

# Network Orchestration

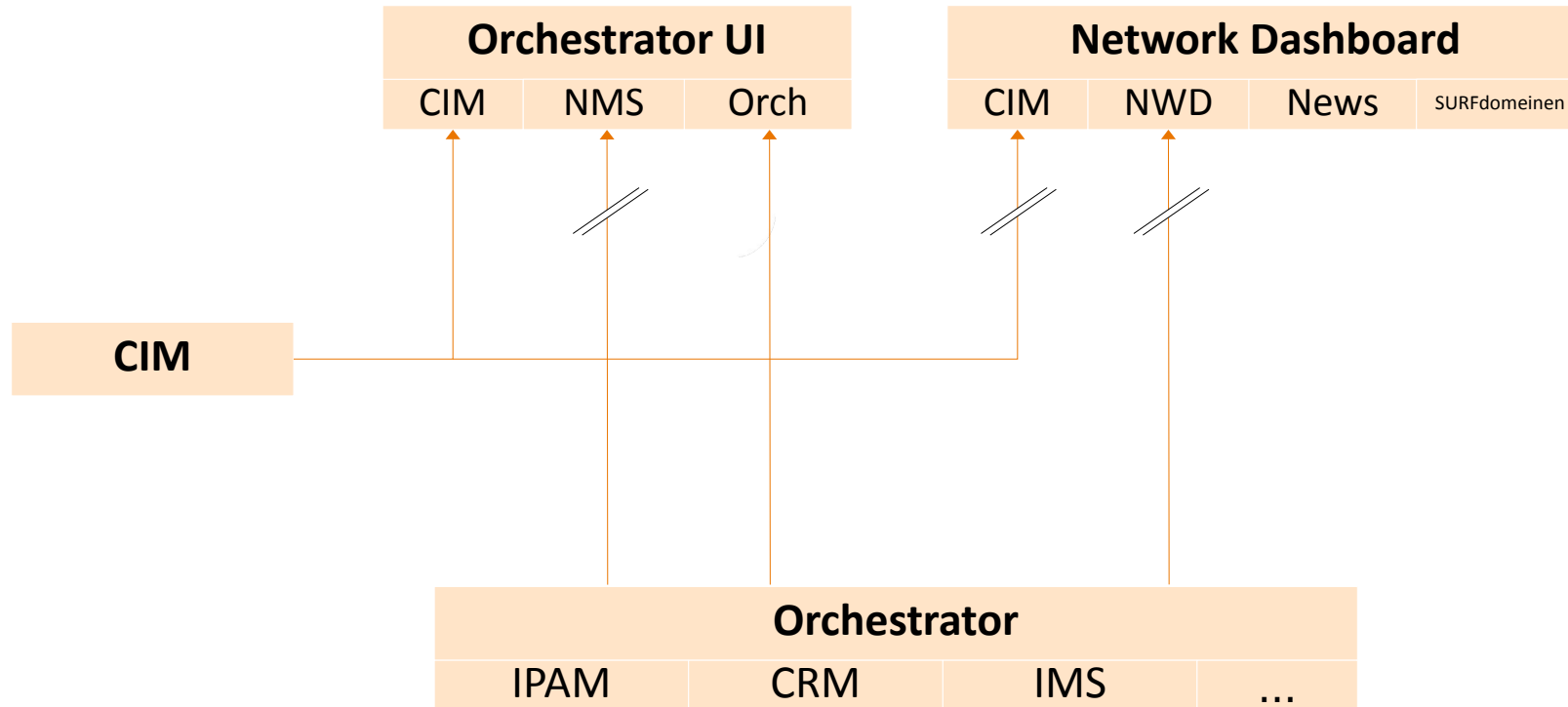


## SURF 2026

Arthur Nieuwland  
June, 2026

**SURF**

# LANDSCAPE




CIM: Customer Inform Module  
NMS: Network Management System



# Network Dashboard


Customer portal of network services which can be monitored and self-serviced to an extent by customers

 **Featured news**

**The North Sea as a Research Instrument**  
6 May 2026


**Fiber Optic Sensing Workshop The Netw...**  
8 April 2026

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 **Current Incidents**

**Incident - SNTT-66683**  
21 May, 14:40 until

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 **Planned work**







**Planned work - SNNP-104132**  
5 Jun, 00:00 until 06:00

**Planned work - SNNP-104291**  
4 Jun, 22:00 until 06:00


**Planned work - SNNP-104443**  
4 Jun, 08:00 until 17:00

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**SURF network**  
47 services

 <b>Internet</b> <a href="#">More information</a>	 <b>IP prefixes</b> 4 service(s)
 <b>EVPN - Multipoint</b> 1 service(s)	 <b>L3VPN - Multipoint</b> <a href="#">More information</a>
 <b>EVPN - Point-to-point</b> 10 service(s)	 <b>Ports</b> 32 service(s)


✓ 33 | − 10 | ⚠ 0

 **SURFdomijnen**  
Domain registration and DNS management.


[OPEN PORTAL](#)

 **SURFcert**  
Review and manage your DDoS protection, DNS-firewall and other security measures here


⚠ 0 | ⚠ 0 | ⚠ 0

 **SURFfirewall**  
No notifications

✓ 1 | − 0 | ⚠ 0

 **SURFwireless**  
Wifi as a Service. Reliable wifi, maintained by SURF.

[MORE INFORMATION](#)

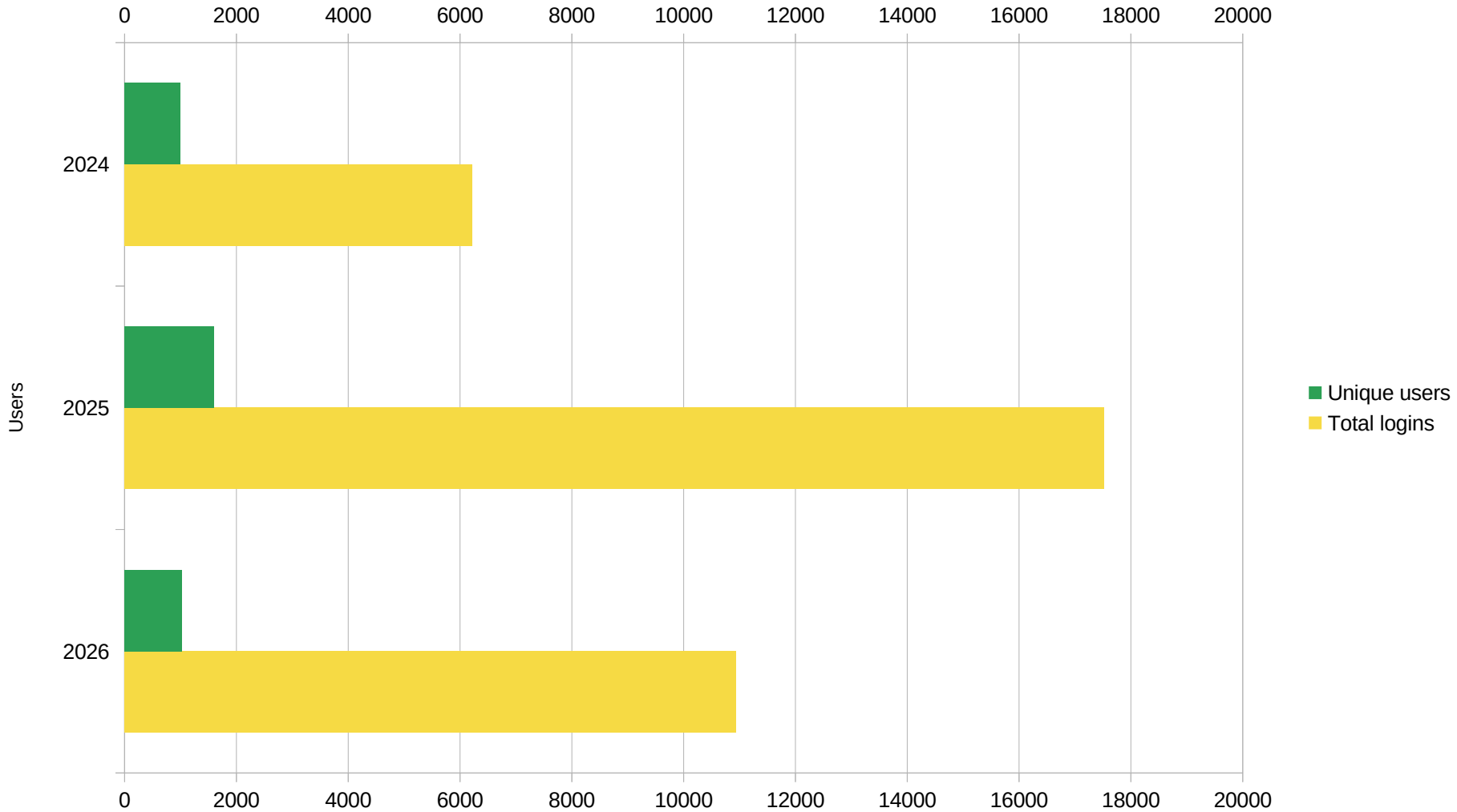
 **SURFwired**  
Wired as a Service. Reliable campus network, maintained by SURF.

[MORE INFORMATION](#)



# USAGE INCREASE NETWORK DASHBOARD

Data: June, 2026

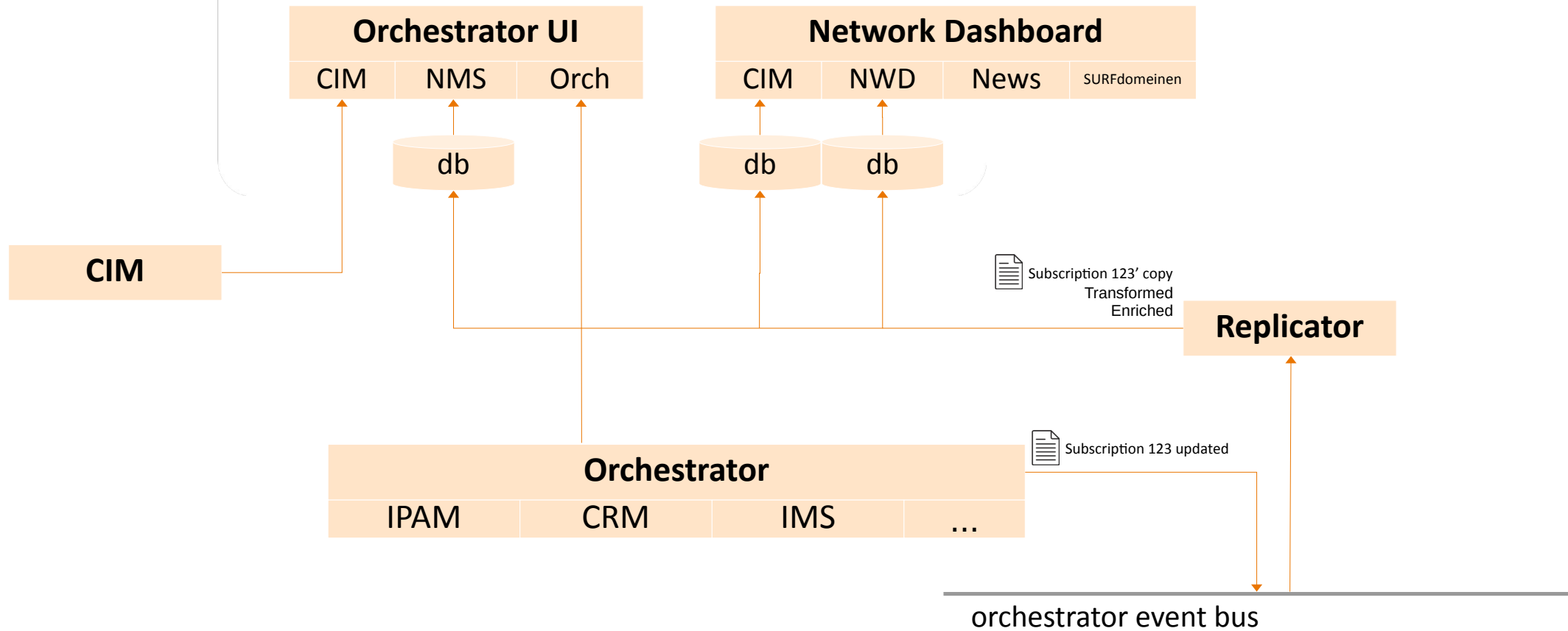


# PHASE OUT OF GRAPHQL FEDERATION

Unified API	Cascading issues affecting all down-stream
Independently scalable	Slow and crash-prone
Schema integration (DDD)	Difficult to maintain and understand



# PHASE OUT OF GRAPHQL FEDERATION



# AARNETNOC L2VPN ASD001B 100 Gbit/s ⚡

NA REAL TIME IN 252,42 Mock REAL TIME OUT 252,42 Mock

Poorten Service configuratie Algemeen Workflows Gerelateerde services Geplande werkzaamheden

### ESI asd001b-jnx-06 vlan 3921,3923

**AGGSP 100G tagged (asd001b-jnx-06)**  
NA 6162e98f

Eigenaar	DANTE
Modus	tagged
Vlan Id	3921,3923

Port 1

Status	NA
Node	asd001b-jnx-06
Interface	-
Fysieke poort	-
Connector	-
Fiber type	-
Patch	-

### ESI asd001b-jnx-06 vlan 3921,3923

**SP 100G tagged (asd001b-jnx-06)**  
NA 3bc819c9

Eigenaar	KAUST
Modus	tagged
Vlan Id	3921,3923

Port 1

Status	NA
Node	asd001b-jnx-06
Interface	-
Fysieke poort	-
Connector	-
Fiber type	-
Patch	-





# Network Management System

Engineer portal to view subscriptions as network services

# Data streamed from devices directly into UI

**Chassis** Services Customers

Search...

Chassis Name	Node Role	Chassis type	Software version
 asd002a-jnp-01	node-peering	PTX10002-36QDD [PTX1	25.4R1-S1.3-EVO
 asd066d-jnp-03	node-peering	PTX10002-36QDD [PTX1	25.4R1-S1.3-EVO
 aac001a-jnx-01	node-sn8	JNP204 [MX204]	23.4R2-S5.6
 ah001a-jnx-01	node-sn8	MX480	23.4R2-S5.6



## AARNETNOC L2VPN ASD001B 100 Gbit/s ⚡

0.00k↓ 0.00k↑

Ports Service configuration General Workflows Related services Planned Work

L2VPN multipoint service 100 Gbit/s

ESI asd001b-jnx-06 vlan 3920,3922,3924

**SP 100G tagged (asd001b-jnx-06)**  
0.00k↓ 0.00k↑

Owner: KAUST  
Mode: tagged  
Vlan Id: 3920,3922,3924

Port 1

Status	UP	UP
Power	0.56↓	-0.33↑
Traffic	1.16G↓	2.41G↑
Node	ASD001B-JNX-06	
Interface	100GBASE-LR4	
Physical port	2/1/0	
Connector	LC/PC	
Fiber type	single-mode	

ESI asd001b-jnx-06 vlan 3920,3922,3924

**AGGSP 100G tagged (asd001b-jnx-06)**  
0.00k↓ 0.00k↑

Owner: DANTE  
Mode: tagged  
Vlan Id: 3920,3922,3924

Port 1

Status	UP	UP
Power	-0.24↓	0.54↑
Traffic	6.70G↓	4.93G↑
Node	ASD001B-JNX-06	
Interface	100GBASE-LR4	
Physical port	0/1/3	
Connector	LC/PC	
Fiber type	single-mode	

# Network Management System

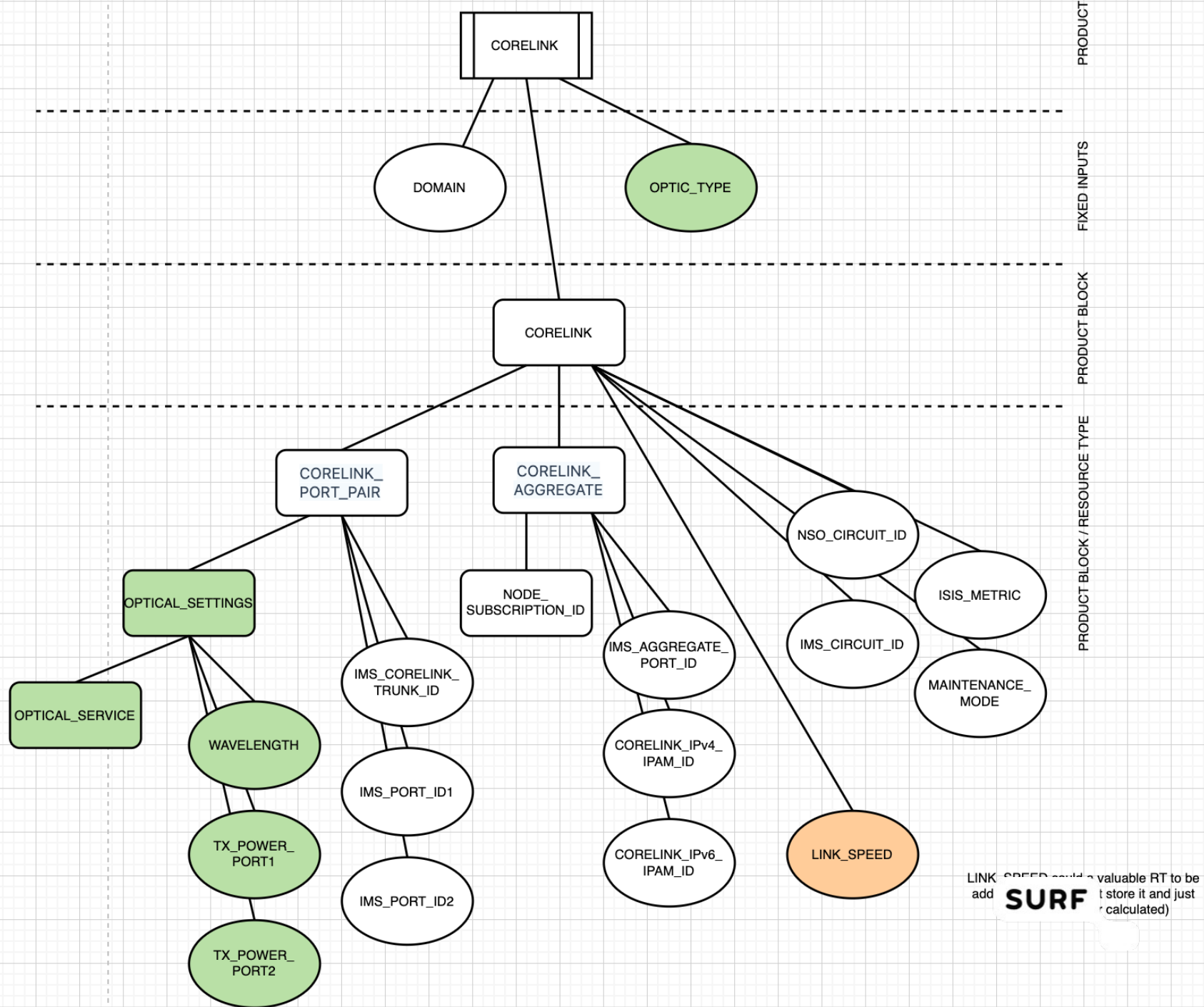
Engineer portal to view subscriptions as network services

# DWDM support

## CoreLink optic type

- non-DWDM
- 100G
- 400G
- 800G

Part of SURFnet infinity



LINK\_SPEED could be a valuable RT to be added (SURFnet infinity store it and just calculate it)

# AIOps

*"Phasing out first line support"*

Or giving them more tools to do their work better?

- Implemented MCP across the stack
- Chat support
- Exchangable models
- More this afternoon

# Reconcile workflows

Enforce state on external systems via empty modify workflow

Something as little as a customer name changes could lead to many out of sync subscriptions. Reconcile brings external systems back in sync.

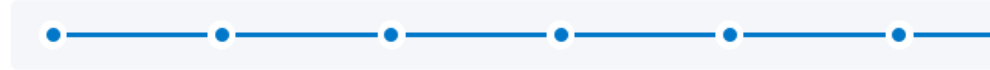
Each product has received a reconcile workflow.

## Reconcile IP Lir Prefix



 IP Lir Prefix

Status	Huidige stap	Customer
COMPLETED	Done	Universitair Medisch Cent



Workflow stappen [klap alles uit](#)



Start

success - 26-5-2026, 14:36:11



Load customer info

success - 26-5-2026, 14:36:12



Update subscription description

success - 26-5-2026, 14:36:13



Update RIPE

success - 26-5-2026, 14:36:15

# Tasks scheduling CRUD

Daily subscription validations

Daily customer data import

Nightly domain model export

...

**PUT**

`/api/schedules/` Update Scheduled Task

**POST**

`/api/schedules/` Create Scheduled Task

**DELETE**

`/api/schedules/` Delete Scheduled Task

**SURF**



# Metadata

Edit columns Export Schedule task

Task	Task description ↑	Next runtime	Schedule	
<b>task_import_crm_data_to</b>	Import CRM data to IMS	4-6-2026, 14:00:00	cron[hour='12']	
<b>task_import_crm_custom</b>	Import customers from CRM	4-6-2026, 21:00:00	cron[hour='19']	
<b>task_push_customers_to</b>	Push customers to Kafka	4-6-2026, 22:00:00	cron[hour='20']	
<b>task_sync_crm_customer</b>	Sync customers from CRM to RIPE	5-6-2026, 01:00:00	cron[hour='23']	
<b>task_clean_up_tasks</b>	Task Clean Up Tasks	4-6-2026, 17:34:33	interval[6:00:00]	
<b>task_resume_workflows</b>	Task Resume Workflows	4-6-2026, 12:34:33	interval[1:00:00]	
<b>task_validate_products</b>	Task Validate Products	5-6-2026, 04:30:00	cron[hour='2', minute='30']	
<b>task_validate_subscriptio</b>	Task Validate Subscriptions	5-6-2026, 02:10:00	cron[hour='0', minute='10']	
<b>task_validate_crm_locatio</b>	Validate CRM locations	5-6-2026, 09:00:00	cron[hour='7']	
<b>task_validate_corelink_ptj</b>	Validate Corelink Prefix records against subscriptions	5-6-2026, 02:00:00	cron[hour='0']	
<b>task_validate_ptp_prefix_</b>	Validate IPAM PTP records against subscriptions	5-6-2026, 02:00:00	cron[hour='0']	
<b>task_validate_customer_ij</b>	Validate IPAM customer IP Prefix records against subscriptions	5-6-2026, 02:00:00	cron[hour='0']	
<b>task_validate_nso_agains</b>	Validate NSO service models against subscriptions	5-6-2026, 06:30:00	cron[hour='4', minute='30']	

# Tasks scheduling CRUD



Workflow Orchestrator

Production

Engine is RUNNING

30



Workflow Orchestrator

Production

Engine is RUNNING

30



Main menu



Main menu



Start / ... / Schedule-task-form

## Create new schedule

Select the task you want to schedule \*

Resume all workflows that are stuck on tasks with the status 'waiting', 'created' or 'resumed' x | v

Modify Availability Zone

Validate subscription owners against customers

Migrate Service Port to Aggregated Service Port

Resume all workflows that are stuck on tasks with the status 'waiting', 'created' or 'resumed'

Create availability zone

Modify Node: Set In Service

Terminate Node

Terminate Core Link

Reconcile IP Static



Start / ... / Schedule-task-form

## Create new schedule

Select the task you want to schedule

Resume all workflows that are stuck on tasks with the status 'waiting', 'created' or 'resumed'

What type of schedule do you need? \*

Search and select value... | v

Once

Interval

Cron

# RIPE integration

SURF committed to managing RIPE database for our members

Sync information about institutes' LIR-prefixes with the RIPE database

LIR-prefix workflows create/delete the associated prefixes

Records are validated nightly using new Schedule API

Scheduled job syncs CRM to RIPE

Easy Reconcile support



# Questions?

**SURF**

