



# Netnod Updates

16 November 2022

# About Netnod

- A neutral, Internet infrastructure organisation
- Largest IXP operator in the Nordics
- Manages I-root, one of the world's 13 root name servers
- Provides DNS services to TLDs, including some of the largest ccTLDs
- Provides time and frequency services (Swedish national time, Network Time Security)

# Interconnecting the Nordics

- Peak traffic >2 Tbps
- 200+ connected ASNs
- 100% uptime since 2002



# Netnod IX Helsinki – launched March 2022

## 3 PoPs:

- Digita Helsinki Pasila
- Equinix HE7
- Telia Helsinki



# **Netnod IX Helsinki – special offer**

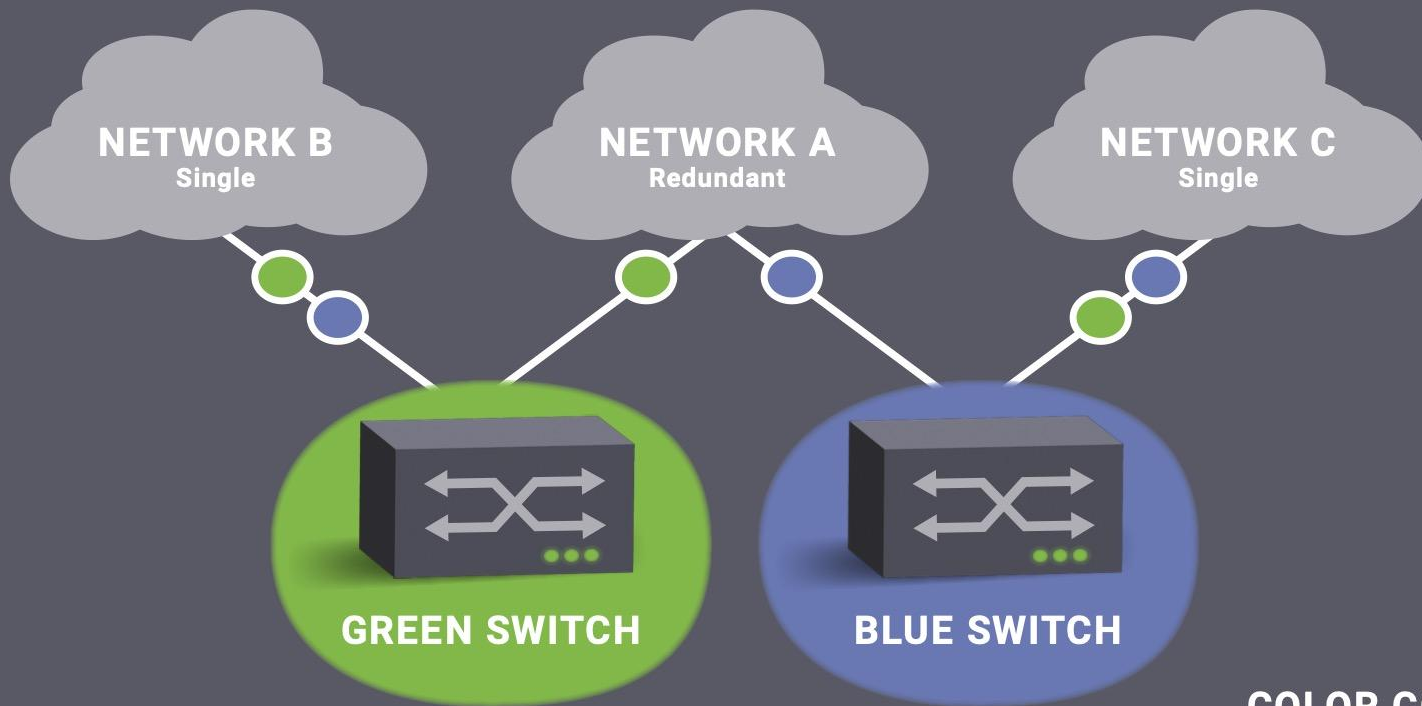
IX port (up to and including 100GE)

No set up or monthly fee

**Free of charge until 1 July 2023**

**+**

**Free 1-10G Remote IX connection  
(until 1 July 2023)**



### COLOR CODES

-  Blue Peering LAN
-  Green Peering LAN

# Interconnecting the Nordics

- Private VLAN
- Shaped Port
- Remote IX

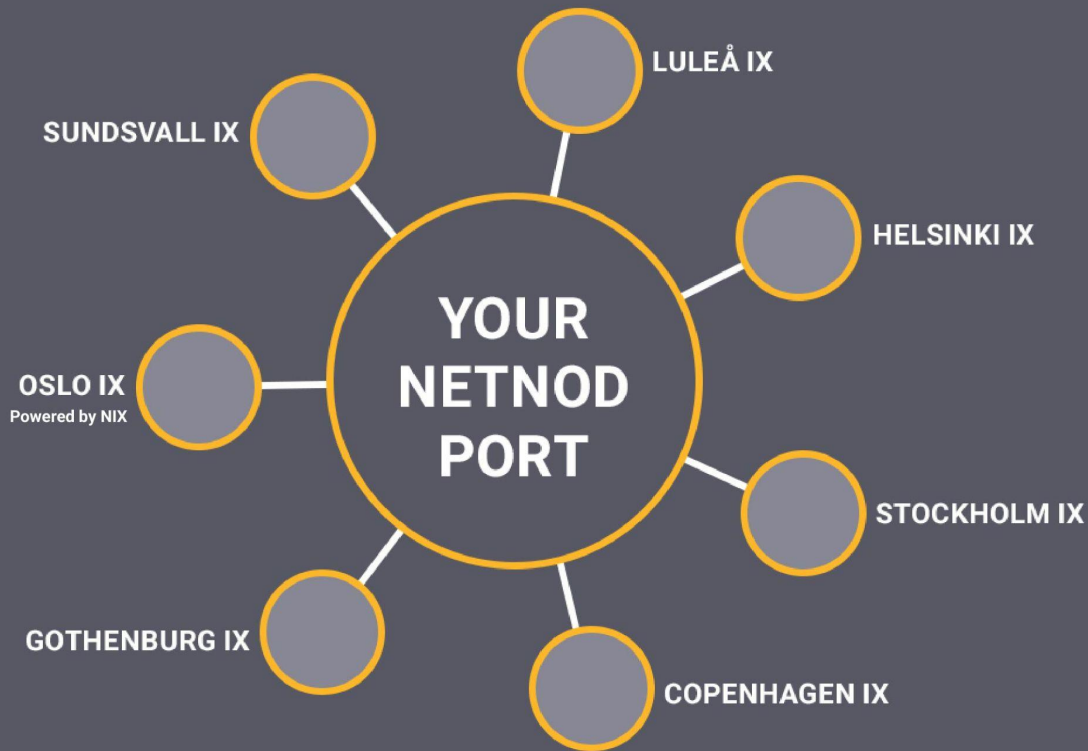


# SHAPED PORT



EASY UPGRADES IN INCREMENTAL STEPS





- Use your existing port
- No extra cross-connect, colo or hardware costs
- Secure transport
- Full redundancy
- 10G prices from **475 EUR** per month



**ROUTE SERVER  
SUPPORT FOUNDATION**



# European Peering Forum

11-13 September 2023  
PRAGUE



# Customer Portal

Now:

- See traffic stats per port
- Bit errors, light levels for troubleshooting
- Invoices and contracts
- Easy access to technical details

Later:

- Upgrade your ports
- Order new services



Netnod AB

Kaj Kjellgren



Dashboard



Services



Internet Exchange - IX



Domain Name System - DNS



Netnod Time



Billing



Contact us



Settings



Sign Out

# Hello Kaj!

Welcome to Netnod's customer portal. Here you can administer and monitor the different services you have at Netnod.

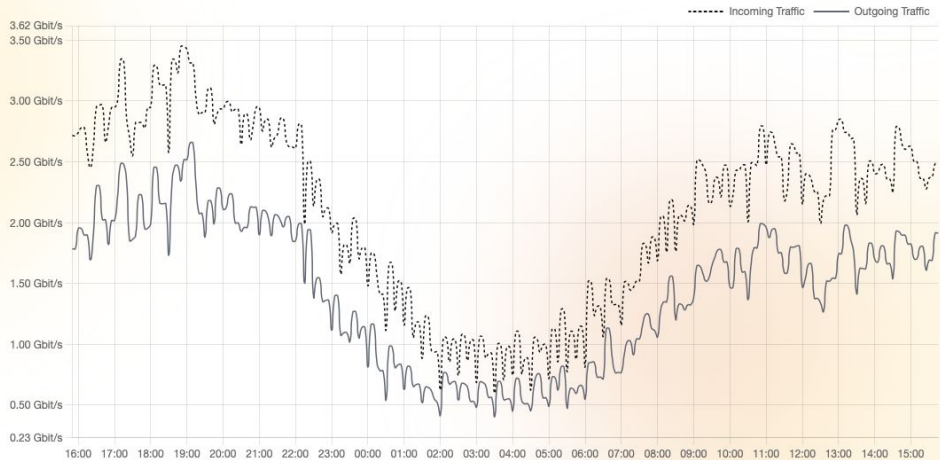
## Statistics: IX Metrics

TRAFFIC

BROADCAST

Daily

All regions



[Reset zoom](#)

Hold Shift to move when zoomed

## IX Products



10G Helsinki (IX / Single)

Contract End Date 2023-02-28

1G Luleå (IX / Single)

Contract End Date 2023-03-31

Tutorial

## Invoices



You have no invoices yet

[Go to billing page](#)

## Latest news



Tue, 13 Sep 2022 13:00:00 GMT

**New time service brings ultra-precise and robust time to companies in Sweden**



Fri, 08 Jul 2022 08:29:27 GMT

**New DNSNODE sites improve DNS service for Finland, Canada and Armenia**



# Internet Exchange (IX) Services

● 100G Stockholm (IX / Redundant) ▾

Contract number 215 | Stockholm 📍 Active

Capacity

100 Gbit/s

Category

Redundant

Amount

0 SEK

Current contract period

2008-02-27 - 2023-10-22

Upgrade to 400 Gbit/s ↑

Upgrade to 400 Gbit/s | 1680000 SEK

Route Server Peering Active

asn 8674

as sets AS-NETNOD

MAC addresses

Blue 74:83:EF:36:F7:31

Green 74:83:EF:37:10:57

Ethernet4/33/1

Blue co1b-stb.sth.netnod.se

IP Addresses

-

TRAFFIC

ERRORS

POWER

Daily ▾

----- Incoming Traffic — Outgoing Traffic

Amsterdam  
Bangkok  
Chicago  
Dubai  
Frankfurt  
Geneva  
Helsinki  
Hong Kong  
Kathmandu  
London  
Oslo  
Paris  
Palo Alto  
São Paulo  
St. Petersburg  
Stockholm  
Tokyo  
Washington DC







# Time and Frequency services

NTP, NTS and PTP

# Netnod's clock nodes - accurate and secure time

- Netnod is responsible for distributing Swedish time UTC(SP)
- Dual nodes with all critical equipment duplicated for redundancy (2x atomic clocks)
- Placed in secure bunkers throughout Sweden





# Netnod Time - local, robust and accurate time

**Netnod Time Remote:** Guarantees 1ms accuracy from UTC

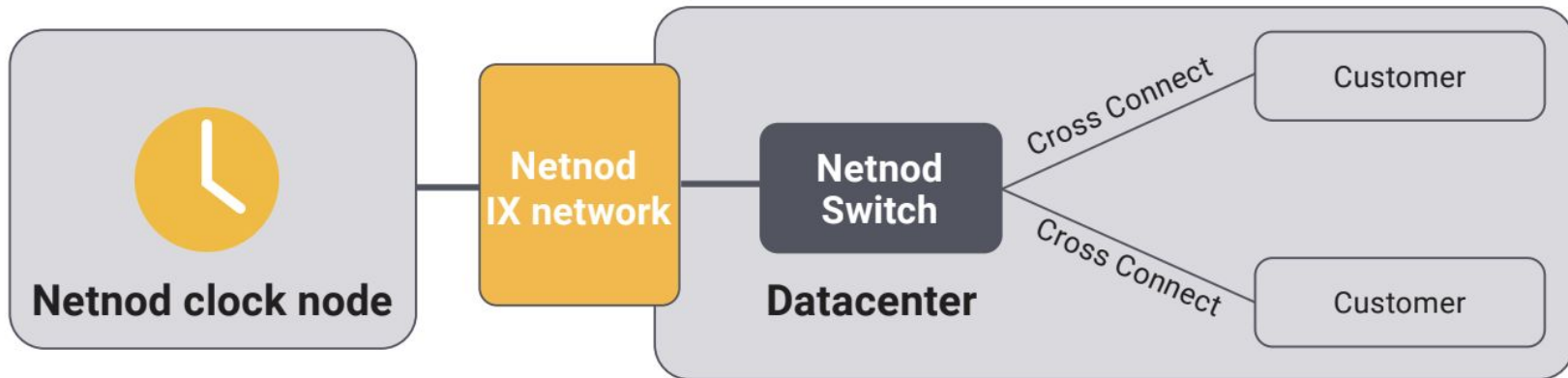
**Netnod Time Direct:** Guarantees 30 $\mu$ s accuracy from UTC

- Fully managed time service with SLA
- Guarantees independence from GNSS
- Easy to integrate as primary or secondary source of time



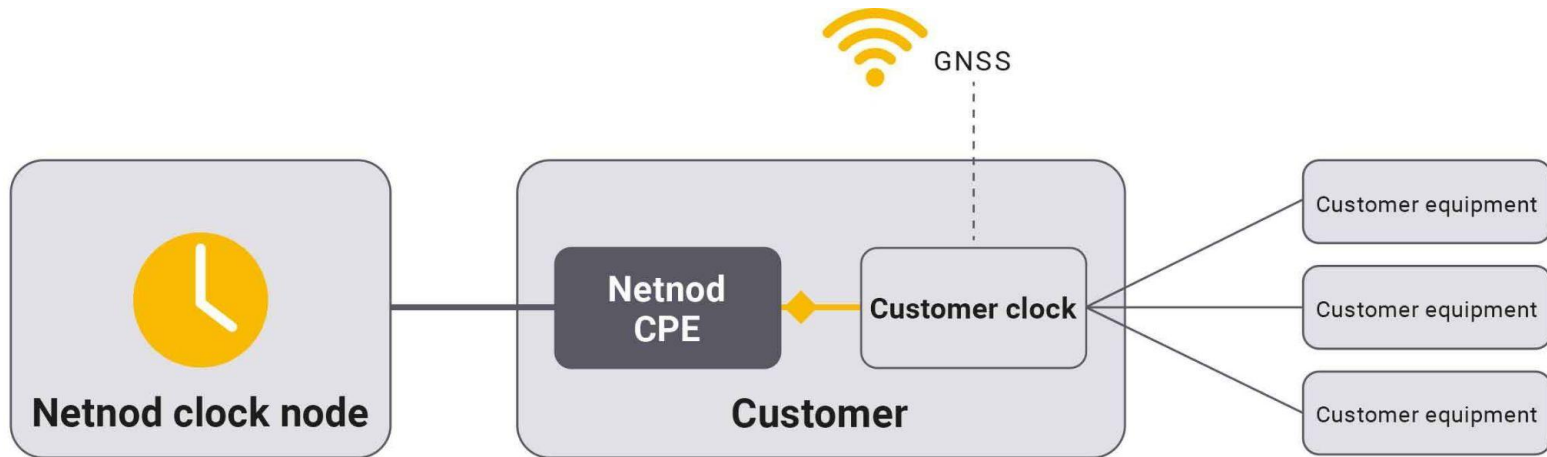
# Netnod Time Direct - time-as-a-service

- A fully managed time service with SLA that guarantees 30μs accuracy from UTC
- Delivered over cross-connect or IX port
- Immediate provisioning and easy integration with current setup
- Available in Sweden and Copenhagen



# Netnod Time Remote - time-as-a-service

- A fully managed time service with SLA that guarantees 1ms accuracy from UTC
- Fibre connection from Netnod's central clock nodes to locally placed equipment (CPE) from Netnod.
- The CPE's clock is set by Netnod's central clocks and delivers high precision, stable time
- Client clocks can be set from the CPE





# Precision Time Protocol Service

# White papers and best practises

- **Best practises**

- How to connect to NTS
- NTP best practices

- **White Papers**

- How does NTS work and why is it important?
- The world's first hardware implementation of NTS

- **Industry presentations:** NTS in an FPGA (RIPE 84)





# NET NOD

Join us - Netnod Meeting 14-15 March 2023