This white paper has been deprecated.

For the most up to date information, please refer to the [Citrix Virtual Desktop Handbook](#).

Prepared by:
Worldwide Consulting
Desktops and
Apps Group

[Citrix](#)
User Profile Planning Guide
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Overview

A user’s profile plays a critical role in determining how successful the user experience is within a virtual desktop or virtual application scenario. Even a well-designed virtual desktop/application solution can fail if users are frustrated due to lengthy logon times or lost settings, since first time experience may leave a lasting impression severely impacting acceptance.

This planning guide is intended to be a guideline during the user profile strategy decision process, but it cannot provide turnkey solutions that fit for every scenario due to the complexities of each organization’s environment and user requirements.

As Microsoft Windows itself offers multiple profile solutions, which are supplemented by various 3rd party software companies and their products, it is critical to have knowledge about all base profile technologies and to perform a detailed planning during the XenApp / XenDesktop architecture design phase.

Note: In order to fully understand the ramifications of each user profile option, it is advisable to review [http://en.wikipedia.org/wiki/Microsoft_Windows_profile](http://en.wikipedia.org/wiki/Microsoft_Windows_profile), [Designing Terminal Services User Profiles – eDocs Guide](http://support.citrix.com/article/CTX120285) which provide an overview of the major user profile techniques as well as the pros and cons of every option.
Guidelines

As mentioned previously, the Microsoft Windows Operating System offers various user profile solutions, whereof each has their own strengths and weaknesses. Therefore it is necessary to understand the functional requirements of the users as well as the technical and architectural demands of the customer infrastructure, to be able to choose the optimal user profile strategy. Based on Citrix Consulting experience, it is recommended to focus on the following core themes:

- Central Management
- User setting Persistence
- Multi-Platform Support
- Concurrent Access
- Performance / Robustness / Complexity

Central Management

One of the first things that need to be considered is whether it is required to have a central store for user profiles or not. A central store for user profiles allows users to roam their settings to any network attached system, but it also enables administrators to backup and centrally maintain or troubleshoot the user profiles. While this is a big advantage for administrators, it is important to take into account that loading centrally managed user profiles upon logon will put significant load on the network infrastructure as well on the respective file server, especially during 09:00am logon peak or 05:00pm logoff peak scenarios.

**Decision:** Local user profile vs. Roaming profile

**Recommendation:** For typical XenApp or XenDesktop environments central profile management using roaming profiles is a must.

User Setting Persistence

The vast majority of user related application settings (i.e. Word spell check configuration or Outlook mail signature) is stored within a user’s profile. Users typically expect application settings to persist across subsequent logons. Unfortunately, enabling users to “write” into their profile also can lead to:

- **Profile bloat:** Applications constantly write information into the profile, which makes them grow over time (in worst case up to gigabytes in size, if implemented improperly).
Profile Inconsistencies Writeable copies of profiles can become inconsistent over time causing varieties of issues. While certain 3rd party vendors have developed tools to repair corrupt profiles, in typical environments damaged profiles are deleted and a new profile will be created. Further information can be found here: http://community.citrix.com/x/PoHFCQ

Read only user profiles (mandatory profiles) do not face these issues, but also do not allow application settings persistence.

Important to know is, that certain applications require writable user profiles to store i.e. signature IDs to identify users.

Decision: Mandatory Profiles (read only) vs. Writeable Profiles (Local / Roaming)

Recommendation: For Kiosk scenarios or task workers, mandatory profiles are a viable solution for typical office users or knowledge workers, writeable profiles are required.

Multiple Platforms

User profiles have a tight integration into the underlying operating system. Therefore it is not supported to reuse a single user profile on different operating systems or even different platforms like 64-Bit (x64) and 32-Bit (x86). In fact Windows 2008 / Vista introduced a new user profile structure (can be identified by .V2 profile directory suffix), that makes older user profiles (i.e. Windows 2003 / XP based) incompatible with new operating systems.

The Windows built-in solution for this particular challenge is called “Multiple Roaming Profiles”. Hereby a single user will get multiple profiles, which need to reside within separate directories. To achieve this two options exist:

- The user profile path, which is configured at the user object level in Active Directory, needs to be configured using system variables For example: \myshare\%username\%version\%, whereof the system variable %version% needs to be configured at every system a user might log on.

- More conveniently this can be configured by means of Active Directory Group Policies (GPO) i.e. under the “Computer Configuration\Policies\Administrative Templates\Windows Components\Terminal Services” node. To configure multiple roaming profiles per user, it is necessary to create separate GPOs for every operating system and/or platform.

Disadvantages of Multiple Roaming Profiles are increased file space requirements for profile storage and applications settings need to be configured for every profile individually, as there is no replication of user settings between profiles. If you configure Microsoft Word settings on one
platform, those settings do not automatically sync with the other platform. As changes are made
to one system, the other system is left behind.

In addition to the Microsoft Windows build-in solutions, 3rd party software vendors such as
AppSense, LiquidWare and RES automatically account for differences in operating system
and/or platform and provide the ability of using a central user profile for multiple platforms.
Citrix Profile Management does not support this functionality at this time.

These kind of user profile solutions, referred as “Hybrid Profiles” within this document, share a
similar functionality, where a static core profile (i.e. mandatory profile or default profile) is
seamlessly and transparently merged with user specific settings (Registry Keys or Files) at
runtime. Functionality wise Hybrid Profiles are similar to standard Roaming Profiles from a user
point of view, but allow faster logon times, require less file space and are more robust. Further
information can be found here: http://support.citrix.com/proddocs/topic/user-profile-manager-
kib/upm-how-it-works-den.html

Decision: Hybrid Profiles / Multiple Roaming Profiles vs. Single Roaming Profile

Recommendation: Hybrid Profiles are strongly recommended for multi-platform
infrastructures.

Concurrent Access

Upon user logoff the user profile is sent, via the network, to the file share hosting the centrally
managed (roaming) profile. In case a user is logged on to multiple systems using the same user
profile (i.e. multiple XenApp sessions or using hosted applications from within a virtual desktop)
the last write wins when both sessions are closed. This means the settings from the last profile
written to the share takes precedence and settings from other sessions are lost. If both sessions
are closed at the same time and the profiles are written to the share simultaneously from both
systems, the user profile may become inconsistent. Further information can be found here:
http://community.citrix.com/x/PoHFCQ

This issue can be solved using Hybrid Profiles, as these solutions have mature queuing techniques
built-in that automatically detect and essentially prevent simultaneous writes. Furthermore this
technology allows specifying which settings are persistent on a per-device or device group basis,
which minimizes the risk of losing configuration settings in such scenarios.

Decision: Hybrid Profiles vs. Single Roaming Profile

Recommendation: Hybrid Profiles are strongly recommended for XenApp / XenDesktop
scenarios where multiple HDX sessions will be leveraged concurrently.
Performance / Robustness / Complexity

In most Citrix XenApp or XenDesktop environments user logon times are critical and need to be as short as possible. In order to ensure good performance, user profiles need to be stored on a high performance file server with a very good network connection, but more importantly the profiles need to be small in terms of file space and number of files. Most easily this can be achieved by means of Folder Redirection. Without folder redirection, all user data is stored within the profile. When folder redirection is enabled, user files stored in the selected folders are segregated from the user profile. As a result, user logins proceed as quickly as possible, and the impact on the profile is minimized. Further information can be found here: http://technet.microsoft.com/en-us/library/cc766489(WS.10).aspx.

To minimize the user profile size even further, Hybrid Profiles can be implemented. When utilizing their capabilities to its fullest extent, only administrator-defined parts of the user profile (Registry Keys or Folders that hold user configurations) are loaded upon logon or written to the file share upon logoff. This approach effectively prevents “Profile bloat” and minimizes the risk of “Profile Corruption”. The downside of Hybrid Profiles is their higher complexity and in some cases higher infrastructural requirements, when compared with standard Windows Roaming Profiles.

**Decision:** Hybrid Profiles vs. Roaming Profiles

**Recommendation:** Hybrid Profiles are recommended for complex XenApp / XenDesktop and enterprise environments.
Planning

For choosing the optimal user profile strategy, it is important to understand the user profile technologies discussed within this document and the requirements of the respective infrastructure. The following diagram outlines a user profile planning decision tree following the topics discussed earlier, opting for the easiest and cheapest solution while still meeting the requirements.
Things to consider

Besides choosing the appropriate user profile solution, further topics are vital to a successful project. Based on Citrix Consulting experience, it is recommended to focus on the following core themes:

- **Profile Storage**: User profiles should be stored on a redundant and high performance file server or NAS, which is connected to the network using a redundant and high performance connection (i.e. 2 x 1GBit/s as NIC Team). Furthermore it is important to locate the file server as close as possible to the systems where users log on, to minimize profile load times. In general the file server or NAS should be monitored for availability and resource utilization (i.e. CPU, Memory or Disk space available).

- **Folder redirection**: Redirecting folders from within the user profile towards a separate network share (i.e. user home) is a good practice to minimize the profile size. Unfortunately certain applications tend to read / write data to profile folders (such as AppData) on short intervals or upon specific actions. Therefore it is important to research profile read / write activities and perform a pilot, before moving to production. Otherwise the file server housing the user profiles may become fully utilized and unresponsive. One example for regular profile read activities is Microsoft Outlook, which reads the user signature every time a mail is created.

- **Profile size**: In general user profile sizes should be minimized in terms of file space as well as number of files (i.e. Cookies) as much as possible using techniques described earlier to ensure short logon times. Furthermore it is a good practice to monitor user profile sizes to be able to act pro-actively and to implement a Microsoft Group Policy to limit the user profile size.
User Profile Management Tools

Troubleshooting

- Citrix EdgeSight: http://community.citrix.com/edgesight

Maintenance

- Sepago Profile Nurse: http://www.sepago.de/d/research-development/downloads/profile-nurse

Migration

- Sepago Profile Migrator: http://www.sepago.de/d/research-development/downloads/profile-migrator
Product Versions

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