

An eInfrastructure in Europe: a NREN perspective

Dany.Vandromme@renater.fr

A bit of history (1/5)

- Parallel development of RENATER (and many other NRENs) and the European interconnection network.

A bit of history (1/5)

- Parallel development of RENATER (and many other NRENs) and the European interconnection network.
- From early 90s, RENATER was a IP service between a set of PoP of the national operator. Regional networks were also that way ==> Black box service!

A bit of history (1/5)

- Parallel development of RENATER (and many other NRENs) and the European interconnection network.
- From early 90s, RENATER was a IP service between a set of PoP of the national operator. Regional networks were also that way ==> Black box service!
- At the same time, Telcos monopolies provided packaged services (X25 with IXI, ATM with JAMES, IP with EUROPANET) (max 2 Mb/s).

A bit of history (2/5)

- From 1996, France Telecom had to provide the IP service on a dedicated ATM infrastructure, to adjust the growing needs (filling the gap between 2 and 34/45 Mb/s) and to allow monitoring from the user edge.

A bit of history (2/5)

- From 1996, France Telecom had to provide the IP service on a dedicated ATM infrastructure, to adjust the growing needs (filling the gap between 2 and 34/45 Mb/s) and to allow monitoring from the user edge.
- At the same time, TEN-34 was started, made on half circuits provided by monopoly Telcos (based also on ATM to adjust carefully the pay-per-bandwidth feature): 10 Mb/s Paris-London, 12 Mb/s Paris-Frankfurt!

A bit of history (3/5)

- From 1999, RENATER-2 was organised as a major procurement action, where circuits, equipment, PoP hosting and network management were sought, eventually from different providers.

A bit of history (3/5)

- From 1999, RENATER-2 was organised as a major procurement action, where circuits, equipment, PoP hosting and network management were sought, eventually from different providers.
- France Telecom kept most of the circuit provision (PDH/SDH), but lost the network management (IP/ATM). Equipments were acquired directly by RENATER and the RENATER PoP were installed in University premises.

A bit of history (4/5)

- From 1999, similarly, TEN-155 was organised also as a major procurement action by DANTE, on behalf of the NRENs.

A bit of history (4/5)

- From 1999, similarly, TEN-155 was organised also as a major procurement action by DANTE, on behalf of the NRENs.
- A single operator won the core circuit provision (PDH/SDH), complemented by monopolies in other places. The Operator provided also the ATM layer, while the IP service was managed by a NREN NOC.

A bit of history (4/5)

- From 1999, similarly, TEN-155 was organised also as a major procurement action by DANTE, on behalf of the NRENs.
- A single operator won the core circuit provision (PDH/SDH), complemented by monopolies in other places. The Operator provided also the ATM layer, while the IP service was managed by a NREN NOC.
- Equipment were acquired separately by DANTE, and the ATM layer was even removed before the end of the project.

A bit of history (5/5)

- From 2002, RENATER-3 was built on WDM/SDH circuits. France Telecom lost almost all the circuit provision. The network is totally under the control of RENATER

A bit of history (5/5)

- From 2002, RENATER-3 was built on WDM/SDH circuits. France Telecom lost almost all the circuit provision. The network is totally under the control of RENATER
- From 2002, GEANT was operational, with 8 different connectivity suppliers. The equipments were tendered separately, and the network management service was outsourced to a specialized company. The network is totally under the control of DANTE (on behalf of the NRENs)

Future trends

- Not to substitute to telecommunications operators, but acquire products and services not off-the-shelves.

Future trends

- Not to substitute to telecommunications operators, but acquire products and services not off-the-shelves.
- Cooperate with Telcos but convince them to provide raw capacity at the lowest rates as possible and bring most of the technology mastering in the NRENs hands: WDM instead of SDH, lit fibres instead of WDM, and eventually dark fibres instead of lit fibres when feasible.

Future trends

- Not to substitute to telecommunications operators, but acquire products and services not off-the-shelves.
- Cooperate with Telcos but convince them to provide raw capacity at the lowest rates as possible and bring most of the technology mastering in the NRENs hands: WDM instead of SDH, lit fibres instead of WDM, and eventually dark fibres instead of lit fibres when feasible.
- Customize and provide network services by the NRENs themselves (DANTE for collective actions)

Challenges

- Not to be destructive for the telecommunications industry, but incentive for new services

Challenges

- Not to be destructive for the telecommunications industry, but incentive for new services
- Coordinate disparate actions like xx-Light initiatives which promote lambdas rather than usages

Challenges

- Not to be destructive for the telecommunications industry, but incentive for new services
- Coordinate disparate actions like xx-Light initiatives which promote lambdas rather than usages
- Account for differentiated economical and regulatory contexts to harmonize the European network and reduce the digital divide.

Challenges

- Not to be destructive for the telecommunications industry, but incentive for new services
- Coordinate disparate actions like xx-Light initiatives which promote lambdas rather than usages
- Account for differentiated economical and regulatory contexts to harmonize the European network and reduce the digital divide.
- TEN-155/GEANT issue was to managed simultaneously liberalized markets and monopolies: Next will be to manage also markets with no rules!

Facts

- It is acknowledged that TEN-155 and GEANT have significantly improved the research network situation in Europe.

Facts

- It is acknowledged that TEN-155 and GEANT have significantly improved the research network situation in Europe.
- However, the gap between extremes has also significantly increased.

Facts

- It is acknowledged that TEN-155 and GEANT have significantly improved the research network situation in Europe.
- However, the gap between extremes has also significantly increased.
- Today, SEE countries are among the most expensive countries from GEANT point of view!

Facts

- It is acknowledged that TEN-155 and GEANT have significantly improved the research network situation in Europe.
- However, the gap between extremes has also significantly increased.
- Today, SEE countries are among the most expensive countries from GEANT point of view!
- Poland and Czeck Republik have adopted a different approach to be among the most advanced partners.

Facts

- The difficulty, reported for the SEE is well confirmed by the EUMEDCONNECT tendering process!

Facts

- The difficulty, reported for the SEE is well confirmed by the EUMEDCONNECT tendering process!
- Better to cooperate (eventually being VERY incentive) with telcos than to fight them to improve the market situation, induced by the lack of competition.

Facts

- The difficulty, reported for the SEE is well confirmed by the EUMEDCONNECT tendering process!
- Better to cooperate (eventually being VERY incentive) with telcos than to fight them to improve the market situation, induced by the lack of competition.
- Governments may help, because of specific needs for Education and Research.

Facts

- The difficulty, reported for the SEE is well confirmed by the EUMEDCONNECT tendering process!
- Better to cooperate (eventually being VERY incentive) with telcos than to fight them to improve the market situation, induced by the lack of competition.
- Governments may help, because of specific needs for Education and Research.
- New European rules for procurement will help.

But keep in mind:

- It is better to have one operator than none.

But keep in mind:

- It is better to have one operator than none.
- RENATER is also in charge of connectivity for overseas territories (Martinique, Guadelup, Guyana, Reunion, Mayotte, New Caledonia, Tahiti, Wallis, Futuna). For all these places, RENATER is grateful to France Telecom to discuss about connectivity.

END OF PRESENTATION!

