IPv6 Addressing

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IPv6 addren is represented as 8 groups of 4 Hexadecimal digits, each group representing 16 bits (two octets), called Hextet, each group is separated by Colon.

For example: 2001:0db8:85a3:0000:
0000:8a2e:0370:7334

2001:0db8:85a3:0000:0000:8a2e:0370:7334
2001:db8:85a3:0:0:8a2e:370:7334
2001:db8:85a3::8a2e:370:7334

Zero compression: ✓✓

2001:0db8:0000:0000:0000:0370:0000:0000
2001:db8:0:0:0:370:0:0
2001:db8::370:0:0

The full representation of eight four-digit groups may be simplified by several techniques, to eliminate groups' parts.

Zero Compression:

✡ leading zeros in each 16-bit field are suppressed, but each group must retain at least one digit in case of all zeros.

E.g: 2001:0db8:85a3:0:0:0001:003a:0000
2001:db8:85a3::1:3a:0

Longest sequence of consecutive all-zeros fields is replaced with two colons (::). If the addren contains multiple runs of all-zeros fields then the leftmost is compressed.

E.g: 2001:db8:0:0:1:0:0:1
2001:db8::1:0:0:1