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**DEFFERENCE BETWEEN IPv6 and IPv4**

1. **Version**

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| --- | --- |
| **IPV4** | **IPV6** |
| 1. IPv4 is a 32-Bit IP Address.
 | 1. IPv6 is 128 Bit IP Address.
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| 1. IPv4 is a numeric address, and its binary bits are separated by a dot (.)
 | 1. IPv6 is an alphanumeric address whose binary bits are separated by a colon (:). It also contains hexadecimal.
 |
| 1. Has checksum fields
 |  3. Does not have checksum fields |

1. **Priority**

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| **IPV4** | **IPV6** |
| 1. QoS allows you to request packet priority and bandwidth for TCP/IP applications.
 | 1. Currently, the IBM implementation of QoS does not support IPv6.
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| 1. Broadcast ARP
 | 1. Multicast Neighbor Solicitation
 |

1. **Flow label**

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| --- | --- |
| **IPV4** | **IPV6** |
| 1. IPv4 options were defined in [[RFC0791](https://tools.ietf.org/html/rfc0791)] as the means of extending the

IP protocol. IPv4 options have not been successful. Early routerimplementations, and even those today, either don't process IPv4options or relegate them to a slow path effectively making themunusable for serious applications. IPv4 options are limited to fortybytes length and, unlike TCP options, no IP options have been definedthat are critical to communications. The upshot is that IPv4 optionshave long not been considered an option for deployment [[IPNOOP](https://tools.ietf.org/html/draft-herbert-ipv4-eh-01#ref-IPNOOP)]. | 1. IPv6 took a different approach. Extensibility of IPv6 is provided by

extension headers. Optional internet-layer information is encoded inseparate headers that may be placed between the IPv6 header and theupper-layer header in a packet [[RFC8200](https://tools.ietf.org/html/rfc8200)]. IPv6 extension headers havehad mixed success in deployment in that some intermediate deviceshave trouble processing them [[RFC7872](https://tools.ietf.org/html/rfc7872)], however there are severalactive proposals in IETF that would make use of them (e.g. [[FAST](https://tools.ietf.org/html/draft-herbert-ipv4-eh-01#ref-FAST)],[[MTUOPT](https://tools.ietf.org/html/draft-herbert-ipv4-eh-01#ref-MTUOPT)], [[IOAM](https://tools.ietf.org/html/draft-herbert-ipv4-eh-01#ref-IOAM)], [[SRV6EH](https://tools.ietf.org/html/draft-herbert-ipv4-eh-01#ref-SRV6EH)]). |

1. **Payload Length**

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| --- | --- |
| **IPV4** | **IPV6** |
| 1. IPv4 packet (IPv4 header + IPv4 payload) and does not include link layer framing. The size of this field is 16 bits, which can indicate an IPv4 packet that is up to 65,535 bytes long.
 | 1. The payload length field of IPv6 (and IPv4) has a size of 16 bits, capable of specifying a maximum length of 65535 octets for the payload.
 |

1. **Data**

|  |  |
| --- | --- |
| **IPV4** | **IPV6** |
| 1. The packet payload is not included in the checksum. Its contents are interpreted based on the value of the Protocol header field.
 | 1. Destination Address field indicates the IPv6 address of the final destination (in most cases). All the intermediate nodes can use this information in order to correctly route the packet.
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