APNIC eLearning:
IPv6 Addressing and Subnetting

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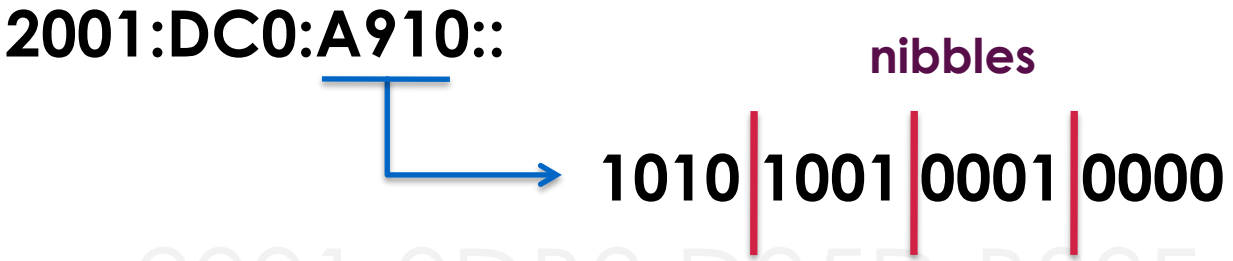
Overview

- IPv6 Address Text Representation
- IPv6 Addressing Structure
- IPv6 Address Management Hierarchy
- Local Addresses
- Global Addresses
- Interface ID
- IPv6 Autoconfiguration
- Subnetting

IPv6 Addressing

- An IPv6 address is 128 bits long
- So the number of addresses are **2^128** = 340282366920938463463374607431768211455
- In hex, 4 bits (also called a ‘nibble’) is represented by a hex digit
- So 128 bits is reduced down to 32 hex digits



IPv6 Addressing

- Hexadecimal values of eight 16 bit fields
  - X:X:X:X:X:X:X:X (X=16 bit number, ex: A2FE)
  - 16 bit number is converted to a 4 digit hexadecimal number
- Example:
  - FE38:DCE3:124C:C1A2:BA03:6735:EF1C:683D
  - Abbreviated form of address

    4EED:0023:**0000:0000:0000**:036E:1250:2B00

    →4EED:23:**0:0:0**:36E:1250:2B00

    →4EED:23**::**36E:1250:2B00

    (Null value can be used only once)

Leading zeroes

Groups of zeroes

Double colons

IPv6 Addressing