

Title	Demonstrate and apply introductory knowledge of open computer operating systems		
Level	4	Credits	15

Purpose	<p>This unit standard covers knowledge of computer networks, the devices used in these networks and their relationship to the Open Systems Interconnection (OSI) reference model.</p> <p>People credited with this unit standard are able to demonstrate:</p> <ul style="list-style-type: none"> – knowledge of an open computer operating system; – and apply knowledge of GUIs; – knowledge of and use a file and directory system; – and apply knowledge of printing; – and apply knowledge of backup systems; – and apply knowledge of system processes and memory management for an operating system; – and apply knowledge of operating system shells; and – and apply knowledge of a network environment.
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Classification	Electronic Engineering > Computer Engineering
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Available grade	Achieved
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Guidance Information

- 1 This unit standard is intended for use in engineering courses at diploma level.
- 2 Reference
Fundamentals of UNIX Companion Guide (Cisco Networking Academy Program), 2nd Edition; Cisco Systems; ISBN: 1587131404; and all subsequent amendments and replacements.
- 3 Definitions
CDE – common desktop environment.
CLI – Command line interface.
CPU – central processor unit.
DNS – domain name system.
egrep – extended grep.
FTP – file transfer protocol.
GNOME – GNU network object model environment.
GNU – not Unix.
grep – globally find regular expressions and print.
GUI – graphical user interface.
Industry practice – practice used and recommended by organisations involved in the electrotechnology industry.

Introductory knowledge – means employing a broad knowledge of the subject matter, incorporating some theoretical concepts, to make an informed judgement.

jar – java archive.

KDE – K desktop environment.

lp – line printer (UNIX).

lpr – line printer. The UNIX print command.

NIS – network information service.

OS – operating system.

OSI – Open System Interconnect, a model developed by the International Standards Organisation.

SSH – secure shell.

tar – tape archive.

vi – visual interface, a de facto standard screen editor used for UNIX.

- 4 All measurements are to be expressed in Syst me International (SI) units, and, where required, converted from Imperial units into SI units.
- 5 All activities must comply with: any policies, procedures, and requirements of the organisations involved; the standards of relevant professional bodies; and any relevant legislative and/or regulatory requirements.
- 6 Range
 - a performance in relation to the outcomes of this unit standard must comply with the Health and Safety at Work Act 2015;
 - b laboratory and workshop safety practices are to be observed at all times.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of an open computer operating system.

Performance criteria

- 1.1 The main components of a computer and peripherals are described in terms of function, size, speed, and any special features.

Range	CPU, memory, storage devices, interface ports, printers, scanners, keyboard, mouse.
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- 1.2 Operating systems and their relationships to workstations and the network are described.

Range	desktop OS, network OS, server, relationship to CPU, hardware and drivers.
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- 1.3 Characteristics and functions of the operating system and environment are explained.

Range	brief history, Unix varieties, Linux, OS and the kernel, the OS shell, the file system, graphical user interface.
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1.4 Use of the CLI is demonstrated in accordance with industry practice.

Range login; change directory; display directory information; run a basic application, e.g. text editor, logout, help.

Outcome 2

Demonstrate and apply knowledge of GUIs.

Performance criteria

2.1 Functions provided by various GUIs are described and the differences between them identified.

Range may include but is not limited to – CDE, KDE, GNOME.

2.2 Valid and logical use of the GUI is demonstrated in accordance with industry practice.

Range logging in and out, launching applications, managing windows, customisation of the environment.

2.3 Use of a number of GUI applications is demonstrated in accordance with industry practice.

Range mail tool, calendar, web browsers, help and other built in applications.

Outcome 3

Demonstrate knowledge of and use a file and directory system.

Performance criteria

3.1 File types and naming conventions for files and directories in a typical open computer operating system are identified in accordance with industry practice.

3.2 Directories and files are managed by the use of the CLI in accordance with industry practice.

Range creating, copying and removing files; creating and removing directories; renaming and moving files and directories; input/output redirection; command piping; find; grep and egrep.

3.3 Files are managed by the use of a GUI file manager in accordance with industry practice.

Range file and folder icons, menu options, creating, deleting and recovering files, use of drag and drop for moving and copying, sort and find.

3.4 The use of text editors is demonstrated in accordance with industry practice.

Range vi and/or other CLI text editors, GUI text editors.

Outcome 4

Demonstrate and apply knowledge of printing.

Performance criteria

4.1 Components and process required for printing are identified.

4.2 The use of CLI spoolers is demonstrated in accordance with industry practice.

Range lp and lpr, managing queues, cancelling print requests.

4.3 The use of GUI printing tools is demonstrated in accordance with industry practice.

Range print manager, printer properties and job options, print from file manager.

Outcome 5

Demonstrate and apply knowledge of backup systems.

Performance criteria

5.1 Backup strategies and media are explained.

Range importance, methods, restoration issues, magnetic tape, floppy disks, optical disks.

5.2 Backing up, compression, and restoration processes are demonstrated in accordance with industry practice.

Range may include but is not limited to – tar, jar, GUI tools.

Outcome 6

Demonstrate and apply knowledge of system processes and memory management for an operating system.

Performance criteria

6.1 The system processes and memory management are explained in accordance with industry practice.

Range system process overview, types of processes.

6.2 Tools to monitor and control processes are used in accordance with industry practice.

Range displaying processes, terminating processes, foreground and background processes, scheduling processes.

Outcome 7

Demonstrate and apply knowledge of operating system shells.

Performance criteria

7.1 Shells used in the operating system are described.

Range may include but is not limited to – Korn, Bash shells; evidence of at least two shells is required.

7.2 The use of CLI in available shells is demonstrated in accordance with industry practice.

7.3 Shell scripts are used in accordance with industry practice.

Range create, execute, and debug simple shell scripts.

Outcome 8

Demonstrate and apply knowledge of a network environment.

Performance criteria

8.1 The requirements of network devices for a client/server network are described.

Range ethernet switch or hub, DNS, NIS.

8.2 A workstation is connected to a network, and tools used to test and confirm the connection, in accordance with industry practice.

Range ping, traceroute, telnet, FTP, SSH, resource sharing.

This unit standard is expiring. Assessment against this standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 December 2006	31 December 2021
Rollover and Revision	2	28 June 2018	31 December 2021
Review	3	28 January 2021	31 December 2021

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

This unit standard is expiring