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| **IPv6 Addressing** |

1. **Introduction**

IPv6 supports 128-bit address space and can potentially support 2(128) or 3.4W1038 unique IP addresses.

1. **Types of IPv6 Addresses**

IPv6 addresses are broadly classified into three categories:

1) **Unicast addresses**: A Unicast address acts as an identifier for a single interface. An IPv6 packet sent to a Unicast address is delivered to the interface identified by that address.

2) **Multicast addresses**: A Multicast address acts as an identifier for a group/set of interfaces that may belong to the different nodes. An IPv6 packet delivered to a Multicast address is delivered to the multiple interfaces.

3) **Anycast addresses**: Anycast addresses act as identifiers for a set of interfaces that may belong to the different nodes. An IPv6 packet destined for an Anycast address is delivered to one of the interfaces identified by the address

1. **IPv6 Address Notation**

IPv6 addresses are denoted by eight groups of hexadecimal quartets separated by colons in between them.

Following is an example of a valid IPv6 address: 2001:cdba:0000:0000:0000:0000:3257:9652

Any four-digit group of zeroes within an IPv6 address may be reduced to a single zero or altogether omitted. Therefore, the following IPv6 addresses are similar and equally valid:

2001:cdba:0000:0000:0000:0000:3257:9652

2001:cdba:0:0:0:0:3257:9652

2001:cdba::3257:9652

1. **Difference between IPv6 and IPv4**
2. **Address format**.

IPv4 are formatting in dotted decimal. But IPv6 are formatting hexadecimal.

1. **Address size**.

IPv4 are 32 bits and IPv6 are 128 bits.

1. **Address.**

Ipv4 are class-based and IPv6 are classless.