

Understanding GPO Exporter 2.0's Slow Boot/Slow Logon Reports

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In the latest release of our GPO Exporter product, version 2.0, we've made available a set of reports within the category of "Slow Boot/Slow Logon". What exactly does this mean and what can you do with these reports? In this whitepaper, we'll examine each report in this category and explain how you can use them to make good decisions around your Group Policy design.

GPO Design and Its Effect on Desktop Performance

In general, there are decisions you can make in the way you design and deploy your Group Policy Objects (GPOs) that can have an impact on how quickly your Windows desktops boot and become usable to your users. Some of these decisions are obvious, while many are not. The "Slow Boot/Slow Logon" reports in [GPO Exporter 2.0](#) are designed to expose this information in a way that can prove useful to your design decisions.

Foreground vs. Background GP Processing

When it comes to GP and desktop performance, there are a few key concepts to understand. First, Group Policy processing, when it occurs on the desktop machine, can run in two ways: **foreground and background**. Foreground processing occurs when the machine starts up or when the user logs on. Some policy areas (also called Client Side Extensions (CSEs)) can **only** run during foreground processing. Examples of these include Folder Redirection, Software Installation and Group Policy Preferences Drive Mapping. Background processing is that thing that occurs every 90 or so minutes on Windows workstations, where GP refreshes itself periodically. Background processing happens, well, in the background, while the user is working and they generally never notice it.

Synchronous vs. Asynchronous GP Processing

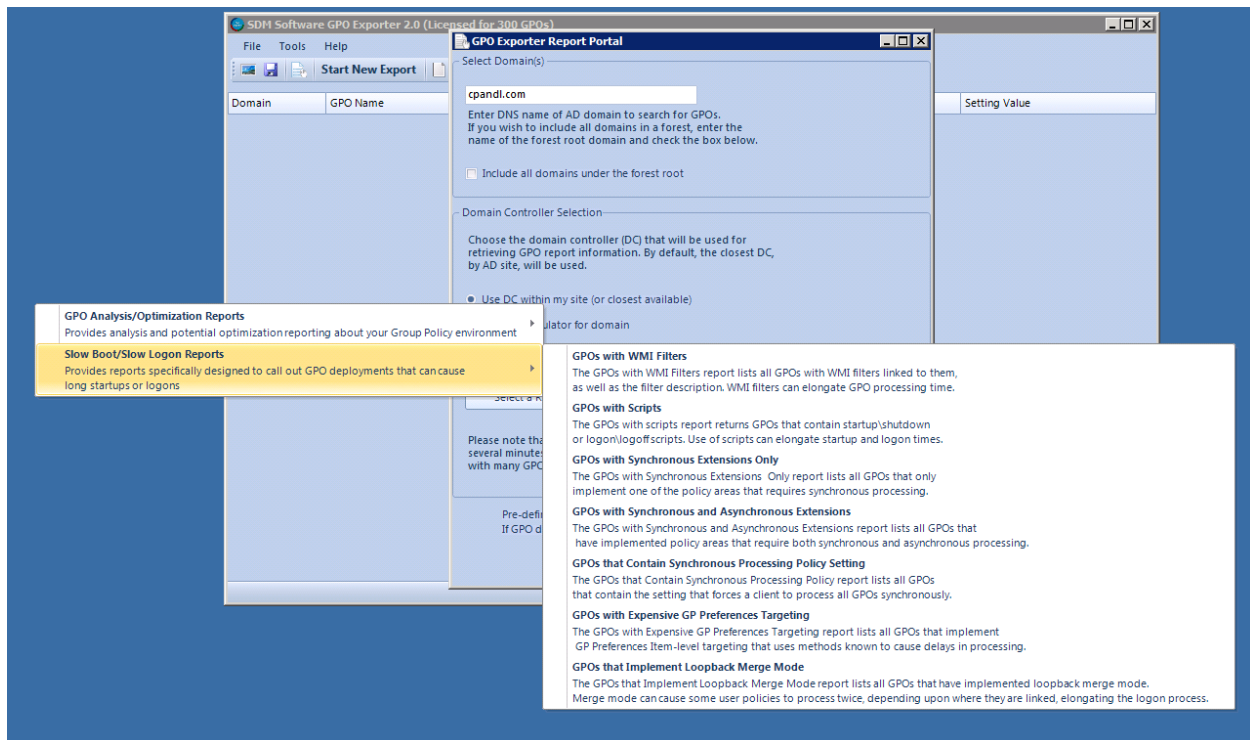
Foreground processing can also operate under two different modes—**synchronously** or **asynchronously**. The default foreground processing mode for Windows clients since Windows XP has been asynchronous. The definition of Asynchronous GP processing for computers is as follows. When the computer is starting up, GP processing starts to occur for the computer, and in the meantime, the user is presented the Windows logon prompt. Likewise, for asynchronous user processing, the user logs on and is presented with their desktop but GP processing is or can still be running in the background. The user is not delayed getting either their logon prompt or their desktop during asynchronous GP processing. When foreground processing is synchronous, the user is not presented with the logon prompt until computer GP processing has completed after a system boot. Likewise the user will not see their desktop at logon until user GP processing completes. This can have the effect of making the user feel like the system is running slow.

Foreground processing will run synchronously for two reasons. The first is that the administrator forces synchronous processing through policy. This can be done by enabling the policy at Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon. Enabling this setting will make all foreground processing synchronous.

The second way that synchronous processing can be enabled is by a particular CSE requiring it. There are four CSEs currently supported by Microsoft that require synchronous foreground processing: Software Installation, Folder Redirection, Microsoft Disk Quota and GP Preferences Drive Mapping. If any of these are enabled within one or more GPOs, they will trigger the next foreground processing cycle to run synchronously when they are next processed.

How GPO Exporter 2.0 Helps

GPO Exporter provides a set of free Slow Boot/Slow Logon reports that help to identify some of the most common factors that can elongate Windows desktop boot and logon times, as shown below:



These reports can scan your entire GP environment and locate aspects of your GPO deployment that could be slowing down boot and logon cycles on your desktops. In this section, we'll describe each report and how you can use it to help identify problem areas within your GP deployment.

GPO Exporter Reports

GPOs with WMI Filters

This report returns all GPOs that have WMI filters linked to them. In addition the report will provide a description of each WMI filter. The benefit of this is that you can see at-a-glance which WMI filters are

associated to which GPOs. A WMI filter does not automatically slow down GP processing appreciably, but if a WQL query implemented in that filter is time consuming, it could slow down the startup or logon process, especially if that workstation is running GP processing synchronously. This report provides a quick way to investigate the WMI filters in use in your environment.

GPOs with Scripts

The GPOs with Scripts report lists all GPOs within an environment that contain startup, shutdown, logon and logoff scripts, as shown below:

The screenshot shows a web browser window titled "GPO Exporter Report Portal Viewer". The page header includes the "sdmsoftware" logo and the text "The Group Policy Experts". The main heading is "GPOs with Scripts Report". Below the heading, it states "17 GPOs Found". A table with three columns is displayed: "Domain Name", "GPOName", and "Scripts Associated with GPO".

Domain Name	GPOName	Scripts Associated with GPO
cpandl.com	Domain User Logon Script	domainlogon.bat (Logon)
cpandl.com	GPAE Demo	\\dc1\netlogon\logon.vbs (Logon)
cpandl.com	GPO Compare Demo	logon.bat (Logon)
cpandl.com	KEverything	startup.bat (Startup);shutdown.bat (Shutdown);startup.ps1 (Startup);logon.bat (Logon);logon2.bat (Logon);logoff.cmd (Logoff);logon.ps1 (Logon);logoff.ps1 (Logoff)
cpandl.com	Logon Script Test	launchapp.wsf (Logon)
cpandl.com	Office 2003 Policy	logon.vbs (Logon)
cpandl.com	Office 2007 Deploy	cscript.exe (Startup)
cpandl.com	orderCSE	foo.bat (Startup)
cpandl.com	Screen Saver for Users	logon.bat (Logon)
cpandl.com	Scripts TEst	startup.bat (Startup);test.bat (Startup);shut.bat (Shutdown);foo.ps1 (Startup);test.bat (Logon)
cpandl.com	StartupDebug	foo.bat (Startup)
cpandl.com	StartupTest	startup.bat (Startup)
cpandl.com	Tsys-DDP	DefaultDomain.bat (Startup)
cpandl.com	User Policy	oulogon.bat (Logon)
cpandl.com	VSG EC Desktop Policy	\\%userdomain%\netlogon\EC-VSGAuditPolicy.CMD (Startup)
cpandl.com	VSG EC Lantop Policy	\\%userdomain%\netlogon\EC-

Startup or logon scripts are not by themselves always a problem. But too many scripts running for a given user or computer, or scripts that hang or are no longer really in use can add to desktop startup

and logon times. Scripts that hang will not timeout for 10 minutes, by default. So it's important that you know what scripts have been implemented within given GPOs.

GPOs with Synchronous Extensions Only

This report scans all GPOs and returns that only implement one of the four policy areas listed above that will force synchronous policy processing. When something is changed in one of these GPOs, then computers or users that process those GPOs will trigger a flag to set the next foreground processing cycle (computer or user) to synchronous. Therefore, if possible, avoid making frequent changes to these GPOs.

GPOs with Synchronous and Asynchronous Extensions

This report scans all GPOs and returns those GPOs that implement one of the four synchronous policy areas as well as those areas that do not require synchronous processing. Why is this problematic? When you group synchronous and asynchronous policy areas in a single GPO, any changes you make to that GPO, even changes to asynchronous policy areas, will force clients to flag the next processing cycle as synchronous. For example, if you group Administrative Templates settings with GP Preferences Drive Mapping settings in a single GPO and you are changing Administrative Templates settings in that GPO on a semi-regular basis, each time that changed GPO is processed, the mere presence of GP Preferences Drive Mappings will force the client to mark its next processing cycle as synchronous (even though the Drive Mapping settings didn't change). This report can help identify these "mixed-use" GPOs and give you the opportunity to reorganize your GPOs to separate these different policy area types.

GPOs that Contain Synchronous Processing Policy Setting

This report scans all GPOs and return those that implement the setting that enables "always-on" synchronous policy processing, namely the one mentioned earlier under **Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon** as shown here:

Domain Name	GPO Name	Setting Path	Setting Value	GPO Links
cpandl.com	289Test	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	cpandl.com/EastCoast/Office Deploy/Test (Enabled)
cpandl.com	Administrative Template GPO	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	
cpandl.com	ADMTest	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	
cpandl.com	GPAE Demo	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	
cpandl.com	KEverything	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	
cpandl.com	Office2k3Pro Deployment	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	cpandl.com/Vista Test/Workstations (Enabled)
cpandl.com	War-Test	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at computer startup and logon\State	Enabled	
cpandl.com	zGotEFS	Computer Configuration\Policies\Administrative Templates\System\Logon\Always wait for the network at	Enabled	

In addition, this report shows the state of the policy setting (i.e. Enabled or Disabled) and where the GPO containing the setting is linked. If you're implementing this policy across your environment (or within OUs within your AD domain) you might want to consider turning it off to speed up the startup and logon process.

GPOs with Expensive GP Preferences Targeting

This report scans all GPOs and reports on those that implement GP Preferences settings that use Item-Level Targeting (ILT) types that are known to take more time to run. These include all of the ILT types that must work over the network against AD to be evaluated, including OU, LDAP Query, Domain, Site or Computer Security Group filters. The report returns all details about the ILT, including, for example the OU or LDAP query being performed, and where the GPO is linked. Ensuring that you don't have too many settings leveraging expensive ILT queries can help reduce GP processing time.

GPOs that Implement Loopback Merge Mode

This report scans all GPOs and lists those that have loopback merge mode enabled. It also shows where those GPOs are linked. When Loopback merge mode is enabled for a set of computers, it can have the effect of causing user policy processing to take longer. This is because merge mode, by definition, means that user policy processing runs first for the user's AD object, and then again for the computer object the user is logging into. It's a good idea to minimize merge mode to scenarios where it's absolutely needed, since under certain scenarios, you can get GPOs being processed twice for a given user. For

example, if a logon script is part of a GPO linked at the domain level and that logon script applies to all users in the domain (e.g. using the Authenticated Users group) then for a user logging into a workstation which has loopback merge mode enabled, that logon script will run twice—once for the user and once for the computer.

Summary

The goal of GPO Exporter's free Slow Boot/Slow Logon reports is to help you uncover areas of your Group Policy deployment that could be causing desktop performance issues. Each report has the capability of scanning your entire environment and surfacing design decisions that you might be making that are causing slowness. The full version of Exporter also gives you the ability to focus these reports on specific GPOs. For example, if you're having slowness issues with Marketing OU users, you can pick just those GPOs linked to computers or users in the Marketing OU and run the Slow Boot/Slow Logon reports against those GPOs only. In either case, Exporter helps you quickly and easily track down situations where Group Policy may be contributing to desktop slowness.

For more information about Exporter, or to download the demo version that contains these free reports, visit <http://sdmsoftware.com/group-policy-management-products/group-policy-exporter/> or contact sales@sdmsoftware.com to get pricing on the full commercial version of the product.