

# MyID MFA and PSM

Version 5.2

## YubiKey Reprogramming Guide

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## Conventions used in this document

- Lists:
  - Numbered lists are used to show the steps involved in completing a task when the order is important.
  - Bulleted lists are used when the order is unimportant or to show alternatives.
- **Bold** is used for menu items and for labels.

For example:

  - Record a valid email address in '**From**' email address.
  - Select **Save** from the **File** menu.
- *Italic* is used for emphasis:

For example:

  - Copy the file *before* starting the installation.
  - Do *not* remove the files before you have backed them up.
- ***Bold and italic*** hyperlinks are used to identify the titles of other documents.

For example: "See the ***Release Notes*** for further information."

Unless otherwise explicitly stated, all referenced documentation is available on the product installation media.
- A `fixed width` font is used where the identification of spaces is important, including filenames, example SQL queries and any entries made directly into configuration files or the database.
- **Notes** are used to provide further information, including any prerequisites or configuration additional to the standard specifications.

For example:

**Note:** This issue only occurs if updating from a previous version.
- Warnings are used to indicate where failure to follow a particular instruction may result in either loss of data or the need to manually configure elements of the system.

For example:

**Warning:** You must take a backup of your database before making any changes to it.

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# 1 Introduction

This document describes the process for configuring your YubiKey device so that you can use it to authenticate YubiKey-generated One Time PINs (OTPs) locally, without requiring access to the internet-based YubiKey servers for validation.

**Note:** MyID MFA and MyID PSM were previously known as Authlogics products. Authlogics is now an Intercede Group company and the products have been rebranded accordingly. The term 'Authlogics' may still appear in certain areas of the product.

## 1.1 Considerations

You must have MyID Multi-Factor Authentication (MFA) version 4 or above installed, configured, and fully operational. You must also provision all users issued with YubiKey devices with MyID One Time Codes (formerly known as PINpass) before customizing and provisioning YubiKeys for local MyID server validation.

## 2 YubiKey personalization

Intercede introduced the ability to process YubiKey generated one-time codes locally in MyID Multi-Factor Authentication version 4. Before you can use your YubiKeys locally without requiring them to be validated using the YubiKey published servers over the internet, you must customize and configure the devices for MyID use.

The process described in this chapter generates a Comma Separated Value (CSV) file that you can import into MyID MFA.

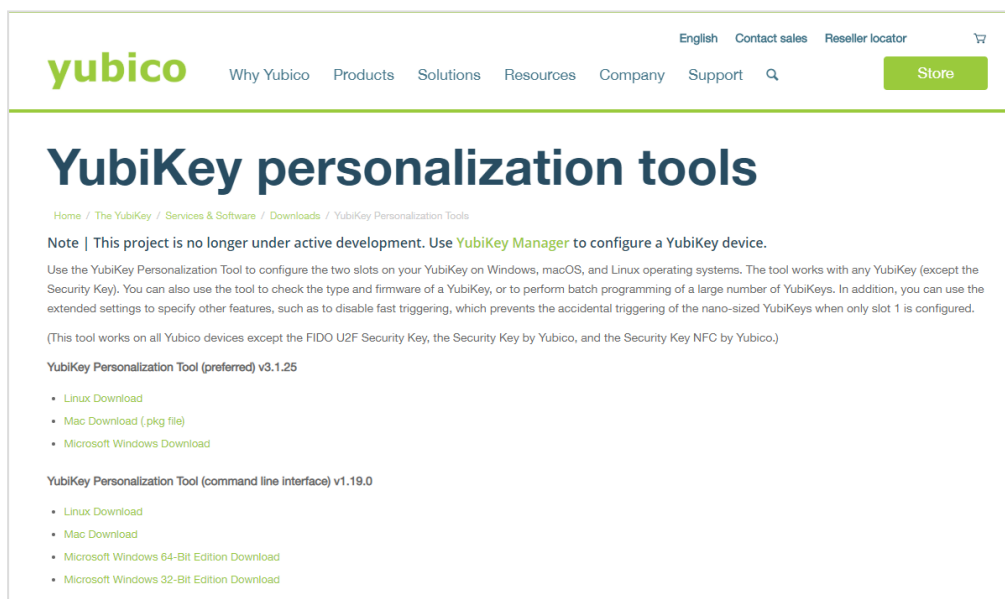
**Note:** If you do not customize the YubiKey according to the instructions in this chapter, YubiKey OTPs are still sent to YubiKey-hosted servers on the Internet, and no local server processing occurs. As such, outbound Internet access to the YubiKey servers is still required from the MyID Authentication servers.

### 2.1 Configuring YubiKey devices

You can carry out the customization using the YubiKey Personalization Tool.

You are recommended to use the Graphical User Interface version, not the command-line tool. You can download this tool from the YubiKey website:

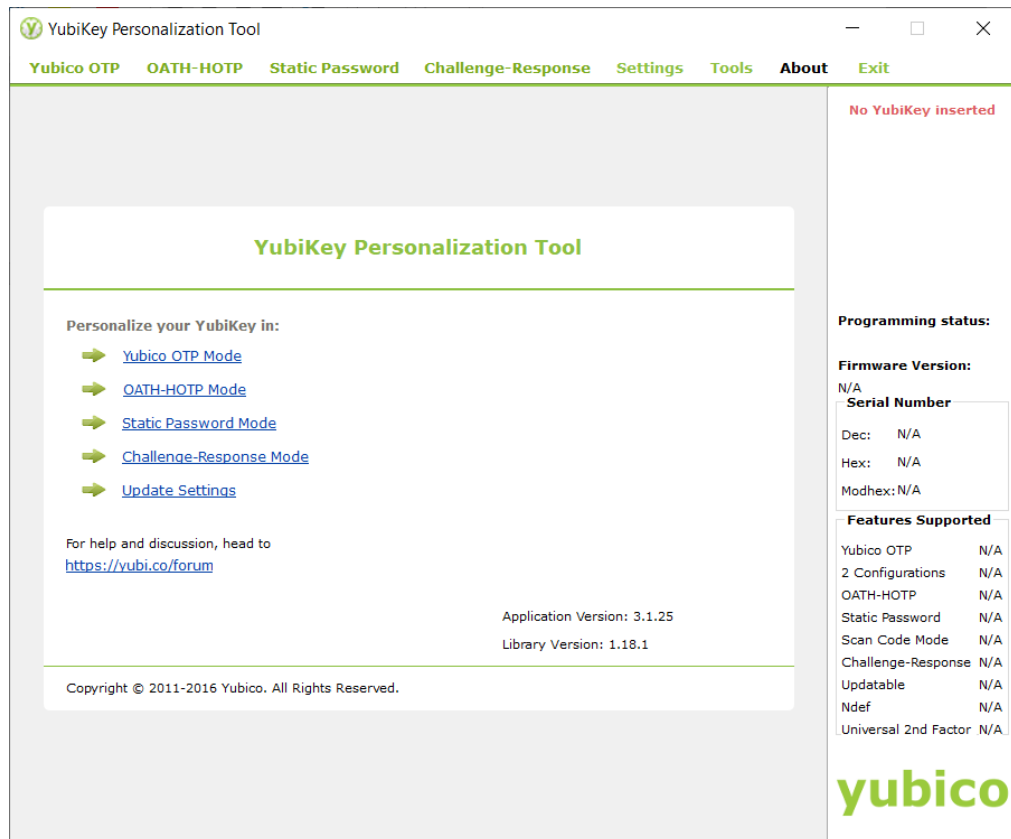
[www.yubico.com/products/services-software/download/yubikey-personalization-tools/](http://www.yubico.com/products/services-software/download/yubikey-personalization-tools/)



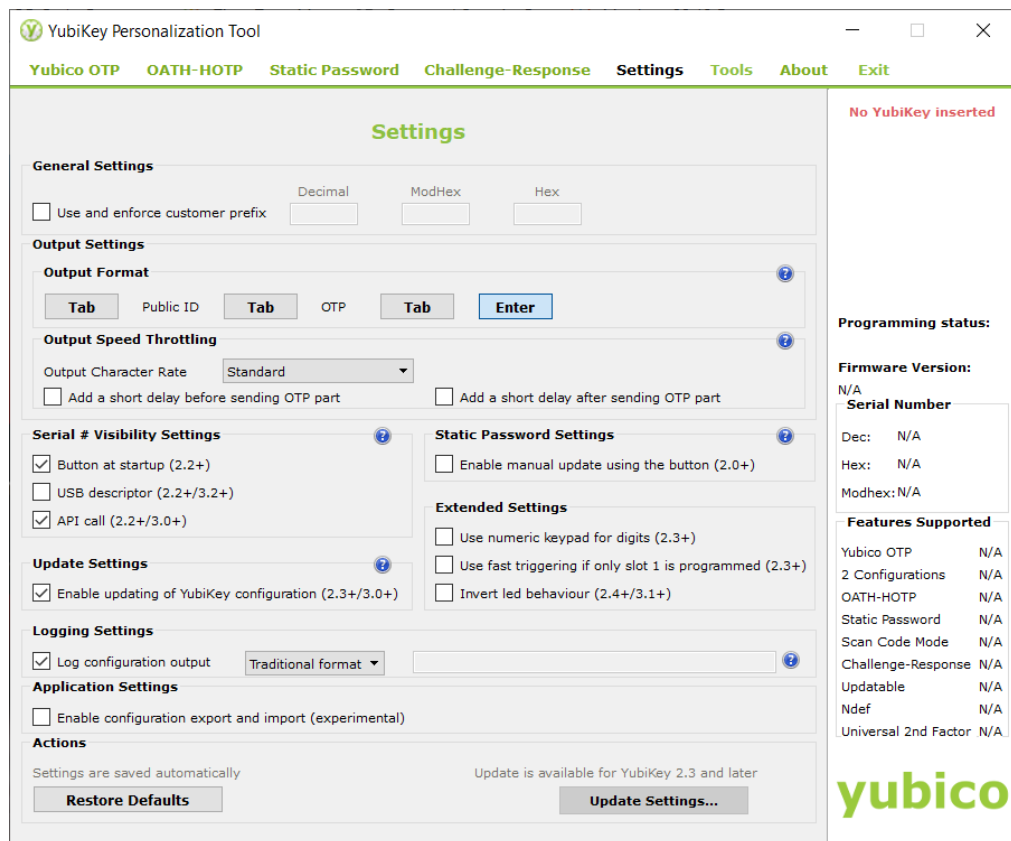
The screenshot shows the Yubico website's page for downloading the YubiKey Personalization Tools. The page has a green header with the Yubico logo and navigation links: Why Yubico, Products, Solutions, Resources, Company, Support, and a Store button. The main heading is "YubiKey personalization tools". Below the heading is a breadcrumb trail: Home / The YubiKey / Services & Software / Downloads / YubiKey Personalization Tools. A note states: "Note | This project is no longer under active development. Use YubiKey Manager to configure a YubiKey device." The text explains that the tool is used to configure YubiKey slots on Windows, macOS, and Linux, and can also check device type/firmware or perform batch programming. A disclaimer notes that the tool works on all Yubico devices except the FIDO U2F Security Key, the Security Key by Yubico, and the Security Key NFC by Yubico. Two download sections are listed: "YubiKey Personalization Tool (preferred) v3.1.25" with links for Linux, Mac (pkg file), and Microsoft Windows; and "YubiKey Personalization Tool (command line interface) v1.19.0" with links for Linux, Mac, Microsoft Windows 64-Bit Edition, and Microsoft Windows 32-Bit Edition.

To customize the YubiKey using the YubiKey Personalization Tool:

1. Ensure that no YubiKey devices are inserted into your workstation.
2. Launch the YubiKey Personalization Tool.
3. Select **Yubico OTP Mode**.

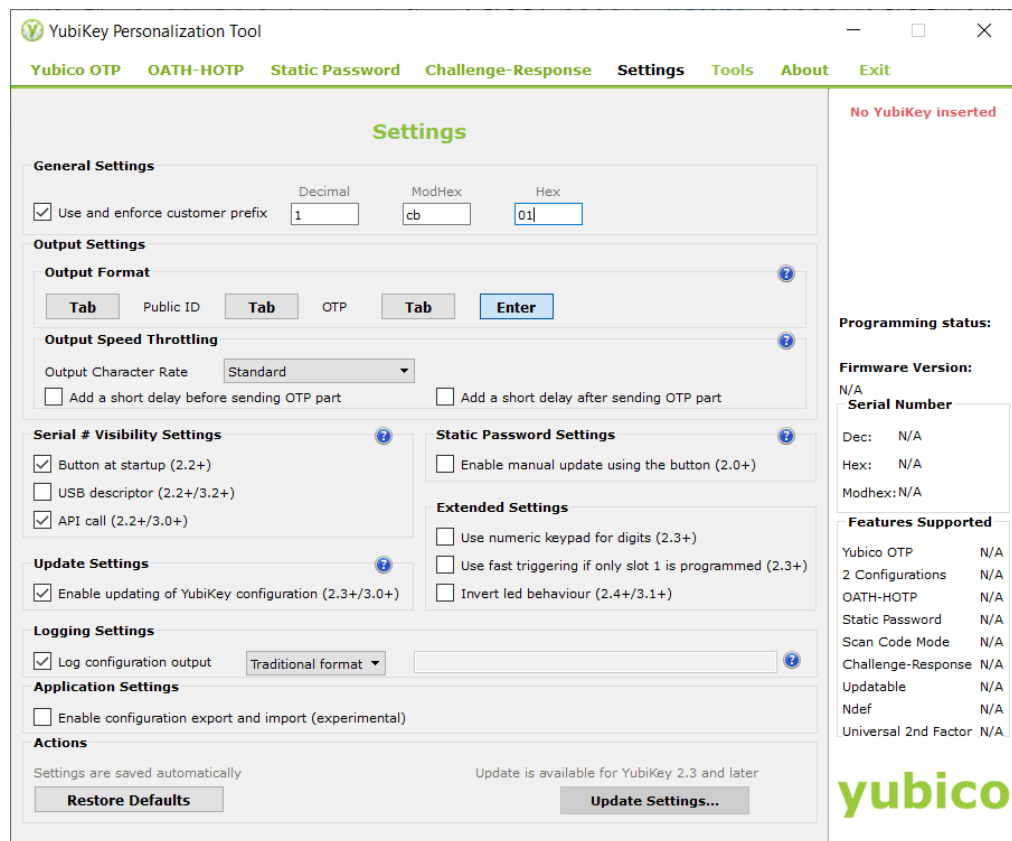


4. Select **Settings**.



Features Supported	
Yubico OTP	N/A
2 Configurations	N/A
OATH-HOTP	N/A
Static Password	N/A
Scan Code Mode	N/A
Challenge-Response	N/A
Updatable	N/A
Ndef	N/A
Universal 2nd Factor	N/A

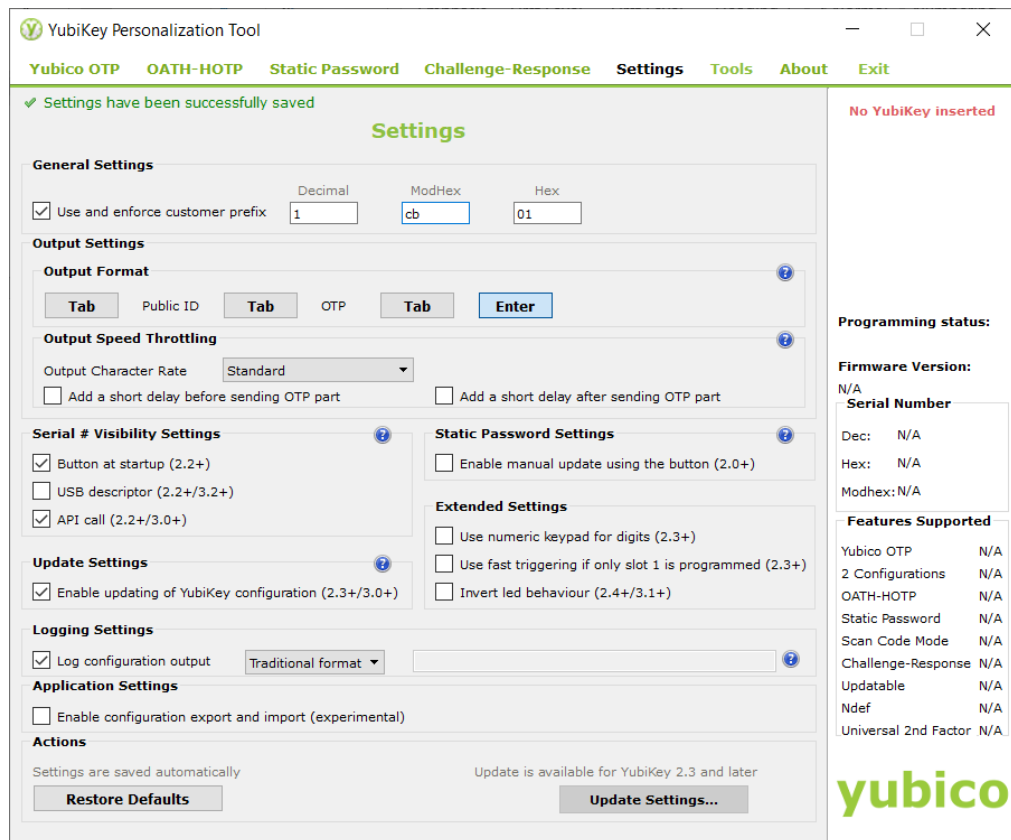
5. In the **General Settings** section, enable the **Use and enforce customer prefix** option and specify a value between 01 and FF in the HEX field.



Features Supported	
Yubico OTP	N/A
2 Configurations	N/A
OATH-HOTP	N/A
Static Password	N/A
Scan Code Mode	N/A
Challenge-Response	N/A
Updatable	N/A
Ndef	N/A
Universal 2nd Factor	N/A

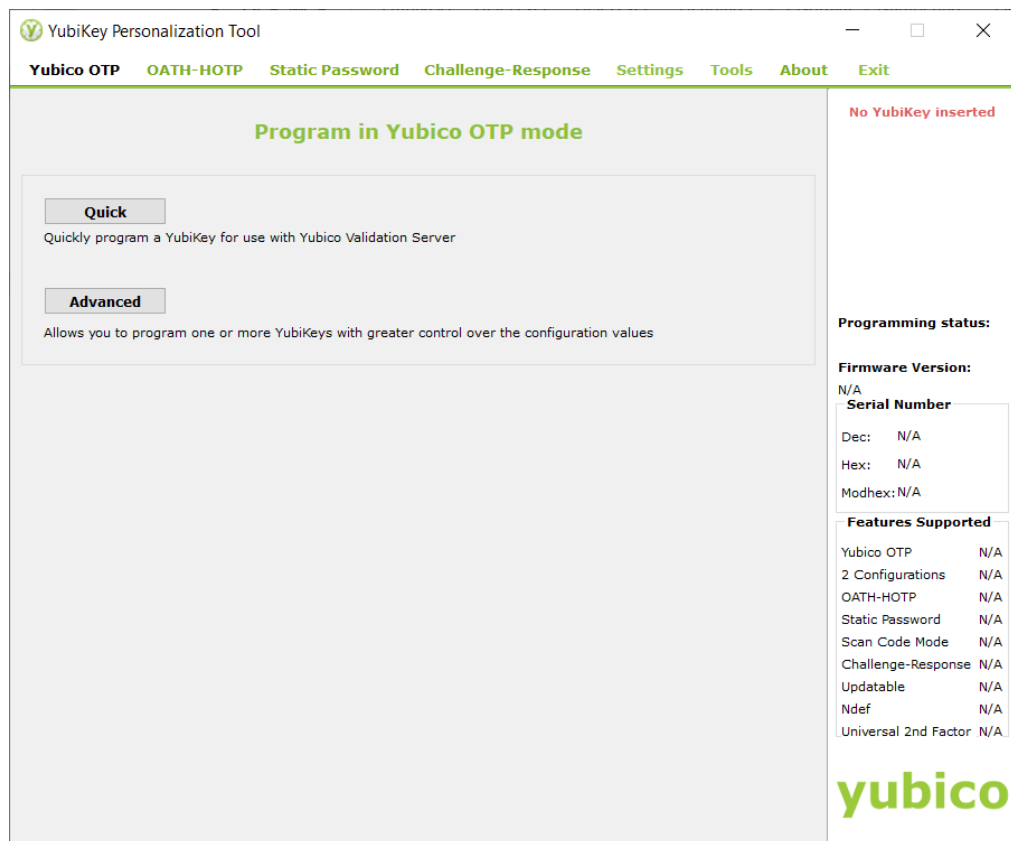
6. Once you have added a **Hex** value, click on the **Decimal** or **ModHex** fields to save the settings.

The message Settings have been successfully saved appears in the top left.



Features Supported	
Yubico OTP	N/A
2 Configurations	N/A
OATH-HOTP	N/A
Static Password	N/A
Scan Code Mode	N/A
Challenge-Response	N/A
Updatable	N/A
Ndef	N/A
Universal 2nd Factor	N/A

7. Select the **Yubico OTP** section.



8. Select **Advanced**.

YubiKey Personalization Tool

Yubico OTP OATH-HOTP Static Password Challenge-Response Settings Tools About Exit

### Program in Yubico OTP mode - Advanced

**Configuration Slot**  
Select the configuration slot to be programmed  
☐ Configuration Slot 1 ☐ Configuration Slot 2

☐ **Program Multiple YubiKeys**  
☐ Automatically program YubiKeys when inserted

**Parameter Generation Scheme**  
Identity from serial; Randomize Secrets

**Configuration Protection (6 bytes Hex)**  
YubiKey(s) unprotected - Keep it that way  
Current Access Code  
☐ Use Serial Number  
New Access Code  
☐ Use Serial Number

**Yubico OTP Parameters**  
☒ Public Identity (1-16 bytes Modhex) cc cb cc cc cc cc **Generate**  
Public Identity Length 6 (6 bytes is default length as required by Yubico OTP validation server)  
☒ Private Identity (6 bytes Hex) 00 00 00 00 00 00 **Generate**  
Secret Key (16 bytes Hex) 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 **Generate**

**Actions**  
Press Write Configuration button to program your YubiKey's selected configuration slot  
**Write Configuration** **Stop** **Reset** **Back**

**Results**

#	Public Identity (Modhex)	Status	Timestamp
---	--------------------------	--------	-----------

**Programming status:**  
No YubiKey inserted

**Firmware Version:**  
N/A  
**Serial Number**  
Dec: N/A  
Hex: N/A  
Modhex: N/A

**Features Supported**

Yubico OTP	N/A
2 Configurations	N/A
OATH-HOTP	N/A
Static Password	N/A
Scan Code Mode	N/A
Challenge-Response	N/A
Updatable	N/A
Ndef	N/A
Universal 2nd Factor	N/A

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9. Select **Configuration Slot 1** to re-program the short press slot of your YubiKey device.
10. Enable the **Program Multiple YubiKeys** and **Automatically program YubiKeys when inserted** options.

YubiKey Personalization Tool

Yubico OTP OATH-HOTP Static Password Challenge-Response Settings Tools About Exit

### Program in Yubico OTP mode - Advanced

**Configuration Slot**  
Select the configuration slot to be programmed  
☒ Configuration Slot 1 ☐ Configuration Slot 2

☒ **Program Multiple YubiKeys**  
☒ Automatically program YubiKeys when inserted  
Parameter Generation Scheme: Identity from serial; Randomize Secrets

**Configuration Protection (6 bytes Hex)**  
YubiKey(s) unprotected - Keep it that way  
Current Access Code:   
Use Serial Number: ☐  
New Access Code:   
Use Serial Number: ☐

**Yubico OTP Parameters**  
☒ Public Identity (1-16 bytes Modhex): cc cb cc cc cc cc cc **Generate**  
Public Identity Length: 6 (6 bytes is default length as required by Yubico OTP validation server)  
☒ Private Identity (6 bytes Hex): 5d 8f 62 27 49 a9 **Generate**  
Secret Key (16 bytes Hex): b2 b1 69 29 13 c3 e7 3c 28 98 c7 73 74 43 dd c7 **Generate**

**Actions**  
Press Write Configuration button to program your YubiKey's selected configuration slot  
**Write Configuration** **Stop** **Reset** **Back**

**Results**  
Table with 4 columns: #, Public Identity (Modhex), Status, Timestamp

**Programming status:**  
No YubiKey inserted

**Firmware Version:**  
N/A  
**Serial Number**  
Dec: N/A  
Hex: N/A  
Modhex: N/A

**Features Supported**

Yubico OTP	N/A
2 Configurations	N/A
OATH-HOTP	N/A
Static Password	N/A
Scan Code Mode	N/A
Challenge-Response	N/A
Updatable	N/A
Ndef	N/A
Universal 2nd Factor	N/A

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11. Insert your YubiKey device into the workstation, then, under the **Actions** section, click the **Write Configuration** option.

**YubiKey Personalization Tool**

Yubico OTP OATH-HOTP Static Password Challenge-Response Settings Tools About Exit

### Program in Yubico OTP mode - Advanced

**Configuration Slot**  
Select the configuration slot to be programmed  
☐ Configuration Slot 1 ☒ Configuration Slot 2

☒ **Program Multiple YubiKeys**  
☒ Automatically program YubiKeys when inserted

Parameter Generation Scheme  
Identity from serial; Randomize Secrets

**Configuration Protection (6 bytes Hex)**  
YubiKey(s) unprotected - Keep it that way  
Current Access Code  
☐ Use Serial Number  
New Access Code  
☐ Use Serial Number

**Yubico OTP Parameters**  
☒ Public Identity (1-16 bytes Modhex) cc cb cc cc cc cc cc **Generate**  
Public Identity Length 6 (6 bytes is default length as required by Yubico OTP validation server)  
☒ Private Identity (6 bytes Hex) 5d 8f 62 27 49 a9 **Generate**  
Secret Key (16 bytes Hex) b2 b1 69 29 13 c3 e7 3c 28 98 c7 73 74 43 dd c7 **Generate**

**Actions**  
Press Write Configuration button to program your YubiKey's selected configuration slot  
**Write Configuration** **Stop** **Reset** **Back**

**Results**

#	Public Identity (Modhex)	Status	Timestamp
---	--------------------------	--------	-----------

**YubiKey is inserted**

**Programming status:**  
Slot 1 and 2 configured

**Firmware Version:**  
4.3.7

**Serial Number**  
Dec: 6915630  
Hex: 69862e  
Modhex: hkjhdh

**Features Supported**  
Yubico OTP ✓  
2 Configurations ✓  
OATH-HOTP ✓  
Static Password ✓  
Scan Code Mode ✓  
Challenge-Response ✓  
Updatable ✓  
Ndef ✗  
Universal 2nd Factor ✓

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The tool creates a CSV file named `slot1.csv`.

12. Select the folder for the CSV and click **Save**.

**Select Log File**

← → ↑ ↓ This PC > System (C:) > YubiKeys Search YubiKeys

Organize New folder

Desktop Documents Downloads Music Pictures Videos System (C:) Data (D:) 2Tb Blue Passport (F:) USB SSD 1Tb (G:) TOSHIBA EXT (I:) 2Tb Blue Passport (F:) TOSHIBA EXT (I:) USB SSD 1Tb (G:) Network

Name Date modified Type Size  
No items match your search.

File name: slot1.csv  
Save as type: Comma-separated values (\*.csv)

Hide Folders **Save** Cancel

The **Results** field reflects the changes to the YubiKey device.

**YubiKey Personalization Tool**

**Yubico OTP** OATH-HOTP Static Password Challenge-Response Settings Tools About Exit

✓ YubiKey (Public ID: cccbchkhjdu) has been successfully configured. Please remove this YubiKey

### Program in Yubico OTP mode - Advanced

**Configuration Slot**  
Select the configuration slot to be programmed  
☐ Configuration Slot 1 ☒ Configuration Slot 2

☒ **Program Multiple YubiKeys**  
☒ Automatically program YubiKeys when inserted  
 Parameter Generation Scheme: Identity from serial; Randomize Secrets

**Configuration Protection (6 bytes Hex)**  
 YubiKey(s) unprotected - Keep it that way  
 Current Access Code:   
☐ Use Serial Number  
 New Access Code:   
☐ Use Serial Number


**Yubico OTP Parameters**  
☒ Public Identity (1-16 bytes Modhex) cc cb cc hk jh du **Generate**  
 Public Identity Length: 6 (6 bytes is default length as required by Yubico OTP validation server)  
☒ Private Identity (6 bytes Hex) 95 cb 5c ae e6 9f **Generate**  
 Secret Key (16 bytes Hex) af 76 c1 12 98 19 4e 10 7c ba 35 5c 9a 0a d8 c7 **Generate**

**Actions**  
 Press Write Configuration button to program your YubiKey's selected configuration slot  
**Write Configuration** **Stop** **Reset** **Back**

**Results**

#	Public Identity (Modhex)	Status	Timestamp
✓ 1	cccbchkhjdu	YubiKey has been successfully configured	15/05/2020 14:02

**YubiKey is inserted**



**Programming status:**  
Slot 1 and 2 configured

**Firmware Version:**  
4.3.7

**Serial Number**

Dec: 6915630  
 Hex: 69862e  
 Modhex: hkjhd

**Features Supported**

- Yubico OTP ✓
- 2 Configurations ✓
- OATH-HOTP ✓
- Static Password ✓
- Scan Code Mode ✓
- Challenge-Response ✓
- Updatable ✓
- Ndef ✗
- Universal 2nd Factor ✓

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13. Remove your YubiKey device and insert the next device.

Each device you insert is reprogrammed with the details written to the CSV file you created.

All new devices inserted are listed in the **Results** pane.

**YubiKey Personalization Tool**

Yubico OTP OATH-HOTP Static Password Challenge-Response Settings Tools About Exit

✓ YubiKey (Public ID: cccbchkhjdu) has been successfully configured. Please remove this YubiKey

### Program in Yubico OTP mode - Advanced

**Configuration Slot**  
Select the configuration slot to be programmed  
☐ Configuration Slot 1 ☒ Configuration Slot 2

☒ **Program Multiple YubiKeys**  
☒ Automatically program YubiKeys when inserted  
 Parameter Generation Scheme: Identity from serial; Randomize Secrets

**Configuration Protection (6 bytes Hex)**  
 YubiKey(s) unprotected - Keep it that way  
 Current Access Code:   
 Use Serial Number: ☐  
 New Access Code:   
 Use Serial Number: ☐


**Yubico OTP Parameters**  
☒ Public Identity (1-16 bytes Modhex): cc cb cc hk jh du **Generate**  
 Public Identity Length: 6 (6 bytes is default length as required by Yubico OTP validation server)  
☒ Private Identity (6 bytes Hex): 89 a1 87 e6 1f bb **Generate**  
 Secret Key (16 bytes Hex): 9f 59 5e c3 ea ee a9 6d 97 e3 19 33 f7 bd 97 b3 **Generate**

**Actions**  
 Press Write Configuration button to program your YubiKey's selected configuration slot  
**Write Configuration** **Stop** **Reset** **Back**

**Results**

#	Public Identity (Modhex)	Status	Timestamp
✓ 3	cccbchkhjdu	YubiKey has been successfully configured	15/05/2020 14:08
✓ 2	cccbchkhjdu	YubiKey has been successfully configured	15/05/2020 14:04
✓ 1	cccbchkhjdu	YubiKey has been successfully configured	15/05/2020 14:02

**YubiKey is inserted**



**Programming status:**  
Slot 1 and 2 configured

**Firmware Version:**  
4.3.7

**Serial Number**

Dec: 6915630  
 Hex: 69862e  
 Modhex: hkjdu

**Features Supported**

- Yubico OTP ✓
- 2 Configurations ✓
- OATH-HOTP ✓
- Static Password ✓
- Scan Code Mode ✓
- Challenge-Response ✓
- Updatable ✓
- Ndef ✗
- Universal 2nd Factor ✓

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All your devices have now been reprogrammed, and the CSV file is ready to be imported into the MyID Authentication Server. For more information on importing this file, see the *YubiKey OTP Configuration Wizard* section of the [MyID Authentication Server Installation and Configuration Guide](#).