privacyIDEA Credential Provider Documentation

Release 2.2

NetKnights GmbH

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CHAPTER 1

Introduction

The privacyIDEA Credential Provider is a tool to improve the logon security of your Windows Desktops, Servers and Windows Terminal Servers. It is used to add a second factor for authentication, when logging into your Windows system.

The privacyIDEA Credential Provider does this by communicating with the privacyIDEA Authentication System[1]. The privacyIDEA Authentication System can manage many different kind of second factors for the domain users. Ranging from classical OTP tokens, one time codes via SMS, Smartphone Apps to the Yubikey.

Users need to authenticate with their windows password and additionally with their token as second factor.

[1] https://privacyidea.org

CHAPTER 2

Installation

2.1 Prerequisites

To use the privacyIDEA Credential Provider you need to have a privacyIDEA Authentication System. The installation and setup of this backend is covered in another documentation[1].

Ask the company NetKnights to get an evaluation version of the privacyIDEA Credential Provider[2].

2.2 MSI package

The privacyIDEA Credential Provider comes as a 32bit and 64bit MSI package. You can install it manually or use your software distribution tool.

2.2.1 Start installation

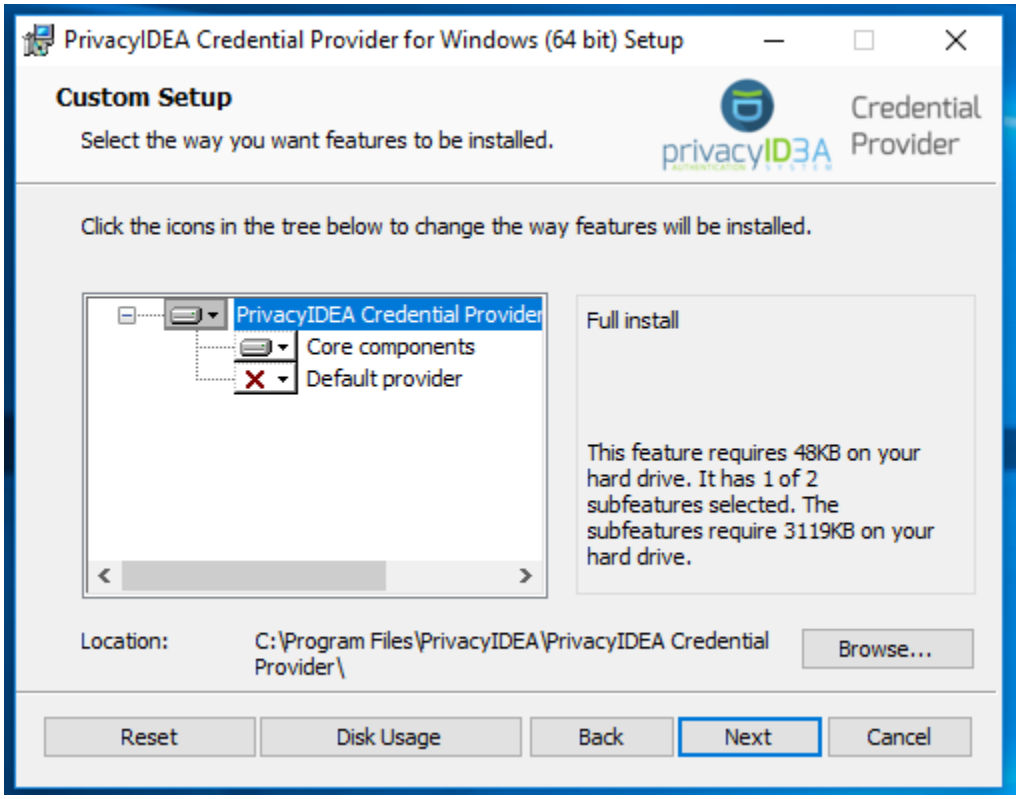
In the first step you can decide, if you want to make the privacyIDEA Credential Provider the default provider. This means, that no other credential provider is active on this machine. The user can not login with only his Windows password anymore.

Note: We recommend not activating this setting during installation. First you should configure the privacyIDEA Credential Provider and check, if it works right. After this, you can change the installation and change this configuration.

2.2.2 Configure the privacyIDEA Authentication Server

In the next step, you can configure the communication to the privacyIDEA Authentication Server. The credential provider and the server communicate via the REST API `POST /validate/check`.

[1] http://privacyidea.readthedocs.io/en/latest/installation/index.html
[2] https://netknights.it/en/unternehmen/kontakt/



Note: You only need to specify the hostname of the authentication server. In most cases you only need to enter the hostname like *yourserver.example.com*. Additionally the path can be specified if there is. Something like */path/to/pi*.

You can specify a custom **login text**, which will be displayed underneath the provider.

You can also specify if certain SSL errors shall be ignored.

Warning: We recommend NOT to ignore any SSL errors in productive use. Otherwise you will be vulnerable to man-in-the-middle attacks. An attacker who intercepts the communication could modify the authentication response and thus make the second factor useless.

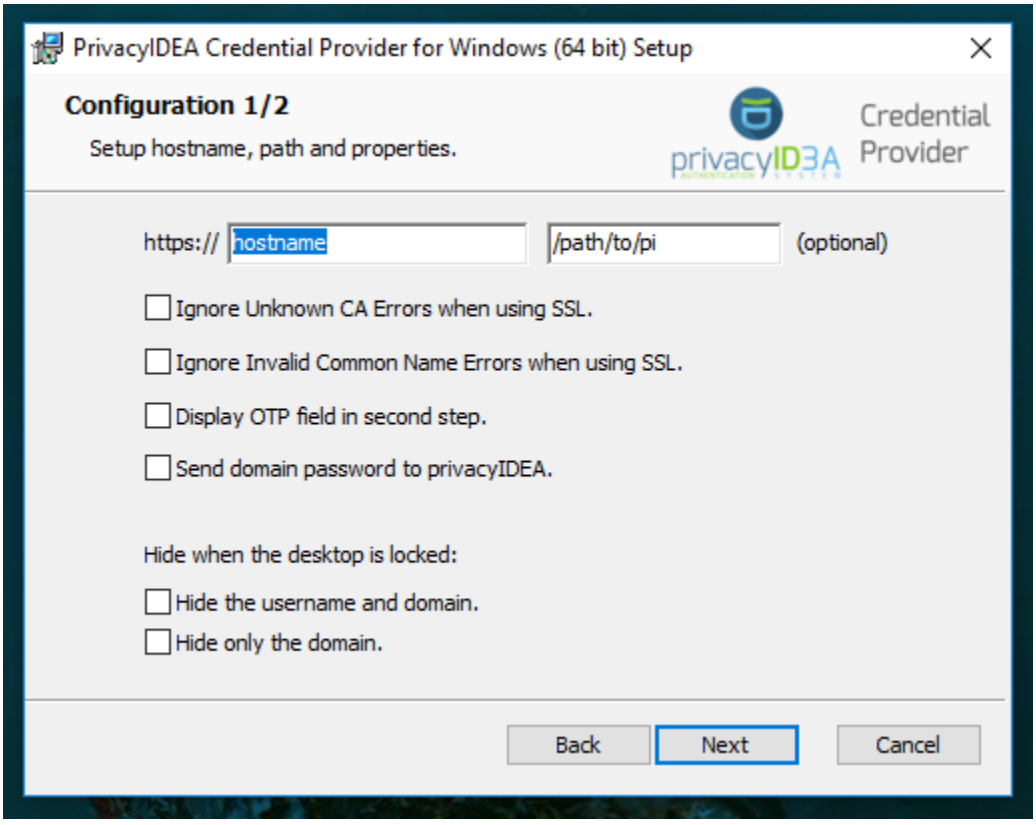
You may specify the path to a custom login image.

Note: The image must be a BMP version 3 file.

After these two steps the privacyIDEA Credential Provider is installed on your system and can be chosen for login.

2.3 Manual Installation

The privacyIDEA Credential Provider and Filter can also be registered manually. To do this, the file `PrivacyIDEACredentialProvider.dll` has to be put into `%windir%\System32`. (If desired, the `PrivacyIDEACredentialProviderFilter.dll` can be added aswell).



Next, the privacyIDEA Credential Provider has to be registered to be loaded into the logon process. This is done by adding its CLSID to the list of Credential Providers at `HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Authentication\Credential Providers\`. Add a new key here with the name `{7BAF541E-F8E0-4EDF-B69A-BD2771139E8E}` (the CLSID). Afterwards set the data of the default to `PrivacyIDEACredentialProvider`. Finally, the DLL has to be registered with the system. To do this, go to `HKEY_CLASSES_ROOT\CLSID\` and add a new key with the CLSID from above. Add another key to the on just created with the name `InprocServer32`. Set the default data to `PrivacyIDEACredentialProvider.dll` and add another REG_SZ with the name `ThreadingModel` and data `Apartment`. Now the privacyIDEA Credential Provider is registered and should be visible at the next Login attempt. This can also be done via the file `RegisterProvider.reg`.

If you wish to also use the privacyIDEA Credential Provider Filter, do the steps above again with the CLSID of the Filter which is `{34065473-D75F-4BC2-9782-E98E63ED0D41}` and registration at `HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Authentication\Credential Provider Filters\`. Alternativly, the file `RegisterFilter.reg` can be used.

To unregister, the corresponding files `UnregisterXXX.reg` can be used. This does not remove the configuration, DLL files or CLSID entries, it only removes the Provider or Filter from the Authentication flow at ``HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Authentication\`.

CHAPTER 3

Configuration

During installation of the privacyIDEA Credential Provider you already configured all necessary settings, but it can be interesting to change settings later. Like changing the available credential providers or changing the verification of the authentication server certificate.

3.1 Registry Settings

If you want to change the configuration after the installation, you can only do this by editing the registry keys. You can use administrative templates to deploy the credential provider on many desktops in your network.

The configuration is located at `Computer\HKEY_LOCAL_MACHINE\SOFTWARE\NetKnights GmbH\PrivacyIDEA-CP\`.

NOTE: If an entry is missing, you can just create a new entry of type REG_SZ with the corresponding name.

3.1.1 Connection Settings

These settings define the connection to the privacyIDEA server. The connection is established via https by default, like indicated in the installer.

hostname

The hostname of the privacyIDEA Authentication Service. That usually is something like *yourserver.example.com* without any additional path information.

path

The path to the privacyIDEA Authentication Service if there is. E.g. */test/path/pi*

NOTE: The entry */path/to/pi* is a placeholder. If it is read by the Credential Provider, it is treated as an empty entry.

ssl_ignore_invalid_cn

Set to `1` if the privacyIDEA Credential Provider should ignore SSL errors originating from an invalid common name.

ssl_ignore_unknown_ca

Set to `1` if the privacyIDEA Credential Provider should ignore SSL errors originating from an unknown CA.

custom_port

This entry is not there by default. You can add it to declare a custom port. The value has to be of type *REG_SZ* with the name *custom_port*.

NOTE: By default the port is the default https port, which is 443.

resolve_timeout, connect_timeout, send_timeout, receive_timeout

With these entries you can specify the timeout (in ms) for the corresponding phase. This might be interesting if the offline feature is used. The default timeouts are infinite / 60s / 30s / 30s.

3.1.2 Login behaviour

Using these settings you can specify the behaviour of the privacyIDEA Credential Provider. The credential provider can ask for the username, the password and the otp value in one step or in two steps.

enable_filter

This setting is introduced in v3.2. Set this to `1` to disable all other Credential Providers so that only this one will be usable.

two_step_hide_otp

Set to `1` if the privacyIDEA Credential Provider should ask for the user's OTP in a second step. In the first step the user will only be asked for the password.

two_step_send_password

Set to `1` if the privacyIDEA Credential Provider should send the user's password to the privacyIDEA Authentication Service.

two_step_send_empty_password

Set to `1` if the privacyIDEA Credential Provider should send an empty password to the privacyIDEA Authentication Service.

NOTE: If both **two_step_send_password** and **two_step_send_empty_password** are set to `1`, the privacyIDEA Credential Provider will send an empty password to the privacyIDEA Authentication Service. NOTE: Sending the windows or an empty password can be used to trigger token types like SMS, Email or Push.

excluded_account

Specify an account that should be excluded from 2FA. The format is required to be `domain\username` or `computername\username`.

send_upn Set to `1` to send the UPN instead of username and domain to privacyIDEA.The determination if the username input is a UPN is currently very basic and will assume an UPN if there is an @ and no contained in the input. If the input is not an UPN, the usual realm settings are applied.

3.1.3 Filter

The Filter is an additional component of a credential provider. It can be used to filter out other credential providers (e.g. the system ones). By default, if our filter is enabled, it will filter every other credential provider so that the privacyIDEA CP is the only one usable.

enable_filter Set this to `1` to enable the filter of the privacyIDEA Credential Provider. If this is disabled, the privacyIDEA CP will just be listed **in addition** to the other existing CPs.

filter_whitelist Add entries to this REG_MULTI_SZ to spare other CPs from being filtered. The entry has to be the CLSID of a CP. One way to check the CLSID of a CP is to look at **HKEY_LOCAL_MACHINESOFTWAREMicrosoftWindowsCurrentVersionAuthenticationCredential Providers**

3.1.4 Disabling for specific scenarios

There are different *credential provider usage scenarios* ("cpus"). The available scenarios are **logon**, **unlock** and **credui**.

It is possible to configure both the Credential Provider and the Filter for each of the scenarios. This way the administrator can define a different behaviour if a users either logs in or unlocks his desktop.

For the configurations in this section to take effect, the **enable_filter** setting has to be enabled in v3.2 or higher.

The behaviour in each scenario can be configured via the corresponding registry entry named **cpus_logon**, **cpus_unlock** and **cpus_credui**.

These entries expect a *REG_SZ*, that consist of a digit 0, 1, 2, 3 and a character "e" or "d".

- 0: relevant for *remote* (RDP) and *local* operation
- 1: relevant for *remote* operation
- 2: relevant for *local* operation
- 3: the privacyIDEA Credential Provider will **not** be shown in *remote* and *local* operation.

The characters stand for:

- "e": Only the privacyIDEA Credential Provider is available. All other credential providers are not available.
- "d": The privacyIDEA Credential Provider will be available *in addition* to all other Credential Providers on the machine.

E.g. This would result in:

- `cpus_logon = 0e`: Only the privacyIDEA Credential Provider is available for Logon via remote and locally.
- `cpus_unlock = 1d`: Remotely the locked destop can be unlocked with all available Credential Providers, including the privacyIDEA Credential Provider.
- `cpus_unlock = 2e`: Locally unlocking the desktop is only possible with the privacyIDEA Credential Provider.
- `cpus_credui = 3d`: For credui scenarios, the privacyIDEA Credential Provider is disabled and will not be shown, no matter if remotely or locally. Only the other credential providers are available. (Note: "3e" does not exist, because there would be no credential provider available)

If there is no entry for a scenario, the default is assumed: The privacyIDEA Credential Provider will be available and the Filter will be active, if installed.

NOTE: Starting with Windows 10, CPUS_UNLOCK is not triggered by default anymore when unlocking the workstation. Instead, unlocking the workstation is considered CPUS_LOGON. If you need to differentiate the two scenarios, disabling fast user switching in the group policy editor restores the previous behavior. An example of how to do this can be found here: https://support.waters.com/KB_Inf/Empower_Breeze/WKB47366_How_To_Enable_Disable_Fast_User_Switching_In_Windows_10

3.1.5 Recommended setup for remote desktop scenarios

In scenarios where the privacyIDEA Credential Provider is to be used for RDP connections, it is recommended to install the privacyIDEA Credential Provider only on the RDP target. The Filter has to be enabled for RDP scenarios, otherwise Windows will use the System Credential Provider automatically! It is also recommended to use the *two_step_hide_otp* setting to skip entering the windows password a second time.

3.1.6 Customization of the Look and Feel

You can also change the look and feel of the privacyIDEA Credential Provider.

login_text

Specify the text that is displayed underneath the credential logo and on the right side where available credentials are listed. The default is "privacyIDEA Login".

otp_text

Speficy the text that is displayed in the OTP input field. Usually this is "One-Time Password", but you can change it to any other value you like.

otp_hint_text

Speficy the text that is displayed when prompted to enter the OTP in the second step. The default is "Please enter your second factor!".

otp_fail_text

Specify a custom text that is shown when the OTP verification failed. The default is "Wrong One-Time Password!". NOTE: An error on either the client or server side overwrites this message.

hide_domainname

Set to `1` if you want the privacyIDEA Credential Provider to hide only the domain name when the desktop is locked.

hide_fullname

Set to `1` if you want the privacyIDEA Credential Provider to hide the user and domain name when the desktop is locked. Instead only the contents of the *login_text* settings will be displayed.

v1_bitmap_path

The complete path and filename of a bitmap image. This is a customized login image. The image must be a version 3 Windows BMP file with a resolution of 128x128 pixels.

no_default

Add this registry entry and set it `1` to **not** have the privacyIDEA Credential Provider selected by default when logging in.

show_domain_hint

Set this to `1` to show the domain that is currently used to log in.

prefill_username

Set this to `1` to have the username field prefilled with the user that last logged on.

enable_reset

Set this to `1` to have a clickable text shown at the bottom which will reset the login.

3.1.7 Offline token

HOTP token can be configured to be usable without a connection to privacyIDEA. On the detail page of the token, select Application => offline at the bottom. Now the token has to be used online once with the Credential Provider, to get the configured amount of OTPs in advance. The following settings can be useful with offline token:

offline_file

Specify the **absolute** path to where the offline file should be saved. The default is C:offlineFile.json. NOTE: Either txt or json file type is recommended.

offline_try_window

Specify how many offline values shall be compared to the input at max. Default is 10. A value of 0 equals the default.

offline_threshold

Specify the number of remaining OTP values below which a refill should be attempted. Refilling is done online and therefore requires a connection to the server. If the machine is really offline and refill is attempted, this will cause a timeout and thus slow down the login. By default, refill is attempted after every successful offline authentication. However, if 100 offline values are available, it is not neccessary to try refilling after every authentication.

offline_show_info

Set this to `1` to show information about available offline token for the current user. This will trigger as soon as the input from the username field matches a user for which offline token are available.

3.1.8 Realms

Realms are implemented by mapping Windows domains to privacyIDEA realms. When a matching mapping exists, the &realm=... parameter is added to the request.

default_realm

Specify a default realm. If set, it is appended to every request that has no other matching mapping.

The mapping is done in the sub key `realm-mapping` (=> HKEY_LOCAL_MACHINE\SOFTWARE\Netknights GmbH\PrivacyIDEA-CP\realm-mapping). Here you can specify the Windows domains as the names and the privacyIDEA realms as data of REG_SZ entries.

3.1.9 Log file

debug_log

Set to `1` if you want the privacyIDEA Credential Provider to write a detailed log file, which is helpful when reporting bugs. The log file is located at C:\PICredentialProviderLog.txt. If this setting is disabled, actual errors are still written to the log file.

log_sensitive

In some cases it can be useful to log sensitive data (e.g. passwords) to find the cause of a problem. By default, sensitive data is not logged. Instead it is only logged if the password contains a value. To log sensitive data aswell, create a new registry key of type *REG_SZ* with the name *log_sensitive* and a value of *1*. This can be deleted after creating a log file.

CHAPTER 4

Development, Maintenance and Support

The privacyIDEA Credential Provider was first developed by Last Squirrel IT[1]. The company has a long experience in Microsoft Windows security tools. They developed many different credential providers and plugins for Active Directory Federation Services.

Since 2018 the development is continued by NetKnights. You will get maintenance and support via the company NetKnights[2]. NetKnights also maintains the privacyIDEA Authentication System and issues different service level agreements[3] for the privacyIDEA Credential Provider and the privacyIDEA Authentication System.

[1] http://www.lastsquirrel.com
[2] https://netknights.it
[3] https://netknights.it/en/produkte/privacyidea-credential-provider/

CHAPTER 5

Indices and tables

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