

# NDG Linux Courses Overview

Developed by NDG





# NDG Linux courses: From zero knowledge to certification skills

## 1. NDG Linux Essentials is for beginners

- Aligns to LPI.org Linux Essentials Professional Development certificate

## 2. NDG Introduction to Linux I is aligned to LPIC-1 / Linux+

- Certifications:
- Aligns to exam 101 for LPI.org LPIC-1
- Aligns to exam LX0-103 CompTIA Linux+ powered by LPI

## 3. NDG Introduction to Linux II is aligned to LPIC-1 / Linux+

- Certifications:
- Aligns to exam 101 for LPI.org LPIC-1
- Aligns to exam LX0-104 for CompTIA Linux+ powered by LPI



# NDG Linux course charges

## 1. Linux Essentials for beginners

- Instructor Led Training is offered at no cost worldwide, for fee sustains the free offering
- Self-paced access is offered for a discounted fee of \$39.95 for Cisco Networking Academy participants

## 2. Introduction to Linux I aligned to LPIC-1 / Linux+

- For fee course discounted for Cisco Networking Academies to \$39.95
- Instructor access provided at no cost

## 3. Introduction to Linux II aligned to LPIC-1 / Linux+

- Course is currently in pilot

**Why is NDG charging a fee?** The fee is to sustain the course offerings.

**How long is access?** Institutions set the course start and end dates. (Maximum timeframe is six months).

**Is the fee discounted?** Yes, Cisco Networking Academies receive 50% discount from NDG retail price.

# Linux skills are in demand



**93%** of hiring managers plan to hire a Linux professional in the next six months

and almost **90%** said it's difficult to find experienced Linux pros.

This means lots of job opportunities for those with Linux skills.

-2014 Linux Job Report,  
Linux Foundation & Dice

# NDG Linux Essentials course content

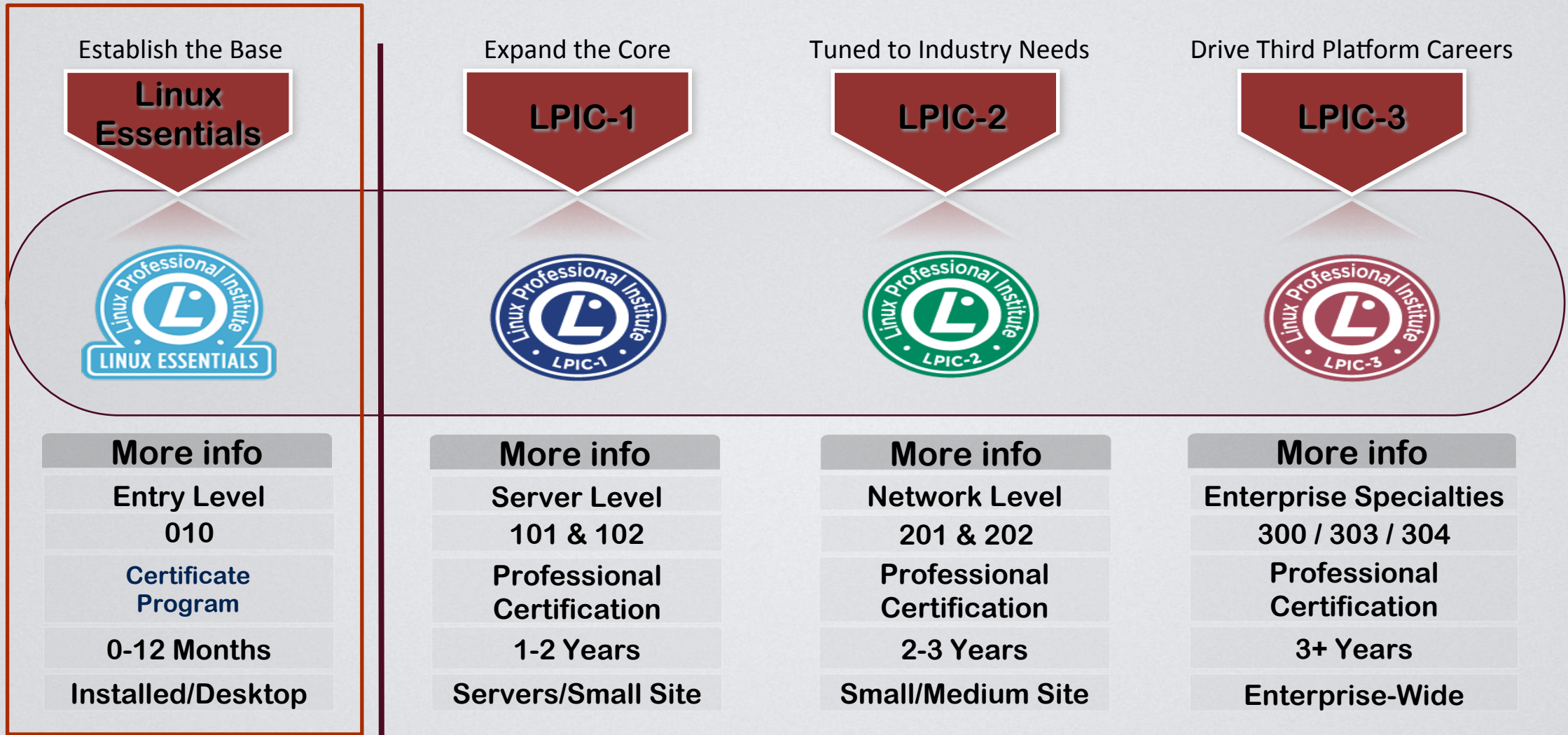


- Designed to be a full semester course
  - With lectures, content, labs and assessments
- Sixteen (16) chapters
- Thirteen (13) lab exercises
- Virtual machine for learner via LMS
- Assessments
  - Chapter, midterm and final
- Instructor presentations for each chapter

# NDG Linux Essentials course modules

| Title of Learning Module / Chapter               | LPI.org Linux Essentials Certificate Objectives Covered |
|--|---|
| 1 Introduction to Linux                          | 1.1 Linux Evolution and Popular Operating Systems       |
|  | 4.1 Choosing an Operating System                        |
| 2 Open Source Applications and Licenses          | 1.2 Major Open Source Applications                      |
|  | 1.3 Understanding Open Source Software and Licensing    |
| 3 Using Linux                                    | 1.4 ICT Skills and Working in Linux                     |
| 4 Command Line Skills                            | 2.1 Command Line Basics                                 |
| 5 Getting Help                                   | 2.2 Using the Command Line to Get Help                  |
| 6 Working with Files and Directories             | 2.3 Using Directories and Listing Files                 |
|  | 2.4 Creating, Moving and Deleting Files                 |
| 7 Archiving and Compression                      | 3.1 Archiving Files on the Command Line                 |
| 8 Pipes, Redirection, and REGEX                  | 3.2 Searching and Extracting Data from Files            |
| 9 Basic Scripting                                | 3.3 Turning Commands into a script                      |
| 10 Understanding Computer Hardware               | 4.2 Understanding Computer Hardware                     |
| 11 Managing Packages and Processes               | 4.3 Where Data is Stored                                |
| 12 Network Configuration                         | 4.4 Your Computer on the Network                        |
| 13 System and User Security                      | 5.1 Basic Security and Identifying User Types           |
| 14 Managing Users and Groups                     | 5.2 Creating Users and Groups                           |
| 15 Ownership and Permissions                     | 5.3 Managing File Permissions and Ownership             |
| 16 Special Permissions, Links and File Locations | 5.4 Special Directories and Files                       |

## CERTIFICATIONS



# NDG Introduction to Linux I aligned to LPIC-1 (101 Exam)



- Designed to be a full semester course
  - With lectures, content, labs and assessments
- Higher level of rigor than Linux Essentials
- 1<sup>st</sup> in series of two courses
- 27 chapters
- 24 lab exercises
- Assessments
  - Chapter, midterm and final
- Current release is English only

# NDG Introduction to Linux I Course Modules

| Title of Learning Module / Chapter       | LPI.org LPIC-1 101 Certification Objectives  |
|--|--|
| Before You Get Started                   | Course Introduction  |
| 1 Using the Shell                        | 103.1 Work on the command line   |
| 2 Getting Help                           | 103.1 Work on the command line   |
| 3 Text Utilities                         | 103.2 Process text streams using filters   |
| 4 Configuring the Shell                  | 103.1 Work on the command line   |
| 5 File Manipulation                      | 103.3 Process basic file management  |
| 6 File Globbing                          | 103.3 Process basic file management  |
| 7 Finding Files                          | 103.3 Process basic file management<br>104.7 Find system files and place files in the correct location |
| 8 Regular Expressions                    | 103.7 Search text files using regular expressions  |
| 9 The vi Editor                          | 103.8 Perform basic file editing operations using vi   |
| 10 Standard Text Streams and Redirection | 103.4 Use streams, pipes and redirects   |
| 11 Managing Processes                    | 103.5 Create, monitor and kill processes<br>103.6 Modify process execution priorities                  |
| 12 Archive Commands                      | 103.3 Process basic file management  |
| 13 File Permissions and Ownership        | 104.5 Manage file permissions and ownership  |

# NDG Introduction to Linux I Course Modules Continued

| Title of Learning Module / Chapter | LPI.org LPIC-1 101 Certification Objectives   |
|------------------------------------|---|
| 14 File Systems Links              | 104.6 Create and change hard and symbolic links                                       |
| 15 Hardware Configuration          | 101.1 Determine and configure hardware settings                                       |
| 16 The Boot Process                | 101.2 Boot the system   |
| 17 Bootloaders                     | 102.2 Install a boot manager  |
| 18 Runlevels                       | 101.3 Change runlevels and shutdown or reboot system                                  |
| 19 Designing a Scheme              | 102.1 Design hard disk layout   |
| 20 Creating Partitions             | 102.1 Design hard disk layout<br>104.1 Create partitions and filesystems              |
| 21 Mounting Filesystems            | 102.1 Design hard disk layout<br>104.3 Control mounting and unmounting of filesystems |
| 22 Maintaining Integrity           | 104.2 Maintain the integrity of filesystems   |
| 23 Fixing Filesystems              | 104.2 Maintain the integrity of filesystems   |
| 24 Disk Quotas                     | 104.4 Manage disk quotas  |
| 25 RPM Package Management          | 102.5 Use RPM and YUM package management  |
| 26 Debian Software Management      | 102.4 Use Debian package management   |
| 27 Managing Shared Libraries       | 102.3 Manage shared libraries   |

## CERTIFICATIONS



# NDG Introduction to Linux II aligned to LPIC-1 (102 Exam)

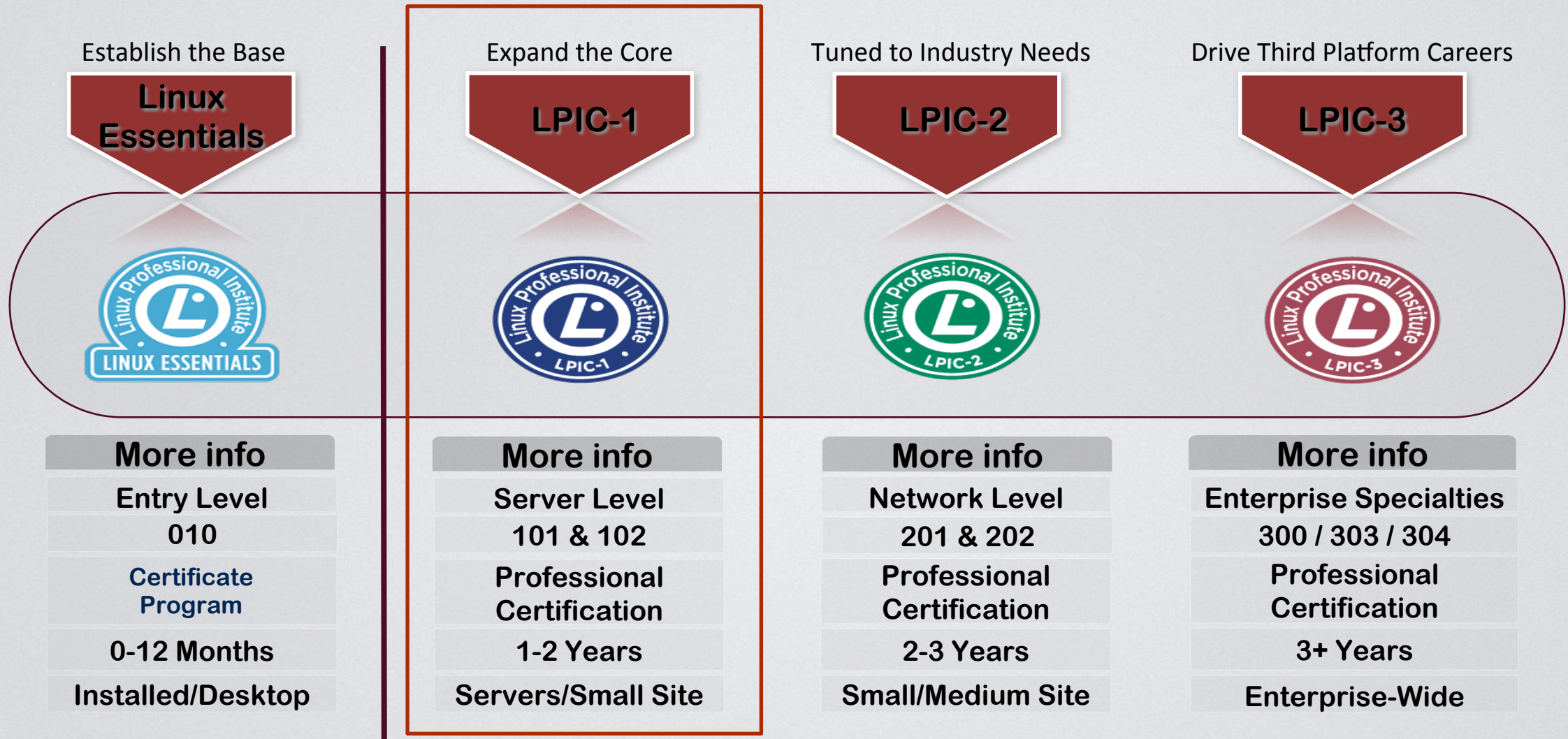


- Designed to be a full semester course
  - With lectures, content, labs and assessments
- 2<sup>nd</sup> course in series
- 19 chapters
- 19 lab exercises
- Assessments
  - Chapter, midterm and final
- Current release is English only

# NDG LPIC-1 102 Preliminary Course Modules

| Title of Learning Module / Chapter | LPI.org LPIC-1 101 Certification Objectives                   |
|------------------------------------|---|
| 1 Shell Customization              | 105.1 Customize and use the shell environment                 |
| 2 Introduction to Shell Scripts    | 105.2 Customize or write simple scripts                       |
| 3 X Windows Components             | 106.1 Install and configure X11                               |
| 4 Configuring Display Managers     | 106.2 Setup a display manager                                 |
| 5 Accessibility                    | 106.3 Accessibility   |
| 6 User and Group Accounts          | 107.1 Manage user and group accounts and related system files |
| 7 Scheduling Jobs                  | 107.2 Automate system administration tasks by scheduling jobs |
| 8 Localization                     | 107.3 Localization and internationalization                   |
| 9 System Time                      | 108.1 Maintain system time                                    |
| 10 Logging                         | 108.2 System logging  |
| 11 Email Configuration             | 108.3 Mail Transfer Agent (MTA) basics                        |
| 12 Printer Management              | 108.4 Manage printers and printing                            |

## CERTIFICATIONS



# How can I offer these new NDG Linux courses?



The banner features a photograph of four students in a classroom setting, focused on their computer monitors. The text 'Cisco Networking Academy' is positioned at the top left, accompanied by a hamburger menu icon. At the bottom, a blue bar contains the course title 'NDG Linux Essentials' and a white 'Register' button.


Cisco Networking Academy

NDG Linux Essentials

Register

- Available in Cisco NetSpace
- Purchase by institution or learner
  - For courses with a fee

# Course home page in NetSpace

 Cisco Networking Academy

NetSpace Home | Inbox | Settings | Logout | Help

Mind Wide Open

Courses ▾ | Assignments | Grades | Calendar

NDG101

Home

Announcements

Modules

Grades

Assignments

Discussions

People

Pages

Files

Syllabus

Outcomes

Quizzes

Help & Resources

Settings

NDG101

NDG Linux Essentials

Change Home Page Layout | See Course Stream


Page history

This introduction to Linux course is offered by the Network Development Group (NDG). The skills taught in this course are applicable to a wide range of careers including networking, software development and Linux administration.

This course aligns to the Linux Professional Institute (LPI) Linux Essentials Professional Development Certificate. To learn more about this certificate, visit [www.lpi.org/LE](http://www.lpi.org/LE).

How marketable are Linux skills? Before you begin this course, please take a few minutes to review the Linux jobs posted on the Cisco Networking Academy job site [www.netacadadvantage.com](http://www.netacadadvantage.com).

Go to the [Modules List](#) to get started!

  
[www.netdevgroup.com](http://www.netdevgroup.com)

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Create a New Page

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Canvas By Instructure

NetSpace

# Course content with virtual machine = Learn by Doing!

Linux Essentials

Help

## 1.3.3 Role of Open Source

Linux started out in 1991 as a hobby project by Linus Torvalds. He made the source freely available and others joined in to shape this fledgling operating system. His was not the first system to be developed by a group, but since it was a built-from-scratch project, early adopters had the ability to influence the project's direction and to make sure mistakes from other UNIXes weren't made.

Software projects take the form of *source code*, which is a human readable set of computer instructions. The source code may be written in any of hundreds of different languages, Linux just happens to be written in C, which is a language that shares history with the original UNIX.

Source code is not understood directly by the computer, so it must be compiled into machine instructions by a *compiler*. The compiler gathers all of the source files and generates something that can be run on the computer, such as the Linux kernel.

Historically, most software has been issued under a *closed-source license*, meaning that you get the right to use the machine code, but cannot see the source code. Often the license specifically says that you will not attempt to reverse engineer the machine code back to source code to figure out what it does!

*Open source* takes a source-centric view of software. The open source philosophy is that you have a right to obtain the software, and to modify it for your own use. Linux adopted this philosophy to great success. People took the source, made changes, and shared them back with the rest of the group.

Alongside this, was the *GNU project* (GNU's, not UNIX). While GNU was building their own operating system, they were far more effective at building the tools that go along with a UNIX operating system, such as the compilers and user interfaces. The source was all freely available, so Linux was able to target their tools and provide a complete system.

There are many different variants on open source, and those will be examined in a later chapter. All agree that users should have access to the source code, but there are different opinions on how to do it.

Linux Terminal

Show/Hide

```
sysadmin@localhost:~$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
sysadmin@localhost:~$ ls -l
total 32
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Desktop
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Documents
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Downloads
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Music
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Pictures
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Public
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Templates
drwxr-xr-x 2 sysadmin sysadmin 4096 Jan 27 18:35 Videos
sysadmin@localhost:~$
```

Reset Restart

← Previous

Next →

# Lab exercises for learners to reinforce skills

The screenshot shows a web browser window with the URL <https://content.netdevgroup.com/labs/linux-essentials/4/#>. The page title is "Linux Essentials".

**LAB 4: COMMAND LINE SKILLS**

- Introduction
- Linux Essentials Exam Objectives
- Files and directories
  - Step 1
  - Step 2**
  - Step 3
  - Step 4
- Shell Variables
  - Step 1
  - Step 2
  - Step 3
  - Step 4
  - Step 5
  - Step 6
  - Step 7
  - Step 8
  - Step 9
- Quoting
  - Step 1
  - Step 2
  - Step 3
  - Step 4
  - Step 5
  - Step 6
- Control Statements
  - Step 1
  - Step 2
  - Step 3
  - Step 4

**4.3.2 Step 2**

The next command also displays information contained in the prompt. To be able to see the name of the computer, or *hostname*, on which you are executing commands, type the following in the terminal:

hostname

You output should be like the following:

```
sysadmin@localhost:~$ hostname
localhost
sysadmin@localhost:~$
```

From the output of this command, localhost, you are able to see the fully-qualified hostname of this computer. Many commands that are executed produce text output like this. You can change what output is produced by a command by using options after the name of the command.

Options for a command can be specified in several ways. Traditionally in UNIX, options were expressed by the hyphen following by another character, for example: `-s`.

In Linux, options can sometimes also be given by two hyphen characters followed by a word, or hyphenated word, for example: `--short`.

**Linux Terminal**

```
Ubuntu 12.10 localhost tty
localhost login: sysadmin (automatic login)
Welcome to Ubuntu 12.10 (GNU/Linux 3.8.0-34-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

sysadmin@localhost:~$
```

Reset Reset

← Previous Next →

# Assessments: Chapter Quizzes, Midterm and Final

[Linux101](#) > [Assignments](#) > [Chapter 04 Exam](#)

Time elapsed: 22 hours, 23 minutes, 29 seconds

Question 1

Select all the applications that provide access to the Command Line Interface (CLI)?  
(choose all that apply)

☐ Virtual Terminal

☐ opera

☐ firefox

☐ Terminal window

Question 2

A pair of single quotes ( ' ) will prevent the shell from interpreting any metacharacter.  
True or False?

☐ True

☐ False

Question 3

A pair of double quotes ( " ) will prevent the shell from interpreting any metacharacter.  
True or False?

[Edit Assignment Settings](#)

[Speed Grader](#)

# Instructor lecture materials – PowerPoint per chapter

- Aligns to certificate
- Lists objectives
- Helps with lectures

## 4.1 Linux Essentials Exam Objectives

2.1 Basics of using the Linux command line.

Weight: 2

Description: Basics of using the Linux command line.

Key Knowledge Areas:

- a. Basic shell
- b. Formatting commands
- c. Working with Options
- d. Variables
- e. Globbing
- f. Quoting

The following is a partial list of the used files, terms, and utilities:

- a. echo
- b. PATH environment variable
- c. history
- d. which

# Online support built into the curriculum

Linux Essentials

Help

## 5.3.2 Controlling the man Page Display

The `man` command uses a "pager" to display documents. Normally this pager is the `less` command, but on some distributions it may be the `more` command. Both are very similar in how they perform and will be discussed in more detail in a later chapter.

If you want to view the various movement commands that are available, you can type the letter `h` while viewing a man page. This will display a help page (note: If you are working on a Linux distribution that uses the `more` command as a pager, your output will be different than the example shown here):

sysadmin@localhost:~

File Edit View Search Terminal Help

SUMMARY OF LESS COMMANDS

Commands marked with \* may be preceded by a number, `N`.  
Notes in parentheses indicate the behavior if `N` is given.

|                |  |                    |
|----------------|--|--------------------|
| <code>h</code> | <code>H</code>   | Display this help. |
| <code>q</code> | <code>:q</code> <code>Q</code> <code>:Q</code> <code>ZZ</code> | Exit.              |

-----

MOVING

|                        |  |  |
|------------------------|--|--|
| <code>e</code>         | <code>^E</code> <code>j</code> <code>^N</code> <code>CR</code> | * Forward one line (or <code>N</code> lines).                        |
| <code>y</code>         | <code>^Y</code> <code>k</code> <code>^K</code> <code>^P</code> | * Backward one line (or <code>N</code> lines).                       |
| <code>f</code>         | <code>^F</code> <code>^V</code> <code>SPACE</code>             | * Forward one window (or <code>N</code> lines).                      |
| <code>b</code>         | <code>^B</code> <code>ESC-v</code>                             | * Backward one window (or <code>N</code> lines).                     |
| <code>z</code>         |  | * Forward one window (and set window to <code>N</code> ).            |
| <code>w</code>         |  | * Backward one window (and set window to <code>N</code> ).           |
| <code>ESC-SPACE</code> |  | * Forward one window, but don't stop at end-of-file.                 |
| <code>d</code>         | <code>^D</code>  | * Forward one half-window (and set half-window to <code>N</code> ).  |
| <code>u</code>         | <code>^U</code>  | * Backward one half-window (and set half-window to <code>N</code> ). |
| <code>ESC-)</code>     | <code>RightArrow</code>  | * Left one half screen width (or <code>N</code> positions).          |
| <code>ESC-(</code>     | <code>LeftArrow</code>   | * Right one half screen width (or <code>N</code> positions).         |

HELP -- Press RETURN for more, or q when done

>\_ Linux Terminal

Show/Hide

Your lab session is ready. Press the [Enter] key to begin...

sysadmin@localhost:~\$  
sysadmin@localhost:~\$  
sysadmin@localhost:~\$

Reset Restart

Consider This...

If you want to send your man page to your default printer, then you may want to execute the man command as follows:

# NDG online tool to submit issues

The screenshot displays the NDG online tool interface. A modal window titled "Send us feedback" is open, featuring a dropdown menu with options: "Question", "Feedback", "Typo" (highlighted), and "Bug Report". A "Next" button is located at the bottom right of the modal. In the background, the "Linux Essentials" page is visible, showing the section "5.3.2 Controlling the man" and a terminal window titled "sysadmin@local". The terminal displays the output of the `man less` command, including a "SUMMARY OF LESS COMMANDS" and a "MOVING" section with various keyboard shortcuts. A "Consider This..." box at the bottom right contains the text: "If you want to send your man page to your default printer, then you may want to execute the man command as follows:".

# NDG Linux Course Summary

- ❑ Goal is additional content aligned to job skills
- ❑ Linux Essentials teaches Linux command line
  - ❑ Helps Cisco students learn basics of Linux
- ❑ Introduction to Linux I aligns to LPIC-1 / Linux+
- ❑ Introduction to Linux II aligns to LPIC-1 / Linux+

Knowing Linux advances careers.

86%

of Linux professionals report that knowing Linux has given them more career opportunities

and

64%

say they chose to work with Linux because of its pervasiveness in modern-day technology infrastructure.

-2014 Linux Job Report,  
Linux Foundation & Dice