Sometimes the following issue turns up as a support case with Microsoft Support:

Every now and then, we have a slow logon to several of our workstations.

We can't see a pattern in which users or computers are involved and we can't reproduce the issue consistently.

Most of the time everything works fine and the users log on without problems.

*When the issue *does* occur; the machine typically hangs for a long time during the 'Applying Computer Group Policy' or 'Applying User Group Policy' or 'Running Startup Scripts' stages.*

This is usually a difficult and time-consuming problem to troubleshoot. The bigger your network and the farther away from the end-user you are, the longer the time you're likely to spend on the issue.

The first challenge is to filter out the relevant from the irrelevant, i.e. who is actually having a problem and who just feels that the computer should generally be taking less time to log them on. Additionally, identifying whether you're looking at a Slow Logon or a Slow Startup is crucial as it determines the possible causes.

The big problem is that to the end-user this seems like the same thing since the symptoms are the same.

Windows XP and Windows Vista have a feature called Fast Logon Optimization, which means that the user is allowed to enter their credentials before the machine itself is fully ready to service logons. If you logon immediately and you don't have an IP address for example, you log on using Cached Credentials and then get authenticated transparently later on. Computer Group Policy is then applied later in the background.
Now, this is an excellent feature for the end-user as it allows them to log on without waiting for the hardware to be ready but it does complicate any troubleshooting scenario as it means you can't trust that the machine will always be applying the Group Policy in the same order every time.

By default in Windows 8, Windows 7, Windows Vista, and Windows XP, the Fast Logon Optimization feature is set for domain and workgroup members. Policy settings apply asynchronously when the computer starts and when the user signs in. As a result, Windows 8, Windows 7, Windows Vista, and Windows XP do not wait for the network to be fully initialized at startup and sign-in. Existing users are logged on by using cached credentials. This results in shorter logon times. Group Policy is applied in the background after the network becomes available. Be aware that, because this is a background refresh, extensions such as Software Installation and Folder Redirection take two logons to apply changes. Additionally, changes that are made to the user object, such as adding a roaming profile path, root directory, or user object logon script, may take two logons to be detected.

If you turn off this feature, Windows waits for the network to be fully initialized before users are logged on. This results in the synchronous application of policies when the computer starts and when the user logs on. This application of policies resembles a background refresh process and can reduce the time that is required for the **Logon** dialog box to display and the time that is required for the shell to be available to the user. An administrator can change the default by using the Group Policy MMC snap-in.

Fast Logon Optimization is always off during logon when a user first logs on to a computer.

You should be aware that, under the previous conditions, computer startup can still be asynchronous. However, because logon is synchronous under these conditions, logon does not exhibit optimization.

When your folder redirection policy is not completely applied at first logon, you can find the following warning in the event log:

Event Type: Warning
Event Source: Folder Redirection
Event Category: None
Event ID: 301
Description: Folder redirection policy application has been delayed until the next logon because the group policy logon optimization is in effect.

Folder redirection and software installation policies

Be aware that when logon optimization is turned on, a user may have to log on to a computer two times before folder redirection policies and software installation policies are applied. This is because applying these kinds of policies requires the synchronous policy application. During a policy refresh (which is asynchronous), the system sets a flag that indicates that applying folder redirection or a software installation policy is required. The flag forces synchronous application of the policy at the user's next logon.

BE aware that Windows clients support Fast Logon Optimization in any domain environment. To turn off Fast Logon Optimization, you can use the following policy setting:
Computer Configuration\Administrative Templates\System\Logon\ Always wait for the network at computer startup and logon
When this policy is enabled, a Windows XP client behaves in the same manner as a Windows 2000 client at both system startup and at user logon.

Note This also applies to systems that are running Windows 7 or Windows 8. However, in those systems, the event ID changes to 510:

Event Log: Application Log
Event Type: Error
Event Source: Microsoft-Windows-Folder Redirection
Event ID: 510

Description: Folder redirection policy application has been delayed until the next logon because the group policy logon optimization is in effect.