A Recommendation for IPv6 Address Text Representation

6man IETF75

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Brief review of IPv6 address notation

One single address can be text represented in many different flavors.

examples :

2001:0db8:0000:0000:abcd:0000:0000:0001
2001:db8:0:0:abcd:0:0:1
2001:db8::abcd:0:0:1
2001:db8:0:0:abcd::1
2001:DB8::ABCD:0:0:1
2001:db8:0:0:abcd::0:1

What problems arise?

- Searching for an address in .txt .xls etc
  - searching in text files, Excels, etc will be an endless battle (especially for non-engineers)
  - addresses written in diagrams are “plain texts” as well
  - traceroute results will not match your configuration repository, address management systems, etc

What problems arise?

- Log Parsing
  - daemon A tells me 2001:0db8:0000:0000:abcd:0000:0000:0001 but daemon B tells me 2001:db8::abcd:0:0:1

- Configuration Auditing
  - many tools are plain diffs.
  - if I switch to a different brand router, will I get a different output?

What problems arise?

- Customer support, outages
  - do we have the time to confirm if the address is 2001:db8::1:0:1 or 2001:db8:0:1::1 ?
  - we very often ask customers to report IP addresses, in times of trouble…

    I would be depressed if they gave me 2001:0db8:0000:0000:abcd:0000:0000:0001

Our thoughts

It would be nice to have a canonical format that

A. is fairly well widespread

B. fully compliant with RFC4291

C. human friendly

and have an informational document that can be referenced by wide variety of people (developers, operators, enterprise IT people, etc)

draft-kawamura-ipv6-text-representation-03

- Briefly describes the situation.
- Describe problems that can happen in the real world if operators are not careful.
- Proposes a canonical format .
- Notes on other informational issues about text representation.

The proposed idea

1. omit leading zeros in a 16 bit field
   ~~2001:0db8::0001~~ 2001:db8::1

2. :: used in places that shorten address the most
   ~~2001::1:0:0:0:1~~ 2001:0:0:1::1

3. if there's a tie breaker for rule 2, then shorten former zeros
   ~~2001:db8:0:0:1::~~1 2001:db8::1:0:0:1

The proposed idea

4. :: used to shorten all consecutive zeros
   ~~2001:db8::0:0:1~~ 2001:db8::1

5. :: when there are more than two zero fields
   ~~2001:db8::1:2:3:4:5~~ 2001:db8:0:1:2:3:4:5

6. lower case preferable

checked with traceroute, ifconfig, ipconfig, on major PC operating systems

Status now

- draft-kawamura-ipv6-representation-03.txt
  - update to -03 was done based on ML discussions.

- Recent discussions on the 6man list (and other WGs)
  - couple of pending editorial fixes.
    thanks to everyone that commented!

  - discussions on addresses that can be written in hex/decimal mixed notations .
    -> most seems to be in favor of mixed (If possible)
    -> some editorial fixing needs to be done.

- What next?

Frågor?
Kommentarer?

Thank you!!!