



What is a Terminal Emulator?

#8 IN A SERIES

A terminal emulator is a software program that allows an end user to interact with a server. This article will explore the need for using a terminal emulator as well as some of its capabilities.

Terminal Basics

Let's start with the basics. A terminal is a keyboard and display. Very early terminals did not have any local processing capability (or "intelligence") and so today are sometimes referred to as "dumb" terminals. One very popular terminal was the IBM family of 3270 terminals (e.g. 3278, 3279, etc.) which was originally made available in the mid-1970s. 3270 terminals were originally connected via coaxial cable to a 3274 control unit, which in turn was connected to an enterprise server¹ I/O channel. This hardware configuration allowed an end user to establish a connection or "session" with a server and then interact with it to accomplish various kinds of work such as submitting a batch job², editing a data set or checking on the status of previously submitted work. The 3270 terminal not only provided a keyboard and a display, but it also defined the data stream that flowed between the terminal hardware and the enterprise server – that is, the protocol that allowed communication during the end user session.

Terminal Emulation

An emulator is something that imitates another program or device. The "something" in this case is a computer program or "software". There are many different kinds of emulators (not just terminal emulators) but here we are interested in an emulator for a terminal. So, putting "terminal" together with "emulator" gives us a "terminal emulator" which is a software program that imitates a 3270 terminal. But why would we want to emulate such an old device?

3270 Protocol

Since the middle 1970s, enterprise servers and their operating systems have evolved considerably and 3270 terminals are no longer produced or available. So why are we still talking about or emulating them? The simple answer is that the protocol or data stream used for exchanging information between a 3270 terminal and an enterprise server is pervasive. The enterprise server operating system itself still expects the 3270 protocol to be used to establish a TSO³ session. Further, thousands of application programs were written using the 3270 protocol and those programs are still in use today. And no one wants to take the time or effort (which equates to real money) to change those application programs just so they can use some other protocol to communicate with an enterprise server. Using a different protocol just would not deliver sufficient tangible benefit in order to justify the cost to convert to a new or different protocol. So, we continue to use the 3270 protocol to exchange data between a terminal and an enterprise server, but the terminal hardware is no longer a 3270 terminal. Instead, we use a personal computer running a program that emulates a 3270 terminal (i.e. a 3270 terminal emulator). This allows the use of a modern, inexpensive, commodity hardware "terminal" without change to the existing application programs that expect to use the 3270 data protocol for communication.

3270 Terminal Emulators

There are a number of 3270 terminal emulators available in the market. One reason that there are so many is that a different terminal emulator program is needed for each operating system – Windows, iOS, Linux, etc. And sometimes there is more than one terminal emulator for an operating system because there are many vendors that want to provide them.

¹ See ECI No. 5

² See ECI No. 4

³ See ECI No. 10

Some of the more popular terminal emulators include: Vista, IBM PCOM, x3270 (for Linux), Hummingbird, etc. So, does this mean I can access and interact with an enterprise server from my iPad or iPhone? Yes, it does, and people do it all the time!

Most of these emulators have more in common than they have differences. They all emulate the 3270 data stream used to exchange data with an enterprise server. And they all provide functions that let the user configure which of several 3270 models they want emulated (e.g. a 3278 Model 2). The terminal emulator user can usually select the screen configuration that will be displayed by choosing the number of characters displayed across the width and along the height of the display. And because today's PC keyboards do not exactly match the prior 3270 keyboard, the emulator user can decide which real PC keyboard key corresponds to a particular 3270 keyboard key function. This is referred to as "keyboard mapping".

Keyboard Mapping

For example, suppose a user is familiar with the old 3270 keyboard that had the enter key in the lower right of the keyboard. If that user wanted to maintain that key position on the keyboard for the enter function, he could simply map the "ctrl" key in the lower right of the PC keyboard to correspond to the "enter" function (instead of using the key marked "enter" on the PC keyboard). On the other hand if an emulator user never used a real 3270 keyboard and wanted to use the key marked "enter" on the PC keyboard for the enter function, the emulator would let him do that instead. Keyboard mapping is very flexible. But, be sure to understand the default keyboard mapping of the emulator you are using or you may become very confused, very quickly!

Extended Features

In addition to emulating the prior capabilities of 3270 terminals, most 3270 terminal emulators take advantage of the modern hardware they are running on to provide functions that never were provided on

a real 3270 terminal. For example, most modern emulators allow recording and playback of key strokes to simplify repetitive tasks, assistance for up loading local files from a PC where the emulator runs to an enterprise server (and vice versa), establishing multiple sessions with an enterprise server, and other capabilities. All of these capabilities tend to make an end user more productive or make their job easier.

Summary

So, there you have it – a 3270 terminal emulator is a software program that emulates the capabilities of 3270 terminals. It also provides functions that make an emulator user more productive and protects huge prior investments in enterprise software.

We will explore other aspects of Enterprise Computing in subsequent articles.