

5.1 Graphical User Interfaces

As you study this section, answer the following questions:

- What are the four major components of the X11 Windows system?
- What are the three major components of the Wayland system?
- What are the major differences between X11 Windows systems and Wayland systems?
- What is the role of a display server?
- What is the role of the desktop?
- What are two popular desktops used in Linux?

Key terms for this section include the following:

Term	Definition
GUI	The GUI or graphical user interface is a mechanism in Linux that allows a user to perform functions using a mouse and keyboard (similar to the Windows and Mac interfaces) as opposed to performing all functions from a Linux shell.
Scenegraph	A scenegraph is a data structure representing a graphical scene. When using the Wayland system, the Wayland compositor keeps track of what's on the screens in a scenegraph. This lets the Wayland compositor know which Wayland client should receive events received from hardware devices (such as the keyboard). When the Wayland client makes changes, these are sent to and recorded by the Wayland compositor.
Display server	The display server is the program responsible for coordinating the input and output of the programs and applications running the GUI interface to and from the rest of the operating system, the hardware, and each other.
Window manager	A window manager controls the placement and appearance of windows on a Linux computer (such as moving, hiding, resizing, or closing), as well as controlling what they display. In X11, this is a separate program. In Wayland, this function is incorporated in the Wayland compositor.
Desktop environment	A desktop environment controls the desktop features, including desktop menus, screensavers, wallpapers, desktop icons, and taskbars. Common desktops include, Gnome, Unity, Cinnamon, MATE, and KDE.

This section helps you prepare for the following certification exam objectives:

Exam	Objective
CompTIA Linux+	2.8 Compare and contrast Linux graphical user interfaces. <ul style="list-style-type: none">• Servers<ul style="list-style-type: none">◦ Wayland◦ X11

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