

WDM system install

EIX WG, RIPE60

Prague

Background

- In Stockholm the city have retained the right-of ways for fibers.
- Because the city owned fiber company is the only provider that is able to deliver to all destinations we are in practice forced to use them for all connections to operators
- This model pre-dates the first neutral co-location facilities in Stockholm - so historically all local operators build their own datacenters
- Which is partly why there was no “obvious” place to build an IX when Netnod took over from D-GIX

Background

- Netnod includes the fiber connection from the operators location to the bunkers / switches
- Fiber costs are just 'passed on'
- Under a framework agreement costs are based on location
 - Split in 'inner' and 'outer' city locations
- All carrier neutral co-lo's are 'outer' city - meaning more expensive

Why DWDM?

- We wanted to move pricing to 'inner-city' for the neutral co-los
- Three options
 - Renegotiate contract with fiber monopoly
 - CWDM
 - DWDM
- First option did not lead anywhere

Why DWDM?

- CWDM was possibly cheaper, but with mix of 10GE and 1GE had other limiting factors (also distance)
- Left us with DWDM
 - Would also give us additional options for the future
 - Like circuit protection
 - Faster install times

Selecting a WDM system

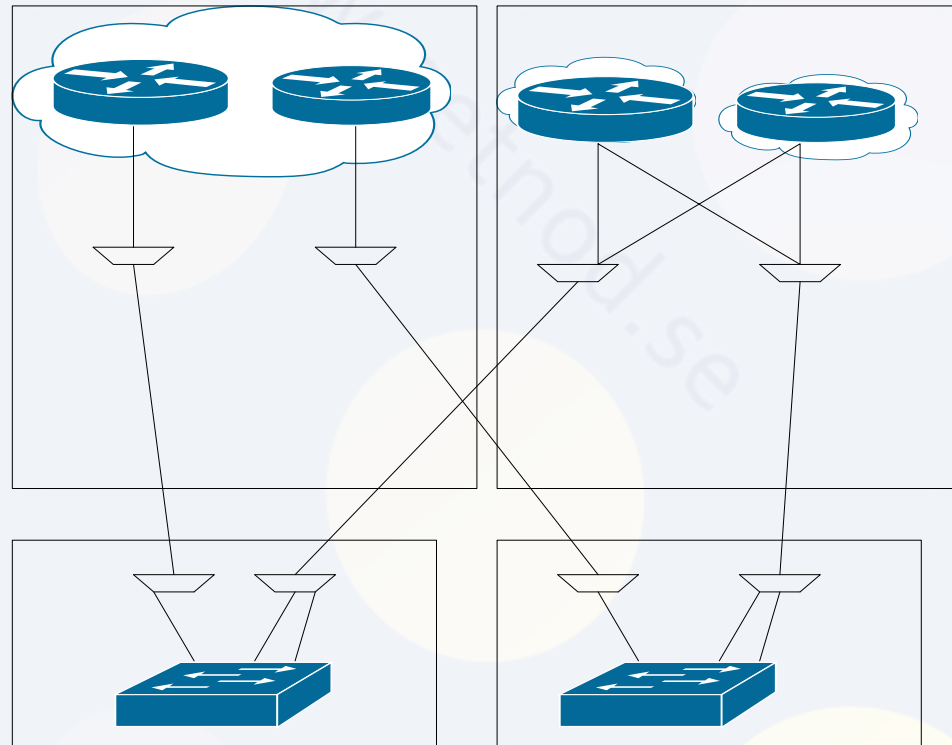
- We are not telco engineers
 - So we wanted a system with mgmt that looked like the router CLIs we where used to (i.e no TL1)
- We also wanted it to fit in with current monitor / alarm systems - so MIBs we could plug into Nagios
- We had lots of port density and range requirements
- Price

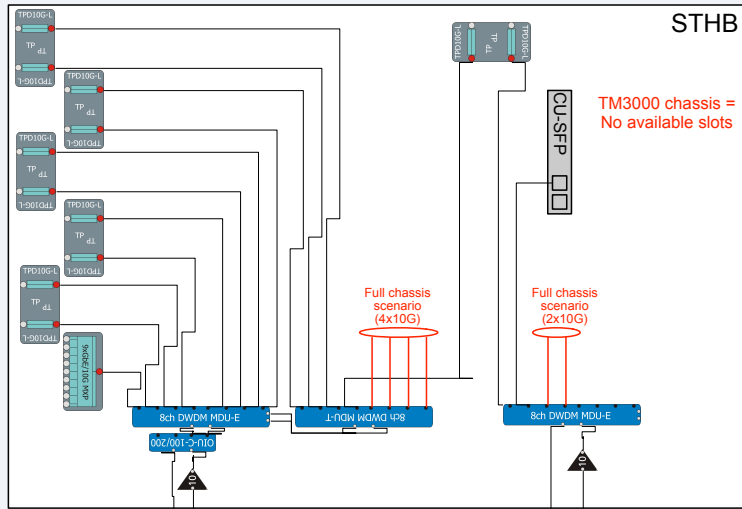
Selecting a WDM system

- During the summer '09 we completed an RFP process for WDM systems
- We had some 8 bidders in total
- 3 met the technical criteria
- 2 met the pricing criteria (i.e was affordable)
- In the end we selected Transmode

Installation

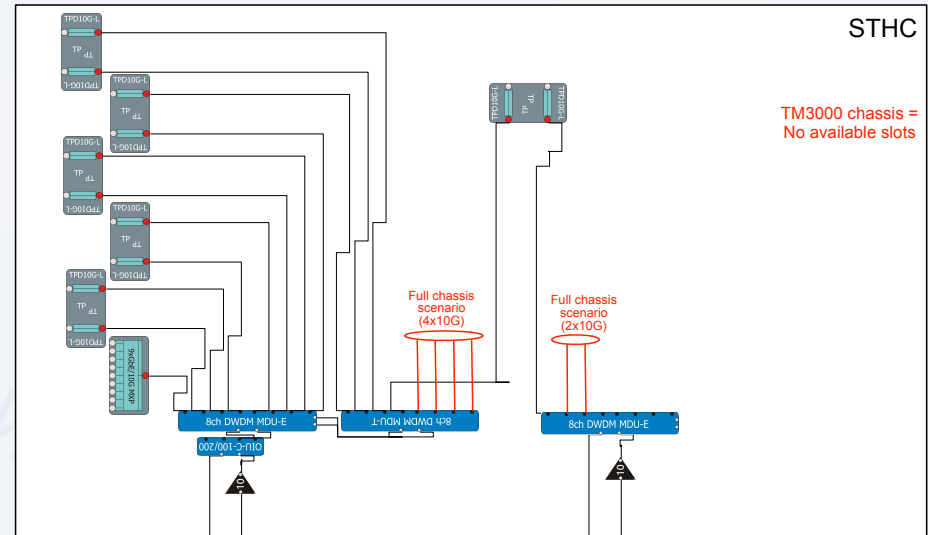
- The model picked was that we used the DWDM systems as 'point-to-point' links





STHB

TM3000 chassis =
No available slots



STHC

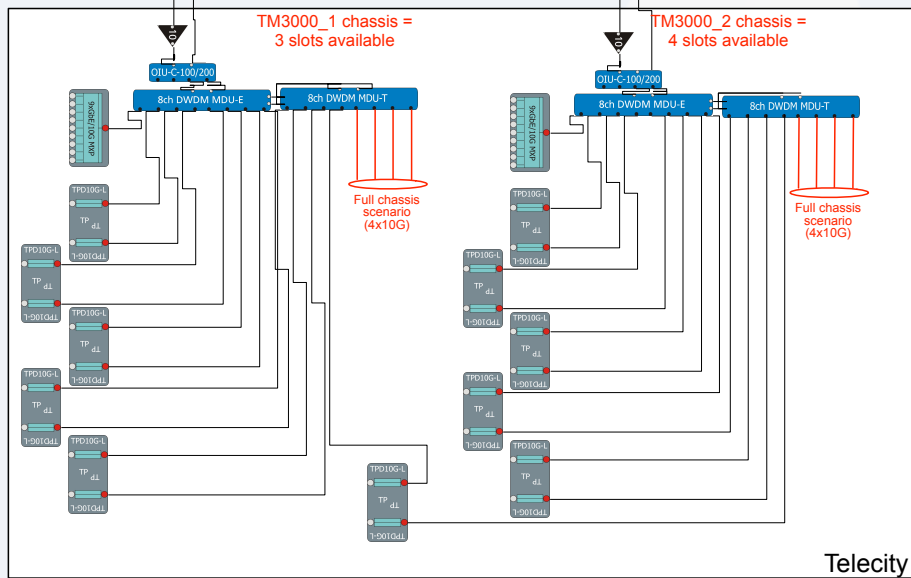
TM3000 chassis =
No available slots

Attenuation max 14 dB

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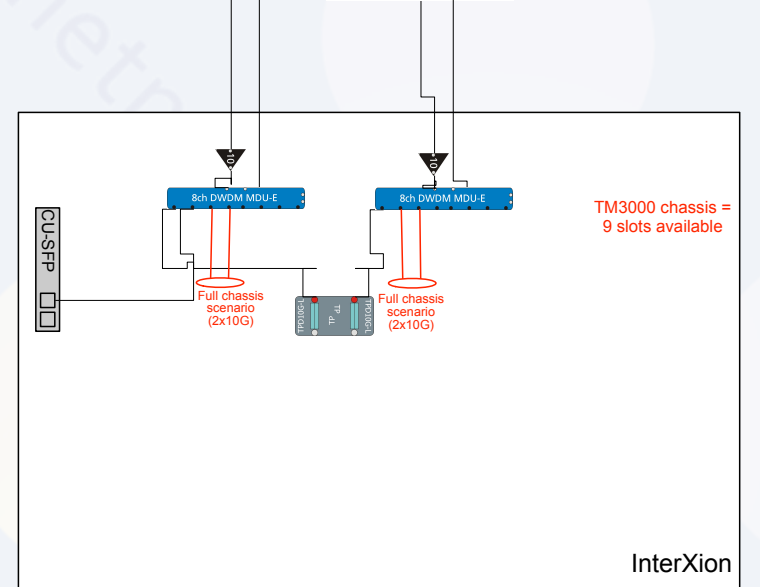
Attenuation max 14 dB



TM3000_1 chassis =
3 slots available

TM3000_2 chassis =
4 slots available

Telecity



TM3000 chassis =
9 slots available

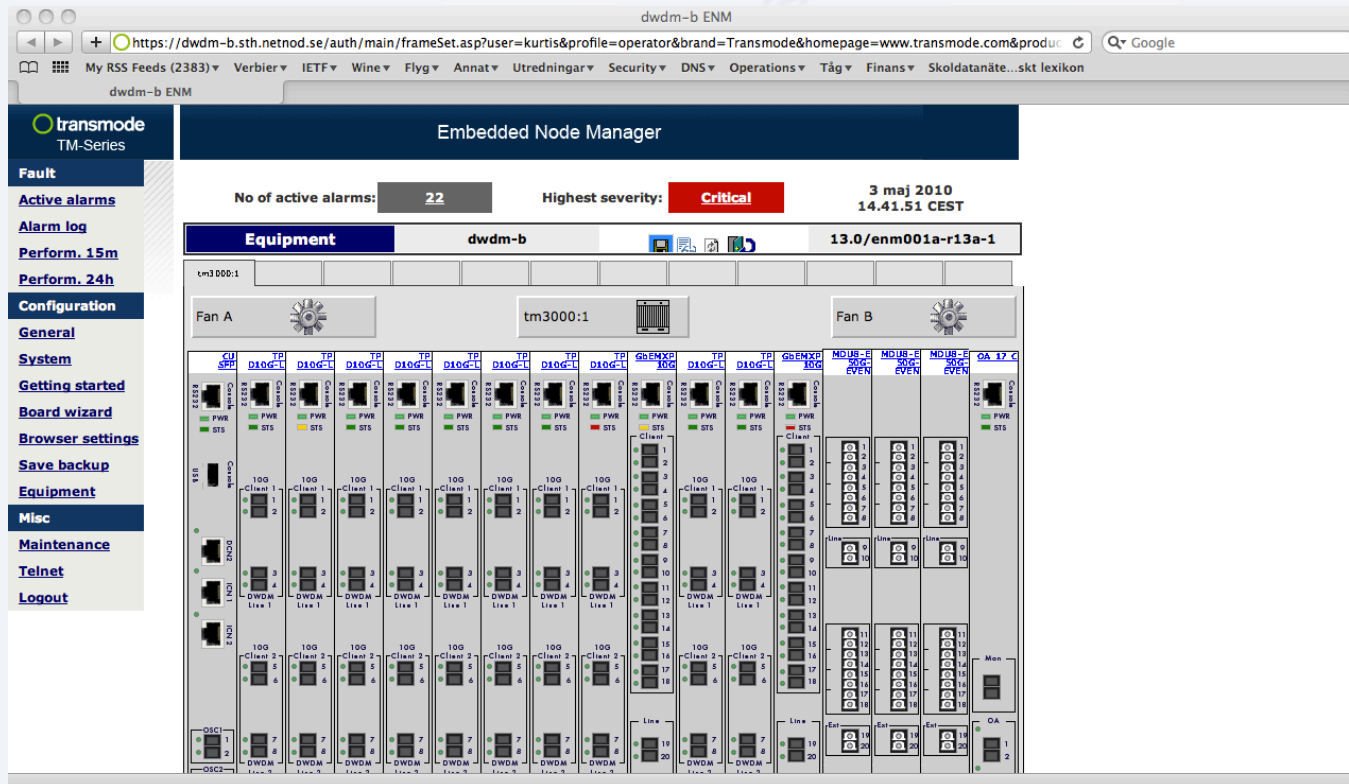
InterXion

Further development

- We quickly filled the first shelves, so today there are more, but still in point-to-point mode
- We added the second Telecity site, again as point-to-point
- Fiber monopoly have services windows of 6hours(!)
- We will most likely get fully redundant fibers, with protection

Management

- Both web-based GUI and CLI



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www.netnod.se

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