

IPv6 Addressing case study Renater

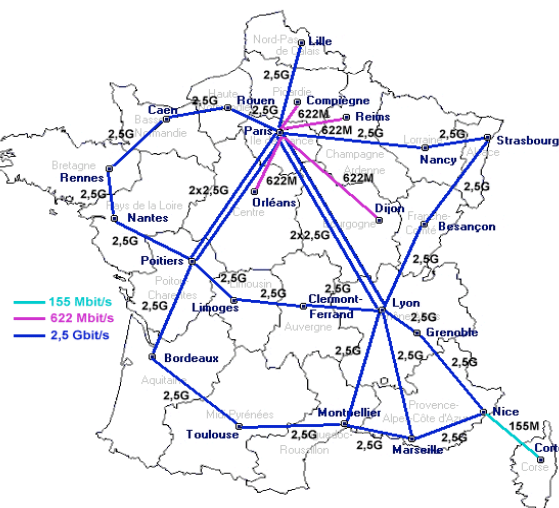
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IPv6DISSemination and Exploitation

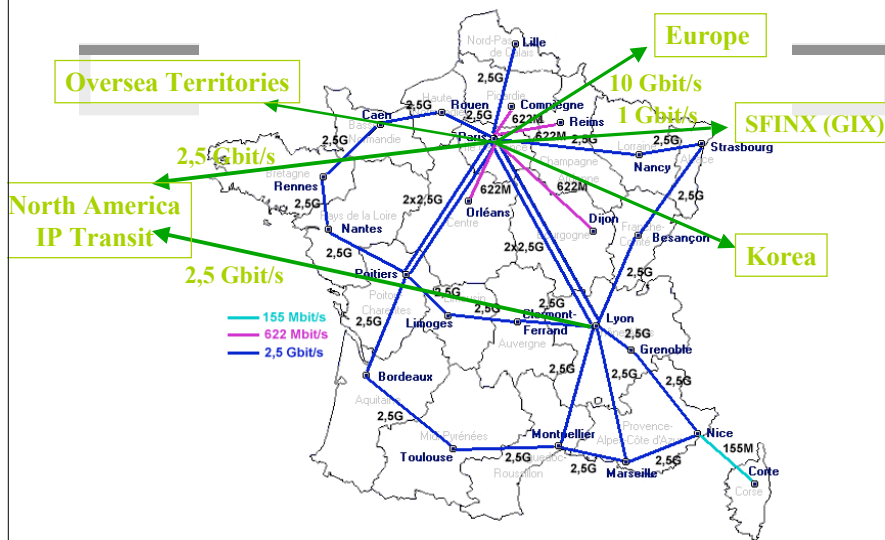
Renater : national backbone



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IPv6DISSemination and Exploitation

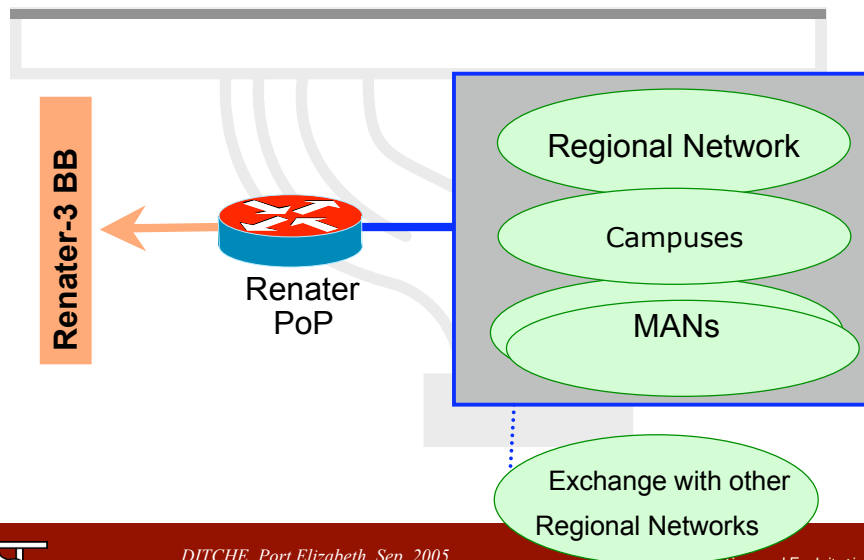
Renater : international links



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IPv6DISSEmination and Exploitation

Renater-3 architecture



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IPv6DISSEmination and Exploitation

RENATER's Production IPv6 service

- Why a production-like IPv6 service ?
- ATM removed ...
 - Move all network services on a unique topology
 - Do we want to forget about IPv6, IPv4 multicast ... ?
- Needs for an IPv6 transport
 - Research projects using IPv6
 - Sites with native IPv6 network
 - install a native IPv6 core
 - run both versions of IP on the same equipments
- Monitor the IPv6 service in the same operational way than IPv4



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IPv6DISSemination and Exploitation

Renater 3 : IPv6 Native support

- 2.5 Gbits/s backbone
- 30 Regional Nodes (NR)
- Native IPv6 on all regional nodes
 - Dual stack backbone → IPv4 and IPv6
- Global IP Service
 - IPv4 unicast and multicast
 - IPv6 unicast
 - IPv6 and IPv4 carried without any distinction
- Goal : achieve for both versions of IP an equal level of
 - Performance
 - Availability
 - Management
 - Support



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IPv6DISSemination and Exploitation

Addressing

- Hierarchical addressing
- Renater
 - Prefix = 2001:0660::/32
 - Allocated by the RIR (RIPE NCC)
- Regional Nodes
 - POP-ID = 2001:0660:xy::/40
- Site
 - Site-ID : a /48
 - from RN's prefix (/40) it's connected to
 - Site-IDs allocated by Renater (LIR)
 - 16 bits are reserved for the site topology



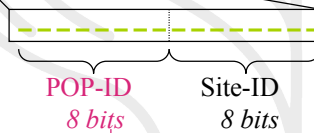
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IPv6DISSemination and Exploitation

Addressing



2001:0660:



2001:0660:3000:/40	Paris NRI
2001:0660:3300:/40	Paris Jussieu RI
2001:0660:4400:/40	Lille RI
2001:0660:5400:/40	Marseille RI
(...)	

2001:0660:300x:/48



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IPv6DISSemination and Exploitation

Example

Renater's prefix	2001:0660::/32
POP-ID Strasbourg	2001:0660:4700::/40
Sites connected to Strasbourg's RI	2001:0660:4701::/48 2001:0660:4702::/48 ...

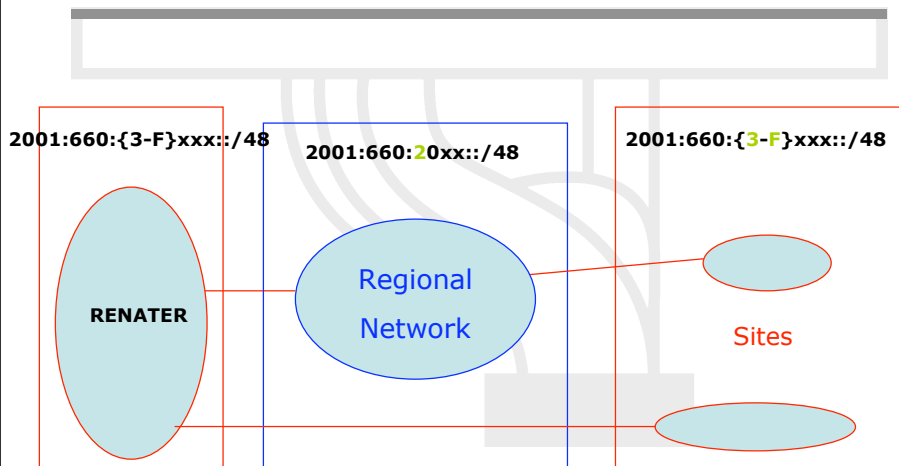


Regional Nets Addressing

- Two possibilities
 - Uses its own prefix (Commercial ISP)
 - Uses Renater's address space
 - 2001:0660:2--:/48
 - In both cases
 - Sites are addressed in Renater's sTLA
 - 2001:0660:{3-F}--:/48
 - Interco Network (site – Regional / MAN)
 - First /64 from the NLA-ID



Addressing scheme



Conclusion

- Preparing an IPv6 plan is a bit complex
- Plan it in advance ...
 - Not forgetting your PoPs equipment (loopbacks, admin LANs, interconnects ...)
- Draw benefit from aggregation
 - Smaller routing tables to manage (even in the core)
 - Less prefixes to advertise to BGP peers
- Lot of people have an experience yet ...
 - Not necessary to reinvent the wheel ;)

