FIPS

Federal Information Processing Standards Publications (FIPS PUBS)

Index

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National Institute of Standards and Technology
Information Technology Laboratory
Gaithersburg, MD 20899-0001

FEDERAL INFORMATION PROCESSING STANDARDS PUBLICATIONS (FIPS PUBS)

INDEX

GENERAL INFORMATION

Under the Information Technology Management Reform Act (Public Law 104-106), the Secretary of Commerce approves standards and guidelines that are developed by the National Institute of Standards and Technology (NIST) for Federal computer systems. These standards and guidelines are issued by NIST as Federal Information Processing Standards (FIPS) for use government-wide. NIST develops FIPS when there are compelling Federal government requirements such as for security and interoperability and there are no acceptable industry standards or solutions.

Entries in this publication list include title, publication number, date of issue, and a short abstract for each FIPS PUB. Associated voluntary standards and guidelines are indicated where appropriate. Each standard contains information about the purpose, waiver requirements, and suggested solicitation wording. This information was previously included in the Federal ADP and Standards Index that had been issued by the General Services Administration. GSA no longer publishes that Index.

Also included in this Index are Federal Standards (FED-STDS) for telecommunications that had been developed by the National Communications System (NCS) and approved by GSA.

FED-STDS are available from:

National Communications System (NCS)
Technology and Standards Division
Attn: N6
701 South Court House Road
Arlington, VA 22204-2198
Telephone: (703) 607-6200
FAX: (703) 607-4830
E-mail: orndorfj@ncs.gov

FIPS PUBS are sold by the National Technical Information Service (NTIS), U.S. Department of Commerce. Prices and ordering information are provided on pages 35 through 40. Most FIPS documents are available on-line using the World Wide Web at the following URL address:

http://www.nist.gov/itl/div897/pubs/

Requests for additional copies of this list or for information about current FIPS may be addressed to:

Standards Processing Coordinator
Information Technology Laboratory
Building 820, Room 562
National Institute of Standards and Technology
Gaithersburg, MD 20899-0001
Telephone: (301) 975-2816
FAX: (301) 926-3696
E-mail: barbara.blickenstaff@nist.gov

For more information about ITL programs, you may contact:

Information Technology Laboratory
Building 225, Room A216
National Institute of Standards and Technology
Gaithersburg, MD 20899-0001
Telephone: (301) 975-2832
FAX: (301) 926-3696
E-mail: itlab@nist.gov

ITL also publishes Special Publications (Spec Pub), NISTIRs (Internal Reports), ITL Bulletins and Newsletters. For information about the publications, you may contact:

ITL Publications
National Institute of Standards and Technology
Building 225, Room A216
Gaithersburg, MD 20899-0001
Tel: (301) 975-2832
Fax: (301) 926-3696

Conformance Testing

A web-based Directory of Conformance Testing Programs, Products, and Services for information technology (IT) standards is available on-line at the following URL address:

http://www.nist.gov/ctdirectory.html

This directory provides sources for measuring software for conformance to IT standards. It includes conformance testing information for a variety of IT standards including federal, national, and international standards.

The purpose of the on-line directory is to provide a central information source for linking providers of conformance testing materials with the users of these materials. This publication is populated with data sheets from suppliers describing the conformance testing materials that they offer. The directory provides tables for easily cross-linking IT standards with available conformance testing program sponsors, test suites, certificates, and testing services. The directory can be used to locate:

- conformance testing/certification programs;
- test services offered in both the public and private sectors;
- listings of products which have been tested;
- various test suites and tools that are used to measure conformance to IT standards.

The directory also contains sample solicitation wording for specifying the validation of implementations of standards for conformance to standards.

For further information contact:

National Institute of Standards and Technology
Conformance Testing Group
Building 820, Room 562
Gaithersburg, MD 20899-0001
Tel: (301) 975-3283
Fax: (301) 948-6213

ITL conducts conformance testing programs for:

**FIPS 21-4, COBOL
FIPS 46-2, Data Encryption Standard
**FIPS 69-1, FORTRAN
FIPS 113, Computer Data Authentication
FIPS 140-1, Security Requirements for Cryptographic Modules
*FIPS 151-2, POSIX: Portable Operating System Interface for Computer Environments
*FIPS 160, C
FIPS 171, Key Management Using ANSI X9.17
FIPS 180-1, Secure Hash Standard (SHS)
FIPS 186, Digital Signature Standard (DSS)

Information on Conformance Testing Program and lists for test products are available through the World Wide Web using the following instructions:

Open the file called "ftp://speckle.ncsl.nist.gov/vpl/intro.htm"

Questions or comments concerning the VPL should be directed to:

National Institute of Standards and Technology
Information Technology Laboratory
Attn: Validated Products List (VPL)
Building 820, Room 517
Gaithersburg, MD 20899-0001
Telephone: (301) 975-2490

Information about Voluntary Industry Standards

The American National Standards Institute (ANSI) operates the National Standards System Network (NSSN). This powerful reference tool provides 24-hour access to over 65,000 references to standards and specifications from the U.S. government, U.S. private sector organizations and international standards organizations. To access, open the NSSN World Wide Web site at:

http://www.nssn.org

* Conformance testing programs to terminate 12/97.
** Scheduled to terminate 9/98.

TERMINOLOGY TO INCORPORATE STANDARDS IN SOLICITATIONS

This index provides a listing of the FIPS and FED-STDs, with the approved solicitation terminology for those standards for which such terminology was developed prior to 1997. Agencies must review the standards to determine applicability, and in some cases, to select alternatives or options. Solicitation terminology is included only for those FIPS and FED-STDs which are mandatory for use by Government departments and agencies. Government activities desiring to use non-mandatory FIPS and FED-STDs may develop terminology for these non-mandatory FIPS and FED-STDs based on their intended application. In the absence of Federal standards, agencies should use voluntary industry standards in accordance with the National Technology Transfer and Advancement Act (PL104-113).

Waivers. The conditions under which standards are applicable and procedures for waivers to the standards are contained in each FIPS publication. In 1988, the Secretary of Commerce delegated to the heads of executive departments and agencies the authority to waive mandatory use of FIPS.

PROCEDURES FOR WAIVERS
FOR THE
FEDERAL INFORMATION PROCESSING STANDARDS (FIPS)

Under certain exceptional circumstances, the heads of Federal departments and agencies may approve waivers to Federal Information Processing Standards (FIPS). The head of such agency may redelegate such authority only to a Chief Information Officer designated pursuant to section 3506 of Title 44, U.S. Code. Waivers shall be granted only when:

a. Compliance with a standard would adversely affect the accomplishment of the mission of an operator of a Federal computer system, or

b. Cause a major adverse financial impact on the operator which is not offset by Government-wide savings.

Agency heads may act upon a written waiver request containing the information detailed above. Agency heads may also act without a written waiver request when they determine that conditions for meeting the standard cannot be met. Agency heads may approve waivers only by a written decision which explains the basis on which the agency head made the required findings(s). A copy of each such decision, with procurement sensitive or classified portions clearly identified, shall be sent to: National Institute of Standards and Technology; ATTN: FIPS Waiver Decisions, Technology Building, Room A216, Gaithersburg, MD 20899.

In addition, notice of each waiver granted and each delegation of authority to approve waivers shall be sent promptly to the Congress and shall be published promptly in the *Federal Register.*

When the determination on a waiver applies to the procurement of equipment and/or services, a notice of the waiver determination must be published in the *Commerce Business Daily* as a part of the notice of solicitation for offers of an acquisition or, if the waiver determination is made after that notice is published, by amendment to such notice.

A copy of the waiver, any supporting documents, the document approving the waiver and any supporting and accompanying documents, with such deletions as the agency is authorized and decides to make under 5 U.S.C. Sec. 552(b), shall be part of the procurement documentation and retained by the agency.

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY
AND
INFORMATION AND TECHNOLOGY

The major focus of NIST activities in information technology is developing tests, measurements, proofs of concept, reference data and other technical tools to support the development of pivotal, forward-looking technology.

Under Section 513 of the Information Technology Management Reform Act of 1996 and the Computer Security Act of 1987, Public Law 104-106, NIST develops standards, guidelines, and associated methods and techniques for Federal computer systems.

- including those needed to assure the cost-effective security and privacy of sensitive information in Federal computer systems,
- when there are compelling Federal requirements and there are no existing voluntary industry standards.

Use of Voluntary Industry Standards

- In accordance with the National Technology Transfer and Advancement Act of 1995 (Public Law 104-113) and Administration policies, NIST supports the development of voluntary industry standards both nationally and internationally as the preferred source of standards to be used by the Federal government. The use of voluntary industry standards eliminates the cost to the government of developing its own standards, and furthers the policy of reliance upon the private sector to supply goods and services to the government.
- NIST collaborates with national and international standards committees, users, industry groups, consortia, and research and trade organizations, to get needed standards developed.
- Federal Information Processing Standards (FIPS) are developed only when there are no existing voluntary standards to address Federal requirements for the interoperability of different systems, for the portability of data and software, and for computer security.

Process for Adoption of FIPS

When FIPS are considered necessary, NIST follows rulemaking procedures modeled after those established by the Administrative Procedures Act.

- NIST announces proposed FIPS in the *Federal Register* for public review and comment.
- A 90-day period is provided for review and for submission of comments to NIST on the proposed FIPS.
- At the same time that the proposed FIPS is announced in the *Federal Register*, NIST sends the proposed standard to senior contacts in Federal government agencies and departments, and in State agencies.
- Comments received in response to the *Federal Register* notice and to the notice to Federal and State government agencies are reviewed by NIST to determine if modifications to the proposed FIPS are needed.
- A detailed justification document is prepared, analyzing the comments received and explaining whether modifications were made, or explaining why recommended changes were not made.
- NIST submits recommended standards, and recommendations as to whether the standards should be compulsory and binding for Federal government use, to the Secretary of Commerce for approval.
- A notice announcing approval of the FIPS by the Secretary of Commerce is published in the *Federal Register*.
- A copy of the detailed justification document is forwarded to the Department of Commerce's Central Reference and Records Inspection Facility where it is available for public review.
- Federal and State agencies are notified of the approval of the FIPS.

CONTENTS

FIPS PUBLICATION SERIES

(1) GENERAL PUBLICATIONS

FIPSPUB29-3 INTERPRETATION PROCEDURES FOR FEDERAL INFORMATION PROCESSING STANDARDS FOR SOFTWARE, 1992 October 29.
Purpose: Establishes procedures for requesting an interpretation of the technical specifications of the FIPS for software and for providing a solution to the request.

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES

Computer Network Protocols

FIPSPUB146-2 PROFILES FOR OPEN SYSTEMS INTERNETWORKING TECHNOLOGIES (POSIT), 1995 May 15.
Purpose: This revised standard modifies FIPS 146-1 by removing the requirement that Federal agencies specify Open Systems Interconnection (OSI) protocols when they acquire networking products and services and communications systems and services. Federal agencies are encouraged to use open voluntary standards when acquiring data communications protocols.

FIPSPUB179-1 GOVERNMENT NETWORK MANAGEMENT PROFILE (GNMP), 1995 May 15.
Purpose: This FIPS encourages the use of open voluntary standards for the exchange of management information, management functions and services, and the syntax and semantics of the management information required to support monitoring and control of the network and system components and their resources.

Database

FIPSPUB127-2 DATABASE LANGUAGE SQL, 1993 June 2.
Purpose: FIPS 127-2 adopts American National Standard ANSI X3.135-1992 Database Language SQL which defines the syntactic and semantic rules for database definition and data manipulation in a relational model database management system.
Applicability: FIPS 127-2 Database Language SQL is suited for use by applications that employ the relational data model.
Solicitation Wording: "Acquisition of Database Language SQL Processors"
"SQL language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 127-2 Database Language. SQL. These processors shall implement (1) all of the required language elements of FIPS 127-2 not previously covered by a waiver, (2) all of the FIPS 127-2 options specified elsewhere in this requirements document, as well as, (3) all default options required by Section 16 of FIPS 127-2, Special Procurement Considerations. These processors shall also implement any additional language elements specified elsewhere in this document [insert reference]."
Solicitation Wording: "Development or Acquisition of Application Programs"
"When computer application programs are developed or acquired as a result of the requirements of which this is apart, and one of the FIPS programming languages is specified elsewhere, in the requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used."

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Database—Continued

FIPSPUB193 SQL ENVIRONMENTS, 1995 February 3.

Purpose: A non-mandatory standard that defines conformance profiles that can be used by both vendors and users to specify exact requirements for how various products fit into an SQL environment.

Applicability: This standard is applicable in any situation where it is desirable to integrate client-side productivity tools or server-side data into an SQL environment. It may be used on a case-by-case basis subject to the integration objectives of the procuring department or agency. It is particularly suitable for specifying limited SQL interfaces to legacy databases or to specialized data repositories such as geographic information systems, document management systems, or object database management systems.

Solicitation Wording: "Development or Acquisition of SQL Interfaces to Non-SQL Data Repositions"

"All data repositories that are offered or used as a result of this requirement shall provide an SQL interface that complies with one of the SQL/ERI Server profiles defined in FIPS 193."

Electronic Data Interchange

FIPSPUB161-2 ELECTRONIC DATA INTERCHANGE (EDI), 1996 May 22.

Purpose: FIPS 161-2 adopts, with specific conditions, the families of EDI standards known as X12, UN/EDIFACT and HL7 developed by national and international standards developing organizations. FIPS 161-2 does not mandate the implementation of EDI systems within the Federal government, but requires the use of the identified families of standards when Federal agencies and organizations implement EDI systems.

Applicability: This standard is applicable to the interchange of data between Federal agencies or organizations if the data are to be transmitted electronically, and if X12, UN/EDIFACT or HL7 standard messages meeting the data requirements of the agencies or organizations for the subject of the interchange have been developed and approved under the conditions set forth in FIPS 161-2.

Solicitation Wording: "Electronic Data Interchange systems offered as a result of the requirements of which this is a part shall conform to the requirements specified in FIPS 161-2."

Graphics

FIPSPUB120-1 GRAPHICAL KERNEL SYSTEM (GKS), 1991 January 8.

Purpose: Specifies a library (or toolbox package) of subroutines for an application programmer to incorporate within a program in order to produce and manipulate two-dimensional pictures. Promotes portability of graphics application programs between different computers, and to aid programmers in understanding and using graphics methods. Adopts ANSI X3.124-1985(R1991), X3.124.1-1985(R1991), X3.124.2-1988(R1994), X3.124.3-1989, and ISO/IEC 8651-4:1991. GKS is also an international standard (ISO 7942).

Applicability: For use in graphics programming applications that require the output and manipulation of two-dimensional pictures.

Solicitation Wording: "Acquisition of Graphical Kernel Systems (GKS)"

"All two-dimensional graphics libraries/packages to be used as a programming interface to application programs offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 120-1. These two-dimensional graphics libraries/packages shall (1) implement all of the requirements of FIPS 120-1 as specified elsewhere in this requirements

Graphics—Continued

document [insert reference], and (2) implement any additional requirements specified elsewhere in this document [insert reference]."

Note: Agencies should review FIPS 120-1 for detailed information on the FIPS options (e.g., features, subsets, levels, modules, profiles, etc.) that need to be specified in the requirements document to complete the solicitation specifications.

FIPSPUB128-2 COMPUTER GRAPHICS METAFILE (CGM), 1996 April 17.

Purpose: Specifies a file format suitable for the description, storage, and communication of graphical (pictorial) information in a device independent manner. Adopts ANSI/ISO 8632.1-4:1992[1994], ANSI/ISO 8632:1992/Amd. 1:1994, ANSI/ISO 8632:1992/Amd. 2:1995, ATA Spec. 2100, Working Draft, Version 2.1, June 1994, Model Profile contained in ISO 8632:1992/Amd. 1: 1994, and MIL-D-28003A. MIL-D-28003A specifies a profile of CGM and defines the options, elements and parameters of ANSI/ISO 8632.1-4:1992[1994] needed for transfer of graphical information in a device independent manner.

Applicability: FIPS 128-2 is provided for use by all Federal departments and agencies in computer graphics applications that are either developed or acquired. Although the standard was not developed specifically for printing/graphic files, it may be used in these applications whenever desirable. The use of a profile is required for all metafiles and implementations of CGM.

Solicitation Wording: "Acquisition of Computer Graphics Metafile (CGM) or CGM Processors"

"All computer graphics metafiles acquired to describe, store, and/or communicate graphical (pictorial information among different devices, systems and installations must be in compliance with the requirements set forth in FIPS 128-2. All software application which create or read graphical pictures must be in compliance with the requirements set forth in FIPS 128-2."

Solicitation Wording: "Development or Acquisition of Application Programs"

"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and one of the FIPS programming languages is specified elsewhere in this requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used."

FIPSPUB153-1 PROGRAMMER'S HIERARCHICAL INTERACTIVE GRAPHICS SYSTEM (PHIGS), 1995 January 27.

Purpose: Specifies the control and data interchange between an application program and its graphic support system. Provides a set of functions and programming language bindings for the definition, display and modification of two-dimensional (2D) or three-dimensional (3D) graphical data. These language bindings allow for the definition, display and modification of geometrically related objects, graphical data, and the relationships between the graphical data. Adopts ANSI/ISO 9592.1,2,3:1989, 9592.1a,2a,3a,4:1992, 9593.1:1990, 9593.3:1990, 9593.4:1991, and 9593.1/AM1, 3/AM1, 4/AM1:1991.

Applicability: For use in computer graphics applications that are either developed or acquired for government use.

Solicitation Wording: "Aquisition of Programmer's Hierarchical Interactive Graphics System (PHIGS)"

"All computer graphics software toolbox packages acquired to support very highly interactive graphics applications or needing rapid modification of both the graphics data and the relationships between the graphical data must be in compliance with the functional requirements as set forth in

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Graphics—Continued

FIPS 153-1, Part 1, the Programmer's Hierarchical Interactive Graphics System (PHIGS), and Part 4, Plus Lumiere und Surfaces (PHIGS PLUS). In addition, such toolbox packages must support, at a minimum, one of the programming language bindings as specified in FIPS 153-1, Part 2, and Part 4."

FIPSPUB177-1 INITIAL GRAPHICS EXCHANGE SPECIFICATION (IGES), 1996 April 23.

Purpose: Provides a mechanism for the digital exchange of database information among computer-aided design and manufacturing systems; supports applications which enhance 2-dimensional or 3-dimensional geometry representations with rich attribute information; and provides a data format for describing product design and manufacturing information. Adopts ANSI/US PRO/IPO-100-1993, Version 5.2, Layered Electrical Product (LEP) Application Protocol, IPO-110-1994, 3-D Piping Application Protocol, Engineering Drawing (Class II) Subset (MIL-D-28000A), Dec. 1992 Version.

Applicability: For use when the product definition data is to be used and maintained by other than the original designer; the product definition application program is under constant review, and changes may occur frequently; the anticipated life of the data files will be longer than the life of the presently utilized CAD/CAM equipment; the product definition application may run on equipment other than that which it was developed; or the product definition data is or is likely to be used by organizations outside the Federal government.

Solicitation Wording: "Exchange of Product Definition Data"

"Software offered as a result of the requirements in this solicitation for the exchange of product definition data shall conform to FIPS 177-1, Initial Graphics Exchange Specification (IGES)."

FIPSPUB194 OPEN DOCUMENT ARCHITECTURE (ODA) RASTER DOCUMENT APPLICATION PROFILE (DAP), 1995 March 13.

Purpose: To provide specifications for defining a subset of the ODA standard to be used for the interchange of images among raster graphics applications. Facilitates the interchange of raster documents among different raster graphics applications by specifying the constraints on document structure and content according to the rules of the ODA standard. Adopts ISO/IEC 12064-1 ISP/FOD112, which specifies the use of a subset of the ODA standard.

Applicability: This standard applies to all Federal government agencies when acquiring and developing ODA raster graphics applications. It applies to applications systems that process, generate, and/or receive raster images utilizing the ODA standard in a structured document environment. Specifically, it specifies the structure and parameters for describing and interchanging bi-level untitled and bled raster images.

Solicitation Wording: "Development or Acquisition of ODA Raster Products and Systems"

"All ODA raster graphics products and systems that are offered or used as a result of this requirement shall conform with the specifications of FIPS 194."

Hardware Description Language

FIPSPUB172-1 VHSIC HARDWARE DESCRIPTION LANGUAGE (VHDL), 1995 January 27.

Purpose: Specifies the form and establishes the interpretation of programs expressed in VHDL for use on a variety of data processing systems. Adopts ANSI/IEEE 1076-1993.

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Hardware Description Language—Continued

Applicability: Hardware description languages are applicable for the design, documentation, and test generation of digital systems, subsystems, assemblies, hybrid components, and components developed for Government use. It applies when:

- The digital system will need to be maintained and upgraded, or
- is under constant revision during the development process;
- must be understood by multiple people, groups, or organization;
- is to be designed by multiple people, groups, or organizations, and
- requires accurate unambiguous specification.

Solicitation Wording: "Acquisition of VHDL Processors"
"VHSIC Hardware Description Language (VHDL) processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 172-1, VHDL. These processors shall (1) implement all of the language elements of FIPS 172-1, VHDL, and (2) implement any additional language elements specified in this document [insert reference]."

"Development or Acquisition of Application Programs"
"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and the FIPS 172-1 VHDL is specified, only the language elements of the FIPS 172-1 VHDL, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used."

Information Interchange

FIPSPUB173-1 SPATIAL DATA TRANSFER STANDARD (SDTS), 1994 June 10.
Purpose: Provides specifications for the organization and structure of digital spatial data transfer, definition of spatial features and attributes, data transfer encoding and a topological vector profile (TVP). The purpose of this standard is to promote and facilitate the transfer of digital spatial data between dissimilar computer systems.
Applicability: For use in the acquisition and development of Government applications and programs involving the transfer of digital spatial data between dissimilar computer systems, when the transfer of digital spatial data occurs or is likely to occur within and/or outside of the Federal government. The use does not apply to the transfer of digital geocoded data files which are not intended to represent spatial entities as digital geographic or cartographic features, and is not intended to facilitate product distribution of spatial data in a form designed for direct access by applications software specific to a particular data structure, class of computer platform, or distribution media.
Solicitation Wording: "Acquisition of Spatial Data Transfer Systems"
"When computer application programs or systems are developed or acquired as a result of the requirements of which this is a part and when the transfer of spatial data is required between compatible as well as non-compatible systems, the developed application or acquired system shall comply with the specifications defined in FIPS 173-1."

FIPSPUB192-1 APPLICATION PROFILE FOR THE GOVERNMENT INFORMATION LOCATOR SERVICE (GILS), 1997 August 1.
Purpose: Describes the United States Federal government use of the international application profile for the GILS, also known as the Global Information Locator Service. The GILS Profile is based parimarily on ISO 23950, presently equivalent to the ANSI/NISO Z39.50-1995/Version 2. GILS is a decentralized collection of servers and associated information services that will be used by the public either directly or through intermediaries to find public information throughout the Federal government.

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Information Interchange—Continued

Applicability: Recommended for use in the development and establishment of information locators, and required in the development and use of information locators pursuant to the requirements of OMB Bulletin 95-01 and other applicable law, regulation and policy. The GILS Core requirements apply to those GILS locator records which:

- describe information resources maintained by the Federal government;
- comply with the defined GILS Core Elements;
- are mutually accessible through interconnected electronic network facilities without charge to the direct user; and
- are designated by the agency to be part of the Federal government GILS Core, pursuant to OMB Bulletin 95-01.

Solicitation Wording: "All GILS systems and servers offered as a result of this requirement shall comply with FIPS 192-1."

Modeling Techniques

FIPSPUB183 INTEGRATION DEFINITION FOR FUNCTION MODELING (IDEFO), 1993 December 21.

Purpose: Describes the IDEF0 modeling language (semantics and syntax), and associated rules and techniques, for developing structured graphical representations of a system or enterprise. Use of this standard permits the construction of models comprising system functions (activities, actions, processes, operations), functional relationships, and data (information or objects) that support systems integration.

Applicability: This standard is applicable when system or enterprise modeling techniques are applied to projects requiring IDEFO as the modeling technique and to the development of software tools implementing IDEFO modeling techniques. The use of this standard is strongly recommended for projects that require a modeling technique for the analysis, development, re-engineering, integration, or acquisition of information systems; or that incorporate a systems or enterprise modeling technique into a business process analysis or software engineering methodology.

Solicitation Wording: "Integration Definition for Function Modeling Technique"

"Software, systems or services offered as a result of this requirement for the Integration Definition Language 0 (IDEFO) modeling technique shall conform to FIPS 183, Integration Definition for Function Modeling (IDEFO)."

FIPSPUB184 INTEGRATION DEFINITION FOR INFORMATION MODELING (IDEF1X), 1993 December 21.

Purpose: Describes the IDEF1X modeling language (semantics and syntax), and associated rules and techniques, for developing a logical model of data. IDEF1X is used to produce a graphical information model which represents the structure and semantics of information within an environment or system. Use of this standard permits the construction of semantic data models which may serve to support the management of data as a resource, the integration of information systems, and the building of computer databases.

Applicability: The use of this standard is strongly recommended for projects requiring a standard means of defining and analyzing the data resources within an organization. The specifications of this standard are applicable when the IDEF1X data modeling technique is required; to development of automated software tools to implement IDEF1X modeling technique is required.

Solicitation Wording: "Integration Definition for Information Modeling Technique"

"Software, systems or services offered as a result of this requirement for the Integration Definition language 1X (IDEF1X) modeling technique shall conform to FIPS 184, Integration Definition for Information Modeling (IDEF1X)."

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Operating Systems

FIPSPUB151-2 PORTABLE OPERATING SYSTEM INTERFACE (POSIX)—SYSTEM APPLICATION PROGRAM INTERFACE [C LANGUAGE], 1993 May 12.

Purpose: POSIX is for use by computing professionals involved in system and application software development and implementation. Adopts ISO/IEC 9945-1:1990, which defines a C language source interface to an operating system environment.

Applicability: In the acquisition and development of operating systems for all levels of computer systems where application portability is required.

Solicitation Wording: "Acquisition and Development of Portable Operating Systems"

"Operating systems environments offered as a result of the requirements of which this is a part shall implement FIPS 151-2, as well as any additional elements specified elsewhere in this requirements document [insert reference here], and shall require validation in accordance with provisions contained in FIPS 151-2."

FIPSPUB189 PORTABLE OPERATING SYSTEM INTERFACE (POSIX)—PART 2: SHELL AND UTILITIES, 1994 October 11.

Purpose: Defines a command language interpreter (shell) and a set of utility programs. Addresses the Applications Portability Profile functional area that deals with methods by which a person interacts with the operating system. Adopts ISO/IEC 9945-2:1993.

Applicability: This standard applies to POSIX command language interpreters (shells) and utilities that are either developed or acquired for Government use for notebooks, sub-notebooks, laptops, micro-computer systems, mini-computer systems, workstations, mainframes, and other systems that require POSIX-like command language interfaces.

Proposed Solicitation Wording: "Development or Acquisition of POSIX Command Language Interpreters (Shells) and Utilities"

"All POSIX command language interpreters (shells) and utilities that are offered or used as a result of this requirement shall conform with the specifications of FIPS 189."

Programming Languages

FIPSPUB21-4 COBOL, 1995 January 23

Purpose: Establishes the form for and the interpretation of programs expressed in FIPS COBOL, reflects corrections and clarifications to the COBOL specifications. Adopts ANSI X3.23-1985, X3.23a-1989 and X3.23b-1993.

Applicability: Systems requiring a COBOL processor.

Solicitation Wording: "Acquisition of COBOL Language Processors"

"COBOL language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 21-4 COBOL. These processors shall (1) implement all of the language elements of the subset and optional modules of FIPS 21-4 COBOL as specified elsewhere in this requirements document [insert reference], and (2) implement any additional language elements specified elsewhere in this document [insert reference]."

Agencies should review FIPS 21-4 for detailed information on the FIPS options (e.g., features subsets, levels, modules, profiles, etc.) that need to be specified in the requirements document to complete the solicitation specifications.

Solicitation Wording: "Development or Acquisition of Application Programs"

"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and one of the FIPS programming languages is specified elsewhere in this requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used."

(3) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Programming Languages—Continued

FIPSPUB29-3 INTERPRETATION PROCEDURES FOR FEDERAL INFORMATION PROCESSING STANDARDS FOR SOFTWARE, 1992 October 29.
Purpose: Establishes procedures for requesting a technical interpretation of any of the FIPS for software and for providing a solution to the request.

FIPSPUB69-1 FORTRAN, 1985 December 24.
Purpose: Specifies the form and establishes the interpretation of programs expressed in the FORTRAN programming language. The standard consists of a full language, FORTRAN, and a subset language, Subset FORTRAN. Adopts ANSI X3.9-1978(R1989).
Applicability: Systems requiring a FORTRAN processor.
Solicitation Wording: "Acquisition of FORTRAN Language Processors"
"FORTRAN language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 69-1 FORTRAN. These processors shall implement all of the language elements of the level of FIPS 69-1 FORTRAN as specified elsewhere in this requirements document [insert reference], and (2) implement any additional language elements specified elsewhere in this document [insert reference]."
Note: Agencies should review FIPS 69-1 for detailed information on the FIPS options (e.g., features, subsets, levels, modules, profiles, etc.) that need to be specified in the requirements document to complete the solicitation specifications.
Solicitation Wording: "Development or Acquisition of Application Programs"
"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and one of the FIPS programming languages is specified elsewhere in this requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used. "

FIPSPUB119-1 ADA, 1995 March 13.
Purpose: Specifies the form and establishes the interpretation of programs expressed in the Ada programming language. Promotes portability of Ada programs for use on a variety of data processing systems. Adopts ANSI/ISO/IEC 8652:1995.
Applicability: Systems requiring Ada processor.
Solicitation Wording: "Acquisition of Ada Language Processors"
"Ada language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 119-1, Ada. These processors shall implement all of the language elements of FIPS 119-1, Ada."
Solicitation Wording: "Development or Acquisition of Application Programs"
"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and one of the FIPS programming languages is specified elsewhere in this requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference] shall be used."

FIPSPUB125-1 MUMPS, 1993 June 10.
Purpose: Adopts American National Standard for MUMPS, ANSI/MDC X11.1-1990, which specifies the form and establishes the interpretation of programs written in the MUMPS programming language.
Applicability: Systems requiring MUMPS programming language processor.

(2) HARDWARE AND SOFTWARE STANDARDS AND GUIDELINES—Continued

Programming Languages—Continued

Solicitation Wording: "Acquisition of MUMPS Language Processors"

"MUMPS language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 125-1 MUMPS. These processors shall (1) implement all of the language elements of FIPS 125-1 MUMPS as specified elsewhere in this requirements document [insert reference], and (2) implement any additional language elements specified elsewhere in this document [insert reference]."

Solicitation Wording: "Development or Acquisition of Applicable Programs"

"When computer application programs are developed or acquired as a result of the requirements of which this is a part, and one of the FIPS programming languages is specified elsewhere in this requirements document [insert reference here], only the language elements of that FIPS, as well as any additional language elements as specified elsewhere in this document [insert reference], shall be used."

FIPSPUB160 C, 1991 March 13.

Purpose: Specifies the form and establishes the interpretation of programs written in the C programming language. Adopts ANSI/ISO 9899:1992 (replaces ANSI X3.159-1989).

Applicability: Systems requiring a C processor.

Solicitation Wording: "Acquisition of C Language Processors"

"C language processors offered as a result of the requirements of which this is a part shall conform to the requirements in FIPS 160 C. These processors shall (1) implement all of the language elements of FIPS 160 C as specified elsewhere in this requirements document [insert reference], and (2) implement any additional language elements specified elsewhere in this document [insert reference]."

Note: Agencies should review FIPS 160 for detailed information on the FIPS options (e.g., features, subsets, levels, modules, profiles, etc.) that need to be specified in the requirements document to complete the solicitation specifications.

Software Maintenance

FIPSPUB106 GUIDELINE ON SOFTWARE MAINTENANCE, 1984 June 15.

Purpose: Presents information on techniques, procedures, and methodologies to employ throughout the lifecycle of a software system to improve the maintainability of that system. Included is a glossary of technical terms. Appendices provide information on software maintenance process; how to decide whether or not to continue maintaining a system; and software maintenance tools.

Validation, Verification, and Testing

FIPSPUB101 GUIDELINE FOR LIFECYCLE VALIDATION, VERIFICATION, AND TESTING OF COMPUTER SOFTWARE, 1983 June 6.

Purpose: Presents an integrated approach to validation, verification, and testing (VV&T) that should be used throughout the software lifecycle. Also included is a glossary of technical terms and a list of supporting NBS publications. An appendix provides an outline for formulating a VV&T plan.

FIPSPUB132 GUIDELINE FOR SOFTWARE VERIFICATION AND VALIDATION PLANS, 1987 November 19.

Purpose: Provides uniform and minimum requirements for the format and content of software verification and validation plans. Defines minimum tasks, inputs, and outputs for critical software and optional tasks. Adopts ANSI/IEEE Standard 1012-1986.

(3) DATA STANDARDS AND GUIDELINES

Representations and Codes

FIPSPUB4-1 REPRESENTATION FOR CALENDAR DATE AND ORDINAL DATE FOR INFORMATION INTERCHANGE, 1988 January 27.

Purpose: Specifies codes to identify years, months and dates of the Gregorian calendar. Adopts ANSI X3.30-1985/R1991.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 4-1 if the provisions of FIPS 4-1 apply to the data being interchanged."

FIPSPUB5-2 CODES FOR THE IDENTIFICATION OF THE STATES, THE DISTRICT OF COLUMBIA AND THE OUTLYING AREAS OF THE UNITED STATES, AND ASSOCIATED AREAS, 1987 May 28.

Purpose: Provides a set of two-digit numeric codes and a set of two-letter alphabetic codes for representing the 50 states, the District of Columbia and the outlying areas of the U.S., and associated areas such as the Federated States of Micronesia and Marshall Islands, and the trust territory of Palau.

Applicability: Systems requiring the interchange of data among Federal users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 5-2 if the provisions of FIPS 5-2 apply to the data being interchanged."

FIPSPUB6-4 COUNTIES AND EQUIVALENT ENTITIES OF THE UNITED STATES, ITS POSSESSIONS, AND ASSOCIATED AREAS, 1990 August 31.

Purpose: Provides the names and three-digit codes that represent the counties and statistically equivalent entities of the 50 States, the District of Columbia, and the possessions and associated areas of the United States, for use in the interchange of formatted machine-sensible data. Implements ANSI X3.31-1988.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 6-4 if the provisions of FIPS 6-4 apply to the data being interchanged."

(3) DATA STANDARDS AND GUIDELINES—Continued

Representations and Codes—Continued

FIPSPUB8-6 METROPOLITAN AREAS (INCLUDING MSAs, CMSAs, PMSAs, AND NECMAs), 1995 March—(reflects technical changes through July 1, 1994).

Purpose: Provides a four-digit numeric code for each Metropolitan Area (MAs) in the U.S. and Puerto Rico, including units called Metropolitan Statistical Areas (MSAs), Consolidated Metropolitan Statistical Areas (CMSAs), and Primary Metropolitan Statistical Areas (PMSAs), and related units called New England County Metropolitan Areas (NECMAs). The general concept underlying MAs is that of a core area containing a large population nucleus together with adjacent communities having a high degree of economic and social integration with that core.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 8-6 if the provisions of FIPS 8-6 apply to the data being interchanged."

FIPSPUB9-1 CONGRESSIONAL DISTRICTS OF THE UNITED STATES, 1990 November 30.

Purpose: Provides the structure of numeric codes for representing congressional districts and similar areas defined for the various Congresses of the United States.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 9-1 if the provisions of FIPS 9-1 apply to the data being interchanged."

FIPSPUB10-4 COUNTRIES, DEPENDENCIES, AREAS OF SPECIAL SOVEREIGNTY, AND THEIR PRINCIPAL ADMINISTRATIVE DIVISIONS, 1995 April—(reflects technical changes through May 6, 1993).

Purpose: Provides a list of the basic geopolitical entities in the world, together with the principal administrative divisions that comprise each entity. Each basic geopolitical entity is represented by a two-character, alphabetic country code. Each principal administrative division is identified by a four-character code consisting of the two-character country code followed by a two-character administrative division code. These codes are intended for use in activities associated with the mission of the Department of State and in National defense programs.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 10-4 if the provisions of FIPS 10-4 apply to the data being interchanged."

FIPSPUB55-DC3 GUIDELINE: CODES FOR NAMED POPULATED PLACES, PRIMARY COUNTY DIVISIONS, AND OTHER LOCATIONAL ENTITIES OF THE UNITED STATES, PUERTO RICO, AND THE OUTLYING AREAS, 1994 December 28.

Purpose: Provides a two-character State code and five-character numeric place code to uniquely identify each listed entity. An exhaustive list is carried of incorporated places, census designated places, primary county divisions, recognized Indian reservations and Alaska Native villages, and counties. For the data files, request the fifth printed version (hard copy) or the tenth update tape. Implements ANSI X3.47-1993.

(3) DATA STANDARDS AND GUIDELINES—Continued

Representations and Codes—Continued

FIPSPUB55-3 GUIDELINE: CODES FOR NAMED POPULATED PLACES, PRIMARY COUNTY DIVISIONS, AND OTHER LOCATIONAL ENTITIES OF THE UNITED STATES, PUERTO RICO, AND THE OUTLYING AREAS, 1994 December 28.

Same as FIPS PUB 55-DC3; (DOCUMENTATION ONLY).

FIPSPUB66 STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES, 1979 August 15.

Purpose: The Standard Industrial Classification (SIC) Manual for 1987 issued by the Office of Management and Budget in the Executive Office of the President should be used as the source of classifications, short titles, and codes for representing industries as prescribed by FIPS PUB 66.

Applicability: Systems requiring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 66 if the provisions of FIPS 66 apply to the data being interchanged."

FIPSPUB92 GUIDELINE FOR STANDARD OCCUPATIONAL CLASSIFICATION (SOC) CODES, 1983 February 24.

Purpose: Adopts a code set developed by the Office of Management and Budget to identify types of occupational activities. The classification system includes all occupations in which work is performed for pay or profit.

FIPSPUB95-1 CODES FOR THE IDENTIFICATION OF FEDERAL AND FEDERALLY ASSISTED ORGANIZATIONS, 1993 January 4.

Purpose: Specifies a four-character identifier for Federal Government Legislative, Judicial and Executive Branch agencies, and for Federal-State, interstate and international organizations that receive budgetary support. Also includes government-sponsored enterprises and some Federally aided organizations.

Applicability: Systems requring the interchange of data among Federal ADP users and internal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 95-1 if the provisions of FIPS 95-1 apply to the data being interchanged."

FIPSPUB103 CODES FOR THE IDENTIFICATION OF HYDROLOGIC UNITS IN THE UNITED STATES AND THE CARIBBEAN OUTLYING AREAS, 1983 November 15.

Purpose: Identifies a hydrologic system that divides the United States and Caribbean outlying areas into 21 major regions. Regions are further subdivided into approximately 2150 units that delineate river basins having drainage areas usually greater than 700 square miles. The codes provide a standardized base for use by water-resources organizations. Adopts *Geological Survey Circular* 878-A, which has been adopted as ANSI X3.145-1986.

Applicability: Systems requiring the interchange of data among Federal ADP users and hllemal data systems where such use contributes to operational benefits, efficiency and economy.

Solicitation Wording: "Interchange of Machine Processable Data"

"All application programs resulting from this requirement that have been identified as those that will be interchanged, or that will record data that will be interchanged with Federal agencies, State and local governments, industry, and the public must implement FIPS 103 if the provisions of FIPS 103 apply to the data being interchanged."

(4) COMPUTER SECURITY STANDARDS AND GUIDELINES

Access Control

FIPSPUB48 GUIDELINES ON EVALUATION OF TECHNIQUES FOR AUTOMATED PERSONAL IDENTIFICATION, 1977 April 1.
Purpose: Discusses the performance of personal identification devices, how to evaluate them, and considerations for their use within the context of computer system security.

FIPSPUB83 GUIDELINE ON USER AUTHENTICATION TECHNIQUES FOR COMPUTER NETWORK ACCESS CONTROL, 1980 September 29.
Purpose: Provides guidance in the selection and implementation of techniques for authenticating the users of remote terminals in order to safeguard against unauthorized access to computers and computer networks.

FIPSPUB112 PASSWORD USAGE, 1985 May 30.
Purpose: Defines 10 factors to be considered in the design, implementation and use of access control systems that are based on passwords. It specifies minimum security criteria for such systems and provides guidance for selecting additional security criteria for password systems which must meet higher security requirements.
Applicability: The standard applies to all Federal departments and agencies determining a need for using passwords for authenticating users of an ADP system, or for authorizing access to data in the system. The standard provides a common foundation for password systems and specifies basic security criteria for the use of such systems.
Solicitation Wording: "Computer Systems Password Usage"
"If a requirement is set forth elsewhere in this requirements document for the use of passwords to authenticate users of an ADP System or to authorize access to data in the System, the systems, equipment, and/or services provided to satisfy that requirement must be in conformance with FIPS 112."

FIPSPUB190 GUIDELINE FOR THE USE OF ADVANCED AUTHENTICATION TECHNOLOGY ALTERNATIVES, 1994 September 28.
Purpose: Describes the primary alternative methods for verifying the identities of computer system users, and provides recommendations to Federal agencies and departments for the acquisition and use of technology which supports these methods.

FIPSPUB 196 ENTITY AUTHENTICATION USING PUBLIC KEY CRYPTOGRAPHY, 1997 February 18.
Purpose: Specifies two challenge-response protocols by which entitites in a computer system may authenticate their identities to one another. These protocols may be used during session initiation, and at any other time that entity authentication is necessary. Depending on which protocol is implemented, either one or both entities involved may be authenticated. The defined protocols are derived from an international standard for entity authentication based on public key cryptography, which uses digital signatures and random number challenges.
Applicability: Applicable to all Federal departments and agencies that use public key based authentication systems to protect unclassified information within computer and digital telecommunications systems to protect unclassified information within computer and digital telecommunications systems that are not subject to Section 2315 of Title 10, U.S. Code, or Section 3502(2) of Title 44, U.S. Code. This standard is for use in the designing, acquisition and implementation of public key based, challenge-response authentication systems at the application layer within computer and digital telecommunications systems. May be used at other layers within computer and digital telecommunications systems.
Solicitation Wording: No wording available.

(4) COMPUTER SECURITY STANDARDS AND GUIDELINES—Continued

Cryptography

FIPSPUB46-2 DATA ENCRYPTION STANDARD (DES), 1993 December 30. (Reaffirmed until 1998.)
Purpose: Reaffirms the Data Encryption Algorithm until 1998, and allows for implementation of the algorithm in hardware, software, firmware or any combination thereof. The data encryption algorithm uniquely defines the mathematical steps required to transform data into a cryptographic cipher and also to transform the cipher back to the original form. Encryption may be used by Federal organizations to protect sensitive data during transmission or while in storage.
Applicability: Applies to products and services requiring the cryptographic protection of computer data provided by FIPS 46-2.
Solicitation Wording: "Data Encryption"

"When an unclassified data encryption requirement is specified elsewhere in this requirement, such encryption will be accomplished in accordance with FIPS 46-2. Implementations of the standard embodied in products or services offered as a result of this requirement that are asserted to have an encryption capability in conformance with FIPS 46-2 must have the capability validated by the National Institute of Standards and Technology prior to being proposed."

FIPSPUB74 GUIDELINES FOR IMPLEMENTING AND USING THE NBS DATA ENCRYPTION STANDARD, 1981 April 1.
Purpose: Provides guidance for the use of cryptographic techniques when such techniques are required to protect sensitive or valuable computer data. For use in conjunction with FIPS PUB 81.

FIPSPUB81 DES MODES OF OPERATION, 1980 December 2.
Purpose: Defines four modes of operation for the DES which may be used in a wide variety of applications. The modes specify how data will be encrypted (cryptographically protected) and decrypted (returned to original form). This standard has been adopted as a voluntary industry standard, ANSI X3.106-1983.
Applicability: For use with equipment and services requiring compliance with FIPS 46-1.
Solicitation Wording: "Modes of Operation-Data Encryption"

"Equipment and services offered as a result of this requirement that implement the Data Encryption Standard (FIPS 46-1) and that are intended for use in the cryptographic protection of sensitive but unclassified computer data shall use one or more of the modes of operation specified in FIPS 81."

FIPSPUB113 COMPUTER DATA AUTHENTICATION, 1985 May 30.
Purpose: Specifies a Data Authentication Algorithm (DAA) which, when applied to computer data, automatically and accurately detects unauthorized modifications, both intentional and accidental. Based on FIPS PUB 46, this standard is compatible with requirements adopted by the Department of Treasury and the banking community to protect electronic fund transfer transactions.
Applicability: FIPS 113 shall be used by Federal organizations whenever a determination is made that cryptographic authentication is needed for the detection of intentional modifications of data, unless the data is classified according to the National Security Act of 1947 or the Atomic Energy Act of 1954. Equipments approved for the cryptographic authentication of classified data may be used in lieu of equipments meeting this standard.
Solicitation Wording: "Computer Data Authentication"

"If a requirement is set forth elsewhere in this requirements document that cryptographic authentication is required for the detection of unauthorized modification of data and that data is not classified according to the National Security Act of 1947, as amended, the systems, equipment and/or services provided to satisfy this requirement must be in compliance with FIPS 113.

If, as a result of the requirements set forth elsewhere in this requirements document, a separate capability is offered to provide cryptographic authentication for the detection of unauthorized modification of data classified according to the National Security Act of 1947, as amended, or the Atomic Energy Act of 1954, as amended, and this separate capability is also to be used for the detection of unauthorized modification of unclassified data, the systems, equipment, and/or services provided to satisfy that requirement must perform as comprehensively as those specified in FIPS 113."

(4) COMPUTER SECURITY STANDARDS AND GUIDELINES—Continued

Cryptography—Continued

FIPSPUB140-1 SECURITY REQUIREMENTS FOR CRYPTOGRAPHIC MODULES, 1994 January 11.

Purpose: Provides the security requirements that are to be satisfied by a cryptographic module implemented within a security system and provides four increasing, qualitative levels of security intended to cover a wide range of potential applications and environments. The security requirements cover basic design and documentation, module interfaces, authorized roles and services, physical security, software security, operating system security, key management, cryptographic algorithms, electromagnetic interference/electromagnetic compatibility (EMI/EMC), and self-testing.

Applicability: To all Federal agencies that use cryptographic-based security systems to protect unclassified information within computer and telecommunication systems (including voice systems) that are not subject to Section 2315 of Title 10, U.S. Code, or Section 3502(2) of Title 44, U.S. Code. This standard shall be used in designing, acquiring and implementing cryptographic-based security systems within computer and telecommunication systems (including voice systems), operated by a Federal agency or by a contractor of a Federal agency or other organization that processes information (using a computer or telecommunications system) on behalf of the Federal government to accomplish a Federal function.

Solicitation Wording: "Cryptographic Modules"

"All hardware, software, firmware, or any combination thereof, offered to protect unclassified information within computer and telecommunication systems (including voice systems), shall conform to FIPS 140-1, Security Requirements for Cryptographic Modules, and implement an overall security level of [insert required security level from FIPS 140-1]. The offered module(s) shall also implement the following security levels: [insert the required security level for each specific FIPS 140-1 requirement(s), e.g., software security, operating system security, module interfaces]."

FIPSPUB171 KEY MANAGEMENT USING ANSI X9.17, 1992 April 27.

Purpose: Specifies a particular selection of options for the automated distribution of keying material by the Federal Government when using the protocols of ANSI X9.17-1985. ANSI X9.17-1985 defines procedures for the manual and automated management of keying materials and utilizes the Data Encryption Standard to provide key management for a variety of operational environments.

Applicability: This standard shall be used by Federal agencies when designing, acquiring, implementing and managing keying material using the manual and automated procedures of ANSI X9.17.

Solicitation Wording: "Acquisition of Cryptographic Key Management Systems"

"If key management using the protocols of ANSI X9.17 is specified in this requirement, all key management systems offered as a result of this requirement shall comply with the specifications of FIPS 171."

FIPSPUB180-1 SECURE HASH STANDARD (SHS), 1995 April 17.

Purpose: To specify a Secure Hash Algorithm to be used by both the transmitter and intended receiver of a message in computing and verifying a digital signature.

Applicability: This standard is applicable to all Federal agencies for the protection of unclassified information that is not subject to Section 2315 of Title 10, United States Code. This standard is required for use with the Digital Signature Algorithm (DSA) and whenever a secure hash algorithm is required for Federal applications.

Solicitation Wording: "Secure Hash Algorithm (SHA)"

"Equipment or software offered as the result of this requirement must comply with FIPS 180 1. The SHA is required for use with [specify either 'the Digital Signature Algorithm as specified in The Digital Signature Standard' or other applications which require a secure hash algorithm]. The SHA may be implemented in software, firmware, hardware, or any combination thereof."

(4) COMPUTER SECURITY STANDARDS AND GUIDELINES—Continued

Cryptography—Continued

FIPSPUB181 AUTOMATED PASSWORD GENERATOR (APG), 1993 October 5.

Purpose: Specifies a standard to be used by Federal organizations that require computer generated pronounceable passwords to authenticate the personal identity of an automated data processing (ADP) system user, and to authorize access to system resources. The standard describes an automated password generation algorithm that randomly creates simple pronounceable syllables as passwords. The password generator accepts input from a random number generator based on the Data Encryption Standard (DES) cryptographic algorithm defined in Federal Information Processing Standard 46-2.

Applicability: To the development of procurement or design specifications for implementing an automatic password generation algorithm within a computer system. It shall be used by all Federal agencies when there is a requirement for computer generated pronounceable passwords for authenticating users of computer systems or for authorizing access to resources in those systems.

Solicitation Wording: "Automated Password Generator"

"All automated password generators offered as a result of this requirement shall conform to FIPS 181 and be used in conjunction with FIPS 112."

FIPSPUB185 ESCROWED ENCRYPTION STANDARD (EES), 1994 February 9.

Purpose: This non-mandatory standard provides an encryption/decryption algorithm and a Law Enforcement Access Field (LEAF) creation method which may be implemented in electronic devices and may be used at the option of government agencies to protect government telecommunications. The algorithm and the LEAF creation method are classified and are referenced, but not specified, in the standard. Electronic devices implementing this standard may be designed into cryptographic modules which are integrated into data security products and systems for use in data security applications. The LEAF is used in a key escrow system that provides for decryption of telecommunications when access to the telecommunications is lawfully authorized.

FIPSPUB186 DIGITAL SIGNATURE STANDARD (DSS), 1994 May 19.

Purpose: Specifies a Digital Signature Algorithm (DSA) appropriate for applications requiring a digital rather than written signature. The DSA digital signature is a pair of large numbers represented in a computer as strings of binary digits. The digital signature is computed using a set of rules (i.e., the DSA) and a set of parameters such that the identity of the signatory and integrity of the data can be verified. The DSA provides the capability to generate and verify signatures. ANSI approved the DSA as X9.30, Part 1.

Applicability: This standard is applicable for all Federal departments and agencies for the protection of unclassified information that is not subject to Section 2315 of Title 10, United States Code, or Section 3505(2) of Title 44, United States Code. Applications include authentication of the integrity of signed data, authentication of the identity of the signatory, and proof to a third party that data was actually signed by the generator of the signature. This standard shall be used in designing and implementing public key based signature systems which Federal departments and agencies operate or which are operated for them under contract.

Solicitation Wording: "Development or Acquisition of Public Key-based Signature Systems"

"All public key-based signature facilities and systems that are offered or used as a result of this requirement shall conform with the specifications of FIPS 186."

General Computer Security

FIPSPUB31 GUIDELINES FOR AUTOMATIC DATA PROCESSING PHYSICAL SECURITY AND RISK MANAGEMENT, 1974 June.

Purpose: Provides guidance to Federal organizations in developing physical security and risk management programs for their ADP facilities. Can be used as a checklist for planning and evaluating security of computer systems.

(4) COMPUTER SECURITY STANDARDS AND GUIDELINES—Continued

General Computer Security—Continued

FIPSPUB41 COMPUTER SECURITY GUIDELINES FOR IMPLEMENTING THE PRIVACY ACT OF 1974, 1975 May 30.
Purpose: Provides guidance in the selection of technical and related procedural methods for protecting personal data in automated information systems. Discusses categories of risks and the related safeguards for physical security, information management practices, and system controls to improve system security.

FIPSPUB73 GUIDELINES FOR SECURITY OF COMPUTER APPLICATIONS, 1980 June 30.
Purpose: Describes the different security objectives for a computer application, explains the control measures that can be used, and identifies the decisions that should be made at each stage in the lifecycle of a sensitive computer application. For use in planning, developing and operating computer systems which require protection.

FIPSPUB102 GUIDELINE FOR COMPUTER SECURITY CERTIFICATION AND ACCREDITATION, 1983 September 27.
Purpose: Describes how to establish and how to carry out a certification and accreditation program for computer security. Certification consists of a technical evaluation of a sensitive system to see how well it meets its security requirements. Accreditation is the official management authorization for the operation of the system and is based on the certification process.

Risk Analysis and Contingency Planning

FIPSPUB87 GUIDELINES FOR ADP CONTINGENCY PLANNING, 1981 March 27.
Purpose: Describes what should be considered when developing a contingency plan for an ADP facility. Provides a suggested structure and format which may be used as a starting point from which to design a plan to fit each specific operation.

FIPSPUB191 GUIDELINE FOR THE ANALYSIS OF LOCAL AREA NETWORK SECURITY, 1994 November 9.
Purpose: Discusses threats and vulnerabilities and considers technical security services and security mechanisms.

Security Labels

FIPSPUB188 STANDARD SECURITY LABEL FOR INFORMATION TRANSFER, 1994 September 6.
Purpose: Defines a security label syntax for information exchanged over data networks and provides label encodings for use at the Application and Network Layers.
Applicability: This standard applies to U.S. Government communications systems required by agency security policy to label sensitive but unclassified data when exchanged over data networks.
Proposed Solicitation Wording: "Development or Acquisition of Security Label Products and Systems"
"All security-enhanced computer communications products and systems implementing or using security labels shall conform with the specifications of FIPS 188."

(5) TELECOMMUNICATIONS STANDARDS

Cables and Wiring

FIPSPUB175 FEDERAL BUILDING STANDARD FOR TELECOMMUNICATIONS PATHWAYS AND SPACES, 1992 August 21.

Purpose: Specifies minimum requirements for the design and construction of rooms, areas and pathways into which and through which telecommunications equipment and media are to be installed within a building and between buildings in a campus environment. Adopts ANSI/EIA/TIA-569-1990.

Applicability: This standard shall be used by all Federal agencies in the planning and design of all office buildings when FIPS 176 is not selected. This includes both the wiring of new buildings and the upgrading of existing plant, for sites with a geographical extent up to 3,000 meters, up to 1,000,000 square meters of office space, and with a population of up to 50,000 individual users.

Solicitation Wording: "Telecommunications Wiring for Federal Buildings"

"All telecommunications facilities and systems offered or used as a result of this requirement must conform with the specifications of FIPS 174."

FIPSPUB176 RESIDENTIAL AND LIGHT COMMERCIAL TELECOMMUNICATIONS WIRING STANDARD, 1992 August 21.

Purpose: Specifies minimum requirements for telecommunications wiring for connecting one to four exchange access lines to various types of customer premises equipment in small buildings. Adopts ANSI/EIA/TIA-570-1991. This standard is complementary to FIPS 174, which addresses large building sites.

Applicability: This standard shall be used by all Federal agencies in the planning and design of premises-wiring intended for connecting one to four exchange access lines to various types of customer-premises equipment when FIPS 174 is not selected. This includes both the wiring of new buildings and the upgrading of the existing plant.

Solicitation Wording: "Planning and Design of Federal Office Buildings"

"All telecommunications facilities and systems that are offered or used as a result of this requirement shall conform with the specifications of FIPS 176."

Coding and Character Sets

FIPSPUB137 ANALOG TO DIGITAL CONVERSION OF VOICE BY 2,400 BIT/SECOND LINEAR PREDICTIVE CODING, 1984 November 28.

Purpose: FIPS 137 specifies requirements relating to the conversion of analog voice to 2,400 bit/second digitized voice by Linear Predictive Coding (LPC-10) and reconversion back to analog voice.

Applicability: Applies to all synchronous (not packetized) 2,400 bit/second digitized voice telecommunications equipment procured or leased.

Solicitation Wording: "2,400 Bit/second Digitized Voice Telecommunications Equipment"

"All synchronous (not packetized) 2,400 Bit/second Digitized Voice telecommunications equipment offered as a result of this requirement shall be capable of Linear Predictive Coding (LPC-10) operation in conformance with FIPS 137."

Facsimile Equipment

FIPSPUB 148 PROCEDURES FOR DOCUMENT FACSIMILE TRANSMISSION, 1982 April 14.

Purpose: FIPS 148 establishes the procedures for document facsimile transmission in the General Switched Telephone Network. Adopts EIA RS-466.

Applicability: Facsimile terminals/systems used in the General Switched Telephone Network.

Solicitation Wording: "Acquisition, Design or Development of Group 1, 2, and Facsimile Apparatus"

"All Group 1, 2, and 3 facsimile apparatus designed, developed, or offered for use over voiceband analog circuits shall comply with FIPS 148."

(5) TELECOMMUNICATIONS STANDARDS—Continued

Facsimile Equipment—Continued

FIPSPUB150 FACSIMILE CODING SCHEMES AND CODING CONTROL FUNCTIONS FOR GROUP 4 FACSIMILE APPARATUS, 1988 November 4.

Purpose: FIPS 150 defines the facsimile coding schemes and their control functions for Group 4 facsimile apparatus. The standard adopts EIA-RS-538.

Applicability: Acquisition, design or development of Group 4 facsimile terminals/systems.

Solicitation Wording: "Acquisition and Design of Facsimile Coding Schemes" and "Control Functions for Group 4 Apparatus"

"All group 4 facsimile apparatus designed and offered as a result of this requirement shall comply with FIPS 150."

Grounding and Bonding

FIPSPUB195 FEDERAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS, 1995 August 15.

Purpose: To facilitate the planning, design, and installation of telecommunications grounding systems within a Federal government building with or without prior knowledge of the telecommunications systems that will subsequently be installed. Adopts ANSI/TIA/EIA 607-1994.

Applicability: The standard shall be used by all departments and agencies of the Federal government in the planning, design, and installation of telecommunications grounding systems in new Federal buildings. Use of this standard is recommended in the maintenance, renovation, or retrofit of telecommunications grounding systems in existing Federal buildings.

Solicitation Wording: "Development of Acquisition of Telecommunications Grounding Systems"

"All telecommunications grounding systems that are offered or used as a result of this requirement shall conform with the specifications of FIPS 195."

Integrated Services Digital Network

FIPSPUB182 INTEGRATED SERVICES DIGITAL NETWORK (ISDN), 1993 October 5.

Purpose: Defines the generic protocols necessary to establish transparent Integrated Services Digital Network (ISDN) connection among government networks and between government and conformant common carrier networks. This standard provides a minimal set of bearer services, and is based on national standards, international standards, and implementation agreements developed by the North American ISDN Users' Forum (NIUF).

Applicability: This standard shall be used by Federal agencies for the acquisition of ISDN Customer-Premises Equipment, switches, and ISDN services.

Solicitation Wording: "Telecommunication Protocols for Integrated Services Digital Network"

"Any equipment, systems or services offered in response to the specific functional requirements in this solicitation must provide the associated protocols specified in the standards referenced by FIPS 182, Integrated Services Digital Network (ISDN)."

Interface

FIPSPUB100-1 INTERFACE BETWEEN DATA TERMINAL EQUIPMENT (DTE) AND DATA CIRCUIT-TERMINATING EQUIPMENT (DCE) FOR OPERATION WITH PACKET-SWITCHED DATA NETWORKS (PSDN), OR BETWEEN TWO DTEs, BY DEDICATED CIRCUIT, 1991 March 20.

Purpose: Specifies the interface between data terminating equipment (DTE) such as automated data processing (ADP) equipment and telecommunication system terminal equipment, and data circuit-terminating equipment (DCE) for operation in the packet mode on packet-switched data networks (PSDN), or between two DTEs, by dedicated circuit. This revised standard adopts ANSI X3.100-1989 which in turn adopts CCITT Recommendation X.25-1988 developed by the Consultative Committee on International Telephone and Telegraph, and ISO 7776-1986 and ISO 8208-1987 developed by the International Organization for Standardization.

(5) TELECOMMUNICATIONS STANDARDS—Continued

Interface—Continued

Applicability: In the acquisition, design and development of all Federal ADP equipment, services, and telecommunication equipment using public packet-switched data communication networks whenever an interface based on CCITT Recommendation X.25 is required.
Solicitation Wording: "Public Packet-Switched Data Communications Network Interface"

"All applicable ADP and telecommunications equipment or services using public packet switched data communication networks which require an interface based on CCITT Recommendation X.25 must comply with the requirements specified in FIPS 100-1."

FIPSPUB138 ELECTRICAL CHARACTERISTICS OF BALANCED VOLTAGE DIGITAL INTERFACE CIRCUITS, 1975 September 24.
Purpose: Specifies the electrical characteristics of balanced voltage digital interface circuits normally implemented in integrated circuit technology that are to be employed for the interchange of serial binary data, timing, and control signals between voice or data telecommunications equipment where information is being conveyed at the DC base band level at data signalling rates up to 10 megabits per second.
Applicability: Equipment employing balanced voltage digital interface circuits.
Solicitation Wording: "Digital Interface Circuits-Balanced Voltage"

"All equipment using balanced voltage digital interface circuits that is offered as a result of this requirement shall comply with the electrical characteristics addressed by FIPS 138."

FIPSPUB142 ELECTRICAL CHARACTERISTICS OF UNBALANCED VOLTAGE DIGITAL INTERFACE CIRCUITS, 1980 January 31.
Purpose: Specifies the electrical characteristics of unbalanced voltage digital interface circuits normally implemented in integrated circuit technology that are to be employed for the interchange of serial binary data, timing, and control signals between voice or data telecommunications equipment where information is being conveyed at the DC baseband level at data signalling rates up to 100 kilobits per second.
Applicability: Equipment employing unbalanced voltage digital interface circuits.
Solicitation Wording: "Digital Interface Circuits—Unbalanced Voltage"

"All equipment using unbalanced voltage digital interface circuits that is offered as a result of this requirement shall comply with the electrical characteristics addressed by FIPS 142."

FIPSPUB143 GENERAL PURPOSE 37-POSITION AND 9-POSITION INTERFACE BETWEEN DATA TERMINAL EQUIPMENT AND DATA CIRCUIT-TERMINATING EQUIPMENT, 1985 June 10.
Purpose: Adopts Electronic Industries Association (EIA) Standard RS-449 which specifies the functional and mechanical interface characteristics for data terminal equipment and data circuit-terminating equipment employing serial binary data interchange.
Applicability: This is an optional standard which may be used by Federal agencies in the design and procurement of data communications applications to be used over analog telecommunications networks.
Solicitation Wording: "Acquisition of General Purpose 37-Position and 9-Position Interface Between Data Terminal Equipment and Data Circuit Terminating Equipment"

"All general purpose 37-position and 9-position interfaces offered for use with data communications systems as a result of the requirements of which this is a part shall conform to the requirements established in FIPS 143."

FIPSPUB154 HIGH SPEED 25-POSITION INTERFACE FOR DATA TERMINAL EQUIPMENT AND DATA CIRCUIT-TERMINATING EQUIPMENT, 1988 November 4.
Purpose: Specifies the interconnection of data terminal equipment (DTE) and data circuit-terminating equipment (DCE) employing serial binary data interchange circuits with control information exchanged on separate control circuits. Defines the signal characteristics, interface mechanical characteristics, functional description of interchange circuits, and standard interfaces for selected communication system configurations. Adopts EIA-530-1987.

(5) TELECOMMUNICATIONS STANDARDS—Continued

Interface—Continued

Applicability: Acquisition and design of high-speed data communications equipment.
Solicitation Wording: "Acquisition of High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment"

"Telecommunications systems offered as a result of this requirement which employ high speed (20,000 to 2,000,000 bit/second) interchange between DTEs and DCEs shall conform to the electrical, mechanical and procedural characteristics established for interfaces in FIPS 154."

Modems

FIPSPUB162 1,200 BITS PER SECOND TWO-WIRE DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.22 for equipment or services that utilize 600 and/or 1,200 bit/s two-wire duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: New equipment and services that require 600 and/or 1,200bit/s two-wire duplex modems for data communication on telephone-type circuits. This standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—1,200 Bit/Sec Two-wire Duplex Modems"

"All 1,200 Bits Per Second Two-wire Duplex Modems offered for Data Communications Use on Telephone-Type Circuits shall comply with FIPS 162."

FIPSPUB163 2,400 BITS PER SECOND TWO-WIRE DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.22 bis for equipment and services that utilize 2,400 bit/s two-wire duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: New equipment and services that require 2,400 bit/s two wire duplex modems for data communication on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—2,400 Bit/Sec Two-wire Duplex Modems"

"All 2,400 Bits Per Second Two-wire Duplex Modems offered for Data Communications Use on Telephone-Type Circuits shall comply with FIPS 163."

FIPSPUB164 2,400 BITS PER SECOND FOUR-WIRE DUPLEX AND TWO-WIRE HALF-DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.26 for equipment and services that utilize 2,400 bit/s four-wire duplex and/or two-wire half-duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: New equipment and services that require 2,400 bit/s four wire duplex and two-wire half-duplex modems for data communication on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—2,400 Bit/Sec Four-wire duplex and Two-wire Half-duplex Modems"

"All 2,400 bits per second four-wire duplex and two-wire half-duplex modems offered for data communications use on telephone-type circuits shall comply with FIPS 164."

FIPSPUB165 4,800 BITS PER SECOND FOUR-WIRE DUPLEX AND TWO-WIRE HALF-DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.27 bis and V.27 ter equipment and services that utilize 4,800 bit/s four-wire duplex and/or two-wire half-duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.

(5) TELECOMMUNICATIONS STANDARDS—Continued

Modems—Continued

Applicability: New equipment and services that require 4,800 bit/Sec four-wire duplex and two-wire half-duplex modems for data communication on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—4,800 Bits/Sec Four-wire duplex and Two-wire Half-duplex Modems"

"All 4,800 bits per second four-wire duplex and two-wire half-duplex modems offered for data communications use on telephone-type circuits shall comply with FIPS 165."

FIPSPUB166 4,800 AND 9,600 BITS PER SECOND TWO-WIRE DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.32 for equipment and services that utilize 4,800 and/or 9,600 bit/s two-wire duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: All new equipment and services that require 4,800 and 9,600 bit/s two-wire half-duplex modems for data communications on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—4,800 and 9,600 Bit/Sec Two-wire Duplex Modems"

"All 4,800 bits per second two-wire duplex modems offered for data communications use on telephone-type circuits shall comply with FIPS 166."

FIPSPUB167 9,600 BITS PER SECOND FOUR-WIRE DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.29 for equipment and services that utilize 9,600 bit/s four-wire duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: All new equipment and services that require 9,600 bit/s four-wire duplex modems for data communications on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—9,600 Bit/Sec Four-wire Duplex Modems"

"All 9,600 bit/Sec per four-wire duplex modems offered for data communications use on telephone-type circuits shall comply with FIPS 167."

FIPSPUB168 12,000 and 14,400 BITS PER SECOND FOUR-WIRE DUPLEX MODEMS FOR DATA COMMUNICATIONS USE ON TELEPHONE-TYPE CIRCUITS, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.33 for equipment and services utilizing 12,000 and/or 14,000 bit/s four-wire duplex modems to facilitate interoperability between telecommunications facilities of the Federal government.
Applicability: All new equipment and services that require 12,000 and 14,400 bits per second four-wire duplex modems for data communications on telephone-type circuits. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Coding and Modulation—12,000 and 14,400 Bit/Sec Four-wire Duplex Modems"

"All 12,000 and 14,400 bits per second four-wire duplex modems offered for data communications use on telephone-type circuits shall comply with FIPS 168."

FIPSPUB169 ERROR CORRECTION IN MODEMS EMPLOYING ASYNCHRONOUS-TO-SYNCHRONOUS CONVERSION, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.42 for equipment and services that utilize error correction in modems employing asynchronous-to-synchronous conversion to facilitate interoperability between telecommunications facilities of the Federal government.

(5) TELECOMMUNICATIONS STANDARDS—Continued

Modems—Continued

Applicability: All new equipment and services that require error correction in modems employing asynchronous-to-synchronous conversion. However, this standard is not mandatory when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Error Correction in Modems Employing Asynchronous-to-Synchronous Conversion"

"Error correction in modems employing asynchronous-to-synchronous conversion shall comply with FIPS 169."

FIPSPUB170 DATA COMPRESSION IN MODEMS EMPLOYING CCITT RECOMMENDATION V.42 ERROR CORRECTION, 1992 April 2.
Purpose: Adopts CCITT Recommendation V.42 bis for equipment and services that utilize data compression in modems employing data compression obtained by substituting strings of characters by reduced length codes at a transmitting modem and replacing the transmitted codes by the original strings of characters at a receiving modem. Standard facilitates interoperability between telecommunications facilities of the Federal government.
Applicability: Shall be used by all Federal agencies when procuring new equipment and services that utilize data compression in modems employing CCITT V. 42 error correction. However, it is not mandatory for use when expanding or replacing equipment in already existing networks of modems.
Solicitation Wording: "Data Compression in Modems Employing CCITT Recommendation V.42 Error Correction"

"All modems that are offered which employ CCITT Recommendation V.42 error correction for data compression shall comply with FIPS 170."

Performance Measurement

FIPSPUB144 DATA COMMUNICATION SYSTEMS AND SERVICES USER-ORIENTED PERFORMANCE PARAMETERS, 1985 May 28.
Purpose: Improves Federal government procurement of digital telecommunications systems and services by providing user-oriented and system independent means of specifying communication performance. Adopts ANSI X3.102-1983/R1990.
Applicability: This standard shall be used by all Federal departments and agencies in specifying the performance of data communication systems and services as perceived by end users.
Solicitation Wording: "Communications Systems and Service-user Oriented Performance Parameters"

"Performance specifications and equipment, systems, and services required to measure, evaluate, or monitor systems performance based on the parameters specified elsewhere in this requirements document [insert reference here] shall comply with FIPS 144."

FIPSPUB155 DATA COMMUNICATION SYSTEMS AND SERVICES USER-ORIENTED PERFORMANCE MEASUREMENT METHODS, 1988 November 4.
Purpose: Specifies uniform methods of measuring the performance of data communication services at digital interfaces between data communication systems and their users. These methods may be used to characterize the performance of any data communication service in accordance with the user-oriented performance parameters defined in a companion standard, American National Standard X3.102-1983, which has been adopted as FIPS 144. Adopts ANSI X3.141-1987.
Applicability: For use in the measurement of performance of system design, operation or usage effect.
Solicitation Wording: "Data Communications Performance Testing"

"Test measurements on data communications systems and services offered as a result of this requirement shall be conducted in accordance with FIPS 155 to determine compliance with the user oriented performance specifications coded in FIPS 144."

(5) TELECOMMUNICATIONS STANDARDS—Continued

Security

FIPSPUB139 INTEROPERABILITY AND SECURITY REQUIREMENTS FOR USE OF THE DATA ENCRYPTION STANDARD IN THE PHYSICAL LAYER OF DATA COMMUNICATIONS, 1983 August 3.

Purpose: FIPS 139 facilitates the interoperation of government data communication facilities, systems, and data that require cryptographic protection using the Data Encryption Standard (DES) algorithm. The standard specifies interoperability and security related requirements using encryption at the Physical Layer of the ISO Open Systems Interconnection (OSI) Reference Model (International Standard 7498) in the telecommunications systems conveying Automatic Data Processing (ADP) and/or narrative text information.

Applicability: All applicable DES cryptography components, equipment or services used for encryption of ADP and/or narrative text information in the Physical Layer data communications using the Data Encryption Standard (DES) algorithm.

Solicitation Wording: "Cryptographic Components, Equipment Systems, and Services"

"All applicable DES cryptographic components, equipment or services used for encryption of ADP and/or narrative text information in the physical layer communications using the requirements specified in FIPS 139. The physical layer is further defined in International Standard 7498, Open Systems Interconnection Reference Model."

FIPS PUB141 INTEROPERABILITY AND SECURITY REQUIREMENTS FOR USE OF THE DATA ENCRYPTION STANDARD WITH CCITT GROUP 3 FACSIMILE EQUIPMENT, 1985 April 4.

Purpose: FIPS 141 specifies interoperability and security related requirements for use of encryption with the International Telegraph and Telephone Consultative Committee (CCITT) Group 3-type facsimile equipment conveying Automatic Data Processing (ADP) and/or narrative text information.

Applicability: Cryptographic components, equipment or services used for the encryption of documents transmitted by CCITT Group 3 type facsimile equipment. The access is on interoperability of Government facsimile equipment that requires DES protection.

Solicitation Wording: "CCITT Group 3 Facsimile Equipment, Systems and Services"

"All applicable cryptographic components, equipment or services used for the encryption of documents transmitted by CCITT Group 3 type facsimile equipment using the Data Encryption Standard (DES) algorithm must comply with the requirements specified in FIPS 141."

Telecommunications Administration

FIPS PUB187 ADMINISTRATION STANDARD FOR THE TELECOMMUNICATIONS INFRASTRUCTURE OF FEDERAL BUILDINGS, 1994 August 11.

Purpose: Specifies the administrative requirements of the telecommunications infrastructure within a new, existing, or renovated office building or campus. Adopts ANSI/TIA/EIA-606-1993.

Applicability: This standard shall be used by all departments and agencies in the administration of the telecommunications infrastructure for all new office buildings. Use is recommended for the administration of the telecommunications infrastructure within an existing or renovated office building or campus. This standard shall be used in designing and implementing public key based signature systems which Federal departments and agencies operate or which are operated for them under contract.

Solicitation Wording: "Development or Acquisition of Telecommunications Administration Facilities and Systems"

"All telecommunications facilities and systems that are offered or used as a result of this requirement shall conform with the specifications of FIPS 187."

(5) TELECOMMUNICATIONS STANDARDS—Continued

Video Teleconferencing

FIPS PUB 178 VIDEO TELECONFERENCING SERVICES AT 56 TO 1,920 KB/S, 1992 December 21.

Purpose: Provides a comprehensive description of the interoperability criteria for audiovisual systems used in video teleconferencing and videophone applications. Adopts ITU-T-H.320, H221, H242, H261, and H.230.

Applicability: To be used by all Federal agencies in the design and procurement of video teleconferencing and videophone systems. This standard is mandatory only for those audiovisual systems operating at rates between 56 and 1,960 kbps. This standard shall be used in the planning, design, and procurement, including lease and procurement, including lease and purchase, of all new video communications systems that utilize video coders/decoders (codecs).

Solicitation Language: "Video Teleconferencing Services at 56 to 1,920 kbps"

"Audiovisual systems or services designed or offered as a result of this requirement that operate at rates between 56 kbps and 1,920 kbps and that employ video codecs shall comply with FIPS 178."

(6) FEDERAL TELECOMMUNICATIONS STANDARDS (FED-STDS)*

FED-STD 1002A TIME AND FREQUENCY REFERENCE INFORMATION IN TELECOMMUNICATIONS SYSTEMS, 1991 September 3.

Purpose: FED-STD 1002A establishes the requirements for telecommunications facilities and systems of the Federal government to utilize time and frequency reference information based upon coordinated universal time (UTC).

Applicability: Telecommunications facilities and systems dependent on time or frequency reference information.

Solicitation Wording: "Time and Frequency Reference"

"All applicable telecommunications facilities and systems that are offered or used as a result of this requirement shall be referenced to the time and frequency standard specified in FED-STD 1002A."

FED-STD 1016 TELECOMMUNICATIONS: ANALOG TO DIGITAL CONVERSION OF RADIO VOICE BY 4,800 BIT/SECOND CODE EXCITED LINEAR PREDICTION (CELP), 1991 February 14.

Purpose: FED-STD 1016 specifies interoperability-related requirements for the conversion of analog voice to a 4,800 bit/second digitized form for digital radio transmission by Code Excited Linear Prediction (CELP) method.

Applicability: This standard shall be used by all Federal departments and agencies in the design and procurement of all radio equipment systems and applications wherein voice transmission must be digitized prior to encryption.

Solicitation Wording: "Acquisition and development of digitized voice equipment using 4,800 bit/second Code Excited Linear Prediction (CELP)"

"All applicable equipment or applications offered as a result of this requirement for the conversion of analog voice to a 4,800 bit/second digitized form for digital radio transmission by Code Excited Linear Prediction (CELP) method must comply with the requirements specified in FED-STD 1016."

FED-STD 1023 TELECOMMUNICATIONS: INTEROPERABILITY REQUIREMENTS FOR ENCRYPTED, DIGITIZED VOICE UTILIZED WITH 25 KHZ CHANNEL FM RADIOS OPERATING ABOVE 30 MHZ, 1989 September 25.

Purpose: FED-STD 1023 describes interoperability-related requirements for the conversion of analog voice to digital form, its encryption and related synchronization and subsequent frequency modulation.

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* These Federal Telecommunications Standards (FED-STDS) were developed by the National Communications System (NCS) and were approved by GSA.

(6) FEDERAL TELECOMMUNICATIONS STANDARDS (FED-STDS)—Continued

Applicability: Used in the design and procurement of digitized voiced Type I encryption equipment for use with nominal 25 kHz channel FM radio systems that operate above 30 MHz.

Solicitation Wording: "Acquisition and Development of Digitized Voice Type I Encryption Equipment for Use With FM Radio System"

"All applicable equipment or services resulting from this requirement that are employed for digitized voice Type I encryption for use of frequency Modulation radio systems must comply with the requirements specified in FED-STD 1023."

FED-STD 1035A TELECOMMUNICATIONS: CODING MODULATIONS AND TRANSMISSION REQUIREMENTS FOR SINGLE CHANNEL MEDIUM AND HIGH FREQUENCY RADIOTELEGRAPH SYSTEMS USED IN GOVERNMENT MARITIME MOBILE TELECOMMUNICATIONS, 1991 May 10.

Purpose: FED-STD 1035A established minium requirements for single channel, narrowband, medium and high frequency radiotelegraph to facilitate the interoperability of maritime mobile telecommunications facilities.

Applicability: This standard shall be used by all Federal departments and agencies in the design and procurement of maritime mobile and radiotelegraph systems for medium and high frequency operation.

Solicitation Wording: "Acquisition of Maritime Mobile Telecommunications"

"All applicable equipment or services resulting from this requirement that are employed for the operation of maritime mobile radiotelegraph systems using single channel, narrowband, medium and high frequency transmissions must comply with FED-STD 1035A."

FED-STD 1037B TELECOMMUNICATIONS: GLOSSARY OF TELECOMMUNICATIONS TERMS, 1991 June 3.

Purpose: FED-STD 1037B provides Federal departments and agencies a comprehensive source of definitions of terms used in telecommunications and directly related fields by international, national, and U.S. Government telecommunications specialist.

Applicability: Federal departments and agencies shall use this glossary in defining terms used in specifications for telecommunications systems, equipment, and services.

Solicitation Wording: No wording available.

FED-STD 1045A TELECOMMUNICATIONS: HF RADIO AUTOMATIC LINK ESTABLISHMENT, 1993 October 18.

Purpose: FED-STD 1045 establishes the technical requirements to ensure interoperability of new long-haul radio equipment in the medium frequency (MF) band and the high frequency (HF) band.

Applicability: Used in the design and procurement of medium frequency and high frequency radio systems employing automatic link establishment (ALE)

Solicitation Wording: "Acquisition of MF/HF Radio with Automatic Link Establishment"

"All applicable medium frequency and high frequency telecommunications systems employing automatic link establishment must comply with the requirements set forth in FED-STD 1045."

FED-STD 1046/1 TELECOMMUNICATIONS: HF RADIO AUTOMATIC NETWORKING SECTION 1; BASIC NETWORKING—ALE CONTROLLER, 1993 October 18.

Purpose: Establishes technical parameters, in the form of mandatory standards and optional design objectives that are considered necessary to ensure interoperability of new long-haul and tactical radio equipment in the HF band.

(6) FEDERAL TELECOMMUNICATIONS STANDARDS (FEDSTDS)—Continued

Applicability: This standard shall be used by all Federal agencies in the planning, design, and procurement, including lease and purchase, of all new data communications systems that utilize the HF Automatic Link Establishment (ALE) radio media for networking purposes.
Solicitation Language: "Automatic Link Establishment Network Controller"

"All equipment, software or systems offered as a result of this requirement for a network controller for radio systems employing automatic link establishment shall comply with FED-STD 1046, Section 1."

FED-STD 1049/1 TELECOMMUNICATIONS: HF RADIO AUTOMATIC LINK ESTABLISHMENT IN STRESSED ENVIRONMENTS, SECTION 1: LINKING PROTECTION, 1993 July 26.
Purpose: To improve the Federal acquisition process by providing Federal agencies a comprehensive, authoritative source of definitions of terms and link protection parameters, and to prevent the establishment of unauthorized HF radio links or the unauthorized manipulation of legitimate HF radio automatic link establishment (ALE).
Applicability: All Federal agencies shall use this standard in the design and acquisition of ALE automated radio equipment requiring operation in stressed environments.
Solicitation Wording: "Linking Protection in Stressed Environments for HF Radio Automatic Link Establishment"

"All equipment and services offered as the result of this requirement shall comply with FED-STD 1049/1 and FED-STD 1045."

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55-DC3	(3)	G	Guideline: Codes for Named Populated Places, Primary County Divisions, and Other Locational Entities of the United States, Puerto Rico, and the Outlying Areas 94 Dec 28	
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100-1	(5)	S	Interface Between Data Terminal Equipment (DTE) and Data Circuit-Terminating Equipment (DCE) for Operation with Packet-Switched Data Networks (PSDN), or Between Two DTEs, by Dedicated Circuit (ANSI X3.100-1989) 91 Mar 20	
101	(2)	G	Guideline for Lifecycle Validation, Verification, and Testing of Computer Software 83 June 06	
102	(4)	G	Guideline for Computer Security Certification and Accreditation 83 Sept 27	
103	(3)	S	Codes for the Identification of Hydrologic Units in the United States and the Caribbean Outlying Areas (USGS/CIRCULAR#878-A&ANSI X3.145-1986) 83 Nov 15	
106	(2)	G	Guideline on Software Maintenance 84 June 15	
112	(4)	S	Password Usage 85 May 30	
113	(4)	S	Computer Data Authentication 85 May 30	
119-1	(2)	S	Ada (ANSI/ISO/IEC 8652:1995) 95 Mar 13	
120-1	(2)	S	Graphical Kernel System (GKS) (ANSI X3.124-1985 (R1991), X3.124.1-1985(R1991), X3.124.2-1988 (R1994), X3.124.3-1989 and ISO/IEC 8651-4:1991) 91 Jan 08	1
125-1	(2)	S	MUMPS (ANSI/MDC X11.1-1990)	
127-2	(2)	S	Database Language SQL (ANSI X3.135-1992) 93 June 02	1
128-2	(2)	S	Computer Graphics Metafile (CGM) (ANSI/ISO 8632.1-4:1992[1994], 8632:1992/Amd. 1:1994 & Amd. 2:1995, MIL-D-28003A+Amd.1, and ATA Spec. 2100, Version 2.1) 96 April 17	
132	(2)	G	Guideline for Software Verification and Validation Plans (ANSI/IEEE 1012-1986) 87 Nov 19	

FIPS PUBLICATIONS LIST BY FIPS NUMBER (contd.)

1997 September

FIPS NO.	CATEGORY		TITLE—DATE	CHANGE NOTICES
137	(5)	S	Analog to Digital Conversion of Voice by 2,400 Bit/ Second Linear Predictive Coding 84 Nov 28	
138	(5)	S	Electrical Characteristics of Balanced Voltage Digital Interface Circuits 75 Sept 24	
139	(5)	S	Interoperability and Security Requirements for Use of the Data Encryption Standard in the Physical Layer of Data Communications 83 Aug 3	
140-1	(5)	S	Security Requirements for Cryptographic Modules 94 Jan 11	
141	(5)	S	Interoperability and Security Requirements for Use of the Data Encryption Standard with CCITT Group 3 Facsimile Equipment 85 Apr 04	
142	(5)	S	Electrical Characteristics of Unbalanced Voltage Digital Interface Circuits 80 Jan 31	
143	(5)	S	General Purpose 37-Position and 9-Position Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment (EIA-RS-449) 85 June 10	
144	(5)	S	Data Communication Systems and Services User-Oriented Performance Parameters (ANSI X3.102-1983/R1990) 85 May 28	
146-2	(2)	S	Profiles for Open Systems Internetworking Technologies (POSIT) 95 May 15	2
148	(5)	S	Procedures for Document Facsimile Transmission (EIA-RS-466) 82 Apr 14	
150	(5)	S	Facsimile Coding Schemes and Coding Control Functions for Group 4 Facsimile Apparatus (EIA-538-1988) 88 Nov 04	
151-2	(2)	S	Portable Operating System Interface (POSIX)—System Application Program Interface [C Language] (ISO/IEC 9945-1:1990) 93 May 12	
153-1	(2)	S	Programmer's Hierarchical Interactive Graphics System (PHIGS) (ANSI/ISO 9592.1,2,3:1989, 9592.1a,2a,3a, 4:1992, 9593.1:1990, 9593.3-1990, 9593.4:1991, and 9593.1/AM1, 3/AM1, 4/AM1:1991) 95 Jan 27	
154	(5)	S	High Speed 25-Position Interface for Data Terminal Equipment and Data Circuit-Terminating Equipment (EIA-530-1987) 88 Nov 04	

FIPS PUBLICATIONS LIST BY FIPS NUMBER (contd.)

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FIPS NO.	CATEGORY		TITLE—DATE	CHANGE NOTICES
155	(5)	S	Data Communication Systems and Services User-Oriented Performance Measurement Methods (ANSI X3.141-1987) 88 Nov 04	
160	(2)	S	C (ANSI/ISO 9899:1992) 91 Mar 13	1
161-2	(2)	S	Electronic Data Interchange (EDI) 96 May 22	
162	(5)	S	1,200 Bits Per Second Two-Wire Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 136/Former Federal Standard 1008)	
163	(5)	S	2,400 Bits Per Second Two-Wire Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 133/Former Federal Standard 1005A)	
164	(5)	S	2,400 Bits Per Second Four-Wire Duplex and Two-Wire Half-Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 133/Former Federal Standard 1005A)	
165	(5)	S	4,800 Bits Per Second Four-Wire Duplex and Two-Wire Half-Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 134-1/Former Federal Standard 1006A)	
166	(5)	S	4,800 and 9,600 Bits Per Second Two-Wire Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 134-1/Former Federal Standard 1006A)	
167	(5)	S	9,600 Bits Per Second Four-Wire Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2 (Supersedes FIPS PUB 135/Former Federal Standard 1007)	
168	(5)	S	12,000 and 14,400 Bits Per Second Four-Wire Duplex Modems for Data Communications Use on Telephone-Type Circuits 92 April 2	
169	(5)	S	Error Correction in Modems Employing Asynchronous-To-Synchronous Conversion 92 Apr 2	
170	(5)	S	Data Compression in Modems Employing CCITT Recommendation V.42 Error Correction 92 Apr 2	

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1997 September

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171	(4)	S	Key Management Using ANSI X9.17 (ANSI X9.17-1985) 92 Apr 27	
172-1	(2)	S	VHSIC Hardware Description Language (VHDL) (ANSI/IEEE 1076-1993) 95 Jan 27	
173-1	(2)	S	Spatial Data Transfer Standard (SDTS)(DOI/USGS Specs.) 94 June 10	
175	(5)	S	Federal Building Standard for Telecommunications Pathways and Spaces (ANSI/EIA/TIA-569-1990) 92 Aug 21	
176	(5)	S	Residential and Light Commercial Telecommunications Wiring Standard (ANSI/EIA/TIA-570-1991) 92 Aug 21	
177-1	(2)	S	Initial Graphics Exchange Specification (IGES) (ANSI/US PRO-100-1993, Version 5.2, LEP Application Protocol, IP-110-1994, and Engr. Dwg. (Class II) Subset (MIL-D-28000A), Dec. 1992 Version)) 96 Apr 23	
178	(5)	S	Video Teleconferencing Services at 56 to 1,920 kb/s (ITU-T Recommendations H.221; 230; 242; 261; 320-1993) 92 Dec 21	1
179-1	(2)	S	Government Network Management Profile (GNMP) 95 May 15	2
180-1	(4)	S	Secure Hash Standard (SHS) 95 Apr 17	
181	(4)	S	Automated Password Generator (APG) 93 Oct 05	
182	(5)	S	Integrated Services Digital Network (ISDN) 93 Oct 05	
183	(2)	S	Integration Definition for Function Modeling (IDEFO) 93 Dec 21	
184	(2)	S	Integration Definition for Information Modeling (IDEFIX) 93 Dec 21	
185	(4)	S	Escrowed Encryption Standard (EES) 94 Feb 09	
186	(4)	S	Digital Signature Standard (DSS) 94 May 19	1
187	(5)	S	Administration Standard for the Telecommunications Infrastructure of Federal Buildings (ANSI/TIA/EIA-606-1993) 94 Aug 11	
188	(4)	S	Standard Security Label for Information Transfer 94 Sept 6	
189	(2)	S	Portable Operating System Interface (POSIX)—Part 2: Shell and Utilities (ISO/IEC 9945-2:1993) 94 Oct 11	
190	(4)	G	Guideline for the Use of Advanced Authentication Technology Alternatives 94 Sept 28	

FIPS PUBLICATIONS LIST BY FIPS NUMBER (contd.)

1997 September

FIPS NO.	CATEGORY		TITLE—DATE	CHANGE NOTICES
191	(4)	G	Guideline for the Analysis of Local Area Network Security 94 Nov 9	
192-1	(2)	S	Application Profile for the Government Information Locator Service (GILS) 97 Aug 1	
193	(2)	S	SQL Environments 95 Feb 3	
194	(2)	S	Open Document Architecture (ODA) Raster Document Application Profile (DAP) (ISO/IEC 12064-1 ISP/FOD112) 95 Mar 13	1
195	(5)	S	Federal Building Grounding and Bonding Requirements for Telecommunications (ANSI/TIA/EIA-607-1994) 1995 Aug 15	
196	(4)	S	Entity Authentication Using Public Key Cryptography 1997 Feb 18	

CATEGORY KEY:

(1) GENERAL PUBLICATIONS

(2) HARDWARE AND SOFTWARE STANDARDS/ GUIDELINES

(3) DATA STANDARDS/GUIDELINES

(4) COMPUTER SECURITY STANDARDS/GUIDELINES

(5) TELECOMMUNICATIONS STANDARDS

(6) FEDERAL TELECOMMUNICATIONS STANDARDS (FED-STDS)

S — Standard
G — Guideline
P — Program Information Document

FED-STDS LIST

1997 September

FED-STD 1002A	Time and Frequency Reference Information in Telecommunication Systems
FED-STD 1016	Telecommunications: Analog to Digital Conversion of Radio Voice by 4,800 Bit/Second Code Excited Linear Prediction (CELP)
FED-STD 1023	Interoperability Requirements for Encrypted, Digitized Voice Utilized with 25 kHz Channel FM Radios Operating Above 30 MHz
FED-STD 1035A	Coding, Modulation and Transmission Requirements for Single Channel Medium and High Frequency Radiotelegraph Systems Used in Government Maritime Mobile Telecommunications
FED-STD 1037B	Glossary of Telecommunications Terms
FED-STD 1045A	Telecommunications: HF Radio Automatic Link Establishment
FED-STD 1046/1	Telecommunications: HF Radio Automatic Networking **Section 1:** Basic Networking—ALE Controller
FED-STD 1049/1	Telecommunications: HF Radio Automatic Link Establishment in Stressed Environments **Section 1:** Linking Protection

FED-STDS are available from:

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FAX: (703) 607-4830
E-mail: orndorfj@ncs.gov

FIPS PRICE LIST

1997 September

(These prices are subject to change.)

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FIPSSET/BAT (includes FIPS PUBS 4-1 through 196)	$2,000.00	$4,000.00
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FIPSPUB8-6/BAT	A05	A01	PB95-503280 diskette
FIPSPUB9-1/BAT	A02	A01	
FIPSPUB10-4/BAT	A04	A01	PB95-503504 diskette
FIPSPUB21-4/BAT ANSI X3.23-1985 X3.23a-1989 X3.23b-1993	E99	*	
FIPSPUB21-4A/BAT ANSI X3.23a-1989	E13	*	
FIPSPUB21-4B/BAT ANSI X3.23b-1993	E99	*	
FIPSPUB29-3/BAT	A02	A01	
FIPSPUB31/BAT	A05	A01	
FIPSPUB41/BAT	A02	A01	
FIPSPUB46-2/BAT	E04	A01	
FIPSPUB48/BAT	A02	A01	
FIPSPUB55-3/BAT DOCUMENTATION	E04	A01	
FIPSPUB55-DC3/BAT DATA CODES	E99		PB95-502563 T05
FIPSPUB66/BAT	E99 PB87-100012	*	PB87-100020/BAT T02
FIPSPUB69-1/BAT ANSI X3.9-1978/R1989	E13	*	
FIPSPUB73/BAT	A04	A01	
FIPSPUB74/BAT	A03	A01	
FIPSPUB81/BAT	A03	A01	
FIPSPUB83/BAT	A03	A01	

*Not available in microfiche.

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***See price codes on page 41.

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FIPSPUB92/BAT	A03	A01	PB81-162513/BAT T02
FIPSPUB95-1/BAT	E04	A01	
FIPSPUB100-1/BAT ANSI X3.100-1989	E06	*	
FIPSPUB101/BAT	A03	A01	
FIPSPUB102/BAT	A05	A01	
FIPSPUB103/BAT USGS/CIR#878-A& ANSI X3.145-1986	A07	*	
FIPSPUB106/BAT	A02	A01	
FIPSPUB112/BAT	A04	A01	
FIPSPUB113/BAT	A03	A01	
FIPSPUB119-1/BAT ANSI/ISO/IEC 8652:1995	E99	*	
FIPSPUB120-1/BAT ANSI X3.124-1985(R1991)& X3.124.1-1985(R1991)	E15	*	
FIPSPUB120-1A/BAT ANSI X3.124.2-1988(R1994)	E09	*	
FIPSPUB120-1B/BAT ANSI X3.124.3-1989	E12	*	
FIPSPUB120-1C/BAT ISO/IEC 8651-4:1991	E99	*	
FIPSPUB125-1/BAT ANSI/MDC X11.1-1990	E99	*	
FIPSPUB127-2/BAT ANSI X3.135-1992	E99	*	
FIPSPUB128-2A ANSI/ISO 8632.1:1992	E99	*	
FIPSPUB128-2A-A1 ANSI/ISO 8632:1992/ Amd.1:1994	E99	*	
FIPSPUB128-2A-A2 ANSI/ISO 8632:1992/ Amd.2:1995	E99	*	
FIPSPUB128-2B ANSI/ISO 8632.2:1992	E99	*	
FIPSPUB128-2C ANSI/ISO 8632.3:1992	E99	*	
FIPSPUB128-2D ANSI/ISO 8632.4:1992	E99	*	
FIPSPUB128-2E MIL-D-28003A+Amd. 1	E99	*	

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FIPSPUB128-2F ATA Spec.2100, Ver.2.1	E99	*	
FIPSPUB132/BAT ANSI/IEEE 1012-1986	E07	*	
FIPSPUB137/BAT	E01	*	
FIPSPUB138/BAT	E01	*	
FIPSPUB139/BAT	E01	*	
FIPSPUB140-1/BAT	E05	*	
FIPSPUB141/BAT	E01	*	
FIPSPUB142/BAT	E01	*	
FIPSPUB143/BAT EIA-RS-449	E01	*	
FIPSPUB144/BAT ANSI X3.102-1983/R90	E06	*	
FIPSPUB146-2/BAT	E99	A01	
FIPSPUB148/BAT EIA-RS-466	E10	*	
FIPSPUB150/BAT EIA-538-1988	E08	*	
FIPSPUB151-2/BAT ISO/IEC 9945-1:1990	E99	*	
FIPSPUB153-1/BAT ANSI/ISO 9592.1:1989	E99	*	
FIPSPUB153-1-A1/BAT ANSI/ISO9592.1a:1992/AM1	E06	*	
FIPSPUB153-1A/BAT ANSI/ISO 9592.2:1989	E07	*	
FIPSPUB153-1A-A1/BAT ANSI/ISO 9592.2a:1992/AM1	E06	*	
FIPSPUB153-1B/BAT ANSI/ISO 9592.3:1989	E14	*	
FIPSPUB153-1B-A1/BAT ANSI/ISO 9592.3a:1992/AM1	E99	*	
FIPSPUB153-1C/BAT ANSI/ISO 9593.3:1990	E99	*	
FIPSPUB153-1C-A1/BAT ANSI/ISO 9593.3:1991/AM1	E99	*	
FIPSPUB153-1D/BAT ANSI/ISO 9593.1:1992	E99	*	
FIPSPUB153-1D-A1/BAT ANSI/ISO 9593.1:1991/AM1	E99	*	
FIPSPUB153-1E/BAT ANSI/ISO 9593.4:1991	E99	*	
FIPSPUB153-1E-A1/BAT ANSI/ISO 9593.4:1991/AM1	E99	*	
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FIPSPUB160/BAT ANSI/ISO 9899:1992	E15		*	
FIPSPUB161-2/BAT	E01		A01	
FIPSPUB162/BAT	E99		*	
FIPSPUB163/BAT	E99		*	
FIPSPUB164/BAT	E99		*	
FIPSPUB165/BAT	E99		*	
FIPSPUB166/BAT	E99		*	
FIPSPUB167/BAT	E99		*	
FIPSPUB168/BAT	E99		*	
FIPSPUB169/BAT CCITT V Series	E99		*	
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FIPSPUB170/BAT CCITT V Series	E99		*	
for FIPS170	E99	PB-92-220011	*	
FIPSPUB171/BAT ANSI X9.17-1985	E16		*	
FIPSPUB172-1/BAT ANSI/IEEE 1076-1993	E99		*	
FIPSPUB173-1A/BAT Parts 1, 2, & 3	A14		A01	
FIPSPUB173-1B/BAT Part 4	E99		A01	
FIPSPUB175/BAT ANSI/EIA/TIA-569-1990	E19		*	
FIPSPUB176/BAT ANSI/EIA/TIA-570-1991	E13		*	
FIPSPUB177-1A ANSI/US PRO/IPO-100-1993 Ver. 5.2	E99		*	
FIPSPUB177-1B LEP Application Protocol	E99		*	
FIPSPUB177-1C IPO-110-1994	E99		*	
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ITU-T H.230-1993	E99	PB-94-979102	*	
ITU-T H.242-1993	E99	PB-94-979103	*	
ITU-T H.261-1993	E99	PB-94-979104	*	
ITU-T H.320-1993	E99	PB-94-979105	*	
FIPSPUB179-1	E99		A01	
FIPSPUB180-1	E04		A01	
FIPSPUB181	E05		A01	
FIPSPUB182	E03		A01	
FIPSPUB183	E07		A01	
FIPSPUB184	E10		A01	
FIPSPUB185	E03		A01	
FIPSPUB186	E04		A01	
FIPSPUB187/BAT	E99		*	
ANSI/TIA/EIA-606-1993				
FIPSPUB188/BAT	E04		A01	
FIPSPUB189/BAT	E99		*	
ISO/IEC 9945-2:1993				
FIPSPUB190/BAT	E04		A01	
FIPSPUB191/BAT	E05		A01	
FIPSPUB192-1/BAT	E04		A01	
FIPSPUB193/BAT	E05		A01	
FIPSPUB194/BAT	E04		A01	
ISO/IEC 12064-1 ISP/FOD112				
FIPSPUB195/BAT	E99		*	
ANSI/TIA/EIA-607-1994				
FIPSPUB196	E99		A01	

Note: See page i for information about ordering FED-STDS.

ORDERING INFORMATION FOR FIPS

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A03	$19.50	$24.50
A04	$21.50	$27.00
A05	$21.50	$27.00
A06	$25.00	$31.50
A07	$28.00	$35.00
A08	$31.00	$39.00
A09	$35.00	$44.00
A10	$38.00	$47.50
A11	$41.00	$51.50
A12	$44.00	$55.00
A13	$47.00	$59.00
A14	$49.00	$61.50
A15	$49.00	$61.50
A16	$49.00	$61.50
A17	$49.00	$61.50
A18	$57.00	$71.50
A19	$57.00	$71.50
A20	$57.00	$71.50
A21	$57.00	$71.50
A22	$67.00	$84.00
A23	$67.00	$84.00
A24	$67.00	$84.00
A25	$67.00	$84.00
A99	Contact NTIS	

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E03	$19.00
E04	$22.50
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E06	$28.00
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E14	$57.00
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E20	$101.00
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D11	$612.00	T11	$1,385.00
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D13	$742.00	T13	$1,635.00
D14	$802.00	T14	$1,765.00
D15	$852.00	T15	$1,895.00
D16	$902.00	T16	$2,015.00
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D18	$1,022.00	T18	$2,265.00
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A08	$62.00	$69.00
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A14	$98.00	$108.00
A15	$98.00	$108.00
A16	$98.00	$108.00
A17	$98.00	$108.00
A18	$114.00	$125.50
A19	$114.00	$125.50
A20	$114.00	$125.50
A21	$114.00	$125.50
A22	$134.00	$147.50
A23	$134.00	$147.50
A24	$134.00	$147.50
A25	$134.00	$147.50
A99	Contact NTIS	

	Exception Prices
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E02	$34.00
E03	$38.00
E04	$45.00
E05	$50.00
E06	$56.00
E07	$63.00
E08	$70.00
E09	$77.00
E10	$84.00
E11	$90.00
E12	$99.00
E13	$106.00
E14	$114.00
E15	$123.00
E16	$136.00
E17	$148.00
E18	$158.00
E19	$176.00
E20	$202.00
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	"N" Codes
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N02	$75.00
N03	$40.00

* A01 for standard microfiche is $20.00; $25.00 for out-of-print microfiche.

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D05	$544.00	T05	$1,290.00
D06	$644.00	T06	$1,550.00
D07	$784.00	T07	$1,790.00
D08	$884.00	T08	$2,050.00
D09	$984.00	T09	$2,290.00
D10	$1,124.00	T10	$2,530.00
D11	$1,224.00	T11	$2,770.00
D12	$1,364.00	T12	$3,030.00
D13	$1,484.00	T13	$3,270.00
D14	$1,604.00	T14	$3,530.00
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D16	$1,804.00	T16	$4,030.00
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BAT		$							$	$
BAT		$							$	$
BAT		$							$	$
BAT		$							$	$

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