

YubiKey Token Reprogramming

Generating YubiKey Device CSV for Authlogics MFA

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Introduction

This document describes the process for configuring your YubiKey device so that it can be used to authenticate YubiKey generated One Time PIN (OTP) locally and not require access to the internet-based YubiKey servers for validation.

Consideration

Authlogics Multi-Factor Authentication version 4 and above needs to be installed, configured and fully operationally. Furthermore, users issued with YubiKey devices will need be provisioned to Authlogics PINpass prior to customising and provisioning YubiKeys for local Authlogics server validation.

YubiKey Personalisation

Authlogics introduced the ability to locally process YubiKey generated one-time codes in Multi-Factor Authentication solution version 4. Before YubiKeys can be used locally and no longer be validated using the YubiKey published servers over the internet, the devices will need to be customised and configured for Authlogics use.

The process defined below will generate a Comma Separated Value (CSV) file which will need to be imported into Authlogics MFA.

If the YubiKey is not customised as per the instructions below, YubiKey OTPs will still be sent to YubiKey hosted servers on the Internet and no local server processing will occur. As such, outbound Internet access to the YubiKey servers will be required from the Authlogics Authentication servers will be required.

Configuring YubiKey Devices

Customisation is performed through the YubiKey Personalization Tool. We recommend using the Graphical User Interface version and not the command-line tool. This tool can be downloaded from <u>https://www.yubico.com/products/services-software/download/yubikey-personalization-tools/</u>



yubico	English Contact sales Reseller locator
YubiKe	ev personalization tools
	cy personalization tools
Home / The YubiKey / Services	as & Software / Downloads / YubiKey Personalization Tools
Note This project is no	o longer under active development. Use YubiKey Manager to configure a YubiKey device.
Use the YubiKey Personalizat Security Key). You can also us extended settings to specify of (This tool works on all Yubico	tion Tool to configure the two slots on your YubiKey on Windows, macOS, and Linux operating systems. The tool works with any YubiKey (except the use the tool to check the type and firmware of a YubiKey, or to perform batch programming of a large number of YubiKeys. In addition, you can use the other features, such as to disable fast triggering, which prevents the accidental triggering of the nano-sized YubiKeys when only slot 1 is configured. o devices except the FIDO U2F Security Key, the Security Key by Yubico, and the Security Key NFC by Yubico.)
YubiKey Personalization Tool	i (preferred) v3.1.25
Linux Download	
 Mac Download (.pkg file) 	
Microsoft Windows Downloa	ad
YubiKey Personalization Tool	i (command line interface) v1.19.0
Linux Download	
Mac Download	
Microsoft Windows 64-Bit Ed	Edition Download
 Microsoft Windows 32-Bit Fe 	Edition Download

Once installed and executed, please follow the instructions to customise the YubiKey. To start, ensure that no YubiKey devices are inserted into the workstation.

(1) Start the YubiKey Personalization Tool and select **Yubico OTP Mode**.



(2) Select Settings

fubico OTP OATH-HOTP Static Password	Challenge-Response Settings Tools Abou	ıt Exit
Sett	tings	No YubiKey inserted
Decimal 1 Use and enforce customer prefix	ModHex Hex	
Output Settings		
Output Format	0	
Tab Public ID Tab OFP T	ab Enter	Programming status:
Output Speed Throttling	0	
Output Character Rate Standard 💌		Firmware Version:
Add a short delay before sending OTP part	Add a short delay after sending OTP part	N/A Serial Number
Serial # Visibility Settings	Static Password Settings	Deer N/A
		Dec. N/A
✓ Button at startup (2.2+)	Enable manual update using the button (2.0+)	Hex: N/A
USB descriptor (2.2+/3.2+)	Extended Settings	Modhex: N/A
✓ API call (2.2+/3.0+)	Use numeric keyned for digits (2.3±)	Features Supported
Undate Settings	Use fast triangular if only slot 1 is assessmented (2.2.1)	Yubico OTP N/
	Use fast triggering it only slot 1 is programmed (2.5+)	2 Configurations N/
Enable updating of YubiKey configuration (2.3+/3.0+)	Invert led behaviour (2.4+/3.1+)	OATH-HOTP N/
Logging Settings		Static Password N/
✓ Log configuration output Traditional format ▼	0	Challenge-Response N/
Application Settings	•	Updatable N/
Enable configuration expect and impact (experimental)		Ndef N/
Actions		Universal 2nd Factor N/
Settings are saved automatically	update is available for YubiKey 2.3 and later	whice

(3) In General Settings, enable **Use and enforce customer prefix** and specify a value between **01** and **FF** in the **HEX** field

𝒱 YubiKey Personalization Tool	- 🗆 X
Yubico OTP OATH-HOTP Static Password Challenge-Response Settings Tools About	Exit
Settings	No YubiKey inserted
Decimal ModHex Hex Use and enforce customer prefix 1 cb 01	
Output Settings Output Format Tab Public ID Tab OTP Tab Enter	
Output Speed Throttling Image: Control of the speed o	Programming status: Firmware Version: N/A Serial Number
Serial # Visibility Settings Static Password Settings Ø Button at startup (2.2+) Enable manual update using the button (2.0+) USB descriptor (2.2+/3.2+) Extended Settings Ø API call (2.2+/3.0+) Use numeric keypad for digits (2.3+) Update Settings Imvert led behaviour (2.4+/3.1+) Imvert led behaviour (2.4+/3.1+) Imvert led behaviour (2.4+/3.1+)	Dec: N/A Hex: N/A Modhex:N/A Yubico OTP N/A 2 Configurations N/A OATH-HOTP N/A Static Password N/A
Log configuration output Traditional format Application Settings Enable configuration export and import (experimental) Actions Satings are eased automatically	Scan Code Mode N/A Challenge-Response N/A Updatable N/A Ndef N/A Universal 2nd Factor N/A
Restore Defaults Update is evaluate for Fubric 2.5 and later	yubico





(4) Once a Hex has been added, click on the Decimal or ModHex fields for the settings to be saved. The message *Settings has been successfully saved* will be displayed in the top left corner.



(5) Select Yubico OTP

	OATH-HOTP	Static Password	Challenge-Response	Settings	Tools	About	Exit		
		Program in Yu	bico OTP mode				No Yub	iKey inse	te
Quick Quickly progra	am a YubiKey for u	se with Yubico Validation :	Server						
Advance	d	ora YuhiYaya with graataa	control over the configuratio	n values			Program	ming stat	us
allows you to	program one or m	sie rubikeys with greater	control over the configuration	ii values			Einnen	a Mansian	
							N/A	e version	
							Serial N	lumber	
							Dec:	N/A	
							Hex:		
							Feature		
							Verbian Of		
							2 Configu	urations	
							OATH-HO	TP	
							Static Pas	ssword	
							Scan Coo	de Mode	
							Challeng	e-Response	f.
							Updatable	e	
							- Contraction		



(6) Select Advanced

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Yubico OTP	ОАТН-НОТР	Static Password	Challenge-Response	Settings	Tools	About	Exit	
	Progra	am in Yubico O)TP mode - Advar	nced			No YubiKey inse	rted
Configuration :	Slot							
Select the config	uration slot to be p	rogrammed						
Configuration	n Slot 1	Configuration S	lot 2			0		
Program Mu	ultiple YubiKeys		Configuration Protectio	on (6 bytes H	lex)	0		
Automatically	y program YubiKey	s when inserted	YubiKey(s) unprotected -	Keep it that w	ау	•		
Parameter Gene	ration Scheme	0	Current Access Code				Programming sta	tus:
Identity from se	rial; Randomize Se	ecrets 👻	New Access Code				Firmware Version	
	ramatars		Use Serial Number				N/A Serial Number	
Public Identi	y (1-16 bytes Mod	nex) cc cb cc cc cc cc			Generate		Dec: N/A	
Public Identity Le	ingth	6 🤤 (6 bytes is	default length as required by	Yubico OTP v	alidation serv	/er)	Hex: N/A	
Private Ident	ity (6 bytes Hex)	00 00 00 00 00 00			Generate		Modhex: N/A	
Secret Key (16 b	ytes Hex)	00 00 00 00 00 00	00 00 00 00 00 00 00 00 00 0	0	Generate		Features Suppor	ted
							Yubico OTP	N/A
Actions							2 Configurations	N/A
Actions Press Write Co	nfiguration button t	to program your YubiKey	's selected configuration slot				OATH-HOTP	N/4
Actions Press Write Co Write Conf	nfiguration button t	to program your YubiKey	's selected configuration slot				OATH-HOTP Static Password	N/A N/A
Actions Press Write Co Write Conf	nfiguration button t	to program your YubiKey Stop Rese	et Back				OATH-HOTP Static Password Scan Code Mode	N/A N/A N/A
Actions Press Write Co Write Conf Results	nfiguration button (to program your YubiKey Stop Rese	r's selected configuration slot et Back				OATH-HOTP Static Password Scan Code Mode Challenge-Response	N/A N/A N/A e N/A
Actions Press Write Co Write Conf Results # Publ	nfiguration button f iguration	to program your YubiKey Stop Rese	r's selected configuration slot et Back p				OATH-HOTP Static Password Scan Code Mode Challenge-Respons Updatable	N/A N/A N/A B N/A N/A

(7) Select Configuration Slot 1 to re-program the short press slot of your YubiKey device. Enable Program Multiple YubiKeys and Automatically program Yubikeys when inserted.

W YubiKey Personalization Too	l.					- 🗆	\times
Yubico OTP OATH-HOTP	Static Password	Challenge-Response	Settings	Tools	About	t Exit	
Progra	am in Yubico C)TP mode - Advai	nced			No YubiKey inse	rted
Configuration Slot							
Select the configuration slot to be p Configuration Slot 1	orogrammed O Configuration S	Slot 2			•		
✓ Program Multiple YubiKeys		Configuration Protection	on (6 bytes He	x)	0		
Automatically program YubiKey	s when inserted	YubiKey(s) unprotected -	Keep it that wa	У	•		
Parameter Generation Scheme Identity from serial: Randomize S	ecrets -	Current Access Code Use Serial Number				Programming sta	tus:
Yuhina OTB Baramatana		Use Serial Number				N/A	
Rublic Identity (1-16 bytes Mod	hex)			onorato			
Public Identity Length	6 (6 bytes is	default length as required by	Yubico OTP val	idation serv	er)	Hex: N/A	
Private Identity (6 bytes Hex)	5d 8f 62 27 49 a9	a constant reingen ab reiden au by	6	enerate		Modhex: N/A	
Secret Key (16 bytes Hex)	b2 b1 69 29 13 c3	e7 3c 28 98 c7 73 74 43 dd c	7 6	ienerate	0	Features Suppo	rted
Actions						Yubico OTP	N/A
Press Write Configuration button	to program your YubiKey	's selected configuration slot				2 Configurations	N/A
Write Configuration	Stop Res	et Back				Static Password	N/A
						Scan Code Mode	N/A
Results						Challenge-Respons	e N/A
# Public Identity (Modhey	() Status Timestam	ip.			\sim	Ndef	N/A
						Universal 2nd Facto	r N/A
					\sim	wubia	
						yubic	10



(8) Insert your YubiKey device into the workstation and select **Write Configuration** under Actions.

Yubico OTP OATH-HO	TP Static P	assword	Challenge-Response	Settings	Tools	About	t Exit	
Pro	gram in Y	ubico O	TP mode - Advar	nced			YubiKey is inser	rteo
Configuration Slot	be programmed						A A A A A A A A A A A A A A A A A A A	l
Configuration Slot 1 Program Multiple YubiKet	eys	infiguration S	Configuration Protection	n (6 bytes I	lex)	0	~	
 Automatically program Yub 	iKeys when inse	rted	YubiKev(s) unprotected -	Keep it that w	av	•		
Parameter Generation Scheme		0	Current Access Code				Programming stat	tus
Identity from serial: Randomi	ze Secrets	•	Use Serial Number				Slot 1 and 2 configu	red
			Use Serial Number				4.3.7	•
Yubico OTP Parameters							Serial Number	
Public Identity (1-16 bytes	Modhex) cc cb	ce ee ee ee			Generate	0	Dec: 6915630	
Public Identity Length	6 🌲	(6 bytes is	default length as required by	Yubico OTP v	alidation serv	ver)	Hex: 69862e	
Private Identity (6 bytes H	ex) 5d 8f	62 27 49 a9			Generate	0	Modhex:hkjhdu	
Secret Key (16 bytes Hex)	b2 b1	69 29 13 c3	e7 3c 28 98 c7 73 74 43 dd ci	7	Generate	0	Features Suppor	rte
							Yubico OTP	
Press Write Configuration bu	ttop to program	your YubiKay	's selected configuration slot				2 Configurations	
Fress write Configuration bu		your rubikey					OATH-HOTP	
Write Configuration	Stop	Rese	et Back				Static Password Scan Code Mode	
lesults							Challenge-Respons	e
# Public Identity (Mo	dhex) Status	Timestam	p			~	Updatable	
							Ndef	
							Universal 2nd Facto	r .
						U .		
							VIIDIC	*/

When Write Configuration is selected, a CSV file (slot1.csv) will be created and saved in a folder that you select.

𝒞 Select Log File				×
$\leftarrow \rightarrow \checkmark \uparrow$] > This PC > System (C:) > YubiKeys		ٽ ~	Search YubiKeys	م
Organize Vew folder				• •
Desktop Documents Documents Documloads Music Pictures Viceos System (C:) Data (D:) Data (D:) USB SSD 1Tb (G:) USB SSD 1Tb (G:) TOSHIBA EXT (I:) TOSHIBA EXT (I:) TOSHIBA EXT (I:)	▲ Name ▲	Date modified No items match your search.	Туре	Size
 USB SSD 1Tb (G:) Network 	I			
	× <			
File name: slot1.csv				~
Save as type: Comma-sepparated values (*.csv)				~
∧ Hide Folders			Save	Cancel



The **Results** field will reflect the changes to the YubiKey device.

YubiKey (Public ID: cccbcchkjhdu Program) has been successfu m in Yubico O	lly configured. Please remove this TP mode - Advanced	YubiKey		YubiKey is inso	erte
Configuration Slot Select the configuration slot to be pro Configuration Slot 1	ogrammed © Configuration S	lot 2		•	0	
Program Multiple YubiKeys		Configuration Protection (6 by	tes Hex)	0	•	
Automatically program YubiKeys	when inserted	YubiKey(s) unprotected - Keep it t	hat way	~		
Parameter Generation Scheme		Current Access Code			Programming st	atus
Identity from serial; Randomize Sec	rets 🗸	Use Serial Number			Firmware Versig	n:
		Use Serial Number			4.3.7	
Yubico OTP Parameters				_	Serial Number	
Public Identity (1-16 bytes Modhe	x) cc cb cc hk jh du		Generate	0	Dec: 6915630	
Public Identity Length	6 🌲 (6 bytes is	default length as required by Yubico (OTP validation serv	er)	Hex: 69862e	
Private Identity (6 bytes Hex)	95 cb 5c ae e6 9f		Generate	0	Modhex: hkjhdu	
Secret Key (16 bytes Hex)	af 76 c1 12 98 19 4	e 10 7c ba 35 5c 9a 0a d8 c7	Generate	0	Features Suppo	orte
					Yubico OTP	
Actions					2 Configurations	
Press write Configuration button to	program your tubikey	s selected configuration slot			OATH-HOTP	
Write Configuration	Stop Rese	et Back			Static Password	
Results					Challenge-Respon	se
# Dublic Identify (Medboy)	C+	Timostama			Updatable	
# 1 cosheshkibdu	YubiKey bas been s	reconstruity configured 15/05/2020 14	02		Ndef	
	rubikey nas been st	iccessiony configured 15/05/2020 14	02		Universal 2nd Eact	or

(9) Remove your YubiKey device and insert the next device. Each device inserted will be reprogrammed with the details written to the CSV file selected in Step 8.

All new devices inserted will be listed in the Results pane.

YubiKey Per	rsonalization Tool					;
ubico OTP	ОАТН-НОТР	Static Password	Challenge-Response	Settings Too	s Abou	t Exit
YubiKey (Pub	lic ID: cccbcchkjhdu	ı) has been successfu	Ily configured. Please rem	ove this YubiKey		YubiKey is inserte
	Progra	m in Yubico O	TP mode - Adva	nced		fide S
onfiguration	Slot					1442
elect the confi	guration slot to be pr	ogrammed				
Configuratio	on Slot 1	Configuration S	lot 2		•	
Program M	ultiple YubiKeys		Configuration Protection	on (6 bytes Hex)	0	
Automatical	ly program YubiKeys	when inserted	YubiKey(s) unprotected -	Keep it that way	Ψ.	
arameter Gen	eration Scheme	•	Current Access Code			Programming statu: Slot 1 and 2 configure
dentity from s	erial; Randomize Sec	crets 👻	New Access Code			Firmware Version:
			Use Serial Number			4.3.7
ubico OTP Pa	arameters					Serial Number
Public Ident	ity (1-16 bytes Modh	ex) cc cb cc hk jh du		Genera	ite 🔞	Dec: 6915630
ublic Identity L	ength	6 🌲 (6 bytes is	default length as required by	Yubico OTP validation	server)	Hex: 69862e
Private Ider	tity (6 bytes Hex)	89 a1 87 e6 1f bb		Genera	ite 🕜	Modhex: hkjhdu
ecret Key (16	bytes Hex)	9f 59 5e c3 ea ee a	19 6d 97 e3 19 33 f7 bd 97 b3	Genera	ite 😢	Features Supporte
ctions						Yubico OTP
Press Write C	onfiguration button to	n program your YubiKey	's selected configuration slot			2 Configurations
	c					OATH-HOTP Static Paceword
write Con	riguration	Stop Rese	ат васк			Scan Code Mode
esults						Challenge-Response
# Pub	lic Identity (Modhex)	St	atus Tir	nestamp	~	Updatable
✓ 3 cccbc	chkjhdu	YubiKey has been su	accessfully configured 15/05/	/2020 14:08		Ndef
✓ 2 cccbo	chkjhdu	YubiKey has been su	accessfully configured 15/05/	/2020 14:04		Universal 2nd Factor
			C. H. C. 1.45/05	00000 4 4 000		

All your devices will now have been reprogrammed and the CSV file is ready for importing into the Authlogics Authentication Server. Details for importing can be found in the Authentication Server Installation and Configuration Guide:

https://authlogics.com/download/authentication-server-installation-and-configuration-guide



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