

# What is POSIX

Computer Systems Laboratory Newsletter  
October 1991  
THE NIST POSIX TESTING PROGRAM

For the past several years, the National Institute of Standards and Technology's Computer Systems Laboratory (NIST/CSL) has collaborated with vendors, users, and voluntary standards organizations to advance the implementation and use of the standard on Portable Operating System Interface for Computer Environments (POSIX). First adopted as a Federal Information Processing Standard (FIPS) in 1988 and revised in 1990, FIPS 151-1, POSIX, adopts the Institute of Electrical and Electronics Engineers (IEEE) Standard 1003.1-1988 which defines an interface to an operating system environment.

FIPS 151-1 is for use in the acquisition of new operating system environments by federal agencies where POSIX-like interfaces are required. FIPS 151-1 permits federal agencies to exercise more effective control over the production, management, and use of information resources by promoting the portability of computer applications at the source code level. POSIX is part of an open systems environment which should reduce the cost of information systems by making it easier and less expensive to maintain and transfer information technology applications. Copies of FIPS 151-1 are available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, (703) 487-4650.

## ***The Importance of Testing***

Agencies require assurance, however, that POSIX products conform to the requirements of FIPS 151-1. Testing for conformance to standards becomes increasingly important as standards become more complex and interrelated. Organizations need an independent, objective means of ascertaining that products conform to standards and interoperate with other products as intended. Tests are an important factor in user acceptance and in the development of dependable POSIX products; compliance with FIPS 151-1 provides increased assurance that a computer program written for one machine will run on other computers.

## **The NIST POSIX Conformance Test Suite**

NIST/CSL developed the POSIX Conformance Test Suite (NIST-PCTS) to test conformance of POSIX products to FIPS 151-1. The NIST-PCTS adheres to the guidelines of IEEE 1003.3 Draft 10.0, "Standards for Test Methods for Measuring Conformance to POSIX," or where assertions were incorrectly stated, the NIST-PCTS was changed to align with those updated assertions in Draft 11.0. The current version of the test suite is NIST-PCTS:151-1 (Version 1.1) dated 9-28-90, available from NTIS. Also required is the latest "patch" from NIST/CSL.

## ***The POSIX Testing Program***

How is a vendor product tested for conformance to POSIX? The vendor typically buys the NIST-PCTS from NTIS and conducts the initial tests. Once satisfied that the product is conformant, the vendor contracts with a testing laboratory which has been accredited by NIST's National Voluntary Laboratory Accreditation Program (NVLAP) to conduct POSIX conformance testing. The laboratory then forwards test results to NIST/CSL, which evaluates the results and issues a Certificate of Validation for successful tests. The certificate assists federal agencies by verifying that the product has met the FIPS 151-1 standard for the tested configuration.

## ***Accredited POSIX Testing Laboratories***

The NIST POSIX Testing Program began with the announcement of the following seven accredited POSIX testing laboratories (APTLs) on May 1, 1991. Laboratories are accredited for a period of one year, with accreditation renewable annually.

Applications Software Incorporated  
1656 Gryc Court  
Mendota Heights, MN 55118

(612) 456-5364

DataFocus Incorporated  
12500 Fair Lakes Circle, Suite 160  
Fairfax, VA 22033-3821  
(703) 631-6770

Hewlett-Packard Company  
Hewlett-Packard POSIX Conformance Test Center  
250 Apollo Drive  
Chelmsford, MA 01824  
(508) 256-6600

Mindcraft, Inc.  
410 Cambridge Avenue  
Palo Alto, CA 94306  
(415) 323-9000

National Computing Centre Ltd  
Oxford Road  
Manchester, M1 7ED, ENGLAND  
+44 61 228-6333

PERENNIAL  
4699 Old Ironsides Drive, Suite 210  
Santa Clara, CA 95054  
(408) 748-2900

UniSoft Corporation  
6121 Hollis Street  
Emeryville, CA 94608-2092  
(415) 420-6400

### ***NIST POSIX Validated Products***

As of September 17, 1991, NIST/CSL has issued Certificates of Validation for the following products (listed in alphabetical order by product supplier):

- A/UX Version 2.0.1, Release 1/30/91 for the Macintosh IIci, IIfx, and IIsi (Product Supplier, Apple Computer Inc. - APTL, Mindcraft, Inc.)
- EP/IX Version 1.3.1, Release 3/21/91 for the Control Data 4000 Model 4330-250 and Model 4680 (Product Supplier, Control Data Corporation - APTL, Applications Software Incorporated)
- DG/UX Version 4.32 for the AViion AV/400/4000 Model AV/410: DG/UX Version 5.4 for the AViion 5000 Model AV/5240, the AViion 400/4000 Model AV/4100 and Model AV/412 (Product Supplier, Data General Corporation - APTL, Mindcraft, Inc.)
- ULTRIX Version 2.4, Release 5/31/91 for the VAXstation II Model GPX and the DECstation Model 3100 (Product Supplier, Digital Equipment Corporation - APTL, Mindcraft, Inc.)
- AIX Version 3 Release 1 for the RISC System/6000 Model 530 and Model 320 (Product Supplier, International Business Machines Inc. - APTL, Mindcraft, Inc.)
- SCO UNIX System V/386 Version 3.2 for the Data General Corporation Walkabout/SX Model G2763 (APTL, Mindcraft, Inc.) and the Zenith Data Systems Supersport Laptop Model Supersport SX (APTL, DataFocus Inc.) (Product Supplier, Santa Cruz Operation)
- CTOSII Version 3, Release 3 for the UNISYS B-Series Model NGEN (Product Supplier, UNISYS Corporation - APTL, DataFocus Inc.)

### ***Availability of POSIX Information***

CSL maintains a register called the "NIST POSIX Testing Laboratories and Validated Products" which lists current APTLs and POSIX products. As additional products are validated, they are added to the register. NIST/CSL publishes the register in its quarterly Validated Processor List, the current version of which is NISTIR 4690 dated October 1991. You may order this document from NTIS, (703) 487-4650, order number PB91-937300, price \$17.00 paper, \$8.00 microfiche. Subscriptions are also available at \$68.00 per year; call (703) 487-4630 for this service.

### ***POSIX Electronic Mail File Service***

NIST/CSL's Software Engineering Group also provides an electronic mail (email) file service. You can receive the most recent information on the NIST POSIX Testing Program by sending specially formatted email messages to [posix@nist.gov](mailto:posix@nist.gov). The automatic mail file server program will read the message and return the requested document as the body of one or more email messages.

To use the service, you must be able to send and receive email via the Internet. For most email systems, you will send an email message to [posix@nist.gov](mailto:posix@nist.gov) (mail [posix@nist.gov](mailto:posix@nist.gov)). When the email system responds with "Subject:" you may type anything. The next line should be a basic command for the email server to send you whatever document you want (send register). After you issue your send command and a carriage return, the next line should simply have a period and a carriage return, signalling the end of your email message. Your email system will probably respond with EOT for the end of transmission. The mail server program reads the message and figures out what to send and where to send it.

Each of the available documents is referenced by the short names listed below. You may request more than one file at a time (send policy register). All the files are plain 7-bit ASCII text.

These are the available NIST POSIX Conformance Testing documents: register -a register of accredited labs and tested implementations (5905 bytes) policy - "NIST POSIX Testing Policy General Information" (27396 bytes) required -"NIST POSIX Testing Policy Certificate of Validation Requirements - #1-FIPS 151-1" (135093 bytes)

### ***For More Information***

Contact Jim Hall, NIST, CSL, Room B266, Technology Building, Gaithersburg, MD 20899, email:[hall@swe.ncsl.nist.gov](mailto:hall@swe.ncsl.nist.gov) or phone (301) 975-3273.