# ➔ Adresses et idées reçues

**Laurent Toutain**

enst Bretagne | get

# ➔ difference between packets and addresses

IPv6

IPv4

80   90   00   10

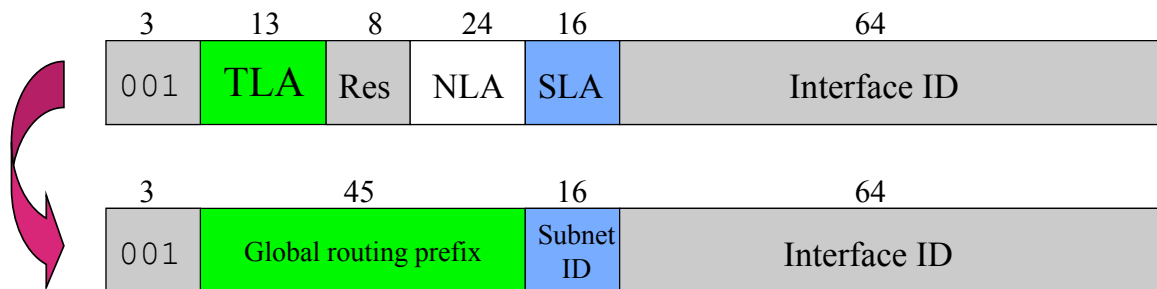classfull    CIDR

????

enst Bretagne | get
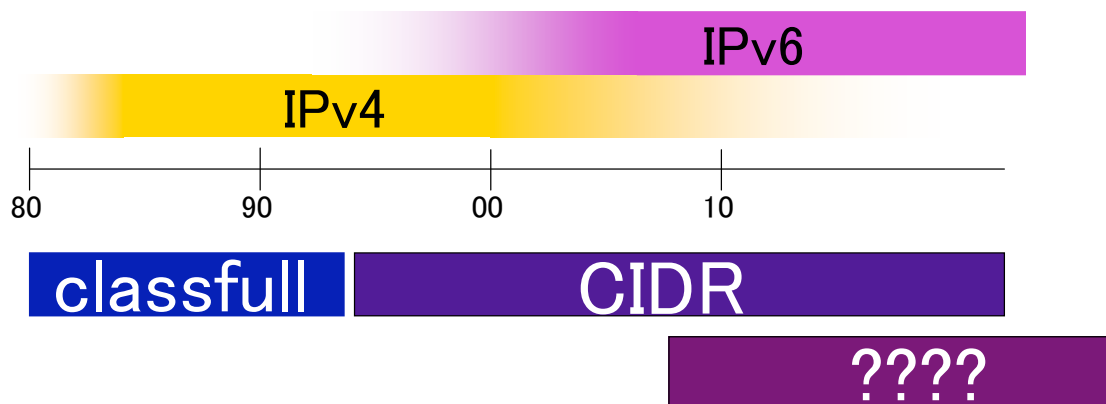
# ⊕ Is it enough for the future ?

- **Address length**
  - Between 1 564  and  3 911 873 538 269 506 102 addresses by m$^2$
  - 60,000 trillion trillion addresses per inhabitant of the earth
  - Addresses for every grain of sand in the world

- **=> Justification of a fix address length**

- An address for everything <u>on the network</u> **and not
An address for everything**

# ⊕ Address Space

| | | |
|---|---|---|
| **0000::/8** | **Reserved by IETF** | **[RFC3513]** |
| 0100::/8 | Reserved by IETF | [RFC3513] |
| 0200::/7 | Reserved by IETF | [RFC-carpenter-obsolete-1888-01.txt] |
| 0400::/6 | Reserved by IETF | [RFC3513] |
| 0800::/5 | Reserved by IETF | [RFC3513] |
| 1000::/4 | Reserved by IETF | [RFC3513] |
| **2000::/3** | **Global Unicast** | **[RFC3513]** |
| 4000::/3 | Reserved by IETF | [RFC3513] |
| 6000::/3 | Reserved by IETF | [RFC3513] |
| 8000::/3 | Reserved by IETF | [RFC3513] |
| A000::/3 | Reserved by IETF | [RFC3513] |
| C000::/3 | Reserved by IETF | [RFC3513] |
| E000::/4 | Reserved by IETF | [RFC3513] |
| F000::/5 | Reserved by IETF | [RFC3513] |
| F800::/6 | Reserved by IETF | [RFC3513] |
| FA00::/7 | Reserved by IETF | [RFC3513] |
| **FC00::/7** | **Unique Local Unicast** | **[RFC-ietf-ipv6-unique-local-addr-09.txt]** |
| FE00::/9 | Reserved by IETF | [RFC3513] |
| **FE80::/10** | **Link Local Unicast** | **[RFC3513]** |
| FEC0::/10 | Reserved by IETF | [RFC3879] |
| **FF00::/8** | **Multicast** | **[RFC3513]** |

# ⊕ RFC 3587: Aggregatable Global Unicast (obsoletes RFC 2374)

| 3 | 13 | 8 | 24 | 16 | 64 |
|---|----|---|----|----|----|
| 001 | TLA | Res | NLA | SLA | Interface ID |

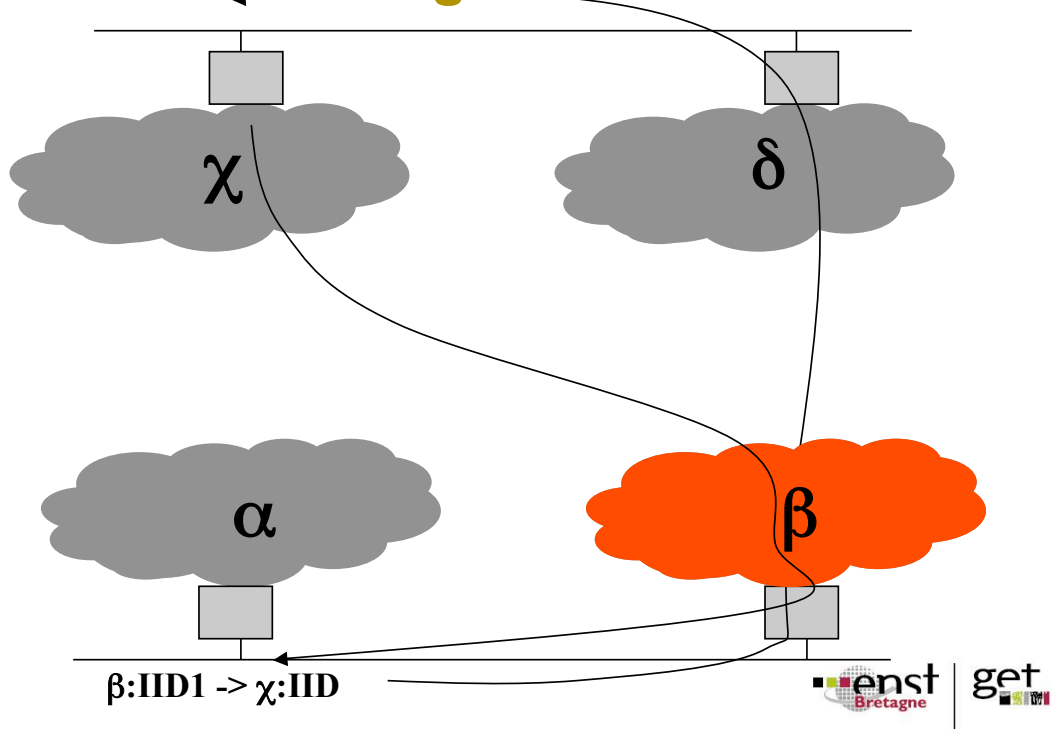| 3 | 45 | 16 | 64 |
|---|----|----|----|
| 001 | Global routing prefix | Subnet ID | Interface ID |

# ⊕ Source Address selection

Default route is selected "randomly" by hosts and is set for every direction

If ISP $\alpha$ proceeds to address filtering (cf. RFC2827) to avoid IP spoofing, then the packet will be discarded

α

β

β:IID1 -> destination

α:IID1
β:IID1

α:IID2
β:IID2
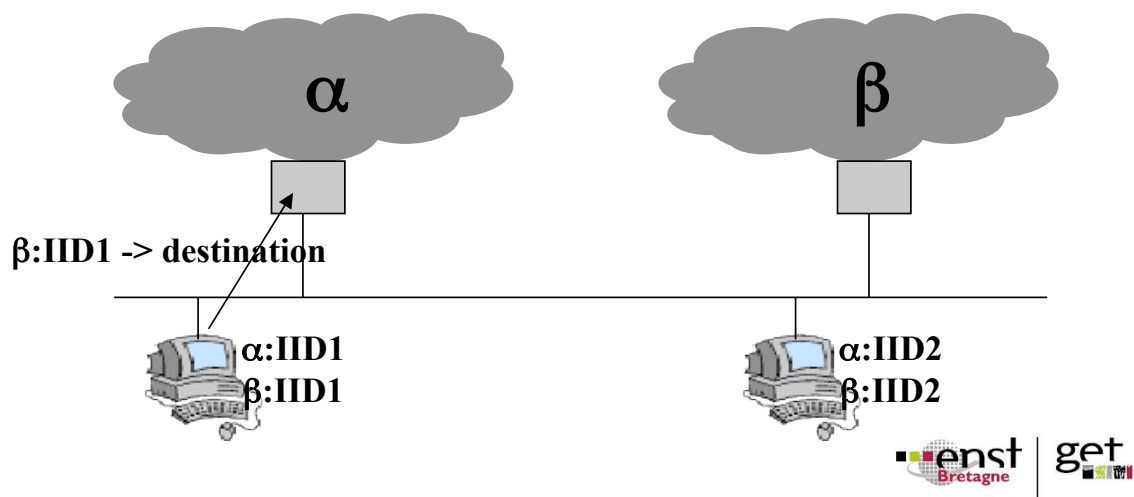
# ⊕ How to handle efficiently multi-homing ?



β:IID1 -> χ:IID

# ⊕ Multi-homing possibilities



| One address | One space two addresses | one spaces | Two spaces | Addresses list | Upper Layer Tag |
|---|---|---|---|---|---|
| NAT | Mobility | | | | |