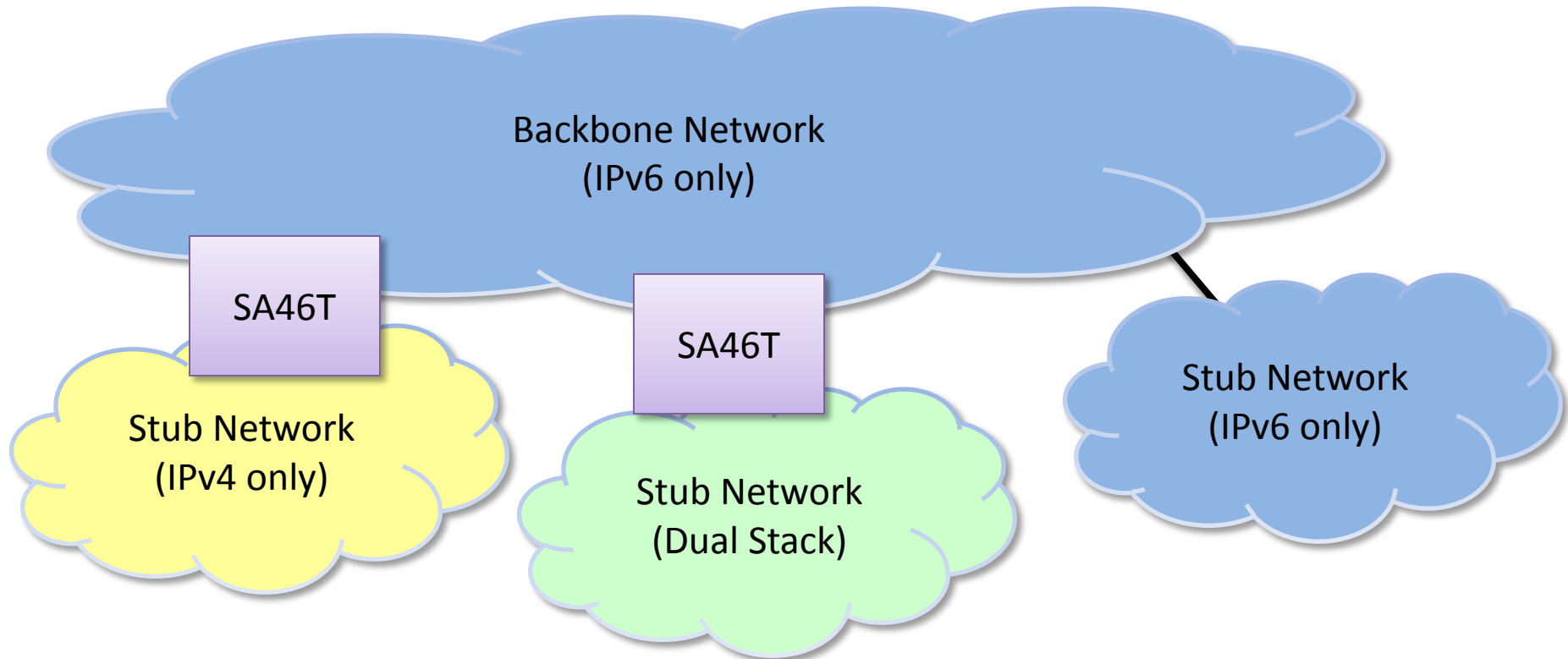


Stateless automatic IPv4 over IPv6 Tunneling (SA46T)

draft-matsuhira-sa46t-spec-00.txt

Naoki Matsuhira
Fujitsu Limited
matsuhira@jp.fujitsu.com
77th IETF, March 2010

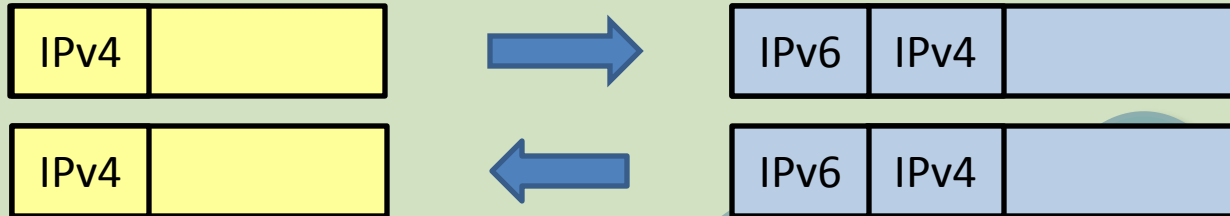
Network Configuration



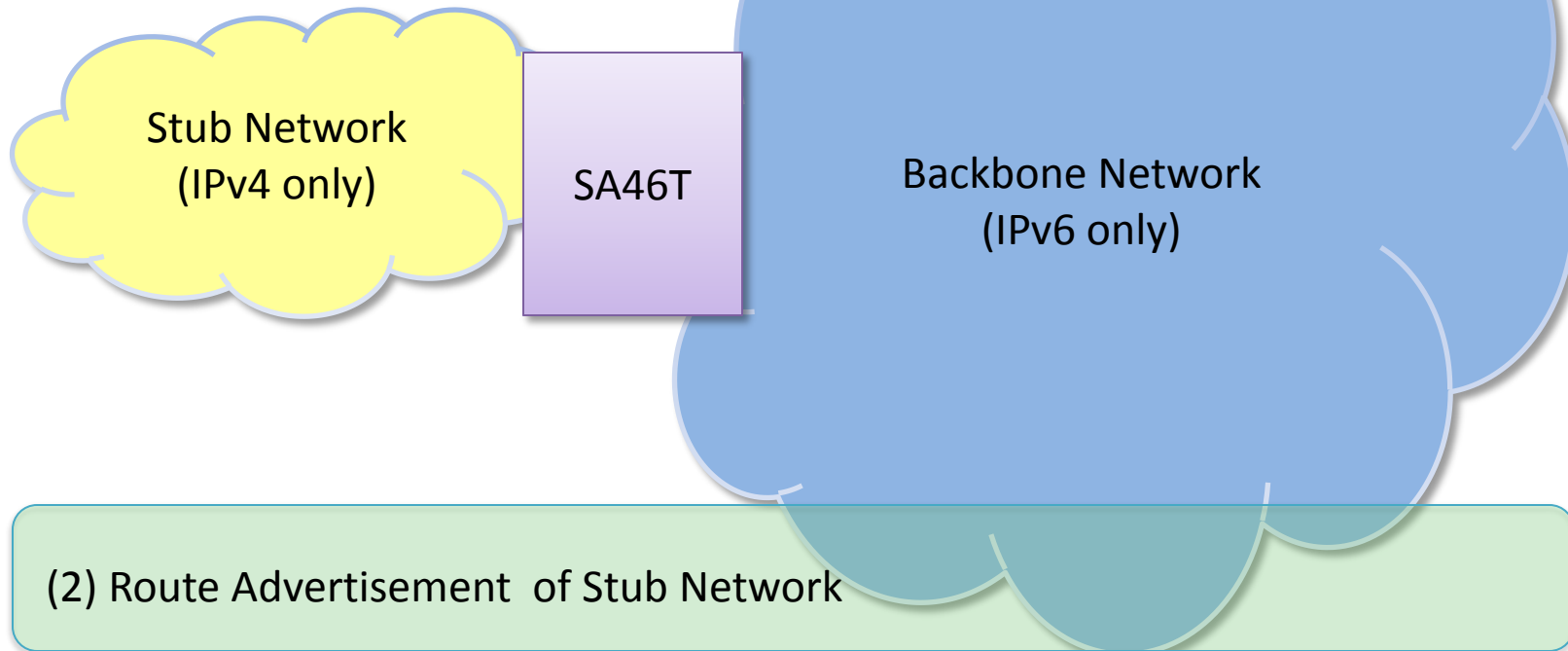
SA46T: Stateless Automatic IPv4 over IPv6 Tunneling

Function of SA46T

(1) Encapsulation / Decapsulation of IPv4 packet



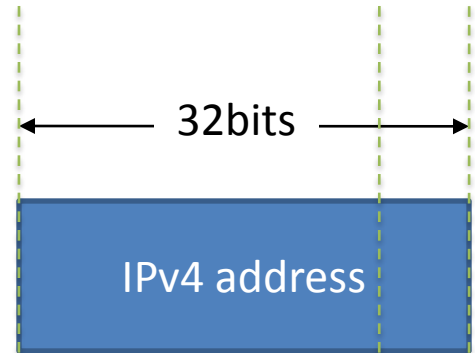
(1-1) Return ICMP Packet too big message (if exceed MTU)



(2) Route Advertisement of Stub Network

SA46T address architecture and routing

■ IP address of inner IPv4 header



← /24 →

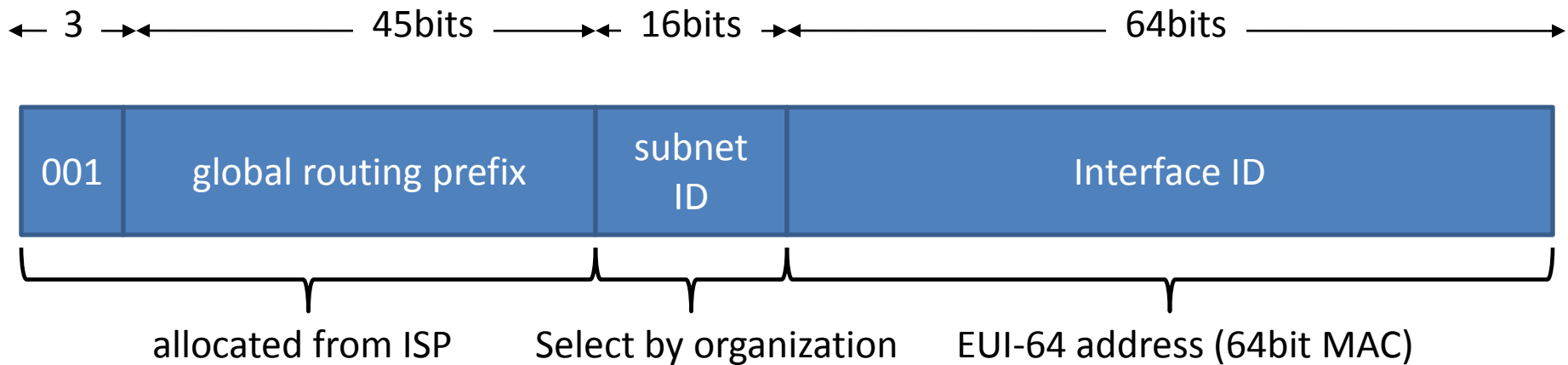
■ IP address of outer IPv6 header (SA46T address)



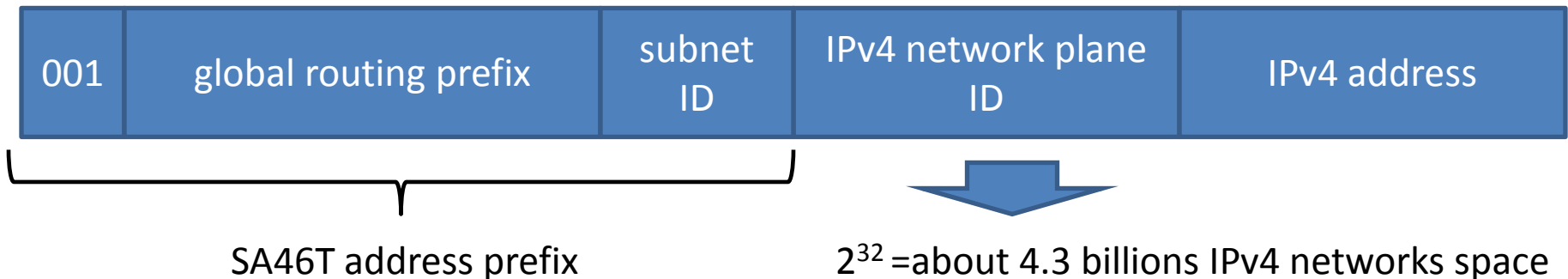
← /120 →

Example of SA46T address format

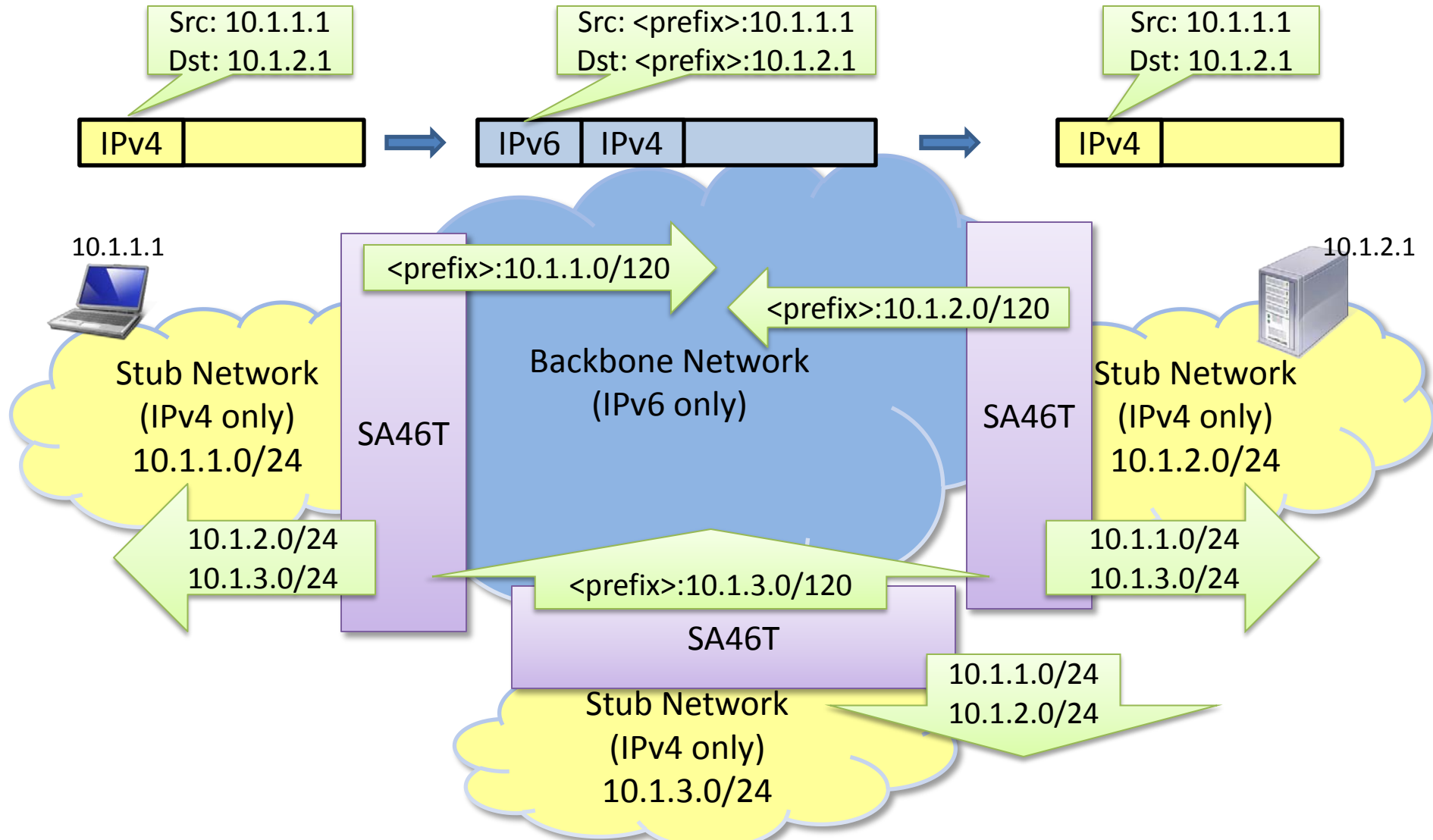
IPv6 Global Unicast Address Format(RFC3587)



SA46T address Use part of global address space (e.g. one subnet)



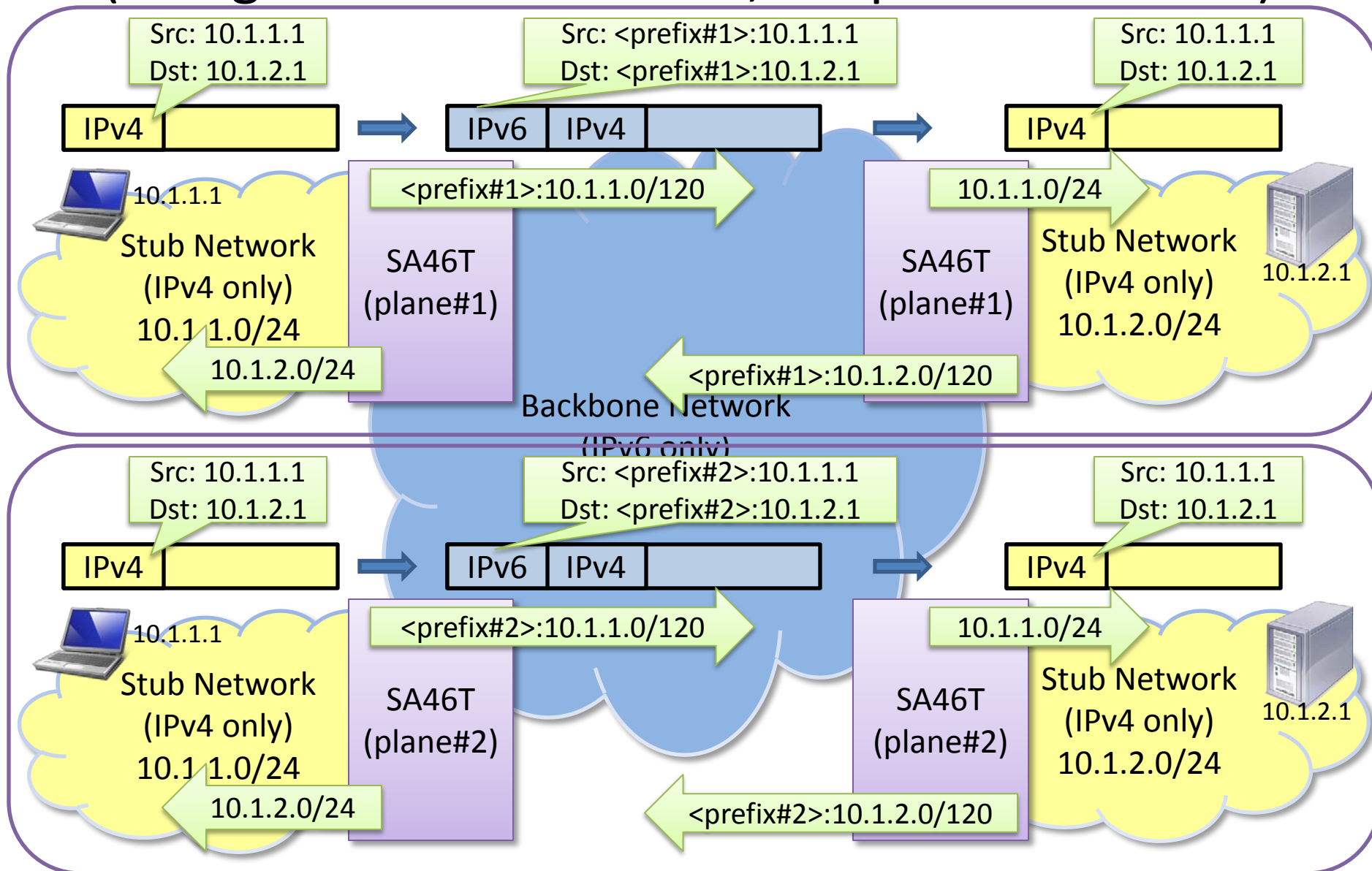
Route Advertisement



<prefix>: 001+global routing prefix + subnet ID + IPv4 network plane ID

Stacking Multiple IPv4 Networks

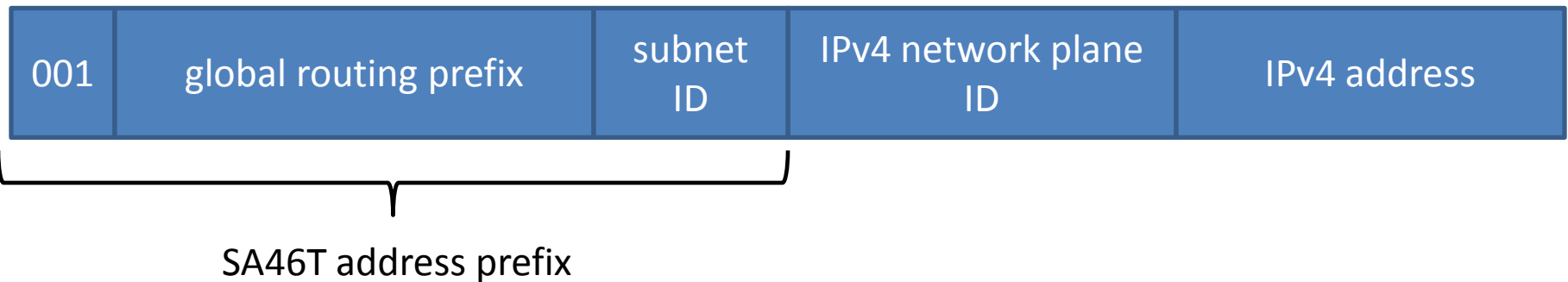
(Using same IPv4 Address, i.e. private address)



Configuration of SA46T

- SA46T address prefix + IPv4 network plane ID
- Prefix Length

SA46T address (in case use part of Global address)



Summary

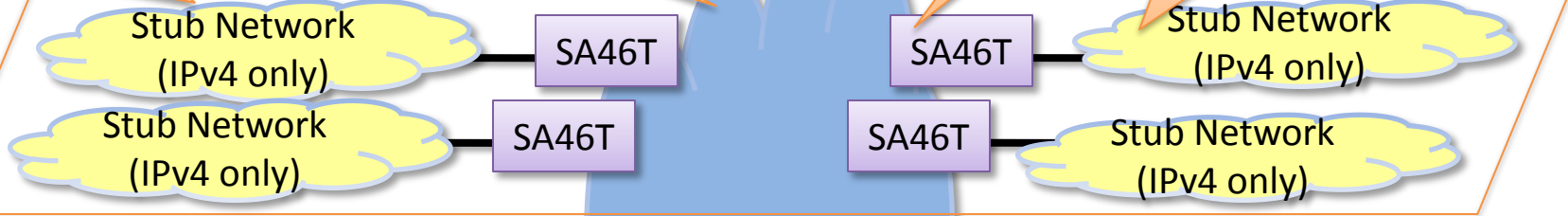
(1) Reduce operation cost by IPv6 only

(2) Reallocate IPv4 addr from B.B. to Stub

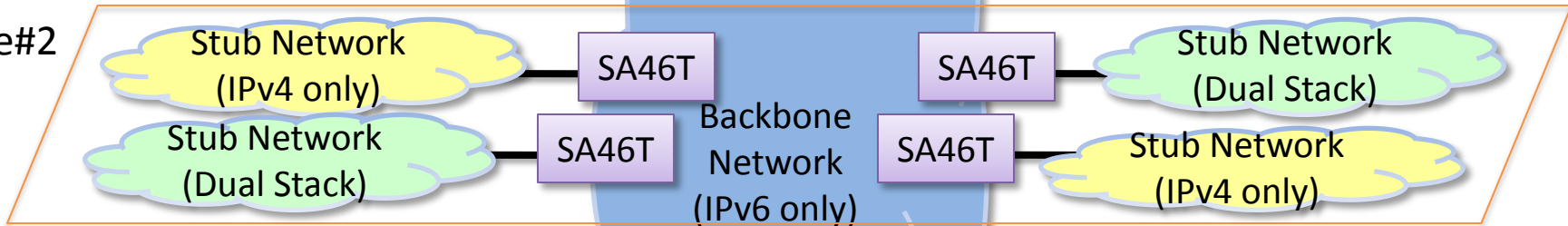
(4) No special protocol

(3) Less configuration

plane#1



plane#2

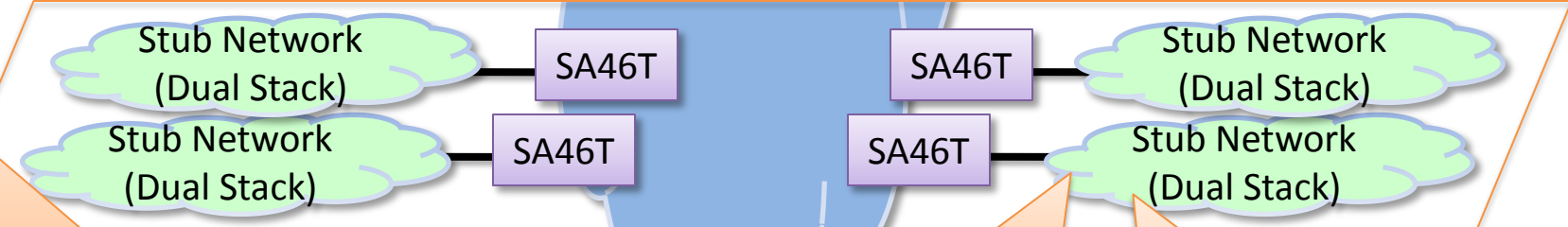


:

:

:

plane#n



(6) Stacking IPv4 Private networks

(5) No dependence with L2

(8) Provide Redundancy

(7) Easy stop IPv4 operation (just remove SA46T)

Applicability of SA46T

- IPv6 only Campus / Enterprise / ISP Backbone Network
 - Possible transition scenario, edge based solution
 - Interoperable between AS with SA46T Global Address
- IPv4 VPNs over IPv6 backbone
 - Pure L3 solution, can mix different L2 (wire and wireless)
 - Over 4096 possible, 4.3 billion with 32bits plane ID
 - Inter AS VPN with SA46T Global address
- IPv4 address reuse (IPv4 address sharing)
 - Possible solution for IPv4 Global address running out
 - Can reuse Net10 in each IPv4 plane
 - 4.3 billion IPv4 plane with 32bits plane ID

Next Step

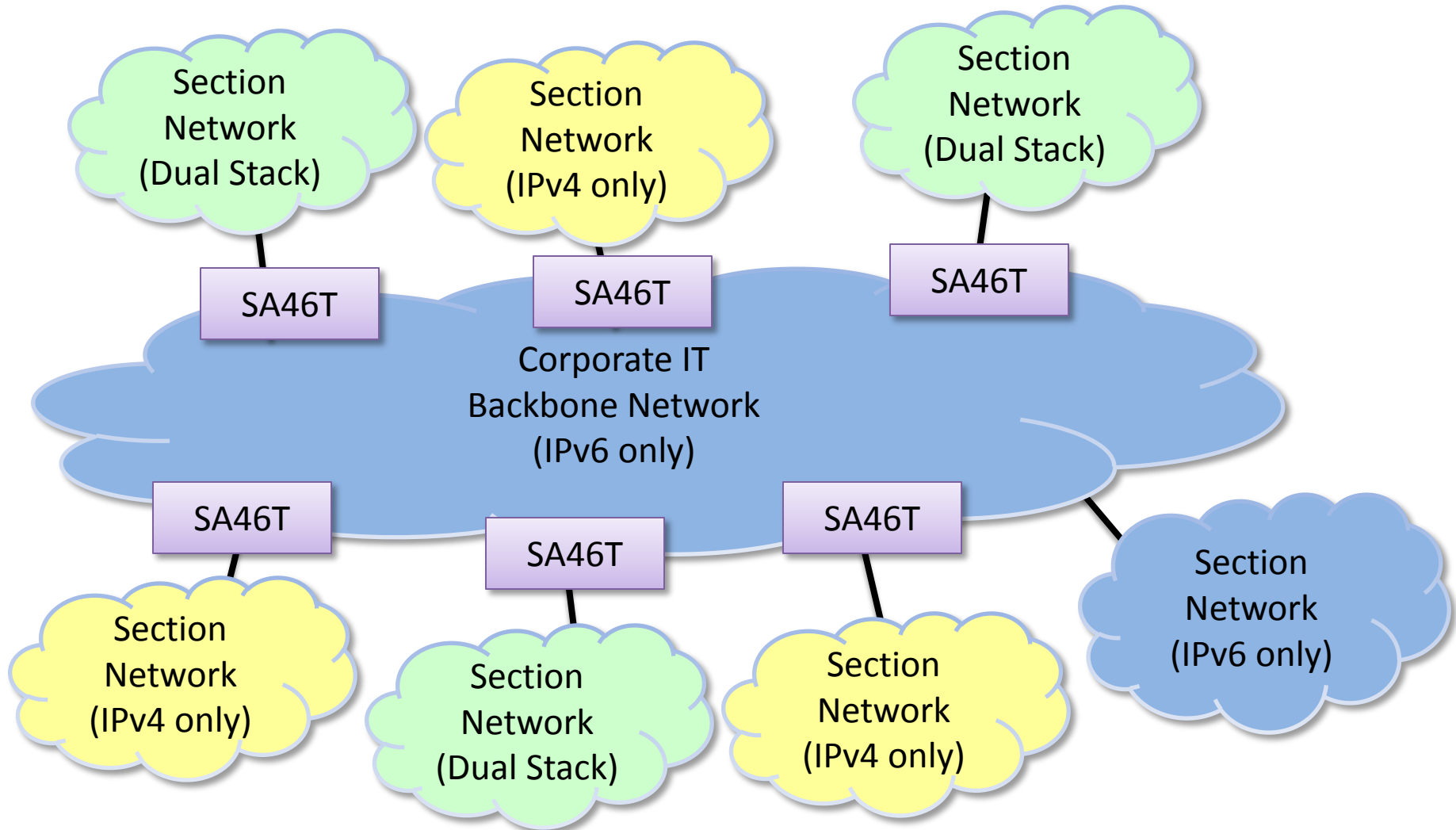
- Update SA46T spec document as seed technology
 - Reflects comments
- Planning to submit SA46T Applicability documents, and compare with other methods
 - IPv6 only Enterprise / Campus / ISP Network
 - VPN
 - IPv4 address reuse (Stacking networks with Private address)
 - SA46T Global address
 - draft-matsuhira-sa46t-gaddr-00.txt
 - other ?
- Interests?
 - WG documents ?

IPv4 Networks as IPv6 application

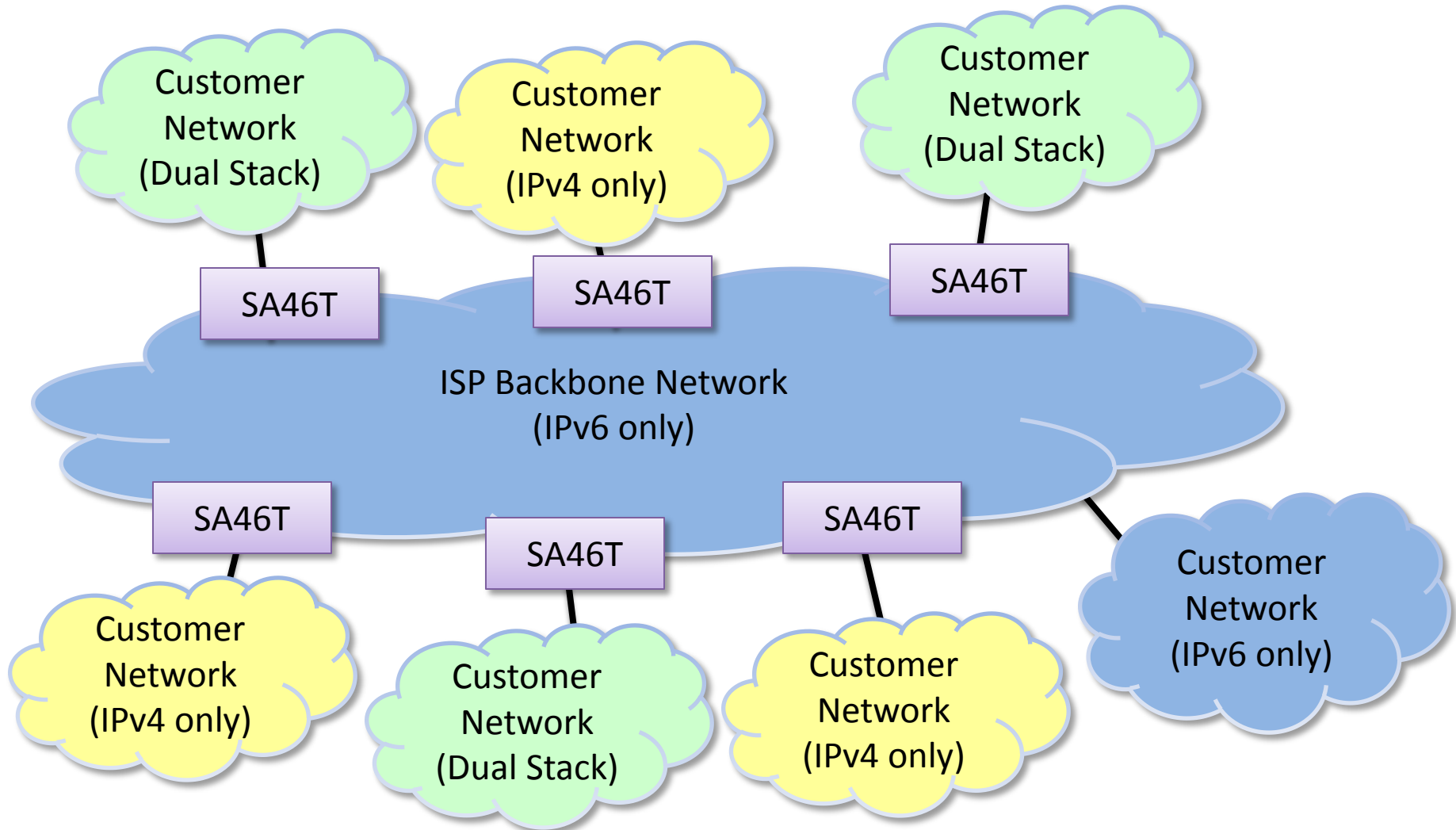
provided by SA46T

Prepare for questions

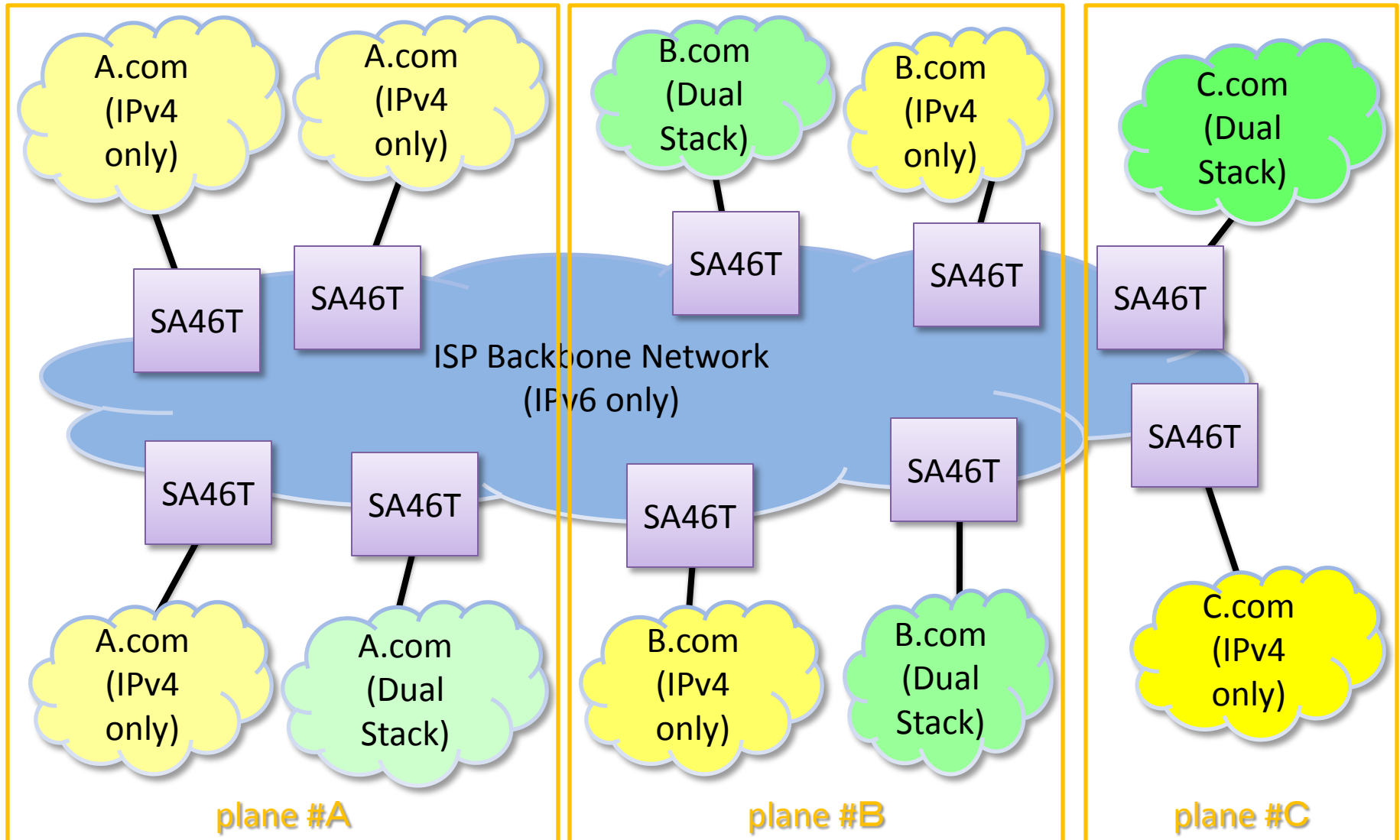
Enterprise / Campus Network



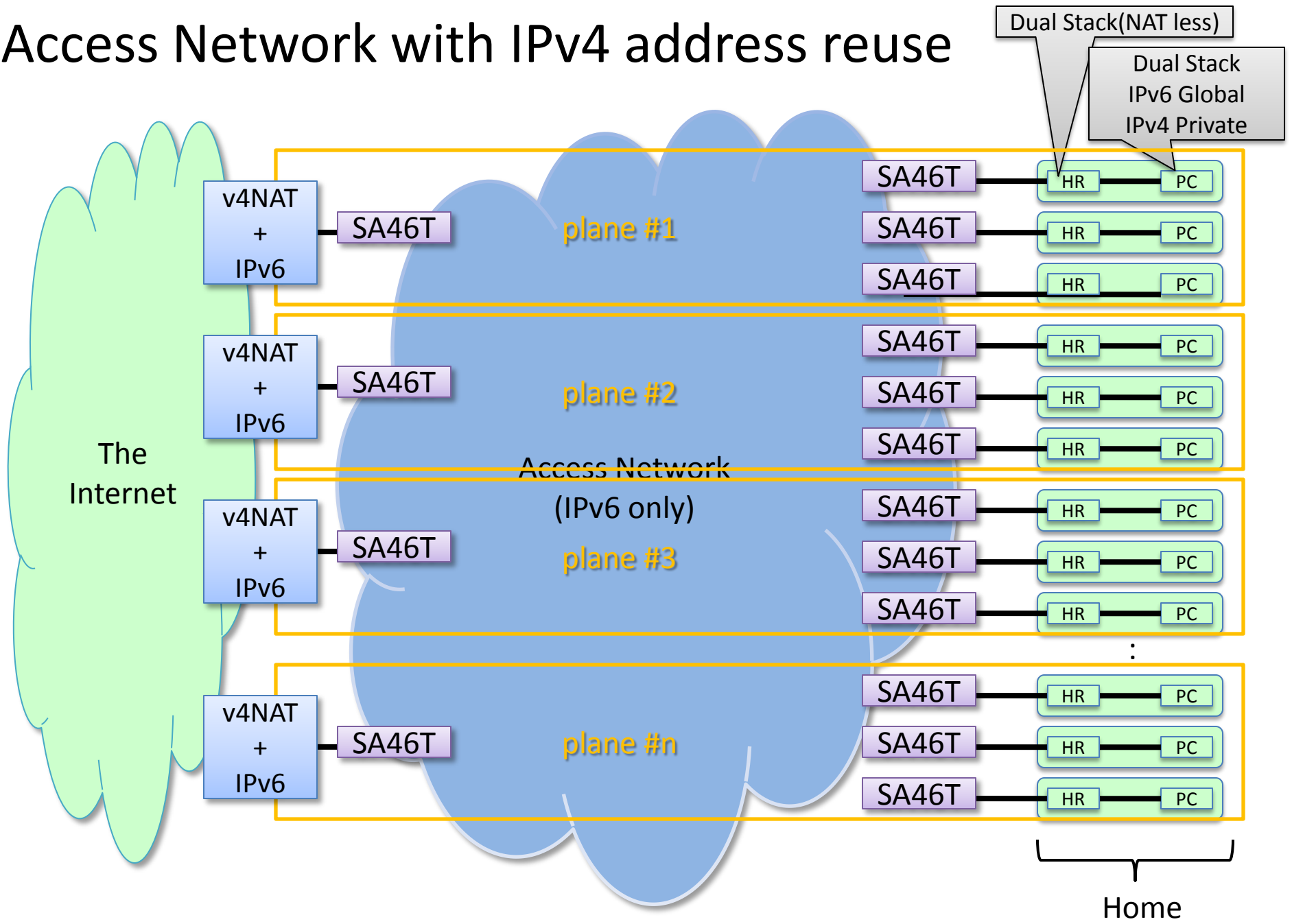
ISP Backbone Network



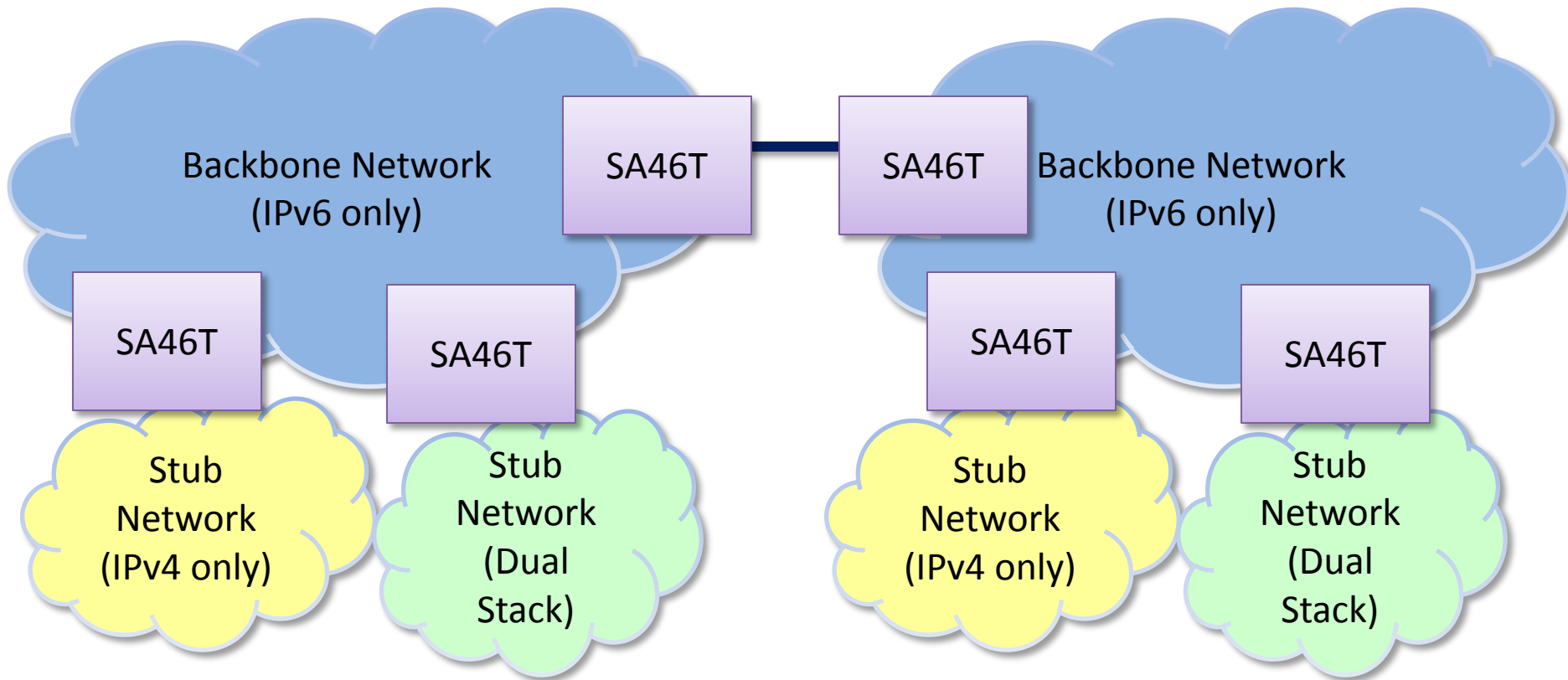
VPN service by ISP



Access Network with IPv4 address reuse



Network Configuration without Global SA46T address



Network Configuration with SA46T

Global address

