RECAP/

IPv4 issues

**Depletion of IPv4 address space has been the motivation foactor for moving to IPv6**

**IPv6 is larger 128-bit address space, providing 340 undecillion possible addresses**

The IETF not only made it longer but also better

**Both IPv4 and IPv6 coexist** and the transition to only IPv6 will take several years

IETF has created various **protocols and tools to help network administratoors migrade their networks to IPv6**

Those are:

DUAL STACK **run both IPv4 and IPv6** TUNNELING **transports IPv6 packet over an IPv4 network** (IPv6 is encapsulated inside an IPv4 packet)  
 TRANSLATION **NAT64 enables IPv6 enabled devices commmunicate with IPv4 enabled devices using translation technique**

IPv6 addressing

**128 bits length written as a string using hexadecimal values**

4 bits = 1 hexadecimal digit total of 32 hexadecimal values

Hextet = 16bits or 4 hexadecimal digits

fe80:0000:0000:0000:0123:4567:89ab:cdef

**2 rules:**

Rule 1:

Omit leading zeros ONLY LEADING 0s

01ab --> 1ab, 0a00 --> a00, 00ab --> ab

Rule 2:

Double colon (::)

Replaces any hextets of only 0s

2001:db8:cafe:1:0:0:0:1 --> 2001:db8:cafe:1::1