IPv4 Address Literal in URL

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

Osamu NAKAMURA
Hiroaki HAZEYAZMA *
Akira KATO
Yukito UENO
@ WIDE Project

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

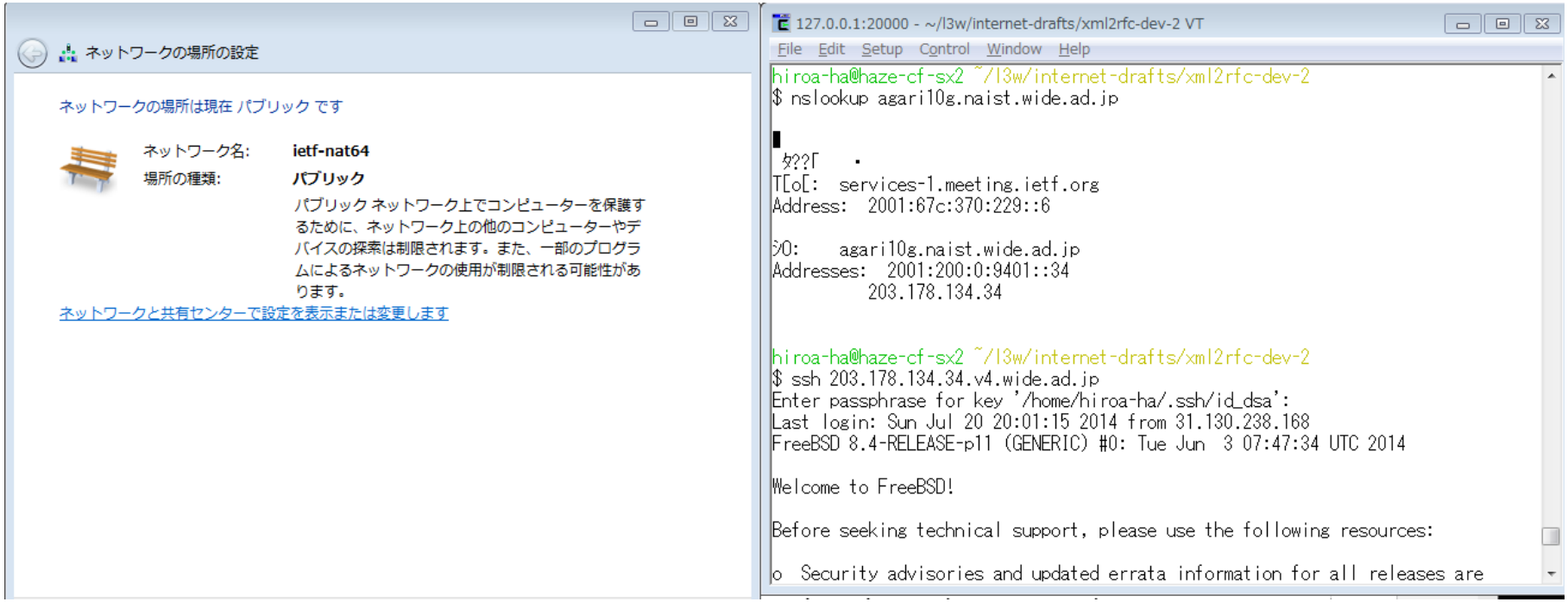
- Benefits
  - Just place a special TLD auth DNS server in somewhere
    - No need to survey NAT64 prefix by yourself
    - No need to calculate HEX expression by yourself
      - ex.) 192.0.2.10 -> YOUR:PREF::c000:020a
    - No need to update other things
      - libc, nat64 spec, dns64 spec, etc.
  - 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



- 203.178.134.34 is my server`s IPv4 address

Chrome Plug-in example

- 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