



# Network Troubleshooting

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Standards

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# Standards

## I.1 10/100/1,000 MBit/s Ethernet:

<http://grouper.ieee.org/groups/802/3/index.html>

- IEEE Std 802.3, ..... Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer
- IEEE Std 802.3a-1988, ..... 10 Mb/s MAU 10BASE2 (Clause 10).
- IEEE Std 802.3b-1985, ..... Broadband Medium Attachment Unit and Broadband Medium Specifications, Type 10BROAD36 (Clause 11).
- IEEE Std 802.3c-1985, ..... Repeater Unit for 10 Mb/s Baseband Networks (Subclauses 9.1-9.8)
- IEEE Std 802.3d-1987, ..... Medium Attachment Unit and Baseband Medium Specification for a Vendor Independent Fiber Optic Inter Repeater Link (Section 9.9).
- IEEE Std 802.3e-1987, ..... Physical Signaling, Medium Attachment, and Baseband Medium Specifications, Type 1BASE5 (Clause 12).
- IEEE Std 802.3h-1990, ..... Layer Management (Clause 5).
- IEEE Std 802.3i-1990, ..... System Considerations for Multisegment 10 Mb/s Baseband Networks (Clause 13) AND Twisted-Pair Medium Attachment Unit (MAU) and Baseband Medium, Type 10BASE-T (Section 14).
- IEEE Std 802.3j-1993, ..... Fiber Optic Active and Passive Star-Based Segments, Type 10BASE-F (Clauses 15-18).
- IEEE Std 802.3k-1992, ..... Layer Management for 10 Mb/s Baseband Repeaters (Clause 19).
- IEEE Std 802.3l-1992, ..... Type 10BASE-T Medium Attachment Unit (MAU) Protocol Implementation Conformance Statement (PICS) Proforma (Subclause 14.10).
- IEEE Std 802.3m-1995, ... Second Maintenance Ballot.
- IEEE Std 802.3n-1995, .... Third Maintenance Ballot. IEEE Std 802.3p-1993, Layer Management for 10 Mb/s Baseband Medium Attachment Units (MAUs) (Clause 20).
- IEEE Std 802.3q-1993, ..... Guidelines for the Development of Managed Objects (GDMO) (ISO 10165-4) Format for Layer-Managed Objects (Clause 5)
- IEEE Std 802.3r-1997, ..... Type 10BASE5 Medium Attachment Unit PICS Proforma.
- IEEE Std 802.3s-1995, ..... Fourth Maintenance Ballot.
- IEEE Std 802.3t-1995, ..... Informative Annex for Support of 120 Ohm Cables in 10BASE-T Simplex Link Segment (Annex D.5).
- IEEE Std 802.3u-1995, ..... Type 100BASE-T MAC Parameters, Physical Layer, MAUs, and Repeater for 100 Mb/s Operation.
- IEEE Std 802.3v-1995, ..... Informative Annex for Support of 150 Ohm Cables in 10 BASE-T Link Segment (Annex D.6).
- IEEE Std 802.3x&y-1997, Specification for 802.3 Full Duplex Operation and Physical Layer Specification for 100 Mb/s Operation on Two Pairs of Category 3 or Better Balanced Twisted Pair Cable (100BASE-T2).
- IEEE Std 802.3z-1998, ..... Physical Layers, Repeater, and Management Parameters for 1000 Mb/s Operation.
- IEEE Std 802.3aa-1998, ... Maintenance Revision #5 (Revisions to 100BASE-T)
- IEEE 802.3.ab, ..... Physical Layer Parameters and Specifications for 1000 Mb/s Operation Over 4-Pair Category 5 Balanced Copper Cabling, Type 1000BASE 07/99
- IEEE Std 802.3ac-1998, ... Supplement to IEEE Std 802.3, 1998 Edition, Carrier Sense Multiple Access with Collision Detection (CSMA/CD)—Frame Extensions for Virtual Bridged Local Area Network (VLAN) Tagging on 802.3 Networks.
- IEEE802.3w, ..... Standard for Enhanced Media Access Control Algorithm
- IEEE 1802.3 d-1993, ..... Supplement to IEEE Std 1802.3-1991, Local and Metropolitan Area Networks: Conformance Test Methodology: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications
- IEEE 802.3ae, ..... 10 Gbit/s Ethernet PAR approved 01/00
- RFC 1271 ..... Remote Network Monitoring Management Information Base
- RFC 2074 ..... Remote Network Monitoring MIB Protocol Identifiers

## I.2 Token Ring

<http://www.8025.org>

- IEEE Std 802.5c-19 91, .... Supplement to IEEE Std 802.5-1989, Local and metropolitan area networks: Recommended practice for dual ring operation with wrapback reconfiguration.
- IEEE 802.5e, ..... Token ring station management entity specifications
- IEEE Std 802.5j-1997, ..... Supplement to information technology—Telecommunications and information exchange between systems - Local and metropolitan area networks—Specific requirements —Part 5: Token Ring access method and physical layer specifications Fibre Optic Media requirements.
- IEEE Std 802.5r-1997, ..... Standard for Information technology - Telecommunications and information exchange between systems - Local and metropolitan area networks - Specific requirements - Part 5: Token Ring access method and physical layer specifications—Dedicated Token Ring Operation.
- IEEE 802.5t, ..... Supplement to ISO/IEC 8802-5: 1995 Specific requirements—Part 5: Token Ring access method and physical layer specifications - 100 Mbit/s dedicated Token Ring operation over 2-pair cabling.
- IEEE 802.5u, ..... Supplement to ISO/IEC 8802-5: 1995 Specific requirements - Part 5: Token Ring access method and physical layer specifications - 100 Mbit/s dedicated Token Ring operation over multi-mode fibre.
- IEEE 802.5v, ..... Supplement to ISO/IEC 8802-5: 1995, Specific requirements - Part 5: Token Ring access method and physical layer specifications. Media access control parameters, physical layers, and management parameters for 1,000 Mbit/s operation or above.
- RFC 1231 IEEE 802.5 ..... Token Ring MIB

## I.3 FDDI

<http://www.ansi.org>

- ANSI X3.139-1987, ISO 9314-2:1989, Media Access Control (MAC)
- ANSI X3.148-1988, ISO 9314-1:1989, Physical Layer Protocol (PHY)
- ANSI X3.166-1990, ISO 9314-3:1990, Physical Layer, Medium Dependent (PMD)
- ANSI X3.229-1994, ISO 9314-6, Station Management (SMT)
- ANSI X3.184-1993, ISO 9314-4, Single Mode Fiber PMD (SMF-PMD)
- ANSI X3.237-1995, ISO 9314-9, Low Cost Fiber PMD (LCF-PMD)
- ANSI X3.263.1995, ISO 9314-10, Twisted Pair PMD (TP-PMD)
- ANSI X3.278, Physical Layer Repeater (PHY-REP)
- ANSI X3.262 ISO 9314-13, Conformance Test PICS Proforma for FDDI (CT-PICS)
- ANSI X3.245-199x, ISO 9314-26, Abstract Test Suite for MAC (MAC-ATS)
- ANSI X3.248-199x, ISO 9314-21, Abstract Test Suite for PHY (PHY-ATS)
- ANSI X3.255-199x, ISO 9314-20, Abstract Test Suite for PMD (PMD-ATS)
- ANSI X3T9.5/92-102, Rev 1.4, Abstract Test Suite for SMT (SMT-ATS)
- RFC 1285, FDDI-MIB

## I.4 ATM

### I.4.1 ITU-T Series I: Integrated Services Digital Network

<http://www.itu.ch>

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- [Q.920] ..... Recommendation Q.920 (03/93) - Digital subscriber signaling system No. 1 (DSS1) - ISDN user-network interface data link layer - General aspects
- [Q.921] ..... Recommendation Q.921 (09/97) - ISDN user-network interface - Data link layer specification
- [Q.921 bis] ..... Recommendation Q.921 bis (03/93) - Abstract test suite for LAPD conformance testing
- [Q.922] ..... Recommendation Q.922 (02/92) - ISDN data link layer specification for frame mode bearer services
- [Q.923] ..... Recommendation Q.923 (02/95) - Specification of a synchronization and coordination function for the provision of the OSI connection-mode network service in an ISDN environment
- [Q.930] ..... Recommendation Q.930 (03/93) - Digital subscriber signaling system No. 1 (DSS 1) - ISDN user-network interface layer 3 - General aspects
- [Q.931] ..... Recommendation Q.931 (05/98) - ISDN user-network interface layer 3 specification for basic call control 1
- [Q.931 bis] ..... Recommendation Q.931 bis (02/95) - PICS and abstract test suite for ISDN DSS 1 layer 3 - Circuit mode, basic call control conformance testing
- [Q.932] ..... Recommendation Q.932 (05/98) - Digital subscriber signaling system No. 1 - Generic procedures for the control of ISDN supplementary services
- [Q.933] ..... Recommendation Q.933 (10/95) - Integrated services digital network (ISDN) digital subscriber signaling system No. 1 (DSS 1) - Signaling specifications for frame mode switched and permanent virtual connection control and status monitoring
- [Q.933 Bis] ..... Recommendation Q.933 bis (10/95) - PICS and abstract test suite for frame mode basic call control conformance testing of PVCs - Section 1: user and network sides of user-network interface

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- [Q.939] ..... Recommendation Q.939 (03/93) - Digital subscriber signaling system No. 1 (DSS 1) - Typical DSS 1 service indicator codings for ISDN telecommunications services
- [Q.940] ..... Recommendation Q.940 (11/88) - ISDN user-network interface protocol for management - General aspects
- [Q.941] ..... Recommendation Q.941 (03/93) - Digital subscriber signaling system No. 1 (DSS 1) - ISDN user-network interface protocol profile for management
- [Q.950] ..... Recommendation Q.950 (06/00) - Supplementary services protocols, structure and general principles
- [Q.951.1] ..... Recommendation Q.951, Sections 1, 2 and 8 (02/92) - Stage 3 description for number identification supplementary services using DSS 1 - Direct-dialing-in (DDI)
- [Q.951.3] ..... Recommendation Q.951, Clauses 3, 4, 5 and 6 (03/93) - Stage 3 description for number identification supplementary services using DSS 1: Calling line identification presentation (CLIP): Calling line identification restriction (CLIR): Connected line...
- [Q.951.7] ..... Recommendation Q.951.7 (06/97) - Stage 3 description for number identification supplementary services using DSS 1: Malicious call identification (MCID)
- [Q.952] ..... Recommendation Q.952 (03/93) - Stage 3 description for call offering supplementary services using DSS 1 - Diversion supplementary services
- [Q.952.7] ..... Recommendation Q.952.7 (06/97) - Stage 3 description for call offering supplementary services using DSS 1: Explicit call transfer (ECT)
- [Q.953.1] ..... Recommendation Q.953, Section 1 (02/92) - Stage 3 description for call completion supplementary services using DSS 1: Call waiting
- [Q.953.2] ..... Recommendation Q.953, Clause 2 (03/93) - Stage 3 description for call completion supplementary services using DSS 1: Clause 2 - Call hold
- [Q.953.3] ..... Recommendation Q.953.3 (06/97) - Stage 3 description for call completion supplementary services using DSS 1: Completion of Calls to Busy Subscribers (CCBS)
- [Q.953.4] ..... Recommendation Q.953, Clause 4 (10/95) - Integrated services digital network (ISDN) - Stage 3 description for call completion supplementary services using DSS 1: Clause 4 - Terminal Portability (TP)
- [Q.953.5] ..... Recommendation Q.953.5 (12/99) - Stage 3 description for call completion supplementary services using DSS 1: Call Completion on No Reply (CCNR)
- [Q.954.1] ..... Recommendation Q.954, Clauses 1 and 2 (03/93) - Stage 3 description for multiparty supplementary services using DSS 1: Conference calling; Three-party service
- [Q.954.1 Notice] ... Notice to Recommendation Q.954.1 (03/93) - Stage 3 description for multiparty supplementary services using DSS 1 - Clause 1: Conference calling, Clause 2: Three-party service
- [Q.954.2] ..... Recommendation Q.954, Clause 2 (10/95) - Integrated services digital network (ISDN) - Stage 3 description for multiparty supplementary services using DSS 1: Three party (3PTY)
- [Q.955.1] ..... Recommendation Q.955, Section 1 (02/92) - Stage 3 description for community of interest supplementary services using DSS 1: Closed user group
- [Q.955.3] ..... Recommendation Q.955, Clause 3 (03/93) - Stage 3 description for community of interest supplementary services using DSS 1: Multi-level precedence and preemption (MLPP)
- [Q.956.2] ..... Recommendation Q.956, Clause 2 (10/95) - Integrated services digital network (ISDN) - Stage 3 service description for charging supplementary services using DSS 1: Clause 2 - Advice of charge (AOC)
- [Q.956.3] ..... Recommendation Q.956, Clause 3 (10/95) - Integrated services digital network (ISDN) - Stage 3 description for charging supplementary services using DSS 1: Clause 3 - Reverse charging
- [Q.957.1] ..... Recommendation Q.957.1 (07/96) - Stage 3 description for additional information transfer supplementary services using DSS 1: User-to-User Signaling (UUS)
- [Q.1000] ..... Recommendation Q.1000 (11/88) - Structure of the Q.1000-Series Recommendations for public land mobile networks
- [Q.1001] ..... Recommendation Q.1001 (11/88) - General aspects of public land mobile networks
- [Q.1002] ..... Recommendation Q.1002 (11/88) - Network functions
- [Q.1003] ..... Recommendation Q.1003 (11/88) - Location registration procedures
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- [Q.1031] ..... Recommendation Q.1031 (11/88) - General signaling requirements on interworking between the ISDN or PSTN and the PLMN
- [Q.1032] ..... Recommendation Q.1032 (11/88) - Signaling requirements relating to routing of calls to mobile subscribers
- [Q.1061] ..... Recommendation Q.1061 (11/88) - General aspects and principles relating to digital PLMN access signaling reference points
- [Q.1062] ..... Recommendation Q.1062 (11/88) - Digital PLMN access signaling reference configurations
- [Q.1063] ..... Recommendation Q.1063 (11/88) - Digital PLMN channel structures and access capabilities at the radio interface (Um reference point)
- [Q.1100] ..... Recommendation Q.1100 (03/93) - Interworking with Standard A INMARSAT system - Structure of the Recommendations on the INMARSAT mobile satellite systems
- [Q.1101] ..... Recommendation Q.1101 (11/88) - General requirements for the interworking of the terrestrial telephone network and INMARSAT Standard A system
- [Q.1102] ..... Recommendation Q.1102 (11/88) - Interworking between signaling system R2 and INMARSAT Standard A system
- [Q.1103] ..... Recommendation Q.1103 (11/88) - Interworking between signaling system No. 5 and INMARSAT Standard A system
- [Q.1111] ..... Recommendation Q.1111 (03/93) - Interfaces between the INMARSAT Standard B system and the international public switched telephone network/ISDN

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- [Q.1112] ..... Recommendation Q.1112 (03/93) - Procedures for interworking between INMARSAT Standard-B system and the international public switched telephone network/ISDN
- [Q.1151] ..... Recommendation Q.1151 (03/93) - Interfaces for interworking between the INMARSAT aeronautical mobile-satellite system and the international public switched telephone network/ISDN
- [Q.1152] ..... Recommendation Q.1152 (03/93) - Procedures for interworking between INMARSAT aeronautical mobile satellite system and the international public switched telephone network/ISDN
- [Q.1200] ..... Recommendation Q.1200 (09/97) - General series Intelligent Network Recommendation structure
- [Q.1201/L.312] ..... Recommendation I.312/Q.1201 (10/92) - Principles of intelligent network architecture
- [Q.1202/L.328] ..... Recommendation I.328/Q.1202 (09/97) - Intelligent Network - Service plane architecture
- [Q.1203/L.329] ..... Recommendation I.329/Q.1203 (09/97) - Intelligent Network - Global functional plane architecture
- [Q.1204] ..... Recommendation Q.1204 (03/93) - Intelligent network distributed functional plane architecture
- [Q.1205] ..... Recommendation Q.1205 (03/93) - Intelligent network physical plane architecture
- [Q.1208] ..... Recommendation Q.1208 (09/97) - General aspects of the Intelligent Network Application protocol
- [Q.1210] ..... Recommendation Q.1210 (10/95) - Q.1210-Series Intelligent network Recommendation structure
- [Q.1211] ..... Recommendation Q.1211 (03/93) - Introduction to intelligent network capability set 1
- [Q.1213] ..... Recommendation Q.1213 (10/95) - Global functional plane for intelligent network CS-1
- [Q.1214] ..... Recommendation Q.1214 (10/95) - Distributed functional plane for intelligent network CS-1
- [Q.1215] ..... Recommendation Q.1215 (10/95) - Physical plane for intelligent network CS-1
- [Q.1218] ..... Recommendation Q.1218 (10/95) - Interface Recommendation for intelligent network CS-1
- [Q.1218 Add.1] ..... Addendum 1 to Recommendation Q.1218 (09/97) - Interface Recommendation for Intelligent Network CS-1; Addendum 1: Definition for two new contexts in the SDF data model
- [Q.1219] ..... Recommendation Q.1219 (04/94) - Intelligent network user's guide for capability set 1
- [Q.1219 Sup.1] ..... Supplement 1 to Recommendation Q.1219 (09/97) - Intelligent network user's guide: Supplement for IN CS-1; Supplement 1
- [Q.1220] ..... Recommendation Q.1220 (09/97) - Q.1220-Series Intelligent network capability set 2 Recommendation structure
- [Q.1221] ..... Recommendation Q.1221 (09/97) - Introduction to intelligent network capability set 2
- [Q.1222] ..... Recommendation Q.1222 (09/97) - Service plane for intelligent network capability set 2
- [Q.1223] ..... Recommendation Q.1223 (09/97) - Global functional plane for intelligent network capability set 2
- [Q.1224] ..... Recommendation Q.1224 (09/97) - Distributed functional plane for intelligent network capability Set 2: Part 1, 2, 3
- [Q.1225] ..... Recommendation Q.1225 (09/97) - Physical plane for intelligent network capability set 2
- [Q.1228] ..... Recommendation Q.1228 (09/97) - Interface Recommendation for intelligent network capability set 2
- [Q.1236] ..... Recommendation Q.1236 (12/99) - Intelligent network capability set 3 - Management information model requirements and methodology
- [Q.1238.2] ..... Recommendation Q.1238.2 (06/00) - SCF-SSF interface
- [Q.1290] ..... Recommendation Q.1290 (05/98) - Glossary of terms used in the definition of intelligent networks
- [Q.1300] ..... Recommendation Q.1300 (10/95) - Telecommunication applications for switches and computers (TASC) - General overview
- [Q.1301] ..... Recommendation Q.1301 (10/95) - Telecommunication applications for switches and computers (TASC) - TASC Architecture
- [Q.1302] ..... Recommendation Q.1302 (10/95) - Telecommunication applications for switches and computers (TASC) - TASC functional services
- [Q.1303] ..... Recommendation Q.1303 (10/95) - Telecommunication applications for switches and computers (TASC) - TASC management: architecture, methodology and requirements
- [Q.1400] ..... Recommendation Q.1400 (03/93) - Architecture framework for the development of signaling and OA&M protocols using OSI concepts
- [Q.1400 Add.1] ..... Addendum 1 to Recommendation Q.1400 (02/95) - Architecture framework for the development of signaling and OAM protocols using OSI concepts
- [Q.1541] ..... Recommendation Q.1541 (05/98) - UPT stage 2 for Service Set 1 on IN CS-1 - Procedures for universal personal telecommunication: Functional modeling and information flows
- [Q.1551] ..... Recommendation Q.1551 (06/97) - Application of Intelligent Network Application Protocols (INAP) CS-1 for UPT Service Set 1
- [Q.1600] ..... Recommendation Q.1600 (09/97) - Signaling system No. 7 - Interaction between ISUP and INAP
- [Q.1701] ..... Recommendation Q.1701 (03/99) - Framework for IMT-2000 networks
- [Q.1711] ..... Recommendation Q.1711 (03/99) - Network functional model for IMT-2000
- [Q.2010] ..... Recommendation Q.2010 (02/95) - Broadband integrated services digital network overview - Signaling capability set 1, release 1
- [Q.2100] ..... Recommendation Q.2100 (07/94) - B-ISDN signaling ATM adaptation layer (SAAL) overview description
- [Q.2110] ..... Recommendation Q.2110 (07/94) - B-ISDN ATM adaptation layer - Service specific connection oriented protocol (SSCOP)
- [Q.2119] ..... Recommendation Q.2119 (07/96) - B-ISDN ATM adaptation layer - Convergence function for SSCOP above the frame relay core service
- [Q.2120] ..... Recommendation Q.2120 (02/95) - B-ISDN meta-signaling protocol

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- [Q.2130] ..... Recommendation Q.2130 (07/94) - B-ISDN signaling ATM adaptation layer - Service specific coordination function for support of signaling at the user-network interface (SSFC At UNI)
- [Q.2140] ..... Recommendation Q.2140 (02/95) - B-ISDN ATM adaptation layer - Service specific coordination function for signaling at the network node interface (SSCF at NNI)
- [Q.2144] ..... Recommendation Q.2144 (10/95) - B-ISDN Signaling ATM adaptation layer - Layer management for the SAAL at the network node interface
- [Q.2150.1] ..... Recommendation Q.2150.1 (12/99) - AAL type 2 signaling transport converter on broadband MTP
- [Q.2150.2] ..... Recommendation Q.2150.2 (12/99) - AAL type 2 signaling transport converter on SSCOP
- [Q.2210] ..... Recommendation Q.2210 (07/96) - Message transfer part level 3 functions and messages using the services of ITU-T Recommendation Q.2140
- [Q.2610] ..... Recommendation Q.2610 (12/99) - Usage of cause and location in B-ISDN user part and DSS2
- [Q.2660] ..... Recommendation Q.2660 (12/99) - Interworking between signaling system No. 7 broadband ISDN user part (B-ISUP) and narrow-band ISDN user part (N-ISUP)
- [Q.2722.1] ..... Recommendation Q.2722.1 (07/96) - B-ISDN user part - Network node interface specification for point-to-multipoint call/connection control
- [Q.2722.1 Am.1] .. Amendment 1 (06/00) to Recommendation Q.2722.1
- [Q.2724.1] ..... Recommendation Q.2724.1 (07/96) - B-ISDN user part - Look-ahead without state change for the Network Node Interface (NNI)
- [Q.2726.2] ..... Recommendation Q.2726.2 (07/96) - B-ISDN user part - Call priority
- [Q.2726.3] ..... Recommendation Q.2726.3 (07/96) - B-ISDN user part - Network generated session identifier
- [Q.2726.4] ..... Recommendation Q.2726.4 (06/00) - Extensions to the B-ISDN user part application generated identifiers
- [Q.2730] ..... Recommendation Q.2730 (12/99) - Signaling system No.7 B-ISDN user part (B-ISUP) - Supplementary services
- [Q.2735.1] ..... Recommendation Q.2735.1 (06/97) - Stage 3 description for community of interest supplementary services for B-ISDN using SS No. 7: Closed User Group (CUG)
- [Q.2751.1] ..... Recommendation Q.2751.1 (09/97) - Extension of Q.751.1 for SAAL signaling links
- [Q.2762] ..... Recommendation Q.2762 (02/95) - Broadband integrated services digital network (B-ISDN) - General functions of messages and signals of the B-ISDN user part (B-ISUP) of signaling system No. 7
- [Q.2763] ..... Recommendation Q.2763 (02/95) - Broadband Integrated Services Digital Network (B-ISDN) - Signaling system No. 7 B-ISDN user part (B-ISUP) - Formats and codes
- [Q.2766.1] ..... Recommendation Q.2766.1 (05/98) - Switched virtual path capability
- [Q.2766.1 Am.1] ... Amendment 1 (06/00) to Recommendation Q.2766.1
- [Q.2767.1] ..... Recommendation Q.2767.1 (06/00) - Soft PVC capability
- [Q.2769.1] ..... Recommendation Q.2769.1 (06/00) - Support of number portability information across B-ISUP
- [Q.2931] ..... Recommendation Q.2931 (02/95) - Broadband Integrated Services Digital Network (B-ISDN) - Digital subscriber signaling system No. 2 (DSS 2) - User-Network Interface (UNI) - Layer 3 specification for basic call/connection control
- [Q.2931 Amend.1] Amendment 1 to Recommendation Q.2931 (06/97) - Digital subscriber signaling system No. 2 - User-network interface (UNI) layer 3 specification for basic call/connection control Amendment 1
- [Q.2931 Amend.2] Amendment 2 (03/99) to Recommendation Q.2931 - Digital subscriber signaling system No. 2 - User-network interface (UNI) layer 3 specification for basic call/connection control
- [Q.2931Am2Cor1] Amendment 2, Corrigendum 1 (06/00) to ITU-T Recommendation Q.2931
- [Q.2931 Amend.3] Amendment 3 to Recommendation Q.2931 (03/99) - User-network interface (UNI) layer 3 specification for basic call/connection control
- [Q.2932.1] ..... Recommendation Q.2932.1 (07/96) - Digital subscriber signaling system No. 2 - Generic functional protocol: Core functions
- [Q.2933] ..... Recommendation Q.2933 (07/96) - Digital subscriber signaling system No. 2 (DSS 2) - Signaling specification for Frame Relay service
- [Q.2934] ..... Recommendation Q.2934 (05/98) - Digital subscriber signaling system No. 2 - Switched virtual path capability
- [Q.2939.1] ..... Recommendation Q.2939.1 (09/97) - Digital subscriber signaling system No. 2 - Application of DSS 2 service-related information elements by equipment supporting B-ISDN services
- [Q.2941.1] ..... Recommendation Q.2941.1 (09/97) - Digital subscriber signaling system No. 2 - Generic identifier transport
- [Q.2941.3] ..... Recommendation Q.2941.3 (06/00) - Broadband integrated services digital network (B-ISDN) digital subscriber signaling system No. 2 (DSS 2): Generic identifier transport extension for support of bearer independent call control
- [Q.2951] ..... Recommendation Q.2951 (02/95) (Clauses 1, 2, 3, 4, 5, 6 and 8) - Stage 3 description for number identification supplementary services using B-ISDN Digital subscriber signaling system No. 2 (DSS 2) - Basic call
- [Q.2951 Cor.1] .... Corrigendum 1 (05/98) to Recommendation Q.2951 - Stage 3 description for number identification supplementary services using B-ISDN Digital subscriber signaling system No.2 (DSS 2) - Basic call Corrigendum 1
- [Q.2955.1] ..... Recommendation Q.2955.1 (06/97) - Stage 3 description for community of interest supplementary services using B-ISDN Digital subscriber signaling system No. 2 (DSS 2): Closed User Group (CUG)
- [Q.2957.1] ..... Recommendation Q.2957.1 (02/95) - User-to-user signaling (UUS)
- [Q.2957.1 Am.1] ... Amendment 1 to Recommendation Q.2957.1 (12/99) - Stage 3 description for additional information transfer supplementary services using B-ISDN Digital subscriber signaling system No. 2 (DSS 2) - Basic call
- [Q.2959] ..... Recommendation Q.2959 (07/96) - Digital subscriber signaling system No. 2 - Call priority
- [Q.2961.1] ..... Recommendation Q.2961.1 (10/95) - Additional signaling capabilities to support traffic parameters for the tagging option and the sustainable cell rate parameter set

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[Q.2961.2] .....	Recommendation Q.2961.2 (06/97) - Digital subscriber signaling system No. 2 - Additional traffic parameters: Support of ATM transfer capability in the broadband bearer capability information element
[Q.2961.2 Cor.1] ..	Corrigendum 1 (03/99) to Recommendation Q.2961.2 - Digital subscriber signaling system No. 2 - Additional traffic parameters: Support of ATM transfer capability in the broadband bearer capability information element
[Q.2961.3] .....	Recommendation Q.2961.3 (09/97) - Digital subscriber signaling system No. 2 - Additional traffic parameters: Signaling capabilities to support traffic parameters for the available bit rate (ABR) ATM transfer capability
[Q.2961.4] .....	Recommendation Q.2961.4 (09/97) - Digital subscriber signaling system No. 2 - Additional traffic parameters: Signaling capabilities to support traffic parameters for the ATM Block Transfer (ABT) ATM transfer capability
[Q.2961.5] .....	Recommendation Q.2961.5 (03/99) - Digital subscriber signaling system No. 2 - Additional traffic parameters: Additional traffic parameters for cell delay variation tolerance indication
[Q.2961.6] .....	Recommendation Q.2961.6 (05/98) - Digital subscriber signaling system No. 2 - Additional traffic parameters: Additional signaling procedures for the support of the SBR2 and SBR3 ATM transfer capabilities
[Q.2962] .....	Recommendation Q.2962 (05/98) - Digital subscriber signaling system No. 2 - Connection characteristics negotiation during call/connection establishment phase
[Q.2963.2] .....	Recommendation Q.2963.2 (09/97) - Digital subscriber signaling systems No. 2 - Connection modification: Modification procedures for sustainable cell rate parameters
[Q.2963.3] .....	Recommendation Q.2963.3 (05/98) - Digital subscriber signaling system No. 2 - Connection modification: ATM traffic descriptor modification with negotiation by the connection owner
[Q.2964.1] .....	Recommendation Q.2964.1 (07/96) - Digital subscriber signaling system No. 2: Basic look-ahead
[Q.2965.1] .....	Recommendation Q.2965.1 (03/99) - Digital subscriber signaling system No. 2 - Support of quality of service classes
[Q.2965.1 Am.1] ..	Amendment 1 (06/00) to Recommendation Q.2965.1
[Q.2971] .....	Recommendation Q.2971 (10/95) - Broadband integrated services digital network B-ISDN - DSS 2 - Digital subscriber signaling system No. 2 - User-network interface layer 3 specification for point-to-multipoint call/connection control
[Q.2971 Corr.1] .....	Corrigendum 1 (12/99) to Recommendation Q.2971 - Digital subscriber signaling system No. 2 (DSS2) - User-Network interface layer 3 specification for point-to-multipoint call/connection control
[Q.2982] .....	Recommendation Q.2982 (12/99) - Broadband integrated services digital network (B-ISDN) Digital subscriber signaling system No. 2 (DSS 2) Q.2931-based separated call control protocol
[Q.2983] .....	Recommendation Q.2983 (12/99) - Broadband integrated services digital network (B-ISDN) Digital subscriber signaling No. 2 (DSS 2): Bearer control protocol

## I.4.3 ATM-Forum-Standards

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Technical Working Group	Approved Specifications	Technical Working Group	Approved Specifications
	Specification Approved Date		Specification Approved Date
B-ICI .....			PNNI Transported Address Stack, Version 1.0 af-cs-0115.000 May, 1999
	B-ICI 1.0 af-bici-0013.000 Sep, 1993		PNNI Version 1.0 Security Signaling Addendum af-cs-0116.000 May, 1999
	B-ICI 1.1 af-bici-0013.001		UNI Signaling 4.0 Security Addendum af-cs-0117.000 May, 1999
	B-ICI 2.0 (delta spec to B-ICI 1.1) af-bici-0013.002 Dec, 1995		ATM Inter-Network Interface (AINI) Specification af-cs-0125.000 July, 1999
	B-ICI 2.0 (integrated specification) af-bici-0013.003 Dec, 1995		PNNI Addendum for Generic Application Transport Version 1.0 af-cs-0126.000 July, 1999
	B-ICI 2.0 Addendum or 2.1 af-bici-0068.000 Nov, 1996		PNNI SPVC Addendum Version 1.0 af-cs-0127.000 July, 1999
Control Signaling .....			PHY/MAC Identifier Addendum to UNI Signaling 4.0 af-cs-0135.000 Nov, 1999
	PNNI Addendum on PNNI/B-QSIG Interworking and Generic Functional Protocol for the Support of Supplementary Services af-cs-0102.000 Oct, 1998		
	Addressing Addendum for UNI Signaling 4.0 af-cs-0107.000 Feb, 1999		

Technical Working Group	Approved Specifications	Technical Working Group	Approved Specifications
	Specification Approved Date		Specification Approved Date
	Network Call Correlation Identifier v1.0 af-cs-0140.000 March, 2000		Multi-Protocol over ATM Version 1.0 MIB af-mpoa-0092.000 July, 1998
	PNNI Addendum for Path and Connection Trace, Version 1.0 af-cs-0141.000 March, 2000		Multi-protocol over ATM Specification, Version 1.1 af-mpoa-0114.000 May, 1999
	Operation of the Bearer Independent Call Control (BICC) Protocol with SIG 4.0/PNNI 1.0-AINI af-cs-vmoa-0146.000 July, 2000		MPOA v1.1 Addendum on VPN Support af-mpoa-0129.000 Oct, 1999
	UBR with MDCR Addendum to UNI 4.0/PNNI 1.0 AINI af-cs-0147.000 July, 2000	Network Management	Customer Network Management (CNM) for ATM Public Network Service af-nm-0019.000 Oct, 1994
	Modification of Traffic Descriptor for an Active Connection af-cs-0148.000 July, 2000		M4 Interface Requirements and Logical MIB af-nm-0020.000 Oct, 1994
Data Exchange Interface	Data Exchange Interface version 1.0 af-dxi-0014.000 Aug, 1993		M4 Interface Requirements and Logical MIB: ATM Network Element View af-nm-0020.001 Oct, 1998
Directory and Naming Services	ATM Named System v2.0 af-dans-0152.000 July, 2000		CMIP Specification for the M4 Interface af-nm-0027.000 Sep, 1995
Frame-based ATM	Frame-based ATM Transport over Ethernet (FATE) af-fbatm-0139.000 Mar, 2000		CMIP Specification for the M4 Interface: ATM Network Element View, Version 2 af-nm-0027.001 July, 1999
	Frame based ATM over Sonet/SDH af-fbatm-0151.000 July, 2000		M4 Public Network View af-nm-0058.000 Mar, 1996
ILMI (Integrated Local Mgmt. Interface)	ILMI 4.0 af-ilmi-0065.000 Sep, 1996		M4 Interface Requirements and Logical MIB: ATM Network View, Version 2 af-nm-0058.001 May, 1999
Lan Emulation/MPOA	LAN Emulation over ATM 1.0 af-lane-0021.000 Jan, 1995		M4 "NE View" af-nm-0071.000 Jan, 1997
	LAN Emulation Client Management Specification af-lane-0038.000 Sep, 1995		Circuit Emulation Service Interworking Requirements, Logical and CMIP MIB af-nm-0072.000 Jan, 1997
	LANE 1.0 Addendum af-lane-0050.000 Dec, 1995		M4 Network View CMIP MIB Spec v1.0 af-nm-0073.000 Jan, 1997
	LANE Servers Management Spec v1.0 af-lane-0057.000 Mar, 1996		M4 Network View Requirements & Logical MIB Addendum af-nm-0074.000 Jan, 1997
	LANE v2.0 LUNI Interface af-lane-0084.000 July, 1997		ATM Remote Monitoring SNMP MIB af-nm-test-0080.000 July, 1997
	LAN Emulation Client Management Specification Version 2.0 af-lane-0093.000 Oct, 1998		SNMP M4 Network Element View MIB af-nm-0095.001 July, 1998
	LAN Emulation over ATM Version 2 - LNNI Specification af-lane-0112.000 Feb. 1999		Network Management M4 Security Requirements and Logical MIB af-nm-0103.000 Jan, 1999
	Multi-Protocol over ATM Specification v1.0 af-mpoa-0087.000 July, 1997		Auto-configuration of PVCs af-nm-0122.000 May, 1999

Technical Working Group	Approved Specifications	Technical Working Group	Approved Specifications
	Specification Approved Date		Specification Approved Date
Physical Layer	<p>Issued as part of UNI 3.1:44.736 DS3 Mbps</p> <p>Physical Layer 100 Mbps Multimode Fiber Interface</p> <p>Physical Layer 155.52 Mbps SONET STS-3c</p> <p>Physical Layer 155.52 Mbps Physical Layer</p> <p>af-uni-0010.002</p>		<p>155 Mb/s Plastic Optical Fiber and Hard Polymer Clad Fiber PMD Specification Version 1.1</p> <p>af-phy-0079.001</p> <p>Jan, 1999</p> <p>Inverse ATM Mux Version 1.0</p> <p>af-phy-0086.000</p> <p>July, 1997</p> <p>Inverse Multiplexing for ATM (IMA) Specification Version 1.1</p> <p>af-phy-0086.001</p> <p>March, 1999</p> <p>Physical Layer High Density Glass Optical Fiber Annex</p> <p>af-phy-0110.000</p> <p>Feb, 1999</p> <p>622 and 2488 Mbit/s Cell-Based Physical Layer</p> <p>af-phy-0128.000</p> <p>July, 1999</p> <p>ATM on Fractional E1/T1</p> <p>af-phy-0130.000</p> <p>Oct, 1999</p> <p>2.4 Gbps Physical Layer Specification</p> <p>af-phy-0133.000</p> <p>Oct, 1999</p> <p>Physical Layer Control</p> <p>af-phy-0134.000</p> <p>Oct, 1999</p> <p>Utopia 3 Physical Layer Interface</p> <p>af-phy-0136.000</p> <p>Nov, 1999</p> <p>Specification of the Device Control Protocol (DCP) Version 1.0</p> <p>af-phy-0138.000</p> <p>Mar, 2000</p> <p>Multiplexed Status Mode (MSM3)</p> <p>af-phy-0142.000</p> <p>March, 2000</p> <p>Frame-based ATM Interface (Level 3)</p> <p>af-phy-0143.000</p> <p>March, 2000</p> <p>UTOPIA Level 4</p> <p>af-phy-0144.001</p> <p>March, 2000</p>
ATM Physical Medium	<p>Dependent Interface Specification for 155 Mb/s over Twisted Pair Cable</p> <p>af-phy-0015.000</p> <p>Sep, 1994</p> <p>DS1 Physical Layer Specification</p> <p>af-phy-0016.000</p> <p>Sep, 1994</p> <p>Utopia</p> <p>af-phy-0017.000</p> <p>Mar, 1994</p> <p>Mid-range Physical Layer Specification for Category 3 UTP</p> <p>af-phy-0018.000</p> <p>Sep, 1994</p> <p>6,312 Kbps UNI Specification</p> <p>af-phy-0029.000</p> <p>June, 1995</p> <p>E3 UNI</p> <p>af-phy-0034.000</p> <p>Aug, 1995</p> <p>Utopia Level 2</p> <p>af-phy-0039.000</p> <p>June, 1995</p> <p>Physical Interface Specification for 25.6 Mb/s over Twisted Pair</p> <p>af-phy-0040.000</p> <p>Nov, 1995</p> <p>A Cell-based Transmission Convergence Sublayer for Clear Channel Interfaces</p> <p>af-phy-0043.000</p> <p>Jan, 1996</p> <p>622.08 Mbps Physical Layer</p> <p>af-phy-0046.000</p> <p>Jan, 1996</p> <p>155.52 Mbps Physical Layer Specification for Category 3 UTP (See also UNI 3.1, af-uni-0010.002)</p> <p>af-phy-0047.000</p> <p>Nov, 1995</p> <p>120 Ohm Addendum to ATM PMD Interface Spec for 155 Mbps over TP</p> <p>af-phy-0053.000</p> <p>Jan, 1996</p> <p>DS3 Physical Layer Interface Spec</p> <p>af-phy-0054.000</p> <p>Mar, 1996</p> <p>155 Mbps over MMF Short Wave Length Lasers, Addendum to UNI 3.1</p> <p>af-phy-0062.000</p> <p>July, 1996</p> <p>WIRE (PMD to TC layers)</p> <p>af-phy-0063.000</p> <p>July, 1996</p> <p>E-1 Physical Layer Interface Specification</p> <p>af-phy-0064.000</p> <p>Sep, 1996</p> <p>155 Mbps over Plastic Optical Fiber (POF) Version 1.0</p> <p>af-phy-0079.000</p> <p>May, 1997</p>	PNNI	<p>Interim Inter-Switch Signaling Protocol</p> <p>af-pnni-0026.000</p> <p>Dec, 1994</p> <p>PNNI V1.0</p> <p>af-pnni-0055.000</p> <p>Mar, 1996</p> <p>PNNI 1.0 Addendum (soft PVC MIB)</p> <p>af-pnni-0066.000</p> <p>Sep, 1996</p> <p>PNNI ABR Addendum</p> <p>af-pnni-0075.000</p> <p>Jan, 1997</p> <p>PNNI v1.0 Errata and PICS</p> <p>af-pnni-0081.000</p> <p>July, 1997</p>
		Routing and Addressing	<p>PNNI Augmented Routing (PAR) Version 1.0</p> <p>af-ra-0104.000</p> <p>Jan, 1999</p> <p>ATM Forum Addressing: User Guide Version 1.0</p> <p>af-ra-0105.000</p> <p>Jan, 1999</p>



Technical Working Group	Approved Specifications	Technical Working Group	Approved Specifications
	Specification Approved Date		Specification Approved Date
	ATM Forum Addressing: Reference Guide af-ra-0106.000 Feb, 1999	Testing .....	Introduction to ATM Forum Test Specifications af-test-0022.000 Dec, 1994
	PNNI Addendum for Mobility Extensions Version 1.0 af-ra-0123.000 May, 1999		PICS Proforma for the DS3 Physical Layer Interface af-test-0023.000 Sep, 1994
Residential Broadband .....	Residential Broadband Architectural Framework af-rbb-0099.000 July, 1998		PICS Proforma for the SONET STS-3c Physical Layer Interface af-test-0024.000 Sep, 1994
	RBB Physical Interfaces Specification af-rbb-phy-0101.000 Jan, 1999		PICS Proforma for the 100 Mbps Multimode Fibre Physical Layer Interface af-test-0025.000 Sep, 1994
Service Aspects and Applications .....	Frame UNI af-saa-0031.000 Sep, 1995		PICS Proforma for the ATM Layer (UNI 3.0) af-test-0028.000 Apr, 1995
	Circuit Emulation af-saa-0032.000 Sep, 1995		Conformance Abstract Test Suite for the ATM Layer for Intermediate Systems (UNI 3.0) af-test-0030.000 Sep, 1995
	Native ATM Services: Semantic Description af-saa-0048.000 Feb, 1996		Interoperability Test Suite for the ATM Layer (UNI 3.0) af-test-0035.000 Apr, 1995
	Audio/Visual Multimedia Services: Video on Demand v1.0 af-saa-0049.000 Jan, 1996		Interoperability Test Suites for the Physical Layer: DS-3, STS-3c, 100 Mbps MMF (TAXI) af-test-0036.000 Apr, 1995
	Audio/Visual Multimedia Services: Video on Demand v1.1 af-saa-0049.001 Mar, 1997		PICS Proforma for the DS1 Physical Layer af-test-0037.000 Apr, 1995
	ATM Names Service af-saa-0069.000 Nov, 1996		Conformance Abstract Test Suite for the ATM Layer (End Systems) UNI 3.0 af-test-0041.000 Jan, 1996
	FUNI 2.0 af-saa-0088.000 July, 1997		PICS for AAL5 (ITU spec) af-test-0042.000 Jan, 1996
	Native ATM Services DLPI Addendum Version 1.0 af-saa-api-dlpi-0091.000 Feb, 1998		PICS Proforma for the 51.84 Mbps Mid-Range PHY Layer Interface af-test-0044.000 Jan, 1996
	API Semantics for Native ATM Services af-saa-0108.000 Feb, 1999		Conformance Abstract Test Suite for the ATM Layer of Intermediate Systems (UNI 3.1) af-test-0045.000 Jan, 1996
	FUNI Extensions for Multimedia af-saa-0109.000 Feb, 1999		PICS for the 25.6 Mbps over Twisted Pair Cable (UTP-3) Physical Layer af-test-0051.000 Mar, 1996
	H.323 Media Transport over ATM af-saa-0124.000 July, 1999		Conformance Abstract Test Suite for the ATM Adaptation Layer (AAL) Type 5 Common Part (Part 1) af-test-0052.000 Mar, 1996
Security .....	ATM Security Framework Version 1.0 af-sec-0096.000 February, 1998		PICS for ATM Layer (UNI 3.1) af-test-0059.000 July, 1996
	ATM Security Specification Version 1.0 af-sec-0100.001 Feb, 1999		Conformance Abstract Test Suite for the UNI 3.1 ATM Layer of End Systems af-test-0060.000 June, 1996
Signaling .....	(See UNI 3.1, af-uni-0010.002)		
	UNI Signaling 4.0 af-sig-0061.000 July, 1996		
	Signaling ABR Addendum af-sig-0076.000 Jan, 1997		

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	Specification Approved Date		Specification Approved Date
	Conformance Abstract Test Suite for the SSCOP Sublayer (UNI 3.1) af-test-0067.000 Sep, 1996	Voice & Telephony over ATM .....	ATM ..... Circuit Emulation Service 2.0 af-vtoa-0078.000 Jan, 1997
	SSCOP Conformance Abstract Test Suite, Version 1.1 af-test-0067.001 May, 1999		Voice and Telephony Over ATM to the Desktop af-vtoa-0083.000 May, 1997
	PICS for the 155 Mbps over Twisted Pair Cable (UTP-5/STP-5) Physical Layer af-test-0070.000 Nov, 1996		Voice and Telephony over ATM to the Desktop af-vtoa-0083.001 Feb, 1999
	PICS for Direct Mapped DS3 af-test-0082.000 July, 1997		(DBCES) Dynamic Bandwidth Utilization in 64 KBPS Time Slot Trunking over ATM - Using CES af-vtoa-0085.000 July, 1997
	Conformance Abstract Test Suite for Signaling (UNI 3.1) for the Network Side af-test-0090.000 September, 1997		ATM Trunking Using AAL1 for Narrow Band Services v1.0 af-vtoa-0089.000 July, 1997
	Abstract Test Suite for UNI 3.1 ATM Signaling for the Network Side v2.0 af-test-0090.001 March, 2000		ATM Trunking Using AAL2 for Narrowband Services af-vtoa-0113.000 Feb, 1999
	ATM Test Access Function (ATAF) Specification Version 1.0 af-test-nm-0094.000 February, 1998		Low Speed Circuit Emulation Service af-vtoa-0119.000 May, 1999
	PICS for Signaling (UNI v3.1) - User Side af-test-0097.000 April, 1998		ICS for ATM Trunking Using AAL2 for Narrowband Services af-vtoa-0120.000 May, 1999
	Interoperability Test for PNNI Version 1.0 af-test-csra-0111.000 Feb, 1999		Low Speed Circuit Emulation Service (LSCES) Implementation Conformance Statement Performance af-vtoa-0132.000 Oct, 1999
	PICS Proforma for UNI 3.1 Signaling (Network Side) af-test-csra-0118.000 May, 1999		Loop Emulation Service Using AAL2 af-vmoa-0145.000 July, 2000
	ATM Forum Performance Testing Specification af-test-tm-0131.000 Oct, 1999	User-Network Interface (UNI) .....	ATM User-Network Interface Specification V2.0 af-uni-0010.000 June, 1992
	Implementation Conformance Statement (ICS) Proforma Style Guide af-test-0137.000 Mar, 2000		ATM User-Network Interface Specification V3.0 af-uni-0010.001 Sep, 1993
Traffic Management .....	(See UNI 3.1, af-uni-0010.002)		ATM User-Network Interface Specification V3.1 af-uni-0010.002 1994
	Traffic Management 4.0 af-tm-0056.000 Apr, 1996		
	Traffic Management ABR Addendum af-tm-0077.000 Jan, 1997		
	Traffic Management 4.1 af-tm-0121.000 March, 1999		
	Addendum to TM 4.1: Differentiated UBR af-tm-0149.000 July, 2000		
	Addendum to Traffic Management v4.1 Optional Minimum Desired Cell Rate Indication for UBR af-tm-0150.000 July, 2000		

## I.5 Frame Relay

### I.5.1 ITU

<http://www.itu.ch>

- I.122 ..... Framework for Providing Additional Packet Mode Bearer Services
- I.233 ..... Frame Relay Bearer Service Description
- Q.921 ..... ISDN User-Network Interface (D-Channel) Layer 2 Specification
- Q.922 ..... ISDN Data Link Layer Specification for Frame Mode Bearer Services
- Q.933 ..... DSS1 - Signaling Specification for Frame Mode Bearer Services

### I.5.2 ANSI

<http://www.ansi.org>

- T1S1 ..... Architectural Framework and Service Description
- T1.602 .... Telecommunications ISDN Data Link Layer Signaling Specification
- T1.606 .... Frame Relay Bearer Service Description
- T1.617 .... Signaling Specification for Frame Relay Bearer Service
- T1.618 .... Core Aspects of Frame Protocol for Use with Frame Relay Bearer Service

### I.5.3 Frame Relay Forum

<http://www.frforum.com/>

- FRF.1 ..... User-to-Network Implementation Agreement (UNI)
- FRF.2 ..... Network-to-Network Implementation Agreement (NNI)
- FRF.3 ..... Multiprotocol Encapsulation Implementation Agreement
- FRF.4 ..... User-to-Network SVC Implementation Agreement
- FRF.5 ..... Frame Relay ATM PVC Network Interworking Implementation Agreement
- FRF.6 ..... Frame Relay Service Customer Network Manager Implementation Agreement (MIB)
- FRF.7 ..... Frame Relay PVC Multicast Service and Protocol Description Implementation Agreement
- FRF.8 ..... Frame Relay/ATM PVC Service Interworking Implementation Agreement
- FRF.9 ..... Data Compression Over Frame Relay Implementation Agreement
- FRF.10 .... Frame Relay Network-to-Network SVC Implementation Agreement
- FRF.11 .... Voice Over Frame Relay Implementation Agreement
- FRF.12 .... Frame Relay Fragmentation Implementation Agreement
- FRF.13 .... Service Level Definitions I.A
- FRF.14 .... Physical Layer Interface I.A
- FRF.15 .... End-to-End Multilink Frame Relay I.A
- FRF.16 .... Multilink Frame Relay UNI/NNI I.A
- FRF.17 .... Frame Relay Privacy I.A
- FRF.18 .... Network-to-Network FR/ATM SVC Service Interworking I.A

## I.6 SDH/SONET/PDH

### I.6.1 ITU

<http://www.itu.ch>

- G.702 ..... Digital hierarchy bit rates
- G.703 ..... Physical/electrical characteristics of hierarchical digital interfaces
- G.704 ..... Synchronous frame structures used at 1544, 6312, 2048, 8488 and 44,736 Kbit/s hierarchical levels
- G.706 ..... Frame alignment and cyclic redundancy check (CRC) procedures relating to basic frame structures defined in Recommendation G.704
- G.707 ..... Network node interface for the synchronous digital hierarchy (SDH)
- G.772 ..... Protected monitoring points provided on digital transmission systems
- G.810 ..... Definitions and terminology for synchronization networks
- G.811 ..... Timing characteristics of primary reference clocks
- G.812 ..... Timing requirements of slave clocks suitable for use as node clocks in synchronization networks
- G.813 ..... Timing characteristics of SDH equipment slave clocks (SEC)
- G.821 ..... Error performance of an international digital connection operating at a bit rate below the primary rate and forming part of an integrated services digital network
- G.822 ..... Controlled slip rate objectives on an international digital connection
- G.823 ..... The control of jitter and wander within digital networks which are based on the 2048 Kbit/s hierarchy
- G.824 ..... The control of jitter and wander within digital networks which are based on the 1544 Kbit/s hierarchy
- G.825 ..... The control of jitter and wander within digital networks which are based on the synchronous digital hierarchy (SDH)
- G.826 ..... Error performance parameters and objectives for international, constant bit rate digital paths at or above the primary rate
- G.827 ..... Availability parameters and objectives for path elements of international constant bit-rate digital paths at or above the primary rate
- G.832 ..... Transport of SDH elements on PDH networks – Frame and multiplexing structures
- G.841 ..... Types and characteristics of SDH network protection architectures
- G.957 ..... Optical interfaces for equipments and systems relating to the synchronous digital hierarchy
- G.958 ..... Digital line systems based on the synchronous digital hierarchy for use on optical fibre cables
- M.2100 ... Performance limits for bringing-into-service and maintenance of international PDH paths, sections and transmission systems
- M.2101.1 Performance limits for bringing-into-service and maintenance of international SDH paths and multiplex sections
- M.2110 ... Bringing-into-service of international PDH paths, sections and transmission systems and SDH paths and multiplex sections
- M.2120 ... PDH path, section and transmission system and SDH path and multiplex section fault detection and localization procedures
- M.2130 ... Operational procedures in locating and clearing transmission faults
- O.150 ..... General requirements for instrumentation for performance measurements on digital transmission equipment
- O.151 ..... Error performance measuring equipment operating at the primary rate and above
- O.152 ..... Error performance measuring equipment for bit rates of 64 Kbit/s and  $N \times 64$  Kbit/s
- O.162 ..... Equipment to perform in-service monitoring on 2048, 8448, 34 368 and 139 264 Kbit/s signals
- O.163 ..... Equipment to perform in-service monitoring on 1544 Kbit/s signals
- O.171 ..... Timing jitter and wander measuring equipment for digital systems which are based on the plesiochronous digital hierarchy (PDH)
- O.181 ..... Equipment to assess error performance on STM-N interfaces

### I.6.2 ANSI

<http://www.ansi.org>

- ANSI T1.105-1995 ..... Telecommunications - Synchronous Optical Network (SONET) - Basic Description Including Multiplex Structures, Rates, and Formats
- ANSI T1.105.01-1995 ..... Telecommunications - Synchronous Optical Network (SONET) - Automatic Protection Switching
- ANSI T1.105.02-1995 ..... Telecommunications - Synchronous Optical Network (SONET) - Payload Mappings
- ANSI T1.105.03-1994 ..... Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces
- ANSI T1.105.03a-1995 ..... Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces - DS1 Supplement

ANSI T1.105.03b-1997 .....	Telecommunications - Synchronous Optical Network (SONET) - Jitter at Network Interfaces - DS3 Wander Supplement
ANSI T1.105.04-1995 .....	Telecommunications - Synchronous Optical Network (SONET) - Data Communication Channel Protocols and Architectures
ANSI T1.105.05-1994 .....	Telecommunications - Synchronous Optical Network (SONET) - Tandem Connection Maintenance
ANSI T1.105.06-1996 .....	Telecommunications - Synchronous Optical Network (SONET) - Physical Layer Specifications
ANSI T1.105.07-1996 .....	Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats Specification
ANSI T1.105.07a-1997 .....	Telecommunications - Synchronous Optical Network (SONET) - Sub STS-1 Interface Rates and Formats Specification (Inclusion of N X VT Group Interfaces)
ANSI T1.105.09-1996 .....	Telecommunications - Synchronous Optical Network (SONET) - Network Element Timing and Synchronization
ANSI T1.119-1994 .....	Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications
ANSI T1.119.01-1995 .....	Telecommunications - Synchronous Optical Network (SONET) - Operations, Administration, Maintenance, and Provisioning (OAM&P) Communications - Protection Switching Fragment
ANSI T1.245-1997 .....	Telecommunications - Directory Service for Telecommunications Management Network (TMN) and Synchronous Optical Network (SONET)
ANSI T1.514-1995 .....	Telecommunications - Network Performance Parameters and Objectives for Dedicated Digital Services - SONET Bit Rates

## I.7 Internet Protocols

<http://www.ieft.org/rfc.html>

The current document containing all official Internet protocols is RFC 2700: Internet Official Protocol Standards.

Mnemonic	Title	RFC#	STD#
	Internet Official Protocol Standards	2700	1
	Assigned Numbers	1700	2
	Requirements for Internet hosts – Communication Layers	1122	3
	Requirements for Internet hosts – Application and Support	1123	3
IP	Internet Protocol	791	5
ICMP	Internet Control Message Protocol	792	5
	Broadcasting Internet Datagrams	919	5
	Broadcasting Internet Datagrams in the Presence of Subnets	922	5
	Internet Standard Subnetting Procedure	950	5
IGMP	Host Extensions for IP Multicasting	1112	5
UDP	User Datagram Protocol	768	6
TCP	Transmission Control Protocol	793	7
TELNET	Telnet Protocol Specification	854	8
TELNET	Telnet Option Specifications	855	8

<b>Mnemonic</b>	<b>Title</b>	<b>RFC#</b>	<b>STD#</b>
FTP	File Transfer Protocol	959	9
SMTP	Simple Mail Transfer Protocol	821	10
SMTP-EXT	SMTP Service Extensions	1869	10
SMTP-SIZE	SMTP Service Extension for Message Size Declaration	1870	10
MAIL	Standard for the Format of ARPA Internet Text Messages	822	11
DOMAIN	Domain Names - Concepts and Facilities	1034	13
DOMAIN	Domain Names - Implementation and Specification	1035	13
DNS-MX	Mail Routing and the Domain System	974	14
SNMP	Simple Network Management Protocol (SNMP)	1157	15
SMI	Structure and Identification of Management Information for TCP/IP-based Internets	1155	16
Concise-MI	Concise MIB Definitions	1212	16
MIB-II	Management Information Base for Network Management of TCP/IP-based Internets: MIB-II	1213	17
NETBIOS	Protocol Standard for a NetBIOS Service on a TCP/UDP Transport	1001	19
NETBIOS	Protocol Standard for a NetBIOS Service on a TCP/UDP Transport	1002	19
ECHO	Echo Protocol	862	20
DISCARD	Discard Protocol	863	21
CHARGEN	Character Generator Protocol	864	22
QUOTE	Quote of the Day Protocol	865	23
USERS	Active Users	866	24
DAYTIME	Daytime Protocol	867	25
TIME	Time Protocol	868	26
TOPT-BIN	Telnet Binary Transmission	856	27
TOPT-ECHO	Telnet Echo Option	857	28
TOPT-SUPP	Telnet Suppress Go Ahead Option	858	29
TOPT-STAT	Telnet Status Option	859	30
TOPT-TIM	Telnet Timing Mark Option	860	31
TOPT-EXTOP	Telnet Extended Options	861	32
TFTP	The TFTP Protocol (Revision 2)	1350	33
TP-TCP	ISO Transport Services on Top of the TCP	1006	35

<b>Mnemonic</b>	<b>Title</b>	<b>RFC#</b>	<b>STD#</b>
IP-FDDI	Transmission of IP and ARP over FDDI Networks	1390	36
ARP	Ethernet Address Resolution Protocol	826	37
RARP	Reverse Address Resolution Protocol	903	38
IP-WB	Host Access Protocol specification	907	40
IP-E	Standard for the Transmission of IP Datagrams over Ethernet Networks	894	41
IP-EE	Standard for the Transmission of IP Datagrams over Experimental Ethernet Networks	895	42
IP-IEEE	Standard for the transmission of IP Datagrams over IEEE 802 Networks	1042	43
IP-DC	DCN Local-Network Protocols	891	44
IP-HC	Internet Protocol on Network System's HYPERchannel	1044	45
IP-ARC	Transmitting IP Traffic over ARCNET Networks	1201	46
IP-SLIP	Nonstandard for Transmission of IP Datagrams over Serial Lines	1055	47
IP-NETBIOS	Standard for the Transmission of IP Datagrams over NetBIOS Networks	1088	48
IP-IPX	Standard for the Transmission of 802.2 Packets over IPX Networks	1132	49
ETHER-MIB	Definitions of Managed Objects for the Ethernet-like Interface Types	1643	50
PPP	The Point-to-Point Protocol (PPP)	1661	51
PPP-HDLC	PPP in HDLC-like Framing	1662	51
IP-SMDS	Transmission of IP Datagrams over the SMDS Service	1209	52
POP3	Post Office Protocol - Version 3	1939	53
OSPF2	OSPF Version 2	2328	54
IP-FR	Multiprotocol Interconnect over Frame Relay	2427	55
RIP2	RIP Version 2	2453	56
RIP2-APP	RIP Version 2 Protocol Applicability Statement	1722	57
SMIv2	Structure of Management Information Version 2 (SMIv2)	2578	58
CONV-MIB	Textual Conventions for SMIv2	2579	58
CONF-MIB	Conformance Statements for SMIv2	2580	58
RMON-MIB	Remote Network Monitoring Management Information Base	2819	59