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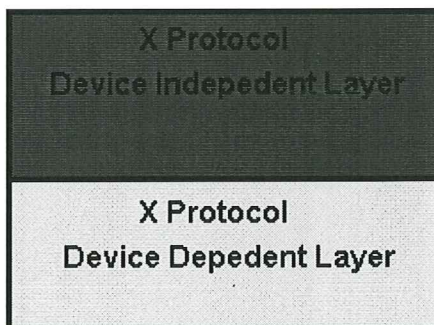
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## The X Protocol

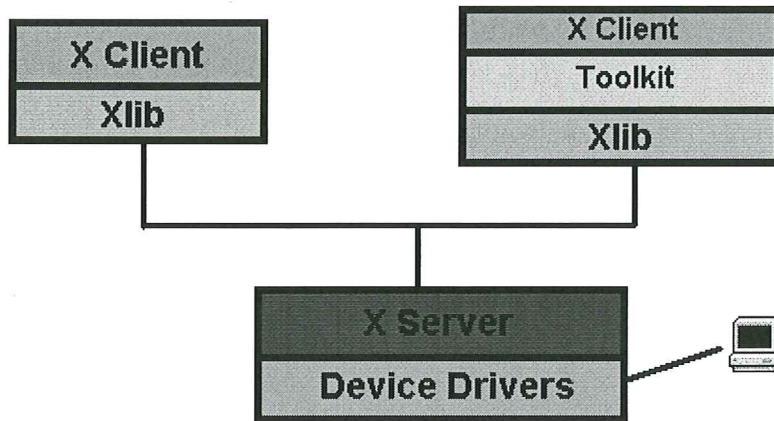
The X Protocol was developed in the mid 1980's amid the need to provide a network transparent graphical user interface primarily for the UNIX operating system. X provides for the display and management of graphical information, much in the same manner as Microsoft's Windows and IBM's Presentation Manager.

The key difference is in the structure of the X Protocol. Whereas Windows and Presentation Manager simply display graphical applications local to the PC, the X Protocol distributes the processing of applications by specifying a client-server relationship at the application level. The *what to do* part of the application is called an X client and is separated from the *how to do* part, the display, called the X server. X clients typically run on a remote machine which has excess computing power and displays on an X server. The benefit is true client-server and distributed processing.



### Definition

The X Protocol defines a client-server relationship between an application and its display. To meet this the application (called an X client) is divorced from the display (known as the X server). X further provides a common windowing system by specifying both a device dependent and an independent layer, and basing the protocol on an asynchronous network protocol for communication between an X client and X server. In effect, the X Protocol hides the peculiarities of the operating system and the underlying hardware. This masking of architectural and engineering differences simplifies X client development and provides the springboard for the X Window System's high portability.



The advantages of this approach are many:

- Local and network based computing look and feel the same to both the user and the developer.
- The X server is highly portable allowing support for a variety of languages and operating systems.
- X clients also have a high degree of portability.
- X can support any byte stream oriented network protocol, local or remote.
- Applications do not suffer a performance penalty.