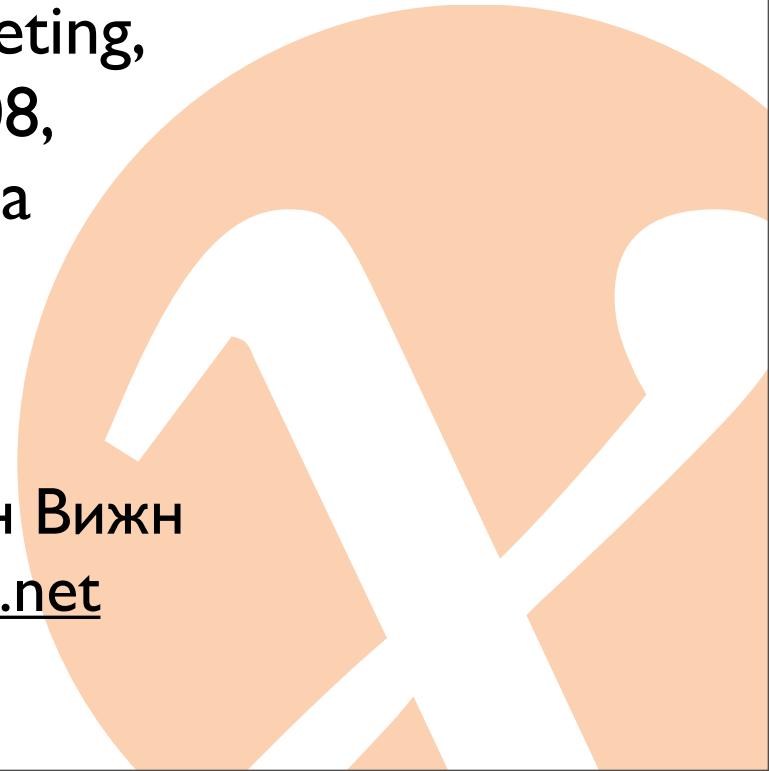# About AMS-IX

RIPE regional meeting,
September 2008,
Moscow Russia

Ariën Vijn / Ариен Вижн
arien.vijn@ams-ix.net

~ 1993

```
Stockholm    CERN
    !          !
    !512       !512
    !          !
    !    !----!----!
    !    !  IDNX  !
    !    !-!-----!-!
    !      !     !
    !     !448  !32
    !     !IP   !CLNP
    !      !     !
!---!------!-----!---!  64
!    (ibr-router)    -------- RedIRIS
!                    !
!    Amsterdam.      -------- Leuven
!     ebone.net   !  64              !-------------!           (UCD)
!                 ---------------- PTT Telecom -------- IXI (ULB)
!----------!---------!              !-------------!           (YUNAC)
          !
=====!====!==========!===== ibr-lan
     !               !
!-----!-----!    !-----!-----!
!Amsterdam1.!    !Amsterdam. !
!router.    !    !nl.eu.net  !
!surfnet.nl !    !           !
!-----!-----!    !-----!-----!
     !               !
   SURFnet         EUnet
```
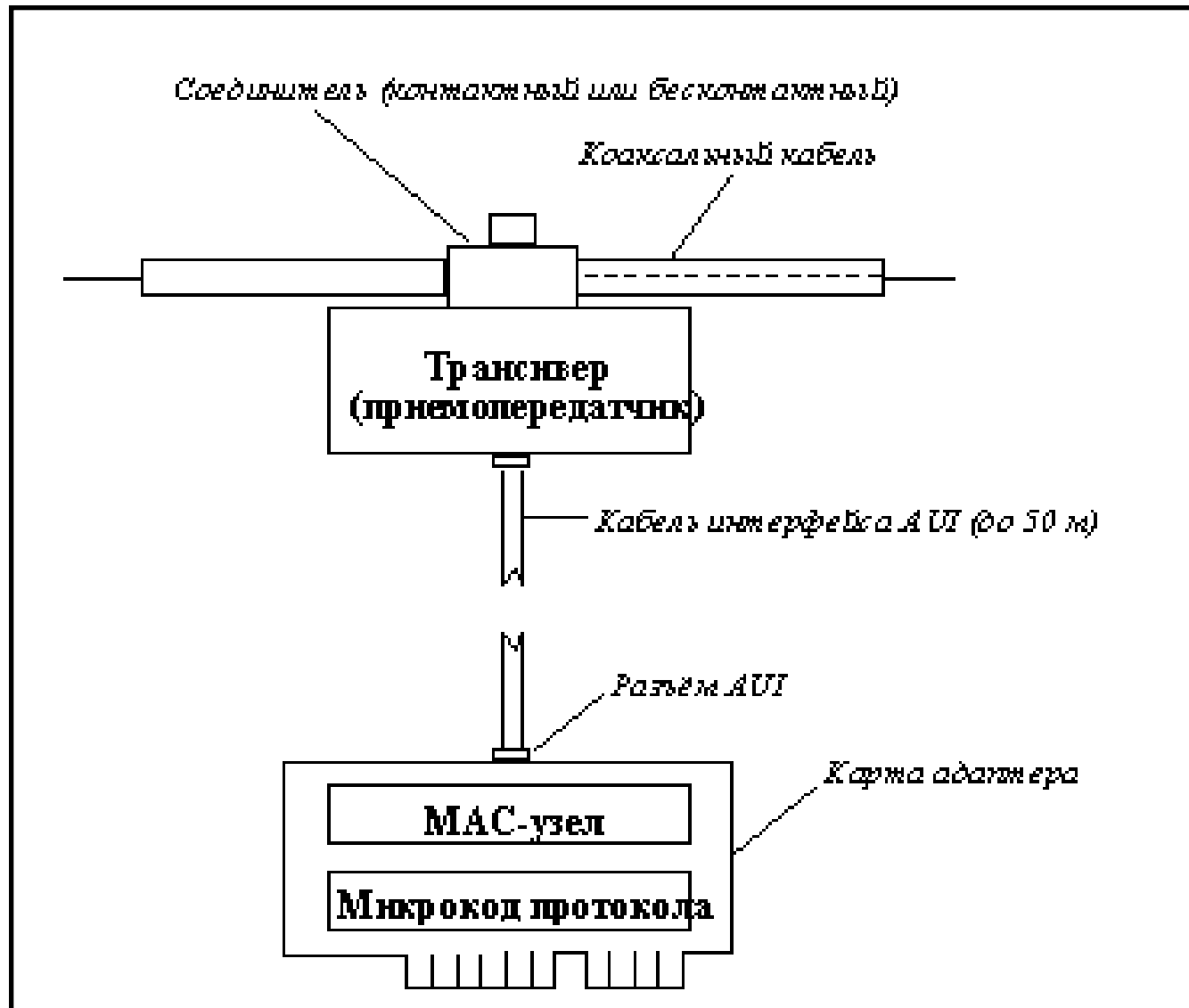
~ 1993

```
Stockholm     CERN
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!-----!-----!    !-----!-----!
      !                !
   SURFnet          EUnet
```

Соединитель (контактный или бесконтактный)

Коаксальный кабель

Трансивер (приемопередатчик)

Кабель интерфейса AUI (до 50 м)

Разъём AUI

Карта адаптера

MAC-узел

Микрокод протокола

~ 1993

```
        Stockholm    CERN
           !            !
           !512         !512
           !            !
           !     !----!----!
           !     !   IDNX   !
           !     !-!-----!-!
           !       !        !
           !      !448    !32
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           !       !        !
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        !    (ibr-router)    -------- RedIRIS
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        !                  ---------------- PTT Telecom -------- IXI (ULB)
        !----------!---------!                !-------------!         (YUNAC)
                   !
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        !-----!-----!     !-----!-----!
              !                   !
          SURFnet             EUnet
```

Content

- AMS-IX overview.
    - Organisation
    - Membership
    - Traffic / Network

- Benefit for the members.

- How to connect?
   - Processes & support

AMS-IX organisation

- AMS-IX is a professional, non-profit, independent and neutral Internet Exchange.

- Early 90's
  - Thick ethernet cable provided shared medium that became popular for peering.

- Formalised 29 December 1997
  - Association in the Netherlands, operating under Dutch Law.
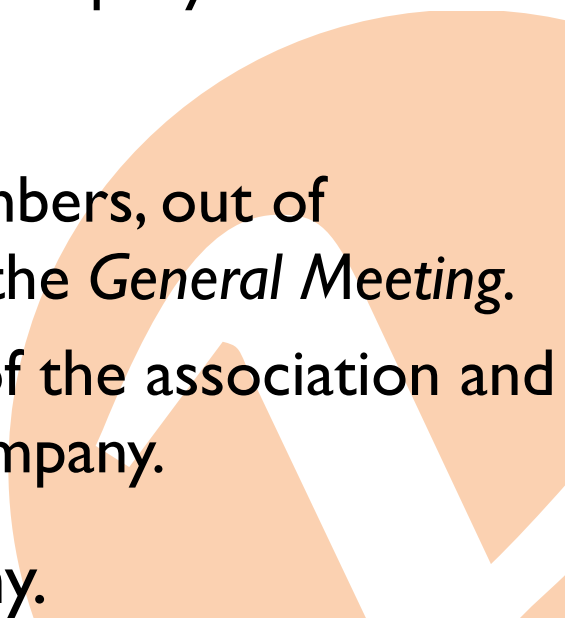 - Over 300 members (September 2008).

AMS-IX organisation

- *Amsterdam Internet Exchange B.V.*
    - Limited Liability Company.
    - Association is the single shareholder.
    - Founded in 2000 as the administrative body.
    - Took over operations in December 2001.
        - AMS-IX NOC.
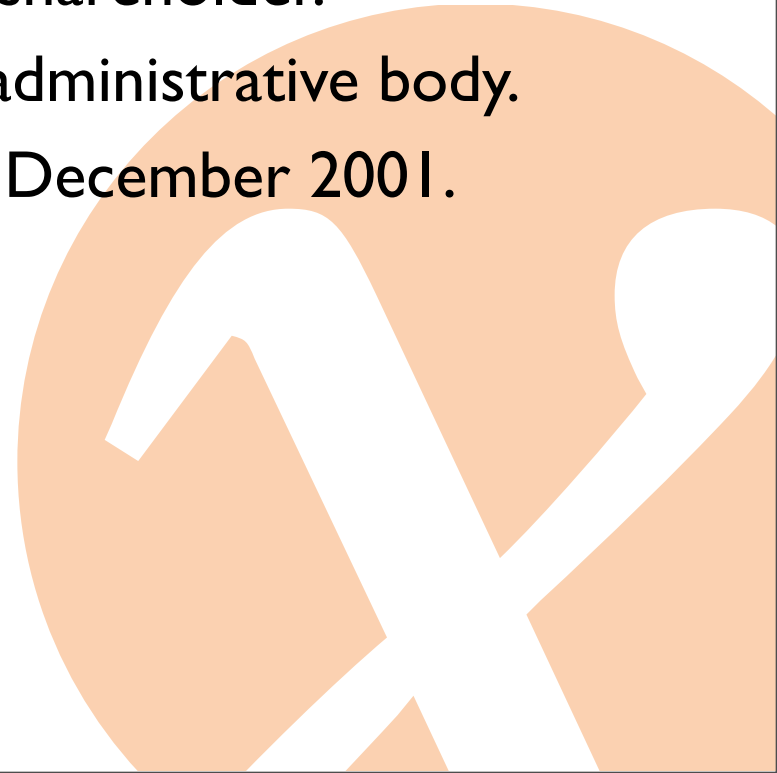
Governance Structure

- Twice-yearly *General Meeting*.
  - Assembly meeting of the association and shareholders meeting of the company.

- The Board.
  - Five seats, elected by the members, out of member representatives, in the *General Meeting*.
  - Acts both as *Executive Board* of the association and as *Supervisory Board* of the company.

- Management of the company.

Governance Structure

AMS-IX bodies

	Association	Corporation
Assembly acts as	General Assembly	Shareholders meeting
Board acts as	Executive Board	Supervisory Board
Management acts as		Management
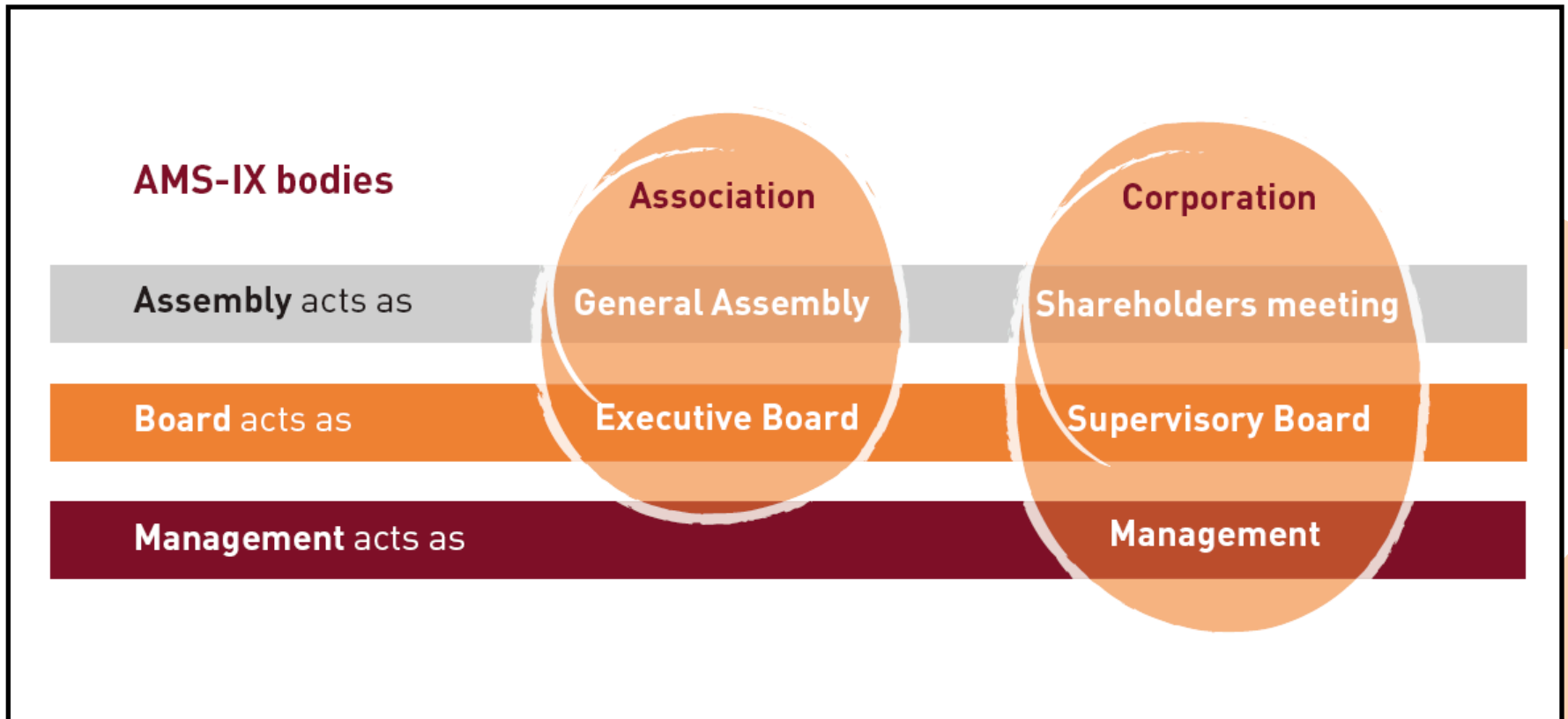
Company

- Administrative departments
  - Member Relations & Support
    - First contact for non-technical matters.
    - info@ams-ix.net or through IM.
  - Finance
    - Invoices

- Technical department
  - AMS-IX NOC
    - First contact for technical matters.
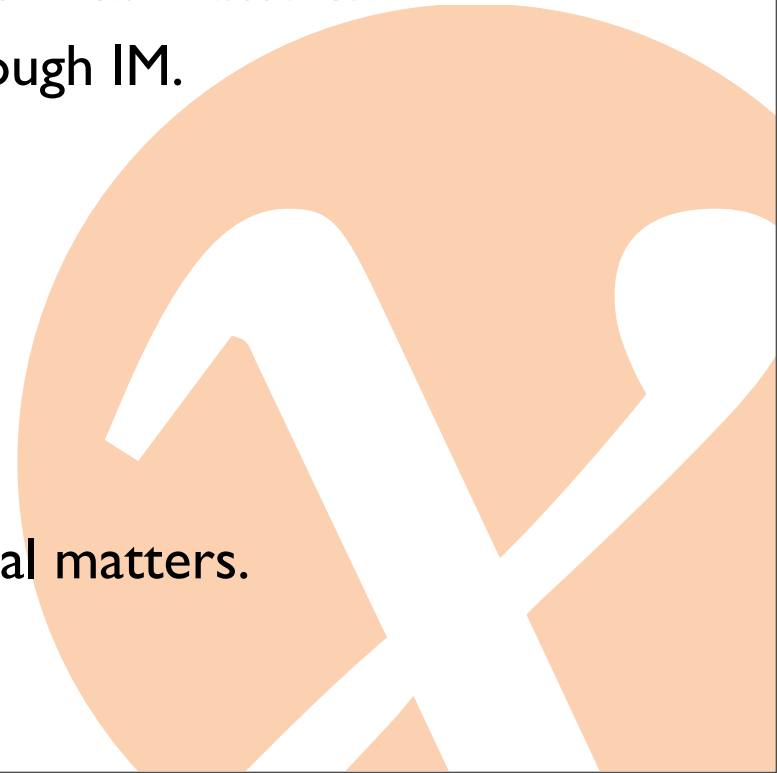
Member profile - origin

- 35 % National Members
  - Incumbent KPN, ISPs, news providers, hosting parties, broadcasters.

- 65 % International Members
  - Of which 50 % from Europe
    - 12% FR, 12% DE, 12% UK, rest mix.
  - Of the other 50%
    - 50 % from North America (US, CAN),
    - 50 % from the Rest of the World.
      - 12% Asia.

Member profile - type

- ISP's/Access providers
  - XS4ALL, UPC, Free, Tiscali, Golden telecom...
- Carriers/Telco's
  - KPN, BT, FT, DT, AT&T, Cogent, Sprint...
- Content providers/CDNs
  - BBC, Google, Yahoo, Microsoft, Highwinds, Giganews, Akamai, Limelight, CDNetworks....
- Hosting providers
- Mobile operators

Eastern European Region

ANO RIPN - Russia

Anders Business group - Russia

ATM - Poland

COMSTAR- direct - Russia

Dial Telecom - Czech Republic

Jasmin Media Group - Hungary

Elion - Estonia

eTelecom - Russia

EuroTranstelecom- Ukraine

Golden Telecom - Russia

Ha-vel - Czech Republic

Linxtelecom - Russia/NL

MTT- Russia

Nauka-Svyaz - Russia

OBIT- Russia

RDSnet - Romania

RTCom- Russia
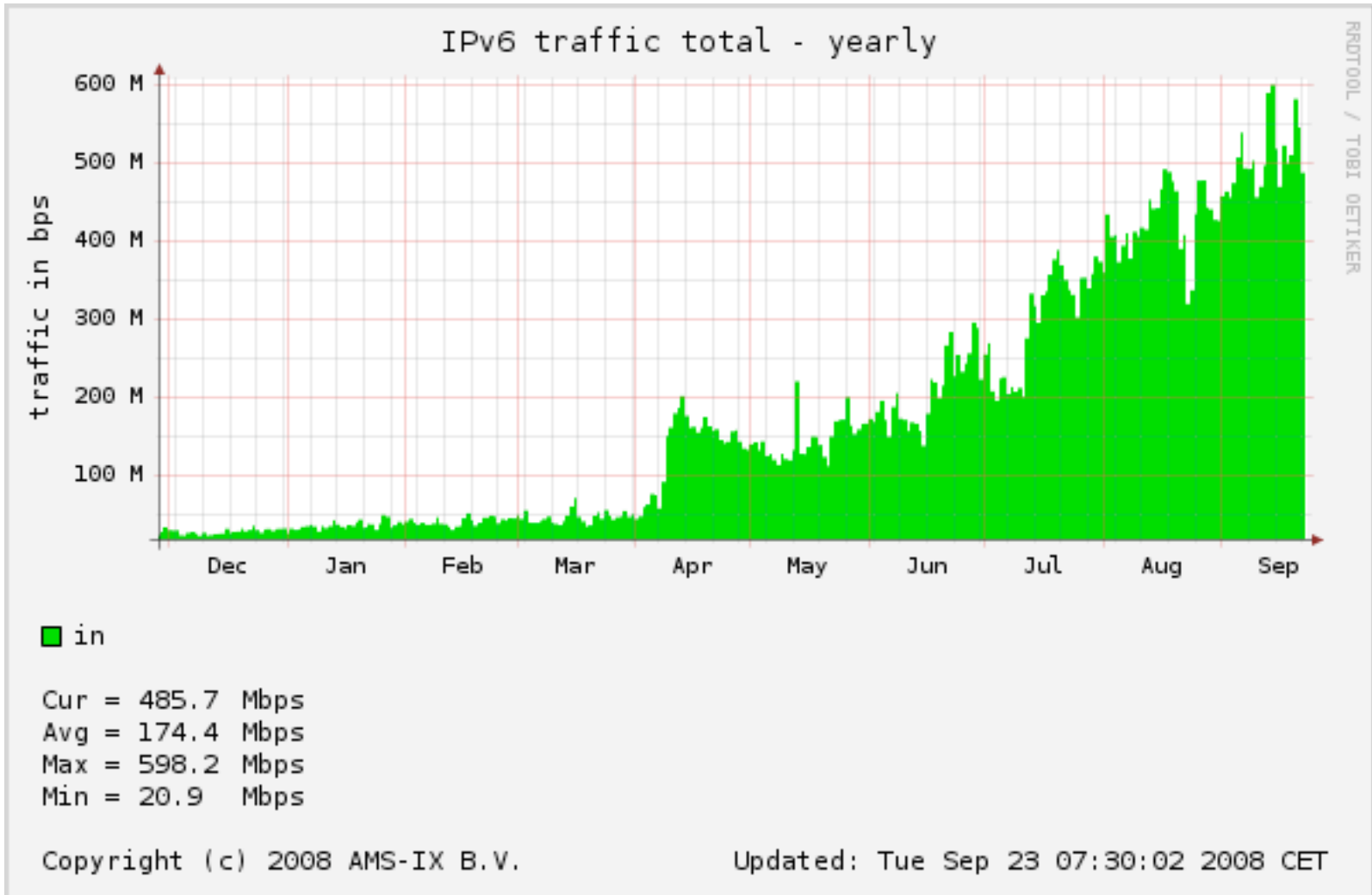
Runnet - Russia

Triera - Slovenia

Daily Traffic
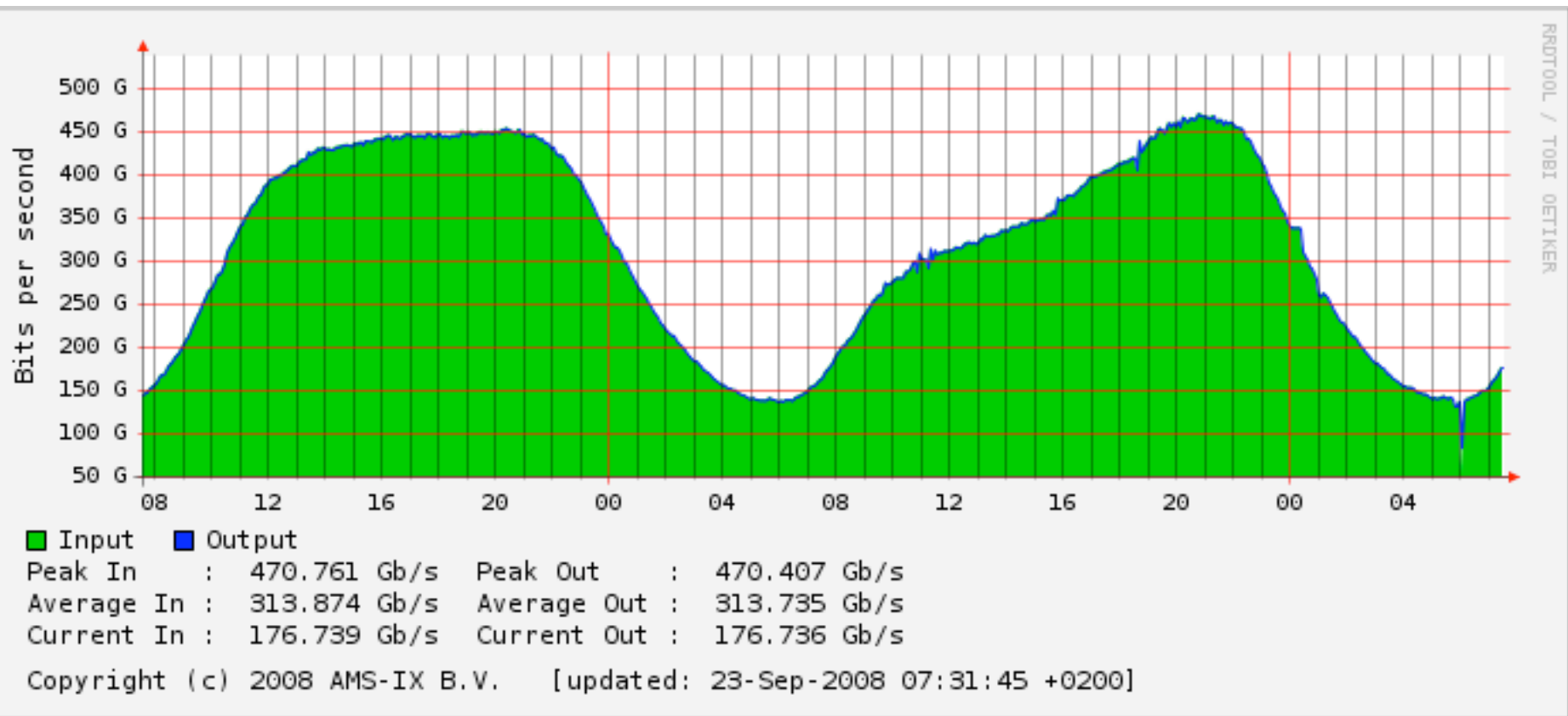
Daily IPv6 traffic
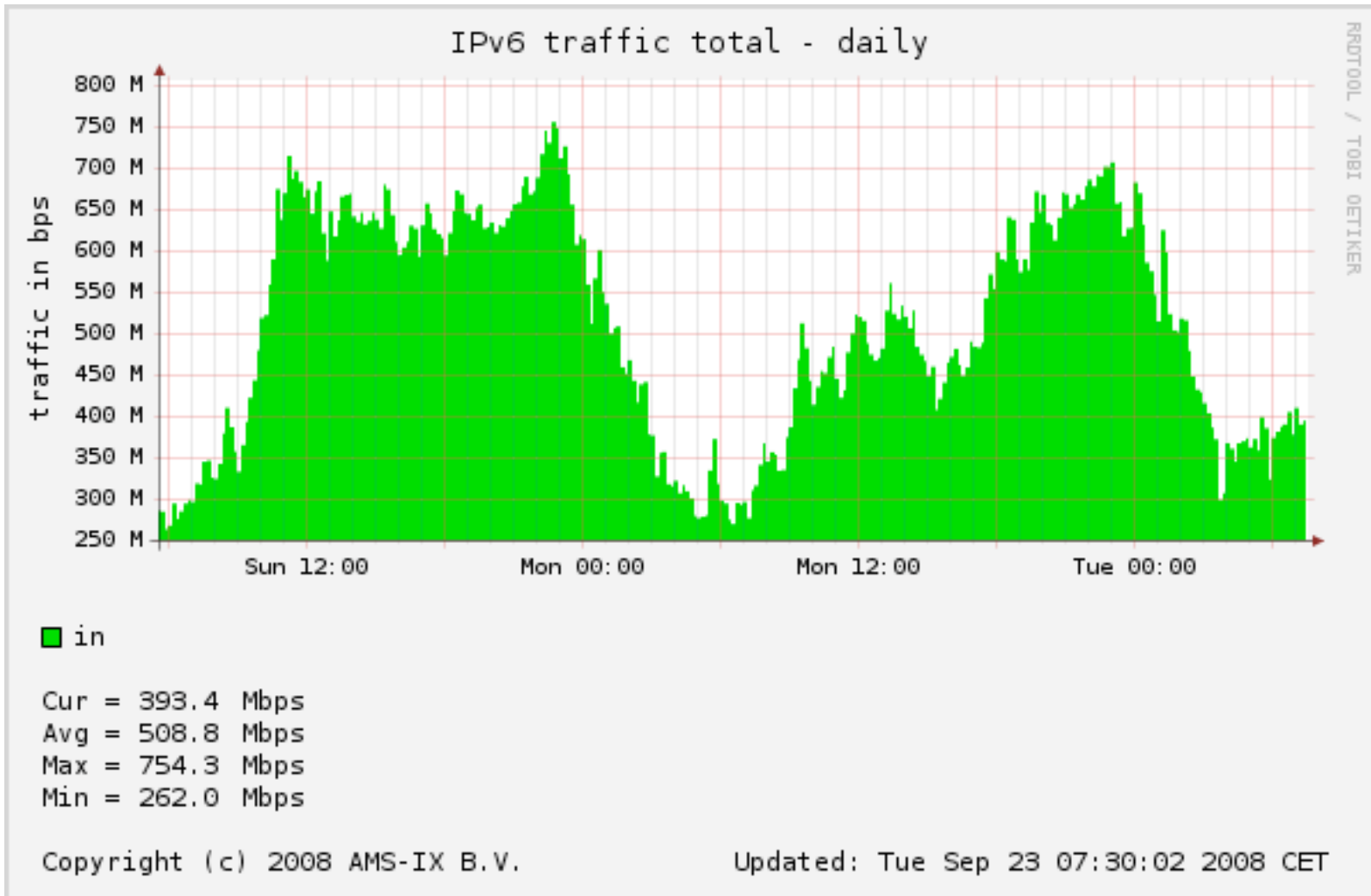
Growth of IPv6

Per member statistics

- Username/password protected.

- Volume (bps)

- Frame rate (fps)

- Errors (eps)
  - Logarithmic Y-axis.
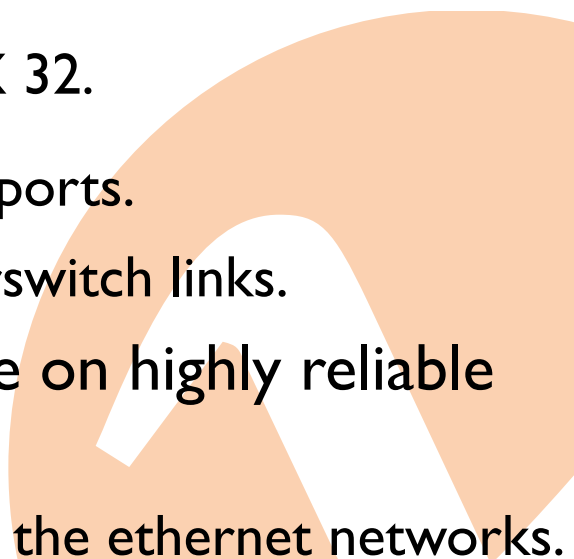
- Volume per peer
  - sFlow (bps)

AMS-IX Network

- 566 member ports.
  - (10Mbps), 100Mbps, Gigabit and 10Gbit/s.
  - Up to 8 x 10Gbit/s.

- Five sites in Amsterdam
  - SARA, NIKHEF - Science park.
  - Telecity SE - Amsterdam South East.
  - Global Switch - Amsterdam West.
  - euNetworks - Amstel Business Park

- Six[th] is coming up
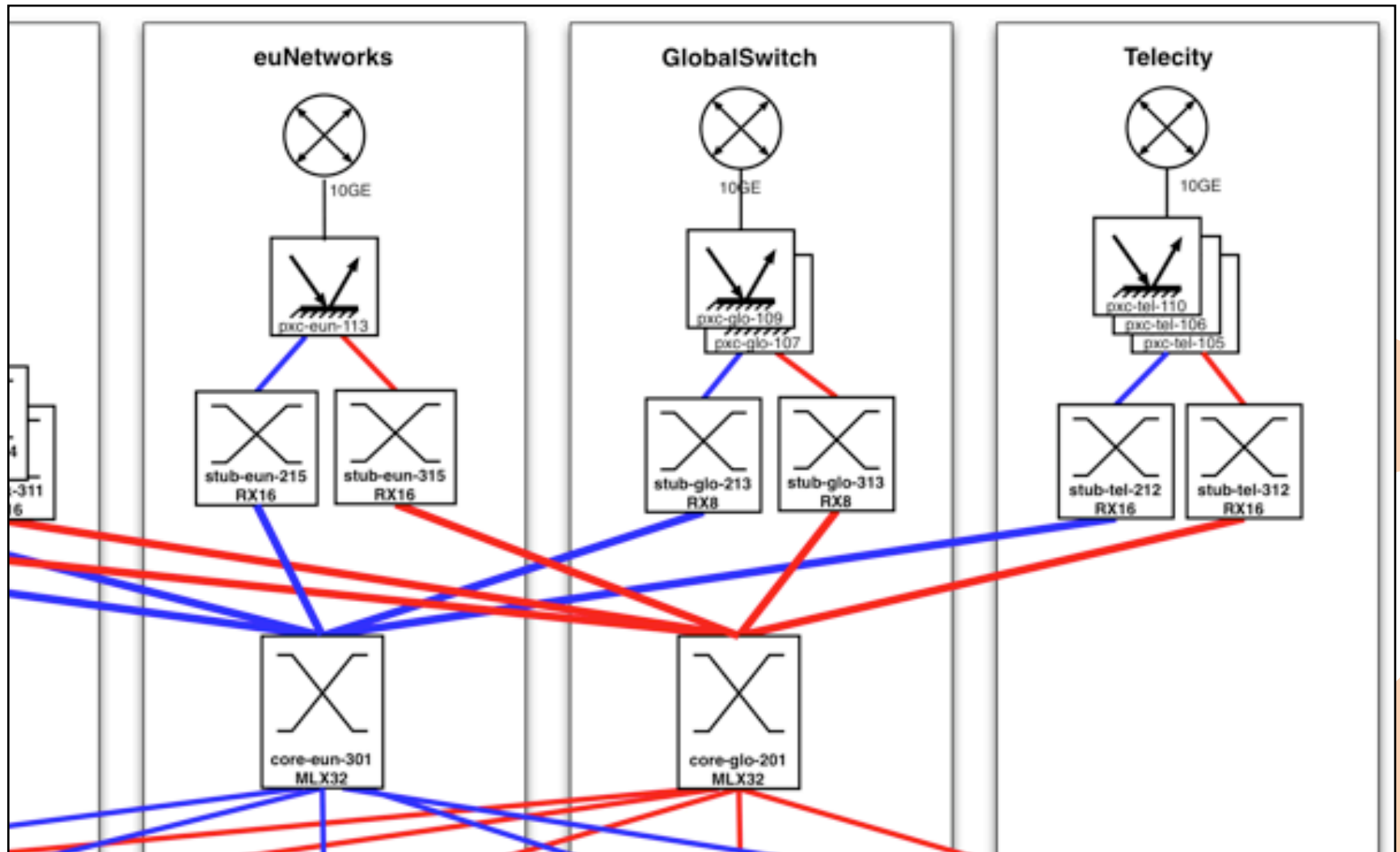 - Equinix - Amsterdam South East.

AMS-IX Network
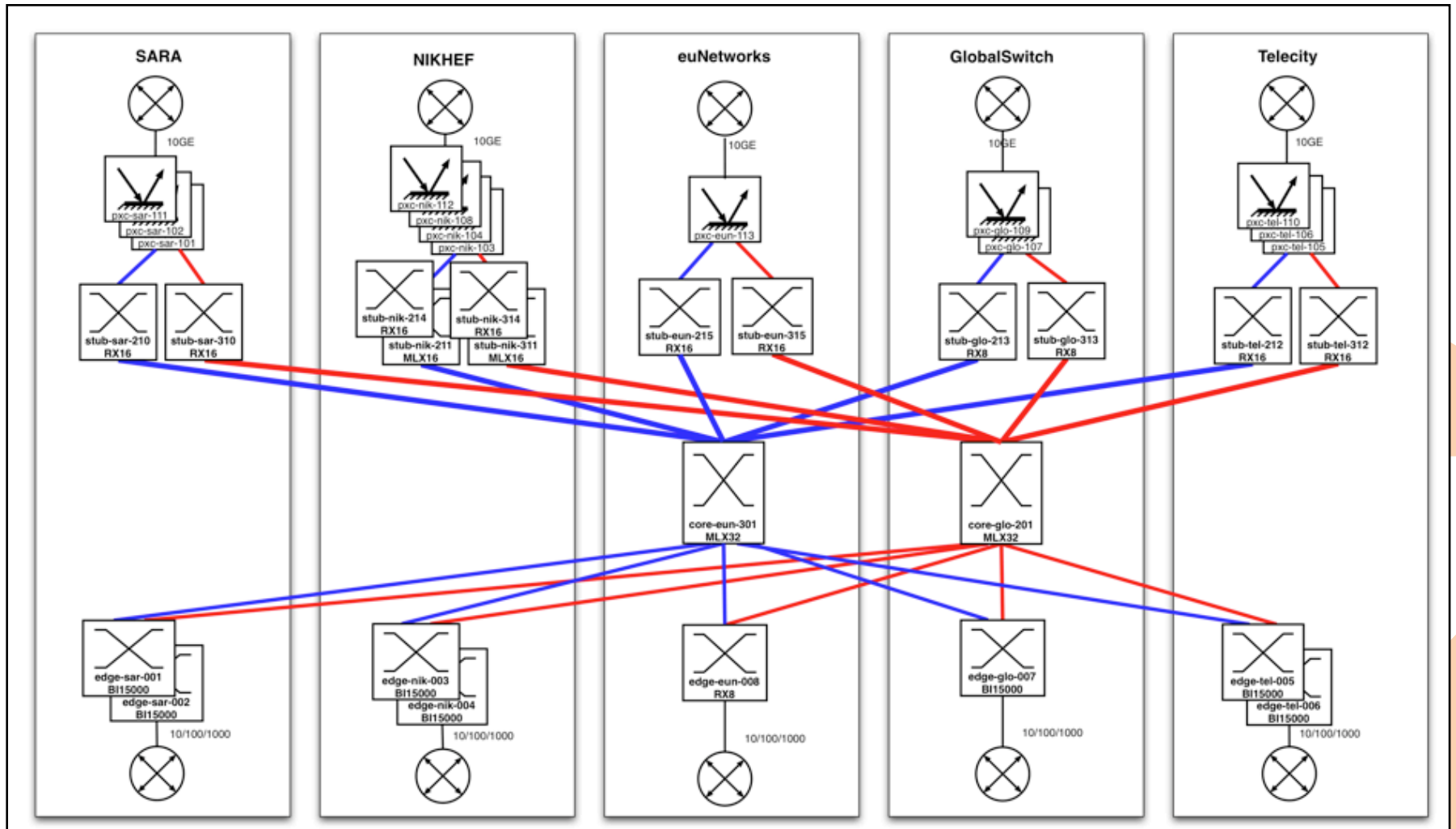
AMS-IX Network

- Fully redundant n · 2 (active/backup) system.

- Star topology.

- Two core switches.

  - Foundry Networks MLX 32.

    - Up to 128 ·10Gbit/s ports.

    - Up to 16 · 10Gbit/s interswitch links.

- 10GbE member ports are on highly reliable layer-1 switches.

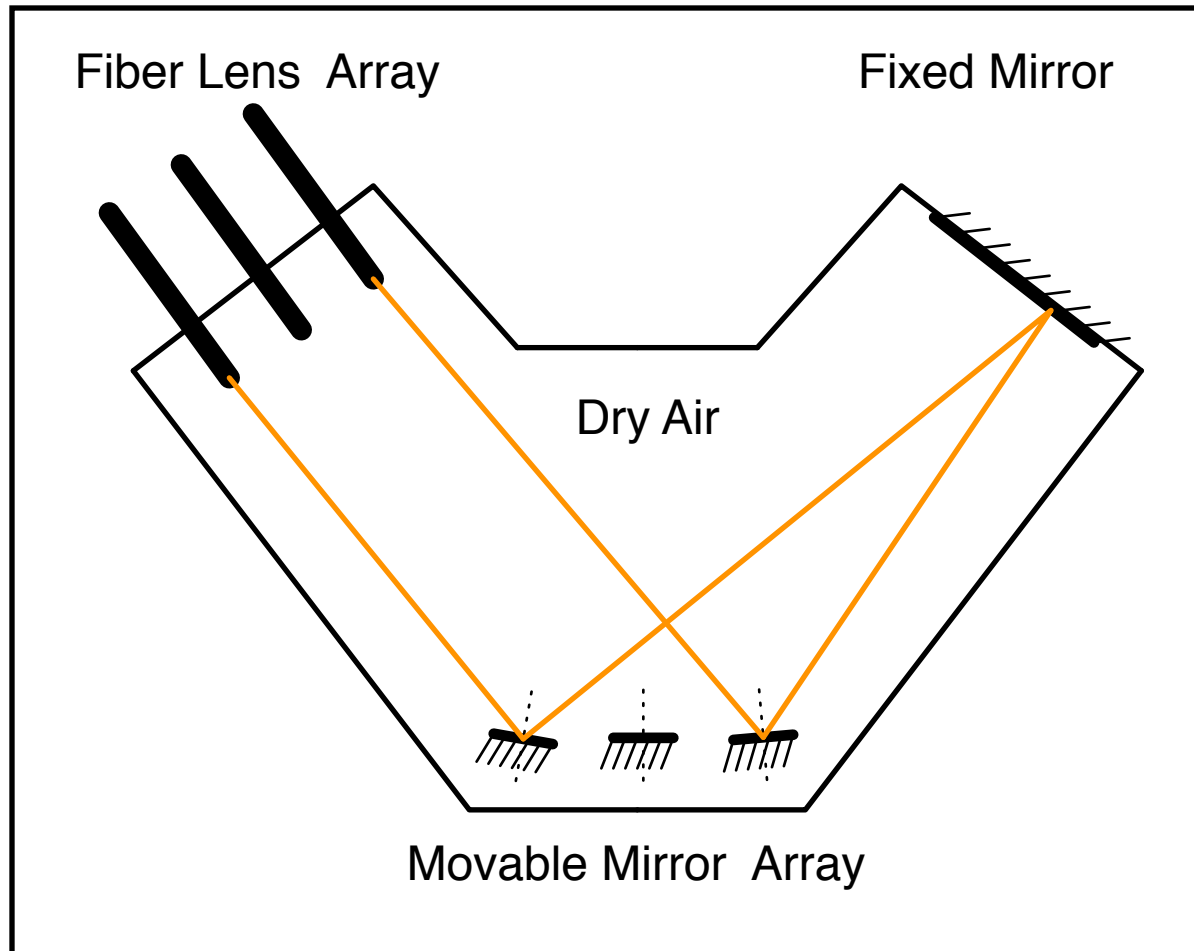 - Used to switch between the ethernet networks.

AMS-IX Network

Layer-1 switching

Layer-1 switching

Fiber Lens Array

Fixed Mirror

Dry Air

Movable Mirror Array
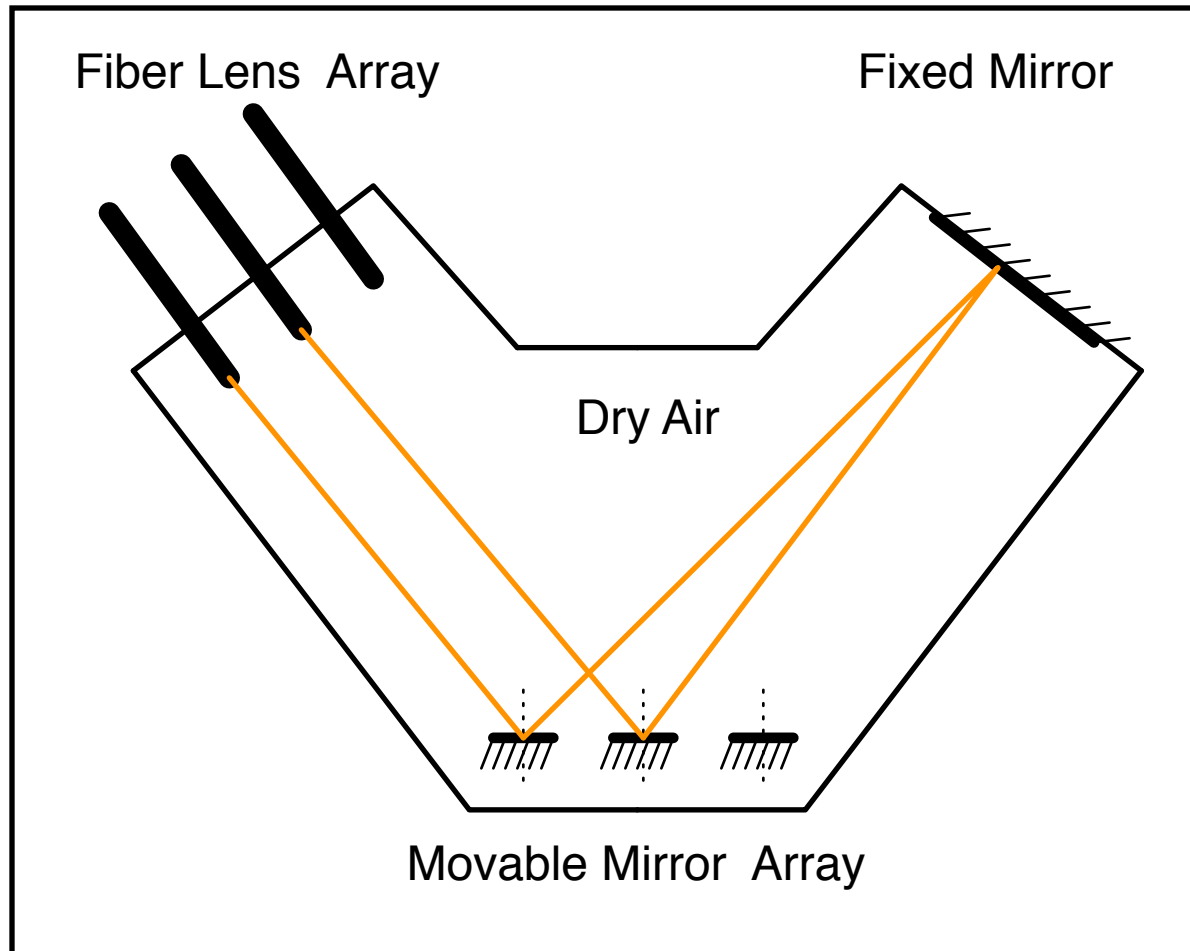
Benefits

- Meet over 300 networks
    - Wide variety of Dutch and Western European networks.
    - Top networks and content from the US/Canada and Central Europe.
    - Many important Asian and Pacific parties.

- Good non-blocking network managed by a dedicated team.
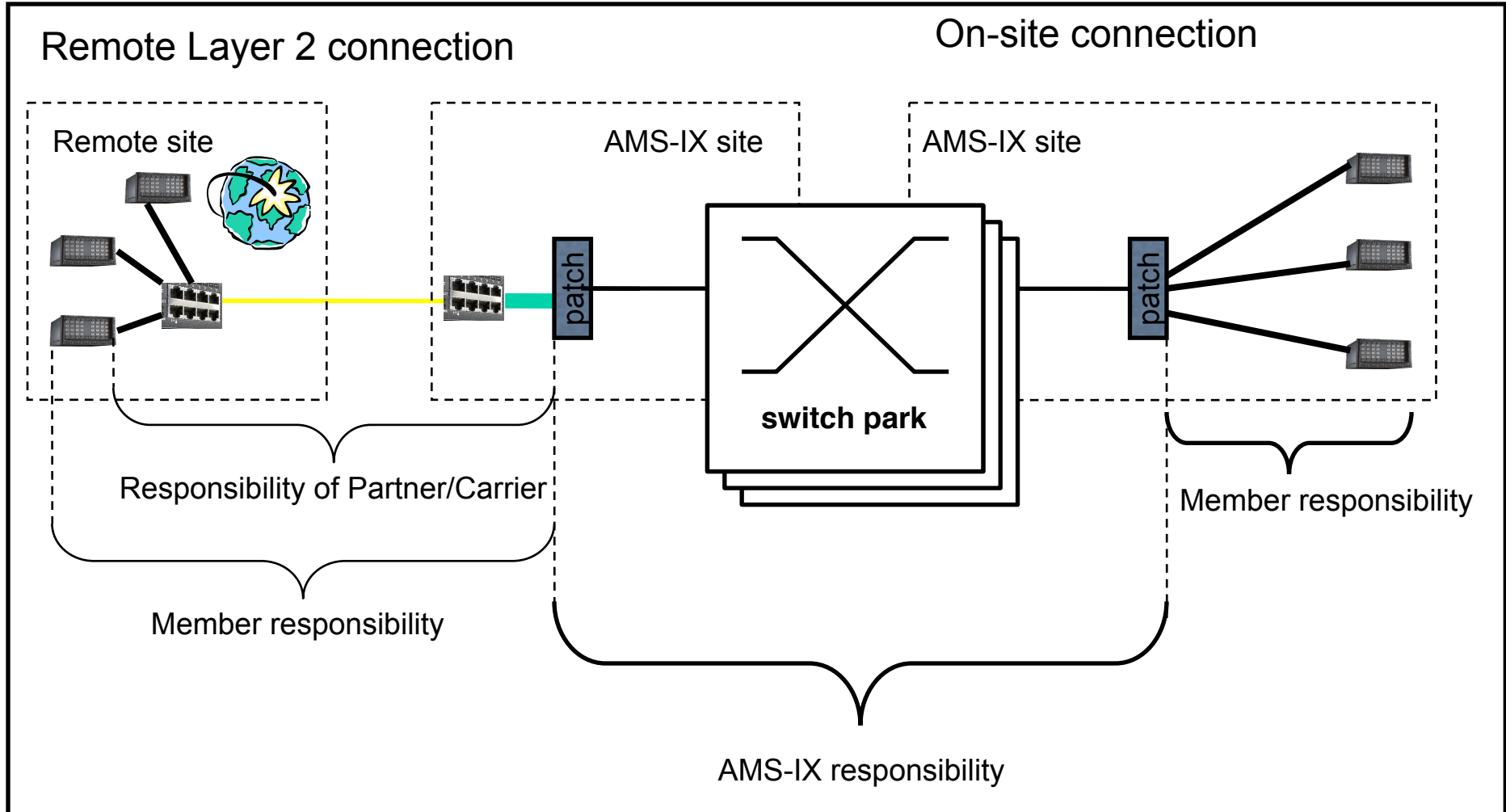
AMS-IX Membership requirements

1. Recognised legal entity.

2. Autonomous System Number.

3. Primary function of the business (unit) must be internet related.

4.   Willing to sign the AMS-IX connection agreement

    - Standard for all AMS-IX members and collectively approved by the Association, therefore we cannot negotiate exceptions.
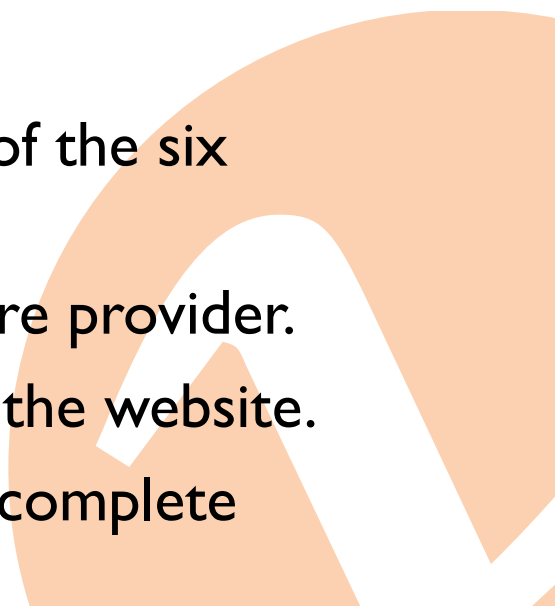
AMS-IX Membership requirements

5. Housing agreement with one of the 6 AMS-IX co-locations.

    - Can be arranged through a partner and/or pseudowire provider.

Setups

Remote Layer 2 connection

On-site connection

Remote site

AMS-IX site

AMS-IX site

patch

switch park

patch

Responsibility of Partner/Carrier

Member responsibility

Member responsibility

AMS-IX responsibility

Steps to connect to AMS-IX

1. Check that you fit all the requirements for becoming a member of AMS-IX.

2. Carefully read the AMS-IX articles of Association and connection agreement.

3. Establish an agreement with one of the six AMS-IX co-locations.

   • Or arrange this via a pseudo wire provider.

4. Fill in the AMS-IX Entry Form on the website.

5. Allow maximum 3 weeks for the complete connection process.

Connection Process

You will be sent 2 copies of the AMS-IX Connection Agreement. Both of these copies must be signed and the appendices initialised by the contractual contact person.

At the same time your membership application form will be forwarded to the Management Board for approval, this takes a period of 3 days.

Once the application is approved by our management and the signed Connection Agreement received AMS-IX starts the process of assigning/configuring the reserved port for you.

Taking into account your envisioned date of connection your TCP will be contacted by our engineers with details of the port assignment. Your port will initially be placed in a quarantine LAN and traffic hygiene will be judged
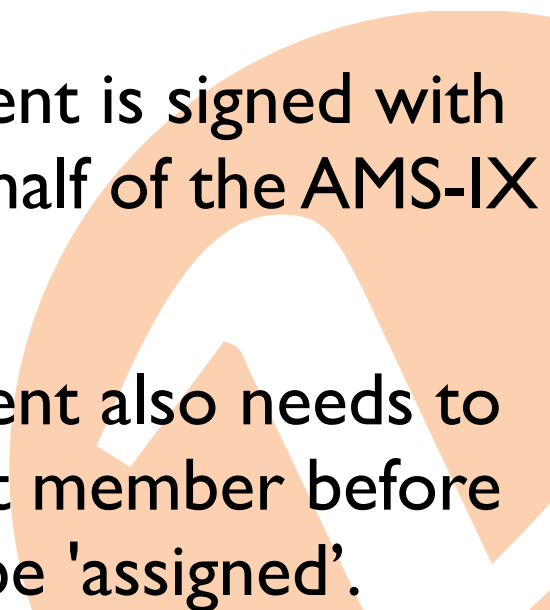
At this time you are able to physically install/configure your router and other equipment at your chosen housing location(s). You should then contact your chosen housing location(s) with this information and ask them to finalise the cabling and verify Layer 1 connectivity.

Once this is done you can contact the AMS-IX NOC during office hours on +31 (20) 514 17 17 or noc@ams-ix.net (quoting your 'project number') and ask them to bring the interface into the appropriate production LAN. You are now live.

Now you are able to set up peering with AMS-IX on AS 1200, by sending a request to peering@ams-ix.net.

At this stage you are also able to set up peering with other connected members. Look at the list of members page for details on their peering policies and contact details.

Contract phase

- We'll check both port availability and the necessary fulfilment of the membership requirements.

- The Connection Agreement is signed with AMS-IX B.V. acting on behalf of the AMS-IX Association.

- The Connection Agreement also needs to be signed by the prospect member before the ordered port(s) can be 'assigned'.

Port assignment

- Your technical contacts get an email with port details.

- Housing site does the wiring.
  - They get an email as well.

- Quarantine VLAN
  - Ping test.
  - Single MAC-address per port.
  - Allowed traffic types:
   - IPv4, ARP and IPv6.

Invoicing

- Starts 10 days after the assignment date (not reservation date).

- Quarterly invoice.

- Payment period 30 days.

- VAT can be transferred on request.

- Annual payment possible with a 3% administrative discount.

Peering

- We'll announce new members once out of quarantine.

- Expect bilateral peering requests.
  - Including AS1200 (AMS-IX).

- You can use the route servers.
  - 124 ASNs with just two sessions.
  - IPv6 and IPv4.
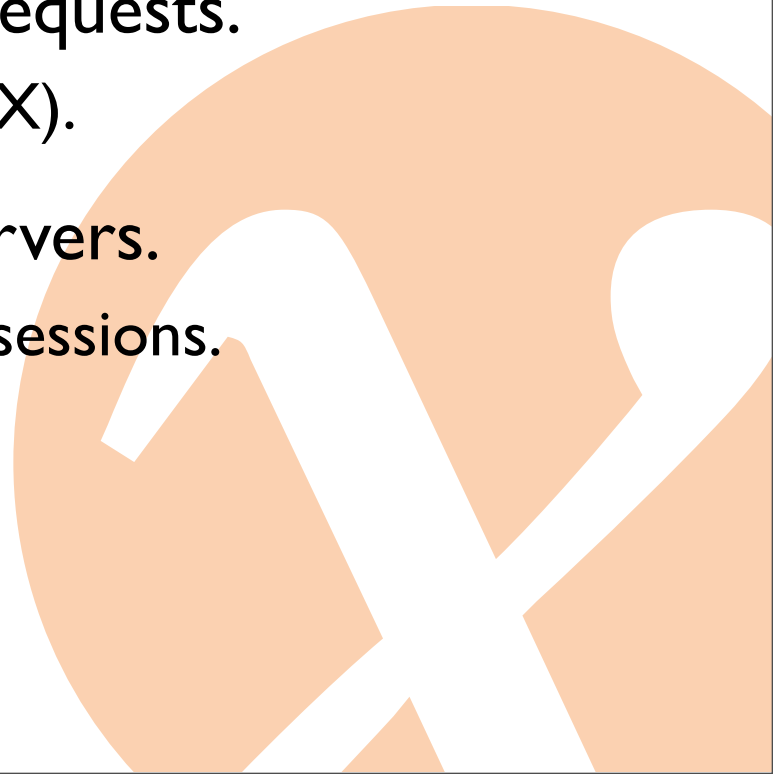
Support

- Technical support
  - 24x7 – Emergency only outside office hours.
  - Ticket overview on the member pages.
  - tech-l and ops-announce-l mailing lists (updates on maintenance and general technical issues).

- Other support
  - Via AMS-IX office: info@ams-ix.net.

Thank you / Спасибо