Naming IPv6 address parts
draft-denog-v6ops-addresspartnaming-02.txt

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Abstract

   In the daily communication between technicians, engineers and other
   people who need to deal with computer networks, it is often necessary
   to refer to particular parts of IP addresses. In the world of IPv4,
   the term "octet" is well established, however as the use of IPv6 is
   spreading, it becomes apparent that there is no such commonly
   accepted term for IPv6 addresses.

   Discussing and explaining technical matters become difficult when
   different people use different terms for the same thing. Therefore,
   this document discusses several naming proposal for those 16bit
   pieces of IPv6 addreses.

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1. Introduction

Verbal and written communication requires a common set of terms, eas-
ily understood by every potential party. While deploying IPv6, when
refering to segments of IPv6 addresses, confusion regularly arises
due to the usage of different and sometimes conflicting nomenclature
for the same pieces of information.

[IPV6Addr] is the normative reference to IPv6 addressing and avoids
to coin a special term for the subject of this document itself:
   The preferred form is x:x:x:x:x:x:x:x, where the 'x's are one to
   four hexadecimal digits of the eight 16-bit pieces of the address.

[IPv6Rep] is the normative reference to IPv6 address text representa-
tion and introduces the term "16-bit field" or short "field".

2. Rationale

While we readily agree that the naming of IPv6 address parts is not
the most pressing concern the Internet is facing today, a common
nomenclature is important for efficient communication.

In IPv6 deployments the delimiting colons are regularly used to
facilitate the separation of labels discerning not only administra-
tive boundaries but also network segments and distinct infrastructure
components. Consequently the values between the colons are frequently
refered to especially in communication regarding coordinative mat-
ters.

Time spent explaining what one is referring to is wasted and con-
flicting names can lead to misunderstanding while the usage of a com-
mon term helps facilitating quick understanding.

To solve this problem, the specification of a precise and recogniz-
able term is advised.

A typical ambiguity occurs in [IPv6Rep] which uses the term "field"
or "16-bit field" for the term in question. This case is interesting
because there was a short IETF WG discussion which term should be
used.
   If an IPv6 address field in a certificate was incorrectly verified
   by converting it to text ...

Since parts of the internet community only accept authoritative
advice substantiated by a published document, also known as the
'citation needed' approach, it is helpful to have a definite source.

[3](#). Naming Considerations

Any term that can be confused with other technical terms due to pho-
netic similarities can lead to misconfiguration causing reachability
and security risks to the involved parties. Even with English being
the preferred language in the IT world today, a good name should
describe the technical matter precisely while being easy to remember,
spell and pronounce in as many languages as possible.

[4](#). Naming Proposals

We are presenting a broadest selection of mostly serious proposals
which needs to be narrowed in the future by straw polls and finally
select one using normal IETF consensus.

[4.1](#). Chazwazza

"Chazwazza" was proposed as a Simpsons reference, see [[greg](#)]. While
this is certainly a unique term in the networking world, it is not
particularly meaningful nor easy to pronounce.

[4.2](#). Chunk

A chunk is commonly understood to be a specific amount of data. The
term is not unique to IPv6, however easy to remember and pronounce.

[4.3](#). Column

The colons in an IPv6 address' text representation make it similar to
a table. Besides that, the meaning of the word "column" has very lit-
tle to do with the actual technical meaning of a 16bit piece of an
IPv6 address, though.

[4.4](#). Colonade, Colonnade

Based on the colon as seperator the word sounds English (using a sin-
gle 'n' to make it an artificial word) and is easy to spell and pro-
nounce. Alternatively, "colonnade" could be used, overloading the
existing, yet unrelated word with a new meaning.

[4.5](#). Doctet

Derived from "double octet", thus accurately describes the technical
matter, as an octet is a standard term for a sequence of 8 bits.

[4.6](). **Field**

A "field" describes a form of a data structure in many programming
languages. The term stresses the fact that a field is one of multiple
fractions of a bigger subject, just like countryside is divided into
fields, or like IPv6 addresses into 16bit long pieces. A drawback of
that similarity is the lack of uniqueness to IPv6, though.

[4.7](). **Hexadectet**

"Hexadectet" is directly derived from IPv4's "octet", thus techni-
cally correct and probably convenient to get used to. On the other
hand, it is much harder to pronounce.

[4.8](). **Hit**

Short for "hex-bit", short and convenient to pronounce, however usu-
ally associated with a completely different meaning.

[4.9](). **Orone**

Initially started as a typo in [[greg]()], "orone" is a short, unique
word without a specific meaning yet.

[4.10](). **Part**

The word "part" has been used throughout this document to describe
the subject until there is a better term for this. It is very unspe-
cific and can be used in countless ways, not only to describe 16bit
long parts of an IPv6 address.

[4.11](). **Provider number, customer number, network number**

These terms provide semantic descriptions of the different parts of
an IPv6 address. However, it is not within the scope of this document
to find terms describing semantic, but rather syntactic elements.

Furthermore, naming the 16bit pieces of IPv6 addresses in a semantic
way would introduce new problems, like limited applicability, e.g. it
would not work for multicast addresses.

[4.12](). **Quad nibble, qibble, quibble**

A nibble is a 4bit entity, hence 16 bits are a quad nibble. This is a
rather bulky word, however, so "quibble" is a convenient abbrevia-
tion. Also, it is a unique term, thus eliminating any chances of mis-
interpretation.

4.13. Segment

"Segment" is another obvious choice, however it is also quite unspe-
cific and used in different contexts, e.g. "network segments".

4.14. Tuple

A tuple is a sequence of typically heterogenous elements considered
as a new entity by itself. It is also a short, descriptive word that
is not yet associated with anything networking related. Usually a
tuple exceeds grouping by creating a new semantic level.

4.15. Word

A "word" usually refers to a fixed group of bits that are processed
at a time, and especially on legacy x86 systems is a synonym for 16
bits. It has a different and much more unspecific meaning to less
technically skilled people, which might be problematic.

5. Security Considerations

This memo does not directly discuss security issues, however the lack
of a common, well established term could theoretically lead to misin-
terpretation, possible leading to insecure configuration of computer
systems.

6. IANA Considerations

No assignments by the IANA are required. However it is considered
desirable that the IANA adopts the term in future documents.

7. References

7.1. Normative References

[IPV6Addr] Deering, S. and R. Hinden, "IP Version 6 Addressing
           Architecture", RFC 4291, February 2006

[IPv6Rep] Kawamura, S. and Kawashima, M., "A Recommendation for IPv6
           Address Text Representation", RFC 5952, August 2010

[Q.6]   ITU-T, "Advantages of international automatic working",
           Fascicle VI.1 of the Blue Book, 1988

7.2. Informal References

[greg]   http://etherealmind.com/network-dictionary-chazwazza/,
           Sept 5, 2010

[8](#). Acknowledgements

Thanks go to Greg Ferro who initiated the discussion by proposing the term "chazwazza".[[greg](#)]

Thanks all the people who read to this point and are willing to provide valuable input instead of simply shaking their heads and moving on.

The inital version of this document was created following the spirit of [[Q.6](#)].

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Appendix A. Change History

   00 - inital version

   01 - Jens Link moved from Author to Supporter
      - Leon Weber moved from Supporter to Author
      - numerous typographic fixes
      - added "field" from [IPv6Rep] as proposal and as reason
      - added "part" for completeness
      - dismissed "hextet / hexatet / sixlet"
      - created sub sections for each proposal
      - added update notification of RFC4291 and RFC5952
      - added a "Security considerations" section

   02 - Fixing nits
      - Propose a selection mechanism