                 THE REQUEST FOR COMMENTS REFERENCE GUIDE

STATUS OF THIS MEMO

   This RFC is a reference guide for the Internet community which
   summarizes of all the Request for Comments issued between April 1969
   and March 1987. This guide also categorizes the RFCs by topic.

INTRODUCTION

   This RFC Reference Guide is intended to provide a historical account
   by categorizing and summarizing of the Request for Comments numbers 1
   through 999 issued between the years 1969-1987. These documents have
   been crossed referenced to indicate which RFCs are current, obsolete,
   or revised. Distribution of this memo is unlimited.

THE ORIGINS OF RFCS - by Stephen D. Crocker

   The DDN community now includes hundreds of nodes and thousands of
   users, but once it was all a gleam in Larry Roberts' eye. While much
   of the development proceeded according to a grand plan, the design of
   the protocols and the creation of the RFCs was largely accidental.

   The procurement of the ARPANET was initiated in the summer of 1968 --
   Remember Vietnam, flower children, etc? There had been prior
   experiments at various ARPA sites to link together computer systems,
   but this was the first version to explore packet-switching on a grand
   scale. ("ARPA" didn't become "DARPA" until 1972.) Unlike most of
   the ARPA/IPTO procurements of the day, this was a competitive
   procurement. The contract called for four IMPs to be delivered to
   UCLA, SRI, UCSB and The University of Utah. These sites were running
   a Sigma 7 with the SEX operating system, an SDS 940 with the Genie
   operating system, an IBM 360/75 with OS/MVT (or perhaps OS/MFT), and
   a DEC PDP-10 with the Tenex operating system. Options existed for
   additional nodes if the first experiments were successful. BBN won
   the procurement in December 1968, but that gets ahead of this story.

   Part of the reason for selecting these four sites was these were
   existing ARPA computer science research contractors. The precise
   usage of the ARPANET was not spelled out in advance, and the research
   community could be counted on to take some initiative. To stimulate
   this process, a meeting was called during the summer with
   representatives from the selected sites, chaired by Elmer Shapiro

from SRI. If memory serves me correctly, Jeff Rulifson came from
SRI, Ron Stoughton from UCSB, Steve Carr from Utah and I came from
UCLA. (Apologies to anyone I've left out; records are inaccessible or
lost at this point.) At this point we knew only that the network was
coming, but the precise details weren't known.

That first meeting was seminal. We had lots of questions -- how IMPs
and hosts would be connected, what hosts would say to each other, and
what applications would be supported. No one had any answers, but
the prospects seemed exciting. We found ourselves imagining all
kinds of possibilities -- interactive graphics, cooperating
processes, automatic data base query, electronic mail -- but no one
knew where to begin. We weren't sure whether there was really room
to think hard about these problems; surely someone from the east
would be along by and by to bring the word. But we did come to one
conclusion: We ought to meet again. Over the next several months, we
managed to parlay that idea into a series of exchange meetings at
each of our sites, thereby setting the most important precedent in
protocol design.

The first few meetings were quite tenuous. We had no official
charter. Most of us were graduate students and we expected that a
professional crew would show up eventually to take over the problems
we were dealing with. Without clear definition of what the host-IMP
interface would look like, or even what functions the IMP would
provide, we focused on exotic ideas. We envisioned the possibility
of application specific protocols, with code downloaded to user
sites, and we took a crack at designing a language to support this.
The first version was known as DEL, for "Decode-Encode Language" and
a later version was called NIL, for "Network Interchange Language."
When the IMP contract was finally let and BBN provided some definite
information on the host-IMP interface, all attention shifted to
low-level matters and the ambitious ideas for automatic downloading
of code evaporated. It was several years before ideas like remote
procedure calls and typed objects reappeared.

In February of 1969 we met for the first time with BBN. I don't
think any of us were prepared for that meeting. The BBN folks, led
by Frank Heart, Bob Kahn, Severo Ornstein and Will Crowther, found
themselves talking to a crew of graduate students they hadn't
anticipated. And we found ourselves talking to people whose first
concern was how to get bits to flow quickly and reliably but hadn't
-- of course -- spent any time considering the thirty or forty layers
of protocol above the link level. And while BBN didn't take over the
protocol design process, we kept expecting that an official protocol
design team would announce itself.

A month later, after a particularly delightful meeting in Utah, it
became clear to us that we had better start writing down our

discussions. We had accumulated a few notes on the design of DEL and
other matters, and we decided to put them together in a set of notes.
I remember having great fear that we would offend whomever the
official protocol designers were, and I spent a sleepless night
composing humble words for our notes. The basic ground rules were
that anyone could say anything and that nothing was official. And to
emphasize the point, I labeled the notes "Request for Comments." I
never dreamed these notes would distributed through the very medium
we were discussing in these notes. Talk about Sorcerer's Apprentice!

Over the spring and summer of 1969 we grappled with the detailed
problems of protocol design. Although we had a vision of the vast
potential for intercomputer communication, designing usable protocols
was another matter. A custom hardware interface and custom intrusion
into the operating system was going to be required for anything we
designed, and we anticipated serious difficulty at each of the sites.
We looked for existing abstractions to use. It would have been
convenient if we could have made the network simply look like a tape
drive to each host, but we knew that wouldn't do.

It was clear we needed to support remote login for interactive use --
later known as Telnet -- and we needed to move files from machine to
machine. We also knew that we needed a more fundamental point of
view for building a larger array of protocols. Unfortunately,
operating systems of that era tended to view themselves as the center
of the universe; symmetric cooperation did not fit into the concepts
currently available within these operating systems. And time was
pressing: The first IMP was due to be delivered to UCLA September 1,
1969, and the rest were scheduled at monthly intervals.

At UCLA we scrambled to build a host-IMP interface. SDS, the builder
of the Sigma 7, wanted many months and many dollars to do the job.
Mike Wingfield, another grad student at UCLA, stepped in and offered
to get interface built in six weeks for a few thousand dollars. He
had a gorgeous, fully instrumented interface working in five and one
half weeks. I was in charge of the software, and we were naturally
running a bit late. September 1 was Labor Day, so I knew I had a
couple of extra days to debug the software. Moreover, I had heard
BBN was having some timing troubles with the software, so I had some
hope they'd miss the ship date. And I figured that first some
Honeywell people would install the hardware -- IMPs were built out of
Honeywell 516s in those days -- and then BBN people would come in a
few days later to shake down the software. An easy couple of weeks
of grace.

BBN fixed their timing trouble, air shipped the IMP, and it arrived
on our loading dock on Saturday, August 30. They arrived with the
IMP, wheeled it into our computer room, plugged it in and the

software restarted from where it had been when the plug was pulled in
Cambridge. Still Saturday, August 30. Panic time at UCLA.

The second IMP was delivered to SRI at the beginning of October, and
ARPA's interest was intense. Larry Roberts and Barry Wessler came by
for a visit on November 21, and we actually managed to demonstrate a
Telnet-like connection to SRI.

With the pressure to get something working and the general confusion
as to how to achieve the high generality we all aspired to, we punted
and defined the first set of protocols to include only Telnet and FTP
functions. In particular, only asymmetric, user-server relationships
were supported. In December 1969, we met with Larry Roberts in Utah,
and suffered our first direct experience with "redirection". Larry
made it abundantly clear that our first step was not big enough, and
we went back to the drawing board. Over the next few months we
designed a symmetric host-host protocol, and we defined an abstract
implementation of the protocol known as the Network Control Program.
("NCP" later came to be used as the name for the protocol, but it
originally meant the program within the operating system that managed
connections. The protocol itself was known blandly only as the
host-host protocol.) Along with the basic host-host protocol, we
also envisioned a hierarchy of protocols, with Telnet, FTP and some
splinter protocols as the first examples. If we had only consulted
the ancient mystics, we would have seen immediately that seven layers
were required.

The initial experiment had been declared an immediate success and the
network continued to grow. More and more people started coming to
meetings, and the Network Working Group began to take shape. Working
Group meetings started to have 50 and 100 people in attendance
instead of the half dozen we had had in 1968 and early 1969. We held
one meeting in conjunction with the Spring Joint Computer Conference
in Atlantic City in 1971. In October 1971 we all convened at MIT for
a major protocol "fly-off". Representatives from each site were on
hand, and everyone tried to log in to everyone else's site. With the
exception of one site that was completely down, the matrix was almost
completely filled in, and we had reached a major milestone in
connectivity.

The rapid growth of the network and the working group also led to a
large pile of RFCs. When the 100th RFC was in sight, Peggy Karp took
on the task of indexing them. That seemed like a large task then,
and we could have hardly anticipated seeing more than a 1000 RFCs
several years later.

Where will it end? The network has the exceeded all estimates of its
growth. It has been transformed, extended, cloned, renamed and
reimplemented. I doubt if there is a single computer still on the

   network that was on it in 1971. But the RFCs march on. Maybe I'll
   write a few words for RFC 10,000.

REQUEST FOR COMMENTS BY CATEGORIES

   The RFCs are categorized into several broad groups and within these
   groups are subdivided by topic. For example, the RFCs relating to
   file transfer are in 5 (Applications) c (File Transfer).

   1. Administrative

      1a. Assigned Numbers RFCs

         997, 990, 960, 943, 923, 900, 870, 820, 790, 776, 770, 762,
         758, 755, 750, 739, 717, 604, 503, 433, 349, 322, 317, 204,
         179, 175, 167.

      1b. Official Protocols RFCs

         991, 961, 944, 924, 901, 880, 840, 694, 661, 617, 582, 580,
         552.
         774 - Internet Protocol Handbook Table of Contents

      1c. Meeting Notes and Minutes

         898 - Gateway Special Interest Group Meeting Notes
         808, 805, 469 - Computer Mail Meeting Notes
         910, 807 - Multimedia Mail Meeting Notes
         585 - ARPANET Users Interest Working Group Meeting
         549, 396, 282, 253 - Graphics Meeting Notes
         371 - International Computer Communications Conference
         327 - Data and File Transfer Workshop Notes
         316 - Data Management Working Group Meeting Report
         164, 131, 116, 108, 101, 082, 077, 066, 063, 037, 021 - Network
               Working Group Meeting

      1d. Meeting Announcements and Group Overviews

         828 - Data Communications: IFIP's International "Network" of
               Experts
         631 - Call for Papers: International Meeting on Minicomputers
               and Data Communication
         584 - Charter for ARPANET Users Interest Working Group
         537 - Announcement of NGG Meeting
         526 - Technical Meeting - Digital Image Processing Software
               Systems
         504 - Workshop Announcement
         483 - Cancellation of the Resource Notebook Framework Meeting
         474, 314, 246, 232, 134 - Network Graphics Working Group

          471 - Announcement of a (Tentative) Workshop on Multi-Site
                Executive Programs
          461 - Telnet Meeting Announcement
          457 - TIPUG
          456 - Memorandum
          454 - File Transfer Protocol Meeting Announcement
          453 - Meeting Announcement to Discuss a Network Mail System
          374 - IMP System Announcement
          359 - The Status of the Release of the New IMP System (2600)
          343, 331 - IMP System Change Notification
          324 - RJE Protocol Meeting
          323 - Formation of Network Measurement Group (NMG)
          320 - Workshop on Hard Copy Line Graphics
          309 - Data and File Transfer Workshop Announcement
          299 - Information Management System
          295 - Report of the Protocol Workshop
          291, 188, 173 - Data Management Meetings
          245, 234, 207, 188, 173, 140, 116, 099, 087, 085, 075, 043, 035
                - Network Working Group Meetings
          222 - System Programmer's Workshop
          212 - NWG Meeting on Network Usage
          157 - Invitation to the Second Symposium on Problems in the
                Optimization of Data Communication Systems
          149 - The Best Laid Plans...
          147 - The Definition of a Socket
          111 - Pressure from the Chairman
          048 - A Possible Protocol Plateau
          046 - ARPA Network Protocol Notes

     1e. Distribution List

          402, 363, 329, 303, 300, 211, 168, 155 - ARPA Network Mailing
                Lists
          069 - Distribution List Change for MIT
          052 - Updated Distribution List

     1f. Policies

          980 - Protocol Document Order Form
          952, 810, 608 - Host Table Specification
          945 - A DoD Statement on the NRC Report
          902 - ARPA-Internet Protocol Policy
          849 - Suggestions for Improved Host Table Distribution
          678 - Document Formats
          602 - The Stockings Were Hung by the Chimney With Care
          115 - Some Network Information Center Policies on Handling
                Documents
          053 - An Official Protocol Mechanism

   1g. Request for Comments Administrative

      999, 899, 800, 699 - Requests for Comments Summary
      825 - Request for Comments on Requests for Comments
      629 - Scenario for Using the Network Journal
      628 - Status of RFC Numbers and a Note on Pre-assigned Journal
           Numbers
      598, 200, 170, 160, 100, 084 - RFC Index

   1h. Bibliographies

      829 - Packet Satellite Technology Reference Sources
      290 - Computer Network and Data Sharing: A Bibliography
      243 - Network and Data Sharing Bibliography

   1i. Other

      637 - Change of Network Address for SU-DSL
      634 - Change in Network Address for Haskins Lab
      616 - Latest Network Maps
      609 - Statement of Upcoming Move of NIC/NLS Service
      590 - MULTICS Address Change
      588 - London Node is Now Up
      551 - NYU, ANL, and LBL Joining the Net
      544 - Locating On-Line Documentation at SRI-ARC
      543 - Network Journal Submission and Delivery
      518 - ARPANET Accounts
      511 - Enterprise Phone Service to NIC From ARPANET Sites
      510 - Request for Network Mailbox Addresses
      432 - Network Logical Map
      423, 389 - UCLA Campus Computing Network Liaison Staff for APRA
           Network
      421 - A Software Consulting Service for Network Users
      419 - MIT-DMS on Vacation
      416 - The ARC System will be Unavailable for Use During
           Thanksgiving Week
      405 - Correction to RFC 404
      404 - Host Address Changes Involving Rand and ISI
      403 - Desirability of a Network 1108 Service
      386 - Letter to TIP Users - 2
      384 - Official Site IDENTS for Organizations in the ARPA
           Networks
      381 - Three Aids to Improved Network Operation
      356 - ARPA Network Control Center
      334 - Network Use on May 8
      305 - Unknown Host Numbers
      301 - BBN IMP No. 5 and NCC Schedule for March 4, 1972
      276 - NIC Course
      249 - Coordination of Equipment and Supplies Purchase

   3d. Other

      986 - Working Draft - Guidelines for the Use of Internet-IP
            Addressing in the ISO Connectionless-Mode Network
      981 - An Experimental Multiple-Path Routing Algorithm
      963 - Some Problems with the Specification of the Military
            Standard Internet Protocol
      950 - Internet Standard Subnetting Procedure
      947 - Multi-Network Broadcasting Within the Internet
      940, 917, 925, 932, 936, 922 - Internet Subnets Protocol
      925, 917, 826 - Multi-LAN Address Resolution Protocol
      919, 922 - Broadcasting Internet Datagrams
      891 - DCN Local-Network Protocols
      871 - A Perspective on the ARPANET Reference Model
      831 - Backup Access to the European Side of SATNET
      817 - Modularity and Efficiency in Protocol Implementation
      816 - Fault Isolation and Recovery
      814 - Name, Addresses, Ports, and Routes
      796 - Address Mapping
      795 - Service Mappings
      730 - Extensible Field Addressing

 4. Host Level

   4a. User Datagram Protocol

      768 - User Datagram Protocol

   4b. Transmission Control Protocol

      983 - ISO Transport Services on Top of the TCP
      964 - Some Problems with the Specification of the Military
            Standard Transmission Control Protocol
      896 - Congestion Control in IP/TCP Internetworks
      889 - Internet Delay Experiments
      879 - The TCP Maximum Segment Size and Related Topics
      872 - TCP-ON-A-LAN
      817 - Modularity and Efficiency in Protocol Implementation
      816 - Fault Isolation and Recovery
      814 - Name, Addresses, Ports, and Routes
      794 - Pre-Emption
      793, 761, 675 - Transmission Control Protocol
      721 - Out of Band Control Signals in a Host to Host Protocol
      700 - A Protocol Experiment

   4c. Transaction Protocols and Distributed Operating Systems

      955 - Towards a Transport Service for Transaction Processing
            Applications

            938 - Internet Reliable Transaction Protocol Functional and
                  Interface Specification
            908 - Reliable Data Protocol
            722 - Thoughts on Interactions in Distributed Services
            713 - MSDTP -- Message Services Data Transmission Protocol
            712 - A Distributed Capability Computing System DCCS
            708 - Elements of a Distributed Programming System
            707 - A High-Level Framework for Network-Based Resource Sharing
            684 - A Commentary on Procedure Calling as A Network Protocol
            677 - The Maintenance of Duplicate Databases
            674 - Procedure Call Documents--Version 2
            672 - A Multi-Site Data Collection Facility
            671 - A Note on Reconnection Protocol
            645 - Network Standard Data Specification Syntax
            615 - Proposed Network Standard Data Pathname Syntax
            610 - Further Datalanguage Design Concepts
            592 - Some Thoughts on System Design to Facilitate Resource
                  Sharing
            578 - Using MIT-MATHLAB MACSYMA From MIT-DMS Muddle - An
                  Experiment in Automated Resource Sharing
            515 - Specifications for Datalanguage, Version 0/9
            500 - The Integration of Data Management Systems on a Computer
                  Network
            441 - Inter-Entity Communication - An Experiment
            437 - Data Reconfiguration Service at UCSB
            203 - Achieving Reliable Communication
            076 - Connection-by-Name: User-Oriented Protocol
            062 - A System for Interprocess Communication in a Resource
                  Sharing Computer Network
            061 - A Note on Interprocess Communication in a Resource
                  Sharing Computer Network
            051 - Proposal for a Network Interchange Language
            031 - Binary Message Forms in Computer Networks
            005 - DEL
            001 - Host Software

      4d.   Other

            998, 969 - NETBLT: A Bulk Data Transfer Protocol
            988 - Host Extensions for IP Multicasting
            979 - PSN End-to-End Functional Specification
            966 - A Multicast Extension to the Internet Protocol
            869 - Host Monitoring Protocol
            741 - Specifications for the Network Voice Protocol NVP
            643 - Cross Net Debugger
            162 - NETBUGGER3

5. Application Level

   5a. Telnet Protocol

        854, 764 - Telnet Protocol Specification
        818 - The Remote User Telnet Service
        801 - NCP/TCP Transition Plan
        782 - A Virtual Terminal Management Model
        764 - Telnet Protocol Specification
        728 - A Minor Pitfall in the Telnet Protocol
        688 - Tentative Schedule for the New Telnet Implementation for
              the TIP
        681 - Network Unix
        600 - Interfacing an Illinois Plasma Terminal to the ARPANET
        596 - Second Thoughts on Telnet Go-Ahead
        595 - Some Thoughts in Defense of the Telnet Go-Ahead
        593 - Telnet and FTP Implementation Schedule Change
        576 - Proposal for Modifying Linking
        570 - Experimental Input Mapping Between NVT ASCII and UCSB
              Online System
        562 - Modifications to the Telnet Specification
        559 - Comments on the New Telnet Protocol and Its
              Implementation
        529 - A Note on Protocol Synch Sequences
        513 - Comments on the New Telnet Specifications
        495 - Telnet Protocol Specification
        466 - Telnet Logger/Server for Host LL-67
        461 - Telnet Meeting Announcement
        452 - Telnet Command at Host LL
        435 - Telnet Issues
        426 - Reconnection Protocol
        393 - Comments on Telnet Protocol Changes
        377 - Using TSO Via ARPA Network Virtual Terminal
        357 - An Echoing Strategy for Satellite Links
        355, 346 - Satellite Considerations
        340 - Proposed Telnet Changes
        339 - MLTNET - A "Multi-Telnet" Subsystem for TENEX
        328 - Suggested Telnet Protocol Changes
        318 - Ad Hoc Telnet Protocol
        216 - Telnet Access to UCSB's On-Line System
        215 - NCP, ICP, and Telnet: The Terminal IMP Implementation
        206 - A User Telnet Description of an Initial Implementation
        205 - NETCRT - A Character Display Protocol
        190 - DEC PDP-10 - IMLAC Communication System
        158 - Proposed Telnet Protocol
        139 - Discussion of Telnet Protocol
        137 - Telnet Protocol - A Proposed Document
        135, 110 - Conventions for Using an IBM 2741 Terminal as a User
              Console for Access to Network Server Hosts

        103 - Implementation of Interrupt Keys
        097 - A First Cut at a Proposed Telnet Protocol
        091 - A Proposed User-User Protocol
        015 - Network Subsystem for Time Sharing Hosts

    5b. Telnet Options

        946 - Telnet Terminal Location Number Option
        933 - Output Marking Telnet Option
        930 - Telnet Terminal Type Option
        927 - TACACS User Identification Telnet Option
        885 - Telnet End of Record Option
        884 - Telnet Terminal Type Option
        861 - Telnet Extended Options - List Option
        860 - Telnet Timing Mark Option
        859 - Telnet Status Option
        858 - Telnet Suppress Go Ahead Option
        857 - Telnet Echo Option
        856 - Telnet Binary Transmission
        855 - Telnet Option Specifications
        854 - Telnet Protocol Specifications
        779 - Telnet Send-Location Option
        749 - Telnet SUPDUP-OUTPUT Option
        748 - Telnet Randomly-Lose Option
        736 - Telnet SUPDUP Option
        735 - Revised Telnet Byte Macro Option
        734 - SUPDUP Protocol
        747 - Recent Extensions to the SUPDUP Protocol
        746 - The SUPDUP Graphics Extension
        732 - Telnet Data Entry Terminal Option
        731 - Telnet Data Entry Terminal Option
        729 - Telnet Byte Macro Option
        727 - Telnet Logout Option
        726 - Remote Controlled Transmission and Echoing Telnet Option
        719 - Discussion on RCTE
        718 - Comments on RCTE from the Tenex Implementation Experience
        703, 702, 701 - Survey of New-Protocol Telnet Servers
        698 - Telnet Extended ASCII Option
        679 - February, 1975, Survey of New-Protocol Telnet Servers
        669 - November 1974, Survey of New-Protocol Telnet Servers
        659 - Announcing Additional Telnet Options
        658 - Telnet Output Line Feed Disposition
        657 - Telnet Output Vertical Tab Disposition Option
        656 - Telnet Output Vertical Tab Stops Option
        655 - Telnet Output Form Feed Disposition Option
        654 - Telnet Output Horizontal Tab Disposition Option
        653 - Telnet Output Horizontal Tab Stops Option
        652 - Telnet Output Carriage Return Disposition Option
        651 - Revised Telnet Status Option

       915 - Network Mail Path Service
       886 - Proposed Standard for Message Header Munging
       850 - Standard for Interchange of USENET Messages
       841 - Specification for Message Format for Computer Based
             Message Systems
       822 - Standard for the Format of ARPA Internet Text Messages
       821 - Simple Mail Transfer Protocol
       806 - Specification for Message Format for Computer Based
             Message Systems
       780, 772 - Mail Transfer Protocol
       786 - Mail Transfer Protocol - ISI TOPS-20 MTP-NIMAIL Interface
       785 - Mail Transfer Protocol - ISI TOPS-20 File Definitions
       784 - Mail Transfer Protocol - ISI TOPS-20 Implementation
       771 - Mail Transition Plan
       763 - Role Mailboxes
       757 - A Suggested Solution to the Naming, Addressing, and
             Delivery Problem for ARPANET Message Systems
       754 - Out-of-Net Host Addresses for Mail
       753 - Internet Message Protocol
       751 - Survey of FTP Mail and MLFL
       733 - Standard for the Format of ARPA Network Text Messages
       724 - Proposed Official Standard for the Format of ARPA Network
             Messages
       720 - Address Specification Syntax for Network Mail
       706 - On the Junk Mail Problem
       680 - Message Transmission Protocol
       644 - On the Problem of Signature Authentication for Network
             Mail
       577 - Mail Priority
       574 - Announcement of a Mail Facility at UCSB
       561 - Standardizing Network Mail Headers
       555 - Responses to Critiques of the Proposed Mail Protocol
       539, 524 - A Proposed Mail Protocol
       498 - On Mail Service to CCN
       491 - What is "Free"?
       475 - On FTP and the Network Mail System
       458 - Mail Retrieval via FTP
       333 - A Proposed Experiment with a Message Switching Protocol
       278, 224, 221, 196 - A Mail Box Protocol

    5f. Facsimile and Bitmaps

       809 - UCL Facsimile System
       804 - Facsimile Formats
       803 - Dacom 450/500 Facsimile Date Transcoding
       798 - Decoding Facsimile Data From the Rapicom 450
       797 - Bitmap Formats
       769 - Rapicom 450 Facimile File Format

     5g. Graphics

        965 - A Format for a Graphical Communication Protocol
        553 - Draft Design for a Text/Graphics Protocol
        493 - Graphics Protocol
        401 - Conversion of NGP-0 Coordinates to Device Specific
              Coordinates
        398 - UCSB Online Graphics
        387 - Some Experiences in Implementing Network Graphics
              Protocol Level 0
        351 - Information Form for the ARPANET Graphics Resources
              Notebook
        336 - Level 0 Graphics Input Protocol
        296 - DS-1 Display System
        292 - Graphics Protocol - Level 0 only
        285 - Network Graphics
        268 - Graphics Facilities Information
        199 - Suggestions for a Network Data-Telnet Graphics Protocol
        192 - Some Factors Which a Network Graphics Protocol Must
              Consider
        191 - Graphics Implementation and Conceptualization at ARC
        186 - A Network Graphics Loader
        184 - Proposed Graphic Display Modes
        181, 177 - A Device Independent Graphical Display Description
        178 - Network Graphics Attention Handling
        125, 086 - Proposal for a Network Standard Format for a Data
              Stream to Control Graphics Display
        094 - Some Thoughts on Network Graphics

     5h. Data Management

        304 - A Data Management System Proposal for the ARPA Network
        195 - Data Computers - Data Descriptions and Access Language
        194 - The Data Reconfiguration Service - Compiler/Interpreter
              Implementation Notes
        166 - Data Reconfiguration Service - An Implementation
              Specification
        144 - Data Sharing on Computer Networks
        138 - Status Report on Proposed Data Reconfiguration Service
        083 - Language-Machine for Data Reconfiguration

     5i. Remote Job Entry

        740, 599, 589, 325, 189, 088 - CCN Network Remote Job Entry
              Program - NETRJS
        725 - An RJE Protocol for a Resource Sharing Network
        499 - Harvard's Network RJE
        490 - Surrogate RJS for UCLA-CCN
        477, 436 - Remote Job Service at UCSB

           407 - Remote Job Entry
           368 - Comments on "Proposed Remote Job Entry Protocol"
           360 - Proposed Remote Job Entry Protocol
           338 - EBCDIC/ASCII Mapping for Network RJE
           307 - Using Network Remote Job Entry
           283 - NETRJT - Remote Job Service Protocol for TIPS
           105 - Network Specification for Remote Job Entry and Remote Job
                 Output Retrieval at UCSB

     5j. Time

           958, 957, 956 - Network Time Protocol
           868 - Time Server Protocol
           867 - Daytime Protocol
           778 - DCNET Time Server Protocol
           738 - Time Server
           685 - Response Time in Cross-network Debugging
           034 - Some Brief Preliminary Notes on the ARC Clock
           032 - Some Thoughts on SRI's Proposed Real Time Clock
           028 - Time Standards

     5k. Other

           978 - Voice File Interchange Protocol (VFIP)
           972 - Password Generator Protocol
           954, 812 - Whois Protocol
           951 - Bootstrap Protocol
           937, 918 - Post Office Protocol
           931, 912 - Authentication Service
           913 - Simple File Transfer Protocol
           909 - Loader Debugger Protocol
           891 - DCN Local Net Protocol
           887 - Resource Location Protocol
           866 - Active Users Protocol
           865 - Quote of the Day Protocol
           864 - Character Generator Protocol
           863, 361, 348 - Discard Protocol
           862, 361, 347 - Echo Protocol
           821, 822 - Simple Mail Transfer Protocol
           783 - Trivial File Transfer Protocol
           767 - Document Formats
           759 - Internet Message Protocol
           742 - Finger Protocol
           734 - SUPDUP Protocol
           726 - Remote Controlled Transmission and Echoing Telnet Option
           666 - Specification of the Unified User-Level Protocol
           621 - NIC User Directories at SRI-ARC
           569 - Network Standard Text Editor
           470 - Change in Socket for TIP News Facility

   6. Program Documentation

      6a. General

   7. Network Specific

      7a. ARPANET

        241 - Connecting Computers to NLC Ports
        239 - Host Mnemonics Proposed in RFC 226
        237 - The NIC's View of Standard Host Names
        236 - Standard Host Names
        233 - Standardization of Host Call Letters
        230 - Toward Reliable Operation of Minicomputer-based Terminals
              on a TIP
        229 - Standard Host Names
        228 - Clarification
        226 - Standardization of Host Mnemonics
        218 - Changing the IMP Status Reporting
        213 - IMP System Change Notification
        209 - Host/IMP Interface Documentation
        208 - Address Tables
        073, 067 - Proposed Change to Host/IMP Spec to Eliminate
              Marking
        071 - Reallocation in Case of Input Error
        070 - A Note On Padding
        064 - Getting Rid of Marking
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        017a, 017 - Some Questions Re: HOST-IMP Protocol
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    7b. Internet Protocol On Networks

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        907 - Host Access Protocol
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    7c. Host Front End Protocols

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      8a. General

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         214, 193 - Network Checkout
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         153 - SRI ARC-NIC Status
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      8b. Surveys

         971 - A Survey of Data Representation Standards
         876 - Survey of SMTP Implementations
         848 - Who Provides the "Little" TCP Services?
         847 - Summary of Smallberg Surveys
         844 - Who Talks ICMP, too? Survey of 18 February 1983
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              Who Talks TCP?
         787 - Connectionless Data Transmission Survey/Tutorial
         703, 702, 701, 679, 669 - Survey of New-Protocol Telnet Servers
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   10. Site Documentation

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         30, 27, 24, 16, 10, 3 - Documentation Conventions

   11. Other Standards

      11a. ANSI

         570 - Experimental Input Mapping Between NVT ASCII and UCSB
               Online System
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         020 - ASCII Format for Network Interchange

      11b. CCITT

         987 - Mapping Between X.400 and RFC 822
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      11c. NRC

         942 - Transport Protocols for Department of Defense Data
               Networks
         939 - Executive Summary of the NRC Report on Transport
               Protocols for Department of Defense Data Networks

      11d. ISO

         995 - End System to Intermediate System Routing Exchange
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         994 - Final Text of DIS 8473, Protocol for Providing the
               Connectionless Mode Network Service
         982 - Guidelines for the Specification of the Structure of the
               Domain Specific Part (DSP) of the ISO Standard NSAP
               Address
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               Network Layer Addressing
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               Services
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   12. Never Issued

      12a. Never Issued

          014, 026, 092, 159, 201, 220, 244, 248, 257, 258, 259, 260,
          261, 262, 272, 275, 277, 279, 284, 337, 341, 358, 375, 380,
          383, 397, 424, 427, 428, 444, 465, 481, 484, 502, 507, 517,
          536, 540, 541, 554, 558, 564, 572, 575, 583, 605, 639, 641,
          646, 648, 649, 650, 664, 665, 668, 670, 673, 676, 682, 693,
          709, 710, 711, 715, 723, 853.

REQUEST FOR COMMENTS LIST WITH ABSTRACTS

   RFC   Author   Date   Title
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   999   Westine   Mar 87   Requests For Comments Summary

      A summary of the Request for Comments Documents from RFC 900-999.

   998   Lambert   Mar 87   NETBLT: A Bulk Data Transfer
                                      Protocol

      This document is a description of and a specification for the
      NETBLT protocol. It is a revision of the specification published
      in RFC-969. NETBLT (NETwork BLock Transfer) is a transport level
      protocol intended for the rapid transfer of a large quantity of
      data between computers. It provides a transfer that is reliable
      and flow controlled, and is designed to provide maximum throughput
      over a wide variety of networks. Although NETBLT currently runs
      on top of the Internet Protocol (IP), it should be able to operate
      on top of any datagram protocol similar in function to IP.

      This document is published for discussion and comment, and does
      not constitute a standard. The proposal may change and certain
      parts of the protocol have not yet been specified; implementation
      of this document is therefore not advised.

   997   Reynolds   Mar 87   Internet Numbers

      This memo is an official status report on the network numbers used
      in the Internet community. As of 1-Mar-87 the Network Information
      Center (NIC) at SRI International has assumed responsibility for
      assignment of Network Numbers and Autonomous System Numbers. This
      RFC documents the current assignments of these numbers at the time
      of this transfer of responsibility.

   996   Mills   Feb 87   Statistics Server

      This RFC specifies a standard for the ARPA Internet community.
      Hosts and gateways on the DARPA Internet that choose to implement
      a remote statistics monitoring facility may use this protocol to
      send statistics data upon request to a monitoring center or
      debugging host.

   995   ANSI   Apr 86   End System to Intermediate System
                                      Routing Exchange Protocol for use in
                                      conjunction with ISO 8473.

      This Protocol is one of a set of International Standards produced

to facilitate the interconnection of open systems. The set of
standards covers the services and protocols required to achieve
such interconnection.

This Protocol is positioned with respect to other related
standards by the layers defined in the Reference Model for Open
Systems Interconnection (ISO 7498) and by the structure defined in
the Internal Organization of the Network Layer (DIS 8648). In
particular, it is a protocol of the Network Layer. This Protocol
permits End Systems and Intermediate Systems to exchange
configuration and routing information to facilitate the operation
of the routing and relaying functions of the Network Layer.

    994   ANSI   Mar 86   Final Text of DIS 8473, Protocol for
                                        Providing the Connectionless Mode
                                        Network Service

This Protocol Standard is one of a set of International Standards
produced to facilitate the interconnection of open systems. The
set of standards covers the services and protocols required to
achieve such interconnection.

This Protocol Standard is positioned with respect to other related
standards by the layers defined in the Reference Model for Open
Systems Interconnection (ISO 7498). In particular, it is a
protocol of the Network Layer. This Protocol may be used between
network-entities in end systems or in Network Layer relay systems
(or both). It provides the Connectionless-mode Network Service as
defined in Addendum 1 to the Network Service Definition Covering
Connectionless-mode Transmission (ISO 8348/AD1).

    993   Clark   Dec 86   PCMAIL: A Distributed Mail System
                                        for Personal Computers

This document is a discussion of the PCMAIL workstation-based
distributed mail system. It is a revision of the design published
in NIC RFC 984. The revision is based on discussion and comments
from a variety of sources, as well as further research into the
design of interactive PCMAIL clients and the use of client code on
machines other than IBM PCs. As this design may change,
implementation of this document is not advised.

    992   Birman   Nov 86   On Communication Support for
                                        Fault-Tolerant Process Groups

This memo describes a collection of multicast communication
primitives integrated with a mechanism for handling process
failure and recovery. These primitives facilitate the
implementation of fault-tolerant process groups, which can be used

     to provide distributed services in an environment subject to
     non-malicious crash failures.

     Here, we argue that the form of "best effort" reliability provided
     by host groups may not address the requirements of those
     researchers who are building fault tolerant software. Our basic
     premise is that reliable handling of failures, recoveries, and
     dynamic process migration are important aspects of programming in
     distributed environments, and that communication support that
     provides unpredictable behavior in the presence of such events
     places an unacceptable burden of complexity on higher level
     application software. This complexity does not arise when using
     the fault-tolerant process group alternative.

  991   Reynolds   Nov 86   Official ARPA-Internet Protocols

     This RFC identifies the documents specifying the official
     protocols used in the Internet. Comments indicate any revisions
     or changes planned. This memo is an official status report on the
     numbers used in protocols in the ARPA-Internet community. This
     memo obsoletes RFCs 961, 944, 924, 901, 880, 840, 694, 661, 617,
     582, 580, 552.

  990   Reynolds   Nov 86   Assigned Numbers

     This Network Working Group Request for Comments documents the
     currently assigned values from several series of numbers used in
     network protocol implementations. This memo is an official status
     report on the numbers used in protocols in the ARPA-Internet
     community. This memo obsoletes RFCs 960, 943, 923, 900, 870, 820,
     790, 776, 770, 762, 758, 755, 750, 739, 717, 604, 503, 433, 349,
     322, 317, 204, 179, 175, 167.

  989   Linn   Feb 87   Privacy Enhancement for Internet
                                   Electronic Mail: Part I: Message
                                   Encipherment and Authentication
                                   Procedures

     This RFC suggests a proposed protocol for the Internet community
     and requests discussion and suggestions for improvements. This
     RFC is the outgrowth of a series of IAB Privacy Task Force
     meetings and of internal working papers distributed for those
     meetings. This RFC defines message encipherment and
     authentication procedures, as the initial phase of an effort to
     provide privacy enhancement services for electronic mail transfer
     in the Internet. It is intended that the procedures defined here
     be compatible with a wide range of key management approaches,
     including both conventional (symmetric) and public-key
     (asymmetric) approaches for encryption of data encrypting keys.

Use of conventional cryptography for message text encryption
and/or authentication is anticipated.

Privacy enhancement services (confidentiality, authentication, and
message integrity assurance) are offered through the use of
end-to- end cryptography between originator and recipient User
Agent processes, with no special processing requirements imposed
on the Message Transfer System at endpoints or at intermediate
relay sites. This approach allows privacy enhancement facilities
to be incorporated on a site-by-site or user-by-user basis without
impact on other Internet entities. Interoperability among
heterogeneous components and mail transport facilities is
supported.

988   Deering   Jul 86   Host Extensions for IP Multicasting

This memo specifies the extensions required of a host
implementation of the Internet Protocol (IP) to support
internetwork multicasting. This specification supersedes that
given in RFC 966, and constitutes a proposed protocol standard for
IP multicasting in the ARPA-Internet. The reader is directed to
RFC 966 for a discussion of the motivation and rationale behind
the multicasting extension specified here.

987   Kille   Jun 86   Mapping Between X.400 and RFC 822

The X.400 series of protocols have been defined by CCITT to
provide an Interpersonal Messaging Service (IPMS), making use of a
store and forward Message Transfer Service. It is expected that
this standard will be implemented very widely. This document
describes a set of mappings which will enable interworking between
systems operating the X.400 protocols and systems using RFC 822
mail protocol or protocols derived from RFC 822. This RFC
suggests a proposed protocol for the ARPA-Internet community, and
requests discussion and suggestions for improvements.

986   Callon   Jun 86   Working Draft -- Guidelines for the
                                Use of Internet-IP addressing in the
                                ISO Connectionless-Mode Network
                                Protocol

This RFC suggests a method to allow the existing IP addressing,
including the IP protocol field, to be used for the ISO
Connectionless Network Protocol (CLNP). This is a draft solution
to one of the problems inherent in the use of "ISO-grams" in the
DoD Internet. Related issues will be discussed in subsequent
RFCs. This RFC suggests a proposed protocol for the ARPA-Internet
community, and requests discussion and suggestions for
improvements.

985   Mills   May 86   Requirements for Internet Gateways

   This RFC summarizes the requirements for gateways to be used on
   networks supporting the DARPA Internet protocols. While it
   applies specifically to the National Science Foundation research
   programs, the requirements are stated in a general context and are
   believed applicable throughout the Internet community. The
   purpose of this document is to present guidance for vendors
   offering products that might be used or adapted for use in an
   Internet application. It enumerates the protocols required and
   gives references to RFCs and other documents describing the
   current specification. Suggestions and comments on this document
   are welcomed and can be sent to Dave Mills (Mills@D.ISI.EDU) or
   Dave Farber (Farber@HUEY.UDEL.EDU).

984   Clark   May 86   PCMAIL: A Distributed Mail System
                                   for Personal Computers

   This document is a preliminary discussion of the design of a
   personal-computer-based distributed mail system. Pcmail is a
   distributed mail system that provides mail service to an arbitrary
   number of users, each of which owns one or more personal computers
   (PCs). The system is divided into two halves. The first consists
   of a single entity called the "repository". The repository is a
   storage center for incoming mail. Mail for a Pcmail user can
   arrive externally from the Internet or internally from other
   repository users. The repository also maintains a stable copy of
   each user's mail state. The repository is therefore typically a
   computer with a large amount of disk storage. It is published for
   discussion and comment, and does not constitute a standard. As
   the proposal may change, implementation of this document is not
   advised.

983   Cass   Apr 86   ISO Transport Services on Top of the
                                   TCP

   This memo describes a proposed protocol standard for the
   ARPA-Internet community. The CCITT and the ISO have defined
   various session, presentation, and application recommendations
   which have been adopted by the international community and
   numerous vendors. To the largest extent possible, it is desirable
   to offer these higher level services directly to the
   ARPA-Internet, without disrupting existing facilities. This
   permits users to develop expertise with ISO and CCITT applications
   which previously were not available in the ARPA-Internet. The
   intention is that hosts within the ARPA-Internet that choose to
   implement ISO TSAP services on top of the TCP be expected to adopt
   and implement this standard. Suggestions for improvement are
   encouraged.

982   ANSI   Apr 86   Guidelines for the Specification of
                                   the Structure of the Domain Specific
                                   Part (DSP) of the ISO Standard NSAP
                                   Address

   This RFC is a draft working document of the ANSI "Guidelines for
   the Specification of the Structure of the Domain Specific Part
   (DSP) of the ISO Standard NSAP Address". It provides guidance to
   private address administration authorities on preferred formats
   and semantics for the Domain Specific Part (DSP) of an NSAP
   address. This RFC specifies the way in which the DSP may be
   constructed so as to facilitate efficient address assignment.
   This RFC is for informational purposes only and its distribution
   is unlimited and does not specify a standard of the ARPA-Internet.

981   Mills   Mar 86   An Experimental Multiple-Path
                                   Routing Algorithm

   This document introduces wiretap algorithms, a class of
   experimental, multiple routing algorithms that compute
   quasi-optimum routes for stations sharing a packet-radio broadcast
   channel. The primary route (a minimum-distance path), and
   additional paths ordered by distance, which serve as alternate
   routes should the primary route fail, are computed. This
   prototype is presented as an example of a class of routing
   algorithms and data-base management techniques that may find wider
   application in the Internet community. Discussions and
   suggestions for improvements are welcomed.

980   Jacobsen   Mar 86   Protocol Document Order Information

   This RFC indicates how to obtain various protocol documents used
   in the DARPA research community. Included is an overview of the
   new 1985 DDN Protocol Handbook and available sources for obtaining
   related documents (such as DOD, ISO, and CCITT).

979   Malis   Mar 86   PSN End-to-End Functional
                                   Specification

   This memo is an updated version of BBN Report 5775, "End-to-End
   Functional Specification". It describes important changes to the
   functionality of the interface between a host and the PSN (Packet
   Switch Node), and should be carefully reviewed by anyone involved
   in supporting a host on either the ARPANET or MILNET. The new
   End-to-End Protocol (EE) is being developed in order to correct a
   number of deficiencies in the old End-to-End Protocol, to improve
   its performance and overall throughput, and to better equip the
   Packet Switch Node (also known as the IMP) to support its current
   and anticipated host population.

978   Reynolds   Feb 86   Voice File Interchange Protocol
                                  (VFIP)

   The purpose of the Voice File Interchange Protocol (VFIP) is to
   permit the interchange of various types of speech files between
   different systems in the ARPA-Internet community. Suggestions for
   improvement are encouraged.

977   Kantor   Feb 86   Network News Transfer Protocol

   NNTP specifies a protocol for the distribution, inquiry,
   retrieval, and posting of news articles using a reliable
   stream-based transmission of news among the ARPA-Internet
   community. NNTP is designed so that news articles are stored in a
   central database allowing a subscriber to select only those items
   he wishes to read. Indexing, cross-referencing, and expiration of
   aged messages are also provided. This RFC suggests a proposed
   protocol for the ARPA-Internet community, and requests discussion
   and suggestions for improvements.

976   Horton   Feb 86   UUCP Mail Interchange Format
                                  Standard

   This document defines the standard format for the transmission of
   mail messages between computers in the UUCP Project. It does not
   however, address the format for storage of messages on one
   machine, nor the lower level transport mechanisms used to get the
   date from one machine to the next. It represents a standard for
   conformance by hosts in the UUCP zone.

975   Mills   Feb 86   Autonomous Confederations

   This RFC proposes enhancements to the Exterior Gateway Protocol
   (EGP) to support a simple, multiple-level routing capability while
   preserving the robustness features of the current EGP model. The
   enhancements generalize the concept of core system to include
   multiple communities of autonomous systems, called autonomous
   confederations. Discussion and suggestions for improvement are
   requested.

974   Partridge   Jan 86   Mail Routing and the Domain System

   This RFC presents a description of how mail systems on the
   Internet are expected to route messages based on information from
   the domain system. This involves a discussion of how mailers
   interpret MX RRs, which are used for message routing.

973   Mockapetris   Jan 86   Domain System Changes and
                                  Observations

   This RFC documents updates to Domain Name System specifications
   RFC-882 and RFC-883, suggests some operational guidelines, and
   discusses some experiences and problem areas in the present
   system.

972   Wancho   Jan 86   Password Generator Protocol

   This RFC specifies a standard for the ARPA-Internet community.
   The Password Generator Service (PWDGEN) provides a set of six
   randomly generated eight-character "words" with a reasonable level
   of pronounceability, using a multi-level algorithm. Hosts on the
   ARPA-Internet that choose to implement a password generator
   service are expected to adopt and implement this standard.

971   DeSchon   Dec 85   A Survey of Data Representation
                                  Standards

   This RFC is a comparison of several data representation standards
   that are currently in use. The standards discussed are the CCITT
   X.409 recommendation, the NBS Computer Based Message System (CBMS)
   standard, DARPA Multimedia Mail system, the Courier remote
   procedure call protocol, and the SUN Remote Procedure Call
   package. No proposals in this document are intended as standards
   for the ARPA-Internet at this time. Rather, it is hoped that a
   general consensus will emerge as to the appropriate approach to a
   data representation standard, leading eventually to the adoption
   of an ARPA-Internet standard.

970   Nagle   Dec 85   On Packet Switches With Infinite
                                  Storage

   The purpose of this RFC is to focus discussion on a particular
   problem in the ARPA-Internet and possible methods of solution.
   Most prior work on congestion in datagram systems focuses on
   buffer management. In this memo, the case of a packet switch with
   infinite storage is considered. Such a packet switch can never
   run out of buffers. It can, however, still become congested. The
   meaning of congestion in an infinite-storage system is explored.
   An unexpected result is found that shows a datagram network with
   infinite storage, first-in-first-out queuing, at least two packet
   switches, and a finite packet lifetime will, under overload, drop
   all packets. By attacking the problem of congestion for the
   infinite-storage case, new solutions applicable to switches with
   finite storage may be found. No proposed solutions this document
   are intended as standards for the ARPA-Internet at this time.

969   Clark   Dec 85   NETBLT: A Bulk Data Transfer
                                 Protocol

   This RFC has been replaced by RFC 998. This is a preliminary
   discussion of the Network Block Transfer (NETBLT) protocol.
   NETBLT is intended for the rapid transfer of a large quantity of
   data between computers. It provides a transfer that is reliable
   and flow controlled, and is structured to provide maximum
   throughput over a wide variety of networks. This description is
   published for discussion and comment, and does not constitute a
   standard. As the proposal may change, implementation of this
   document is not advised.

968   Cerf   Dec 85   'Twas the Night Before Start-up'

   This memo discusses problems that arise and debugging techniques
   used in bringing a new network into operation.

967   Padlipsky   Dec 85   All Victims Together

   This RFC proposes a new set of RFCs on how the networking code is
   integrated with various operating systems. It appears that this
   topic has not received enough exposure in the literature. Comments
   and suggestions are encouraged.

966   Deering   Dec 85   A Multicast Extension to the
                                 Internet Protocol

   This RFC defines a model of service for Internet multicasting and
   proposes an extension to the Internet Protocol (IP) to support
   such a multicast service. Discussion and suggestions for
   improvements are requested.

965   Aguilar   Dec 85   A Format for a Graphical
                                 Communication Protocol

   This RFC describes the requirements for a graphical format on
   which to base a graphical on-line communication protocol, and
   proposes an Interactive Graphical Communication Format using the
   GKSM session metafile. We hope this contribution will encourage
   the discussion of multimedia data exchange and the proposal of
   solutions.

964   Sidhu   Nov 85   Some Problems with the Specification
                                 of the Military Standard
                                 Transmission Control Protocol

   The purpose of this RFC is to provide helpful information on the
   Military Standard Transmission Control Protocol (MIL-STD-1778) so

that one can obtain a reliable implementation of this protocol
standard. This note points out three errors with this
specification. This note also proposes solutions to these
problems.

963   Sidhu   Nov 85   Some Problems with the Specification
                                of the Military Standard Internet
                                Protocol

The purpose of this RFC is to provide helpful information on the
Military Standard Internet Protocol (MIL-STD-1777) so that one can
obtain a reliable implementation of this protocol. This paper
points out several problems in this specification. This note also
proposes solutions to these problems.

962   Padlipsky   Nov 85   TCP-4 Prime

This memo is in response to Bob Braden's call for a transaction
oriented protocol (RFC-955), and continues the discussion of a
possible transaction oriented transport protocol. This memo does
not propose a standard.

961   Reynolds   Dec 85   Official ARPA-Internet Protocols

This RFC has been replaced by RFC 991.

960   Reynolds   Dec 85   Assigned Numbers

This RFC has been replaced by RFCs 997 and 990.

959   Postel   Oct 85   File Transfer Protocol (FTP)

This memo is the official specification of the File Transfer
Protocol (FTP) for the DARPA-Internet community. The primary
intent is to clarify and correct the documentation of the FTP
specification, not to change the protocol. The following new
optional commands are included in this edition of the
specification: Change to Parent Directory (CDUP), Structure Mount
(SMNT), Store Unique (STOU), Remove Directory (RMD), Make
Directory (MKD), Print Directory (PWD), and System (SYST). Note
that this specification is compatible with the previous edition.

958   Mills   Sep 85   Network Time Protocol (NTP)

This document describes the Network Time Protocol (NTP), a
protocol for synchronizing a set of network clocks using a set of
distributed clients and servers. NTP is built on the User
Datagram Protocol (UDP), which provides a connectionless transport
mechanism. It evolved from the Time Protocol and the ICMP

Timestamp message and is a suitable replacement for both. This
RFC suggests a proposed protocol for the ARPA-Internet community,
and requests discussion and suggestions for improvements.

957   Mills   Sep 85   Experiments in Network Clock
                                    Synchronization

This RFC discusses some experiments in clock synchronization in
the ARPA-Internet community, and requests discussion and
suggestions for improvements. One of the services frequently
neglected in computer network design is a high-quality,
time-of-day clock capable of generating accurate timestamps with
small errors compared to one-way network delays. Such a service
would be useful for tracing the progress of complex transactions,
synchronizing cached data bases, monitoring network performance
and isolating problems. In this memo, one such clock service
design will be described and its performance assessed. This
design has been incorporated as an integral part of the network
routing and control protocols of the Distributed Computer Network
(DCnet) architecture.

956   Mills   Sep 85   Algorithms for Synchronizing Network
                                    Clocks

This RFC discussed clock synchronization algorithms for the
ARPA-Internet community, and requests discussion and suggestions
for improvements. The recent interest within the Internet
community in determining accurate time from a set of mutually
suspicious network clocks has been prompted by several occasions
in which errors were found in usually reliable, accurate clock
servers after thunderstorms which disrupted their power supply.
To these sources of error should be added those due to
malfunctioning hardware, defective software and operator mistakes,
as well as random errors in the mechanism used to set and
synchronize clocks. This report suggests a stochastic model and
algorithms for computing a good estimator from time-offset samples
measured between clocks connected via network links. Included in
this report are descriptions of certain experiments which give an
indication of the effectiveness of the algorithms.

955   Braden   Sep 85   Towards a Transport Service for
                                    Transaction Processing Applications

The DoD Internet Protocol Suite includes two alternative transport
service protocols, TCP and UDP, which provide virtual circuit and
datagram service, respectively. These two protocols represent
points in the space of possible transport service attributes which
are quite "far apart". We want to examine an important class of
applications, those which perform what is often called

"transaction processing". We will see that the communication
needs for these applications fall into the gap "between" TCP and
UDP -- neither protocol is very appropriate.

954   Harrenstien Oct 85   NICNAME/WHOIS

This RFC is the official specification of the NICNAME/WHOIS
protocol. This memo describes the protocol and the service. This
is an update of RFC 812. Obsoletes RFC 812.

953   Harrenstien Oct 85   Hostname Server

This RFC is the official specification of the Hostname Server
Protocol. This edition of the specification includes minor
revisions to RFC 811 which brings it up to date. Obsoletes RFC
811.

952   Harrenstien Oct 85   DoD Internet Host Table
                                  Specification

This RFC is the official specification of the format of the
Internet Host Table. This edition of the specification includes
minor revisions to RFC 810 which brings it up to date. Obsoletes
RFCs 810, 608.

951   Croft   Sep 85   Bootstrap Protocol (BOOTP)

This RFC describes an IP/UDP bootstrap protocol (BOOTP) which
allows a diskless client machine to discover its own IP address,
the address of a server host, and the name of a file to be loaded
into memory and executed. The bootstrap operation can be thought
of as consisting of TWO PHASES. This RFC describes the first
phase, which could be labeled 'address determination and bootfile
selection'. After this address and filename information is
obtained, control passes to the second phase of the bootstrap
where a file transfer occurs. The file transfer will typically
use the TFTP protocol, since it is intended that both phases
reside in PROM on the client. However BOOTP could also work with
other protocols such as SFTP or FTP. This RFC suggests a proposed
protocol for the ARPA-Internet community, and requests discussion
and suggestions for improvements.

950   Mogul   Aug 85   Internet Standard Subnetting
                                  Procedure

This memo discusses the utility of "subnets" of Internet networks,
which are logically visible sub-sections of a single Internet
network. For administrative or technical reasons, many
organizations have chosen to divide one Internet network into

several subnets, instead of acquiring a set of Internet network
numbers. This memo specifies procedures for the use of subnets.
These procedures are for hosts (e.g., workstations). The
procedures used in and between subnet gateways are not fully
described. Important motivation and background information for a
subnetting standard is provided in RFC-940. This RFC specifies a
protocol for the ARPA-Internet community. If subnetting is
implemented it is strongly recommended that these procedures be
followed.

949   Padlipsky   Jul 85   FTP Unique-Named Store Command

There are various contexts in which it would be desirable to have
an FTP command that had the effect of the present STOR but rather
than requiring the sender to specify a file name istead caused the
resultant file to have a unique name relative to the current
directory.

This RFC proposes an extension to the File Transfer Protocol for
the ARPA-Internet community, and requests discussion and
suggestions for improvements.

948   Winston   Jun 85   Two Methods for the Transmission of
                                  IP Datagrams Over IEEE 802.3
                                  Networks

This memo describes two methods of encapsulating Internet Protocol
(IP) datagrams on an IEEE 802.3 network.

947   Lebowitz   Jun 85   Multi-Network Broadcasting Within
                                  the Internet

This RFC describes the extension of a network's broadcast domain
to include more than one physical network through the use of a
broadcast packet repeater.

946   Nedved   May 85   Telnet Terminal Location Number
                                  Option

Many systems provide a mechanism for finding out where a user is
logged in from usually including information about telephone
extension and office occupants names. The information is useful
for physically locating people and/or calling them on the phone.
In 1982 CMU designed and implemented a terminal location database
and modified existing network software to handle a 64-bit number
called the Terminal Location Number (or TTYLOC). It now seems
appropriate to incorporate this mechanism into the TCP-based
network protocol family. The mechanism is not viewed as a
replacement for the Terminal Location Telnet Option

(SEND-LOCATION) but as a shorthand mechansim for communicating
terminal location information between hosts in a localized
community. This RFC proposes a new option for Telnet for the
ARPA-Internet community, and requests discussion and suggestions
for improvements.

945   Postel   May 85   A DoD Statement on the NRC Report

   In May 1983, the National Research Council (NRC) was asked jointly
   by the DoD and NBS to study the issues and recommend a course of
   action. The final report of the NRC committee was published in
   February 1985 (see RFC-942). The enclosed letter is from Donald C.
   Latham (ASDC3I) to DCA transmitting the NRC report and requesting
   specific actions relative to the recommendations of the report.

   This RFC reproduces a letter from the Assistant Secretary of
   Defense for Command, Control, Communications, and Intelligence
   (ASDC3I) to the Director of the Defense Communications Agency
   (DCA). This letter is distributed for information only.

944   Reynolds   Apr 85   Official ARPA-Internet Protocols

   This RFC has been replaced by RFC 991.

943   Reynolds   Apr 85   Assigned Numbers

   This RFC has been replaced by RFCs 997 and 990.

942   NRC   Feb 85   Transport Protocols for Department
                                    of Defense Data Networks

   This RFC reproduces the National Research Council report resulting
   from a study of the DoD Internet Protocol (IP) and Transmission
   Control Protocol (TCP) in comparison with the ISO Internet
   Protocol (ISO-IP) and Transport Protocol level 4 (TP-4).

941   ISO   Apr 85   Addendum to the Network Service
                                    Definition Covering Network Layer
                                    Addressing

   This Addendum to the Network Service Definition Standard, ISO
   8348, defines the abstract syntax and semantics of the Network
   Address (Network Service Access Point Address). The Network
   Address defined in this Addendum is the address that appears in
   the primitives of the connection-mode Network Service as the
   calling address, called address, and responding address
   parameters, and in the primitives of the connectionless-mode
   Network Service as the source address and destination address
   parameters.

        This document is distributed as an RFC for information only. It
        does not specify a standard for the ARPA-Internet.

   940   GADS   Apr 85   Toward an Internet Standard Scheme
                                       for Subnetting

        Several sites now contain a complex of local links connected to
        the Internet via a gateway. The details of the internal
        connectivity are of little interest to the rest of the Internet.
        One way of organizing these local complexes of links is to use the
        same strategy as the Internet uses to organize networks, that is,
        to declare each link to be an entity (like a network) and to
        interconnect the links with devices that perform routing functions
        (like gateways). This general scheme is called subnetting, the
        individual links are called subnets, and the connecting devices
        are called subgateways (or bridges, or gateways). This RFC
        discusses standardizing the protocol used in subnetted
        environments in the ARPA-Internet. Distribution of this memo is
        unlimited. The author of this RFC is the Gateway Algorithms and
        Data Structures (GADS) Task Force, chaired by David L. Mills.

   939   NRC   Feb 85   Executive Summary of the NRC Report
                                       on Transport Protocols for
                                       Department of Defense Data Networks

        This RFC reproduces the material from the "front pages" of the
        National Research Council report resulting from a study of the DOD
        Internet Protocol (IP) and Transmission Control Protocol (TCP) in
        comparison with the ISO Internet Protocol (ISO-IP) and Transport
        Protocol level 4 (TP-4). The point of this RFC is to make the
        text of the Executive Summary widely available in a timely way.
        The order of presentation has been altered, and the pagination
        changed.

   938   Miller   Feb 85   Internet Reliable Transaction
                                       Protocol Functional and Interface
                                       Specification

        This RFC is being distributed to members of the DARPA research
        community in order to solicit their reactions to the proposals
        contained in it. While the issues discussed may not be directly
        relevant to the research problems of the DARPA community, they may
        be interesting to a number of researchers and implementors. This
        RFC suggests a proposed protocol for the ARPA-Internet community,
        and requests discussion and suggestions for improvements.

937   Reynolds   Feb 85   Post Office Protocol - Version 2

   This RFC suggests a simple method for workstations to dynamically
   access mail from a mailbox server. This RFC specifies a proposed
   protocol for the ARPA-Internet community, and requests discussion
   and suggestions for improvement. This memo is a revision of
   RFC 918.

936   Karels   Feb 85   Another Internet Subnet Addressing
                                 Scheme

   There have been several proposals for schemes to allow the use of
   a single Internet network number to refer to a collection of
   physical networks under common administration which are reachable
   from the rest of the Internet by a common route. Such schemes
   allow a simplified view of an otherwise complicated topology from
   hosts and gateways outside of this collection. They allow the
   complexity of the number and type of these networks, and routing
   to them, to be localized. Additions and changes in configuration
   thus cause no detectable change, and no interruption of service,
   due to slow propagation of routing and other information outside
   of the local environment. These schemes also simplify the
   administration of the network, as changes do not require
   allocation of new network numbers for each new cable installed.
   This proposal discusses an alternative scheme, one that has been
   in use at the University of California, Berkeley since April 1984.
   This RFC suggests a proposed protocol for the ARPA-Internet
   community, and requests discussion and suggestions for
   improvements.

935   Robinson   Jan 85   Reliable Link Layer Protocols

   This RFC discusses protocols proposed recently in RFCs 914 and
   916, and suggests a proposed protocol that could meet the same
   needs addressed in those memos. The stated need is reliable
   communication between two programs over a full-duplex,
   point-to-point communication link, and in particular the RFCs
   address the need for such communication over an asynchronous link
   at relatively low speeds. The suggested protocol uses the methods
   of existing national and international data link layer standards.
   This RFC suggests a proposed protocol for the ARPA-Internet
   community, and requests discussion and suggestions for
   improvements.

934   Rose   Jan 85   Proposed Standard for Message
                                 Encapsulation

   This memo concerns itself with message forwarding. Forwarding can
   be thought of as encapsulating one or more messages inside

another. Although this is useful for transfer of past
correspondence to new recipients, without a decapsulation process
(which this memo terms "bursting"), the forwarded messages are of
little use to the recipients because they can not be distributed,
forwarded, replied-to, or otherwise processed as separate
individual messages. In order to burst a message it is necessary
to know how the component messages were encapsulated in the draft.
At present there is no unambiguous standard for interest group
digests. This RFC proposes a proposed protocol for the
ARPA-Internet community, and requests discussion and suggestions
for improvements.

933   Silverman   Jan 85   Output Marking Telnet Option

    This proposed option would allow a Server-Telnet to send a banner
    to a User-Telnet so that this banner would be displayed on the
    workstation screen independently of the application software
    running in the Server-Telnet.

932   Clark   Jan 85   A Subnetwork Addressing Scheme

    This RFC proposes an alternative addressing scheme for subnets
    which, in most cases, requires no modification to host software
    whatsoever. The drawbacks of this scheme are that the total
    number of subnets in any one network are limited, and that
    modification is required to all gateways.

931   StJohns   Jan 85   Authentication Server

    This RFC suggests a proposed protocol for the ARPA-Internet
    community, and requests discussion and suggestions for
    improvements. This is the second draft of this proposal
    (superseding RFC 912) and incorporates a more formal description
    of the syntax for the request and response dialog, as well as a
    change to specify the type of user identification returned.

930   Solomon   Jan 85   Telnet Terminal Type Option

    This RFC specifies a standard for the ARPA-Internet community.
    Hosts on the ARPA-Internet that exchange terminal type information
    within the Telnet protocol are expected to adopt and implement
    this standard. Distribution of this memo is unlimited. This
    standard supersedes RFC 884. The only change is to specify that
    the TERMINAL-TYPE IS sub-negotiation should be sent only in
    response to the TERMINAL-TYPE SEND sub-negotiation.

929   Lilienkamp   Dec 84   Proposed Host-Front End Protocol

   The Host-Front End Protocol introduced in RFC 928 is described in
   detail in this memo. The first order of business is to declare
   that THIS IS A PROPOSAL, NOT A FINAL STANDARD, and the second
   order of business is to request that any readers of these
   documents who are able to do test implementations (a) do so and
   (b) coordinate their efforts with the author. This RFC suggests a
   proposed protocol for the ARPA-Internet community, and requests
   discussion and suggestions for improvements.

928   Padlipsky   Dec 84   Introduction to Proposed DOD
                                 Standard H-FP

   The broad outline of the Host-Front End Protocol introduced here
   and described in RFC 929 is the result of the deliberations of a
   number of experienced H-FP designers, who sat as a committee of
   the DoD Protocol Standards Technical Panel. It is the intent of
   the designers that the protocol be subjected to multiple test
   implementations and probable iteration before being agreed upon as
   any sort of "standard". Therefore, the first order of business is
   to declare that THIS IS A PROPOSAL, NOT A FINAL STANDARD, and the
   second order of business is to request that any readers of these
   documents who are able to do test implementations (a) do so and
   (b) coordinate their efforts with the author. This RFC suggests a
   proposed protocol for the ARPA-Internet community, and requests
   discussion and suggestions for improvements.

927   Anderson   Dec 84   TACACS User Identification Telnet
                                 Option

   The following is the description of a Telnet option designed to
   facilitate double login avoidance. It is intended primarily for
   TAC connections to target hosts on behalf of TAC users, but it can
   be used between any two consenting hosts. For example, all hosts
   at one site (e.g., BBN) can use this option to avoid double login
   when TELNETing to one another.

   This RFC suggests a proposed protocol for the ARPA-Internet
   community, and requests discussion and suggestions for
   improvements.

926   ISO   Dec 84   Protocol for Providing the
                                 Connectionless-Mode Network Services

   This note is the draft ISO protocol roughly similar to the DoD
   Internet Protocol. This document has been prepared by retyping
   the text of ISO DIS 8473 of May 1984, which is currently
   undergoing voting within ISO as a Draft International Standard

     (DIS). This document is distributed as an RFC for information
     only. It does not specify a standard for the ARPA-Internet.

   925   Postel   Oct 84   Multi-LAN Address Resolution

     The problem of treating a set of local area networks (LANs) as one
     Internet network has generated some interest and concern. It is
     inappropriate to give each LAN within a site a distinct
     ARPA-Internet network number. It is desirable to hide the details
     of the interconnections between the LANs within a site from
     people, gateways, and hosts outside the site. The question arises
     on how to best do this, and even how to do it at all. In RFC 917,
     Jeffery Mogul makes a case for the use of "explicit subnets" in a
     multi-LAN environment. The explicit subnet scheme is a call to
     recursively apply the mechanisms the ARPA-Internet uses to manage
     networks to the problem of managing LANs within one network.   In
     this note I urge another approach: the use of "transparent
     subnets" supported by a multi-LAN extension of the Address
     Resolution Protocol. This RFC suggests a proposed protocol for
     the ARPA-Internet community, and requests discussion and
     suggestions for improvements.

   924   Reynolds   Oct 84   Official ARPA-Internet Protocols

     This RFC has been replaced by RFC 991.

   923   Reynolds   Oct 84   Assigned Numbers

     This RFC has been replaced by RFCs 997 and 990.

   922   Mogul   Oct 84   Broadcasting Internet Datagrams in
                                   the Presence of Subnets

     We propose simple rules for broadcasting Internet datagrams on
     local networks that support broadcast, for addressing broadcasts,
     and for how gateways should handle them.

     This RFC suggests a proposed protocol for the ARPA-Internet
     community, and requests discussion and suggestions for
     improvements.

   921   Postel   Oct 84   Domain Name System Implementation
                                   Schedule - Revised

     This memo is a policy statement on the implementation of the
     Domain Style Naming System in the ARPA-Internet. This memo is an
     update of RFC 881, and RFC 897. This is an official policy
     statement of the IAB and the DARPA. The intent of this memo is to
     detail the schedule for the implementation for the Domain Style

Naming System. The explanation of how this system works is to be found in the references.

920   Postel   Oct 84   Domain Requirements

This memo states the requirements on establishing a Domain, and introduces the limited set of top level domains. This memo is a policy statement on the requirements of establishing a new domain in the ARPA-Internet and the DARPA research community. This is an official policy statement of the IAB and the DARPA.

919   Mogul   Oct 84   Broadcasting Internet Datagrams

This RFC proposes simple rules for broadcasting Internet datagrams on local networks that support broadcast, for addressing broadcasts, and for how gateways should handle them. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

918   Reynolds   Oct 84   Post Office Protocol (POP)

Updated by RFC 937.

917   Mogul   Oct 84   Internet Subnets

This memo discusses subnets and proposes procedures for the use of subnets, including approaches to solving the problems that arise, particularly that of routing. A subnet of an Internet network is a logically visible sub-section of a single Internet network. For administrative or technical reasons, many organizations have chosen to divide one Internet network into several subnets, instead of acquiring a set of Internet network numbers. This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

916   Finn   Oct 84   Reliable Asynchronous Transfer
                                Protocol (RATP)

This paper proposes and specifies a protocol which allows two programs to reliably communicate over a communication link. It ensures that the data entering one end of the link if received arrives at the other end intact and unaltered. The protocol, named RATP, is designed to operate over a full duplex point-to-point connection. It contains some features which tailor it to the RS-232 links now in common use.

This RFC suggests a proposed protocol for the ARPA-Internet community, and requests discussion and suggestions for improvements.

   915   Elvy   Dec 84   Network Mail Path Service

   The network mail path service fills the current need of people to
   determine mailbox addresses for hosts that are not part of the
   ARPA-Internet but can be reached by one or more relay hosts that
   have Unix to Unix Copy (UUCP) mail, CSNET mail, MAILNET mail,
   BITNET mail, etc. Anyone can use the service if they have
   TCP/TELENET to one of the hosts with a mail path server. This RFC
   proposes a new service for the ARPA-Internet community and
   requests discussion and suggestions for improvements.

   914   Farber   Sep 84   A Thinwire Protocol

   This document focuses discussion on the particular problems in the
   ARPA-Internet of low speed network interconnection with personal
   computers, and possible methods of solution. None of the proposed
   solutions in this document are intended as standards for the
   ARPA-Internet. Rather, it is hoped that a general consensus will
   emerge as to the appropriate solution to the problems, leading
   eventually to the adoption of standards.

   913   Lottor   Sep 84   Simple File Transfer Protocol

   This memo describes a proposed Simple File Transfer Protocol
   (SFTP). It fills the need of people wanting a protocol that is
   more useful than TFTP but easier to implement (and less powerful)
   than FTP. SFTP supports user access control, file transfers,
   directory listing, directory changing, file renaming, and
   deleting. Discussion of this proposal is encouraged, and
   suggestions for improvements may be sent to the author.

   912   StJohns   Sep 84   Authentication Service

   This memo describes a proposed authentication protocol for
   verifying the identity of a user of a TCP connection. Given a TCP
   port number pair, it returns a character string which identifies
   the owner of that connection on the server's system. Suggested
   uses include automatic identification and verification of a user
   during an FTP session, additional verification of a TAC dial up
   user, and access verification for a generalized network file
   server.

   911   Kirton   Aug 84   EGP Gateway under Berkeley Unix 4.2

   This memo describes an implementation of the Exterior Gateway
   Protocol (EGP) (in that sense it is a status report). The memo
   also discusses some possible extentions and some design issues (in
   that sense it is an invitation for further discussion).

910   Forsdick   Aug 84   Multimedia Mail Meeting Notes

   This memo is a report on a meeting about the experimental
   multimedia mail system (and in a sense a status report on that
   experiment). The meeting was held at Bolt Beranek and Newman on
   23-24 July 1984 to discuss recent progress by groups who are
   building multimedia mail systems and to discuss a variety of
   issues related to the further development of multimedia systems.
   Representatives were present from BBN, ISI, SRI and Linkabit.
   Distribution of this memo is unlimited.

909   Welles   Jul 84   Loader Debugger Protocol

   The Loader Debugger Protocol (LDP) is an application layer
   protocol for loading, dumping, and debugging target machines from
   hosts in a network environment. This RFC specifies a proposed
   protocol for the ARPA-Internet and DARPA research community, and
   requests discussion and suggestions for improvements.

908   Velten   Jul 84   Reliable Data Protocol

   The Reliable Data Protocol (RDP) is designed to provide a reliable
   data transport service for packet-based applications. This RFC
   specifies a proposed protocol for the ARPA-Internet and DARPA
   research community, and requests discussion and suggestions for
   improvemts.

907   Storch   Jul 84   Host Access Protocol Specification

   This document specifies the Host Access Protocol (HAP). Although
   HAP was originally designed as the network-access level protocol
   for the DARPA/DCA sponsored Wideband Packet Satellite Network, it
   is intended that it evolve into a standard interface SATNET and
   TACNET (aka MATNET) as well as the Wideband Network. HAP is an
   experimental protocol, and will undergo further revision as new
   capabilities are added and/or different satellite networks are
   suported. Implementations of HAP should be performed in
   coordination with satellite network development and operations
   personnel.

906   Finlayson   Jun 84   Bootstrap Loading Using TFTP

   It is often convenient to be able to bootstrap a computer system
   from a communications network. This RFC proposes the use of the
   IP/TFTP protocol for bootstrap loading in this case.

   905   ISO   Apr 84   ISO Transport Protocol Specification
                                     (ISO DP 8073)

      This is the current specification of the ISO Transport Protocol.
      This document is the text of ISO/TC97/SC16/N1576 as corrected by
      ISO/TC97/SC16/N1695. This is the specification currently being
      voted on in ISO as a Draft International Standard (DIS). This
      document is distributed as an RFC for your information only, it
      does not specify a standard for the ARPA-Internet or DARPA
      research community. Our thanks to Alex McKenzie of BBN for making
      this online version available. Please note the size of this
      document, the file contains 258,729 characters.

   904   Mills   Apr 84   Exterior Gateway Protocol Formal
                                     Specification

      This is the specification of the Exterior Gateway Protocol (EGP).
      This memo updates portions of RFC 888 and RFC 827. This RFC
      specifies an official protocol of the DARPA community for use
      between gateways of different autonomous systems in the
      ARPA-Internet.

   903   Finlayson   Jun 84   A Reverse Address Resolution
                                     Protocol

      This RFC suggests a method for workstations to dynamically find
      their protocol address (e.g., their Internet Address), when they
      know only their hardware address (e.g., their attached physical
      network address). This RFC specifies a proposed protocol for the
      ARPA-Internet community, and requests discussion and suggestions
      for improvement.

   902   Postel   Jul 84   ARPA-Internet Protocol Policy

      The purpose of this memo is to explain how protocol standards are
      adopted for the ARPA-Internet and the DARPA research community.
      There are three important aspects to be discussed: the process,
      the authority, and the complex relationship between the DARPA
      community and the DDN community. This memo is a policy statement
      on how protocols become official standards for the ARPA-Internet
      and the DARPA research community. This is an official policy
      statement of the ICCB and the DARPA.

   901   Reynolds   Jun 84   Official ARPA-Internet Protocols

      This RFC has been replaced by RFC 991.

900   Reynolds   Jun 84   Assigned Numbers

    This RFC has been replaced by RFCs 997 and 990.

899   Postel   Apr 84   Requests For Comments Summary

    A summary of the Request for Comments documents from RFC 800-898.

898   Hinden   Apr 84   Gateway Special Interest Group
                                 Meeting Notes

    This memo is a report on the Gateway Special Interest Group
    Meeting that was held at ISI on 28 and 29 February 1984. Robert
    Hinden of BBNCC chaired, and Jon Postel of ISI hosted the meeting.
    Approximately 35 gateway designers and implementors attended.
    These notes are based on the recollections of Jon Postel and Mike
    Muuss. Under each topic area are Jon Postel's brief notes, and
    additional details from Mike Muuss. This memo is a report on the
    meeting. No conclusions, decisions, or policy statements are
    documented in this note.

897   Postel   Feb 84   Domain Name System Implementation
                                 Schedule

    This memo is a policy statement on the implementation of the
    Domain Style Naming System in the ARPA-Internet. This memo is a
    partial update of RFC 881. The intent of this memo is to detail
    the schedule for the implementation of the Domain Style Naming
    System. The names of hosts will be changed to Domain style names.
    Hosts will begin to use Domain style names on 14-Mar-84, and the
    use of old style names will be completely phased out before
    2-May-84. This applies to both the ARPA research hosts and the
    DDN operational hosts. This is an official policy statement of
    the ICCB and the DARPA.

896   Nagle   Jan 84   Congestion Control in IP/TCP
                                 Internetworks

    This memo discusses some aspects of congestion control in IP/TCP
    Internetworks. It is intended to stimulate thought and further
    discussion of this topic. While some specific suggestions are
    made for improved congestion control implementation, this memo
    does not specify any standards.

895   Postel   Apr 84   A Standard for the Transmission of
                                 IP Datagrams over Experimental
                                 Ethernet Networks

    This RFC specifies a standard method of encapsulating Internet

Protocol (IP) datagrams on an Experimental Ethernet. This RFC
specifies a standard protocol for the ARPA-Internet community.

894   Hornig   Apr 84   A Standard for the Transmission of
                                IP Datagrams over Ethernet Networks

This RFC specifies a standard method of encapsulating Internet
Protocol (IP) datagrams on an Ethernet. This RFC specifies a
standard protocol for the ARPA-Internet community.

893   Leffler   Apr 84   Trailer Encapsulations

This RFC discusses the motivation for use of "trailer
encapsulations" on local-area networks and describes the
implementation of such an encapsulation on various media. This
document is for information only. This is NOT an official
protocol for the ARPA-Internet community.

892   ISO   Dec 83   ISO Transport Protocol Specification

This is a draft version of the transport protocol being
standardized by the ISO. This version also appeared in the ACM
SIGCOMM Computer Communication Review (V.12, N.3-4)
July-October 1982. This version is now out of date.

891   Mills   Dec 83   DCN Local-Network Protocols

This RFC provides a description of the DCN protocols for
maintaining connectivity, routing, and clock information in a
local network. These procedures may be of interest to the
designers and implementers of other local networks.

890   Postel   Feb 84   Exterior Gateway Protocol
                                Implementation Schedule

This memo is a policy statement on the implementation of the
Exterior Gateway Protocol (EGP) in the ARPA-Internet. This is an
official policy statement of ICCB and DARPA. After 1-Aug-84 there
shall be no dumb gateways in the Internet. Every gateway must be
a member of some autonomous system. Some gateway of each
autonomous system must exchange routing information with some
gateway of the core autonomous system using the Exterior Gateway
Protocol.

889   Mills   Dec 83   Internet Delay Experiments

This memo reports on some measurements of round-trip times in the
Internet and suggests some possible improvements to the TCP

retransmission timeout calculation. This memo is both a status
report on the ARPA-Internet and advice to TCP implementers.

888   Seamonson   Jan 84   "Stub" Exterior Gateway Protocol

This RFC describes the Exterior Gateway Protocol (EGP) used to
connect Stub Gateways to an Autonomous System of core Gateways.
This document specifies the working protocol, and defines an ARPA
official protocol. All implementers of Gateways should carefully
review this document.

887   Accetta   Dec 83   Resource Location Protocol

This RFC specifies a draft standard for the ARPA-Internet
community. It describes a resource location protocol for use in
the ARPA-Internet. It is most useful on networks employing
technologies which support some method of broadcast addressing,
however it may also be used on other types of networks. For
maximum benefit, all hosts which provide significant resources or
services to other hosts on the ARPA-Internet should implement this
protocol. Hosts failing to implement the Resource Location
Protocol risk being ignored by other hosts which are attempting to
locate resources on the ARPA-Internet.

886   Rose   Dec 83   Proposed Standard for Message Header
                             Munging

This RFC specifies a draft standard for the ARPA-Internet
community. It describes the rules to be used when transforming
mail from the conventions of one message system to those of
another message system. In particular, the treatment of header
fields, and recipient addresses is specified.

885   Postel   Dec 83   Telnet End of Record Option

This RFC specifies a standard for the ARPA-Internet community. It
specifies a method for marking the end of records in data
transmitted on Telnet connections.

884   Solomon   Dec 83   Telnet Terminal Type Option

This RFC specifies a standard for the ARPA-Internet community. It
specifies a method for exchanging terminal type information in the
Telnet protocol.

   883   Mockapetris Nov 83   Domain Names - Implementation and
                                   Specification

      This RFC discusses the implementation of domain name servers and
      resolvers, specifies the format of transactions, and discusses the
      use of domain names in the context of existing mail systems and
      other network software.

   882   Mockapetris Nov 83   Domain Names - Concepts and
                                   Facilities

      This RFC introduces domain style names, their use for
      DDN/ARPA-Internet mail and host address support, and the protocol
      and servers used to implement domain name facilities.

   881   Postel   Nov 83   The Domain Names Plan and Schedule

      This RFC outlines a plan and schedule for the implementation of
      domain style names throughout the DDN/ARPA-Internet community.
      The introduction of domain style names will impact all hosts on
      the DDN/ARPA-Internet.

   880   Reynolds   Oct 83   Official Protocols

      This RFC has been replaced by RFC 991.

   879   Postel   Nov 83   The TCP Maximum Segment Size and
                                   Related Topics

      This RFC discusses the TCP Maximum Segment Size Option and related
      topics. The purpose is to clarify some aspects of TCP and its
      interaction with IP. This memo is a clarification to the TCP
      specification, and contains information that may be considered as
      "advice to implementers".

   878   Malis   Dec 83   The ARPANET 1822L Host Access
                                   Protocol

      This RFC specifies the ARPANET 1822L Host Access Protocol, which
      is a successor to the existing 1822 Host Access Protocol. The
      1822L procedure allows ARPANET hosts to use logical identifiers as
      well as 1822 physical interface identifiers to address each other.

   877   Korb   Sep 83   A Standard for the Transmission of
                                   IP Datagrams Over Public Data
                                   Networks

      This RFC specifies a standard adopted by CSNET, the VAN gateway,

and other organizations for the transmission of IP datagrams over
the X.25-based public data networks.

876   Smallberg   Sep 83   Survey of SMTP Implementations

    This RFC is a survey of implementation status. It does not
    specify an official protocol, but rather notes the status of
    implementation of aspects of a protocol. It is expected that the
    status of the hosts reported on will change. This information
    must be treated as a snapshot of the state of these
    implemetations.

875   Padlipsky   Sep 82   Gateways, Architectures, and
                                  Heffalumps

    This RFC is a discussion about the role of gateways in an
    internetwork, especially the problems of translating or mapping
    protocols between different protocol suites. The discussion notes
    possible functionality mis-matches, undesirable routing
    "singularity points", flow control issues, and high cost of
    translating gateways. Originally published as M82-51 by the MITRE
    Corporation, Bedford, Massachusetts.

874   Padlipsky   Sep 82   A Critique of X.25

    This RFC is an analysis of X.25 pointing out some problems in the
    conceptual model, particularly the conflict between the interface
    aspects and the end-to-end aspects. The memo also touches on
    security, and implementation issues. Originally published as
    M82-50 by the MITRE Corporation, Bedford, Massachusetts.

873   Padlipsky   Sep 82   The Illusion of Vendor Support

    This memo takes issue with the claim that international standards
    in computer protocols presently provide a basis for low cost
    vendor supported protocol implementations. Originally published
    as M82-49 by the MITRE Corporation, Bedford, Massachusetts.

872   Padlipsky   Sep 82   TCP-ON-A-LAN

    This memo attacks the notion that TCP cannot be appropriate for
    use on a Local Area Network. Originally published as M82-48 by
    the MITRE Corporation, Bedford Massachusetts.

871   Padlipsky   Sep 82   A Perspective on the Arpanet
                                  Reference Model

    This RFC is primarily intended as a perspective on the ARM and
    points out some of the differences between the ARM and the ISORM

which were expressed by members in NWG general meetings, NWG
protocol design committee meetings, the ARPA-Internet Working
Group, and private conversations over the intervening years.
Originally published as M82-47 by the MITRE Corporation, Bedford,
Massachusetts.

870   Reynolds   Oct 83   Assigned Numbers

This RFC has been replaced by RFCs 997 and 990.

869   Hinden   Dec 83   A Host Monitoring Protocol

This RFC specifies the Host Monitoring Protocol used to collect
information from various types of hosts in the Internet.
Designers of Internet communications software are encouraged to
consider this protocol as a means of monitoring the behavior of
their creations.

868   Postel   May 83   Time Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Time
Protocol are expected to adopt and implement this standard. This
protocol provides a site-independent, machine readable date and
time. The Time service sends back to the originating source the
time in seconds since midnight on January first 1900.

867   Postel   May 83   Daytime Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Daytime
Protocol are expected to adopt and implement this standard. The
Daytime service simply sends the current date and time as a
character string without regard to the input.

866   Postel   May 83   Active Users

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement an Active
Users Protocol are expected to adopt and implement this standard.
The Active Users service simply sends a list of the currently
active users on the host without regard to the input.

865   Postel   May 83   Quote of the Day Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Quote of the
Day Protocol are expected to adopt and implement this standard.

The Quote of the Day service simply sends a short message without
regard to the input.

864   Postel   May 83   Character Generator Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Character
Generator Protocol are expected to adopt and implement this
standard. The Character Generator service simply sends data
without regard to the input.

863   Postel   May 83   Discard Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Discard
Protocol are expected to adopt and implement this standard. The
Discard service simply throws away any data it receives.

862   Postel   May 83   Echo Protocol

This RFC specifies a standard for the ARPA-Internet community.
Hosts on the ARPA-Internet that choose to implement a Echo
Protocol are expected to adopt and implement this standard. The
Echo service simply sends back to the originating source any data
it receives.

861   Postel   May 83   Telnet Extended Options - List
                                Option

This Telnet Option provides a mechanism for extending the set of
possible options. This RFC specifies a standard for the
ARPA-Internet community. Hosts on the ARPA-Internet are expected
to adopt and implement this standard. Obsoletes NIC 16239.

860   Postel   May 83   Telnet Timing Mark Option

This Telnet Option provides a way to check the roundtrip path
between two Telnet modules. This RFC specifies a standard for the
ARPA-Internet community. Hosts on the ARPA-Internet are expected
to adopt and implement this standard. Obsoletes NIC 16238.

859   Postel   May 83   Telnet Status Option

This Telnet Option provides a way to determine the other Telnet
module's view of the status of options. This RFC specifies a
standard for the ARPA-Internet community. Hosts on the
ARPA-Internet are expected to adopt and implement this standard.
Obsoletes RFC 651 (NIC 31154).

858   Postel   May 83   Telnet Suppress Go Ahead Option

   This Telnet Option disables the exchange of go-ahead signals
   between the Telnet modules. This RFC specifies a standard for the
   ARPA-Internet community. Hosts on the ARPA-Internet are expected
   to adopt and implement this standard. Obsoletes NIC 15392.

857   Postel   May 83   Telnet Echo Option

   This Telnet Option enables remote echoing by the other Telnet
   module. This RFC specifies a standard for the ARPA-Internet
   community. Hosts on the ARPA-Internet are expected to adopt and
   implement this standard. Obsoletes NIC 15390.

856   Postel   May 83   Telnet Binary Transmission

   This Telnet Option enables a binary data mode between the Telnet
   modules. This RFC specifies a standard for the ARPA-Internet
   community. Hosts on the ARPA-Internet are expected to adopt and
   implement this standard. Obsoletes NIC 15389.

855   Postel   May 83   Telnet Option Specifications

   This memo specifies the general form for Telnet options and the
   directions for their specification. This RFC specifies a standard
   for the ARPA-Internet community. Hosts on the ARPA-Internet are
   expected to adopt and implement this standard. Obsoletes RFC 651,
   NIC 18640.

854   Postel   May 83   Telnet Protocol Specifications

   This is the specification of the Telnet protocol used for remote
   terminal access in the ARPA-Internet. The purpose of the Telnet
   Protocol is to provide a fairly general, bi-directional, eight-bit
   byte oriented communications facility. Its primary goal is to
   allow a standard method of interfacing terminal devices and
   terminal-oriented processes to each other. It is envisioned that
   the protocol may also be used for terminal-terminal communication
   ("linking") and process-process communication (distributed
   computation).   This RFC specifies a standard for the
   ARPA-Internet community. Hosts on the ARPA-Internet are expected
   to adopt and implement this standard. Obsoletes NIC 18639.

853   Never Issued.

852   Malis   Apr 83   The ARPANET Short Blocking Feature

   This RFC specifies the ARPANET Short Blocking Feature, which will
   allow ARPANET hosts to optionally shorten the IMP's host blocking
   timer. This Feature is a replacement of the ARPANET non-blocking
   host interface, which was never implemented, and will be available
   to hosts using either the 1822 or 1822L Host Access Protocol.
   This RFC is also being presented as a solicitation of comments on
   the Short Blocking Feature, especially from host network software
   implementers and maintainers.

851   Malis   Apr 83   The ARPANET 1822L Host Access
                                Protocol

   This RFC specifies the ARPANET 1822L Host Access Protocol, which
   is a successor to the existing 1822 Host Access Protocol. 1822L
   allows ARPANET hosts to use logical names as well as 1822's
   physical port locations to address each other. This RFC is also
   being presented as a solicitation of comments on 1822L, especially
   from host network software implementers and maintainers.
   Obsoletes RFC 802.

850   Horton   Jun 83   Standard for Interchange of USENET
                                Messages

   This memo is distributed as an RFC only to make this information
   easily accessible to researchers in the ARPA-Internet community.
   It does not specify an Internet standard. This RFC defines the
   standard format for interchange of Network News articles among
   USENET sites. It describes the format for articles themselves,
   and gives partial standards for transmission of news. The news
   transmission is not entirely standardized in order to give a good
   deal of flexibility to the individual hosts to choose transmission
   hardware and software, whether to batch news and so on.

849   Crispin   May 83   Suggestions for Improved Host Table
                                Distribution

   This RFC actually is a request for comments. The issue dealt with
   is that of a naming registry update procedure, both as exists
   currently and what could exist in the future. None of the
   proposed solutions are intended as standards at this time; rather
   it is hoped that a general consensus will emerge as the
   appropriate solution, leaving eventually to the adoption of
   standards.

848   Smallberg   Mar 83   Who provides the "Little" TCP
                                 Services?

   This RFC lists those hosts which provide any of these "little" TCP
   services: The list of hosts were taken from the NIC hostname
   table of 24-Feb-83. The tests were run on February 23 and 24, and
   March 3 and 5 from ISI-VAXA.ARPA.

847   Westine   Feb 83   Summary of Smallberg Surveys

   This is a summary of the surveys of Telnet, FTP and Mail (SMTP)
   servers conducted by David Smallberg in December 1982, January and
   February 1983 as reported in RFC 832-843, 845-846. This memo
   extracts the number of hosts that accepted the connection to their
   server for each of Telnet, FTP, and SMTP, and compares it to the
   total host in the ARPA-Internet (not counting TACs or ECHOS).

846   Smallberg   Feb 83   Who Talks TCP? -- Survey of 22
                                 February 1983

   This RFC is a survey of hosts to identify the implementation
   status of Telnet, FTP, and Mail on TCP. The list of hosts was
   taken from the NIC hostname table of 18-Feb-83. The tests were
   run on 22-Feb-83 from ISI-VAXA.ARPA.

845   Smallberg   Feb 83   Who Talks TCP? -- Survey of 15
                                 February 1983

   This RFC is a survey of hosts to identify the implementation
   status of Telnet, FTP, and Mail on TCP. The list of hosts was
   taken from the NIC hostname table of 3-Feb-83. The tests were run
   on 15-Feb-83 from ISI-VAXA.ARPA.

844   Clements   Feb 83   Who Talks ICMP, too? Survey of 18
                                 February 1983

   This survey determines how many hosts are able to respond to
   Telnet connections from a user at a class C site. This requires,
   in addition to IP and TCP, participation in gateway routing via
   ICMP and handling of Class C addresses. The list of hosts was
   taken from RFC 843, extracting only those hosts which are listed
   there as accepting Telnet connection. The tests were run on
   18-Feb-83.

843   Smallberg   Feb 83   Who Talks TCP? -- Survey of 8
                                 February 1983

   This RFC is a survey of hosts to identify the implementation
   status of Telnet, FTP, and Mail on TCP. The list of hosts was

   taken from the NIC hostname table of 3-Feb-83. The tests were run
   on 8-Feb-83 and on 9-Feb-83 from ISI-VAXA.ARPA.

   842   Smallberg   Feb 83   Who Talks TCP? -- Survey of 1
                                     February 1983

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 28-Jan-83. The tests were
      run on 1-Feb-83 and on 2-Feb-83 ISI-VAXA.ARPA.

   841   FIPS PUB 98 Jan 83   Specification for Message Format for
                                     Computer Based Message Systems

      This RFC is FIPS 98. The purpose of distributing this document as
      an RFC is to make it easily accessible to the ARPA research
      community. This RFC does not specify a standard for the
      ARPA-Internet. Obsoletes RFC 806.

   840   Postel   Apr 83   Official Protocols

      This RFC has been replaced by RFC 991.

   839   Smallberg   Jan 83   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 31-Dec-82. The tests were
      run on 25-Jan-83.

   838   Smallberg   Jan 83   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 31-Dec-82. The tests were
      run on 18-Jan-83.

   837   Smallberg   Jan 83   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 31-Dec-82. The tests were
      run on 11-Jan-83.

   836   Smallberg   Jan 83   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was

      taken from the NIC hostname table of 20-Dec-82. The tests were
      run on 4-Jan-83 through 5-Jan-83.

   835   Smallberg   Dec 82   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 2-Dec-82. The tests were run
      on 28-Dec-82 through 5-Jan-83.

   834   Smallberg   Dec 82   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 2-Dec-82. The tests were run
      on 22-Dec-82.

   833   Smallberg   Dec 82   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 2-Dec-82. The tests were run
      on 14-Dec-82.

   832   Smallberg   Dec 82   Who Talks TCP?

      This RFC is a survey of hosts to identify the implementation
      status of Telnet, FTP, and Mail on TCP. The list of hosts was
      taken from the NIC hostname table of 2-Dec-82. The tests were run
      on 7-Dec-82.

   831   Braden   Dec 82   Backup Access to the European Side
                                    of SATNET

      The purpose of this RFC is to focus discussion on a particular
      Internet problem: a backup path for software maintenance of the
      European sector of the Internet, for use when SATNET is
      partitioned. We propose a mechanism, based upon the Source
      Routing option of IP, to reach European Internet sites via the VAN
      Gateway and UCL. This proposal is not intended as a standard at
      this time.

   830   Zaw-Sing Su Oct 82   A Distributed System for Internet
                                    Name Service

      This RFC proposes a distributed name service for ARPA-Internet.
      Its purpose is to focus discussion on the subject. It is hoped
      that a general consensus will emerge leading eventually to the
      adoption of standards.

    829   Cerf   Oct 82   Packet Satellite Technology
                                      Reference Sources

      This RFC describes briefly the packet satellite technology
      developed by the Defense Advanced Research Projects Agency and
      several other participating organizations in the U.K. and Norway
      and provides a bibliography of relevant papers for researchers
      interested in experimental and operational experience with this
      dynamic satellite-sharing technique.

    828   Owen   Aug 82   Data Communications: IFIP's
                                      International "Network" of Experts

      This RFC is distributed to inform the ARPA-Internet community of
      the activities of the IFIP technical committee on Data
      Communications, and to encourage participation in those
      activities.

    827   Rosen   Oct 82   Exterior Gateway Protocol (EGP)

      This RFC is proposed to establish a standard for Gateway to
      Gateway procedures that allow the Gateways to be mutually
      suspicious. This document is a DRAFT for that standard. Your
      comments are strongly encouraged.

    826   Plummer   Nov 82   An Ethernet Address Resolution
                                      Protocol

      The purpose of this RFC is to present a method of Converting
      Protocol Addresses (e.g., IP addresses) to Local Network Addresses
      (e.g., Ethernet addresses). This is an issue of general concern
      in the ARPA-Internet Community at this time. The method proposed
      here is presented for your consideration and comment. This is not
      the specification of an ARPA-Internet Standard.

    825   Postel   Nov 82   Request for Comments on Requests for
                                      Comments

      This RFC is intended to clarify the status of RFCs and to provide
      some guidance for the authors of RFCs in the future. It is in a
      sense a specification for RFCs.

    824   MacGregor   Aug 82   The Cronus Virtual Local Network

      The purpose of this note is to describe the CRONUS Virtual Local
      Network, especially the addressing related features. These
      features include a method for mapping between Internet Addresses
      and Local Network addresses. This is a topic of current concern
      in the ARPA-Internet community. This note is intended to

stimulate discussion. This is not a specification of an
ARPA-Internet Standard.

823   Hinden   Sep 82   The DARPA Internet Gateway

This RFC is a status report on the Internet Gateway developed by
BBN. It describes the Internet Gateway as of September 1982.
This memo presents detailed descriptions of message formats and
gateway procedures, however, this is not an implementation
specification, and such details are subject to change.

822   Crocker   Aug 82   Standard for the Format of ARPA
                                  Internet Text Messages

This document revises the specifications in RFC 733, in order to
serve the needs of the larger and more complex ARPA-Internet.
Some of RFC 733's features failed to gain adequate acceptance. In
order to simplify the standard and the software that follows it,
these features have been removed. A different addressing scheme
is used, to handle the case of internetwork mail; and the concept
of re-transmission has been introduced. Obsoletes RFC 733,
NIC 41952.

821   Postel   Aug 82   Simple Mail Transfer Protocol

The objective of Simple Mail Transfer Protocol (SMTP) is to
transfer mail reliably and efficiently. SMTP is independent of
the particular transmission subsystem and requires only a reliable
ordered data stream channel. Obsoletes RFCs 788, 780, 772.

820   Postel   Jan 82   Assigned Numbers

This RFC is is replaced by RFCs 997 and 990.

819   Zaw-Sing Su Aug 82   The Domain Naming Convention for
                                  Internet User Applications

This RFC is an attempt to clarify the generalization of the Domain
Naming Convention, the Internet Naming Convention, and to explore
the implications of its adoption for ARPA-Internet name service
and user applications.

818   Postel   Nov 82   The Remote User Telnet Service

This RFC is the specification of an application protocol. Any
host that implements this application level service must follow
this protocol.

817   Clark   Jul 82   Modularity and Efficiency in
                                Protocol Implementation

   This RFC will discuss some of the commonly encountered reasons why
   protocol implementations seem to run slowly.

816   Clark   Jul 82   Fault Isolation and Recovery

   This RFC describes the portion of fault isolation and recovery
   which is the responsibility of the host.

815   Clark   Jul 82   IP Datagram Reassembly Algorithms

   This RFC describes an alternate approach of dealing with
   reassembly which reduces the bookkeeping problem to a minimum, and
   requires only one buffer for storage equal in size to the final
   datagram being reassembled, which can reassemble a datagram from
   any number of fragments arriving in any order with any possible
   pattern of overlap and duplication, and which is appropriate for
   almost any sort of operating system.

814   Clark   Jul 82   Name, Addresses, Ports, and Routes

   This RFC gives suggestions and guidance for the design of the
   tables and algorithms necessary to keep track of these various
   sorts of identifiers inside a host implementation of TCP/IP.

813   Clark   Jul 82   Window and Acknowledgement Strategy
                                in TCP

   This RFC describes implementation strategies to deal with two
   mechanisms in TCP, the window and the acknowledgement. It also
   presents a particular set of algorithms which have received
   testing in the field, and which appear to work properly with each
   other. With more experience, these algorithms may become part of
   the formal specification, until such time their use is
   recommended.

812   Harrenstien Mar 82   NICNAME/WHOIS

   This RFC gives a description of what the NICNAME/WHOIS Server is
   and how to access it. This server together with the corresponding
   Identification Data Base provides online directory look-up
   equivalent to the ARPANET Directory.

811   Harrenstien Mar 82   Hostnames Server

   This RFC gives a description of what the Hostnames Server is and
   how to access it. The function of this particular server is to
   deliver machine-readable name/address information describing
   networks, gateways, hosts, and eventually domains, within the
   Internet environment.

810   Feinler   Mar 82   DoD Internet Host Table
                                 Specification

   This RFC specifies a new host table format applicable to both
   ARPANET and Internet needs. In addition to host name to host
   address translation and selected protocol information, we have
   also included network and gateway name to address correspondence,
   and host operating system information. This RFC obsoletes the
   host table described in RFC 608.

809   Chang   Feb 82   UCL Facsimile System

   This RFC describes the features of the computerised facsimile
   system developed in the Department of Computer Science at UCL.
   First its functions are considered and the related experimental
   work are reported. Then the disciplines for system design are
   discussed. Finally, the implementation of the system are
   described, while detailed description are given as appendices.

808   Postel   Mar 82   Summary of Computer Mail Services
                                 Meeting Held at BBN on 10 January
                                 1979

   This RFC is a very belated attempt to document a meeting that was
   held three years earlier to discuss the state of computer mail in
   the ARPA community and to reach some conclusions to guide the
   further development of computer mail systems such that a coherent
   total mail service would continue to be provided.

807   Postel   Feb 82   Multimedia Mail Meeting Notes

   This RFC consists of notes from a meeting held at USC/Information
   Sciences Institute on the 12th of January to discuss common
   interests in multimedia computer mail issues and to agree on some
   specific initial experiments.

806   NBS   Sep 81   Specification for Message Format for
                                 Computer Based Message Systems

   This RFC deals with Computer Based Message systems which provides
   a basis for interaction between different CBMS by defining the

format of messages passed between them. This RFC is replaced by
RFC 841.

805   Postel   Feb 82   Computer Mail Meeting Notes

This RFC consists of notes from a meeting that was held at
USC/Information Sciences Institute on 11 January 1982, to discuss
addressing issues in computer mail. The major conclusion reached
at the meeting is to extend the "username@hostname" mailbox format
to "username@host.domain", where the domain itself can be further
structured.

804   CCITT   Jan 82   CCITT Draft Recommendation T.4

This is the CCITT standard for group 3 facsimile encoding. This
is useful for data compression of bit map data.

803   Agarwal   Nov 81   Dacom 450/500 Facsimile Data
                                Transcoding

The first part of this RFC describes in detail the Dacom 450 data
compression algorithms and is an update and correction to an
earlier memorandum. The second part of this RFC describes briefly
the Dacom 500 data compression algorithm as used by the INTELPOST
electronic-mail network under development by the US Postal Service
and several foreign administrators.

802   Malis   Nov 81   The ARPANET 1822L Host Access
                                Protocol

This document proposed two major changes to the current ARPANET
host access protocol. The first change will allow hosts to use
logical addressing (i.e., host addresses that are independent of
their physical location on the ARPANET) to communicate with each
other, and the second will allow a host to shorten the amount of
time that it may be blocked by its IMP after it presents a message
to the network (currently, the IMP can block further input from a
host for up to 15 seconds). See RFCs 852 and 851.

801   Postel   Nov 81   NCP/TCP Transition Plan

This RFC discusses the conversion of hosts from NCP to TCP. And
making available the principle services: Telnet, File Transfer,
and Mail. These protocols allow all hosts in the ARPA community
to share a common interprocess communication environment.

     800   Postel   Nov 82   Requests for Comments Summary

     This RFC is a slightly annotated list of the 100 RFCs from RFC 700
     through RFC 799. This is a status report on these RFCs.

     799   Mills   Sep 81   Internet Name Domains

     This document suggests that, as the Internet grows, the space of
     host names cannot remain a flat space of globally unique names,
     therefore a hierarchy of name domains must be introduced; see also
     RFC 822.

     798   Katz   Sep 81   Decoding Facsimile Data From the
                                        Rapicom 450

     A description of the encoding/decoding procedure for Rapicom 450
     facsimile machine.

     797   Katz   Sep 81   Format for Bitmap Files

     The description of a simple file format for bitmap data.

     796   Postel   Sep 81   Address Mappings

     A description of the way the addresses of a few actual networks
     are mapped into internet addresses.

     795   Postel   Sep 81   Service Mappings

     A description of how the internet type of service is mapped into
     the actual service parameters of a few particular networks, and
     vice versa.

     794   Cerf   Sep 81   Pre-Emption

     Discusses how pre-emption of TCP connection can be implemented.
     Replaces IEN 125.

     793   Postel   Sep 81   Transmission Control Protocol

     The specification of TCP. Replaces RFCs 761 and 675.

     792   Postel   Sep 81   Internet Control Message Protocol

     The specification of ICMP. Replaces RFCs 777 and 760.

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791     Postel      Sep 81      Internet Protocol
```

An updated specification of IP. Replaces RFC 760.

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790     Postel      Sep 81      Assigned Numbers
```

The RFC is replaced by RFCs 997 and 990.

```
789     Rosen       Jul 81      Vulnerabilities of Network Control
                                Protocols:  An Example
```

A description of an outage in ARPANET service and the process of determining the cause; also, subtleties of designing network protocols.

```
788     Postel      Nov 81      Simple Mail Transfer Protocol
```

An old version; see RFC 821.

```
787     Chapin      Jul 81      Connectionless Data Transmission
                                Survey/Tutorial
```

A discussion of datagram service. Intended for submission to international standards bodies.

```
786     Sluizer     Jul 81      Mail Transfer Protocol:  ISI TOPS-20
                                MTP-NIMAIL Interface
```

The description of the way mail is passed between the MTP and the NIMAIL programs in ISI TOPS-20. Outdated.

```
785     Sluizer     Jul 81      Mail Transfer Protocol:  ISI TOPS-20
                                File Definitions
```

The description of the file format for passing mail to the MTP program from user mail programs in ISI TOPS-20. Outdated.

```
784     Sluizer     Jul 81      Mail Transfer Protocol:  ISI TOPS-20
                                Implementation
```

The description of the program structure for the MTP implementation in the ISI TOPS-20. Outdated.

```
783     Sollins     Jun 81      The TFTP Protocol Revision 2
```

The specification of TFTP. Replaces RFCs 768, 764 and IEN 133.

782   Nabielsky   undated   A Virtual Terminal Management Model

   A description of the elements of a virtual terminal and the
   management of communications between them.

781   Su   May 81   A Specification of the Internet
                                  Protocol IP Timestamp Option

   The description of IP Timestamp option, now included in the IP
   specification (RFC 791).

780   Sluizer   May 81   Mail Transfer Protocol

   An outdated Mail protocol; see RFC 821.

779   Killian   Apr 81   Telnet Send-Location Option

   Definition of this Telnet option.

778   Mills   Apr 81   DCNet Internet Clock Service

   Specifies a format and procedure for the exchange of messages to
   maintain synchronized clocks.

777   Postel   Apr 81   Internet Control Message Protocol

   An old version; see RFC 792.

776   Postel   Jan 81   Assigned Numbers

   This RFC has been replaced by RFCs 997 and 990.

775   Mankins   Dec 80   Directory Oriented FTP Commands

   The definition of additional FTP Commands related to directory
   management.

774   Postel   Oct 80   Internet Protocol Handbook Table of
                                  Contents

   An out-of-date table of contents for an Internet Protocol
   Handbook.

773   Cerf   Oct 80   Comments on NCP/TCP Mail Service
                                  Transition Strategy

   A discussion of issues in the transition from NCP to TCP,
   particularly as related to MAIL Service.

772   Sluizer   Sep 80   Mail Transfer Protocol

    An old version of a Mail Protocol; see RFC 821.

771   Cerf   Sep 80   Mail Transition Plan

    A plan for supporting mail service in the transition from NCP to
    TCP; see also RFC 801.

770   Postel   Sep 80   Assigned Numbers

    This RFC has been replaced by RFCs 997 and 990.

769   Postel   Sep 80   Rapicom 450 Facsimile File Format

    The definition of the exchange format of the encoded facsimile
    data of the Rapicom 450; see also RFC 798.

768   Postel   Aug 80   User Datagram Protocol

    The specification of the UDP.

767   Postel   Aug 80   A Structured Format for Transmission
                                   of Multi-Media Documents

    The definition of the format for the document of a multimedia
    message.

766   Postel   Jul 80   Internet Protocol Handbook

    An out-of-date table of contents for the Internet Protocol
    Handbook.

765   Postel   Jun 80   File Transfer Protocol Specification

    The specification of FTP.

764   Postel   Jun 80   Telnet Protocol Specification

    The specification of Telnet.

763   Abrams   May 80   Role Mailboxes

    A call for mailboxes with role names, such as "Management".

762   Postel   Jan 80   Assigned Numbers

     This RFC has been replaced by RFCs 997 and 990.

761   Postel   Jan 80   DOD Standard Transmission Protocol

     An old version; see RFC 793.

760   Postel   Jan 80   DOD Standard Internet Protocol

     An old version; see RFC 791.

759   Postel   Aug 80   Internet Message Protocol

     The definition of the protocol and format for the exchange of
     multimedia mail. Replaces RFC 753.

758   Postel   Aug 79   Assigned Numbers

     This RFC has been replaced by RFCs 997 and 990.

757   Deutsch   Sep 79   A Suggested Solution to the Naming,
                                        Addressing, and Delivery Problem for
                                        ARPANET Message Systems

     Discusses several proposals for handing the name to address to
     route processing for computer mail. Favors a solution based on
     unique-ids and a data base, see also RFCs 759, 821 and 822.

756   Pickens   Jul 79   The NIC Name server--A
                                        Datagram-Based Information Utility

     Describes a Host Name to Address look up service.

755   Postel   May 79   Assigned Numbers

     This RFC has been replaced by RFCs 997 and 990.

754   Postel   Apr 79   Out-of-Net Host Addresses for Mail

     A discussion of options for addressing computer mail beyond the
     ARPANET.

753   Postel   Mar 79   Internet Message Protocol

     An old version; see RFC 759.

752   Crispin   Jan 79   A Universal Host Table

    Describes the host table used at MIT and Stanford. This has
    several extensions and generalizations from the NIC standard and
    the table used by most Tenex and TOPS20 hosts.

751   Lebling   Dec 78   Survey of FTP Mail and MLFL

    A survey of hosts' responses to probes of their FTP servers to see
    if servers (a) accept mail for unknown users and (b) support the
    MAIL and MLFL commands.

750   Postel   Sep 78   Assigned Numbers

    This RFC has been replaced by RFCs 997 and 990.

749   Greenberg   Sep 78   Telnet SUPDUP-OUTPUT Option

    Updates RFC 736; see also RFCs 734, 746, and 747.

748   Crispin   Apr 78   Telnet Randomly-Lose Option

    Defines this Telnet option (note the date of this memo).

747   Crispin   Mar 78   Recent Extensions to the SUPDUP
                                Protocol

    An update to the SUPDUP protocol (RFC 734); see also RFCs 749, 746
    and 736.

746   Stallman   Mar 78   The SUPDUP Graphics Extension

    An extension of SUPDUP for Graphics; see also RFCs 734, 736, 747
    and 749.

745   Beeler   Mar 78   JANUS Interface Specifications

    The specification of a symmetrical 1822 style interface.

744   Sattley   Jan 78   MARS - A Message Archiving and
                                Retrieval Service

    The description of a database service for computer mail messages,
    which operates via computer mail.

543   Harrenstien Dec 77   FTP Extension: XRSQ/XRCP

   An extension to FTP mail to allow more efficient transmission of
   computer mail. Now incorporated into SMTP; see RFC788.

742   Harrenstien Dec 77   NAME/FINGER Protocol

   Defines the Name or Finger Protocol which allows one to get "who
   is on" or "where is user x" information from another host.

741   Cohen   Nov 77   Specifications for the Network Voice
                                   Protocol NVP

   Defines the protocol used in the ARPANET packet speech
   experiments. Replaced by NVP-II and ST for Internet packet speech
   experiments. ST is documented in ISN 119; NVP-II is documented in
   an ISI Internal memo.

740   Braden   Nov 77   NETRJS Protocol

   Defines the protocol used for Remote Job Entry on the UCLA CCN IBM
   system; replaces RFCs 599 and 189.

739   Postel   Nov 77   Assigned Numbers

   This RFC has been replaced by RFCs 997 and 990.

738   Harrenstien Oct 77   Time Server

   Defines the Time Server Protocol; see IEN 142 for the TCP and VDP
   versions.

737   Harrenstien Oct 77   FTP Extension: XSEN

   An extension to the Mail procedures. This function is
   incorporated in the SMTP; see also RFC 821.

736   Crispin   Oct 77   Telnet SUPDUP Option

   Defines the procedure for negotiating to use the SUPDUP, protocol
   as a Telnet option; see also RFCs 734, 746, 747 and 749.

735   Crocker   Nov 77   Revised Telnet Byte Macro Option

   Defines a Telnet option for assigning codes to stand for strings
   in Telnet connections. Replaces RFC 729. Obsoletes NIC 40306.

734   Crispin   Oct 77   SUPDUP Protocol

    Description of a terminal control protocol used at Stanford and
    MIT; see also RFCs 736, 746-749.

733   Crocker   Nov 77   Standard for the Format of ARPA
                                   Network Text Messages

    Specification of the format for the headers of computer mail. An
    old version; see RFC 822.

732   Day   Sep 77   Telnet Data Entry Terminal Option

    The specification of a Telnet Option for the control of a data
    entry display terminal. Replaces RFC 731.

731   Day   Jun 77   Telnet Data Entry Terminal Option

    An old version; see RFC 732.

730   Postel   May 77   Extensible Field Addressing

    Discusses some ideas on addressing that come up in the context of
    changing from 8-bit to 24-bit network addresses.

729   Crocker   May 77   Telnet Byte Macro Option

    An old version; see RFC 735.

728   Day   Apr 77   A Minor Pitfall in the Telnet
                                   Protocol

    This RFC warns of the possibility of an unexpected occurence in
    Telnet resulting from the interaction between option
    subnegotiations and the Telnet SYNCH operation.

727   Crispin   Apr 77   Telnet Logout Option

    Defines a Telnet option for causing a logout.

726   Postel   Mar 77   Remote Controlled Transmission and
                                   Echoing Telnet Option

    Defines a Telnet option for controlling the transmission and
    echoing of data to smooth the response to use in high transmission
    delay environments; see also RFCs 719 and 718.

725   Day   Mar 77   An RJE Protocol for a Resource
                                    Sharing Network

     Describes a possible Remote Job Entry protocol.

724   Crocker   May 77   Proposed Official Standard for the
                                    Format of ARPA Network Messages

     An old version; see RFC 822.

723   Never Issued.

722   Haverty   Sep 76   Thoughts on Interactions in
                                    Distributed Services

     A discussion on the design of interactive distributed services and
     the kinds of primitive operations that are needed.

721   Garlick   Sep 76   Out of Band Control Signals in a
                                    Host to Host Protocol

     A discussion of the control signals in transport protocols (e.g.,
     NCP's Interrupt or TCP's Urgent).

720   Crocker   Aug 76   Address Specification Syntax for
                                    Network Mail

     A discussion of computer mail addresses, with comments on real
     names vs. mailboxes, and mailing lists; see also RFC 819.

719   Postel   Jul 76   Discussion on RCTE

     A short discussion of RCTE implementation issues; see also RFCs
     726 and 718.

718   Postel   Jun 76   Comments on RCTE from the Tenex
                                    Implementation Experience

     A short note on the Tenex implementation of RCTE; see also RFCs
     726 and 719.

717   Postel   Jul 76   Assigned Network Numbers

     This RFC has been replaced by RFC 997 and 990.

716   Levin   May 76   Interim Revision to Appendix F of
                                     BBN 1822

   A short note updating the specification of the Very Distant Host
   1822 interface.

715   Never Issued.

714   McKenzie   Apr 76   A Host/Host Protocol for an
                                     ARPANET-type Network

   A specification of a NCP-like protocol for an ARPA-like network.
   Interesting to compare to the NCP specification to see what the
   author would do differently.

713   Haverty   Apr 76   MSDTP -- Message Services Data
                                     Transmission Protocol

   The specification of a set of Data Primitives for building
   interactive services.

712   Donnelley   Feb 76   A Distributed Capability Computing
                                     System DCCS

   A description of a Distributed Capability based computing system.

711   Never Issued.

710   Never Issued.

709   Never Issued.

708   White   Jan 76   Elements of a Distributed
                                     Programming System

   A description of a distributed programming system; see also RFC
   707.

707   White   Dec 75   A High-Level Framework for
                                     Network-Based Resource Sharing

   A description of a programming environment for network-based
   programs; see also RFC 708.

706   Postel   Nov 75   On the Junk Mail Problem

   A short note pointing out that the ARPANET maybe subject to a
   "denial of service" attack by a misbehaving host.

705   Bryan   Nov 75   Front-End Protocol

   This RFC describes a protocol used between a PDP-11 (the ARPANET
   front end) and a B6700 to support network communication.

704   Santos   Sep 75   IMP/Host and Host/IMP Protocol
                                     Change

   Describes the changes to the 1822 interface to eliminate the
   restriction of 63 IMPs.

703   Dodds   Jul 75   Survey of New-Protocol Telnet
                                     Servers

   A poll of Telnet servers to check implementation status and Telnet
   options. Updates RFCs 702, 701, 679 and 669.

702   Dodds   Sep 74   Survey of New-Protocol Telnet
                                     Servers

   An earlier poll of Telnet server implementation status; see also
   RFC's703, 701, 679, and 669.

701   Dodds   Aug 74   Survey of New-Protocol Telnet
                                     Servers

   An earlier poll of Telnet server implementation status; see also
   RFCs 703, 702, 679 and 669.

700   Mader   Aug 74   A Protocol Experiment

   Describes a protocol based loosely on a very early version of TCP,
   used to send data to a printer server.

699   Postel   Nov 82   Requests for Comments Summary
                                     Notes: 600-699

   A summary of the Request for Comments documents from RFC 600-699.

698   Tovar   Jul 75   Telnet Extended ASCII Option

   Describes an option to allow transmission of a special kind of
   extended ASCII used at the Stanford AI and MIT AI Labs.

697   Lieb   Jul 75   CWD Command of FTP

   Discusses FTP login access to "files only" directories.

696   Cerf   Jul 75   Comments on the IMP/HOST and
                                  HOST/IMP Protocol Changes

   Observations on current international standards recommendations
   from IFIP working group 6.1; see also RFCs 692, 690 687.

695   Krilanovich   Jul 75   Official Change in Host-Host
                                  Protocol

   Corrects an ambiguity concerning the ERR command; changes NIC 8246
   and NIC 7104.

694   Postel   Jun 75   Protocol Information

   This RFC has been replaced by RFC 991.

693   Never Issued.

692   Wolfe   Jun 75   Comments on IMP/Host Protocol
                                  Changes

   A proposed solution to the problem of combined length of IMP and
   Host leaders; see also RFCs 696, 690 and 687.

691   Harvey   May 75   One More Try on the FTP

   A slight revision of RFC 686, regarding the subject of print
   files; see also RFCs 640, 630, 542, 454, 448, 414, 385 and 354.

690   Postel   Jun 75   Comments on the Proposed Host/IMP
                                  Protocol Changes

   Comments on suggestions in RFC 687; see also RFCs 692 and 696.

689   Clements   May 75   Tenex NCP Finite State Machine for
                                  Connections

   Describes the internal states of an NCP connection in the Tenex
   implementation.

688   Walden   Jun 75   Tentative Schedule for the New
                                  Telnet Implementation for the TIP

687   Walden   Jun 75   IMP/Host and Host/IMP Protocol
                                  Changes

   This RFC discusses addressing hosts on more than 63 IMPs, and
   other backwards compatible expansions; see also RFCs 690 and 692.

686   Harvey   May 75   Leaving Well Enough Alone

   Discusses the difference between early and later versions of FTP;
   see also RFCs 691, 640, 630, 542, 454, 448, 414, 385 and 354.

685   Beeler   Apr 75   Response Time in Cross-network
                                     Debugging

   This memo discusses the contribution of ARPANET communication to
   response time.

684   Schantz   Apr 75   A Commentary on Procedure Calling as
                                     a Network Protocol

   Describes issues in designing distributed computing systems.
   Shortcomings of RFC 674; see also RFCs 542 and 354.

683   Clements   Apr 75   FTPSRV -- Tenex Extension for Paged
                                     Files

   Defines an extension to FTP for page-mode transfers between Tenex
   systems; also discusses file transfer reliability.

682   Never Issued.

681   Holmgren   May 75   Network Unix

   Capabilities as an ARPANET Mini-Host: standard I/O, Telnet, NCP,
   Hardware/Software requirements, reliability, availability.

680   Myer   Apr 75   Message Transmission Protocol

   Extends message field definition beyond RFC 561 attempts to
   establish syntactic and semantic standards for ARPANET; see also
   RFCs 733 and 822.

679   Dodds   Feb 75   February, 1975, Survey of
                                     New-Protocol Telnet Servers

   An earlier poll of Telnet server implementation status. Updates
   RFCs 701, 702 and 669; see also RFC 703.

678   Postel   Dec 74   Standard File Formats

   For transmission of documents across different environments.

677   Johnson   Jan 75   The Maintenance of Duplicate
                               Databases

676   Never Issued.

675   Cerf   Dec 74   Specification of Internet
                               Transmission Control Program (TCP)

    The first detailed specification of TCP; see RFC 793.

674   Postel   Dec 74   Procedure Call Documents--Version 2

    A host level protocol used in the NSW--a slightly constrained
    version of ARPANET Host-to-Host protocol, affecting allocation,
    RFNM wait, and retransmission; see also RFC 684.

673   Never Issued.

672   Schantz   Dec 74   A Multi-Site Data Collection
                               Facility

    Applicability of TIP/Tenex protocols beyond TIP accounting.

671   Schantz   Dec 74   A Note on Reconnection Protocol

    Experience with implementation in RSEXEC context.

670   Never Issued.

669   Dodds   Dec 74   November 1974, Survey of
                               New-Protocol Telnet Servers

    An earlier poll of Telnet server implementation status. Updates
    RFC 702; see also RFCs 703 and 679.

668   Never Issued.

667   Chipman   Dec 74   BBN Host Ports

    Approved scheme to connect host ports to the network.

666   Padlipsky   Nov 74   Specification of the Unified
                               User-Level Protocol

    Discusses and proposes a common command language.

665   Never Issued.

664   Never Issued.

663   Kanodia   Nov 74   A Lost Message Detection and
                                   Recovery Protocol

   Proposed extension of host-host protocol; see also RFCs 534, 516,
   512, 492 and 467.

662   Kanodia   Nov 74   Performance Improvement in ARPANET
                                   File Transfers from Multics

   Experimenting with host output buffers to improve throughput.

661   Postel   Nov 74   Protocol Information

   This RFC has been replaced by RFC 991.

660   Walden   Oct 74   Some Changes to the IMP and the
                                   IMP/Host Interface

   Decoupling of message number sequences of hosts; host-host access
   control; message number window; messages outside normal mechanism;
   see also BBN 1822.

659   Postel   Oct 74   Announcing Additional Telnet Options

   Options defined in RFCs 651-658.

658   Crocker   Oct 74   Telnet Output Line Feed Disposition

   Defines a Telnet option for specific control of Line Feed.

657   Crocker   Oct 74   Telnet Output Vertical Tab
                                   Disposition Option

   Defines a Telnet option for specific control of Vertical Tab.

656   Crocker   Oct 74   Telnet Output Vertical Tab Stops
                                   Option

   Defines a Telnet option for setting the stops for Vertical Tab.

655   Crocker   Oct 74   Telnet Output Form Feed Disposition
                                   Option

   Defines a Telnet option for specific control of Form Feed.

654   Crocker   Oct 74   Telnet Output Horizontal Tab
                                  Disposition Option

   Defines a Telnet option for specific control of Horizontal Tab.

653   Crocker   Oct 74   Telnet Output Horizontal Tab Stops
                                  Option

   Defines a Telnet option for setting the stops for Horizontal Tab.

652   Crocker   Oct 74   Telnet Output Carriage Return
                                  Disposition Option

   Defines a Telnet option for specific control of Carriage Return.

651   Crocker   Oct 74   Revised Telnet Status Option

   Revises the Telnet Option for communicating the status of all
   Telnet options over the network.

650   Never Issued.

649   Never Issued.

648   Never Issued.

647   Padlipsky   Nov 74   A Proposed Protocol for Connecting
                                  Host Computers to ARPA-Like Networks
                                  via Front End Processors

   Approaches to Front-End protocol processing using available
   hardware and software.

646   Never Issued.

645   Crocker   Jun 74   Network Standard Data Specification
                                  Syntax

   Providing a mechanism for specifying all attributes of a
   collection of bits; see also RFC 615.

644   Thomas   Jul 74   On The Problem of Signature
                                  Authentication for Network Mail

   Proposes that the mail sender be an authorized system process and
   that the mail sender and mail receiver processes exchange a
   password. The sender process takes responsibility for
   authentication of the signature on the mail.

643   Mader   Jul 74   Network Debugging Protocol

    To be used in an implementation of a PDP-11 network bootstrap
    device and a cross-network debugger.

642   Burchfiel   Jul 74   Ready Line Philosophy and
                                 Implementation

641   Never Issued.

640   Postel   Jun 74   Revised FTP Reply Codes

    Updates RFC 542.

639   Never Issued.

638   McKenzie   Apr 74   IMP/TIP Preventive Maintenance
                                 Schedule

    Corrects RFC 633.

637   McKenzie   Apr 74   Change of Network Address for SU-DSL

    A host at Stanford changes its address from 2/2 to 2/3.

636   Burchfiel   Jun 74   TIP/TENEX Reliability Improvements

    Obtaining/maintaining connections; recovery from lost connections;
    connection-state changes.

635   Cerf   Apr 74   An Assessment of ARPANET Protocols

    Theoretical and practical motivation for redesign. Multipacket
    messages; host retransmission; duplicate detection; sequencing;
    acknowledgement.

634   McKenzie   Apr 74   Change in Network Address for
                                 Haskins Lab.

    A host a Haskins Lab changes its address from 5/3 to 9/3.

633   McKenzie   Mar 74   IMP/TIP Preventive Maintenance
                                 Schedule

    An old version; see RFC 638.

632   Opderbeck   May 74   Throughput Degradations for Single
                                 Packet Messages

    A study of packet throughput.

631   Danthine   Apr 74   Call for Papers: International
                                 Meeting on Minicomputers and Data
                                 Communication

    A meeting on data communications held January 1975 in Liege,
    Belgium.

630   Sussman   Apr 74   FTP Error Code Usage for More
                                 Reliable Mail Service

    Describes FTP reply-code usage in TENEX mail processing.

629   North   Mar 74   Scenario for Using the Network
                                 Journal

    An example of how to access information in the NIC's Journal
    database.

628   Keeney   Mar 74   Status of RFC Numbers and a Note on
                                 Pre-assigned Journal Numbers

    A method for getting the next RFC number to use on a new memo.

627   Feinler   Mar 74   ASCII Text File of Hostnames

    See also RFCs 606, 608, 623 and 625.

626   Kleinrock   Mar 74   On a possible Lockup Condition in
                                 IMP Subnet due to Message Sequencing

    A potential problem in the IMP processing of messages. A detailed
    description of how this condition can arise.

625   Feinler   Mar 74   On Line Hostnames Service

    See also RFCs 606, 608, 623 and 627.

624   Krilanovich   Feb 74   Comments on the File Transfer
                                 Protocol

    Design changes and slight modifications. Replaces RFC 607; see
    also RFCs 614, 542 and 640.

623   Krilanovich Feb 74   Comments on On-Line Host Name
                                Service

   See also RFCs 627, 625, 608 and 606.

622   McKenzie   Mar 74   Scheduling IMP/TIP Down Time

   Modification of previous policy.

621   Kudlick   Mar 74   NIC User Directories at SRI-ARC

   Changes in user accounts at the NIC.

620   Ferguson   Mar 74   Request for Monitor Host Table
                                Updates

   Changes in the hosts Office-1 and SRI-ARC.

619   Naylor   Mar 74   Mean Round-Trip Times in the ARPANET

   Actual measurements of round-trip times.

618   Taft   Feb 74   A Few Observations on NCP Statistics

   Distribution of NCP and IMP message types by actual measurement.

617   Taft   Feb 74   A Note on Socket Number Assignment

   Danger of imposing more fixed socket number requirements; see also
   RFCs 542, 503 and 451.

616   Walden   Feb 74   Latest Network Maps

   Geographic ad Topologic maps of the ARPANET of January 1974.

615   Crocker   Mar 74   Proposed Network Standard Data
                                Pathname Syntax

   A suggestion for a network wide standard for naming data (such as
   files).

614   Pogran   Jan 74   Response to RFC 607 (NIC-21255),
                                "Comments on the FTP"

   See also RFCs 624, 542 and 640.

613   McKenzie   Jan 74   Network Connectivity: A Response to
                                     RFC 603

   Remarks about connectivity and robustness of networks.

612   McKenzie   Jan 74   Traffic Statistics

   A report on Host traffic statistics for the month of December
   1973. Updates RFC 601.

611   Walden   Feb 74   Two Changes to the IMP/Host Protocol

   Expansion of Host-Going-Down and addition of Dead-Host-Status
   Message.

610   Winter   Dec 73   Further Datalanguage Design Concepts

   Preliminary results of the language design; a model for data
   languagea semantics; future considerations.

609   Ferguson   Jan 74   Statement of Upcoming Move of
                                     NIC/NLS Service

   See also RFCs 621 and 620.

608   Feinler   Jan 73   Host Names On-Line

   Response to RFC 606; see also RFCs 627, 625 and 623.

607   Krilanovich Jan 73   NIC-21255 Comments on the File
                                     Transfer Protocol

   An old version; see RFC 624; see also RFCs 614, 542 and 640.

606   Deutsch   Dec 73   Host Names On-Line

   Resolving differences in hostname-address mappings; see also RFCs
   627, 625, 623 and 608.

605   Never Issued.

604   Postel   Dec 73   Assigned Link Numbers

   Modifies official host-host protocol. Replaced by RFCs 997 and
   990.

603   Burchfiel   Dec 73   Response to RFC 597: Host Status

    Questions about the ARPANET topology described in RFC 597.

602   Metcalfe   Dec 73   "The Stockings Were Hung by the
                                   Chimney With Care"

    Susceptibility of ARPANET to security violations.

601   McKenzie   Dec 73   Traffic Statistics

    A report on Host traffic statistics for the month of November
    1973. Updates RFC 586.

600   Berggreen   Nov 73   Interfacing an Illinois Plasma
                                   Terminal to the ARPANET

    Discusses plans to map Plato terminal codes to network ASCII for
    accessing the Plato system via the network using Telnet.

599   Braden   Dec 73   Update on NETRJS

    A status report and update on UCLA-CCN's remote job entry service.

598   NICSTA   Dec 73   RFC Index - December 5, 1973

    Lists RFCs 1-593.

597   Neigus   Dec 73   Host Status

    This RFC provides the most current network maps, geographic and
    logical, plus a list of hosts connected to the ARPANET.

596   Taft   Dec 73   Second Thoughts on Telnet Go-Ahead

    Cited objections to the requirement that hosts implement the
    Telnet Go-Ahead (GA) command, as specified in the Telnet Protocol
    Specification.

595   Hathaway   Dec 73   Some Thoughts in Defense of the
                                   Telnet Go-Ahead

    This RFC is in reply to RFC 596.

594   Burchfiel   Dec 73   Speedup of Host-IMP Interface

    A discussion on how to make the full performance capabilities of
    the subnet available for interprocess communication.

593   McKenzie   Nov 73   Telnet and FTP Implementation
                                Schedule Change

592   Watson   Nov 73   Some Thoughts on System Design to
                                Facilitate Resource Sharing

   Proposes a system interconnection approach which would help in
   moving toward more resource sharing on the ARPANET.

591   Walden   Nov 73   Addition to the Very Distant Host
                                Specification

   A sentence correction notation that should be inserted in Appendix
   F of BBN Report 1822.

590   Padlipsky   Nov 73   MULTICS Address Change

   Announcement of a plan to change the address of MIT Multics.

589   Braden   Nov 73   CCN NETRJS Server Messages to Remote
                                User

   Describes the system to user messages at UCLA-CCN's remote job
   entry service.

588   Stokes   Oct 73   London Node is now up

   Notice that an ARPANET node is operational at University College,
   London.

587   Postel   Nov 73   Announcing New Telnet Options

   Announcement of Negotiate About Output Line Width (NAOL), and
   Negotiate About Output Page Size (NAOP).

586   McKenzie   Nov 73   Traffic Statistics

   A report on the Host traffic statistics for the month of
   October 1973. Updates RFC 579.

585   Crocker   Nov 73   ARPANET Users Interest Working Group
                                Meeting

   Meeting notes of the first Users Interest Working Group.

    584   Iseli   Nov 73   Charter for ARPANET Users Interest
                                        Working Group

       Describes the background, membership, and scope of the newly
       formed Users Interest Working Group.

    583   Never Issued.

    582   Clements   Nov 73   Comments on RFC 580 - Machine
                                        Readable Protocols

       Cites objections to the phrase "preferably NLS files".

    581   Crocker   Nov 73   Corrections to RFC 560 - Remote
                                        Controlled Transmission and Echoing
                                        Telnet Option

       This RFC contains corrections to RFC 560, which described the
       Remote Controlled Transmission and Echoing Telnet Option.

    580   Postel   Oct 73   Note to Protocol Designers and
                                        Implementers

       An announcement that future proposed protocols shall be submitted
       in the form of on-line documents, preferably in NLS files, to the
       Network Information Center.

    579   McKenzie   Oct 73   Traffic Statistics

       A report on the Host traffic statistics for the month of
       September 1973. Updates RFC 566.

    578   Bhushan   Oct 73   Using MIT-MATHLAB MACSYMA From
                                        MIT-DMS Muddle - An Experiment in
                                        Automated Resource Sharing

       This paper describes an experiment in non-trivial automated
       resource sharing between dissimilar systems. The goal of this
       experiment was to interface the Muddle system at MIT-DMS to the
       MACSYMA system at MIT-Mathlab.

    577   Crocker   Oct 73   Mail Priority

       A paper that suggests interpretations for urgency values, based on
       arguments presented in RFC 555. References RFC 539.

    576   Victor   Sep 73   Proposal for Modifying Linking

        This RFC presents a plan to modify the link jsys in Tenex to work
        in a better way in terms of the user interface.

    575   Never Issued.

    574   Krilanovich Sep 73   Announcement of a Mail Facility at
                                    UCSB

        An announcement of a server program which supports that subset of
        the File Transfer Protocol necessary for mail delivery.

    573   Bhushan   Sep 73   Data and File Transfer - Some
                                    Measurement Results

        A report on the results of the performance of MIT-DM's FTP-user
        and FTP-server programs.

    572   Never Issued.

    571   Braden   Nov 73   Tenex FTP Problem

        A report on a problem in the current Tenex implementation which is
        likely to cause incorrect results when transferring files to a
        non-Tenex site.

    570   Pickens   Oct 73   Experimental Input Mapping Between
                                    NVT ASCII and UCSB Online System

        This RFC updates RFC 216. This document describes the proposed
        solutions from the requests to improve the human interface to the
        UCSB On-Line System.

    569   Padlipsky   Oct 73   NETED: A Common Editor for the ARPA
                                    Network

        Defines a simple line style text editor and suggests that it be
        made available on every host in the network.

    568   McQuillan   Sep 73   Response to RFC 567 - Cross-Country
                                    Network Bandwidth

        This RFC serves as a brief correction to several fundamental
        errors in RFC 567.

567   Deutsch   Sep 73   Cross-Country Network Bandwidth

     Computation of cross-country network bandwidth.

566   McKenzie   Sep 73   Traffic Statistics

     A report on the Host traffic statistics for the month of
     August 1973. Updates RFC 556.

565   Cantor   Aug 73   Storing Network Survey Data at the
                                  Datacomputer

     A project summary report describing the programs developed and
     implemented that have been operating successfully with the
     datacomputer since July 10.

564   Never Issued.

563   Davidson   Aug 73   Comments on the RCTE Telnet Option

     A critique based on inferences drawn from the sample Tenex
     interaction in RFC 560.

562   McKenzie   Aug 73   Modifications to the Telnet
                                  Specification

     Presenting two documents that update RFC 495, plus summarizing the
     changes.

561   Bhushan   Sep 73   Standardizing Network Mail Headers

     A proposed document for the explicit specification of such header
     information as author, title, and date within the current FTP mail
     protocol.

560   Crocker   Aug 73   Remote Controlled Transmission and
                                  Echoing Telnet Option

     Defines a Telnet option for detailed control of echoing to promote
     interactive use on long delay paths.

559   Bhushan   Aug 73   Comments on the New Telnet Protocol
                                  and Its Implementation

     This RFC describes the experience that MIT-DM had with the
     implementation of the new Telnet protocol (both server and user).

558   Never Issued.

557   Wessler   Aug 73   Revelations in Network Host
                                 Measurements

   A report to the RFC community on the current network host
   measurements.

556   McKenzie   Aug 73   Traffic Statistics

   A report on the Host traffic statistics for the month of
   July 1973.   Updates RFC 538.

555   White   Jul 73   Response to Critiques of the
                                 Proposed Mail Protocol

   Response to the proposal for a Mail Protocol (RFC 524).

554   Never Issued.

553   Thomas   Jul 73   Draft Design for a Text/Graphics
                                 Protocol

   This document was proposed as a synthesis of existing ideas rather
   than an attempt to put forth new ones.   It draws upon the concerns
   about the lack of text-handling capabilities of the protoocl
   suggested in RFC 493.

552   Owen   Jul 73   Single Access to Standard Protocols

   Queries and statements regarding a socket number assignment for a
   single access protocol before the proposed mail protocol becomes
   official.

551   Feinroth   Aug 73   NYU, ANL, and LBL Joining the Net

   Announcement of the intent of several Atomic Energy Commission
   installations to enter the network.

550   Deutsch   Aug 73   NIC NCP Experiment

   Statistics on total incoming messages, incoming host-host control
   opcodes, and size of outgoing messages.

549   Michener   Jul 73   Minutes of Network Graphics Group
                                 Meeting

   Description of a meeting on graphics held in July 1973.

548   Walden   Aug 73   Hosts Using the IMP Going Down
                                     Message

   Discusses the user and intention of the ARPANET IMP's "going down"
   message.

547   Walden   Aug 73   Change to the Very Distant Host
                                     Specification

   A document on a new version of figure F-4 for BBN Report 1822.

546   Thomas   Aug 73   Tenex Load Averages for July 1973

   Report on the load on two of the key service computers on the
   ARPANET.

545   Pickens   Jul 73   Of What Quality be the UCSB Resource
                                     Evaluators?

   This memo is in response to RFC 531.

544   Meyer   Jul 73   Locating On-Line Documentation at
                                     SRI-ARC

   Updated memo on how to access on-line documentation at the NIC.

543   Meyer   Jul 73   Network Journal Submission and
                                     Delivery

   Announcement that the first implementation of a Network Journal
   Submission and Delivery system is now experimentally up.

542   Neigus   Jul 73   File Transfer Protocol

   This RFC states that there are considerable changes from the last
   "official" version of FTP, but the gross structure still remains
   the same. References RFCs 354, 454, and 495.

541   Never Issued.

540   Never Issued.

539   Crocker   Jul 73   Thoughts on the Mail Protocol
                                     Proposed in RFC 524

   This memo is in response to RFC 524. In general, the authors of
   this RFC feel that the protocol is extremely rich. They also feel
   that there are some minor and some major problems.

538   McKenzie   Jul 73   Traffic Statistics

    A report on the Host traffic statistics for the month of June
    1973. Updates RFC 522.

537   Bunch   Jun 73   Announcement of NGG Meeting

    Arrangement details for a graphics meeting held July 1973. See
    RFC 549.

536   Never Issued.

535   Thomas   Jul 73   Comments on File Access Protocol

    This memo is in response to RFC 420.

534   Walden   Jul 73   Lost Message Detection

    This RFC presents three suggestions for detecting the loss of
    messages by the communications subsystem.

533   Walden   Jul 73   Message-ID Numbers

    Notice that the ARPANET link field of 8-bits has been expanded to
    12-bits and renamed the message-id field.

532   Merryman   Jul 73   The UCSD-CC Server-FTP Facility

    A description of the FTP service at UCSD.

531   Padlipsky   Jun 73   Feast or Famine? - A Response to Two
                                     Recent RFC's About Network
                                     Information

    This memo is in response to RFCs 514 and 519.

530   Bhushan   Jun 73   A Report on the SURVEY Project

    The purpose of this paper is 1) to report on the status of the
    SURVEY project and current data, 2) to inform the ARPANET
    community of the services offered related to this project, 3) to
    report on future plans, and 4) to ask for suggestions and
    improvements.

529   McKenzie   Jun 73   A Note on Protocol Synch Sequences

    A response to RFC 513.

528   McQuillan   Jun 73   Software Checksumming in the IMP and
                                    Network Reliability

    A description of some of the modifications that have recently
    been made to the IMP and TIP programs.

527   Merryman   Jun 73   ARPAWOCKY

    A parody by D. L. Covill of the ARPANET based on the Jabberwocky
    of Lewis Carroll

526   Pratt   Jun 73   Technical Meeting - Digital Image
                                    Processing Software Systems

    Announcement of a technical meeting on digital image processing
    software systems.

525   Parrish   Jun 73   MIT-Mathlab Meets UCSB-OLS

    A description of problem solving using both the MIT-P1ACSYM system
    and the UCSB-OLS system.

524   White   Jun 73   A Proposed Mail Protocol

    A proposed specification for handling mail in the ARPA network.

523   Bhushan   Jun 73   SURVEY is in Operation Again

    The purpose of this RFC is to alert the network community that the
    survey program at MIT-DMCG computer system is in operation.

522   McKenzie   Jun 73   Traffic Statistics

    A report on the Host traffic statistics for the month of May 1973.
    Updates RFC 509.

521   McKenzie   May 73   Restricted Use of IMP DDT

    Proposal of restricted use of IMP DDT due to opinions from
    representatives of several sites feeling that uncontrolled use of
    IMP DDT made access control mechanisms too vulnerable to
    interception or tampering.

520   Day   Jun 73   Memo to FTP Group (Proposal for File
                                    Access Protocol)

    This document discusses the File Access Protocol as an extension
    to FTP.

519   Pickens   Jun 73   Resource Evaluation

   UCSB announces a new test group based upon RFC 369, which attempts
   to take a detailed look at specific network resources and develop
   initial site dependent and function dependent MINIMAN's.

518   Feinler   Jun 73   ARPANET Accounts

   A memo on information regarding opening an account at a given site
   on the ARPANET.

517   Never Issued.

516   Postel   May 73   Lost Message Detection

   This RFC is replaced by RFC 534.

515   Winter   Jun 73   Specifications for Datalanguage,
                                  Version 0/9

   This specification for Datalanguage is extremely primitive.
   Version 0/9 is currently running at CCA and offers an opportunity
   for experience with the Datacomputer and with fundamental
   Datalanguage concepts.

514   Kantrowitz   Jun 73   Network Make-Work

   Updates RFC 459.

513   Hathaway   May 73   Comments on the New Telnet
                                  Specifications

   Discussion of the Telnet Protocol.

512   Hathaway   May 73   Lost Message Detection

   This RFC is replaced by RFC 534.

511   North   May 73   Enterprise Phone Service to NIC From
                                  ARPANET Sites

   Discussion of cost and alternatives for special telephone numbers
   for the NIC.

510   White   May 73   Request for Network Mailbox
                                  Addresses

   Announcement of Network Journal delivery by the NIC and a request
   for updated/additional network mailbox addresses.

509   McKenzie   May 73   Traffic Statistics

   A report on the Host traffic statistics for the month of April
   1973. Updates RFC 497.

508   Pfeifer   May 73   Real-Time Data Transmission on the
                                  ARPANET

   Discussion on the pros and cons of support of real-time processes
   on the ARPA Network.

507   Never Issued.

506   Padlipsky   Jun 73   An FTP Command Naming Problem

   This RFC discusses a problem when using the File Transfer
   Protocol: the choice of names for two crucial commands is faulty.

505   Padlipsky   Jun 73   Two Solutions to a File Transfer
                                  Access Problem

   This memo is in response to RFCs 487 and 501.

504   Thomas   May 73   Workshop Announcement

   Detailed plans for a workshop on Automated Resource Sharing to be
   held May 1973.

503   Neigus   Apr 73   Socket Number List

   This RFC has been replaced by RFCs 997 and 990.

502   Never Issued.

501   Pogran   May 73   Un-Muddling "Free File Transfer"

   This memo is in response to RFC 487.

500   Shoshani   Apr 73   The Integration of Data Management
                                  Systems on a Computer Network

   In this paper, discussion is focused on an approach to integrating
   data management systems on a computer network for the purpose of
   data sharing.

499   Reussow   Apr 73   Harvard's Network RJE

    A description of the remote job entry service at Harvard.

498   Braden   Apr 73   On Mail Service to CCN

    A description of the electronic mail service at UCLA-CCN.

497   McKenize   Apr 73   Traffic Statistics

    A report on the Host traffic statistics for the month of March
    1973. Updates RFC 482.

496   Auerbach   Apr 73   A TNLS Quick Reference Card is
                                 Available

    Announcement of a new TNLS Quick Reference Card.

495   McKenize   May 73   Telnet Protocol Specification

    Results of an open meeting discussing Telnet, with two attached
    documents which report the results of that meeting.

494   Walden   Apr 73   Availability of MIX and MIXAL in the
                                 Network

    A list of hosts that support programming in MIX and MIXAL.

993   Michener   Apr 73   Graphics Protocol

    Discuses the opinions and decisions reached at the second meeting
    of the Network Graphics Group.

492   Meyer   Apr 73   Response to RFC 467

    This document briefly describes the problems and proposed
    solutions, offers comments and alternative suggestions in response
    to RFC 467.

491   Padlipsky   Apr 73   What is "Free"?

    This memo discusses the assertion that network mail should be
    free; i.e., no login or USER command should be required.

490   Pickens   Mar 73   Surrogate RJS for UCLA-CCN

    A description of how UCLA's RJS can be accessed from UCSB's
    standard remote job entry service.

    489   Postel   Mar 73   Comment on Resynchronization of
                                      Connection Status Proposal

   Comments on ideas proposed in RFC 467.

    488   Auerbach   Mar 73   NLS Classes at Network Sites

      This RFC solicits comments from the Network community on the
      desirability of doing on-site classes.

    487   Bressler   Mar 73   Host-Dependent FTP Parameters

      This memo is in response to RFC 430.

    486   Bressler   Apr 73   Data Transfer Revisited

      A proposeal to base RJE and FTP on a common data transfer
      protocol.

    485   Pickens   Mar 73   MIX and MIXAL at UCSB

      A response to Walden's MIX query (RFC 473).

    484   Never Issued.

    483   Kudlick   Mar 73   Cancellation of the Resource
                                      Notebook Famework Meeting

    482   McKenzie   Mar 73   Traffic Statistics

      A report on the Host traffic statistics for the month of February
      1973. Updates RFC 455.

    481   Never Issued.

    480   White   Mar 73   Host-Dependent FTP Parameters

      This memo is in response to RFC 430.

    479   White   Mar 73   Use of FTP by the NIC Journal

      This RFC states how the NIC outlined its requirements for
      implementing FTP Journal delivery and submission.

    478   Bressler   Mar 73   FTP Server-Server Interaction - II

      Discusses server-server interaction where, in a typical situation,
      a user conversing with two servers is interested in retrieving a
      file from one site and sending it to another.

477   Krilanovich May 73   Remote Job Service at UCSB

   This RFC is the follow-on document to RFC 436. This document
   restates the essence of the official RJE Protocol and documents in
   detail UCSB's implementation of it. Obsoletes RFC 436.

476   McKenzie   Mar 73   IMP/TIP Memory Retrofit Schedules
                                 (Revision 2)

   Describes plans and schedule for upgrading IMPs and TIPs.

475   Bhushan   Mar 73   FTP and the Network Mail System

   This paper describes the author's understanding of the results of
   the Network Mail System meeting and the implications for FTP.

474   Bunch   Mar 73   Announcement of Forthcoming Meeting
                                 of the Network Graphics Working
                                 Group and Call for RFC's.

   Plans for a graphics meeting to be held in May 1973.

473   Walden   Feb 73   MIX and MIXAL?

472   Bunch   Mar 73   Illinois' Reply to Maxwell's Request
                                 for Graphics Information

   This RFC represents the author's response to NIC document 14925.

471   Thomas   Mar 73   Announcement of a (Tenative)
                                 Workshop on Multi-Site Executive
                                 Programs

   A suggestion for a workshop and a query for interest.

470   Thomas   Mar 73   Change in Socket for TIP News
                                 Facility

469   Kudlick   Mar 73   Network Mail Meeting Summary

   A description of a meeting on mail held February 1973.

468   Braden   Mar 73   FTP Data Compression

   This RFC describes the definition of the "HASP" or compressed
   mode.

467   Burchfiel   Feb 73   Proposed Change to Host-Host
                                 Protocol Resynchronization of
                                 Connection Status

   To achieve resynchronization of allocation, this RFC proposes the
   addition of two commands to the host-host protocol.

466   Winett   Feb 73   Telnet Logger/Server for Host LL-67

   This RFC contains writeup documents on the Telnet Logger/Server
   for the CP/CMS system on the Lincoln Laboratory 360/67.

465   Never Issued.

464   Kudlick   Feb 73   Resource Notebook Framework

   This document presents a framework for coordinating all the
   surveys and data gathering efforts concerned with "resource
   notebook" type of information.

463   Bhushan   Feb 73   FTP Comments and Response to RFC 430

   This RFC represents the author's response to RFC 430 and other
   similar views.

462   Iseli   Feb 73   Responding to User Needs

   A proposal to have network documentation maintained at the source,
   that is, by each site, and available as a distributed database.

461   McKenzie   Feb 73   Telnet Meeting Announcement

   Plans for a meeting on Telnet to be held March 1973.

460   Kline   Feb 73   NCP Survey

   This RFC is a first in a series which will request information on
   implmentation of host-to-host protocol.

459   Kantrowitz   Feb 73   Network Questionnaires

   Suggests that there is too much or too many different people
   trying to gather data from all the other sites.

458   Bressler   Feb 73   Mail Retrieval via FTP

   Proposal of two new FTP commands called ReaDMailFile and ReaDMail.

457   Walden   Feb 73   TIPUG

   How to get updates to the TIP Users Guide.

456   NIC   Feb 73   Memorandum

   Change in the meeting time for the Network Mail meeting discussed
   in RFC 453.

455   McKenzie   Feb 73   Traffic Statistics

   Report on the Host traffic statistics for the month of January
   1973. Updates RFC 443.

454   McKenzie   Feb 73   File Transfer Protocol (Meeting
                                 Announcement and a New Proposed
                                 Document

   The specification of the File Transfer Protocol and the
   announcement of a meeting (March 1973) to discuss it.

453   Kudlick   Feb 73   Meeting Announcement to Discuss a
                                 Network Mail System

   Plans for a meeting on electronic mail held February 1973. See
   RFC 469.

452   Winett   Feb 73   Telnet Command at Host LL

   This RFC documents the use of the Telnet command at Host LL for
   uses under the CP/CMS time-sharing system.

451   Padlipsky   Feb 73   Tentative Proposal for a Unified
                                 User Level Protocol

   A suggestion for the idea of a network standard command language
   for interactive systems.

450   Padlipsky   Feb 73   Multics Sampling Timeout Change

   Announcement of better service for experimental users of MIT
   Multics.

449   Walden   Jan 73   The Current Flow-Control Scheme for
                                 IMPSYS

   Updates RFC 442.

448   Braden   Feb 73   Print Files in FTP

   This document reviews the problem of print files.

447   McKenzie   Jan 73   IMP/TIP Memory Retrofit Schedule

   Updates RFC 434.

446   Deutsch   Jan 73   Proposal to Consider a Network
                                  Program Resource Notebook

445   McKenzie   Jan 73   IMP/TIP Preventive Maintenance
                                  Schedule

444   Never Issued.

443   McKenzie   Jan 73   Traffic Statistics

   Report on the Host traffic statistics for the month of December
   1972. Updates RFC 422.

442   Cerf   Jan 73   The Current Flow-Control Scheme for
                                  IMPSYS

   This RFC discusses the current flow-control scheme for IMPSYS.

441   Bressler   Jan 73   Inter-Entity Communication - An
                                  Experiment

   A status report concerning an experiment based on the desire of
   users, at their consoles, to converse with one another, and to
   receive some debugging assistance.

440   Walden   Jan 73   Scheduled Network Software
                                  Maintenance

   Explains plans and schedule for IMP software maintenance, expands
   the normal time slot.

439   Cerf   Jan 73   PARRY Encounters the Doctor

   A lighthearted documentation on a session that actually happened
   on September 18, 1972.

438   Thomas   Jan 73   FTP Server-Server Interaction

   This document suggests a simple extension to FTP which would allow
   a FTP user process at one site to arrange for FTP server processes
   at other sites to act cooperatively on its behalf.

437   Faeh   Jun 73   Data Reconfiguration Service at UCSB

   Announcement of the availability of the Data Reconfiguration
   Service (DRS) at UCSB.

436   Krilanovich Jan 73   Announcement of RJS at UCSB

   Announcement of the availability of RJS at UCSB.

435   Cosell   Jan 73   Telnet Issues

   This RFC discusses a number of Telnet related issues, with the
   central issue of discussion being echoing.

434   McKenzie   Jan 73   IMP/TIP Memory Retrofit Schedule

   Explains plans and schedule for IMP and TIP upgrades.

433   Postel   Dec 72   Socket Number List

   Establishment of assigned socket numbers to be used for public
   functions. This RFC has been replaced by RFC 997 and 990.

432   Neigus   Dec 72   Network Logical Map

   Attachment of the network logical map as of December 30, 1972.

431   Krilanovich Dec 72   Update on SMFS Login and Logout

   This document obsoletes RFC 399, which introduced the Login and
   Logout commands for UCSB's SMFS, but was incomplete. RFC 399 is
   restated more fully in this RFC.

430   Braden   Feb 73   Comments on File Transfer Protocol

   Discusses several issues in FTP.

429   Postel   Dec 72   Character Generator Process

   A proposal that there be a standard process implemented on
   whatever hosts desire which generates character data with out any
   regard to input.

428   Never Issued.

427   Never Issued.

    426   Thomas   Jan 73   Reconnection Protocol

        This document describes several situations in which the ability to
        reconnect is useful, presents a mechanism to achieve
        reconnections, sketches how the mechanism could be added to
        Host-Host or Telnet protocol, and recommends a place for the
        mechanism in the protocol hierarchy.

    425   Bressler   Dec 72   "But my NCP costs $500 a day..."

        Discussion on the cost of network software and network use.

    424   Never Issued.

    423   Noble   Dec 72   UCLA Campus Computing Network
                                     Liaison Staff for ARPA Network

        A list of ARPA network contacts at CCN. Updates RFC 389.

    422   McKenzie   Dec 72   Traffic Statistics

        Report on the Host traffic statistics for the month of November
        1972. Updates RFC 413.

    421   McKenzie   Nov 72   A Software Consulting Service for
                                     Network Users

        An announcement of a BBN software consulting service that has been
        established for ARPA network users.

    420   Murray   Jan 73   CCA ICCC Weather Demo

        Announcement that the weather demo for the ICCC show is now
        generally available.

    419   Vezza   Dec 72   MIT-DMS on Vacation

        The MIT Dynamic Modeling System will be down for 2-4 weeks.

    418   Hathaway   Nov 72   Server File Transfer Under TSS/360
                                     at NASA/Ames Research Center

        This RFC is a description of the initial implementation of Server
        File Transfer at NASA-Ames Research Center.

417   Postel   Nov 72   LINK Usage Violation

    The protocol police issue a citation.

416   Norton   Nov 72   The ARC System will be Unavailable
                                    for Use During Thanksgiving Week

    The SRI-ARC machine will be down for 9-10 days.

415   Murray   Nov 72   TENEX Bandwidth

    Considerations of the performances of each host. References
    RFC 392.

414   Bhushan   Nov 72   File Transfer Protocols (FTP) Status
                                    and Further Comments

    A status report on working server and user FTPs.

413   McKenzie   Nov 72   Traffic Statistics

    Three sets of network traffic statistic reports. Updates RFC 400.

412   Hicks   Nov 72   User FTP Documentation

    A "help" file for the Utah-10 implementation of the User FTP
    process.

411   Padlipsky   Nov 72   New Multics Network Software
                                    Features

    Discussion on two recently-installed features of the Multics
    Network software.

410   McQuillan   Nov 72   Removal of the 30-Second Delay When
                                    Hosts Come Up

    A proposal to elminate the 30-second delay altogether.

409   White   Dec 72   TENEX Interface to UCSB's
                                    Simple-Minded File System

    This document is intended to provide users with the information
    necessary to use SMFS from a terminal; the reader is assumed
    familiar with Tenex.

408   Owen   Oct 72   NETBANK

   A proposed idea for a protocol (or service) that is offered as an
   aid to network use for new users.

407   Bressler   Oct 72   Remote Job Entry Protocol

   The release of the official Remote Job Entry Protocol, per the
   ARPA office.

406   McQuillan   Oct 72   Scheduled IMP Software Releases

   Explains the plans and schedule for IMP software maintenance.

405   McKenzie   Oct 72   Correction to RFC 404

   Typographical error notation. Obsoletes RFC 404.

404   McKenzie   Oct 72   Host Address Changes Involving Rand
                                   and ISI

   The new address of ISI is IMP 22. THe new address of RAND is
   IMP 7.

d

403   Hicks   Jan 73   Desirability of a Network 1108
                                   Service

402   NIC   Oct 72   ARPA Network Mailing Lists

   Obsoletes RFC 363.

401   Hansen   Oct 72   Conversion of NGP-0 Coordinates to
                                   Device Specific Coordinates

   A means is described to convert NGP coordinates to interger
   coordinates in the range zero to M, where M is the maximum address
   of the device screen on a machine using 2's complement arithmetic.

400   McKenzie   Oct 72   Traffic Statistics

   A report on the Host traffic statistics for the month of
   September 1972. Updates RFC 391.

399   Krilanovich   Sep 72   SMFS Login and Logout

398   Pickens   Sep 72   UCSB Online Graphics

   Announcement that users with Tektronix or IMLAC terminals, or with
   systems that support the proposed Level 0 graphics protocol can
   access UCSB graphics.

397   Never Issued.

396   Bunch   Nov 72   Network Graphics Working Group
                                    Meeting - Second Iteration

395   McQuillan   Oct 72   Switch Settings on IMPs and TIPs

   Discussion on a description of the switches on the front panel of
   IMPs and TIPs that are important to the correct operation of the
   network software.

394   McQuillan   Sep 72   Two Proposed Changes to the IMP-HOST
                                    Protocol

   Updates RFC 381. This note describes two changes to the IMP-Host
   communication protocol described in BBN Report 1822.

393   Winett   Oct 72   Comments on Telnet Protocol Changes

   Comments and objections to two of the three recent suggestions for
   changing the Telnet protocol as described in RFC 328.

392   Hicks   Sep 72   Measurement of Host Costs for
                                    Transmitting Network Data

   Discussion of Utah's development of a program to use the Remote
   Job Service System (RJS) at UCLA-CCN in conjunction with Utah's
   "batch" users.

391   McKenzie   Sep 72   Traffic Statistics

   A report on the Host traffic statistics for the month of
   August 1972. Updates RFC 378.

390   Braden   May 72   TSO Scenario Batch Compilation and
                                    Foreground Execution

   An example session with TSO on UCLA-CCN.

389   Noble   Aug 72   UCLA Campus Computing Network
                                    Liaison Staff for ARPA Network

   A list for ARPA Network contacts at UCLA/CCN.

388   Cerf   Aug 72   NCP Statistics

   Updates RFC 323. Announcement that UCLA/NMC is prepared to gather
   NCP statistics on a daily basis.

387   Kelley   Aug 72   Some Experiences in Implementing
                                    Network Graphics Protocol Level 0

386   Cosell   Aug 72   Letter to TIP Users - 2

   A second point of information letter to TIP users. Updates
   RFC 365.

385   Bhushan   Aug 72   Comments on the File Transfer
                                    Protocol (RFC 354)

   The comments in this document include errata, further discussion,
   emphasis points, and additions to the protocol. Updates RFC 354.

384   North   Aug 72   Official Site IDENTS for
                                    Organizations in the ARPA Network

   Includes two lists, a list in alpha order and a list by Site
   address. Obsoletes RFC 289.

383   Never Issued.

382   McDaniel   Aug 72   Mathematical Software on the ARPA
                                    Network

   Comments on the efforts to develop high quality libraries of
   mathematical and statistical subroutines.

381   McQuillan   Jul 72   Three Aids to Improved Network
                                    Operation

   Discusses helpful aids to improved network operation: schedules of
   software maintenance, IMP-to-Host communication, and network news
   service.

380   Never Issued.

379   Braden   Aug 72   Using TSO at CCN

   Announcement that IBM's Time Sharing Option (TSO) is up on a
   regularly scheduled basis at UCLA/CCN.

378   McKenzie   Aug 72   Traffic Statistics

   Traffic statistics for the month of July 1972.

377   Braden   Aug 72   Using TSO Via ARPA Network Virtual
                                   Terminal

   Announcement of IBM's Time Sharing Option (TSO) availability at
   UCLA/CCN on Socket 1, using the standard Telnet protocol.

376   Westheimer   Aug 72   Network Host Status

   Report on the status of Network Hosts from July 31 to August 4.
   Updates RFC 370.

375   Never Issued.

374   McKenzie   Jul 72   IMP System Announcement

   Updates RFCs 331,343,359.

373   McCarthy   Jul 72   Arbitrary Character Sets

   Suggests how to get arbitrary characters sets stored in computers
   and to be able to display them on any CRT screen, edit them using
   any keyboard, and print them on any printer.

372   Watson   Jul 72   Notes on a Conversation with Bob
                                   Kahn on the ICCC

   Discussion on some aspects of the ICCC meeting demonstration.

371   Kahn   Jul 72   Demonstration at International
                                   Computer Communications Conference

   Observation and notes on the ICCC meeting demonstration.

370   Westheimer   Jul 72   Network Host Status

   Report on the status of Network Hosts from July 17 to July 28.
   Updates RFC 367.

369   Pickens   Jul 72   Evaluation of ARPANET Services
                                 (January through March, 1972)

   This paper provides descriptions, surveys, critiques of ARPANET
   services, and suggestions for improvement.

368   Braden   Jul 72   Comments on "Proposed Remote Job
                                 Entry Protocol"

   Suggestions on honing the final standard of the RJE protocol
   (references RFC 360).

367   Westheimer   Jul 72   Network Host Status

   Report on the status of Network Hosts from July 1 to July 16.
   Updates RFC 366.

366   Westheimer   Jul 72   Network Host Status

   Report on the status of Network Hosts from June 19 to June 30.
   Updates RFC 362.

365   Walden   Jul 72   A Letter to All TIP Users

   Descriptions of new commands that have recently been added to the
   "TIP Users Guide".

364   Abrams   Jul 72   Serving Remote Users on the ARPANET

   This paper asserts that a problem exists in serving remote users
   and offers a set of suggestions for its amelioration.

363   NIC   Aug 72   ARPA Network Mailing Lists

   Obsoletes RFC 329.

362   Westheimer   Jun 72   Network Host Status

   Report on the status of Network Hosts from June 5 to June 16.
   Updates RFC 353.

361   Bressler   Jul 72   In Response to RFCs 347 and 348

   Deamon Processes on Host 106.

360   Holland   Jun 72   Proposed Remote Job Entry Protocol

   This protocol specifies the Network standard procedures for remote
   job entry as a mechanism whereby a user at one location causes a
   batch-processing job to be run at some other location.

359   Walden   Jun 72   The Status of the Release of the New
                                IMP System (2600)

   Obsoletes RFC 343.

358   Never Issued.

357   Davidson   Jun 72   An Echoing Strategy for Satellite
                                Links

   This document describes a strategy which will eliminate the delay
   associated with simple echoing and allow the transmission delay to
   be hidden in the cost of computation only. This scheme is
   proposed as an optional addition to existing User Telnets; its use
   requires the explicit support of a cooperating server process.

356   Alter   Jun 72   ARPA Network Control Center

   Announcement of the NCC's new operation schedule.

355   Davidson   Jun 72   Response to RFC 346

354   Bhushan   Jul 72   The File Transfer Protocol

   This RFC obsoletes RFCs 264,265. The File Transfer Protocol (FTP)
   is a protocol for file transfer between HOSTs on the ARPANET. The
   primary function of FTP is to transfer files efficiently and
   reliably among hosts and to allow the convenient use of remote
   file storage capabilities.

353   Westheimer Jun 72   Network Host Status

   Status report of most Network Hosts from May 22 to June 2.
   Updates RFC 344.

352   Crocker   Jun 72   TIP Site Information Form (Graphics)

   An information form to provide additional information for TIP
   users of the NET.

351   Crocker   Jun 72   (Graphics) Information Form for the
                                 ARPANET Graphics Resources Notebook

   A questionnaire about the state of graphics resources at various
   sites.

350   Stoughton   May 72   User Accounts for UCSB On-Line
                                 System

   Announcement of new login parameters for the UCSB On-Line System.

349   Postel   May 72   Proposed Standard Socket Numbers

   A proposal to officially standardize socket number assignments.

348   Postel   May 72   Discard Process

   A RFC discussing debugging and measurement pupuses for those hosts
   which are willing to implement a "Discard" process. Old version;
   see RFC 863.

347   Postel   May 72   Echo Process

   A RFC discussing debugging and measurement pupuses for those hosts
   which are willing to implement an "Echo" process. Old version;
   see RFC 862.

346   Postel   May 72   Satellite Considerations

   Discussion on using space satellite transmission links in the
   ARPANET.

345   Kelly   May 72   Interest in Mixed Integer
                                 Programming (MPSX on 360/91 at CCN)

   Request for interested persons in the MPSX to contact author.

344   Westheimer   May 72   Network Host Status

   Updates RFC 342.

343   McKenzie   May 72   IMP System Change Notification

   Obsoletes RFC 331. Release of IMPSYS 2600 was unsuccessful.

342   Westheimer   May 72   Network Host Status

   Updates RFC 332.

341   Never Issued.

340   O'Sullivan   May 72   Proposed Telnet Changes

   A proposed change to the Telnet protocol calling for one standard
   protocol and dropping the idea of minimum implementation.

339   Thomas   May 72   MLTNET - A "Multi-Telnet" Subsystem
                                  for TENEX

   This RFC describes MLTNET as a Telnet-like facility for Tenex
   which enables a user to control a number of jobs, running on
   different ARPANET hosts. MLTNET is currently a subsystem on the
   BBN-Tenex host.

338   Braden   May 72   EBCDIC/ASCII Mapping for Network RJE

   This RFC proposes: to make all users of NETRJS aware of the
   changed ASCII mapping; to call this problem to the attention of
   the Network RJE Protocol committee; and to knowledge and support
   Joel Winett's pioneering work in this area.

337   Never Issued.

336   Cotton   May 72   Level 0 Graphic Input Protocol

   A description of the graphics input protocol as discussed at a
   Network Graphics Working Group meeting.

335   Bryan   May 72   New Interface-IMP/360

   Announcement of a new interface and requests to hear of any
   difficulties network users encounter while operating with UCSB.

334   McKenzie   May 72   Network Use on May 8

333   Bressler   May 72   A Proposed Experiment with a Message
                                  Switching Protocol

   This document attempts to sketch how one would organize the lowest
   level host-host protocol in the ARPANET around Message Switching
   Protocols (MSPs) and how this organization would affect the
   implementation of the host software.

332   Westheimer   Apr 72   Network Host Status

   Updates RFC 330.

331   McQuillan   Apr 72   IMP System Change Notification

   Announcement of the release of IMPSYS 2600.

330   Westheimer   Apr 72   Network Host Status

   Updates RFC 326.

329   NIC   May 72   ARPA Network Mailing Lists

328   Postel   Apr 72   Suggested Telnet Protocol Changes

   This RFC proposes changes to the Telnet protocol.

327   Bhushan   Apr 72   Data and File Transfer Workshop
                                   Notes

326   Westheimer   Apr 72   Network Host Status

   Updates RFC 319.

325   Hicks   Apr 72   Network Remote Job Entry Program -
                                   NETRJS

   Report on the NETRJS running at the University of Utah.

324   Postel   Apr 72   RJE Protocol Meeting

   Announcement of a RJE Protocol meeting at UCLA.

323   Cerf   Mar 72   Formation of Network Measurement
                                   Group (NMG)

   Describes some network measurement results, some plans for further
   measurement and the formation of an interest group.

322   Cerf   Mar 72   Well Known Socket Numbers

   Announcement of intent to catalog all sockets which are supposed
   to be well-known.

321   Karp   Mar 72   CBI Networking Activity at MITRE

     Response to RFC 313 - comments on Computer Based Instruction.

320   Reddy   Mar 72   Workshop on Hard Copy Line Graphics

     Announcement of a one day workshop on the XCRIBL system at CMU.

319   Westheimer   Mar 72   Network Host Status

     Updates RFC 315.

318   Postel   Apr 72   Ad Hoc Telnet Protocol

     Obsoletes RFC 158. This Telnet specification was effective for
     several years.

317   Postel   Mar 72   Official Host-Host Protocol
                                     Modification: Assigned Link Numbers

     Lists current Link number assignments. This RFC has been replaced
     by RFCs 997 and 990.

316   McKay   Feb 72   ARPA Network Data Management Working
                                     Group Meeting Report

315   Westheimer   Mar 72   Network Host Status

     Updates RFC 306.

314   Cotton   Mar 72   Next Network Graphics Working Group
                                     Meeting

     Describes plans for a graphics meeting to be held in April 1972.

313   O'Sullivan   Mar 72   Computer Based Instruction

     This paper has two purposes: to solicit comments from the NWG and
     others on how selected classes of resources of a General Purpose
     Network might be applied to the field of Computer Based
     Instructions; and initiate a dialog between interested parties on
     the problem of Computer Base Instruction.

312   McKenzie   Mar 72   Proposed Change in IMP-to-Host
                                     Protocol

     This RFC proposes a redefinition of the IMP-to-Host error message
     types and the creation of additional IMP-to-Host error message
     types. These changes should assist the Hosts in determining

appropriate recovery action without causing any serious
reprogramming problems.

311   Bryan   Feb 72   New Console Attachments to the UCSB
                                 Host

   Describes types of terminals used at UCSB.

310   Bhushan   Apr 72   Another Look at Data and File
                                 Transfer Protocols

   This paper suggests some specific changes in DTP and FTP that
   should make them more useful and/or simplify implementation.

309   Bhushan   Mar 72   Data and File Tranfer Workshop
                                 Announcement

   Describes plans for a meeting on FTP to be held April 1972.

308   Seriff   Mar 72   ARPANET Host Availability Data

   A SURVEY program is up and working to aid in gathering information
   on the availability of various Hosts on the ARPANET.

307   Harslem   Feb 72   Using Network Remote Job Entry

   Announcement of a program on a PDP-10 allowing access to the
   Remote Job Service (RJS) at UCLA.

306   Westheimer   Feb 72   Network Host Status

   Updates RFC 298.

305   Alter   Jan 72   Unknown Host Numbers

   Discusses testing of IMPs and notes that this may cause some hosts
   to receive messages from unregistered addresses.

304   McKay   Feb 72   A Data Management System Proposal
                                 for the ARPA Network

   A proposal to provide a framework that will allow the ARPA
   community to recognize and develop the necessary tools in a
   unified manner enabling the network to manage its resources to the
   best advantage of the user.

303   NIC   Feb 72   ARPA Network Mailing List

    Obsoletes RFC 300.

302   Bryan   Feb 72   Excercising the ARPANET

    Describes a class project to tryout hosts on the ARPANET.

301   Alter   Feb 72   BBN IMP (No. 5) and NCC Schedule for
                                  March 4, 1972

    BBN host will be down for a day for moving equipment.

300   NIC   Jan 72   ARPA Network Mailing Lists

    Obsoletes RFC 211.

299   Hopkin   Feb 72   Information Management System

    Announcement of intent to build an Information Management and
    Statistical System for the ILLIAC IV.

298   Westheimer   Feb 72   Network Host Status

    Updates RFC 293.

297   Walden   Jan 72   TIP Message Buffers

    Discussion regarding the size of the TIP's message buffers.

296   Liddle   Jan 72   DS-1 Display System

    This RFC describes a proposed modular graphic/alphanumeric display
    system containing a 512 by 512 line, 60 line per inch plasma
    display/memory panel and a minprocessor. It is intended to
    combine the advantages of display memory and local processing
    power in three general modes.

295   Postel   Oct 71   Report of the Protocol Workshop

    A report on the decisions reached at the protocol workshop held in
    conjunction with the NWG meeting of 10 October 1971.

294   Bhushan   Jan 72   The Use of "Set Data Type"
                                  Transaction in File Transfer
                                  Protocol

    Updates RFC 265.

293   Westheimer   Jan 72   Network Host Status

    Updates RFC 288.

292   Michener   Jan 72   Graphics Protocol - Level 0 only

    A description of part of the proposed Network Standard Graphics
    Protocol for transmitting graphics data within the ARPA network.
    The particular aspects covered are related to the form and content
    of graphics information sent from a source of graphical
    information to a display package for output to a graphics console.

291   McKay   Jan 72   Data Management Meeting Announcement

    A meeting about datamanagement will be held February 1972.

290   Mullery   Jan 72   Computer Network and Data Sharing: A
                                  Bibliography

    Updates RFC 243.

289   Watson   Dec 71   What We Hope is an Official List of
                                  Host Names

    An accepted list of official formal host names and nicknames.

288   Westheimer   Jan 72   Network Host Status

    Updates RFC 287.

287   Westheimer   Dec 71   Network Host Status

    Reports on tests of host availability for 6 Dec to 18 Dec 1971.

286   Forman   Dec 71   Network Library Information System

    This RFC solicites interested parties in the ARPA community to
    form a working group whose interests include developing a new
    system that would enable computer query of Library holdings.
    Georgetown University is currently designing a Learning Resource
    Center which could be the prototype of the proposed working group.

285   Huff   Dec 71   Network Graphics

    This paper is aimed at bringing together the present state of
    graphics on the NET for the newcomer and attempting to add a
    little more documentation to the current ground covered in
    graphics research by ARPA.

284   Never Issued.

283   Braden   Dec 71   NETRJT - Remote Job Service Protocol
                                  for TIPS

   Discusses how it may be feasible in the future to use TIPS for
   remote job entry in one or more of three ways: attach local card
   readers, line printer, and card punches directly to TIP ports,
   connect a remote batch terminal to a full-duplex TIP port via a
   communication line, and/or use the tape drive, and do card-to-tape
   and/or tape-to-print on another computer.

282   Padlipsky   Dec 71   Graphics Meeting Report

   Describes a graphics meeting held November 1972.

281   McKenzie   Dec 71   A Suggested Addition to File
                                  Transfer Protocol

   Suggests an improved restart procedure in FTP.

280   Watson   Nov 71   A Draft Set of Host Names

   A proposed list of names for hosts.

279   Never Issued.

278   Bhushan   Nov 71   Revision of the Mail Box Protocol

   This paper obsoletes RFC 221. The changes to RFC 221 are
   presented in this document. The protocol is also restated for
   additional review.

277   Never Issued.

276   Watson   Nov 71   NIC Course

   A course announcement from the NIC on the use of its Online System
   (NLS).

275   Never Issued.

274   Forman   Nov 71   Establishing a Local Guide for
                                  Network Usage

   Discussion on the best solutions to the general problem of
   interfacing Hosts to IMPs.

273   Watson   Oct 71   More on Standard Host Names

    Discussion on the best way to set up naming schemes for standard
    Host names.

272   Never Issued.

271   Cosell   Jan 72   IMP System Change Notification

    Announcement of a new version of the IMP System, Version 2514.

270   McKenzie   Jan 72   Correction to BBN Report No. 1822

    Updates pages 25 and 26 of BBN report 1822.

269   Brodie   Dec 71   Some Experience with File Transfer

    Updates RFCs 122,238,172.

268   Postel   Nov 71   Graphic Facilities Information

    Request for graphics information.

267   Westheimer   Nov 71   Network Host Status

    Reports on tests of host availability for 8 Nov to 19 Nov 1971.

266   Westheimer   Nov 71   Network Host Status

    Reports on tests of host availability for 25 Oct to 5 Nov 1971.

265   Bhushan   Nov 71   The File Transfer Protocol

    This paper is a revision of RFC 172. The changes to RFC 172 are
    presented in this document. The protocol is also restated for
    additional review.

264   Bhushan   Nov 71   The Data Transfer Protocol

    This paper is a revision of RFC 171. The changes to RFC 171 are
    presented in this document. The protocol is also restated for
    additional review.

263   McKenzie   Dec 71   "Very Distant" Host Interface

    Discussion on the best solutions to the general problem of
    interfacing Hosts to IMPs.

262   Never Issued.

261   Never Issued.

260   Never Issued.

259   Never Issued.

258   Never Issued.

257   Never Issued.

256   Cosell   Nov 71   IMPSYS Change Notification

    Announcement of a new version of the IMP system, Version 2513.

255   Westheimer   Oct 71   Site Status

    Updates RFC 252.

254   Bhushan   Oct 71   Scenarios for Using ARPANET
                                  Computers

    This document is provided to facilitate the use of ARPANET host
    computer systems via the ARPANET. The objective of these
    scenarios is to aid a user in sampling host computers on the
    ARPANET, thereby stimulating his interest in using the ARPANET.

253   Moorer   Oct 71   Second Network Graphics Meeting
                                  Details

    Plans for a graphics meeting to be held November 1971. See RFC
    282.

252   Westheimer   Oct 71   Site Status

    Updates RFC 240.

251   Stern   Oct 71   Weather Data

    Announcement of the USAF Environmental Technical Application
    Center (ETAC) services in providing weather data for the ARPA
    Network.

250   Brodie   Oct 71   Some Thoughts on File Transfer

    Further clarification and proposed revision on several aspects of
    the proposed Data Transfer Protocol and the File Transfer
    Protocol.

249   Borelli   Oct 71   Coordination of Equipment and
                                 Supplies Purchase

   Announcement of an agreement reached regarding the study of the
   feasibility of a coordinating point for purchases of equipment and
   supplies to be used on the network.

248   Never Issued.

247   Karp   Oct 71   Proffered Set of Standard Host Names

   Proposed general set of rules for forming Host Names. Obsoletes
   RFC 226.

246   Vezza   Oct 71   Networks Graphics Meeting

245   Falls   Oct 71   Reservations for Network Group
                                 Meeting

244   Never Issued.

243   Mullery   Oct 71   Network and Data Sharing
                                 Bibliography

   Updated by RFC 290.

242   Haibt   Jul 71   Data Descriptive Language for Shared
                                 Data

   Discussion of representation differences. Three categories are
   defined: very local representation, representation of collections
   of data, and other more complex structures that data collections
   may have.

241   McKenzie   Sep 71   Connecting Computers to MLC Ports

   Discussion on the pros and cons of computers being connected
   through serial communication lines to ports on the Terminal IMP's
   Multi-Line Controller (MLC).

240   McKenzie   Sep 71   Site Status

   A reissue of RFC 235, without typographical errors.

239   Braden   Sep 71   Host Mnemonics Proposed in RFC 226

   Discussion and comments on RFC 226.

238   Braden   Sep 71   Comments on DTP and FTP Protocols

    This RFC updates RFCs 171,172.

237   Watson   Sep 71   The NIC's View of Standard Host
                                   Names

    The NIC strongly favors standardization of host names. In this
    RFC, the NIC proposes that any standard naming scheme should take
    into account certain considerations.

236   Postel   Sep 71   Standard Host Names

    An update of RFC 229, with some modifications included.

235   Westheimer   Sep 71   Site Status

    Starting with this RFC, BBN will report on the status of most
    Network Hosts.

234   Vezza   Oct 71   Network Working Group Meeting
                                   Schedule

    Plans for a Network Working Group meeting in October 1971.

233   Bhushan   Sep 71   Standardization of Host Call Letters

    A currently recommended list of call letters.

232   Vezza   Sep 71   Announcement of the next Network
                                   Graphics Meeting

    Schedule conflict and postponement of the graphics meeting.

231   Heafner   Sep 71   Service Center Standards for Remote
                                   Usage - A User's View

    A statement of views on service center standards. An input to the
    service center panel discussion of the October Network meeting.

230   Pyke   Sep 71   Toward Reliable Operation of
                                   Minicomputer-based Terminals on a
                                   TIP

    Points out inadequate error detection and initiation of corrective
    measures in the present protocol for communication between a TIP
    and attached terminals. References RFC 203.

229   Postel   Sep 71   Standard Host Names

   A suggestion of eight character names and a proposed list of
   names.

228   Walden   Sep 71   Clarification

   A correction to RFC 70.

227   Heafner   Sep 71   Data Transfer Rates (RAND/UCLA)

   A memo on data rates typical of the RJS use at UCLA CCN.

226   Karp   Sep 71   Standardization of Host Mnemonics

   A list of Host Mnemonics is provided.

225   Harslem   Sep 71   RAND/UCSB Network Graphics
                                  Experiment

   Describes use from RAND of the UCSB-OLS system.

224   McKenzie   Sep 71   Comments on Mailbox Protocol

   Comments on electronic mail and TIP's.

223   Melvin   Sep 71   Network Information Center Schedule
                                  for Network Users

   Access schedule for remote users of the NIC.

222   Metcalfe   Sep 71   System Programmer's Workshop

   Announcement of the next workshop.

221   Watson   Aug 71   A Mail Box Protocol, Version-2

   Discussion of the initial reaction to RFC 196.

220   Never Issued

219   Winter   Sep 71   User's View of the Datacomputer

   A description of the Datacomputer.

218   Cosell   Sep 71   Changing the IMP Status Reporting

   A change in internal procedures in the ARPANET status reports from
   the IMPs to the NIC.

217   White   Sep 71   Specification Changes for OLS,
                                RJE/RJOR, and SMFS

   Current listing of documents that have been revised.

216   White   Sep 71   Telnet Access to UCSB's On-Line
                                System

   Discussion of the implementation of a teletype-compatible
   interface to UCSB's On-Line System.

215   McKenzie   Aug 71   NCP, ICP, and Telnet: The Terminal
                                IMP Implementation

   Announcement of six Terminal IMPs being incorporated into the
   Network, with additional Terminal IMPS scheduled for delivery.

214   Harslem   Aug 71   Network Checkout

   Notification of the verification of certain sites.

213   Cosell   Aug 71   IMP System Change Notification

   Several changes in the IMP internal procedures.

212   Vezza   Aug 71   NWG Meeting on Network Usage

   A mailing list for RFC distribution.

211   NIC   Aug 71   ARPA Network Mailing List

210   Conrad   Aug 71   Improvement of Flow Control

   Discussion of the current "give back" - "return" scheme.

209   Cosell   Aug 71   Host/IMP Interface Documentation

   Discussion of a change to the IMP and the documentation
   (BBN report 1822).

208   McKenzie   Aug 71   Address Tables

   A table of hosts on or soon to be on the ARPANET.

207   Vezza   Aug 71   A September Network Working Group
                                    Meeting

   Next meeting announcement.

206   White   Aug 71   A User Telnet Description of an
                                    Initial Implementation

   This document describes a program whose function is to make an
   Online System terminal appear to any teletype-compatible,
   time-sharing system in the Network as if it were directly
   connected to that system.

205   Braden   Aug 71   NETCRT - A Character Display
                                    Protocol

   A significant revision of the character-display protocol (NETCRT),
   based on CCN's proposed NETCRT from the May NWG Meeting.

204   Postel   Aug 71   Sockets in use

   Announcement to collect information on the use of socket numbers
   for standard service programs.

203   Kalin   Aug 71   Achieving Reliable Communication

   This is a non-standard protocol, suitable for either second or
   third level use and is proposed with the intent of providing error
   resistant and highly reliable communication channels.

202   Wolfe   Jul 71   Possible Deadlock in ICP

   A notation of a possible deadlock that will occur if both sides
   open thier send or both sides open their receive sockets first.

201   Never Issued.

200   NIC   Aug 71   RFC List by Number

   RFC's 1-200.

199   Williams   Jul 71   Suggestions for a Network
                                 Data-Tablet Graphics Protocol

   SDC's comments to the discussion of a protocol for network
   graphics within the ARPA Network community. Concern is focused on
   the development of the graphics protocol in two areas:
   non-interactive graphics and data-tablet graphics, as opposed to
   fully interactive graphics.

198   Heafner   Jul 71   Site Certification - Lincoln Labs
                                 360/67

   A report from RAND that Lincoln Labs protocol implementations are
   correct.

197   Shoshani   Jul 71   Initial Connection Protocol -
                                 Revised

   An attempt at a simple version of ICP, assuming one may add
   commands to Host-Host protocol.

196   Watson   Jul 71   A Mail Box Protocol

   The purpose of this protocol is to provide at each site a standard
   mechanism to receive sequential files for immediate or deferred
   printing or other uses.

195   Mealy   Jul 71   Data Computers - Data Descriptions
                                 and Access Language

   This document discusses some of the problems involved in the
   unified approach to Network data management, and to suggest
   possible avenues of approach toward their resolution.

194   Cerf   Jul 71   The Data Reconfiguration Service -
                                 Compiler/Interpreter Implementation
                                 Notes

   This document describes the new features of the language, the new
   syntax, the form interpreter, and the instruction set.

193   Harslem   Jul 71   Network Checkout

   A report form RAND on testing ten other hosts.

192   Watson   Jul 71   Some Factors Which a Network
                                 Graphics Protocol Must Consider

   Discussion on what any network graphics protocol should come to
   grips with.

191   Irby   Jul 71   Graphics Implementation and
                                 Conceptualization at ARC

   A brief description of the way in which graphics terminals are
   conceptualized and used at the Augmentation Research Center.

190   Deutsch   Jul 71   DEC PDP-10 - IMLAC Communication
                                 System

   This document describes an operational system for communicating
   textual display information between a main-site computer and a
   remote display processor.

189   Braden   Jul 71   Interim NETRJS Specifications

   A description of the operation and protocol of the remote job
   entry service to CCN's 360 Model 91. This interim protocol will
   be implemented as a production service before the end of July.

188   Karp   Jan 71   Data Management Meeting Announcement

   Plans for a data management meeting to be held Auguest 1971.

187   McKay   Jul 71   A Network/440 Protocol Concept

   An information Request for Comments that is intended to convey
   some of the thinking and philosophy that went into IBM's network
   protocol and overall network design.

186   Michener   Jul 71   A Network Graphics Loader

   The Network Graphics Loader described in this document proposes to
   permit remote users on the ARPA network to obtain graphics output
   from programs they write for the Evans and Sutherland Line Drawing
   System.

185   North   Jul 71   NIC Distribution of Manuals and
                                 Handbooks

   The NIC request that sites send copies of manuals and handbooks to
   them.

   184   Kelley   Jul 71   Proposed Graphic Display Modes

   The ARPA Network node at the University of Illinois' Center for
   Advanced Computation is different from other nodes. It is not
   just a simple attachment to the net. Establishment of the
   computer system specifically for use of the ILLIAC IV and the
   network is in process. This paper describes the operating
   systems, network interface and utility routines, and ILLIAC IV
   routines to be used over the network.

   183   Winett   Jul 71   The EBCDIC Codes and Their Mapping
                                   to ASCII

   This document defines and describes the IBM Standard Extended BCD
   Interchange Code. This is done in order to uniquely map the ASCII
   codes into corresponding EBCDIC codes in a consistent manner
   throughout the ARPA Network.

   182   North   Jun 71   Compilation of List of Relevant Site
                                   Reports

   A Network Information Center compilation list of all site-produced
   reports which are of interest to Network participants.

   181   McConnell   Jun 71   Modifications to RFC 177

   This document is intended to modify the proposal for a device
   independent graphical display description discussed in RFC 177.
   The main changes are in the definition of coordinate areas to
   avoid one problem encountered with the old definition and to
   provide more flexibility.

   180   McKenzie   Jun 71   File System Questionnaire

   An attempt to gather information about local file and data
   conventions.

   179   McKenzie   Jun 71   Link Number Assignments

   This RFC has been replaced by RFCs 997 and 990.

   178   Cotton   Jun 71   Network Graphic Attention Handling

   The process of attention handling is briefly described, various
   graphic configurations are discussed, input devices are surveyed
   to identify the types of data which they produce, and an attention
   protocol is proposed.

   177   McConnell   Jun 71   A Device Independent Graphical
                                       Display Description

      As more nodes are connected to the ARPA network, the types of
      graphical display processors available to users is quite varied.
      To attempt to facilitate the transmission of graphical information
      over the network, a device independent description of a display is
      described.

   176   Bhushan   Jun 71   Comments on Byte Size for
                                       Connections

      This document points out three views on the use of byte size for
      network connections: 1) Byte size should not be used at all. 2)
      Byte size is solely for the convenience of NCP's. 3) Byte size
      choice is a user-level prerogative.

   175   Harslem   Jun 71   Comments on "Socket Conventions
                                       Reconsidered"

      Pro and con discussion regarding RFC 167.

   174   Postel   Jun 71   UCLA-Computer Science Graphics
                                       Overview

      This document provides an overview of the hardware, software, and
      intentions of the UCLA Computer Science Department's Graphics
      project.

   173   Karp   Jun 71   Network Data Management Committeee
                                       Meeting Announcement

      A report on the formation of a data managment committee and on its
      first meeting.

   172   Bhushan   Jun 71   The File Transfer Protocol

      This protocol is a user-level protocol for file transfer between
      host computers (including terminal IMPs), on the ARPA computer
      network. The File Transfer Protocol (FTP) uses the data transfer
      protocol described in RFC 171. This paper assumes knowledge of
      RFC 171.

   171   Bhushan   Jun 71   The Data Transfer Protocol

      Definition of a low-level Data Transfer Protocol (DTP) to be used
      for transfer of data in file transfer, remote job entry, and other
      applications oriented protocols. A companion paper (RFC 172)
      describes file transfer protocol.

170   NIC   Jun 71   RFC List by Number

    A list of RFCs 1-170.

168   North   May 71   ARPA Network Mailing Lists

    Distribution list for RFCs.

167   Bhushan   May 71   Socket Conventions Reconsidered

    The recent NCP Protocol said nothing about how hosts should assign
    socket numbers to process ports, except that the low-order bit is
    to specify socket gender. This document discusses two recent
    proposals that call for additional network-wide conventions on the
    32-bit socket number.

166   Anderson   May 71   Data Reconfiguration Service - An
                                  Implementation Specification

    This DRS experiment involved a software mechanism to reformat
    Network data streams. The mechanism can be adapted to numerous
    Network application programs.

165   Postel   May 71   A Proferred Official Initial
                                  Connection Protocol

    This document specifies the third level protocol used to connect a
    user process at one site with a server process at another site.

164   Heafner   May 71   Minutes of Network Working Group
                                  Meeting

    A 38 page reference on the discussions held at the Network Working
    Group Meeting.

163   Cerf   May 71   Data Transfer Protocols

    An informal statement on Data Transfer Protocols, in relation to
    material discussed at the SJCC.

162   Kampe   May 71   NETBUGGER3

    Discussion of NETBUGGER3 as a third level program for the
    debugging of second and third level programs, experimentation with
    and simulation of third level protocols.

161   Shoshani   May 71   A Solution to the Race Condition in
                                 the ICP

    A proposed solution to a problem that arose out of RFC 143.

160   NIC   May 71   RFC Brief List

    Title or Partial Title RFC List (1-160)

159   Never Issued.

158   O'Sullivan   May 71   Proposed Telnet Protocol

    Solicitation of comments, evaluation, and requests for
    modification of the proposed Telnet protocol.

157   Cerf   May 71   Invitation to the Second Symposium
                                 on Problems in the Optimization of
                                 Data Communication Systems

    Announcement of an ACM/IEEE conference on data communication.

156   Bouknight   Apr 71   Status of the Illinois Site
                                 (Response to RFC 116)

    Discusses the status of the operational hardware at the Illinois
    site.

155   NIC   May 71   List to Receive RFCs

    Mailing list of people who are receiving the initial distribution
    of RFCs.

154   Crocker   May 71   Exposition Style

    A note on style in documentation.

153   Melvin   May 71   SRI ARC-NIC Status

    Discusses the current computer and network status of the SRI
    ARC-NIC.

152   Wilber   May 71   SRI Artificial Intelligence Status
                                 Report

    Status report on SRAI's connection to the ARPANET as a research
    center.

151   Shoshani   May 71   Comments on a Proferred Official ICP
                              (RFCs 123,127)

    Specific and general remarks regarding the ICP.

150   Kalin   May 71   The Use of IPC Facilities

    A working paper discussing the exposition of the types of usage to
    which an IPC facility would be subjected. This document hopes to
    clarify the goals being pursued and should provide a benchmark for
    gauging various implementation strategies.

149   Crocker   May 71   The Best Laid Plans...

    Changes to the topics and attendees of the upcoming NWG meeting.

148   Bhushan   May 71   Comments on RFC 123

    Regarding the byte size requirements for the initial connection.

147   Winett   May 71   The Definition of a Socket

    Defining, specifying, and identifying sockets.

146   Karp   May 71   Views on Issues Relevant to Data
                              Sharing on Computer Networks

    Concurrence with the views presented in RFC 140.

145   Postel   May 71   Initial Connection Protocol Control
                              Commands

    An interpretation of the exchange between NCP's which would be
    necessary to carry out the Initial Connection Protocol (ICP) of
    RFC 123.

144   Shoshani   Apr 71   Data Sharing on Computer Networks

    An introductory paper for the upcoming NWG meeting in Atlantic
    City.

143   Naylor   May 71   Regarding Proferred Official ICP

    Comments on a race condition discovered in the ICP as proposed in
    RFC 123.

142   Kline   May 71   Time-out Mechanism in the Host-Host
                                   Protocol

   Discussion on potential situations that can occur when sending a
   message to a foreign site.

141   Harslem   Apr 71   Comments on RFC 114 (A File Transfer
                                   Protocol)

   Further discussion on the File Transfer Protocol.

140   Crocker   May 71   Agenda for the May NWG Meeting

   A list of topics to be discussed at the upcoming meeting, plus a
   listing of relevant RFCs that should be reviewed prior to the
   meeting.

139   O'Sullivan   May 71   Discussion of Telnet Protocol

   An extension of RFC 137.

138   Anderson   Apr 71   Status Report on Proposed Data
                                   Reconfiguration Service

   Provides a description of a proposed Network experiment and to
   solicit comments on any aspect of the experiment.

137   O'Sullivan   Apr 71   Telnet Protocol - A Proposed
                                   Document

   Solicitation for review and comment before the Atlantic City NWG
   meetings.

136   Kahn   Apr 71   Host Accounting and Administrative
                                   Procedures

   Discussion of a plan to be formulated and accepted for the
   development of a Host accounting system in the ARPA Network.

135   Hathaway   Apr 71   Response to RFC 110

   Comments and proposals of new conventions to replace the ones
   proposed in RFC 110.

134   Vezza   Apr 71   Network Graphics Meeting

   Announcement of the next Network Graphics Meeting at Project MAC
   in July 1971.

133   Sundberg   Apr 71   File Transfer and Error Recovery

     Sample interchanges and comments on file transfer and errors.

132   White   Apr 71   Typographical Error in RFC 107

     Points out an error in RFC 107.

131   Harslem   Apr 71   Response to RFC 116 (May NWG
                                  Meeting)

     A description of networr plans at RAND, including the data
     reconfiguration service, and a comment on the role of the NWG.

130   Heafner   Apr 71   Response to RFC 111 (Pressure from
                                  the Chairman)

     Discussion of RAND's role in testing other host implementations
     and schedule dependences.

129   Harslem   Apr 71   A Request for Comments on Socket
                                  Name Structure

     Comments on several suggested socket name structures.

128   Postel   Apr 71   Bytes

     Discussion of the Byte size parameter allowed by the 2nd level
     protocol.

127   Postel   Apr 71   Comments on RFC 123

     Continued interpretations of the exchange between NCP's which
     would be necessary to carry out the Initial Connection Protocol of
     RFC 123.

126   McConnell   Apr 71   Ames Graphics Facilities at Ames
                                  Research Center

     Discusses the graphical facilities at Ames for the IBM 360/67 TSS.

125   McConnell   Apr 71   Response to RFC 86, Proposal for
                                  Network Standard Format for a
                                  Graphics Data Stream

     Improves and updates RFC 86.

124   Melvin   Apr 71   Typographical Error in RFC 107

    Points out an error in RFC 107.

123   Crocker   Apr 71   A Proferred Official ICP

    Description of a family of ICPs (Initial Connection Protocol)
    suitable for establishing one pair of connections (one in each
    direction) between any user process and any server process, and
    proposes a particular subset of this family as the standard ICP
    for connecting user processes to loggers on systems which accept
    teletype-like devices.

122   White   Apr 71   Network Specifications for UCSB's
                                    Simple-Minded File System

    UCSB's Simple Minded File System (SMFS) which will provide file
    storage for network users. This document provides programmers
    with the information necessary to communicate with SMFS.

121   Krilanovich   Apr 71   Network On-Line Operators

    Descriptions of operators that have been implemented within UCSB's
    On-Line System and make the network (via NCP) accessible to
    On-Line system users.

120   Krilanovich   Apr 71   Network PL1 Subprograms

    Descriptions of subroutines that have been implemented at UCSB and
    make the network (via NCP) accessible to PL1 programs executing in
    the IBM 360/75.

119   Krilanovich   Apr 71   Network FORTRAN Subprograms

    Descriptions of a set of assembly-language subprograms, their
    functions and calling sequences.

118   Watson   Apr 71   Information Required for Each
                                    Service Available to the Network

    Cites two classes of information which each site needs to provide
    for every service or process it makes available over the ARPA
    network.

117   Wong   Apr 71   Some Comments on the Official
                                    Protocol

    Cites weaknesses in RFC 107, and provides suggestions for
    correction and handling.

116   Crocker   Apr 71   Structure of the May NWG Meeting

    Proposed meeting agenda centering around discussions of advertised
    topics, with published status reports and position papers.

115   Watson   Apr 71   Some Network Information Center
                                 Policies on Handling Documents

    Discusses current document policies between the Network
    Information Center and sites on the network.

114   Bhushan   Apr 71   A File Transfer Protocol

    Proposed file transfer mechanisms that have been developed for
    immediate implementation on hosts at MIT.

113   Harlsem   Apr 71   Network Activity Report: UCSB and
                                 RAND

    Report on the network use and validity between UCSB's RJE and RJOR
    systems and RAND.

112   O'Sullivan   Apr 71   User/Server Site Protocol Network
                                 HOST Questionnaire

    A summary of the responses to the referenced questionnaire.

111   Crocker   Mar 71   Pressure from the Chairman

    Proposed scheduling for the implementation of NCPs and Telnets.

110   Winett   Mar 71   Conventions for Using an IBM 2741
                                 Terminal as a User Console for
                                 Access to Network Server Hosts

    Telnet implementation and the 2741.

109   Winett   Mar 71   Level III Server Protocol for the
                                 Lincoln Laboratory 360/67 Host

    Telnet implementation and the 360/67.

108   Watson   Mar 71   Attendance List at the Urbana NWG
                                 Meeting, 17-19 February 1971

    Lists attendees at the NWG meeting held February 1971.

107   Bressler   Mar 71   Output of the Host-Host Protocol
                                   Glitch Cleaning Committee

   The second meeting of the Host-Host Protocol Glitch Cleaning
   committee.

106   O'Sullivan   Mar 71   USER/SERVER Site Protocol Network
                                   Host Questionnaire

   An attempt to gather information for creating the Telnet Protocol.

105   White   Mar 71   Network Specification for Remote Job
                                   Entry and Remote Job Output
                                   Retrieval at UCSB

   Describes the remote job entry service at UCSB.

104   Postel   Feb 71   Link 191

   General agreement to reserve a link for use in measurements.
   Therefore, Link 191 will be assigned for measurement use.

103   Kalin   Feb 71   Implementation of Interrupt Keys

   This paper discusses the problems and solutions that are simple to
   implement in the current protocol specifications that contain
   serious logical errors in the interrupt functions.

102   Crocker   Feb 71   Output of the HOST/HOST Protocol
                                   Glitch Cleaning Committee

   Numerous topics were discussed.

101   Watson   Feb 71   Notes on the Network Working Group
                                   Meeting

   Transcript of the Network Working Group Meeting, February 1970.

100   Karp   Feb 71   Categorization and Guide to NWG/RFCs

   Categorizes, identifies, and summarizes RFCS 1-100.

099   Karp   Feb 71   Network Meeting

   Announcement of the next meeting of the Network Working Group for
   20 May 1970.

098   Meyer   Feb 71   Logger Protocol Proposal

   This "network logger protocol" is intended to specify how the
   existing logger of a network host is to interface to the network
   so as to permit a login from a console attached to another host.

097   Melvin   Feb 71   A First Cut at a Proposed Telnet
                                   Protocol

   This document was motivated by the need to set specifications for
   a protocol which would allow on-line access to the Network
   Information Center (NIC).

096   Watson   Feb 71   An Interactive Network Experiment to
                                   Study Modes of Access to the Network
                                   Information Center

   Outlines the framework for a simple interactive experiment to
   study modes of access to the Network Information Center (NIC).

095   Crocker   Feb 71   Distribution of NWG/RFC's Through
                                   the NIC

   Standards for establishing lines of communication of all of the
   sites with the Network Information Center, in regards to
   distribution of RFC's.

094   Harslem   Feb 71   Some Thoughts on Network Graphics

   Discussion of the initial reaction to RFC 86, whose purpose was to
   provide a basis for discussion and development of Network
   graphics.

093   McKenzie   Jan 71   Initial Connection Protocol

   A review of the Initial Connection Protocol (ICP), first described
   in RFC 66 and restated in RFC 80.

092   Never Issued.

091   Mealy   Dec 70   A Proposed User-User Protocol

   Discussion of UCLA's Campus Computing Network of services and
   implementation priorities.

090   Braden   Jan 71   CCN as a Network Service Center

   Discussion of UCLA's Campus Computing Network of services and
   implementation priorities.

089   Metcalfe   Jan 71   Some Historic Moments in Networking

   Noteworthy achievements for the MIT-Project MAC Dynamic
   Modeling/Computer Graphics PDP-6/10 System, while awaiting the
   completion of an interim network control program.

088   Braden   Jan 71   NETRJS - A Third Level Protocol for
                                Remote Job Entry

   Description of NETRJS, which is the name for a message protocol
   and a set of control conventions which will allow users at remote
   Hosts to access the RJS remote batch subsystem of UCLA/CCN.

087   Vezza   Jan 71   Topic for Discussion at the Next
                                Network Working Group Meeting

   Suggests Network Working Group discussion on topics germane to
   network graphics.

086   Crocker   Jan 71   Proposal for a Network Standard
                                Format for a Data Stream to Control
                                Graphics Display

   Proposes specifying the form of an output stream for the case that
   the output portion of the console (which is attached to a computer
   at the user's site) is a typical refresh display with point,
   vector, and character drawing capability.

085   Crocker   Dec 70   Network Working Group Meeting

   Announcement of regularly scheduled Network Working Group Meetings
   every three months.

084   North   Dec 70   List of NWG/RFCs 1-80

   Lists RFCs 1-80.

083   Anderson   Dec 70   Language-Machine for Data
                                Reconfiguration

   Describes a syntax-driven interpreter that operates on a grammar
   which is an orderd set of replacement rules for the Form Machine.

082   Meyer   Dec 70   Network Meeting Notes

     A transcribed summary of the Fall 1970 network meeting notes.

081   Bouknight   Dec 70   Request for Reference Information

     Request for documents in the subject areas of data communications
     and communications theory.

080   Harslem   Dec 70   Protocol and Data Formats

     Proposes general solutions concerning Initial Connection
     Protocols, Pre-specified Data Formats, and Adaptable Mechanisms.

079   Meyer   Nov 70   Logger Protocol Error

078   Harslem   Nov 70   NCP Status Report: UCSB/Rand

     Conducted an excercise between UCSB console to/from RAND console
     validation of the respective NCPs.

077   Postel   Nov 70   Network Meeting Report

     Report on three Network Working Group meetings held during
     November 16, 17, and 18.

076   Bouknight   Oct 70   Connection-by-Name: User-Oriented
                                 Protocol

     Suggests a user level interface to network protocol where all user
     protocol is handled symbolically with system procedures making the
     translation into host-to-host protocol. Proposes general
     solutions.

075   Crocker   Oct 70   Network Meeting

     Announcement of the next scheduled meeting of the Network Working
     Group for 16 Nov 70.

074   White   Oct 70   Specifications for Network Use of
                                 the UCSB On-Line System

     Announcement of UCSB's On-Line System (OLS) availability to ARPA
     Network users.

073   Crocker   Sep 70   Response to RFC 67

    General agreement with proposed policy.

072   Bressler   Sep 70   Proposed Moratorium on Changes to
                                 Network Protocol

    Cites critical changes that could occur in hardware/software
    development efforts and advanced debugging if changes in the
    Network Protocol aren't kept in check.

071   Schipper   Sep 70   Reallocation in Case of Input Error

    Discussion of how to resynchronize flow control using a proposed
    protocol for the CCN-Host at UCLA.

070   Crocker   Oct 70   A Note on Padding

    Discussion of padding on a message.

069   Bhushan   Sep 70   Distribution List Change for MIT.

    Announcement of name change.

068   Elie   Aug 70   Comments on Memory Allocation
                                 Control Commands (CEASE, ALL, GVB,
                                 RET) and RFNM

    Provides a scheme for buffer allocation.

067   Crowther   Undated   Proposed Change to Host/IMP Spec to
                                 Eliminate Marking

    Proposed change to eliminate marking, per Walden's comments.

066   Crocker   Aug 70   3rd Level Ideas and Other Noise

    Meeting notes from 12 Aug 70 between Crocker and representatives
    from BBN and MIT regarding the third level protocol.

065   Walden   Aug 70   Comments on Host-Host Protocol
                                 Document Number 1 (Crocker,
                                 3 August 70)

    Critique and suggestions for improvement of the Host-Host Protocol
    document.

064   Elie   Undated   Getting Rid of Marking

   Suggests simple modifications and solutions to the IMP-HOST
   interface which would be a better solution than marking.

063   Cerf   Jul 70   Belated Network Meeting Report

   Network meeting report of the Network Working Group from 8 May 70.

062   Walden   Aug 70   A System for Interprocess
                                  Communication in a Resource Sharing
                                  Computer Network

   Supercedes RFC 61.

061   Walden   Jul 70   A Note on Interprocess Communication
                                  in a Resource Sharing Computer
                                  Network

   A draft request for comments of a resource sharing study that may
   be of general interest to network participants.

060   Kalin   Jul 70   A Simplified NCP Protocol

   Definition of a new NCP Protocol that is simple enough to be
   implemented on a very small computer, yet can be extended for
   efficient operation on large timesharing machines.

059   Meyer   Jun 70   Flow Control-Fixed Versus Demand
                                  Allocation

   Discussion of the advantages and disadvantages of the method of
   flow control as described in RFC 54.

058   Skinner   Jun 70   Logical Message Synchronization

   A discussion on a question raised at the last network meeting
   regarding the question of logical and physical message
   distinctions.

057   Kraley   Jun 70   Thoughts and Reflections on RFC 54

056   Belove   Jun 70   Third Level Protocol

   All explanations in this RFC are meant to describe functional
   characteristics rather than design.

055   Newkirk   Jun 70   A Prototypical Implementation of the
                                  NCP

   A prototypical specification in a prose format of what the NCP
   could look like.

054   Crocker   Jun 70   An Official Protocol Proffering

   Submission of the Official Protocol for comments and suggestions.

053   Crocker   Jun 70   An Official Protocol Mechanism

   Group discussion on rules for establishing and modifying an
   official Host-Host protocol.

052   Postel   Jul 70   Updated Distribution List

   Mailing list for distributing the RFCs.

051   Elie   May 70   Proposal for a Network Interchange
                                  Language

   A proposal to specify a high level programming language for
   computer networks, specifically the ARPA network.

050   Harslem   Apr 70   Comments on the Meyer Proposal

   General acceptance on RFC 46, plus comments on the seven issues
   raised in RFC 47.

049   Meyer   Apr 70   Conversations with Steve Crocker
                                  (UCLA)

   Discussion of telephone conversations relating to the Network
   Protocol, specifically regarding Meyer's proposal in RFC 46.

048   Postel   Apr 70   A Possible Protocol Plateau

   Reporting activities since the Network meeting of 17 March 1970.

047   Postel   Apr 70   BBN's Comments on RFC 33

   Comments from BBN regarding RFC 33 (New HOST-HOST Protocol).

046   Meyer   Apr 70   ARPA Network Protocol Notes

   Comments and suggestions from the NWG at Project MAC, based upon
   the protocol outlined in RFCs 33,36.

045   Postel   Apr 70   New Protocol is Coming

    Announcement of a new version of the Network Protocol.

044   Shoshani   Apr 70   Comments on RFCs 33,36

    General discussion and suggestions for refinements to the
    HOST-HOST Protocol.

043   Nemeth   Mar 70   Proposed Meeting

    An announcement of a meeting to discuss the Local Interaction
    Language system.

042   Ancona   Mar 70   Message Data Types

    A proposal that the first eight bits of a normal message be
    reserved for a message data type.

041   Melvin   Mar 70   IMP/IMP Teletype Communication

    Comments that transmitting IMP sites should use 24 hour time and
    include the time zone designation.

040   Harslem   Mar 70   More Comments on the Forthcoming
                                  Protocol

    Further elaborations on the errors, queries, and Host status that
    were mentioned in RFC 39.

039   Harslem   Mar 70   Comments on Network Protocol
                                  (RFC 36)

    More suggestions to be considered as additions to RFC 36 - Network
    Protocol.

038   Wolfe   Mar 70   Comments on Network Protocol
                                  (RFC 36)

    Continued discussion on the proposed Network Protocol.

037   Crocker   Mar 70   Network Meeting Epilogues, etc.

    Network Meeting notes from 17 March 1970.

036   Crocker   Mar 70   Protocol Notes

   A three part overview of the Network Protocol.

035   Crocker   Mar 70   Network Meeting

   Announcement of a network meeting: date, time, place, and proposed
   agenda.

034   English   Feb 70   Some Brief Preliminary Notes on the
                                   ARC Clock

   Describes the ARC Clock system.

033   Crocker   Feb 70   New Host-Host Protocol

   Revises RFC 11, and indicates numerous changes in the old
   protocol.

032   Cole   Feb 70   Some Thoughts on SRI's Proposed Real
                                   Time Clock

   References and comments on RFCs 28,29.

031   Bobrow   Feb 68   Binary Message Forms in Computer
                                   Networks

   Suggest alternative approaches and methods for describing
   messages.

030   Crocker   Feb 70   Documentation Conventions

   Revises the definition of style, content, form, and distribution
   of the Network Working Group's notes. Replaces RFCs 10,16,24,27.

029   Kahn   Jan 70   Note in Response to Bill English's
                                   Request for Comments

   Comments in response to English's question which was raised in
   RFC 28.

028   English   Jan 70   Time Standards

   Request for comments relative to Network time standards.

027   Crocker   Dec 69   Documentation Conventions

   Revises the definition of style, content, form, and distribution
   of the Network Working Group's notes. Replaces RFCs 10,16,24.

026   Never Issued.

025   Crocker   Oct 69   No High Link Numbers

   Suggests that no link number over 63 be used.

024   Crocker   Nov 69   Documentation Conventions

   Revises the definition of style, content, form, and distribution
   of the Network Working Group's notes. Replaces RFCs 10,16.

023   Gregg   Oct 69   Transmission of Multiple Control
                                 Messages

   Discusses how a network program at a site should be prepared to
   send or receive more than one control message in a single control
   communication.

022   Cerf   Oct 69   Host-Host Control Message Formats

   Reports on a new control message format which does not use the
   7-bit ASCII character mode of transmission.

021   Cerf   Oct 69   Report on Network Meeting

   Attendance list and topics discussed.

020   Cerf   Oct 69   ASCII Format for Network Interchange

   Discusses the use of standard 7-bit ASCII embedded in an 8-bit
   byte whose high order bit is always 1.

019   Kreznar   Oct 69   Two Protocol Suggestions to Reduce
                                 Congestion at Swap-Bound Nodes

   Suggests alternatives in reducing congestion at swap-bound nodes.

018   Cerf   Sep 69   Comments Re: Host-Host control link

   Suggestions regarding the Host-Host control link.

017a   Kahn   Aug 69   Some Comments Re: HOST-IMP Protocol

   Comments in response to Kreznar's questions which were raised in
   RFC 17.

017   Kreznar   Aug 69   Some Questions Re: HOST-IMP Protocol

   Queries and opinions regarding the HOST-IMP Protocol.

016   Crocker   Aug 69   M.I.T.

   Announcement that MIT is now to receive all Network Working Group
   memos.

015   Carr   Sep 69   Network Subsystem for Time Sharing
                                 Hosts

   Proposes a subsystem called "Telnet", which would be a shell
   program around the network system primitives, allowing a teletype
   or similar terminal at a remote host to function as a teletype at
   the serving host.

014   Never Issued.

013   Cerf   Aug 69   Referring to RFC 11

   Proposes a zero text length EOF (End-Of-File) message.

012   Wingfield   Aug 69   IMP-HOST Interface Flow Diagrams

   Flow diagrams that indicate the logical sequence of hardware
   operations which occur within the IMP-HOST interface.

011   Deloche   Aug 69   Implementation of the Host-Host
                                 Software Procedures in GORDO

   Discussion of Host-Host Procedures and GORDO as a time-sharing
   system that was implemented on a SDS Sigma 7.

010   Crocker   Jul 69   Documentation Conventions

   Revises the definition of style, content, form, and distribution
   of the Network Working Group's notes. Replaces RFC 3.

009   Deloche   May 69   Host Software

   Discusses the Host-Host Protocol, Network Service Calls, and Data
   Structures.

008   Deloche   May 69   ARPA Network Functional
                                 Specifications

   Discusses transmission features, functional software
   specifications, and the Link establishment procedure.

007   Deloche   May 69   HOST-IMP Interface

   Discusses Host-IMP interface issues.

006   Crocker   Apr 69   Conversation with Bob Kahn

   Conversations regarding code conversion in the IMP's, IMP-HOST
   communication, and HOST software.

005   Rulifson   Jun 69   DEL

   Details the machine independent language DEL (Decode-Encode
   Language).

004   Shapiro   Mar 69   Network Timetable

   Discusses installation, configuration, network checkout, and test
   messages run between SRI and UCLA.

003   Crocker   Apr 69   Documentation Conventions

   Establishes a definition of style, content, form, and distribution
   of the Network Working Group's notes (Obsoleted by RFC 10).

002   Duvall   Apr 69   Links

   Discusses various types of Links, including Control, Primary, and
   Auxilliary Links.

001   Crocker   Apr 69   Host Software

   Discusses the Host software and initial experiments on the ARPA
   Network.