

Concepts

This section contains useful descriptions of the main concepts introduced to the CYΦ system.

1.

[Accreditation](#)

Accreditation of EFD products is the process through which individual POS or E-SDC products become accredited for distribution and usage in a specific tax jurisdiction.

2.

[What is a PFX Digital Certificate?](#)

PFX digital certificates are issued by the Tax Authority and provided to the taxpayers in file form, upon their request. They are used to issue fiscal invoices via a V-SDC service.

3.

[Volatile Memory](#)

Volatile memory is computer memory that requires power to maintain the stored information.

4.

[Verification URL](#)

Verification URL is a unified resource location used to verify a particular invoice by using the Invoice Verification Service provided by the tax authority.

5.

[Taxpayer Administration Portal](#)

Taxpayer Administration Portal (TAP) is a central administration hub for taxpayers where they can:

6.

[TaxCore](#)

The electronic monitoring system for billing is an initiative undertaken by many countries for the purpose of reducing the grey economy and tax evasion. An important and new component of this initiative is the certified systems put in place for taxpayers to electronically secure each transaction at the moment of sale.

7.

[Smart Card](#)

A smart card, chip card, or integrated circuit card (ICC or IC card) is a physical electronic authorization device, used to control access to a resource.

8.

[Semi Connected Scenario](#)

Taxpayers are encouraged to use online capabilities whenever possible – V-SDC service is widely available and accessible from the variety of [Accredited POS](#) devices and software solutions. But, in order to rollout a fiscalization system, it has to be able to close any possible gaps in the fiscal discipline that might be the result of a poor or no internet connection.

9.

[QR Code](#)

QR code is a machine-readable, barcode representation of the [verification URL](#). In the TaxCore solution, it

is used for the verification of printed invoices.

10.

[POS](#)

See [Invoicing System](#).

11.

[PKI](#)

See [https://en.wikipedia.org/wiki/Public key infrastructure](https://en.wikipedia.org/wiki/Public_key_infrastructure)

12.

[Non volatile Memory](#)

Non-volatile memory is a type of computer memory that can retrieve stored information even after having been power cycled (turned off and back on); for example: a USB Flash drive.

13.

[Manufacturer Registration Code MRC](#)

Manufacturer Registration Code (MRC) is a unique identification code for each E-SDC product. It consists of three parts - the first two parts are assigned when an E-SDC developer begins a new accreditation process for a new E-SDC product or a new version of an already accredited product.

14.

[Invoicing System](#)

Invoicing system is any software or hardware capable of issuing fiscal invoices or receipts in accordance with the official technical instructions published in the documentation for [EFD vendors](#).

15.

[Internal Data](#)

When information about an issued fiscal invoice is transferred to the tax authority's database, part of the message contains some confidential fiscal data that must be protected from any outside attempts to access it.

16.

[GUID](#)

GUID is a Globally Unique Identifier.

17.

[Fiscal Receipt](#)

Fiscal receipt is a digitally signed acknowledgment that a specified payment has been received. A receipt records the sale of goods or a service fee. In this context, the term *fiscal receipt* is used interchangeably with the term [fiscal invoice](#).

18.

[Fiscal Invoice](#)

A fiscal invoice is, by definition, a digitally signed acknowledgment that a specified payment has been received or refunded. It is created by the [EFD](#) setup that the taxpayer has selected to use.

19.

[Electronic Fiscal Device EFD](#)

Electronic Fiscal Device (EFD) is composed of an [Invoicing System](#) (POS), an SDC and a Secure Element, all connected into one system. EFD produces [fiscal receipts](#) and reports [Audit Data](#) to a tax authority.

20.

[Developer Portal](#)

Developer Portal is used by EFD vendors and taxpayers to test their POS or E-SDC products and apply for [accreditation](#).

21.

[Connected Scenario](#)

The simplest scenario is: a Client software application (usually POS) creates an invoice, applies tax labels and calls the V-SDC web service to fiscalize the invoice.

22.

[Audit](#)

An audit is a process of sequential transferring of [audit packages](#) from an SDC to the [*TaxCore.TaxCoreConfiguration.ElectronicMonitoringShortName*] system and handling the response generated by the system for the specific taxpayer's [secure element].

23.

[Audit Package](#)

Audit Package is encrypted [Audit Data](#) ready to be sent to the CYΦ database for storage and analysis.

24.

[Audit Data](#)

Audit Data is a textual and machine-readable representation of a fiscal invoice (with associated metadata) submitted to the [*TaxCore.TaxCoreConfiguration.ElectronicMonitoringShortName*] database. When an invoice's transaction data gets fiscalized by an [SDC], it becomes Audit Data.

25.

[APDU command](#)

APDU command (application protocol data unit) is the communication unit between a smart card reader and a smart card.

26.

[Accredited POS](#)

Accredited Point of Sale (POS) is a computer program, electronic device, or information system for issuing receipts in compliance with the fiscalization regulations requirements.

27.

[What is a Sales Data Controller?](#)

A Sales Data Controller (SDC) is the software, hardware, or web-service component of an

28.

[What is Secure Element?](#)

Secure Element (SE) is a fiscal component, implemented as a special software or device, designed to perform a specific set of functions:

Accreditation

Accreditation of EFD products is the process through which individual POS or E-SDC products become accredited for distribution and usage in a specific tax jurisdiction.

There are two types of accreditations:

- **Transferable** - EFD vendors (developers, manufacturers or resellers) can apply to have their products accredited so they can sell them to taxpayers in that jurisdiction
- **Non-transferable** - individual taxpayers can apply and go through the process of accreditation for a POS or E-SDC solution that will be used only by them. This accreditation then refers only to that specific taxpayer and the accredited POS or E-SDC can not be sold nor lent to other taxpayers.

Each new POS or E-SDC product (or a new product version) has to go through the accreditation process. Only after it becomes officially accredited by the tax authority, it can be sold to taxpayers from that jurisdiction as an EFD component.

The accreditation process consists of two parts:

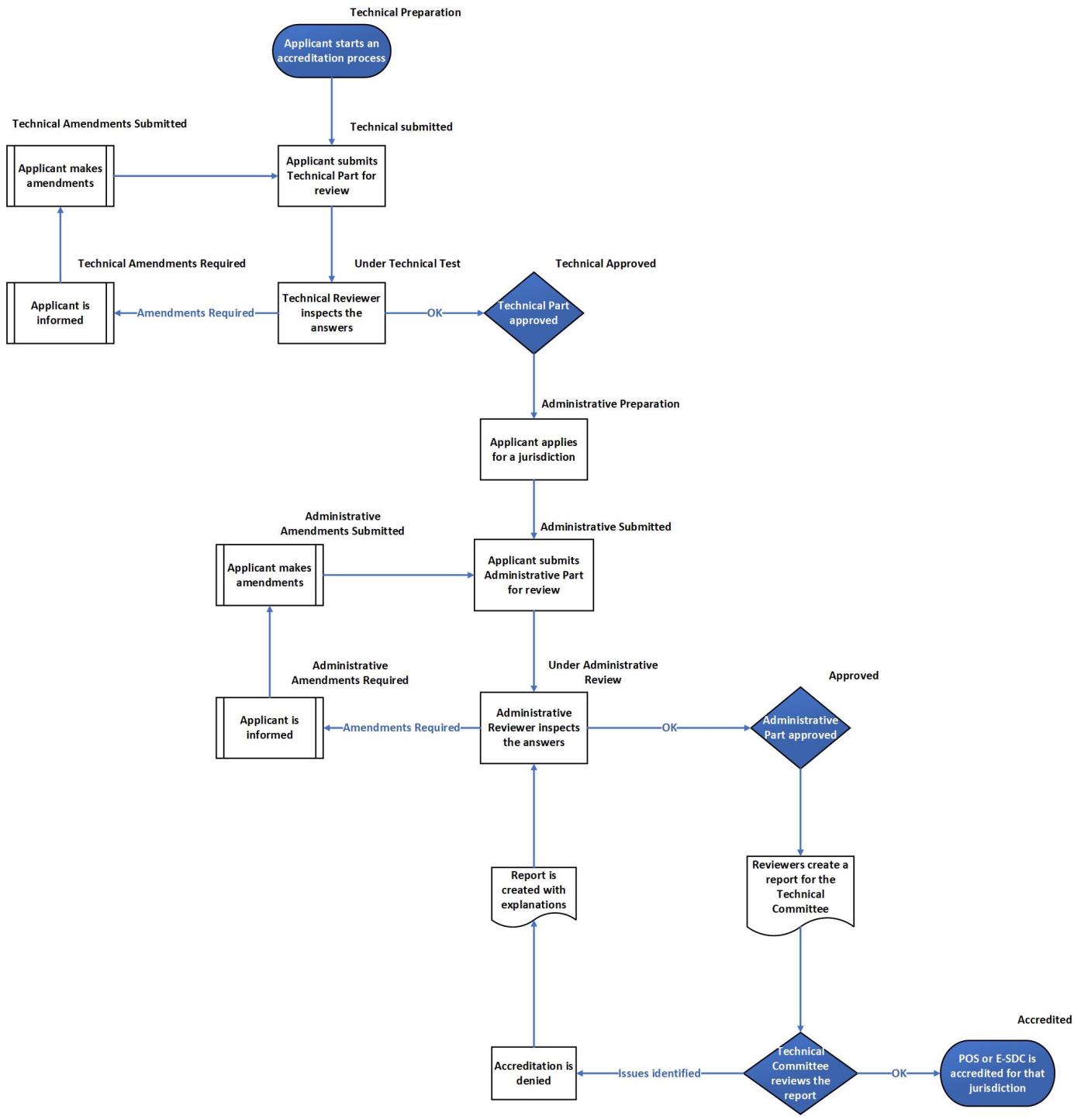
- **Technical review** - performed only once for a single POS or E-SDC product (or single product version). When a product successfully passes the technical review, the vendors can apply for accreditation in as many jurisdictions as they wish.
- **Administrative review** - specific for each jurisdiction. After a product passes the common technical review, it has to go through the administrative review for each jurisdiction separately.

Only after a product passes both the technical review and administrative review, it can become officially accredited for the jurisdiction(s) selected in the administrative part of the process.

EFD vendors use the [Developer Portal](#) to test their POS or E-SDC products and apply for accreditation.

Flowchart

Accreditation Process



What is a PFX Digital Certificate?

PFX digital certificates are issued by the Tax Authority and provided to the taxpayers in file form, upon their request. They are used to issue fiscal invoices via a V-SDC service.

PFX digital certificates are requested via the Taxpayer Administration Portal - see Requesting Additional Certificates

Related articles

- PFX Certificate Password
- PAC Code

PFX Certificate Password

In order to install a PFX digital certificate on a device, a taxpayer has to provide a valid PFX certificate password.

In the CYΦ system, a PFX certificate password is **always an 8-character alphanumeric code (upper-case)**, selected by taxpayers when requesting an additional PFX certificate.

 TaxCore RCA Development.cer 1 KB	 XLT6ZVV5.pfx 3 KB	 TaxCore ICA1 Development.cer 1 KB
--	--	--

3 attachments (6 KB)

TaxCore

Dear **Raymond**, Your POS access request has been approved.

You have requested 0 cards / 1 files.

Business name: Sunny Way Diner

TIN: US - 234459688

Location Name: Sunny Way Brunch

Please use this link to set your connection to V-SDC server: "<https://vsdc.test.taxcore.dti.rs/>"

Please find the list of digital certificates for V-SDC access.

UID	Password	PAC	Download URL
XLT6ZVV5	FGVMBCQ3	MQ23KX	https://test.taxcore.dti.rs/a/7194dd1e16274fb2b95c13ee6200b3cc

Related articles

- What is a PFX Digital Certificate?
- PFX Certificate PAC Code

PFX Certificate PAC Code

PAC is an authentication code that a taxpayer/cashier needs to provide to confirm their authorization when issuing a fiscal invoice with a PFX digital certificate.

In the CYΦ system, a PAC is **always a 6-character alphanumeric code (upper case)**, selected by taxpayers when requesting an additional PFX digital certificate.

 TaxCore RCA Development.cer 1 KB	 XLT6ZVV5.pfx 3 KB	 TaxCore ICA1 Development.cer 1 KB
3 attachments (6 KB)		

TaxCore

Dear **Raymond**, Your POS access request has been approved.

You have requested 0 cards / 1 files.

Business name: Sunny Way Diner

TIN: US - 234459688

Location Name: Sunny Way Brunch

Please use this link to set your connection to V-SDC server: "<https://vsdc.test.taxcore.dti.rs/>"

Please find the list of digital certificates for V-SDC access.

UID	Password	PAC	Download URL
XLT6ZVV5	FGVMBCQ3	MQ23KX	https://test.taxcore.dti.rs/a/7194dd1e16274fb2b95c13ee6200b3cc

Related articles

- What is a PFX Digital Certificate?
- PFX Certificate Password

Volatile Memory

Volatile memory is computer memory that requires power to maintain the stored information.

It retains its contents while powered on but when the power is interrupted, the stored data is lost immediately or very rapidly e.g. RAM.

Verification URL

Verification URL is a unified resource location used to verify a particular invoice by using the Invoice Verification Service provided by the tax authority.

Verification URL is a standard component of every fiscal invoice, and without it, an invoice cannot be considered as fiscal.

It is generated by SDC and returned to [invoicing system](#) as part of the response.

It is represented as a [QR code](#) on a printed receipt or as a hyperlink in an electronic document (e.g. an email message).

Taxpayer Administration Portal

Taxpayer Administration Portal (TAP) is a central administration hub for taxpayers where they can:

- keep track of their basic business administration
 - review all issued fiscal invoices
 - review the total amounts per location and each secure element
 - monitor the level of activity of each business location and secure element
- request additional secure elements from the tax authority
 - request revocation of a secure element
- monitor their level of compliance (whether their invoices are reaching the tax authority database) on three levels
 - missing invoices for the whole company
 - missing invoices for each business location
 - missing invoices for each secure element
- perform [local audit](#)
- use a free web invoicing tool to issue fiscal invoices (as a simplified version of POS)

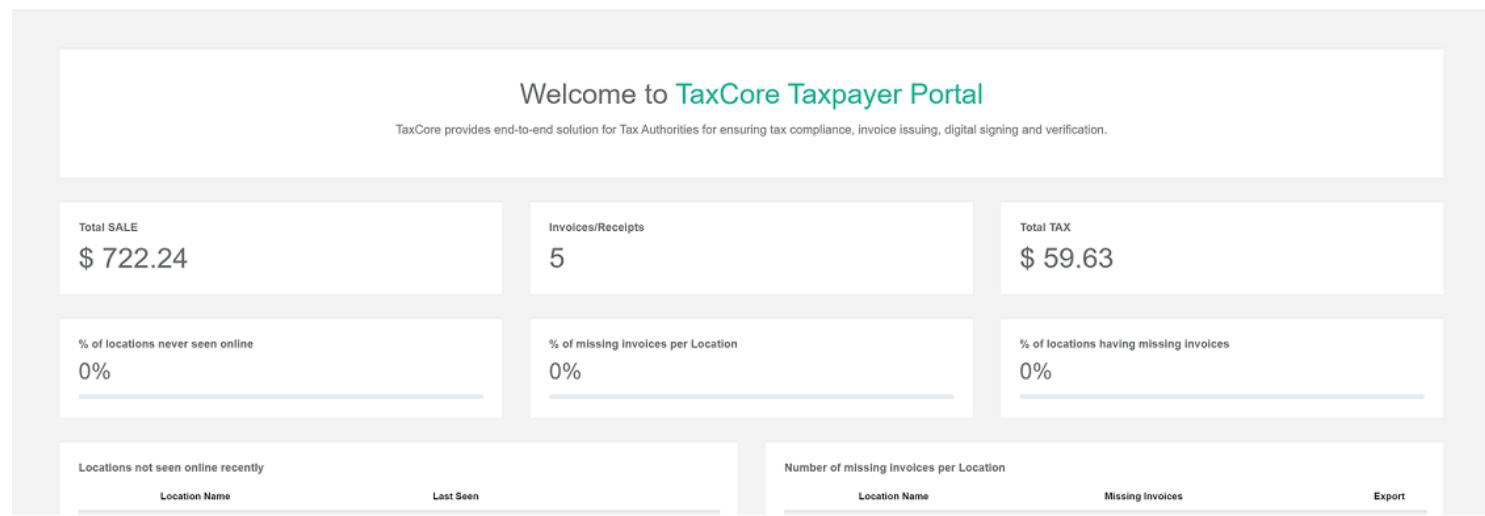
TAP can be accessed at any time, via most electronic devices (desktop, tablet, etc.) with an internet connection. The complete security of taxpayers' personal and business information is enabled through the Public Key Infrastructure.

NOTE:

In the Sandbox environment, TAP is also used by EFD vendors to access the [Developer Portal](#).

Taxpayer Administration Portal is available free of charge, and accessing the portal requires just a simple process of registration.

Staple LLC (TIN: 12-3456789)



TaxCore

The electronic monitoring system for billing is an initiative undertaken by many countries for the purpose of reducing the grey economy and tax evasion. An important and new component of this initiative is the certified systems put in place for taxpayers to electronically secure each transaction at the moment of sale.

TaxCore (c) is a scalable software solution that enables tax compliance through the usage of commercially available technologies and public APIs to issue instantly verifiable receipts in online and offline environments and collect audit data.

It is implemented as set of applications and services deployed and published to Tax Officers and other users to enable electronic monitoring of [fiscal receipts](#) issued by [EFDs](#).

Smart Card

A smart card, chip card, or integrated circuit card (ICC or IC card) is a physical electronic authorization device, used to control access to a resource.

In the CYΦ system, every smart card is personalized for a specific taxpayer (similar to bank credit cards) and a specific business location.

Smart cards are used to store taxpayers' Secure Elements.

They also grant access to public services such as the Taxpayer Administration Portal.



Related Articles

- [Smart card PIN](#)
- What is PFX Digital Certificate?

Smart card PIN

Smart card PIN is a verification code that a smart card user has to provide in order to confirm his/her authorization for using the card.

In the TaxCore system, a smart card PIN is **always a 4-digit code**, selected by taxpayers when requesting each smart card.

Smart card users will be requested to provide the valid PIN when:

- establishing communication between E-SDC and a smart card secure element at the beginning of operation (if a valid PIN is entered, the user does not need to re-enter it until a smart card is removed from the reader)
- authenticating to a [TaxCore.TaxCoreConfiguration.ElectronicMonitoringShortName]] public service; for example, logging into the [Taxpayer Administration Portal or the [Developer Portal](#)
- sometimes when issuing a fiscal invoice (depending on the POS setup)

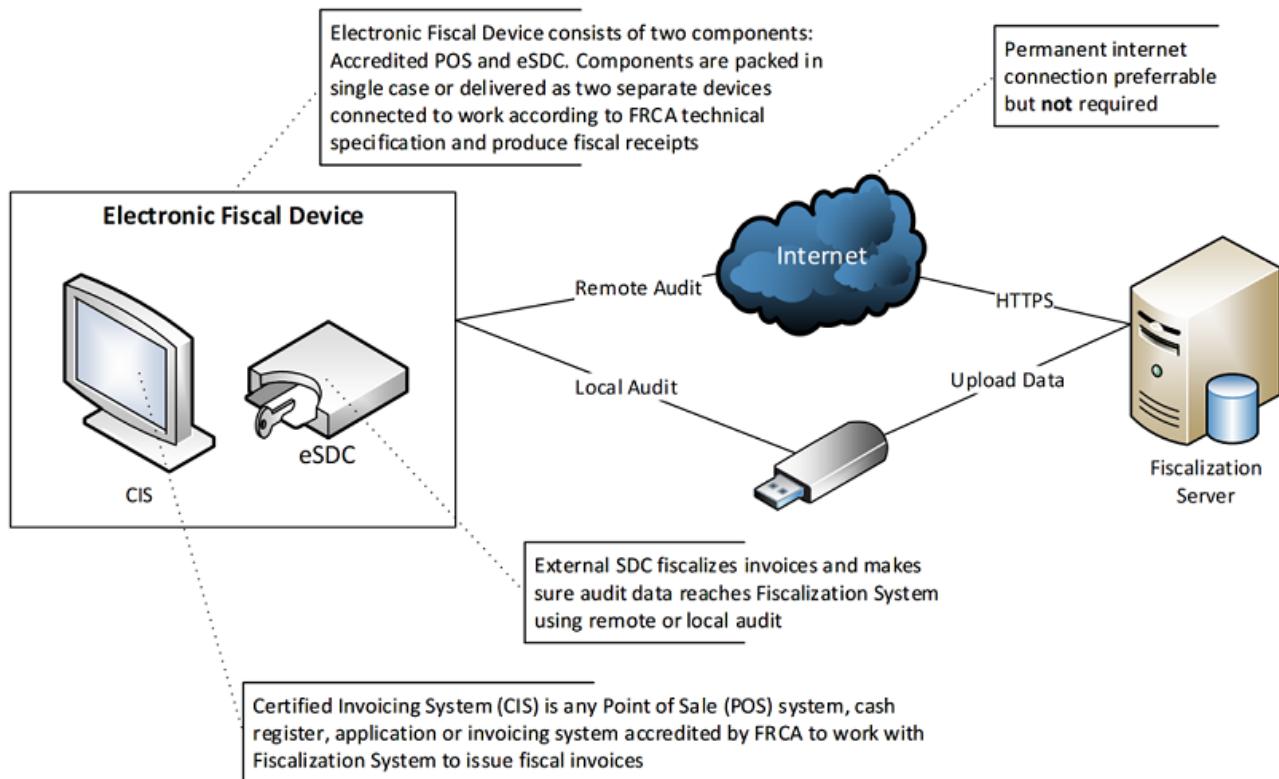
Related Articles

- [Smart Card](#)

Semi-Connected Scenario

Taxpayers are encouraged to use online capabilities whenever possible – V-SDC service is widely available and accessible from the variety of [Accredited POS](#) devices and software solutions. But, in order to rollout a fiscalization system, it has to be able to close any possible gaps in the fiscal discipline that might be the result of a poor or no internet connection.

External Sales Data Controller (E-SDC) device exposes JSON-based protocols for communication with the Accredited POS using UTP cable or Wi-Fi. E-SDC uses a Secure Element to digitally sign invoices received from the Accredited POS and to produce audit data. Audit data is stored on an E-SDC internal memory which enables local and remote audits.



QR Code

QR code is a machine-readable, barcode representation of the [verification URL](#). In the TaxCore solution, it is used for the verification of printed invoices.

A QR code contains information about the invoice's [internal data](#) and digital signature - making it a reliable method of checking the invoice authenticity immediately after fiscalization. A customer or a tax authority officer can simply scan a QR code on an issued invoice to check its authenticity.

However, a valid invoice does not necessarily require a QR code. If an invoice is delivered as an electronic document (email), a QR code is substituted with an Invoice verification URL in a (clickable) hyperlink format.

NOTE:

A QR code and an Invoice verification URL are not the same thing. The invoice verification process is actually always performed via the verification URL. QR code is just the most practical way of displaying and a verification URL on a printed invoice.

Printed QR code is sometimes hard to scan. For that reason, the minimum QR code size is 40x40mm. If you are wondering whether it can be smaller, please check [Can we shorten QR Code? Can we make it smaller?](#)



POS

See [Invoicing System](#).

PKI

See https://en.wikipedia.org/wiki/Public_key_infrastructure

Non-volatile Memory

Non-volatile memory is a type of computer memory that can retrieve stored information even after having been power cycled (turned off and back on); for example: a USB Flash drive.

Manufacturer Registration Code - MRC

Manufacturer Registration Code (MRC) is a unique identification code for each E-SDC product. It consists of three parts - the first two parts are assigned when an E-SDC developer begins a new accreditation process for a new E-SDC product or a new version of an already accredited product.

The Manufacturer Registration Code must be included in audit packages that are sent from an E-SDC to the tax authority database. However, it is optional information for fiscalized information returned from an E-SDC to a POS.

MRC consists of three parts and always has the following format *ProductCode-ProductVersionCode-DeviceSerialNumber*:

- **ProductCode** - unique alphanumerical code (2 characters) received from the tax authority when an E-SDC developer begins a new accreditation process. It uniquely identifies a specific E-SDC product submitted for accreditation.
- **ProductVersionCode** - alphanumerical code (4 characters) also received from the tax authority when an E-SDC developer begins a new accreditation process. It uniquely identifies a specific E-SDC product version submitted for accreditation.
- **DeviceSerialNumber** - manufacturer serial number (max 32 characters, including special characters). This element is generated by the E-SDC manufacturer and must be unique for each E-SDC device/application.

All 3 elements of the code are mandatory.

Example

A typical MRC look like this: **04-0020-ASDJKA1\$DJL2A**

04 - ProductCode

0020 - ProductVersionCode

ASDJKA1\$DJL2A - DeviceSerialNumber

Invoicing System

Invoicing system is any software or hardware capable of issuing fiscal invoices or receipts in accordance with the official technical instructions published in the documentation for [EFD vendors](#).

After an Invoicing system goes through the Accreditation process, it is considered Accredited Invoicing System (AIS) and becomes a component of the business's [EFD](#).

POS communicates with an SDC service in order to fiscalize transactions. It submits transaction data to an SDC and receives back fiscalized data, which it uses to issue a fiscal invoice.

NOTE:

For more information on creating fiscal invoices, see [Fiscal Invoice](#).

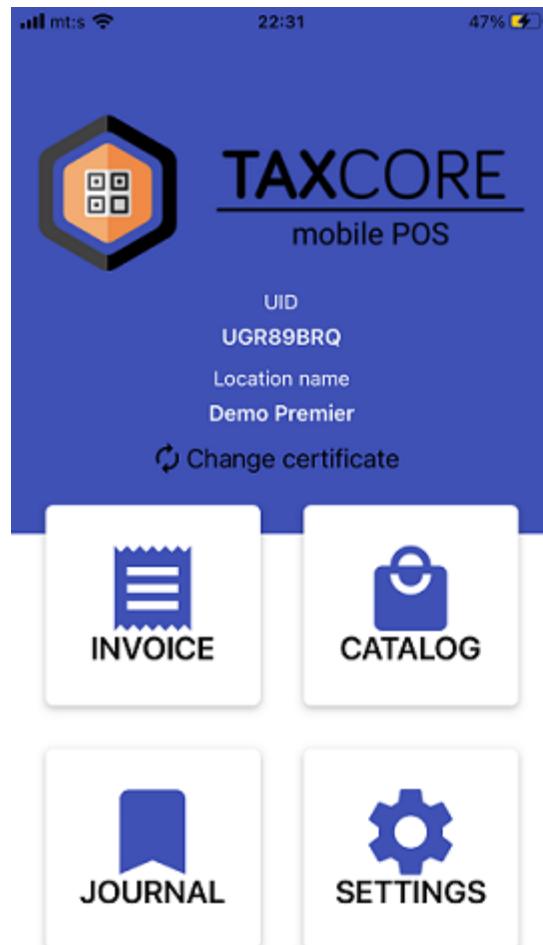
Transaction data input methods

Invoicing systems can receive input of transaction data in different ways:

- Keyboard input - cashier inputs article codes or searching article names
- Barcode scanning - cashier scans unique article barcodes
- Touchscreen input - cashier selects appropriate article icons
- File input - POS receives files that contain article ID, name, quantity, and other necessary information from another application.

Examples

1. Cash Register that can establish an HTTP connection with an E-SDC device installed on-premises.
2. Computer-Based POS system connected to V-SDC service via permanent internet connection.
3. Mobile App used by taxi drivers to generate receipts connected to an E-SDC installed on the same mobile device.
4. Part of an ERP or Accounting software used to generate monthly invoices for all customers, connected to V-SDC service via permanent Internet connection.



Internal Data

When information about an issued fiscal invoice is transferred to the tax authority's database, part of the message contains some confidential fiscal data that must be protected from any outside attempts to access it.

This set of information is called internal data. It is protected by encryption applied by the taxpayer's secure element. This protection can be decrypted only by the CYΦ system.

In other words, the content of the internal data is readable only to CYΦ staff.

GUID

GUID is a Globally Unique Identifier.

In its canonical textual representation, the sixteen octets of a UUID are represented as 32 hexadecimal (base 16) digits, displayed in five groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters (32 alphanumeric characters and four hyphens).

For example: 123e4567-e89b-12d3-a456-426655440000

Fiscal Receipt

Fiscal receipt is a digitally signed acknowledgment that a specified payment has been received. A receipt records the sale of goods or a service fee. In this context, the term *fiscal receipt* is used interchangeably with the term [fiscal invoice](#).

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLASS4DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-----NORMAL SALE-----

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)	8,40	2	16,80
-----------------------------	------	---	-------

Sunny Way red mug (A)	12,00	1	12,00
-----------------------	-------	---	-------

Total Purchase:	28,80
-----------------	-------

Cash:	28,80
-------	-------

=====

Label	Name	Rate	Tax
-------	------	------	-----

A	VAT	15,00%	3,76
---	-----	--------	------

Total Tax:	3,76
------------	------

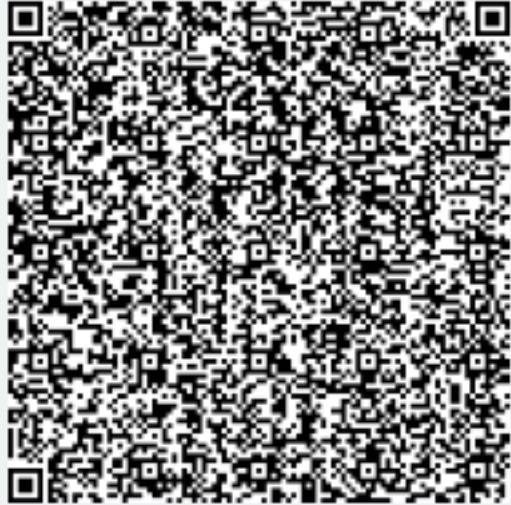
=====

SDC Time: 20.04.2022. 14:46:17

SDC Invoice No: BQVWAAR4-NBN68V00-21

Invoice Counter: 15/21II

=====



===== END OF FISCAL INVOICE =====

A fiscal invoice is, by definition, a digitally signed acknowledgment that a specified payment has been received or refunded. It is created by the [EFD](#) setup that the taxpayer has selected to use.

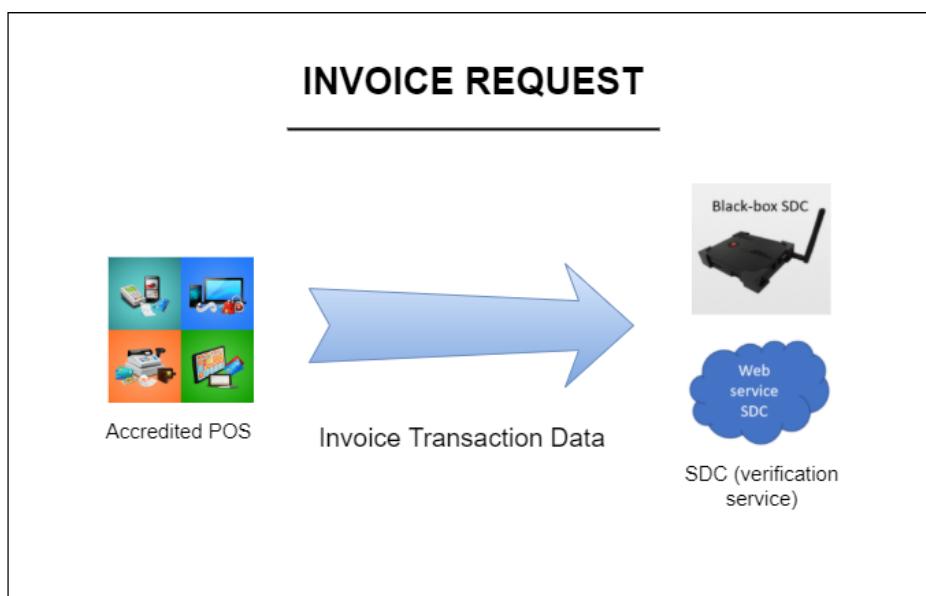
Each invoice type is associated with one or more of the following payment types:

- cash
- card
- check
- wire transfer
- mobile money
- voucher
- other

Main steps in invoice creation

The process of creating a fiscal invoice consists of two main steps – **Invoice Request** and **Invoice Response**.

Invoice Request is created by an [Accredited POS](#) and it contains the usual invoice information like items, tax labels and invoice number. The invoice request is submitted by the taxpayer's [invoicing system](#) (acredite POS solution) to a V-SDC (web-service) or E-SDC (black-box device).



Invoice Response is generated by a V-SDC or E-SDC after data validation and sent back to the same invoicing system (accredited POS). It is an integral part of any fiscal invoice. Without this information, an invoice could not be considered a legal fiscal invoice.

As part of the invoice response, the SDC service (V-SDC or E-SDC) communicates with a secure element that applies the digital signature and guarantees the authenticity of each fiscal invoice.

INVOICE RESPONSE



Accredited POS

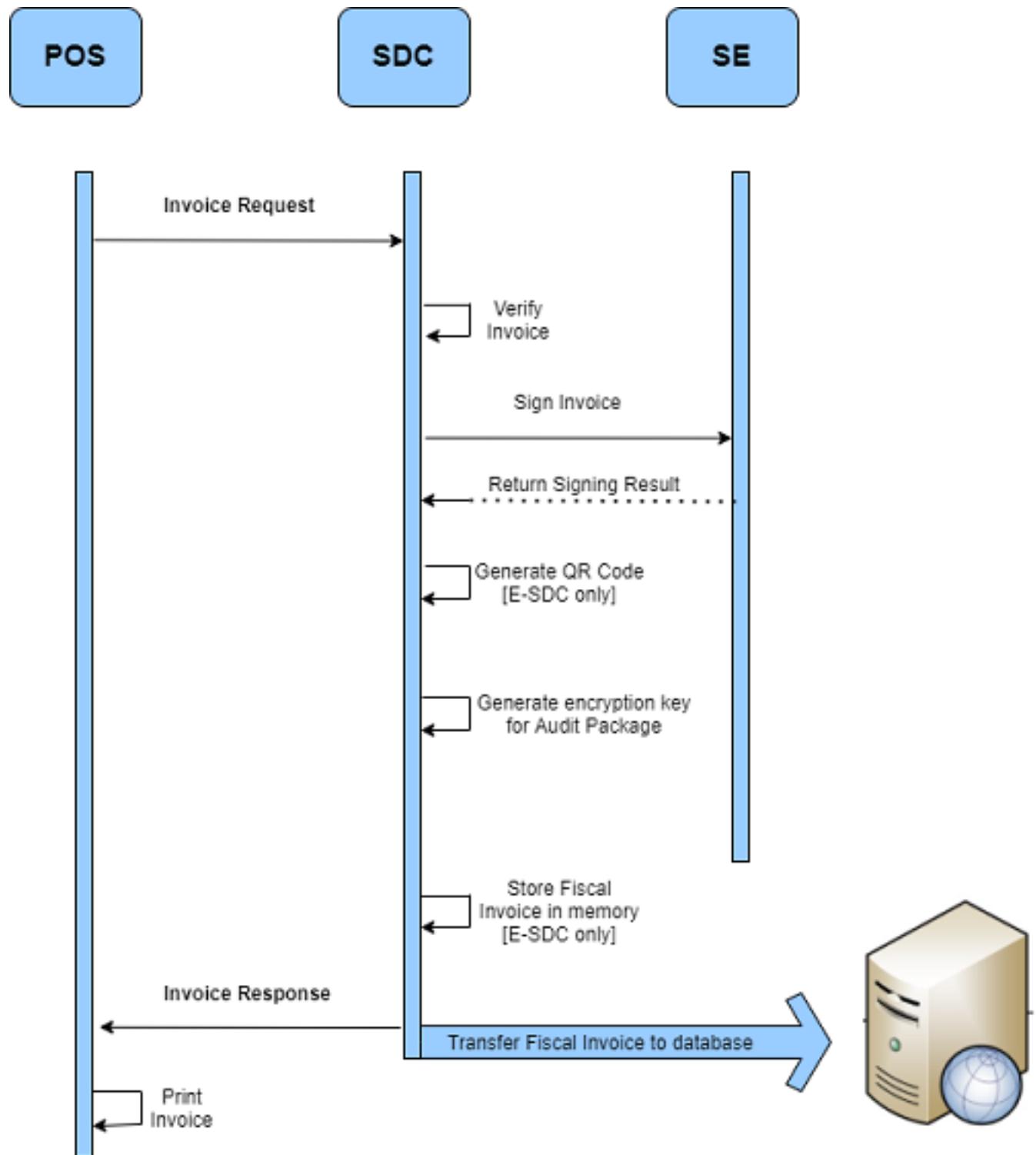


Fiscal Data with a QR code



SDC (verification
service)

Visual representation of the fiscal invoice creation process



Map of the fiscal invoice elements

The image below shows which EFD component is responsible for providing the content of each fiscal invoice element.

===== FISCAL INVOICE =====		Invoicing system
111000005 Grocery King 100000006 - Sale 1 313 E Cactus Rd London		Secure Element
Cashier: 21 - 458 Buyer: RS349007 Buyers Cost Center: R2D2 Ref No: 996MFFC5-996MFFC5-1 Ref DT: 8/14/2024 10:31:53 AM -----NORMAL REFUND----- Items =====		Invoicing system
Name Price Qty. Total Milk Chocolate (E) 2.60 2 -5.20 French cheese (E) 7.00 1 -7.00 ----- Total Refund: 12.20 Cash: 20.00 =====		
Label Name Rate Tax E VAT 10.00% 1.11 ----- Total Tax: 1.11 ----- SDC Time: 10/14/2024 3:47:12 PM		Sales Data Controller
SDC Invoice No: T4GEXJ69-H56YG200-3 Invoice Counter: 2/3NR =====		Secure Element
		
===== END OF FISCAL INVOICE =====		Invoicing system

Related articles

- [Cashier TIN](#)
-

- [Buyer TIN](#)
- [Buyer's Cost Center](#)
- [Reference Number](#)
- [SDC Time](#)
- [SDC Invoice Number](#)
- [Invoice Counter](#)
- [QR Code](#)

POS number

The **POS number** is a combination of the ID number of the invoicing system (or POS) and its software version. It must be present on invoices of all transaction and invoice types.

Cancellation of a Fiscal Invoice

In case the cashier or customer notices **an error on an issued invoice**, the invoicing system allows the taxpayer to cancel that invoice and to issue a new, correct invoice.

Both Sale and Refund invoices can be canceled in case of error.

NOTE:

Sale invoice cancelation is performed when there has not been any payment received by the taxpayer for the goods/services listed as items on the flawed invoice. **In case the payment has already been completed, the taxpayer should issue a standard Refund invoice, not a cancellation.**

NOTE:

Invoice cancelation should be performed only for **Normal and Advance** type of invoices.

Cancellation of Sale Invoices

If there is an error on the **Normal Sale** or **Advance Sale** invoice, the taxpayer can cancel those invoices by issuing a **Normal Refund** or **Advance Refund** invoice.

- **Normal Sale** invoice is cancelled with an **Normal Refund** invoice
- **Advance Sale** invoice is cancelled with an **Advance Refund** invoice

If the user selects the cancellation option on the invoicing system, the system generates a Normal Refund or an

Advance Refund invoice with the same invoice components as the invoice being canceled, except for the following special fields:

- The **Buyer ID** field must be populated with the **Taxpayer Identification Number (TIN)** of the seller
- The **Reference Number** field is populated with the **SDC Number of the Sale invoice being canceled**

Sale invoice with an error	Cancelation invoice
<pre>===== FISCAL INVOICE ===== 502579006 Super Electronics Shop No1 2 Woodstand Road Suva Cashier: Admin POS No: ASDF238/1.2 ----- NORMAL-SALE ----- Items ===== Name Price Qty. Total Samsung phone (A) 800.00 1 800.00 ----- Total: 800.00 Cash: 800.00 ===== Label Name Rate % Tax A VAT 15.00 104.35 ----- ~ Total Tax: 104.35 ===== SDC Time: 01/06/2024 2:01:24 PM SDC No: 7AF234D9-E377B30A-150492 Invoice Counter: 149035/150492NS ===== ,,QR Code" ===== END OF FISCAL INVOICE =====</pre>	<pre>===== FISCAL INVOICE ===== 502579006 Super Electronics Shop No1 2 Woodstand Road Suva Cashier: Admin Buyer: 502579006 POS No: ASDF238/1.2 Ref No: 7A23F4D9-E377B30A-150492 ----- NORMAL-REFUND ----- Items ===== Name Price Qty. Total Samsung phone (A) 800.00 1 - 800.00 ----- Total: 800.00 Cash: 800.00 ===== Label Name Rate % Tax A VAT 15.00 104.35 ----- ~ Total Tax: 104.35 ===== SDC Time: 02/06/2024 5:53:48 PM SDC No: 7AF234D9-E377B30A-150493 Invoice Counter: 1027/150493NR ===== ,,QR Code" ===== END OF FISCAL INVOICE =====</pre>

Cancellation of Refund Invoices

If there is an error on the **Normal Refund** or **Advance Refund** invoice, the taxpayer can cancel those invoices by issuing a **Normal Sale** or **Advance Sale** invoice.

- Normal Refund** invoice is cancelled with an **Normal Sale** invoice
- Advance Refund** invoice is cancelled with an **Advance Sale** invoice

If the user selects the cancellation option on the invoicing system, the system generates a Normal Sale or an Advance Sale invoice with the same invoice components as the invoice being canceled, except for the following special fields:

- The **Buyer ID** field must be populated with the **Taxpayer Identification Number (TIN)** of the seller
- The **Reference Number** field is populated with the **SDC Number of the Sale invoice being canceled**

Refund invoice with an error	Cancelation invoice
<pre>===== FISCAL INVOICE ===== 502579006 Super Electronics Shop No1 2 Woodstand Road Suva Cashier: Admin POS No: ASDF238/1.2 ----- NORMAL-REFUND ----- Items ===== Name Price Qty. Total Samsung phone (A) 800.00 1 -800.00 ----- Total: 800.00 Cash: 800.00 ===== Label Name Rate % Tax A VAT 15.00 104.35 ----- Total Tax: 104.35 ===== SDC Time: 01/06/2024 2:01:24 PM SDC No: 7AF234D9-E377B30A-150492 Invoice Counter: 4098/150492NR ===== „QR Code“ ===== END OF FISCAL INVOICE =====</pre>	<pre>===== FISCAL INVOICE ===== 502579006 Super Electronics Shop No1 2 Woodstand Road Suva Cashier: Admin Buyer: 502579006 POS Number: ASDF238/1.2 Ref No: 7A23F4D9-E377B30A-150492 ----- NORMAL-SALE ----- Items ===== Name Price Qty. Total Samsung phone (A) 800,00 1 800.00 ----- Total: 800.00 Cash: 800.00 ===== Label Name Rate % Tax A VAT 15.00 104,35 ----- Total Tax: 104,35 ===== SDC Time: 02/06/2024 5:53:48 PM SDC No: 7AF234D9-E377B30A-150493 Invoice Counter: 143027/150493NS ===== „QR Code“ ===== END OF FISCAL INVOICE =====</pre>

Reference Time

Reference Time is actually the [SDC Time](#) of the fiscal invoice that is being referenced. It identifies the exact date and time when the previously issued fiscal invoice (that is being referenced) was issued.

Reference Time is **always optional** information on an invoice. It can be used on **any Refund or Copy** transaction - to refer to the SDC Time of the original invoice that is being refunded or copied.

The purpose of using Reference Time is for SDC to determine which tax rate group to use when creating a Refund or Copy invoice. If an [invoicing system](#) does not submit Reference Time, the SDC uses the currently active tax rate group.

Reference Time can be used only when there is a [Reference Number](#) on the same invoice.

Example

- Normal Refund invoice is issued with a *Reference Time 12/04/2021 22:22:34*
- This means that the *SDC Time* of the Normal Sale invoice which is being refunded was also **12/04/2021 22:22:34**

Cashier TIN

Cashier TIN is a unique identification of the cashier that issued a particular fiscal invoice. It is submitted by the taxpayer's [invoicing system](#) to an SDC service which fiscalizes the invoice.

If Cashier TIN information is required by official fiscalization regulations, it must be submitted in the prescribed form.

NOTE:

Cashier TIN is not mandatory information in every tax jurisdiction. However, even if it is optional, the taxpayer can still use it for personal record keeping.

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLA554DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-----NORMAL REFUND-----

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)			
-----------------------------	--	--	--

8,40	2	-16,80
------	---	--------

Sunny Way red mug (A)			
-----------------------	--	--	--

12,00	1	-12,00
-------	---	--------

Total Refund:	28,80
---------------	-------

Card:	28,80
-------	-------

=====

Label	Name	Rate	Tax
-------	------	------	-----

A	VAT	15,00%	3,76
---	-----	--------	------

Total Tax:	3,76
------------	------

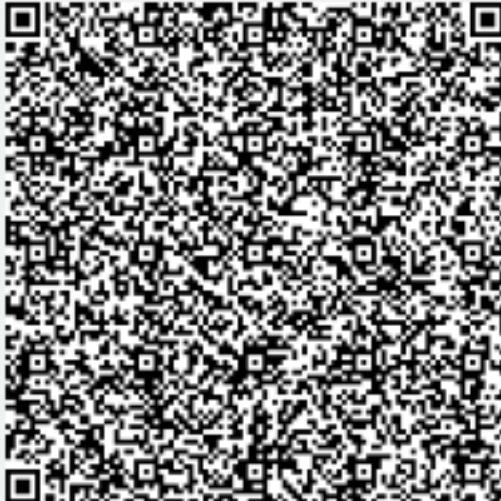
=====

SDC Time:	20.04.2022. 13:09:11
-----------	----------------------

SDC Invoice No:	BQVWAAR4-NBN68V00-16
-----------------	----------------------

Invoice Counter:	3/16/MP
------------------	---------

=====



===== END OF FISCAL INVOICE =====

Buyer TIN

Buyer TIN is the official identification of the buyer, as registered in the official business registry of each country. The use of Buyer TIN is always prescribed by local tax legislation. When it is mandatory, it must be printed on the

fiscal invoice. It uniquely identifies the buyer of the product(s)/service(s) that are listed on the invoice.

When issuing a B2B fiscal invoice for exported goods/services (i.e. when goods/services are sold to a buyer from a foreign country), the cashier **must enter a Buyer TIN which starts with an official country code prefix**.

Country code prefix is an **ISO 3166-1 alpha-2 (2 letters) country code**. It identifies the buyer's country of origin.

NOTE:

ISO 3166-1 alpha-2 codes are two-letter country codes defined in [ISO 3166-1](#), part of the [ISO 3166 standard](#) published by the [International Organization for Standardization \(ISO\)](#).

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLA554DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-----NORMAL REFUND-----

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)			
-----------------------------	--	--	--

8,40	2	-16,80
------	---	--------

Sunny Way red mug (A)			
-----------------------	--	--	--

12,00	1	-12,00
-------	---	--------

Total Refund:	28,80
---------------	-------

Card:	28,80
-------	-------

=====

Label	Name	Rate	Tax
-------	------	------	-----

A	VAT	15,00%	3,76
---	-----	--------	------

Total Tax:	3,76
------------	------

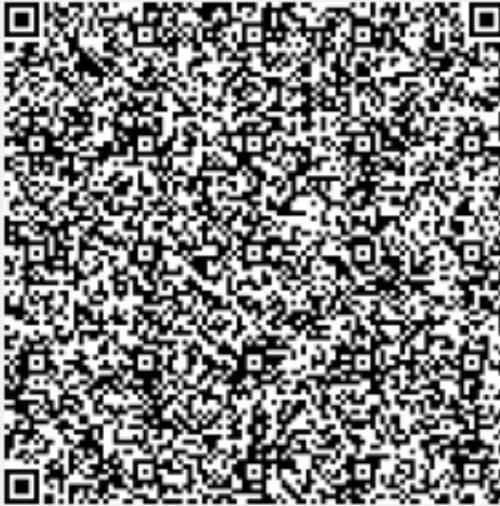
=====

SDC Time: 20.04.2022. 13:09:11

SDC Invoice No: BQVWAAR4-NBN68V00-16

Invoice Counter: 3/16/MP

=====



===== END OF FISCAL INVOICE =====

Buyer's Cost Center

Buyer Cost Center is the identification of the purpose for which that invoice was issued. The use of Buyer Cost Center is always prescribed by local tax legislation. When it is mandatory, it must be printed on the invoice.

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLASS4DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-NORMAL REFUND-

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)

8,40 2 -16,80

Sunny Way red mug (A)

12,00 1 -12,00

=====

Total Refund: 28,80

Card: 28,80

=====

Label	Name	Rate	Tax
-------	------	------	-----

A VAT 15,00% 3,76

=====

Total Tax: 3,76

=====

SDC Time: 20.04.2022. 13:09:11

SDC Invoice No: BQVWAAR4-NBN68V00-16

Invoice Counter: 3/16MP

=====



===== END OF FISCAL INVOICE =====

Reference Number

Reference Number is **always mandatory for Refund or Copy transactions, as well as the Normal Sale and Advance Sale/Refund transactions which are connected to previously issued Advance Sale or Advance**

Refund invoices. It identifies which previously issued fiscal invoice is being refunded, copied or referenced as an advance.

Reference Number is actually the [SDC Invoice No](#) of the fiscal invoice which is being referenced.

Example

- Normal Refund invoice is issued with a Reference Number **LLA5S4DW-LGHFXH00-2**
- This means that the SDC Invoice Number of the Normal Sale invoice which is being refunded was also **LLA5S4DW-LGHFXH00-2**

Using the Reference Number

The table below displays the mandatory or optional usage of the Reference Number, depending on the invoice type. The colors in the table cells signify the following rules:

- Red color - you must use the Reference Number (some mandatory cases with advance-type are labeled in the table and explained in detail below)
- Gray color - you mustn't use the Reference Number
- White color - you can use the Reference Number

NOTE:

The usage of the Reference Number may vary depending on the tax jurisdictions' legislative requirements. Make sure you are familiarized with the specific requirements of the tax jurisdiction(s) where you operate.

When you issue...	...you must/can/mustn't reference the following invoice types									
	NS	NR	AS	AR	PS	PR	CS	CR	TS	TR
	NS			Case 1						
	NR	Red								
	AS			Case 2	Case 3					
	AR				Case 4					
	PS									
	PR					Red				
	CS	Red								
	CR		Red							
	TS									
	TR								Red	

Explanation of specific mandatory cases with advance-type invoices:

Transactions involving advance payments can consist of different combinations of Advance Sale and Advance Refund invoices. Each invoice from that transaction, except the first one, must contain a Reference Number in order to create a thread that connects all the invoices from that transaction.

No matter the combination, the Reference Number is always applied chronologically to the first previous invoice from that transaction, i.e. the invoice from the transaction that immediately precedes the invoice you are issuing.

- **Case 1** - Normal Sale invoice must reference a previously issued Advance Refund invoice when it is issued to complete a transaction the involves previously received advance payments
 - Example of this advance payment thread: AS1 < AS2 < **AR** < **NS**
- **Case 2** - Advance Sale invoice must reference a previously issued Advance Sale invoice when they are part of the same transaction
 - Example of this advance payment thread: **AS1** < **AS2** < AR < NS
- **Case 3** - Advance Sale invoice must reference a previously issued Advance Refund invoice when they are part of the same transaction
 - Example of this advance payment thread: AS1 < AS2 < **AR1** < **AS3** < AR2 < NS
- **Case 4** - Advance Refund invoice must reference a previously issued Advance Refund invoice when they are part of the same transaction
 - Example of this advance payment thread: AS < **AR1** < **AR2** < NS

NOTE:

For more information about completing transactions involving advance payments, see Completing a Transaction Involving Advance Payments.

Invoice and Transaction Types

Invoice types

The invoice type defines the context in which the document has been created.

- **NORMAL** invoice is issued when a service or product is provided
- **ADVANCE** invoice is issued when a customer pays (partially or completely) for the service/product before it is provided/delivered.
- **TRAINING** invoice is a document created during an operator's regular training program.
- **COPY** is created when an invoicing system issues a copy of the already created document.
- **PROFORMA** invoices are used to issue quotations to customers.

Transaction Types

The transaction type defines if a fiscal invoice increases or decreases the due taxes.

-

SALE

- o Normal Sale and Advance Sale **Increases** tax liability

REFUND

- o Normal Refund and Advance Refund **Decreases** tax liability
- o Requires a reference to the original document

All possible combinations

	Sale	Refund	Notes
Normal	NS	NR	Normal Sale and Normal Refund invoices affect taxpayers' tax liability
Advance	AS	AR	Advance Sale and Advance Refund invoices also affect taxpayers' tax liability
Training	TS	TR	Training Sale and Training Refund invoices do not affect taxpayers' tax liability
Copy	CS	CR	Copy Sale and Copy Refund invoices require reference to the original document and get a new SDC Invoice Number . They do not affect taxpayers' tax liability.
Proforma	PS	PR	Proforma Sale and Proforma Refund invoices are completely optional and they do not affect taxpayers' tax liability

INVOICE TYPE EXAMPLES

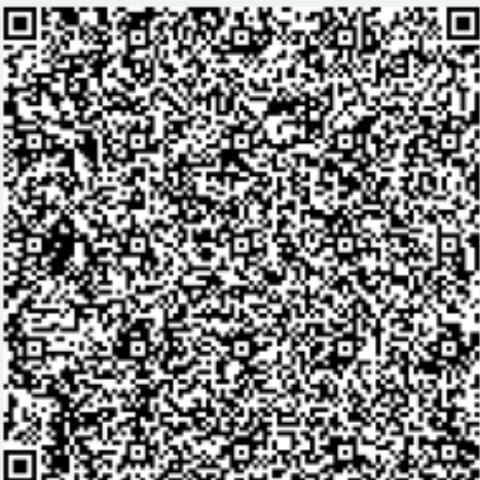
NORMAL INVOICE

```
===== FISCAL INVOICE =====
RS654321
Premier League DTI
Premier League DTI
Kruzni put 7
Lestane
Cashier: 2-5783
Buyer: RS349802744
Buyers Cost Center: CR02R
Ref No: LLA554DW-LGHFXH08-2
Ref DT: 20.04.2022. 13:08:34
NOMINAL SALE
```

COPY INVOICE

```
===== THIS IS NOT A FISCAL RECEIPT =====
RS654321
Premier League DTI
Premier League DTI
Kruzni put 7
Lestane
Cashier: 2-5783
Buyer: RS349802744
Buyers Cost Center: CR02R
Ref No: BQVWAAR4-NBN68VD0-17
Ref DT: 20.04.2022. 14:25:52
-----COPY SALE-----
```

PROFESSOR SALE			
Items			
Name	Price	Qty.	Total
Milk Chocolate (A)	2,60	3	7,80
French cheese camembert (A)	7,00	1	7,00
Total Purchase:			14,80
Cash:			14,80
Total Tax:			1,93
SDC Time:	20.04.2022. 14:25:52		
SDC Invoice No:	BQVWAAR4-NBN68V00-17		
Invoice Counter:	14/17NN		



===== END OF FISCAL INVOICE =====

Items			
Name	Price	Qty.	Total
Milk Chocolate (A)	2,60	3	7,80
French cheese camembert (A)	7,00	1	7,00
Total Purchase:	14,80		
Cash:	14,80		

THIS IS NOT A FISCAL INVOICE



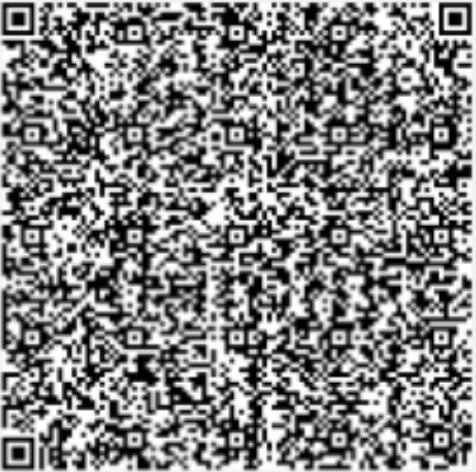
===== THIS IS NOT A FISCAL RECEIPT =====

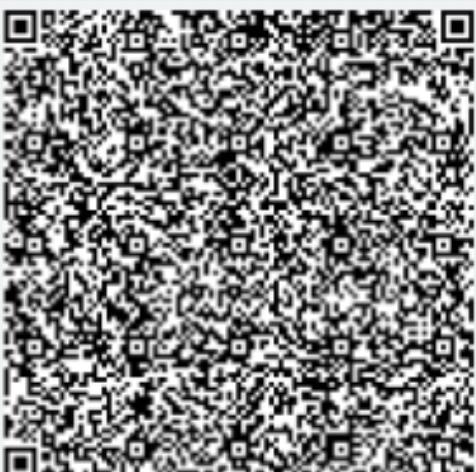
PROFORMA INVOICE

===== THIS IS NOT A FISCAL RECEIPT =====			
RS654321			
Premier League DTI			
Premier League DTI			
Kruzni put 7			
Lestane			
Cashier:	2-5783		
Buyer:	RS349802744		
Buyers Cost Center:	CR02R		
Ref No:	LLA554DW-LGHFXH00-2		
Ref DT:	20.04.2022. 13:08:34		
-----PROFORMA SALE-----			
Items			
Name	Price	Qty.	Total
Milk Chocolate (A)	2,60	3	7,80
French cheese camembert (A)			

TRAINING INVOICE

===== THIS IS NOT A FISCAL RECEIPT =====			
RS654321			
Premier League DTI			
Premier League DTI			
Kruzni put 7			
Lestane			
Cashier:	2-5783		
Buyer:	RS349802744		
Buyers Cost Center:	CR02R		
Ref No:	LLA554DW-LGHFXH00-2		
Ref DT:	20.04.2022. 13:08:34		
-----TRAINING SALE-----			
Items			
Name	Price	Qty.	Total
Milk Chocolate (A)	2,60	3	7,80
French cheese camembert (A)			

7,00	1	7,00	
=====			
Total Purchase:	14,80		
Card:	14,80		
=====			
THIS IS NOT A FISCAL INVOICE			
=====			
Label	Name	Rate	Tax
A	VAT	15,00%	1,93
=====			
Total Tax:		1,93	
=====			
SDC Time:	20.04.2022. 14:28:12		
SDC Invoice No:	BQVWAAR4-NBN68V00-19		
Invoice Counter:	1/19Pfl		
=====			
			
===== THIS IS NOT A FISCAL RECEIPT =====			

7,00	1	7,00	
=====			
Total Purchase:	14,80		
Other:	14,80		
=====			
THIS IS NOT A FISCAL INVOICE			
=====			
Label	Name	Rate	Tax
A	VAT	15,00%	1,93
=====			
Total Tax:		1,93	
=====			
SDC Time:	20.04.2022. 14:29:04		
SDC Invoice No:	BQVWAAR4-NBN68V00-20		
Invoice Counter:	1/280fl		
=====			
			
===== THIS IS NOT A FISCAL RECEIPT =====			

SDC Time

SDC Time is the official date and time relevant to the tax calculation and reporting. It shows the exact time when an SDC service fiscalized a particular invoice.

SDC time is always displayed in local time.

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLA554DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-----NORMAL REFUND-----

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)			
-----------------------------	--	--	--

8,40	2	-16,80
------	---	--------

Sunny Way red mug (A)			
-----------------------	--	--	--

12,00	1	-12,00
-------	---	--------

Total Refund:	28,80
---------------	-------

Card:	28,80
-------	-------

=====

Label	Name	Rate	Tax
-------	------	------	-----

A	VAT	15,00%	3,76
---	-----	--------	------

Total Tax:	3,76
------------	------

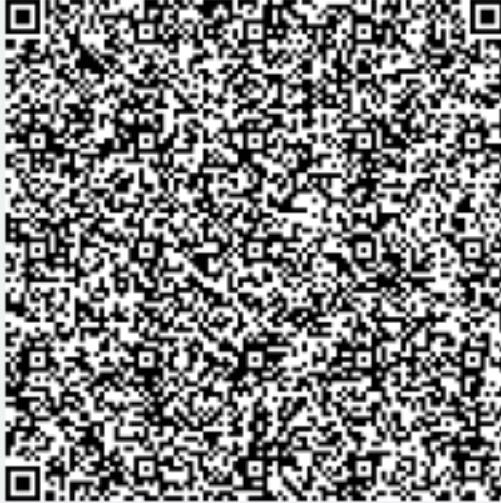
=====

SDC Time: 20.04.2022. 13:09:11

SDC Invoice No: BQVWAAR4-NBN68V00-16

Invoice Counter: 3/16/MP

=====



===== END OF FISCAL INVOICE =====

SDC Invoice Number

Every invoice has a unique SDC Invoice Number. It is important for distinguishing all invoices in the database and can be used for investigation purposes. The unique SDC Invoice Number identifies:

- The taxpayer who issued the invoice
- The business location where it was issued
- The verification service (SDC) that checked and signed the invoice
- Whether there are any invoices issued with the same secure element that are missing in the tax authority database

SDC invoice number is created in a way that prevents taxpayers/cashiers to modify it in any way.

How is it created?

A fiscal invoice is created in two steps – Invoice Request and Invoice Response.

1. *Invoice Request* is sent by an Accredited POS to an SDC service. It contains the **unique identifier (UID) of the taxpayer's secure element**.
2. *Invoice Response* is generated by V-SDC or E-SDC after data validation, and returned to the taxpayer's POS. Among other information, it contains the **unique identifier (UID) of the secure element** that was used to digitally sign the invoice, as well as the **counter number**.

Elements of an SDC invoice number

A typical SDC invoice number looks like this:

7AF4D923-E3B30A31-234

- **7AF4D923** - the UID of the secure element that requested signing.
- **E3B30A31** - the UID of the secure element that signed (fiscalized) the invoice.
- **234** - corresponds to the total number of fiscal invoices issued with this combination of secure element UIDs.

Difference between E-SDC and V-SDC versions of the SDC invoice number

When an E-SDC is used, the secure elements' UIDs will be the same. E-SDC uses the same taxpayer's certificate that was used to send an invoice request to also perform invoice fiscalization.

----- FISCAL INVOICE -----

101062846

ERKOM DOO

Maloprodaja

НИКОЛЕ РАБРЕНОВИЋА 23

Ивањица

Cashier: Тоса

Buyer: 43534543534

Buyers Cost Center: Опционо поље купца. П
роба За Максималан Број Карактера.

POS Number: null

POS Time: 15.01.2022. 15:25:49

Ref No: XXXXXXXX-XXXXXXX-1

Ref DT: 15.01.2022. 15:25:49

-----NORMAL SALE-----

Items

Name	Price	Qty.	Total
------	-------	------	-------

Хлеб (Ђ)	10,55	2	21,10
----------	-------	---	-------

Total Purchase: 21,10

Cash: 20,00

Label	Name	Rate	Tax
Ђ	О-ПДВ	20,00%	3,52

Total Tax: 3,52

SDC Time: 15.01.2022. 15:25:49

SDC Invoice No: SPTTWYE5-SPTTWYE5-11

Invoice Counter: 2/11NS



----- END OF FISCAL INVOICE -----

When using V-SDC, the secure elements' UIDs will be different because V-SDC uses its own (integrated) secure element to fiscalize the invoice.

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: BQVWAAR4-NBN68V00-21

Ref DT: 20.04.2022. 14:46:17

-NORMAL REFUND-

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)	8,40	2	-16,80
-----------------------------	------	---	--------

Sunny Way red mug (A)	12,00	1	-12,00
-----------------------	-------	---	--------

Total Refund:	28,80
---------------	-------

Cash:	28,80
-------	-------

=====

Label	Name	Rate	Tax
-------	------	------	-----

A	VAT	15,00%	3,76
---	-----	--------	------

Total Tax:	3,76
------------	------

=====

SDC Time: 20.04.2022. 14:46:52

SDC Invoice No: BQVWAAR4-NBN68V00-22

Invoice Counter: 4/22IP

=====



===== END OF FISCAL INVOICE =====

Invoice counter is actually the invoice number according to the invoice and transaction type. It shows the following information:

- the number of invoices of a particular [invoice and transaction type](#) issued with that combination of secure element UIDs
- the total number of invoices issued that combination of secure element UIDs

For example, invoice counter **267/303 NS** means that

- this invoice is a Normal Sale invoice
- a total of **267** Normal Sale invoices were issued with that secure element
- a total of **303** invoices of all types were issued with that secure element

===== FISCAL INVOICE =====

RS654321

Premier League DTI

Premier League DTI

Kruzni put 7

Lestane

Cashier: 2-5783

Buyer: RS349802744

Buyers Cost Center: CR02R

Ref No: LLA554DW-LGHFXH00-2

Ref DT: 20.04.2022. 13:08:34

-----NORMAL REFUND-----

Items

=====

Name	Price	Qty.	Total
------	-------	------	-------

Barn ground coffee 200g (A)

8,40 2 -16,80

Sunny Way red mug (A)

12,00 1 -12,00

Total Refund: 28,80

Card: 28,80

=====

Label	Name	Rate	Tax
-------	------	------	-----

A VAT 15,00% 3,76

Total Tax: 3,76

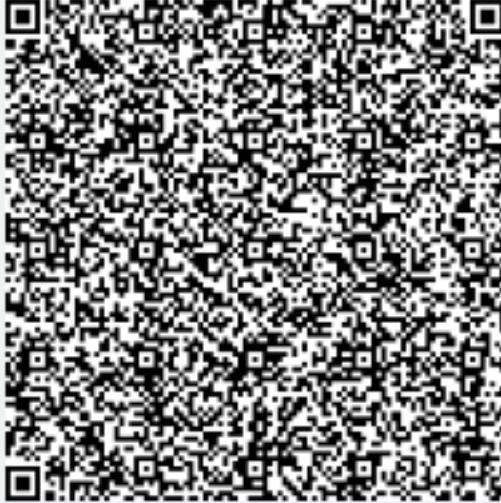
=====

SDC Time: 20.04.2022. 13:09:11

SDC Invoice No: BQVWAAR4-NBN68V00-16

Invoice Counter: 3/16/MP

=====



===== END OF FISCAL INVOICE =====

Electronic Fiscal Device - EFD

Electronic Fiscal Device (EFD) is composed of an [Invoicing System](#) (POS), an SDC and a Secure Element, all connected into one system. EFD produces [fiscal receipts](#) and reports [Audit Data](#) to a tax authority.

There are different options for a taxpayer's EFD setup. Every taxpayer can decide which EFD setup best suits his/her business needs.

Examples

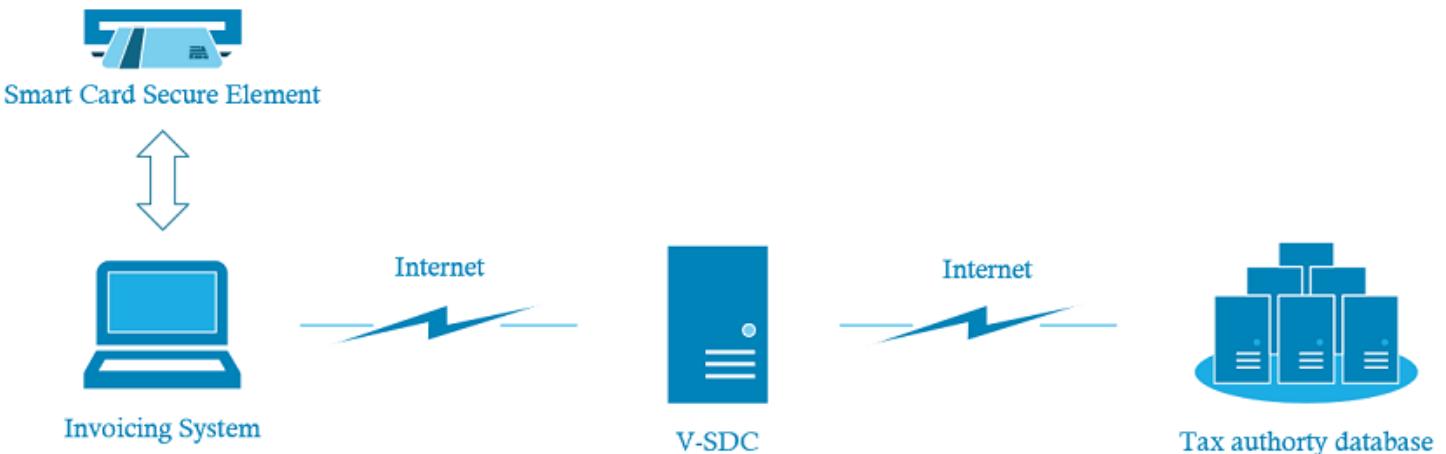
Below are examples of different EFD setup options with brief descriptions:

Invoicing System with V-SDC via digital file certificate



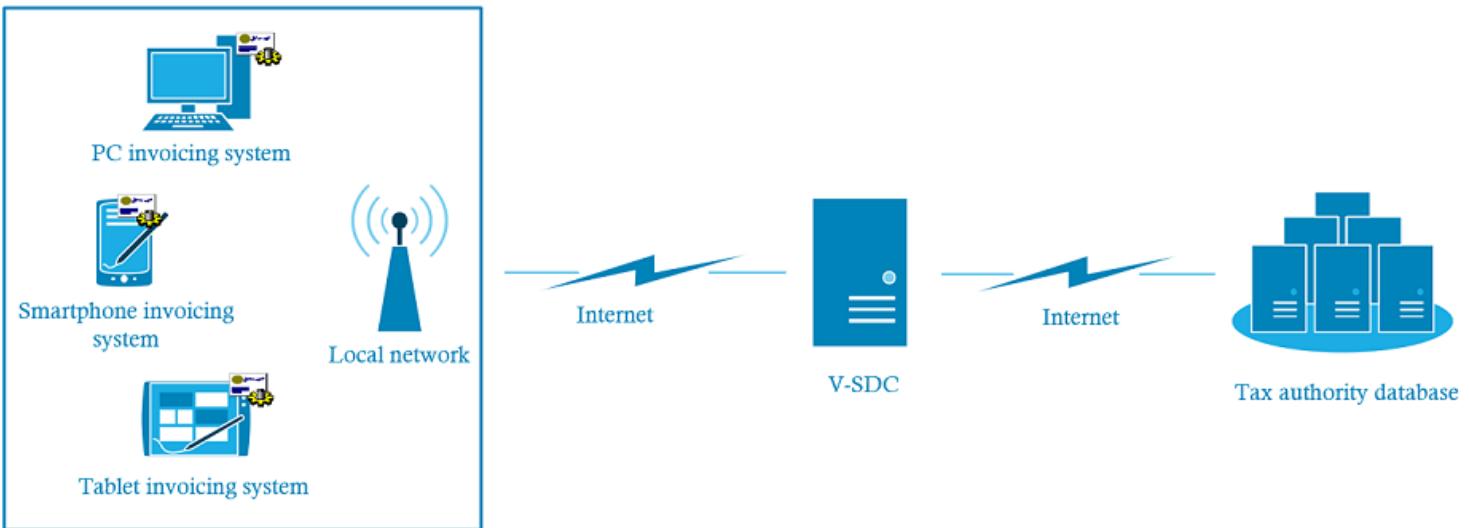
Invoicing system is connected with V-SDC service using an internet connection and fiscal invoices cannot be issued without the Internet. Taxpayers are authenticated against V-SDC through locally installed digital certificates.

Invoicing System with V-SDC via smart card



Invoicing system is connected with V-SDC service using an internet connection and fiscal invoices cannot be issued without the Internet. A smart card certificate is used for taxpayer authentication to the V-SDC service.

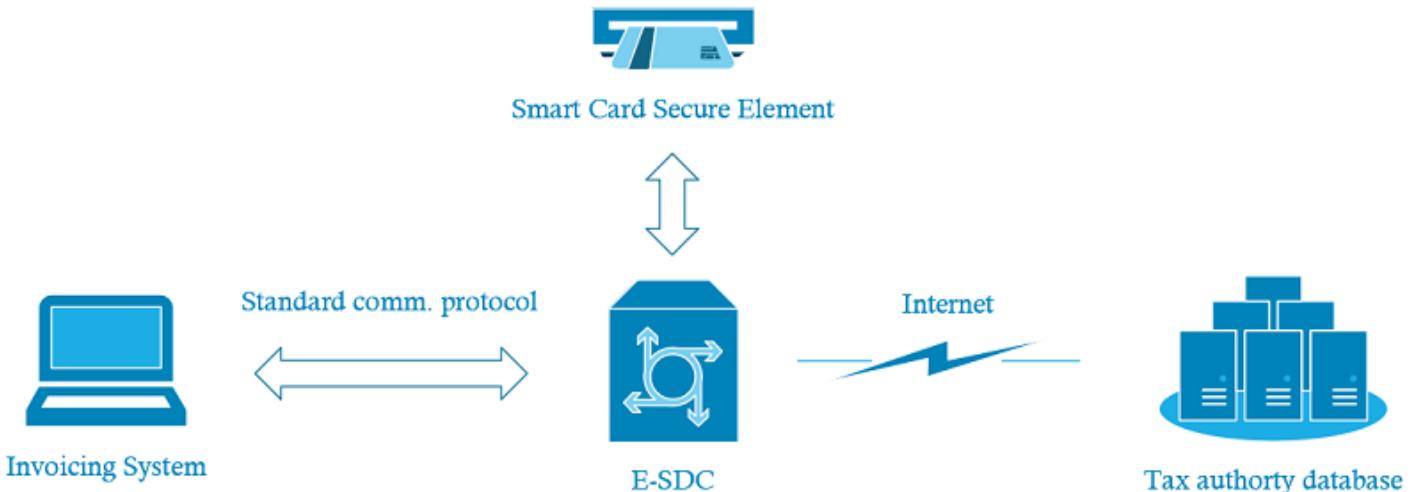
Multiple invoicing systems with V-SDC



More invoicing systems are linked, either through a local network or directly over the Internet, to a V-SDC. Users are authenticated through locally installed digital certificates. Receipts can only be issued if an internal connection is available.

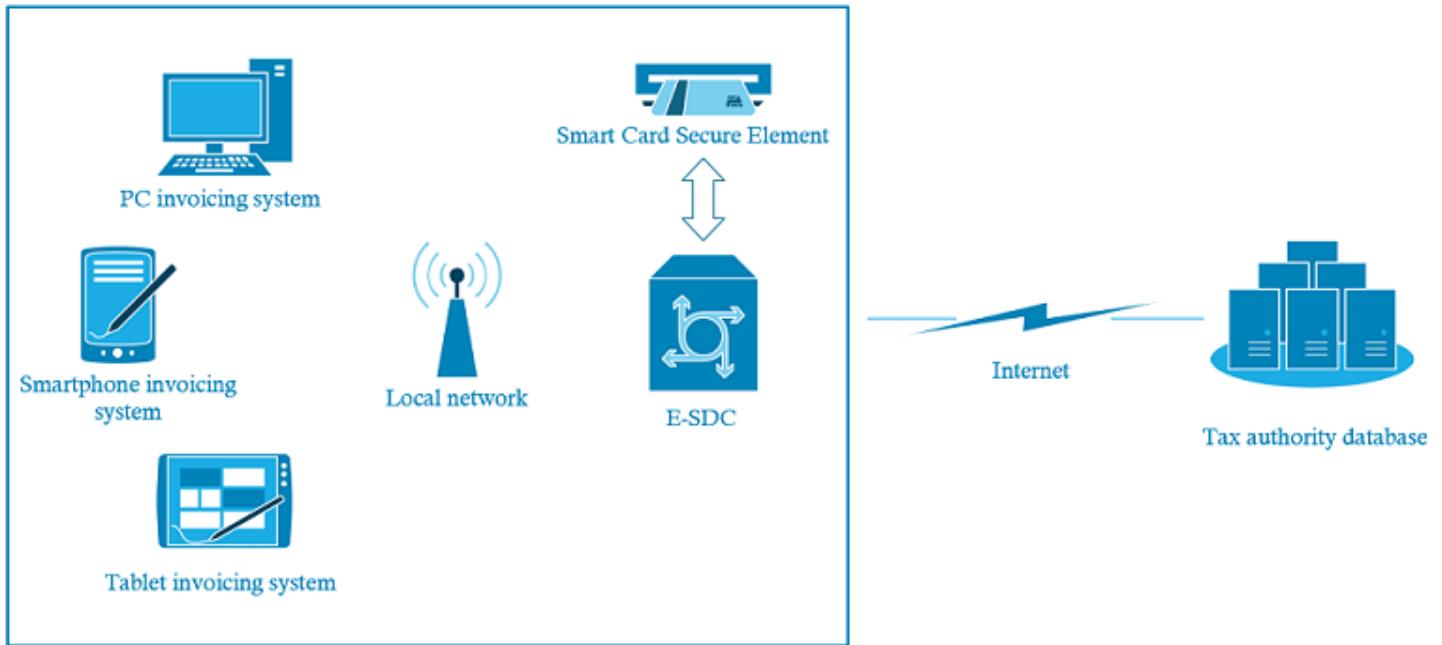
The benefit of this setting is the taxpayer's compliance which is almost completely free of charge, as mobile applications and existing smart invoicing devices can be used without any additional hardware on-premise.

Invoicing System with E-SDC



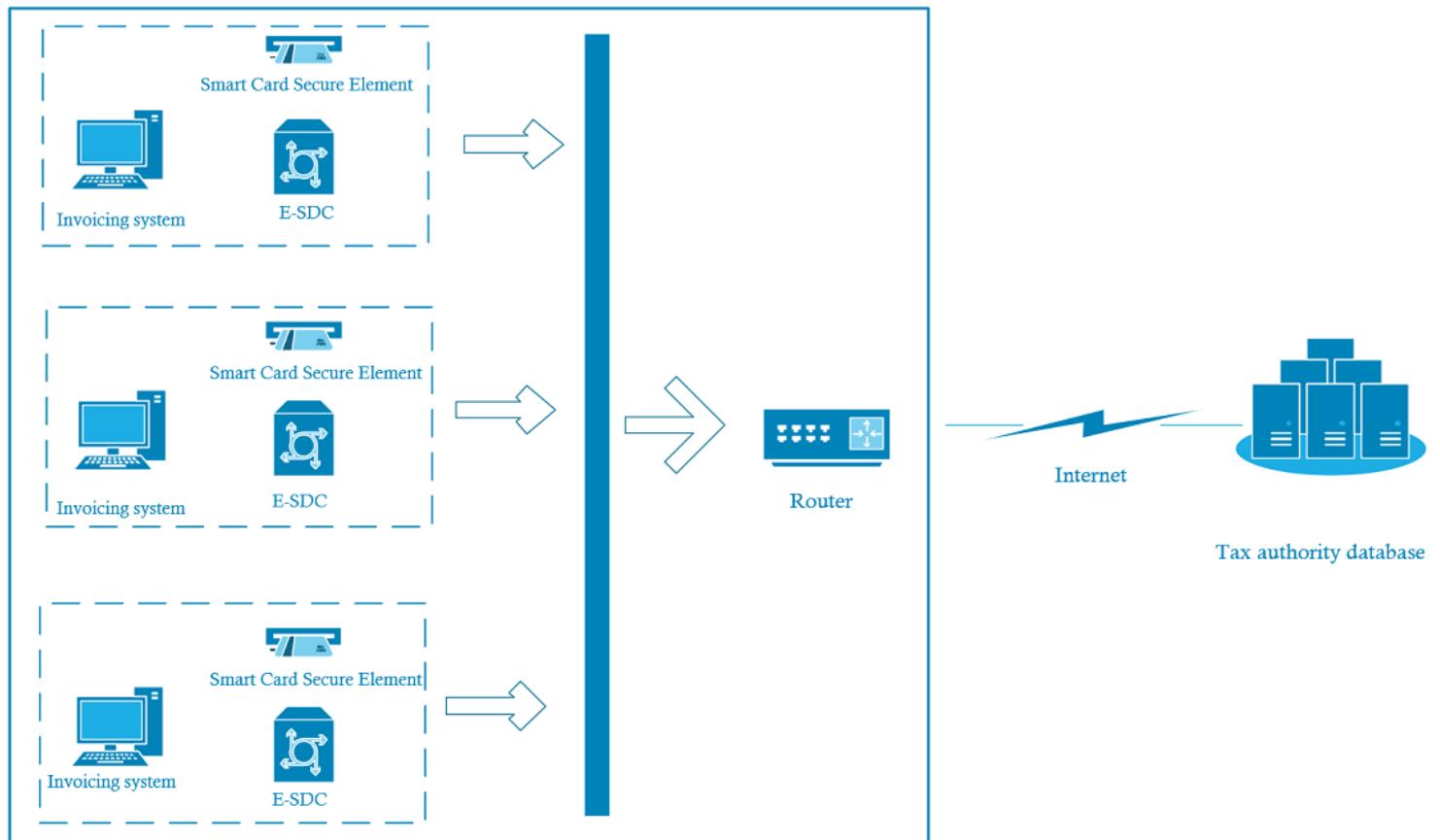
Invoicing System is connected to a locally kept E-SDC solution. This setup enables taxpayers to issue fiscal invoices with or without an internet connection. E-SDC communicates with the smart card secure element in order to authenticate the taxpayer, create digitally signed invoices and perform audits.

Multiple Invoicing Systems with one E-SDC



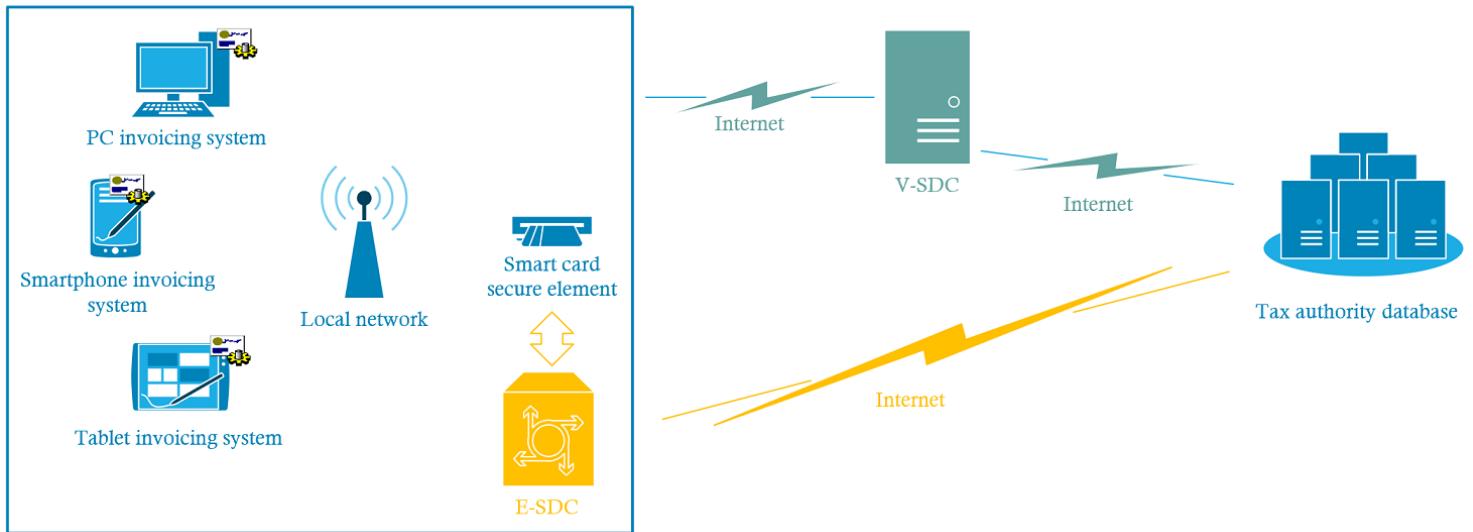
Invoicing systems connect through the wireless local network to an E-SDC. This enables receipt fiscalization even when the internet connection to the CYΦ database is not available. An example of such an installation is, for example, a showroom or other sales facility where some or all salespersons are equipped with receipts issuing devices.

Multiple Invoicing Systems with their own E-SDC



Invoicing systems are directly linked to E-SDCs and they enable receipts to be issued at the point of sale even when local area network or internet is not available. This setting is typical of supermarkets with multiple points of sales.

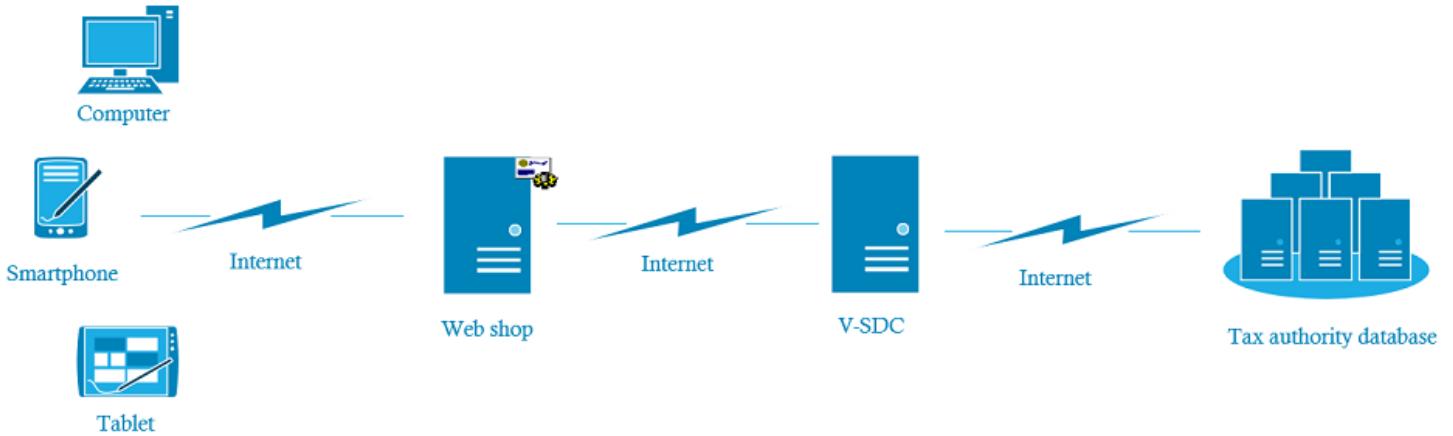
Invoicing systems with both V-SDC and E-SDC



As the **default option**, one or more invoicing systems are linked, either through a local network or directly over the Internet, to a V-SDC. Taxpayers are authenticated through locally installed digital certificates or a smart card secure element. Fiscal invoices can only be issued if an internal connection is available.

As the **alternative option**, in case the internet connection is unavailable, the taxpayer switches to E-SDC and continues issuing fiscal invoices in the offline mode. The E-SDC saves all the invoices in its memory and submits them once the internet connection returns.

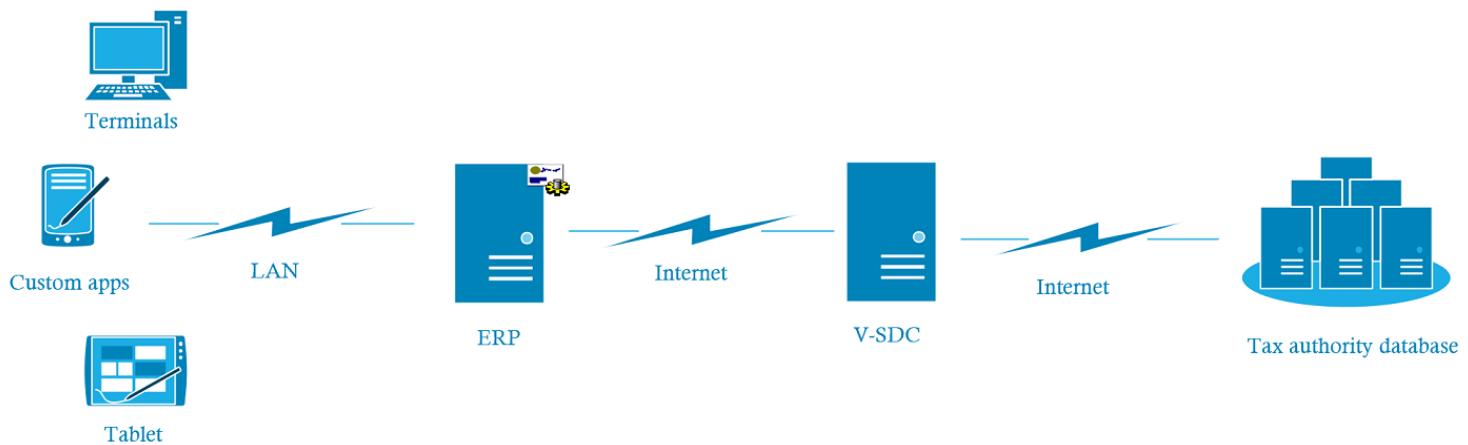
Web shop fiscalization



Fiscalization of web shops (both local and international ones) operating in the local market can be done by linking websites through which goods and services are sold with an online sales data controller (V-SDC).

A variation in this situation is the web shops that provide goods and services sales to third parties. In that case, the taxpayers would have to delegate the rights to use their digital certificates to the web shop, which would then use them to authenticate to V-SDC.

ERP system fiscalization



Issuance of fiscal receipts or invoices can also be done through Enterprise Resource Planning (ERP) systems that issue invoices to clients massively and in a previously defined period (e.g. Public utility services or telephone bills which are issued once a month to customers). Before sending or printing the invoice, ERP would contact a V-SDC to have the invoice fiscalized.

Developer Portal

Developer Portal is used by EFD vendors and taxpayers to test their POS or E-SDC products and apply for [accreditation](#).

The portal enables its users to run tests and simulate the standard operation of POS and E-SDC products. The applications and the documentation available on the portal are available to all users to make sure their products are compliant with the current POS and E-SDC technical instructions.

Developer Portal is available free of charge, and accessing the portal requires just a simple process of registration.

Developer locations page.' The page is divided into sections for 'New developers' and 'Existing developers', each with a list of steps for accreditation or reaccreditation."/>

Welcome to TaxCore Developer Portal
Home to POS and SDC Accreditation.

To request additional developer certificates visit [Developer locations](#) page.

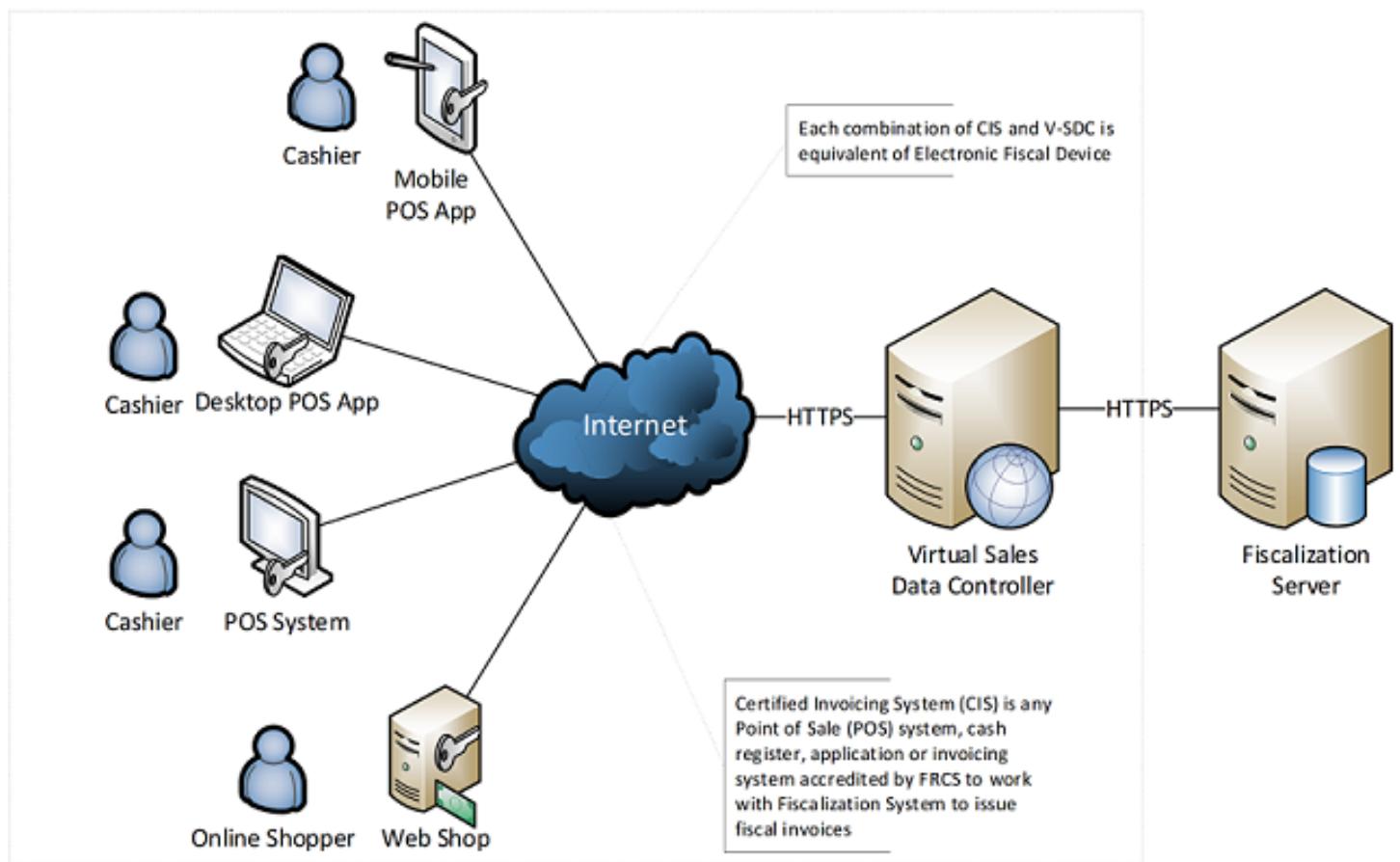
New developers <ul style="list-style-type: none"> As POS Developer <ul style="list-style-type: none"> Start Accreditation process by: <ul style="list-style-type: none"> Submitting POS Self-Assessment checklist. Submitting new POS Command 	Existing developers <ul style="list-style-type: none"> As POS Developer <ul style="list-style-type: none"> Start Reaccreditation process by: <ul style="list-style-type: none"> Submitting new POS Self-Assessment checklist. Submitting new POS Command
---	--

Connected Scenario

The simplest scenario is: a Client software application (usually POS) creates an invoice, applies tax labels and calls the V-SDC web service to fiscalize the invoice.

V-SDC authenticates the caller (verifies taxpayer's digital certificate), performs validation, calculates taxes based on applied tax labels, signs the invoice and returns a response to the Client.

V-SDC response consists of a digital signature of invoice data, an internal encrypted message for tax authority system, digital certificate metadata, a textual representation of an invoice, a [verification URL](#) and optionally a [QR Code](#).



Accredited POS prints a textual representation of the invoice and a QR Code on a receipt. In case the receipt is delivered in the electronic form, a verification URL should be rendered as a 'clickable' hyperlink in an email or a web page.

To summarize, the receipt fiscalization process consists of the following steps:

1. POS creates an invoice (standard fields like shopping items).
2. POS submits invoice (JSON format) to V-SDC REST service for fiscalization. POS and V-SDC are mutually authenticated using digital certificates.
3. V-SDC authenticates the caller (Taxpayer), performs validations and returns the result of the fiscalization
4. POS prints a textual representation of the invoice and a QR Code containing a verification URL, on the receipt. The paper width should be 58mm / 2.28in or wider.

Audit

An audit is a process of sequential transferring of [audit packages](#) from an SDC to the [*TaxCore.TaxCoreConfiguration.ElectronicMonitoringShortName*] system and handling the response generated by the system for the specific taxpayer's [secure element].

There are two common scenarios:

- [Remote Audit](#)
- [Local Audit](#)

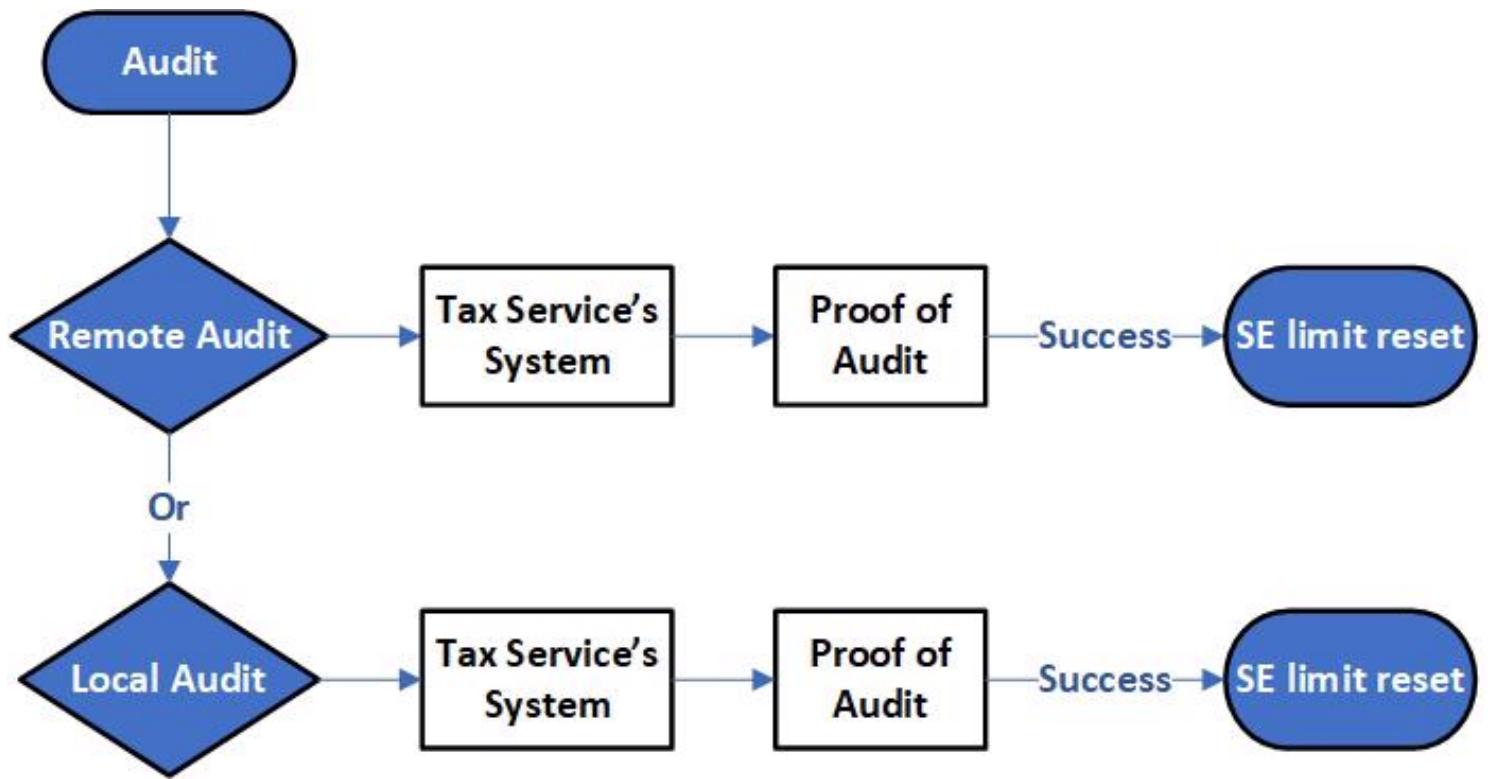
and two specific ones:

- Scanning the QR code on an invoice (performed by customers of tax auditors)
- Secure Element Audit (performed by tax auditors)

	Remote Audit	Local Audit	QR Scan	SE Audit
Audit type	Automatic	On Demand	On demand	On Demand
Data set submitted to СУФ	Full	Full	Subset	Internal data only
Journal and Items	Full	Full	No	No
Security	Full	Full	Full	Full

An audit is always an asynchronous process. Depending on the amount of data and means of communication, it can take from less than a second to a couple of hours.

Once audit is completed, СУФ will generate and deliver a [Proof of Audit](#) for a specific Secure Element. If the Proof of Audit is valid, the Secure element will reset the limit imposed during the personalization process.



Read more

- [Local Audit](#)
- [Remote Audit](#)
- Audit Request Payload - ARP
- [Proof of Audit - POA](#)

Local Audit

Local audit initiated by a taxpayer is a common scenario for devices that lack the ability to connect to the internet due to the technical limitations of the devices or limited infrastructure.

An audit is initiated by inserting an SD card or a USB Flash drive to an E-SDC device.

During the Local Audit, the E-SDC doesn't submit [audit packages](#) to the tax authority system directly; instead, those files are saved to an SD Card or a USB Flash Drive.

Local Audit from the perspective of a taxpayer:

1. Transfer the audit packages and ARP file from an E-SDC to external storage (e.g. SD card or a USB Flash drive)
2. Upload the audit packages and the ARP file using the section Upload audit packages on the Taxpayer Administration Portal
3. Check if there are pending commands for your E-SDC using the section Download Commands on the Taxpayer Administration Portal
4. If there are pending commands, download them to the external storage

NOTE:

If you do not have any internet access, you can take the SD Card or USB Flash Drive to a tax office where a CYΦ officer will perform steps 2, 3 and 4.

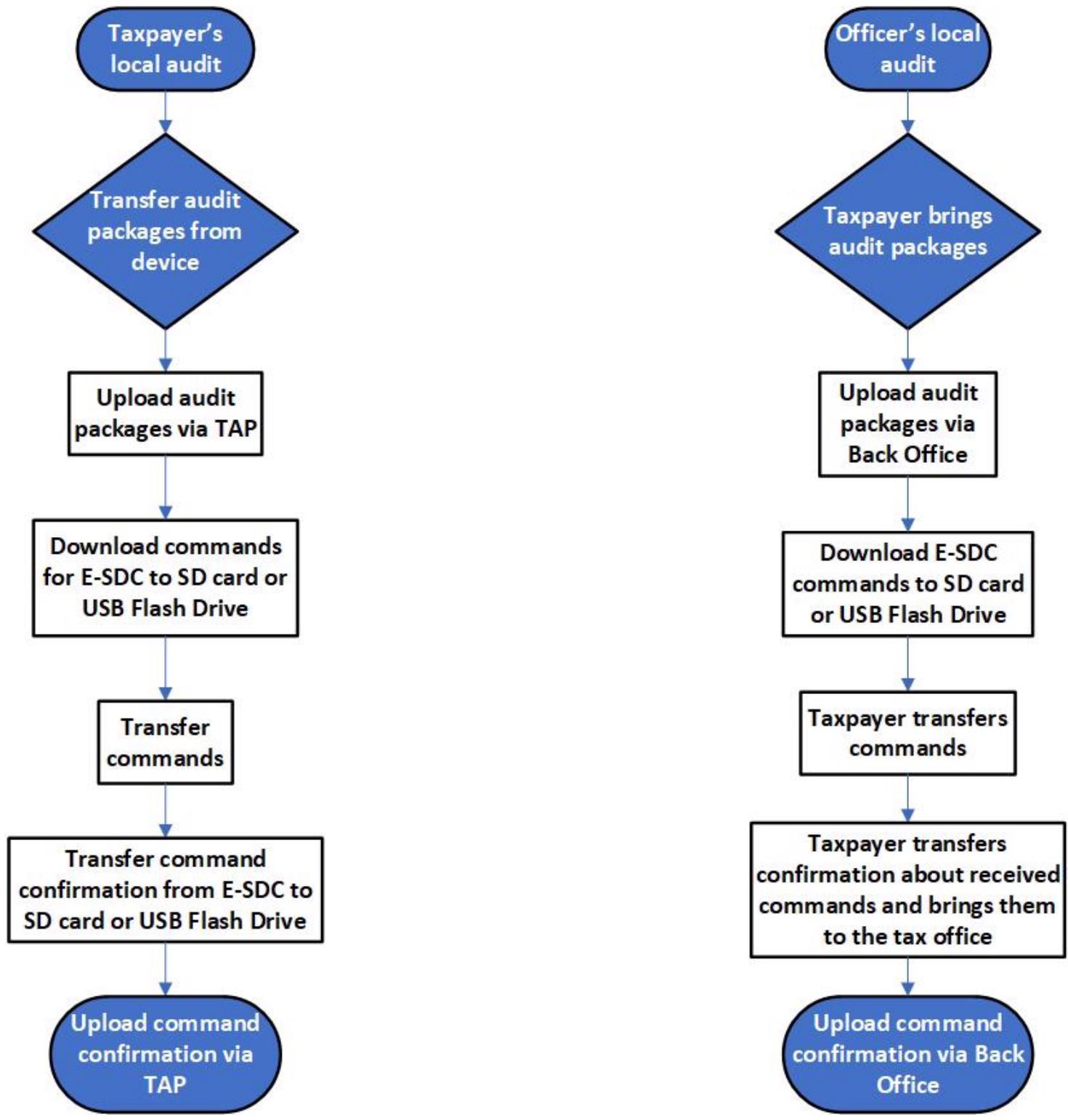
5. Transfer the commands from the external storage to the same E-SDC
6. Transfer the confirmation about receiving the commands from the E-SDC to the external storage
7. Upload the confirmation using the Upload Commands Status on the Taxpayer Administration Portal.

NOTE:

If you do not have any internet access, you can take the SD Card or USB Flash Drive to a tax office where a CYΦ officer will perform step 7.

Local Audit from the perspective of a CYΦ officer:

1. A taxpayer brings an external storage unit (e.g. SD card or a USB Flash drive) containing audit packages transferred from their E-SDC or gives it to a Tax Inspector who is visiting the taxpayer's business premise
2. Upload the audit packages using the section Upload audit packages on the Back Office platform
3. Check if there are pending commands for the taxpayer's E-SDC using the section Download SDC Commands on the Back Office platform
4. If there are pending commands, download them to external storage
5. The taxpayer transfers the commands from the external storage to the same E-SDC
6. The taxpayer transfers the confirmation about receiving the commands from the E-SDC to external storage and brings it to the tax office or gives it to the Tax Inspector at their business premise
7. Upload the confirmation using the Upload SDC Commands Result section on the Back Office.



Remote Audit

Remote audit is the process of transferring [audit packages](#) to the CYΦ system using the internet connection. It is the most common way to perform audits for any device with a stable internet connection.

Remote audit is executed automatically if there is an internet connection between the taxpayer's E-SDC and CYΦ system.

An E-SDC checks if the CYΦ system is reachable. If it is reachable, the E-SDC authenticates the CYΦ system by using a server-side certificate installed on the CYΦ system's endpoint, enabling HTTPS protocol. The tax authority's

system authenticates the E-SDC using a digital certificate issued on the Secure Element and issues a token for that session.

The E-SDC starts sending audit packages, performing a series of audits until no more unaudited data is stored on its [non-volatile memory](#).

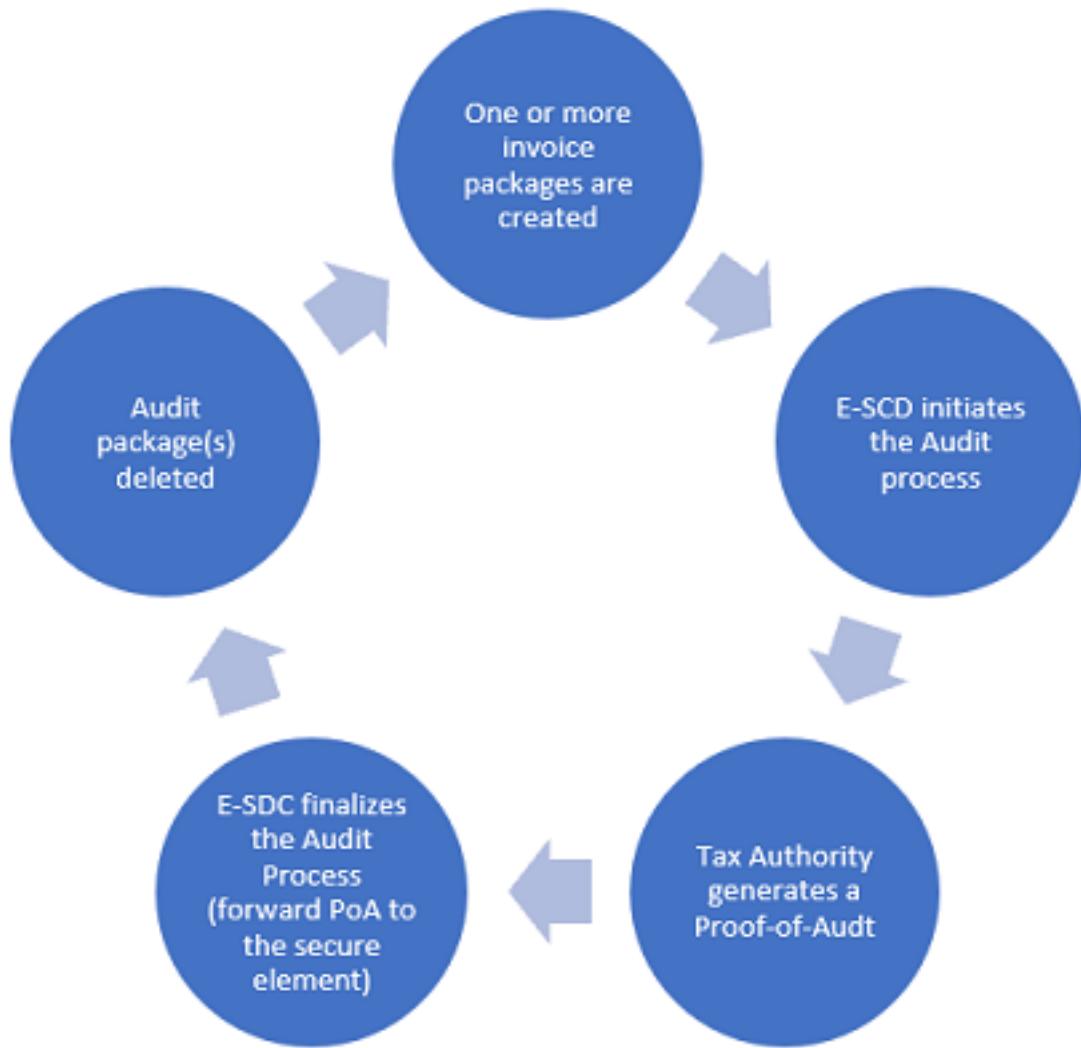
Performing a remote audit is not the only option for an E-SDC. If the network connection is not available due to the interruption of the service or a missing GPRS modem or network card, E-SDC will still be able to perform a [local audit](#).

Proof of Audit - POA

Proof-of-Audit is a confirmation from the tax authority system that all the invoices issued with a particular secure element (one taxpayer can have more secure elements) have been stored in its database.

NOTE:

This article describes the default operation mode of the *Proof of Audit Service*. However, upon the Tax Authority's decision, the service can use different strategies for issuing a proof-of-audit. For the currently applicable non-standard issuance strategies, see [Currently Applicable Non-Standard Strategy for Issuing Proof of Audit](#).



A Proof-of-Audit can be issued after each fiscal invoice ([remote audit](#)) or after a group of delayed invoices reaches the database (remote audit facing technical issues or [local audit](#)). It also confirms that the same data entered in the taxpayer's POS was transferred to the tax authority database.

However, not receiving a Proof-of-Audit does not immediately prevent the taxpayer from issuing new fiscal invoices. The taxpayer can continue issuing fiscal invoices without a Proof-of-Audit but there is always a preset limit until when a Proof-of-Audit can be delayed.

This setup forces taxpayers to report regularly.

Even if the internet failure prevents normal invoice transmission to the database, the taxpayer will be informed that the preset limit is approaching. The taxpayer can then perform a local audit in order to obtain a Proof-of-Audit from the tax authority.

Let's suppose that due to the failure of the EFD component, or some other reason, the taxpayer is unable to send data on one or more issued invoices. In that case, the Tax Authority still has the option to issue a Proof-of-Audit if it can determine the tax liability for that secure element.

Currently Applicable Non-Standard Strategies for

Issuing Proof of Audit

In this article, you can read a description of the currently applicable strategies for issuing proof of audit (POA), if it deviates from the standard mode of operation of the Proof of Audit Service. Entries are divided by tax jurisdiction:

Serbia (PURS)

According to the decision of the Serbian tax authority (PURS), the eFiscalization system, on its production environment, currently implements a strategy of issuing POA after each valid request that the system receives from the taxpayer's E-SDC. In other words, the condition that, prior to the POA issuance, all invoices issued by that security element must be stored in the system's database does not apply.

Audit Package

Audit Package is encrypted [Audit Data](#) ready to be sent to the CYΦ database for storage and analysis.

An Audit Package is a file containing audit data of one fiscal invoice. It is not a collection of more invoices.

Audit Data for one fiscal invoice is encrypted as a JSON format file and saved in SDC memory until transfer to the database.

Audit Packages are submitted to the database in a piecemeal fashion, starting from the oldest unaudited file.

Audit Data

Audit Data is a textual and machine-readable representation of a fiscal invoice (with associated metadata) submitted to the `[TaxCore.TaxCoreConfiguration.ElectronicMonitoringShortName]` database. When an invoice's transaction data gets fiscalized by an [SDC, it becomes Audit Data.

Taxpayer's [POS/invoicing system](#) submits information about the transaction (transaction data) to an SDC service. The SDC then fiscalizes this transaction data and turns it into Audit Data.

Audit data is encrypted and saved as a JSON format file in SDC's memory. SDC then transfers encrypted Audit Data to the CYΦ database where it is decrypted and analyzed.

These encrypted files containing Audit Data for one fiscal receipt, are called [Audit Packages](#).

APDU command

APDU command (application protocol data unit) is the communication unit between a smart card reader and a smart card.

The structure of the APDU is defined by ISO/IEC 7816-4 Organization, security and commands for interchange.

Accredited POS

Accredited Point of Sale (POS) is a computer program, electronic device, or information system for issuing receipts in compliance with the fiscalization regulations requirements.

Accredited POS is a type of accredited [invoicing system](#).



What is a Sales Data Controller?

A Sales Data Controller (SDC) is the software, hardware, or web-service component of an EFD that receives an invoice request from an invoicing system (POS), creates the fiscal invoice, returns it to the same invoicing system (POS), and sends the audit data to the tax authority database.

SDC is used to generate an invoice by signing requests received from an accredited POS, as well as to produce audit data. It stores audit data in its own internal memory and enables performing audits. All the data that an SDC

sends to the tax authority database is encrypted and only the tax authority official can decrypt it - meaning that taxpayers' business information is perfectly safe during this transmission.

In more detail, an SDC:

- receives transaction data from an accredited POS (Invoice Request);
- analyses the transaction data and prepares it for applying a digital signature;
- calculates tax liability for a specific fiscal invoice;
- uses a Secure Element to apply a digital signature - turning transaction data into fiscal data (fiscalization);
- generates a QR code for each fiscal invoice with a unique URL for verifying the invoice authenticity;
- puts the signed fiscal data and the QR code together into one fiscal invoice;
- transmits the fiscal invoice back to the accredited POS (Invoice Response);
- encrypts the signed fiscal data and the QR code;
- transmits the encrypted fiscal data to the tax authority's database (audit data);
- preserves both the transaction data and fiscal data in its memory in an irrevocable and secure manner.

NOTE:

If taxpayers notice any prolonged issues with sending audit packages to the tax authority database or that they are issuing fiscal invoices with an incorrect time on the invoice, it is their responsibility to report that to the tax authority.

There are three different implementations of SDC in the CYΦ system:

- Virtual SDC
- External SDC
- Development E-SDC

Development E-SDC

Introduction

Development ESDC is a software version of an [E-SDC](#) and it is used by POS developers and Technical Reviewers on Sandbox environments. It is built according to the latest technical specifications for E-SDC devices and is used to develop, test and accredit invoicing solutions.

How to get access?

Development ESDC is available to all registered vendors via the [Developer Portal](#).

You can request additional instances of Development E-SDCs and assign each instance to a particular team or developer within your organization.

How Development E-SDC works?

Development E-SDC implements all operations of an E-SDC on a local network in the production environment, so vendors can use it to upgrade their applications or devices without obtaining any E-SDC (software or physical device) or Secure Element smart card.

1. Vendor's authorized person is registered on the Development Portal
2. Navigate to the E-SDCs section
3. Copy the URL of your Dev E-SDC instance
4. Start development and testing of your invoicing system

Development E-SDC is also used during the [accreditation process](#) to check whether an invoicing system is fully functional and built according to the specification.

V-SDC

Virtual Sales Data Controller is a web service operated by the Tax Service that enables authorized taxpayers to use SDC functionality via the Internet.

This software solution is designed to apply the approved encryption algorithm to sign and safeguard details of a receipt and justify tax liability for the remote issuer.

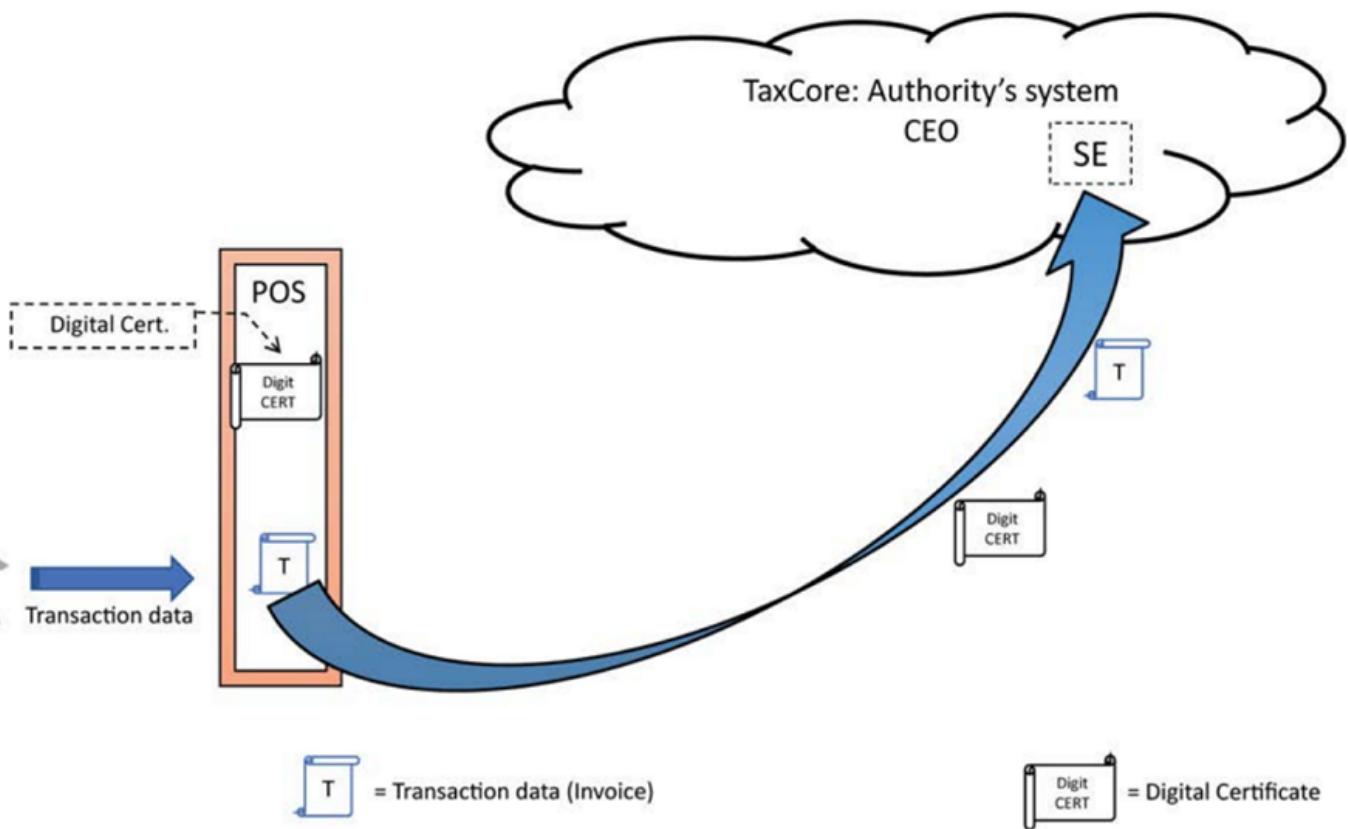
It contains and uses a Secure Element to sign invoices and enables [Connected scenarios](#).

V-SDC communicates with a Secure Element which is not issued to taxpayers (one secure element which signs invoices for all taxpayers who use this V-SDC).

Invoice request via V-SDC

The request is an automatic process. Immediately after the POS has assembled the transaction data - which can come from a range of sources including a standard POS, a mobile POS app, a cashier using a computer, or an online shopping forum - the accredited POS sends a request for fiscalization via the Internet, using an associated V-SDC controlled by the tax authority.

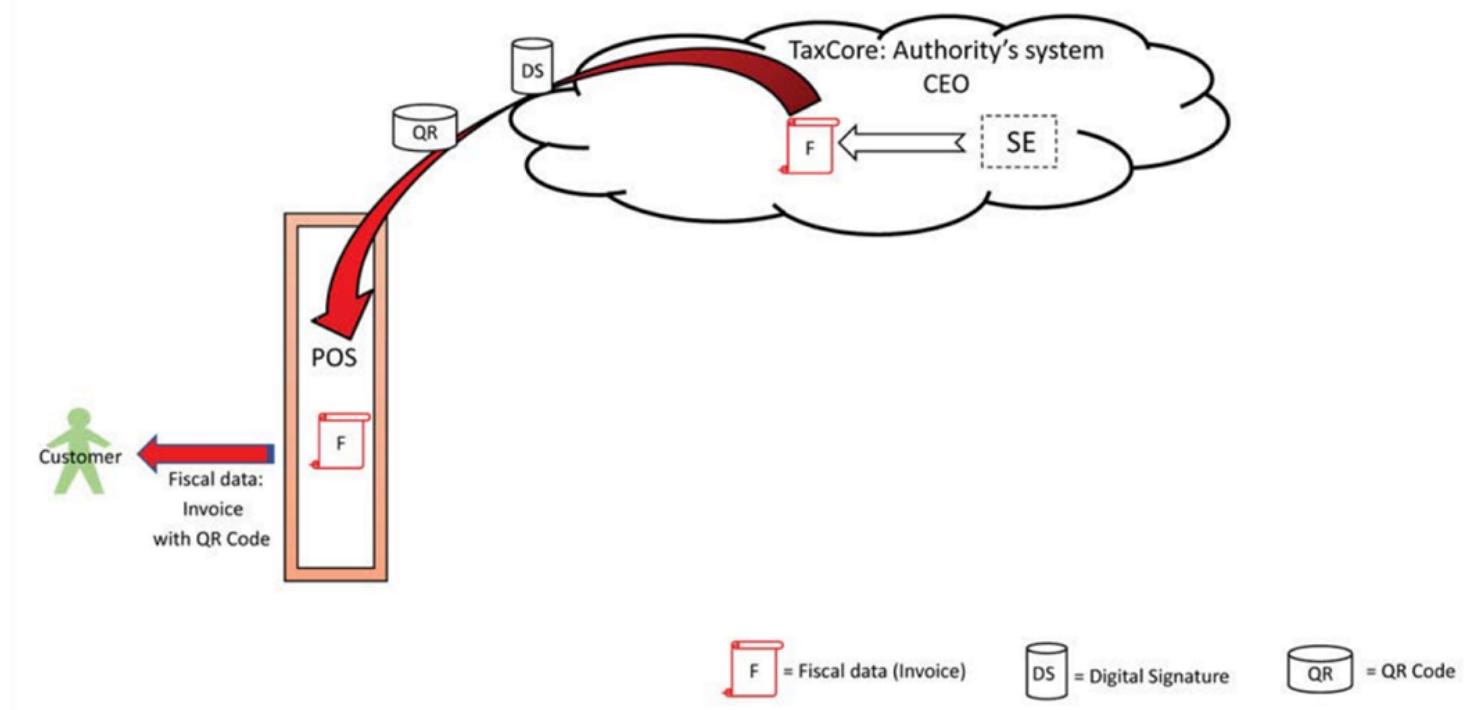
The required data elements in the invoice request are predetermined through the official regulations (the cahier/taxpayer can't choose what kind of information to include or to leave out). The POS identifies itself to the secure element via a unique digital certificate. The secure element verifies and identifies the caller - that is, the taxpayer using the POS. The V-SDC has an accompanying digital certificate that verifies its identity to the POS.



Invoice response via V-SDC

The V-SDC confirms the validity of the request and makes sure that the transactional data in the invoice request match the requirements of the official regulations. It also provides a digital signature and the verification URL through which the POS can generate a QR Code. The result of this process is a fiscal invoice.

The customer can scan the QR Code to confirm that the authority has recorded the invoice data (see Invoice Verification Service).



E-SDC

External SDC (E-SDC) is a 'black box' type of software or hardware that communicates with a smart card secure element and enables [semi-connected fiscalization scenarios](#) (enables issuing fiscal invoice when the internet is down).

It resides at taxpayers' business locations and communicates with a Secure Element which is issued to taxpayers on a smart card (every smart card has its own secure element and a taxpayer can have more than one smart card for issuing fiscal invoices). In other words, E-SDC uses the taxpayer's secure element to place a digital signature on the fiscal invoice.

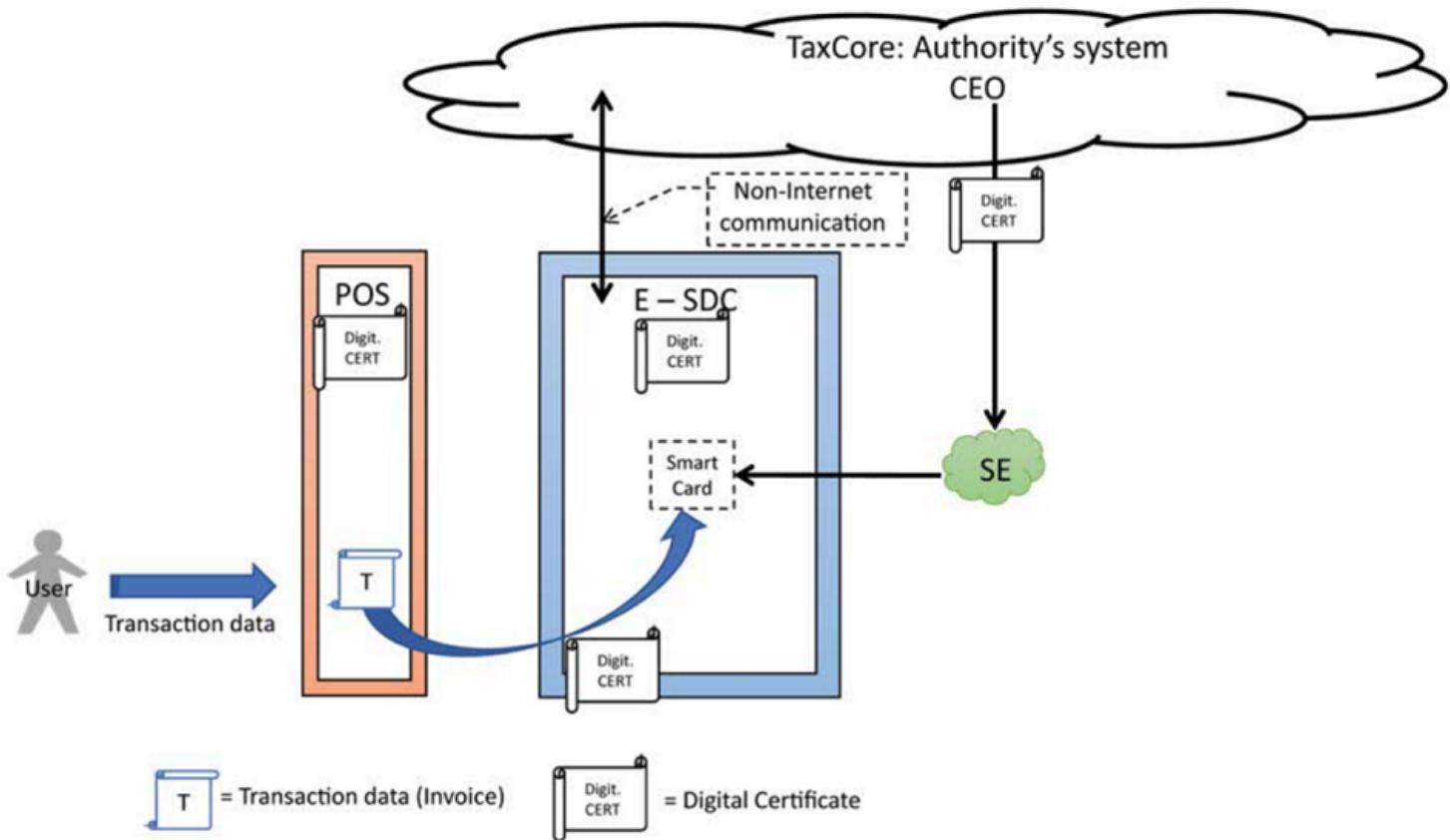
E-SDC performs the same functions as V-SDC, but it is not controlled by the tax authority in real-time. To establish control over their work, [local](#) and [remote](#) audits are performed. If an audit is successful, the E-SDC will receive a [Proof-of-Audit](#) from the CYΦ system.

NOTE:

Taxpayers are responsible for maintaining the operational state of their E-SDC(s) and must resolve any E-SDC related issues in cooperation with their vendor.

Invoice request via E-SDC

The request is presented to the secure element issued to the taxpayer, instead of the V-SDC secure element within the tax authority's system. This enables E-SDC to work in offline mode because the internet is not always available. The secure element replicates the functions of the authority's system after the E-SDC prepares the transactional data for signing.



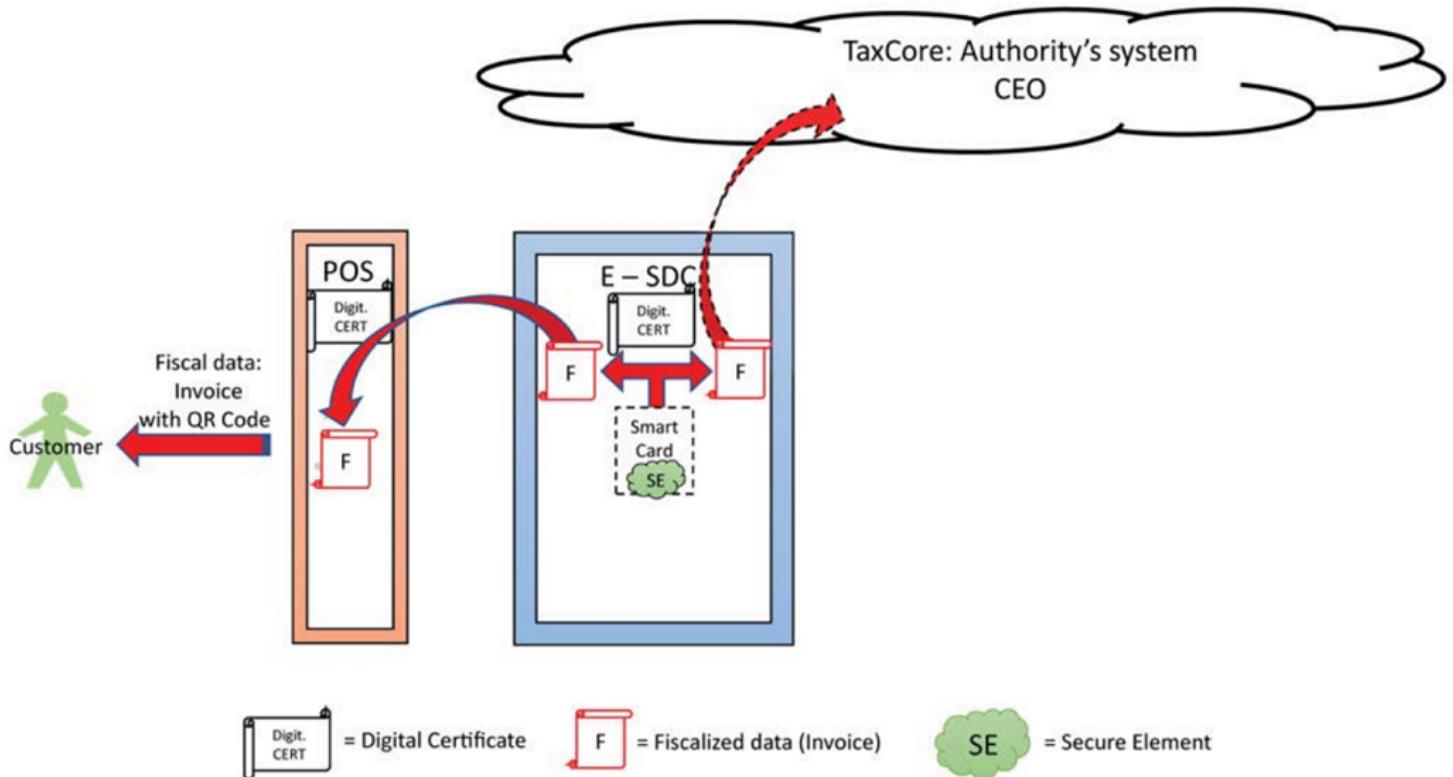
Invoice response via E-SDC

When the secure element fiscalizes the transaction data from the POS, the E-SDC verifies the amounts and calculations, signs, and encrypts the fiscalized data for two purposes:

- to prepare the data for transmission back to the POS, which will issue a fiscal receipt with a QR Code for the customer; and
- to prepare the data for transmission to the tax authority's system when the internet connection is available.

When the Internet connection is not available, the encrypted data will be safeguarded until it can be sent when the internet is restored or using an alternate transmission mechanism, which can involve manual delivery of the data to a tax office.

The secure element will retain fiscal data on location until it transfers the fiscal data and receives a notification from the authority's system that the transfer is complete (Proof-of-Audit).



What is Secure Element?

Secure Element (SE) is a fiscal component, implemented as a special software or device, designed to perform a specific set of functions:

- identify the taxpayer to different services (V-SDC, [Taxpayer Administration Portal...](#))
- sign invoices using the taxpayer's digital certificate
- control audits ([remote](#) or [local](#))
- maintain a set of fiscal counters (to prevent any invoices from "disappearing" after they were created)

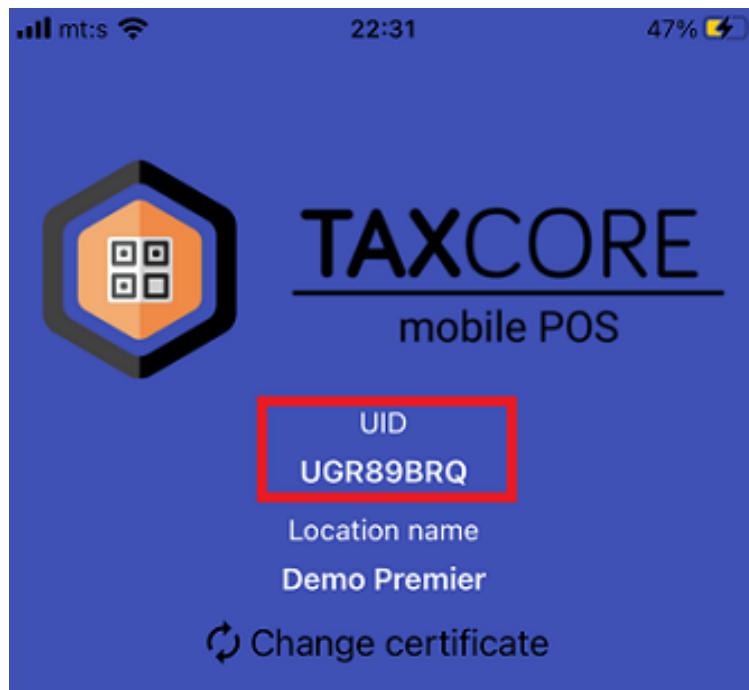
NOTE:

Secure element is always issued for a specific business location. If a taxpayer changes the address of the location, all secure elements connected to that location must be replaced. If a taxpayer officially reregisters a business location, all secure elements connected to that location must be revoked.

Secure element options

The above functions can be performed:

- **locally** - a secure element is issued to a taxpayer on a [smart card](#). Two applets are installed on the card to perform all of the above functions.
- **via the Internet** - taxpayers use a smart card or a digital file certificate to identify themselves to a V-SDC service. The rest of the secure element functions are performed by software installed on that V-SDC.



Secure element medium

Secure Elements are issued in two forms - smart card or a digital file certificate. The table below shows the basic information in differences in usage.

	Smart Card	Digital file
Issued upon taxpayer's request	Yes	Yes
Issued for a specific business location	Yes	Yes
SDC compatibility	E-SDC and V-SDC	only V-SDC
Internet connection when issuing invoices	Optional	Mandatory
Gives access to Taxpayer Administration Portal	Yes	No

Secure element's data protection

Secure Element communicates **only** with SDC services. It receives specific invoice data from an SDC and performs invoice signing and data processing. When that is finished, it sends back response data to the SDC (this provides the authenticity of invoice data). The SDC then forwards all this back to the POS together with a QR code.

All Secure Elements are controlled by the tax authority. Taxpayers cannot access or alter data even on the smart cards issued to them.

Secure Element identification

Each Secure Element is uniquely identified by a Unique Identifier (UID) combination:

- If a taxpayer uses E-SDC, the combination contains two same UIDs;
- If a taxpayer uses V-SDC, the combination contains two different UIDs.

Secure Element audit control

A smart card SE stops issuing invoices if the maximum allowed number is exceeded since the last audit for that particular SE (the limit is preset by the tax authority for each case). This encourages regular audit and forces taxpayers to report back to the tax authority system.

Likewise, the SE will continue to produce fiscal invoices once it receives a confirmation from the tax authority ([Proof-of-Audit](#)) that audit has been received and stored in its system.

Unique Identifier - UID

Unique Identifier (UID) uniquely identifies each digital certificate (as part of the secure element) issued by the tax authority.

Unique Identifier **always consists of a randomly generated, 8-character alphanumeric string (upper case)**.

UIDs are also used to form a unique identification of each fiscal document ([SDC invoice number](#)).

```

=====
FISCAL INVOICE =====
RS654321
Premier League DTI
Premier League DTI
Kruzni put 7
Lestane

Cashier: 2-5783
Buyer: RS349802744
Buyers Cost Center: CR02R
Ref No: LLA554DW-LGHFXH08-2
Ref DT: 20.04.2022. 13:08:34
-----NORMAL SALE-----
Items
=====
Name    Price     Qty.      Total
Barn ground coffee 200g (A)
        8,40       2         16,80
Sunny Way red mug (A)
        12,00      1         12,00
-----
Total Purchase: 28,80
Cash: 28,80
=====
Label      Name     Rate      Tax
A          VAT     15,00%   3,76
-----
Total Tax: 3,76
=====
SDC Time: 20.04.2022. 14:46:17
SDC Invoice No: BQVWAAR4-NBN68V08-21
Invoice Counter: 15/21nn
=====
```



==== END OF FISCAL INVOICE =====

**UID of the
taxpayer's secure
element**

**UID of the V-SDC
secure element which
signed the invoice**

Secure Element Limit

The secure element limit is the highest total amount from all receipts that a secure element can sign without performing an audit (i.e. reporting to the tax authority). It is set only on smart card secure elements.

Sale amounts are accumulated on the secure element until an audit is performed and this represents its current unaudited amount. After a successful audit, the secure element receives a confirmation from the tax authority ([proof-of-audit](#)) which resets the current unaudited amount back to zero.

If an audit has not been performed by the time a secure element's unaudited amount reaches the limit, the secure element will stop signing new receipts. In this case, the secure element will continue signing invoices **only** after it receives a proof-of-audit for all unaudited invoices.

The limit is set by the tax authority during the process of secure element personalization. It can be different for a category of business or company depending on certain risk factors.