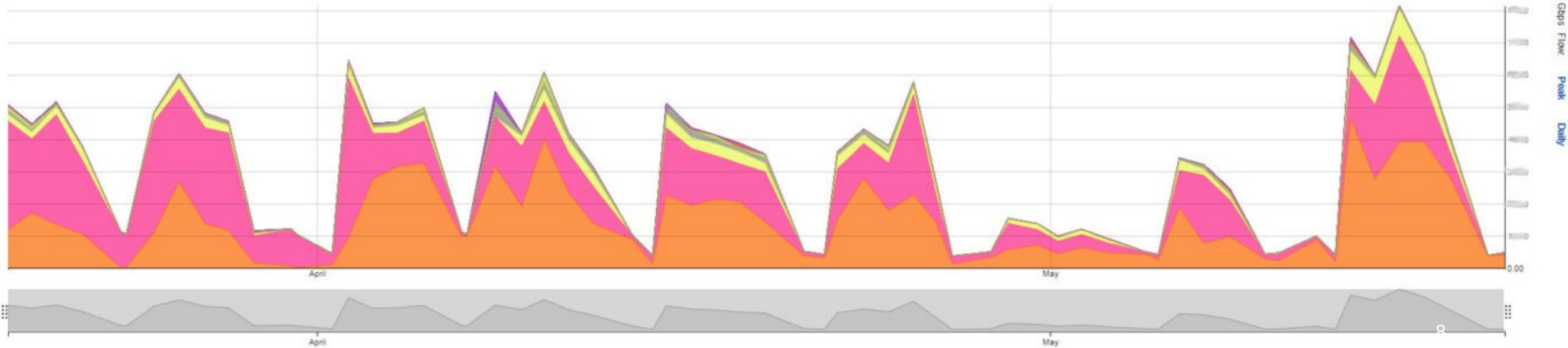
Volume Share for Source AS

Volume Share for Handover AS

Volume Share for Nexthop AS

Volume Share for Destination AS

Relative
  Show SNMP Total Traffic
  Show Extrapolated Flow (1.59% divergence)
 Cannot display SNMP for filter(s): Source AS. Please clear this filter to view SNMP.





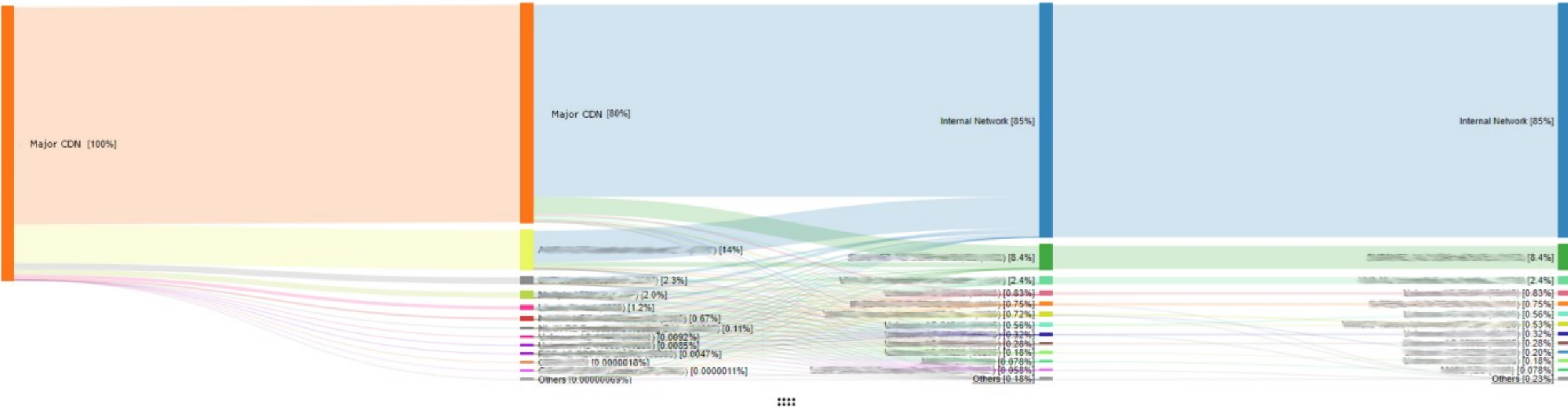
# Solution

Indirect traffic was coming from a major CDN.

- Joachim, Network operator on SURF, reached out to BGP Engineer of the CDN in question, and suggested corrections to the BGP announcements to steer traffic towards the direct interconnection and not via a transit provider.

The direct traffic jumped from 42% to 80%, an absolute increase of 90%.

Consequently, the indirect traffic fell, from 58% to 20%, bringing the traffic flow to the IP upstream provider below the Committed Data Rate (CDR). This shift in traffic to the direct interconnection with the CDN network saved substantial monthly costs for SURF.



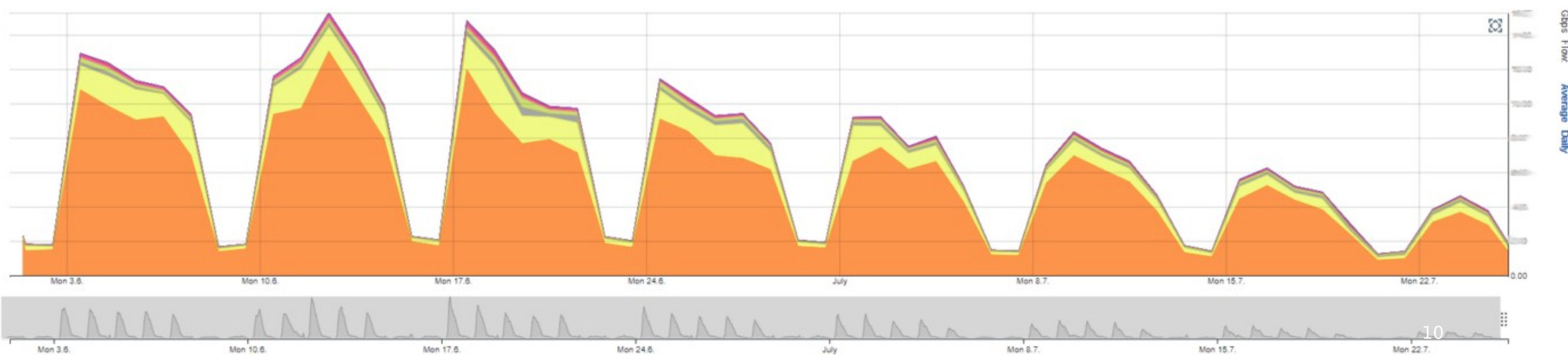
Volume Share for Source AS


Volume Share for Handover AS

Volume Share for Nexthop AS

Volume Share for Destination AS

Relative 
  Show SNMP Total Traffic 
  Show Extrapolated Flow (2.48% divergence) 
 Cannot display SNMP for filter(s): Source AS. Please clear this filter to view SNMR





Use Case  
More examples at a  
glance



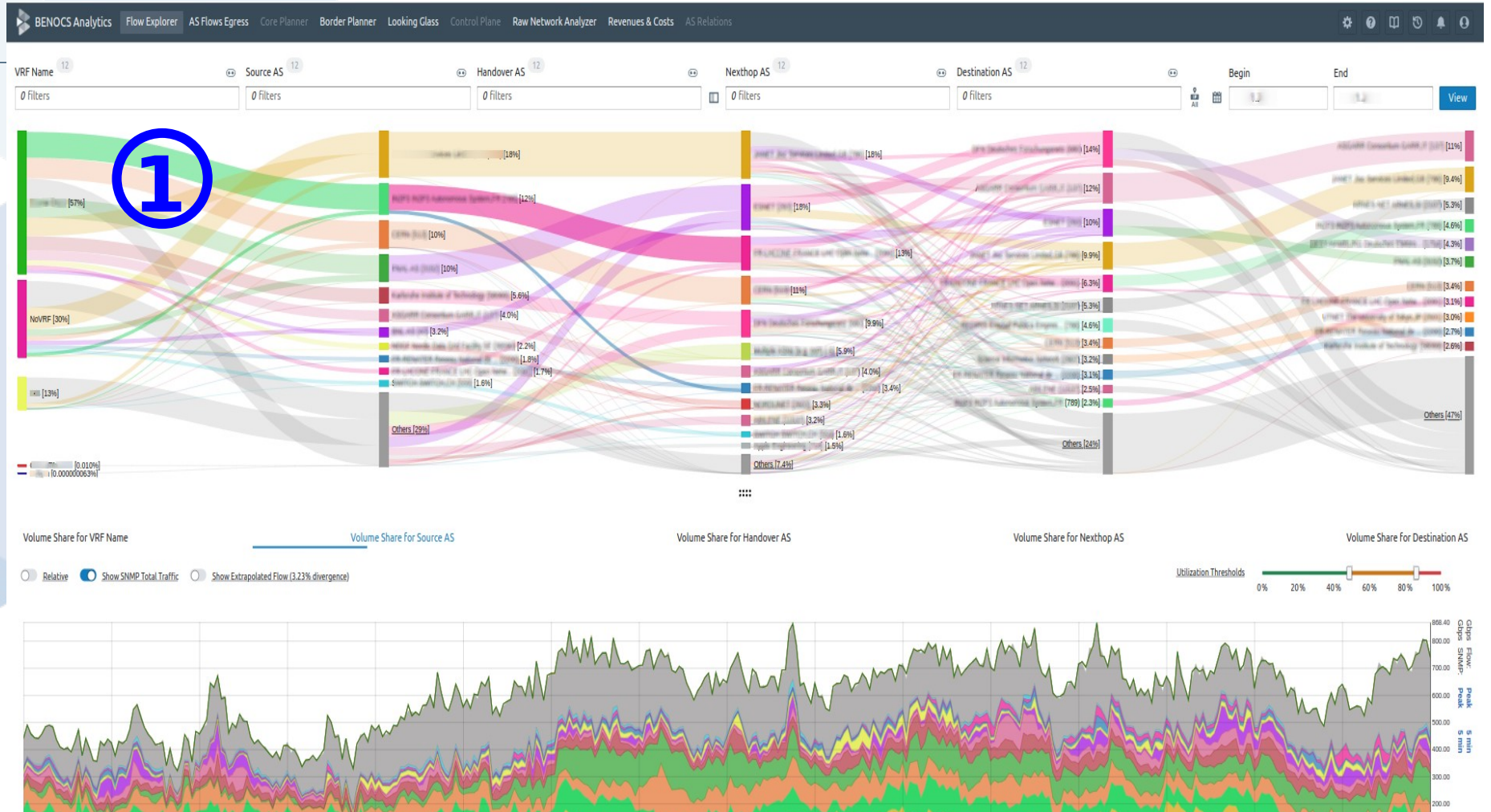
# BENOCS Analytics Usecases

Sales, Marketing & Peering	Network Operations, NOC, Firstline Maintenance	Network Engineering, BGP-Engineering, Traffic Engineering	Capacity Planning
Prospect identification Flow explorer	Monitor peers, transit, caches Flow explorer	Route optimization Flow explorer Looking Glass	Interconnect capacity Border Planner
Peering & cache locations Flow explorer	Alerting without noise Anomaly Alerts Application Identifier	Route debugging Looking Glass	Backbone links capacity Core Planner Core Flow Inspector
Policy control Flow explorer Anomaly Alerts Customer Portal	Traffic debugging Raw Network Analyzer	Localization of traffic- Flow explorer	Alerting without noise Anomaly Alerts
Profitability checks Flow explorer	Route debugging Looking Glass	Localization of traffic- steering Flow explorer	
Customer retention Flow explorer Anomaly Alerts Customer Portal			

# VRF Inspection

1 Check volume share for **VRF Name**

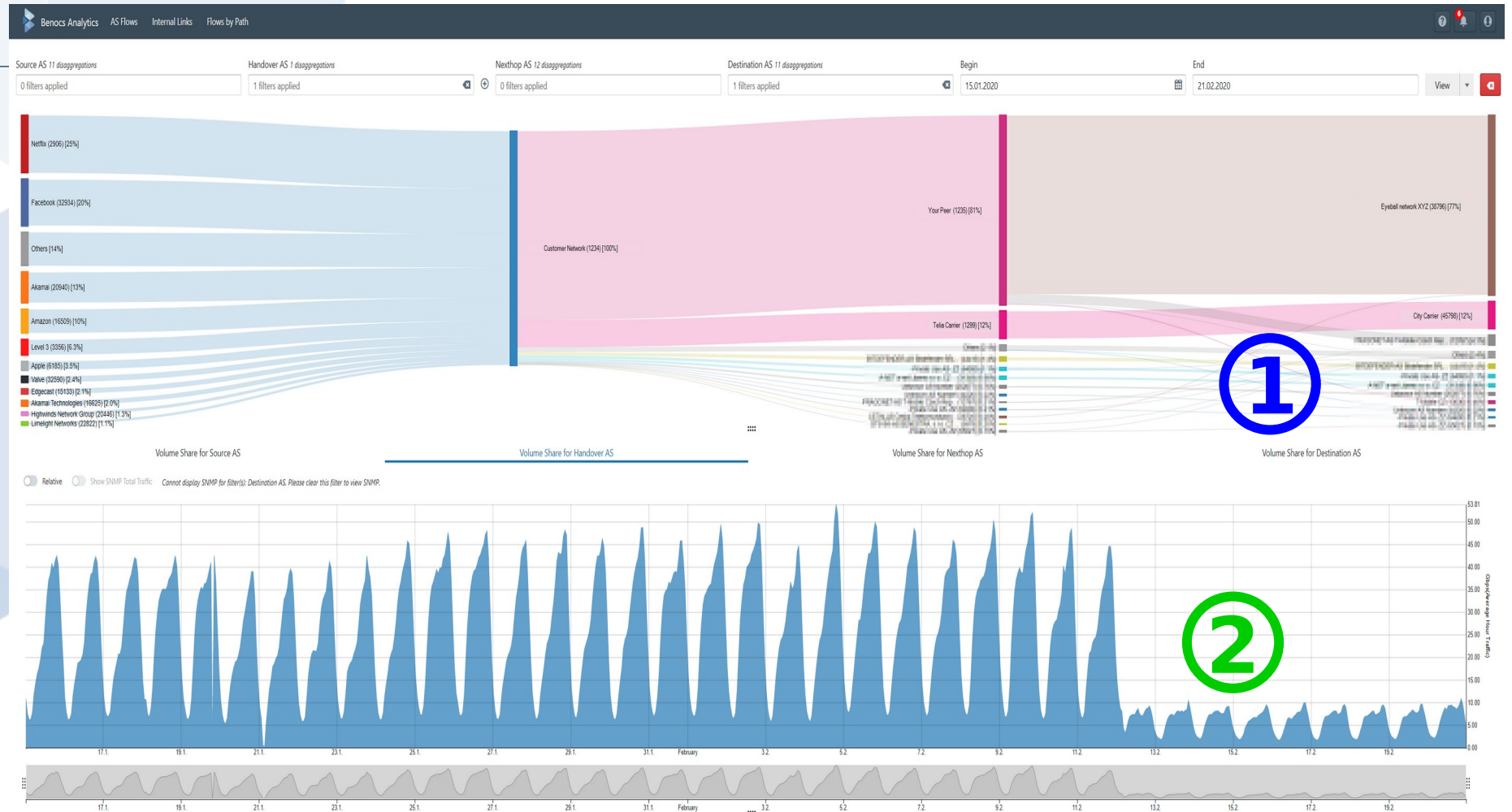
Traffic levels dropped significantly



# Find sudden changes to your network in a click

1 Check volume share for Destination AS

2 Traffic levels dropped significantly





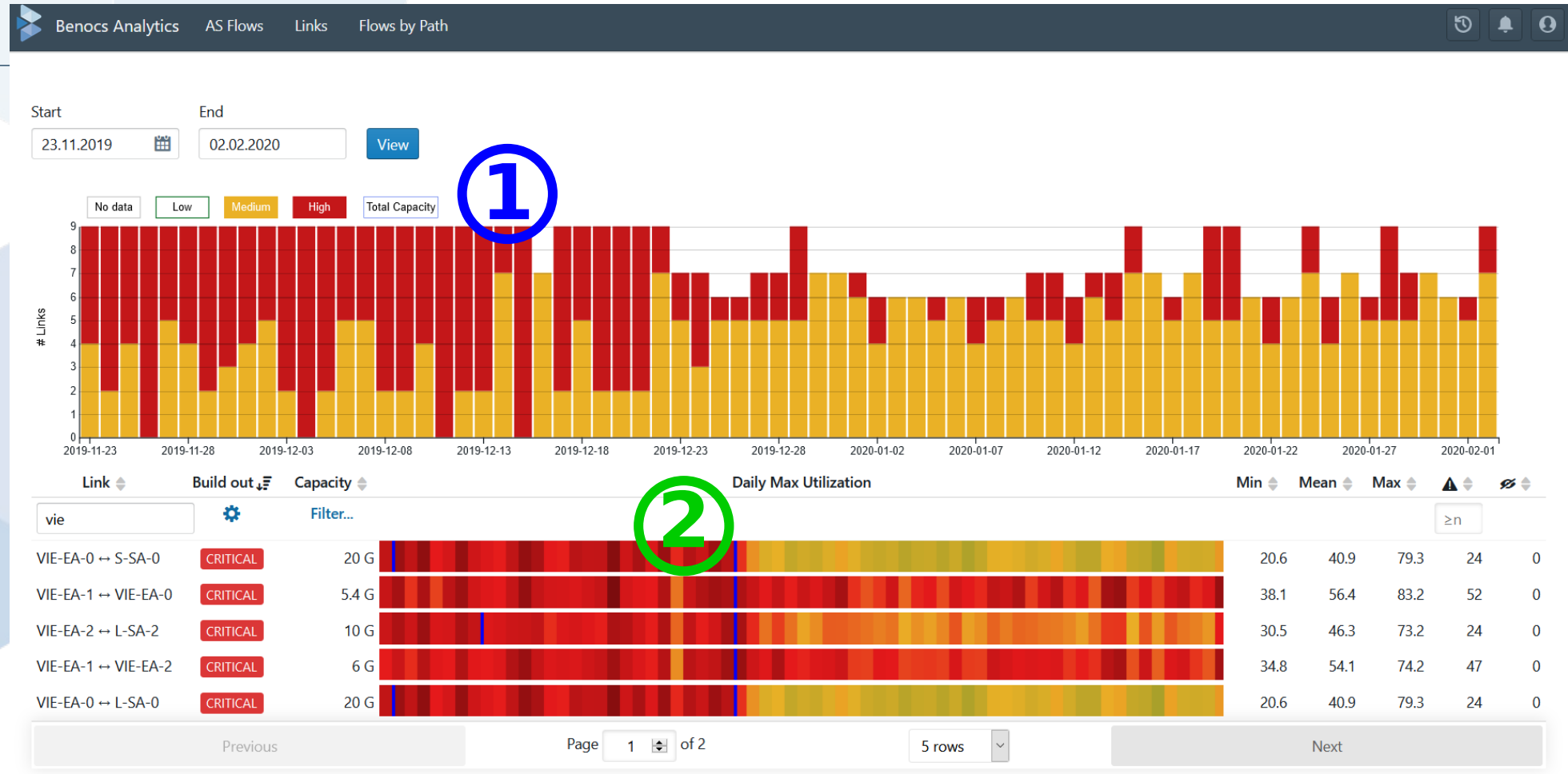
# Identify critical capacity routers using thresholds

1

Routers in Vienna have been listed as “critical” for over a month.

2

We can see that doubling the capacity in most cases was enough to solve the problem.

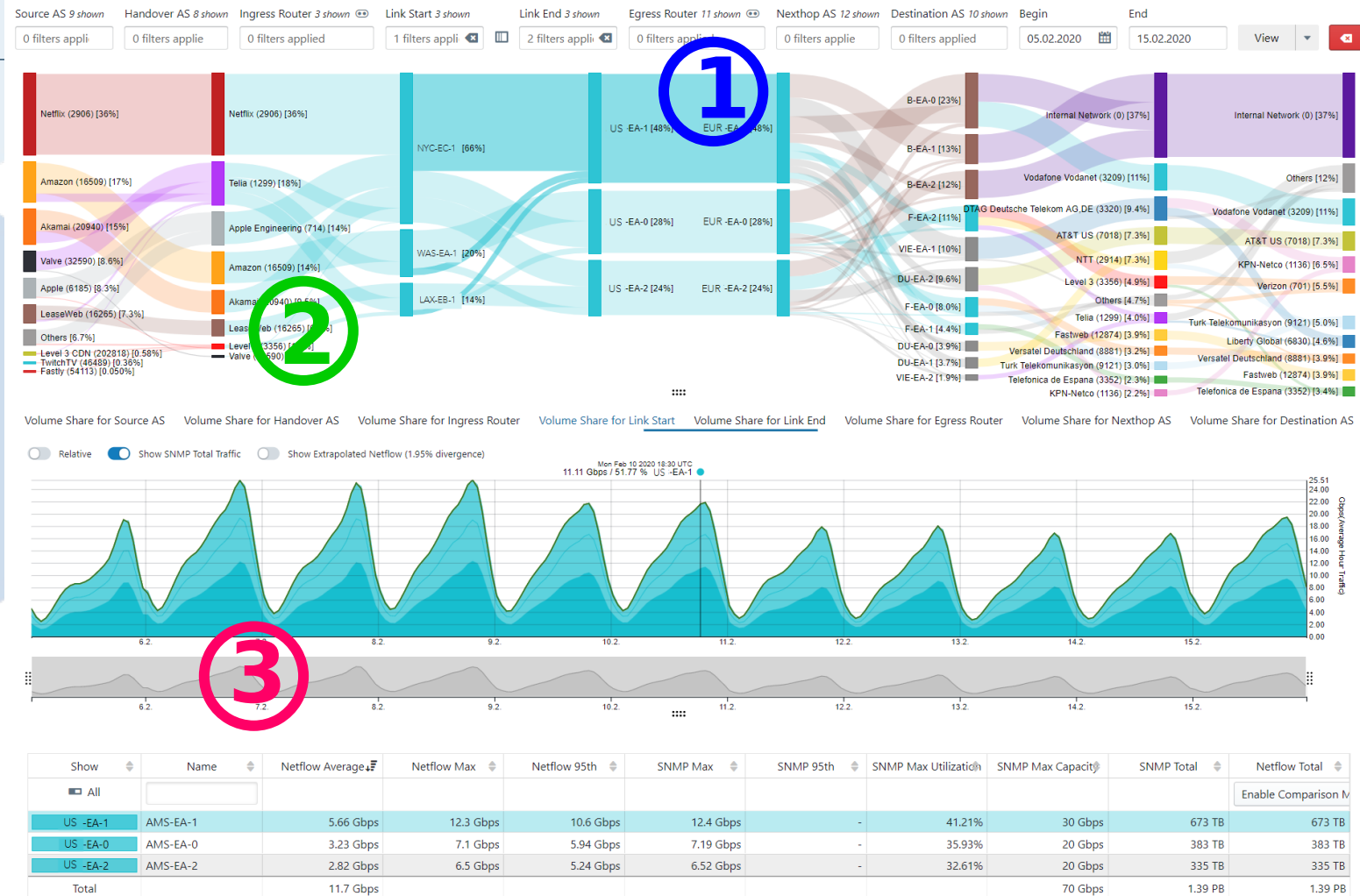


# Backbone Optimization - Check the traffic traversing through core-router links

**1** Current view caters to traffic passing from USA to Europe backbone links

**2** Break-out and filter any dimension(s) you are interested in

**3** The table gives you traffic split in actual numbers to understand traffic vs capacity of that link



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