2.1.2 Linux Shell Facts

The Linux shell is often described as a Command Line Interface (CLI) or Text User Interface (TUI) to the Linux Operating System.

This lesson covers the following topics:

- Linux shell definition and use
- Linux shell access methods
- Linux shell types
- Linux shell common characteristics

Linux Shell Definition and Use

A Linux shell is a program that traditionally provides the text user interface (TUI) for Linux. The term shell is descriptive, since it is considered an outer layer of the operating system. The shell is the interface between you, a user or administrator, and the internal parts of the operating system including its very core which is the kernel. The shell's main function is to read and parse your commands and then to execute them through interactions with the Linux kernel.

Most Linux distributions offer a workstation version that includes a graphical interface (GUI), and many administration tasks can be completed within the graphical environment. Since a GUI can diminish server performance, many Linux distribution offer a server version where the GUI is either disabled or is not installed. Whether you are managing a Linux workstation version or a server version, you perform much of your administrative tasks using shell commands. In addition, you will find that graphical environments and tools may vary between distributions, but shell commands are more likely to be consistent.

Linux Shell Access methods

The Linux shell can be accessed:

Access Method	Description
From the Console (The keyboard and monitor attached to	Press the following key combinations: • **Ctrl+Alt+F1** (in some Linux distributions, **Alt+F1**) will start or switch to the first Linux shell session. • **Ctrl+Alt+F2** through **Ctrl+Alt+F6** (in some Linux distributions, **Alt+F2** through **Alt+F6**) will switch to the second through sixth shell sessions.

a computer running Linux)	While Linux distributions will vary, in most cases when a GUI is installed, it will use the first console session. Use **Ctrl+Alt+F1** to switch to a graphical login screen. If you are already logged in, **Ctrl+Alt+F7** will switch to the desktop GUI.
From a desktop GUI	Open a terminal session from the applications menu.

Linux Shell Types

The following table describes many common shell types:

Shell Type	Description
sh	The Bourne shell is the oldest Linux shell, but is not widely used. This shell was developed for UNIX in the 1970s.
bash	The Bourne-again shell (Bash) is the default shell used by most Linux distributions. It uses commands similar to a UNIX shell. The Bash includes: • Command and file name completion when pressing the Tab key • Command history
zsh	The Z Shell (zsh) is an improved version of Bash and is available on many Linux distributions.
shh	The Bourne shell (sh) is an earlier version of bash, and is similar in many ways. The sh shell was originally created by Steve Bourne.
ksh	The Korn shell (ksh) provides scripting features not found in Bash. Ksh was developed by David Korn.
csh	The C-shell (csh) uses syntax similar to the syntax used in the C programming language.
tcsh	The tcsh shell is an improved version of csh. It offers command line editing and completion features that are not available in csh.

If a shell type is installed, it will be listed in the **/etc/shells** file. You can switch to any shell by typing the shell's name. For example, type **ksh** within any shell to switch to the Korn shell.

The following commands can be used to determine the default shell type and the current shell type.

Command	Description
echo $SHELL	The **echo $SHELL** command returns the default or preferred shell. The environment **$SHELL** holds the user's preferred shell which is typically set in **/etc/passwd**. For example, if bash is the user's preferred shell, **$SHELL** will hold the value, **/bin/bash**. The preferred shell does not change when you switch shell types.
echo $0	The **echo $0** command can be used to return the current shell type. The special variable **$0** normally holds the command used to start a script. A shell session is initiated by a script. Consequently, **$0** will hold the name of the script which is consistent with the shell type. For example, **$0** in a console session running bash might hold the value **-bash**, $0 in a terminal application opened from a desktop menu might hold the value **bash**. When you type **ksh**, the **ksh** script is run, a Korn shell session is opened and **$0** will hold the value **ksh**.

Linux Shell Common Characteristics

Despite their differences, all shells share some common characteristics.

- The shell provides a command line interface that allows the user to interact with the Linux kernel.
- A Linux system can run multiple shell sessions at the same time.
- One shell session can run within another shell session. This may be done interactively, such as when a user starts a second shell from the first shell's command line, or automatically, by scripts or programs.
- Shells use configuration files to establish their operating environments.