

TD3 RNG

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Encapsulation

- 6over4
 - Encapsulation d'IPv6 au dessus IPv4 (**IPv6/IPv4**)
 - Entête IPv4 : **Protocol = 41** (IPv6)
 - Coût de l'encapsulation
 - Taille Entêtes = $20 + 40 = 60\text{B}$
 - Données utiles = 1280B
 - Coût = $20 / (1280+60) = 1.5\%$
 - On calcule le coût de l'entête rajoutée par rapport à un trafic natif.

Encapsulation

- Software
 - Encapsulation : IPv6/PPP/L2TP/UDP/IPv4
 - Coût de l'encapsulation :
 - Taille Entêtes = $40 + 3 + 6 + 8 + 20 = 77\text{B}$
 - Données utiles = 1280B
 - Coût = $37 / (1280+77) = 2,7\%$
 - Conclusion : L'encapsulation n'impacte pas forcément les performances à cause des entêtes rajoutées, mais souvent par le temps de traitement qu'implique l'encapsulation

Tunnels 6to4 et 6rd

- Plan d'adressage 6to4
 - Adresses incluses dans le préfixe **2002::/16**
 - $\text{IPv6}_{6to4} = 2002 + \text{IPv4}_{pub} + \text{SID} + \text{IID}$
- Plan d'adressage 6rd
 - Adresses incluses dans le plan de l'opérateur
 - $\text{IPv6}_{6rd} = \text{Prefix}_{6rd} + \text{IPv4}_{pub/priv} + \text{SID} + \text{IID}$

Concepts

Facts on
Addresses

Addresses

Protocol

Associated
Protocols &
Mechanisms

IPv6 & DNS

Integration

Why IPv6
Integration ?6 generic
scenarios

Tools overview

Scenarios
Backbone
operator

Internet Access

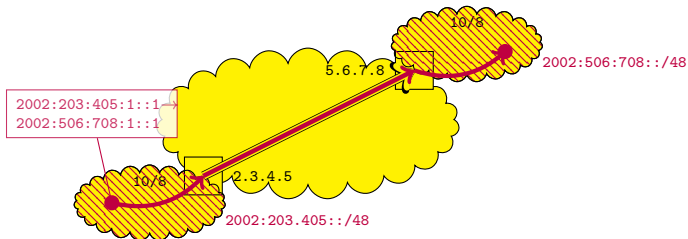
Provider

3G/LTE

Enterprise

Home network
and SOHOProgramming
IPv6

- based on the magic formula $16+32=48$
 - $2002::/16 + \text{IPv4 address}$



- Cannot cross NAT (need to know public address)
- Bad performances.

Tunnels 6to4 et 6rd

		6to4		6rd	
		P-à-P			
Entête IPv4	@src	IPv4 _{pub} A			
	@dst	IPv4 _{pub} B			
Entête IPv6	@src	IPv6 _{6to4} A			
	@dst	IPv6 _{6to4} B			

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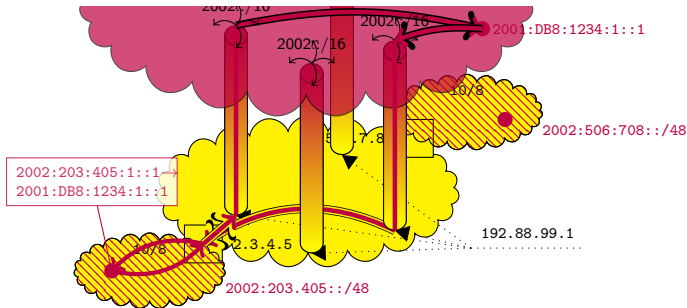
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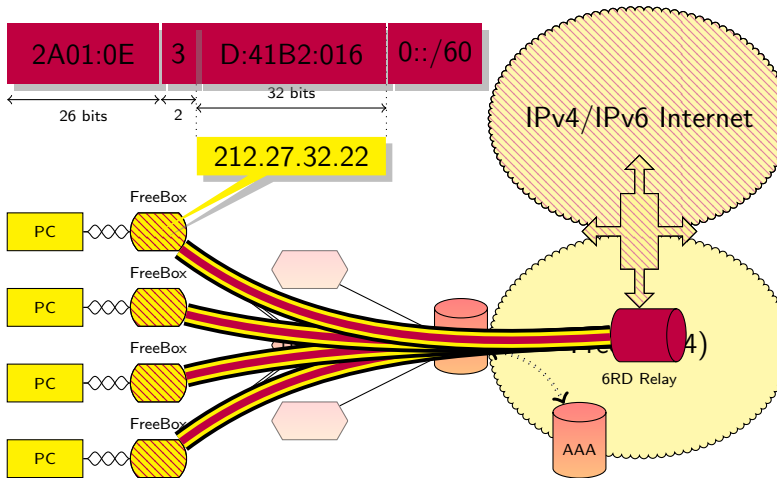


- Cannot cross NAT (need to know public address)
- Bad performances.

Tunnels 6to4 et 6rd

		6to4		6rd	
		P-à-P	IPv6 natif		
Entête IPv4	@src	IPv4 _{pub} A	IPv4 _{pub} A		
	@dst	IPv4 _{pub} B	Anycast		
Entête IPv6	@src	IPv6 _{6to4} A	IPv6 _{6to4} A		
	@dst	IPv6 _{6to4} B	IPv6 B		

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- Why IPv6 Integration ?
- 6 generic scenarios
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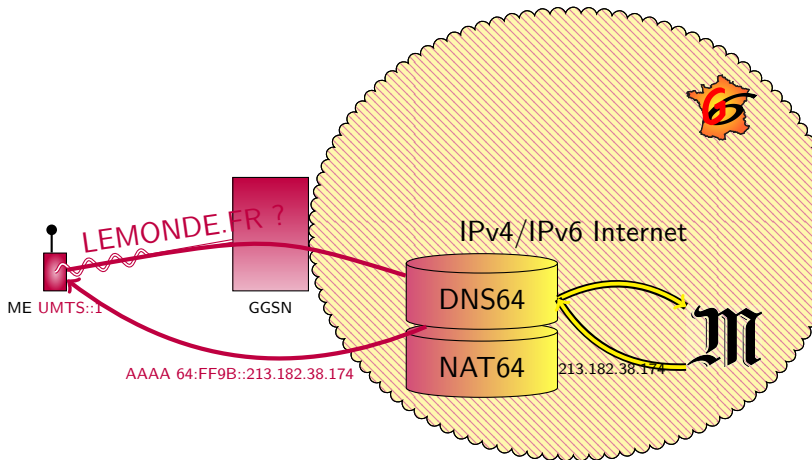
Tunnels 6to4 et 6rd

		6to4		6rd	
		P-à-P	IPv6 natif	P-à-P	
Entête IPv4	@src	IPv4 _{pub} A	IPv4 _{pub} A	IPv4 _{pub/priv} A	
	@dst	IPv4 _{pub} B	Anycast	IPv4 _{pub/priv} B	
Entête IPv6	@src	IPv6 _{6to4} A	IPv6 _{6to4} A	IPv6 _{6rd} A	
	@dst	IPv6 _{6to4} B	IPv6 B	IPv6 _{6rd} A	

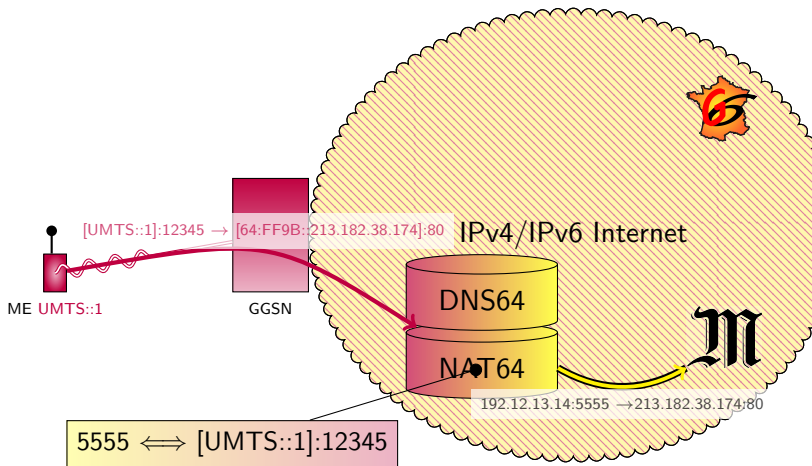
Tunnels 6to4 et 6rd

		6to4		6rd	
		P-à-P	IPv6 natif	P-à-P	IPv6 natif
Entête IPv4	@src	IPv4 _{pub} A	IPv4 _{pub} A	IPv4 _{pub/priv} A	IPv4 _{pub/priv} A
	@dst	IPv4 _{pub} B	Anycast	IPv4 _{pub/priv} B	Relay 6rd
Entête IPv6	@src	IPv6 _{6to4} A	IPv6 _{6to4} A	IPv6 _{6rd} A	IPv6 _{6rd} A
	@dst	IPv6 _{6to4} B	IPv6 B	IPv6 _{6rd} A	IPv6 B

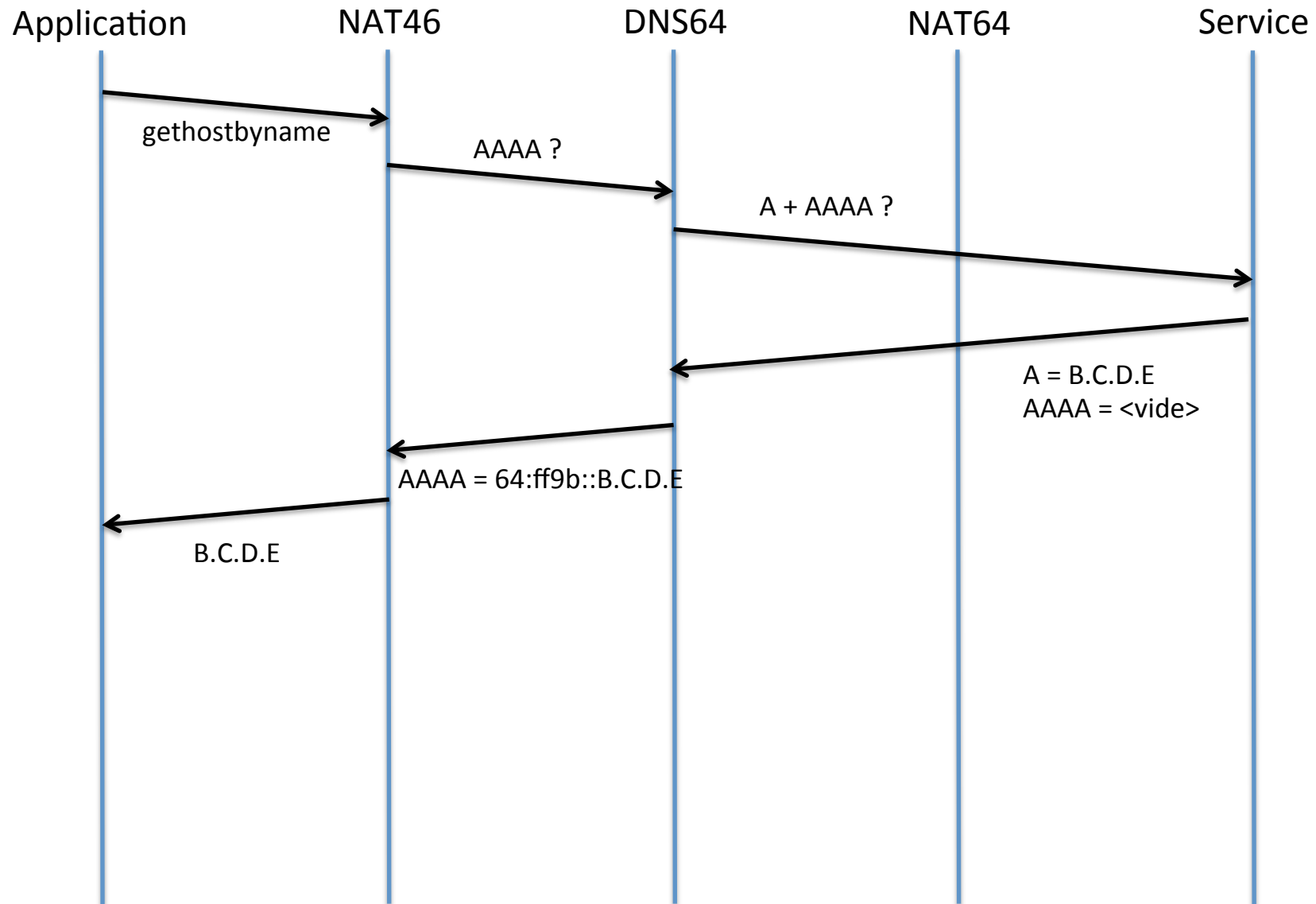
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464XLAT – Résolution DNS



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