YubiKey Manager (ykman) CLI and GUI Guide

Yubico

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CHAPTER

ONE

INTRODUCTION

The YubiKey Manager (ykman) is a cross-platform application for managing and configuring a YubiKey via a graphical user interface (GUI) and a Python 3.6 (or later) library and command line interface (CLI). It provides an easy way to perform the most common configuration tasks on a YubiKey, such as:

- Displaying the serial number and firmware version of a YubiKey (see *YubiKey Firmware*)
- Configuring a FIDO2 PIN
- Resetting the FIDO applications
- Configuring the OTP application. A YubiKey has two slots (Short Touch and Long Touch). This tool can configure a Yubico OTP credential, a static password, a challenge-response credential or an OATH HOTP credential in either or both of these slots.
- Manage certificates and PINs for the PIV application
- Swap the credentials between two configured slots
- Enable and disable USB and NFC interfaces

Some of the more advanced options are only available through the command line.

This guide contains the instructions for using both ykman's CLI and its GUI.

- For the GUI, see *Using the YubiKey Manager GUI* in this guide.
- For the CLI, see the balance of this guide. The commands are organized by protocol. CLIs that do not relate specifically to a particular protocol are listed in Base Commands.

1.1 YubiKey Firmware

The YubiKey firmware is separate from the YubiKey itself in the sense that it is put onto each YubiKey in a process separate from the manufacture of the physical key. Nonetheless, it can be neither removed nor altered. Yubico periodically updates the YubiKey firmware to take advantage of features and capabilities introduced into operating systems (OSs) such as Windows, etc., as well as to enable new YubiKey features and capabilities.

The firmware version on a YubiKey therefore determines whether or not a feature or a capability is available to that YubiKey. The quickest and most convenient way to determine your YubiKey's firmware version is to use ykman.

CHAPTER

TWO

INSTALLATION

YubiKey Manager (ykman) can be installed on Windows, macOS, and Linux systems.

2.1 Download ykman

Download ykman installers from: YubiKey Manager Releases.

The installers include both the full graphical application and command line tool.

Additional installation packages are available from third parties. Refer to the third party provider for installation instructions. This applies to:

- Pre-built packages from platform package managers.
- Homebrew and MacPorts for macOS.
- Linux distribution third party package maintainers.

2.2 OS-independent Installation

ykman can be installed independently of platform by using `pip` (or equivalent). From a command line, run:

```
pip install --user yubikey-manager
```

2.3 Windows

To install ykman on Windows:

1. As Administrator, run the `.exe` executable.
2. As Administrator, open a command window with Run.
3. From the download directory, run the installer executable, `C: yubikey-manager-qt-1.2.3.win64.exe`.

2.3.1 PowerShell

If you are using PowerShell you may need to either prefix an ampersand to run the executable, or you can use two commands: one to change directory, then one to run the executable from the working directory. For example:

```
PS> & "C:\Users..."
```

or

```
PS> cd "C:\Users..."

PS> .\yubikey-manager-qt-1.2.3.exe
```

2.3.2 Silent Install

Adding `/S` to this makes the installation silent. The `S` must be capitalized.

2.3.3 Mapped Drives

If running from a mapped drive, you might need to add `/D <install path>`. This ensures ykman is installed in the correct drive.

```
PS> .\yubikey-manager-qt-1.2.3.exe /S /D "C:\Program Files\Yubico\YubiKey Manager"
```

2.3.4 Uninstaller

Once installed, the application uninstaller, `ykman-uninstall.exe`, is located in the ykman install directory.

Running the uninstaller starts the uninstall process. The `/S` silent install option described above works with the uninstaller.

2.4 MacOS

2.4.1 Using Homebrew for CLI

From the Mac's terminal run the `brew` command below.

This is the preferred install method for the CLI as it will enable native `ykman` command functionality without the need to change directories.

```
brew install ykman
```

2.4.2 Using Package File

To install the GUI on Mac, download the latest package from the releases linked in the `Download ykman` section at the start of this article. Once downloaded, double-click the `.pkg` file and follow the prompts.

2.5 Linux

On Linux platforms you need to have `pcscd` installed and running to communicate with a YubiKey over the SmartCard interface. Additionally, you might need to set permissions for your user to access YubiKeys via the HID interfaces.

Some of the libraries used by ykman have C-extensions, and might require additional dependencies to build, such as `swig` and potentially `PCSC lite`.

2.5.1 Third Party Linux Distributions

Yubico provides packages for Ubuntu in the yubico/stable PPA.

Note: For Linux amd64 ONLY and other architectures such as ARM, use the general `pip` instructions above.

If you are using packages from one of the several Linux distributions' third party repositories, follow the installation steps from the Linux distribution.

For example:

```
sudo apt-add-repository ppa:yubico/stable
sudo apt update
sudo apt install yubikey-manager
```

See also the Yubico Support Knowledge Base article Installing Yubico Software on Linux.

2.6 Developers

For more information, see the ykman CLI page on developers.yubico.com. For APDUs, see the APDU page in the .NET YubiKey SDK User's Manual.

To get in touch with Yubico Support, click here.

CHAPTER

THREE

USING THE YUBIKEY MANAGER GUI

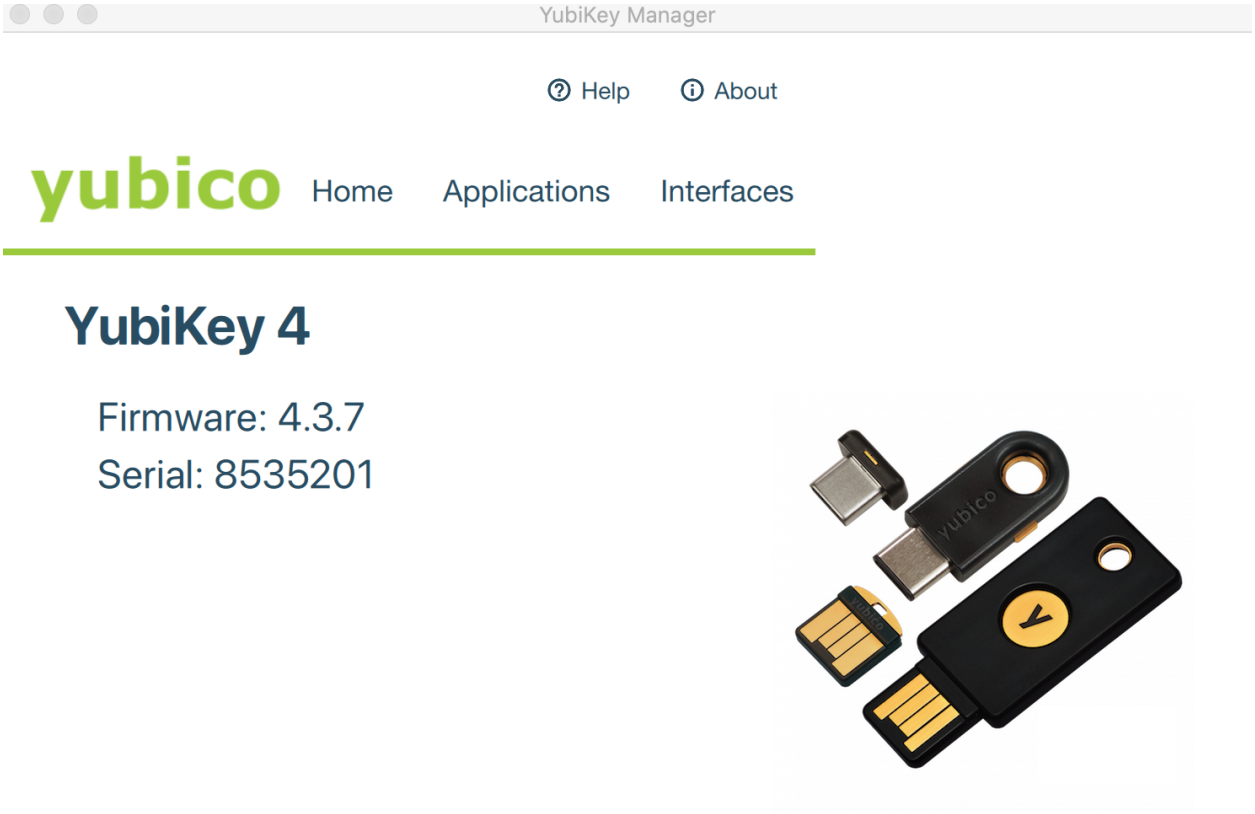
The YubiKey Manager's (ykman's) graphical user interface (GUI) is a quick, convenient way to find out what firmware your YubiKey has and/or to reset it - unless you prefer to use ykman's CLI. Note that the CLI has more options, so if you do not find what you want in the GUI, check to see if the CLI has it.

3.1 Checking Firmware Version

Launch the **YubiKey Manager App** and connect your YubiKey if it is not already connected. Note that the tool will only read a single YubiKey at a time, so if you have multiple keys connected, it might not be evident which one the tool is identifying.

ykman opens the **Home** tab by default, displaying the following:

- YubiKey series (e.g., YubiKey 5)
- Firmware (e.g., 5.4.X)
- Images of the various form factors within that series.



YubiKey Manager GUI, Home tab

3.2 Managing Applications

3.2.1 Enabling/Disabling

ykman can be used to check which applications are enabled on which interface and to enable or disable each application on each physical interface.

To find out which applications are enabled, select the **Interfaces** tab. A checkbox with a tick is shown next to each enabled applications. To change which applications are enabled, use the checkboxes to select the ones you want enabled and click **Save Interfaces**.

Note: For the YubiKey 5Ci, any modifications made to the applications over the USB interface will also apply to the applications over Lightning®.

3.2.2 Locking

Once the desired applications have been selected, a lock code can be set to prevent changes to the set of enabled applications. This is done using the ykman CLI `ykman config set-lock-code`. The lock code is 16 bytes presented as 32 hex characters. For more information, see *ykman config set-lock-code [OPTIONS]*.

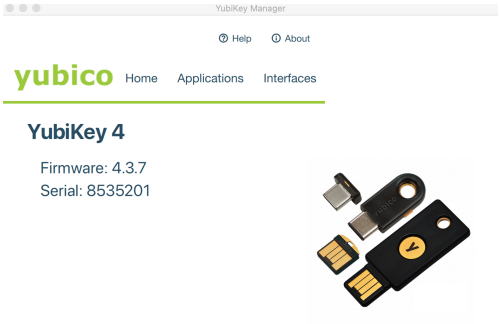
3.3 Managing Interfaces

The **Interfaces** tab displays your key's form factor (e.g., USB), and the interfaces it has. Use the **Interfaces** tab to configure what is available on that key. For example, you can disable the interfaces by deselecting the respective checkboxes.

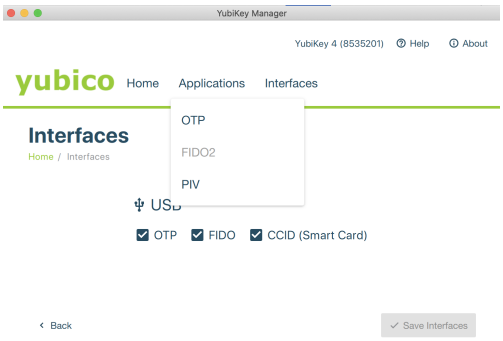
3.4 Resetting FIDO2 Function

Resetting the key is not the same as unblocking it. Because resetting the FIDO2 function returns the key to its beginning state when it has no PIN, you must set a new PIN and enroll the key again after resetting it.

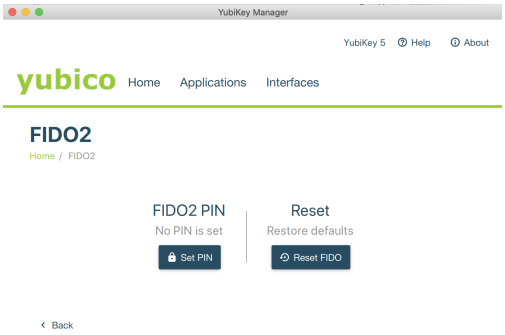
Step 1
Remove your YubiKey if it is still connected to your machine, then launch ykman and insert your key.



Step 2
Click on the word **Applications** at the top of that tab. A list of menu options appears. The specific options depend on the key.

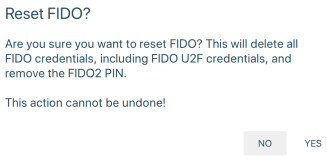


Step 3
Select **FIDO2**. The FIDO2 page appears.



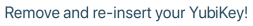
Step 4

Click the **Reset FIDO** button. The Reset FIDO confirmation popup appears.



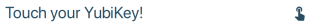
Step 5

Click **Yes**. Everything on the key is removed: the PIN (if set) is deleted. The **Remove and re-insert your YubiKey!** prompt appears.



Step 6

Remove and re-insert your YubiKey. The **Touch your YubiKey** prompt appears, and the green LED flashes.



Step 7

Touch your YubiKey. The message “FIDO applications have been reset” appears at the bottom of the **Applications** page.

Step 8

Remove the key in preparation for re-enrolling it.

To get in touch with Yubico Support, click here.

CHAPTER

FOUR

USING THE YUBIKEY MANAGER CLI

The YubiKey Manager - ykman - can be used to configure all aspects of the YubiKey. This section covers the options for accessing and launching the application.

4.1 Windows

Run the commands from Command Prompt or PowerShell. **Either** facilitate the running of `ykman` commands, **or** if your environment variable is not set to automatically find `ykman`, change directories. Instructions for both are given below.

4.1.1 Facilite Running ykman Commands

To enable running `ykman` commands without changing directories or updating environment variables, add an alias for `ykman` to your $PROFILE for PowerShell. To do this, run the following commands in PowerShell.

Step 1
Test for $PROFILE existence - output should return true

```
PS> Test-Path $PROFILE
```

Step 2
If `False` is returned, make a $PROFILE

```
PS> New-Item $PROFILE -ItemType File
```

Step 3
Create alias for `ykman` CLI, (32-bit)

```
PS> Add-Content $PROFILE -Value 'Set-Alias ykman "C:\Program Files (x86)\
↪Yubico\YubiKey Manager\ykman.exe"'
```

Step 4
Create alias for `ykman` CLI, (64-bit)

```
PS> Add-Content $PROFILE -Value 'Set-Alias ykman "C:\Program Files\Yubico\
↪YubiKey Manager\ykman.exe"'
```

Step 5
Reload $PROFILE by closing and re-opening PowerShell, or run the command

```
PS> & $PROFILE
```

4.1.2 Change Directory

If your environment variable is not set to automatically find `ykman`, or you don't have a PowerShell alias set, change directory to the location of the `ykman` executables. For example, with Windows 64-bit version of YubiKey Manager installed, this would be `C:\\cd "C:\Program Files\Yubico\YubiKey Manager\"`.

4.1.3 Launch ykman

You might need to scroll horizontally to see the entire command.

To launch `ykman` in GUI mode or CLI mode from the command line, select and run the command for one of the options listed below:

- Launch `ykman` **CLI**, (**32-bit**)

```
C:\>"C:\Program Files (x86)\Yubico\YubiKey Manager\ykman.exe"
```

- Launch `ykman` **CLI**, (**64-bit**)

```
C:\>"C:\Program Files\Yubico\YubiKey Manager\ykman.exe"
```

- Launch `ykman` **GUI**, (**32-bit**)

```
C:\>"C:\Program Files (x86)\Yubico\YubiKey Manager\ykman-gui.exe"
```

- Launch `ykman` **GUI**, (**64-bit**)

```
C:\>"C:\Program Files\Yubico\YubiKey Manager\ykman-gui.exe"
```

To launch `ykman` with **debug logging** enabled, add the following to the execution command:

```
--log-level DEBUG --log-file %USERPROFILE%\Desktop\ykman-log.txt
```

Example:

```
C:\>"C:\Program Files (x86)\Yubico\YubiKey Manager\ykman-gui.exe" --log-level DEBUG --
↪log-file %USERPROFILE%\Desktop\ykman-log.txt
```

4.2 macOS

From the Mac's Terminal application, run the listed commands as needed.

If you have installed `ykman` using Homebrew, referenced in the ykman Installation for MacOS, you don't need to change directories to run `ykman` commands in Mac's terminal. The CLI will run as native commands.

4.2.1 Change Directory

Change directory to the location of the ykman executables. On macOS you must escape the space in the filename "YubiKey Manager.app" by putting in a backslash before the space, or you must enclose the filename in double quotes. Examples of both are given below:

```
cd /Applications/YubiKey\ Manager.app/Contents/MacOS/
```

```
cd "/Applications/YubiKey Manager.app/Contents/MacOS/"
```

4.2.2 Launch ykman

You might need to scroll horizontally to see the entire command.

To launch `ykman` in GUI mode or CLI mode from the command line, run the command for the appropriate option:

- Launch `ykman` **CLI**

  ```
  % /Applications/YubiKey Manager.app/Contents/MacOS/ykman
  ```

- Launch `ykman` **GUI**

```
% /Applications/YubiKey Manager.app/Contents/MacOS/ykman-gui
```

To run `ykman` with **debug logging** (to a file) enabled, add the following to the run command:

```
--log-level DEBUG --log-file ~/Desktop/ykman.txt
```

Example:

```
% /Applications/YubiKey Manager.app/Contents/MacOS/ykman --log-level DEBUG --log-file ~/
↪Desktop/ykman.txt
```

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CHAPTER

FIVE

BASE COMMANDS

The base commands are those that do not apply to any specific protocol. However, they do apply to the different connection methods such as USB and NFC.

Acronyms and their definitions are listed at the bottom of this page.

5.1 ykman [OPTIONS] COMMAND [ARGS]...

Description

Configure your YubiKey via the command line.

5.1.1 Examples

- List connected YubiKeys, only output serial number:

  ```
  $ ykman list --serials
  ```

- Show information about the YubiKey with serial number 0123456:

  ```
  $ ykman --device 0123456 info
  ```

5.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-d, --device SERIAL`	Specify YubiKey to interact with by serial number.
`--diagnose`	Show diagnostics information for troubleshooting.
`--full-help`	Show –help, including hidden commands, and exit.
`--log-file FILE`	Write logs to a given FILE instead of standard error. Ignored unless `--log-level` also set.
`-l, --log-level [DEBUG|INFO|WARNING|ERROR|CRITICAL]`	Enable logging at given verbosity level.
`-r, --reader NAME`	Use an external smart card reader. Conflicts with `--device` and `list`.
`-v, --version`	Show version information about the app [ykman]

5.1.3 Commands

Command	Description
`config`	Enable/Disable applications.
`fido`	Manage the FIDO applications.
`info`	Show general information.
`list`	List connected YubiKeys.
`oath`	Manage the OATH Application.
`openpgp`	Manage the OpenPGP Application.
`otp`	Manage the OTP Application.
`piv`	Manage the PIV Application.

5.2 ykman config [OPTIONS] COMMAND [ARGS]...

Description

Enable or disable applications. The applications may be enabled and disabled independently over different transports (USB and NFC). The configuration may also be protected by a lock code.

5.2.1 Examples

- Disable PIV over NFC:

```
$ ykman config nfc --disable PIV
```

- Enable all applications over USB:

```
$ ykman config usb --enable-all
```

- Generate and set a random application lock code:

```
$ ykman config set-lock-code --generate
```

5.2.2 Options

Option	Description
`-h, --help`	Show this message and exit.

5.2.3 Commands

Commmand	Description
`mode`	Manage connection modes (USB interfaces).
`nfc`	Enable or disable applications over NFC.
`set-lock-code`	Set or change the configuration lock code.
`usb`	Enable or disable applications over USB.

5.3 ykman config mode [OPTIONS] MODE

Description

Manage connection modes (USB Interfaces). This command is generally used with YubiKeys prior to the 5 series. Use `ykman config usb` for more granular control on YubiKey 5 and later. Get the current connection mode of the YubiKey, or set it to `MODE`.

5.3.1 Examples

- Set the OTP and FIDO mode:

```
$ ykman config mode OTP+FIDO
```

- Set the CCID only mode and use touch to eject the smart card:

```
$ ykman config mode CCID --touch-eject
```

5.3.2 Arguments

Argument	Description
`MODE`	`MODE` can be a string, such as `OTP+FIDO+CCID`, or a shortened form: `o+f+c`. It can also be a mode number.

5.3.3 Options

Option	Description
`-h, --help`	Show this message and exit.
`--autoeject-timeout SECONDS`	When set, the smartcard automatically ejects after the given time. Implies `--touch-eject` (CCID mode only).
`--chalresp-timeout SECONDS`	Sets the timeout when waiting for touch for challenge response.
`-f, --force`	Confirm the action without prompting.
`--touch-eject`	When set, the button toggles the state of the smartcard between ejected and inserted (CCID mode only).

5.4 ykman config nfc [OPTIONS]

Description

Enable or disable applications over NFC.

5.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --enable-all`	Enable all applications.
`-d, --disable [OTP|U2F|FIDO2|OATH|PIV|OPENPGP|HSMAUTH]`	Disable applications.
`-D, --disable-all`	Disable all applications.
`-e, --enable [OTP|U2F|FIDO2|OATH|PIV|OPENPGP|HSMAUTH]`	Enable applications.
`-f, --force`	Confirm the action without prompting.
`-l, --list`	List enabled applications.
`-L, --lock-code HEX`	Current application configuration lock code.

5.5 ykman config set-lock-code [OPTIONS]

Description

Set or change the configuration lock code. A lock code may be used to protect the application configuration. The lock code must be a 32 characters (16 bytes) hex value.

5.5.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-c, --clear`	Clear the lock code.
`-f, --force`	Confirm the action without prompting.
`-g, --generate`	Generate a random lock code. Conflicts with `--new-lock-code`.
`-l, --lock-code HEX`	Current lock code.
`-n, --new-lock-code HEX`	New lock code. Conflicts with –generate.

5.6 ykman config usb [OPTIONS]

Description
Enable or disable applications over USB.

5.6.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --enable-all`	Enable all applications.
`--autoeject-timeout SECONDS`	When set, the smartcard automatically ejects after the specified time. Implies `--touch-eject`.
`--chalresp-timeout SECONDS`	Sets the timeout when waiting for touch response to the challenge-response from the OTP application.
`-d, --disable [OTP|U2F|FIDO2| OATH|PIV|OPENPGP|HSMAUTH]`	Disable applications.
`-e, --enable [OTP|U2F|FIDO2| OATH|PIV|OPENPGP|HSMAUTH]`	Enable applications.
`-f, --force`	Confirm the action without prompting.
`-l, --list`	List enabled applications.
`-L, --lock-code HEX`	Current application configuration lock code.
`--no-touch-eject`	Disable touch eject (CCID only).
`--touch-eject`	When set, the button toggles the state of the smartcard between ejected and inserted (CCID only).

5.7 ykman info [OPTIONS]

Description

Show general information. Displays information about the connected YubiKey such as serial number, firmware version, applications, etc.

5.7.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-c, --check-fips`	Check if YubiKey is in FIPS-approved mode. Available on YubiKey 4 FIPS only.

5.7.2 Example

```
$ ./ykman info
Device type: YubiKey 5Ci
Serial number: 12345678
Firmware version: 5.2.3
Form factor: Keychain (USB-C, Lightning)
Enabled USB interfaces: OTP, FIDO, CCID

Applications
OTP          Enabled
FIDO U2F     Enabled
OpenPGP      Enabled
PIV          Enabled
OATH         Enabled
FIDO2        Enabled
```

5.8 ykman list [OPTIONS]

Description
List connected YubiKeys.

5.8.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-r, --readers`	List available smart card readers.
`-s, --serials`	Output only serial numbers of the connected YubiKeys, one per line. Devices without serial numbers are not listed.

To get in touch with Yubico Support, click here.

5.9 Acronyms

3DES
Triple Data Encryption Algorithm

AES
Advanced Encryption Standard

CCC
Card Capability Container

CCID
Chip card interface device, a USB protocol for a smartcard.

CHUID
Card Holder Unique ID

CN
Common name

CSR
Certificate Signing Request

ECC
Elliptic curve cryptography

FIDO
Fast Identity Online

FIPS
Federal Information Processing Standards (US government) covering codes and encryption standards.

HMAC
: Hash-based message authentication code

HOTP
: HMAC-based One-Time Password algorithm

OATH
: The Initiative for Open Authentication is an organization that specifies two open authentication standards, TOTP and HOTP

OTP
: One-Time Password

PUK
: PIN Unlock Key

stdin
: standard input - usually keyboard or CLI instructions

stdout
: standard output - usually print to screen

TOTP
: Time-based One-Time Password algorithm

X.509
: The standard defining the format of a public key certificate

CHAPTER

SIX

FIDO COMMANDS

On Windows, FIDO operations are privileged. Therefore you must run Command Prompt / PowerShell as administrator in order to be able to run commands that begin with `ykman fido`.

Acronyms and their definitions are listed at the bottom of the *Base Commands* page.

6.1 ykman fido [OPTIONS] COMMAND [ARGS]...

Description

Manage FIDO applications.

6.1.1 Examples

- Reset the FIDO (FIDO2 and U2F) applications:

```
$ ykman fido reset
```

- Change the FIDO2 PIN from 123456 to 654321:

```
$ ykman fido access change-pin --pin 123456 --new-pin 654321
```

6.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.

6.1.3 Commands

Command	Description
`access`	Manage the PIN for FIDO.
`credentials`	Manage discoverable (resident) credentials.
`fingerprints`	Manage fingerprints.
`info`	Display status of FIDO2 application.
`reset`	Reset all FIDO applications.

6.2 ykman fido access [OPTIONS] COMMAND [ARGS]...

Description

Manage the PIN for FIDO.

6.2.1 Options

Option	Description
`-h, --help`	Show this message and exit.

6.2.2 Commands

Command	Description
`change-pin`	Set or change the PIN code.
`verify-pin`	Verify the FIDO PIN against a YubiKey.

6.3 ykman fido access change-pin [OPTIONS]

Description

Set or change the PIN code. The FIDO2 PIN must be at least 4 characters long and can be any type of alphanumeric character. On YubiKey FIPS, a PIN can be set for FIDO U2F. That PIN must be at least 6 characters long.

6.3.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-n, --new-pin TEXT`	A new PIN.
`-P, --pin TEXT`	Current PIN code.
`-u, --u2f`	Set FIDO U2F PIN instead of FIDO2 PIN.

6.4 ykman fido access unlock [OPTIONS] (Deprecated)

Replaced unlock command with verify-pin command.

Description

Verify U2F PIN for YubiKey FIPS. Unlock the YubiKey FIPS and allow U2F registration.

6.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	Current PIN code.

6.5 ykman fido access verify-pin [OPTIONS]

Description

Verify the FIDO PIN against a YubiKey. For YubiKeys supporting FIDO2 this resets the "retries" counter of the PIN. For YubiKey FIPS this unlocks the session, allowing U2F registration.

6.5.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	Current PIN code.

6.6 ykman fido credentials [OPTIONS] COMMAND [ARGS]...

Description

Manage discoverable (resident) credentials. This command lets you manage credentials stored on your YubiKey. Credential management is only available when a FIDO PIN is set on the YubiKey.

Note: Managing credentials requires having a PIN. Set a PIN first.

6.6.1 Examples

- List stored credentials (providing PIN via argument):

```
$ ykman fido credentials list --pin 123456
```

- Delete a credential by user name (PIN is prompted for):

```
$ ykman fido credentials delete example_user
```

6.6.2 Options

Option	Description
`-h, --help`	Show this message and exit.

6.6.3 Commands

Command	Description
`delete`	Delete a resident credential.
`list`	List resident credentials.

6.7 ykman fido credentials delete [OPTIONS] QUERY

Description

Delete a credential.

6.7.1 Arguments

Argument	Description
`QUERY`	A unique substring match of a credentials RP ID, user ID (hex) or name, or credential ID.

6.7.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm deletion without prompting
`-P, --pin TEXT`	PIN code.

6.8 ykman fido credentials list [OPTIONS]

Description

List credentials.

6.8.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	PIN code.

6.9 ykman fido fingerprints [OPTIONS] COMMAND [ARGS]...

Description

Manage fingerprints. Requires a YubiKey with fingerprint sensor. Fingerprint management is only available when a FIDO PIN is set on the YubiKey.

6.9.1 Examples

- Register a new fingerprint (providing PIN via argument):

```
$ ykman fido fingerprints add "Left thumb" --pin 123456
```

- List already stored fingerprints (providing PIN via argument):

```
$ ykman fido fingerprints list --pin 123456
```

- Delete a stored fingerprint with ID "f691" (PIN is prompted for):

```
$ ykman fido fingerprints delete f691
```

6.9.2 Options

Option	Description
`-h, --help`	Show this message and exit.

6.9.3 Commands

Command	Description
`add`	Add a new fingerprint.
`delete`	Delete a fingerprint.
`list`	List registered fingerprint.
`rename`	Set the label for a fingerprint.

6.10 ykman fido fingerprints add [OPTIONS] NAME

Description

Add a new fingerprint.

6.10.1 Arguments

Argument	Description
`NAME`	A short readable name for the fingerprint (eg. “Left thumb”).

6.10.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	PIN code.

6.11 ykman fido fingerprints delete [OPTIONS] ID

Description

Delete a fingerprint. Delete a fingerprint from the YubiKey by its ID.

6.11.1 Arguments

Argument	Description
`ID`	To see the ID run the `list` subcommand.

6.11.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm deletion without prompting.
`-P, --pin TEXT`	PIN code.

6.12 ykman fido fingerprints list [OPTIONS]

Description

List registered fingerprint. Lists fingerprints by ID and (if available) label.

6.12.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	PIN code.

6.13 ykman fido fingerprints rename [OPTIONS] ID NAME

Description

Set the label for a fingerprint.

6.13.1 Arguments

Argument	Description
`ID`	The ID of the fingerprint to rename (as shown in `list`).
`NAME`	A short readable name for the fingerprint (eg. “Left thumb”).

6.13.2 Options:

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	PIN code.

6.14 ykman fido info

Description

Display general status of the FIDO2 application.

6.14.1 Options

Option	Description
`-h, --help`	Show this message and exit.

6.15 ykman fido reset [OPTIONS]

Description

Reset all FIDO applications. This action wipes all FIDO credentials on the YubiKey, including FIDO U2F credentials, and removes the PIN code. The reset is triggered immediately after the YubiKey is inserted, and it requires that the YubiKey be touched.

6.15.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

To get in touch with Yubico Support, click here.

CHAPTER

SEVEN

OATH COMMANDS

Acronyms and their definitions are listed at the bottom of the *Base Commands* page.

7.1 ykman oath [OPTIONS] COMMAND [ARGS]...

Description

Manage OATH application.

7.1.1 Examples

- Generate codes for accounts starting with `yubi`:

```
$ ykman oath accounts code yubi
```

- Add an account, with the secret key `f5up4ub3dw` and the name `yubico`, that requires touch:

```
$ ykman oath accounts add yubico f5up4ub3dw --touch
```

- Set a password for the OATH application:

```
$ ykman oath access change-password
```

7.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.

7.1.3 Commands

Command	Description
`access`	Manage password protection for OATH.
`accounts`	Manage and use OATH accounts.
`info`	Display general status of OATH application.
`reset`	Reset all OATH data.

7.2 ykman oath access [OPTIONS] COMMAND [ARGS]...

Description

Manage password protection for OATH.

7.2.1 Options

Option	Description
`-h, --help`	Show this message and exit.

7.2.2 Commands

Command	Description
`change`	Change the password used to protect OATH accounts.
`forget`	Remove a stored password from this computer.
`remember`	Store the YubiKey password on this computer to avoid having to enter it on each use.

7.3 ykman oath access change [OPTIONS]

Description

Change the password used to protect OATH accounts. Allows you to set or change a password that is required to access the OATH accounts stored on the YubiKey.

7.3.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-c, --clear`	Clear the current password.
`-n, --new-password TEXT`	Provide a new password as an argument.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.

7.4 ykman oath access forget [OPTIONS]

Description

Remove a stored password from this computer.

7.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --all`	Remove all stored passwords.

7.5 ykman oath access remember [OPTIONS]

Description

Store the YubiKey password on this computer to avoid having to enter it on each use.

7.5.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.

7.6 ykman oath accounts [OPTIONS] COMMAND [ARGS]...

Description

Manage and use OATH accounts.

7.6.1 Options

Option	Description
`-h, --help`	Show this message and exit.

7.6.2 Commands

Command	Description
`add`	Add a new account.
`code`	Generate codes.
`delete`	Delete an account.
`list`	List all accounts.
`rename`	Rename an account (Requires YubiKey 5.3 or later).
`uri`	Add a new account from an `otpauth://` URI.

7.7 ykman oath accounts add [OPTIONS] NAME [SECRET]

Description

Add a new account. This adds a new OATH account to the YubiKey.

7.7.1 Arguments

Argument	Description
NAME	Provide a name for this account.
SECRET	Optional.

7.7.2 Options

Option	Description
-h, --help	Show this message and exit.
-a, --algorithm [SHA1|SHA256|SHA512]	Algorithm to use for code generation.[default: SHA1]
-c, --counter INTEGER	Initial counter value for HOTP accounts.
-d, --digits [6|7|8]	Number of digits in generated code. [default: 6]
-f, --force	Confirm the action without prompting.
-i, --issuer TEXT	Issuer of the account.
o, --oath-type [[HOTP|TOTP]	Time-based (TOTP) or counter-based (HOTP) account. [default: 32]
-p, --password TEXT	Provide a password to unlock the YubiKey.
-p, --period INTEGER	Number of seconds a TOTP code is valid. [default: 30]
-r, --remember	Remember the password on this machine.
-t, --touch	Require touch on YubiKey to generate code.

7.8 ykman oath accounts code [OPTIONS] [QUERY]

Description

Generate codes. Generate codes from OATH accounts stored on the YubiKey. Accounts of type HOTP or those that require touch, also require a single match to be triggered.

7.8.1 Arguments

Argument	Description
`QUERY`	Provide a query string to match one or more specific accounts.

7.8.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-H, --show-hidden`	Include hidden accounts.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.
`-r, --remember`	Remember the password on this machine.
`-s, --single`	Ensure only a single match, and output only the code.

7.9 ykman oath accounts delete [OPTIONS] QUERY

Description

Delete an account. Delete an account from the YubiKey. Provide a query string to match the account to delete.

7.9.1 Arguments

Argument	Description
`QUERY`	Provide a query string to match one or more specific accounts.

7.9.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm deletion without prompting
`-p, --password TEXT`	Provide a password to unlock the YubiKey.
`-r, --remember`	Remember the password on this machine.

7.10 ykman oath accounts list [OPTIONS]

Description

List all accounts. List all accounts stored on the YubiKey.

7.10.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-H, --show-hidden`	Include hidden accounts.
`-o, --oath-type`	Display the OATH type.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.
`-p, --period`	Display the period.
`-r, --remember`	Remember the password on this machine.

7.11 ykman oath accounts rename [OPTIONS] QUERY NAME

Description

Rename an account (Requires YubiKey 5.3 or later).

7.11.1 Arguments

Argument	Description
`QUERY`	A query to match a single account (as shown in `list`).
`NAME`	The name of the account (use `<issuer>:<name>` to specify the issuer).

7.11.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm rename without prompting.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.
`-r, --remember`	Remember the password on this machine.

7.12 ykman oath accounts uri [OPTIONS] URI

Description

Add a new account from an `otpauth://` URI. Use a URI to add a new account to the YubiKey.

7.12.1 Arguments

Argument	Description
`URI`	Specify URI path for account.

7.12.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.
`-p, --password TEXT`	Provide a password to unlock the YubiKey.
`-r, --remember`	Remember the password on this machine.
`-t, --touch`	Require touch on YubiKey to generate code.

7.13 ykman oath info [OPTIONS]

Description

Display status of OATH application.

7.13.1 Options

Option	Description
`-h, --help`	Show this message and exit.

7.14 ykman oath reset [OPTIONS]

Description

Reset all OATH data. This action deletes all accounts and restores factory settings for the OATH application on the YubiKey.

7.14.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

To get in touch with Yubico Support, go to https://support.yubico.com/hc/en-us/requests/new.

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CHAPTER

EIGHT

OPENPGP COMMANDS

Acronyms and their definitions are listed at the bottom of the *Base Commands* page.

8.1 ykman openpgp [OPTIONS] COMMAND [ARGS]...

Description
Manage OpenPGP Application.

8.1.1 Examples

Set the retries for PIN, Reset Code and Admin PIN to 10:

```
$ ykman openpgp set-retries 10 10 10
```

Require touch to use the authentication key:

```
$ ykman openpgp set-touch aut on
```

8.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.

8.1.3 Commands

Command	Description
`access`	Manage PIN, Reset Code, and Admin PIN.
`certificates`	Manage certificates.
`info`	Display general status of the OpenPGP application.
`keys`	Manage private keys.
`reset`	Reset all OpenPGP data.

8.2 ykman openpgp access [OPTIONS] COMMAND [ARGS]...

Description

Manage PIN, Reset Code and Admin PIN.

8.2.1 Options

Option	Description
`-h, --help`	Show this message and exit.

8.2.2 Commands

Command	Description
`set-retries`	Set PIN, Reset Code and Admin PIN retries.

8.3 ykman openpgp access set-retries [OPTIONS] PIN-RETRIES RESET-CODE-RETRIES ADMIN-PIN-RETRIES

Description

Set PIN, Reset Code and Admin PIN retries.

8.3.1 Arguments

Argument	Description
`PIN-RETRIES`	Set number of retries for PIN attempts.
`RESET-CODE-RETRIES`	Set number of retries for RESET CODE attempts.
`ADMIN-PIN-RETRIES`	Set number of retries for ADMIN PIN attempts.

8.3.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --admin-pin TEXT`	Admin PIN for OpenPGP.
`-f, --force`	Confirm the action without prompting.

8.4 ykman openpgp certificates [OPTIONS] COMMAND [ARGS]...

Description

Manage certificates.

8.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.

8.4.2 Commands

Command	Description
`delete`	Delete an OpenPGP certificate.
`export`	Export an OpenPGP certificate.
`import`	Import an OpenPGP certificate.

8.5 ykman openpgp certificates delete [OPTIONS] KEY

Description

Delete an OpenPGP certificate.

8.5.1 Arguments

Argument	Description
`KEY`	Key slot to delete certificate from `sig`, `enc`, `aut`, or `att`

8.5.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --admin-pin TEXT`	Admin PIN for OpenPGP.

8.6 ykman openpgp certificates export [OPTIONS] KEY CERTIFICATE

Description

Export an OpenPGP certificate.

8.6.1 Arguments

Argument	Description
`CERTIFICATE`	File to write certificate to. Use `'-'` to use `stdout`.
`KEY`	Key slot to read from (`sig`, `enc`, `aut`, or `att`).

8.6.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-F, --format [PEM|DER]`	Encoding format. [Default: `PEM`]

8.7 ykman openpgp certificates import [OPTIONS] KEY CERTIFICATE

Description

Import an OpenPGP certificate.

8.7.1 Arguments

Argument	Description
`CERTIFICATE`	File containing the certificate. Use `'-'` to use `stdin`.
`KEY`	Key slot to import certificate to (`sig`, `enc`, `aut`, or `att`).

8.7.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --admin-pin TEXT`	Admin PIN for OpenPGP.

8.8 ykman openpgp keys [OPTIONS] COMMAND [ARGS]...

Description

Manage private keys.

8.8.1 Options

Option	Description
`-h, --help`	Show this message and exit.

8.8.2 Commands

Command	Description
`attest`	Generate an attestation certificate for a key.
`import`	Import a private key (ONLY SUPPORTS ATTESTATION KEY).
`set-touch`	Set touch policy for OpenPGP keys.

8.9 ykman openpgp keys attest [OPTIONS] KEY CERTIFICATE

Description

Generate an attestation certificate for a key. Attestation is used to show that an asymmetric key was generated on the YubiKey and therefore doesn't exist outside the device.

8.9.1 Arguments

Argument	Description
`KEY`	Key slot to attest (`sig`, `enc`, `aut`).
`CERTIFICATE`	File to write attestation certificate to. Use `'-'` to use `stdout`.

8.9.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-F, --format [PEM|DER]`	Encoding format. [Default: `PEM`]
`-P, --pin TEXT`	PIN code.

8.10 ykman openpgp keys import [OPTIONS] KEY PRIVATE-KEY

Description

Import a private key (ONLY SUPPORTS ATTESTATION KEY). Import a private key for OpenPGP attestation.

8.10.1 Arguments

Argument	Description
`KEY`	Key slot to import (`sig`, `enc`, `aut`).
`PRIVATE-KEY`	File containing the private key. Use `'-'` to use `stdin`.

8.10.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --admin-pin TEXT`	Admin PIN for OpenPGP.

8.11 ykman openpgp keys set-touch [OPTIONS] KEY POLICY

Description

Set touch policy for OpenPGP keys.

8.11.1 Arguments

Argument	Description
`KEY`	Key slot to set (`sig`, `enc`, `aut` or `att`).
`POLICY`	Touch policy to set (`on`, `off`, `fixed`, `cached` or `cached-fixed`).

The touch policy is used to require user interaction for all operations using the private key on the YubiKey. The touch policy is set individually for each key slot. To see the current touch policy, run:

```
$ ykman openpgp info
```

8.11.2 Touch Policies

Policy	Description
`Cached`	Touch required, cached for 15s after use.
`Cached-Fixed`	Touch required, cached for 15s after use, can't be disabled without a full reset.
`Fixed`	Touch required, can't be disabled without a full reset.
`Off`	No touch required. (default)
`On`	Touch required.

8.11.3 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --admin-pin TEXT`	Admin PIN for OpenPGP.
`-f, --force`	Confirm the action without prompting.

8.12 ykman openpgp info [OPTIONS]

Description

Display status of OpenPGP application.

8.12.1 Options

Option	Description
`-h, --help`	Show this message and exit.

8.13 ykman openpgp reset [OPTIONS]

Description

Reset OpenPGP application. This action wipes all OpenPGP data, and sets all PINs to their default values.

8.13.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

To get in touch with Yubico Support, go to https://support.yubico.com/hc/en-us/requests/new.

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CHAPTER

NINE

OTP COMMANDS

Acronyms and their definitions are listed at the bottom of the *Base Commands* page.

9.1 ykman otp [OPTIONS] COMMAND [ARGS]...

Description

Manage OTP application. The YubiKey provides two keyboard-based slots that can each be configured with a credential. Several credential types are supported. A slot configuration can be write-protected with an access code. This prevents the configuration from being overwritten without the access code provided.

Note: Mode-switching the YubiKey is not possible when a slot is configured with an access code.

9.1.1 Examples

Swap the configurations between the two slots:

```
$ ykman otp swap
```

Program a **random challenge-response** credential to slot 2:

```
$ ykman otp chalresp --generate 2
```

Program a Yubico **OTP credential** to slot 1, using the serial as public id:

```
$ ykman otp yubiotp 1 --serial-public-id
```

Program a random 38 character long **static password** to slot 2:

```
$ ykman otp static --generate 2 --length 38
```

9.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`--access-code HEX`	A 6-byte access code. Set to empty to use a prompt for input.

9.1.3 Commands

Command	Description
`calculate`	Perform a challenge-response operation.
`chalresp`	Program a challenge-response credential.
`delete`	Deletes the configuration stored in a slot.
`hotp`	Program an HMAC-SHA1 OATH-HOTP credential.
`info`	Display general status of the YubiKey OTP slots.
`ndef`	Configure a slot to be used over NDEF (NFC).
`settings`	Update the settings for a slot.
`static`	Configure a static password.
`swap`	Swaps the two slot configurations.
`yubiotp`	Program a Yubico OTP credential.

9.2 ykman otp calculate [OPTIONS] {1|2} [CHALLENGE]

Description

Perform a challenge-response operation. Send a challenge (in hex) to a YubiKey slot with a challenge-response credential, and read the response. Supports output as an OATH-TOTP code.

9.2.1 Arguments

Argument	Description
CHALLENGE	

9.2.2 Options

Option	Description
-h, --help	Show this message and exit.
-d, --digits [6|8]	Number of digits in generated TOTP code. [Default: 6]
-T, --totp	Generate a TOTP code, use the current time if challenge is omitted.

9.3 ykman otp chalresp [OPTIONS] {1|2]} [KEY]

Description

Program a challenge-response credential.

9.3.1 Arguments

Argument	Description
KEY	If KEY is not specified, an interactive prompt asks for it.

9.3.2 Options

Option	Description
-h, --help	Show this message and exit.
-f, --force	Confirm the action without prompting.
-g, --generate	Generate a random secret key. Conflicts with KEY argument.
-t, --touch	Require touch on the YubiKey to generate a response.
-T, --totp	Use a base32-encoded key for TOTP credentials.

9.4 ykman otp delete [OPTIONS] {1|2}

Description

Deletes the configuration in the specified slot.

9.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

9.5 ykman otp hotp [OPTIONS] {1|2} [KEY]

Description

Program an HMAC-SHA1 OATH-HOTP credential.

9.5.1 Arguments

Argument	Description
`KEY`	

9.5.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-d, --digits [6|8]`	Number of digits in generated code. [Default: `6`]
`-c, --counter INTEGER`	Initial counter value.
`--no-enter`	Do not send an **Enter** keystroke after outputting the code.
`-f, --force`	Confirm the action without prompting.

9.6 ykman otp info [OPTIONS]

Description

Display general status of YubiKey OPT slots.

9.6.1 Options

Option	Description
`-h, --help`	Show this message and exit.

9.7 ykman otp ndef [OPTIONS] {1|2}

Description

Configure a slot to be used over NDEF (NFC). The default prefix is used if no prefix is specified: "https://my.yubico.com/yk/#"

9.7.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-p, --prefix TEXT`	Added before the NDEF payload. Typically a URI.

9.8 ykman otp settings [OPTIONS] {1|2}

Description

Update the settings for a slot. Change the settings for a slot without changing the stored secret. All settings not specified are written with default values.

9.8.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-A, --new-access-code HEX`	Set a new 6-byte access code for the slot. Set to empty to use a prompt for input.
`--delete-access-code`	Remove access code from the slot.
`--enter / --no-enter`	Should send **Enter** keystroke after slot output. [Default: `True`]
`-f, --force`	Confirm the action without prompting.
`-p, --pacing [0|20|40|60]`	Throttle output speed by adding a delay (in ms) between characters emitted. [Default: `0`]
`--use-numeric-keypad`	Use scancodes for numeric keypad when sending digits. Helps with some keyboard layouts. [Default: `False`]

9.9 ykman otp static [OPTIONS] {1|2} [PASSWORD]

Description

Configure a static password. To avoid problems with different keyboard layouts, the following characters (upper and lower case) are allowed by default:

```
c b d e f g h i j k l n r t u v
```

Use the `--keyboard-layout` option to allow more characters based on preferred keyboard layout.

9.9.1 Arguments

Argument	Description
`PASSWORD`	Specify if required.

9.9.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.
`-g, --generate`	Generate a random password.
`-k, --keyboard-layout [[MODHEX|US|UK|DE|FR|IT|BEPO|NORMAN]`	Keyboard layout to use for the static password. [Default: `KEYBOARD_LAYOUT.MODHEX`]
`-l, --length LENGTH`	Length of generated password. [Default: 38;1<=x<=38]
`--no-enter`	Do not send an **Enter** keystroke after outputting the password.

9.10 ykman otp swap [OPTIONS]

Description

Swaps the two slot configurations.

9.10.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

9.11 ykman otp yubiotp [OPTIONS] {1|2}

Description

Program a Yubico OTP credential.

9.11.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.
`-k, --key HEX`	16-byte secret key.
`-g, --generate-private-id`	Generate a random private ID. Conflicts with `--private-id`.
`-G, --generate-key`	Generate a random secret key. Conflicts with `--key`.
`--no-enter`	Do not send an **Enter** keystroke after emitting the OTP.
`-P, --public-id MODHEX`	Public identifier prefix.
`-p, --private-id HEX`	6-byte private identifier.
`-S, --serial-public-id`	Use YubiKey serial number as public ID. Conflicts with `--public-id`.
`-u, --upload`	Upload credential to YubiCloud (opens in browser). Conflicts with `--force`.

To get in touch with Yubico Support, click here.

CHAPTER

TEN

PIV COMMANDS

Acronyms and their definitions are listed at the bottom of the *Base Commands* page.

10.1 ykman piv [OPTIONS] COMMAND [ARGS]...

Description

Manage the PIV Application.

10.1.1 Examples

Generate an ECC P-256 private key and a self-signed certificate in slot 9a:

```
$ ykman piv keys generate --algorithm ECCP256 9a pubkey.pem
$ ykman piv certificates generate --subject "yubico" 9a pubkey.pem
```

Change the PIN from 123456 to 654321:

```
$ ykman piv access change-pin --pin 123456 --new-pin 654321
```

Reset all PIV data and restore default settings:

```
$ ykman piv reset
```

10.1.2 Options

Option	Description
`-h, --help`	Show this message and exit.

10.1.3 Commands

Command	Description
`access`	Manage PIN, PUK and Management Key.
`certificates`	Manage certificates.
`info`	Display general status of the PIV application.
`keys`	Manage private keys.
`objects`	Manage PIV data objects.
`reset`	Reset all PIV data.

10.2 ykman piv access [OPTIONS] COMMAND [ARGS]...

Description

Manage PIN, PUK, and Management Key.

10.2.1 Options

Option	Description
`-h, --help`	Show this message and exit.

10.2.2 Commands

Command	Description
`change-management-key`	Change the management key.
`change-pin`	Change the PIN code.
`change-puk`	Change the PUK code.
`set-retries`	Set the number of PIN and PUK retry attempts.
`unblock-pin`	Unblock the PIN (using PUK).

10.3 ykman piv access change-management-key [OPTIONS]

Description

Change the management key. Management functionality is guarded by a management key. This key is required for administrative tasks, such as generating key pairs. A random key may be generated and stored on the YubiKey, protected by PIN.

10.3.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --algorithm [TDES|AES128|AES192|AES256]`	Management key algorithm. [Default: TDES]
`-f, --force`	Confirm the action without prompting.
`-g, --generate`	Generate a random management key. Implied by `--protect` unless `--new-management-key` is also given. Conflicts with `--new-management-key`.
`-m, --management-key TEXT`	Current management key.
`-n, --new-management-key TEXT`	A new management key.
`-p, --protect`	Store new management key on the YubiKey, protected by PIN. A random key is used if no key is provided.
`-P, --pin TEXT`	PIN code.
`-t, --touch`	Require touch on YubiKey when prompted for management key.

10.4 ykman piv access change-pin [OPTIONS]

Description

Change the PIN code. The PIN must be between 6 and 8 characters long, and it can be any type of alphanumeric character. For cross-platform compatibility, numeric PINs are recommended.

10.4.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-n, --new-pin TEXT`	A new PIN.
`-P, --pin TEXT`	Current PIN code.

10.5 ykman piv access change-puk [OPTIONS]

Description

Change the PUK code. If the PIN is lost or blocked it can be reset using a PUK. The PUK must be between 6 and 8 characters long, and it can be any type of alphanumeric character.

10.5.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-n, --new-puk TEXT`	A new PUK code.
`-p, --puk TEXT`	Current PUK code.

10.6 ykman piv access set-retries [OPTIONS] PIN-RETRIES PUK-RETRIES

Description

Set the number of PIN and PUK retry attempts.

Note: This resets the PIN and PUK to their factory defaults.

10.6.1 Arguments

Argument	Description
`PIN-RETRIES`	Set number of retries for PIN attempts.
`PUK-RETRIES`	Set number of retries for PUK attempts.

10.6.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.
`-m, --management-key TEXT`	The management key.
`-P, --pin TEXT`	PIN code.

10.7 ykman piv access unblock-pin [OPTIONS]

Description

Unblock the PIN (using PUK).

10.7.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-n, --new-pin NEW-PIN`	A new PIN code.
`-p, --puk TEXT`	Current PUK code.

10.8 ykman piv certificates [OPTIONS] COMMAND [ARGS]...

Description

Manage certificates.

10.8.1 Options

Option	Description
`-h, --help`	Show this message and exit.

10.8.2 Commands

Option	Description
`delete`	Delete a certificate.
`export`	Export an X.509 certificate.
`generate`	Generate a self-signed X.509 certificate.
`import`	Import an X.509 certificate.
`request`	Generate a Certificate Signing Request (CSR).

10.9 ykman piv certificates delete [OPTIONS] SLOT

Description

Delete a certificate. Delete a certificate from a PIV slot on the YubiKey.

10.9.1 Arguments

Argument	Description
SLOT	PIV slot of the certificate.

10.9.2 Options

Option	Description
-h, --help	Show this message and exit.
-m, --management-key TEXT	The management key.
-P, --pin TEXT	PIN code.

10.10 ykman piv certificates export [OPTIONS] SLOT CERTIFICATE

Description

Export an X.509 certificate. Reads a certificate from one of the PIV slots on the YubiKey.

10.10.1 Arguments

Argument	Description
SLOT	PIV slot of the certificate.
CERTIFICATE	File to write certificate to. Use '-' to use stdout.

10.10.2 Options

Option	Description
-h, --help	Show this message and exit.
-F, --format [PEM|DER]	Encoding format. [Default: PEM]

10.11 ykman piv certificates generate [OPTIONS] SLOT PUBLIC-KEY

Description

Generate a self-signed X.509 certificate. A self-signed certificate is generated and written to one of the slots on the YubiKey. A private key must already be present in the corresponding key slot.

10.11.1 Arguments

Argument	Description
SLOT	PIV slot of the certificate.
PUBLIC-KEY	File containing a public key. Use '-' to use stdin.

10.11.2 Options

Option	Description
-h, --help	Show this message and exit.
-a, --hash-algorithm [SHA1|SHA256|SHA384|SHA512]	Hash algorithm. [default: SHA256]
-d, --valid-days INTEGER	Number of days until the certificate expires. [Default: 365]
-m, --management-key TEXT	The management key.
-P, --pin TEXT	PIN code.
-s, --subject TEXT	Subject for the certificate, as an RFC 4514 string. [required].

10.12 ykman piv certificates import [OPTIONS] SLOT CERTIFICATE

Description

Import an X.509 certificate. Write a certificate to one of the PIV slots on the YubiKey.

10.12.1 Arguments

Argument	Description
SLOT	PIV slot of the certificate.
CERTIFICATE	File containing the certificate. Use '-' to use stdin.

10.12.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-m, --management-key TEXT`	The management key.
`-p, --password TEXT`	A password may be needed to decrypt the data.
`-P, --pin TEXT`	PIN code.
`-v, --verify`	Verify that the certificate matches the private key in the slot.

10.13 ykman piv certificates request [OPTIONS] SLOT PUBLIC-KEY CSR

Description

Generate a Certificate Signing Request (CSR). A private key must already be present in the corresponding key slot.

10.13.1 Arguments

Argument	Description
`CSR`	File to write CSR to. Use `'-'` to use `stdout`.
`PUBLIC-KEY`	File containing a public key. Use `'-'` to use `stdin`.
`SLOT`	PIV slot of the certificate.

10.13.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-a, --hash-algorithm [SHA1|SHA256|SHA384|SHA512]`	Hash algorithm. [default: SHA256]
`-P, --pin TEXT`	PIN code.
`-s, --subject TEXT`	Subject for the requested certificate, as an RFC 4514 string. [Required]

10.14 ykman piv info [OPTIONS]

Description

Display general status of PIV application.

10.14.1 Options

Option	Description
`-h, --help`	Show this message and exit.

10.15 ykman piv keys [OPTIONS] COMMAND [ARGS]...

Description

Manage private keys.

10.15.1 Options

Option	Description
`-h, --help`	Show this message and exit.

10.15.2 Commands

Command	Description
`attest`	Generate an attestation certificate for a key pair.
`export`	Export a public key corresponding to a stored private key.
`generate`	Generate an asymmetric key pair.
`import`	Import a private key from file.

10.16 ykman piv keys attest [OPTIONS] SLOT CERTIFICATE

Description

Generate an attestation certificate for a key pair. Attestation is used to show that an asymmetric key was generated on the YubiKey and therefore doesn't exist outside the device.

10.16.1 Arguments

Argument	Description
CERTIFICATE	File to write attestation certificate to. Use '-' to use stdout.
SLOT	PIV slot of the private key.

10.16.2 Options

Option	Description
-h, --help	Show this message and exit.
-F, --format [PEM|DER]	Encoding format. [Default: PEM]

10.17 ykman piv keys export [OPTIONS] SLOT PUBLIC-KEY

Description

Export a public key corresponding to a stored private key. This command uses several different mechanisms for exporting the public key corresponding to a stored private key, which may fail. If a certificate is stored in the slot it is assumed to contain the correct public key. If this is not the case, the wrong public key will be returned. The --verify flag can be used to verify that the public key being returned matches the private key, by using the slot to create and verify a signature. This may require the PIN to be provided.

10.17.1 Arguments

Argument	Description
PUBLIC-KEY	File containing the generated public key. Use - to use stdout.
SLOT	PIV slot of the private key.

10.17.2 Options

Option	Description
-h, --help	Show this message and exit.
-F, --format [PEM|DER]	Encoding format. [default: PEM]
-P, --pin TEXT	PIN code (used for --verify).
-v, --verify	Verify that the public key matches the private key in the slot.

10.18 ykman piv keys generate [OPTIONS] SLOT PUBLIC-KEY

Description

Generate an asymmetric key pair. The private key is generated on the YubiKey, and written to one of the slots.

10.18.1 Arguments

Argument	Description
PUBLIC-KEY	File containing the generated public key. Use '-' to use stdout.
SLOT	PIV slot of the private key.

10.18.2 Options

Option	Description
-h, --help	Show this message and exit.
-a, --algorithm [RSA1024 RSA2048|ECCP256|ECCP384]	Algorithm to use in key generation. [Default: RSA2048]
-F, --format [PEM|DER]	Encoding format. [Default: PEM]
-m, --management-key TEXT	The management key.
-P, --pin TEXT	PIN code.
--pin-policy [DEFAULT| NEVER|ONCE|ALWAYS]	PIN policy for slot.
--touch-policy [DEFAULT| NEVER|ALWAYS|CACHED]	Touch policy for slot.

10.19 ykman piv keys import [OPTIONS] SLOT PRIVATE-KEY

Description

Import a private key from file. Write a private key to one of the PIV slots on the YubiKey.

10.19.1 Arguments

Argument	Description
PRIVATE-KEY	File containing the private key. Use '-' to use stdin.
SLOT	PIV slot of the private key.

10.19.2 Options

Option	Description
-h, --help	Show this message and exit.
-m, --management-key TEXT	The management key.
--pin-policy [DEFAULT|NEVER ONCE|ALWAYS]	PIN policy for slot.
-p, --password TEXT	Password used to decrypt the private key.
-P, --pin TEXT	PIN code.
--touch-policy [DEFAULT| NEVER|ALWAYS|CACHED]	Touch policy for slot.

10.20 ykman piv objects [OPTIONS] COMMAND [ARGS]...

Description

Manage PIV data objects.

10.20.1 Examples

Write the contents of a file to data object with ID: `abc123:`

```
$ ykman piv objects import abc123 myfile.txt
```

Read the contents of the data object with ID: `abc123 into a file:`

```
$ ykman piv objects export abc123 myfile.txt
```

Generate a random value for CHUID:

```
$ ykman piv objects generate chuid
```

10.20.2 Options

Option	Description
`-h, --help`	Show this message and exit.

10.20.3 Commands

Command	Description
`export`	Export an arbitrary PIV data object.
`generate`	Generate and write data for a supported data object.
`import`	Write an arbitrary PIV object.

10.21 ykman piv objects export [OPTIONS] OBJECT OUTPUT

Description

Export an arbitrary PIV data object.

10.21.1 Arguments

Argument	Description
`OBJECT`	Name of PIV data object, or ID in HEX.
`OUTPUT`	File to write object to. Use `'-'` to use `stdout`.

10.21.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-P, --pin TEXT`	PIN code.

10.22 ykman piv objects generate [OPTIONS] OBJECT

Description

Generate and write data for a supported data object.

10.22.1 Arguments

Argument	Description
`OBJECT`	Name of PIV data object, or ID in HEX. Supported data objects are: `CHUID` (Card Holder Unique ID) `CCC` (Card Capability Container)

10.22.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-m, --management-key TEXT`	The management key.
`-P, --pin TEXT`	PIN code.

10.23 ykman piv objects import [OPTIONS] OBJECT DATA

Description

Write an arbitrary PIV object. Write a PIV object by providing the object id. Yubico writable PIV objects are available in the range 5f0000 - 5fffff.

10.23.1 Arguments

Argument	Description
`DATA`	File containing the data to be written. Use `'-'` to use `stdin`.
`OBJECT`	Name of PIV data object, or ID in HEX.

10.23.2 Options

Option	Description
`-h, --help`	Show this message and exit.
`-m, --management-key TEXT`	The management key.
`-P, --pin TEXT`	PIN code.

10.24 ykman piv reset [OPTIONS]

Description

Reset all PIV data. This action wipes all data and restores factory settings for the PIV application on your YubiKey.

10.24.1 Options

Option	Description
`-h, --help`	Show this message and exit.
`-f, --force`	Confirm the action without prompting.

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CHAPTER

ELEVEN

YUBIHSM COMMANDS

For a full description of YubiHSM Auth, see the corresponding chapter in the YubiKey 5 Series Technical Manual. YubiHSM Auth is disabled in firmware version 5.4.X.

11.1 Enable or Disable YubiHSM Auth on a YubiKey

This section includes the expected output and testing methods.

Enable YubiHSM Auth by running:

```
ykman config usb --enable HSMAUTH
YubiHSM Auth successfully enabled.
```

Test enablement by connecting to the YubiHSM with YubiHSM-Shell:

```
yubihsm> session ykopen 1 "default key" "my secret"
Session authenticated to YubiHSM2.
```

Disable YubiHSM Auth by running:

```
ykman config usb --disable HSMAUTH
YubiHSM Auth successfully disabled.
```

Test disablement by connecting to the YubiHSM with YubiHSM-Shell:

```
yubihsm> session ykopen 1 "default key" "my secret"
No access to the YubiKey application YubiHSM Auth.
```

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CHAPTER

TWELVE

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12.3 Document Updated

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