

# IPv6 Addressing

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IPv6 address is represented as 8 groups of 4 hexadecimal digits, each group representing 16 bits (two octets), called hexet, each group is separated by colon.

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

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:0  
2001:db8:85a3::1:3a:0

Longest sequence of consecutive all-zeros fields is replaced with two colons (::). If the address 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