Synchronous versus asynchronous group policy processing.

Synchronous versus asynchronous processing. Another important aspect of Group Policy processing that has significant performance ramifications is the distinction between synchronous and asynchronous Group Policy processing. To understand synchronous processing, let's look at a typical example of Group Policy processing from bootup to user logon.

When a Windows computer starts, there's a point at which the client connects to the network. At that point, computer-based Group Policy processing kicks off. If this processing is configured to run synchronously, the user doesn't see the logon dialog box (aka the Graphical Identification and Authentication -- GINA) until the processing is completed. After the user logs on to the system, user-based Group Policy processing begins; the user doesn't see the desktop until that processing finishes. Thus, synchronous processing elongates the time it takes for a user to boot up the system, log on, and get productive.

But starting with Windows XP, Microsoft set the default for foreground Group Policy processing as asynchronous. This type of processing is also called Fast Logon Optimization and remains the default foreground processing method through Windows 8 . Asynchronous processing basically tells Windows to continue doing what it was doing, even if Group Policy processing is still running. So, when a computer boots up, it doesn't wait for computer-based Group Policy processing to finish before presenting the user with the logon dialog box. Likewise, when the user logs on, there is no waiting on user Group Policy processing before presenting the user with the desktop.

Most folks read this and think, "Why would I ever want to run Group Policy processing synchronously?" The answer, as many of you have likely discovered, is that some Group Policy client-side extensions (i.e., Software Installation, Folder Redirection, Disk Quota, and Group Policy Preferences Drive Mappings) work only when run synchronously. So, some folks essentially disable asynchronous processing to ensure that these policy areas do what they're supposed to do. These people enable the somewhat-mislabeled Computer Configuration\Policies\Administrative Templates\System\Logon\ *Always Wait for the network at computer startup and user logon policy* setting to force synchronous foreground processing.

To put it simply

Asynchronous processing of group policy: The user is able to log on right away even before the policies have had time to run on the computer eg. User logging on from cache. This means the user logs in immediately.

Synchronous Processing of group policy. The policies are applied first then the user is able to log on. The policies in red above all require synchronous processing. This method obviously takes longer.