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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 addresses.

Table of Contents

1. Introduction .................................................. 3
2. Rationale ..................................................... 3
3. Naming Considerations ....................................... 4
4. Naming Proposals .............................................. 4
   4.1. Chazwazza ................................................ 4
   4.2. Chunk .................................................... 4
   4.3. Column ................................................... 4
   4.4. Colonade, Colonnade .................................. 4
   4.5. Doctet ................................................... 4
   4.6. Field .................................................... 4
   4.7. Hexadectet .............................................. 5
   4.8. Hit ...................................................... 5
   4.9. Orone .................................................... 5
   4.10. Part .................................................... 5
   4.11. Provider number, customer number, network number .... 5
   4.12. Quad nibble, qibble, quibble ........................... 5
   4.13. Segment ................................................ 5
   4.15. Word .................................................... 6
5. IANA Considerations ........................................... 6
6. References .................................................... 6
   7.1. Normative References .................................... 6
   7.2. Informal References ..................................... 6
7. Acknowledgements ............................................... 7
1. Introduction

Verbal and written communication requires a common set of terms, easily understood by every potential party. While deploying IPv6, when referring 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 representation 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 administrative boundaries but also network segments and distinct infrastructure components. Consequently the values between the colons are frequently referred to especially in communication regarding coordinative matters.

Time spent explaining what one is referring to is wasted and conflicting names can lead to misunderstanding while the usage of a common term helps facilitating quick understanding.

To solve this problem, the specification of a precise and recognizable term is advised.

A typical example 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 phonetic 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

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 little 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 separator the word sounds English (using a single ‘n’ to make it an artificial word) and is easy to spell and pronounce. 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 technically 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 usually 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 unspecific 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 abbreviation. Also, it is a unique term, thus eliminating any chances of misinterpretation.

4.13. Segment

"Segment" is another obvious choice, however it is also quite unspecific and used in different contexts, e.g. "network segments".
4.14. Tuple

A tuple is a sequence of typically heterogeneous 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 misinterpretation, 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


7.2. Informal References

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 initial version of this document was created following the spirit of [Q.6].

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Appendix A. Change History

00 - initial 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