# Preface

This publication documents the UNICOS multilevel security (MLS) feature (also referred to as *security enhancements*) for the UNICOS 10.0 operating system running on Cray PVP computer systems. The Cray ML-Safe system configuration is also described in this manual.

This manual is written for two audiences. First, new users of the UNICOS MLS feature can use it as a stand-alone tutorial/reference manual. Second, the Cray Research Training department is using it as a training document to introduce the UNICOS MLS feature to new users (these users may include people who are becoming system or security administrators). Whenever possible, the text and the accompanying figure are presented in a two-page layout for easy use.

**Note:** In a future release of the UNICOS system, this manual (*UNICOS Multilevel Security (MLS) Feature User's Guide*, Cray Research publication SG–2111) may not be available as relevant chapters are merged into other UNICOS man pages or administrator guides.

The examples shown in this manual, especially in chapters 3, 4, and 7, build on information found in the preceding example. Studying an example out of order or out of context can cause problems when trying to understand the concept being presented.

**Warning:** The Cray ML-Safe configuration of the UNICOS operating system supports processing at multiple security labels and system administration using only nonsuper-user administrative roles. The Cray ML-Safe configuration consists of the subset of UNICOS software that offers these capabilities. The Cray ML-Safe name does not imply maintenance of the UNICOS 8.0.2 security evaluation.

This manual contains the following chapters, which are briefly described as follows:

| Chapter | Description |
|---|---|
| Introduction | This chapter introduces the UNICOS MLS feature, defines basic security concepts, security terminology, the U.S. Department of Defense (DoD) criteria used to define security, and explains how the UNICOS MLS feature is implemented on Cray Research mainframes, including an overview of the Cray ML-Safe configuration of the UNICOS operating system. |

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| Logging in and Using Passwords | This chapter describes the login and password procedures used on a UNICOS system. Descriptions are given for interactive logins on both UNICOS and Cray ML-Safe system configurations, logins using the SecurID card, and how to choose passwords. Also the login and password protection features available on a UNICOS system are described. |
| Using Access Controls Lists (ACL) | This chapter describes the discretionary access controls used by a UNICOS system. How to create, display, remove and duplicate access controls lists (ACL) for your files are explained. Examples are provided showing you how to use the `spacl`(1) and `spset`(1) commands. Also, the chapter explains how ACLs are check to grant or deny access. |
| Using Security Labels | This chapters describes the mandatory access controls used by a UNICOS system. The UNICOS security policy is defined, plus examples are provided showing you how to use the `setulvl`(1), and `setucmp`(1) commands to change your active security label. |
| Creating Directories and Files | This chapter describes the rules that must be followed when assigning security labels to files and directories, defines wildcard and multilevel directories, explains the use of these directories on a UNICOS system, provides examples of how to display a file's or directory's security attributes by using the `ls`(1) command, and how to create, remove, and archive files and directories. |
| Network Access | This chapter describes how the UNICOS MLS feature affects RQS. TCP/IP and NQS controls are explained in other manuals; cross-references are provided. |
| Miscellaneous Information | This chapter describes how the `cron`(8) and `su`(1) commands work on a UNICOS system. Also, cross-references are provided for finding MLS information for the tape subsystem, the Data Migration Facility (DMF), and Cray/REELlibrarian (CRL) features. |

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| Overview of TCSEC Trusted System Divisions | This appendix provides and overview of the DoD security policy and accountability requirements of the *Trusted Computer System Evaluation Criteria* (TCSEC). |

## Related publications

The following documents contain additional information that may be helpful:

- *TCP/IP Network User's Guide*, Cray Research publication SG–2009, *publication number*
- *Tape Subsystem User's Guide*, Cray Research publication SG–2051
- *Cray/REELlibrarian (CRL) User's Guide*, Cray Research publication SG–2126
- *NQE Administration*, Cray Research publication SG–2150

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## Conventions

The following conventions are used throughout this document:

| Convention | Meaning |
|---|---|
| `command` | This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures. |
| `manpage`(*x*) | Man page section identifiers appear in parentheses after man page names. The following list describes the identifiers:<br>1 User commands<br>1B User commands ported from BSD<br>2 System calls<br>3 Library routines, macros, and opdefs<br>4 Devices (special files)<br>4P Protocols<br>5 File formats<br>7 Miscellaneous topics<br>7D DWB-related information<br>8 Administrator commands<br>Some internal routines (for example, the `_assign_asgcmd_info`() routine) do not have man pages associated with them. |
| *variable* | Italic typeface denotes variable entries and words or concepts being defined. |
| **`user input`** | This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font. |
| [ ] | Brackets enclose optional portions of a command or directive line. |
| ... | Ellipses indicate that a preceding element can be repeated. |

The following machine naming conventions may be used throughout this document:

| Term | Definition |
|---|---|
| Cray PVP systems | All configurations of Cray parallel vector processing (PVP) systems that support this release |
| Cray MPP systems | All configurations of the CRAY T3D series. The UNICOS operating system is not supported on CRAY T3E systems. CRAY T3E systems run the UNICOS/mk operating system. |
| All Cray Research systems | All configurations of Cray PVP and Cray MPP systems that support this release. |

The default shell in the UNICOS and UNICOS/mk operating systems, referred to in Cray Research documentation as the *standard shell*, is a version of the Korn shell that conforms to the following standards:

- Institute of Electrical and Electronics Engineers (IEEE) Portable Operating System Interface (POSIX) Standard 1003.2–1992
- X/Open Portability Guide, Issue 4 (XPG4)

The UNICOS and UNICOS/mk operating systems also support the optional use of the C shell.

Cray UNICOS Version 10.0 is an X/Open Base 95 branded product.

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