FAA-STD-047 DCN 2
December 29, 1993

U.S. Department
of Transportation
**Federal Aviation
Administration**

JAN 3 1 1994

U.S. Department of Transportation

Federal Aviation Administration

Standard

NATIONAL AIRSPACE SYSTEM (NAS)

OPEN SYSTEMS INTERCONNECTION (OSI) CONFORMANCE TESTING

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DOCUMENT CHANGE NOTICE

1. Originator Name and Address SEIC Washington, DC	2. [ ] Proposed [X] Approved	3. Code Identification N/A 5. Code Identification N/A	4. Standard No. FAA-STD-047 6. DCN No. 1
7. System Designation NAS	8. Related ECR/NCP No. see #14	9. Contract No. DTFA01-84-C-00017	10. Contractual Activity N/A
11. Configuration Item Nomenclature NAS Open Systems Interconnection (OSI) Conformance Testing, FAA-STD-047		12. Effectivity N/A	

This notice informs recipients that the standard identified by the number (and revision letter) shown in block 4 has been changed. The pages changed by this DCN (being those furnished herewithin) carry the same date as the DCN. The page numbers and dates listed below in the summary of changed pages, combined with nonlisted pages of the original issue of the revision shown in block 4, constitute the current version of this specification.

13. DCN No.	14. Pages changed	S*	A/D*	15. Date
1	NCP 16173 baselines this standard..		A	12/29/93

*S = Indicates Supercedes Earlier Pages *A = Indicates Added Page * D = Indicates Deleted Page

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FOREWORD

This standard establishes requirements necessary for ensuring the compliance of National Airspace Systems (NAS) open systems to Open Systems Interconnection (OSI) requirements specified in FAA-STD-039a (or latest revision). Open system Interfaces employed within the NAS must be certified implementations of communication protocols that comply with the International Organization for Standardization (ISO) OSI standards, as well as the Government Open Systems Interconnection Profile (GOSIP), FIPS PUB 146-1.

This standard includes definitions in section 6.1 and is written in accordance with FAA-STD-005.

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1. SCOPE

1.1 Scope. This standard provides the requirements for ensuring that vendor-supplied Open Systems Interconnection (OSI) products conform to the NAS OSI requirements specified in FAA-STD-039a (or latest revision).

Conformance testing requirements for NAS open systems which communicate via the Aeronautical Telecommunication Network (ATN) are contained in the ATN manual.

1.2 Purpose. The purpose of this standard is to establish conformance testing requirements and to ensure OSI compliance for NAS open systems. Conformance testing does not guarantee interoperability, but is designed to increase the probability that different vendor implementations of OSI products are interoperable. Successful communications among NAS open systems is more likely if all systems conform to the same standards.

1.3 Relationship to Other Documents. This document provides requirements for testing the conformance of the protocols specified in FAA-STD-039a (or latest revision).

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2. APPLICABLE DOCUMENTS

2.1 Government Documents. The following documents form a part of this standard to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this standard, the contents of this standard shall be considered the superseding requirement.

FAA Standards

FAA-STD-039	National Airspace System (NAS) Open Systems Architecture and Protocols

Federal Standards

FIPS PUB 146-1	Government Open Systems Interconnection Profile (GOSIP), Version 2.0
GOSIP PICS Proforma 6	US GOSIP Protocol Implementation Conformance Statement Proforma for Transport Class 0 and 4 Protocols (ISO 8073), March 1992
GOSIP PICS Proforma 1	US GOSIP Protocol Implementation Conformance Statement Proforma for Packet Layer (ISO 8208), March 1992
GOSIP PICS Proforma 3	US GOSIP Protocol Implementation Conformance Statement Proforma for Connectionless Network Layer Protocol (ISO 8473), March 1992
NISTIR 4594	GOSIP Conformance and Interoperation Testing and Registration, version 1, March 1991

2.2 Non-Government Documents. The following documents form a part of this standard to the extent specified herein. In the event of conflict between the documents referenced herein and the contents of this standard, the contents of this standard shall be considered the superseding requirement.

Electronic Industries Association (EIA)

EIA-232D	Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange
EIA-232E	Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange
EIA-530	High-Speed 25-position Interface for Data Terminal Equipment and Data Circuit and Data Circuit Terminating Equipment

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RS-232C	Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment Employing Serial Binary Data Interchange

International Telegraph and Telephone Consultative Committee (CCITT)

CCITT V.32	A family of 2-wire, Duplex Modems Operating at Data Signaling Rates of up to 9600 Bit/s for Use on the General Switched Telephone Network and on Leased Telephone-Type Circuits
CCITT V.35	Data Transmission at 48 Kilobits per Second Using 60-108 kHz Group Band Circuits
CCITT X.25	Interface Between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE) for Terminals operating in the Packet Mode on Public Data Networks, 1984
CCITT X.32	Interface Between Data Terminal Equipment (DTE) and Data Circuit Terminating Equipment (DCE) for Terminals Operating in the Packet Mode and Accessing a Packet Switched Public Data Network through a Public Switched Telephone Network or a Circuit Switched Public Data Network, 1984

International Organization for Standardization (ISO)

ISO 4335:1987	Information Processing Systems - Data Communication - High-Level Data link Control (HDLC) Elements of Procedures, 3rd Edition
ISO 7478:1987	Information Processing Systems - Data Communication - Multi-link Procedures, 1st Edition
ISO 7776:1986	Information Processing Systems - Data Communication - High-Level Data Link Control Procedures - Description of the X.25 LAPB- Compatible DTE Data Link Procedures, 1st Edition
ISO 7776:1986/ AM1:1992	Information Processing Systems - Data Communication - High-Level Data Link Control Procedures - Description of the X.25 LAPB -Compatible DTE Data Link Procedures - Amendment 1: PICS Proforma
ISO/IEC 8073:1988	Information Processing Systems - Open Systems Interconnection - Connection-Oriented Transport Protocol Specification, 2nd Edition

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ISO/IEC 8073:1988/ AD2:1989	Information Processing Systems – Open Systems Interconnection – Connection-Oriented Transport Protocol Specification – Addendum 2: Class Four Operation over Connectionless Network Service
ISO/IEC 8208:1990	Information Technology – Data Communications – X.25 Packet Layer Protocol for Data Terminal Equipment, Version 2
ISO 8327:1987	Information Processing Systems – Open Systems Interconnection – Basic Connection-Oriented Session Protocol Specification, 1st Edition
ISO 8327/DAD2	Information Processing Systems – Open Systems Interconnection – Basic Connection-Oriented Session Protocol Specification – Addendum 2: Incorporation of Unlimited User Data, June 1988
CD 8327-2.2	Information Technology – Open Systems Interconnection – Basic Connection-Oriented Session Protocol Specification – Part 2: Protocol Implementation Conformance Statement (PICS) Proforma, September 1991
ISO 8473:1988	Information Processing Systems – Data Communications – Protocol for Providing the Connectionless-Mode Network Service (CLNS), 1st Edition
ISO 8473:1988/ AD3:1989	Information Processing Systems – Data Communications – Protocol for Providing the Connectionless-Mode Network Service – Addendum 3: Provision of the Underlying Service Assumed by ISO 8473 over Subnetworks Which Provide the OSI Data Link Service, 1st Edition
ISO/IEC 8571-4:1988	Information Processing Systems – Open Systems Interconnection – File Transfer, Access, and Management – Part 4: File Protocol Specification, 1st Edition
ISO/IEC 8571-5:1990	Information Technology – Open Systems Interconnection – File Transfer, Access, and Management – Part 5: Protocol Implementation Conformance Statement (PICS) Proforma
ISO 8650:1988	Information Processing Systems – Open Systems Interconnection – Protocol Specification for the Association Control Service Element, 1st Edition
DIS 8650-2	Information technology – Open Systems Interconnection – Protocol Specification for the Association Control Service Element – Part 2: Protocol Implementation Conformance Statement Proforma (PICS), June 1990

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ISO/IEC 8802-2:1989	Information Processing Systems - Local Area Networks - Part 2: Logical Link Control, 1st Edition
ISO/IEC 8802-2/PDAM3.3	Information processing Systems - Local Area Networks - Part 2: Logical Link Control - Amendment 3: Conformance Requirements, August 1992
ISO/IEC 8802-3:1992	Information Processing Systems - Local Area Networks - Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications, 2nd Edition
ISO/IEC 8802-4:1990	Information Processing Systems - Local Area Networks - Part 4: Token-Passing Bus Access Method and Physical Layer Specifications, 1st Edition
ISO/IEC 8802-5:1992	Information Processing Systems - Local Area Networks - Part 5: Token Ring Access Method and Physical Layer Specification, 1st Edition
ISO/IEC 8823:1988	Information Processing Systems - Open Systems Interconnection - Connection-Oriented Presentation Protocol Specification, 1st Edition
DIS 8823-2	Information Technology - Open Systems Interconnection - Connection-Oriented Presentation Protocol Specification - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma, June 1990
ISO/IEC 8878:1987	Information Processing Systems - Data Communications - Use of X.25 to Provide the OSI Connection-mode Network Service (CONS), 1st Edition
DIS 8878-2	Information Technology- Telecommunications and Information Exchange Between Systems - Use of X.25 to Provide the OSI Connection- mode Network Service - Part 2: Protocol Implementation Conformance Statement (PICS), October 1991
ISO/IEC 8880-2:1988	Information Processing Systems - Protocol Combinations to Provide and Support the OSI Network Service - Part 2: Provision and Support of the Connection-Mode Network Service, 1st Edition
ISO/IEC 9041-1:1990	Information technology- Open Systems Interconnection - Virtual Terminal Basic Class Protocol - Part 1: Specification, 1st Edition

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DIS 9041-2	Information technology - Open Systems Interconnection - Basic Class Virtual Terminal Protocol - Part 2: Protocol Implementation Conformance Statement (PICS) Proforma, April 1991
ISO/IEC 9072-2:1989	Information Processing Systems - Text Communication - Remote Operations - Part 2: Protocol Specification, 1st Edition
ISO 9314-1:1989	Information Processing Systems - Fibre-Distributed Data Interface (FDDI) - Part 1: Physical Layer Protocol (PHY), 1st Edition
WD 9314-13	Information Technology- Fibre-Distributed Data Interface (FDDI) - Part 13: FDDI Conformance Testing, Protocol Implementation Conformance Statement (PICS)
ISO/IEC 9542:1988	Information Processing Systems - Telecommunications and Information Exchange Between Systems- End System to intermediate System Routeing Exchange Protocol for Use in Conjunction with the Protocol for Providing the Connectionless-mode Network Service
ISO/IEC 9646-1:1991	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 1: General Concepts
ISO/IEC 9646-1 DAM 1	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 1: General Concepts - Draft Amendment 1: Protocol Profile Testing Methodology, November 1992
ISO/IEC 9646-1 DAM 2	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 1: General Concepts - Draft Amendment 2: Multi-Party Testing Methodology, November 1992
ISO/IEC 9646-2:1991	Information Technology - OSI Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification
ISO/IEC 9646-2 DAM 1	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification - Draft Amendment 1: Protocol Profile Testing Methodology, November 1992

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ISO/IEC 9646-2 DAM 2	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 2: Abstract Test Suite Specification - Draft Amendment 2: Multi-party Conformance Testing Methodology, November 1992
DIS 9646-3	Information Technology - OSI Conformance Testing Methodology and Framework - Part 3: The Tree And Tabular Combined Notation (TTCN), March 1990
DIS 9646-3 PDAM 1	Information Technology - OSI Conformance Testing Methodology and Framework - Part 3: TTCN - Proposed Draft Amendment 1: TTCN Extensions, January 1992
ISO/IEC 9646-4:1991	Information Technology - OSI Conformance Testing Methodology and Framework - Part 4: Test Realization
ISO/IEC 9646-4:DAM 1	Information Technology - OSI Conformance Testing Methodology and Framework - Part 4: Test Realization - Draft Amendment 1: Protocol Profile Testing Methodology, November 1992
ISO/IEC 9646-4:PDAM 2	Information Technology - OSI Conformance Testing Methodology and Framework - Part 4: Test Realization - Draft Amendment 2: Multi- Party Conformance Testing Methodology, November 1992
ISO/IEC 9646-5:1991	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 5: Requirements on Test Laboratories and Clients for the Conformance Assessment Process
ISO/IEC 9646-5 DAM 1	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 5: Requirements on Test Laboratories and Clients for the Conformance Assessment Process - Draft Amendment 1: Protocol profile Testing Methodology and Multi-Protocol Testing, November 1992
ISO/IEC 9646-5 DAM 2	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 5: Requirements on Test Laboratories and Clients for the Conformance Assessment Process - Draft Amendment 2: Multi-Party Testing Methodology, November 1992
DIS 9646-6	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 6: Protocol Profile Test Specification, October 1992

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CD 9646-7	Information Technology - Open Systems Interconnection - Conformance Testing Methodology and Framework - Part 7: Implementation Conformance Statements - Requirements and guidance on ICS and ICS proformas, November 1992
ISO/IEC 10021-6:1990	Information Technology - Text Communication - Message-Oriented Text Interchange System - Part 6: Protocol Specifications, 1st Edition
DIS 10026-3.2	Information Technology - Open Systems Interconnection - Distributed Transaction Processing - Part 3: Protocol Specification, November 1991
CD 10026-4.2	Information Technology - Open Systems Interconnection - Distributed transaction Processing - Part 4: Protocol Implementation Conformance Statement (PICS) Proforma, October 1991
WD 10169-2	Information Technology - Open Systems Interconnection - Conformance Test Suite for the Protocol Specification of ACSE - Part 2: Common ACSE Abstract Test Suite
ISO/IEC 10589:1991	Information Technology - Telecommunication and Information Exchange Between Systems - Intermediate System (IS) to IS Intra-Domain Routeing Information Exchange Protocol for Use in Conjunction With the Protocol for Providing the Connectionless-Mode Network Service (ISO 8473)
DIS 10747	Information Technology - Telecommunications and Information Exchange Between Systems - Protocol for Exchange of Inter-Domain Routeing Information among Intermediate Systems to Support Forwarding of ISO 8473 PDUs, August 1992

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3. REQUIREMENTS

3.1 General Requirements. NAS open systems shall conform to International Organization for Standardization (ISO) standards, as well as FIPS PUB 146-1, Government Open Systems Interconnection Profile (GOSIP) as specified in FAA-STD-039.

Conformance testing of vendor-developed Open Systems Interconnection (OSI) products shall be accomplished by the methodology specified in ISO/IEC 9646, (Parts 1 to 7). Conformance testing shall be performed by accredited testing agencies in accordance with the policies specified in the GOSIP Conformance and Interoperation Testing and Registration document, NISTIR 4594. The means of testing (MOT) used to determine the compliance of the system under test (SUT), shall be accredited by the National Institute of Standards and Technology (NIST) Computer Systems Laboratory (NCSL) or its agent. The MOT shall be based on an abstract test suite (ATS) approved by NCSL (i.e., GOSIP ATS). If such an ATS is not available, then an approved ISO ATS shall be used. If neither a GOSIP or ISO ATS exist, then the vendor-provided MOT shall be approved by the FAA.

Conformance testing of vendor-provided commercial off-the-shelf (COTS) OSI products shall be verified through GOSIP registration.

3.2 Protocol Specific Requirements. This section contains specific requirements for ensuring the compliance of vendor-provided OSI protocols to NAS OSI requirements.

3.2.1 Upper Layers.

3.2.1.1 Application Layer. NAS open end systems use common application service elements (ASE) to provide application layer services common to user applications. These ASEs include association control service element (ACSE) and remote operations service element (ROSE). NAS open end systems may select from several specific ASEs to satisfy particular open end systems requirements. These ASEs include file transfer, access and management (FTAM), message handling system (MHS), transaction processing, (TP), and virtual terminal (VT).

3.2.1.1.1 Association Control Service Element (ACSE). NAS open end systems implement the ACSE protocol as specified in ISO 8650. The MOT used for testing the conformance of ACSE shall be based on the generic ATS for ACSE as specified by WD 10169-2, Common ACSE Abstract Test Suite. Implementors claiming ACSE conformance shall complete DIS 8650-2, Annex A, Protocol implementation Conformance Statement (PICS) Proforma.

3.2.1.1.2 Remote Operations Service Element (ROSE). NAS open end systems implement the ROSE protocol as specified in ISO 9072-2. Currently, neither a registered generic abstract test suite or PICS Proforma exists for ROSE. Therefore, the vendor-provided MOT and PICS Proforma for ROSE shall be approved by the FAA.

3.2.1.1.3 File Transfer Access and Management (FTAM). NAS open end systems implement the FTAM protocol as specified in ISO 8571-4. The MOT used for testing the conformance of FTAM shall be based on GOSIP FTAM abstract test suite, ATS 2-16. Implementors claiming FTAM conformance shall complete ISO 8571-5, PICS Proforma.

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3.2.1.1.4 Message Handling System (MHS). NAS open end systems implement the MHS protocol as specified in ISO 10021-6. Currently, neither a registered abstract test suite or PICS Proforma exists for MHS (1988). Therefore, the vendor-provided MOT and PICS Proforma for MHS (1988) shall be approved by the FAA.

3.2.1.1.5 Transaction Processing (TP). NAS open end systems implement the TP protocol as specified in DIS 10026-3.2. Currently, a registered abstract test suite for testing TP does not exist. Therefore, the vendor-provided MOT for testing TP shall be approved by the FAA. Implementors claiming TP conformance shall complete CD 10026-4.2, PICS Proforma.

3.2.1.1.6 Virtual Terminal (VT). NAS open end systems implement the VT protocol as specified in ISO 9041-1. Currently, a registered abstract test suite for testing VT does not exist. Therefore, the vendor-provided MOT for testing VT shall be approved by the FAA. Implementors claiming VT conformance shall complete DIS 9041-2, PICS Proforma.

3.2.1.2 Presentation Layer. NAS open end systems implement the connection-oriented presentation protocol as specified in ISO 8823. Currently, a registered generic abstract test suite for testing the presentation protocol does not exist. Therefore, the vendor-provided MOT for testing the presentation protocol shall be approved by the FAA. Implementors claiming presentation protocol conformance shall complete DIS 8823-2, PICS Proforma.

3.2.1.3 Session Layer. NAS open end systems implement the connection-oriented session protocol specification as specified in ISO 8327 and ISO 8327/DAD2. The MOT used for testing the conformance of the session protocol shall be based on the generic GOSIP session abstract test suite, ATS 2-10. Implementors claiming session protocol conformance shall complete CD 8327-2.2, PICS Proforma.

3.2.2 Lower Layers.

3.2.2.1 Transport Layer. NAS open end systems implement the connection-oriented transport protocol as specified in ISO 8073 and ISO 8073/AD2. The MOT used for testing the conformance of the transport class 0 protocol shall be based on GOSIP transport abstract test suite, ATS 2-8. The MOT used for testing the conformance of the transport class 4 protocol shall be based on GOSIP transport abstract test suite, ATS 2-9. Implementors claiming transport protocol conformance shall complete GOSIP Version 2 PICS Proforma for Transport Class 0 and 4 Protocols (ISO 8073).

3.2.2.2 Network Layer.

3.2.2.2.1 Network Layer Protocol.

3.2.2.2.1.1 Connectionless Network Protocol. NAS open end systems implement the protocols for connectionless-mode network protocol (CLNP) as specified in ISO 8473 and ISO 8473/AD3. The MOT used for testing the conformance of CLNP shall be based on GOSIP CLNP abstract test suite, ATS 2-7. Implementors claiming connectionless network protocol conformance shall complete GOSIP version 2 PICS Proforma for connectionless network layer protocol (ISO 8473).

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3.2.2.2.1.1.1 End System to Intermediate System Routing Protocol. NAS open systems (e.g., end systems and routers) use the end system to intermediate system (ES-IS) protocol as specified in ISO 9542. Currently, a registered abstract test suite for testing ES-IS does not exist. Therefore, the vendor-provided MOT for testing ES-IS shall be approved by the FAA. Implementors claiming ES-IS protocol conformance shall complete ISO 9542, Annex A, PICS Proforma.

3.2.2.2.1.1.2 Intermediate System to Intermediate System Intra-Domain Routing Protocol. NAS open intermediate systems (e.g., routers), which provide routing within the NAS, use the intermediate system to intermediate system (IS-IS) protocol as specified in ISO 10589. Currently, a registered abstract test suite for testing IS-IS does not exist. Therefore, the vendor-provided MOT for testing IS-IS shall be approved by the FAA. Implementors claiming IS-IS protocol conformance shall complete ISO 10589, Annex A, PICS Proforma.

3.2.2.2.1.1.3 Boundary Intermediate System to Boundary Intermediate System Inter-Domain Routing Protocol. NAS open boundary intermediate systems (e.g., routers), use the boundary intermediate system to boundary intermediate system (BIS-BIS) protocol as specified in DIS 10747. Currently, a registered abstract test suite for testing BIS-BIS does not exist. Therefore, the vendor-provided MOT for testing BIS-BIS shall be approved by the FAA. Implementors claiming BIS-BIS protocol conformance shall complete DIS 10747, Annex A, PICS Proforma.

3.2.2.2.1.2 Connection-oriented Network Protocol. NAS open end systems which require a network connection when communicating over intermediary networks and not directly connected to a X.25 packet switching network, implement the connection-oriented network service (CONS) in conjunction with ISO 8473, as specified in ISO 8880-2. Currently, neither a registered ATS or PICS Proforma exists for ISO 8880-2. Therefore, the vendor provided MOT and PICS Proforma for ISO 8880-2 shall be approved by the FAA.

NAS open end systems communicating only over a single X.25 network (i.e., no intermediary networks) implement CONS in conjunction with ISO 8208, as specified in ISO 8878. Currently, a registered abstract test suite does not exist for testing ISO 8878. Therefore, the vendor-provided MOT for testing ISO 8878 shall be approved by the FAA. Implementors claiming conformance shall complete DIS 8878-2, PICS Proforma.

3.2.2.2.2 Subnetwork Access Protocol. NAS open end systems communicating over wide area networks (WAN) implement the subnetwork access protocol for data terminal equipment (DTE) interfaces as specified in FAA-STD-039a and defined in ISO 8208.

Intermediate systems (e.g., routers) providing DTE internetwork access for open end systems implement the subnetwork access protocol as defined in ISO 8208. The MOT for testing ISO 8208 shall be based on GOSIP abstract test suite, ATS 2-2. Implementors claiming conformance shall complete GOSIP Version 2 PICS Proforma for Packet Layer (ISO 8208).

Intermediate systems (i.e., packet switching nodes) providing WAN subnetwork access to open end systems implement the subnetwork access protocol for data circuit-terminating equipment (DCE) defined in CCITT X.25 (1984). Currently, neither a registered abstract test suite or PICS Proforma exists for CCITT X.25 (1984) for DCE interfaces. Therefore, the vendor-provided MOT and PICS Proforma for DCE CCITT X.25 (1984) interfaces shall be approved by the FAA.

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3.2.2.3 Data Link Layer.

3.2.2.3.1 ISO 4335. NAS open systems implement high-level data link control (HDLC) protocol as specified in ISO 4335. Currently, neither a registered abstract test suite or PICS Proforma exists for ISO 4335. Therefore, the vendor-provided MOT and PICS Proforma shall be approved by the FAA.

3.2.2.3.2 CCITT X.25 LAPB. NAS open systems which provide subnetwork access implement DCE Link Access Procedure for Balance (LAPB) system as specified in CCITT X.25 (1984). Currently, neither a registered abstract test suite or PICS Proforma exists for CCITT X.25 LAPB. Therefore, the vendor-provided MOT and PICS Proforma for testing CCITT X.25 LAPB shall be approved by the FAA.

3.2.2.3.3 ISO 7776. NAS open systems provide a compatible LAPB interface as specified in ISO 7776. The MOT used for testing the conformance to ISO 7776 protocol shall be based on GOSIP abstract test suite, ATS 2-1. Implementors claiming protocol conformance shall complete ISO 7776/AM1, PICS Proforma.

3.2.2.3.4 ISO 7478 (Multilink Procedure). NAS open end systems implement the multi-link procedure (MLP) as specified in ISO 7478. Currently, neither a registered abstract test suite or PICS Proforma exists for ISO 7478. Therefore, the vendor-provided MOT and PICS Proforma for ISO 7478 shall be approved by the FAA.

Intermediate systems which provide subnetwork access implement multi-link procedures as specified in CCITT X.25 (1984). Currently, neither a registered abstract test suite or PICS Proforma exists for CCITT X.25 (1984) Multi-link Procedure. Therefore, the vendor-provided MOT and PICS Proforma for CCITT X.25 (1984) Multi-link Procedure shall be approved by the FAA.

3.2.2.3.5 CCITT X.32. NAS open systems implement dial-in/dial-out services and procedures as specified in CCITT X.32. Currently, neither a registered abstract test suite or PICS Proforma exists for CCITT X.32. Therefore, the vendor-provided MOT and PICS Proforma for CCITT X.32 shall be approved by the FAA.

3.2.2.3.6 ISO 8802-2. NAS open systems implement logical link control (LLC) as specified in ISO 8802-2. The MOT used for testing the conformance to ISO 8802-2 protocol shall be based on GOSIP abstract test suite, ATS 2-6. Implementors claiming LLC protocol conformance shall complete ISO 8802-2/PDAM3.3, PICS Proforma.

3.2.2.4 Physical Layer. NAS open systems implement EIA-530, EIA-232D, EIA-232E, RS-232C, V.35, V.32, ISO 8802-3, ISO 8802-4, and ISO 8802-5, and ISO 9314-1 (FDDI) as specified in FAA-STD-039a.

EIA-530, EIA-232D, EIA-232E, RS-232C, V.35, and V.32 functions and options shall be tested with standard data communication test equipment.

3.2.2.4.1 ISO 8802-3. NAS open end systems use a collision detection access protocol as specified in ISO 8802-3. The MOT used for testing the conformance to ISO 8802-3 protocol shall be based on GOSIP abstract test suite, ATS 2-3. Currently, a PICS Proforma does not exist for this protocol. Therefore, the vendor-provided protocol for ISO 8802-3 shall be approved by the FAA.

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3.2.2.4.2 ISO 8802-4. NAS open end systems use a token passing protocol suitable for broadband bus architectures as specified in ISO 8802-4. The MOT used for testing the conformance to ISO 8802-4 protocol shall be based on GOSIP abstract test suite, ATS 2-4. Currently, a PICS Proforma does not exist for this protocol. Therefore, the vendor-provided protocol for ISO 8802-4 shall be approved by the FAA.

3.2.2.4.3 ISO 8802-5. NAS open end systems use a token passing protocol suitable for ring architectures as specified in ISO 8802-5. Currently, a registered abstract test suite for testing the conformance of ISO 8802-5 protocol does not exist. Therefore, the vendor-provided MOT for testing ISO 8802-5 protocol shall be approved by the FAA. Implementors claiming protocol conformance shall complete ISO 8802-5, PICS Proforma.

3.2.2.4.4 ISO 9314-1 (FDDI). NAS open end systems will use a connectionless token passing protocol as specified in ISO 9314-1. Currently, a registered abstract test suite for testing the conformance of ISO 9314-1 protocol does not exist. Therefore, the vendor-provided MOT for testing ISO 9314-1 protocol shall be approved by the FAA. Implementors claiming protocol conformance shall complete WD 9314-13, PICS Proforma.

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4. QUALITY ASSURANCE PROVISIONS

This section is not applicable to this standard.

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5. PREPARATION FOR DELIVERY

This section is not applicable to this standard.

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6. NOTES

6.1 Definitions.

Abstract Test Case - A complete and independent specification of the actions required to achieve a specific test purpose (or a specified combination of test purposes), defined at the level of abstraction of a particular abstract test method, starting in a stable testing state and ending in a stable testing state. This specification may involve one or more consecutive or concurrent connections.

Abstract Test Method - The description of how an IUT is to be tested, given at an appropriate level of abstraction to make the description independent of any particular realization of a means of testing, but with enough detail to enable tests to be specified for this method.

Abstract Test Suite - The complete set of abstract test cases needed to perform dynamic conformance testing for a given OSI protocol.

Conformance - Fulfillment by a product of all specified requirements.

Conformance Testing - Testing the extent to which an IUT is a conforming implementation.

End System - An end system contains the application processes that are the ultimate sources and destinations of user-oriented message flows. The functions of an end system can be distributed among more than one processor/computer.

Executable Test Case - A realization of an abstract test case.

Executable Test Suite - A suite composed of executable test cases.

GOSIP Product - A product which implements one or more of the data communications protocols identified in GOSIP and meets the

requirements specified herein.

Implementation Under Test (IUT) - An implementation of one or more OSI protocols in an adjacent user/provider relationship, being that part of a real open system which is to be studied by testing.

Intermediate System - A system providing an Open Systems Interconnection - Reference Model Network Layer relay function (that is, a system that receives data from one correspondent Network entity and forwards it to another corresponding Network entity).

Means of Testing - The realization of an abstract test method as defined in the OSI conformance testing methodology and framework. This realization includes the test system, executable test suite, testing support tools (hardware and software) and documentation (including technical test procedures).

Open System - An open system is a system capable of communicating with other open systems by virtue of implementing OSI protocols and services. End systems and intermediate systems are open systems. However, an open system may not be accessible by all other open systems. This isolation may be provided by physical separation or by technical capabilities based upon computer and communications security.

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Protocol Implementation Conformance Statement (PICS) – A statement made by the supplier of an OSI implementation, or system, stating which capabilities and options have been implemented for a given OSI protocol.

Protocol Implementation Conformance Statement (PICS) Proforma – A document, in the form of a questionnaire, designed by the protocol specifier or conformance test suite specifier which, when completed for an OSI implementation or system, becomes the PICS.

System Under Test (SUT) – The real open system in which the IUT resides.

6.2 Acronyms and abbreviations.

ACSE	Association Control Service Element
AD	Addendum
AM	Amendment
ASN.1	Abstract Syntax Notation One
ASE	Application Service Element
ATS	Abstract Test Suite
BIS	Boundary Intermediate System
CCITT	International Telegraph and Telephone Consultative Committee
CD	Collision Detection
CD	Committee Draft
CLNP	Connectionless Network Protocol
CLNS	Connectionless Network Service
CONS	Connection Oriented Network Service
COTS	Commercial-off-the-shelf
CSMA	Carrier Sense Multiple Access
DAD	Draft Addendum
DAM	Draft Amendment
DCE	Data Circuit-terminating Equipment
DIS	Draft International Standard
DTE	Data Terminal Equipment
EIA	Electronic Industries Association
ES	End System
ETS	Executable Test Suite
FDDI	Fibre-Distributed Data Interface
FIPS	Federal Information Processing Standard
FTAM	File Transfer, Access and Management
GOSIP	Government Open Systems Interconnection Profile
HDLC	High-level Data Link Control
IS	Intermediate System
IS	International Standard
ISO	International Organization for Standardization
IUT	Implementation Under Test
LAPB	Link Access Procedure Balanced

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LLC	Logical Link Control
MHS	Message Handling System
MLP	Multilink Procedure
MOT	Means of Testing
NA	National Airspace System
NCSL	NIST Computer Systems Laboratory
NIST	National Institute of Standards and Technology
NVLAP	National Voluntary Laboratory Accreditation Program
OSI	Open Systems Interconnection
PDAD	Proposed Draft Addendum
PDAM	Proposed Draft Amendment
PDTR	Proposed Draft Technical Report
PHY	Physical
PICS	Protocol Implementation Conformance Statement
PLP	Packet Layer Protocol
ROSE	Remote Operations Service Element
SUT	System Under Test
TP	Transaction Processing
TTCN	Tree and Tabular Combined Notation
VT	Virtual Terminal
WAN	Wide Area Network
WD	Working Draft

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APPENDIX I

10. GOSIP CONFORMANCE TESTING LABORATORY REGISTER

LAB CODE	LAB NAME	CONTACT
354	Control Data Corp., OSI Accredited Test Center Arden Hills, MN	Ronald Swan, 612-482-6257
355	Bull Conformance Test Center Phoenix, AZ	Oscar Hefner, 602-862-6001
361	IBM Corporation - Networking Systems Protocol Ctr. Research Triangle Park, NC	Robert Amy 919-254-4141
362	Digital Equipment Corporation Littleton, MA	Richard Duharmel 508-486-5021
363	Corporation for Open Systems International Test Ctr. Fairfax, VA	Andrea Reitzel, 703-205-2809
364	CDA, Inc., Open Systems Development Group McLean, VA	Kevin Murry, 703-821-1858
365	Hewlett-Packard Co., OSI Conformance Test Center Cupertino, CA	Murali Subbarao, 408-447-2822
367	UNISYS - Open Systems Interconnection Laboratory Paoli, PA	Andrew Kalish, 215-993-7044
371	Alcatel TITN Inc., Conformance Accreditation and Test Ctr. Pleasanton, CA	Sanjay Lokare, 510-484-5764
385	Dept. of Defense, Joint Interoperability Test Ctr.	Kenneth Thomas, 602-538-5170
391	Data General Corp., OSI Conformance Test Center Westborough, MA	Charles Stakus, 508-870-6392

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APPENDIX II

20. GOSIP VERSION 2 MEANS OF TESTING REGISTER

20.1 MOT 2-1 WIDE AREA NETWORK TEST SYSTEMS

SUPPLIER	CONTACT
International Business Machines Research Triangle, NC	John Conner, 919-254-2679
Hewlett-Packard Company Edmonton, Alberta, Canada	Bill Mortimer, 403-462-4545
TEKELEC Calabasas, CA	Siamak Pousabahian, 818-880-7952
Alcatel, TITN Incorporated Pleasanton, CA	Scott Schmitz, 703-715-0800
The National Computing Centre Limited Manchester, United Kingdom	Peter Bird, 011-44-612-286-333 Robert Clark, US, 510-687-3002

20.2 MOT 2-4 TRANSPORT TEST SYSTEMS

SUPPLIER	CONTACT
Alcatel TITN Incorporated Pleasanton, CA	Scott Schmitz, 703-715-0800
The National Computing Centre Limited Manchester, United Kingdom	Peter Bird, 011-44-612-333 Robert Clark, US, 510-687-3002

20.3 MOT 2-5 SESSION TEST SYSTEMS

SUPPLIER	CONTACT
Alcatel TITN Incorporated Pleasanton, CA	Scott Schmitz, 703-715-0800

20.4 MOT 2-7 FTAM TEST SYSTEMS

SUPPLIER	CONTACT
Alcatel TITN Incorporated Pleasanton, CA	Scott Schmitz, 703-715-0800
GSI-Danet, Incorporated Pittsburg, PA	Hans-Ludwig Heil, 412,967-0834
The National Computing Centre, Limited Manchester, United Kingdom	Robert Clark, US, 510-687-3002

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APPENDIX III

30. GOSIP VERSION 2 PICS PROFORMA REGISTER

PICS PROFORMA ID	PICS PROFORMA TITLE
1	US GOSIP PICS Proforma for Packet Layer (ISO 8208)
2	US GOSIP PICS Proforma for Data Link (ISO 7776)
3	US GOSIP PICS Proforma for Connectionless Network Layer Protocol (ISO 8473)
4	ISO/IEC 9542:1988(E),ES-IS Protocol, Annex A, PICS Proforma
5	US GOSIP PICS Proforma for Transport Class 0, 2, and 4 Protocols (ISO 8073:1988)
6	US GOSIP PICS Proforma for Transport Class 0 and 4 Protocols (ISO 8073:1988)
10	ISO/IEC 8328-2 (E), Session
12	ISO/IEC 8650-2: 1992(E), ACSE
13	ISO/IEC 8571-5:1990(E), FTAM
14	ISO/IEC 8823-2:1992(E), FTAM Presentation
15	ISO/IEC 8327:1992(E), FTAM Session

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APPENDIX IV

40. GOSIP VERSION 2 ABSTRACT TEST SUITE REGISTER

CODE	ATS DOCUMENT	PROTOCOL
ATS 2-1	ISO/IEC 8882-2: 1992(E)	ISO 7776
ATS 2-2	ISO/IEC 8882-3: 1991(E)	ISO 8208
ATS 2-3	802.3 Draft Abstract Test Suite for GOSIP Version 2	ISO 8802-3
ATS 2-4	802.4 MAC Sublayer Conformance Test System Test	ISO 8802-4
ATS 2-6	802.2 LLC (Type 1) Abstract Test Suite Submission	ISO 8802-2
ATS 2-7	Internet Protocol Tests and Testing Guide for ISO-8473, End System	ISO 8473
ATS 2-7.1	Interim Abstract Test Suite for CLNP Intermediate Systems Testing	ISO 8473
ATS 2-8	OSTC Abstract Test Suite, Transport Class 0	ISO 8073
ATS 2-9.1	Transport Class 4 over CLNS Abstract Test Suite	ISO 8073
ATS 2-9.3	Transport Class 4 over CONS Abstract Test Suite	ISO 8073
ATS 2-10.1	Session Abstract Test Suite, Volumes 1, 2, and 3	ISO 8823
ATS 2-10.2	Session Abstract Test Suite	ISO 8823
ATS 2-16.2	FTAM T1 Responder ATS and FTAM T1 Initiator	ISO 8571-4
ATS 2-16.4	FTAM T1 Restart and Recovery Abstract Test Suite	ISO 8571-4
ATS 2-16.6	FTAM M1 ATS, Version 2	ISO 8571-4
ATS 2-16.7	FTAM T2 ATS, Volume 1 (Responder) and Volume 2 (Initiator)	ISO 8571-4
ATS 2-16.8	FTAM A1 ATS, Volume 1 (Responder) and Volume 2 (Initiator)	ISO 8571-4
ATS 2-16.9	FTAM ACSE Abstract Test Suite	ISO 8650
ATS 2-16.10	FTAM Presentation Abstract Test Suite	ISO 8823
ATS 2-16.11	FTAM Presentation ASN.1 Abstract Test Suite	ISO 8824
ATS 2-16.12	FTAM Session Abstract Test Suite	ISO 8327
ATS 2-16.13	FTAM Session Restart and Recovery Abstract Test Suite	ISO 8327
ATS 2-20	OSTC Abstract Test Suite, Transport Class 2	ISO 8073

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APPENDIX V

50. GOSIP VERSION 2 CONFORMANCE TESTED PRODUCT REGISTER

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PRODUCT CODE: P-001 PRODUCT TYPE: WAN

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
TP4900/LPM Network Release 6	174	ALCATEL Data	K. Trumble, 703-389-6287	CDA, Inc., McLean, VA, USA
TP4900/TCP/CF Network Release 6	175	ALCATEL Data	K. Trumble, 703-389-6287	CDA, Inc., McLean, VA, USA
TP8000 Network Release 6	173	ALCATEL Data	K. Trumble, 703-389-6287	CDA, Inc., McLean, VA, USA
AT&T X.25 Network Interface Product	1	AT&T	Reginald Lewis 201-898-6005	COSI, McLean VA, USA
DPX/2 B.O.S. (stack B) w/MTB board	91	Bull HN	Bill George 602-862-6008	BULL S.A. Cecob, France
DPX/2 B.O.S. (stack B) w/ECP board	92	Bull HN	Bill George 602-862-6008	BULL S.A. Cecob, France
DATANET DCP 7500, DNS V.4 U1	93	Bull HN	Bill George 602-862-6008	BULL S.A. Cecob, France
AGS+/3 X.25 Version 2	176	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
AGS+/4 X.25 Version 2	177	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
CGS+/3 X.25 Version 2	178	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
CGS+/4 X.25 Version 2	179	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
IGS+/R X.25 Version 2	180	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
MGS+/3 X.25 Version 2	181	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
MGS+/4 X.25 Version 2	182	Cisco Systems	Wm. Miskovetz, 415-688-4682	CDA, Inc., McLean, VA, USA
CDCNET 1.6.1 L780AB	31	Control Data Corp	Ronald D. Swan, 612-482-6257	Control Data Corp., MN, USA
X.25 for Aviion Systems Release 2.20	40	Data General Corp.	AlfredRegina, 508-366-8911	COSI, LcLean, VA, USA
VAX Packetnet SI V5.4	100	DEC	Rich Duhamel, 508-486-5021	DEC, Littleton, MA, USA
DEC X.25 for ULTRIX	140	DEC	Rich Duhamel, 508-486-5021	DEC, Littleton, MA, USA
VAX WAN Device Driver V5.4 Extensions	147	DEC	Rich Duhamel, 508-486-5021	DEC, Littleton, MA, USA
VAX WAN Device Drivers for ULTRIX V2.0	161	DEC	Rich Duhamel, 508-486-5021	DEC, Littleton, MA, USA
DEC Network Integration Server Software	172	DEC	Rich Duhamel, 508-486-5021	DEC, Littleton, MA, USA
Encore Infinity 90 EnComm X.25 and PAD	47	DEC	Ken Chamberlain	DEC Littleton, MA, USA
Challenger ES/174-20 Extended Cntrir	17	Hassis Adacom	Gregory Prynn, 214-386-2000	CDA, Inc., McLean, VA, USA
Challenger ES/174-10 Extended Cntrir	18	Hassis Adacom	Gregory Prynn, 214-386-2000	CDA, Inc., McLean, VA, USA
Challenger ES/174-60 Extended Cntrir	19	Hassis Adacom	Gregory Prynn, 214-386-2000	CDA, Inc., McLean, VA, USA
IBM X.25 NCP Packet Switching Interface	2	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	5	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	6	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	7	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	8	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	9	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	11	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	10	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	12	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM X.25 NCP Packet Switching Interface	14	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA

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PRODUCT CODE: P-001 PRODUCT TYPE: WAN

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
IBM AS/400 X.25 Comm. Support Program	15	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AS/400 X.25 Comm. Support Program	16	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM 6611 Network Processor Model 140	45	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM 6611 Network Processor Model 170	46	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AIX RISC System/6000, for IBM 7011	39	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AIX RISC System/6000, for IBM 7012	41	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AIX RISC System/6000, for IBM 7013	42	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AIX RISC System/6000, for IBM 7015	43	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AIX RISC System/6000, for IBM 7016	44	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AS/400 (9404) X.25 V.2, R.2	102	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AS/400 (9402, 9406) X.25 V.2, R.2	103	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM NCP PSI V.3, R.5	104	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
AS/400 X.25 Communication Support	183	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
IBM AS/400 X.25 Comm. Support Program	125	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
X.25 NCP Packet Switching Interface	162	IBM	John P. Streck, 919-254-4360	IBM, Research Tri. Pk., NC, USA
1174-60R Network Controller	20	Memorex Telex	Kevin Good, 703-318-5600	CDA, Inc., McLean, VA, USA
1174-10R Network Controller	21	Memorex Telex	Kevin Good, 703-318-5600	CDA, Inc., McLean, VA, USA
1174-90R Network Controller	22	Memorex Telex	Kevin Good, 703-318-5600	CDA, Inc., McLean, VA, USA
LinkMaster 7100 Model 20R	27	McData	Steve Cartwright, 303-460-9200	CDA, Inc., McLean, VA, USA
LinkMaster 7100 Model 90R	28	McData	Steve Cartwright, 303-460-9200	CDA, Inc., McLean, VA, USA
LinkMaster 7100 Model 10R	29	McData	Steve Cartwright, 303-460-9200	CDA, Inc., McLean, VA, USA
LinkMaster 7100 Model 60R	30	McData	Steve Cartwright, 303-460-9200	CDA, Inc., McLean, VA, USA
NCR System 3000 X.25 Network Services	62	NCR	Wendy Morrision, 619-693-5665	COSI, McLean, VA, USA
Netrix #1 ISS GOSIP X.25 I/F Module	64	Netrix Corp.	Ted Ritter, 703-742-6000	CDA, Inc., McLean, VA, USA
Netrix #1 ISS GOSIP X.25 I/F Module	143	Netrix Corp.	Ted Ritter, 703-742-6000	CDA, Inc., McLean, VA, USA
Netrix S100 GOSIP X.25 I/F Module	164	Netrix Corp.	Ted Ritter, 703-742-6000	CDA, Inc., McLean, VA, USA
Netrix BRX GOSIP X.25 I/F Module	165	Netrix Corp.	Ted Ritter, 703-742-6000	CDA, Inc., McLean, VA, USA
Magellan DPN-100	168	Northern Telecom	Torre Albritton, 703-712-8764	COSI, McLean, VA, USA
SUNNET X.25 7.0.1	65	SUN Microsystems	Tom Hull, +33-76-41-42-18	CDA, Inc., McLEan, VA, USA
SUNNET X.25 8.0 Rev B	152	SUN Microsystems	Tom Hull, +33-76-41-42-18	CDA, Inc., McLEan, VA, USA
ACP50 X.25 Version 10.04	185	Telematics Internat'l	Terry Rihel, 818-880-4900	CDA, Inc., McLean, VA, USA
UNISYS X.25 PSCS SIRA & PCTs	69	Unisys	Keith Fretz, 703-556-5665	Unisys, Paoli, PA, USA
CP2000 X.25 Protocol V 30.00.192	131	Unisys	Dale Pluta, 703-556-5682	Unisys, Paoli, PA, USA

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PRODUCT CODE: P-002 PRODUCT TYPE: LAN

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
Etherlink 16 Release 3C507, Rev. A	37	3Com Corporation	Howard Chan, 408-764-5827	COSI, McLean, VA, USA
Local Area Controller Subsystem (LACS)	3	Bull HN	K. Finkenauer, 508-294-2909	COSI, McLean, VA, USA
CDCNET LLC/MAC 1.7.1, PLS 1.6.1	79	CDC	Ronald Swan, 612-482-6257	COSI McLean, VA, USA

PRODUCT CODE: P-003 PRODUCT TYPE: INTERMEDIATE SYSTEM

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
CISCO Systems Router V9.1	148	CISCO Systems	Susan Scheer, 415-688-8131	ATI Pleasanton, CA, USA
NETBuilder II Extended WAS 3C6242A	167	3Com Corporation	Cyndi Jung, 4080764-5173	ATI Pleasanton, CA, USA
DEC Network Integration Server Software	184	DEC	Ken Chamberlain	DEC, Littleton, MA, USA
Wellfleet Comm Router Ver 5.81	186	Wellfleet Comm.	Dan Mulvey, 703-739-6710	ATI Pleasanton, CA, USA
CISCO Systems MGS/4 V2.0	TBD	CISCO Systems	Alex Tweedley, 415-688-8114	

PRODUCT CODE: P-003 PRODUCT TYPE: TRANSPORT

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
DPX/2 B.O.S. (stack B), TP0	94	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DATANET DCP 7500, TP0	95	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DPX/2 B.O.S. (stack B), TP4	96	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DATANET DCP 7500, TP4	97	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DPX/2 B.O.S. (stack B), TP4	98	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DPX/2 B.O.S. (stack B), TP4	99	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DPX/2 B.O.S. (stack B), TP4	101	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
DPX/2 B.O.S. (stack B), TP4	169	Bull	Oscar Hefner, 602-862-6001	Bull S.A., Ceocob, France
CDCNET 1.6.1/B720, TP0	88	CDC	J. F. Carey, 612-482-2567	Control Data Corp., MN, USA
CDCNET 1.7.1 BCU #803AA, TP4	170	CDC	R. D. Swann, 612-482-6257	Control Data Corp., MN, USA
Control Data EP/IX Access & Dir 1.4.2, TP4	38	CDC	J. F. Carey, 612-482-2567	Control Data Corp., MN, USA
OSI Platform for Aviion Systems 3.0, TP4	76	Data General	Charles Stakus, 508-870-6392	ATI Pleasanton, CA, USA
OSI Platform for Aviion Systems 3.0, TP0	77	Data General	Charles Stakus, 508-870-6392	ATI Pleasanton, CA, USA
OSI Platform for Aviion Systems 3.0, TP4	89	Data General	Charles Stakus, 508-870-6392	ATI Pleasanton, CA, USA

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PRODUCT CODE: P-003 PRODUCT TYPE: TRANSPORT

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
DECnet-VAX (TM) V5.4 Extensions, TP0	129	DEC	R. Duhamel, 508-486-5021	DEC, Littleton, MA, USA
DECnet/OSI for ULTRIX	144	DEC	R. Duhamel, 508-486-5021	DEC, Littleton, MA, USA
DECnet-VAX (TM) VOTS V3.0A, TP4	54	DEC	Bill Daley	DEC, Reading, U.K.
Encore Infinity 90 EnComm ISO, CLNP	55	Encore Computer	CDA, Inc., McLean, VA, USA	CDA, Inc., McLean, VA, USA
Encore Infinity 90 EnComm ISO, TP0	56	Encore Computer	CDA, Inc., McLean, VA, USA	CDA, Inc., McLean, VA, USA
Encore Infinity 90 EnComm ISO, TP4	57	Encore Computer	CDA, Inc., McLean, VA, USA	CDA, Inc., McLean, VA, USA
HP OSI Transport Serv/9000, TP4	4	Hewlett Packard	M. Subbarao, 408-447-2822	HP Cupertino, CA, USA
OSI Comm. Subsystem Rel. 1-1.1, TP0	112	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem, TP0	23	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem, TP0	24	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem Rel. 1-1.1, TP0	25	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem Rel. 1-1.1, TP0	26	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem, TP4	33	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem, TP4	34	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem Rel. 1-1.1, TP4	35	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem Rel. 1-1.1, TP4	36	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
OSI Comm. Subsystem Rel. 1-1.1, TP4	116	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
AIX OSI Messaging & Filing/6000, TP4	117	IBM	G. Bonnes, +33-92-11-41-22	IBM, La Gaude, France
NCR UNIX OSI Network Services, TP4	51	NCR	W. Morrision, 619-693-5665	COSI McLean, VA, USA
NCR UNIX OSI Network Services, v2.01, TP4	81	NCR	W. Morrision, 619-693-5665	COSI McLean, VA, USA
NCR OSI Network Services, TP0	82	NCR	W. Morrision, 619-693-5665	COSI McLean, VA, USA
Netware FTAM Transport Component, TP4	49	Novell, Inc.	Jan Provan, 408-473-8422	Nat. Computing Ctr., Ltd., U.K.
Netware FTAM Transport Component, TP4	50	Novell, Inc.	Jan Provan, 408-473-8422	Nat. Computing Ctr., Ltd., U.K.
Intel 486 w/Retix LT-610 V2.3.0, TP4	111	Retix	J. Marchioni, 310-8283400	Nat. Computing Ctr., Ltd., U.K.
Intel 386 w/Retix LT-610 V2.3.0, TP4	132	Retix	J. Marchioni, 310-8283400	Nat. Computing Ctr., Ltd., U.K.
SunNET OSI V.7.1, TP4	66	SUN Microsystems	Tom Hull, +33-76-41-42-18	Nat. Computing Ctr., Ltd., U.K.
SunNET OSI V.7.1, TP4	85	SUN Microsystems	Tom Hull, +33-76-41-42-18	Nat. Computing Ctr., Ltd., U.K.
SunNET OSI V.7.1, TP0	87	SUN Microsystems	Tom Hull, +33-76-41-42-18	Nat. Computing Ctr., Ltd., U.K.
SunNET OSI Version 8.0	187	SUN Microsystems	Tom Hull, +33-76-41-42-18	Nat. Computing Ctr., Ltd., U.K.
Sparc 10 M42 w/SUNLINK OSI 8.0, TP4	106	SUN Microsystems	M. Barnes, 703-204-4100	CDA, Inc., McLean, VA, USA
Sparc 4/30 w/SUNLINK OSI 8.0, TP4	107	SUN Microsystems	M. Barnes, 703-204-4100	CDA, Inc., McLean, VA, USA
Sparc 10 M30 w/SUNLINK OSI 8.0, TP4	108	SUN Microsystems	M. Barnes, 703-204-4100	CDA, Inc., McLean, VA, USA
RDI LAPTOP w/SUNLINK OSI 8.0, TP4	109	SUN Microsystems	M. Barnes, 703-204-4100	CDA, Inc., McLean, VA, USA

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PRODUCT CODE: P-003 PRODUCT TYPE: TRANSPORT

PRODUCT NAME	PRODUCT ID	MANUFACTURER	CONTACT	GOSIP LAB
Sparc 10 M41 w/SUNLINK OSI 8.0, TP4	142	SUN Microsystems	M. Barnes, 703-204-4100	CDA, Inc., McLean, VA, USA
SynOptics LattisNet 3030, CLNP	58	SynOptics Comm	B. Sheffer, 703-684-2627	CDA, Inc., McLean, VA, USA
SynOptics LattisNet 3030, CLNP	78	SynOptics Comm	B. Sheffer, 703-684-2627	CDA, Inc., McLean, VA, USA
CMS 1100/OSITS R.7R2B, TP4	59	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA
DCP OSITS 15-55 FEPs, TP4	71	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA
DCP OSITS V.2R1A, TP0	72	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA
DCP OSITS V.2R1A, TP4	73	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA
CMS 1100/OSITS Release 7R2B, TP4	81	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA
A-Series/CP2000 OSI-IPC V30.00.199, TP4	133	Unisys Corporation	Dale Pluta, 703-556-5682	UNISYS Paoli, PA, USA
A-Series/CP2000 OSI-IPC V30.00.200, TP4	136	Unisys Corporation	Dale Pluta, 703-556-5682	UNISYS Paoli, PA, USA
A-Series/CP2000 OSI-IPC V30.00.200, TP0	137	Unisys Corporation	Dale Pluta, 703-556-5682	UNISYS Paoli, PA, USA
A-Series/CP2000 OSI-IPC V30.00.199, TP4	145	Unisys Corporation	Dale Pluta, 703-556-5682	UNISYS Paoli, PA, USA
DCP 15-55 FEPs, TP4	171	Unisys Corporation	Keith Fretz, 703-556-5665	UNISYS Paoli, PA, USA

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