RFC2460 - Internet Protocol, Version 6 (IPv6) Specification

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Table 1: Data sheet for Transmission Control Protocol (TCP)

Title	Internet Protocol, Version 6 (IPv6) Specification
Acronym	IPv6
Version	1981
Document Number	RFC2460
Release Date	December 1998
Reference	https://tools.ietf.org/html/rfc2460

Note: The following is an excerpt from the official IETF RFC. It is provided here as a convenience and is not authoritative. Refer to the original document as the authoritative reference.

Introduction

IP version 6 (IPv6) is a new version of the Internet Protocol, designed as the successor to IP version 4 (IPv4) [RFC-791]. The changes from IPv4 to IPv6 fall primarily into the following categories:

- **Expanded Addressing Capabilities**: IPv6 increases the IP address size from 32 bits to 128 bits, to support more levels of addressing hierarchy, a much greater number of addressable nodes, and simpler auto-configuration of addresses. The scalability of multicast routing is improved by adding a “scope” field to multicast addresses. And a new type of address called an “anycast address” is defined, used to send a packet to any one of a group of nodes.
- **Header Format Simplification**: Some IPv4 header fields have been dropped or made optional, to reduce the common-case processing cost of packet handling and to limit the bandwidth cost of the IPv6 header.
- **Improved Support for Extensions and Options**: Changes in the way IP header options are encoded allows for more efficient forwarding, less stringent limits on the length of options, and greater flexibility for introducing new options in the future.
- **Flow Labeling Capability**: A new capability is added to enable the labeling of packets belonging to particular traffic “flows” for which the sender requests special handling, such as non-default quality of service or “real-time” service.
- **Authentication and Privacy Capabilities**: Extensions to support authentication, data integrity, and (optional) data confidentiality are specified for IPv6.

This document specifies the basic IPv6 header and the initially- defined IPv6 extension headers and options. It also discusses packet size issues, the semantics of flow labels and traffic classes, and the effects of IPv6 on upper-layer protocols. The format and semantics of IPv6 addresses are specified separately in [ADDRARCH]. The IPv6 version of ICMP, which all IPv6 implementations are required to include, is specified in [ICMPv6].