ANNUAL REPORT 2004

amsix
amsterdam internet exchange

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.: Connect to AMS-IX
Reasons to connect
Membership
How to connect
List of partners
.: Portals (restricted)
Members
Housing
Partners
Why connect to AMS-IX?
The reasons to connect to AMS-IX vary per connected member, a recent customer survey has shown the following selection criteria, in order of importance:
A cost effective means of exchanging traffic
A large amount of parties to peer with
The quality of service offered
The neutrality and independence (i.e. being an Association)
The geographical location
The type of connected parties
The range of ports and services offered
The large amount of parties to peer with actually represents both a means for cost savings through reduction of upstream connectivity but in some cases even more important it means improving network performance by improving connectivity, redundancy and more direct traffic flows/shorter paths.
Many connected parties at AMS-IX have open peering policies. We find 69% of the responding members to have an open peering policy. The average number of peering given in the survey was 109.
What do we offer?
AMS-IX is dedicated to offering professional non-blocking peering services over Ethernet infrastructure. We have no restrictions on utilization of the port. Our platform is designed for continuous optimum performance using innovative technologies. AMS-IX is the first IX worldwide to use photonic switching in the core of the switching platform. Moreover it is the first exchange to offer 10GE peering services. AMS-IX has a very extensive IX service portfolio with ports from 10 Mbps to 10Gbps allowing both IPv4 and IPv6 including:
Unicast peering VLAN – for regular IP peering all types of traffic – data & VoIP
Multicast peering VLAN – especially useful for broadcasting streams
Private Interconnects – between 2 members
Closed User Groups – between 3 or more members
GRX – the first global GPRS roaming exchange peering service (restricted)
MDX – the first Mobile Data exchange peering service
IP on demand – IP auction service of our member Telefonica
All these services will be available to you through AMS-IX membership.

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Preface of the Chair

The Executive Board has put considerable energy in keeping last years' promise to support and enable the professionalization and restructuring process of the organisation. The Board is happy with the trust shown by the members through accepting the proposal put forward to that effect. The new structure is a simple model with a clear definition of the responsibilities between the organisation bodies.

This year AMS-IX company has again proven that even with high growth and many changes like the migration and substantial upgrade, it is capable of keeping the platform continuously stable and secure. Additionally the business strategy followed shows that even in a more commercial environment AMS-IX is able to keep the neutrality and independence which is so highly valued by the member community.

I can safely say that the value of the exchange has increased in 2004 for the members. With the professional approach of the management and staff I expect this will be continued in 2005.

The board feels that the new structure enables the organisation, in this case especially the companies' management and staff, to be more flexible in a changing market environment.
Financially the organisation shows sound figures that enable its continuity for the coming period.

On behalf of the Executive board of the AMS-IX Association,

Boudewijn Nederkoorn
Chairman

General

In 2004 AMS-IX celebrated its 10th anniversary, as the exchange had been run as a shared infrastructure in the Amsterdam Science Park since 1994. Although there was no official organizational structure formed yet at that time, the name AMS-IX was being actively used first that year. The anniversary party was held in conjunction with the RIPE48 conference in Amsterdam and more than 350 relations attended and had a good time.

Organisation structure

As remarked by the chair in the preface of last years' annual report, the organisation structure was to be a main topic of discussion during 2004. With the exchange now having reached a certain maturity the organisation structure was proposed to reflect that set-up. The proposal prepared by the board and company management was accepted in the 17th General meeting on the 3rd of November 2004.

In the new set-up of the organization, there is a clearer distinction between the roles and responsibilities of the three bodies (Association, Executive Board of the Association and the Management of the BV). To achieve this, two more official bodies are introduced; the Shareholders meeting and a Supervisory Board for the BV. To keep things simple, the General Assembly functions as the Shareholders meeting and the Supervisory Board for the BV will consist of the same natural persons that are elected by the members as Executive Board.

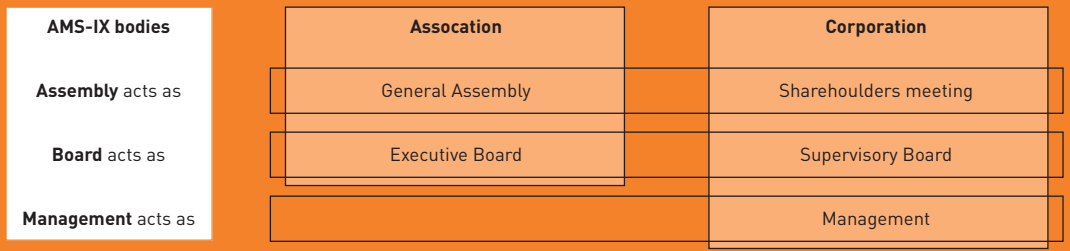
The new structure can be viewed as follows in the figure below. The function of Shareholder meeting is delegated to the elected executive board. This allows for faster action, while at the same time preserving their best interest. Elections at General Meetings are therefore the most important instrument for the members to secure their interest for a relatively long period of time (3 years). Of course the board has to respond to the members at every GM.

This structure is officially being implemented during the first quarter of 2005.

The Amsterdam Internet Exchange Association

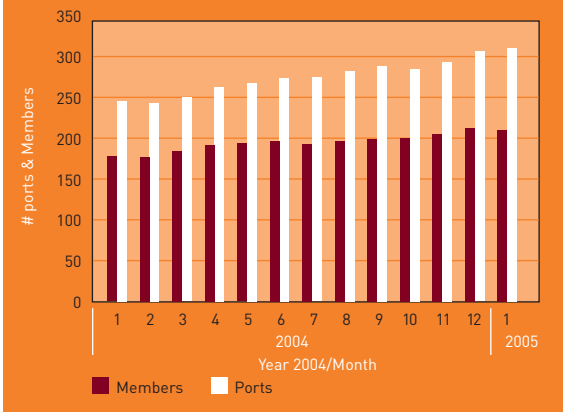
The AMS-IX Association was joined by 42 new members in 2004, a growth of 24%. The total member count for December 2004 was 209. The majority, namely 67% of the new members, comes from outside the Netherlands. Since the home market is limited and well covered by now, this trend was to be expected.

AMS-IX Organisation Structure



Quite a high number of members left AMS-IX in 2004, a total of 11. Most were due to mergers, take-overs or bankruptcy. However some smaller parties from abroad actually disconnected because they decided they were better off buying international transit locally instead of peering outside their home country.

AMS-IX Ports & Members 2004-2005



Executive Board of the AMS-IX Association

During 2004 there were no changes to the Executive Board of the AMS-IX Association. The board has the following composition:

Executive Board of the AMS-IX Association

Boudewijn Nederkoorn – *SURFnet (Chair)*
Michel van Osenbruggen – *BIT*
Jan Paul Dekker – *RTL Interactive*
Mark van der Laan – *Vodafone*
Maurice Dean – *Global Crossing (now Google)*

The executive board convened six times in 2004. Apart from preparation of the general meetings the main topics for the board were the organisation structure, articles of association & company and the business planning, commercial strategy.

General Meeting

As always two General Assembly Meetings were held in 2004, the 16th in May and the 17th in November. In both meetings the main subject was the structure of AMS-IX and articles of Association on which the final proposal was approved in the 17th GM. In the new structure the Assembly explicitly requested simplicity of organisation structure and safe-guarding of the influence of the Assembly on long term commercial strategy. The adjusted articles reflect these requirements.

The Annual Accounts of 2003 were approved during the May meeting, the net result was added to the reserves of the company for risk capital and reserves build-up.
This reserve policy was further explained during the 17th General Meeting in November. Building up of capital & reserves serves the continuity of the business. As a rule it consists of three parts that together determine the desired level:

1 Investment needs totaling to 50% of the new-value of the switch park
2 Working capital equaling to 1 quarter of turnover
3 Reserves for unforeseen.

As this desired level C&R will not be reached in 2005 the new proposed tariffs for 2005 are kept at the same level as in 2004 with the exception of the 100Mb ports on the ISP peering VLAN. The price of the latter decreased from € 850 to € 600 due to market requirements. This tariff proposal is accepted in the November meeting.
The budget 2005 was approved including an increase in housing and facilities expenses due to extension of the office space for the company to Westeinde 14.

In November the General Meeting was webcasted for the first time in conjunction with a live IRC chat functionality to use for questions and remarks by remote viewers. It was a successful test and will be repeated at future meetings. As soon as legally allowed these features will be extended with remote online voting.

Technical Meeting

In contrast with previous years the TM only got together two times in 2004. As it was a very intense period for the NOC team, with the platform migration and introduction of several new services, it was decided to decrease the number of meetings to two, in conjunction with the GM's.

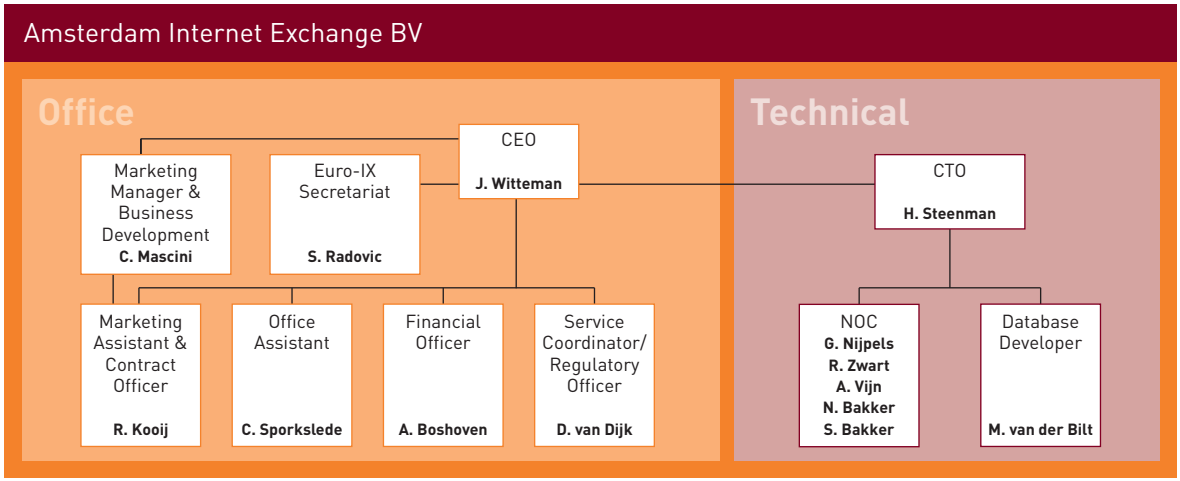
Members were kept up to date on the platform migration status and review during both meetings. The details and status of the proposed new GE link aggregation and 10GE services were presented. More in depth information on the technical topics can be found in chapter 2.

The November meeting was held at the Amsterdam Science Park with WLAN and Internet connectivity and easy access to the technical facilities, which was much appreciated by the members.

The AMS-IX BV

Notwithstanding the discussions on the future organisation structure and housing facilities for the BV, 2004 was a stable and non-eventful year. Amsterdam Internet Exchange BV is a company with limited liability. The sole shareholder of the company is the Amsterdam Internet Exchange Association as a whole. The company manages all contractual relations, commercial and administrative tasks and the operation and support of the platform. All AMS-IX assets are owned by the BV.

The company has a straightforward structure. Job Witteman as the Chief Executive Officer is responsible for the company as a whole. Two main departments exist, Office and Technical. Henk Steenman is the Chief Technical Officer responsible for all technical issues, research & development and the Network Operating Centre team. At Westeinde 12, Amsterdam, the AMS-IX offices house all the companies' employees. The total team grew from 12 to 14 FTE during the year.



The European Internet Exchange Association (Euro-IX)

Euro-IX aims to increase the presence of European IXPs, which is achieved in two ways. Firstly, via its web site portal giving the necessary essential information for ISPs throughout the world looking to connect to a European IXP. Secondly by representing the members at events throughout Europe and the world via a neutral Euro-IX representative.

The outcome of this increased presence attempts to increase the membership of the IXP, thus giving their member ISPs a larger number of potential peering partners. Via purpose built mailing lists, dedicated IXP forums and member only web pages, internal knowledge of the IXP community is exchanged and developed thus improving the Internet Exchange Point community as a whole.
2004 proved to be another successful year for Euro-IX as it expanded its membership to include more than 30 Internet Exchanges in over 20 countries, included dedicated regulatory services to keep in touch with industry related regulations, held two successful forums in Berlin & Athens, and completed its first round of a continent wide IX benchmarking initiative.

Euro-IX continues to use the AMS-IX office in Amsterdam as a base to strengthen the IXP community and develop new strategies to take on the complex issues that the ever increasing Internet traffic poses on IXP's in Europe and around the world.

In 2005 Euro-IX is looking to expand the geography of its membership by inviting Internet Exchange Points from around the globe to join as associate members and thus increasing its reach to differing types and models of IXPs which will in turn strengthen the value of Euro-IX as a whole.

Serge Radovcic

Secretariat General

Word of the CEO

Continued internationalization of AMS-IX and the platform migration was our main focus for 2004. With the home market of AMS-IX being limited an internationalization trend was inevitable, 2/3rds of the new members is of foreign origin. Especially the inflow of members from outside Europe has increased considerably in 2004. Half of the new members are from outside the EU with a 50/50 spread between the American continents and Asia/Pacific regions.

Growth in 2004 was substantial and many records have been broken in the recent period, with over 200 members (09/04), 300 ports (11/04), 10 Petabytes of volume (11/04) and a 50 Gbps traffic high (01/05). The member count by the end of 2004 was 209 representing 306 ports which is an increase of 31 members and 64 ports.

Our engineers countered a huge challenge with the thorough platform migration. The team managed to steadily implement a double hub/spoke topology while preserving the desired platform stability and security. The use of three photonic switches is considered a sound solution for full resilience and contributed to a more reliable and innovative platform for our Members.

Our service portfolio has extended: a logical step to accommodate the increasing bandwidth demands of our Members. Early 2004, Link Aggregation has proved to be a successful solution to fill the gap between 1GE connections towards the -at that time still to be launched- 10GE connection solution. Finally, in October 2004 we were able- and proud- to successfully connect the first Member to the 10GE Service. Both Services have been well received by the Member community, considering the adoption rates.

The former board and company management had set a challenging forecast and associated revenue budget for 2004 that was only just reached. By efficient management of costs the net result was over double the budget though and remained at about the same level as last year.

The first AMS-IX member survey executed showed that the members mostly appreciate the large amount of peering parties available. Combined with the almost 70% generally open peering policies and fair pricing this amounts to good value for money at AMS-IX is the members opinion. As Chief Executive Officer I am very content with the findings of the survey and will make sure we keep fulfilling the members' expectations and requirements for the coming years.

Job Witteman,
Chief Executive Officer

The AMS-IX Network Operating Centre Team
The NOC team made a lot of hours outside the regular European business day in 2004. The migration to the new platform took a lot of energy and was completed without major incidents. Additionally it was also a very good exercise in getting all the members' contact details updated. More technical details can be found in Chapter 2.

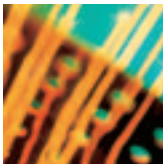
The member survey showed that the professional, no-nonsense and efficient manner of the AMS-IX NOC is highly appreciated by the members.
The NOC team was extended with one FTE, Geert Nijpels, who was a trainee with us before he joined us fulltime in May 2004. The Technical team now consists of 6 employees.

The AMS-IX Office
Business & commercial strategy planning and operation thereof as well as finance and contract administration are the main disciplines executed by AMS-IX Office. Moreover regulatory & corporate affairs and other non-technical external relations are managed through the Office. The business planning process was redesigned in line with the new organisation structure. The member administration database received a firm upgrade and cleanup – thanks to the platform migration. More details on Marketing & Business development in Chapter 3.

As some members seemingly see AMS-IX as a philanthropic institution the average days outstanding on invoices needed some serious attention in 2004. The payment conditions of AMS-IX are there to be adhered too, it is not sound if some members profit by the fast payment of others, it doesn't fit the mutuality.

Moreover AMS-IX is obliged to keep a certain cash flow level due to commitments to the suppliers concerning the maintenance and to the member community to ensure security, resilience and ample capacity of the switchpark, in other words to ensure continuity. So the finance officer started to enforce the disabling & termination procedure for non-payment more strict. This resulted in a substantial decrease of the days outstanding and an increase of the members that pay within the normal 30 days of 25%. The strict enforcement of the policy for disabling & termination in case of non-payment will be kept throughout 2005 as well to further decrease the number of members paying late. More details on Finance in Chapter 5.

Our Regulatory Officer has increased the contacts with local, regional and national governments considerably in 2004. The European contacts are handled specifically through the Euro-IX regulatory service. Nationally we participated actively in the KWINT process (to identify the weak spots of the Internet chain for consumers) initiated by DGTP (General Directorate for Telecommunications and Post). AMS-IX was specifically identified within KWINT as a party that is an example of how parties should manage their resilience and redundancy. Thus, even with being a major hub for many parties, not being a single point of failure.



Technical & Services

Technical

The Network Operating Centre

The NOC team faced some extensive challenges for 2004 and managed to counter them without major incidents. The regular service was kept at the normal carrier grade service level that is expected of AMS-IX, meanwhile the platform did a complete turnaround topology-wise and was fully upgraded. The NOC team was extended with one FTE to a team of 6.

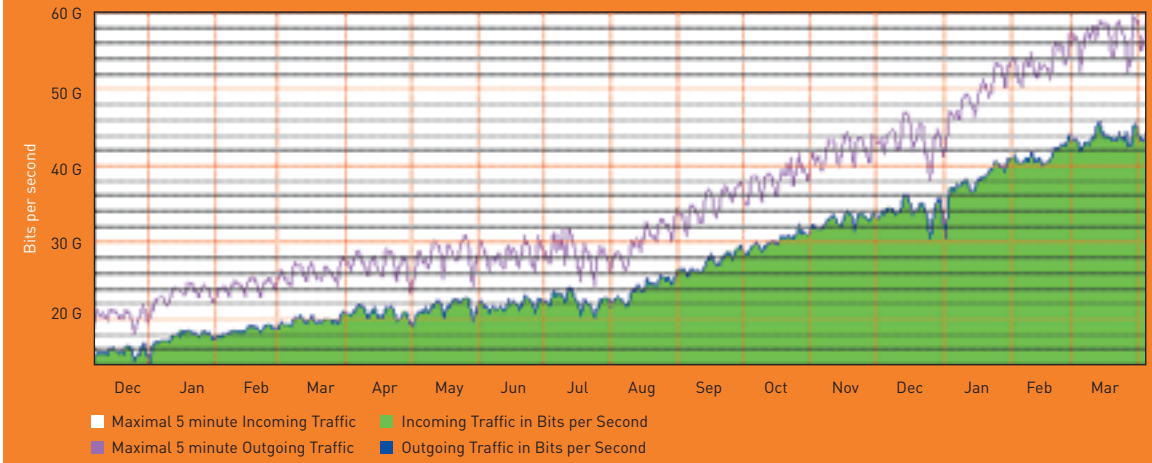
Volume and Traffic Rate

In November 2004 the total monthly volume on the ISP peering LAN passed the 10 Petabyte for the first time. Over the year the volume more than doubled from 5.1 Petabyte in December 2003 to 11.1 Petabyte in December 2004. The volume growth resumed its exponential nature in 2004 and even challenged the exponential line at times.

The 24-hours average traffic rate increased 112% from 17 Gbps to 36 Gbps over the reporting period. The associated maximum 5 minute traffic rate more than doubled as well from 21 Gbps to a 48 Gbps maximum just before the regular December dip.

Related to the growth in international members no doubt is the increase of the nightly traffic rate which almost tripled from 10 Gbps to just under 30 Gbps.

24 hours average Traffic Rate



Word of the CTO

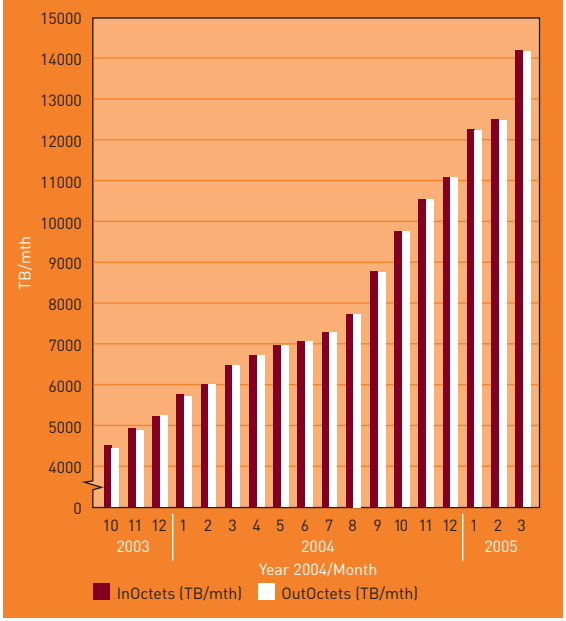
The year 2004 was an exciting year for AMS-IX. The concept of a double hub/spoke topology which we introduced by the end of 2003 worked out very well in 2004. On the one hand, the flexibility of the topology allowed us to introduce the new generation Foundry Networks Mucho Grande 8 core switches without impact on the service. On the other hand the expected enhanced traffic distribution on the inter-switch links turned out to work really well. Especially when we introduced 10GE customer connections by the end of 2004.

Introduction of the last, the 10GE customer connections, was indeed another milestone in the history of AMS-IX. Connection of these customer connections worked out as expected. Of course extensive testing had been done in the lab prior to the launch.

All together the platform could easily handle the enormous traffic growth from 22 to 48 Gbit/s peak traffic. Also the growth in customer ports could be handled by introducing new edge switches at SARA and NIKHEF.
To give members a better understanding of the performance of the Exchange, we connected RIPE test traffic measurement devices to edge switches at the 4 AMS-IX sites. The performance on packet loss, packet delay and jitter over the Exchange, between these devices is continuously published. We are confident that the published results over time will indeed show that AMS-IX delivers a carrier class service.

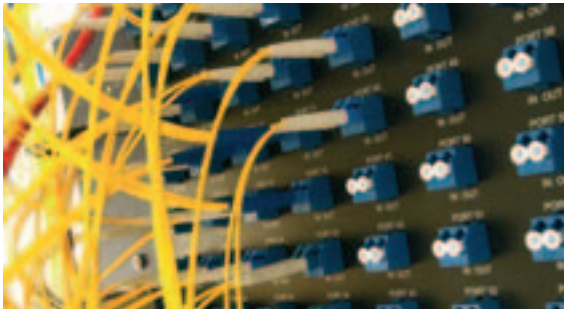
Henk Steenman
Chief Technical Officer

Volume per month



Connections

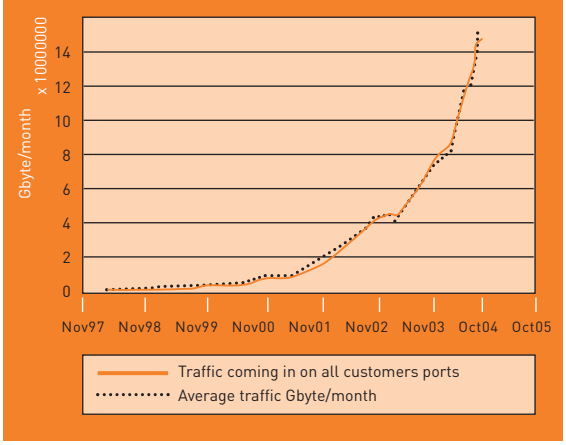
There were a total of 86 new ports in 2004, a gross increase of 35%. However since the number of existing connections decreased, the net growth in connections remained at 26%, increasing from 245 to 309 ports in total (64 ports increase).



Breaking the stability trend of last year the number of average ports per member has increased from 1.37 to 1.48. More members choose for redundancy of routes at the exchange itself.

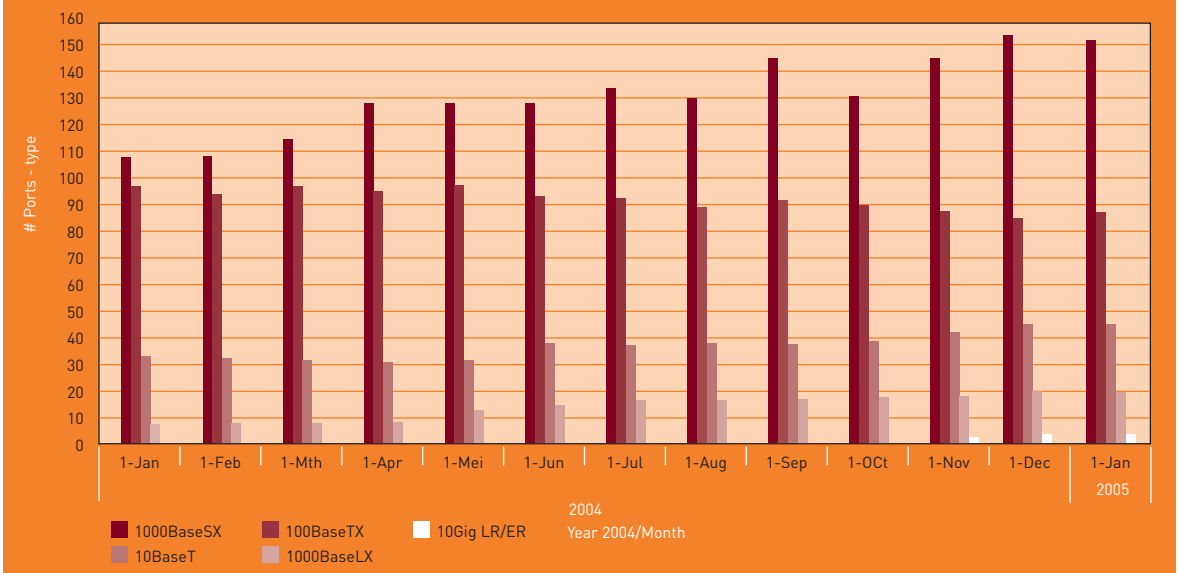
Potentially due to the 2004 price decrease of the Ethernet ports these grew with 40% to a total of 46. The Fast Ethernet ports have shown a steady decrease due to many upgrades to GE and at 31/12 were down to 85 from 97 beginning of the year.

Historic Volume Report



The amount of Gigabit Ethernet ports has grown tremendously from 115 to 174, 51% growth. The regular GE SX interface type shows the highest increase in numbers. Although also LX and LH interfaces connecting members from other locations by direct fiber are increasingly in demand. And of course there were the first 10Gigabit Ethernet connections, a total of 4.

Port types



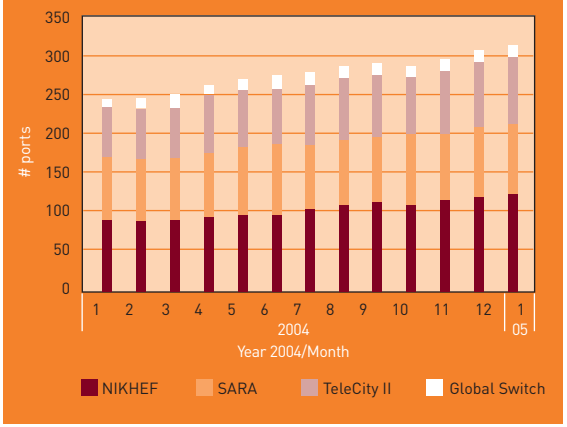
Locations

The steepest growth in number of member ports could be seen at the traditionally largest site NIKHEF, with 41% growth to 121 ports, mainly GE. So the relative importance of NIKHEF increased again from 35% to almost 40%. Telecity showed the second largest increase from 63 to 83 ports. In contrast to the growth in 2003 the number of ports at SARA remained more of less stable around 90. And the Global Switch location grew with 3 ports to 15 in total.

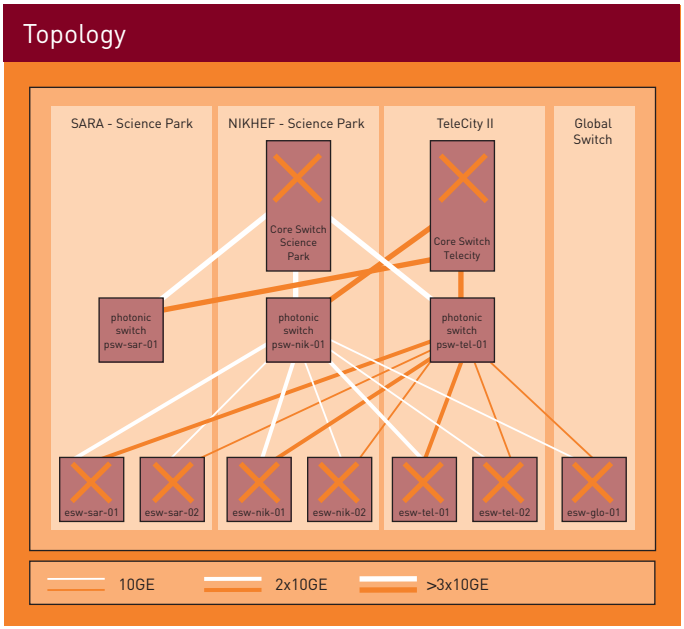
Topology and Architecture

For several continuity reasons the AMS-IX platform needed a firm upgrade and topology migration that was decided on in 2003. The ring topology was to change into a double star of core and edge switches with photonic switching for resilience. The change-over needed to lift

Ports per location



Topology



capacity and scalability constraints, solve interdependent performance issues and enable new services. The migration prerequisites were to maintain operational stability and minimize impact on members. The first was done by working everything out in the lab beforehand and activate step-by-step, making sure that it was possible to go back to a stable situation. The second was achieved by providing a wide range of time windows and if necessary make special arrangements.

The first step of the project was to introduce new Foundry BigIron 15000 Jetcore edge-switches at all four sites. Second, the Glimmerglass Photonic Switches were introduced to step by step change the topology from Ring to hub/spoke. Once in hub/spoke configuration the new Foundry Mucho Grande 8 core-switches were introduced. The inter-switch capacity was upgraded to 2x10GE trunks.

In a later stage additional edge-witches were placed at NIKHEF and SARA.
Within the hub/spoke configuration the resilience comes from the use of the photonic switches by using VSRP (Virtual Switch Redundancy Protocol) between the two core switches, having one active hub/spoke and one stand by hub/spoke. The photonic switches make it possible to do an immediate VSRP switch-over (←20ms) from the active to the stand by core interchanging their status. Moreover the 10GE customer ports which are connected directly on the core-switches get their resilience through the photonic switches (see the topology overview).

The lessons learned during the migration lie mainly in the organizational and communication side of the operation, not so much technically. Especially the quality of the member contacts in the database received a firm upgrade as a result. In one extreme instance the only way to get the member to contact us was to actually disconnect their port.

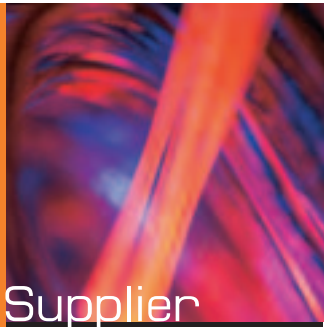
Many thanks to our housing locations, the smooth migration would not have been possible without them.
By December 2004/first quarter of 2005 it was clear that the concept of having the 10GE ports on the core-switches to diminish the traffic-load on the backbone inter-switch capacity indeed pays off. The load on the inter-switch links grows less fast than the load on the overall platform.

Research & Development
The laboratory was used extensively during the migration and upgrade phase. Every new step in the project was tested extensively in the lab before being put into production. Apart from that new software releases for the switch platform are tested and in some cases co-developed.

Glimmerglass says...

Glimmerglass was pleased to support AMS-IX in its transition to a new network topology in 2004. The AMS-IX staff installed three Glimmerglass photonic switches to manage the migration from an older four-location, metro ring topology to a far more scalable double-star topology with new 10GE capable Ethernet switches from Foundry Networks.

Glimmerglass worked closely with AMS-IX technical staff as they created their new network design capable of supporting vastly greater traffic volume and higher-performing access points (10GE). Equally important was enabling the AMS-IX staff to quickly and remotely reconfigure the network back to the original ring configuration to ensure service up-time during the network transition. Glimmerglass' performance enabled the AMS-IX team to proceed on schedule and complete their migration to a new, more scalable network. As a result, AMS-IX delivered a professional, uninterrupted and far more scalable peering exchange service to its customers throughout the transition and is well positioned for the years of high bandwidth growth ahead.



Supplier

Michael McLaughin

Vice President of
Corporate Development

GLIMMERGLASS

Link Aggregation- Multiple GE's
Link Aggregation, also called trunking or etherchannel (802.3ab), that was introduced in beta-stage in 2003 is now a regular service. At the end of 2004 there were 12 aggregated links of multiple GE's on the platform, one of which went up to 4GE.

10GE peering connections
Although later than planned due to some minor but essential issues with the photonic switch software, the 10GE peering ports service was launched in October 2004. The first member to use the service was OpenPeering. By the end of the year there were 4 operational ports.

A 10GE port actually consists of 5 ports in total and includes 2 fiber connections. One incoming port on the photonic switch of the chosen location, two outgoing ports on the same photonic connecting to the 2 core-switches and by fiber a port on each of the core-switches.

First 10GE Customer Open Peering says...

The Open Peering initiative aims at making Dutch Internet traffic faster and cheaper for both providers and the business market.

It actively promotes the concept of open peering and BGP4-based routing, and operates a free MLPA-based (Multi Lateral Peering Agreement) route exchange service on AMS-IX and other exchanges to support that effort.

Open Peering helps parties to actually implement peering by providing all ingredients: AS number, IP addresses, router configuration, 24*7 router management, BGP- 4 courses, peering setup, transit routing etc.
As peering rapidly gains further popularity, Open Peering's bandwidth requirements currently double every 6 to 9 months. Simply doubling exchange capacity was not a scaleable and long term solution to handle such growth anymore.

Therefor AMS-IX's novelty 10GE service, offering a factor ten boost, came right on time. In October 2004, Open Peering was the first AMS-IX customer to go live on 10 gigabit/s. At the current growth rate Open Peering expects its AMS-IX capacity to suffice well into 2006.

Jan Hoogenboom

Business Development

open peering initiative

Marketing and Business Development

The year 2004 was the first year for AMS-IX to actively deploy marketing as a discipline. The AMS-IX marketing philosophy results from the general business strategy of the AMS-IX company. The activities are aimed at preserving and increasing the value of the exchange to its members. The value of the exchange has many variables and is different for every member. Most members appreciate the high amount of peering parties, others the technologically advanced services, the neutrality & independence or geographic location (also see the paragraph on the member survey).

Currently AMS-IX is well known, even renowned we like to think, inside the community (AMS-IX was nominated for the Best Internet Exchange Award 2004 by the ISPAA UK) and we want to keep that position and expand it. Additionally a proactive, informative and open approach towards potential new members, stakeholders, businesses, government agencies and public is taken to increase the awareness and understanding of AMS-IX outside the community.

The positioning we use in our expressions is: "AMS-IX leads the way in global peering services". Although we are the largest mutual public exchange worldwide both in members and public peering traffic (as far as we know) we rather emphasize the quality and diversity of the services and peering value the members experience which holds a more solid message. Meaning we do not 'shout' about it, but do aim for leadership positioning.

Leadership in terms of the high value IX with a broad service portfolio and top of the bill quality of service. High value will result from fair pricing (in relation to i.e. transit prices, other IX's etc.) and excellent peering opportunities. The service portfolio and quality of service are achieved by using innovation for platform and service development combined with efficient processes and procedures.

Due to the fact that the perception of AMS-IX in the market was not always that of a large leading IX yet, we used the following pay-off for during the last period: "It's all about perception!"

Communication

As could be seen from last years' annual report, which was the first to show it, we changed to a new house-style and logo beginning 2004. During the rest of the year the house-style was implemented further. It was received very well and by now is already familiar to the community.

Our main communication medium to the community and outside world is our website. We did a complete website restyle in 2004. Apart from introducing the new house-style the main goal was to ease the navigation and increase the information level for first time visitors and potential new members. Also the consistency of the offered information between the open area and the restricted portals is increased.

Due to the increased level of external communications, AMS-IX received quite some media attention in relation to earlier years. Especially the local media have found their way to us and are better aware of what AMS-IX is and does, and perhaps even more important what we are not and do not do. We used a number of events to issue

press releases, namely: the introduction of the partner program, the new topology with the photonic switches, the results of the member survey, the 10GE service launch and the 200th member.

Sponsoring

AMS-IX has a modest sponsor budget. With our not-for-profit attitude we carefully select the sponsor projects, they should be targeted, fitting and preferably not-for-profit themselves.
In 2004 we sponsored the Dutch ISP Kart Competition which is an annual industry event that many members participate in. Further the worldwide Grid Forum Summit that was held in The Hague this year was sponsored. Apart from marketing aimed sponsoring we do some more philanthropic sponsoring in which case employees can submit a request for sponsoring for a cause that they think worthy. One of this years' causes was the "I'm alive" benefit day for burn victims selected by Steven Bakker.

Member survey

We were quite content with the findings of the first member survey that was held during the summer. The response was quite high, over 50% of the members gave their opinion. The main reason to connect to AMS-IX, given in order of importance, was:

- A cost effective means of exchanging traffic
- A large amount of parties to peer with
- The quality of service offered
- The neutrality and independence (i.e. being an Association)
- The geographical location
- The type of connected parties
- The range of ports and services offered

Especially the two first reasons are strongly related and together score almost 70% as the most important reason to connect. The large amount of parties to peer with actually represents both a means for cost savings through reduction of upstream connectivity but in some cases even more important it means improving network performance by improving connectivity, redundancy and more direct traffic flows/shorter paths.

Many connected parties at AMS-IX have open peering policies. We find 69% of the responding members to have an open peering policy. The average number of peerings given in the survey was 109.

Another interesting fact that was found, is that the responding parties are on average connected to 4 IX's through which 70% of their traffic is handled. Of that 70% half flows over the AMS-IX platform. The other 30% is terminated to private peerings, customers or commercial transit.

Partner Program

The AMS-IX partner program APP was launched in March 2004. The APP allows AMS-IX relations to re-sell AMS-IX ports as part of their own service portfolio. The model is aimed to provide easier (remote) access to AMS-IX without jeopardizing the mutual benefit or neutrality. The partner takes care of customer relation including billing and first line support.
Partners can be existing members e.g. ISP's or carriers, colocation providers or other parties such as fiber providers, ICT consultants or integrators. Mostly the partners are carriers or colocation providers. We do not discriminate, all parties interested fitting the requirements may join the program. However the requirements are strict enough to be able to protect the good name and technical stability of the platform.

The initial parties focus mainly on Europe or even the Netherlands. We do intent to find a balance in the composition of the group of partners with sufficient remote geographic coverage.

Partners cover the complete IX service portfolio and are expected to offer additional services to customers such as co-location or transit. Customers of partners will become a member of the Association and sign a connection agreement with the BV. As a result it has become quite common to connect by pseudo-wire (draft- martini) or layer2/MPLS connection, which is now (officially) allowed.
Ever since the launch of the partner program, membership partition rates show that 60% of new members are joining the Association directly and 40% through the partner program.

T-Systems International says...

T-Systems' wholesale division, International Carrier Sales & Solutions (ICSS), is responsible for the international wholesale carrier business of the Deutsche Telekom Group. We care for 900 top carrier and ISPs in more than 190 countries. On the basis of the Telekom Global Net, ICSS provides unlimited transmission bandwidth, extraordinary quality, excellent network security, and global coverage. The MPLS-based Layer 2 service provides Ethernet access from any of ICSS' global points of presence to AMS-IX.
The Internet burgeoned because it provides widespread connectivity at low cost. But with low cost comes marginal performance and unreliability. This restricts the potential of the network to meet today's business and consumer needs. With the current Triple Play activities in the market, Service providers must move their networks from the Internet-driven commodity transport model into the customer value chain. Providing these customers with networks that dynamically support their application requirements for security, quality, bandwidth and coverage can only do this.
We see huge opportunities in delivering MPLS-Based Layer 2 services in the form of Content Delivery Networks and Peering Networks to fulfill this network requirement. Predictability throughout an MPLS-Based Layer 2 network provides a network foundation to ensure that services are delivered throughout the network with the specifications required by the customer.
Obviously, Internet Exchanges form central connection points in this Layer 2 service offering. With AMS-IX being recognized by our customers as one of the important global Internet Exchanges, ICSS believes that as a Partner of AMS-IX we have a unique offering in delivering one-stop shopping Layer 2 services towards AMS-IX.

Partner

Wilfried Dudink

Director Sales
Development IP
International Carrier
Sales & Solutions

T · · Systems ·

Outlook 2005 and beyond

The first quarter of 2005 has already past at the time of printing this report and it promises to be a good year. It will be the year of the 10GE ports, further growth and hopefully of the next generation Ethernet standard. Additionally it could become the year of the content providers, remote peering, VoIP and broadened mobile data peering. And we envisage even more international parties to join the exchange especially through the partner program and joint marketing initiatives.

We will not be introducing as many new essential services in 2005 as we have in 2004 with the aggregated links and 10GE ports. Service enhancements and optimalisation are planned though, such as a long awaited route-server. We will also be introducing a Quality Statement in which several quality of service parameters are defined giving the targeted carrier grade service level the members are used to at AMS-IX.

The NOC team is already looking at upgrading the just migrated and upgraded platform again. We are working closely with our suppliers Foundry and Glimmerglass to be able to sustain at minimum the predicted growth and potentially manifold that. Further the NOC is looking at means of releasing the increasing port density on the edge-switches on the short term. Our research into future applicable technologies such as fiber or lambda switching as introduced in the annual report of 2003 also continuous. [1]

The Office and NOC teams are not scheduled to grow much unless the business or network growth demands such. In the areas of technical administrative support and webmaster there will be some expansion. The teams now have a certain critical mass with most disciplines well represented.

With regards to pricing the strategy is to keep to the current simple price structure as much as we can. Gradually the prices will decrease over time driven by market demand, technological advancement and economies of scale. However the budget will always be dictated by cost recovery and continuity first and foremost so these potential price decreases are a function of sound business ratios.

We will be doing a member survey again to get as much constructive feedback from the members as in last years and obviously hope to find everybody just as satisfied. The survey will be conducted annually from now on. Moreover, there will be an overlap in the questionnaire with surveys conducted by other exchanges such as LINX and Netnod to be able to provide industry benchmarks. This

1 Annual Report 2003: "The photonic switches introduced in the end of 2003 in the AMS-IX infrastructure might be key to future developments in the area of fiber or lambda switching. Application of these technologies will be extensively researched in the AMS-IX lab environment to see whether this is applicable to an Internet Exchange model. Potentially this technology allows for an connection oriented exchange where BGP sessions can be mapped to a lambda or fiber connection. In this model, each connection (and thus BGP session) could scale to very high bandwidth capacity (→ 40 Gbit/s)"

joint benchmarking is an activity forthcoming out of the Euro-IX community and RIPE EIX meeting.
As we have in the last couple of years, we will continue to play an active role in the Euro-IX community. It has brought us much value both organizationally as well as technically, moreover we are happy to share our knowledge with other, especially starting, exchange operators. Now with the interest of the community outside of Europe through the associate members from Asia and the US we may see a broadened scope to Euro-IX in the coming years.

The regular General Meetings which are the official Shareholders meetings will continue to be held twice a year. These meetings are the way for the members to express their opinions and use their influence over the Supervisory Board and thus the management of the B.V.. Moreover we may start to co-organising targeted evens for peering coordinators if there is community interest.

City of Amsterdam

Amsterdam has always been an attractive city and a thriving hub for business and industry. It is strategically positioned with excellent air, road, water, rail and cable connections to the rest of Europe. Amsterdam is known for its unique combination of its relative small scale, short distances, and at the same time, its cosmopolitan character.

To maintain its position between Europe's finest, the city of Amsterdam, together with the local business community, and in close co-operation with neighbouring cities started the **I am**sterdam campaign. Aiming to make Amsterdam even more attractive as a city to do business, and a place to visit and live. In short: 'if you've got it, flaunt it!

Amsterdam stands out in three main areas: creativity, innovation and spirit of commerce.
One of the best examples of Amsterdam's innovative strength is the AMS-IX. We are proud of the fact that Amsterdam has the largest Internet hub on the continent, offering the highest volume of peering parties you will find anywhere at a single Exchange!

G. Ph. Huffnagel

Deputy Mayor
Alderman for
Economic Affairs,
Finance, ICT and
Airport Affairs

I amsterdam.

Summary of Accounts

Financial

The financial condition of the Amsterdam Internet Exchange keeps being in good order. The net revenues of AMS-IX BV for 2004 are 3,1 Million Euro with a net result percentage of 17% (526 K Euro). The figures show a net revenue increase compared to last year of 24%. As determined in the budget the net profit decreased from 562 K Euro for 2003 to 526 K Euro, being 17% of the net revenues (22% for the year 2003). The main source of income comes from the port fees of the members. The earnings before tax, interest and depreciation are just over 1.5 Million Euro, representing 49% of the net revenues, which is the same percentage as in 2003.

The decreased net profit is mainly to ascribe to the increased investments, due to the switch park migration and upgrade. As a consequence depreciation has grown by 83% in 2004 compared to the previous year.

The cash flow from operating activities increased from Euro 1.130 K for the year 2003 to Euro 1.282 K for the year 2004. These amounts were to a large extent used for investments in switches and technical equipment.

Building up of capital & reserves serves the continuity of the business. The annual budget and rates are determined

Key figures AMS-IX (in €)

	2004	2003	2002	2001
Net revenues	3.144.793	2.547.191	1.959.298	1.614.020
Income before depreciation and taxes	1.529.119	1.255.553	845.918	559.612
Income before taxes	801.604	856.971	551.136	373.481
Net result	525.717	562.306	363.556	247.523
Cash generated by operating activities	1.282.287	1.130.521	373.782	300.770
Investments in tangible fixed assets	1.113.764	1.121.795	482.186	156.728
Capital and reserves	2.166.138	1.640.421	1.078.115	714.559
Cash and cash equivalents (31/12)	526.592	358.069	349.343	457.747
Full time equivalents (31/12)	14	12	9	7
Members (31/12)	211	178	145	119
Connections (31/12)	313	245	201	172

based on cost recovery first but second to ensure continuity. In the 17th GM the agreed policy determining the capital & reserves target consists of three parts that together determine the desired level:

1. Investment needs totaling to 50% of the replacement-value of the switch park
2. Working capital equaling to 1 quarter of revenues
3. Reserves for unforeseen.

For 2004 the desired level of reserves amounts to 3.1 million Euro and subsequently grows with new investments. Capital & Reserves build up has not reached the necessary level in 2004 (capital as per 31/12/2004 amounts to Euro 2.165 K).

Principles of valuation and determination of result

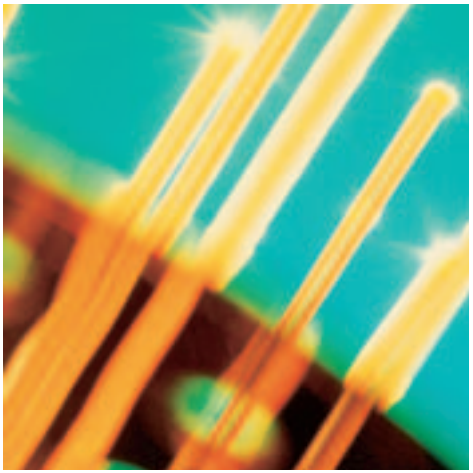
The accounts have been prepared in accordance with general accepted accounting principles in The Netherlands on the basis of historic costs. Tangible fixed assets have been valued at purchase price less accumulated depreciation calculated on a straight-line basis over the estimated useful life (3 years in general). Other assets and liabilities have been valued at face value, with deduction of a provision for bad debts.

Income and expenses are accounted for in the year to which they relate (accrual basis). The turnover consists of invoiced amounts, excluding turnover tax, for the connections provided. The turnover on these connections is attributed to the period in which the connection was used. The costs incurred are based on historic prices and charged to the relevant period.

Corporation tax payable is provided on taxable results at the current rate.

Result appropriation for the financial year 2004

As in previous years the result for the year 2004 of Euro 526 K is proposed to be added to the general reserve. This has been included in the financial statements.



Balance sheet as of December 31, 2004

in €		2004		2003
Fixed assets				
Material fixed assets	1.594.949		1.186.485	
Switch park	84.021		106.236	
Fittings, computer hard- and software, furniture		1.678.970		1.292.721
Current assets				
Receivables	49.574		59.542	
Accounts receivable	10.845		10.770	
Taxes and social premiums	201.547		248.284	
Other receivables		261.966		318.596
Cash at bank and in hand		526.592		358.069
		2.467.528		1.969.386
Capital and reserves		2.166.138		1.640.421
Current liabilities				
Accounts payable	91.615		115.353	
Taxation and social premiums	114.854		162.497	
Other liabilities	94.921		51.115	
		301.390		328.965
		2.467.528		1.969.386

Profit and loss account for 2004

in €		2004		2003
Net revenues		3.144.793		2.547.191
Expenditure				
Personnel costs	1.170.085		918.800	
Depreciation material fixed assets	727.515		398.582	
Other operating expenditure	446.738		381.471	
		2.344.338		1.698.853
Operating result		*800.455*		*848.338*
Interest received		1.149		8.633
Result from ordinary operating activities before taxation		*801.604*		*856.971*
Taxation		275.887		294.665
Net result		525.717		562.306

Cash flow summary

in €		2004		2003
Cash flow from operating activities				
Net profit	525.717		562.306	
Depreciation of fixed assets	727.515		398.582	
Cashflow		*1.253.232*		*960.888*
Changes in working capital:				
Short term receivables	56.238		-49.551	
Other short term liabilities	-27.183		219.184	
Total		29.055		169.633
Cash generated by operating activities		*1.282.287*		*1.130.521*
Cash flow from investment activities (Investment in tangible fixed assets)		-1.113.764		-1.121.795
Increase in cash and cash equivalents		168.523		8.726
Cash and cash equivalents at January 1		358.069		349.343
Cash and cash equivalents at December 31		*526.592*		*358.069*

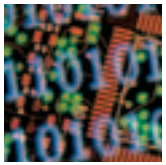
Auditor's statement

The accompanying financial information as presented on page 26 through page 28 is taken from the financial statements for the year ended 31 December 2004 of Amsterdam Internet BV, Amsterdam. We have issued an unqualified auditor's opinion on these financial statements.

Oostzaan, May 2005,
CPAccountants BV

New Member List 2004

EUnet Finland (Saunalahti Gr)
Com-Ned Netwerken B.V.
CIPC B.V.
B.V. Dutch Dsl
Cable & Wireless USA, Inc.
Hotlinks Internet Services
T-Online France SAS
Google Ireland Limited
Caladan Communications
Gyron Internet Ltd.
Caveo Internet B.V.
KPN Eurovoice
Probe Networks
Mistral
NetCologne GmbH
SIG - Service Telecom
Netvictory B.V.
Free SAS
Denit Internet Services
TNG - THE NET GENERATION
Giganews, Inc.
Emirates Telecommunications Corporation (Etisalat)
Academia Sinica Computing Centre (ASnet)
Avence Multimedia
HanseNet Telekommunikation GmbH
Computel Standby B.V.
Global Europe B.V.
Triera Internet - KRS Rotovz
Beyond the Network (BtN)
Netguard B.V.
Virtual Access Internet B.V.
Burstfire Networks Ltd.
Tachyon Europe B.V.
ZeelandNet B.V.
Hurricane Electric
Korea Telecom Corp.
Port80 AB
Utransit International Carrier
@Inet Technology Consultancy
Core ISP Ltd.
ANO RIPN
SARA



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