

An introduction to peering in Italy

Interconnections among the Italian networks

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The Italian Internet Exchanges

The major ones are:

- MIX-IT - Milano
- NAMEX - Roma
- TOP-IX - Torino

Also: TIX (Firenze), VSIX (Padova), NAMEX-B (Bari), MINAP (Milano), MIX-Palermo (Palermo).

Total traffic on the peering LANs is about 250 Gbps.

Private interconnections in Italy

There are some other datacenters in the Milano area, but only the Via Caldera 21 campus is relevant for interconnection.

Popular meet me rooms in Milano

- Infracom's Avalon room.
- MIX-IT datacenter.

Popular meet me rooms in Rome

- NAMEX datacenter.

The Via Caldera 21 campus

After some consolidation, 10 companies with datacenters are left.

Avalon room, Infracom

- Almost everybody is there, also for POTS.
- Space is very expensive.
- Major single point of failure.

Formerly Netscalibur, formerly Unisource.

MIX-IT

- Italy's major internet exchange.
- Many IP and L2 carriers are available as well.

Some L2 and L3 options in Telnet and kpnqwest.it too.

A POP that does not depend on Infracom has a big competitive advantage. Check for L1 diversity as well!



Getting to Italy

The major exchanges are reached by all national and international L2 carriers and allow remote peering.

The other exchanges offer much less choice and tend to be relevant only in their local market.

Italy is reached by some major submarine cables, but access to the landing stations is usually controlled by Telecom Italia and currently no submarine networks terminate fibre at the Italian exchange points.

The large access networks

Telecom Italia, Wind, Fastweb and Vodafone have 92% of the fixed line access market.

Some large networks use private peerings, while others never do.

Notable private peerings:

- Telecom Italia with Wind, Fastweb, BT formerly I.Net.
- Wind and Fastweb.
- Google and many large access networks.

Interconnects may not be symmetrical...

Missing interconnections

Access networks tend to peer widely with small and medium networks, which usually host content, but sometimes reach other access networks over their transits.

Some examples:

- Vodafone
- H3G
- Tiscali Italia

Usually medium-sized networks are well interconnected, often at multiple exchange points.

Since July 2013, Telecom Italia has very few interconnections.



The Telecom Italia network

Telecom Italia is the incumbent operator, with 51% of the residential access market and barely any content on-net.

Telecom Italia operates two networks:

- AS3269: the Italian network for DSL/mobile customers, some enterprise-oriented data centers and a little transit.
- AS6762: the global tier 1 backbone (Telecom Italia Sparkle).

TIS is the only transit provider of AS3269, with a single interconnection in Milano.

In 1996, after buying a large ISP, AS3269 was mandated to peer with Italian ISPs for the next 10 years by the national competition authority.

The Telecom Italia depeering

In July 2013 Telecom Italia unilaterally disabled the existing interconnections with most other Italian networks (*depeering*).

New criteria for settlement free peering with AS3269:

[being] their “Peers”, i.e. Telecommunications Operators fulfilling criteria like, among them, balanced traffic volumes, a significant end users base, high traffic, redundancy, and more. (Our account manager.)

My understanding:

Being a large national fixed line access operator. Maybe.

The actual peering policy of AS3269 has never been published, but Comcast is often mentioned as a positive role model.

Telecom Italia traffic before the depeering

The total pre-depeering traffic levels on the Telecom Italia ports was about 21 Gbps:

- MIX: 7 Gbps
- NAMEX: 3.8 Gbps
- TOP-IX: 10 Gbps (mostly from Akamai)

This is relatively low level but important traffic, like business customers connecting to their company's mail servers, big newspapers or almost all of the cloud infrastructure market.

Very little content is available on the Telecom Italia network.

Depeering: what changed

Currently Telecom Italia only peers with a few large telcos.

So far, only one small company has (not publically) admitted buying their private peering product called *IP Look*.

The prices proposed are similar or higher than TIS transit, and TI requires private interconnections at full port speed instead of using the existing internet exchange platforms.

From any point in Italy, Telecom Italia customers can be reached only from Milano. Or from Frankfurt or Paris.

AS3269 has a long history of recurrent outages of "international" connectivity, and now Italian networks suffer from this as well.

Italian interconnections of Telecom Italia

AS3269 (Telecom Italia)

- **Private peers:** Wind, Fastweb, BT-I.Net, Vodafone (?).
- **Public peers:** GARR (NAMEX), BT-Albacom (NAMEX).
- **Customers:** Infracom, Aruba, Interoute (?), Tiscali (?).

Italian interconnections of Telecom Italia Sparkle

Until 2013 it usually did not peer with other tier 1 in Italy and most of the traffic was exchanged abroad. Recently this started improving.

AS6762 (Telecom Italia Sparkle)

- GTT-Tinet (only some routes, has reached capacity years ago)
- Sprint, C&W, DTAG (not relevant in the Italian market)
- NTT (early 2014, was new to the Italian market)
- Level 3 and Tata (new in 2014!)

Notable exceptions:

- Cogent
- Telia
- Global Crossing (depeered!)
- ~~Level 3~~
- ~~Tata~~ (congested!)

Troubles between AS3269 and AS6762

A partial list of connectivity issues in 2013 and 2014:

- **October-November**: packet loss between TIS and NTT in Milano.
- **November 4**: high latency and packet loss between TIS and Tinnet.
- **February 5**: blackholing of some IPs between TI and TIS.
- **February 7-10**: scenic routing to the USA of some Cogent-TIS traffic due to congestion of european interconnections.
- **March 6-11**: congestion between TIS and Tinnet in Milano.
- **March 11**: blackholing of pairs of random IPs between TI and TIS.
- **April 10-11**: congestion between TIS and Cogent and Tinnet due to a TIS fibre cut in Germany.
- **October 3-7**: www.agcom.it and other TI customers were blackholed for Level3 customers due to a routing leak.

Questions?



http:

`//www.linux.it/~md/text/peering-italy2014linx.pdf`

(Google ... Marco d'Itri ... I feel lucky)

