AMS-IX Update

APRICOT2009
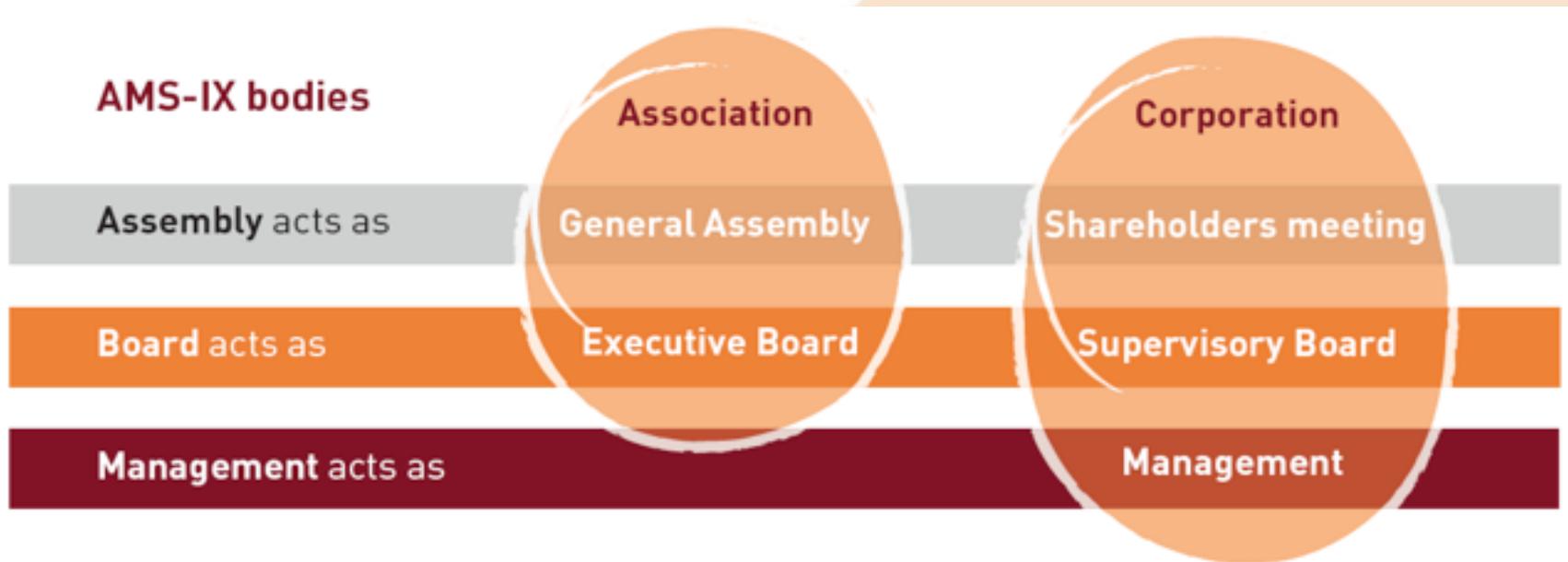24 February 2009, Manila
Cara Mascini

AMS-IX organization

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

- The beginnings of the exchange can be traced back to the early 1990's.

- On the 29th of December 1997 AMS-IX was established as an Association in the Netherlands, operating under Dutch Law.

- Amsterdam Internet Exchange B.V., founded in 2000, is the company of which the Association is a 100% owner that acts as the operator and administrator of the exchange.

- The Association today exists of over 300 members, mostly ISP's but also (mobile) telecom providers, carriers, hosting providers, ASP's and content providers

AMS-IX 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

The Board has 5 seats and is elected by the members, out of member representatives, in the General Meeting
- the Board is both Executive Board of the Association as well as Supervisory Board of the Corporation
- the General Meeting is both the General Assembly Meeting of the Association as well as the shareholders meeting of the Corporation

Member profile- Type of members

- ISP's/Access providers
  - Planet Internet, XS4All, UPC/Chello, Orange, Internode

- Carriers/Telco's
  - KPN, BT, FT, DT, at&t, TeliaSonera, Cable&Wireless, Tiscali, Level3, Cogent, Sprint, Verizon, Turk Telecom, Etisalat, Qatar Telecom, Reach, Reliance Globalcom, TATA, Korea Telecom, Malaysia Telecom etc

- Content providers/CDNs
  - RTL, NPO, BBC, Google, Yahoo, Microsoft, Highwinds, Giganews, Akamai, Limelight, CDNetworks etc

- Hosting providers
  - True, Proserve, SupportNet, ServerCentral etc

- Mobile operators
  - Vodafone, Orange, T-mobile, Aicent, Telefonica IWS, SingTel, NTT etc

Member profile - origin

- 32 % National Members
- 68 % International Members
  - Of which 50 % from Europe
    - 12% DE, 12% UK, 8% FR rest mix
  - Of the other 50%
    - 50 % from North America (US, CAN)
    - 50 % from the Rest of the World
      - 12% Asia
- New members in 2008 from Eastern Europe 24%, North America 9%, AsiaPac 7% and Middle East 3%

Service portfolio AMS-IX

- Regular Internet Peering VLAN Unicast
  - IPv4 and IPv6 native
  - FE/GE/10GE and trunking
- Multicast VLAN
- Private Interconnected VLAN's
  - Between two parties
- Closed User Group VLAN's
  - With three or more parties
  - Mobile peering - GRX, MDX
  - Voice Peering - SIP-IX, JCC
- MRTG graphs, Sflow graphs, Routerservers

The AMS-IX Membership requirements

The 5 requirements for becoming an AMS-IX member:

1. The applicant must be a recognized legal entity
2. The applicant must have an ASN (Autonomous System Number).
   - The Applicant must have their own ASN assigned by a Regional Internet Registry, being either; RIPE-NCC, APNIC, LACNIC, ARIN or by a Local Internet Registry.
3. Primary function of the business (unit) must be internet related
4. The applicant must have the intention to and be willing to sign the AMS-IX Connection Agreement
   - The AMS-IX Connection Agreement is standard for all AMS-IX members and collectively approved by the Association, therefore we cannot negotiate exceptions.
5. The applicant needs a 'housing' agreement with one of the 6 AMS-IX co-locations (which can be arranged through a Carrier/Partner)
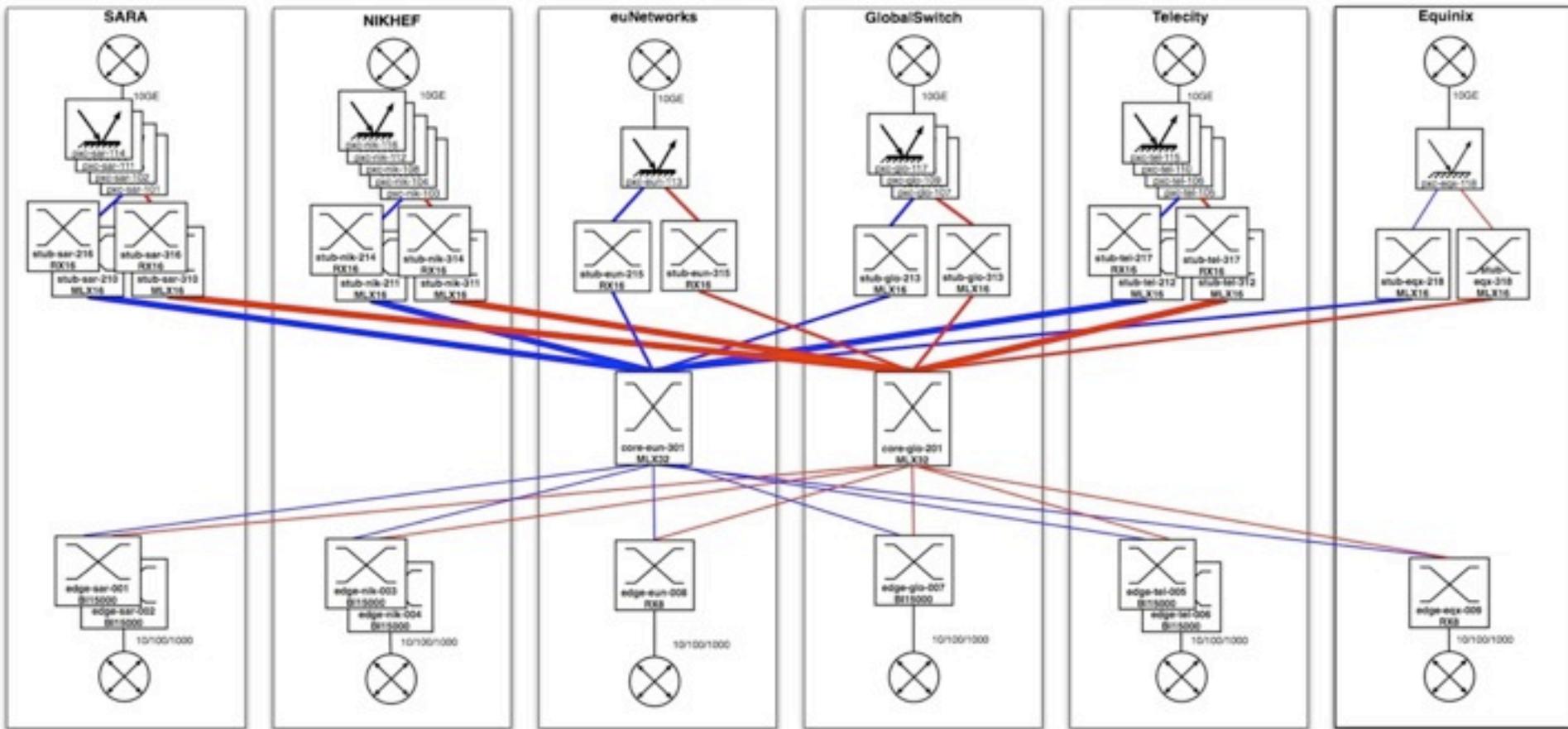
Port & member statistics

	Feb 2008	Feb 2009	+/-
# members	295	313	+18
# ports	507	556	+49
10 GE	169	238	+69
1 GE	197	185	-12
FE	106	98	-8
E	35	35	0

Historic overview

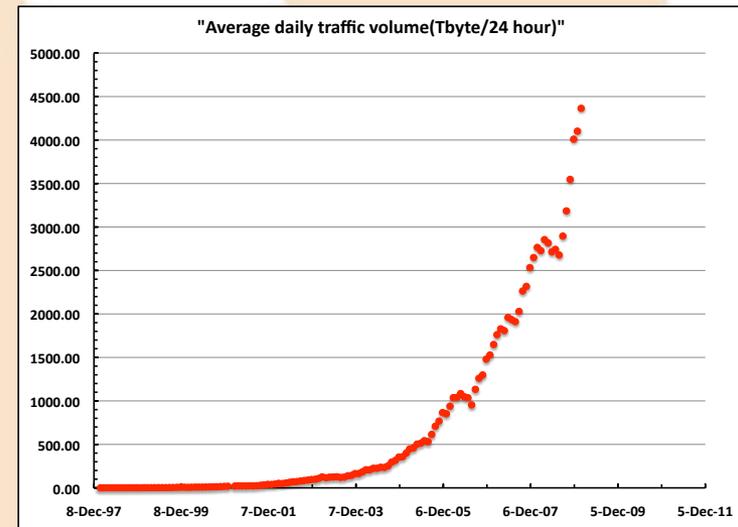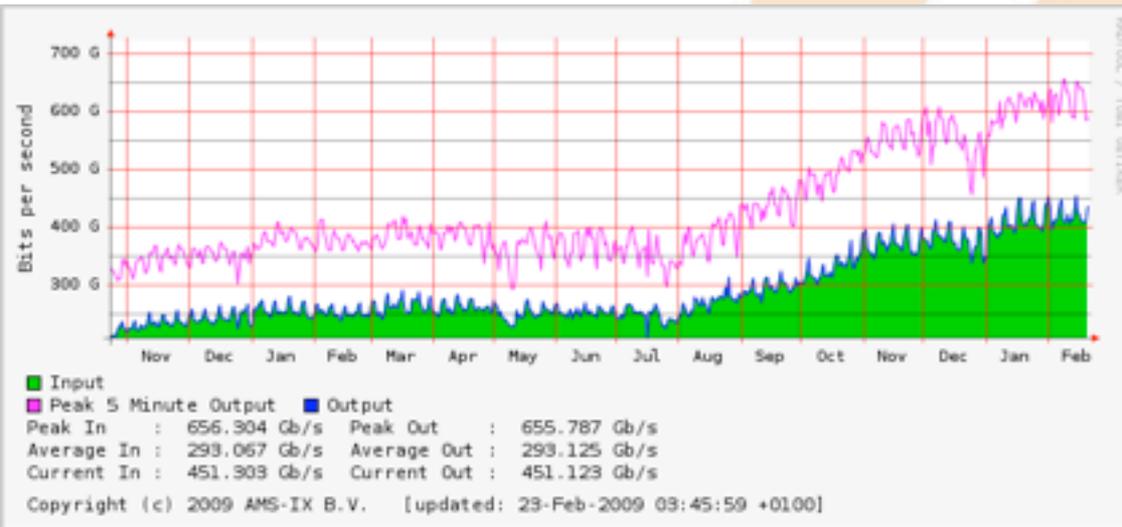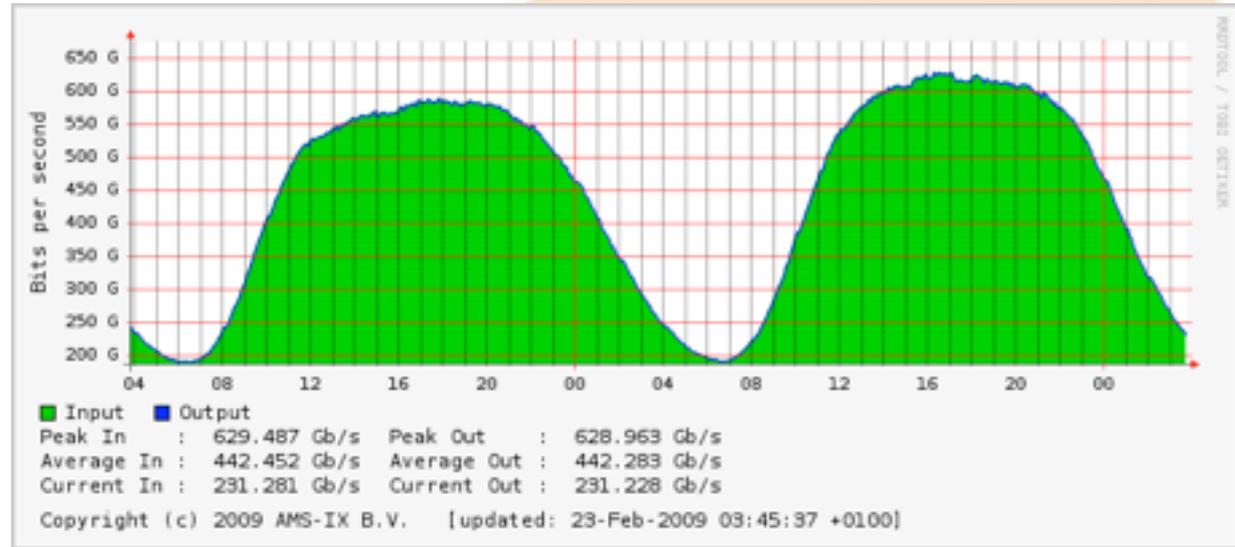
Members&port_types @ amsix
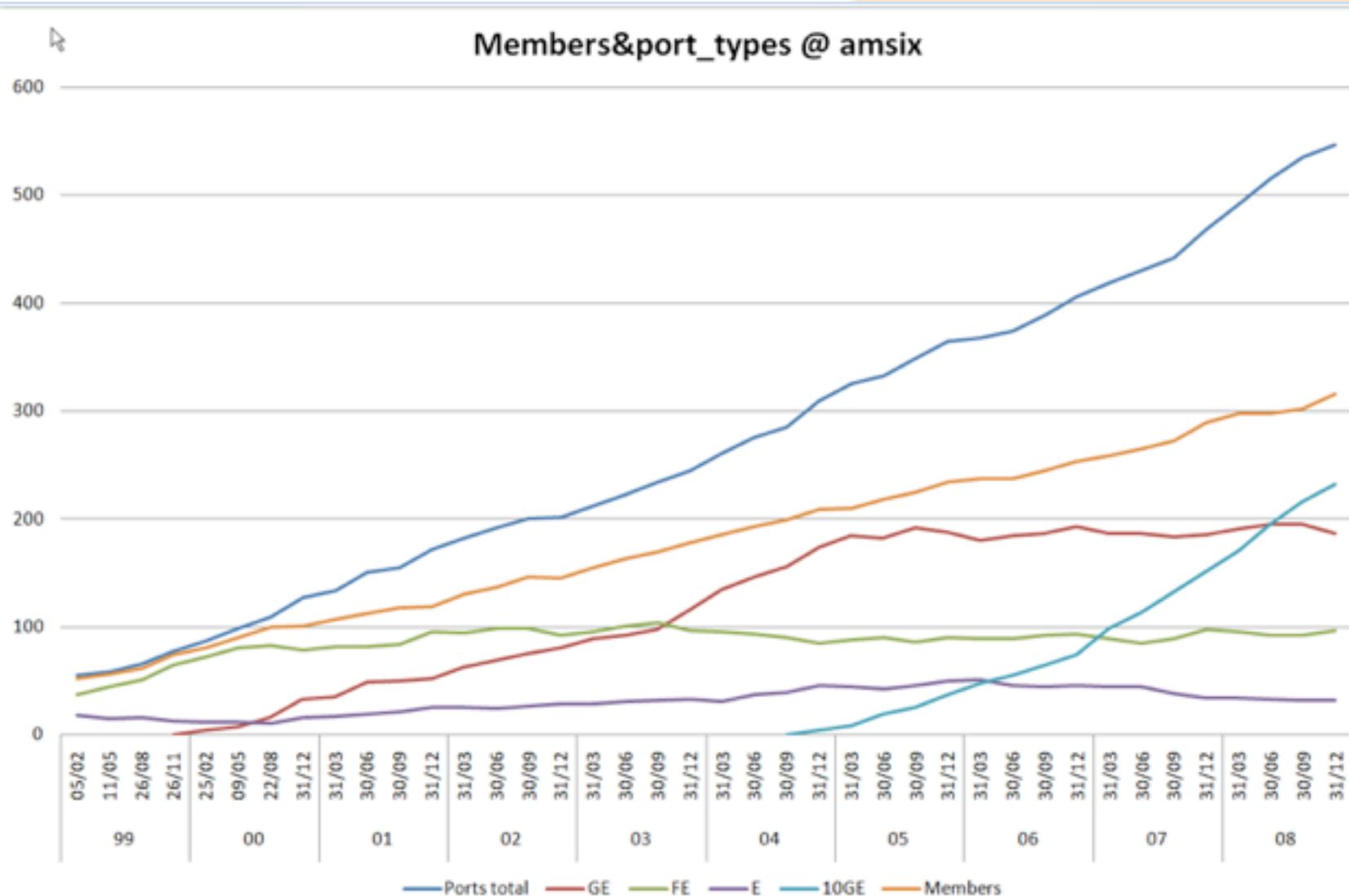
Topology

Dual star topology - redundant hub/spoke 6 edges with dual core, one is active the other standby
- Ethernet switches Foundry MLX platform (now Brocade)
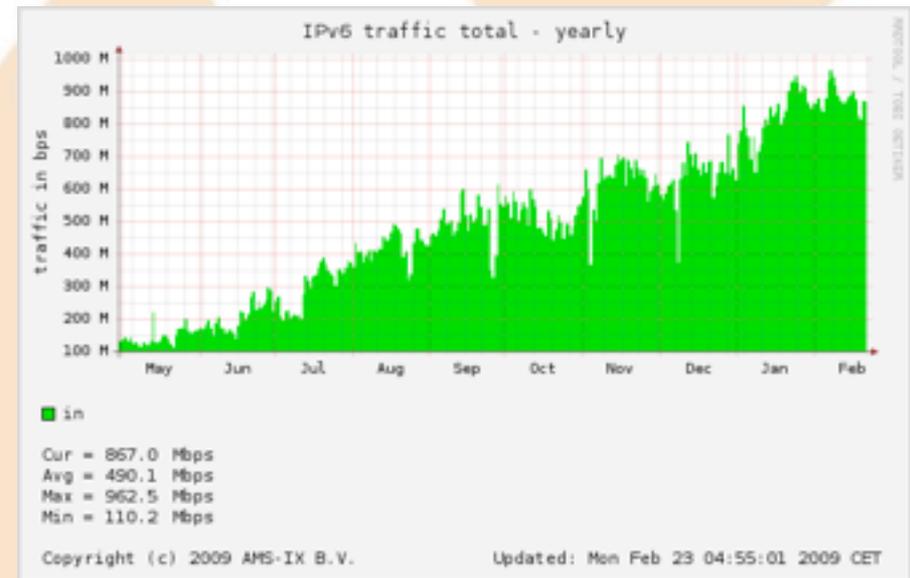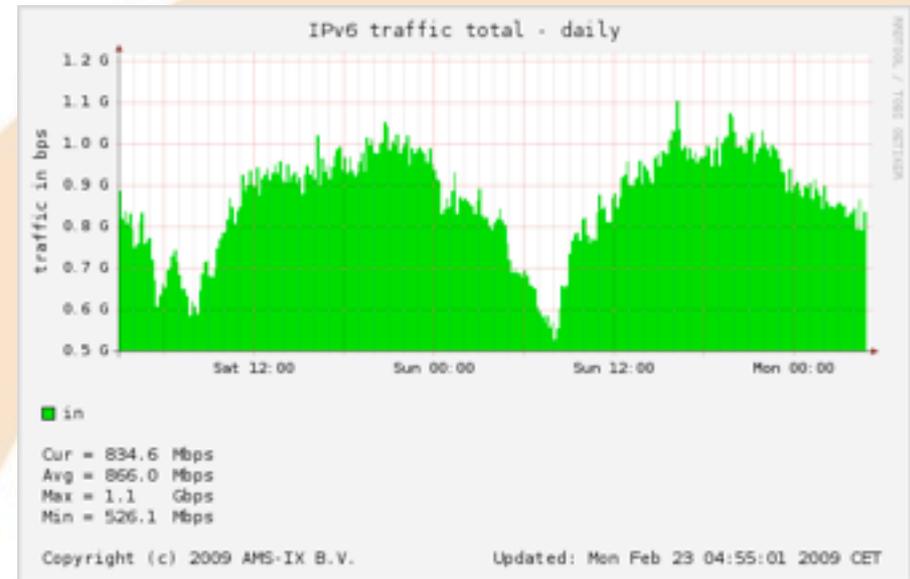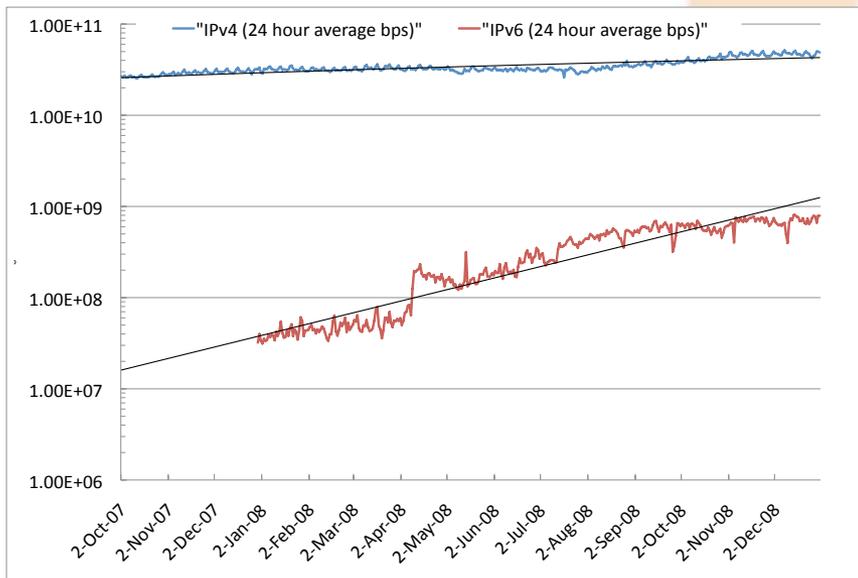- Photonic switches Glimmerglass 300 systems MEMS based

Traffic & volume statistics

- Public peering traffic Maximum 656 Gbps

  (5 min avg)

- 'Night' traffic minimum ~ 200 Gbps (5 min avg)

- Average volume exchanged is 4.2 PetaByte a day


```
■ Input   ■ Output
Peak In    :  629.487 Gb/s   Peak Out    :  628.963 Gb/s
Average In :  442.452 Gb/s   Average Out :  442.283 Gb/s
Current In :  231.281 Gb/s   Current Out :  231.228 Gb/s
Copyright (c) 2009 AMS-IX B.V.   [updated: 23-Feb-2009 03:45:37 +0100]
```



```
■ Input   ■ Peak 5 Minute Output   ■ Output
Peak In    :  656.304 Gb/s   Peak Out    :  655.787 Gb/s
Average In :  293.067 Gb/s   Average Out :  293.125 Gb/s
Current In :  451.303 Gb/s   Current Out :  451.123 Gb/s
Copyright (c) 2009 AMS-IX B.V.   [updated: 23-Feb-2009 03:45:59 +0100]
```


"Average daily traffic volume(Tbyte/24 hour)"

IPv6

- Native on the peering VLAN
- 162 peers enabled
- 1000% growth in 2008!

IPv6 traffic total - daily

Cur = 834.6 Mbps
Avg = 866.0 Mbps
Max = 1.1 Gbps
Min = 526.1 Mbps

Copyright (c) 2009 AMS-IX B.V.   Updated: Mon Feb 23 04:55:01 2009 CET

"IPv4 (24 hour average bps)"   "IPv6 (24 hour average bps)"

IPv6 traffic total - yearly

Cur = 867.0 Mbps
Avg = 490.1 Mbps
Max = 962.5 Mbps
Min = 110.2 Mbps

Copyright (c) 2009 AMS-IX B.V.   Updated: Mon Feb 23 04:55:01 2009 CET
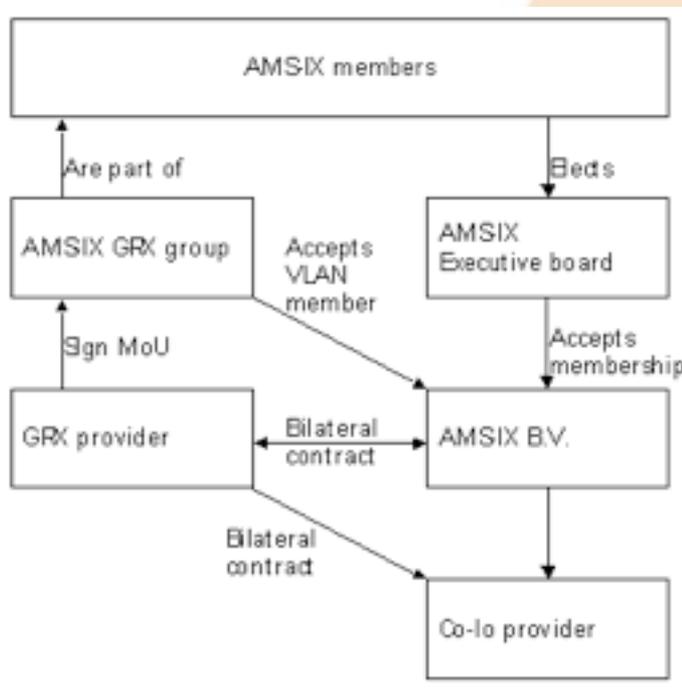
Mobile peering - GRX

- Closed User Group VLAN on AMS-IX platform
- Application process includes signing of MoU
- ~ 100% Annual Traffic growth
- Traffic levels of 200Mbps peak, 130 Mbps average
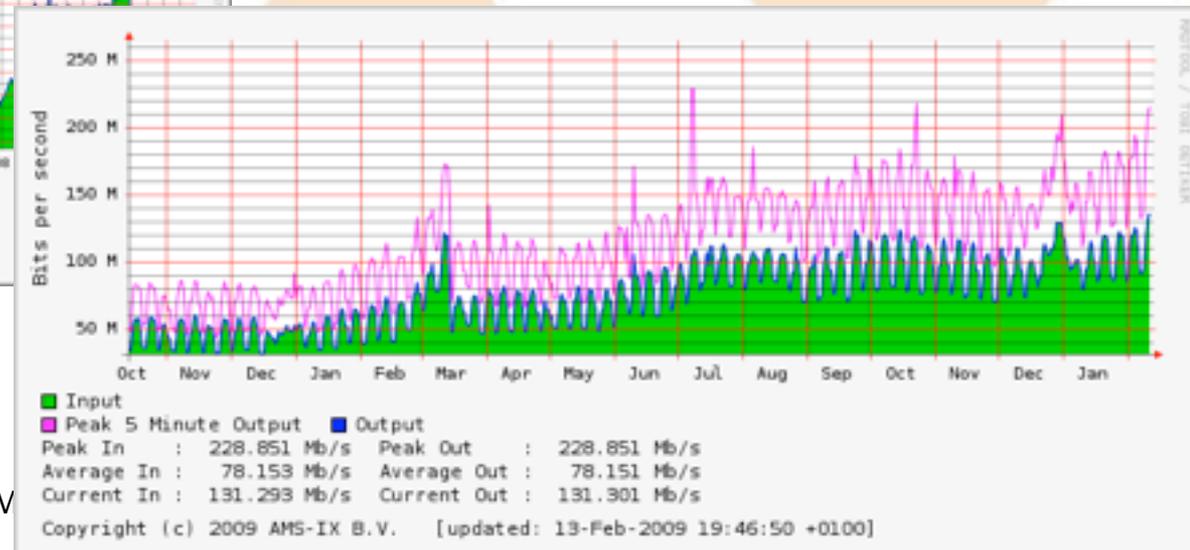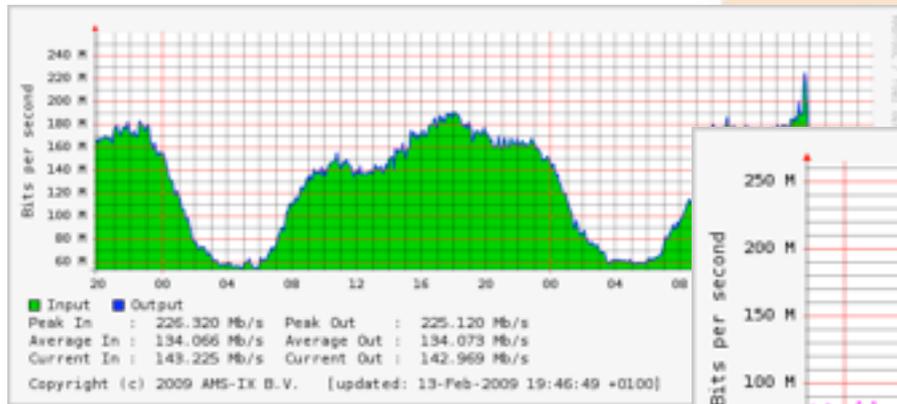
Mobile peering - GRX

- Almost 30 connected GRX providers
- Dedicated redundant ports

Aicent Inc
AKTON d.o.o.
Belgacom International Carrier Services SA
Cable & Wireless UK
CITIC Telecom 1616
Comfone AG
Emirates Telecommunications (EMIX)
France Telecom (Open Transit)
KPN Wholesale Service & Op.
MTT
Neustar
NTT Communications Corporation
OTE International Solutions S.A.
Portugal Telecom Comunicacoes
REACH
Singapore Telecommunications
Syniverse Technologies Inc.
T-Systems International GRX
TDC A/S
Tele2
Telecom Italia Sparkle
Telefonica International Wholesale Services
Telekom Austria
Telenor Global Services AS
TeliaSonera International Carrier

Tariffs per July 1, 2009

- All prices per month per port:
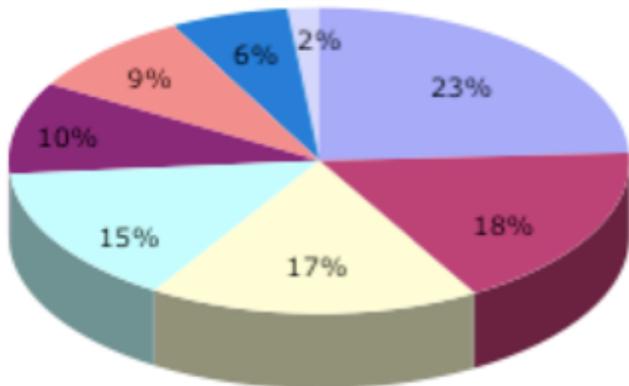
  FE/GE   €   500 (GE now 800)
  10GE   € 2.500 (unchanged)

  - 10BaseT Ethernet ports (10 Mbps) are not sold as a separate service anymore. Current connections will be supported against the last conditions and price for as long as requested.

  – No one-time connection charges, variable charges, annual or membership fees apply
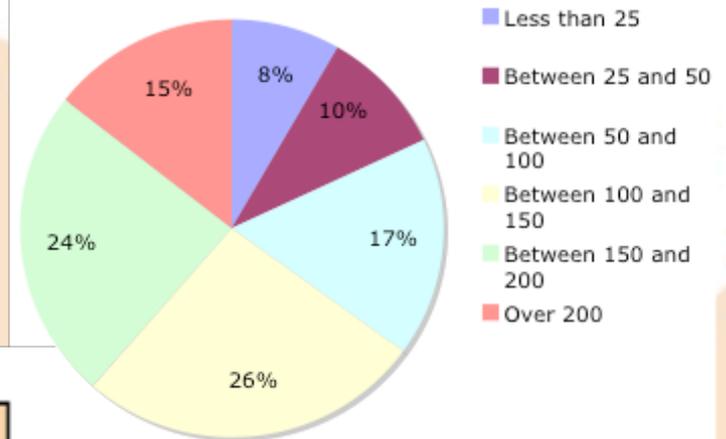
Peering observations

Reasons to connect

- The amount of connected parties
- The number of routes I can get
- Costs Savings
- The quality of service
- The neutrality & independance
- The type of connected parties
- AMS-IX's geographical location
- The range of ports & services offered

Peering Policy	Percent
Open	63%
Selective/Semi-open	30%
Restricted/Closed	7%

Number of peerings with unique ASNs

- Less than 25
- Between 25 and 50
- Between 50 and 100
- Between 100 and 150
- Between 150 and 200
- Over 200

# IXs connected to	Percent
1 or 2	34%
3 to 5	31%
6 to 10	11%
10 or more	24%

Service Level

Quality Statement and reporting on:
- Availability: 99,99%
- Packet loss: <0.05%
- Packet delay: <0.5 ms
- Jitter: -0.1 and +0.1 ms

Satisfaction with non-technical support
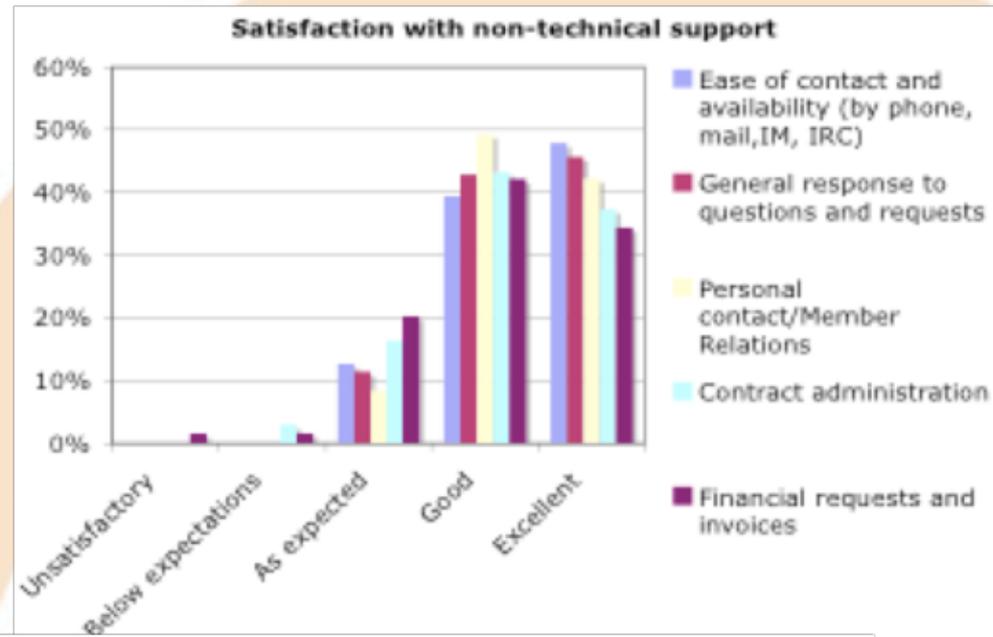
Rate from 1 to 10	Engineering Competence	Trouble ticket support	Maintenance announcements	Speed of responses to requests	Quality of responses to requests	Flexibility to requests
Average	8.7	8.4	8.5	8.3	8.4	8.3

Rate from 1 to 5	Stability of the platform	Availability of the platform	Packet loss % on the platform	Packet delay time on the platform	Reporting
Average	4.2	4.3	4.5	4.4	4.0

What's new?

- Member Relations & Support team
  - Non-technical Support
  - Contract & Order management
  - Member Relations (Kim van Grinsven, Izabella Kasprzyk)
- Special high- end access solutions
  - Multiple 10GE's trunked with DWDM-based connection
- Recent new access locations in Amsterdam
  - euNetworks, Paul van Vlissingenstraat
  - Equinix AM1, Luttenbergerweg

What will be new in 2009?

- sFlow service - continued development
  - raw RDD file downloads
  - native IPv6 to IPv6 graphs
- My.ams-ix.net
  - first: fully integrated - single sign-on
  - next: extended with contracts & invoices
- Route-server change of setup
  - from Quagga to openBSD
- New access site(s)
  - locations to be defined

Calender 2009

- AMS-IX General & Technical Meetings
  - 8th May (after RIPE meeting) - Party on the 6th!
  - End of November
- Peering Forums
  - GPF4 28th-31st January - Punta Cana, Dominican Republic
  - EPF4 - 14 - 15 September - Copenhagen, Denmark
- RIPE's, NANOG's, APRICOT
- Special events
  - Awareness days, Partner event, Press event
- Sponsored events
  - ISP Go-kart competition, TheNextWeb

Questions?

cara.mascini@ams-ix.net

henk.steenman@ams-ix.net - technical

kim.van.grinven@ams-ix.net - connecting