

JANOG Softwire WG activity

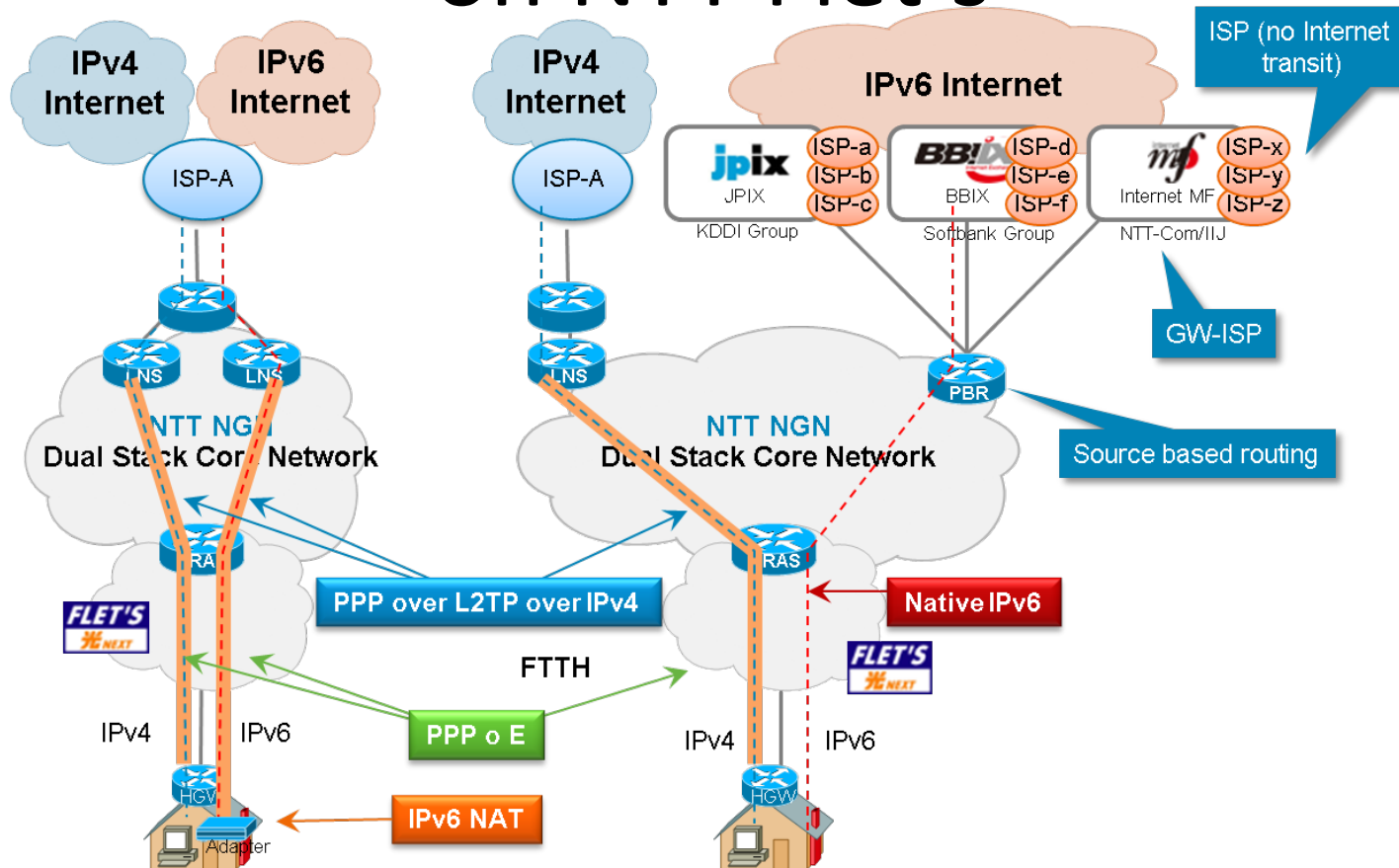
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What is JANOG?

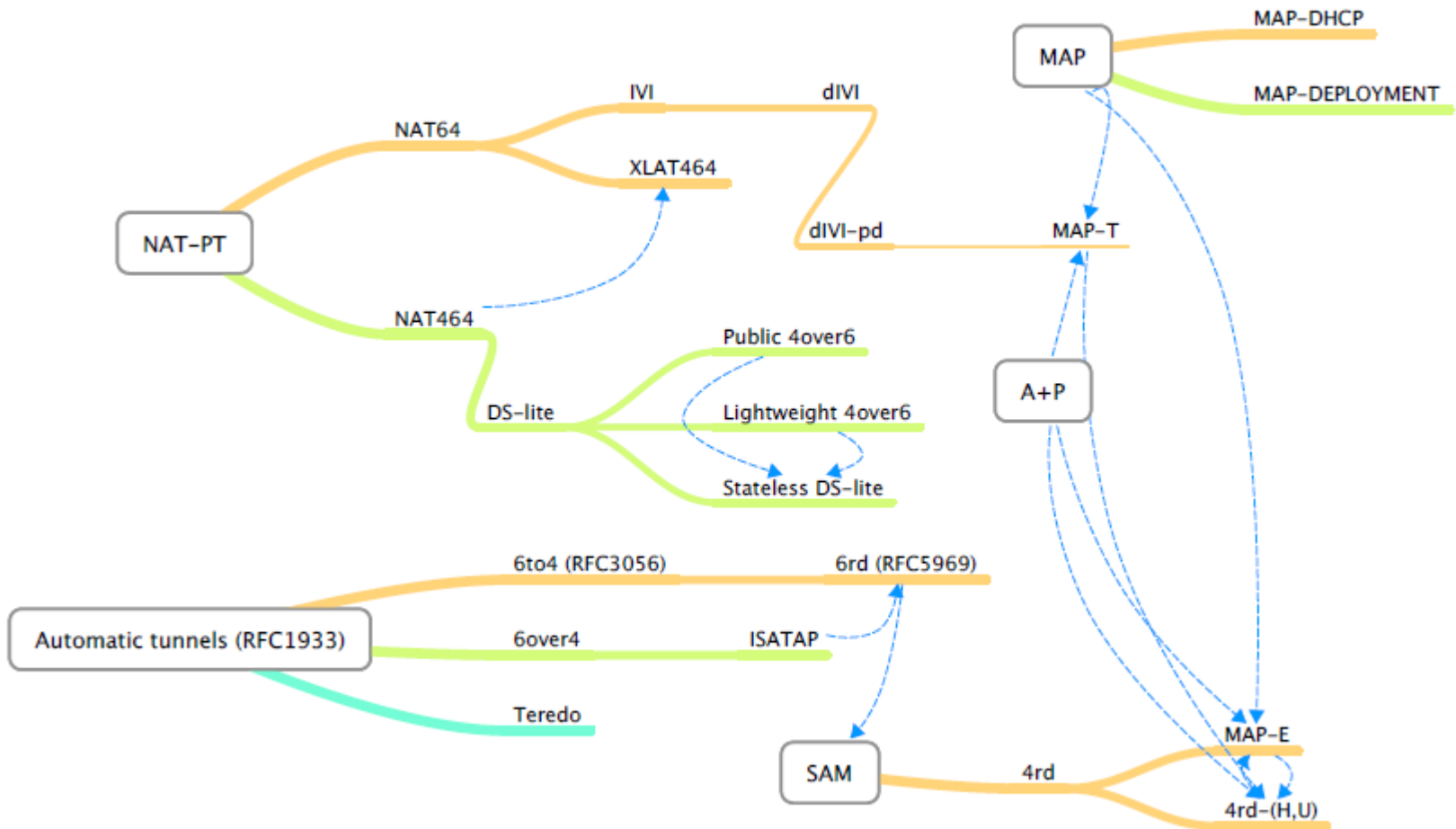
- JApan Network Operators Group
- JANOG has been established since 1997.
- 2 Major Activities
 - Mailing list janog@janog.gr.jp +6200 subscribers
 - 2 Meetings per year
- Can make Working Group to focus specific technology in short term

JAPAN IPv4&IPv6 Internet Service on NTT Flet's



- ISP providing 2 type IPv6 internet model.
- GW ISP is considering how to provide IPv4 internet .They announced use SAM based?? standard technology.
 - http://www.jpix.ad.jp/jp/pdf/20100831_001.pdf

IETF Softwire history



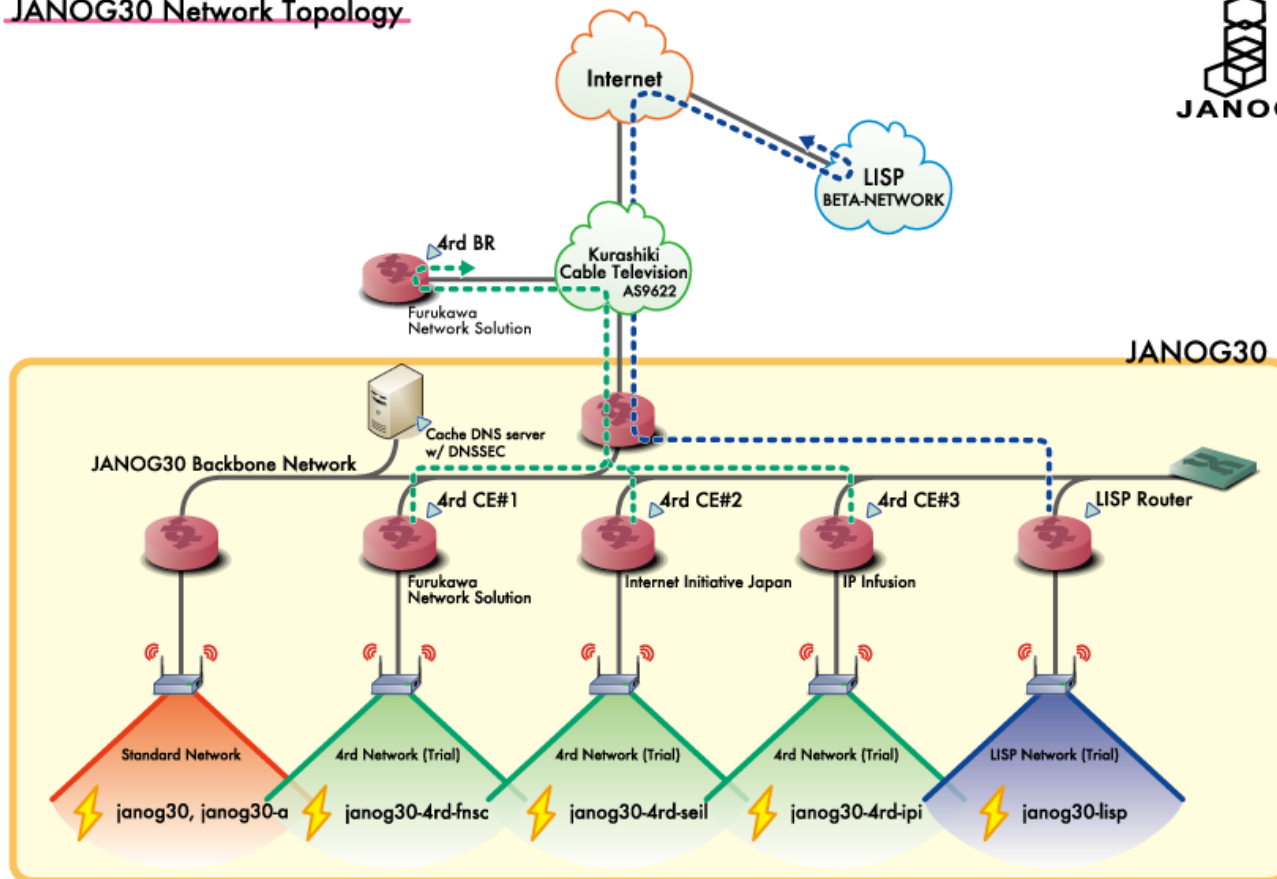
<http://www.ietf.org/proceedings/83/slides/slides-83-softwire-10.pdf>

What happen JANOG30?

- Thinking about IPv4 in an IPv6 era ~Chapter 2~
 - Sato-san tested STUN tools on WIDE camp, and he requests support RFC4787 for online game.
- Is this all right with 4rd? ~Struggle with standardization, implementation and operation~
 - Satoru-san explained IETF standard process delays.

But...

JANOG30 Network Topology



BR: Border Relay, CE: Customer Edge

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- JANOG conference network used (old) 4rd technology
- FNSC, IJ(SEIL), IPinfusion(IPI)

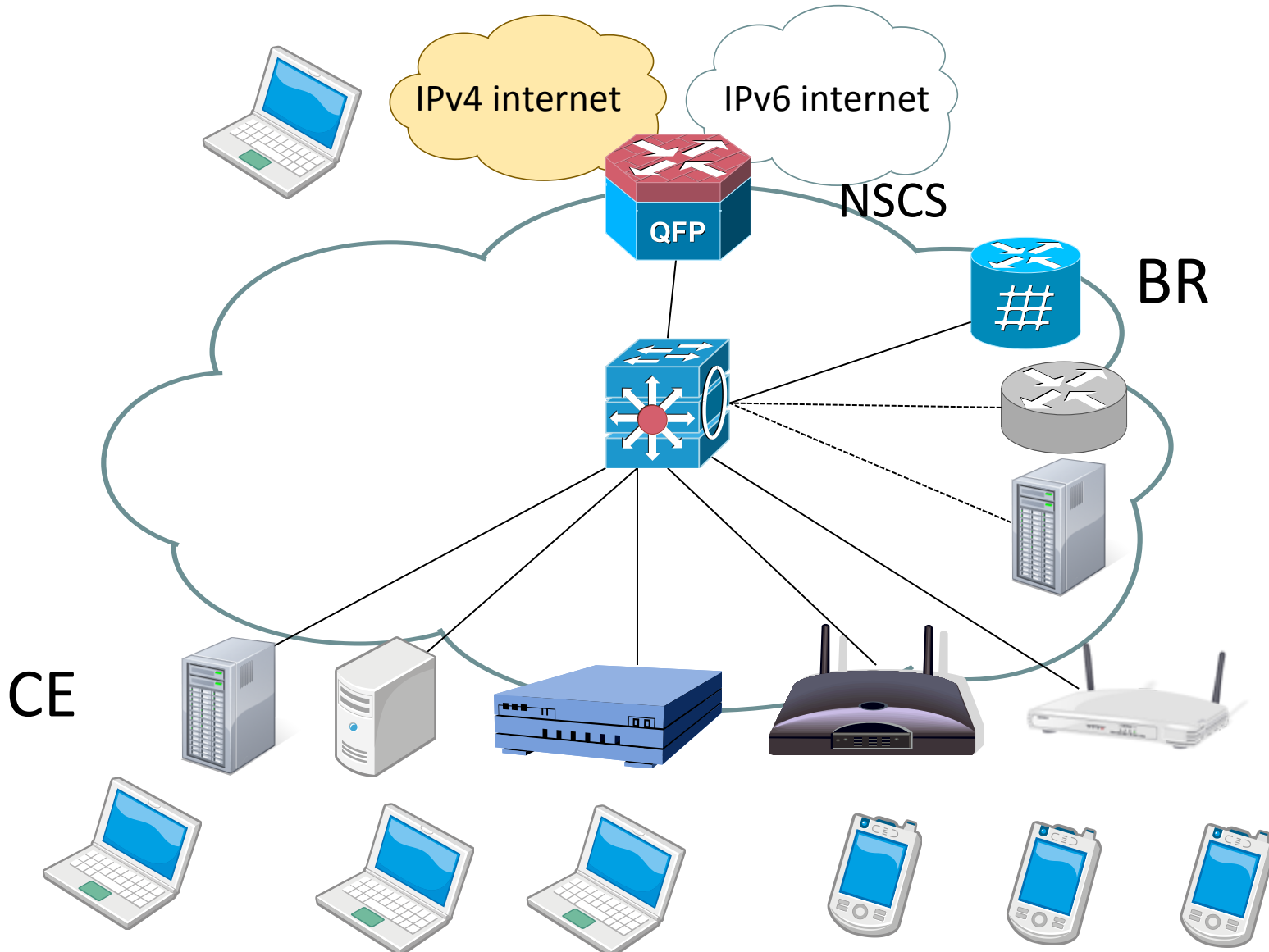
inconsistency in there

- Many vendor supported 4rd
- But 4rd already obsoleted and standard process delayed
- Application tested also not completed ..

JANOG Software WG

- JANOG decide to make software wg
- Target
 - Feedback operators comments to Standards community
 - acceleration IETF standard process

The interop event network topology



BR Participant list

Vendor	OS/Equipement
IP Infusion	Linux 2.6.18
	NetBSD 4.0.1
Furukawa Network Solution Corp.	FX5000
ASAMAP	Vyatta
Internet Initiative Japan Inc.	SEIL/X1
Cisco Systems	IOS-XR/ASR9000

- 5 vendors, 6 implementations

CE Participant list

Vendor	OS/Equipement
IP Infusion	Linux 2.6.18
	NetBSD 4.0.1
Furukawa Network Solution Corp.	F60W
ASAMAP	Vyatta
Internet Initiative Japan Inc.	SEIL/X1
CERNET	OpenWRT
Yamaha Corporation	RTX1200

- 6 vendors, 7 implementations
- Total 7 vendors , 9 implementations

Implementation Report *cont'd*

- Security mechanism
 - ask consistency checks between IPv4 and IPv6 src on BR/CE Section 13 of [I-D.ietf-softwire-map].
- Provisioning method
 - all of attendee only support manual configuration.
 - There is difference configuration type for “Length of EA bits”
- Reachability to BR address
 - 3BR can confirm reachability of BR address
 - 2BR can not confirm reachability of BR address but can confirm reachability of BR’s interface address.

Difference configuration type for “Length of EA bits”

Rule IPv6 prefix:	2403:9200::/32
Rule IPv4 prefix:	203.86.225.0/28
EA bits:	16bit(48-32)
Port-Set ID:	12bit
PSID offset:	4
BR IPv6 address:	2403:9200:fff0:0::2



```
# set interfaces map map0 role br
# set interfaces map map0 br-address 2001:db8::1/64
# set interfaces map map0 default-forwarding-mode translation
# set interfaces map map0 default-forwarding-rule true
# set interfaces map map0 rule 1 ipv6-prefix 2001:db8:89ab::/48
# set interfaces map map0 rule 1 ipv4-prefix 192.0.2.0/24
# set interfaces map map0 rule 1 ea-length 16
```

useful for operation and trouble shooting

```
service cgn JANOG
service-location preferred-active 0/0/CPU0
service-type map-e Software
cpe-domain ipv4 prefix 203.86.225.0/28
cpe-domain ipv6 prefix 2403:9200::/32
sharing-ratio 12
afttr-endpoint-address 2403:9200:fff0::2
contiguous-ports 0
```

easy to understand design

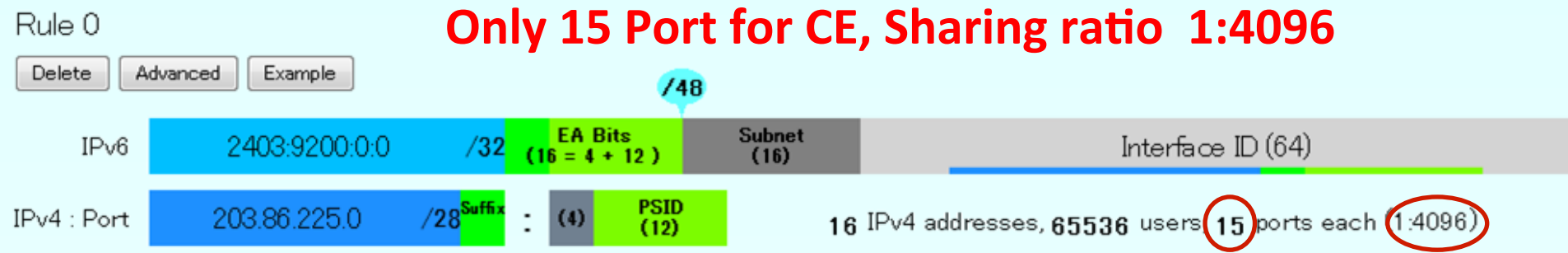
- Appendix 2 all of configuration

Test Parameter

MAP-E

Parameter	Value
Rule IPv6 prefix	2403:9200::/32
Rule IPv4 prefix	203.86.225.0/28
End-user IPv6 prefix	2403:9200:fff1::/48 - 2403:9200:fff7::/48
EA bits	16bit(48-32)
Port-Set ID	12bit
PSID offset	4
BR IPv6 address	2403:9200:fff0:0::2
Topology	Mesh

Only 15 Port for CE, Sharing ratio 1:4096



Test Parameter MTU

Parameter	IPv6 MTU	TCP MSS clamp	Tunnel IF IPv4 MTU
Value	1500byte	Enable	1460byte



Not 1280 byte

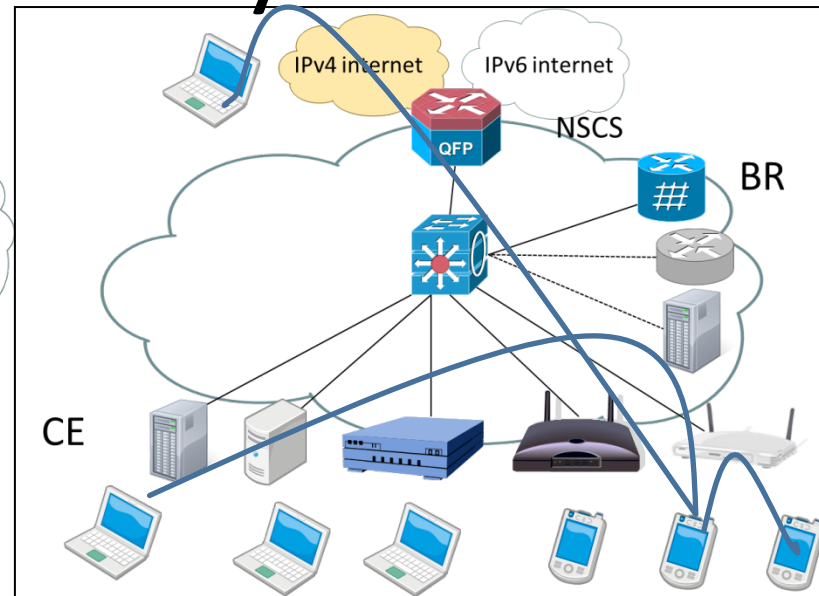
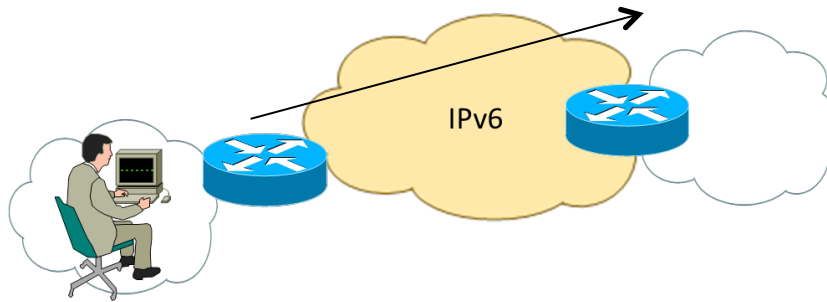
IPv4 functionality over IPv6

ICMP



- With Identifier message for CE/BR
- Null Identifier message for BR

IPv4 functionality over IPv6

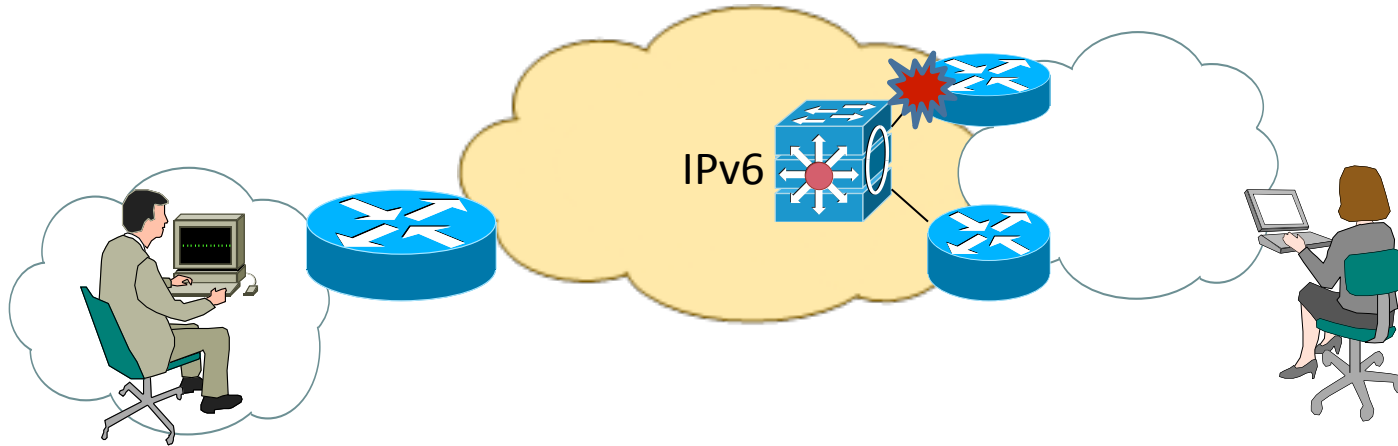


- VPN(IPSec VPN,SSL VPN,PPTP,L2TP),FTP(Port/PASV)
- Instant Messaging ,VoIP and Video
- NAT Verification tool
 - KONAMI [RFC4787] verification tool
 - NAT-Analyzer(TUM)

Issue of IPv4 functionality

- Even DNS query occupy NAT table(only 15)
 - UDP/DNS timeout immediately
 - DNS transport proxy ,[section-3 of \[I-D.draft-dec-stateless-4v6\]](#)
- Implicit IPv6 MTU limitation(1280byte)
 - could not browse, could not video chat
 - should well-managed, [section 10.1 of \[I-D.ietf-softwire-map\]](#)
- All of vendor support NAT Traversal
- Most of modern message tools are succeed
- NAT-verification tool and FTP(ACTV) result depends on implementation of NAT.

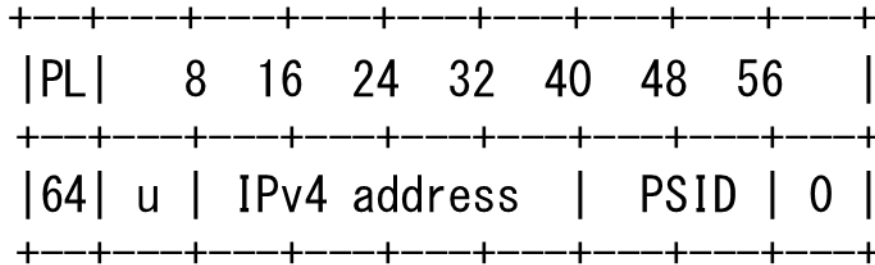
BR redundancy



- Confirmed BR redundancy by routing convergence
- Skype session kept, could communicate after converged

Interoperability

The IPv6 Interface Identifier



Wrong :2403:9200:fff6:0:cb:56e1:fff:6000
Correct: 2403:9200:fff6:0:cb:56e1:f0f:f600

- mis-understanding “left-padding” and “right-padding”
- If it could add example to explain format in Section 6, then it would be more understandable.
- NOTE: The format was changed from 03 to be more simply

Conclusion of interop test

- Many vendors already supported MAP-E.
- No critical interoperability issue between multivendor CE and CE, CE and BR, BR and BR.
- DNS transport proxy and MTU issue already discussed on IETF and draft.

JANOG31 Softwire WG Activity

- MAP tutorial by Asama-san
- MAS cloud Service by Ohkubo-san, IJ, Asamap and IPI.
- Softwire WG Activity report as program
 - include BR redundancy demo

<http://www.youtube.com/watch?v=ulvAaSM9nPc>
- JANOG31 conference network
- KONAMI NAT verification tools provide

Summary of JANOG Software WG Activity

- Some issues was found on interop, but most of issues already fixed.
- MAP-E will be WGLC in IETF86
- Most of modem application could use in MAP-E environment
- Collaborate with ENOG, CERNET, IETF and APRICOT 😊