

IPv4 Address Literal in URL

draft-osamu-v6ops-ipv4-address-literal-in-url

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Remainder

- We introduced draft-00 in IETF 87 Berlin v6ops
- Proposed method
 - To use Literal IPv4 address in a DNS64/NAT64 network, Attach the special-use TLD to Literal IPv4 address
 - ex.) 192.0.2.10.TLD
 - Clients will query the Literal IPv4 address as regular FQDN
 - The auth DNS just removes .TLD and returns IPv4 address as A record
 - DNS64 will work and map IPv4 address into NAT64 prefix appropriately

Remainder

- Benefits
 - Just place a special TLD auth DNS server in somewhere
 - No need to survey NAT64 prefix by yourself
 - No need to calculate HEX expression by yourself
 - ex.) 192.0.2.10 -> YOUR:PREFIX::c000:020a
 - No need to update other things
 - libc, nat64 spec, dns64 spec, etc.
 - Operators can apply multiple NAT64 machines / prefixes
 - Simple browser plug-ins can be developed

A proof of concept implementation

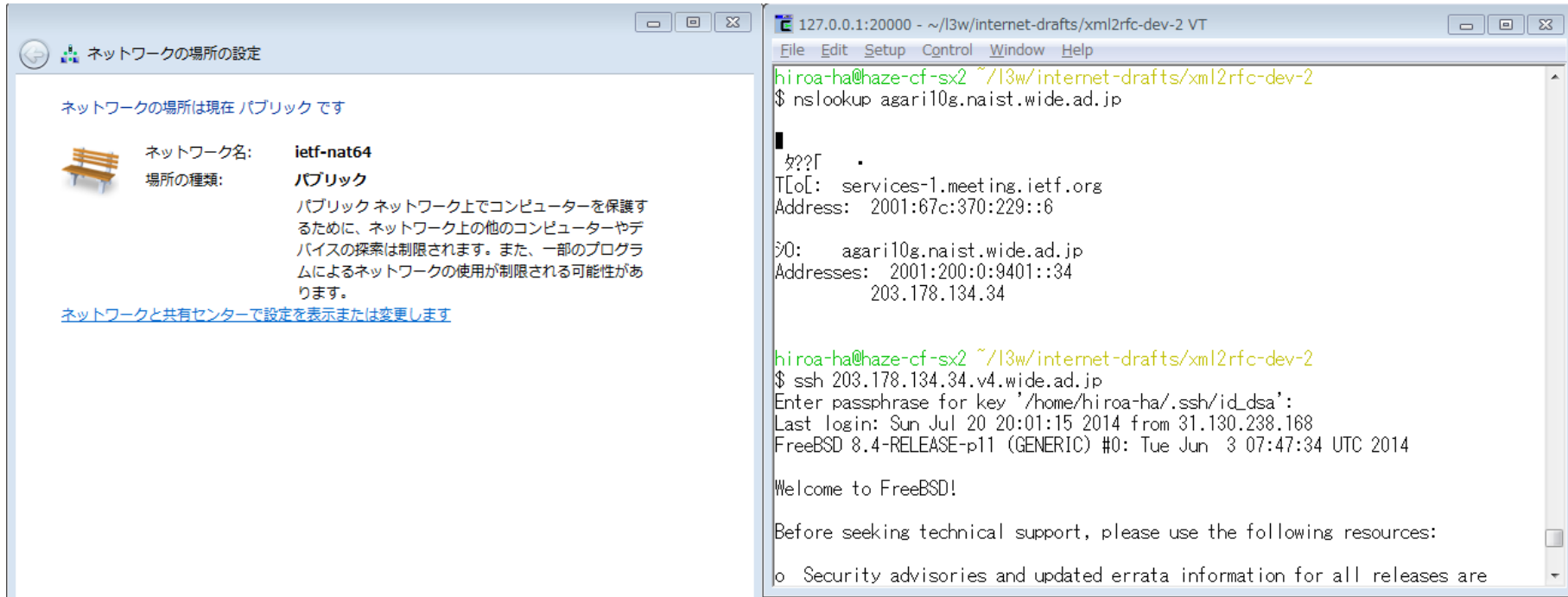
- **.v4.wide.ad.jp**

- A proof of concept DNS auth server about .TLD written in C & python
 - developed by Hirochika Asai (U-Tokyo, WIDE Project)
- You can access your IPv4 address server from ietf-nat64
 - `ssh <your server ipv4 addr>.v4.wide.ad.jp`

- **Google chrome plug-in**

- Developed by Hirotaka Nakajima (Keio Univ., WIDE project)
- Available as **IPv4 Address Literal Appender** in Chrome Web Store
- This plug-in automatically add specified .TLD to IPv4 address literal in url

Example in IETF90 ietf-nat64 wifi



The image shows two side-by-side windows. The left window is titled 'ネットワークの場所の設定' (Network Location Settings) and shows the network location set to 'パブリック' (Public). The right window is a terminal titled '127.0.0.1:20000 - ~/I3w/internet-drafts/xml2rfc-dev-2 VT' and shows the following commands and output:

```
hiroa-ha@haze-cf-sx2 ~/I3w/internet-drafts/xml2rfc-dev-2
$ nslookup agari10g.naist.wide.ad.jp
; <?xml?> .
T[O[: services-1.meeting.ietf.org
Address: 2001:67c:370:229::6

>0: agari10g.naist.wide.ad.jp
Addresses: 2001:200:0:9401::34
          203.178.134.34

hiroa-ha@haze-cf-sx2 ~/I3w/internet-drafts/xml2rfc-dev-2
$ ssh 203.178.134.34.v4.wide.ad.jp
Enter passphrase for key '/home/hiroa-ha/.ssh/id_dsa':
Last login: Sun Jul 20 20:01:15 2014 from 31.130.238.168
FreeBSD 8.4-RELEASE-p11 (GENERIC) #0: Tue Jun  3 07:47:34 UTC 2014

Welcome to FreeBSD!

Before seeking technical support, please use the following resources:

o Security advisories and updated errata information for all releases are
```

- 203.178.134.34 is my server's IPv4 address

Chrome Plug-in example

The image shows two overlapping browser windows. The left window displays the Chrome Web Store page for the 'IPv4 Address Literal Appender' extension, which is highlighted with a red box. The right window shows the extension's options page, where the 'Suffix' field is set to '.v4.wide.ad.jp' and a red arrow points to it. A 'Save' button is visible below the field.

Configuration
Set .v4.wide.ad.jp
And click save button

- Search **IPv4 Address Literal Appender** in Chrome Web Store

Chrome Plug-in example



- Soon redirect to actual web page
 - 163.22.18.230 is www.naist.jp 's IPv4 address

Evaluations of .v4.wide.ad.jp / plug-in

- NAIST DNS64/NAT64 wifi
 - my institute's network
- JANOG34 DNS64/NAT64 with ULA experiments
 - July 17 - 18, 2014 at Takamatu, Japan
 - The details were presented in yesterday by Ohara-san
 - Prof. Kitaguchi (Kanazawa Univ.), Mr. Kawakami (MFeed) mainly tested our plug-in and .v4.wide.ad.jp usage
 - Feedbacks from JANOG guys : works well, good solution!

Update Summary from -00 to -01

- We revised our draft in Jan 12, 2014 along with feedbacks from IETF 87 berlin
 - We prepared -01.txt for ietf 89 London
 - however, we forgot to reserve our presentation slot :p
 - and last week -01.txt was expired :0

Update Summary from -00 to -01

- Diff btwn -00 and -01
 - Simplify the DNS lookup / translation flow
 - Add references of other heuristics along with RFC7650, RFC7651
 - Add breaking connections with Apache virtual host env. pointed by CB in v6ops ML
 - Add consideration with HTTP/HTTPS cookie pointed by Erik Nyrgen and others in v6ops ML
 - Add related RFC about registering <.TLD> (RFC6761)
 - Update security considerations
 - DNSSEC, and the confidentiality against DNS service

Discussion

- Move to a working draft ?
- Shall we have common TLD for this ?
- Or define locally such as “.v4.wide.ad.jp” ?
- What common TLD recommended if we need it?
 - .host
 - .ipv4addr
 - .ip4.arpa
 - Any other candidates?
- DNSSEC support necessary ?
 - Sign on the fly required