Canonical

ADSys

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Contents

ADSys is the Active Directory Group Policy client for Ubuntu.

ADSys enables management of Ubuntu Desktop and Server clients using Microsoft Active Directory. It integrates with services like SSSD or Winbind, which handle user access and authentication, providing extended functionality for managing and controlling Ubuntu clients.

With ADSys, policies can be applied to Ubuntu clients at boot and login, privileges can be granted and revoked, and remote script execution can be automated. ADSys also comes with administrative templates (ADMX and ADML) for all supported versions of Ubuntu.

System administrators can use ADSys to apply familiar skills and tools for managing Windows machines to the management of Ubuntu machines.

1. Tutorials

This section contains step-by-step tutorials to help you get started with ADSys and learn about some its key features.

1.1. Certificates auto-enrollment

Certificate auto-enrollment is a key component of Ubuntu's Active Directory GPO support. This feature enables clients to seamlessly enroll for certificates from Active Directory Certificate Services.

This tutorial is designed to help you develop an understanding of how to efficiently implement and manage certificate auto-enrollment, ensuring your systems remain secure and compliant with organizational policies.

A video version of the tutorial is also available:

[1]

[1] https://www.youtube.com/embed/RwVU7v0sEVY

1.1.1. What you need

- A client machine running Ubuntu 23.04 LTS, Ubuntu 23.10 or Ubuntu 24.04 LTS
- A VPN server that runs in the Azure cloud
- An Ubuntu VM accessible in the VPN

1.1.2. What you will do

- Configure and update the auto-enrollment policy
- Connect to a VPN server using certificates
- Access resources on the virtual network

1.1.3. Setup

You will need an installation of ADSys on your client Ubuntu Machine and the client should be joined to an *Active Directory* (AD) domain. Please refer to our how-to guides on setting up the Ubuntu client machine:

- *Join machine to AD during installation* (page 13)
- *Join machine to AD manually* (page 16)
- *Install ADSys* (page 17)

For the Windows *domain controller*, refer to:

- *Set up AD* (page 7)

1.1.4. Configure the auto-enrollment policy

First the policy needs to be configured. This is done through the same entry policy as that which is used to configure Windows clients.

You can find the entry `Certificate Services Client - Auto-Enrollment` in the GPO tree:

`Policies > Windows Settings > Security Settings > Public Key Policies`

Open the entry and set the Configuration Model to `Enabled`. You should also toggle the option for updating certificates that use certificate templates.

Apply these changes and continue.

1.1.5. Update policies and query certificates

Now update the policies with ADSys:

```
sudo adsysctl update -m -v
```

Note:

This command also typically runs on a fixed schedule and during system reboots.

ADSys downloads certificates from the domain controller. You can query information about the certificates with:

```
sudo getcert list
```

Note:

The `getcert list` command is provided by the `certmonger` utility, which is being used to manage the lifecycle of the certificates, ensuring — for example — that they are automatically renewed.

The output of the command should look something like this:

```
$ getcert list Number of certificates and requests being tracked: 2Request ID
'galacticcafe-CA.Machine': status: MONITORING stuck: no key pair storage:
type=FILE,location='/var/lib/adsys/private/certs/galacticcafe-CA.Machine.key'
certificate:
type=FILE,location='/var/lib/adsys/certs/galacticcafe-CA.Machine.crt' CA:
galacticcafe-CA issuer:
CN=galacticcafe-CA,DC=galacticcafe,DC=com......Request ID
'galacticcafe-CA.Workstation': status: MONITORING stuck: no key pair
storage: type=FILE,location='/var/lib/adsys/private/certs/galacticcafe-CA.
Workstation.key' certificate:
type=FILE,location='/var/lib/adsys/certs/galacticcafe-CA.Workstation.crt' CA:
galacticcafe-CA issuer: CN=galacticcafe-CA,DC=galacticcafe,DC=com.........
```

From this truncated output, we can see that there are two certificates being monitored:

- `galactic-CA.Machine`
- `galactic-CA.Workstation`

These correspond to certificate templates that are configured on the certificate authority.

The paths to the private key and certificate are included in the `getcert list` output. Everything should now be in place for the use of corporate services like VPNs and WiFi.

1.1.6. Connect to VPN server using certificates

To check the VPN configuration run:

```
cat /etc/ppp/peers/azure-vpn
```

Output:

```
$ cat /etc/ppp/peers/azure-vpn remotename: azure-vpnlinkname:
azure-vpnipparamname: azure-vpn......name keypress.galacticcafe.complugin
sstp-pppd-plugin.so......ca: /var/lib/adsys/certs/galacticcafe-CA.2.crtcert:
/var/lib/adsys/certs/galacticcafe-CA.Machine.crtkey:
/var/lib/adsys/private/certs/galacticcafe-CA.Machine.crt......
```

An SSTP VPN is being used for this tutorial, connecting to a gateway in the Azure cloud. The name specified is the FQDN of the machine that the certificates are generated for. Confirm that paths to the `ca`, `cert` and private `key` are all specified.

It should then be possible to connect to the VPN:

```
sudo pon azure-vpn
```

Establishing the connection may take a few seconds.

To check the connection run:

```
ip a
```

This should output a point-to-point connection:

```
$ ip a ......8: ppp0: <POINTTOPOINT,MULTICAST,NOARP,UP,LOWER_UP> mtu 1500
pfifo_fast state unknown group default qlen 3......
```

1.1.7. Accessing resources on a virtual network

The machine should now be connected to a virtual network with access to virtual resources.

For example, if an Ubuntu machine has no public IP but is set up in the same virtual network then it should be accessible:

```
ping <IPv4-address-of-resource>
```

It should be possible to ssh into a machine on the network:

```
ssh -i ~/.ssh/adsys-integration.pem root@<IPv4-address-of-resource>
```

For example, an instance of Ubuntu 24.04 LTS will give an output that shows it is running on Azure based on the kernel version:

```
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.5.0-1004-azure x86_64))
```

1.2. Certificates auto-enrollment

Learn to use Ubuntu's certificate auto-enrollment feature for certificate management with Active Directory Certificate Services.

- *Certificates auto-enrollment* (page 3)

2. How-to guides

These guides help you complete specific tasks across the ADSys operations lifecycle.

2.1. Windows domain controller

Installation and configuration guides for the Windows domain controller.

2.1.1. How to set up the Active Directory server for Ubuntu clients

Active Directory requires policy files (`.admx` and `.adml`), which define the settings for configuring clients and the actions for managing users.

As a rule of thumb, we distinguish between the configuration of Ubuntu and Windows clients to avoid incompatibilities, such as:

- Namespace conflicts
- Slashes used for paths
- Platform-specific support for different configurations

Generation of Ubuntu administrative templates

ADSys ships with pre-built Active Directory administrative templates that you can copy to your Active Directory server.

To generate the templates that list Long Term Support (*LTS*) Ubuntu releases, run:

```
adsysctl policy admx lts-only
```

These will list only the LTS releases of Ubuntu.

To generate templates for all supported releases:

```
adsysctl policy admx all
```

The commands generate two files — `Ubuntu.adml` and `Ubuntu.admx` — in the current directory.

These files are the files that must be copied to your Active Directory server.

Note:

You can find the latest version of these policy files in the ADSys repository[2].
Not all of the keys in the latest version may be supported by a local `ADSys` installation. Only templates generated by `adsysctl` match the version of your client.
The policy files are also shipped as part of the `adsys-windows` package, together with the *Active Directory Watch Daemon* (page 42).

[2] https://github.com/ubuntu/adsys/tree/main/policies

Deployment of policy files on the Active Directory server

The administrative templates for Ubuntu must be deployed on your Active Directory server in the policy definition directory corresponding to your forest root.

For example:

- For the `.admx` file: `\\example.com\sysvol\example.com\Policies\PolicyDefinitions`
- For the `.adml` file: `\\example.com\sysvol\example.com\Policies\PolicyDefinitions\en-US`

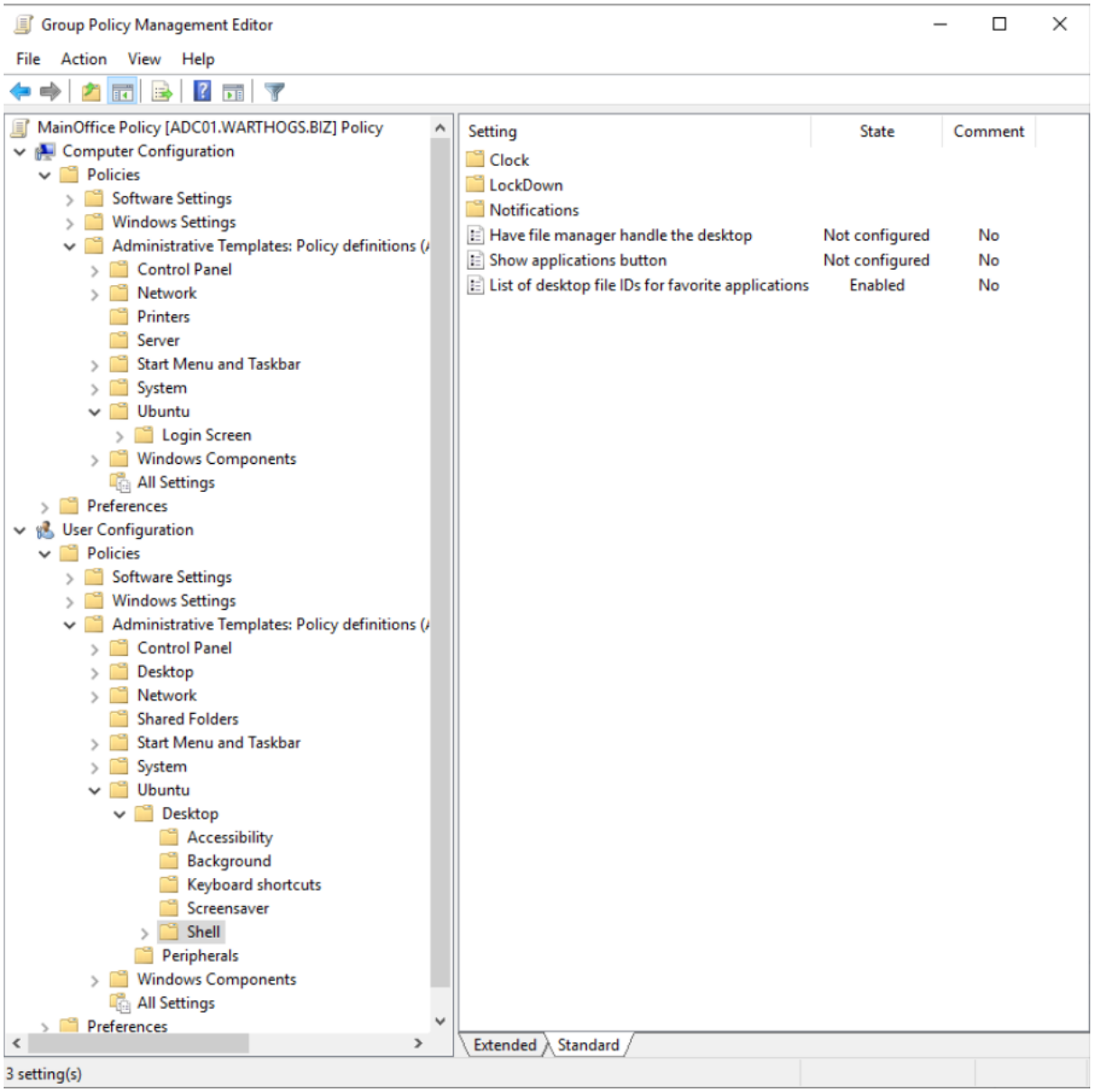
Create these directories manually if they do not exist.

Read the Microsoft documentation on "creating and managing the Central Store"[3].

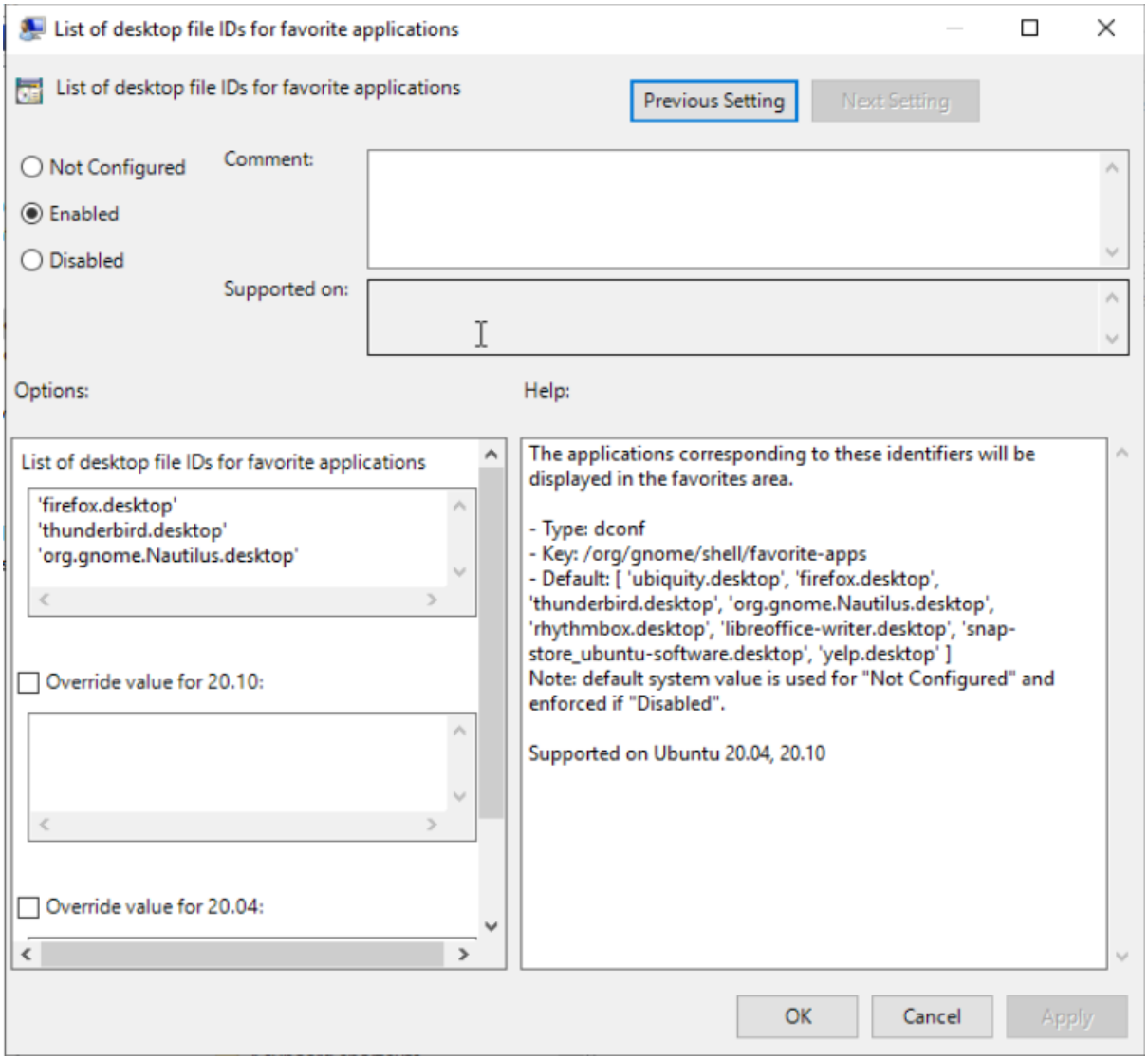
[3] https://docs.microsoft.com/en-us/troubleshoot/windows-client/group-policy/create-and-manage-central-store

After deployment in Active Directory, Ubuntu specific settings for machines and users become available in the **Group Policy Management Editor**:

- Machines: `[Policy Name] > Computer Configuration > Policies > Administrative Templates > Ubuntu`
- Users: `[Policy Name] > User Configuration > Policies > Administrative Templates > Ubuntu`



You can then select individual settings for configuration:



Recommended readings

- Show relevant documentation in the terminal with: `adsysctl help policy admx` or `man adsyctl-policy-admx`.
- Microsoft documentation on creating and managing the Central Store[4].

2.1.2. How to set up the Active Directory Watch Daemon

The Active Directory Watch Daemon or `adwatchd` is a Windows application for automating the otherwise manual process of incrementing the version stanza of a `GPT.ini` file.

The program can be simplified to the following steps:

- Watch a list of user-configured directories and their subdirectories for changes, where only the root directory has a `GPT.ini` file
- When a change is detected, attempt to locate a `GPT.ini` file at the root of the watched directory or create one if absent

[4] https://docs.microsoft.com/en-us/troubleshoot/windows-client/group-policy/create-and-manage-central-store

- If a `GPT.ini` file is found, increment the version stanza of the file by 1, which ensures that a new version of the assets (including scripts) are available to download during the next client refresh

Installation

The `adwatchd` application is available as a standalone Windows executable file, distributed as part of the `adsys-windows` Ubuntu package.

It is also packaged as an installer, which is available in the ADSys GitHub repository[5].

Installing with the Ubuntu package

To source the `adwatchd` executable from the `adsys-windows` package, run the following on Ubuntu:

```
sudo apt install adsys-windows
```

This installs the `adwatchd.exe` executable in the following directory on the Ubuntu client:

```
/usr/share/adsys/windows
```

We recommend that you deploy this executable to a persistent directory on the AD Domain Controller, such as:

```
%SystemDrive%\Program Files\Ubuntu\adsys\
```

Installing using the bespoke installer

Download the latest release[6] of the `adwatchd_setup.exe` file — or a specific version if you prefer.

Run the executable then follow the installation steps.

You can optionally specify a different installation directory for the application.

Configuring and starting the daemon

We recommend using the interactive configuration tool to install the application, as it provides a level of error handling, accounts for path normalization and handles the creation of the configuration file.

After installation, the configuration file can be edited further as needed.

[5] https://github.com/ubuntu/adsys/releases/latest
[6] https://github.com/ubuntu/adsys/releases/latest

Using the interactive configuration tool

Regardless of how the application is installed, the configuration steps are the same:

- Locate and run the `adwatchd.exe` executable to start the interactive configuration tool
- Specify a path for the configuration file, or leave it blank to use the default location (the directory where the executable is located)
- Specify a list of directories to watch, one per line (the program will block installation if any of the directories do not exist)
- Hit the **Install** button to finish the installation, this will:
  - Create the configuration file if it does not exist
  - Install and start the `adwatchd` Windows service

For a better understanding of what directories should be configured for watching, please refer to the *installing scripts on the sysvol* (page 143) in the explanation page for scripts execution.

Note:

The interactive configuration tool can only be run if the `adwatchd` service is not already installed on the machine.
Please refer to the `adwatchd` service section of the *CLI reference for `adwatchd`* (page 64) for instructions on how to manage the service.

Editing the configuration file

The configuration is stored as a YAML file, which can be freely edited after the application has been installed.

The following keys are configurable:

```
verbose: 0     # 0 = warning, 1 = info, 2 = debug, 3 = debug with caller output
dirs:          # list of directories to watch
  - C:\Windows\SYSVOL\sysvol\testdomain.com\Ubuntu     # traditional path
  - \\testdomain.com\SYSVOL\testdomain.com\Ubuntu      # UNC path
```

Configuring the service using a pre-filled configuration file

For convenience, the `adwatchd` application can be configured with a pre-filled configuration file.

Open a Command Prompt or PowerShell terminal and run one of the commands below.

Run interactive configuration tool:

```
C:\path\to\adwatchd.exe -c path\to\config.yaml
```

Run service installation command:

```
C:\path\to\adwatchd.exe service install -c path\to\config.yaml
```

Upgrading the service

The upgrade process differs based on the installation method used. If you decide to switch to a different installation method, you need to uninstall the existing service beforehand.

Upgrading with the Ubuntu package

1. Source the new `adwatchd` executable from the `adsys-windows` Ubuntu package
2. Stop the `adwatchd` service using the Services GUI or the `adwatchd service stop` command
3. (Optional) Remove the existing `adwatchd` service from the system through the `adwatchd service uninstall` command
4. Replace the existing `adwatchd.exe` executable with the new one
5. (Optional) Install the `adwatchd` service through the `adwatchd service install` command
6. Start the `adwatchd` service using the Services GUI or the `adwatchd service start` command

The optional steps are only necessary if you want a complete upgrade of the application, which is not usually needed. Always refer to the changelog for information on the latest version of the application.

Upgrading with the bespoke installer

1. Source the latest release of the `adwatchd_setup.exe` file
2. Run the installer and follow the prompts

The installer automatically handles the upgrade process.

It will offer to stop the service if it is running prior to the upgrade, and start it again afterwards.

2.2. Ubuntu client machine

Installation and configuration guides for the Ubuntu client machine.

2.2.1. How to join Ubuntu Desktop to an Active Directory domain during installation

To use Group Policies on an Ubuntu client, the client machine first needs to be joined to an Active Directory (AD) domain.

This guide shows you how to join an AD domain at installation time with the Ubuntu Desktop installer.

Tip:

Read our separate guide for *manually joining a machine to AD* (page 16).

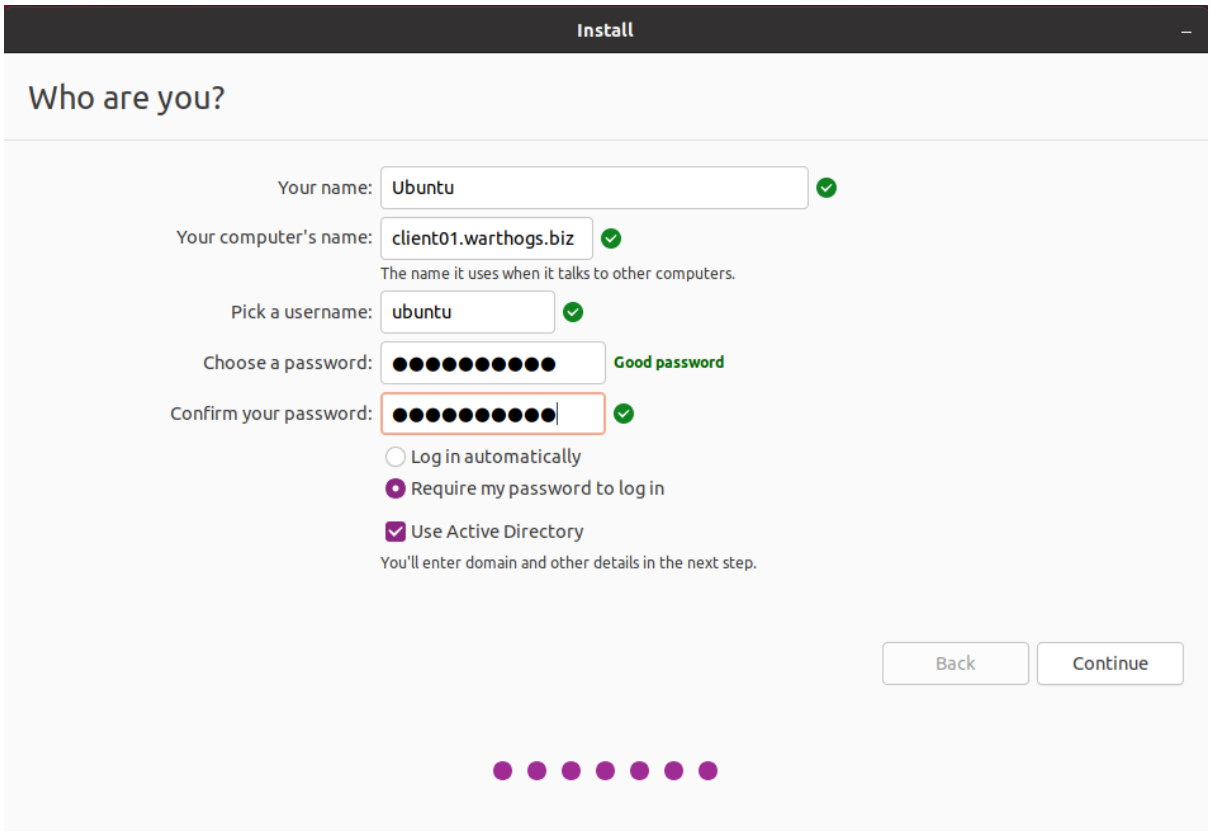
Join at installation time

Joining during installation is supported by the Ubuntu Desktop graphical installer.

Entering user and computer information

Start an installation of Ubuntu Desktop.

On the “Who are you?” screen, enter details for your user and computer.



To set and resolve the host name properly, you must enter the Fully Qualified Domain Name (FQDN) of the machine in the field “Your computer’s name”. For example, use the FQDN `host01.example.com` instead of the corresponding host name `host01`.

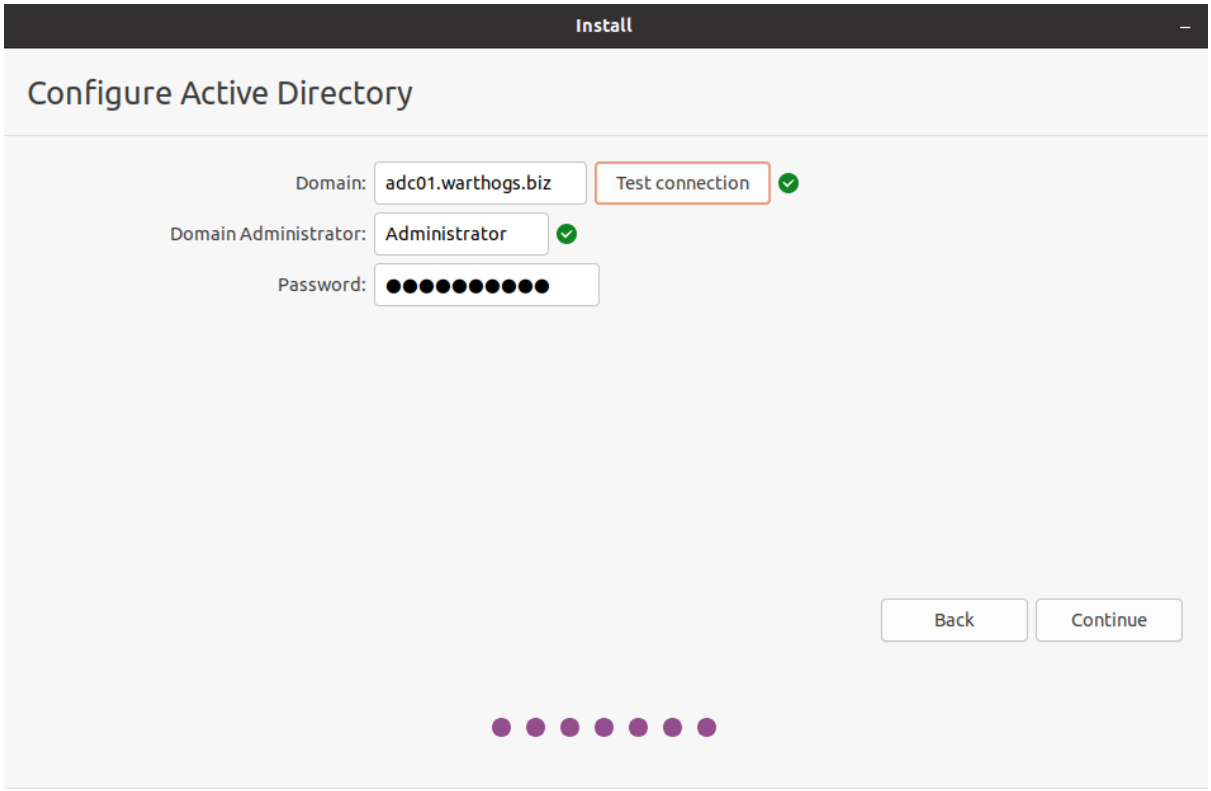
After installation, you can check if these details with the following commands:

- The `hostname` command: Returns the name of the machine (`host01`)
- The `hostname -f` command: Returns the full name of the machine with the domain (`host01.example.com`)

Check the box **Use Active Directory** and then continue to the next step.

Configuring Active Directory

Enter the address of the Active Directory controller and the credentials of the user allowed to add machines to the domain.



Verify that the server is reachable by clicking **Test Connection**.

Once all the information has been entered and is valid, the AD join configuration is complete. Continuing from here will take you through usual steps of the installation.

Logging in as a domain user

After the installation is complete, reboot the machine and log in as a user of the domain.

If anything goes wrong with the join process during installation, you will be notified by a dialog box.

For troubleshooting, you can reboot the machine and log in as the administrator user of the machine, which is the user you entered in the “Who are you?” screen.

This Ubuntu Server guide[7] provides relevant troubleshooting instructions.

[7] https://ubuntu.com/server/docs/service-sssd

2.2.2. How to manually join Ubuntu clients to an Active Directory domain

ADSys supports manual joining of Ubuntu clients to Active Directory (AD) using different backends.

Supported backends

ADSys supports two Active Directory backends:

1. SSSD[8], or System Security Services Daemon, provides access to centralized identity management systems like Microsoft Active Directory, OpenLDAP, and various other directory servers. This client component retrieves and caches data from remote directory servers, delivering identity, authentication, and authorization services to the host machine.
2. Winbind[9] is a component of the Samba suite that provides integration and authentication services between UNIX or Linux systems and Windows-based networks, allowing the former to appear as members in a Windows Active Directory domain.

Configuring connections with these backends is briefly described below with links to external documentation.

Join manually using SSSD

Authentication of Ubuntu against the Active Directory server requires configuration of SSSD and Kerberos. SSSD then retrieves the credentials and the initial security policy of the `Default Domain Policy`.

All these operations are described in detail in the Introduction to network user authentication with SSSD[10] and the White Paper How to integrate Ubuntu Desktop with Active Directory[11].

Join manually using Winbind

In addition to SSSD, ADSys supports Winbind as a backend.

The easiest way to join a domain using Winbind is to use the `realmd` utility, as described in the Samba - Member server in an Active Directory domain[12] guide.

ADSys uses SSSD as the default backend, so Winbind has to be enabled explicitly using the following configuration option in `adsys.yaml`:

```
ad_backend: winbind
```

Winbind also requires additional dependencies to be installed. They can be installed in Ubuntu by executing the following commands, prior to installing and running ADSys:

[8] https://sssd.io/
[9] https://wiki.samba.org/index.php/Configuring_Winbindd_on_a_Samba_AD_DC
[10] https://documentation.ubuntu.com/server/explanation/intro-to/sssd/
[11] https://ubuntu.com/engage/microsoft-active-directory
[12] https://documentation.ubuntu.com/server/how-to/samba/member-server-in-an-ad-domain/

```
sudo apt update
sudo apt install winbind krb5-user
```

2.2.3. How to set up ADSys

ADSys is not currently installed by default on Ubuntu desktop.

This guide shows how it can be installed manually by the local administrator of the machine.

Requirements

- ADSys is supported on Ubuntu starting from Ubuntu 20.04.2 LTS.
- It is tested with Windows Server 2019.
- Only Active Directory on-premise is supported.

Installing ADSys

Log in to the Ubuntu machine on first boot.

Update the repositories and install the `adsys` package with the following commands:

```
sudo apt update
sudo apt install adsys
```

Reboot the machine to initiate a policy refresh.

Logging in as a user of the domain

To log in as a user of the domain, click **Not listed?** in the greeter.

Then enter the username followed by the password.

SSSD

There is no default domain configured in SSSD.

You have to enter the full user name with one of the forms: `USER@DOMAIN.COM`, `USER@DOMAIN` or `DOMAIN/USER`.

On the first log in, the user's home directory is created.

These setting, including default domain, default path for home directories, and default shell, can be configured in `/etc/sssd/sssd.conf`.

Winbind

If Winbind is used as a backend, the account can be specified in one of the following forms: `USER@DOMAIN.COM`, `USER@DOMAIN` or `DOMAIN\\USER`.

To create the user's home directory automatically on login, enable the `pam_mkhomedir` module:

```
sudo pam-auth-update --enable mkhomedir
```

Settings for Winbind can be configured in `/etc/samba/smb.conf`. They are documented in the `smb.conf(5)`[13] man page.

Kerberos

ADSys relies on the configured AD backend (e.g. SSSD) to export the `KRB5CCNAME` environment variable, which points to a valid Kerberos ticket cache when a domain user performs authentication.

If the backend doesn't export the variable but *does* initialize a ticket cache in the default path[14], ADSys can infer the path to the ticket cache and export it as the `KRB5CCNAME` variable during authentication and `adsysctl update` for the current domain user.

To enable this functionality, the following must be added to `/etc/adsys.yaml`:

```
detect_cached_ticket: true
```

ADSys infers the path to the ticket cache using the libkrb5 API. To avoid unexpected behaviors, like rejecting authentication for non-domain users, no action is taken if the path returned by the libkrb5 API does not exist on disk.

2.3. Operations

Create GPO rules in the domain controller and apply them to Ubuntu client machines.

2.3.1. How to use GPO with Ubuntu

There are two sets of Ubuntu specific settings in the Group Policy Management Editor:

- Machine policies: `[Policy Name] > Computer Configuration > Policies > Administrative Templates > Ubuntu`
- User policies: `[Policy Name] > User Configuration > Policies > Administrative Templates > Ubuntu`

This guide will demonstrate how to create GPO rules for changing dconf settings on the client:

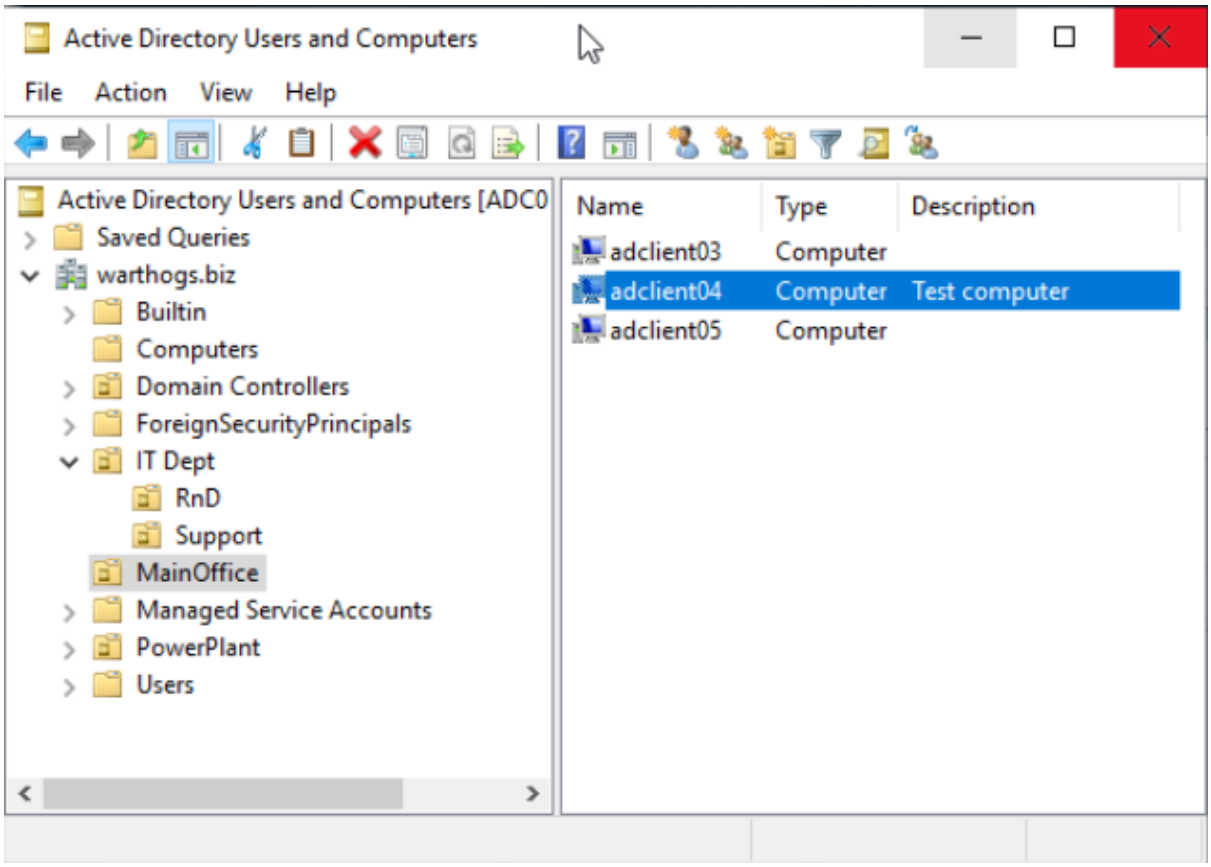
- Computer setting: modify the background image shown in the greeter during login
- User setting: modify the preferred applications shown in the desktop application launcher

[13] https://www.samba.org/samba/docs/current/man-html/smb.conf.5.html
[14] https://web.mit.edu/kerberos/krb5-1.12/doc/basic/ccache_def.html#default-ccache-name

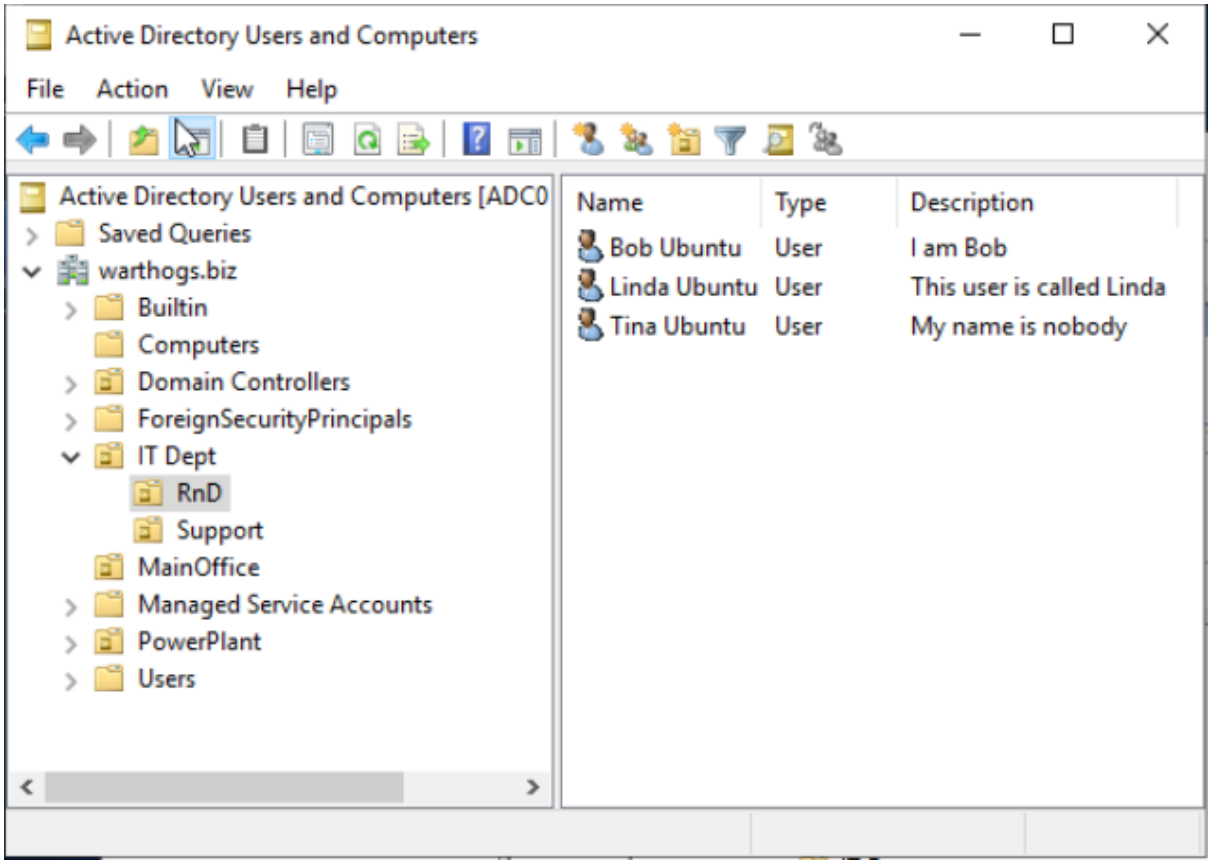
Creating GPO rules

For this example, we will use a test domain called `warthogs.biz` with two separate Organizational Units (OUs).

The machine is called `adclient04` and belongs to `warthogs.biz > MainOffice`.



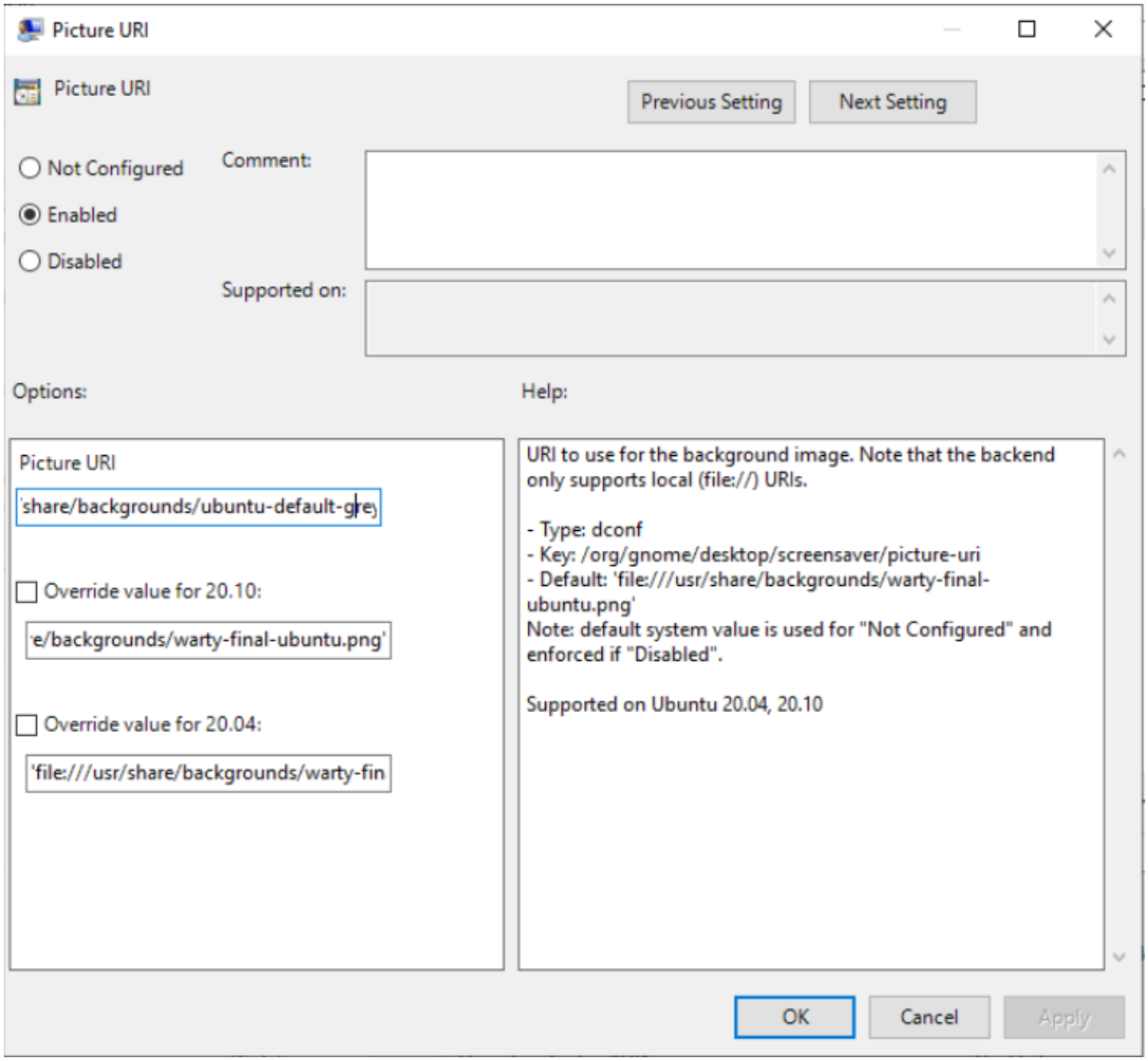
The user is called `bob` and belongs to `warthogs.biz > IT Dept > RnD`.



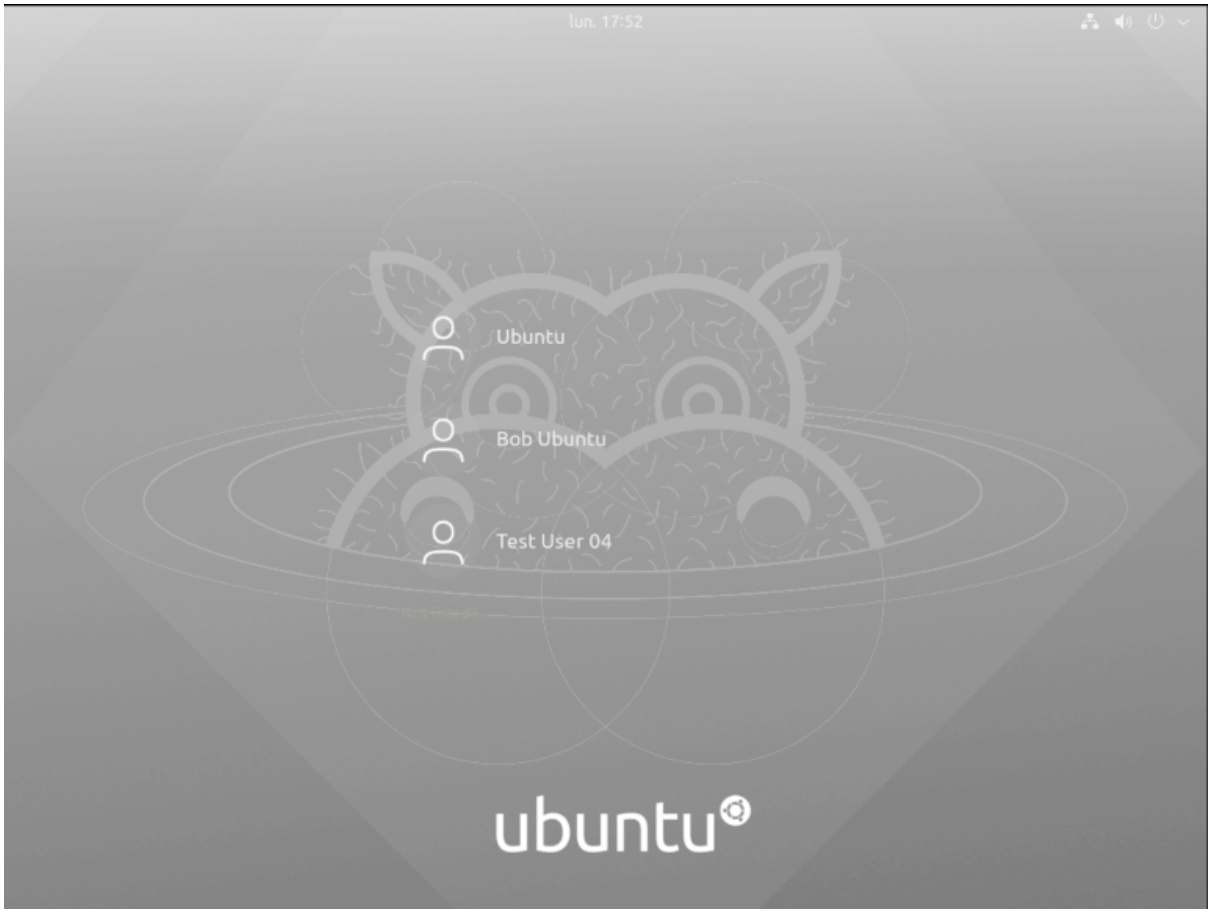
Modifying a computer setting

Launch the GPO Management editor and create a GPO in `warthogs.biz > MainOffice`

1. Select GDM background picture setting in `Computer Configuration > Policies > Administrative Templates > Ubuntu > Login Screen > Interface > Picture URI`.
2. Select `Enabled` to enable the modification of the `Picture URI` field.
3. Enter a valid absolute path to a `.png` image on the client machine, e.g. `/usr/share/backgrounds/ubuntu-default-greyscale-wallpaper.png`.
4. Refresh the GPO rule on the client by rebooting the machine or running `adsysctl update -m` (You may be prompted to enter your password to check if have enough privileges to run the command).



Confirm that the change is now visible in the greeter.



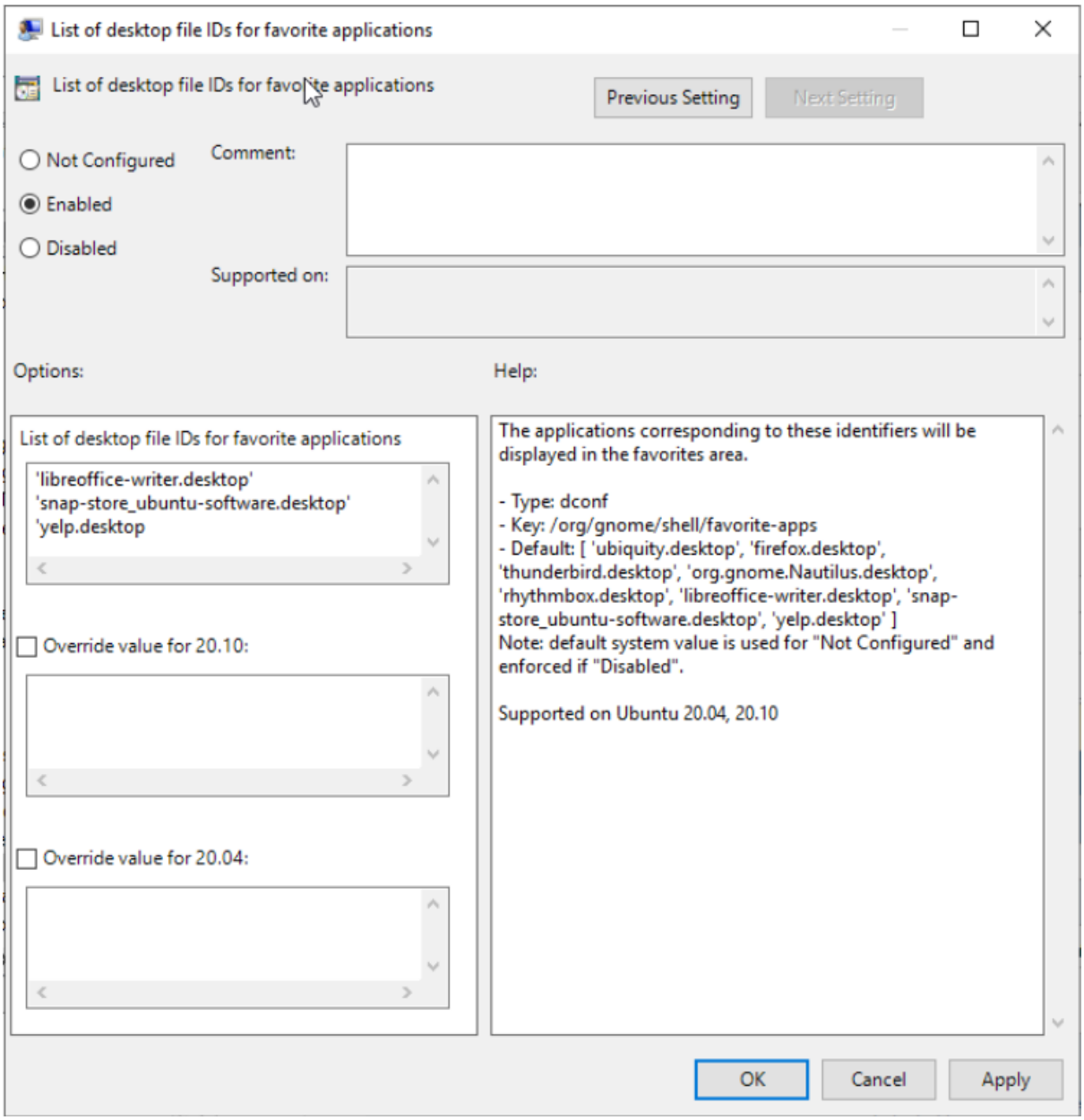
Note:

Files, such as images, are not copied by the Active Directory client and must already exist on the target system at the specified path.

Modifying a user setting

1. Create another GPO in `warthogs.biz > IT Dept > RnD`.
2. Select the list of favorite desktop applications setting in `User Configuration > Policies > Administrative Templates > Ubuntu > Desktop > Shell > List of desktop file IDs for favorite applications`.
3. Enter a list of valid `.desktop` file IDs on separate lines:

```
libreoffice-writer.desktop
snap-store_ubuntu-software.desktop
yelp.desktop
```

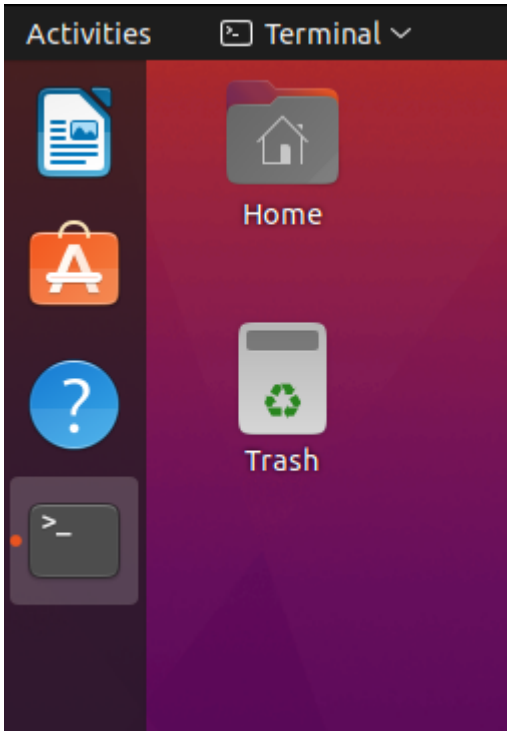


4. Refresh the GPO rule for the computer by running `adsysctl update` to refresh for your current user or `adsysctl update --all` for all active users.

Tip:

Logging out and logging back in also triggers a GPO refresh for the current user.

The list of applications shown on the left side for your current Active Directory user should be updated:



Explanation of GPOs for Ubuntu

There are multiple **policy managers** for different types of settings. As of now, only a **dconf** manager is available.

When settings are common to a machine and users, the machine settings will always take precedence over the user ones.

The workflow to update a setting in the **GPO Management editor** and to apply the setting to a target user or machine is similar to Windows clients. However, we will see below that there are slight differences when the GPO are applied and refreshed between Windows and Ubuntu.

When are GPO applied?

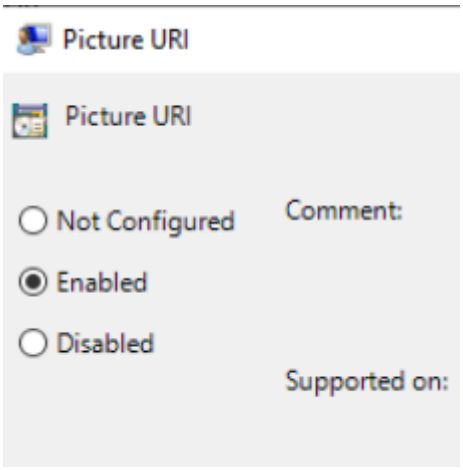
Any change to a GPO is applied:

- On boot for the machine settings
- On login for the user settings
- A periodic refresh timer will update the GPOs of the machine and all active users.

Next section will detail how to configure this and what happens when the Active Directory controller is unreachable.

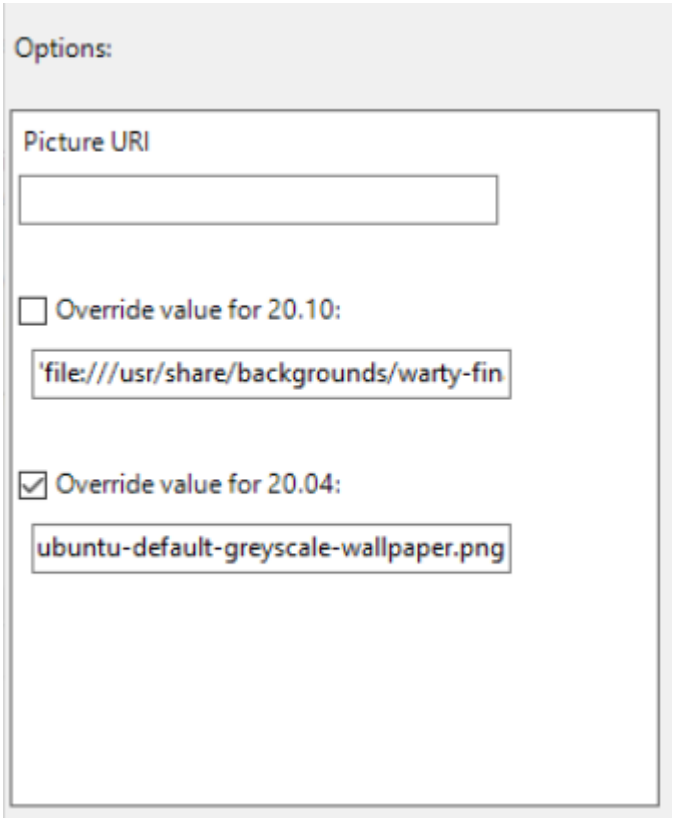
State of GPO settings

Most GPO rules can have three states: `enabled`, `disabled`, `not configured`. These states may have different meanings depending on the manager.



General information of a setting

The **left pane** of the GPO Management Editor contains the options that can be edited when a setting is enabled.

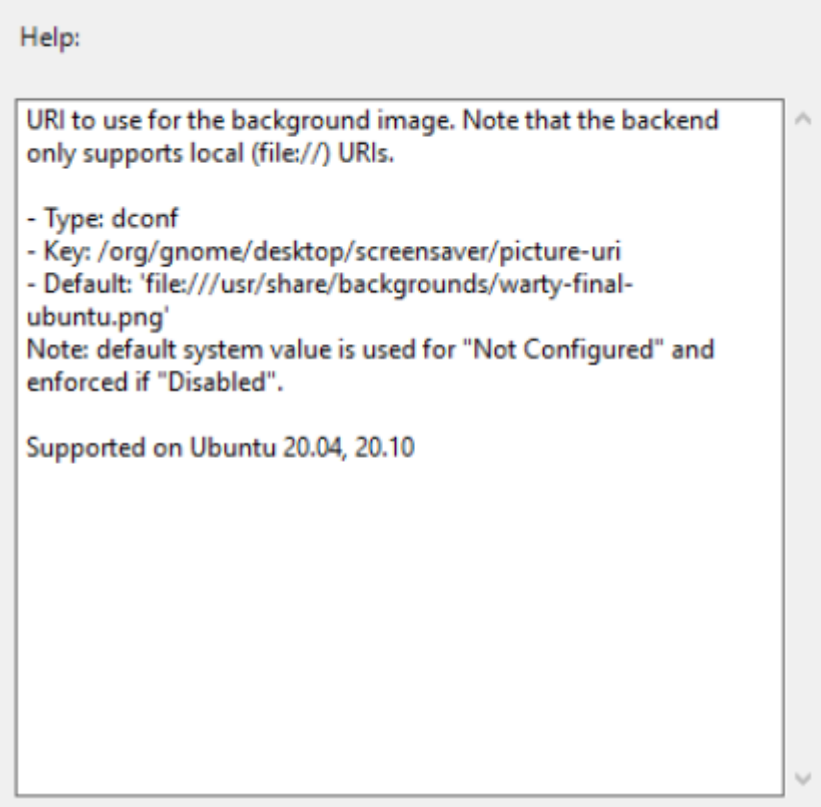


There is a default value for all the releases and an override for each supported release of Ubuntu. More about multiple releases in the next section.

The **right pane** of the GPO Management editor contains the general information about the

GPO including:

- The description of the setting
- The type of settings (e.g. dconf)
- The path of the key in our schema
- The default value of the key that is used if nothing is set on the left pane. Note that if defaults differ between releases, this will be a list per release.
- The list of releases that support this setting.

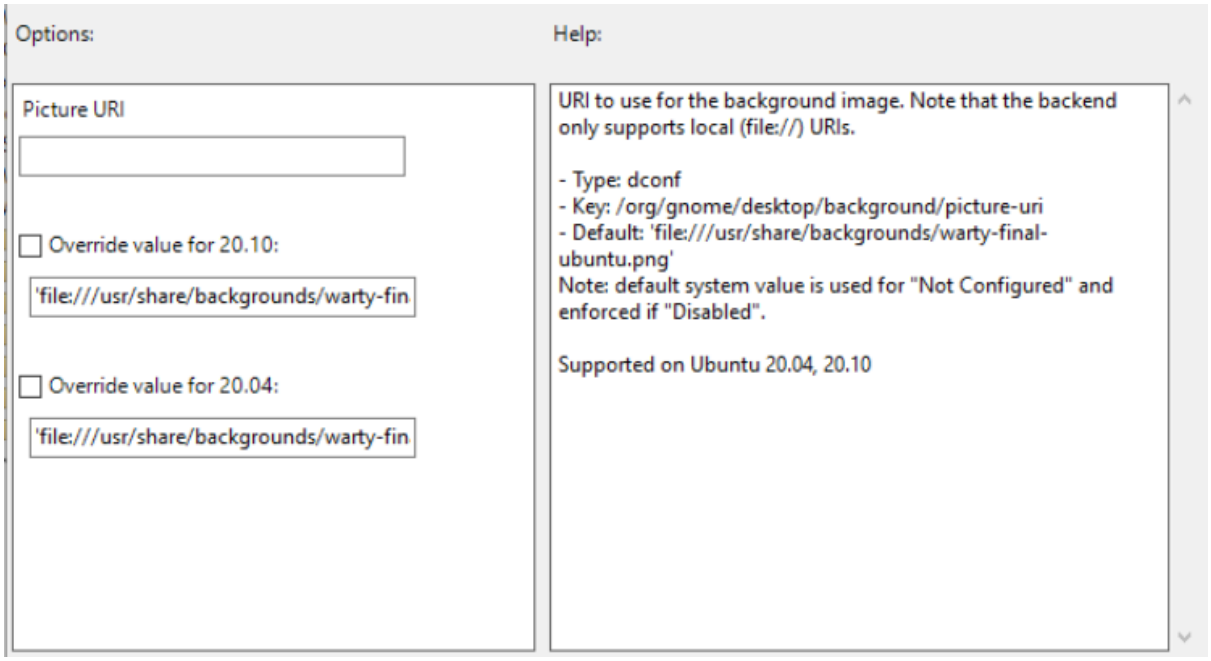


Different types of widgets

Text entry

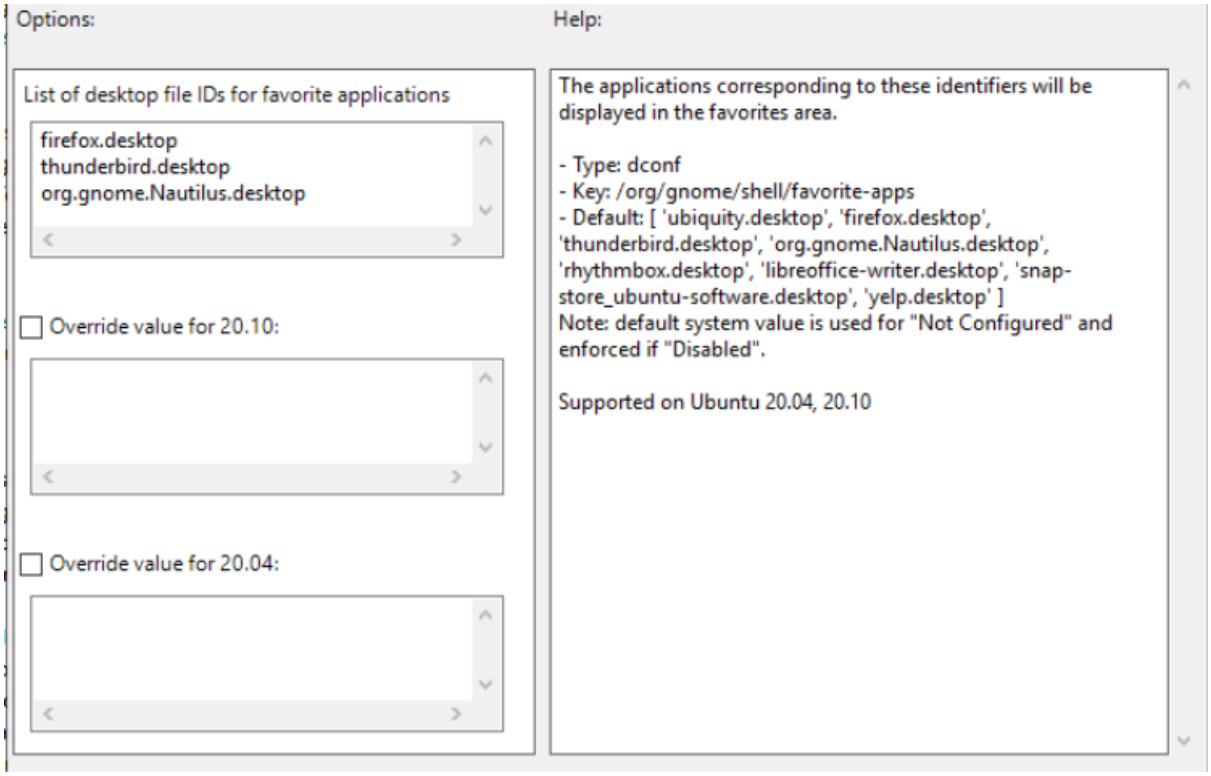
The type `Text` represents a single line of text. If you don't enclose a string with single quotes `'` and the value is not a decimal, it will be done automatically and the entry will be sanitized (e.g. space, `'…`). If you want to force a decimal to be treated as a string, enclose the value with single quotes.

The default value will be already set.



Text list

A multiline text field is used for this case. A list can be:



- One item per line: any end of line will be considered as a delimiter Example:

```
libreoffice.desktop
firefox.desktop
nautilus.desktop
```

- Multiple items on one line: a coma , is the item delimiter:

```
libreoffice.desktop, firefox.desktop, nautilus.desktop
```

Note that spaces will be stripped automatically.

- Both syntaxes can be combined:

```
libreoffice.desktop, firefox.desktop
nautilus.desktop
```

The type can be either text or numeric:

- Text list:

```
libreoffice.desktop
firefox.desktop
nautilus.desktop
```

- Decimal list:

```
42
300
10
```

Ensure that you enter the valid type of list, as expected by dconf setting. ADSys will do its best to try to match the entry with the right and expected dconf type.

String or decimal field ?

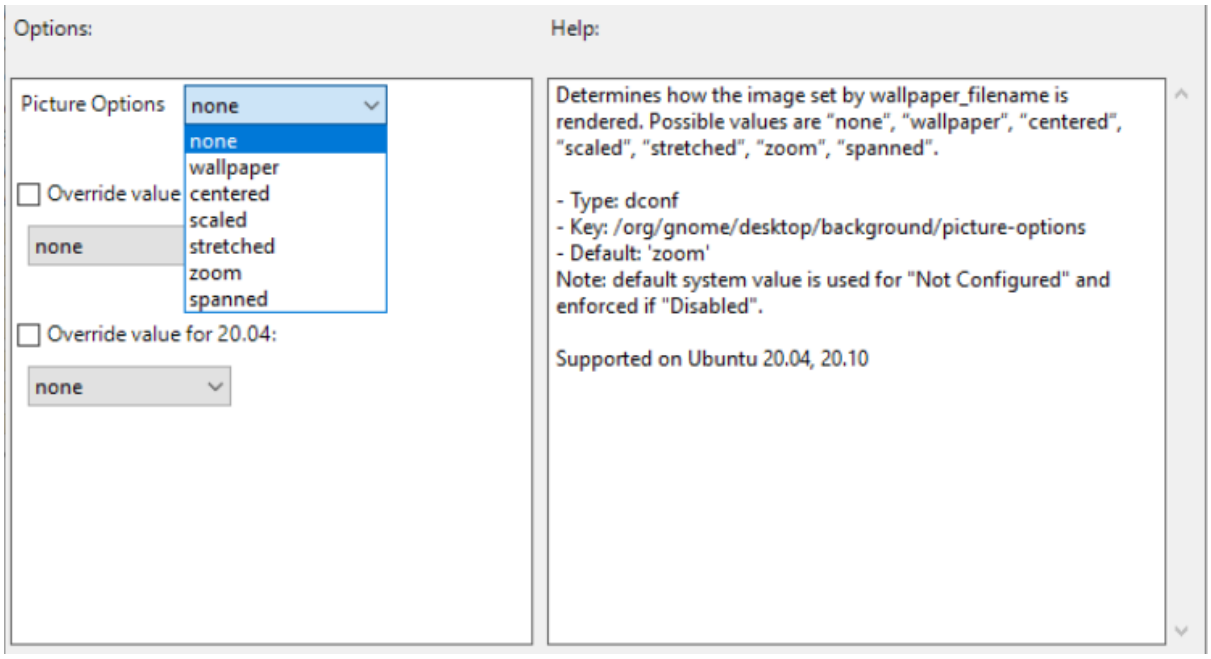
The type of the value will be detected automatically and interpreted as a number if it contains only digits and no quotes, everything else is considered a string. If you want to enforce a list to have string entries, enclose each entry with single quotes.

Text list:

```
'42'
'300'
'10'
```

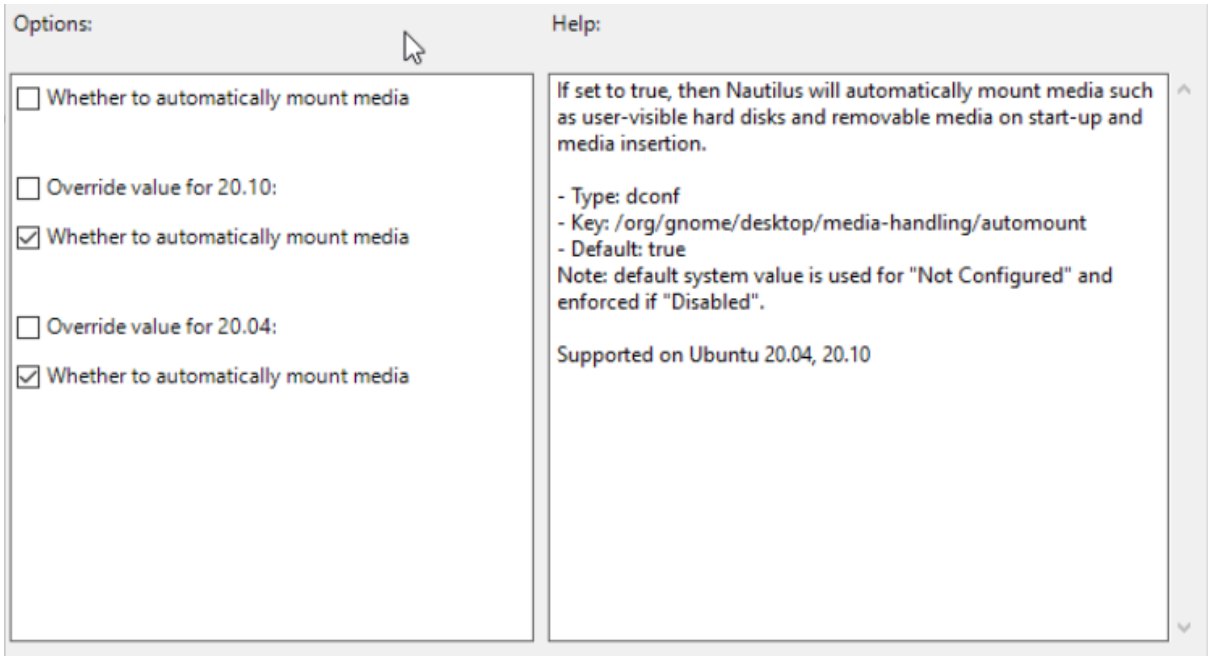
Dropdown list

A list field is a limited list of values to choose from. It is represented by a drop down list.



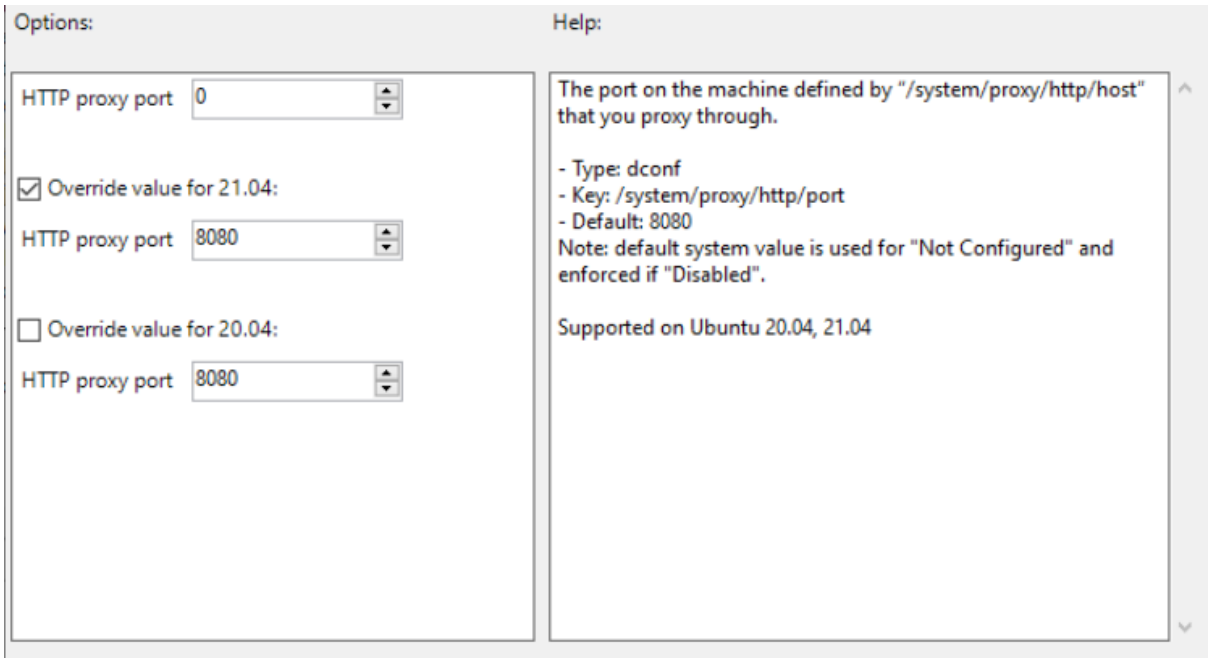
Checkbox

A checkbox will correspond to set to `true` or `false` values for the corresponding setting. The default value will be already selected.



Decimal

Decimal values are fields that allow only digits with optional upper and lower bounds. A spinner helps the user to increase or decrease the value.



The limits, if any, will be specified in the right section, per release.

Multi-release support

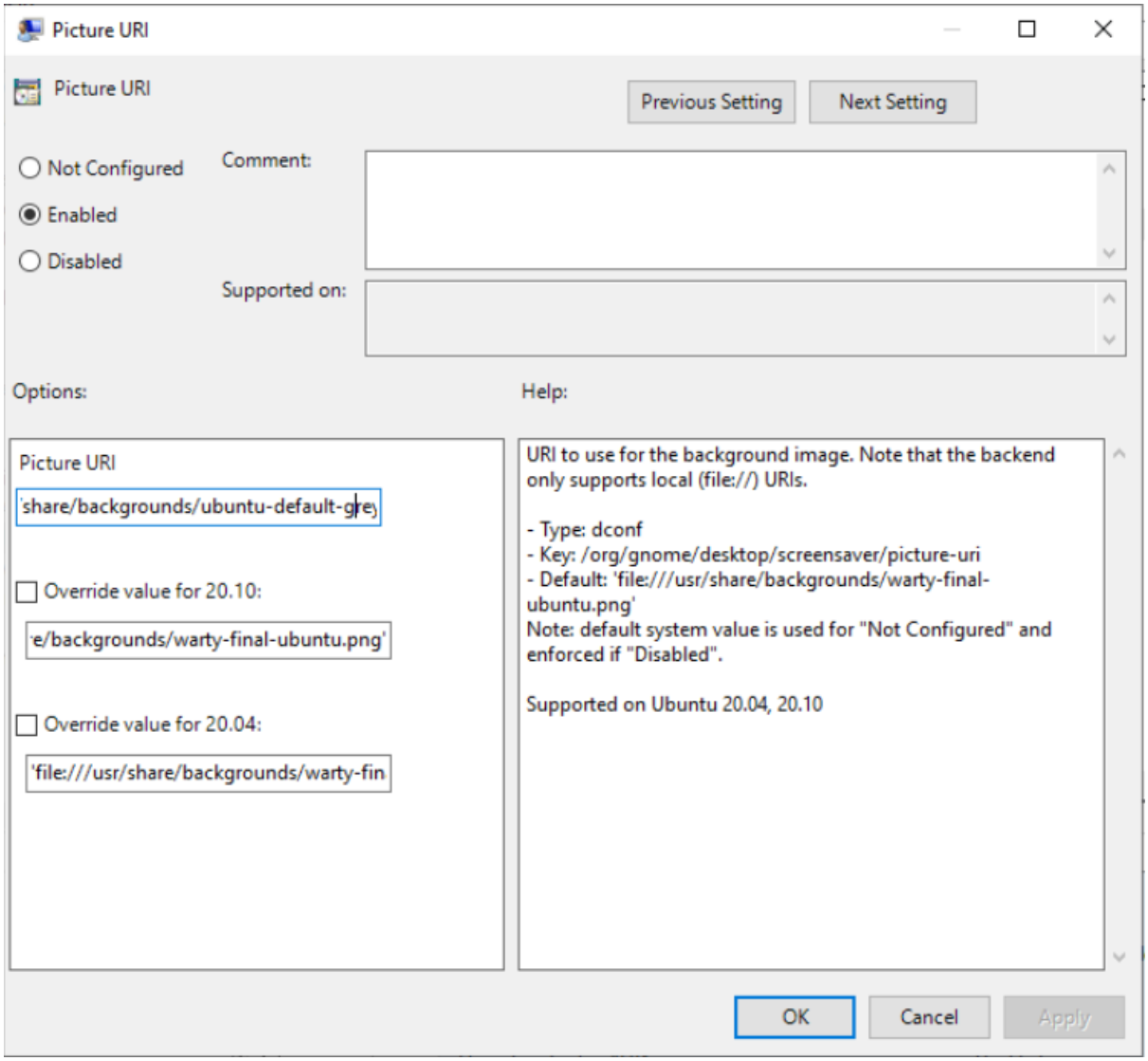
ADSys supports setting different values for different releases of Ubuntu.

The top entry will set a common value between all clients, independently of the release it's running on.

If you need to specify a per-release value for a set of clients, select the `Override` checkbox for the corresponding release and enter a value in the associated field. If the `Override` is checked, but no value is specified, the default value for this release will be used.

By definition, override takes precedence over the default value defined at the top for all the releases.

Finally, note that the help text on the right panel will list each default per release if they differ between themselves. In addition, it will list the supported releases for this setting.



Multi-release overrides are only available when your Active Directory administrative templates defines more than one release. If this is not the case, you will only see the top entry to define your policy.

3. Reference

Reference information is here provided for:

- The daemon – `adsysd` – which implements the Group Policy protocol.
- The command line interface – `adsysctl` – which controls the daemon and reports its status.
- The Windows daemon – `adwatchd` – can be installed on the domain controller to automatically refresh assets without system administrator interventions.

3.1. Overview

Technical overview of the daemons and command line interface.

3.1.1. The adsys daemon

Policy enforcement

On the client the policies are refreshed in three situations:

- At boot time for the policy of the machine.
- At login time for the policy of the user.
- Periodically by a timer for the machine and the user policy.

Failed policy refresh and caching

When the client is offline, a user may still need to log in to the machine.

For this purpose, ADSys uses a cache located in `/var/cache/adsys`.

Types of cache
1. A cache for the GPO downloaded from the server in directory `gpo_cache` 2. A cache for the rules as applied by ADSys in directory `policies`

The enforcement of the policy will fail when the cache is empty or the client fails to retrieve the policy from the server.

If the enforcement of the policy fails:

- At boot time, ADSys stops the boot process.
- At login time, login is denied.
- During periodic refresh, the policy currently applied on the client remains.

Policy refresh rate

Periodic refresh of the policies (machine and active users) is handled by the systemd timer unit `adsys-gpo-refresh.timer`.

Here is an example list of timers after running `systemctl list-timers`:

```
$ systemctl list-timers NEXT LEFT LAST PASSED UNIT ACTIVATESTue 2021-05-18
10:05:49 CEST 11min left Tue 2021-05-18 09:35:49 CEST 18min ago
adsys-gpo-refresh.timer adsys-gpo-refresh.serviceTue 2021-05-18 10:31:34 CEST
36min left Tue 2021-05-18 09:31:09 CEST 23min ago anacron.timer
anacron.service[...]
```

The default refresh rate is **30 minutes**.

Refresh rates are defined with the configuration variables `OnBootSec` and `OnUnitActiveSec`:

Listing 1: /etc/systemd/system/adsys-gpo-refresh.timer.d/refresh-rate.conf

```
# Refresh ADSys GPO every two hours
[Timer]
OnBootSec=
OnBootSec=120min
OnUnitActiveSec=
OnUnitActiveSec=120min
```

Any changes to refresh rates are effective after a reload of the daemon.

You can confirm this by running `systemctl list-timers` after a reboot or after running `systemctl daemon-reload`:

```
$ sudo systemctl list-timers NEXT LEFT LAST PASSED UNIT ACTIVATESTue
2021-05-18 10:35:45 CEST 16min left Tue 2021-05-18 10:05:50 CEST 1h43min ago
adsys-gpo-refresh.timer adsys-gpo-refresh.service[...]
```

Note:

The empty `OnBootSec=` and `OnUnitActiveSec=` statements are used to reset the system-wide timer unit time instead of adding new timers. `man systemd.timer` for more information.

Administrators can get more details about the timer status:

```
$ sudo systemctl status adsys-gpo-refresh.timer  adsys-gpo-refresh.timer -
Refresh ADSys GPO for machine and users Loaded: loaded
(/lib/systemd/system/adsys-gpo-refresh.timer; enabled; vendor preset:
enabled) Active: active (waiting) since Tue 2021-05-18 08:35:48 CEST; 1h
23min ago Trigger: Tue 2021-05-18 10:05:49 CEST; 6min left Triggers: 
adsys-gpo-refresh.service may 18 08:35:48 adclient04 systemd[1]: Started
Refresh ADSys GPO for machine and users.
```

Socket activation

The ADSys daemon is started on demand by systemd's socket activation and only runs when it's required.

It will gracefully shutdown after idling for a short period of time (default: 120 seconds).

Configuration

`ADSys` doesn't ship a configuration file by default.

System-wide or user-specific configuration files can be created to modify the behavior of the daemon and the client:

- System-wide: defined in `/etc/adsys.yaml` and applies to both daemon and client.
- User-specific: defined in `$HOME/adsys.yaml` and applies only to the client for this user.

Other configuration options

The current directory is also searched for an `adsys.yaml` file.
A configuration file path can be passed to the the `adsysd` and `adsysctl` commands using the `--config|-c` flag This may be especially useful for testing.

An example of configuration file is included in the ADSys repository[15] and is shown below for reference.

```
# Service and client configuration
verbose: 2
socket: /tmp/adsysd/socket

# Service only configuration
service_timeout: 3600
cache_dir: /tmp/adsysd/cache
run_dir: /tmp/adsysd/run

# Backend selection: sssd (default) or winbind
ad_backend: sssd

# SSSD configuration
sssd:
  config: /etc/sssd.conf
  cache_dir: /var/lib/sss/db

# Winbind configuration
# (if ad_backend is set to winbind)
winbind:
  ad_domain: domain.com
  ad_server: adc.domain.com

# Client only configuration
client_timeout: 60
```

[15] https://github.com/ubuntu/adsys/blob/main/conf.example/adsys.yaml

Configuration common between service and client

- **verbose** Increase the verbosity of the daemon or client. By default, only warnings and error logs are printed. This value is set between 0 and 3. This has the same effect as the `-v` and `-vv` flags.
- **socket** Path the Unix socket for communication between clients and daemon. This can be overridden by the `--socket` option. Defaults to `/run/adsysd.sock` (monitored by systemd for socket activation).

Service only configuration

- **service_timeout** Time in seconds without any active request before the service exits. This can be overridden by the `--timeout` option. Defaults to 120 seconds.
- **backend** Backend to use to integrate with Active Directory. It is responsible for providing valid kerberos tickets. Available selection is `sssd` or `winbind`. Default is `sssd`. This can be overridden by the `--backend` option.
- **sss_cache_dir** The directory that stores Kerberos tickets used by SSSD. By default `/var/lib/sss/db/`.
- **run_dir** The run directory contains the links to the kerberos tickets for the machine and the active users. This can be overridden by the `--run-dir` option. Defaults to `/run/adsys/`.

Backend only options

SSSD

- **config**

Path `sssd.conf`. This is the source of selected sss domain (first entry in `domains:`), to find corresponding active directory domain section.

The option `ad_domain` in that section is used for the list of domains list of the host. `ad_server` (optional) is used as the Active directory LDAP server to contact. If it is missing, then the "Active Server" detected by sssd will be used.

Finally `default_domain_suffix` is used too, and falls back to the domain name if missing.

Default lookup path is `/etc/sssd/sssd.conf`. This can be overridden by the `--sssd.config` option.

- **cache_dir**

Path to the sss database to find the HOST kerberos ticket. Default path is `/var/lib/sss/db`. This can be overridden by the `--sssd.cache-dir` option.

Winbind

- **ad_domain**

A custom domain can be used to override the C API call that ADSys executes to determine the active domain – which is returned by the `wbinfo --own-domain` (e.g. `example.com`)

- **ad_server**

A custom domain controller can be used to override the C API call that ADSys executes to determine the AD controller FQDN – which is returned by `wbinfo --dsgetdcname domain.com` (e.g. `adc.example.com`).

GPO configuration

- **gpo_list_timeout**

Maximum time in seconds for the GPO list to finish otherwise the GPO list is aborted. This can be overridden by the `--gpo-list-timeout` option. Defaults to 10 seconds.

Client only configuration

- **client_timeout** Maximum time in seconds between two server activities before the client returns and aborts the request. This can be overridden by the `--timeout` option. Defaults to 30 seconds.

Debugging with logs (cat command)

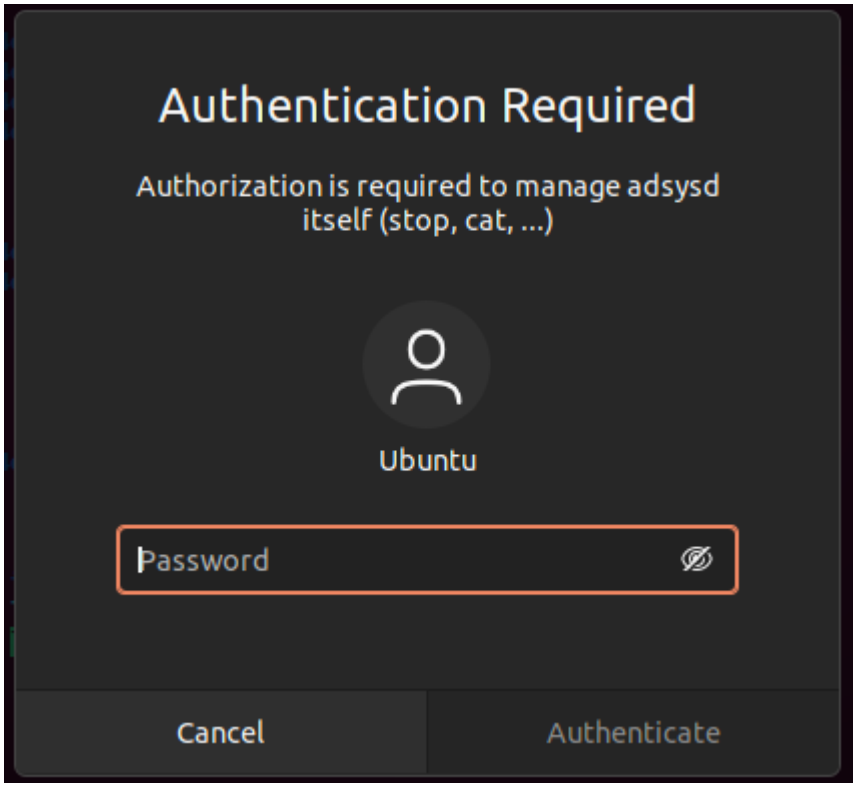
It is possible to follow the exchanges between all clients and the daemon with the `cat` command. It forwards all logs and message printing from the daemon alone.

Only privileged users have access to this information. As with any other command, the verbosity can be increased with `-v` flags (it's independent of the daemon or client current verbosity). More flags increases the verbosity further up to 3.

More information is available in the *adsysctl reference* (page 37).

Authorizations

ADSys uses a privilege mechanism based on polkit to manage authorizations. Many commands require elevated privileges to be executed. If the adsys client is executed with insufficient privileges to execute a command, the user will be prompted to enter its password. If allowed then the command will be executed and denied otherwise.



This is configurable by the administrator as any service controlled by polkit. For more information `man polkit`.

Additional notes

There are additional configuration options matching the adsysd command line options. Those are used to define things like dconf, apparmor, polkit, sudo directories. Even though they exist mostly for integration tests purposes, they can be tweaked the same way as other configuration options for the service.

Further information

Use the shell completion and the `help` subcommands to get more information.

3.1.2. The adsysctl command

`adsysctl` is a command line utility to request actions from the daemon and query its current status. You can get more verbose output with the `-v` accumulative flags, which will stream all logs from the service corresponding to your specific request.

As a general rule, favor shell completion and the help command for discovering various parts of the adsysctl user interface. It will help you by completing subcommands, flags, users and pages of the offline documentation.

Checking which policies are applied

To check which policies are currently applied to the current AD user, run `adsysctl policy applied`:

```
$ adsysctl policy applied Policies from machine configuration:- MainOffice
Policy 2 ({B8D10A86-0B78-4899-91AF-6F0124ECEB48})- MainOffice Policy
({C4F393CA-AD9A-4595-AEBC-3FA6EE484285})- Default Domain Policy
({31B2F340-016D-11D2-945F-00C04FB984F9}) Policies from user configuration:-
RnD Policy 3 ({073AA7FC-5C1A-4A12-9AFC-42EC9C5CAF04})- RnD Policy 2
({83A5BD5B-1D5D-472D-827F-DE0E6F714300})- RnD Policy
({5EC4DF8F-FF4E-41DE-846B-52AA6FFAF242})- IT Policy
({75545F76-DEC2-4ADA-B7B8-D5209FD48727})- Default Domain Policy
({31B2F340-016D-11D2-945F-00C04FB984F9})
```

Note:

The order of policies is top-down, with higher GPOs having priority over lower ones on the stack (e.g., respecting OU order, GPO enforcement, GPO block instructions on your AD setup).

A `username` can be passed to request other users, if you have the right permissions:

```
$ adsysctl policy applied tina Policies from machine configuration:-
MainOffice Policy ({A2F393CA-AD9A-4595-AEBC-3FA6EE484285})- Default Domain
Policy ({31B2F340-016D-11D2-945F-00C04FB984F9}) Policies from user
configuration:- RnD Policy 4 ({25A5BD5B-1D5D-472D-827F-DE0E6F714300})- IT
Policy ({75545F76-DEC2-4ADA-B7B8-D5209FD48727})- Default Domain Policy
({31B2F340-016D-11D2-945F-00C04FB984F9})
```

Tip:

Use shell completion to get the list of active users that you can request which policies are applied on.

The `--details` flag can be used to check which policies are set to a given value or disabled by which key:

```
$ adsysctl policy applied --details Policies from machine configuration:-
MainOffice Policy 2 ({B8D10A86-0B78-4899-91AF-6F0124ECEB48}) - gdm: -
dconf/org/gnome/desktop/notifications/show-banners: Locked to system
default- MainOffice Policy ({C4F393CA-AD9A-4595-AEBC-3FA6EE484285}) - gdm: -
dconf/org/gnome/desktop/interface/clock-format: 24h -
dconf/org/gnome/desktop/interface/clock-show-date: false -
dconf/org/gnome/desktop/interface/clock-show-weekday: true -
dconf/org/gnome/desktop/screensaver/picture-uri:
'file:///usr/share/backgrounds/ubuntu-default-greyscale-wallpaper.png'-
Default Domain Policy ({31B2F340-016D-11D2-945F-00C04FB984F9}) Policies from
```

```
user configuration:- RnD Policy 3 ({073AA7FC-5C1A-4A12-9AFC-42EC9C5CAF04}) -
dconf: - org/gnome/desktop/media-handling/automount: Locked to system
default- RnD Policy 2 ({83A5BD5B-1D5D-472D-827F-DE0E6F714300})- RnD Policy
({5EC4DF8F-FF4E-41DE-846B-52AA6FFAF242}) - dconf: -
org/gnome/shell/favorite-apps:
libreoffice-writer.desktop\nsnap-store_ubuntu-software.desktop\nyelp.desktop-
IT Policy ({75545F76-DEC2-4ADA-B7B8-D5209FD48727}) - dconf: -
org/gnome/desktop/background/picture-options: stretched -
org/gnome/desktop/background/picture-uri:
file:///usr/share/backgrounds/canonical.png- Default Domain Policy
({31B2F340-016D-11D2-945F-00C04FB984F9})
```

The `--all` flag lists every key set by a given GPO, including the ones that are redefined by another GPO with a higher priority. This is can be helpful for debugging your GPO stack and discovering where a given value is defined:

```
$ adsysctl policy applied --all Policies from machine configuration:-
MainOffice Policy 2 ({B8D10A86-0B78-4899-91AF-6F0124ECEB48}) - gdm: -
dconf/org/gnome/desktop/notifications/show-banners: Locked to system
default- MainOffice Policy ({C4F393CA-AD9A-4595-AEBC-3FA6EE484285}) - gdm: -
dconf/org/gnome/desktop/interface/clock-format: 24h -
dconf/org/gnome/desktop/interface/clock-show-date: false -
dconf/org/gnome/desktop/interface/clock-show-weekday: true -
dconf/org/gnome/desktop/screensaver/picture-uri:
'file:///usr/share/backgrounds/ubuntu-default-greyscale-wallpaper.png'-
Default Domain Policy ({31B2F340-016D-11D2-945F-00C04FB984F9}) Policies from
user configuration:- RnD Policy 3 ({073AA7FC-5C1A-4A12-9AFC-42EC9C5CAF04}) -
dconf: - org/gnome/desktop/media-handling/automount: Locked to system
default- RnD Policy 2 ({83A5BD5B-1D5D-472D-827F-DE0E6F714300})- RnD Policy
({5EC4DF8F-FF4E-41DE-846B-52AA6FFAF242}) - dconf: -
org/gnome/shell/favorite-apps:
libreoffice-writer.desktop\nsnap-store_ubuntu-software.desktop\nyelp.desktop-
IT Policy ({75545F76-DEC2-4ADA-B7B8-D5209FD48727}) - dconf: -
org/gnome/desktop/background/picture-options: stretched -
org/gnome/desktop/background/picture-uri:
file:///usr/share/backgrounds/canonical.png - org/gnome/shell/favorite-apps:
'firefox.desktop'\n'thunderbird.desktop'\n'org.gnome.Nautilus.desktop'-
Default Domain Policy ({31B2F340-016D-11D2-945F-00C04FB984F9})
```

Refreshing the policies

The command `adsysctl policy update` is used to refresh the policies. By default only the policy of the current user is updated. It can also refresh only the policy of the machine with the flag `-m`, or the machine and all the active users with the flag `-a`. On success nothing is displayed.

For example, refreshing the policy for all the objects:

```
$ adsysctl policy update --all -v INFO No configuration file: Config File
"adsys" Not Found in "[/home/warthogs.biz/b/bob /etc]".We will only use the
defaults, env variables or flags. INFO Apply policy for adclient04 (machine:
true) INFO Apply policy for bob@warthogs.biz (machine: false)
```

You can provide the name of a user and the path to its Kerberos ticket to refresh a given user.

For example for user `bob@warthogs.biz`

```
$ adsysctl update bob@warthogs.biz /tmp/krb5cc_1899001102_wBlbck -vv INFO No
configuration file: Config File "adsys" Not Found in
"[/home/warthogs.biz/b/bob /etc]".We will only use the defaults, env
variables or flags. DEBUG Connecting as [[26812:519495]] DEBUG New request
/service/UpdatePolicy DEBUG Requesting with parameters: IsComputer: false,
All: false, Target: bob@warthogs.biz, Krb5Cc: /tmp/krb5cc_1899001102_wBlbck
DEBUG Check if grpc request peer is authorized DEBUG Polkit call result,
authorized: true DEBUG GetPolicies for "bob@warthogs.biz", type "user" DEBUG
GPO "RnD Policy 3" for "bob@warthogs.biz" available at "smb://warthogs.biz/
SysVol/warthogs.biz/Policies/{073AA7FC-5C1A-4A12-9AFC-42EC9C5CAF04}" DEBUG
GPO "RnD Policy 2" for "bob@warthogs.biz" available at "smb://warthogs.biz/
SysVol/warthogs.biz/Policies/{83A5BD5B-1D5D-472D-827F-DE0E6F714300}" DEBUG
GPO "RnD Policy" for "bob@warthogs.biz" available at "smb://warthogs.biz/
SysVol/warthogs.biz/Policies/{5EC4DF8F-FF4E-41DE-846B-52AA6FFAF242}" DEBUG
GPO "IT Policy" for "bob@warthogs.biz" available at "smb://warthogs.biz/
SysVol/warthogs.biz/Policies/{75545F76-DEC2-4ADA-B7B8-D5209FD48727}" DEBUG
GPO "Default Domain Policy" for "bob@warthogs.biz" available at
"smb://warthogs.biz/sysvol/warthogs.biz/Policies/{31B2F340-016D-11D2-945F-
00C04FB984F9}" DEBUG Analyzing GPO "Default Domain Policy" DEBUG Analyzing
GPO "IT Policy" DEBUG Analyzing GPO "RnD Policy 2" DEBUG Analyzing GPO "RnD
Policy 3" DEBUG Analyzing GPO "RnD Policy" DEBUG Policy "RnD Policy 2"
doesn't have any policy for class "user" open /var/cache/adsys/gpo_cache/
{83A5BD5B-1D5D-472D-827F-DE0E6F714300}/User/Registry.pol: no such file or
directory DEBUG Policy "Default Domain Policy" doesn't have any policy for
class "user" open /var/cache/adsys/gpo_cache/{31B2F340-016D-11D2-945F-
00C04FB984F9}/User/Registry.pol: no such file or directory INFO Apply policy
for bob@warthogs.biz (machine: false) DEBUG ApplyPolicy dconf policy to
bob@warthogs.biz DEBUG Update user profile
/etc/dconf/profile/bob@warthogs.biz DEBUG Analyzing entry
{Key:org/gnome/desktop/background/picture-options Value:stretched
Disabled:false Meta:s} DEBUG Analyzing entry
{Key:org/gnome/desktop/background/picture-uri
Value:file:///usr/share/backgrounds/canonical.png Disabled:false Meta:s}
DEBUG Analyzing entry {Key:org/gnome/desktop/media-handling/automount Value:
Disabled:true Meta:} DEBUG Analyzing entry
{Key:org/gnome/shell/favorite-apps Value:libreoffice-writer.desktopsnap-
store_ubuntu-software.desktopyelp.desktop Disabled:false Meta:as}
```

Getting the status of the service

The command `adsysctl service status` can be used to get the status:

```
$ adsysctl service status Machine, updated on Tue May 18 12:15Connected users:
bob@warthogs.biz, updated on Tue May 18 12:15 Active Directory: Server:
ldap://adc01.warthogs.biz Domain: warthogs.biz SSS: Configuration:
/etc/sssd/sssd.conf Cache directory: /var/lib/sss/db Daemon: Timeout after
2m0s Listening on: /run/adsysd.sock Cache path: /var/cache/adsys Run path:
/run/adsys Dconf path: /etc/dconf
```

The information includes connected users, when users last refreshed, when the next refresh is scheduled and various service configuration options (static or dynamically configured).

Debugging

The `cat` command has already been described in *the adsys-daemon reference* (page 32).

You can display logs with debugging levels independent of daemon and clients debugging levels. Local printing will also be forwarded.

For example, running `cat` while the command `version` and `applied` are executed:

```
$ adsysctl service cat -vv INFO No configuration file: Config File "adsys"
Not Found in "[/root /etc]".We will only use the defaults, env variables or
flags. DEBUG Connecting as [[29220:823925]] DEBUG New request /service/Cat
DEBUG Requesting with parameters: DEBUG Check if grpc request peer is
authorized DEBUG Authorized as being administrator INFO New connection from
client [[29302:462445]] DEBUG [[29302:462445]] New request /service/Version
DEBUG [[29302:462445]] Requesting with parameters: DEBUG [[29302:462445]]
Check if grpc request peer is authorized DEBUG [[29302:462445]] Any user
always authorized DEBUG Request /service/Version done INFO New connection
from client [[29455:217212]] DEBUG [[29455:217212]] New request
/service/DumpPolicies DEBUG [[29455:217212]] Requesting with parameters:
Target: bob@warthogs.biz, Details: false, All: false DEBUG [[29455:217212]]
Check if grpc request peer is authorized DEBUG [[29455:217212]] Polkit call
result, authorized: true INFO [[29455:217212]] Dumping policies for
bob@warthogs.biz DEBUG Request /service/DumpPolicies done
```

Other commands

Versions

You can get the current service and client versions with the `version` command to check you are running with latest version on both sides:

```
$ adsysctl version adsysctl 0.5adsysd 0.5
```

Documentation

An offline version of this documentation is available in the daemon. It will render the documentation on the command line.

You can get a list of all chapters with their titles:

```
$ adsysctl doc Table of content   1. [Welcome] ADSys: Active Directory Group
Policy integration  2. [Prerequisites] Prerequisites and installation […]
```

And render a given chapter by requesting it:

```
$ adsysctl doc Welcome ADSys: Active Directory Group Policy integration
ADSys is the Active Directory Group Policy client for Ubuntu. It allows[…]
```

Finally, there are different rendering modes for the documentation.

You can dump documentation in html — for example — with the `--format` flag.

Admx generation

The `policy admx` command dumps pre-built Active Directory administrative templates that can be deployed on the Active Directory server.

For more information, check the *AD setup documentation* (page 7)

Stopping the service

If you do not wish to wait for the idling timeout to stop the server, you can request graceful shutdown with `adsysctl service stop`.

This will first wait for all active connections to ends before shutting down.

The `-force` flag ends the service immediately.

3.1.3. Active Directory Watch Daemon

The Active Directory Watch Daemon, or adwatchd, is a Windows application.

It automates the otherwise manual process of incrementing the version stanza of a `GPT.ini` file.

Monitoring the application

`adwatchd` is configured to log to the Windows Event Log.

It can be monitored using the Event Viewer[16].

By default, the application only logs events when it starts or stops.

The verbosity level can be increased in the configuration file to — for example — log more information such as files being watched, or the `GPT.ini` file being updated.

CLI usage

The application can also be managed from the command line.

If the application was installed with the bespoke installer, a helpful shortcut is available in the Start Menu: `Start Command Prompt with adwatchd`.

This starts a Command Prompt window with the `adwatchd` executable in the `PATH`.

Tip:

For detailed descriptions and configuration options of `adwatchd`, refer to the *command line reference* (page 64).

There are two commands available:

- The `run` command starts the directory watch loop in foreground mode. This is useful for debugging purposes, as it can be called with the same arguments as the service.
- The `service` provides a set of subcommands to manage the service.

Additional information

For help setting up `adwatchd`, refer to the *how-to set up adwatchd guide* (page 10).

3.2. Command line interface

Detailed reference for CLI tooling:

3.2.1. CLI references

Detailed CLI references for the ADSys daemon (`adsysd`), ADSys Control (`adsysctl`) and the ADSys Watch Daemon (`adwatchd`).

[16] https://docs.microsoft.com/en-us/shows/inside/event-viewer

adsysd command line

User commands

adsysd

AD integration daemon

Synopsis

Active Directory integration bridging toolset daemon.

```
adsysd COMMAND [flags]
```

Options

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
  -h, --help                    help for adsysd
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd completion

Generate the autocompletion script for the specified shell

Synopsis

Generate the autocompletion script for adsysd for the specified shell. See each sub-command's help for details on how to use the generated script.

Options

```
  -h, --help   help for completion
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd completion bash

Generate the autocompletion script for bash

Synopsis

Generate the autocompletion script for the bash shell.

This script depends on the ‘bash-completion’ package. If it is not installed already, you can install it via your OS’s package manager.

To load completions in your current shell session:

```
source <(adsysd completion bash)
```

To load completions for every new session, execute once:

Linux:

```
adsysd completion bash > /etc/bash_completion.d/adsysd
```

macOS:

```
adsysd completion bash > $(brew --prefix)/etc/bash_completion.d/adsysd
```

You will need to start a new shell for this setup to take effect.

```
adsysd completion bash
```

Options

```
  -h, --help              help for bash
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd completion fish

Generate the autocompletion script for fish

Synopsis

Generate the autocompletion script for the fish shell.

To load completions in your current shell session:

```
adsysd completion fish | source
```

To load completions for every new session, execute once:

```
adsysd completion fish > ~/.config/fish/completions/adsysd.fish
```

You will need to start a new shell for this setup to take effect.

```
adsysd completion fish [flags]
```

Options

```
  -h, --help              help for fish
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd completion powershell

Generate the autocompletion script for powershell

Synopsis

Generate the autocompletion script for powershell.

To load completions in your current shell session:

```
adsysd completion powershell | Out-String | Invoke-Expression
```

To load completions for every new session, add the output of the above command to your powershell profile.

```
adsysd completion powershell [flags]
```

Options

```
  -h, --help              help for powershell
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd completion zsh

Generate the autocompletion script for zsh

Synopsis

Generate the autocompletion script for the zsh shell.

If shell completion is not already enabled in your environment you will need to enable it. You can execute the following once:

```
echo "autoload -U compinit; compinit" >> ~/.zshrc
```

To load completions in your current shell session:

```
source <(adsysd completion zsh)
```

To load completions for every new session, execute once:

Linux:

```
adsysd completion zsh > "${fpath[1]}/_adsysd"
```

macOS:

```
adsysd completion zsh > $(brew --prefix)/share/zsh/site-functions/_adsysd
```

You will need to start a new shell for this setup to take effect.

```
adsysd completion zsh [flags]
```

Options

```
  -h, --help              help for zsh
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd version

Returns version of service and exits

```
adsysd version [flags]
```

Options

```
  -h, --help   help for version
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

Hidden commands

Those commands are hidden from help and should primarily be used by the system or for debugging.

adsysd mount

Mount the locations listed in the specified file for the current user

```
adsysd mount MOUNTS_FILE [flags]
```

Options

```
  -h, --help   help for mount
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
```

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```
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysd runscripts

Runs scripts in the given subdirectory

```
adsysd runscripts ORDER_FILE [flags]
```

Options

```
      --allow-order-missing   allow ORDER_FILE to be missing once the scripts are ready.
  -h, --help                  help for runscripts
```

Options inherited from parent commands

```
      --ad-backend string       Active Directory authentication backend (default "sssd")
      --cache-dir string        directory where ADSys caches GPOs downloads and policies.
(default "/var/cache/adsys")
  -c, --config string           use a specific configuration file
      --run-dir string          directory where ADSys stores transient information erased
on reboot. (default "/run/adsys")
  -s, --socket string           socket path to use between daemon and client. Can be
overridden by systemd socket activation. (default "/run/adsysd.sock")
      --sssd.cache-dir string   SSSd cache directory (default "/var/lib/sss/db")
      --sssd.config string      SSSd config file path (default "/etc/sssd/sssd.conf")
  -t, --timeout int             time in seconds without activity before the service
exists. 0 for no timeout. (default 120)
  -v, --verbose count           issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv)
output
```

adsysctl command line

User commands

adsysctl

AD integration client

Synopsis

Active Directory integration bridging toolset command line tool.

```
adsysctl COMMAND [flags]
```

Options

```
  -c, --config string   use a specific configuration file
  -h, --help            help for adsysctl
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl applied

Print last applied GPOs for current or given user/machine

Synopsis

Alias of “policy applied”

```
adsysctl applied [USER_NAME] [flags]
```

Options

```
  -a, --all         show overridden rules in each GPOs.
      --details     show applied rules in addition to GPOs.
  -h, --help        help for applied
  -m, --machine     show applied rules to the machine.
      --no-color    don't display colorized version.
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl completion

Generate the autocompletion script for the specified shell

Synopsis

Generate the autocompletion script for adsysctl for the specified shell. See each sub-command's help for details on how to use the generated script.

Options

```
  -h, --help   help for completion
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl completion bash

Generate the autocompletion script for bash

Synopsis

Generate the autocompletion script for the bash shell.

This script depends on the 'bash-completion' package. If it is not installed already, you can install it via your OS's package manager.

To load completions in your current shell session:

```
source <(adsysctl completion bash)
```

To load completions for every new session, execute once:

Linux:

```
adsysctl completion bash > /etc/bash_completion.d/adsysctl
```

macOS:

```
adsysctl completion bash > $(brew --prefix)/etc/bash_completion.d/adsysctl
```

You will need to start a new shell for this setup to take effect.

```
adsysctl completion bash
```

Options

```
  -h, --help              help for bash
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl completion fish

Generate the autocompletion script for fish

Synopsis

Generate the autocompletion script for the fish shell.

To load completions in your current shell session:

```
adsysctl completion fish | source
```

To load completions for every new session, execute once:

```
adsysctl completion fish > ~/.config/fish/completions/adsysctl.fish
```

You will need to start a new shell for this setup to take effect.

```
adsysctl completion fish [flags]
```

Options

```
  -h, --help              help for fish
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl completion powershell

Generate the autocompletion script for powershell

Synopsis

Generate the autocompletion script for powershell.

To load completions in your current shell session:

```
adsysctl completion powershell | Out-String | Invoke-Expression
```

To load completions for every new session, add the output of the above command to your powershell profile.

```
adsysctl completion powershell [flags]
```

Options

```
  -h, --help              help for powershell
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl completion zsh

Generate the autocompletion script for zsh

Synopsis

Generate the autocompletion script for the zsh shell.

If shell completion is not already enabled in your environment you will need to enable it. You can execute the following once:

```
echo "autoload -U compinit; compinit" >> ~/.zshrc
```

To load completions in your current shell session:

```
source <(adsysctl completion zsh)
```

To load completions for every new session, execute once:

Linux:

```
adsysctl completion zsh > "${fpath[1]}/_adsysctl"
```

macOS:

```
adsysctl completion zsh > $(brew --prefix)/share/zsh/site-functions/_adsysctl
```

You will need to start a new shell for this setup to take effect.

```
adsysctl completion zsh [flags]
```

Options

```
  -h, --help              help for zsh
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl doc

Documentation

```
adsysctl doc [CHAPTER] [flags]
```

Options

```
  -h, --help   help for doc
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy

Policy management

```
adsysctl policy COMMAND [flags]
```

Options

```
  -h, --help   help for policy
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy admx

Dump windows policy definitions

```
adsysctl policy admx lts-only|all [flags]
```

Options

```
      --distro string   distro for which to retrieve policy definition. (default "Ubuntu")
  -h, --help            help for admx
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy applied

Print last applied GPOs for current or given user/machine

```
adsysctl policy applied [USER_NAME] [flags]
```

Options

```
  -a, --all         show overridden rules in each GPOs.
      --details     show applied rules in addition to GPOs.
  -h, --help        help for applied
  -m, --machine     show applied rules to the machine.
      --no-color    don't display colorized version.
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy purge

Purges policies for the current user or a specified one

```
adsysctl policy purge [USER_NAME] [flags]
```

Options

```
  -a, --all       all purges the policy of the computer and all the logged in users. -m or
USER_NAME cannot be used with this option.
  -h, --help      help for purge
  -m, --machine   machine purges the policy of the computer.
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy update

Updates/Create a policy for current user or given user with its kerberos ticket

```
adsysctl policy update [USER_NAME KERBEROS_TICKET_PATH] [flags]
```

Options

```
  -a, --all       all updates the policy of the computer and all the logged in users. -m
or USER_NAME/TICKET cannot be used with this option.
  -h, --help      help for update
  -m, --machine   machine updates the policy of the computer.
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl service

Service management

```
adsysctl service COMMAND [flags]
```

Options

```
  -h, --help   help for service
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl service cat

Print service logs

```
adsysctl service cat [flags]
```

Options

```
  -h, --help   help for cat
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl service status

Print service status

```
adsysctl service status [flags]
```

Options

```
  -h, --help   help for status
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl service stop

Requests to stop the service once all connections are done

```
adsysctl service stop [flags]
```

Options

```
  -f, --force   force will shut it down immediately and drop existing connections.
  -h, --help    help for stop
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl update

Updates/Create a policy for current user or given user with its kerberos ticket

Synopsis

Alias of “policy update”

```
adsysctl update [USER_NAME KERBEROS_TICKET_PATH] [flags]
```

Options

```
  -a, --all       all updates the policy of the computer and all the logged in users. -m
or USER_NAME/TICKET cannot be used with this option.
  -h, --help      help for update
  -m, --machine   machine updates the policy of the computer.
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl version

Returns version of client and service

```
adsysctl version [flags]
```

Options

```
  -h, --help   help for version
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

Hidden commands

Those commands are hidden from help and should primarily be used by the system or for debugging.

adsysctl policy debug

Debug various policy infos

```
adsysctl policy debug [flags]
```

Options

```
  -h, --help   help for debug
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy debug cert-autoenroll-script

Write certificate autoenrollment python embedded script in current directory

```
adsysctl policy debug cert-autoenroll-script [flags]
```

Options

```
  -h, --help   help for cert-autoenroll-script
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adsysctl policy debug gpolist-script

Write GPO list python embedded script in current directory

```
adsysctl policy debug gpolist-script [flags]
```

Options

```
  -h, --help   help for gpolist-script
```

Options inherited from parent commands

```
  -c, --config string   use a specific configuration file
  -s, --socket string   socket path to use between daemon and client. Can be overridden by
systemd socket activation. (default "/run/adsysd.sock")
  -t, --timeout int     time in seconds before cancelling the client request when the
server gives no result. 0 for no timeout. (default 30)
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd command line

User commands

adwatchd

AD watch daemon

Synopsis

Watch directories for changes and bump the relevant GPT.ini versions.

```
adwatchd [COMMAND] [flags]
```

Options

```
  -c, --config string   use a specific configuration file
  -h, --help            help for adwatchd
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd completion

Generate the autocompletion script for the specified shell

Synopsis

Generate the autocompletion script for adwatchd for the specified shell. See each sub-command's help for details on how to use the generated script.

Options

```
  -h, --help   help for completion
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd completion bash

Generate the autocompletion script for bash

Synopsis

Generate the autocompletion script for the bash shell.

This script depends on the 'bash-completion' package. If it is not installed already, you can install it via your OS's package manager.

To load completions in your current shell session:

```
source <(adwatchd completion bash)
```

To load completions for every new session, execute once:

Linux:

```
adwatchd completion bash > /etc/bash_completion.d/adwatchd
```

macOS:

```
adwatchd completion bash > $(brew --prefix)/etc/bash_completion.d/adwatchd
```

You will need to start a new shell for this setup to take effect.

```
adwatchd completion bash
```

Options

```
  -h, --help              help for bash
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd completion fish

Generate the autocompletion script for fish

Synopsis

Generate the autocompletion script for the fish shell.

To load completions in your current shell session:

```
adwatchd completion fish | source
```

To load completions for every new session, execute once:

```
adwatchd completion fish > ~/.config/fish/completions/adwatchd.fish
```

You will need to start a new shell for this setup to take effect.

```
adwatchd completion fish [flags]
```

Options

```
  -h, --help              help for fish
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd completion powershell

Generate the autocompletion script for powershell

Synopsis

Generate the autocompletion script for powershell.

To load completions in your current shell session:

```
adwatchd completion powershell | Out-String | Invoke-Expression
```

To load completions for every new session, add the output of the above command to your powershell profile.

```
adwatchd completion powershell [flags]
```

Options

```
  -h, --help              help for powershell
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd completion zsh

Generate the autocompletion script for zsh

Synopsis

Generate the autocompletion script for the zsh shell.

If shell completion is not already enabled in your environment you will need to enable it. You can execute the following once:

```
echo "autoload -U compinit; compinit" >> ~/.zshrc
```

To load completions in your current shell session:

```
source <(adwatchd completion zsh)
```

To load completions for every new session, execute once:

Linux:

```
adwatchd completion zsh > "${fpath[1]}/_adwatchd"
```

macOS:

```
adwatchd completion zsh > $(brew --prefix)/share/zsh/site-functions/_adwatchd
```

You will need to start a new shell for this setup to take effect.

```
adwatchd completion zsh [flags]
```

Options

```
  -h, --help              help for zsh
      --no-descriptions   disable completion descriptions
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd run

Starts the directory watch loop

Synopsis

Can run as a service through the service manager or interactively as a standalone application.

The program will monitor the configured directories for changes and bump the appropriate GPT.ini versions anytime a change is detected. If a GPT.ini file does not exist for a directory, a warning will be issued and the file will be created. If the GPT.ini file is incompatible or malformed, the program will report an error.

```
adwatchd run [flags]
```

Options

```
  -c, --config string    use a specific configuration file
  -d, --dirs directory   a directory to check for changes (can be specified multiple
times)
  -f, --force            force the program to run even if another instance is already
running
  -h, --help             help for run
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service

Manages the adwatchd service

Synopsis

The service command allows the user to interact with the adwatchd service. It can manage and query the service status, and also install and uninstall the service.

```
adwatchd service COMMAND [flags]
```

Options

```
  -h, --help   help for service
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service install

Installs the service

Synopsis

Installs the adwatchd service.

The service will be installed as a Windows service.

```
adwatchd service install [flags]
```

Options

```
  -c, --config string   use a specific configuration file
  -h, --help            help for install
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service restart

Restarts the service

Synopsis

Restarts the adwatchd service.

```
adwatchd service restart [flags]
```

Options

```
  -h, --help   help for restart
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service start

Starts the service

Synopsis

Starts the adwatchd service.

```
adwatchd service start [flags]
```

Options

```
  -h, --help   help for start
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service status

Returns service status

Synopsis

Returns the status of the adwatchd service.

```
adwatchd service status [flags]
```

Options

```
  -h, --help   help for status
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service stop

Stops the service

Synopsis

Stops the adwatchd service.

```
adwatchd service stop [flags]
```

Options

```
  -h, --help   help for stop
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd service uninstall

Uninstalls the service

Synopsis

Uninstalls the adwatchd service.

```
adwatchd service uninstall [flags]
```

Options

```
  -h, --help   help for uninstall
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

adwatchd version

Returns version of service and exits

```
adwatchd version [flags]
```

Options

```
  -h, --help   help for version
```

Options inherited from parent commands

```
  -v, --verbose count   issue INFO (-v), DEBUG (-vv) or DEBUG with caller (-vvv) output
```

Hidden commands

Those commands are hidden from help and should primarily be used by the system or for debugging.

3.3. Supported policies

A comprehensive reference of policies supported by ADSys.

3.3.1. Policies reference list

Here is the list of each supported policies by ADSys. The categories and elements are under the same hierarchy you will find on your Active Directory controller.

Computer Policies

Ubuntu

Client management

Computer Scripts

Shutdown scripts

Define scripts that are executed on machine power off. Those scripts are ordered, one by line, and relative to SYSVOL/ubuntu/scripts/ directory. Scripts from this GPO will be appended to the list of scripts referenced higher in the GPO hierarchy.

- Type: scripts
- Key: /shutdown

Note: -

- Enabled: The scripts in the text entry are executed at shutdown time.
- Disabled: The scripts will be skipped. The set of scripts are per boot, and refreshed only on new boot of the machine.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Computer Scripts -> Shutdown scripts
Registry Key	Software\Policies\Ubuntu\scripts\shutdown
Element type	multiText
Class:	Machine

Startup scripts

Define scripts that are executed on machine boot, once the GPO is downloaded. Those scripts are ordered, one by line, and relative to SYSVOL/ubuntu/scripts/ directory. Scripts from this GPO will be appended to the list of scripts referenced higher in the GPO hierarchy.

- Type: scripts
- Key: /startup

Note: -

- Enabled: The scripts in the text entry are executed at startup time.
- Disabled: The scripts will be skipped. The set of scripts are per boot, and refreshed only on new boot of the machine.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Computer Scripts -> Startup scripts
Registry Key	Software\Policies\Ubuntu\scripts\startup
Element type	multiText
Class:	Machine

Power Management

Enable the ALS sensor

If the ambient light sensor functionality is enabled.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/ambient-enabled
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Enable the ALS sensor
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\ambient-enabled
Element type	boolean
Class:	Machine

The brightness of the screen when idle

This is the laptop panel screen brightness used when the session is idle.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/idle-brightness
- Default: 30

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> The brightness of the screen when idle
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\idle-brightness
Element type	decimal
Class:	Machine

Dim the screen after a period of inactivity

If the screen should be dimmed to save power when the computer is idle.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/idle-dim
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Dim the screen after a period of inactivity
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\idle-dim
Element type	boolean
Class:	Machine

Laptop lid close action when on AC

The action to take when the laptop lid is closed and the laptop is on AC power.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/lid-close-ac-action
- Default: 'suspend'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- blank
- suspend
- shutdown
- hibernate
- interactive
- nothing
- logout

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Laptop lid close action when on AC
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\lid-close-ac-action
Element type	dropdownList
Class:	Machine

Laptop lid close action on battery

The action to take when the laptop lid is closed and the laptop is on battery power.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/lid-close-battery-action
- Default: 'suspend'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- blank
- suspend
- shutdown
- hibernate
- interactive
- nothing
- logout

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Laptop lid close action on battery
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\lid-close-battery-action
Element type	dropdownList
Class:	Machine

Laptop lid, when closed, will suspend even if there is an external monitor plugged in

With no external monitors plugged in, closing a laptop's lid will suspend the machine (as set by the lid-close-battery-action and lid-close-ac-action keys). By default, however, closing the lid when an external monitor is present will not suspend the machine, so that one can keep working on that monitor (e.g. for docking stations or media viewers). Set this key to False to keep the default behavior, or to True to suspend the laptop whenever the lid is closed and regardless of external monitors.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/lid-close-suspend-with-external-monitor
- Default: false

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Laptop lid, when closed, will suspend even if there is an external monitor plugged in
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\lid-close-suspend-with-external-monitor
Element type	boolean
Class:	Machine

Power button action

The action to take when the system power button is pressed. Virtual machines only honor the 'nothing' action, and will shutdown otherwise. Tablets always suspend, ignoring all the other action options.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/power-button-action
- Default: 'interactive'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- nothing
- suspend
- hibernate
- interactive

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Power button action
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\power-button-action
Element type	dropdownList
Class:	Machine

Enable power-saver profile when battery is low

Automatically enable the “power-saver” profile using power-profiles-daemon if the battery is low.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/power-saver-profile-on-low-battery
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Loca-tion	Computer Policies -> Ubuntu -> Client management -> Power Management -> Enable power-saver profile when battery is low
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\power-saver-profile-on-low-battery
Element type	boolean
Class:	Machine

Sleep timeout computer when on AC

The amount of time in seconds the computer on AC power needs to be inactive before it goes to sleep. A value of 0 means never.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/sleep-inactive-ac-timeout
- Default: 0

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Sleep timeout computer when on AC
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\sleep-inactive-ac-timeout
Element type	decimal
Class:	Machine

Whether to hibernate, suspend or do nothing when inactive

The type of sleeping that should be performed when the computer is inactive.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/sleep-inactive-ac-type
- Default: ‘suspend’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- blank
- suspend
- shutdown
- hibernate
- interactive
- nothing
- logout

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Whether to hibernate, suspend or do nothing when inactive
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\sleep-inactive-ac-type
Element type	dropdownList
Class:	Machine

Sleep timeout computer when on battery

The amount of time in seconds the computer on battery power needs to be inactive before it goes to sleep. A value of 0 means never.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/sleep-inactive-battery-timeout
- Default for 20.04: 1200
- Default for 22.04: 1200
- Default for 24.04: 900
- Default for 24.10: 900
- Default for 25.04: 900

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Sleep timeout computer when on battery
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\sleep-inactive-battery-timeout
Element type	decimal
Class:	Machine

Whether to hibernate, suspend or do nothing when inactive

The type of sleeping that should be performed when the computer is inactive.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/power/sleep-inactive-battery-type
- Default: 'suspend'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- blank
- suspend
- shutdown
- hibernate
- interactive
- nothing
- logout

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Power Management -> Whether to hibernate, suspend or do nothing when inactive
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\power\sleep-inactive-battery-type
Element type	dropdownList
Class:	Machine

Privilege Authorization

Allow local administrators

This allows or prevents client machine to have local users gaining administrators privilege on the machine.

- Type: privilege
- Key: /allow-local-admins

Note: -

- Enabled: This leaves the default rules for the “sudo” and “admin” rule intact.
- Disabled: This denies root privileges to the predefined administrator groups (sudo and admin).

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Privilege Authorization -> Allow local administrators
Registry Key	Software\Policies\Ubuntu\privilege\allow-local-admins
Element type	
Class:	Machine

Client administrators

Define users and groups from AD allowed to administer client machines. It must be of the form user@domain or %group@domain. One per line.

- Type: privilege
- Key: /client-admins

Note: -

- Enabled: This allows defining Active Directory groups and users with administrative privileges in the box entry.
- Disabled: This disallows any Active Directory group or user to become an administrator of the client even if it is defined in a parent GPO of the hierarchy tree.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> Privilege Authorization -> Client administrators
Registry Key	Software\Policies\Ubuntu\privilege\client-admins
Element type	multiText
Class:	Machine

System Drive Mapping

System mounts

Define network shares that will be mounted for the system. If more shares are defined higher in the GPO hierarchy, the entries listed here will be appended to the list and duplicates will be removed.

Values should be in the format: :/// e.g. nfs://example_nfs.com/nfs_shared_dir smb://example_smb.com/smb_shared_dir ftp://ftp_share_server.com

This pattern must be followed, otherwise the policy will not be applied.

By default, the mounts will be done in anonymous mode. In case of authentication needed, a krb5 tag can be added to the value, e.g. `[krb5]`:///

If the tag is added, the mount will require Kerberos authentication in order to occur.

The supported protocols / file systems are the same as the ones supported by the mount command. They are listed on the mount man page on https://man7.org/linux/man-pages/man8/mount.8.html It's up to the user to ensure that the requested protocols are valid and supported and that the shared directories have the correct configuration for the requested connection.

- Type: mount
- Key: /system-mounts

Note:

- Enabled: The value(s) referenced in the entry are applied on the client machine.
- Disabled: The value(s) are removed from the target machine.
- Not configured: Value(s) declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System Drive Mapping -> System mounts
Registry Key	Software\Policies\Ubuntu\mount\system-mounts
Element type	multiText
Class:	Machine

System proxy configuration

Auto-configuration URL

Declare system-wide proxy auto-configuration URL.

Auto-configuration URLs are always prioritized over manual proxy settings, meaning that if all proxy options are set, the GPO client will enable automatic proxy configuration for supported backends. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/auto

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> Auto-configuration URL
Registry Key	Software\Policies\Ubuntu\proxy\proxy\auto
Element type	text
Class:	Machine

FTP Proxy

Declare system-wide HTTPS proxy setting. The value must be in the form of:

protocol://username:password@host:port

It is not mandatory to escape special characters in the username or password. The GPO client will escape any unescaped special character before applying the proxy settings, and will take care not to double-escape already escaped characters. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/ftp

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> FTP Proxy
Registry Key	Software\Policies\Ubuntu\proxy\proxy\ftp
Element type	text
Class:	Machine

HTTP Proxy

Declare system-wide HTTP proxy setting. The value must be in the form of:

protocol://username:password@host:port

It is not mandatory to escape special characters in the username or password. The GPO client will escape any unescaped special character before applying the proxy settings, and will take care not to double-escape already escaped characters. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/http

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> HTTP Proxy
Registry Key	Software\Policies\Ubuntu\proxy\proxy\http
Element type	text
Class:	Machine

HTTPS Proxy

Declare system-wide HTTPS proxy setting. The value must be in the form of:

protocol://username:password@host:port

It is not mandatory to escape special characters in the username or password. The GPO client will escape any unescaped special character before applying the proxy settings, and will take care not to double-escape already escaped characters. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/https

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> HTTPS Proxy
Registry Key	Software\Policies\Ubuntu\proxy\proxy\https
Element type	text
Class:	Machine

Ignored hosts

An array of hosts allowed to bypass the proxy settings. The host exclusion setting must be in the form of:

localhost,127.0.0.1,::1

Hosts can be individually wrapped in single (') or double quotes ("), or separated by spaces. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/no-proxy

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> Ignored hosts
Registry Key	Software\Policies\Ubuntu\proxy\proxy\no-proxy
Element type	text
Class:	Machine

SOCKS Proxy

Declare system-wide HTTPS proxy setting. The value must be in the form of:

protocol://username:password@host:port

It is not mandatory to escape special characters in the username or password. The GPO client will escape any unescaped special character before applying the proxy settings, and will take care not to double-escape already escaped characters. An empty value will remove previously set settings of the same type.

- Type: proxy
- Key: /proxy/socks

Note: -

- Enabled: The setting in the text entry is applied on the client machine.
- Disabled: The setting is removed from the target machine.
- Not configured: A setting declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System proxy configuration -> SOCKS Proxy
Registry Key	Software\Policies\Ubuntu\proxy\proxy\socks
Element type	text
Class:	Machine

System-wide application confinement

AppArmor

Define AppArmor profiles to be parsed and loaded on client machines. These profiles are ordered, one by line, and relative to the SYSVOL/ubuntu/apparmor/ directory. On the client machine, computer profiles are stored in /etc/apparmor.d/adsys/machine, thus the administrator can reference abstractions and tunables shipped with the client distribution of AppArmor. Files can be included in each other either using a path relative to the current directory of the profile (include “path/to/profile”), or relying on the include path of AppArmor (include <adsys/machine/path/to/profile>).

Profiles from this GPO will be appended to the list of profiles referenced higher in the GPO hierarchy.

- Type: apparmor
- Key: /apparmor-machine

Note: -

- Enabled: The profiles in the text entry are applied on the client machine.
- Disabled: The profiles are removed from the target machine, and any related rules are unloaded.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Client management -> System-wide application confinement -> AppArmor
Registry Key	Software\Policies\Ubuntu\apparmor\apparmor-machine
Element type	multiText
Class:	Machine

Login Screen

Authentication

Number of allowed authentication failures

The number of times a user is allowed to attempt authentication, before giving up and going back to user selection.

- Type: dconf
- Key: /org/gnome/login-screen/allowed-failures
- Default: 3

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Authentication -> Number of allowed authentication failures
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\allowed-failures
Element type	decimal
Class:	Machine

Whether or not to allow fingerprint readers for login

The login screen can optionally allow users who have enrolled their fingerprints to log in using those prints.

- Type: dconf
- Key: /org/gnome/login-screen/enable-fingerprint-authentication
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Authentication -> Whether or not to allow fingerprint readers for login
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\enable-fingerprint-authentication
Element type	boolean
Class:	Machine

Whether or not to allow passwords for login

The login screen can be configured to disallow password authentication, forcing the user to use smartcard or fingerprint authentication.

- Type: dconf
- Key: /org/gnome/login-screen/enable-password-authentication
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Authentication -> Whether or not to allow passwords for login
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\enable-password-authentication
Element type	boolean
Class:	Machine

Whether or not to allow smartcard readers for login

The login screen can optionally allow users who have smartcards to log in using those smart-cards.

- Type: dconf
- Key: /org/gnome/login-screen/enable-smartcard-authentication
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Authentication -> Whether or not to allow smartcard readers for login
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\enable-smartcard-authentication
Element type	boolean
Class:	Machine

Interface

The background-color property sets the background color.

The background-color property sets the background color to use when the background picture URI is missing or when it doesn't cover the whole background. It overrides the value defined in the default style sheet.

- Type: dconf
- Key: /com/ubuntu/login-screen/background-color
- Default: ''

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> The background-color property sets the background color.
Registry Key	Software\Policies\Ubuntu\gdm\dconf\com\ubuntu\login-screen\background-color
Element type	text
Class:	Machine

Sets the background image for the login screen.

URI to use for the background image. Note that the backend only supports local (file://) URIs. It overrides the value defined in the default style sheet.

- Type: dconf
- Key: /com/ubuntu/login-screen/background-picture-uri
- Default: ''

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Sets the background image for the login screen.
Registry Key	Software\Policies\Ubuntu\gdm\dconf\com\ubuntu\login-screen\background-picture-uri
Element type	text
Class:	Machine

The background-repeat property sets if/how the background image will be repeated.

The background-repeat property sets if/how a background image will be repeated. By default, a background-image is repeated both vertically and horizontally. It overrides the value defined in the default style sheet.

- Type: dconf
- Key: /com/ubuntu/login-screen/background-repeat
- Default: 'default'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- default
- repeat
- repeat-x
- repeat-y
- no-repeat
- space
- round

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> how the background image will be repeated.
Registry Key	Software\Policies\Ubuntu\gdm\dconf\com\ubuntu\login-screen\background-repeat
Element type	dropdownList
Class:	Machine

The background-size property specifies the size of the background image.

The background-size property specifies the size of the background images. There are three keywords you can use with this property: auto: The background image is displayed in its original size; cover: Resize the background image to cover the entire container, even if it has to stretch the image or cut a little bit off one of the edges; contain: Resize the background image to make sure the image is fully visible. It overrides the value defined in the default style sheet.

- Type: dconf
- Key: /com/ubuntu/login-screen/background-size
- Default: 'default'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- default
- auto
- cover
- contain

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> The background-size property specifies the size of the background image.
Registry Key	Software\Policies\Ubuntu\gdm\dconf\com\ubuntu\login-screen\background-size
Element type	dropdownList
Class:	Machine

Enable showing the banner message

Set to true to show the banner message text.

- Type: dconf
- Key: /org/gnome/login-screen/banner-message-enable
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Enable showing the banner message
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\banner-message-enable
Element type	boolean
Class:	Machine

Banner message text

Text banner message to show in the login window.

- Type: dconf
- Key: /org/gnome/login-screen/banner-message-text
- Default: ''

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Banner message text
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\banner-message-text
Element type	text
Class:	Machine

Whether the clock displays in 24h or 12h format

Whether the clock displays in 24h or 12h format

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-format
- Default: ‘24h’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- 24h
- 12h

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Whether the clock displays in 24h or 12h format
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\interface\clock-format
Element type	dropdownList
Class:	Machine

Show date in clock

If true, display date in the clock, in addition to time.

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-show-date
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Show date in clock
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\interface\clock-show-date
Element type	boolean
Class:	Machine

Show weekday in clock

If true, display weekday in the clock, in addition to time.

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-show-weekday
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Show weekday in clock
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\interface\clock-show-weekday
Element type	boolean
Class:	Machine

Path to small image at top of user list

The login screen can optionally show a small image to provide site administrators and distributions a way to display branding.

- Type: dconf
- Key: /org/gnome/login-screen/logo
- Default: '/usr/share/plymouth/ubuntu-logo.png'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Interface -> Path to small image at top of user list
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\logo
Element type	text
Class:	Machine

Disable showing the restart buttons

Set to true to disable showing the restart buttons in the login window.

- Type: dconf
- Key: /org/gnome/login-screen/disable-restart-buttons
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Disable showing the restart buttons
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\disable-restart-buttons
Element type	boolean
Class:	Machine

Avoid showing user list

The login screen normally shows a list of available users to log in as. This setting can be toggled to disable showing the user list.

- Type: dconf
- Key: /org/gnome/login-screen/disable-user-list
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Avoid showing user list
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\login-screen\disable-user-list
Element type	boolean
Class:	Machine

Show notification banners

Whether notification banners are visible for application notifications.

- Type: dconf
- Key: /org/gnome/desktop/notifications/show-banners
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Show notification banners
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\notifications\show-banners
Element type	boolean
Class:	Machine

Show notifications in the lock screen

Whether notifications are shown in the lock screen or not.

- Type: dconf
- Key: /org/gnome/desktop/notifications/show-in-lock-screen
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Show notifications in the lock screen
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\notifications\show-in-lock-screen
Element type	boolean
Class:	Machine

Enable Toolkit Accessibility

Whether toolkits should load accessibility related modules.

- Type: dconf
- Key: /org/gnome/desktop/interface/toolkit-accessibility
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	Computer Policies -> Ubuntu -> Login Screen -> Enable Toolkit Accessibility
Registry Key	Software\Policies\Ubuntu\gdm\dconf\org\gnome\desktop\interface\toolkit-accessibility
Element type	boolean
Class:	Machine

User Policies

Ubuntu

Desktop

Accessibility

On-screen keyboard

Whether the on-screen keyboard is turned on.

- Type: dconf
- Key: /org/gnome/desktop/a11y/applications/screen-keyboard-enabled
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Accessibility -> On-screen keyboard
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\a11y\applications\screen-keyboard-enabled
Element type	boolean
Class:	User

Screen magnifier

Whether the screen magnifier is turned on.

- Type: dconf
- Key: /org/gnome/desktop/a11y/applications/screen-magnifier-enabled
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Accessibility -> Screen magnifier
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\a11y\applications\screen-magnifier-enabled
Element type	boolean
Class:	User

Screen reader

Whether the screen reader is turned on.

- Type: dconf
- Key: /org/gnome/desktop/a11y/applications/screen-reader-enabled
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Accessibility -> Screen reader
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\a11y\applications\screen-reader-enabled
Element type	boolean
Class:	User

Enable Toolkit Accessibility

Whether toolkits should load accessibility related modules.

- Type: dconf
- Key: /org/gnome/desktop/interface/toolkit-accessibility
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Accessibility -> Enable Toolkit Accessibility
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\interface\toolkit-accessibility
Element type	boolean
Class:	User

Background

Picture Options

Determines how the image set by wallpaper_filename is rendered. Possible values are “none”, “wallpaper”, “centered”, “scaled”, “stretched”, “zoom”, “spanned”.

- Type: dconf
- Key: /org/gnome/desktop/background/picture-options
- Default: ‘zoom’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- none
- wallpaper
- centered
- scaled
- stretched
- zoom
- spanned

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Background -> Picture Options
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\background\picture-options
Element type	dropdownList
Class:	User

Picture URI (dark)

URI to use for the background image. Note that the backend only supports local (file://) URIs.

- Type: dconf
- Key: /org/gnome/desktop/background/picture-uri-dark
- Default for 22.04: ‘file:///usr/share/backgrounds/warty-final-ubuntu.png’
- Default for 24.04: ‘file:///usr/share/backgrounds/ubuntu-wallpaper-d.png’
- Default for 24.10: ‘file:///usr/share/backgrounds/ubuntu-wallpaper-d.png’
- Default for 25.04: ‘file:///usr/share/backgrounds/ubuntu-wallpaper-d.png’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Background -> Picture URI (dark)
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\background\picture-uri-dark
Element type	text
Class:	User

Picture URI

URI to use for the background image. Note that the backend only supports local (file://) URIs.

- Type: dconf
- Key: /org/gnome/desktop/background/picture-uri
- Default: 'file:///usr/share/backgrounds/warty-final-ubuntu.png'

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Background -> Picture URI
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\background\picture-uri
Element type	text
Class:	User

Keyboard shortcuts

Launch settings

Binding to launch GNOME Settings.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/media-keys/control-center
- Default: `['']`

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Launch settings
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\media-keys\control-center
Element type	multiText
Class:	User

Modifier to use for extended window management operations

This key will initiate the “overlay”, which is a combination window overview and application launching system. The default is intended to be the “Windows key” on PC hardware. It’s expected that this binding either the default or set to the empty string.

- Type: dconf
- Key: /org/gnome/mutter/overlay-key
- Default: ‘Super_L’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Loca-tion	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Modifier to use for extended window management operations
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\mutter\overlay-key
Element type	text
Class:	User

Show the activities overview

- Type: dconf
- Key: /org/gnome/desktop/wm/keybindings/panel-main-menu
- Default: `['<Alt>F1']`

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Show the activities overview
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\wm\keybindings\panel-main-menu
Element type	multiText
Class:	User

Launch terminal

Binding to launch the terminal.

- Type: dconf
- Key: /org/gnome/settings-daemon/plugins/media-keys/terminal
- Default: `['<Primary><Alt>t']`

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Launch terminal
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\settings-daemon\plugins\media-keys\terminal
Element type	multiText
Class:	User

Keybinding to open the “Show Applications” view

Keybinding to open the “Show Applications” view of the Activities Overview.

- Type: dconf
- Key: /org/gnome/shell/keybindings/toggle-application-view
- Default: `["<Super>a"]`

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Keybinding to open the “Show Applications” view
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\shell\keybindings\toggle-application-view
Element type	multiText
Class:	User

Keybinding to open the overview

Keybinding to open the Activities Overview.

- Type: dconf
- Key: /org/gnome/shell/keybindings/toggle-overview
- Default for 20.04: `["<Super>s"]`
- Default for 22.04: `["<Super>s"]`
- Default for 24.04: `[]`
- Default for 24.10: `[]`
- Default for 25.04: `[]`

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Keyboard shortcuts -> Keybinding to open the overview
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\shell\keybindings\toggle-overview
Element type	multiText
Class:	User

Screensaver

Disable lock screen

Prevent the user to lock his screen.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-lock-screen
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Screensaver -> Disable lock screen
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-lock-screen
Element type	boolean
Class:	User

Picture Options

Determines how the image set by wallpaper_filename is rendered. Possible values are “none”, “wallpaper”, “centered”, “scaled”, “stretched”, “zoom”, “spanned”.

- Type: dconf
- Key: /org/gnome/desktop/screensaver/picture-options
- Default: ‘zoom’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- none
- wallpaper
- centered
- scaled
- stretched
- zoom
- spanned

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Screensaver -> Picture Options
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\screensaver\picture-options
Element type	dropdownList
Class:	User

Picture URI

URI to use for the background image. Note that the backend only supports local (file://) URIs.

- Type: dconf
- Key: /org/gnome/desktop/screensaver/picture-uri
- Default: ‘file:///usr/share/backgrounds/warty-final-ubuntu.png’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Screensaver -> Picture URI
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\screensaver\picture-uri
Element type	text
Class:	User

Show notifications in the lock screen

Whether notifications are shown in the lock screen or not.

- Type: dconf
- Key: /org/gnome/desktop/notifications/show-in-lock-screen
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Screensaver -> Show notifications in the lock screen
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\notifications\show-in-lock-screen
Element type	boolean
Class:	User

Shell

Clock

Whether the clock displays in 24h or 12h format

Whether the clock displays in 24h or 12h format

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-format

- Default: ‘24h’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- 24h
- 12h

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Clock -> Whether the clock displays in 24h or 12h format
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\interface\clock-format
Element type	dropdownList
Class:	User

Show date in clock

If true, display date in the clock, in addition to time.

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-show-date
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Clock -> Show date in clock
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\interface\clock-show-date
Element type	boolean
Class:	User

Show weekday in clock

If true, display weekday in the clock, in addition to time.

- Type: dconf
- Key: /org/gnome/desktop/interface/clock-show-weekday
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Clock -> Show weekday in clock
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\interface\clock-show-weekday
Element type	boolean
Class:	User

LockDown

Disable command line

Prevent the user from accessing the terminal or specifying a command line to be executed. For example, this would disable access to the panel’s “Run Application” dialog.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-command-line
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable command line
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-command-line
Element type	boolean
Class:	User

Disable log out

Prevent the user from logging out.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-log-out
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable log out
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-log-out
Element type	boolean
Class:	User

Disable print setup

Prevent the user from modifying print settings. For example, this would disable access to all applications’ “Print Setup” dialogs.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-print-setup
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable print setup
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-print-setup
Element type	boolean
Class:	User

Disable printing

Prevent the user from printing. For example, this would disable access to all applications' "Print" dialogs.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-printing
- Default: false

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable printing
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-printing
Element type	boolean
Class:	User

Disable saving files to disk

Prevent the user from saving files to disk. For example, this would disable access to all applications' "Save as" dialogs.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-save-to-disk
- Default: false

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable saving files to disk
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-save-to-disk
Element type	boolean
Class:	User

Disable user switching

Prevent the user from switching to another account while his session is active.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/disable-user-switching
- Default: false

Note: default system value is used for "Not Configured" and enforced if "Disabled".

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable user switching
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\disable-user-switching
Element type	boolean
Class:	User

Mount removable storage devices as read-only

Prevent users from writing or modifying files on removable storage devices (i.e. flash disks, mobile phones, cameras).

- Type: dconf
- Key: /org/gnome/desktop/lockdown/mount-removable-storage-devices-as-read-only
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Mount removable storage devices as read-only
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\mount-removable-storage-devices-as-read-only
Element type	boolean
Class:	User

Disable user administration

Stop the user from modifying user accounts. By default, we allow adding and removing users, as well as changing other users settings.

- Type: dconf
- Key: /org/gnome/desktop/lockdown/user-administration-disabled
- Default: false

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> LockDown -> Disable user administration
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\lockdown\user-administration-disabled
Element type	boolean
Class:	User

Notifications

Show notification banners

Whether notification banners are visible for application notifications.

- Type: dconf
- Key: /org/gnome/desktop/notifications/show-banners
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Notifications -> Show notification banners
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\notifications\show-banners
Element type	boolean
Class:	User

Privacy

When USB devices should be rejected

If set to “lockscreen”, only when the lock screen is present new USB devices will be rejected; if set to “always”, all new USB devices will always be rejected.

- Type: dconf
- Key: /org/gnome/desktop/privacy/usb-protection-level
- Default: ‘lockscreen’

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Valid values

- lockscreen
- always

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Privacy -> When USB devices should be rejected
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\privacy\usb-protection-level
Element type	dropdownList
Class:	User

Whether to protect USB devices

If the USBGuard service is present and this setting is enabled, USB devices will be protected as configured in the usb-protection-level setting.

- Type: dconf
- Key: /org/gnome/desktop/privacy/usb-protection
- Default for 20.04: false
- Default for 22.04: true
- Default for 24.04: true
- Default for 24.10: true
- Default for 25.04: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Privacy -> Whether to protect USB devices
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\privacy\usb-protection
Element type	boolean
Class:	User

List of desktop file IDs for favorite applications

The applications corresponding to these identifiers will be displayed in the favorites area.

- Type: dconf
- Key: /org/gnome/shell/favorite-apps
- Default for 20.04: `[ 'ubiquity.desktop', 'firefox.desktop', 'thunderbird.desktop', 'org.gnome.Nautilus.desktop', 'rhythmbox.desktop', 'libreoffice-writer.desktop', 'snap-store_ubuntu-software.desktop', 'yelp.desktop' ]`
- Default for 22.04: `[ 'ubuntu-desktop-installer_ubuntu-desktop-installer.desktop', 'ubiquity.desktop', 'firefox_firefox.desktop', 'thunderbird.desktop', 'org.gnome.Nautilus.desktop', 'rhythmbox.desktop', 'libreoffice-writer.desktop', 'snap-store_ubuntu-software.desktop', 'yelp.desktop' ]`
- Default for 24.04: `[ 'ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop', 'firefox_firefox.desktop', 'thunderbird_thunderbird.desktop', 'org.gnome.Nautilus.desktop', 'org.gnome.Rhythmbox3.desktop', 'libreoffice-writer.desktop', 'snap-store_snap-store.desktop', 'yelp.desktop' ]`
- Default for 24.10: `[ 'ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop', 'firefox_firefox.desktop', 'thunderbird_thunderbird.desktop', 'org.gnome.Nautilus.desktop', 'org.gnome.Rhythmbox3.desktop', 'libreoffice-writer.desktop', 'snap-store_snap-store.desktop', 'yelp.desktop' ]`
- Default for 25.04: `[ 'ubuntu-desktop-bootstrap_ubuntu-desktop-bootstrap.desktop', 'firefox_firefox.desktop', 'thunderbird_thunderbird.desktop', 'org.gnome.Nautilus.desktop', 'org.gnome.Rhythmbox3.desktop', 'libreoffice-writer.desktop', 'snap-store_snap-store.desktop', 'yelp.desktop' ]`

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> List of desktop file IDs for favorite applications
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\shell\favorite-apps
Element type	multiText
Class:	User

Have file manager handle the desktop

If set to true, then file manager will draw the icons on the desktop.

- Type: dconf
- Key: /org/gnome/desktop/background/show-desktop-icons
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Have file manager handle the desktop
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\background\show-desktop-icons
Element type	boolean
Class:	User

Show applications button

Show applications button in the dash

- Type: dconf
- Key: /org/gnome/shell/extensions/dash-to-dock/show-show-apps-button
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Desktop -> Shell -> Show applications button
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\shell\extensions\dash-to-dock\show-show-apps-button
Element type	boolean
Class:	User

Peripherals

Whether to automatically mount media

If set to true, then Nautilus will automatically mount media such as user-visible hard disks and removable media on start-up and media insertion.

- Type: dconf
- Key: /org/gnome/desktop/media-handling/automount
- Default: true

Note: default system value is used for “Not Configured” and enforced if “Disabled”.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Peripherals -> Whether to automatically mount media
Registry Key	Software\Policies\Ubuntu\dconf\org\gnome\desktop\media-handling\automount
Element type	boolean
Class:	User

Session management

User Drive Mapping

User mounts

Define network shares that will be mounted for the client. If more shares are defined higher the GPO hierarchy, the entries listed here will be appended to the list and duplicates will be removed.

Values should be in the format: :/// e.g. nfs://example_nfs.com/nfs_shared_dir smb://example_smb.com/smb_shared_dir ftp://ftp_share_server.com

This pattern must be followed, otherwise the policy will not be applied.

By the default, the mounts will be done in anonymous mode. In case of authentication needed, a krb5 tag can be added to the value, e.g. `[krb5]`:///

If the tag is added, the mount will require Kerberos authentication in order to occur.

The supported protocols are the same as the ones supported by gvfs. They are listed on the man page of gvfs, under the gvfs-backends section: https://manpages.ubuntu.com/manpages/jammy/en/man7/gvfs.7.html It's up to the user to ensure that the requested protocols are valid and supported and that the shared directories have the correct configuration for the requested connection.

- Type: mount
- Key: /user-mounts

Note:

- Enabled: The value(s) referenced in the entry are applied on the client machine.
- Disabled: The value(s) are removed from the target machine.
- Not configured: Value(s) declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Session management -> User Drive Mapping -> User mounts
Registry Key	Software\Policies\Ubuntu\mount\user-mounts
Element type	multiText
Class:	User

User Scripts

Logoff scripts

Define scripts that are executed when the user exits from last session. Those scripts are ordered, one by line, and relative to SYSVOL/ubuntu/scripts/ directory. Scripts from this GPO will be appended to the list of scripts referenced higher in the GPO hierarchy.

- Type: scripts
- Key: /logoff

Note: -

- Enabled: The scripts in the text entry are executed at user logoff time.
- Disabled: The scripts will be skipped. The set of scripts are per session, and refreshed only on new session creation.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Session management -> User Scripts -> Logoff scripts
Registry Key	Software\Policies\Ubuntu\scripts\logoff
Element type	multiText
Class:	User

Logon scripts

Define scripts that are executed the first time an user logon until it exits from all sessions. Those scripts are ordered, one by line, and relative to SYSVOL/ubuntu/scripts/ directory. Scripts from this GPO will be appended to the list of scripts referenced higher in the GPO hierarchy.

- Type: scripts
- Key: /logon

Note: -

- Enabled: The scripts in the text entry are executed at user logon time.
- Disabled: The scripts will be skipped. The set of scripts are per session, and refreshed only on new session creation.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Session management -> User Scripts -> Logon scripts
Registry Key	Software\Policies\Ubuntu\scripts\logon
Element type	multiText
Class:	User

User application confinement

AppArmor

Define an AppArmor user profile to be parsed and loaded on client machines. The profile is specified as a file path relative to the SYSVOL/ubuntu/apparmor/ directory. On the client machine, user profiles are stored in /etc/apparmor.d/adsys/users/, thus the administrator can reference abstractions and tunables shipped with the client distribution of AppArmor.

The profile will ideally contain a mapping between a user and a role. Roles must be configured beforehand in the System-wide application confinement section. Below is an example of a user profile declaration:

include <abstractions/authentication> include <abstractions/nameservice>

capability dac_override, capability setgid, capability setuid, /etc/default/su r, /etc/environment r, @{HOMEDIRS}/.xauth* w, /usr/bin/{,b,d,rb}ash Px -> default_user, /usr/bin/{c,k,tc}sh Px -> default_user,

The GPO client will wrap this into an apparmor block declaration containing the client username. The default_user role must be declared beforehand in the Machine section. More details and examples can be found in the apparmor section of the adsys documentation.

The configured profile will override any profile referenced higher in the GPO hierarchy.

- Type: apparmor
- Key: /apparmor-users

Note: -

- Enabled: The profile in the text entry is applied on the client machine.
- Disabled: The profile is removed from the target machine, and any related rules are unloaded.
- Not configured: A profile declared higher in the GPO hierarchy will be used if available.

Supported on Ubuntu 20.04, 22.04, 24.04, 24.10, 25.04.

An Ubuntu Pro subscription on the client is required to apply this policy.

Metadata

Element	Value
Location	User Policies -> Ubuntu -> Session management -> User application confinement -> AppArmor
Registry Key	Software\Policies\Ubuntu\apparmor\apparmor-users
Element type	text
Class:	User

3.4. Glossary

A glossary of technical terms used in the ADSys documentation. This may be especially useful for Windows sysadmins who are not familiar with Linux tools and terminology.

3.4.1. Glossary for ADSys

Overview of technical terms used in the documentation.

Tip:

Think a term is missing and should be included?
You can edit this glossary[17] on GitHub.

[17] https://github.com/ubuntu/adsys/edit/main/docs/reference/glossary.md

active directory
: A directory service developed by Microsoft that provides centralized authentication, authorization, and management of users, computers, and resources in a networked environment.

adcli[18]
: A command-line tool for managing Active Directory domain membership on Linux.

administrative templates **(page 7)**
: A set of policy settings that allow administrators to configure user and computer settings in a Windows-based Active Directory environment, often managed via Group Policy Objects (GPOs).

ADSys
: A tool that allows system administrators to manage Ubuntu machines using Microsoft Active Directory.

adsysctl **(page 51)**
: A command-line utility for interacting with the ADSys service in Ubuntu.

[18] https://manpages.ubuntu.com/manpages/man8/adcli.8.html

adwatchd **(page 42)**
: A daemon that monitors and enforces compliance with Active Directory policies on Ubuntu systems, helping ensure settings are consistently applied.

AppArmor[19]
: A Linux security module that enforces mandatory access control policies on programs to limit their capabilities.

apt
: The Advanced Package Tool. A package management system used in Debian-based distributions like Ubuntu to install, update, and remove software.

certmonger[20]
: A service that monitors and renews certificates, commonly used in enterprise environments.

client
: In the context of ADSys, the "client" refers to an Ubuntu Desktop or Server that is managed using Microsoft Active Directory.

D-Bus call
: A command or API request used to communicate with system services via D-Bus, a message bus system for interprocess communication.

dconf **(page 135)**
: A low-level configuration system used by GNOME-based environments to store application and system settings, providing a centralized way to manage configurations.

domain controller
: A server in an Active Directory network that authenticates users, enforces security policies, and manages domain-wide resources.

FQDN
: The Fully Qualified Domain Name. A complete domain name that specifies the exact location of a device within the DNS hierarchy.

getcert
: A command-line tool used to request, monitor, and renew security certificates, often used with certmonger.

GNOME
: A popular open-source desktop environment for Linux systems, designed for ease of use and accessibility, providing a modern graphical user interface.

group policies
: A feature in Active Directory that allows administrators to define security settings, software installations, and user preferences across multiple computers in a domain.

GSettings
: A system for storing application and desktop settings in GNOME-based environments.

GVfs
: The GNOME Virtual File System. A user-space virtual filesystem that provides access to remote locations, such as FTP, SMB, and Google Drive.

[19] https://documentation.ubuntu.com/server/how-to/security/apparmor/
[20] https://manpages.ubuntu.com/manpages/man8/certmonger.8.html

Kerberos
: A network authentication protocol that uses tickets to securely authenticate users and services.

LDAP
: The Lightweight Directory Access Protocol. A protocol for accessing and managing directory information, commonly used for authentication.

LTS[21]
: A Long Term Support (LTS) release of Ubuntu is an enterprise grade release that receive extended support.

PAM
: Pluggable Authentication Modules. A framework for integrating various authentication methods into Linux systems.

Polkit[22]
: A toolkit for defining and handling system-wide privileges in Linux.

realmd
: A service that allows automatic discovery and enrollment of Linux machines into Active Directory or other identity domains.

Samba
: A software suite that enables file and print sharing between Linux and Windows systems using the SMB/CIFS protocol.

Security Identifier
: The Security Identifier, or SID, is a unique identifier assigned to users, groups, and other objects in Windows-based systems.

server
: In the context of ADSys, the “server” refers to a Windows Server running Active Directory , which manages and enforces policies for Ubuntu clients.

SSSD
: The System Security Services Daemon. A service that manages authentication and authorization with identity providers like Active Directory or LDAP. *SSSD is used with ADSys* (page 132) for managing authentication and policies.

sudo
: A command that allows users to run programs with elevated (superuser) privileges on Linux systems.

systemd
: A modern system and service manager for Linux, responsible for initializing and managing system processes.

systemd journal
: A logging system that collects and organizes system logs for troubleshooting and auditing.

Ubiquity installer
: The default graphical installer for Ubuntu, designed to simplify OS installation.

[21] https://ubuntu.com/about/release-cycle
[22] https://manpages.ubuntu.com/manpages/man8/polkit.8.html

Ubuntu Pro[23]
: A subscription service from Canonical that provides extended security updates (ESM), compliance tools, and enterprise support for Ubuntu systems.

visudo
: A command used to safely edit the sudoers file, a file which controls user permissions for executing commands with elevated privileges.

Winbind
: A component of Samba that allows Linux systems to authenticate users against a Windows domain. It can be used as an alternative to SSSD.

[23] https://ubuntu.com/pro

4. Explanation

Discussions of key topics to aid your understanding of ADSys.

4.1. Architecture

The architecture of ADSys, and how it works with SSSD, is explained here:

4.1.1. ADSys architecture

Here, we explain ADSys and SSSD, and how they are used in combination for managing authentication and policies.

ADSys and SSSD

ADSys is a GPO client. In an AD-managed infrastructure, it can help with the management and control of Ubuntu clients through the AD controller. It compliments and depends on SSSD, which is a daemon that handles authentication and provides authorization to access remote directories, including AD. ADSys can also be used in combination with Winbind, but here we will focus on SSSD.

SSSD runs on the client Ubuntu machine and enables basic authentication with AD. When a client machine that is enrolled in the domain attempts to log in, SSSD sends the user's information to the AD controller. If the credentials are valid, they are returned to SSSD. This allows the user to successfully authenticate.

Tip:

The diagrams on this page can be zoomed with a scroll-wheel or panned by clicking and dragging the left mouse button.

After the user is authenticated, ADSys queries the provider for policies that are directed to the authenticated user in the AD domain and resolves them, before applying the policies to the client.

Authentication and policy flow

A detailed visual explanation of the authentication and policy flow with ADSys and SSSD is shown below:

SSSD manages the enrollment and authentication of clients with AD. If ADSys is not installed, the control and management of AD clients stops at that point.

If ADSys is installed, it checks whether GPOs on the client are up-to-date. If not, they are fetched from the domain controller. Once the latest GPOs are available, they are parsed and applied. The user then authenticates successfully and the GPOs are applied. If the GPOs are not applied and they are enforced, then ADSys will not permit the session to continue.

4.2. Security

A security overview for ADSys is provided below:

4.2.1. ADSys security overview

Contribution of ADSys to security

ADSys facilitates the remote management of Ubuntu machines using Active Directory (AD).

By enabling the enforcement of policies on client machines, ADSys can contribute to the secure maintenance of AD-enrolled Ubuntu machines.

Operation in air-gapped environments

Once installed, ADSys can be used in an air-gapped environment.

Its functionality does not depend on an internet connection. All that is required is a local network connection between the AD server and the Ubuntu client.

The ADSys binary includes both the documentation and the administrative templates, which therefore do not need to be fetched online.

For more information on generating documentation and templates, read about ADSys' command line utility:

- The adsysctl command[24]

Secure transfer of templates

The admin templates are generated on the Ubuntu client before they are transferred to the Windows server.

This can be done using the secure copy protocol (`scp`) in a PowerShell terminal running on the server; for example, the following command copies template files found in the `templates` directory on the client to the Desktop of the server:

```
scp -r user@ubuntu-client/home/ubuntu-client/templates C:\Users\Administrator\Desktop
```

This approach relies on SSH for authentication and encryption, increasing the security of the file transfer.

Using ADSys securely

Security updates

ADSys is released as a Debian package on the Ubuntu archive. We currently provide security updates for ADSys installed on the following Ubuntu LTS releases:

- Ubuntu 24.04
- Ubuntu 22.04

[24] https://documentation.ubuntu.com/adsys/en/stable/reference/adsysctl/

- Ubuntu 20.04

Please ensure that you are using a supported version to receive updates and patches.

If you are unsure of your version, please run the following command in a terminal:

```
adsysctl version
```

Always ensure that ADSys and its dependencies are up-to-date with:

```
sudo apt update && sudo apt upgrade -y
```

Active Directory

The secure use of ADSys depends greatly on the security of the AD instance with which it interfaces.

A comprehensive security overview therefore requires consulting security documentation relating to AD:

- Best practices for securing Active Directory[25]

Authentication

For secure enrollment and authentication of clients with AD, ADSys depends on SSSD or Winbind with Kerberos.

There is an explanation of how ADSys and SSSD work together to manage authentication and policies in the ADSys documentation:

- ADSys architecture[26]

Policies relating to security settings are managed by SSSD, and are described in the documentation:

- Security settings that are supported through SSSD[27]

For detailed information on logging for use in debugging, review the following guides:

- Kerberos logging with Active Directory[28]
- Troubleshooting and logging with SSSD[29]
- Winbind man pages[30]

[25] https://learn.microsoft.com/en-us/windows-server/identity/ad-ds/plan/security-best-practices/best-practices-for-securing-active-directory
[26] https://documentation.ubuntu.com/adsys/en/stable/explanation/adsys-ref-arch/
[27] https://documentation.ubuntu.com/adsys/en/stable/explanation/security-policy/
[28] https://learn.microsoft.com/en-us/troubleshoot/windows-server/active-directory/enable-kerberos-event-logging
[29] https://sssd.io/troubleshooting/basics.html
[30] https://manpages.ubuntu.com/manpages/man8/winbindd.8.html

Risk management

An Ubuntu Pro subscription enables additional features for ADSys, including privilege management, scripts execution and AppArmor profiles.

These are powerful features but can pose security issues if not managed responsibly, for example

- Ensure that users are granted administrator privileges only when necessary and that they are made aware of the associated risks.
- Validate any scripts or binaries to be executed on client machines.
- Develop and test AppArmor profiles before integrating them with ADSys to ensure that they function as expected.

The ADSys documentation includes detailed explanations of these and other Pro-specific features:

- Administrator privilege management[31]
- Scripts execution[32]
- Managing AppArmor profiles[33]

Reporting a vulnerability

Details on the security updates that we provide and the responsible disclosure of security vulnerabilities for ADSys can be found below:

- Security policy for ADSys[34]

4.3. Managers

ADSys supports a wide variety of managers to configure and control various aspects of the client systems:

4.3.1. Dconf manager

The dconf manager allows to enforce default or custom dconf settings[35] on the client.

Some settings are globally enforced on the machine while other are per-user specific settings.

[31] https://documentation.ubuntu.com/adsys/en/stable/explanation/privileges/
[32] https://documentation.ubuntu.com/adsys/en/stable/explanation/scripts/
[33] https://documentation.ubuntu.com/adsys/en/stable/explanation/apparmor/
[34] https://github.com/ubuntu/adsys/blob/main/SECURITY.md
[35] https://wiki.gnome.org/Projects/dconf/SystemAdministrators

Example of settings

- Change the login screen layout and background color.
- Set and lock the default applications in the launcher.
- Set and lock the user wallpaper.
- Set the date and time format of the clock.

Rules precedence

Any settings will override the same settings in less specific GPO.

Settings UI

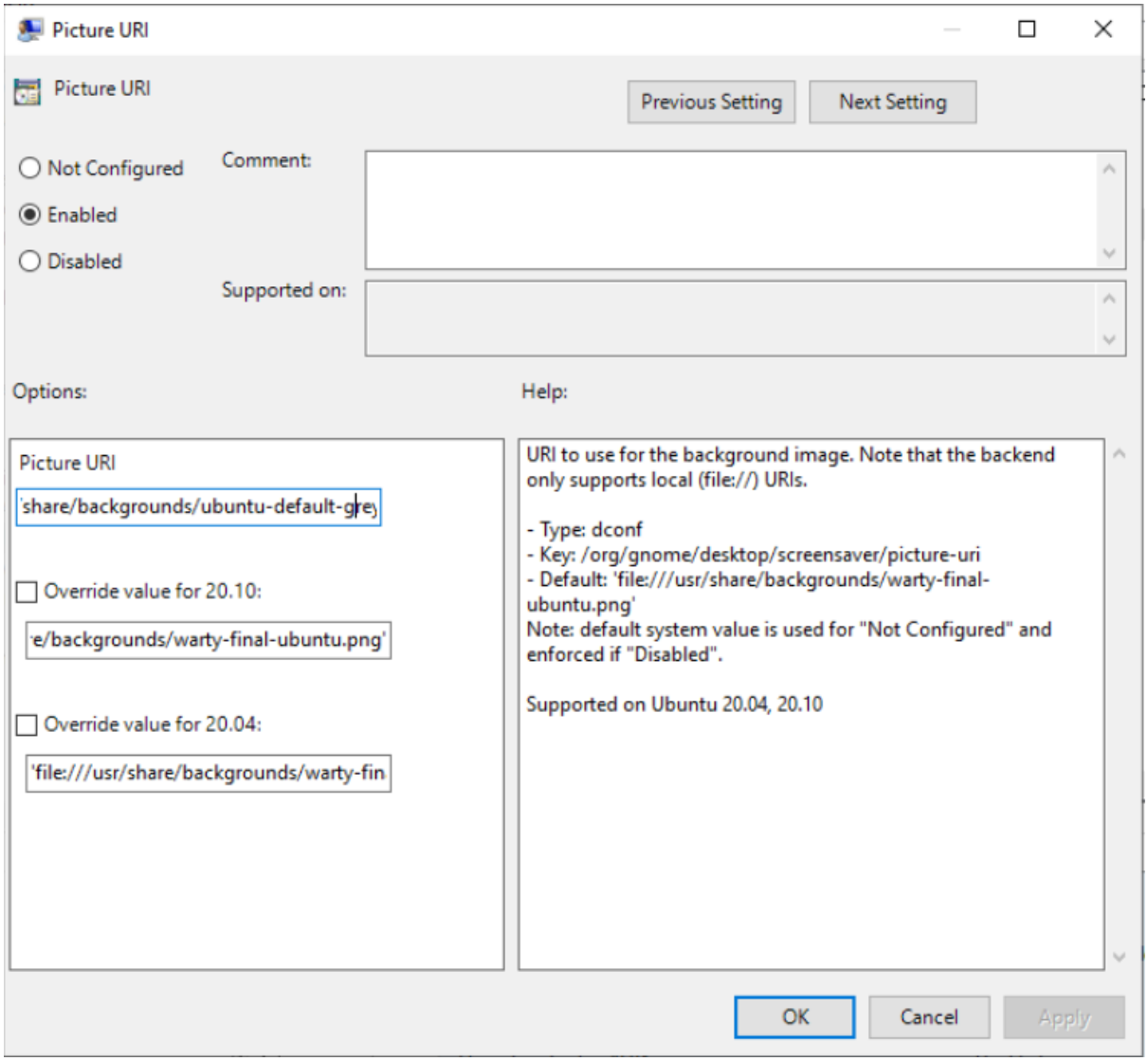
Widgets

Depending on the type of settings, appropriate widgets are displayed to the AD system administrator. Those can be different per release if the type of settings changed.

States

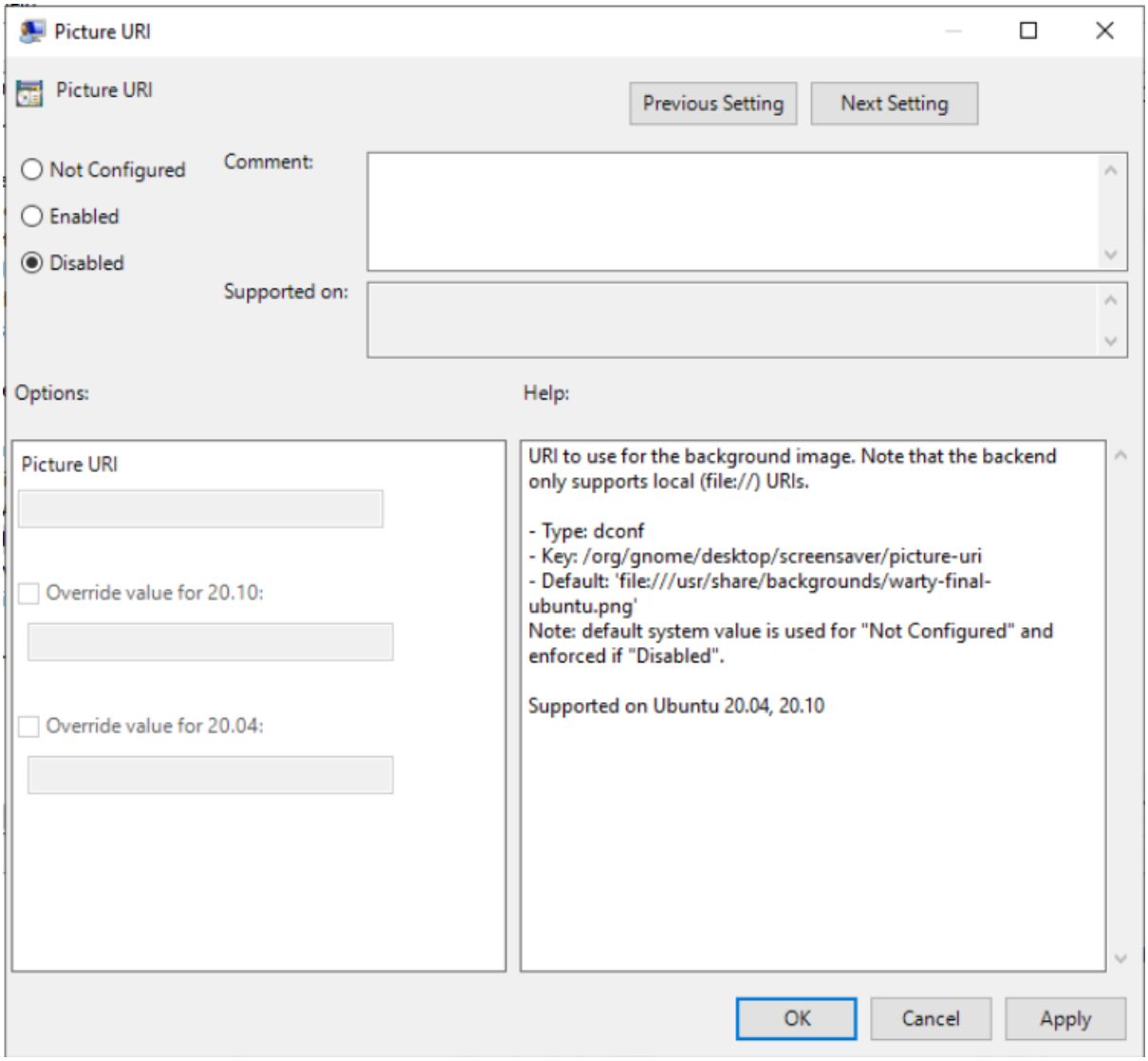
Enabled

Setting a key to `enabled` will apply a value to any machines or user targeted by the GPO. It allows the Active Directory administrator to enter a value that will be applied to the target object (user or machine). This setting will be enforced on the client. Only an administrator of the client system can override it, but it will be reset to the Active Directory setting on next refresh.



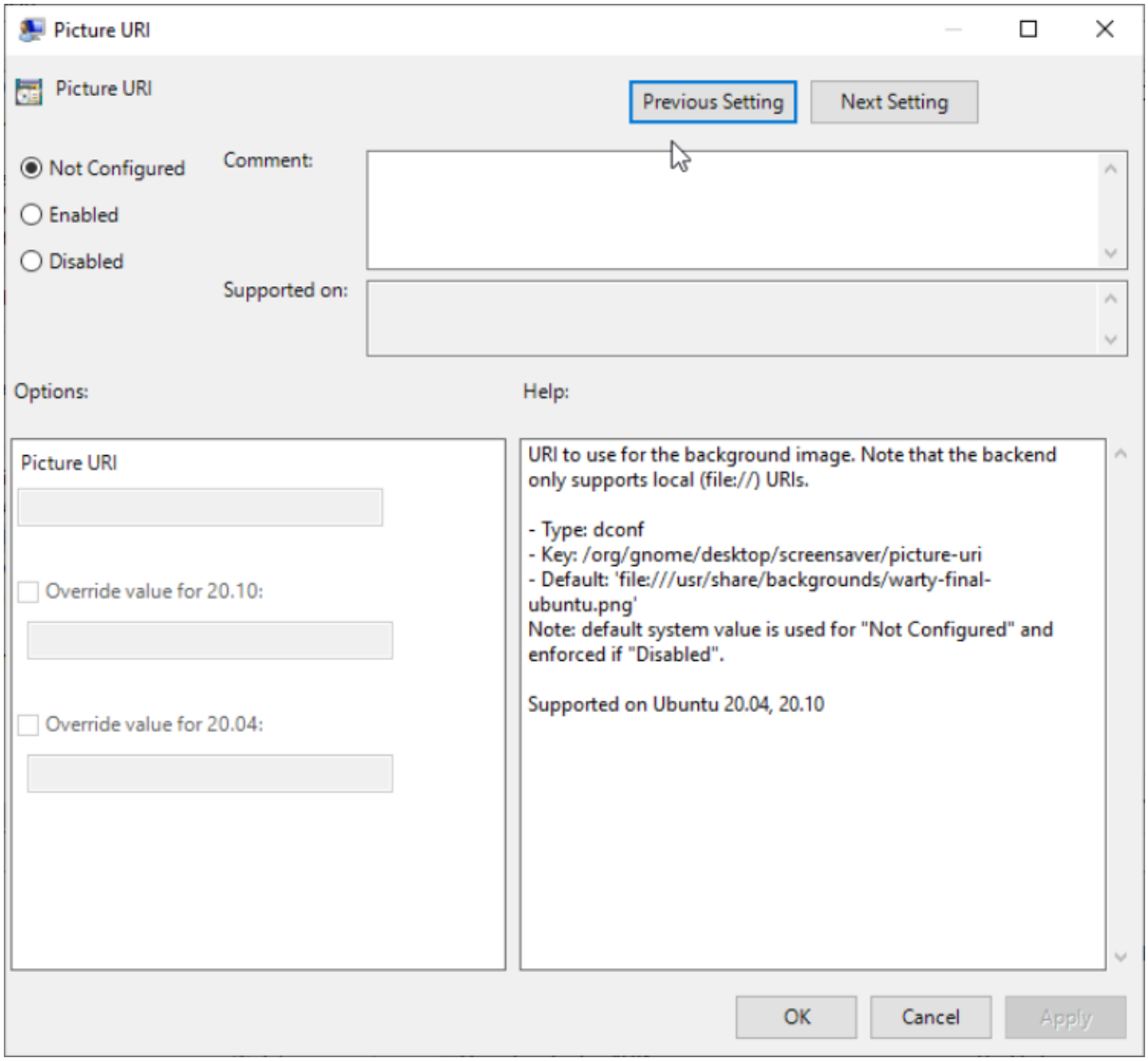
Disabled

Setting a key to `disabled` will prevent user updates. However, no value can be explicitly entered by the Active Directory administrator. The default value of the client system will then be used (which may differ between machines).



Not configured

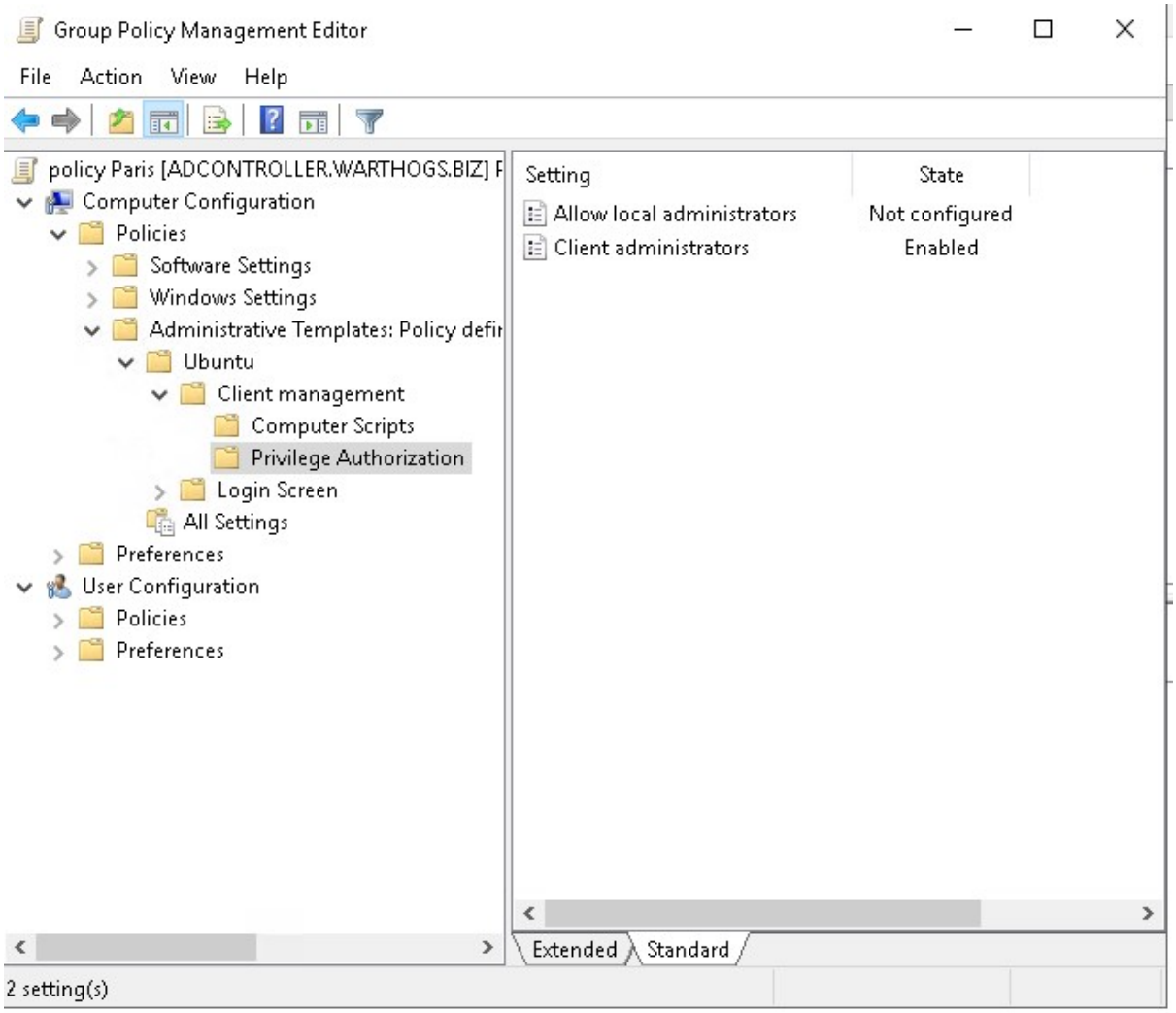
Finally, `not configured` is the default state. The setting is managed as usual directly on the client and without Active Directory.



4.3.2. Admin privileges management

The Admin privilege manager allows to grant or revoke superuser privileges for the default local user, and Active Directory users and groups.

All those settings are globally enforced on the machine and are available at `Computer Configuration > Policies > Administrative Templates > Ubuntu > Client management > Privilege Authorization`.



Feature availability

This feature is available only for subscribers of **Ubuntu Pro**.

Rules precedence

Any settings will override the same settings in less specific GPO.

What does “administrator” means?

Administrators:

- Can get administrators privileges and ran commands as such with `sudo`.
- Are considered **admin** for all `polkit` actions. If the current user is not an admin and a particular daemon require polkit administrator privilege, a prompt will allow you to choose an existing administrators to authenticate before performing the action.

Local user

Members of the local sudo group are administrators by default on the machine.

Not Configured or enabled

This status keep the default for the system: `sudo` group members are considered administrators on the client.

Disabled

`sudo` group members are not considered administrators on the client.

Note:

You can grant specific users not necessarily in the `sudo` group administrator privileges with the “Client administrator option”.

Active Directory users and groups

Users and groups in the directory can be granted administrator privileges of the local machine with `sudo`.

Several users or groups or a set of both can be assigned.

The form is a list of users and group, one per line, `user@domain` for a user and `%group@domain` for a group.

Not Configured or disabled

There is no AD user or group configured with admin privileges for the machine.

Enabled

There is one or several AD user or group configured with admin privileges for the machine via the list under it.

Note: you can use this list to grant non-default local users matching the name on the client.

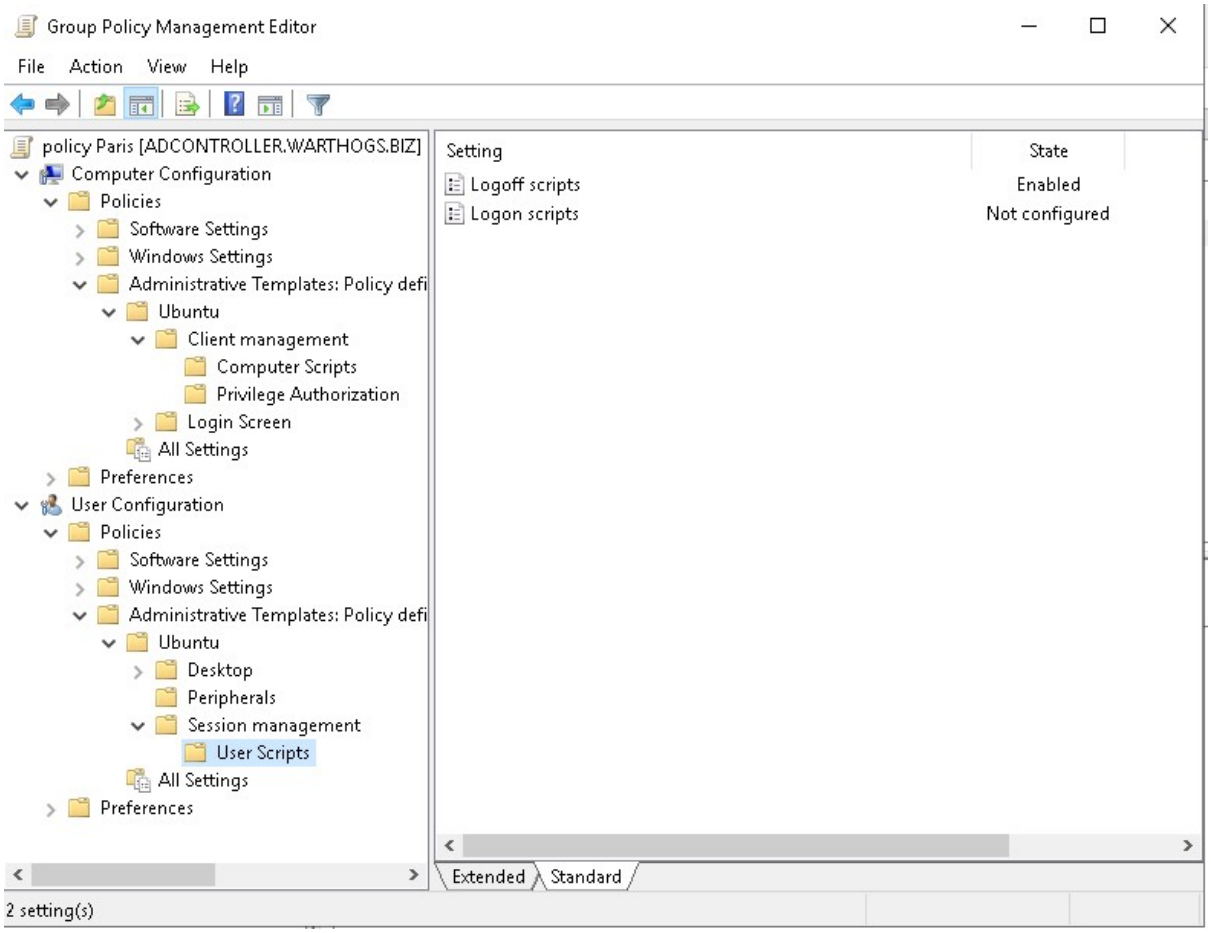
4.3.3. Scripts execution

The scripts managers allows AD administrators to target scripts to be executed on behalf of the client, or by users.

Those scripts, can be triggered on:

- Computer startup and shutdown. They are located in `Computer Configuration > Policies > Administrative Templates > Ubuntu > Client management > Computer Scripts`.
- User log on and log off. They are located in `User Configuration > Policies > Administrative Templates > Ubuntu > Session management > User Scripts`.

Scripts can be shell scripts, or any binary that can be executed on Linux.



Feature availability

This feature is available only for subscribers of **Ubuntu Pro**.

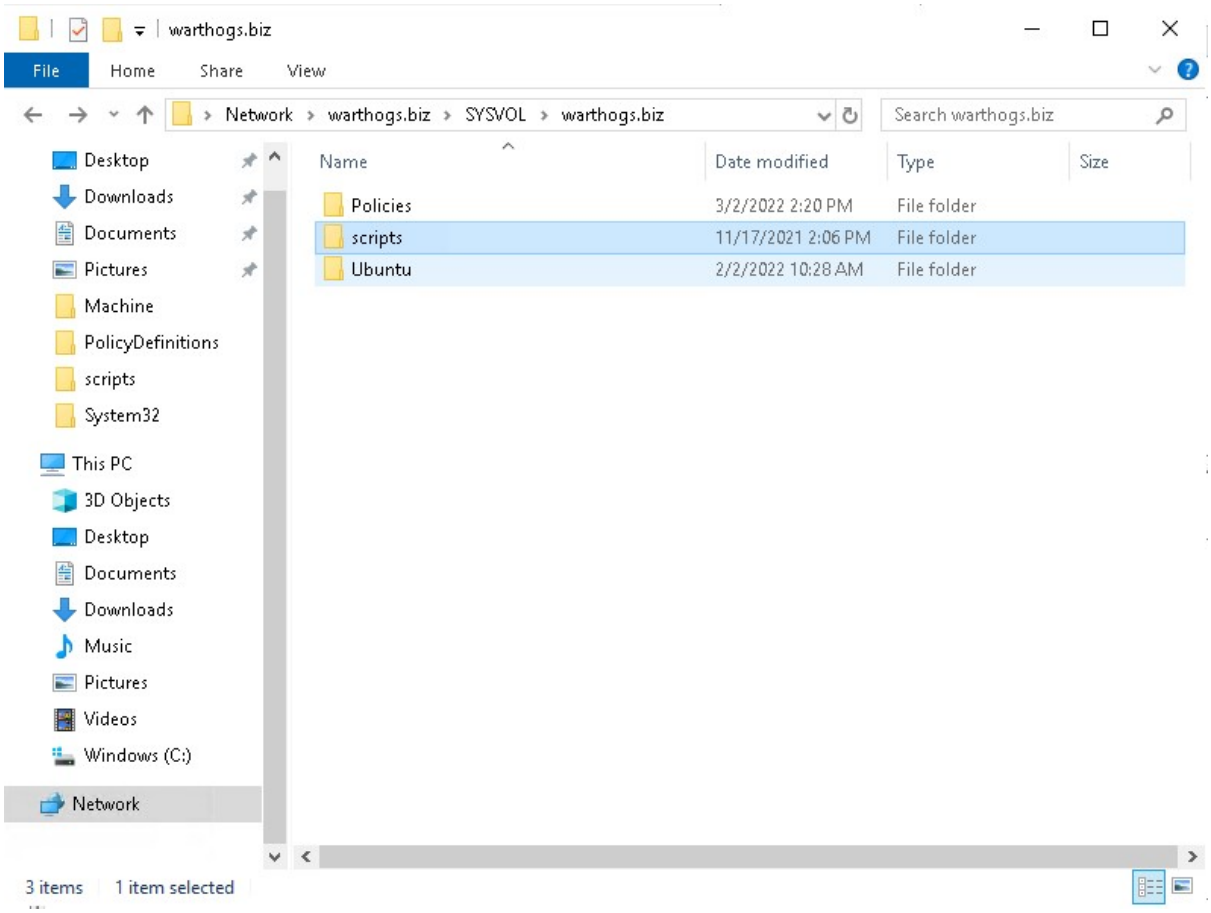
Rules precedence

Any settings will be additive to the same settings in less specific GPO. It means that scripts in the less specific GPO will be executed first.

Installing scripts on sysvol

Scripts must be available in the assets sharing directory on your Active Directory `sysvol/` samba share.

In this directory, next to `Policies` in your domain folder, create a directory matching your distribution name. For instance `Ubuntu`, which will be the assets sharing directory.



It must also contain a `GPT.ini` file of the form:

```
[General]
Version=22
displayName=Ubuntu Assets Directory
```

Every time you change the scripts, you need to increase the version stanza in the `GPT.ini` file (similarly to how Active Directory is doing automatically when you change any field). This

will signal clients that a new version of assets (including scripts) are available and should be downloaded.

Then, place any scripts you need under the `scripts/` directory (subdirectories are allowed).

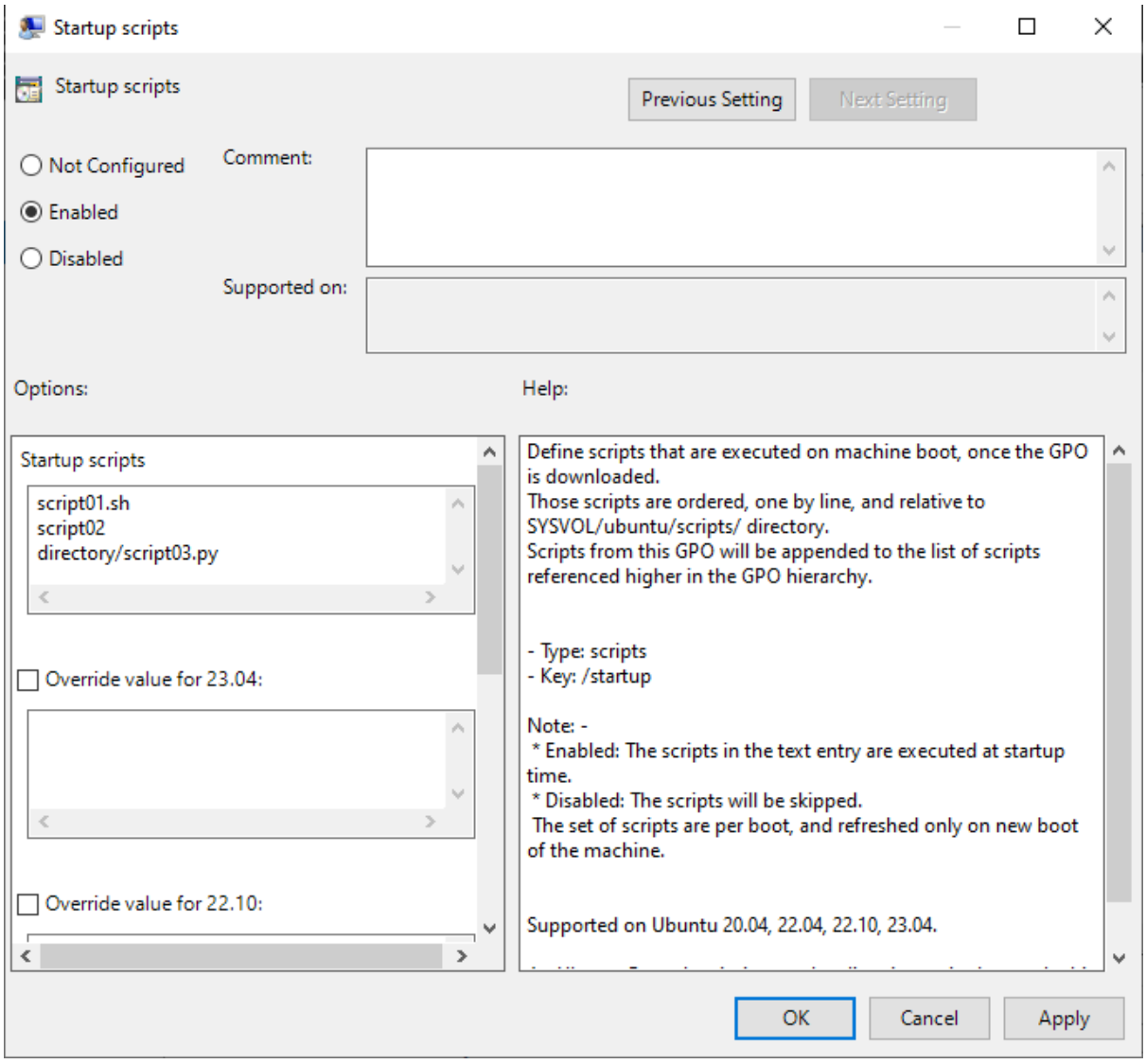
Automating the incrementation of the `GPT.ini` version stanza

Making manual changes to a file every time scripts are changed can be unproductive and tedious. For your convenience, we developed a tool to automate this process. For detailed usage and installation instructions please refer to the *Active Directory Watch Daemon* (page 42) documentation.

Active directory UI

Enabled

The form is a list of scripts path, relative to the `scripts/` subdirectory of your assets sharing file system, one per line.



Not configured or Disabled

This GPO won't refer any scripts for execution.

Scripts behaviors

Scripts erroring out

If a script errors out on execution, it will not fail the session startup or the machine boot. However, some errors details will be available in systemd journal.

Incorrect script path reference

If a script referenced by a GPO doesn't exist or that the path is incorrect, then the policy will fail to be applied and any client startup or user log on will fail.

Transactional sessions

Scripts sessions are transitional: if you installed V1 of some scripts, and starts a session (computer startup or user log on), then you can be ensured that whatever version is updated on the Active Directory, you will exit the session with the same V1 version of the scripts you initially provided (computer log off or user log off).

However, even if **user1** has logged on with version V1 of the scripts and V2 is available, then any log on for **user2** will use the V2 of the scripts. **user1** though, is ensured to continue using the V1 version of the scripts.

4.3.4. Managing AppArmor profiles

The AppArmor manager allows to enforce custom AppArmor[36] profiles on the client.

Custom AppArmor profiles can be enforced on a:

- System-wide level, located in `Computer Configuration > Policies > Administrative Templates > Ubuntu > Client management > System-wide application confinement > AppArmor`
- User level, located in `Computer Configuration > Policies > Administrative Templates > Ubuntu > Session management > User application confinement > AppArmor`

[36] https://apparmor.net/

Feature availability

This feature is available only for subscribers of **Ubuntu Pro**.

Rules precedence

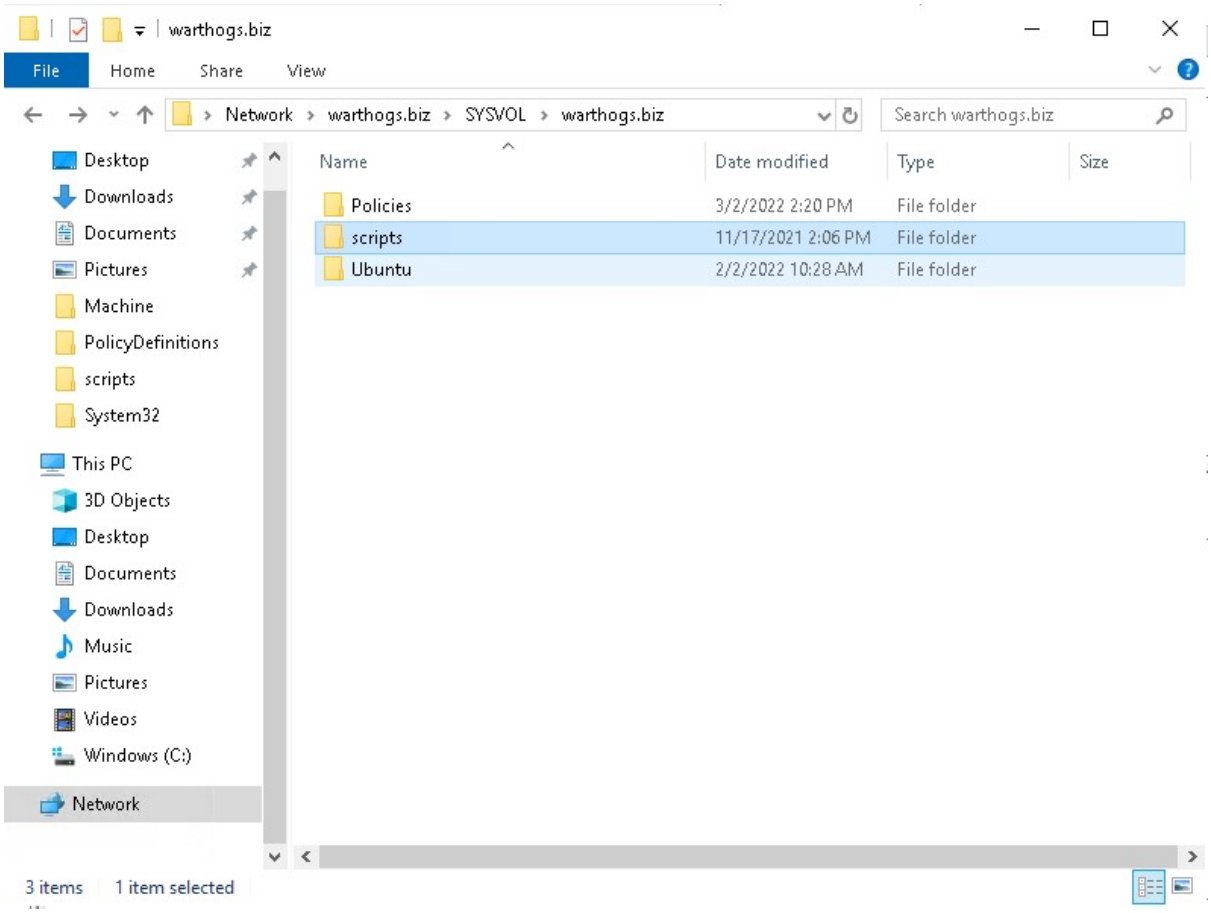
On a system-wide level, files in the entry are appended to the list of profiles referenced higher in the GPO hierarchy.

On a user level, the configured profile will override any profile referenced higher in the GPO hierarchy.

Installing AppArmor profiles on sysvol

AppArmor profiles must be available in the assets sharing directory on your Active Directory `sysvol/` samba share.

In this directory, next to `Policies` in your domain folder, create a directory matching your distribution name. For instance `Ubuntu`, which will be the assets sharing directory.



It must also contain a `GPT.ini` file of the form:

```
[General]
Version=22
displayName=Ubuntu Assets Directory
```

Every time you change the contents of AppArmor profiles, you need to increase the version stanza in the `GPT.ini` file (similarly to how Active Directory is doing automatically when you change any field). This will signal clients that a new version of assets (including AppArmor profiles) are available and should be downloaded.

Then, place any AppArmor profiles you need under the `apparmor/` directory (subdirectories are allowed).

Automating the incrementation of the `GPT.ini` version stanza

Making manual changes to a file every time AppArmor profiles are changed can be unproductive and tedious. For your convenience, we developed a tool to automate this process. For detailed usage and installation instructions please refer to the *Active Directory Watch Daemon* (page 42) documentation.

Developing AppArmor profiles

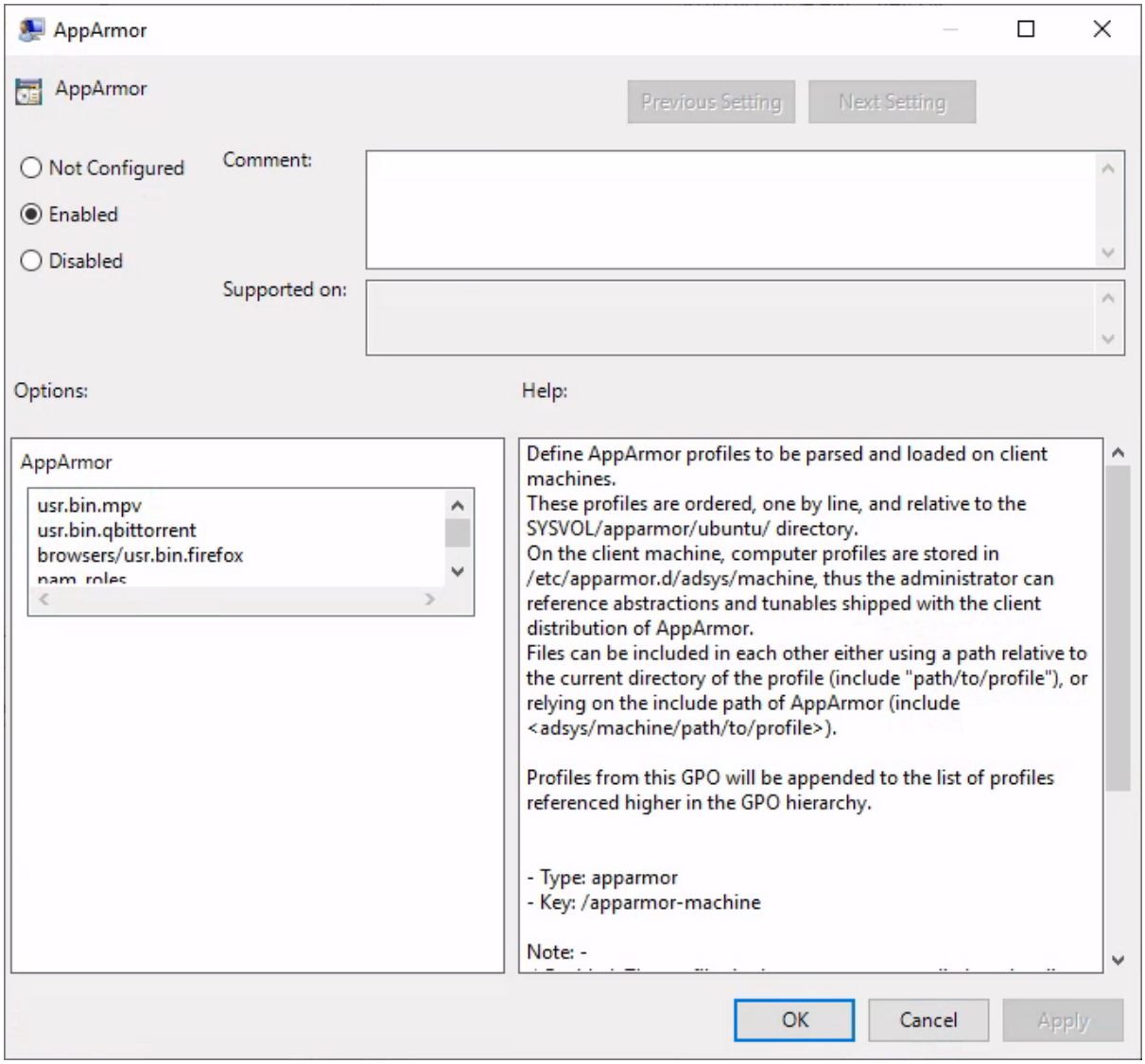
We highly recommend developing AppArmor profiles separately from ADSys, testing them, and only then integrating them with ADSys. Here are some resources to get you started:

- How to create AppArmor Profile[37]
- AppArmor Documentation[38]
- The Comprehensive Guide To AppArmor[39]

System-wide profiles

The form is a list of AppArmor profile paths, relative to the `apparmor/` subdirectory of your assets sharing file system, one per line.

[37] https://ubuntu.com/tutorials/beginning-apparmor-profile-development
[38] https://gitlab.com/apparmor/apparmor/-/wikis/Documentation
[39] https://medium.com/information-and-technology/so-what-is-apparmor-64d7ae211ed



When set to enabled, adsys will load the configured AppArmor profiles on refresh. AppArmor's caching functionality is leveraged to ensure redundant reloads are kept to a minimum, i.e. a loaded profile will be parsed again only if a change occurred in the profile definition.

On the client machine, system-wide profiles are located under `/etc/apparmor.d/adsys/machine` by default.

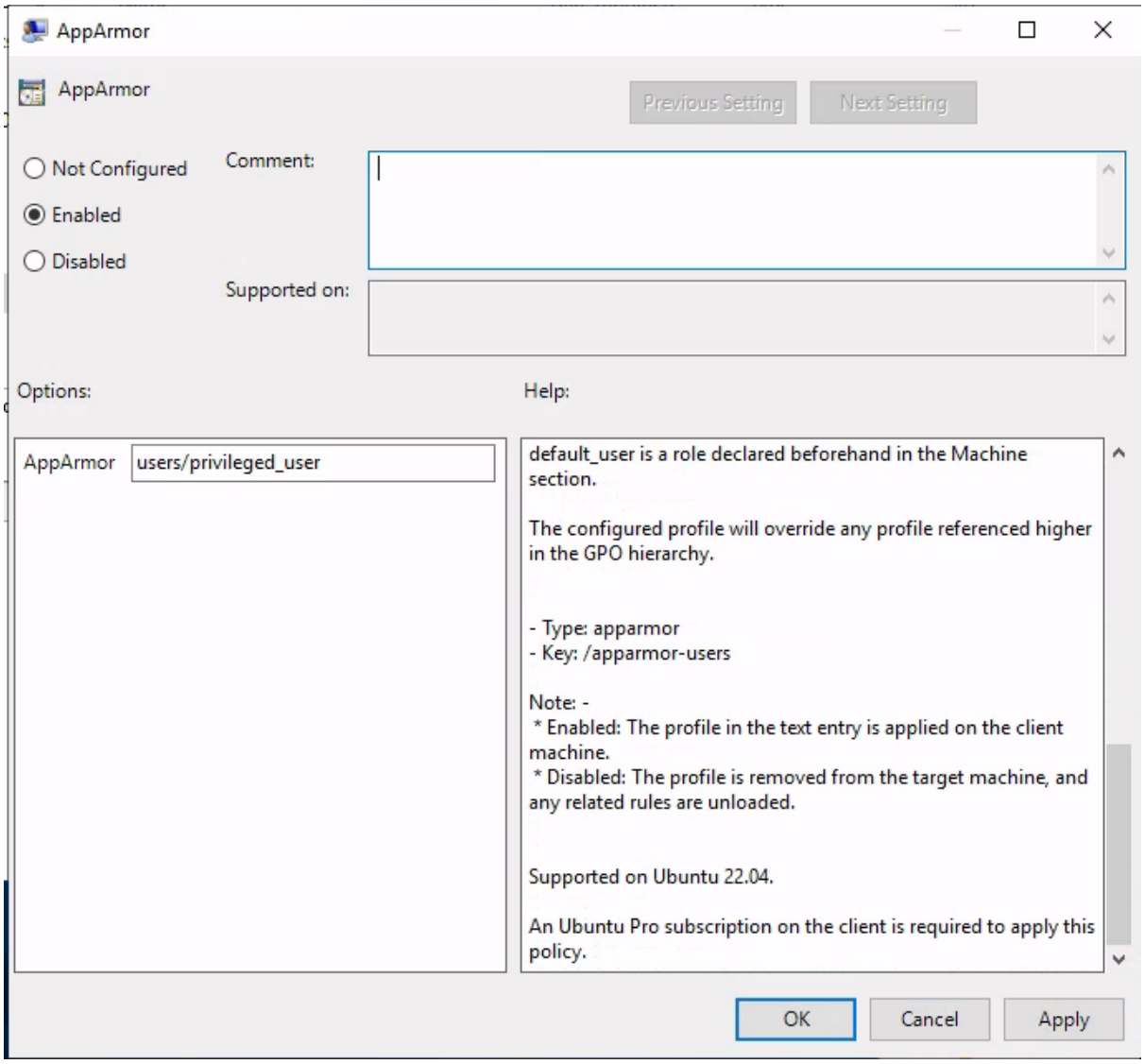
When set disabled / not configured, ADSys will unload any previously loaded profiles (that were managed by ADSys) from the client machine.

User profiles

AppArmor supports confining executables on a user-by-user basis via the `pam_apparmor` PAM module[40]. The module allows applications to confine authenticated users into subprofiles based on group names, user names, or a default profile. To accomplish this, `pam_apparmor` needs to be registered as a PAM session module. A working example[41] can be found on the official AppArmor repository wiki.

[40] https://gitlab.com/apparmor/apparmor/-/wikis/Pam_apparmor
[41] https://gitlab.com/apparmor/apparmor/-/wikis/Pam_apparmor_example

The form accepts a path to a single file, relative to the `apparmor/` directory of your assets sharing file system.



Installing the AppArmor PAM module

The PAM module can be installed on Ubuntu using the following command:

```
sudo apt install libpam-apparmor
```

The module must then be configured manually for any desired executables. To enable it for the `su` command, append the following to the `/etc/pam.d/su` file:

```
session optional pam_apparmor.so order=user,default
```

Warning:

Even though GPOs can be applied to AD groups, the AppArmor policy manager currently only supports confining AD users, so we've omitted `group` from the PAM order.

User profile declaration syntax

As per the example linked above, the user profile is essentially a subprofile (also known as a *hat*) which needs to be included in the actual executable profile definition. The PAM module will then attempt to change *hats* into a subprofile containing the target user's name.

If a regular subprofile looks like the following (assuming `admin@domain.com` is the user we want to confine):

```
^admin@domain.com {
  #include <abstractions/authentication>
  #include <abstractions/nameservice>
  capability dac_override,
  capability setgid,
  capability setuid,
  /etc/default/su r,
  /etc/environment r,
  @{HOMEDIRS}/.xauth* w,
  /bin/{,b,d,rb}ash Ux,
  /bin/{c,k,tc}sh Ux,
}
```

Its ADSys counterpart will omit the first and last lines which will be inferred automatically when policies are applied on the client machine. Thus, the subprofile declaration becomes:

```
#include <abstractions/authentication>
#include <abstractions/nameservice>
capability dac_override,
capability setgid,
capability setuid,
/etc/default/su r,
/etc/environment r,
@{HOMEDIRS}/.xauth* w,
/bin/{,b,d,rb}ash Ux,
/bin/{c,k,tc}sh Ux,
```

When the policy is applied on the target machine, the user profile will be created in `/etc/apparmor.d/adsys/users/admin@domain.com`.

The user profile doesn't accomplish anything on its own until it is included in a system-wide profile definition. We recommend including the entire `users` directory in the profile declaration, as evidenced by the official `pam_apparmor` documentation.

It is also recommended to define a `DEFAULT` subprofile as part of the system-wide profiles to ensure `pam_apparmor` has a profile to switch to as a last resort if it cannot find a profile for the user.

```
/usr/bin/su {
  ...
  include "users"

  ^DEFAULT {
     capability dac_override,
     capability setgid,
     capability setuid,
     /etc/default/su r,
```

(continues on next page)

(continued from previous page)

```
    /etc/environment r,
    @{HOMEDIRS}/.xauth* w,
    /usr/bin/{,b,d,rb}ash Px -> default_user,
    /usr/bin/{c,k,tc}sh Px -> default_user,
  }
}
```

Profile parsing behaviors

Troubleshooting misbehaving user profiles

If you encounter issues with user profiles, it's always helpful to check the kernel buffer (`dmesg`) and the authentication logs at `/var/log/auth.log`. Additionally, appending `debug` to the PAM module declaration stanzas at `/etc/pam.d/` will log additional debug information, such as the profile that the module tries to switch to.

```
Nov 18 13:55:48 ubuntu2204 su: pam_unix(su:session): session opened for user
administrator@warthogs.biz(uid=1130200500) by root(uid=0)
Nov 18 13:55:48 ubuntu2204 su: pam_apparmor(su:session): Using username
'administrator@warthogs.biz'
```

In contrast, switching to a user with no declared profile and no default profile will print the following and restrict access entirely:

```
Nov 18 14:00:22 ubuntu2204 su: pam_unix(su:session): session opened for user fry@warthogs.
biz(uid=1130201105) by root(uid=0)
Nov 18 14:00:22 ubuntu2204 su: pam_apparmor(su:session): Using username 'fry@warthogs.biz'
Nov 18 14:00:22 ubuntu2204 su: pam_apparmor(su:session): Using DEFAULT
Nov 18 14:00:22 ubuntu2204 su: pam_apparmor(su:session): Can't change to any hat
Nov 18 14:00:22 ubuntu2204 su: pam_unix(su:session): session closed for user fry@warthogs.
biz
```

The PAM module goes through the order specified in the configuration (user, default), ultimately bailing and denying access if it cannot find any hat to switch to.

Error on loading profiles

ADSys relies on the `apparmor_parser` executable to parse, load, and unload profiles. If the command fails for any reason (e.g. syntax errors in profile declaration), loading profiles will be aborted and the output of the `apparmor_parser` command will be logged.

```
ERROR Error from server: error while updating policy: failed to apply policy to
"ubuntu2204": can't apply apparmor policy to ubuntu2204: can't apply machine policy:
failed to get apparmor policies: exit status 1
AppArmor parser error for /etc/apparmor.d/adsys/machine/pam_roles in profile /etc/
apparmor.d/adsys/machine/pam_roles at line 9: Lexer found unexpected character: '<' (0x3c)
in state: INITIAL
```

Invalid profile path reference

If an AppArmor profile referenced by a GPO doesn't exist or the path is incorrect, then the policy will fail to be applied and any client startup or user log on will fail.

4.3.5. Network shares

The mount managers allow AD administrators to specify network shares that must be mounted in the file system when a client logs in.

Feature availability

This feature is available only for subscribers of **Ubuntu Pro**.

System mounts

The mount process for these mounts is triggered at the moment a client logs in. System mounts are handled by systemd through unit files and happen at root level. Therefore, users do not have control over the mounting / unmounting process.

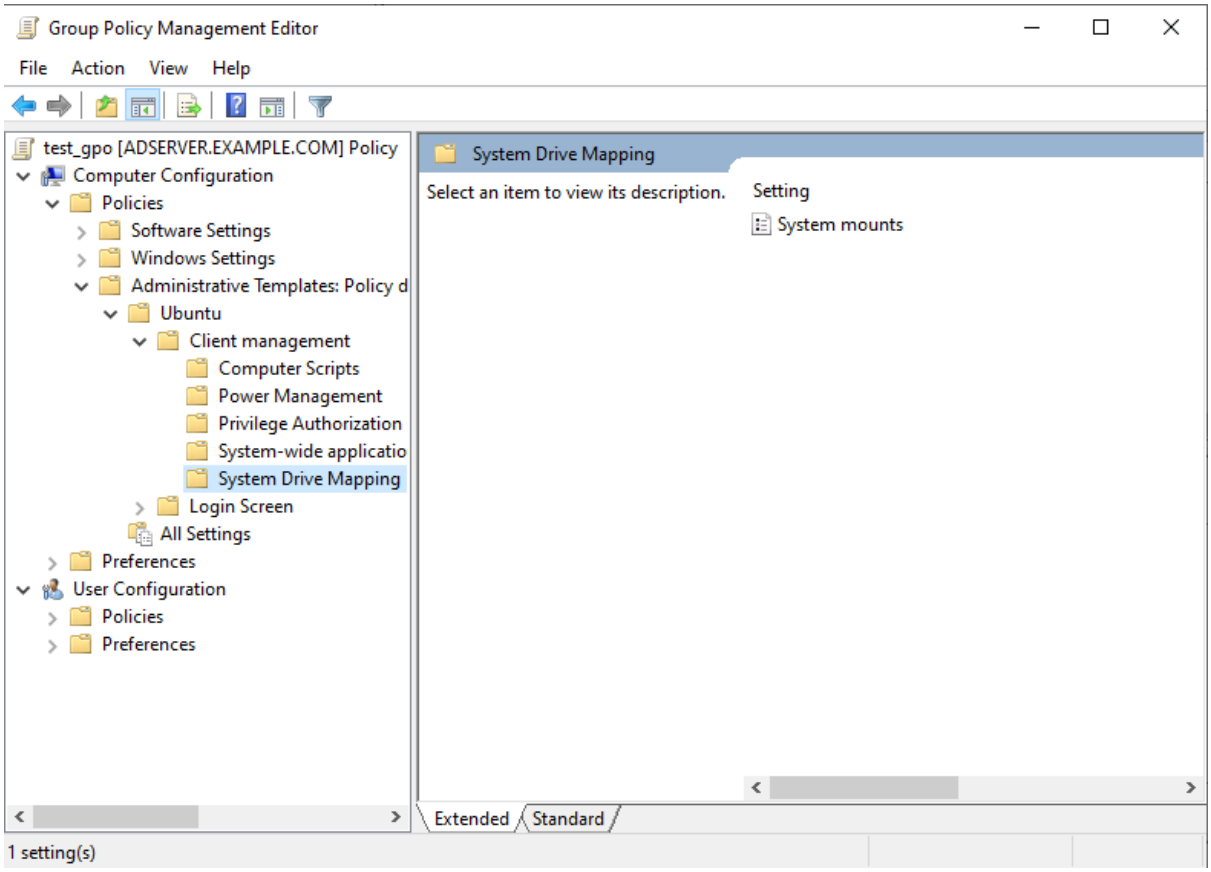
All protocols supported by the mount command[42] should work out of the box. However, the only tested ones are `smb`, `ftp` and `nfs`.

The backends for the protocols `smb` and `nfs` are automatically enabled when installing the adsys package. In order to enable the backend for `ftp` mounts, the user must install the recommended `curlftpfs` package. This behavior is tested on Ubuntu and might differ on other Linux distributions.

Access control and file permissions should be configured on the shared location.

User mount policies are located under `Computer Configuration > Policies > Administrative Templates > Ubuntu > Client management > System Drive Mapping`, as shown in the following picture.

[42] https://manpages.ubuntu.com/manpages/jammy/en/man8/mount.8.html



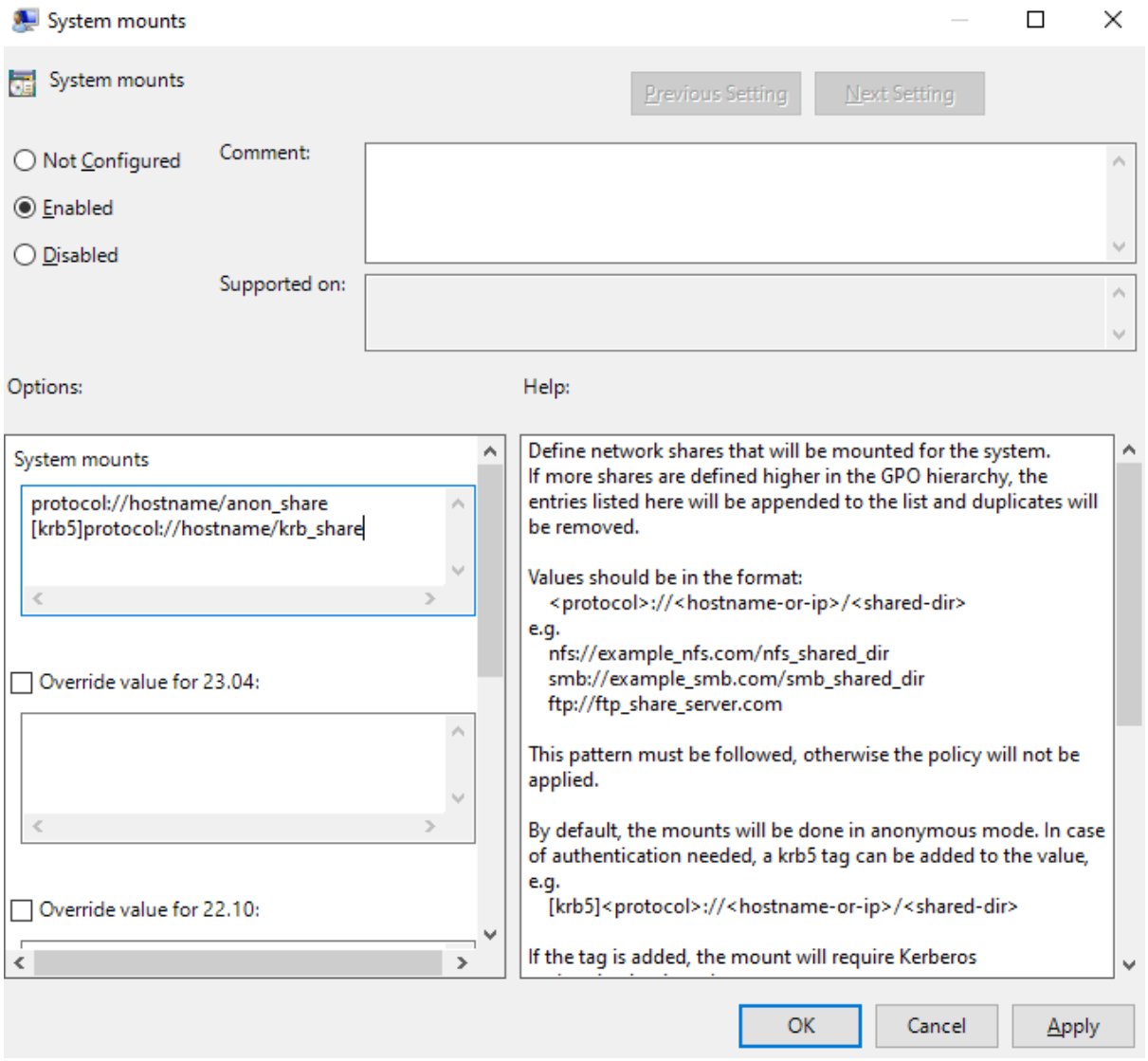
Setting up the policy

The form is a list of shared drives that should be mounted for the client machine. They must follow the structure `{protocol}://{host name or ip address}/{shared location}`.

The default mount behavior is to mount the listed shares anonymously. In order to require kerberos authentication for the mount process, the tag `[krb5]` can be added as a prefix to the listed share, i.e. `[krb5]{protocol}://{host name or ip address}/{shared location}`.

Additional mount options are not supported yet.

All entries must be separated by a line break.



Rules precedence

The policy strategy is “append”. Therefore, if multiple policies defining network shares are to be applied to a client, all of the listed shares will be mounted.

Duplicated shares will be handled. Anonymous and authenticated shares of the same location are treated as duplicates and the first one listed will take precedence over the others.

Invalid mounts

ADSys will block client authentication only if the policy cannot be applied, meaning that the listed shares could not be set up. Any issues that arise after the setup process, such as an unreachable domain or a non-existent share, will be reported as an error. Refer to the system logs for more details about the failures.

Unmounting

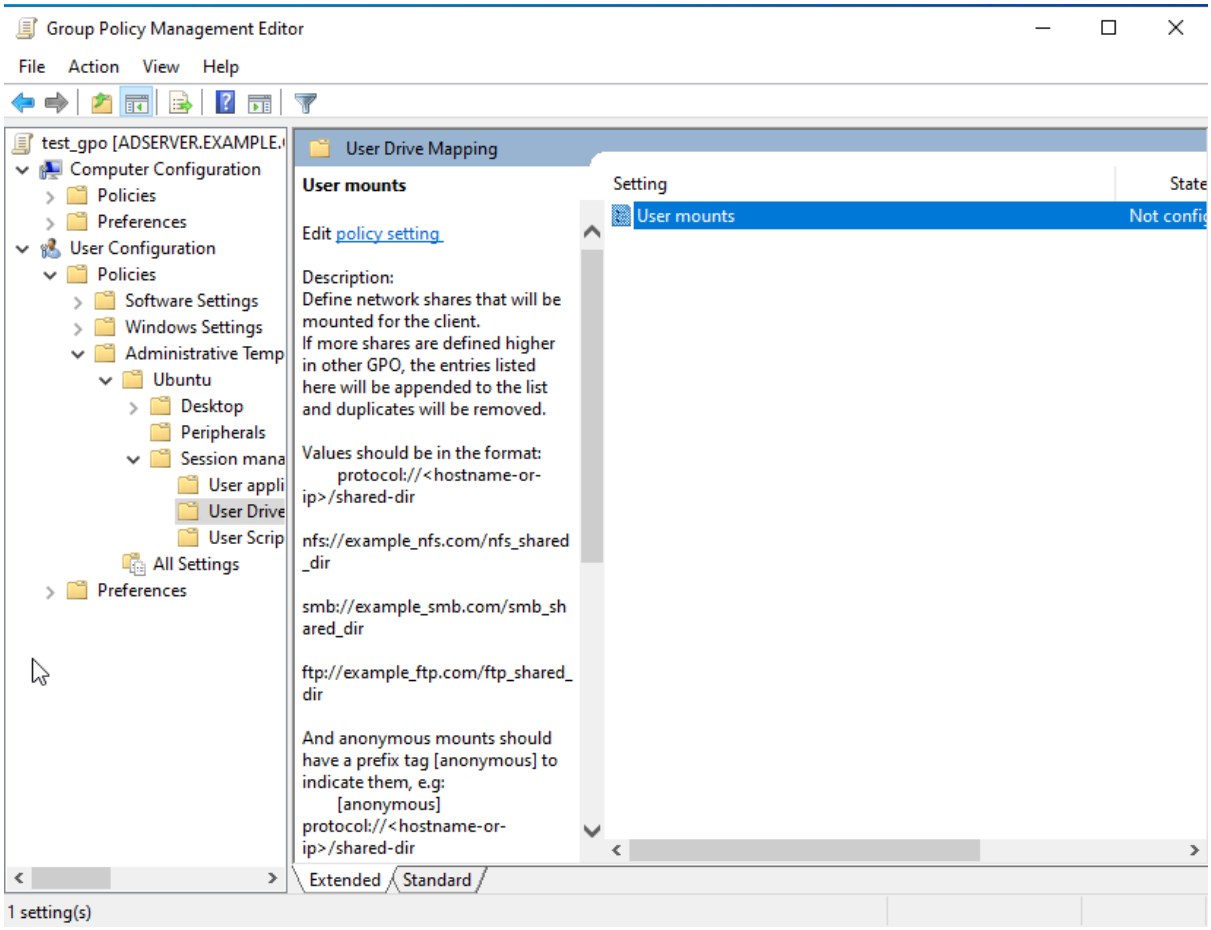
The unmounting process is handled by systemd on shutdown.

User mounts

The mount process for these mounts is triggered at the moment a user logs in. User mounts are accessible in the file manager and the user has the ability to unmount them manually.

Credentials authentication for mounts are disabled on ADSys. Instead, authentication is done with the Kerberos ticket present on the machine. If the mount is set to anonymous, then the administrator must ensure that the shared drive supports anonymous access and that the permissions for the directory are set accordingly.

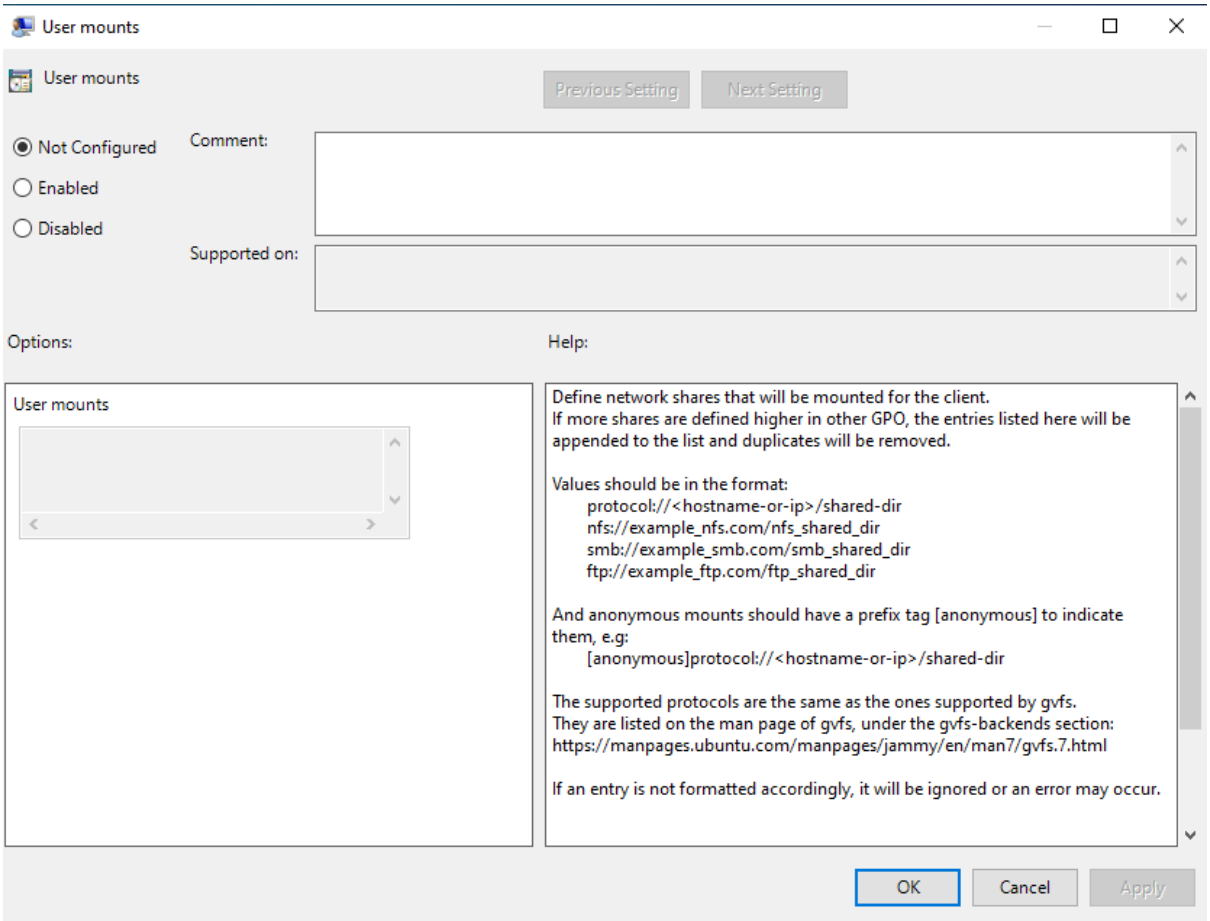
User mount policies are located under `User Configuration > Policies > Administrative Templates > Ubuntu > Session management > User Drive Mapping`, as shown in the following picture.



Setting up the policy

The format is a list of shared drives that should be mounted for the user. They must follow the structure `{protocol}://{host name or ip address}/{shared location}`. If the drive is to be mounted anonymously, the tag `[anonymous]` should be added as a prefix to the listed entry, i.e. `[anonymous]{protocol}://{host name or ip address}/{shared location}`.

All entries must be separated by a line break.



The mount process is handled with GVfs and it defines in which directory the shared drive will be mounted into. Usually, it's mounted under `/run/user/%U/gvfs/`.

Rules precedence

The policy strategy is “append”. Therefore, if multiple policies defining mount locations are to be applied to a user, all of the listed entries will be mounted.

Invalid mounts

If the mounting of an entry listed in the policy fails, ADSys will proceed with the other entries in the policy, mounting those it can and logging those that cannot be mounted.

Unmounting

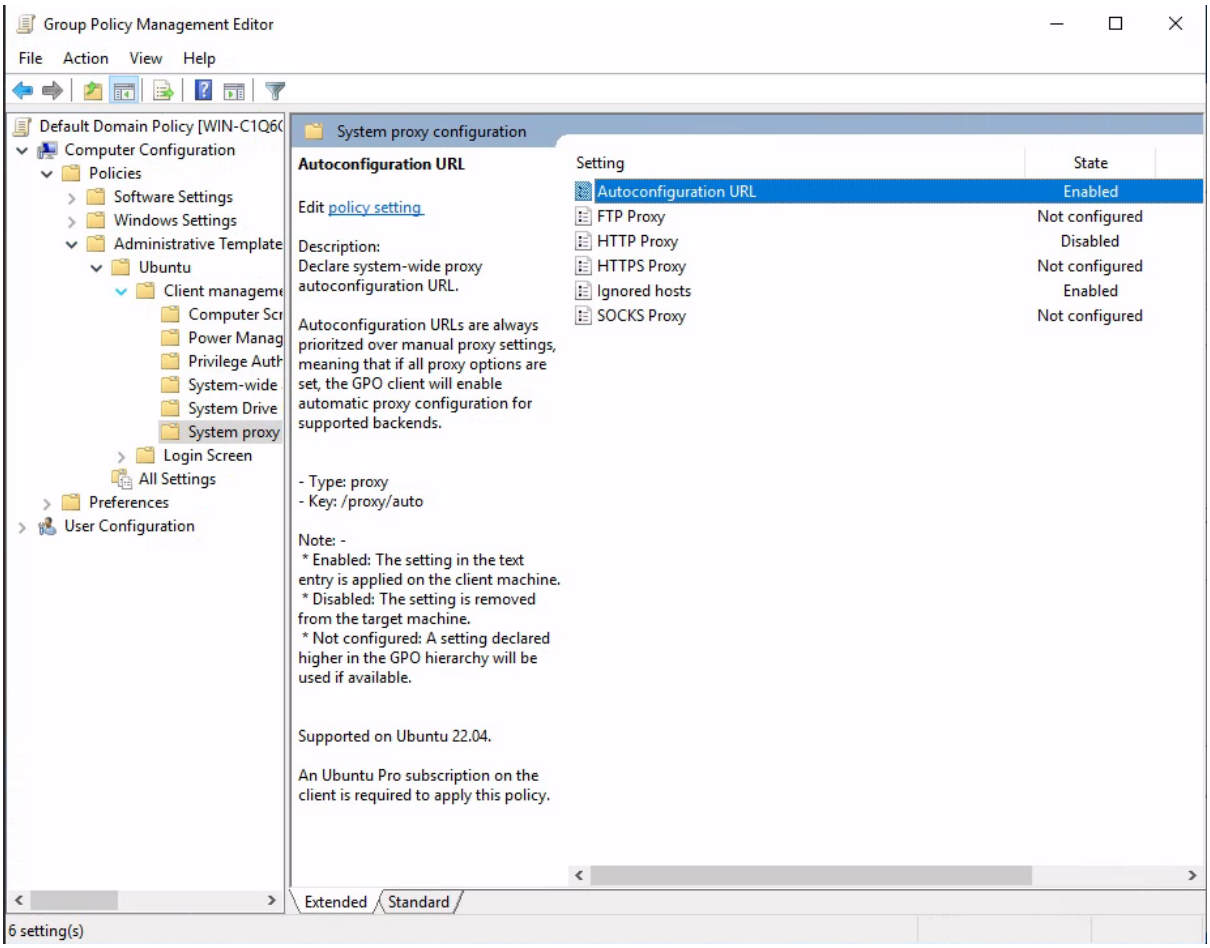
The unmounting process is handled by systemd at the end of the session.

4.3.6. Network proxy

The proxy manager allows AD administrators to apply proxy settings on the clients. Currently, only system-wide proxy settings are supported.

Proxy settings are configurable under the following GPO path:

- System-wide level, located in `Computer Configuration > Policies > Administrative Templates > Ubuntu > Client management > System proxy configuration`



Feature availability

This feature is available only for subscribers of **Ubuntu Pro**.

Additionally, the `ubuntu-proxy-manager`[43] package must be installed in order for proxy settings to be applied on the client system. On Ubuntu systems, run the following to install the package:

```
sudo apt install ubuntu-proxy-manager
```

Rules precedence

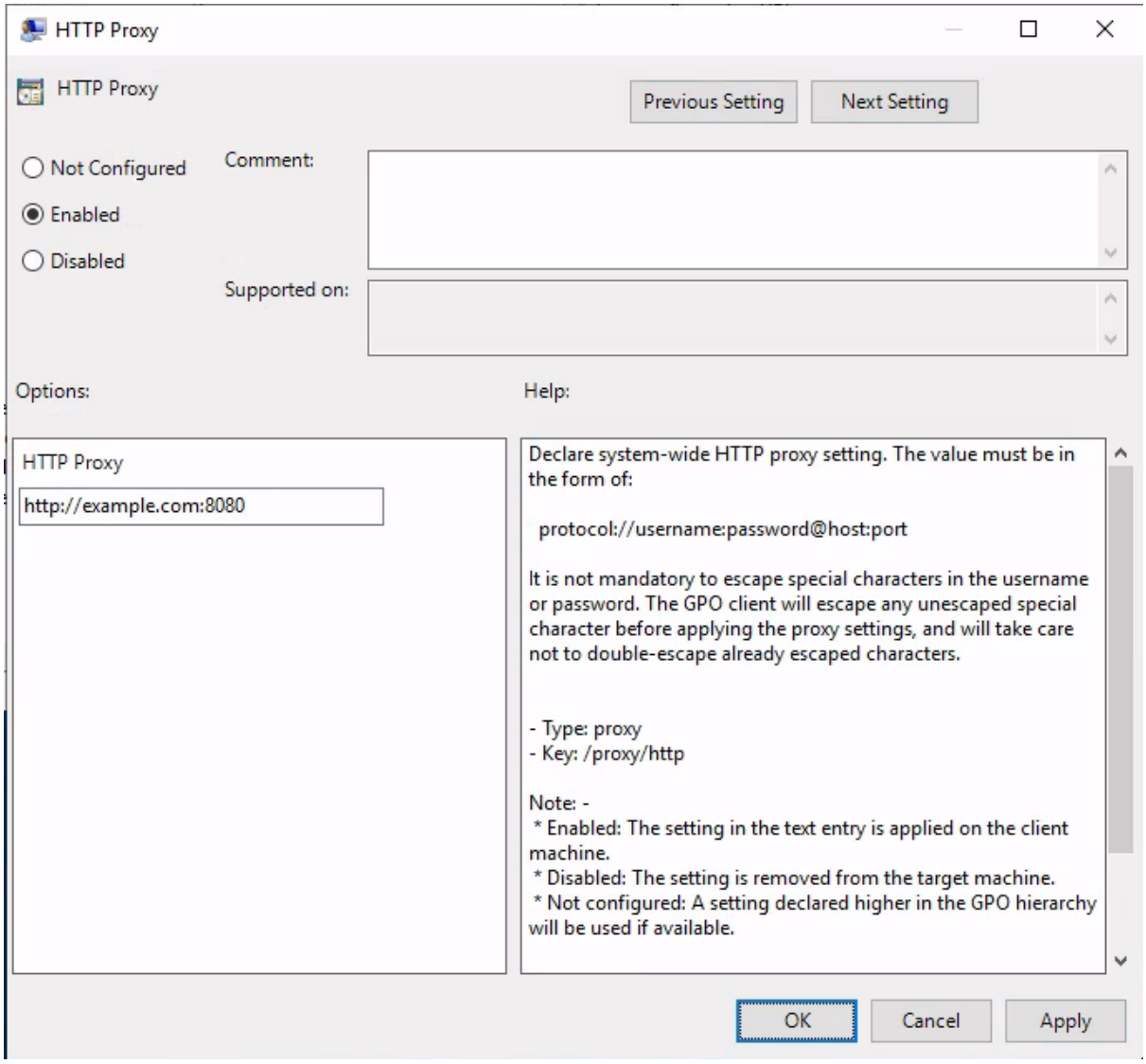
Configured proxy settings will override any settings referenced higher in the GPO hierarchy.

Setting up the policy

The `System proxy configuration` category provides a list of configurable proxy settings:

- HTTP Proxy
- HTTPS Proxy
- FTP Proxy
- SOCKS Proxy
- Ignored hosts
- Auto configuration URL

[43] https://github.com/ubuntu/ubuntu-proxy-manager



Configured settings will then be forwarded to `ubuntu-proxy-manager` which will apply them on all supported backends (e.g. environment variables, APT, GSettings). For an up-to-date list of supported backends, proxy formats and behaviors, refer to the ubuntu-proxy-manager documentation[44].

[44] https://github.com/ubuntu/ubuntu-proxy-manager/blob/main/README.md

Disabling proxy settings

To disable or remove proxy settings, either set the required values to an empty value (`""`), or mark the setting as `Disabled`.

Note that if none of the proxy settings in the category are set (all settings are `Not Configured`), the proxy manager won't take any action.

Troubleshooting manager errors

If any proxy GPOs are configured and the `ubuntu-proxy-manager` package is not installed (specifically, no response is received from the D-Bus call on the object exported by the proxy manager service), the manager will fail hard. The package doesn't need to be installed if no proxy entries are configured.

If proxy application fails for other reasons, refer to the Troubleshooting[45] section of the `ubuntu-proxy-manager` documentation for details on how to debug the D-Bus service.

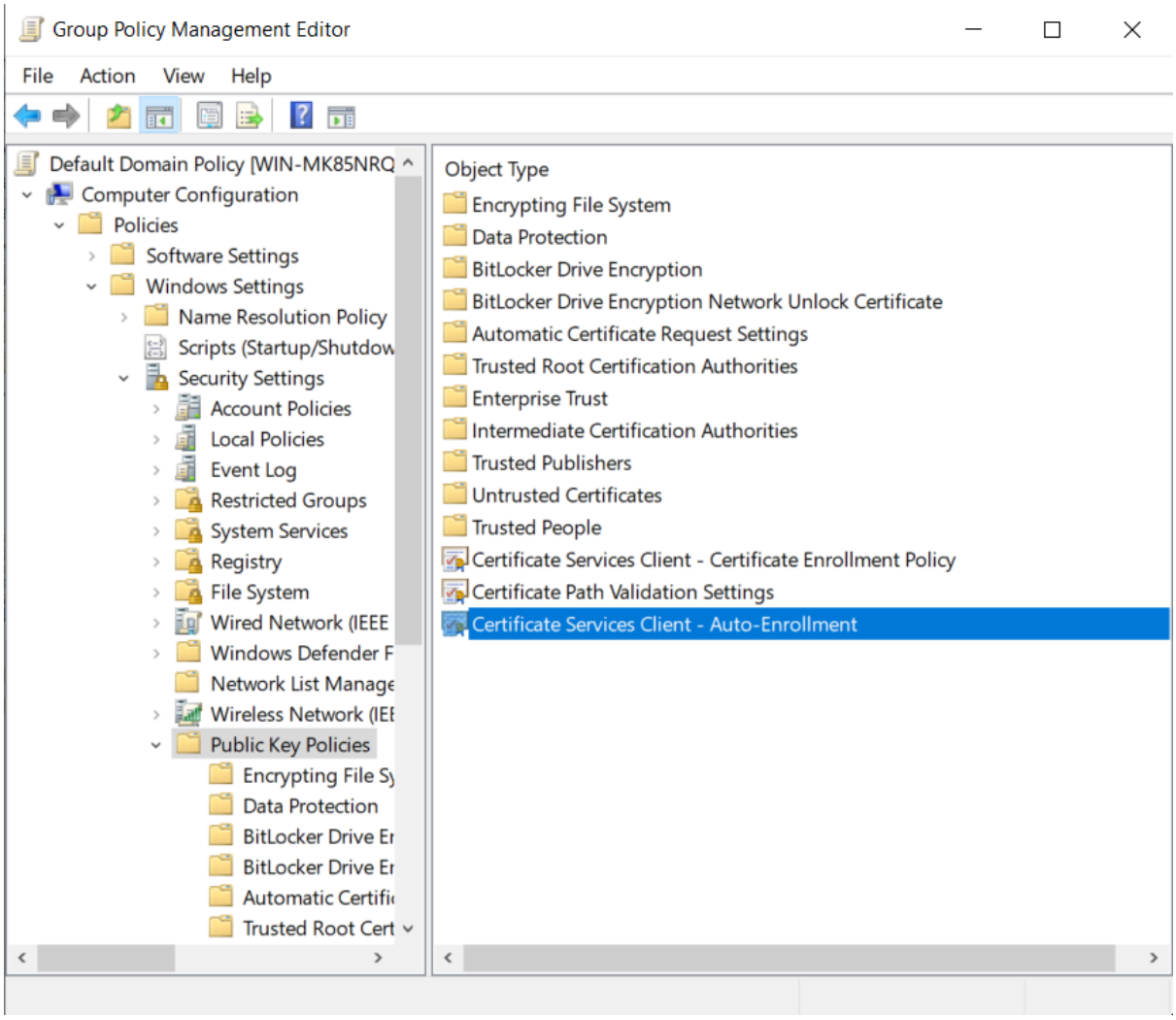
4.3.7. Certificate auto-enrollment

The certificate policy manager allows clients to enroll for certificates from **Active Directory Certificate Services**. Certificates are then continuously monitored and refreshed by the `certmonger`[46] daemon. Currently, only machine certificates are supported.

Unlike the other ADSys policy managers which are configured in the special Ubuntu section provided by the ADMX files (Administrative Templates), settings for certificate auto-enrollment are configured in the Microsoft GPO tree:

- `Computer Configuration > Policies > Windows Settings > Security Settings > Public Key Policies > Certificate Services Client - Auto-Enrollment`

[45] https://github.com/ubuntu/ubuntu-proxy-manager/blob/main/README.md#troubleshooting
[46] https://www.freeipa.org/page/Certmonger



Feature availability

This feature is available only for subscribers of **Ubuntu Pro** and has been tested and known to work on all Ubuntu versions starting with 22.04 (Jammy).

Additionally, the following packages must be installed on the client in order for auto-enrollment to work:

- `certmonger`[47] — daemon that monitors and updates certificates
- `cepces`[48] — `certmonger` extension that can communicate with **Active Directory Certificate Services**

On Ubuntu systems, run the following to install them:

```
sudo apt install certmonger python3-cepces
```

On the Windows side, the following roles must be installed and configured:

- `Certification Authority`
- `Certificate Enrollment Policy Web Service`

[47] https://www.freeipa.org/page/Certmonger
[48] https://github.com/openSUSE/cepces

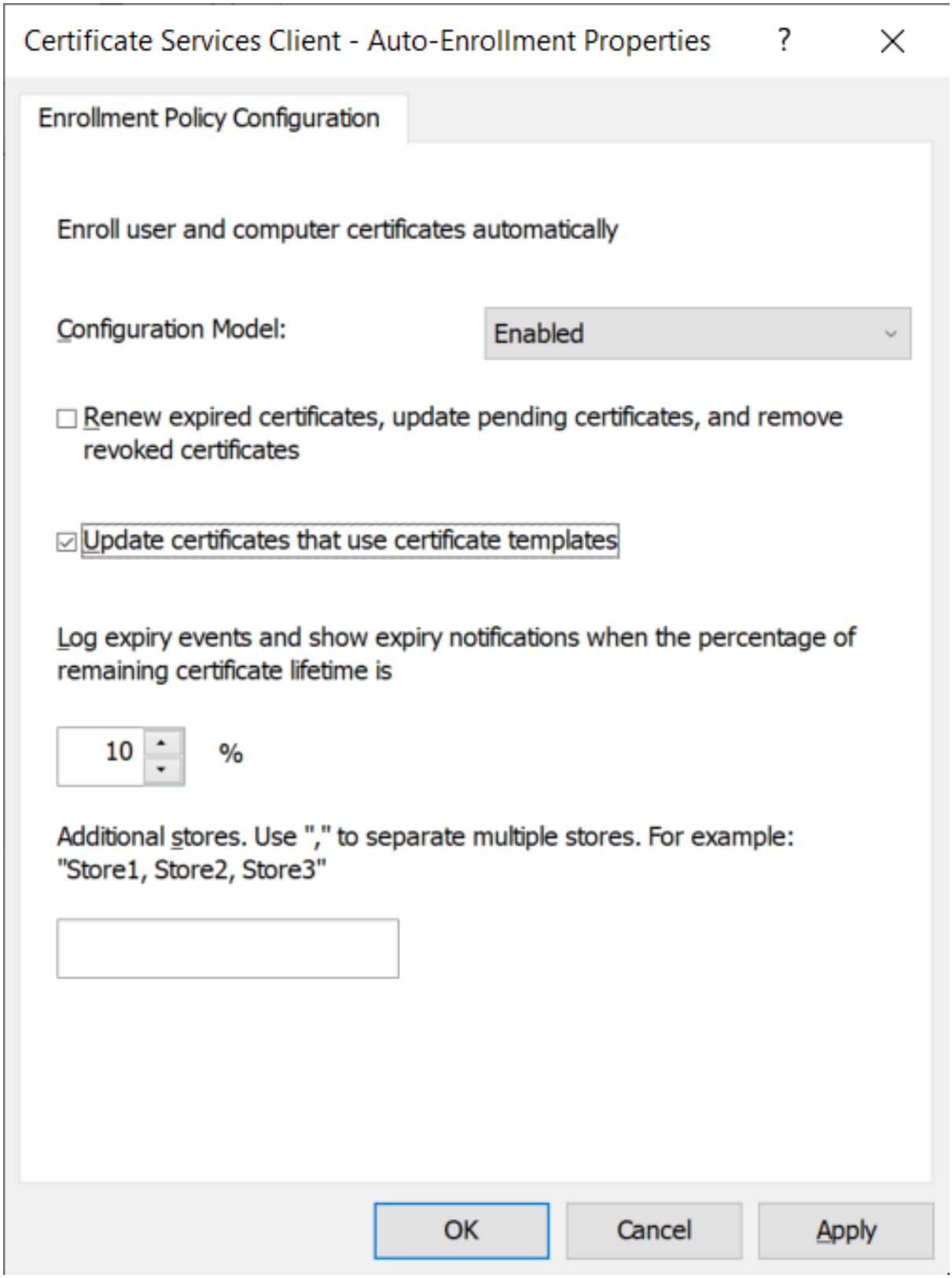
- `Certificate Enrollment Web Service`

Rules precedence

Auto-enrollment configuration will override any settings referenced higher in the GPO hierarchy.

Policy configuration

Certificate auto-enrollment is configured by setting the **Configuration Model** to **Enabled** and ticking the following checkbox: **Update certificates that use certificate templates**.



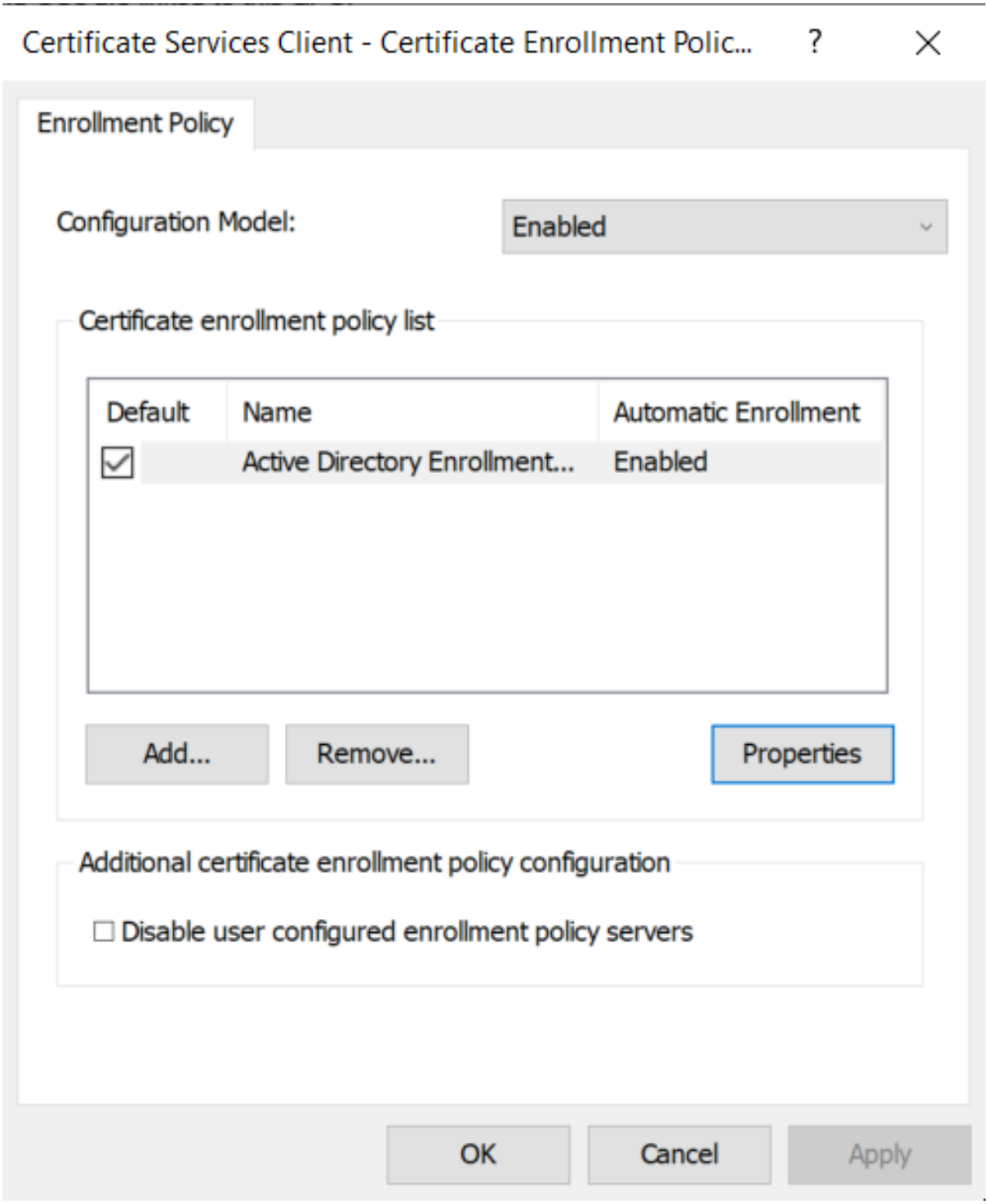
The policy can be disabled by performing *any* of the following:

- unticking the **Update certificates that use certificate templates** checkbox
- setting the **Configuration Model** to **Disabled** or **Not configured**

The other settings in this GPO entry do not affect ADSys in any way.

For more advanced configuration, a list of policy servers can be specified in the following GPO entry:

- `Computer Configuration > Policies > Windows Settings > Security Settings > Public Key Policies > Certificate Services Client - Certificate Enrollment Policy`



Applying the policy

On the client system, a successful auto-enrollment will place certificate data in the following paths:

- `/var/lib/adsys/certs` - certificate data
- `/var/lib/adsys/private/certs` - private key data
- `/usr/local/share/ca-certificates` - root certificate data (symbolic link pointing to `/var/lib/adsys/certs`)

For detailed information on the tracked certificates, `certmonger` can be directly interacted with:

```
# Query monitored certificates
> getcert list
Number of certificates and requests being tracked: 1.
Request ID 'galacticcafe-CA.Machine':
 status: MONITORING
 stuck: no
 key pair storage: type=FILE,location='/var/lib/adsys/private/certs/galacticcafe-CA.
Machine.key'
 certificate: type=FILE,location='/var/lib/adsys/certs/galacticcafe-CA.Machine.crt'
 CA: galacticcafe-CA
 issuer: CN=galacticcafe-CA,DC=galacticcafe,DC=com
 subject: CN=keypress.galacticcafe.com
 issued: 2023-08-18 18:44:27 EEST
 expires: 2024-08-17 18:44:27 EEST
 dns: keypress.galacticcafe.com
 key usage: digitalSignature,keyEncipherment
 eku: id-kp-clientAuth,id-kp-serverAuth
 certificate template/profile: Machine
 profile: Machine
 pre-save command:
 post-save command:
 track: yes
 auto-renew: yes

# Query known CAs
> getcert list-cas
(...)
CA 'galacticcafe-CA':
 is-default: no
 ca-type: EXTERNAL
 helper-location: /usr/libexec/certmonger/cepces-submit --server=win-mk85nrq26nu.
galacticcafe.com --auth=Kerberos
```

Policy implementation

With the exception of policy parsing, ADSys leverages the Samba implementation of certificate auto-enrollment. As this feature is only available in newer versions of Samba, we have taken the liberty of vendoring the required Samba files to allow this policy to work on Ubuntu versions that ship an older Samba version. These files are shipped in `/usr/share/adsys/python/vendor_samba`.

To ensure idempotency when applying the policy, we set up a Samba TDB cache file[49] at `/var/lib/adsys/samba/cert_gpo_state_$(hostname).tdb` which contains various information pertaining to the enrolled certificate(s).

Here is an overview of what happens during policy application:

- GPO parsing (ADSys)
- execute Python helper script (ADSys)
- fetch root CA and policy servers (Samba)
- start monitoring certificate using `certmonger` and `cepces` (Samba)

Troubleshooting

Some dependencies are not available in the client Ubuntu installation

While `certmonger` has been available for a while in Ubuntu, `python3-cepces` is a new package, available starting with Ubuntu 23.10. If unavailable on the client version, it can also be manually installed from the source repository[50]. The certificate policy manager only checks for the existence of the `cepces-submit` and `getcert` binaries, not their respective packages, in order to allow some wiggle room for this.

Manipulating certificates with `getcert`

While not encouraged, certificates can be manipulated with the same tool. This could be helpful for debugging purposes.

```
# Regenerate a certificate
> getcert rekey -i galacticcafe-CA.Machine
Resubmitting "galacticcafe-CA.Machine" to "galacticcafe-CA".

# Unmonitor a certificate
> getcert stop-tracking -i galacticcafe-CA.Machine
Request "galacticcafe-CA.Machine" removed.

# Remove CA
> getcert remove-ca -c galacticcafe-CA
CA "galacticcafe-CA" removed.
```

Note that tampering with certificate data outside of ADSys (e.g. manually unmonitoring using `getcert`) will render the GPO cache obsolete as it will cause a drift between the actual

[49] https://wiki.samba.org/index.php/TDB
[50] https://github.com/openSUSE/cepces

state and the "known" cached state. In this case, it's best to remove the cache file at `/var/lib/adsys/samba/*.tdb` together with any enrolled certificates and CAs to ensure a clean slate.

Debugging `auto-enroll` script

While certificate parsing happens in ADSys itself, enrollment is done via an embedded Python helper script. For debugging purposes, it can be dumped to the current directory and made executable by executing the following commands:

```
> adsysctl policy debug cert-autoenroll-script
> chmod +x ./cert-autoenroll
```

Before executing the script manually, the following environment variables have to be set:

```
export PYTHONPATH=/usr/share/adsys/python
export KRB5CCNAME=/var/run/adsys/krb5cc/$(hostname)
```

Then, run the script passing the required arguments (the argument list is also printed in the ADSys debug logs during policy application):

```
# Un-enroll machine
> ./cert-autoenroll unenroll keypress galacticcafe.com --state_dir /var/lib/adsys --debug
```

Errors communicating with the CEP/CES servers

If ADSys successfully applies the policy but `getcert list` does not list the certificates or they are in an unexpected state, check the `certmonger` logs for details (`journalctl -u certmonger`). Additionally, debug logging for `cepces` can be enabled by editing the logging configuration at `/etc/cepces/logging.conf`.

The `cepces` configuration itself is batteries-included, meaning it should work out of the box for most setups. All configuration options are documented and configurable at `/etc/cepces/cepces.conf`.

Additional information

While configuring Active Directory Certificate Services is outside the scope of the policy manager documentation, we have found the following resources to be useful:

- How to setup Microsoft Active Directory Certificate Services[51]
- How to increase your CSR key size on Microsoft IIS without removing the production certificate?[52]

[51] https://www.virtuallyboring.com/setup-microsoft-active-directory-certificate-services-ad-cs/
[52] https://leonelson.com/2011/08/15/how-to-increase-your-csr-key-size-on-microsoft-iis-without-removing-the-production-ce

Acknowledgements

We would like to thank the Samba team for making great strides in the research and implementation of certificate auto-enrollment via Active Directory Certificate Services.

4.3.8. Case of the security policy

Certain group policies are directly managed by **SSSD**. In such instances, **ADSys** is not involved at all. This is applicable to **Security Settings**.

In Windows Group Policy Management Editor,you can locate these keys at `[FOREST.ROOT] > Computer Configuration > Windows Settings > Security Settings`

Below is a table providing a non-comprehensive list of Security Settings defined in Windows, which are not managed by ADSys but receive partial support through SSSD.

Windows Setting
Account Policies > Password Policy
Enforce password history
Maximum password age
Minimum password age
Minimum password length
Password must meet complexity requirements
Account Policies > Account Lockout Policy
Account lockout duration
Account lockout threshold
Reset account lockout counter after
Local Policies > User Rights Assignment
Access this computer from the network
Allow log on locally
Allow log on through Remote Desktop Services
Change the system time
Change the timezone
Deny access to this computer from the network
Deny log on as a batch job
Deny log on as a service
Deny log on locally
Deny log on through Remote Desktop Services
Log on as a batch job
Log on as a service
Shutdown the system
Local Policies / Security Options
Administrator account status
Shutdown: Allow system to be shut down without having to log on

Get more information on SSSD[53].

[53] https://sssd.io/

5. In this documentation

Tutorials

Learn to use an ADSys feature:

- *Certificate auto-enrollment with ADSys* (page 3)

How-to guides

Follow guides for specific tasks, like:

- *Joining to AD on Ubuntu Desktop install* (page 16)
- *Setting up ADSys on Ubuntu Desktop* (page 17)

Explanation

Understand topics including:

- *The architecture of ADSys* (page 132)
- *Client configuration using Dconf* (page 135)

Reference

Find specific information, such as:

- *Policies supported by ADSys* (page 73)
- *The ADSys daemon* (page 44)

6. Project and community

ADSys is a member of the Ubuntu family. It's an open source project that warmly welcomes community contributions, suggestions, fixes and constructive feedback.

- Code of conduct[54]
- Join us in the Ubuntu Community[55]
- Contribute[56] or Report an issue[57]
- Thinking about using ADSys for your next project? Get in touch![58]
- Licensed under GPL v3[59]

[54] https://ubuntu.com/community/code-of-conduct
[55] https://discourse.ubuntu.com/c/desktop/8
[56] https://github.com/ubuntu/adsys/blob/main/CONTRIBUTING.md
[57] https://github.com/ubuntu/adsys/issues/new
[58] https://ubuntu.com/contact-us/form?product=generic-contact-us
[59] https://github.com/ubuntu/adsys/blob/main/LICENSE