

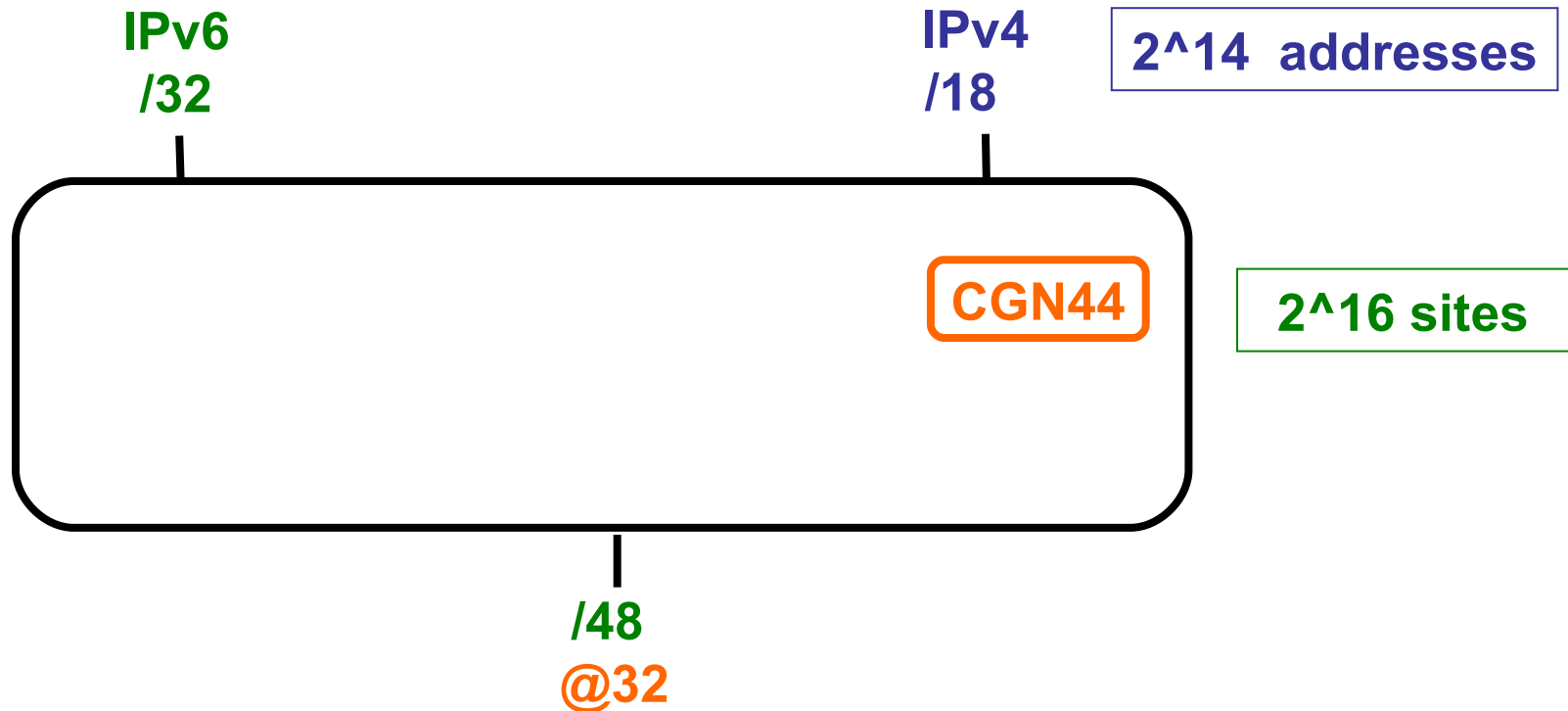
Port-Range based IPv4 address space extension A static approach based on SAM

draft-despres-sam-02 - sections 3.7 & 4.2

Objectives and scope limitation

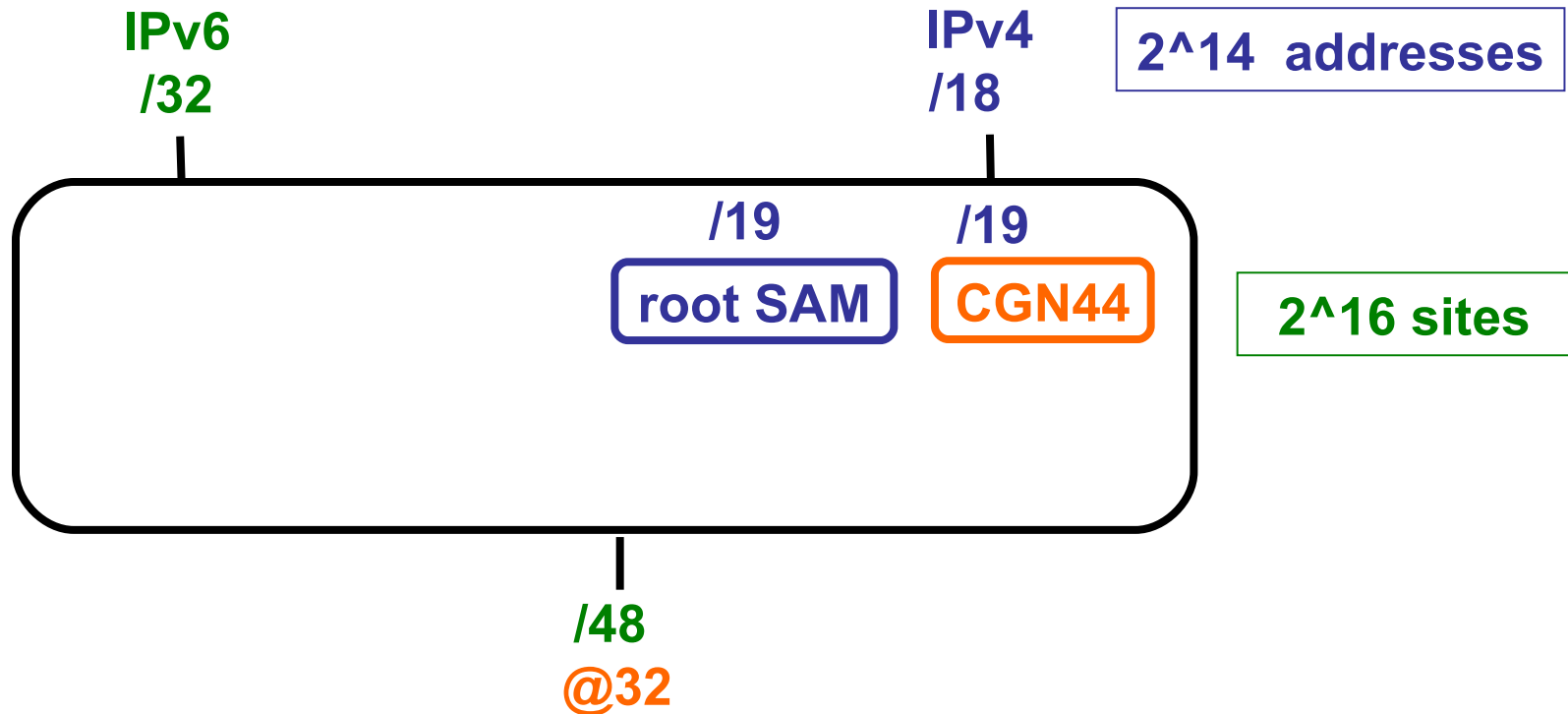
- **No regression (coexistence with NATs)**
- **ONLY STATELESS PROCESSING**
- **Moderate address space multiplication factor (only a transition tool)**

ISP network example



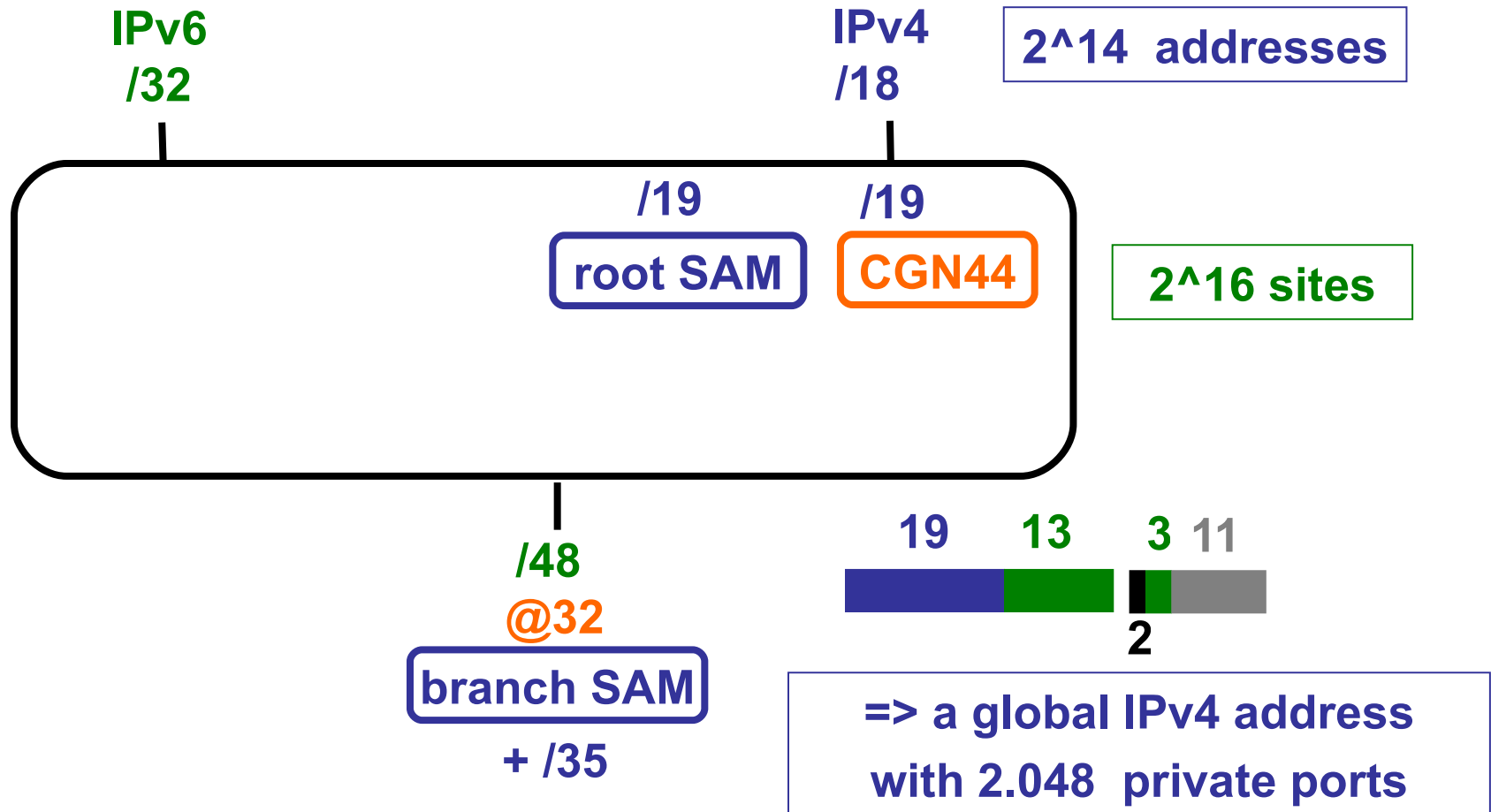
Initial configuration

ISP network example



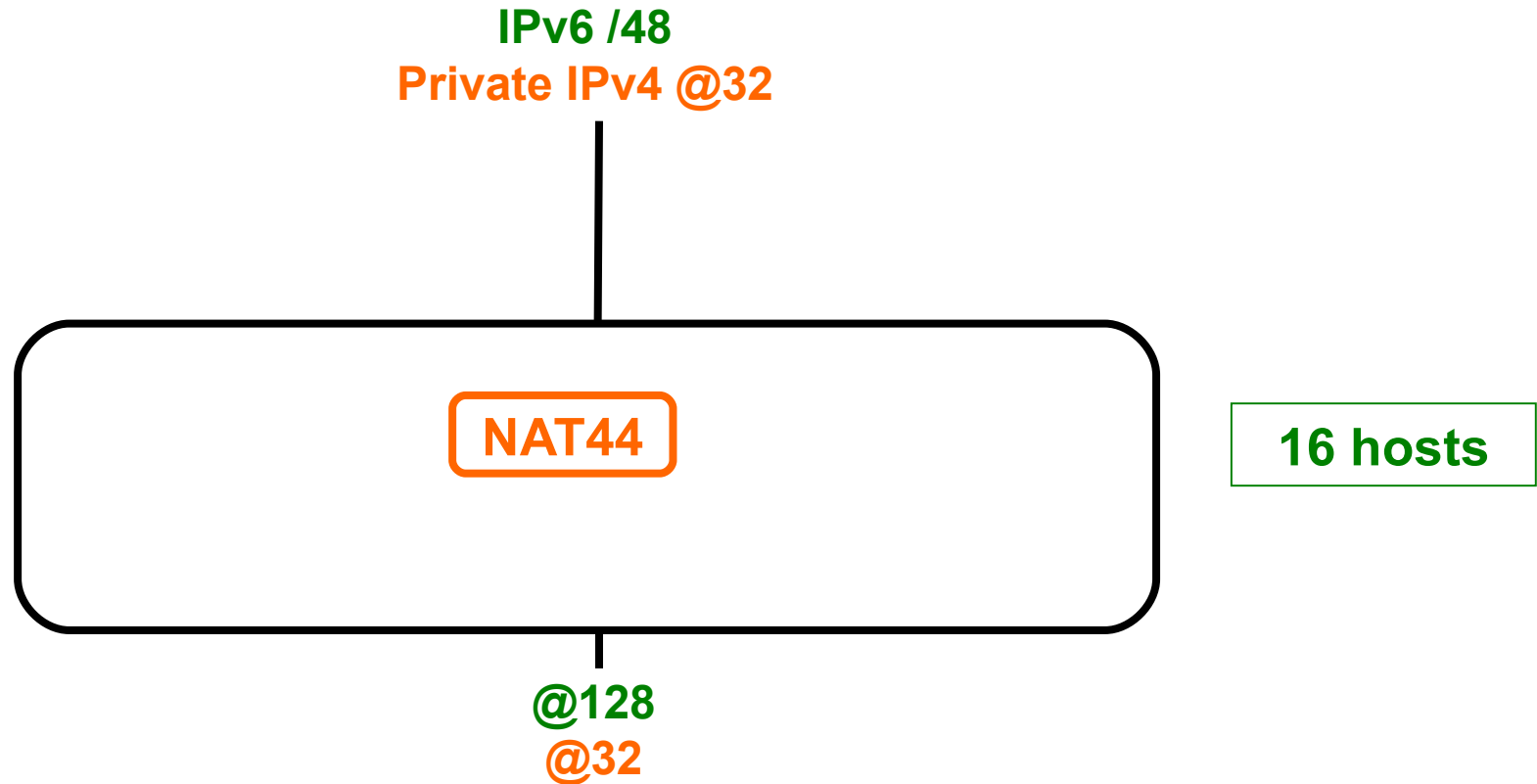
IPv4 space shared by the CGN44 and a SAM

ISP network example



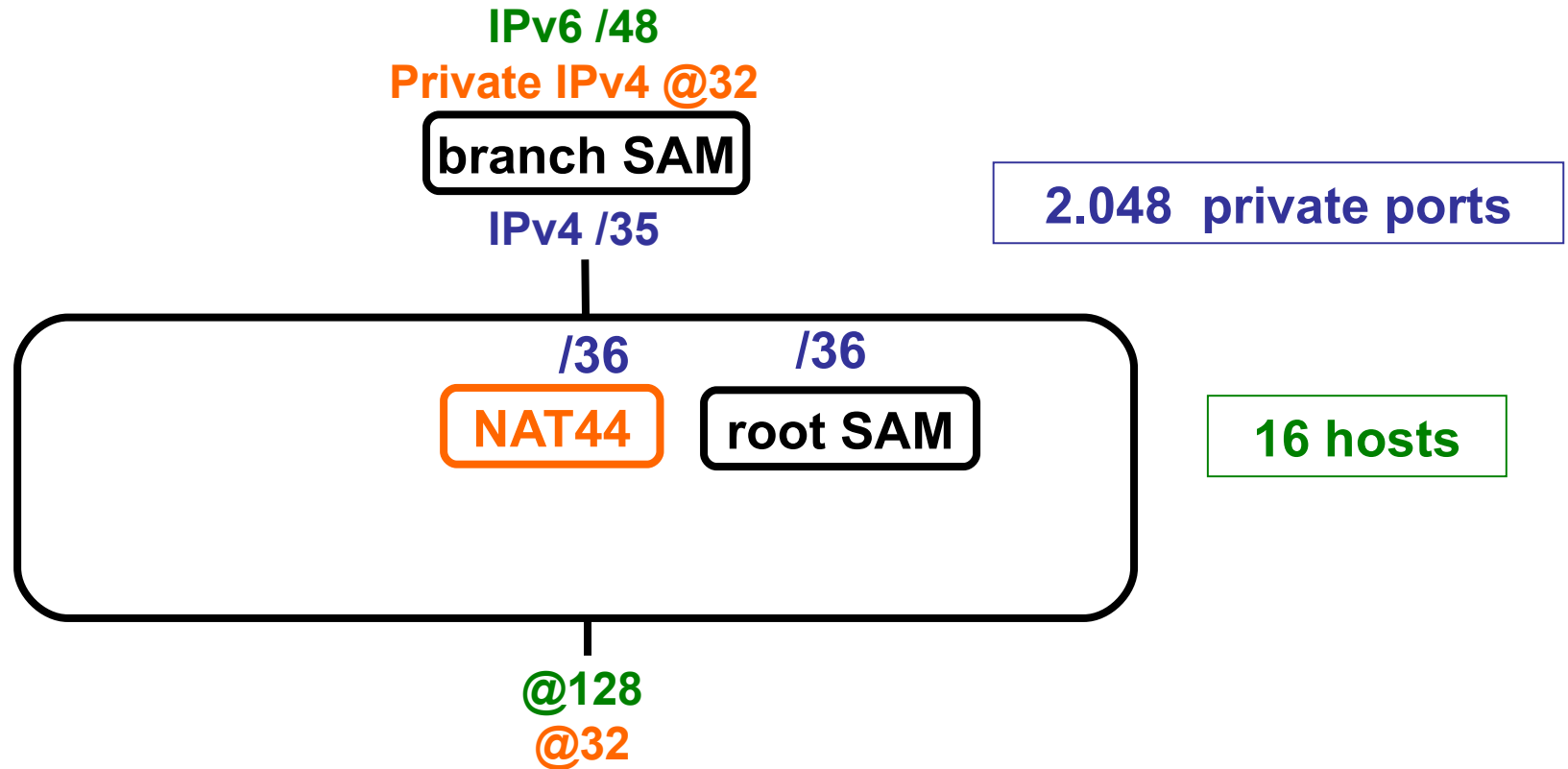
SAM-capable sites don't depend on CGNs

Home site example



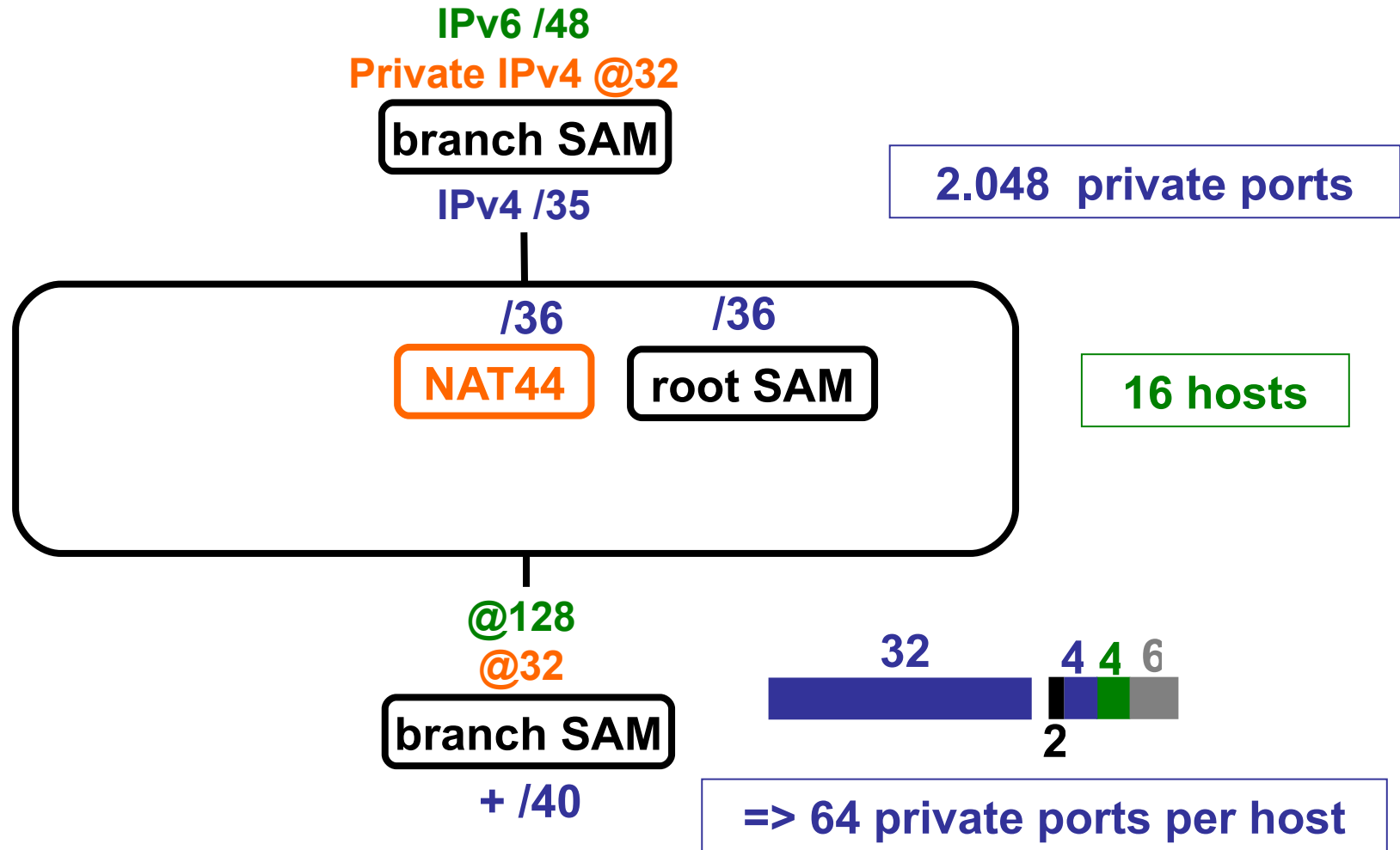
Initial configuration

Home site example



IPv4 space shared by the NAT44 and a SAM

Home site example



SAM-capable hosts avoid all NAT traversals

With IPv6 activated, less and less IPv4 ports will be needed

Real example with GoogleMap being used (Netstat on a Mac)

		Proto	Recv-Q	Send-Q	Local Address	Foreign Address	(state)
IPv4	{	tcp4	0	0	192.168.0.10.49410	ww-in-f136.google.http	CLOSE_WAIT
		tcp4	0	0	192.168.0.10.49409	ag-in-f100.google.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49408	ag-in-f100.google.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49407	209.85.227.136.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49405	209.85.227.91.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49403	209.85.227.136.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49401	209.85.227.91.http	ESTABLISHED
		tcp4	0	0	192.168.0.10.49399	209.85.227.91.http	ESTABLISHED
IPv6	{	tcp6	0	0	2a01:e35:8a6d:d9.49398	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49397	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49396	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49395	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49394	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49393	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49391	2001:4860:a003::80	ESTABLISHED
		tcp6	0	0	2a01:e35:8a6d:d9.49390	2001:4860:a003::80	ESTABLISHED
Localhost	{	tcp6	0	0	2a01:e35:8a6d:d9.49389	2001:4860:a003::80	ESTABLISHED
		tcp4	0	0	localhost.netinfo-loc	localhost.999	ESTABLISHED
		tcp4	0	0	localhost.999	localhost.netinfo-loc	ESTABLISHED
		tcp4	0	0	localhost.netinfo-loc	localhost.1005	ESTABLISHED
		tcp4	0	0	localhost.1005	localhost.netinfo-loc	ESTABLISHED

4 IPv4 addresses, and 2 TCP / address => 2 ports could be enough for 17 TCP

Also: BitTorrent is better in IPv6 (incoming connections on non shared ports)

Thank you

"Simplicity is the ultimate sophistication"
Leonardo da Vinci