23.0

Invantive Authenticator

Reference Manual

invantive
the SQL company

Contents

1 Invantive Authenticator 1

1.1 Start ... 1
1.2 Import Accounts ... 1
1.3 Get TOTP Password ... 4
1.4 Export Account ... 5
1.5 Advanced Use ... 6
1.5.1 Make Account Untraceable ... 6
1.5.2 Find Time of Password ... 7
1.5.3 Side-by-side ... 8
1.5.4 Invantive Keychain ... 8

2 Links 9

3 Invantive Basics 9

3.1 Configuration ... 9
3.1.1 Customer Service ... 9
3.1.2 OS Platform ... 9
3.1.3 Startup Checks ... 9
3.1.4 Cryptography ... 10
3.1.5 UI Language ... 10
3.1.6 Folders ... 11
3.1.7 Capacity ... 12

Index 13

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

1 Invantive Authenticator

Invantive Authenticator is a two-step verification solution for use with TOTP-protected websites and products such as Exact Online. Made in Holland by a partner of Exact, awarded accountancy app partner of the year 2017. It supports TOTP according to RFC 6238 and provides additional export/import options.

Highlights:

- Export accounts to QR Code images.
- Import accounts by drag&drop of QR Code images in files and clipboard.
- Automatically correct local computer time when incorrect.
- Anonymize registered accounts.
- Search time at which a password would have been issued.
- Easily manage large volumes of accounts.
- Made in Holland.
- Trusted and free software.
- Integrates with other Invantive products.

The software is available as a free download.

1.1 Start

Invantive Authenticator can be installed by running the MSI file.

After installation, Invantive Authenticator can be started from the start menu.

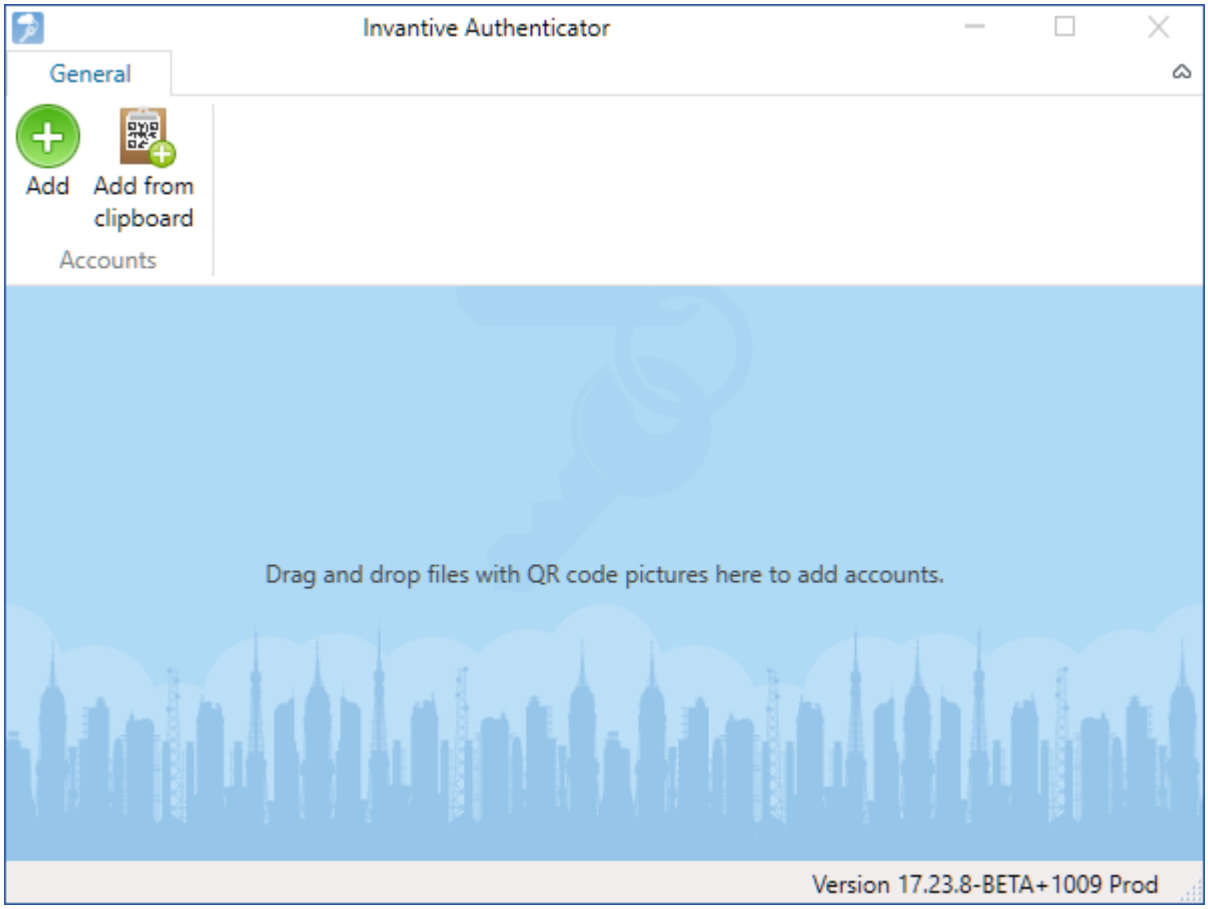
1.2 Import Accounts

On initial use, there are no accounts registered in Invantive Authenticator.

You can register accounts in three ways:

- Drag and drop one or more picture files such as "my-amazon-account-qr-code.png" into the blue area shown below.
- Place one or more picture files on the clipboard and select "Add from clipboard" or press Ctrl-V when the Authenticator window has focus.
- Manually import an account by pressing the "Add" button and entering the specifications.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

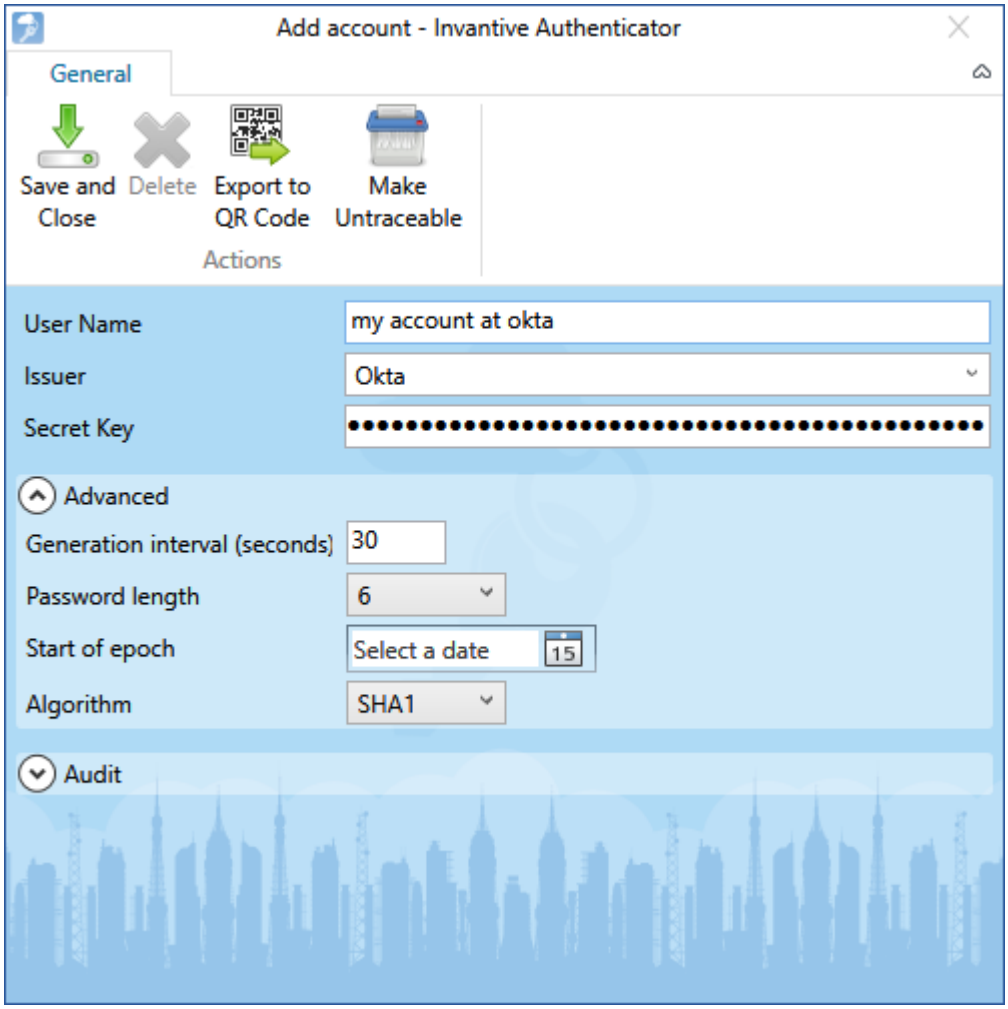


Drag and drop QR code picture files for the TOTP accounts into the blue area

Manual Import

The manual import of an account is achieved by entering all specifications of the account in the window shown below:

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.



Manual import of a TOTP-account

The meaning of the fields is:

- User name can be filled using your preferred naming convention.
- Issuer can either be selected from the list of most common issuers or manually entered.
- Secret key is provided by the issuer.

The TOTP algorithm used has a number of parameters. Practically all issuers use the default values of these parameters as shown above. In unusual circumstances you will run into a TOTP algorithm configured using non-default values for the parameters. Deviating values can be entered:

- Generation interval can be filled with an interval different from 30 seconds.
- Length of generated password can be selected from alternative lengths.
- Start of epoch can be changed to a different date than January 1, 1970.
- Algorithm can be changed to a different algorithm.

Mass Import Accounts

The drag and drop functionality to import accounts works for hundreds of picture files in one action. Consultants and other parties typically have large amounts of QR codes they need to manage. The recommended approach to loading such existing sets of QR codes into In-

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

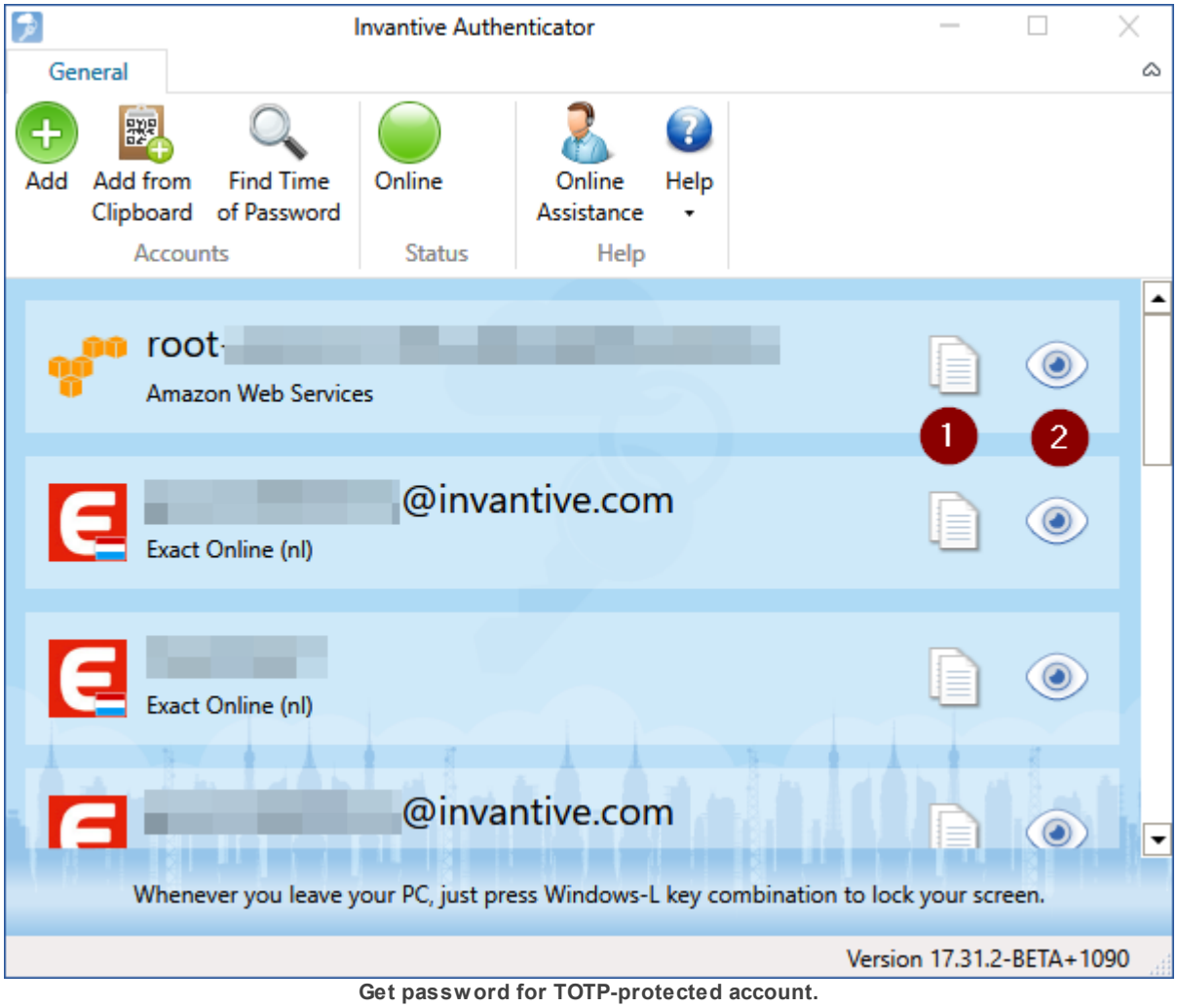
vantive Authenticator is to select all these files and drag&drop them somewhere into the blue area. All accounts will be added to the database.

1.3 Get TOTP Password

Once accounts have been registered as explained in Import Accounts 11, you can retrieve the current password for an account from Invantive Authenticator in two ways:

- copy it to the clipboard, or
- display it on the screen,

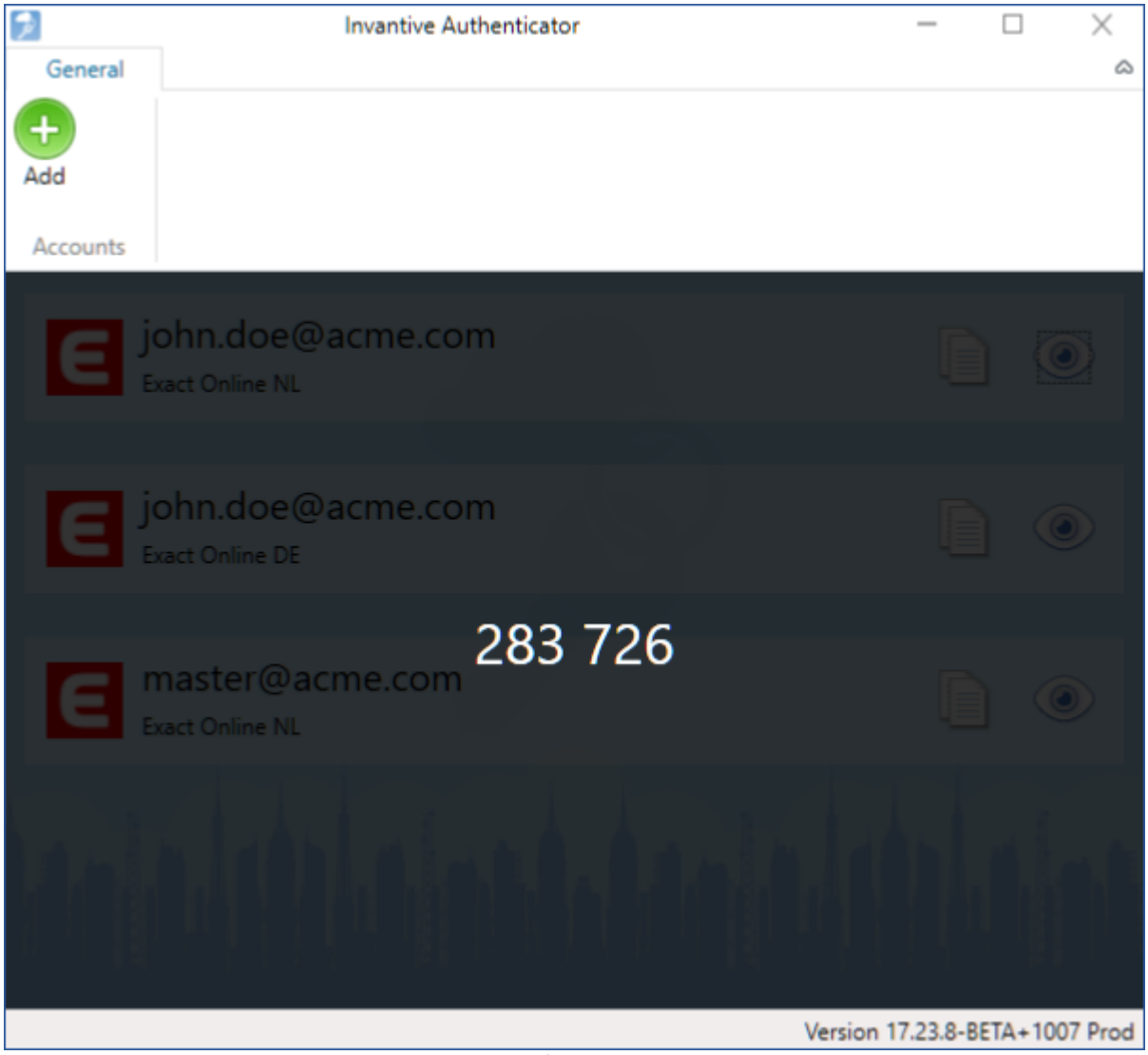
as shown in the picture by (1) and (2).



Get password for TOTP-protected account.

Since the clipboard is shared across all programs running on a computer, the second option is a little more secure. But, running the password generator on the same device as on which the password is entered, is never as secure as running it on a separate device such as a secure phone.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.



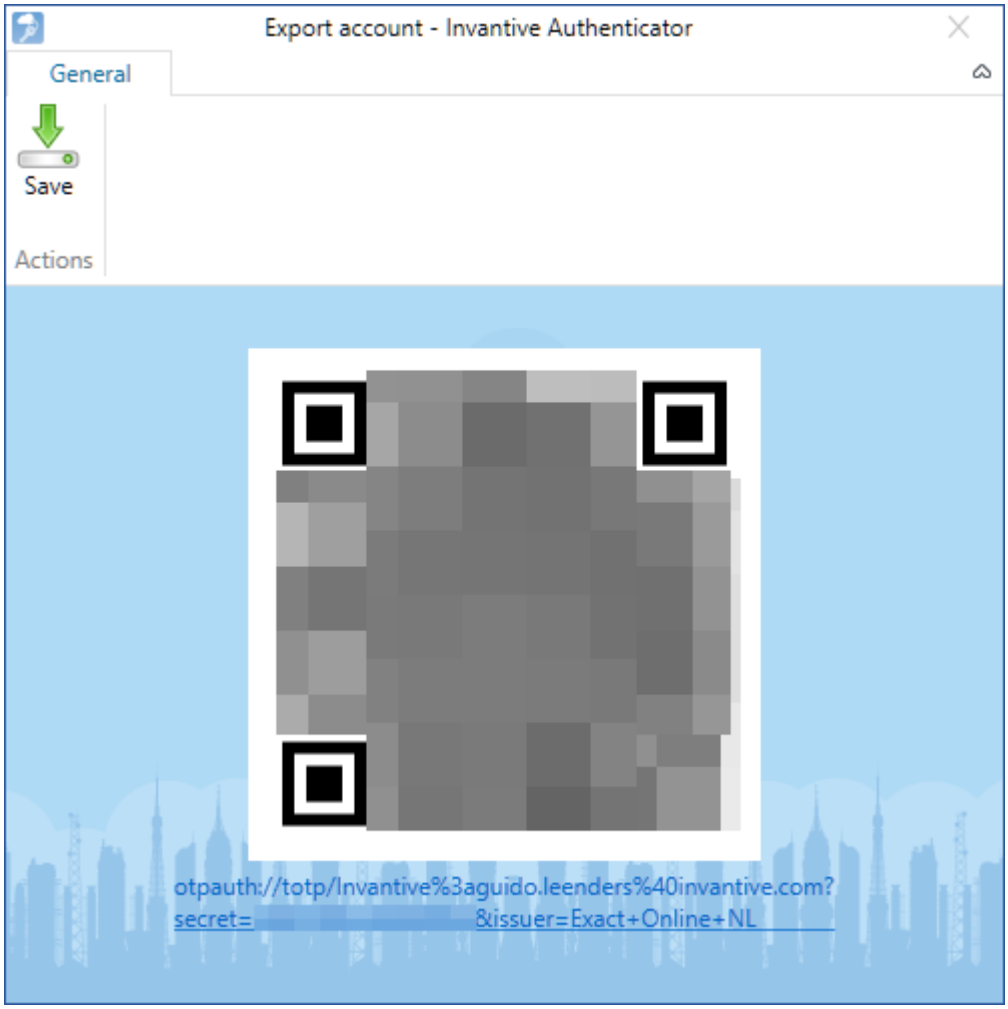
Display TOTP password.

1.4 Export Account

The settings of an account can be exported as follows:

- From the main menu select the account.
- The "Edit account" window opens.
- Choose "Export to QR Code".
- The "Export account" window opens:

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.



Export TOTP-protected account to QR Code and otpauth URL.

- The QR code can be held in front of a phone with applicable app to memorize it or saved to a file using the button.
- Alternatively, the URL at the bottom can be right-clicked to save it to the clipboard.

1.5 Advanced Use

This section provides some topics for advanced use.

1.5.1 Make Account Untraceable

One of the disadvantages of storing TOTP-protected accounts on a device such as phone or PC is that someone may be able to access the device while you are away and have forgotten to lock down the device or the automatic lock down period has not passed yet. This is equivalent to finding a bundle of keys on the street, with a label attached to which house address the keys are for.

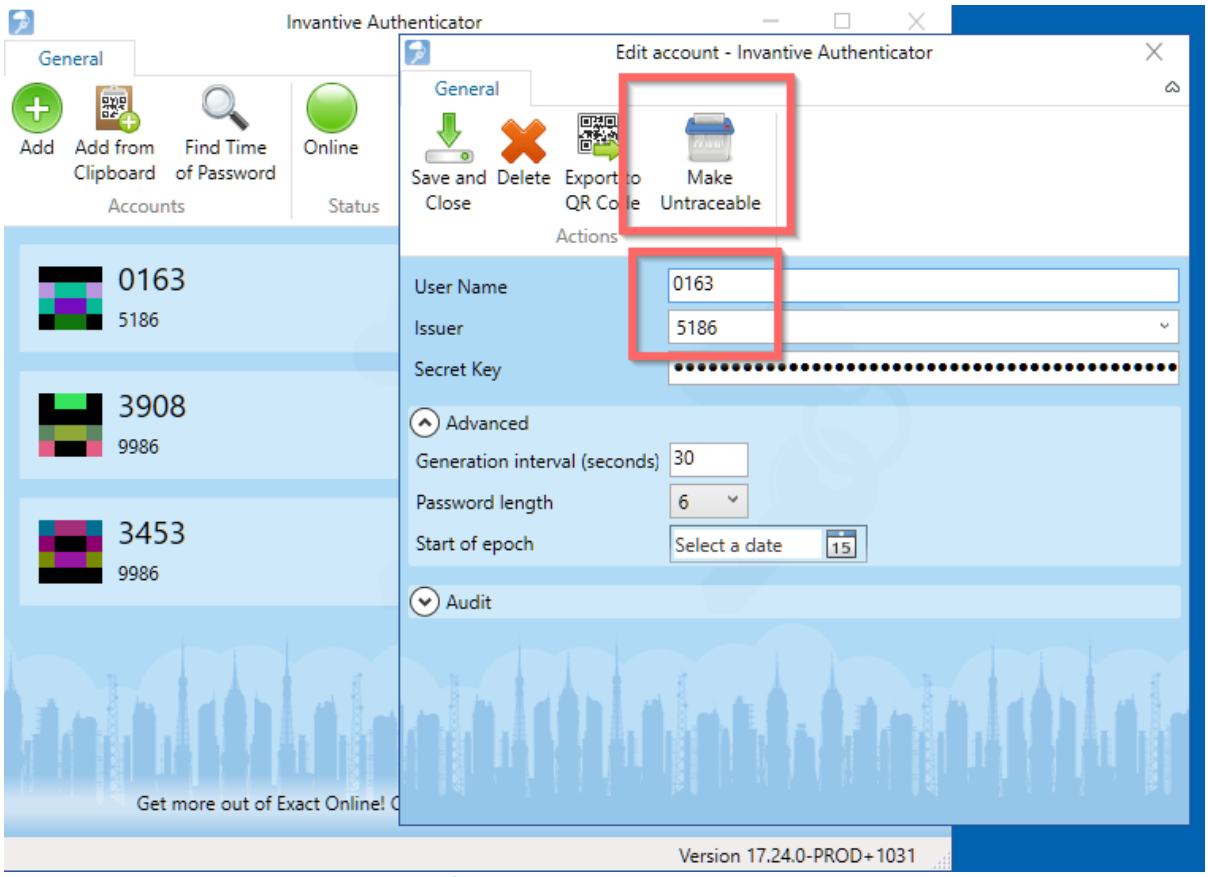
Invantive Authenticator offers an operation to anonymize the address information of the registered accounts. As with house keys, commonly used keys may have a specific shape enabling the user to recognize them without seeing them. Accounts made untraceable also have this property since of each them inherits a specific form and use of colors.

Making accounts untraceable is an irreversible process, unless you have made a backup of Invantive Keychain right before the operaiton.

Perform the following steps to make an account untraceable:

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

- From the main menu select the account.
- The "Edit account" window opens.
- Choose "Make Untraceable".
- The account's descriptive information is replaced by anonymized but human-recognizable values:



Make TOTP-protected account untraceable.

1.5.2 Find Time of Password

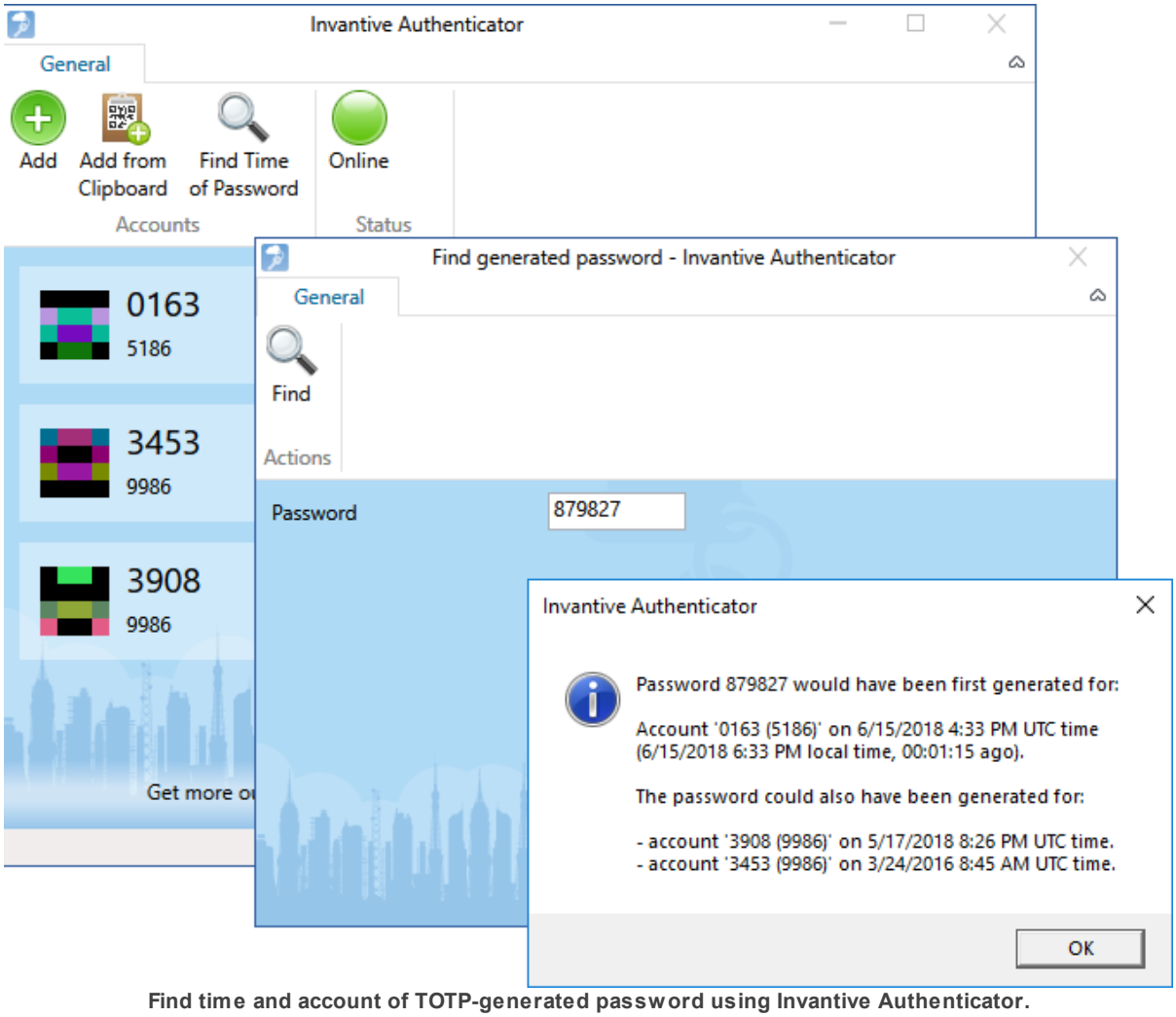
Invantive Authenticator is one out of many possible tools for managing TOTP-protected accounts. It is typically preferred by power users and consultants. One of the issues they run into is that a user complains about not being able to log in. Often this is related to using the wrong account (such as an obsoleted secret key) or incorrect timings.

When provided by the user with the one-time password used, the find feature of Invantive Authenticator enables a power user or consultant to determine for what accounts and moments in time a specific one-time password would have been retrieved. This aids in finding the root cause of configuration issues.

To find the accounts and moments in time a TOTP-password would have been retrieved, perform the following steps:

- From the main menu select the "Find Time of Password" button.
- Enter the password used.
- Press the "Find" button.
- After up to 60 seconds, the possible candidates will be returned in a pop-up window.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

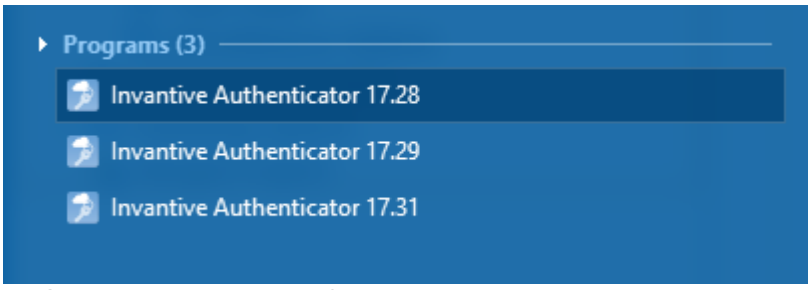


Find time and account of TOTP-generated password using Invantive Authenticator.

The determination of possible accounts and moments in times is very CPU-intensive. The PC will react sluggish during the find process since most CPU-resources will be consumed by the find process. This holds also for devices with up to 32 cores.

1.5.3 Side-by-side

A separate executable is made available per major and minor version to allow side-by-side use of multiple releases. All versions share the same Invantive Keychain 8 database.



Side-by-side installation of three Invantive Authenticator releases

1.5.4 Invantive Keychain

The contents of the Invantive Keychain are stored in an encrypted file 'invantive.keychain' located in %USERPROFILE%\invantive. The unencrypted format of Invantive Keychain is

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

identical to that of the KDBX database format for password managers. The TOTP-accounts reside in a separate branch and can be exported and imported using Invantive Authenticator.

The encryption of Invantive Keychain on Windows devices is based upon an encryption algorithm using RSA-keys which are bound to the device. Therefore, the database can not be opened on another device. Use the export/import options to easily transport your accounts between devices.

On Windows running within a Parallels environment and Mac and Linux editions, the RSA-keys are NOT bound to the device due to limitations of the combination of hardware and software.

2 Links

The following hyperlinks are available:

- Download current release of Invantive Authenticator
- Product website two-step-verification.solutions.

3 Invantive Basics

3.1 Configuration

3.1.1 Customer Service

All Invantive products exchanges messages with a central Customer Service node. These messages include:

- error messages for analysis,
- usage statistics for billing.

On Invantive-internal development workstations only, a non-standard Customer Service node can be selected by specifying a deviating URL in the environment variable `INVANTIVE_CS_BASE_URL`.

3.1.2 OS Platform

A variety of Invantive products is available on Windows, Linux and Mac OSX. The list of supported platforms varies per product, depending on the availability of the libraries such as Microsoft .NET Core.

The OS platform is automatically determined by Invantive software, but sometimes can raise bugs given the bleeding edge nature of Microsoft .NET Core. It is possible to overrule the automatic detection of the OS platform by assigning a value to the environment variable `INVANTIVE_FORCED_OS`. The following values are supported:

- windows: Microsoft Windows,
- linux: Linux,
- osx: Mac OSX.

3.1.3 Startup Checks

The Invantive products execute a number of checks at application start to ensure that the environment running the software meets a number of pre-conditions as established by Invantive. These checks can be disabled for analysis purposes and out-of-the-ordinary deployment scenarios.

Support on products is only available when checks are not manually configured.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

All Platforms

The following settings are available on all platforms:

- `INVANTIVE_MIN_GB_FREE_SYSTEM`: minimum amount of free disk space in GB on the system disk during startup. Defaults to 5 GB.

Microsoft Windows

Configuration of these checks is solely available on the Windows OS platform.

The following environment variables allow manual configuration of the checks by setting them to 'true' or 'false':

- `INVANTIVE_CHECK_SYSTEM_COMPATIBILITY`: validate system compatibility.
- `INVANTIVE_MAINTAIN_VSTO`: re-activate Invantive VSTO add-ins when disabled.
- `INVANTIVE_CHECK_OS_UPDATES`: validate OS updates have been applied sufficiently recent.

3.1.4 Cryptography

The Invantive products use cryptographic operations to protect:

- License key
- Invantive Keychain

By default, a key pair is used and stored in the profile of the user for encryption and decryption.

Windows

On Windows, the encryption is normally done using Windows-managed encryption protocols. The key elements are stored in the roaming profile of the current user.

In some deployment scenarios, a user has only a temporary Windows profile. In that case it is not possible to store a key pair. This is typically signaled by an itgenlic510 error code.

As an alternative, you can configure the environment variable `INVANTIVE_CRYPTOGRAPHY` to the value "MACHINE" to use a key pair that is stored solely on the device.

By setting the environment variable `INVANTIVE_RSA` to `INVANTIVE`, encryption on Windows is also managed as on other platforms by custom Invantive code at the expense of loss of some security features. Often Windows patches break the functionality of previously Windows-managed encryption keys, typically signaled by a error like "Key not valid for use in specified state". Switching to custom Invantive code will solve this problem.

Linux, Mac OSX, Android, iPhone, Windows on Parallels

On all other platforms, Invantive offers solely encryption using key elements stored in files in the RSA folder.

3.1.5 UI Language

The Invantive products supported approximately ten languages. On first startup, the language of the Windows version will be used when supported. Otherwise US-English is used.

The license decides which from the languages are supported.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

Additionally, the user interface language chosen can further be restricted by setting the environment variable `INVANTIVE_ALLOWED_LANGUAGE_CODES` to a comma-separated list of two characters ISO 639-1 codes.

3.1.6 Folders

The Invantive products store configuration and runtime information in a folder hierarchy. This hierarchy is located within the Invantive folder of the user profile. It can be opened in Windows Explorer by entering `%USERPROFILE%\Invantive` in the location bar.

The location of the folder hierarchy can be changed using environment variables. The central location can be changed by setting the environment variable `INVANTIVE_CONFIGURATION_FOLDER` to a different folder.

A number of subfolders can be relocated too:

- INVANTIVE_CONFIGURATION_BACKUP_FOLDER: the folder with backups of settings files. Defaults to the master folder plus "Backup".
- INVANTIVE_CONFIGURATION_CACHE_FOLDER: the folder with disk cache files. Defaults to the master folder plus "Cache".
- INVANTIVE_CONFIGURATION_HTTP_CACHE_FOLDER: the folder with HTTP disk cache files. Defaults to the root cache folder plus "http" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_PERMANENT_CACHE_FOLDER: the folder with permanent disk cache files such as backups of Swagger specification files. Defaults to the root cache folder plus "permanent" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_INCREMENTAL_DATA_FOLDER: the folder with permanent incremental data files such as Exact Online sync APIs. Defaults to the root cache folder plus "incdata" and the OS-user and front-end user.
- INVANTIVE_CONFIGURATION_DATA_CACHE_CACHE_FOLDER: the folder with Data Cache disk cache files. Defaults to the root cache folder plus "datacache". Disk cache files improve performance of HTTP downloads, but when necessary can be purged.
- INVANTIVE_CONFIGURATION_LOG_FOLDER: the folder with log files. Defaults to the master folder plus "Log".
- INVANTIVE_CONFIGURATION_DATABASES_FOLDER: the folder with databases files. Defaults to the master folder.
- INVANTIVE_CONFIGURATION_PLUGINS_FOLDER: the folder with plugin files. Defaults to the master folder plus "Plugins".
- INVANTIVE_CONFIGURATION_PROVIDERS_FOLDER: the folder with provider files. Defaults to the master folder plus "Providers".
- INVANTIVE_CONFIGURATION_RSA_FOLDER: the folder with RSA configuration files. Defaults to the master folder plus "RSA".
- INVANTIVE_CONFIGURATION_TEMPLATES_FOLDER: the folder with template files. Defaults to the master folder plus "Templates".
- INVANTIVE_CONFIGURATION_TRACE_FOLDER: the folder with trace files. Defaults to the master folder plus "Trace".

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

The values may contain any combination of the following placeholders which will be expanded:

- iiid: Invantive Installation ID.
- sessionid: Invantiv session ID.
- frontenduser: name of front-end user (when available).
- osuser: name of operating system user.

A folder can be configured for custom translations which overrule all default translations using the environment variable INVANTIVE_I18N_FOLDER.

3.1.7 Capacity

The Invantive products can configure the capacity of various elements using environment variables.

Support on products is only available when checks are not manually configured.

The following settings are available on all platforms:

- `INVANTIVE_DEFAULT_THREAD_POOL_MIN_WORKER_THREADS`: minimum number of worker threads in default pool. Defaults to twice the number of processors.
- `INVANTIVE_DEFAULT_THREAD_POOL_MIN_ASYNC_IO_THREADS`: minimum number of asynchronous I/O threads in default pool. Defaults to twice the number of processors.

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

Index

- A -

Advanced 6
Anonymize 1

- B -

Billing 9

- C -

Copy password 4
Cryptography 10
Customer Service 9

- D -

Display password 4
Download 9

- E -

Environment variable 9, 10
Error 9
Export 5

- F -

Find time 7
Folder 11
frontenduser 11

- I -

iiid 11
Import 1
Installation 1
Invantive Authenticator 1
invantive.keychain 8
INVANTIVE_ALLOWED_LANGUAGE_CODES 10
INVANTIVE_CHECK_OS_UPDATES 9
INVANTIVE_CHECK_SYSTEM_COMPATIBILITY 9
INVANTIVE_CONFIGURATION_BACKUP_FOLDER 11
INVANTIVE_CONFIGURATION_CACHE_FOLDER 11
INVANTIVE_CONFIGURATION_DATA_CACHE_CACHE_FOLDER 11
INVANTIVE_CONFIGURATION_DATABASES_FOLDER 11
INVANTIVE_CONFIGURATION_FOLDER 11
INVANTIVE_CONFIGURATION_HTTP_CACHE_FOLDER 11
INVANTIVE_CONFIGURATION_LOG_FOLDER 11
INVANTIVE_CONFIGURATION_PLUGINS_FOLDER 11
INVANTIVE_CONFIGURATION_PROVIDERS_FOLDER 11
INVANTIVE_CONFIGURATION_RSA_FOLDER 11
INVANTIVE_CONFIGURATION_TEMPLATES_FOLDER 11
INVANTIVE_CONFIGURATION_TRACE_FOLDER 11
INVANTIVE_CRYPTOGRAPHY 10
INVANTIVE_CS_BASE_URL 9
INVANTIVE_DEFAULT_THREAD_POOL_MIN_ASYNC_IO_THREADS 12
INVANTIVE_DEFAULT_THREAD_POOL_MIN_WORKER_THREADS 12
INVANTIVE_FORCED_OS 9
INVANTIVE_I18N_FOLDER 11
INVANTIVE_MAINTAIN_VSTO 9
INVANTIVE_MIN_GB_FREE_SYSTEM 9
INVANTIVE_RSA 10

- K -

Keychain 8

- L -

Language 10
License 10
Load 1
Loss 6

- M -

Mass import 1

- O -

Operating system 9
osuser 11

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

- P -

Password 7

- Q -

QR code 5
QR code picture file 1

- R -

RSA 8

- S -

Search password 1
sessionid 11
Side-by-side 8
Start 1
Startup check 9

- T -

TOTP 1
TOTP password 4

- U -

Untraceable 6
Usage 9
User interface language 10

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

Copyright

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.

Alle rechten voorbehouden. Niets uit deze uitgave mag worden verveelvoudigd, opgeslagen in een geautomatiseerd gegevensbestand, of openbaar gemaakt, in enige vorm of op enige wijze, hetzij elektronisch, mechanisch, door fotokopieen, opnamen, of enig andere manier, zonder voorafgaande schriftelijke toestemming van de uitgever.

Ondanks alle aan de samenstelling van deze tekst bestede zorg, kan noch de schrijver noch de uitgever aansprakelijkheid aanvaarden voor eventuele schade, die zou kunnen voortvloeien uit enige fout, die in deze uitgave zou kunnen voorkomen.

Deze handleiding is een naslagwerk bedoeld om het gebruik te verduidelijken. Indien gegevens in de voorbeeldafbeeldingen overeenkomen met gegevens in uw systeem, dan is de overeenkomst toevallig.

Auteurs: Jan van Engelen, Michiel de Brieder, Mathijs Terhaag, Tanja Middelkoop, Guido Leenders, Tatjana Daka.

The JasperReports License, Version 1.0
Copyright (C) 2001-2004 Teodor Danciu(teodord@users.sourceforge.net).
All rights reserved.
Redistribution and use in source and binary forms, with or without modification, are permitted provided that the following conditions are met:

1. Redistributions of source code must retain the above copyrightnotice, this list of conditions and the following disclaimer.

2. Redistributions in binary form must reproduce the above copyrightnotice, this list of conditions and the following disclaimer in the cumentationand/or other materials provided with the distribution.

3. The end-user documentation included with the redistribution, if any,must include the following acknowledgment: "This product includes software developed by Teodor Danciu (http://jasperreports.sourceforge.net)."Alternately, this acknowledgment may appear in the software itself, if and wherever such third-party acknowledgments normally appear.

4. The name "JasperReports" must not be used to endorse or promote products derived from this software without prior written permission. Forwritten permission, please contact teodord@users.sourceforge.net.

5. Products derived from this software may not be called "JasperReports",nor may "JasperReports" appear in their name, without prior writtenpermission of Teodor Danciu.

THIS SOFTWARE IS PROVIDED ``AS IS" AND ANY EXPRESSED OR IMPLIED WARRANTIES,INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITYAND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALLTHE APACHE SOFTWARE FOUNDATION OR ITS CONTRIBUTORS BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED ANDON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Invantive B.V.
Biesteweg 11
3849 RD Hierden
the Netherlands

Tel: +31 88 00 26 500
Fax: +31 84 22 58 178
info@invantive.com
invantive.com

IBAN NL25 BUNQ 2098 2586 07
Chamber of Industry and Commerce
13031406
VAT NL812602377B01
RSIN 8122602377
Managing Director: Guido Leenders
Registered office: Roermond

(C) Copyright 2004-2023 Invantive Software B.V., the Netherlands. All rights reserved.
23.0.92
06/11/2023, 12:30
ISBN 978-94-6302-000-8: