For POS Developers

Introduction

An invoicing system (POS) is any 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.

This article offers useful initial information about technical requirements for accrediting POS solutions:

- quick guide for POS accreditation;
- how a POS solution fits in with other EFD components; and
- how a POS solution connects with V-SDC and E-SDC services.

NOTE:
Before reading the rest of this article, make sure you have read the EFD vendors document, as well as General Information for all vendors.

Quick step-by-step guide for E-SDC accreditation

In order to go through the entire accreditation process, you need to follow the steps below:

Click here to see the accreditation process steps

1. Registration & Credentials

Register as an invoicing solution provider on the designated Sandbox environment by visiting https://tap.coral.demo.taxcore.dti.rs/

- Obtain API keys and install digital certificates from TaxCore to access the Developer Portal

2. Environment Setup

- Obtain configuration for the Sandbox environment for development and testing purposes
- Ensure secure HTTPS communication with TaxCore endpoints and, optionally, HTTP communication with E-SDC

3. Sales Data Controller

- Decide what SDC types will be supported - **E-SDC** (offline capable) and/or **V-SDC** (cloud-based)
- Integrate POS with the chosen SDC types for invoice signing
- Validate SDC responses and handle error codes

4. Invoice Compliance

- Include all mandatory invoice fields

5. Testing and Accreditation

- Validate operations against testing tools available on the Sandbox environment
- Complete accreditation with the tax authority
    - Apply for and successfully pass the Technical review
    - Select a tax jurisdiction and complete the Administrative review

6. Deployment and Monitoring

- Switch to production environment
- Set up monitoring for API calls and SDC status
- Schedule periodic updates for security patches.

What can be accredited as a POS solution?

There are many options when it comes to the type of product that can be accredited as a POS solution - the main rule is that it fulfills all technical requirements within these instructions.

Click here to see some POS solution options

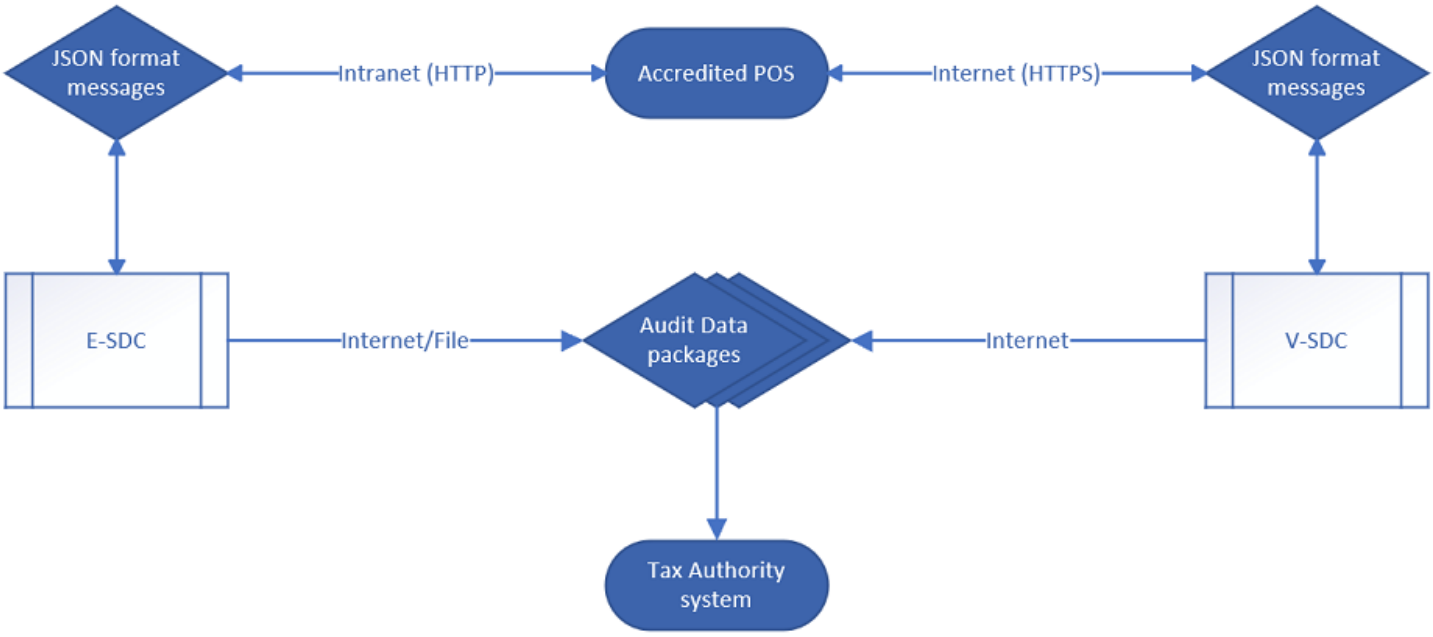
- Standard cash registers;
- ERP systems;
- Middleware that serve as a link between an invoicing system and an SDC service;
- Mobile applications;
- Web applications, etc.

Integration with other EFD components

Click here to see how POS is integrated with other EFD components

The POS is one of three components of any EFD setup.

The POS can work with just one SDC service or with both V-SDC and E-SDC (in which case they are used alternately, depending on the internet availability).



What is the typical process flow of POS operations?

All accredited EFD solutions must follow the basic steps in the process of creating fiscal invoices (although some might have additional, manufacturer-specific steps).

For a list of these basic steps, see Typical Process Flow.

Connecting with V-SDC and E-SDC service

Click here to see how POS connects with V-SDC and E-SDC

Communication Protocols

Each POS or Invoicing System must communicate with either a V-SDC or an E-SDC to fiscalize invoices.

The communication protocol is standardized and public, and can be viewed here.

Each E-SDC is required to implement and expose documented API to all POS and Invoicing systems. The correctness of API implementation is, among other criteria, one of the requirements for E-SDC accreditation.

Each POS must connect to an SDC to issue a fiscal invoice. Depending on the business and technical requirements, a POS can connect using one of the following approaches:

1. **POS connects to a Development E-SDC**. This is used for development, testing, and accreditation purposes only. Development E-SDCs are provided as a web service to all POS vendors to enable development without having to possess real E-SDC applications or devices;
2.

2. **POS connects to a V-SDC** using a digital certificate delivered in the **PKCS12** format and PAC to authenticate to V-SDC.API;
3. **POS Connects to a V-SDC** using digital certificate delivered on a **smart card** and PIN to authenticate to V-SDC.API;
4. **POS Connects to an E-SDC**. Communication between POS and E-SDC is secured on a network level. Fiscalization of the invoice is performed by E-SDC and Secure Element inserted into an E-SDC.

POS connects to Taxcore.Api to get environment configuration and tax rates [Optional, but highly recommended];

> **NOTE:**
> For more information on TaxCore.API endpoints, refer to the TaxCore.API for both POS and E-SDC section.

Connecting with V-SDC service

Issuing fiscal invoices via a V-SDC service requires internet connection. For more details about the process, see Connected Scenario.

Advantages of V-SDC service

- No specialized hardware;
- POS can be implemented as a mobile app;
- Compliance of the existing ERP system can be done quickly;
- Cost of taxpayer fiscalization is reduced;
- Automatic audit.

Disadvantages of V-SDC service

- Requires internet connection in order to create fiscal invoices.

You also use the V-SDC service to issue fiscal invoices with an online POS solution. For more information, see Online POS and V-SDC Integration.

Communication between a POS solution and V-SDC is established using this POS to SDC protocol.

Connecting with E-SDC service

Issuing fiscal invoices via an E-SDC service can be performed both with or without an internet connection. For more details about the process, see Semi-Connected Scenario.

Advantages of E-SDC service

- Enables issuing fiscal invoices without internet connection.

Disadvantages of E-SDC service (if implemented as a hardware/black box solution)

- Increases the cost of taxpayer fiscalization.
- If implemented as a hardware/black box solution:
    - Requires a specialized/dedicated hardware;
    - Prone to physical damage;
    - May require a specialized/dedicated hardware maintenance.

Communication between a POS solution and E-SDC is established using the following POS to SDC protocol.

What are the data formats that POS sends and receives?

The formats of all data exchanged between a POS and an SDC service (V-SDC or E-SDC) is described in section Data Formats.

Useful test cases

Please refer to section Test Cases for both standard and special test cases.

Read more

1. Choosing an Appropriate Model
   The following explanation should help you decide which fiscalization model is the most appropriate for your clients.

2. Typical Process Flow
   This section describes a typical process flow for successful fiscalization scenarios via V-SDC and E-SDC.

3. Connected Scenarios
   In this scenario POS connects to V-SDC and performs instant fiscalization of invoice using web service.

4. Semi Connected Scenarios
   Some jurisdictions may require taxpayers to connect and submit data from their E-SDC on predefined periods of time using any type of audit.

5. Data Formats
   This section describes the main data formats used during fiscalization.

6.

Online POS and V SDC Integration

Since Taxpayers are encouraged to use online POS capabilities, TaxCore supports scenarios for browser-based client applications. Accredited online POS creates **Invoice Requests**, and submits them via the HTTPS protocol directly to V-SDC API, using the **digital certificate** issued to Taxpayer. This process completes invoice fiscalization with a signed invoice returned to online POS.

7. How Tos

   This section contains articles, how-tos and cheat sheats that address particular aspects of POS development and operation in context of TaxCore solution

8. Test Cases

   Regardless of the type of invoicing system you are building, the same test cases apply: