

INTERNET PROTOCOL
DARPA INTERNET PROGRAM
PROTOCOL SPECIFICATION

September 1981

prepared for
Defense Advanced Research Projects Agency
Information Processing Techniques Office
1400 Wilson Boulevard
Arlington, Virginia 22209

by
Information Sciences Institute
University of Southern California
4676 Admiralty Way
Marina del Rey, California 90291

September 1981

Internet Protocol

TABLE OF CONTENTS

PREFACE [iii](#)

1. INTRODUCTION	1
1.1 Motivation	1
1.2 Scope	1
1.3 Interfaces	1
1.4 Operation	2
2. OVERVIEW	5
2.1 Relation to Other Protocols	9
2.2 Model of Operation	5
2.3 Function Description	7
2.4 Gateways	9
3. SPECIFICATION	11
3.1 Internet Header Format	11
3.2 Discussion	23
3.3 Interfaces	31
APPENDIX A: Examples & Scenarios	34
APPENDIX B: Data Transmission Order	39
GLOSSARY	41
REFERENCES	45

PREFACE

This document specifies the DoD Standard Internet Protocol. This document is based on six earlier editions of the ARPA Internet Protocol Specification, and the present text draws heavily from them. There have been many contributors to this work both in terms of concepts and in terms of text. This edition revises aspects of addressing, error handling, option codes, and the security, precedence, compartments, and handling restriction features of the internet protocol.

Jon Postel

Editor

RFC: 791
Replaces: [RFC 760](#)
IENs 128, 123, 111,
80, 54, 44, 41, 28, 26

INTERNET PROTOCOL
DARPA INTERNET PROGRAM
PROTOCOL SPECIFICATION

1. INTRODUCTION

1.1. Motivation

The Internet Protocol is designed for use in interconnected systems of packet-switched computer communication networks. Such a system has been called a "catenet" [1]. The internet protocol provides for transmitting blocks of data called datagrams from sources to destinations, where sources and destinations are hosts identified by fixed length addresses. The internet protocol also provides for fragmentation and reassembly of long datagrams, if necessary, for transmission through "small packet" networks.

1.2. Scope

The internet protocol is specifically limited in scope to provide the functions necessary to deliver a package of bits (an internet datagram) from a source to a destination over an interconnected system of networks. There are no mechanisms to augment end-to-end data reliability, flow control, sequencing, or other services commonly found in host-to-host protocols. The internet protocol can capitalize on the services of its supporting networks to provide various types and qualities of service.

1.3. Interfaces

This protocol is called on by host-to-host protocols in an internet environment. This protocol calls on local network protocols to carry the internet datagram to the next gateway or destination host.

For example, a TCP module would call on the internet module to take a TCP segment (including the TCP header and user data) as the data portion of an internet datagram. The TCP module would provide the addresses and other parameters in the internet header to the internet module as arguments of the call. The internet module would then create an internet datagram and call on the local network interface to transmit the internet datagram.

In the ARPANET case, for example, the internet module would call on a

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.