amsix
amsterdam internet exchange

100GE at AMS-IX

Status Update

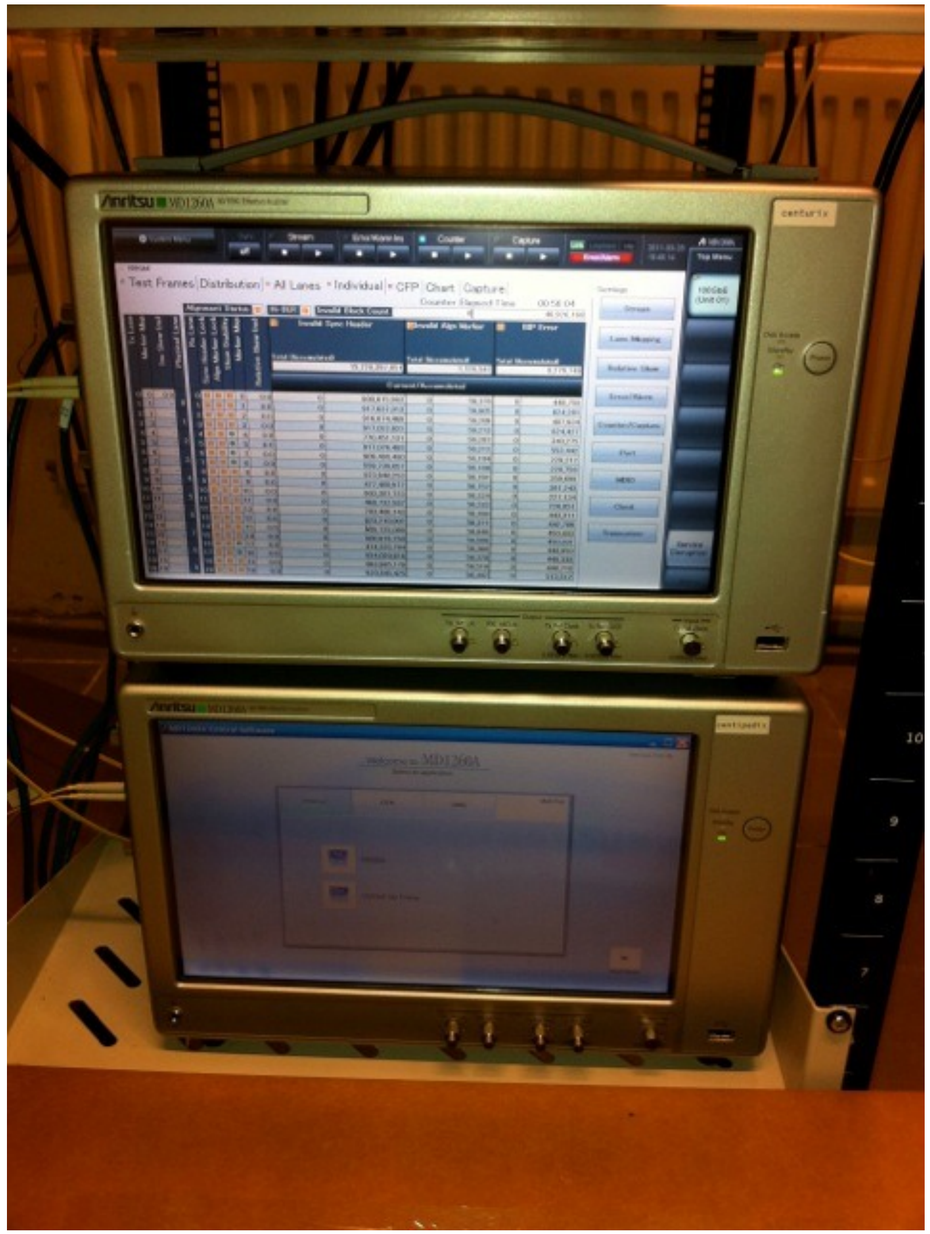
Henk Steenman
Henk.Steenman@ams-ix.net

EPF6
Sep 19 2011

100GE at AMS-IX

Status

- No production 100GE connections yet
- We did do extensive testing in Brocade lab
- We have 2 trials ongoing with AMS-IX members
- A number of bugs are found that are replicated and for which the root cause is understood
  - Fixes under way
- Customer demand for connections
  - Two requirements to go live within the next two to three months
  - Others Q4 2011 to Q3 2012

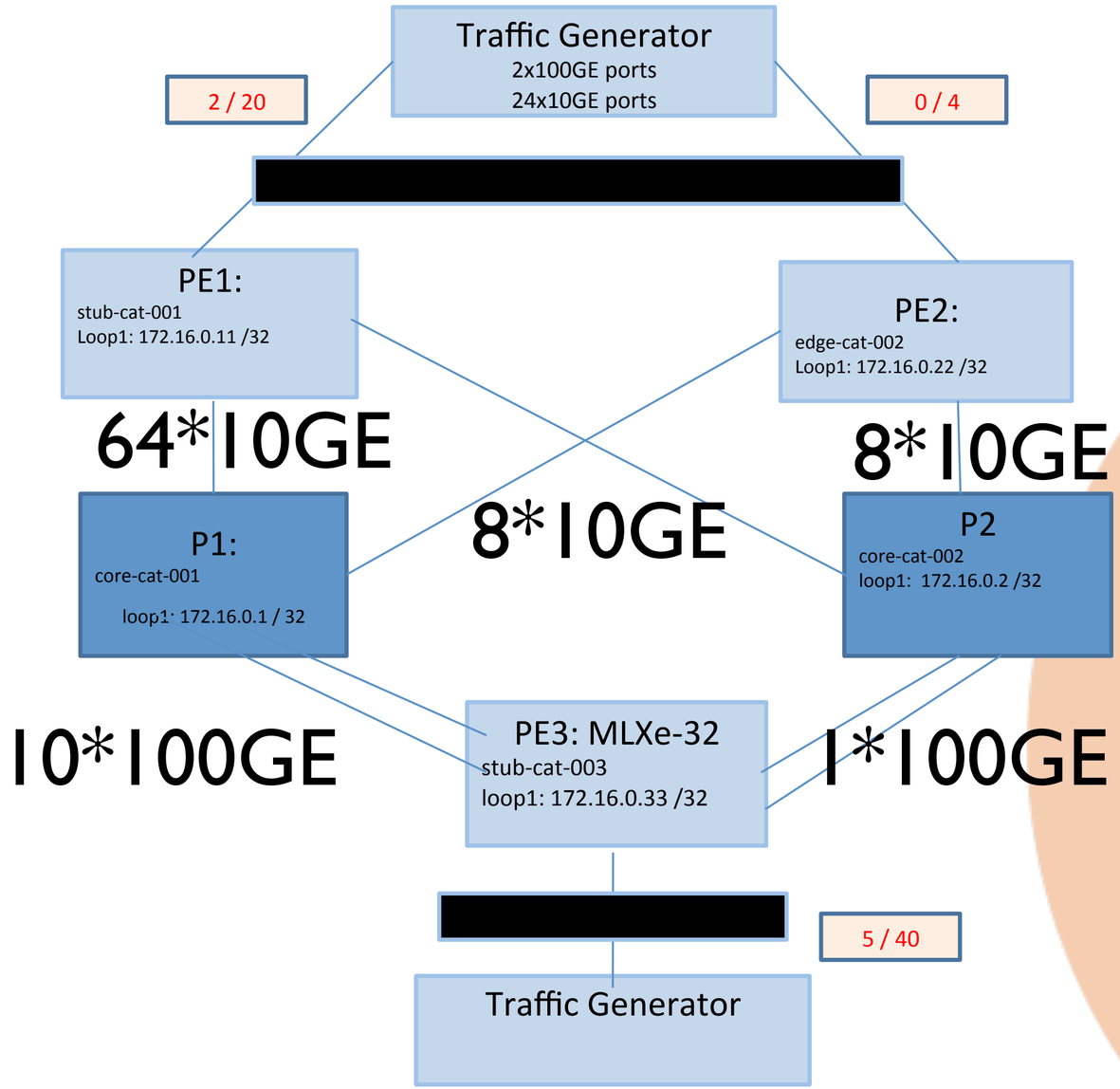


Our big helpers

Anritsu MD1260A 100GE Analyzer

Brocade POC

High volumes/High Density



100GE / 10GE

IP & Host Name
172.16.0.0 / 16

P1
core-cat-001
loop1 : 172.16.0.1 / 32

P2
core-cat-002
loop1: 172.16.0.2 /32

PE1
stub-cat-001
loop1: 172.16.0.11 /32

P1-PE1: 172.16.11.0 /30
P2-PE1: 172.16.11.4 /30

PE2
edge-cat-002
loop1: 172.16.0.22 /32

P1-PE2 : 172.16.22.0 /30
P2-PE2 : 172.16.22.4 /30

PE3
stub-cat-003
loop1: 172.16.0.33 /32

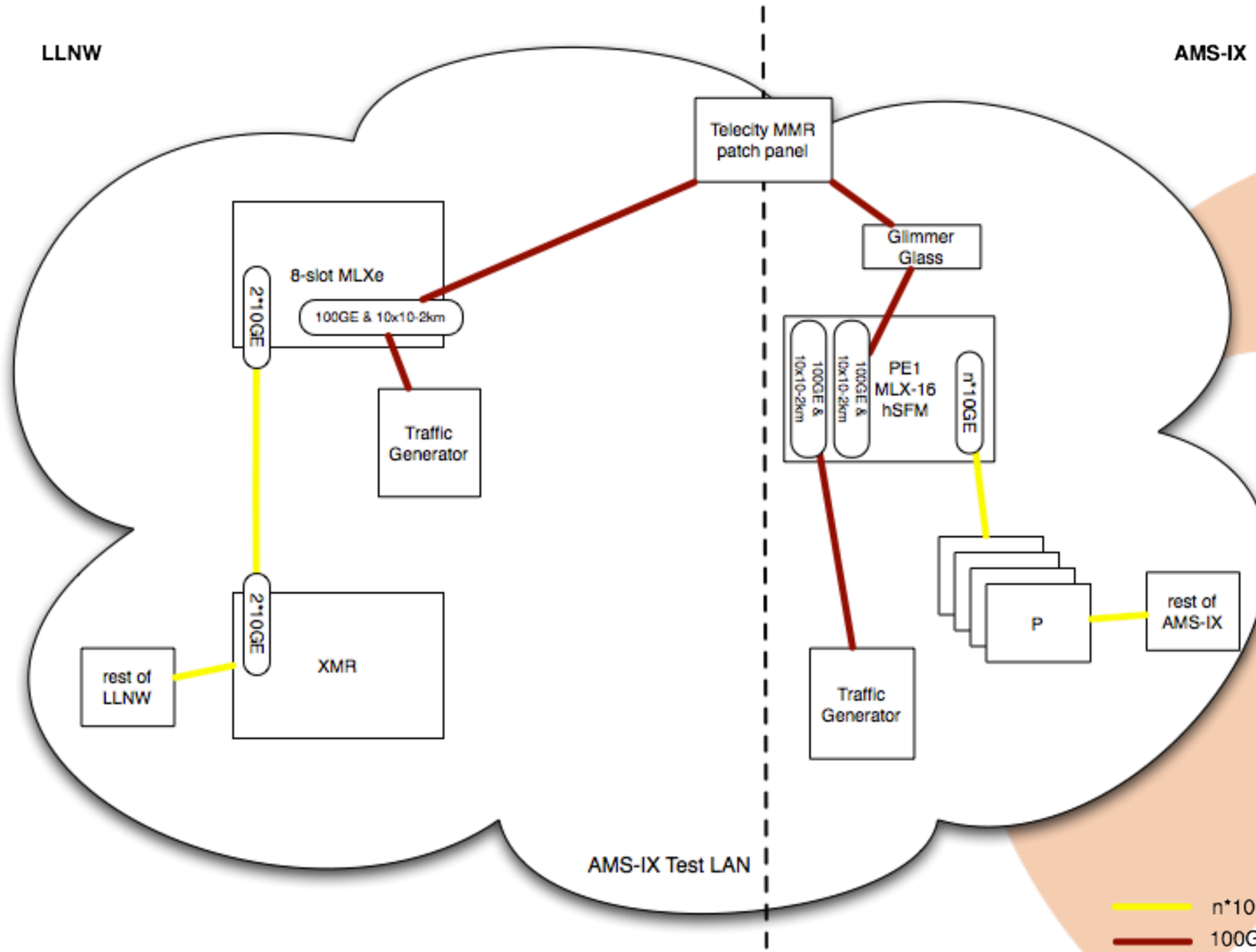
P1-PE3a: 172.16.33.0 /30
P1-PE3b: 172.16.33.4 /30
P2-PE3a: 172.16.33.8 /30
P2-PE3b: 172.16.33.12 /30

Brocade POC

- Purpose to test chassis with high card/port density
- Resembles AMS-IX architecture
- High traffic volumes
- Large LAGs (both 100GE and 10GE)
- Successful test
  - Number of issues identified.
  - Reproduced, root cause understood and awaiting fix

AMS-IX - Limelight

Setup



AMS-IX - Limelight

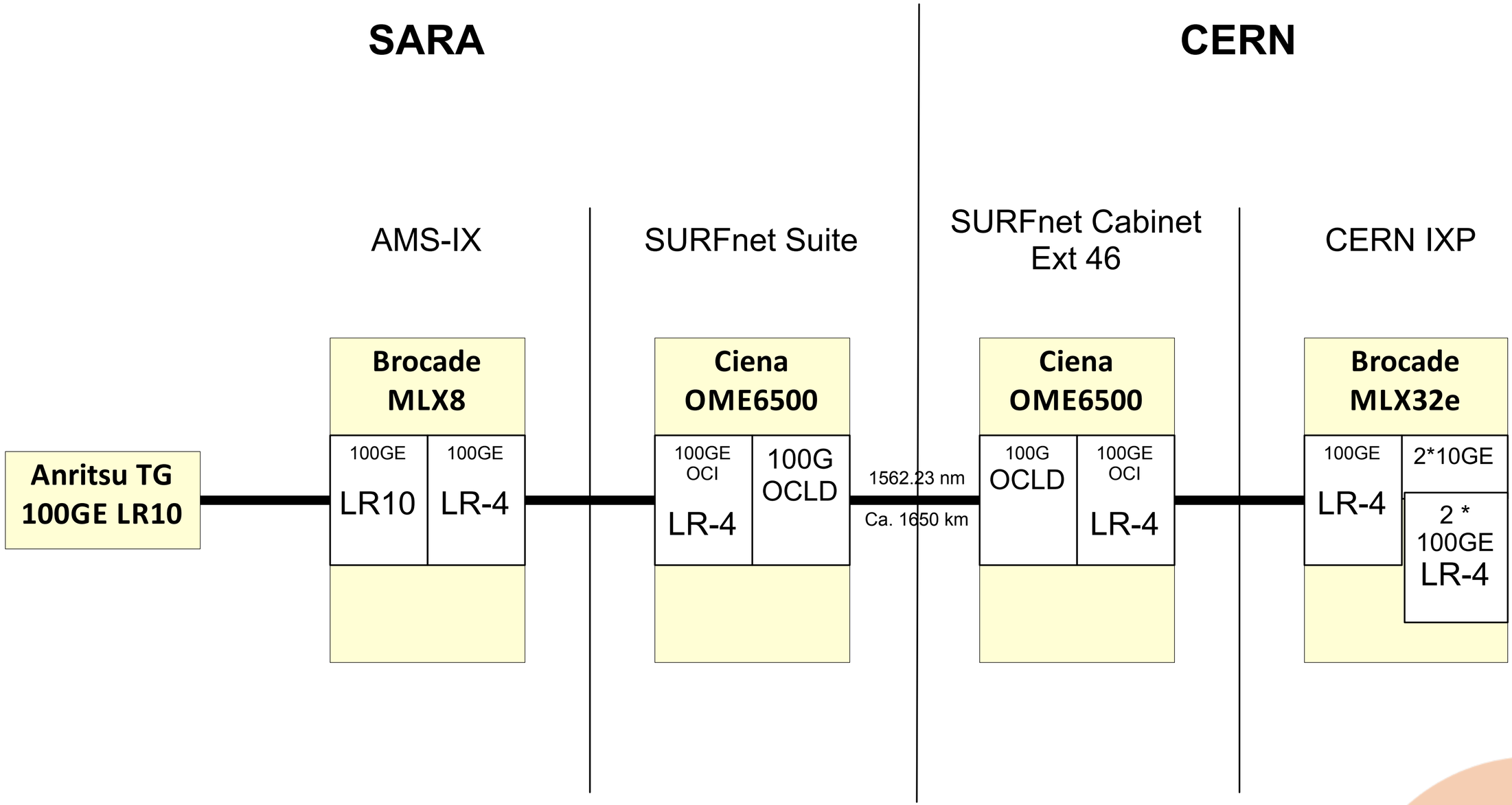
Brocade MLX16 hSFM - Brocade MLXe-8

- MLXe 8-slot at LLNW
  - High-speed Switch Fabric Modules
  - 2 * 10GE to LLNW backbone
- MLX-16 at AMS-IX
  - High-speed Switch Fabric Modules
  - 16 * 10GE to AMS-IX backbone
  - 3 * 2-port 100GE Modules
  - 4 * 10x10-2km CFP optics
- 2 * 100GE Anritsu traffic generator
- 1 * 10GE Anritsu traffic generator

AMS-IX - Limelight

Results

- Line rate forwarding for Internet traffic mixes
- Line rate routing for Internet traffic mixes
- Jumbo frames (only briefly tested)
- IPv6
- AMS-IX topology failovers (190 ms average service interruption)
- sFlow sampling rate (up to 2048)
- A number of “small” issues found for which cause is understood and fixes are underway



Interoperability Ciena, Brocade MLX, LR4 optics

CERN - AMS-IX 100GE trial connection

Cern - AMS-IX 100GE trial connection

Test

- 10GE loop at Cern, 10Gbit/s traffic load
  - 24 hour test: no frame loss
- 100GE loop at CERN, 100Gbit/s traffic load
  - 24 hour test: no frame loss on long distance part
  - A small amount of frame loss in MLX32e in switch fabric
    - packet loss 64 packets out of 150 000000000
    - Reproduced in labs (AMS-IX, Brocade), root cause understood and a fix is being worked on

100GE at AMS-IX

Whats next

- Waiting for next software release with bug fixes
  - Most in 5.2.0b release in 2 weeks
- Verifying bug fixes
- Re-testing
- Setup testenvironment with Dutch operator using Cisco CSR-3 and Huawei for transport
- If you are interested in testing your 100GE hardware against AMS-IX let us know
- If bug fixes are implemented and tested ok => production