# FSLogix Profile Containers and App Masking with Nutanix Frame

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# **Microsoft FSLogix Profile Container Setup with Nutanix Frame**

Before we dive into FSLogix as a solution please check out this Nutanix Frame blog about user profiles:

Windows User Profiles in a Frame World April 27, 2021

# **Overview**

Microsoft FSLogix is a set of solutions that enhance, enable, and simplify persistent and non-persistent Windows computing environments. FSLogix solutions are appropriate for virtual environments in both public and private clouds. Additionally, FSLogix can enable greater portability of computing sessions.

#### FSLogix solutions include:

- Profile Container
- Office Container
- Application Masking
- Java Version Control

What you can do with FSLogix solutions:

- Maintain user context in non-persistent environments
- Minimize sign-in times for non-persistent environments
- Optimize file IO between host/client and remote profile store
- Native (local) profile experience, eliminating many compatibility issues with solutions using visible redirection, such as User Profile Disk (UPD)
- Simplify the management of applications and 'Gold Images'
- Specify the version of Java to be utilized by specific URLs and applications

#### Key capabilities

- Redirect user profiles to a network location using Profile Container. Profiles are placed in VHD(X) files and mounted at run time. It's common to copy a profile to and from the network when a user signs in and out of a remote environment. Because user profiles are often large, sign-in and sign-out times often become unacceptable. Mounting and using the profile container on the network eliminates delays associated with solutions that copy files.
- Redirect only the portion of the profile that contains Office data by using the Office Container. Office Container allows an organization already using an alternate profile solution to enhance Office in a non-persistent or persistent environment. This functionality is helpful with Outlook .OST files.
- Applications use the profile as if it were on the local drive. Because the FSLogix solutions use a Filter Driver to redirect the profile, applications do not recognize that the profile container is stored on the network. Obscuring the redirection is essential because many applications will not work correctly with a profile stored on remote storage.
- Profile Container is used with Cloud Cache to create resilient and highly available environments. Cloud Cache places a portion of the profile VHD on the local hard drive. Cloud Cache also allows

an administrator to specify multiple remote profile locations. The Local Cache, with multiple remote profile containers, insulates users from network and storage failures.

- Application Masking manages access to an application, font, printer, or other items based on rules. Access can be controlled by various areas, by user, IP Address range, or other criteria. Application Masking significantly decreases the complexity of managing large numbers of gold images.
- Profile Container and Office Container do not provide any profile conversion functionality. Operating systems that share a profile version should be able to share a single user profile.

# Requirements

You are eligible to access FSLogix Profile Container, Office 365 Container, Application Masking, and Java Redirection tools if you have any of the following licenses:

- Microsoft 365 E3/E5
- Microsoft 365 A3/A5/ Student Use Benefits
- Microsoft 365 F1/F3
- Microsoft 365 Business
- Windows 10 Enterprise E3/E5
- Windows 10 Education A3/A5
- Windows 10 VDA per user
- Remote Desktop Services (RDS) Client Access License (CAL)
- Remote Desktop Services (RDS) Subscriber Access License (SAL)

FSLogix solutions may be used in any public or private datacenter as long as a user is properly licensed. FSLogix tools operate on all Windows operating systems including:

- Desktop Windows 7 or newer
- Server Windows Server 2008 R2 or newer

FSLogix solutions support both 32-bit and 64-bit where applicable. These solutions are only supported in environments that Microsoft, original software vendors, and equipment vendors support for their application.

**Note:** Frame workloads are supported on Windows 10 for client OS and Windows Server 2016 or higher at this time.

# **Profile Container**

Profile Container is used to redirect the entire user profile in non-persistent, virtual environments, such as Virtual Desktops. When using Profile Container, the entire user profile (except for data that is excluded using the redirections.xml) is included in the profile container.

For users familiar with managing profiles in non-persistent environments, the function of Profile Containers may be compared to Microsoft User Profile Disk, Liquidware ProfileUnity, Profile Disk and Nutanix Frame Enterprise Profiles, or Citrix UPM. Although the function is similar, the underlying method and technology is different, resulting in certain benefits as described.

# Installation and Setup on Frame

The following details will address how to install and configure a Frame environment using FSLogix as a third-party Windows user profile solution for user data persistence.

#### Test Environment Requirements:

- ✓ Single AHV Cluster with Prism Central
- ✓ Microsoft Active Directory Domain Controller 2016/2019 server
- ✔ File Server 2016/2019
  - o Central File share for Profiles
- ✓ Two Non-Persistent Frame Accounts
  - o Frame Guest Agent (FGA) v8.0.12.0 or higher
  - o AIR 8GB Instances
  - o Windows10 build 2004 & 20H2 tested
- ✓ A domain admin and a domain user account

# Prerequisites

Before configuring Profile Container:

- Verify that you meet all entitlement and configuration requirements
- Download and install the latest FSLogix Software
- Consider storage and network requirements for your users' profiles
- Verify that your users have appropriate storage permissions where profiles will be placed
   <u>Permissions required for secure roaming profiles & redirected folders</u>
- Profile Container is installed and configured. Stop and remove other solutions intended to manage remote profiles. Using multiple profile solutions concurrently can cause issues.
- Exclude the VHD(X) files for Profile Containers from antivirus (AV) scanning

**Notes:** Ensure Frame accounts are domain joined (including the Sandbox temporarily), that OFS is configured for the Frame accounts (engineering enablement task), and that **TimeFreeze is not in use (it can be installed, but don't use it).** 

# Installation and Setup

- 1. Download and install the most recent FSLogix build.
  - a. <u>https://docs.microsoft.com/en-us/fslogix/install-ht</u>
- 2. Add the Sandbox to the domain (can be temporary to install and test FSLogix Profile Containers).
  - a. PowerShell: Add-Computer -DomainName dansdomain.com

| Administrator: Windows PowerShell   | Windows PowerShell credential request $~?~~	imes~$ |   |
|---|--|---|
| Windows PowerShell<br>Copyright (C) Microsoft Corporation. All rights reserved.                   |  | ` |
| Try the new cross-platform PowerShell https://aka.ms/pscore6                                      |  |   |
| PS C:\Windows\system32> Add-Computer -DomainName dansdomain.com                                   | Enter your credentials.                            |   |
| cmdlet Add-Computer at command pipeline position 1<br>Supply values for the following parameters: | User name: 🖸 administrator 🗸 💷                     |   |
| Credential  | Password:  |   |
|   |  |   |
|   | OK Cancel  |   |
|   |  |   |
|   |  |   |
|   |  |   |
|   |  |   |
|   |  |   |
|   |  | , |
| Figure 1  |  |   |

| 🔁 Administrator: Windows PowerShell   | _ | $\times$ |
|---|---|----------|
| Windows PowerShell<br>Copyright (C) Microsoft Corporation. All rights reserved.   |   | ^        |
| Try the new cross-platform PowerShell https://aka.ms/pscore6  |   |          |
| PS C:\Windows\system32> Add-Computer -DomainName dansdomain.com   |   |          |
| cmdlet Add-Computer at command pipeline position 1<br>Supply values for the following parameters:<br>Credential<br>MARNING: The changes will take effect after you pertant the computer TE-4E4DD1E403E5 |   |          |
| PS C:\Windows\system32>   |   |          |

Figure 2

**Note:** FCP (Frame Credential Provider) will block domain join when using FGA v8.x.x Currently FCP limits the use of UAC.

3. Log in to the Sandbox with domain admin credentials.



Figure 3

4. Run 'ConfigurationTool' on SandBox in C:\ProgramFiles\FSLogix\Apps as an administrator.

| 📙   💆 📙 🖛               |                | Manage            | Apps    |                     | >                 | × |
|-------------------------|----------------|-------------------|---------|---------------------|-------------------|---|
| File Home Shar          | re View        | Application Tools |         |                     | ~                 | ? |
| ← → ~ ↑ 📙 « F           | FSLogix > Apps | с v с             | ,⊂ Sear | ch Apps             |                   |   |
| ^                       | Name           | ^                 |         | Date modified       | Туре              | ^ |
| Cuick access            | Con            | npiledRules       |         | 3/15/2021 1:23 PM   | File folder       |   |
| Desktop 🖈               | 📑 ima          | geformats         |         | 3/15/2021 1:23 PM   | File folder       |   |
| 🕔 Download Nc 🖈         | plat           | forms             |         | 3/15/2021 1:23 PM   | File folder       |   |
| 👆 Downloads 🖈           | Rule           | 25                |         | 3/15/2021 1:23 PM   | File folder       |   |
| 🕦 Uploads 🛛 🖈           | 🖂 🌐 Con        | figurationTool    |         | 12/15/2020 12:13 PM | Application       |   |
| 🔮 Documents 🖈           | 🗟 срр          | rest_2_10.dll     |         | 12/15/2020 12:13 PM | Application exten |   |
| Pictures 🖈              | 🗟 d3d          | compiler_47.dll   |         | 3/11/2014 3:54 AM   | Application exten |   |
| 🎝 Music 🗸               | Fry I          | EventIonManifect  |         | 12/7/2020 8-54 AM   | YMI Document      | > |
| 34 items 1 item selecte | ed 1.03 MB     |                   |         |                     |                   |   |

Figure 4

5. Define VHDx locations (e.g., \\dansdc01\FSLogix on the DC)

| 🚘 New Share Wizard |                      |                                   | _ | × |
|--------------------|----------------------|-----------------------------------|---|---|
| Specify share nam  | ne                   |                                   |   |   |
| Select Profile     | Share name:          | FSLogix                           |   |   |
| Share Location     |                      |                                   |   |   |
| Share Name         | Share description:   |                                   |   |   |
| Other Settings     |                      |                                   |   |   |
| Permissions        |                      |                                   |   |   |
| Confirmation       | Local path to share: |                                   |   |   |
| Results            | C:\Shares\FSLogix    |                                   |   |   |
|                    | 🕕 If the folder doe  | not exist, the folder is created. |   |   |
|                    | Remote path to sha   | e:                                |   |   |
|                    | \\dansdc01\FSLogi    |                                   |   |   |
|                    |                      |                                   |   |   |



| SLogix Profiles Configuration Tool                          |            |   |                |             |                |        |
|---|------------|---|----------------|-------------|----------------|--------|
| neral Profile Folder Redirection                            |            |   |                |             |                |        |
| Enable FSLogix Profiles                                     |            |   |                |             |                |        |
| HD Locations  |            | Volume Type   |                |             |                |        |
| \\dansdc01.dansdomain.com\FSLogix                           |            | C VHD @ VHDX  |                |             |                |        |
|   |            | Container Properties  |                |             |                |        |
|   |            | Default Size:   |                | 30000       | ÷ м            | B      |
|   |            | Allocation Type:  | Dynamic Alloca | ation       | •              | ·      |
|   |            | Advanced  |                |             |                |        |
|   |            | Profile Reload Maximum Retry Count:   | 12             |             | <u>÷</u>       | Ξ      |
|   |            |   |                |             | -              |        |
|   | Add Remove | Profile Reload Retry Interval:  |                | 12          | second         | ls     |
| sers  | Add Remove | Profile Reload Retry Interval:  |                | 12          | second         | İs     |
| isers<br>inclusion List                                     | Add Remove | Profile Reload Retry Interval:  |                | 12          | econd second   | İs     |
| sers<br>Indusion List<br>Everyone                           | Add Remove | Exclusion List  Fracture Content of Content |                | 12          | econd          | is<br> |
| sers  | Add Remove | Exclusion List IF-4E4DD1E493F5\Frame DANSDOMAIN\Domain Admins   |                | 12          | second         | is<br> |
| sers<br>Indusion List<br>Everyone                           | Add Remove | Profile Reload Retry Interval:<br>Exclusion List<br>[IF-4E4DDTE493F5\Frame<br>DANSDOMAIN\Domain Admins  |                | 12          | second         | -      |
| sers<br>indusion List<br>Everyone                           | Add Remove | Exclusion List F-4E4DD1E493F5\Frame DANSDOMAIN\Domain Admins  |                | 12          | second         | ts<br> |
| sers<br>Indusion List<br>Everyone                           | Add Remove | Exclusion List<br>Fxclusion List<br>Fx4E4DD1E493F5\Frame<br>DANSDOMAIN\Domain Admins  |                | 12 =        | second         | is .   |
| sers<br>inclusion List<br>Everyone                          | Add Remove | Exclusion List Exclusion List IF-4E4DD1E493F5\Frame DANSDOMAIN\Domain Admins  |                | 12 =        |                | ds<br> |
| Isers<br>Inclusion List<br>Everyone                         | Add Remove | Exclusion List Exclusion List IF-4E4DD1E493F5\Frame DANSDOMAIN\Domain Admins  |                | 12 =        |                | ds     |
| Isers<br>Inclusion List<br>Everyone                         | Add Remove | Exclusion List Exclusion List IF-4E4DDTE493F5\Frame DANSDOMAIN\Dormain Admins   |                | 12 <u>-</u> | emove          |        |
| Isers Inclusion List Everyone port settings Export settings | Add Remove | Profile Reload Retry Interval:<br>Exclusion List<br>[IF-4E4DDTE493F5\Frame<br>DANSDOMAIN\Domain Admins  |                | 12 <u>-</u> | Remove<br>Save |        |

Figure 6

Note: Use FQDN and not the NetBIOS name. The FSLogix Agent works best with DNS.

- a. Ensure permissions on FS are set correctly as per:
  - i. https://docs.microsoft.com/en-us/fslogix/fslogix-storage-config-ht
- b. Add SYSTEM with Full Control permissions on the profiles folder.

- c. VHD file format is only for Win7/Server2008, while VHDx is forWin10/Server2016+. Use VHDX when possible so you can resize the VHDX- based VM.
- 6. Add the 'Frame' user and 'Domain Admins' to the exclusion list.



 Verify the 'Altitude' registry value for OFS via the Registry in: HKLM\System\CCS\Services\OFS\Instances\OFS Instance - from 145600.6 to 100000 (6 x 0) Reboot your Sandbox. This setting is required in order for FSLogix Profiles to work with Frame. If not completed, initial profile creation will fail. Verify it's as stated.

| <b>1</b> | Registr | y Editor |                |      |                  |                         |                    |  |
|----------|---------|----------|----------------|------|------------------|-------------------------|--------------------|--|
| File     | Edit    | View     | Favorites Help | )    |                  |                         |                    |  |
| Com      | nputer\ | HKEY_L   | OCAL_MACHINE   | \SYS | TEM\CurrentContr | olSet\Services\OFS\Inst | ances\OFS Instance |  |
|          |         | >        | NetBIOS        | ^    | Name             | Туре                    | Data               |  |
|          |         | >        | NetbiosSmb     |      | ab (Default)     | REG SZ                  | (value not set)    |  |
|          |         | >        | NetBT          |      | ab Altitude      | PEC SZ                  | 145600.6           |  |
|          |         | >        | netkvm         |      | Altitude         | REG_SZ                  | 143000.0           |  |
|          |         | >        | Netlogon       |      | Flags            | REG_DWORD               | UXUUUUUUUU (U)     |  |
|          |         | >        | Netman         |      |                  |                         |                    |  |
|          |         | >        | netprofm       |      |                  |                         |                    |  |
|          |         | >        | NetSetupSvc    |      |                  |                         |                    |  |
|          |         |          | NetTonPortSh   |      | 1                |                         |                    |  |

Figure 8

| 🔡 Registry Editor  |          |   |                                       |   |
|--|----------|---|---------------------------------------|---|
| File Edit View Favorites Help  |          |   |                                       |   |
| Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlS   | et\S     | ervices\OFS\Instanc   | es\OFS Instance                       |   |
| OFS     OFS     OFS     OFS Instances     OFS Instance     OrS Instance     OrS Instance     OreSyncSvc     OneSyncSvc     OneSyncSvc_7535b4 | <b>^</b> | Name<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>(Default)<br>( | Type<br>REG_SZ<br>REG_SZ<br>REG_DWORD | Data<br>(value not set)<br>100000<br>0x00000000 (0) |

Figure 9

a. Check OFS filter driver altitude via fltmc.exe from an administrative command prompt.

| 🔤 Select Administrator: Command Prompt                           |                                  |           |                   |  |  |
|--|----------------------------------|-----------|-------------------|--|--|
| Microsoft Windows [Version 10.<br>(c) 2020 Microsoft Corporation | 0.19041.867]<br>. All rights res | erved.    |                   |  |  |
| C:\Windows\system32>fltmc  |                                  |           |                   |  |  |
| Filter Name  | Num Instances                    | Altitude  | Frame             |  |  |
| cbfltfs4   |                                  | 429998.99 | <legacy></legacy> |  |  |
| bindflt  | 1                                | 409800    | 0                 |  |  |
| WdFilter   |                                  | 328010    | 0                 |  |  |
| frxccd   | 2                                | 306000    | 0                 |  |  |
| frxdrv   | 2                                | 265700    | 0                 |  |  |
| storqosflt   | 0                                | 244000    | 0                 |  |  |
| wcifs  | 0                                | 189900    | 0                 |  |  |
| CldFlt   | 0                                | 180451    | 0                 |  |  |
| FileCrypt  | 0                                | 141100    | 0                 |  |  |
| luafv  | 1                                | 135000    | 0                 |  |  |
| TWZFILE  | 2                                | 134567    | 0                 |  |  |
| frxdrvvt   | 2                                | 132700    | 0                 |  |  |
| OFS  | 0                                | 100000    | 0                 |  |  |
| npsvctrig  | 1                                | 46000     | 0                 |  |  |
| Wof  | 2                                | 40700     | 0                 |  |  |
| FileInfo   |                                  | 40500     | 0                 |  |  |
| C:\Windows\system32>   |                                  |           |                   |  |  |

Figure 10

- 8. (Optional) Frame strongly recommends that administrators leave the Sandbox on the Domain. Leaving the Sandbox domain joined simplifies future management. However, if you *must* remove the Sandbox from the Domain, follow the steps below:
  - a. Go to System properties; Advanced system settings
  - b. Select the Name tab.



c. Select the Workgroup button and point to the workgroup of choice.

| Computer Name/Domain Changes       X         You can change the name and the membership of this computer. Changes might affect access to network resources.         Computer name:         IF-4E4DD1E493F5         Full computer name:         IF-4E4DD1E493F5.dansdomain.com         Member of         Omain:         dansdomain.com         @ Workgroup:         WORKGROUP         OK       Cancel |                     |   |                                   |                               |
|--|---------------------|---|-----------------------------------|-------------------------------|
| You can change the name and the membership of this<br>computer. Changes might affect access to network resources.<br>Computer name:<br>IF-4E4DD1E493F5<br>Full computer name:<br>IF-4E4DD1E493F5.dansdomain.com<br>More<br>Member of<br>Oomain:<br>dansdomain.com<br>@ Workgroup:<br>WORKGROUP<br>OK Cancel  | Comput              | er Name/Domain (                            | Changes                           | ×                             |
| Computer name:<br>IF-4E4DD1E493F5<br>Full computer name:<br>IF-4E4DD1E493F5.dansdomain.com<br>More<br>Member of<br>Obmain:<br>dansdomain.com<br>Workgroup:<br>WORKGROUP<br>OK Cancel   | You can<br>computer | change the name ar<br>r. Changes might affe | nd the membershi<br>access to net | ip of this<br>work resources. |
| IF-4E4DD1E493F5 Full computer name: IF-4E4DD1E493F5.dansdomain.com More Member of Domain: dansdomain.com  Workgroup: WORKGROUP OK Cancel   | Compute             | rname:                                      |                                   |                               |
| Full computer name:<br>IF-4E4DD1E493F5.dansdomain.com<br>More<br>O Domain:<br>dansdomain.com<br>Workgroup:<br>WORKGROUP<br>OK Cancel   | IF-4E4D             | D1E493F5                                    |                                   |                               |
| Domain:<br>dansdomain.com     Workgroup:<br>WORKGROUP     OK Cancel  | IF-4E4D             | outer name:<br>D1E493F5.dansdoma<br>er of   | ain.com                           | More                          |
| dansdomain.com   Workgroup:  WORKGROUP  OK Cancel  | ODo                 | omain:                                      |                                   |                               |
| Workgroup:     WORKGROUP     OK Cancel   | da                  | ansdomain.com                               |                                   |                               |
| WORKGROUP<br>OK Cancel   | ٥w                  | orkgroup:                                   |                                   |                               |
| OK Cancel  | W                   | ORKGROUP                                    |                                   |                               |
| OK Cancel  |                     |   |                                   |                               |
|  |                     |   | OK                                | Cancel                        |

d. Select OK.



Figure 12

9. Publish the Sandbox.

| Dana ECLasiv Ass    | Sandhoy                               |  |
|---------------------|---------------------------------------|--|
| Dans FSLogix Acc    | Salubox                               |  |
|                     |                                       | Status PUBLISHING                                |
| Summary             |                                       | IP prod-32999-10-42-192-113.nutanixframe.com     |
| Sandbox             |                                       | Data<br>center Nutanix-AHV, PHX-X-LABS_CCA30rc34 |
| Utility Servers     |                                       | VAL have at a con                                |
| Launchpads          |                                       | VM type Air ogb                                  |
| Users               |                                       | Disk size 200 GB                                 |
| Capacity            |                                       | OS Windows 10                                    |
| Analytics           |                                       | Variation 0.012.0                                |
| Audit Trail         |                                       | version 8.0.12.0                                 |
| Notification center | Last published on Mar 15th 2021 20:16 |  |
| Settings            |                                       |  |
| Status              | Backups                               | Create backup                                    |
|                     | Figure 13                             |  |

Servers Active Sessions

| Workload Id <sup>1</sup> / <sub>2</sub> Machine Name         Public IP         Private IP         VM Kind         Instance Type         Status           5295387         IF-4E4DD1E493F5         10.42.192.113         Sandbox         ntx.p1c2.m8         Stopped         :           5300159         NUTANIX-V30PE5F         prod-32999-10-42-192.170.nut 10.42.192.170         Production         ntx.p1c2.m8         Almost ready         : | Servers     |                 |                              |               |            |               |              | C Refresh |
|---|-------------|-----------------|------------------------------|---------------|------------|---------------|--------------|-----------|
| 5295387         IF-4E4DD1E493F5         10.42.192.113         Sandbox         ntx.p1.c2.m8         Stopped         :           5300159         NUTANIX-V3OPE5F         prod-32999-10-42-192-170.nut         10.42.192.170         Production         ntx.p1.c2.m8         Almost ready         ::   | Workload Id | Machine Name    | Public IP                    | Private IP    | VM Kind    | Instance Type | Status       |           |
| 5300159 NUTANIX-V3OPE5F prod-32999-10-42-192-170.nut 10.42.192.170 Production ntx.p1c2.m8 • Almost ready  | 5295387     | IF-4E4DD1E493F5 |                              | 10.42.192.113 | Sandbox    | ntx.p1.c2.m8  | Stopped      | :         |
|   | 5300159     | NUTANIX-V3OPE5F | prod-32999-10-42-192-170.nut | 10.42.192.170 | Production | ntx.p1.c2.m8  | Almost ready | :         |



10. Log in to a desktop instance as a Domain User (not a Domain Admin). Make some changes to the desktop (e.g., create a folder). Close the session.





11. Log in to a new session and see if the change you made earlier persisted.



Figure 16

12. Verify that a container exists on the file share you made to store the profile containers.





# **FSLogix Application Masking & Frame**

# **Application Masking**

# Overview

# **Application Masking**

Application Masking can be used to manage user access of installed components and applications. Application Masking may be used in both physical and virtual environments. It is most often applied to manage non-persistent, virtual environments such as virtual desktops.

# Prerequisites:

- Verify that Entitlement and other requirements are met
- Install FSLogix on the Sandbox VM that will use Application Masking
- Install Application Masking Rules Editor on the Sandbox VM that administrators will be using to create rules
- Install all applications, printers, fonts, and other resources to be managed with Application Masking on the Sandbox VM
- Apply any organization-specific configuration for intended environments

#### Resources

- Implement Application Masking Tutorial FSLogix
- How to Simplify Centralized Image Management in Nutanix Frame with Microsoft Application
   Masking

#### Assignment Order

Assignments are executed from top to bottom.

Example: Consider if two assignments were made for the same Rule Set. The first assignment applies the Rule Set to Everyone; the second assignment specifies that the Rule Set *does NOT apply* to User1. In this case, the Rule Set would apply to everyone *except* User1.

If an administrator were to reverse the order of the assignments above, the Rule Set would apply to Everyone without exclusion.

# Managing Assignments

1. After creating rules and rule sets, select the desired rule and click "File>Manage Assignments."

| Assignments                             |           |        |         | < |
|---|-----------|--------|---------|---|
| Rule Set:                               |           |        |         |   |
| Assignment                              |           |        | Applies |   |
| 🖀 Everyone                              |           | No     |         |   |
|   |           |        |         |   |
|   |           |        |         |   |
|   |           |        |         |   |
|   |           |        |         |   |
|   |           |        |         |   |
|   |           |        |         |   |
| Set As Template Move Up                 | Move Down | Add    | Remove  |   |
| Rule Set does apply to user/group       |           |        |         |   |
| O Rule Set does not apply to user/group |           |        |         |   |
| AD Reporting                            | ОК        | Cancel | Apply   |   |

- 2. Click "Add," then select the type of Assignment you want. To create a new Assignment:
  - 2.1. Select one or more Assignments and click "Remove" to delete Assignments.
  - 2.2. Select one or more Assignments and click "Move up" or" Move Down" to arrange Assignments as desired.
  - 2.3. Use the radio buttons to specify whether or not the Rule Set applies, then click "Apply" to apply the application to an entity. Whether or not an Assignment applies is represented by the "Applies" column.

# User Assignment

| Selection | t User X          |
|-----------|-------------------|
| User:     | User 🔒            |
| Domair    | Contoso.com       |
| Assignm   | ent:*@Contoso.com |
|           | OK Cancel         |

# **Group Assignment**

| Selection | t Group           | $\times$ |
|-----------|-------------------|----------|
| Group:    | Group             | -        |
| Domair    | Contoso.com       | ]        |
| Assignm   | ent:*@Contoso.com |          |
|           | OK Cancel         |          |

# **Process Assignment**

| Process                     | _      |   | ×      |
|-----------------------------|--------|---|--------|
| Enter the Path to the execu | table: |   |        |
| Apply to child process      | es     |   |        |
|                             | OK     | 0 | Cancel |

# Network Location Assignment

| Network Location      | —  | ×      |
|-----------------------|----|--------|
| Enter the IP address: |    |        |
|                       |    |        |
|                       | ОК | Cancel |
|                       | ОК | Cancel |

# **Computer Assignment**

| Select   | Computer         | $\times$ |
|----------|------------------|----------|
| Compute  | Computer         |          |
| Domair   | Contoso.com      | ]        |
| Assignme | nt:*@Contoso.com |          |
|          | OK Cancel        |          |
|          |                  |          |

# Directory Container Assignment

| AD Distinguished            | —     |   | $\times$ |
|-----------------------------|-------|---|----------|
| Enter distinguished name st | ring: |   |          |
|                             |       |   |          |
|                             | ОК    | ( | Cancel   |
|                             |       |   |          |

#### **Environment Variable Assignment**

| 🌐 Enter Environment Variable | ×         |
|------------------------------|-----------|
| Environment Variable:        |           |
| Value:                       |           |
| From File                    | OK Cancel |

**Note:** Environment Variables must be *present at sign-on*. Rules created after sign-on will not be supported.

#### Manage Rule Sets and Rules in Application Masking

Application Masking manages access to applications, fonts, and other resources based on criteria. The Application Rules Editor is used to describe the resource to be managed. The editor is also used to define rule criteria. For instance, an administrator would want GitHub to be hidden from an Accounting group. Additional details can be found in <u>Microsoft's official documentation</u>.

#### Things you can do with the Application Rules Editor:

- Create new Rule Sets
- Edit existing Rule Sets
- Manage the user and group assignments for Rule Sets
- Temporarily test Rule Sets

#### Rule Types

FSLogix supports the following 4 rule types:

#### 1. Hiding Rule

Hides the desired resources using specified criteria.

| 🕕 Add Rule                 | ×         |
|----------------------------|-----------|
| Hiding Rule 👻              |           |
| Object Name:               |           |
| Object                     | <b></b>   |
| Object Type                |           |
| File / Registry Value      |           |
| O Directory / Registry Key |           |
| O Printer                  |           |
| O Point                    |           |
| Comment:                   |           |
| Comment                    |           |
|                            |           |
|                            |           |
|                            | OK Cancel |

# 2. Redirect Rule

Causes the desired resource to be redirected as specified.

| 🌐 Add Rule                 | ×         |
|----------------------------|-----------|
| Redirection Rule           |           |
| Source:                    |           |
| Source                     |           |
| Destination:               |           |
| Destination                |           |
| Object Type                |           |
| File / Registry Value      |           |
| O Directory / Registry Key |           |
| Copy Object                |           |
| Comment:                   |           |
| Comment                    |           |
|                            | OK Cancel |

# 3. App Container Rule

Redirects the desired resource onto a VHD.

| Add Rule               |    | ×      |
|------------------------|----|--------|
| pp Container (VHD) F 🔻 |    |        |
| Folder:                |    |        |
| Folder                 |    |        |
| Disk file:             |    |        |
| Disk File              |    |        |
| Comment:               |    |        |
| Comment                |    |        |
|                        |    |        |
|                        |    |        |
|                        |    |        |
|                        |    |        |
|                        |    |        |
|                        | ОК | Cancel |

# 4. Specify Value Rule

Assigns a value for the desired resource.

| 🕕 Add Rule           | ×     |
|----------------------|-------|
| Specify Value Rule 🔻 |       |
| Registry Value Name: |       |
| Value                |       |
| Data:                |       |
| Data                 |       |
| Comment:             |       |
| Comment              |       |
|                      |       |
|                      |       |
|                      |       |
|                      |       |
|                      |       |
| OK Ca                | ancel |

#### Configure FSLogix Application Masking with Frame

1. Install Rule Editor, then run "FSLogixAppsRuleEditorSetup.exe" as an administrator.



Figure 20

#### **Create Application Masking Rules**

1. Run C:\Program Files\FSLogix\Apps\RuleEditor.exe, then run the Rule Editor as an administrator.

| - I 🖓 📑 = I  | Manage Apps                                  |                     |                   |          | – 🗆 X |
|--|--|---------------------|-------------------|----------|-------|
| File Home Share  | View Application Tools                       |                     |                   |          | ~ 🕑   |
| $\leftrightarrow$ $\rightarrow$ $\checkmark$ $\uparrow$ $\square$ « Lo | ocal Disk (C:) > Program Files > FSLogix > / | Apps v Ō            |                   |          |       |
| 📰 Pictures 🛛 🖈 ^   | Name   | Date modified       | Туре              | Size     | ^     |
| 👌 Music  | CompiledRules                                | 3/15/2021 1:23 PM   | File folder       |          |       |
| Videos   | imageformats                                 | 3/15/2021 1:23 PM   | File folder       |          |       |
| <ul> <li>OneDrive</li> </ul>   | platforms                                    | 3/15/2021 1:23 PM   | File folder       |          |       |
| - Onebrive   | Rules  | 3/15/2021 1:23 PM   | File folder       |          |       |
| 💻 This PC  | 🌐 ConfigurationTool                          | 12/15/2020 12:13 PM | Application       | 1,064 KB |       |
| 🗊 3D Objects   | 📧 frx  | 12/15/2020 12:13 PM | Application       | 691 KB   |       |
| Desktop  | frxccds                                      | 12/15/2020 12:16 PM | Application       | 1,216 KB |       |
| Documents  | 🌐 frx context                                | 12/15/2020 12:16 PM | Application       | 383 KB   |       |
| - Downloads  | 📧 frxlauncher                                | 12/15/2020 12:16 PM | Application       | 202 KB   |       |
| Downloads  | 🌐 frxshell                                   | 12/15/2020 12:16 PM | Application       | 336 KB   |       |
| J) Music   | ■ frxsvc                                     | 12/15/2020 12:16 PM | Application       | 2,282 KB |       |
| Pictures   | 🚟 frxtray                                    | 12/15/2020 12:16 PM | Application       | 258 KB   |       |
| Videos   | 🗹 🌐 RuleEditor                               | 12/15/2020 12:17 PM | Application       | 2,506 KB |       |
| 🏪 Local Disk (C:)  | cpprest_2_10.dll                             | 12/15/2020 12:13 PM | Application exten | 957 KB   |       |
| - V  | d3dcompiler 47.dll                           | 3/11/2014 3:54 AM   | Application exten | 4,077 KB | ~     |
| 34 items 1 item selected   | 2.44 MB                                      |                     |                   |          |       |

Figure 21

# 2. Create Application Rules

| 1 | 🗄 F | SLogi | ix App | os Ru | leEd | itor     |        |   |  |   |   |   |   |   |  | - |  | × |
|---|-----|-------|--------|-------|------|----------|--------|---|--|---|---|---|---|---|--|---|--|---|
| F | ile | Edit  | Help   |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   | ß   | ŕ     | , 🗆    |       | 5    | 8        | 2      | D |  | 2 | ÷ | - | ۰ | □ |  |   |  |   |
| _ |     |       |        |       | _    | Filter F | Rules: |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
| 1 |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
| l |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
| e |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
|   |     |       |        |       |      |          |        |   |  |   |   |   |   |   |  |   |  |   |
| Ľ |     |       |        |       |      | I        |        |   |  |   |   |   |   |   |  |   |  |   |

Figure 22

#### 3. Name the file in your storage location.

| 🌐 Save File As                          |          |                |   |                    |   |       |              |        |       | ×        |
|---|----------|----------------|---|--------------------|---|-------|--------------|--------|-------|----------|
| $\leftarrow \rightarrow \cdot \uparrow$ | > This   | PC → Documents | s |                    | ~ | ē     | Search Docu  | uments |       | <i>م</i> |
| Organize 🔻 Nev                          | w folder |                |   |                    |   |       |              |        |       | ?        |
| 💻 This PC                               | ^        | Name           | ^ | Date modified      |   | Туре  |              | Size   |       |          |
| 🧊 3D Objects                            |          | throme         |   | 3/16/2021 12:53 PM | N | FSLog | ix Rule File |        | 3 KB  |          |
| E Desktop                               |          |                |   |                    |   |       |              |        |       |          |
| Documents                               |          |                |   |                    |   |       |              |        |       |          |
| 👆 Downloads                             |          |                |   |                    |   |       |              |        |       |          |
| 👌 Music                                 |          |                |   |                    |   |       |              |        |       |          |
| Pictures                                |          |                |   |                    |   |       |              |        |       |          |
| Videos                                  |          |                |   |                    |   |       |              |        |       |          |
| 🏪 Local Disk (C:)                       |          |                |   |                    |   |       |              |        |       |          |
| 🧀 Network                               | ~        |                |   |                    |   |       |              |        |       |          |
| File name:                              | chrome   | 2              |   |                    |   |       |              |        |       | ~        |
| Save as type:                           | Rule Set | : File (*.fxr) |   |                    |   |       |              |        |       | ~        |
| ∧ Hide Folders                          |          |                |   | <br>               |   |       | Save         |        | Cance | el:      |

Figure 24

4. Select the application you want to manage. Click "Scan" to have the Rules Editor detect the application settings. When scanning is complete, Click "OK."

| ule Set: Contoso_1                              | _    |       | ×      |
|---|------|-------|--------|
| 🔘 Blank Rule Set                                |      |       |        |
| O Enter Program Files Path:                     |      |       |        |
| Choose from installed programs:                 |      |       |        |
| GitHub Desktop                                  |      |       | •      |
| GlobalProtect                                   |      |       |        |
| Google Chrome                                   |      |       |        |
| Soogle Earth Pro                                |      |       |        |
| GoTo Opener                                     |      |       |        |
| GoToMeeting 8.44.2.13022                        |      |       |        |
| Intel(R) Dynamic Platform and Thermal Framework |      |       |        |
| Intel(R) HID Event Filter                       |      |       |        |
| Intel(R) Management Engine Components           |      |       | ~      |
| Program Installation Directory:                 |      |       |        |
| C:\Users\dcoombs\AppData\Local\GitHubDesktop    |      |       |        |
| Progress:                                       |      |       |        |
|   |      |       | 0%     |
| Add Another Application                         | Scan | Cance | )<br>I |

| I FSLogix Apps RuleEditor -   |  | ×   |  |  |  |  |  |  |  |
|---|--|-----|--|--|--|--|--|--|--|
| File Edit Help  |  |     |  |  |  |  |  |  |  |
| D 🖻 🛱 💥 40 N 📤 🛛 💷 🖉 🛨 – 🖨 🗒 🖵  |  |     |  |  |  |  |  |  |  |
| Filter Rules:   |  |     |  |  |  |  |  |  |  |
| chrome Hiding Rule Directory: %ProgramFilesFolder64%\Google\Chrome\Application Product Install Directory                                |  | -   |  |  |  |  |  |  |  |
| Hiding Rule<br>Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{F895F44D-9DFF-303A-80EC-9661<br>Application uninstall key | 122E675  | 8:  |  |  |  |  |  |  |  |
| Hiding Rule<br>Key: HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\UserData\S-1-5-18\Products\D44F<br>Windows Installer key   | Hiding Rule<br>Key: HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\UserData\S-1-5-18\Products\D44F598FFFD9/<br>Windows Installer key |     |  |  |  |  |  |  |  |
| Hiding Rule<br>Key: HKLM\Software\Classes\Installer\Products\D44F598FFFD9A30308CE6916226E5738<br>Windows Installer key                  |  |     |  |  |  |  |  |  |  |
| Hiding Rule<br>File: %SystemDriveFolder%\Users\Public\Desktop\Google Chrome.Ink<br>Program Shortaut (.Ink)                              | Hiding Rule<br>File: %SystemDriveFolder%\Users\Public\Desktop\Google Chrome.Ink<br>Program Shortcut (.Ink)                                     |     |  |  |  |  |  |  |  |
| Hiding Rule<br>File: %SystemDriveFolder%\Users\danadmin\AppData\Roaming\Microsoft\Internet Explorer\Quick La<br>Program Shortcut (.lnk) | aunch\@  | ior |  |  |  |  |  |  |  |
| Hiding Rule<br>File: %CommonStartMenuFolder%\Programs\Google Chrome.Ink<br>Program Shortcut (.Ink)                                      |  |     |  |  |  |  |  |  |  |
| Hiding Rule Key: HKLM\SYSTEM\CurrentControlSet\Services\GoogleChromeElevationService Key containing Service or Driver information       |  | ك   |  |  |  |  |  |  |  |
| Status: Ok (see status in Help->Status)   | -  | -   |  |  |  |  |  |  |  |

5. Assign masking method to rule (user here) to rule.

| 🌐 FSLogix A   | Apps RuleEditor                         |         | - 🗆 X      |
|---------------|---|---------|------------|
| File Edit H   | elp                                     |         |            |
| D 🖻           | 🖺 🎘 🖄 🗈 🖬 🖉 🖬 🖉 🕂 — 🗳 🗟 🖵               |         |            |
|               | Filter Rules:                           |         |            |
| chrome        | Assignments                             | - 🗆     | ×          |
| cnrome        | Rule Set:                               |         |            |
|               | Assignment                              | Applies |            |
|               | 🐏 Everyone                              | No      |            |
|               | adanuser@dansdomain.com                 | Yes     |            |
|               | La framesauser@dansdomain.com           | Yes     |            |
|               | La jonuser@dansdomain.com               | Yes     | .aunch\God |
|               |   |         |            |
|               |   |         |            |
|               |   |         |            |
|               |   |         |            |
|               |   |         |            |
|               |   |         | 598FFFD9/  |
|               | Set As Template Move Up Move Down Ac    | dd Remo | /e         |
|               | C Rule Set does apply to user/group     |         | 122E6758:  |
|               | C Rule Set does not apply to user/group |         | <u> </u>   |
| Status: Ok (s | AD Reporting OK Ca                      | Appl    | y          |
|               | Figure 25                               |         |            |

6. Apply rules to the system to verify status (see status warning below) select the checkbox option again to remove applied rules.

| 🌐 FSLogix Apps Ru | lleEditor   | -        |          | ×         |
|-------------------|---|----------|----------|-----------|
| File Edit Help    |   |          |          |           |
|                   | n x 4 r 📤 🗹 🖬 🖉 🛨 - 🔅 🗐 🖵   |          |          |           |
|                   | Filter Rules: Apply Rules to System   |          |          |           |
| chrome            | Hiding Rule<br>Key: HKLM\SOFTWARE\Classes\ChromeHTML<br>Program ID  |          |          | <b>^</b>  |
|                   | Hiding Rule<br>Key: HKLM\SYSTEM\CurrentControlSet\Services\GoogleChromeElevationService<br>Key containing Service or Driver information |          |          |           |
|                   | Hiding Rule<br>File: %CommonStartMenuFolder%\Programs\Google Chrome.Ink<br>Program Shortcut (.Ink)                                      |          |          |           |
|                   | Hiding Rule<br>File: %SystemDriveFolder%\Users\danadmin\AppData\Roaming\Microsoft\Internet Explor<br>Program Shortcut (.lnk)            | rer\Quic | (Launch  | God       |
|                   | Hiding Rule<br>File: %SystemDriveFolder%\Users\Public\Desktop\Google Chrome.Ink<br>Program Shortcut (.Ink)                              |          |          |           |
|                   | Hiding Rule<br>Key: HKLM\Software\Classes\Installer\Products\D44F598FFFD9A30308CE6916226E5738<br>Windows Installer key                  |          |          |           |
|                   | Hiding Rule<br>Key: HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\UserData\5-1-5-18\Prov<br>Windows Installer key            | ducts\D4 | 4F598FFI | FD9/      |
|                   | Hiding Rule<br>Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{F895F44D-9DFF-303A<br>Application uninstall key           | -80EC-96 | 56122E67 | 7583<br>¥ |
|                   | 4   |          |          | •         |



7. Once you see Status: Ok in the lower left corner of the window, then unapply and save the rule.

| 🌐 FSLogix Apps RuleEdito     | or  | -       |         | ×       |
|------------------------------|---|---------|---------|---------|
| File Edit Help               |   |         |         |         |
| ] 🗅 🖛 🖴 👘                    | × 4 B 🛓 🖌 🖬 🖉 + - 🛊 🗐 🗆   |         |         |         |
| Fi                           | Iter Rules: Apply Rules to System   |         |         |         |
| chrome                       | Hiding Rule<br>Key: HKLM\SOFTWARE\Classes\ChromeHTML<br>Program ID  |         |         | -       |
|                              | Conflict Detected - Hiding Rule<br>Key: HKLM\SYSTEM\CurrentControlSet\Services\GoogleChromeElevationService<br>Key containing Service or Driver information |         |         |         |
| I                            | Hiding Rule<br>File: %CommonStartMenuFolder%\Programs\Google Chrome.lnk<br>Program Shortcut (.lnk)  |         |         |         |
| I                            | Hiding Rule<br>File: %SystemDriveFolder%\Users\danadmin\AppData\Roaming\Microsoft\Internet Explorer\<br>Program Shortcut (.ink)                             | Quick L | aunch\  | 504     |
| I<br>F                       | Hiding Rule<br>File: %SystemDriveFolder%\Users\Public\Desktop\Google Chrome.Ink<br>Program Shortaut (.Ink)  |         |         |         |
| 1                            | Hiding Rule<br>Key: HKLH\Software\Classes\Installer\Products\D44F598FFFD9A30308CE6916226E5738<br>Windows Installer key                                      |         |         |         |
|                              | Hiding Rule<br>Key: HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\UserData\S-1-5-18\Product<br>Windows Installer key                             | s\D44F  | F598FFF | 09/     |
|                              | Hiding Rule<br>Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{F895F44D-9DFF-303A-80<br>Application uninstall key                            | EC-966  | 122E67  | 58:<br> |
|                              | 4   |         |         | •       |
| Status: Ok (see status in He | lp->Status)   |         |         | /       |

Figure 27

8. Once you have created the rules, exit the editor.

| FSLogix Apps Rule | ditor   | -       |          | Х   |  |  |  |  |  |  |
|-------------------|---|---------|----------|-----|--|--|--|--|--|--|
| File Edit Help    |   |         |          |     |  |  |  |  |  |  |
|                   | × 4 B 🛎 🛛 🖃 🖉 + -   0 🗒 🗖   |         |          |     |  |  |  |  |  |  |
| p                 | Filter Rules:   |         |          |     |  |  |  |  |  |  |
| chrome<br>firefox | Hiding Rule   |         |          |     |  |  |  |  |  |  |
|                   | Hiding Rule<br>Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\{F895F44D-9DFF-303A-8<br>Application uninstall key | 0EC-96  | 6122E67  | 583 |  |  |  |  |  |  |
|                   | Hiding Rule<br>Key: HKLM\Software\Microsoft\Windows\CurrentVersion\Installer\UserData\S-1-5-18\Produ<br>Windows Installer key   | cts\D44 | IF598FFF | D9/ |  |  |  |  |  |  |
|                   | Hiding Rule<br>Key: HKLM\Software\Classes\Installer\Products\D44F598FFFD9A30308CE6916226E5738<br>Windows Installer key          |         |          |     |  |  |  |  |  |  |
|                   | Hiding Rule<br>File: %SystemDriveFolder%\Users\Public\Desktop\Google Chrome.Ink<br>Program Shortaut (.ink)                      |         |          |     |  |  |  |  |  |  |
|                   | Hiding Rule<br>File: %SystemDriveFolder%\Users\danadmin\AppData\Roaming\Microsoft\Internet Explore<br>Program Shortcut (.ink)   | r\Quick | Launch   | Got |  |  |  |  |  |  |
|                   | Hiding Rule<br>File: %CommonStartMenuFolder%\Programs\Google Chrome.Ink<br>Program Shortcut (.ink)                              |         |          |     |  |  |  |  |  |  |
|                   | Hiding Rule<br>Key: HKLM\SOFTWARE\Classes\ChromeHTML<br>Program ID  |         |          | •   |  |  |  |  |  |  |
|                   | 4   |         |          | •   |  |  |  |  |  |  |
|                   |   |         |          | 11  |  |  |  |  |  |  |

Figure 28

Copy rules from your source location into C:\Program Files\FSLogix\Apps\Rules.
 Note: Two files of the same name exist for each rule each with adoffernat extension, .faxc & .fxc, copy them all.

| I     Image: Imag | are View                               |                   |                   |      | - | ×<br>~ ? |
|---|--|-------------------|-------------------|------|---|----------|
| ← → • ↑ <mark> </mark> «  | Program Files > FSLogix > Apps > Rules | 5 V               |                   |      |   |          |
| 📰 Pictures 🛛 🖈  | ^ □ Name ^                             | Date modified     | Туре              | Size |   |          |
| b Music   | 🌐 chrome                               | 3/16/2021 1:10 PM | FSLogix Rule Assi | 1 KB |   |          |
| Videos  | 🌐 chrome                               | 3/16/2021 1:09 PM | FSLogix Rule File | 2 KB |   |          |
| OpeDrive  | 🌐 firefox                              | 3/16/2021 1:03 PM | FSLogix Rule Assi | 1 KB |   |          |
| - OneDrive  | irefox                                 | 3/16/2021 1:02 PM | FSLogix Rule File | 2 KB |   |          |
|   |  | Figure 29         |                   |      |   |          |

10. Compiled rules will automatically be stored here: C:\Program Files\FSLogix\Apps\CompiledRules.

| 📙   🛃 📊 🖛   Comp  | iledRules   |                   |           | _    |  | ×   |  |
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| File Home Shi   | are View    |                   |           |      |  | ~ ? |  |
| ← → ▼ ↑ 🔤 « Program Files » FSLogix » Apps » CompiledRules V Ö 🖉 Search CompiledRules |             |                   |           |      |  |     |  |
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| b Music   | chrome.fxac | 3/16/2021 1:10 PM | FXAC File | 1 KB |  |     |  |
| Videos  | chrome.fxc  | 3/16/2021 1:09 PM | FXC File  | 2 KB |  |     |  |
| OneDrive  | irefox.fxac | 3/16/2021 1:03 PM | FXAC File | 1 KB |  |     |  |
| Onebrive  | firefox.fxc | 3/16/2021 1:02 PM | FXC File  | 2 KB |  |     |  |
| 💻 This PC   |             |                   |           |      |  |     |  |
|   |             |                   |           |      |  |     |  |

Figure 30

11. Clear the "Quick access" (a.k.a. "recent files") section in File Explorer in the Sandbox to ensure they aren't visible to end users.

| 🐂   🕑 📗 🖛   File Expl        | orer                   |                      | -                       | $\Box$ $\times$ |  |  |
|------------------------------|------------------------|----------------------|-------------------------|-----------------|--|--|
| File Home Shar               | e View                 |                      |                         | ~ ?             |  |  |
| ← → × ↑ ♣ → 0                | luick access           | ע פֿ ג Searc         | ✓ O Search Quick access |                 |  |  |
| A Quick access               | ~ Frequent folders (8) |                      |                         |                 |  |  |
| 📃 Desktop 🛛 🖈                | Desktop                | Download Now         | Downloads               |                 |  |  |
| 🕔 Download Nc 🖈              | This PC                | dan admin            | This PC                 |                 |  |  |
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| 🗒 Documents 🖈                | <b>V</b>               | *                    | *                       |                 |  |  |
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| Music                        | This PC                | This PC              |                         |                 |  |  |
| Videos                       |                        |                      |                         |                 |  |  |
| <ul> <li>OneDrive</li> </ul> | ~ Recent files (2)     |                      |                         |                 |  |  |
| 💻 This PC                    | C chrome               | This PC\D            | ocuments                |                 |  |  |
| 3D Objects                   | firefox                | This PC\D            | ocuments                |                 |  |  |
| 📃 Desktop 🗸 🗸                |                        |                      |                         |                 |  |  |
| 10 items 1 item selecter     | d 1014 bytes           |                      |                         | EE 📰            |  |  |

Figure 31

| ile Home Share V | Edit with Microsoft FSLogix Apps RuleEditor | ~ |
|------------------|---|---|
|                  | S Share with Skype                          |   |
| → ↑ ↑ ↑ Quick ac | Remove from Quick access                    |   |
| ^                | Edit with Notepad++                         |   |
| 📌 Quick access   | 🕀 Scan with Microsoft Defender              |   |
| 🔜 Desktop 🛛 🖈    | 🖻 Share ad Now Downloads                    |   |
| 🚺 Download Nc 🖈  | Open with                                   |   |
| 🕹 Downloads 🖈    | Give access to                              |   |
| 1 Uploads 🖈      | Restore previous versions Pictures          |   |
| 🔮 Documents 🖈    | Send to                                     |   |
| 📰 Pictures 🛷     |   |   |
| 👌 Music          |   |   |
| Videos           | Create shortcut                             |   |
|                  | Open file location                          |   |
|                  | Properties                                  |   |
| This PC          | chrome This PC\Documents                    |   |
| 3D Objects       | firefox This PC\Documents                   |   |
| 🔜 Desktop 🗸 🗸    |   |   |





Figure 33

- 12. Log off of the Sandbox.
- 13. Publish the Sandbox.

| Nutanix Demo > Dan Simmon | s Test Org (Do Not Delete) > Dans FSLogix Account T | <b>wo ≻</b> Sandbox   | \$                        | Frame    |  |  |  |
|---------------------------|---|-----------------------|---------------------------|----------|--|--|--|
| Dans FSLogix Acc          | Sandbox   |                       | Start session & F         |          |  |  |  |
| ount Two                  |   | Status                | F                         | UBLISH   |  |  |  |
| Summary                   |   | IP prod-              | 33000-10-42-192-187.nutan | xframe.o |  |  |  |
| Sandbox                   |   | Data                  | Nutanix-AHV PHX-X-I ARS   | CC430r   |  |  |  |
| Utility Servers           |   | center                |                           | CCASO    |  |  |  |
| Launchpads                |   | VM type               | VM type Air               |          |  |  |  |
| Users                     |   | Disk size             | isk size 200              |          |  |  |  |
| Capacity                  |   | OS                    |                           | Window   |  |  |  |
| Analytics                 |   | Version               |                           | 8.0.     |  |  |  |
| Audit Trail               |   |                       |                           |          |  |  |  |
| Notification center       | Last published on Mar 15th 2021 20:07               |                       |                           |          |  |  |  |
| Status                    | Backups   |                       | Create b                  | ackup    |  |  |  |
|                           | Name  |                       | Created At 🗘              | Туре     |  |  |  |
|                           | Backup request for vendor 33000                     | Mar 16th 2021 16:39 E | P                         |          |  |  |  |
|                           | Clone vendor, from vendor 32999                     | Mar 16th 2021 15:26 E |                           |          |  |  |  |
|                           | Created for DJI deployment at 2021-03-15 13:04:44   | Mar 15th 2021 16:04 E |                           |          |  |  |  |
|                           | Backup request for vendor 33000                     |                       | Mar 15th 2021 15:58 E     | P        |  |  |  |
|                           | Backup request for vendor 33000                     |                       | Mar 15th 2021 15:41 E     | P        |  |  |  |
|                           |   |                       |                           |          |  |  |  |

14. Log in and test as a non-admin/end user to verify the rules are taking effect (mask Chrome and Firefox.)

| Nutanix Frame   FSLc                   | ogix OneDes I × | +                                |                      |                 |                      |                  |                      |                    |                   | -                        | o x         |
|--|-----------------|----------------------------------|----------------------|-----------------|----------------------|------------------|----------------------|--------------------|-------------------|--------------------------|-------------|
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| console.nutano.com                     |                 | Sharepoint O Nutanix - Prod - M. | O Frame - My Applica | 😭 Classic Frame | M NextFrame   Nutani | 😝 AWS Management | A Home - Microsoft A | Google Cloud Platf | Subnet Mask Cheat | » 🛛 🛄 Othe               | r bookmarks |
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| Recycle Bin Dorthy                     |                 |                                  |                      |                 |                      |                  |                      |                    |                   |                          |             |
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# Application Masking recommendations and options

- As a best practice, use one rule file set for each application suite (such a Microsoft Office).
- Device-based application (e.g. Visio/Project) masking is possible with Device-based licensing by changing license parameters in rule editor. Be sure to add a Client name variable as part of the rule.
- If you want to use masking conditions based on AD Groups, ensure that Sandbox & Frame Account are set up to use Classic AD. As mentioned before, Classic AD is not required and you may also use other masking rules besides users or groups.

# **Use Of FSLogix Group Policy Template Files**

# Overview

FSLogix relies on a set of registry keys to be enabled and correctly configured on the VMs. There are several ways to apply these registry keys, depending on the scenario and scale of your environment:

- Manually creating registry keys using Windows Registry Editor:
  - It is not recommended since it is error-prone and potentially high risk. Manual effort is required, and scale to many hosts is difficult. It should be used only for testing and prototyping on a single machine.
- Local Policies:
  - It is possible to use the Group Policy Object (GPO) mechanism in Windows to apply a set of configuration settings (registry keys) using an object stored locally on a single computer. Should be used only for testing and development of GPO objects to be applied on a larger scale using a Central Store.
  - It can be used as a simple Sandbox master image management solution with Frame.
- Central Store for Policies:
  - This approach is the recommended mechanism to apply FSLogix, and any other configuration setting, at scale on all WVD Host Pool VMs. A centralized repository hosted on Active Directory Domain Controllers is used, thus replicated throughout the entire Active Directory domain.

# Prerequisites

Local Policies and Central Store for Policies rely on a Windows feature called Group policy administrative templates, also known as ADMX templates. The two files that you will need to copy to create your ADMX template are **fslogix.adml** and **fslogix.admx**, which we will discuss in more detail below.

**Note:** In older versions of the FSLogix installation package, two additional and separate files have been provided to configure the ADMX template for Office Container: FSLogixODFC.admx and FSLogixODFC.adml. These files are no longer provided since all the contained settings are now inside a single set of files, that is fslogix.adml and fslogix.admx.

# **ADMX Templates**

Group policy administrative templates, also known as ADMX templates, include settings you can configure for Windows machines through Group Policy Objects (GPO). Administrative Templates files are divided into .admx files and language-specific .adml files. The changes that are implemented in these files let administrators configure the same set of policies by using two languages. Administrators can configure policies by using the language-specific .adml files and the language-neutral .admx files.

In order to facilitate GPO creation, administrators can import these templates and have the editor user interface automatically configured with all the included settings. Once development of GPO is finished with all the desired changes, the resulting GPO object can be associated (linked) to an Organization Unit (OU) in Active Directory.

When VMs are created and joined to the Active Directory domain, the GPOs will automatically be applied, and FSLogix will be configured.

#### Local Policy Settings

#### Local Policy Edit

It is possible to create and edit locally a GPO object using the same template files, in a production environment it is recommended to use a Central Store. For completeness, here are the steps necessary to use the template files locally:

- 1. Copy the ADMX file (fslogix.admx) to C:\Windows\PolicyDefinitions (and unblock the access to the file in the file attribute)
- 2. Copy the ADML file (fslogix.adml) to C:\Windows\PolicyDefinitions\en-US (and unblock the access to the file in the file attribute)
- 3. Run the "Local Group Policy Editor" tool (GPEDIT.MSC)
- 4. Browse to Computer Configuration thenAdministrative Templates then look for FSLogix container.
- 5. Review and enable desired settings, then save the object.



# **Central Store**

To take advantage of the benefits of .admx files, and to distribute settings automatically to the entire VM production pools, you must create a Central Store in the Sysvol folder on a Windows domain controller. The Central Store is a file location that is checked by the Group Policy tools by default.

The Group Policy tools use all .admx files that are in the Central Store. The files that are in the Central Store are replicated to all domain controllers in the domain. To create a Central Store for .admx and .adml files, create a new folder that is named PolicyDefinitions in the following location (for example) on the domain controller:

• \\contoso.com\SYSVOL\contoso.com\policies\PolicyDefinitions

Now copy the FSLogix file fslogix.admx only into this location.

The PolicyDefinitions folder on the Windows domain controller stores all .admx files and .adml files for all languages that are enabled on the client computers. The .adml files are stored in a language-specific folder. For example, English (United States) files are stored in a folder that is named en-US. If not present already, you will need to create a language-specific folder en-US, then add fslogix.adml inside.

#### Template Edit

In the previous section, you completed the preparation of the ADMX template specific for FSLogix for your Active Directory domain. Now you are ready to use this template to create a GPO for your VM production pool.

The administrative tools you will use are the Group Policy Object Editor and Group Policy Management Console: these tools are already installed on Windows Server, they will require manual installation of an additional package on a Windows client:

- 1. Sign in with a Domain Administrator account to a machine or VM part of your Active Directory domain.
- 2. On Windows client OS, if necessary, install the "RSAT: Group Policy Management Tools":
  - 2.1. Open the Settings app > Apps > Optional features > Add features.
  - 2.2. Select RSAT: Group Policy Management Tools > Install.
  - 2.3. Wait while Windows installs the feature.
- 3. On the admin computer, open the Group Policy Management app.
- 4. Locate your Organizational Unit (OU) where WVD Host Pool machine accounts are located, then from the context menu select "Create a GPO in this domain, and Link it here...". Fill in a name for the new GPO and press "OK"
- 5. Right-click on the newly created policy and select "Edit", the Group Policy Management Editor app opens.



6. Expand Computer configuration > Policies > Administrative Templates > FSLogix and enable the desired settings for your configuration. Under the parent FSLogix folder, there are dedicated sections for Cloud Cache, Office 365 Container, and Profile Container.

7. For each setting, double-click on it, enable, and eventually fill in the required values. At the end, be sure to click on "Apply" to save and exit the dialog:

| VHD location  |               | — E  | ) X     |
|---|---------------|--|---------|
| VHD location  |               | Previous Setting Next Setting  |         |
| <ul> <li>Not Configured</li> <li>Enabled</li> </ul> | Comment:      | Configure Azure Files Share repo for my Profile Containers.  | ^       |
| O Disabled  | Supported on: | FSLogix Profiles 2.5   | ~       |
| Options:  |               | Help:  | ~       |
| VHD location  | cation\share1 | Specifies the network location where the VHD(X) files are<br>For example, \\servername\share\containers. | stored. |
|   |               | OK Cancel  | Apply   |

- 8. Once finished, close the dialog and return to the main editor windows. At the next GPO refresh cycle, the production pool VMs will receive these new policy settings and will apply to the local machine registry configuration. If you want to expedite the process, you can connect locally to the machine and execute the command below:
  - 8.1. GPUPDATE /Target:Computer /force

# General Profile Container and Application Masking Troubleshooting

#### **Error Messages**

The Error message below occurs when you are attempting to save the FSLogix configuration and the Sandbox is not domain joined.



Usually when an FSLogix component is not working, Error will be set. When it is set, it corresponds to a standard Windows Error Code.

 <u>https://docs.microsoft.com/en-us/windows/win32/debug/system-error-codes--0-499-?redirecte</u> <u>dfrom=MSDN</u>

Logs

- The Log files are in %ProgramData\FSLogix\Logs\Profile
- C:\Program Files\FSLogix\Apps\Frxtray.exe (FSLogix icon tray) is an excellent way to get visibility into the FSLogix profile and its status, configuration etc.



Figure 19

By default, the profile container VHD will contain the entire Windows profile for the user, except for:

- The TEMP (TMP) folder location
- The IE Cache folder location

The Windows user profile is composed of the contents of a specific folder location and some registry information. Typically this folder location is something like C:\Users\<username>.

If desired, the admin can specify that parts of the user profile are persisted in the profile container. Exclusions are done with a redirections.xml file. The redirections.xml file instructs the FSLogix agent to redirect specific folders out of the profile container and into the local C: drive. Any part of the profile that is excluded will be deleted at sign-out. see the folding link for details:

https://docs.microsoft.com/en-us/fslogix/manage-profile-content-cncpt#redirectionsxml

# Additional Tips

- Configuring Personal Drive together with the FSLogix Profile Container did not cause an issue, verified via Disk Manager.
- It is easy to map a drive letter to FSLogix Profile Container share and browse inside the container for troubleshooting in the instance or Sandbox.

The Profile Container sets three values that represent the state of Profile Container or Office Container:

- Status
- Reason
- Error

Profile Container stores error values here:

• HKLM\Software\FSLogix\Profiles\Sessions<UserSID>

FSLogix Office Container stores error values in two places:

- HKLM\Software\Policies\FSLogix\ODFC\Sessions<UserSID>
- HKCU\Software\FSLogix\ODFC\Sessions

If the Status is zero, the system is in a working state, and Reason will reflect the state.

• For example, if Status and Reason are both zero, then the FSLogix Container is attached and working for this user.

# Status Codes

Status codes can be found in Microsoft's <u>official documentation</u>.

# Group policies

Two group policies need to be set correctly, as described below:

To redirect internet and temporary files, the user needs permission to redirect the profile folder. You can find the GPO by going through the menus:

• User Configuration > Administrative Templates > Desktop > Prohibit User from manually redirecting Profile Folder

This gpo needs to be deactivated to get a value of zero. However, I noticed that the policy is not setting the correct value (at least for me) and therefore, I set the value by a user REG gpo.

- HKCU\Software\Microsoft\Windows\CurrentVersion\Policies\Explorer
- DisablePersonalDirChange REG\_DWORD = 0x00000000

A favorite gpo with companies is removing the run entry from the start menu, but this will also prohibit opening unc paths. With FSLogix, the redirection.xml file is downloaded from an unc share to the local profile. Therefore the download of the redirection.xml file would be blocked, and the exclusions will not apply.

• User Configuration > Administrative Templates > Start Menu and Taskbar > Remove Run menu from Start Menu

# Windows Search and Log Off

The Windows search, when active, can have open file handles to files in the user profile. Because of that, the virtual disk cannot be unloaded and will cause an issue with the following user logon. The workaround to this is to set up a task at logoff that restarts the Windows search. The restart would have no impact on other users because the restart takes less than a second.

The following command will restart the Windows search service :

Powershell.exe -NoLogo -NoProfile -NonInteractive Restart-Service WSearch

# System file access

Under certain conditions, the system keeps open file handles to the user profile and is more specific to the user keyword store. The open handle will block an unload of the virtual disk and the profile gets stuck at that server. There is an undocumented value **CleanupInvalidSessions** under **HKLM\Software\fslogix\apps** that can be used with the current FSLogix Version 2.9.7802.10873 and might help. If not, then you must restart the server!

# Format of the Redirection File

It's important that the redirection file has no errors in the format or the xml syntax. If the file includes errors, then this can lead to different behavior. The best indicator is the FSLogix eventlog, an event that starts with "**error.cpp(13)**," and has become an alert for me. Often, then the vDisk cannot be unloaded from the server.

# Official Microsoft Documentation:

- FSLogix Release Notes
- Configure Profile Container Tutorial
- <u>Storage Permissions for Profile Container and Office Container</u>
- Install FSLogix Agent
- Profile Container troubleshooting guide
- FSLogix Logging and Diagnostics
- <u>Create FSLogix profile container Azure Files Active Directory Domain Services -</u>
   <u>Azure</u>
- Configure FSLogix Cloud Cache Tutorial
- <u>Cloud Cache for resiliency and availability</u>

# Additional Resources:

- AZ-140 ep07 | Plan FSLogix Storage
- **P**FSLogix S2E1 Configuring FSLogix Profiles and Office Containers for the ente...
- SLogix Application Masking Advanced Hiding of Project and Visio

• <u>FSLogix/Invoke-FslShrinkDisk</u> - Shrinks FSLogix Profile and O365 dynamically expanding disk(s).