Technical Specification for Data Sharing through Software Fiscal Device with PRA

Version 1.2

Document Information

Category	Information
Document	Technical Specifications Document
Project-Module Title	Technical Specification for Data Sharing Software Component from POS Clients to PRA (PRAL) Version 1.0
Version	1.0
Author	
Status	Issued
Reviewer(s)	
Review Date	08-Novemeber-2019
Updated By	
Updated Date	08-Novemeber-2019
Approver	Abdul Rauf (CM Development PRAL)
Issue Date	08-Novemeber-2019
Distribution	SD Wing
Document Category	Internal ☒ External ☐
Privacy Level	Public ☐ PRAL Confidential ☒ Customer Confidential ☒
Disclaimer	This document contains confidential information. Do not distribute this document without prior approval from PRAL.

Review History

Sr. #	Reviewer	R/V Date	Remarks
1.			
2.			
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4.			

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1 INTRODUCTION

The purpose of the document is to facilitate Clients to understand methods for invoice data sharing with PRA. The software fiscal device will be installed on the same computer on which POS is installed. The Fiscal device will be integrated with POS system to fiscalize the invoice and returns Fiscal Invoice Number.
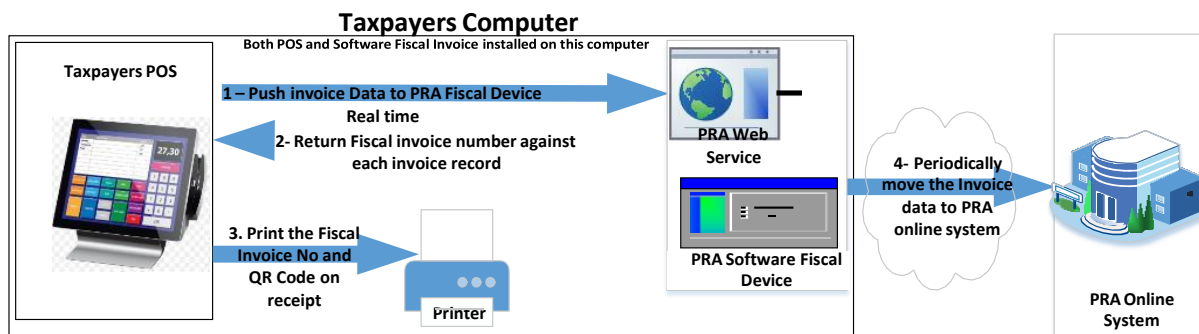

Figure 1 - Invoice Fiscalization Process

POS will be integrated with PRA as per following steps.

- Register each POS in PRA system from which you want to upload the data. Details are given in Section POS Registration.

- Download the software component from the PRA website.

- Install the software on the local computer *(*internet connection is required for this step)*.

- Taxpayer will integrate their system with PRA software component as per provided details in the Section Integration of Taxpayer System with PRA System.

2 SCOPE

The scope of the document is limited to technical description of PRA software fiscal device component. PRA Software Fiscal Device will reside on the same system where the POS is installed by the taxpayer. It will fiscalize each invoice generated through the POS on real time and generate unique fiscal invoice number for each invoice to print on receipt with QR code. Software fiscal device will periodically move recorded invoices data to PRA online system through an independent process.

3 DEFINITION AND ACRONYMS

ACRONYMN	DEFINITION
PRA	Punjab Revenue Authority
PNTN	Punjab National Tax Number

4 POS Registration

All Business sectors will register their POS for each branch using PRA portal by providing the required data.

For POS registration, log in on web site https://reg.pra.punjab.gov.pk/ with your user credential and get registered by accessing the page Registration → POS Client Registration

On successful submission of data, PRA will generate POS registration number which will be referenced in compiling each invoice into required format.
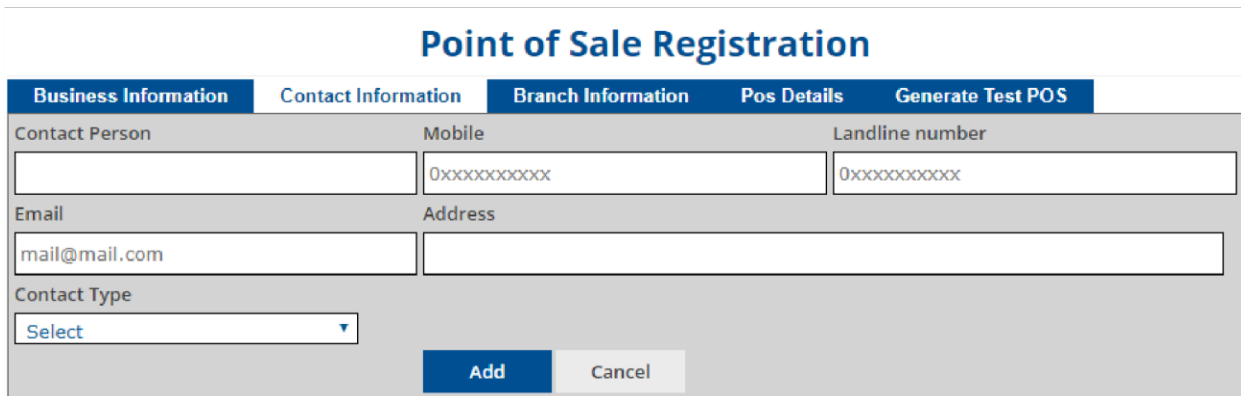

Figure 2- POS Registration

Following is the detail of required data for POS registration:

Business Information

Field	Mandatory	Details
PNTN	System Generated	
Business Name	System Generated	
Brand Name	No	E.g. Outfitters
Products	No	Open field
Manufacturer	Yes	Yes/No
Estimated annual turnover	No	Open field (Numeric)
Estimated number of transactions per day	No	Open field (Numeric)
Website URL	No	Open field
POS Software name	No	Open field
POS software front/back end technologies	No	Open field
POS type	Yes	Cloud Based/Client Server
POS software vendor	No	Open field
In-house software development	Yes	Yes/No
Number of technical staff	No	Open field (Numeric)

Figure 3 Contact Information

Contact Information

Field	Mandatory	Field Information
Contact person	Yes	Contact Person Name
Mobile	Yes	Open field
Landline number	No	Open field

Email	Yes	Open field
Address	Yes	Open field
Contact Type	Yes	General/Technical

Figure 4 Branch Information

Branch Information

Field	Mandatory	Field Information
Business Branch	Yes	Branch Name
City	Yes	Branch City
Sector	Yes	Restaurants, Hotel, Courier, Beauty Parlor
Branch Address	Yes	Location of branch
Contact Person	Yes	Select Information entered in contact details tab
Latitude	No	From Google Map
Longitude	No	From Google Map
Version	No	POS Software Version
Franchise	Yes	Select option Yes or No
Store Timings	No	Operational hours of outlet
Week of Days	No	No of days outlet opens

Figure 5 POS Detail

POS Details

Field	Mandatory	Field Information
POS Branch	Yes	Select branch added from Branches Tab
POS Counter Number/Name	Yes	The counter number/name identification of POS System (Unique)
POS Type	Yes	Select from list of Types (You can select any option. Mostly Primary is selected for daily used POS PC)
MAC Address	Yes	MAC Address of the POS System
IP Address	Yes	IP Address associated with the POS System

Figure 6 Test POS ID

For pre-production integration, generate your test PRA POS Ids and integrate the IMS Component with your POS System.

5 Integration of POS with PRA Software Fiscal Device

PRA has provided the local software fiscal device to all business sectors to share the invoice data with PRA. This component will be accessible only to registered POS Clients. Transaction handling and relevant data dissemination to PRA PRAL will be the responsibility of registered POS Clients. PRA will impose such restrictions so that no un-authorized POS Clients have access to the software fiscal device. To facilitate taxpayers, 2 modes are available in software component for testing and live transactions

For the integration of taxpayer POS with PRA software fiscal device require following steps:

1. Download the Software Fiscal Device from PRA Web Site

   https://reg.pra.punjab.gov.pk//NewsDirectory/UserGuide/IMSSetup.zip

   Note: The setup is same for Test and Production environments. During installation for Test please select "**Sandbox**" option and enter the Test POS ID generated in Figure-6 and for Live/Production select "**Production**" and enter the POS ID generated in Figure-5 and select Option "Production"

POS ID		Access Code		⦿ Sandbox ○ Production	
Directory	Browse destination folder			Browse	Install

2. Install the Setup as instructed in section Installation of the PRA Software Fiscal Device

3. After the installation, a Self Hosted Http service will be configured on following address bindings to be integrated with POS:

   http://localhost:8524/api/IMSFiscal/get

   It will show **"Service is responding"**

   Note: To verify the successful installation of fiscal service. Please confirm fiscalization service is up and running in the system services list (service.msc) as shown in Figure -3.

   Consume the local fiscal service (***http://localhost:8524/api/IMSFiscal/get***) in the POS according to given instruction in Section Steps of Integration for Service Consumption

4. Consume the local fiscal service (***http://localhost:8524/api/IMSFiscal/get***) in the POS according to given instruction in Section Steps of Integration for Http Service Consumption

5. PRA service will return the invoice number against each record.

6. The PRA Invoice number should be printed on the Customer invoice receipt along with QR Code.

7. The invoice data will be periodically uploaded on PRA Servers by the Software fiscal device automatically.

8. IMS Component generates its file at the provided Folder for syncing it with PRA. Keep that file safe at your end.
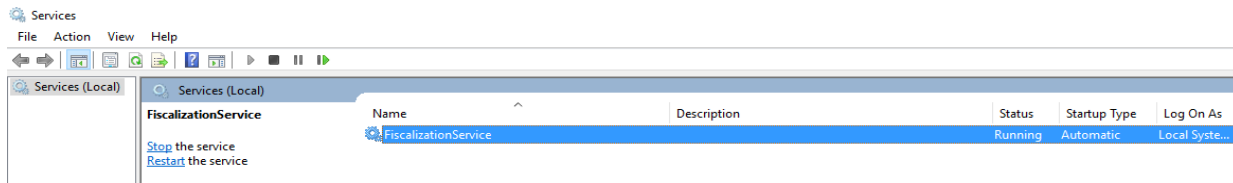
Figure 7- Fiscalization Service

6 Installation of the PRA Software Fiscal Device

Following are the pre-requisites for the installation of Software Component.

- Windows Based Operating System (**Win 10 and above**).
- .Net Frame Work 4.5 or above required.
- Installation User must have the administrator rights.

Following are the Steps for the installation of the PRA Software Component.

1. Run the Setup.exe **as ADMINISTRATOR** as shown in Figure - 4.
2. Select the complete radio option and click Next as shown in Figure - 5.
3. During the installation, setup will prompt for POS Registration Number, Access Code, Test/Productions selection and Target Folder which is issued at the time of POS Registration as shown in figure - 6.
4. Press 'Change Button' and select the folder in which software component will generate local files.
   Note: *It is recommended to select the Drive other than C Drive for security purpose.*
5. Provide the required POS Registration No and press next
6. Click 'Finish' to complete the set up

Figure 8 - Set Up
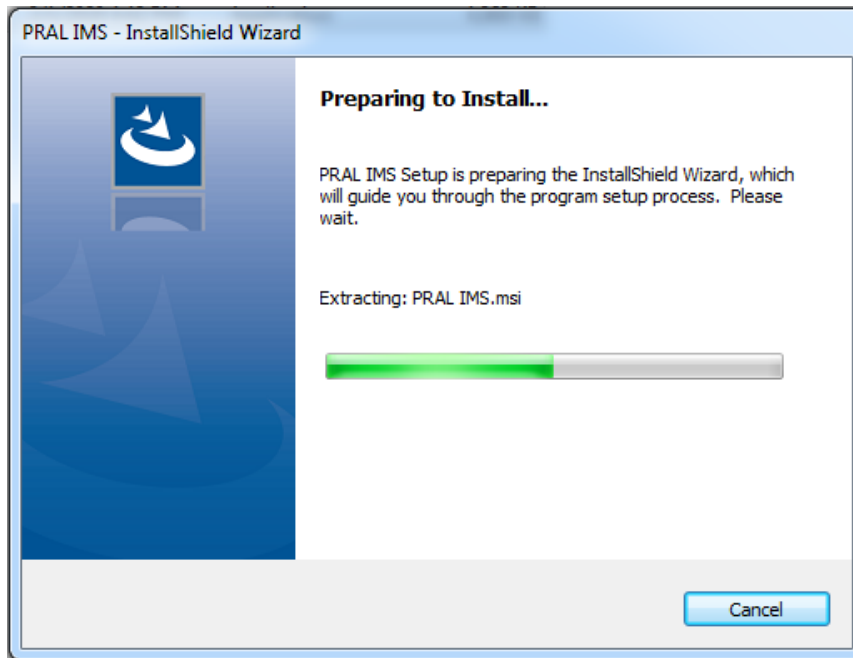
Figure 9 - Installation
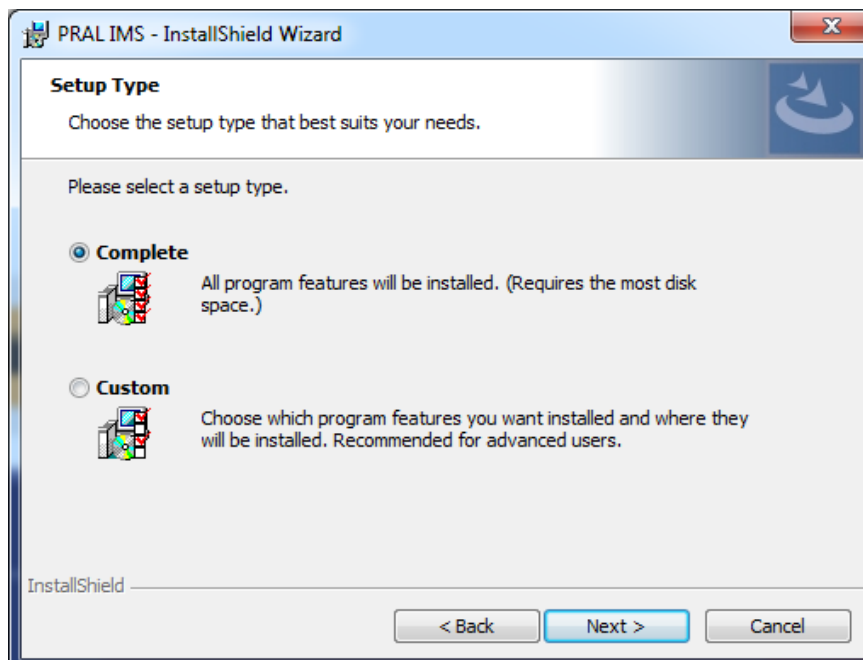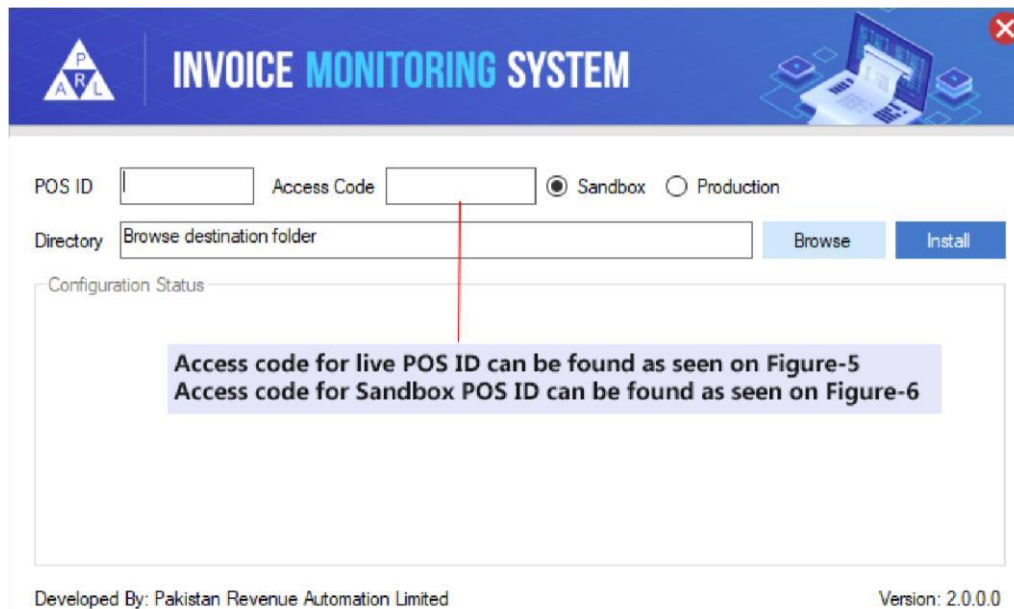
Figure 10 Installation

Figure 11 - POS Registration Number, Access Code, Test/Production selection and Directory
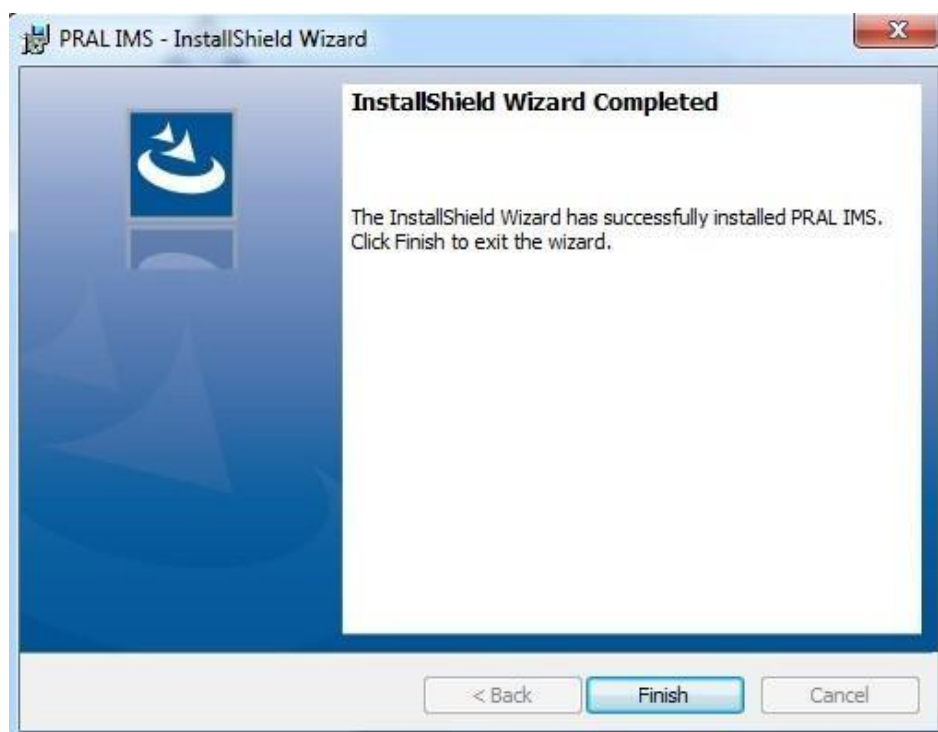
Figure 12 Installation Completed

7. Invoice Model Details

The fields of the invoice model are given below.

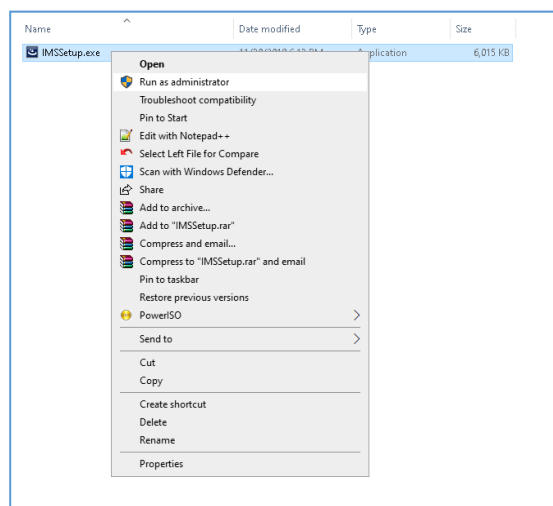| Name	Data Type	Status	Sample Value
InvoiceNumber	varchar(30)	Blank	
POSID (POS Registration Number given by PRA on registration)	bigint	Compulsory	100000
USIN (Business own Invoice Number)	varchar(50)	Compulsory	001897
RefUSIN (Business Reference Invoice Number in case of return)	varchar(50)	Optional	001896
DateTime	datetime	Compulsory	2018-11-01 00:00:00.000
BuyerName	varchar(150)	Optional	Shahzad Ahmed
BuyerPNTN	Varchar(9)	Optional	1234567-8
BuyerCNIC	Varchar(13)	Optional	1111122222223
BuyerPhoneNumber	varchar(20)	Optional	923001234567
TotalSaleValue	double	Compulsory	1,298 (Sum of Item Sales Values) Exclusive of Tax and Discount
TotalTaxCharged	double	Compulsory	221 (Sum of Item Tax)
Discount	double	Optional	380 (Sum of Item Discount)
FurtherTax	double	Optional	0.00 (Sum of Further Tax)
TotalBillAmount	double	Compulsory	1,519
PaymentMode (Use Mixed payment mode in case of more than 1 payment method like cash + card)	Int	Compulsory	1. Cash 2. Card 3. Gift Voucher 4. Loyalty Card 5. Mixed 6. Cheque
InvoiceType	Int	Compulsory	1. New (for new invoices) 2. Debit 3. Credit (Use Credit in case of Return/Cancel order/invoice)
List<InvoiceItems>	list	Compulsory	Table No 2

Invoice Data 1

Table No. 2 (recursive, will contain multiple items record in an invoice)

Name	Data Type	Status	Sample Value
ItemCode	varchar(50)	Compulsory	0001
ItemName	varchar(150)	Compulsory	Blanket
PCTCode	varchar(8)	Compulsory	01011000 This is HS/Classification CODE of your service from the 2nd Schedule: https://pra.punjab.gov.pk/Downloads/Updated-2nd-Schedule-of-PSTS-Act-2012.pdf
Quantity	double	Compulsory	1.00
TaxRate	float	Compulsory	17
SaleValue	double	Compulsory	1,298 (Actual Sale Price on whichTax Calculated) Exclusive of Taxand Discount
Discount	double	Optional	380.00
FurtherTax	double	Optional	0.00
TaxCharged	double	Compulsory	221 (Actual Tax)
TotalAmount	double	Compulsory	1,519
InvoiceType	Int	Compulsory	1. New 2. Debit 3. Credit
RefUSIN(Business Reference Invoice Number in case of return)	Varchar	Optional (In case of Credit or Debit Note)	001897

Invoice Item 1

7.1 Return Fiscal Invoice Number

Json Response string from PRA Web API

{\"InvoiceNumber\":90000520191112000369,\"Response\":\"Invoice received successfully\",\"Code\":\"100\"}

7.2 .Net Code Example: Fill the invoice object

```csharp
Invoice objInv = new Invoice();
objInv.InvoiceNumber = string.Empty;
objInv.POSID = 123123;
objInv.USIN = "123457";
objInv.DateTime = DateTime.Now;
objInv.BuyerPNTN = "1234567-9";
objInv.BuyerCNIC = "12345-1234567-8";
objInv.BuyerName = "Buyer Name
objInv.BuyerPhoneNumber = "0345-1234567";
objInv.PaymentMode = 1;
objInv.TotalSaleValue = 0;
objInv.TotalQuantity = 0;
objInv.TotalBillAmount = 0;
objInv.TotalTaxCharged = 0;
objInv.Discount = 1000;
objInv.FurtherTax = 100;
objInv.InvoiceType = 1;
objInv.Items = Items();

private List<InvoiceItems> Items()
{
    List<InvoiceItems> lst = new List<InvoiceItems>();

    InvoiceItems objItem = new InvoiceItems();
    objItem.ItemCode = "0000";


    objItem.ItemName = "Item Name";
    objItem.Quantity = 3;
    objItem.TotalAmount = Convert.ToDouble(3000.00);
    objItem.SaleValue = Convert.ToDouble(3180);
    objItem.TaxCharged = Convert.ToDouble(180);
    objItem.TaxRate = 6;
    objItem.PCTCode = "00000000";
    objItem.FurtherTax = 20;
    objItem.InvoiceType = 1;
    objItem.Discount = 500;
    lst.Add(objItem);

    return lst;
}
```

7.2.1 Web Client to post data to provided URL and get the response

Below code is used to call the WebAPI. JSON string is passed to the function along with API URL to which data is being posted.

```csharp
using System.Net.Http;
using Newtonsoft.Json;

HttpClient Client = new HttpClient();
var content = new StringContent(JsonConvert.SerializeObject(objinvoice), Encoding.UTF8,
"application/json");
HttpResponseMessage response =
Client.PostAsync("http://localhost:8524/api/IMSFiscal/GetInvoiceNumberByModel",
content).Result;

if (response.IsSuccessStatusCode)
{
    Console.WriteLine("Response from API");
    Console.WriteLine("------------------------------------------------------------------------------");
    Console.WriteLine(response.Content.ReadAsStringAsync().Result);
}
```

7.2.2 Web Client to post data from Cloud and get the response

Below code is used to call the WebAPI. JSON string is passed to the function along with API URL to which data is being posted.

Sandbox URL: https://ims.pral.com.pk/ims/sandbox/api/Live/PostData

Sandbox Token: 24d8fab3-f2e9-398f-ae17-b387125ec4a2

Production URL: https://ims.pral.com.pk/ims/production/api/Live/PostData

Production Token: available on POS Registration Screen under POS Details tab against the POS ID as shown in screenshot:

```
using System.Net.Http;
using Newtonsoft.Json;

HttpClient client = new HttpClient();
            client.DefaultRequestHeaders.Authorization = new
AuthenticationHeaderValue("Bearer", Token);
            StringContent content = new
StringContent(JsonConvert.SerializeObject(objinvoice), Encoding.UTF8,
"application/json");
            System.Net.ServicePointManager.ServerCertificateValidationCallback = delegate
{ return true; };
            HttpResponseMessage response = client.PostAsync(URL,content).Result;
if (response.IsSuccessStatusCode)
{
    Console.WriteLine("Response from API");
    Console.WriteLine("-------------------------------------------------------------------------");
    Console.WriteLine(response.Content.ReadAsStringAsync().Result);
}
```

IP Whitelisting: Share following information on the email (eims@pra.punjab.gov.pk) to get your IP whitelisted on the PRA Server to post the data on the production server.

- PNTN:

- BUSINESS NAME:

- POS ID:

- SERVER IP:

- SERVER LOCATION:

SAMPLE Email for IP Whitelist request:

To: eims@pra.punjab.gov.pk

Email Subject: IP WhiteList Request | PNTN 1122334-0 - POS ID 345678

Dear PRA Team,

Kindly whitelist the following IP for eIMS integration:

PNTN: 1122334-0

BUSINESS NAME: ABC Restaurant

POS ID: 345678

SERVER IP: 10.121.133.44

SERVER LOCATION: USA

7.2.3 Sample JSON Format to POST to IMS Component

```json
{
    "InvoiceNumber":"",
    "POSID":000000,
    "USIN":"USIN0",
    "DateTime":"2020-01-01 12:00:00",
    "BuyerPNTN":"1234567-8",
    "BuyerCNIC":"12345-1234567-8",
    "BuyerName":"Buyer Name",
    "BuyerPhoneNumber":"0000-0000000",
    "TotalBillAmount":0.0,
    "TotalQuantity":0.0,
    "TotalSaleValue":0.0,
    "TotalTaxCharged":0.0,
    "Discount":0.0,
    "FurtherTax":0.0,
    "PaymentMode":1,
    "RefUSIN":null,
    "InvoiceType":1,
    "Items":[
        {
            "ItemCode":"IT_1011",
            "ItemName":"Test Item",
            "Quantity":1.0,
            "PCTCode":"00000000",
            "TaxRate":0.0,
            "SaleValue":0.0,
            "TotalAmount":0.0,
            "TaxCharged":0.0,
            "Discount":0.0,
            "FurtherTax":0.0,
            "InvoiceType":1,
            "RefUSIN":null
        },
        {
            "ItemCode":"IT_1012",
            "ItemName":"Test Item",
            "Quantity":1.0,
            "PCTCode":"00000000",
            "TaxRate":0.0,
            "SaleValue":0.0,
            "TotalAmount":0.0,
            "TaxCharged":0.0,
            "Discount":0.0,
            "FurtherTax":0.0,
            "InvoiceType":1,
            "RefUSIN":null
        }

    ]
}
```

7.2.4 Posting Model in Postman

7.2.4.1 GET Endpoint

Request:
Open new tab in Postman and write URL: http://localhost:8524/api/IMSFiscal/Get . Now click send button to check the response from the Fiscalization Service.
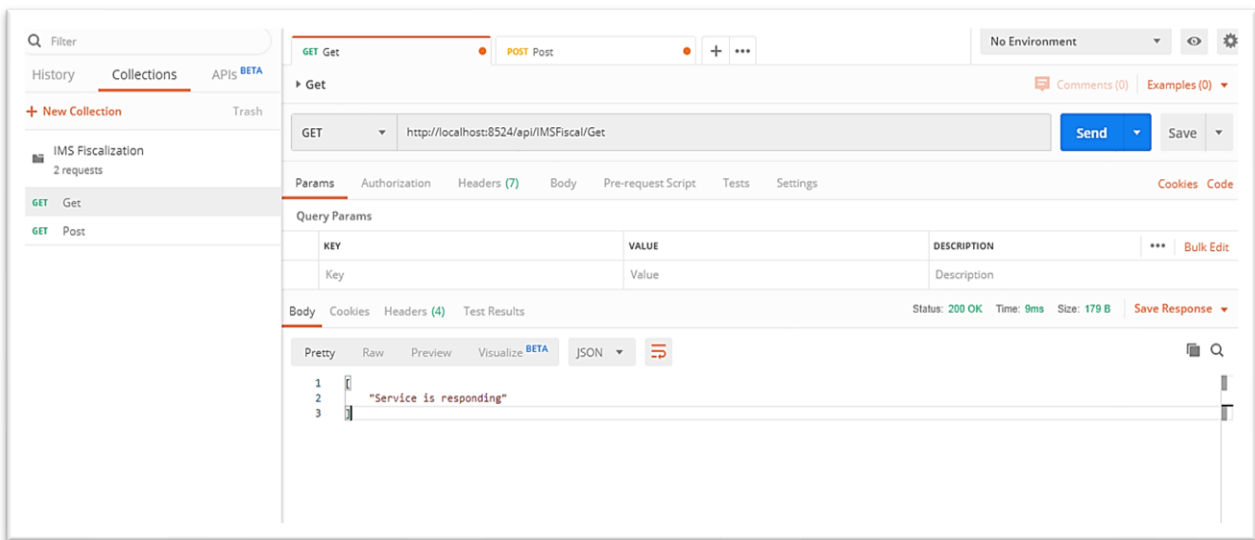

Figure 13 Check IMS Service Response

Response:
```
[
    "Service is responding"
]
```

7.2.4.2 POST Endpoint

Request:
Open new tab in Postman and write URL:
http://localhost:8524/api/IMSFiscal/GetInvoiceNumberByModel
Change type from **Get** to **POST** and then Select **raw** radio button on Postman and change **Text** to **JSON.**
Add the sample json mention in section 7.2.2 Sample JSON Format to POST to IMS Component.
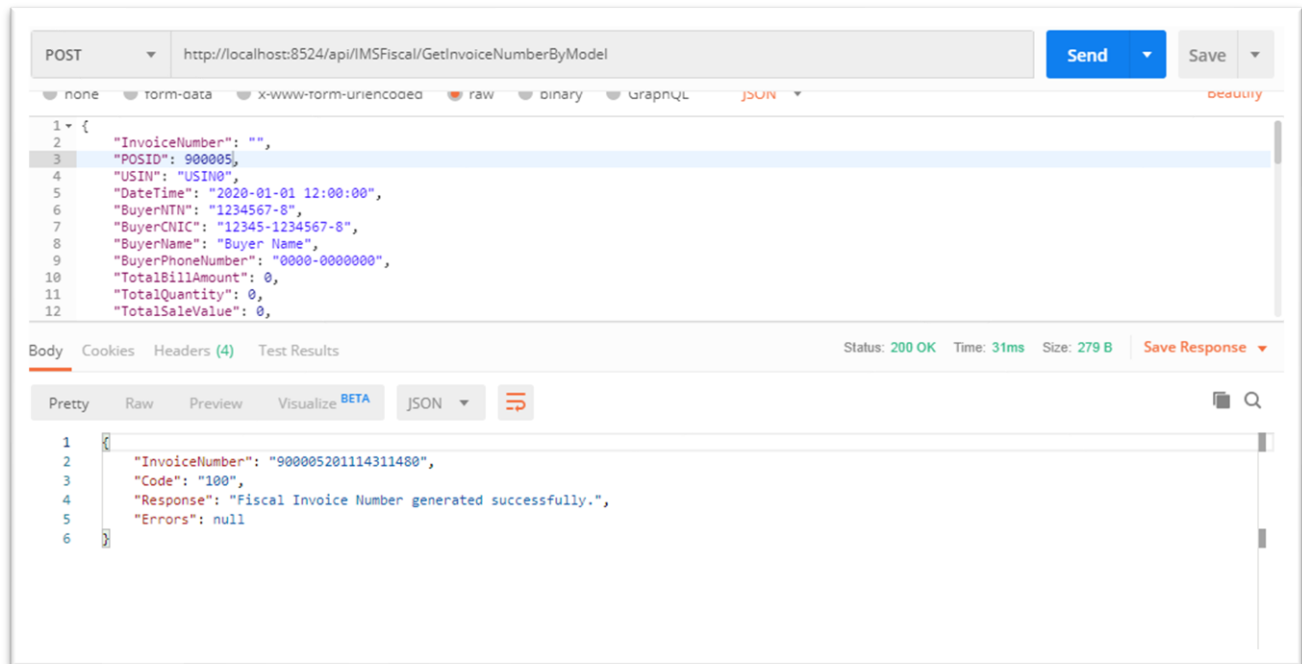Now click send button to check the response from the Fiscalization Service.

Figure 14 Post Data to Fiscalization Service

Response:
```
{
    "InvoiceNumber": "9000052011142444901",
    "Code": "100",
    "Response": "Fiscal Invoice Number generated successfully.",
    "Errors": null
}
```

8 Uninstallation:

You have to uninstall the sandbox component properly before trying to reinstall the live component. Please do not uninstall IMS component from control panel. To properly uninstall the component, follow these steps:

1. Run the Setup.exe as administrator as shown in Figure - 4.
2. The prompt will ask that do you want to perform an upgrade, press "Yes"
3. Click Next on wizard screen
4. In program maintenance screen, select "Remove" radio button. Press Remove button on next wizard screen. It will remove the component properly.
5. Close the wizard by clicking Finish Button. Your component has been uninstalled successfully.

9 IMS Fiscal Report

Once the integration is complete and data has been posted to the PRA server, you may check posted data on the PRA IRIS Portal or through IMS Fiscal Report.

Steps to access the IMS Fiscal Report:

- Login to Legacy PRA Portal (https://reg.pra.punjab.gov.pk/) for invoices prior to **August -2024**. For invoices **September 2024** onwards, login to PRA IRIS https://e.pra.punjab.gov.pk/

- Click on '**IMS Fiscal Report'** button

10   FAQs

1. **What is USIN, RefUSIN in Invoice Model?**

   USIN is the User Invoice Number is a unique number of the taxpayers own system to map PRAInvoiceNumber for cross reference. RefUSIN is Reference User Invoice Number, it is to be provided in case of Credit Invoice Type as a credit invoice type is created always against an alreadyavailable original invoice to neutralize the net effect of original invoice for example if a customerbuys something and invoice is issued upon return of that thing POS creates a credit invoice of sameamount.

2. **What is InvoiceType? Explain debit/credit possible value with scenario in reference of Restaurant Services.**

   Standard Invoice Type is 1=New, A credit Invoice type is used upon return of bought goods etc.scenario is shared in point 1 above.

3. **What is PCTCode in Item List? What is the default value of PCTCode for local purchase item and Restaurant Services?**

   PCT code is same as of HS/Classfication CODE of the service mentioned in the 2nd Schedule. https://pra.punjab.gov.pk/Downloads/Updated-2nd-Schedule-of-PSTS-Act-2012.pdf

4. **What is the URL of QR Code/Invoice verification portal for customers?**

   Invoices can be verified through following link or FBR Assan App: https://reg.pra.punjab.gov.pk/IMSFiscalReport/SearchPOSInvoice_Report.aspx

   For QR code generation, use following query string: https://reg.pra.punjab.gov.pk/IMSFiscalReport/SearchPOSInvoice_Report.aspx?PRAInvNo=126983DJCN820607

__NOTE:__ Please note that QR Code functionality is at vendors end. Need to provide the desired PRA Invoice Number after?PRAInvNo=----------------- in above link

11 Technical Support:

- Email: eims@pra.punjab.gov.pk
- Phone: 042-99205710

   Note: Kindly email your query on eims@pra.punjab.gov.pk along with the PNTN, POS ID, issue/error screenshot, contact number.

12 Technical Guidance for SSL Certificate and TLS Verification:

This document provides instructions for implementing SSL certificate verification and enabling TLS in the provided code. It also highlights common issues that may arise, such as IP whitelisting and configuration challenges.

Common Issues: -

Before looking at the reference code, keep these issues in mind. They might help you resolve any problems:

1. **IP Whitelisting**:

   o   If your taxpayer's server is located outside Pakistan, ensure that the server's IP address is whitelisted. This is necessary to allow access to the API.

2. **SSL Certificate Verification**:

   o   Some configurations may not have SSL certificate verification enabled, which is crucial for secure communication. Ensure that the code verifies the SSL certificate correctly.

3. **TLS Configuration**:

   o   Ensure that the TLS version is properly set. In some cases, it may be disabled or set to an outdated version like (1.0 or 1.1), leading to security vulnerabilities.

4. **General Configuration Issues**:

   o   Check for any misconfigurations in the server settings or in the API request that could lead to failed connections.

Reference Code

```
 curl_setopt_array($curl, array(
CURLOPT_URL => 'https://ims.pral.com.pk/ims/production/api/Live/PostData',
CURLOPT_RETURNTRANSFER => true,
CURLOPT_SSL_VERIFYHOST => 2,
CURLOPT_SSL_VERIFYPEER => true,
CURLOPT_SSLVERSION => CURL_SSLVERSION_TLSv1_2,
CURLOPT_ENCODING => '',
CURLOPT_MAXREDIRS => 10,
CURLOPT_TIMEOUT => 0,
CURLOPT_FOLLOWLOCATION => true,
CURLOPT_HTTP_VERSION => CURL_HTTP_VERSION_1_1,
CURLOPT_CUSTOMREQUEST => 'POST',
CURLOPT_POSTFIELDS => $str,
CURLOPT_HTTPHEADER => array(
 'Authorization: Bearer your token',
 'Content-Type: application/json'
),
));
```

Required Changes
1. **Enable SSL Certificate Verification**:

    o Ensure that CURLOPT_SSL_VERIFYPEER is set to true (this is already done in your code).

    o This option ensures that the SSL certificate is verified against the list of known Certificate Authorities.

2. **Set SSL Version**:

    o Ensure that the line CURLOPT_SSLVERSION is correctly set to use TLS v1.2:

    CURLOPT_SSLVERSION => CURL_SSLVERSION_TLSv1_2,

3. **Host Name Verification**:

    o The setting for CURLOPT_SSL_VERIFYHOST should be set to 2 to verify that the hostname matches the certificate:

    CURLOPT_SSL_VERIFYHOST => 2,

Additional Considerations
- Ensure that the cURL library is up to date on the server to support the required SSL/TLS protocols.

Hosting Server Whitelisting.

1. **NTN/Business Name**: Business Name/NTN of the taxpayer's business registered in POS-PRA.

2. **Hosting Server IP**: Obtain the public IP address of your hosting server.