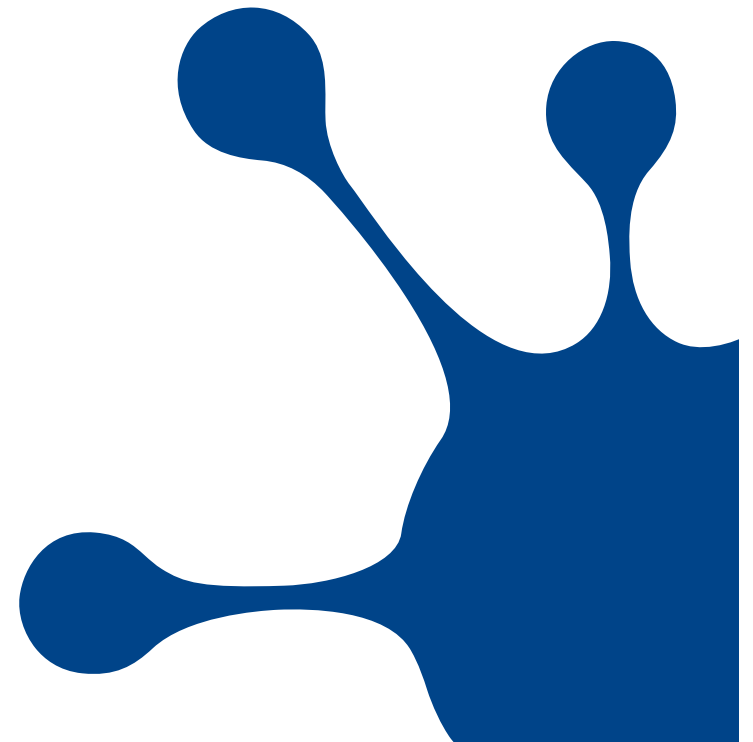
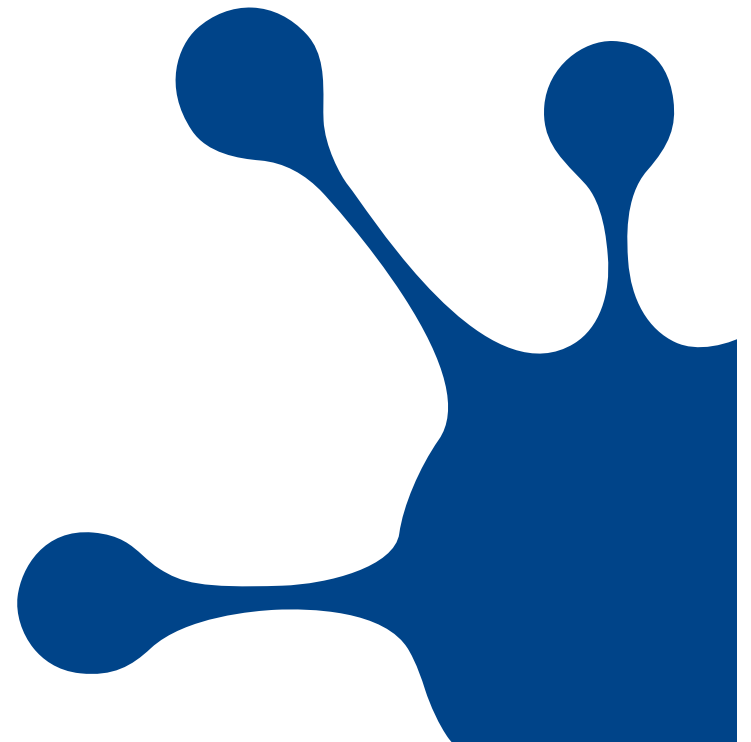


NETNOD MEMBERS MEETING

2014-03-11/12



2013 IN REVIEW



2013 in numbers

3 Upgrades to 100GE

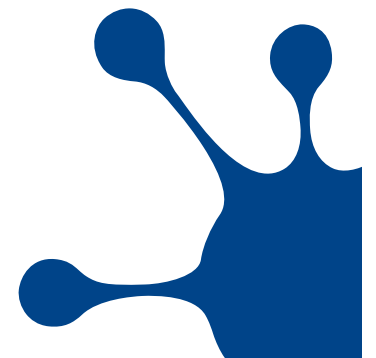
19 new 10GE ports in Stockholm

1 New 10GE port in Sundsvall

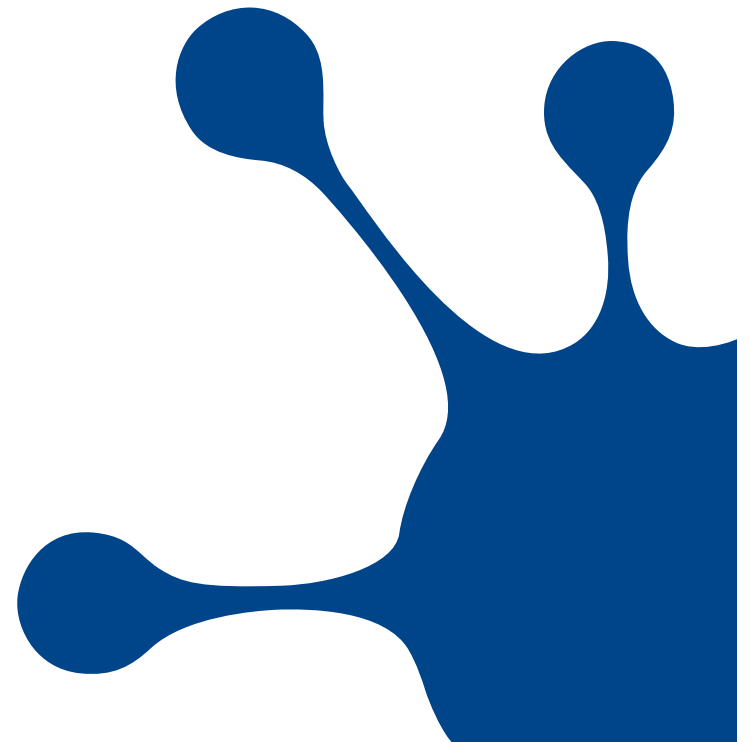
1 New 1GE port in Luleå

3 New members via Netnod Reach

5 New members via 100Mbps ports

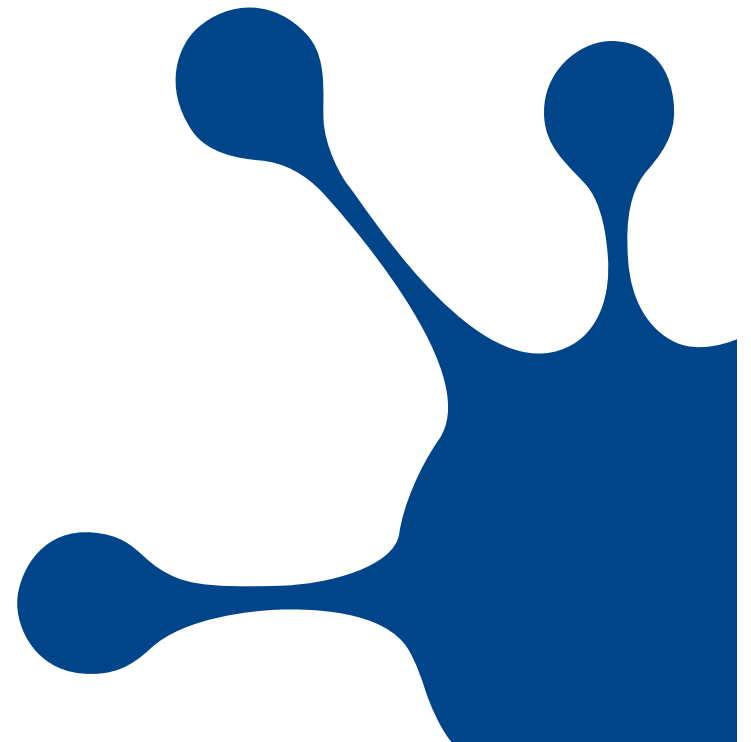


ACTIVITY UPDATE



NETNOD COMIX

More about this later...



Newly connected since last meeting

CONNECTED 100MBPS

- SpaceDump IT
- MrFriday
- Teknikbyrån
- STHIX
- SpriteLink
- Telecity Group



Newly connected since last meeting

GE PORTS STOCKHOLM

- Westcall
- Meanie
- Speedy Networks
- SG.GS

CONNECTED 10GE-STH

- Justin.TV
- one.com
- Valve 2x10GE-STH
- NTT Europe



Upgrades since last meeting

100GE PORTS

- IP-Only
- Netflix
- ComHem
- Elisa (pending)



Newly connected since last meeting

ADDITIONAL PORTS

- Justin.TV 10GE-STH
- RETN 10GE-STH
- Amazon 10GE-STH
- Rostelecom 10GE-STH
- Global Network Management 10GE-STH
- Hi3G 10GE-STH



Newly connected since last meeting

NETNOD COMIX

- Excellent Hosting 100Mbps
- Portlane 10GE

SUNDSVALL

- IP-Only 10GE-SVL

LULEÅ

- IP-Only 1GE-LUL



Pending connections

AKAMAI 100GE

ELISA 100GE

MICROSOFT 10GE-STH

BROADNET A/S 10GE-STH

PROSTOR TELECOM 1GE-STH

HOFNETZ 1GE-STH

NEVACOM 1GE-STH

NETSAT 100MBPS-STH

SVERIGES RADIO 10GE-STH

.IT

HURRICANE ELECTRIC
10GE-COMIX



NETNOD REACH

NETNOD REACH RESELLER PROGRAM PARTNERS



TWICE AS MANY NEW MEMBERS SO FAR IN 2014 AS IN ALL OF 2013



Sites with own presence

INTERXION, PORTLANE NACKA TELECITY BROMMA AND TELECITY SKÖNDAL

- Covered with DWDM systems, used for backhaul

WILL ADD NEW SITES SOON

- Stokab KN7, Availo
- Will be same on-net pricing



100GE Status

ANNOUNCED PREVIOUSLY THAT PRICE CHANGED TO UNIFIED PRICE THROUGHOUT STOCKHOLM

- 100GE-LR4 optics as client optics
- Any address in Stockholm
- 1 025 000 SEK / year

BUILT USING CUBEOPTICS AMPLIFIERS

ON REQUEST WE ALSO OFFER 100GE-ER4 AS ALTERNATIVE

100GE PRICE FOR OUTSIDE STOCKHOLM COMING



Pricing

From 1 Feb lowered prices for 1GE on-net in Stockholm

- Locations where we have our own equipment, InterXion, Portlane Nacka, Telecity Bromma, Telecity Sköndal and soon Availo and Stokab KN7
- 68% reduction in fees
- 40 000 SEK / year for 2x1GE.

At the same time also revised the Netnod Reach pricing



100Mbps ports

IN LOCATIONS WHERE WE HAVE OUR OWN PRESENCE

- InterXion, Telecity Bromma, Telecity Sköndal, Portlane Nacka
- And soon at Stokab KN7 and Availao

2x100MBPS PORTS FOR FREE

- Implemented as 1GE ports rate-limited to 100Mbps



Staff

Strategic account manager recruited

- **Will handle customer contacts and sales**

Additional operations staff

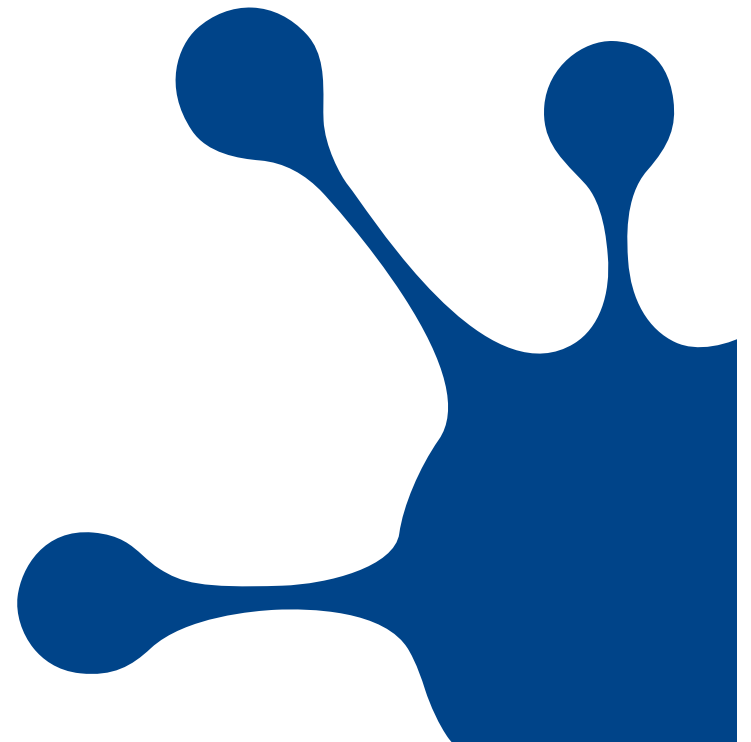
- **As replacement**

Comms officer

- **Position open!**



OPERATIONAL UPDATE IX



Route servers

ROUTE SERVERS HAVE SO FAR BEEN AVAILABLE IN STOCKHOLM

NOW ALSO AVAILABLE AT NETNOD COMIX



Upgrades of IX platforms

GOTHENBURG AND SUNDSVALL

- Upgraded to MLX4e:s
- Will allow for Netnod Reach program
- 100GE capable
- Higher port density



Future of IX platform

AS DISCUSSED LAST TIME, WITH THE UPTAKE OF 100GE THERE IS A RISK THAT THE CURRENT IX MODEL IN STOCKHOLM WON'T SCALE

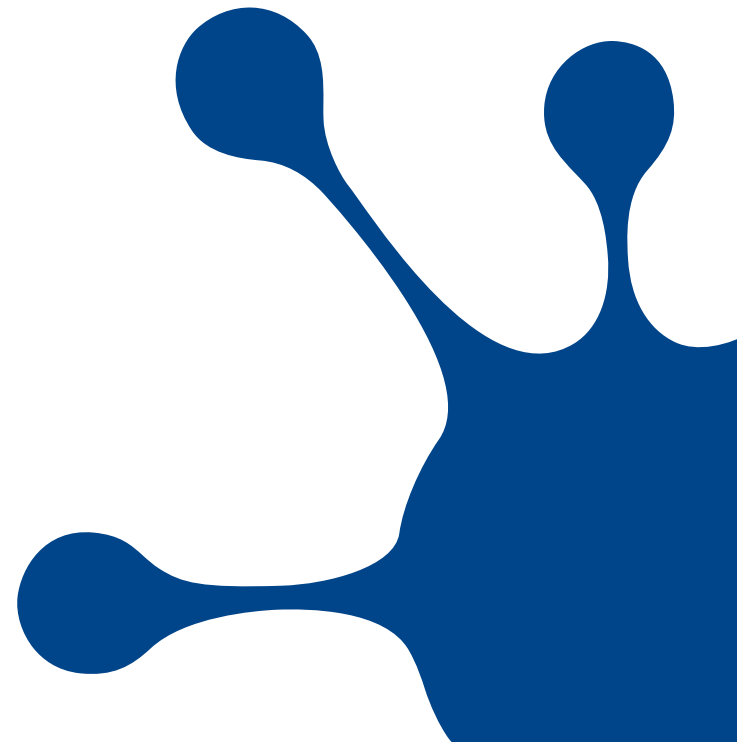
- Higher port density cards will help and extend the life time of the current model
- But not for ever

WE ARE EVALUATING VARIOUS MODELS

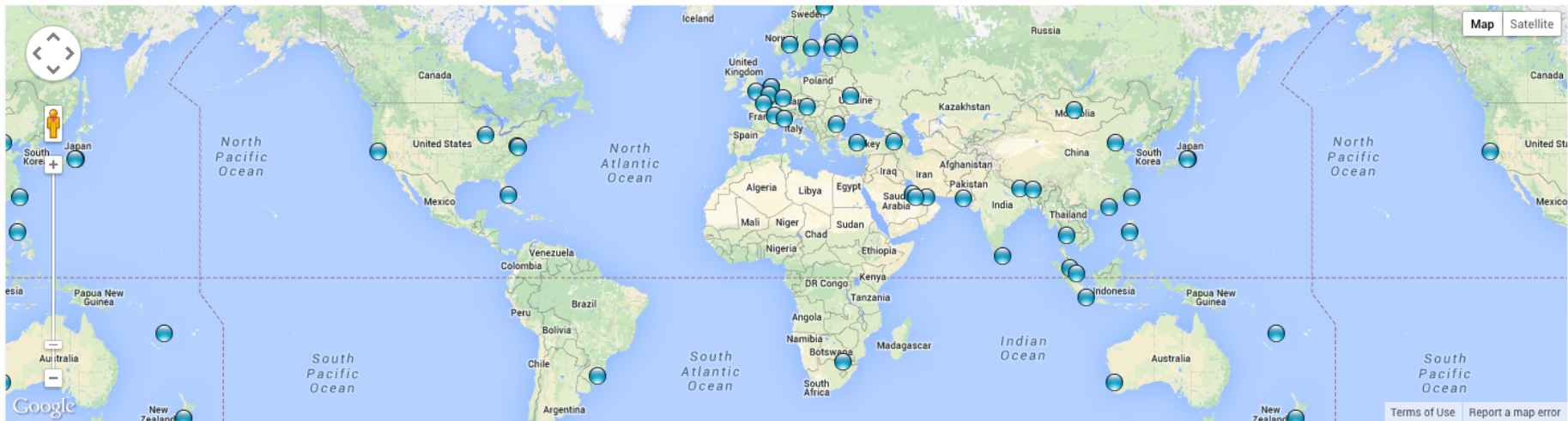
- Local switches at the sites
- DWDM systems / 100GE systems between the sites
- Separate 10 from 100Ge ports and run inteswitch links
- And a few more models...



OPERATIONAL UPDATE DNS



Locations



Network setup

52 locations world wide

- Open peering policy
- 12705 Possible BGP sessions
- With 1897 ASNs

Could use route-servers everywhere

- Are a cute concept but doesn't work 100%
- Some route-servers strip communities
- Some route-servers honors the communities as if they where the receivers (like no-export - duh!).
- Not all members peers with the route-servers, so you still need to do the diff



The Problem

PEERING CO-ORDINATORS

- Can't read (the very long emails with a lot of details such as IP addresses and ASNs)
- Are lazy: "Sure, I'll configure that BGP session right away"
- Sometimes takes a long time to ~~Never~~ read their emails...

QUITE OFTEN IT TAKES TIME TO EXPLAIN THE BENEFIT OF PEERING WITH THE ROOT-SERVERS

"CAN I SELL YOU TRANSIT?"



The result

COLLECT ALL POSSIBLE PEERS FROM PEERINGDB.COM

COLLECT ALL PEERING SESSIONS FROM ROUTERS WITH RANCID

MAKE DIFF OF DATA

- **Generate configs, and push out**

ALL OUR SESSIONS ARE PRE-CONFIGURED!

- **All sessions that haven't been established are in a peer-group with session in passive state**
- **Once a session comes up, moved to active peer group**



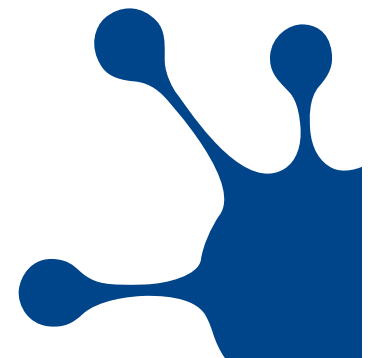
Future

NEW SITES

- **Vanuatu**

UPCOMING OR DISCUSSED SITES

- **Belgrade, Yeakterinburg, Mombasa, Cairo**



Activities

DSC / PACKETQ

- Quite a few modifications made by Netnod and contributed back to the open source package
- Yet more modifications to match our needs and that we are using internally only for users of the anycast service
- Used to provide authenticated and distributed DSC stats for the users

VIRTUALIZATION

- Today a site is approx 10U of equipment
- Easier to deploy, less foot print and cheaper if virtualized
- Requires extensive testing and new provisioning

