End user perspective on higher speed Ethernet

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Agenda

- Short overview of AMS-IX
- Current utilization of the platform
- Future projections
- Requirements on Higher Speed Ethernet
AMS-IX

• Amsterdam based Association under Dutch law.
• Members are Internet related businesses
  – ISPs, Content providers, Carriers, GRX providers, etc
• Purpose of the association is to provide a platform for Internet data exchange between the members
• AMS-IX BV (owned by the association) does day to day management
The AMS-IX infrastructure
Port growth

Amsterdam, Sep 2006
Current Network Usage

Current Network Usage

Max In : 166.526 Gb/s  Max Out : 166.223 Gb/s
Average In : 116.080 Gb/s  Average Out : 115.997 Gb/s
Current In : 151.874 Gb/s  Current Out : 151.364 Gb/s

[updated: Mon Sep 11 22:50:15 2006]
Current Network Usage

- Input
- Peak 5 Minute Output
- Output

Max In : 166.457 Gb/s  Max Out : 166.170 Gb/s
Average In : 81.462 Gb/s  Average Out : 81.380 Gb/s
Current In : 111.597 Gb/s  Current Out : 111.535 Gb/s

[updated: Fri Sep 8 15:54:51 2006]

Amsterdam, Sep 2006
Overall traffic growth
Overall traffic Growth
Relative growth: average monthly traffic
Inter switch traffic

Inter switch traffic chart showing the following statistics:

- Max In: 25.907 Gb/s (32.38%)
- Max Out: 45.756 Gb/s (57.20%)
- Average In: 15.814 Gb/s (19.76%)
- Average Out: 23.427 Gb/s (29.20%)
- Current In: 16.381 Gb/s (20.48%)
- Current Out: 33.553 Gb/s (41.94%)

[updated: Fri Sep 8 16:06:59 2006]
Traffic projections

• Current 45-50 Gbit/s for 24 10GE customer ports
  – Roughly 20% of available capacity on ISL
  – Assumptions
    • Number of customer ports increase to 48 on single switch
    • Average load stays the same
    • End of 2007 ISL capacity will need 80-100 Gbit/s
  – Requires upgrade to 12 -16 * 10GE LAG
  – This will not be enough for another year !
Traffic projections

• Started offering 10GE customer access ports Q3 2004.
• Now first 3*10GE LAG access port to customer router
  – Many 2*10GE LAG access ports
• Expected to offer >4*10GE LAG access port before end 2007
Link Aggregation

- Main concern with link aggregation
  - 10GE port density on available switches.
  - Additional fibers or WDM equipment
    - Added cost
    - More complexity
  - Traffic distribution on (LAG) specifically customer ports not always optimal due to large flows
AMS-IX requirements on Higher speed Ethernet

- At least 100 Gbit/s
- Fiber length between 10 and 40 km on Single Mode fiber
- Port Density:
  - 1 * 100GE port should not replace more than 4 * 10GE
- Link Fault Signaling
- Support Link Aggregation