



NaMeX

Nautilus Mediterranean eXchange point



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NaMeX prehistory

- ✓ May 1995 - Borned in Rome one of the first Italian IXP - **NapRoma**
- ✓ From an initiative of 4 roman ISPs
Agorà – McLink – Unidata and a University Consortium CASPUR
- ✓ CASPUR chosed as place to host the IXP because of is neutrality

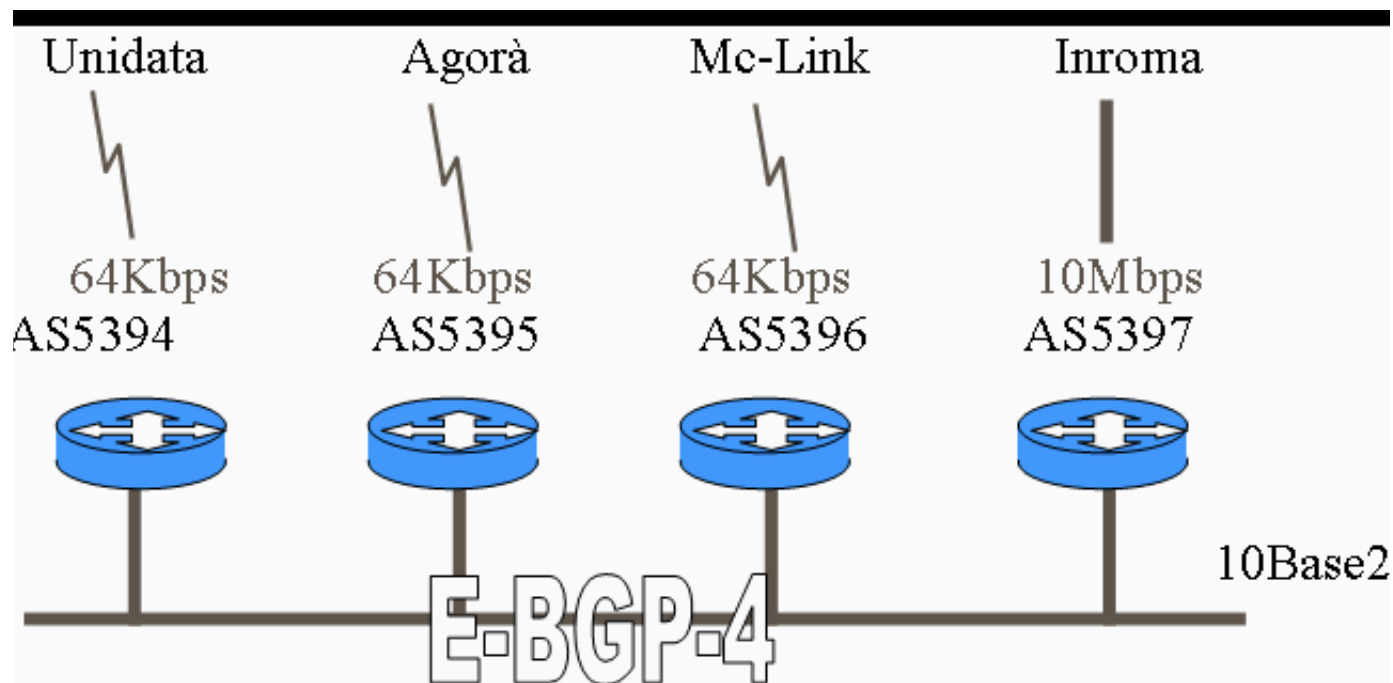
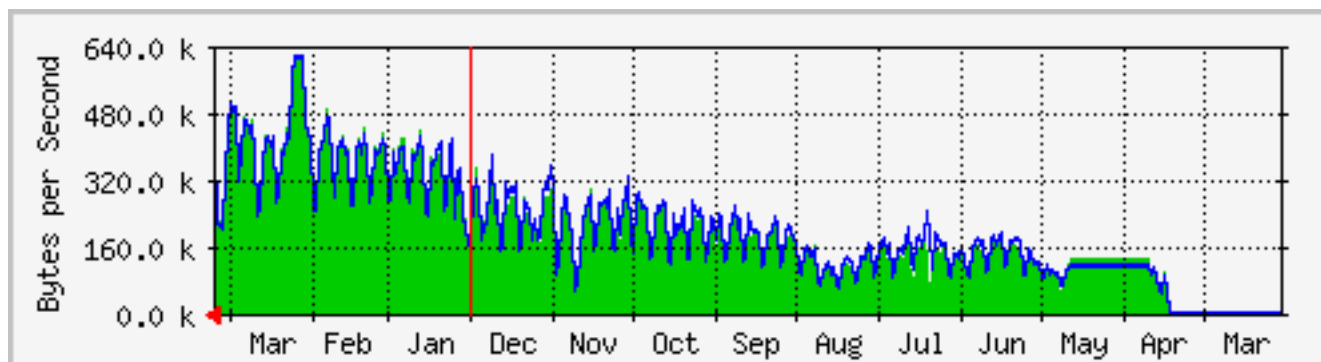


NaMeX prehistory

- ✓ May 1995 - 4 ISPs requested an AS to RIPE at the same time
- ✓ Received 4 AS contiguous
5394 * 5395 * 5396 * 5397
- ✓ 64 Kbps lines
- ✓ No Switch but a cable RG58! (10 Base2)
- ✓ Every time a new member entered the IXP it produced a stop in the NAP



NaMeX prehistory



NaMeX prehistory

- ✓ Jan 1998 1° 10/100 baseTX switch (Cisco Calalyst 2916XL)
- ✓ Incubent (TelecomItalia) forced to the Italian Regulator to join IXP
- ✓ June 99 – 13 Members – 8 Mbps traffic
- ✓ Feb 2000 – Cabletron sponsored new switch (SSR 8000)
- ✓ June 2000 – Traffic at 20 Mbps
- ✓ End 2000 – Garr force TelecomItalia to peer at IXP (2x155 lines)
- ✓ Sept 2001 100Mbps
 - ✓ NaMeX consortium founded (15 ISP)
 - ✓ Members started to pay
- ✓ 2002 first full time staff person
- ✓ 2003 join Euro-IX



NaMeX today

- ✓ Born in 2001
- ✓ Changed from volunteer based to structured consortium
- ✓ **N**autilus
- ✓ **M**editerranean
- ✓ **eX**change Point
- ✓ IXP at the center of mediterranean area



NaMeX today

- ✓ It's an infrastructure whom main goal is to give better opportunity to his members:
- ✓ Two main services
 - ✓ Carrier room: where to buy and sell circuits and transit at best
 - ✓ Peering room: where to peer with the largest number of ISP
- ✓ No restriction for membership (just AS number and IP network)
- ✓ We have only members and no customers

IXPs in Italy

- ✓ NaMeX is the southern IXP in Italy.
- ✓ 7 Total! 3 new in 2009

Italian IXP
NaMeX
MIX Milan
TOPIX
VSIX
TIX
MINAP
FVG-IX



Peering



Brain	British Telecom	CASPUR	E4A	GARR
Cliocom	Cogent	Colt Telecom	Eurocity	Holy See
Convergenze	Eutelia	F-root	Fastweb	I.NET
Forinicom	Infracom	Interoute	Lottomatica	MC-Link
NaMeX	Panservice	Postecom	Retelit	Seeweb
TelecomItalia	Teleinform	Unidata	Wind	Ydea
Agesci	OkCom	Trentino Net	Global Crossing	ACI Network
AKAMAI	Active Network	Aruba	Fastnet	J-root

- ✓ **Internet Holy See (Vatican)**
 - ✓ **First and only holy IXP in the world ☺**
 - ✓ **Note that their AS number it's NOT 666 !**



Italian IXP traffic

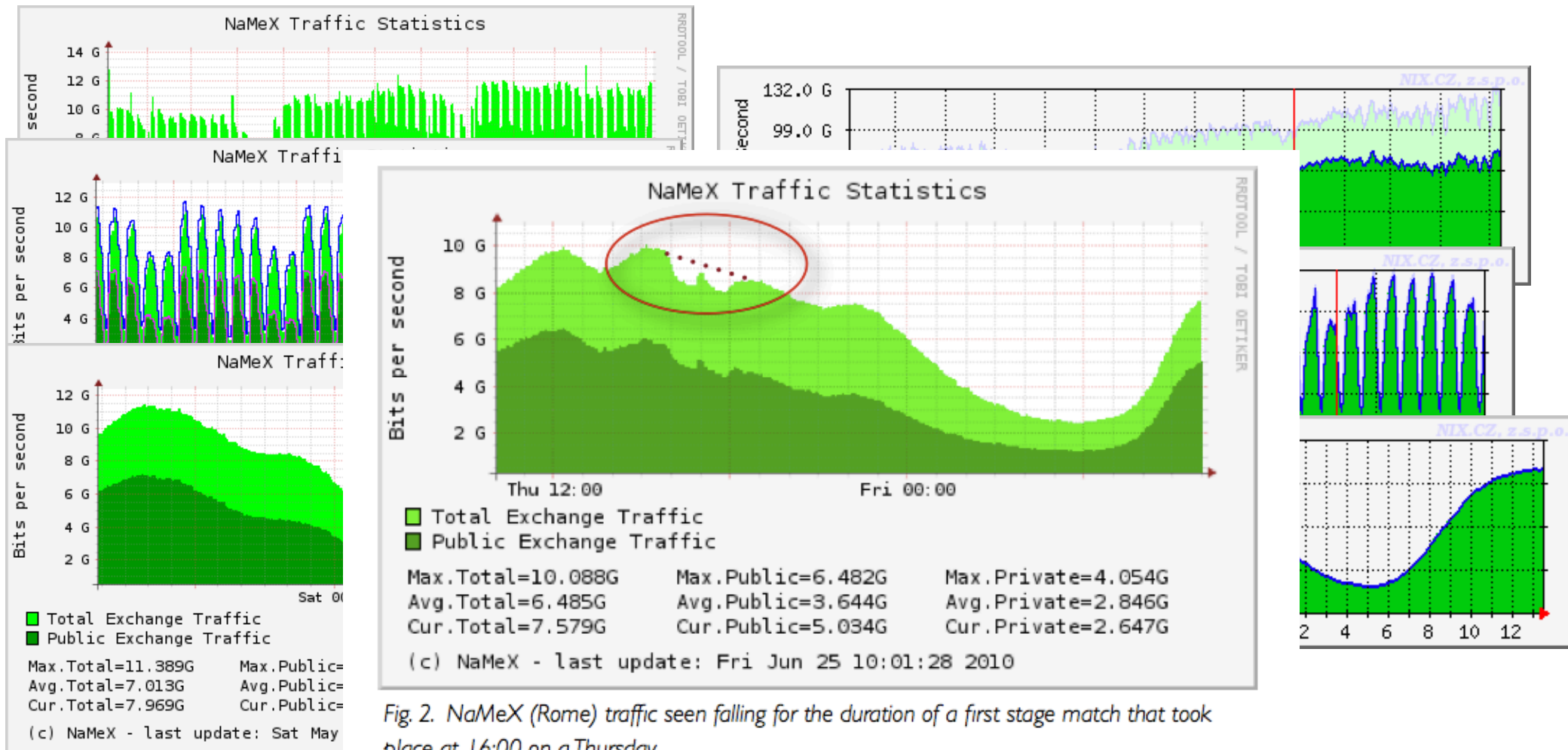


Fig. 2. NaMeX (Rome) traffic seen falling for the duration of a first stage match that took place at 16:00 on a Thursday.

NaMeX today

- ✓ Board elected by members every three years
- ✓ 1 Technical committee
- ✓ 1 President + 1 VP
- ✓ 1 Executive Director
- ✓ 1 CTO
- ✓ 1 Director of strategic alliances
- ✓ 1 Senior Engineer
- ✓ 1 Administrative

NaMeX today



- ✓ Ordinary time work (no outsourcing)
- ✓ Help desk 24x7x365
 - ✓ **8:30 – 17** -> Office
 - ✓ **Off-hour** -> Available through cell phone (2h)
- ✓ Help (out-insource from CASPUR)
- ✓ Double hat (myself)
- ✓ Assistance in installations and outages of members



- ✓ **Data Center owned and managed by CASPUR**
- ✓ **University Computer Center (Top 500, Top Green 500)**
- ✓ **Very high standard (Tier III)**
- ✓ **Excellent maintenance**
- ✓ **Excellent response time**

- ✓ **Chosen as colocation by several Italian critical services**
- ✓ **Chamber of Deputies**
- ✓ **Italian Government**
- ✓ **National Public Network (SPC)**
- ✓ **Italian Research Network (GARR)**



CASPUR
Consorzio interuniversitario
per le Applicazioni di Supercalcolo
Per Università e Ricerca

Peering Prices

- ✓ **Reduced 30% respect 2009 (because of the transit prices)**

Bandwidth	Yearly cost
50 Mbps	EUR 2500
100 Mbps	EUR 5000
500 Mbps	EUR 11000
1 Gbps	EUR 12000
5 Gbps	EUR 20000
10 Gbps	EUR 23000
20 Gbps	EUR 35000

- ✓ **Free additional ports (aggregations + redundancy)**
- ✓ **Free co-location (up to 2 equipments)**
- ✓ **Transit VLANs**

Carrier room



✓ Carrier Interconnections/Meet Me Room (MMR)

British Telecom	Cogent	Colt Telecom	Eutelia	Fastweb
Global Crossing	Infracom	Interoute	MC-Link	Retelit
Tata	TelecomItalia	Unidata	Wind	Telefonica (TIWS)

✓ One of best connected site in south Europe

✓ Fees

- ✓ Space + Kw + patch panel (from 2500 euro/year)
- ✓ <http://www.namex.it/fees>

Additional services and activities

- ✓ F-root, J-Root (.com, .net)
- ✓ Route server
- ✓ AS 112
- ✓ Ibgplay www.ibgplay.org
- ✓ IPV6, Multicast, VoIP

- ✓ We have an agreement with ISC to permanently host DNS and DHCP training courses for Europe in our training center in Rome
 - ✓ Next course next week



Internet Systems Consortium

Meetings

- ✓ **Two meetings every year**
 - ✓ **More than 100 attendees**
 - ✓ **Meet CTO & CEO members and share ideas**
- ✓ **General Meeting (Fall - Winter)**
- ✓ **Peering Workshop (Spring-Summer)**
- ✓ **Next Meeting will be held in Rome:**
 - ✓ **7th General Meeting, January 2011**
 - ✓ **meeting@namex.it**



- ✓ **More interconnection & less peering?**
 - ✓ **Transit price continues to go down**
 - ✓ **Faster and cheaper technology**
- ✓ **The main role of Consortium is to provide services for members; interconnection is what members mostly ask now.**
- ✓ **We must consider NaMeX not just as peering point but as a place “*where network meets*”**
- ✓ **Two projects:**
 - ✓ **Presence in Mediterranean Landing stations**
 - ✓ **AMS-IX agreement**

Submarine cable world

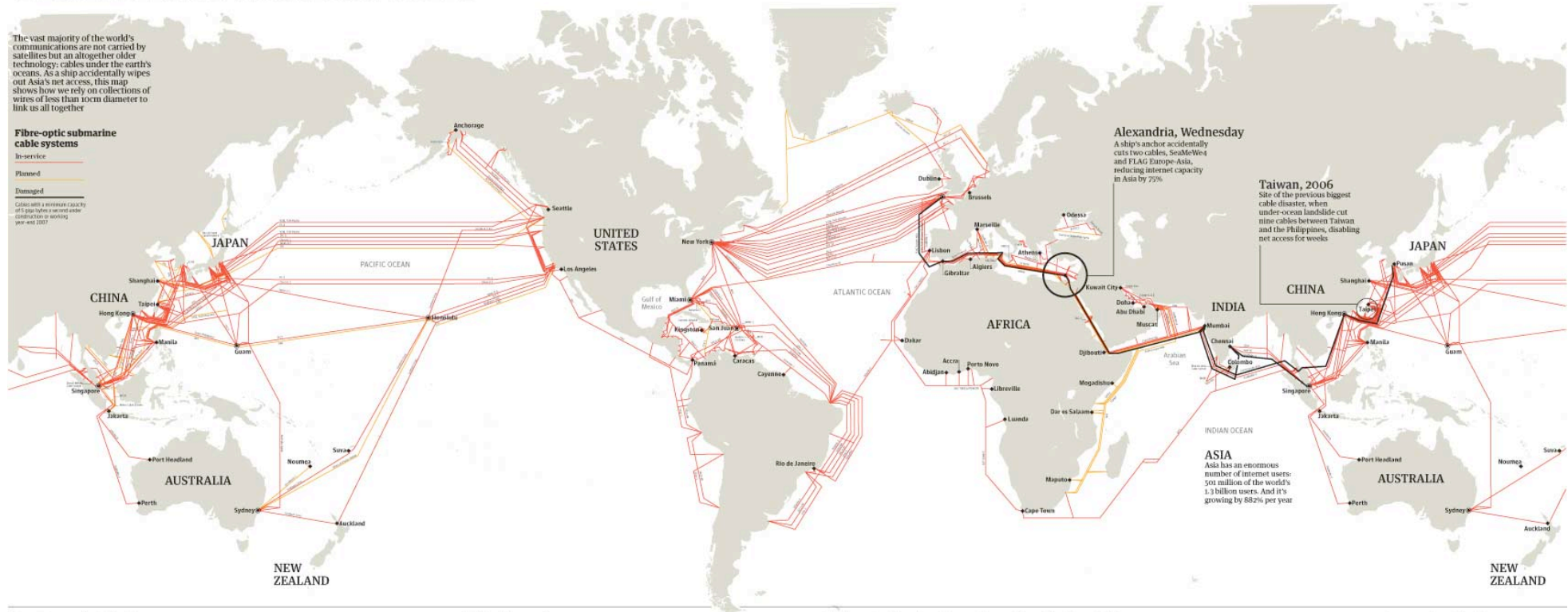
The internet's undersea world

The vast majority of the world's communications are not carried by satellites but an altogether older technology: cables under the earth's oceans. As a ship accidentally wipes out Asia's net access, this map shows how we rely on collections of wires of less than 10cm diameter to link us all together

Fibre-optic submarine cable systems

In-service
Planned
Damaged

Cables with a minimum capacity of 100,000 Gbps are shown in red. Cables with a capacity of less than 100,000 Gbps are shown in yellow. Last updated: year-end 2007



Alexandria, Wednesday

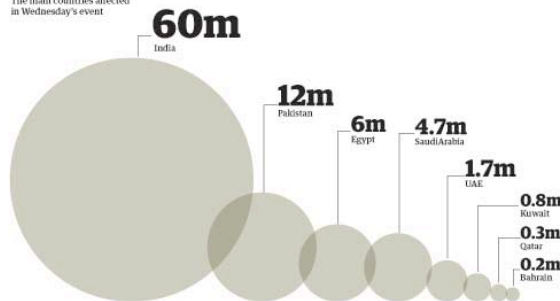
A ship's anchor accidentally cuts two cables, SeaMeWe4 and FLAG Europe-Asia, reducing internet capacity in Asia by 75%.

Taiwan, 2006

Site of the previous biggest cable disaster, when under-sea landslide cut nine cables between Taiwan and the Philippines, disabling net access for weeks.

Internet users affected by the Alexandria incident

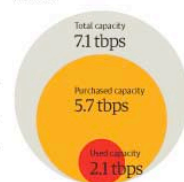
The main countries affected in Wednesday's event



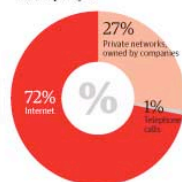
World capacity

Submarine cable operators light (turn on) capacity on their systems to sell bandwidth to other carriers. Carriers buy extra capacity, mainly to hold in reserve. On the trans-Atlantic route 80% of the bandwidth is purchased, but only 20% is used

Capacity in terabytes a second



What makes up "used capacity"?



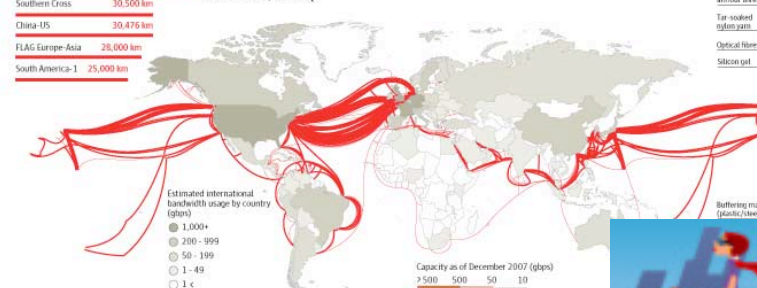
The longest submarine cables

The SeaMeWe-3 system from Norden in Germany to Keeloo, South Korea connects 32 different countries with 39 landing points

SeaMeWe-3	30,000 km
Southern Cross	30,500 km
China-UPS	30,476 km
FLAG Europe-Asia	28,000 km
South America-1	25,000 km

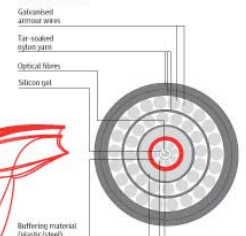
The world's cables in bandwidth

The first intercontinental telephony submarine cable system, TAT-1, connected North America to Europe in 1958 and had an initial capacity of 640,000 bytes per second. Since then, total trans-Atlantic cable capacity has soared to over 7 trillion bps



Cross-section of a cable

Cables of this strength are typically 60 mm in diameter and weigh over 10,000 kilograms a kilometer. In deeper waters, lighter and less insulated cables are used



SOURCE: THE GEOGRAPHIC COMPANY SUBMARINE CABLES MAP 2008. INTERNET STATISTICS FROM INTERNETSTATISTICS.COM

At the center of Mediterranean

Ports available

100 Mbps
250 Mbps
500 Mbps
1 Gbps
10 Gbps

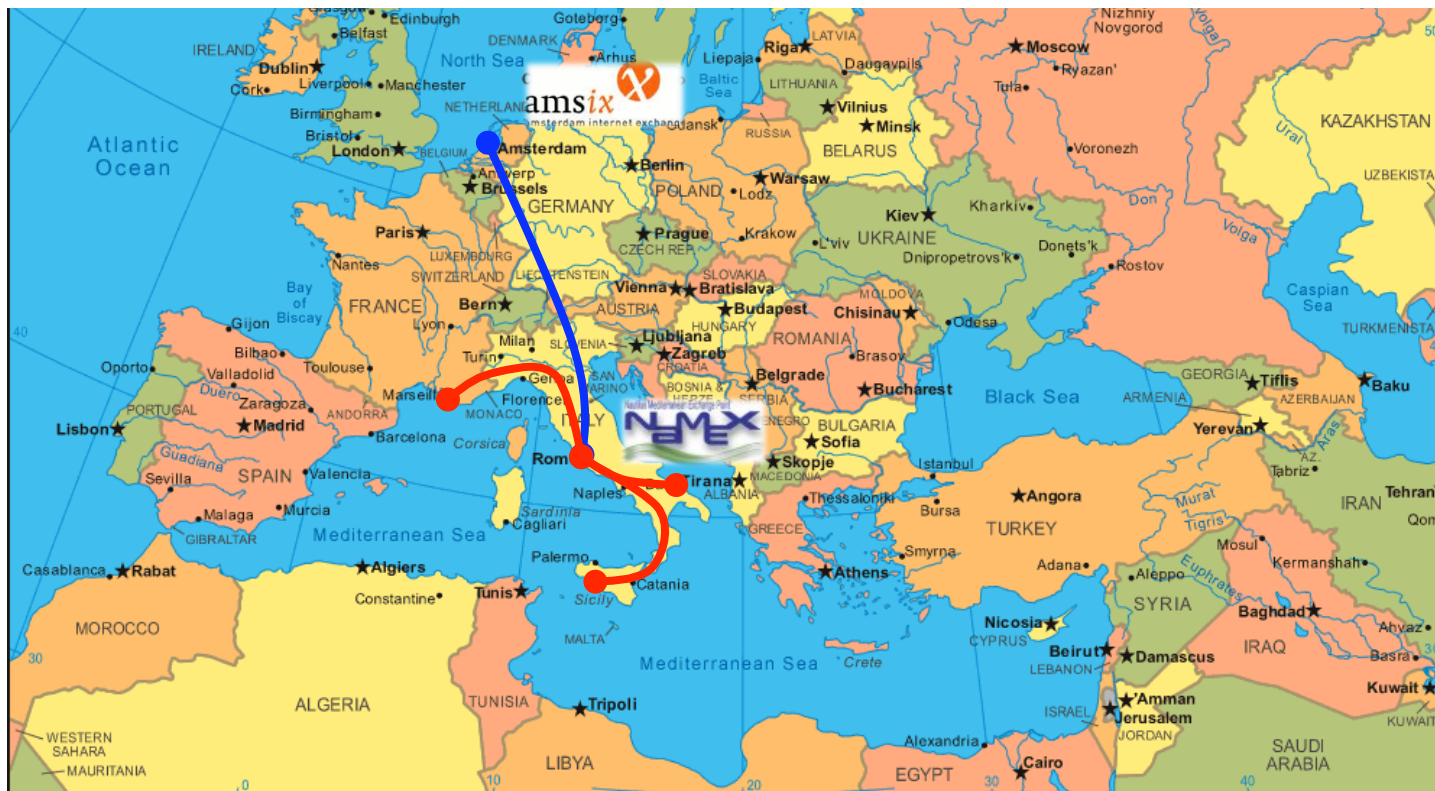
**NaMeX is also
present at
Marseille**

Bari

Mazara del Vallo - Sicily

**NaMeX is present at
Italian landing
Station**

- ✓ NaMeX & AMS-IX mutual partnership
- ✓ Interconnection between IXPs
- ✓ ISPs present at NaMeX (Mazara, Bari, Marseille, Rome) are also connected to AMS-IX and vice versa





Thanks!



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