Agnostic Payment Listener (APL) Setup

Introduction

The Agnostic Payment Listener (APL) is used in conjunction with over-the-counter card payments (also known as Point of Sale / POS payments). This interface will become the single interface for all CentralSquare products that contain some sort of Cash Receipting (CR) interface (such as NaviLine / Select, ONESolution and TRAKiT). This interface will be generic enough that it will be able to account for any and all third party CC processing companies. Third parties must build their interface based on our interface requirements.

This document highlights many considerations of setup, such as the requirements of the third-party providing a payment interface, and the actual setup steps for the APL software itself on the cashier workstation(s).

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High-level Prerequisites

- Third-party Payment Provider (TPPP) interfacing requirements met (see below)
- Appropriate Cash Receipts File Maintenance setup (see below)
- Workstation running Windows 7 or later
- (if using NaviLine) Version 9.1.17.1 or later

Third-Party Payment Provider Interfacing Considerations / Requirements

Introduction

The APL is designed around several expectations from the customer's third-party providing a payment processing interface (TPPP). The TPPP would be required to provide a browser-driven interface for swiping and or keying card information for POS payments. There are various requirements for the browser-driven interface to allow it to integrate with the APL as described below.

High-Level Communication Steps

1. Transaction / Receipt is created in CentralSquare Cash Receipting (CR) module
    a. Cashier uses specific values to tender the transaction that "tie" it to the APL
    b. These values tie to a "**PaymentTypeCode**" parameter that is passed along to the TPPP using the APL. Used for classification purposes in relation to the TPPP
        i. To distinguish the payment "source" as desired by the customer and TPPP (Ex: Utilities versus Permitting, differentiating departments, etc
        ii. Allows the TPPP to calculate, process and return notification of service fees (distinguishable by Payment Type code)
        iii. NOTE: Recommended practice is limiting the number of different Payment Type codes to as few as absolutely needed – a single code can often be used for all CentralSquare applications.
            1. Additional codes means more complexity for cashiers and room for issues.
2. Transaction is passed to the APL inclusive of several key values (see below).
3. APL window launches browser-based TPPP window, inclusive of passing along key values
4. Cashier processes swiped and/or keyed transaction through TPPP window
5. APL continually queries TPPP window for expected response behaviors and parameters returned
6. Once specific values returned from TPPP browser window inclusive of required response values (see below), APL passes response values to CentralSquare CR module.
    a. TPPP would typically present an approval screen on their end. CentralSquare CR module may also pass a value prompting the "Approved" window presented by the TPPP to automatically close after a set period of time
7. CentralSquare CR module presents desired approval response, inclusive of values returned by third-party via APL (see below)

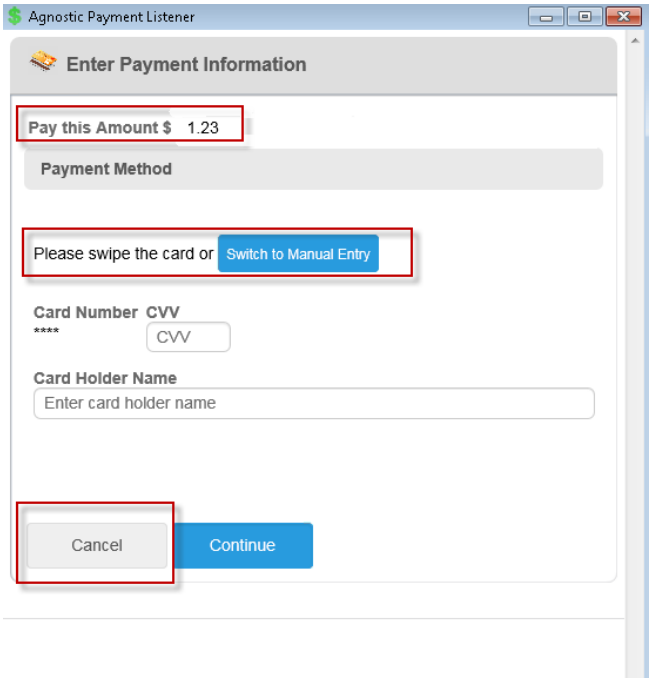
Third-Party Payment Provider (TPPP) Design Requirements for Browser Window

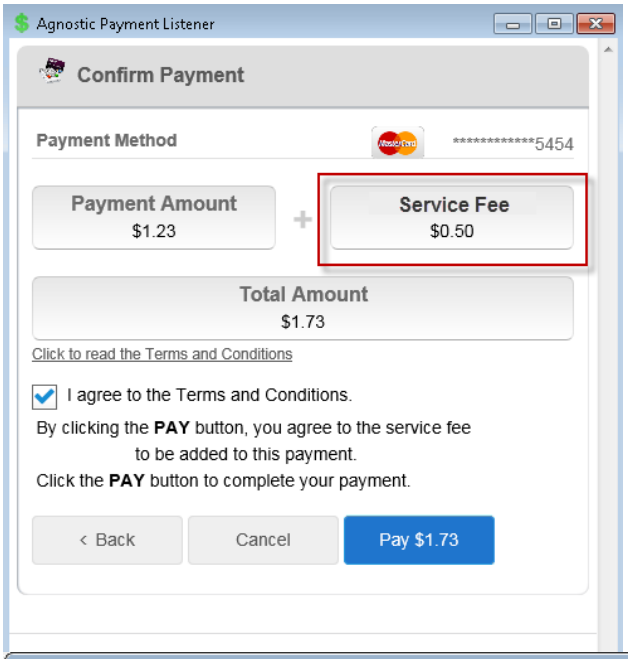
FAQ

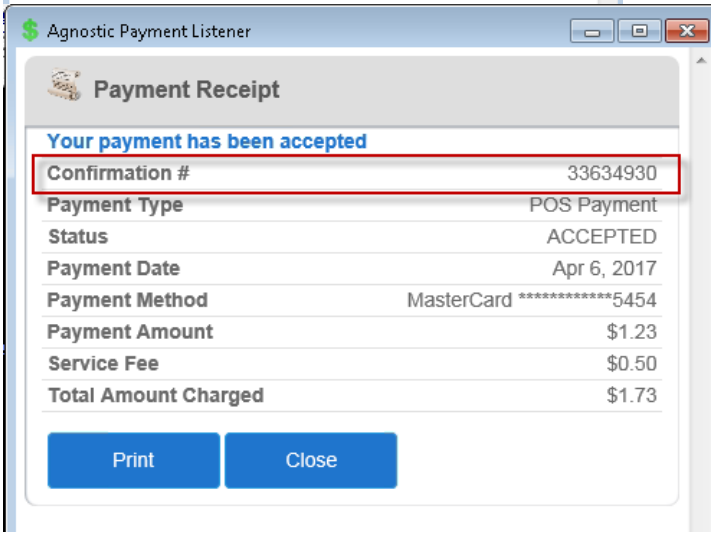
1. Q: Should the amount to be paid field be input capable?
   A: This varies based on the Cash Receipting (CR) interface. NaviLine / Select – this value should NOT be input capable, while other CR solutions (such as ONESolution) may provide for this to be a valid option.
2. Q: Can the customer be directed to a different initial screen based on whether they want to perform a swiped or keyed transaction?
   A: No. This should be controlled by the TPPP as showing in the "Switch to manual entry" button in the below example
3. Q: What (should) happen when the cashier (user) clicks the Cancel button?
   A: If it is coded per our requirements (see below), it will not only close the browser window, but will also notify the APL that the request was cancelled
4. Q: Should the TPPP window AUTOMATICALLY Cancel / Close?
   A: YES – This time frame should correspond with the processing timeout value defined by the configuration values on the CR interface end. The behavior should temporarily present a response page indicting the transaction was cancelled, and the coding mechanisms described below should be included on the page.
5. Q: Does the service fee reflect on the CR interface after the transaction is approved (and how)?
   A: It does. Parameters of HOW the service fee reflects in the CR transaction are definable within the Cash Receipting interface (NaviLine / Select, ONESolution, etc)
6. Q: Should the signature slip be printed through the browser window, or CR interface?
   A: Typically, the CR interface. One reason is that both the receipt and signature slip are formatted to print through a receipt printer (the customer is likely using this instead of standard 8.5 X 11 printer for receipt printing)
7. Q: How is the transaction cross-referenced in the Cash Receipting interface?
   A: Primarily, the "Confirmation Number" value (represented in the response code as `<ReferenceNumber>` – see below), which is written to a table on the database used by the CR module. NOTE: A number of other values are written back as well, which are presented in the Coding Requirements section
8. Q: Are any sensitive values, such as the full card number, written back to the CR database?
   A: No. The last four digits of the card number are passed for reference purposes, but CentralSquare is NOT allowed to store "sensitive" values related to the payment method used, such as full card records, CVV values, etc.
9. Q: Any other recommendations or considerations for configuring the TPPP browser-window layout?
   A: The APL does support a number of variations on the layout, as long as the proper code values are passed to and from (see following sections). However, CentralSquare recommends the TPPP follow the below window layout as closely as possible to decrease the likelihood of unexpected issues. CentralSquare Implementation team will be happy to work with the TPPP to resolve any questions, but strongly encourage the customer be involved in all planning discussions.

Browser Window Layouts (EXAMPLE)

NOTE: The below screens are only one example of the layout of the browser-based processing window. As long as the required elements are present, the APL supports a multitude of layout / functionality options from the TPPP.







How are parameters passed to the TPPP Window?

The TPPP's base URL (inclusive of directory portions) is defined within CR interface and passed to the APL, along with other parameters. APL uses these values to build a URL used to communicate with the TPPP and pass key parameters using standard query format in the URL.

Below is an example URL with query parameters included (the "?" represents the start of query parameters, while the "&" separates each parameter).

EX:
https://<hostname>/<dir>/<subdir>?foreignKey=0eba79c7f4334d93a67372751ec4382f&desktopPayment=true&spsSystem=OP&paymentMethodCategory=CC&header.Amount=1.11&header.paymentTypeCode=9999&ba

tchUser=QTRP2&batchDate=20170303&batchNumber=01&receiptNumber=0000841&tenderSequence=0000657572

NOTE: The <subdir> portion in the above URL is often used by the TPPP to differentiate customers and possibly multiple interface types from a particular customer. CentralSquare would be able to use different URL's (inclusive of directories) to differentiate between various CR interface product suites (such as NaviLine / Select and ONESolution). However, CentralSquare would NOT be able to present multiple authorization URLs from a single CR interface product suite.

Submittal Parameters Explained

Note: critical values to be utilized by TPPP are highlighted in **bold red.** All others are optional for TPPP use

1. foreignKey – Used by the APL as a temporary cross-referencing and interfacing medium (does not need to be utilized in the TPPP response screen / code)
2. desktopPayment, spsSystem, paymentMethodCategory – not currently utilized (future use)
3. **header.Amount – The amount of payment as defined by CR when creating the transaction / receipt**
    a. **NOTE: As specified earlier, this value should not be modifiable in TPPP URL if customer is using NaviLine / Select platform for Cash Receipting, but may be depending on other platforms**
4. **Header.paymentTypeCode – IMPORTANT: See earlier section for purpose of Payment Type code. Value passed by CR interface should be recognized by third-party for calculation of fees, and/or tracking purposes**
5. batchUser, batchDate, batchNumber, receiptNumber, tenderSequence – these values do NOT have to be presented in the response screen / code for the TPPP

Coding Requirements for TPPP Browser Windows

I. Tracking Status – on HTML page, value should be **input** element of type **hidden** with the id of "**sgPaymentStatusCode**". APL will continually check for this element.
    a. Behavior: If this element **does not exist**, or value if **blank**, APL considers the transaction to be **still in process**.
    b. Behavior: If this element exists with a value that is NOT blank, process is considered completed, with the following assumptions:
        i. If the value is (specifically) "**ACCEPTED**" or "**APPROVED**", transaction is presented to CR as such, with relevant fields passed per the below
        ii. Else - **ANY** other value is considered "**DENIED**"
            1. IMPORTANT: As mentioned earlier, this mechanism should be presented in a timeout window if the timer threshold is reached.
    c. Example Code:

```
<input type="hidden" id="sgPaymentStatusCode"
name="sgPaymentStatusCode" value="DECLINED" />
```

II. Responding to "Cancel" Button Press – Element of type **Button**, an id value of "**cancelBtn**"
    a. Behavior: Will notify APL to close the window and report back a status of "User cancelled or a timeout occurred" to CR

III. Input values to be presented with Approved or Denied Transaction (Response Screen) – on HTML page, these values should be presented as **input** elements of type **hidden** with the id values EXACTLY as specified below

a. Behavior – these values are REQUIRED in the response. They will all be presented back to CR by the APL as part of the response. They are written to CR tables, and may be presented in CR response screens, etc.

b. Example Code (and required id values):

```
<form>
     <input type="hidden" id="sgPaymentRefNum" name="sgPaymentRefNum"
value="33634943" />
     <input type="hidden" id="sgPaymentStatusCode"
name="sgPaymentStatusCode" value="ACCEPTED" />
     <input type="hidden" id="sgPaymentStatusDescription"
name="sgPaymentStatusDescription" value="APPROVED TRANSACTION" />
     <input type="hidden" id="sgPaymentAmount" name="sgPaymentAmount"
value="1.23" />
     <input type="hidden" id="sgServiceFee" name="sgServiceFee"
value="0.5" />
     <input type="hidden" id="sgPaymentMethod" name="sgPaymentMethod"
value="Visa" />
     <input type="hidden" id="sgMaskedCardNum" name="sgMaskedCardNum"
value="************1111" />
     <input type="hidden" id="sgCardHolderName" name="sgCardHolderName"
value="test tom" />
     <input type="hidden" id="sgAuthCode" name="sgAuthCode" value="tst588"
/>
</form>
```

Response Values – Further Explained

1. Payment Reference Number – This value is used as permanent cross-referencing value. It is also used to reference the correct transaction when submitting a void (cancellation) request to the TPPP. See sections below for more info on Void / Cancellation mechanisms
2. Payment Status code – See earlier section for details
3. Payment Status Description – Provides more details on reason for approval or decline (can be left blank if needed)
4. Payment Amount – value of amount processed (NOT including service fee portion)
5. Service Fee – Portion of card amount processed for service fee only (0 if no service fee)
6. Masked Card Number – last four digits of card number only
7. Card Holder Name – Name presented for card holder
8. Auth. Code – internal approval code presented by processing network (NOT the TPPP tracking / reference number)

Cancellation / Void Design Considerations for TPPP

High-level considerations

- Integration with cancellation mechanisms may not be available for all setups – see details below

- Communication does NOT require the use of APL, but instead requires direct communication from device hosting CR interface (such as the iSeries or ONESolution Windows server) to a TPPP cancellation URL
    - This URL would be DIFFERENT than the URL used for POS authorizations
- Based on this, several other considerations from a network and SSL communication standpoint may need to be addressed, such as:
    - Ability of CR interface hosting component to communicate with outside URL for TPPP
    - TPPP must allow traffic to cancellation URL from CR source (based on external IP address for outbound from CR source)
- TPPP cancellation URL must be coded to expect specific coded parameters (see below), and respond with specific parameters

Additional Service Fee Considerations (NaviLine / Select CR ONLY)

- Below info is based on NaviLine / Select Cash Receipts design ONLY – other CR interfaces may behave differently
    - Consult CentralSquare install person for details with other CR interfaces
- Two different time-frames to request payment cancellation
    - Voids (PRIOR to posting of CR batch / set)
    - Reversal /Credit (AFTER posting CR batch / set)
- Void – we submit the full amount (including the service fee portion) for reversal
    - Up to the TPPP to credit back the full portion or just a the transaction amount minus the service fee
    - Either way, the full transaction will be processed for void in CR receipt
- Credit – ONLY the original amount charged MINUS the service fee portion will be submitted for reversal

Cancellation Data Flow

1. Cashier User (with proper authority) processes a void of the receipt, or a credit / reversal of the transaction (latter is after batch / set posting)
2. Process calls a program to retrieve the cancellation URL for the TPPP (see below for formatting and coding examples)
3. XML-based request is sent to the URL with the below code values
4. TPPP responds with SPECIFIC code values to confirm the transaction was successfully cancelled, and the amount that was cancelled
5. CR interface notates back-end tables of the cancellation with a record, and processes a void on the receipt
    a. If after batch posting (reversal / credit) a reversal transaction is created successfully
6. Cashier follows standard CR processes to handle voided or reversed transaction

XML Code values sent on Cancellation Request to TPPP (Example)

```
<?xml version="1.0" encoding="utf-8"?>
<payment>
  <user>
```

```
    <login-id>xmlapi</login-id>
    <password>xmlapi1</password>
  </user>
  <header>
    <operation>VOID</operation>
    <reference-number>33626041</reference-number>
    <payment-amount>127.09</payment-amount>
    <notes>n/a</notes>
  </header>
</payment>
```

XML Code values sent on Cancellation Request (Description)

- Login ID and pass value (subcategory of user code) – values are required to be submitted, BUT TPPP can code their URL to disregard these values if they choose
- Operation – Confirms request is "void" (AKA Cancellation) process for coding purposes on TPPP side if needed
- Reference Number – This is the SAME value provided (and stored in CR) during the authorization process described earlier, used for confirmation of payment to be cancelled
- Payment Amount – This amount may INCLUDE the service fee portion (if relevant)
    - Behavior varies depending on if CR Void process or Reversal / Credit
- Notes – Any other info to reference in CR tables tracking cancellation request

XML Code Values Expected from TPPP Response (Example)

XML response file from Void service:

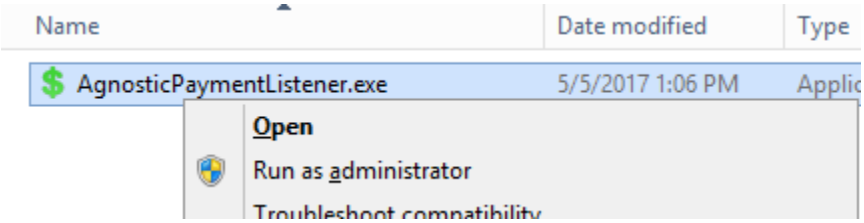
```
<?xml version="1.0" encoding="UTF-
8"?>
<payment-
response>
  <foreignKey></foreignKey>

  <reference-number>33626016</reference-number>
  <payment-date>04132017125600</payment-
date>
  <payment-amount>-123.45</payment-amount>
  <total-amount>-123.45</total-amount>
  <payment-status-description>Authorization Not Found</payment-status-
description>
  <payment-status>ACCEPTED</payment-
status>
  <cardType>MC</cardType>

</payment-response>
```

XML Code Values Expected from TPPP Response (Description)

- Reference Number – This is a DIFFERENT reference number to include in CR tables for cross-referencing and confirmation purposes
- Payment Date – MUST be in the format **mmddyyyyhhmmss** (see above example)
- Payment Amount – The amount that was requested to be cancelled (NOT the actual amount cancelled)
- Total Amount – The ACTUAL amount that was cancelled
- Payment Status Description – Details of the cancellation process that was completed by the TPPP
- Payment Status – This is the most important value – it MUST be ACCEPTED (all UPPER-CASE)
- Card Type – two digit value to represent type of card processed for cancellation

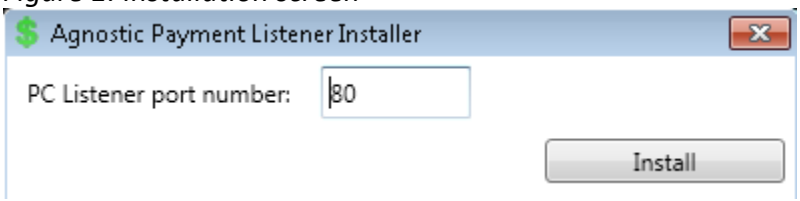
Agnostic Payment Listener (APL) Installation Steps

1. Download current APL installation wizard from the CentralSquare Download site.
2. Expand / unzip the AgnosticPaymentListener.zip file, using Windows zip utility or other means.
3. **Right-Click** on the AgnosticPaymentListener.exe file and select **Run as administrator** to initiate the installation



4. Figure 1 below is presented
    a. Port number will default to 80 and should typically NOT be changed. See Configuration section below for details on potential reasons it would be modified.
    b. Click Install button after making any changes

Figure 1: Installation screen



5. If successful, installation should result in the "$" Icon appearing in the system tray. See following section for Screen shot and details.

Agnostic Payment Listener (APL) Post-Installation Functionality / Options

Introduction

After installation, program can be accessed and maintained via an icon in the Windows System Tray (see below for details). The installation wizard will also create the necessary file and folder structure as described below. Finally, a shortcut will be created and put in place to allow the program to run when any user starts the Windows OS.

System Tray Functionality

System Tray Icon / Screen Shots

Figure 1: System Tray Icon. NOTE: If icon does not appear initially, may require arrow to present additional System Tray icons.

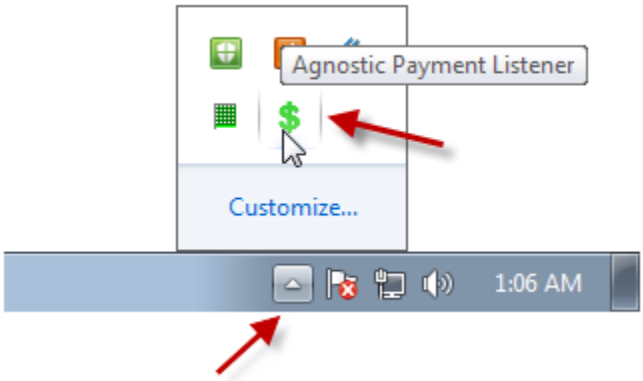
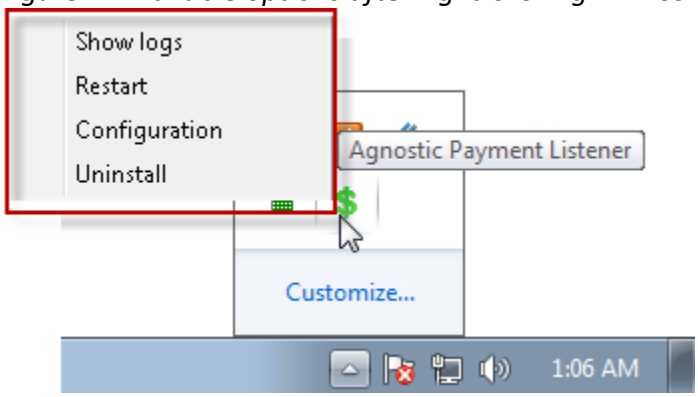


Figure 2: Available options after right-clicking APL icon in system tray (left-click desired option to utilize).



Configuration

- Selecting this option will pull up the configuration file config.ini (see below example)
- Values can be modified after "=" to change
- Must save configuration file, and then restart APL to apply changes (see restart option below)
- To turn on Logging: Changed Enabled value from "False" to "True"
    - Not case sensitive
- Port: Will default to 80, this defines the LOCAL port that the APL is "listening" on – the CR session communicates with the APL running on the cashier workstation using this port
    - NOTE: This should only be modified if local communication from CR workstation tool (such as local iSeries 5250 session or ONESolution session on cashier workstation) cannot communicate on port 80
    - This does NOT define the port used for communication FROM APL to TPPP URL – that should always be port 443 (SSL)
- Title: Change to modify title presented in APL window (that displays TPPP URL)
- Height / Width: Change to modify size of APL window (that displays TPPP URL)

Configuration File Example

```
[Logging]
Enabled=True

[Configuration]
Title=Agnostic Payment Listener
Port=80
Height=700
Width=500
```

Show Logs

- Pulls up the log file in Notepad (see below for pathway)
- NOTE: Logs will show limited information (such as start and stop of APL) unless log level is changed to Debug – see Configuration functionality below

Restart

- Used to restart APL after applying configuration changes or performing other troubleshooting (see above for configuration section)

Uninstall

- Performs a clean uninstall of the program (can be used if a newer program version is available or for troubleshooting purposes)
- Will be prompted with "Are you sure?" hit OK button to continue
- Will remove following:
    - System Tray Icon
    - Shortcut from Startup folder (see below)
    - All files in Agnostic Payment Listener subfolder (see below)

Install Pathway / Files

Install Pathway

<winDrive>:\Program Files\SunGard Public Sector\Agnostic Payment Listener

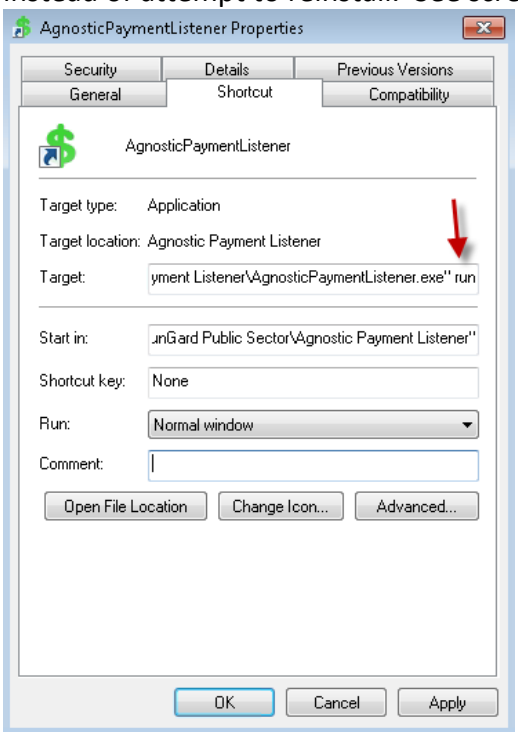
Files:

- Config.ini – physical location for file accessible via earlier instructions
- Log_xxxx.txt –
    - XXXX values will change each time APL is restarted, creating a new log file
    - Current log can be accessed by Show Logs option, as mentioned earlier
    - See also Configuration options for toggle of Debug-level logging
- AgnosticPaymentListener.exe – This executable can be run to reinstall the app
    - See section below on how to manually run the app after installation

Running the APL after Installation

Shortcut for the program will be created and added to All Users startup (via Windows folder pathway: <winDrive>:\ProgramData\Microsoft\Windows\Start Menu\Programs\Startup). Therefore, it will also be accessible in the start menu Startup folder for each user and run automatically at startup or user login.

NOTE: The shortcut is coded to call the installation exe, but present a "run" command. This allows it to run instead of attempt to reinstall. See screen shot below.



Additional Sources of Info

- Fusion Site: https://fusion.CentralSquare.com/Fusion/Suite/NaviLine/GettingStarted
- CentralSquare Support: Call 800-695-6915 Options 1, 5, 1
    - Or enter a support case through Customer Connect Portal: https://support.CentralSquare.com
- Additional Training Options:
    - Group classes via Training and Development (T&D) Site: https://support.CentralSquare.com/
    - One-on-one training – contact your assigned sales person (Customer Success Executive) or ask your assigned Implementation resource(s) at CentralSquare for options and details

Addendum I – Worksheets for Cross-Reference / Setup values in Cash Receipts

NOTE: Explanation of how to setup these values is outside the scope of this document. Please consult separate documentation for details.

URL's to communicate to TPPP via APL

URL Description and Purpose (CentralSquare Product line, etc)	FULL URL Value

Point of Sale Payment Type / Cash Receipts Setup

TPPP Payment Type Description	CentralSquare Cash Receipts Assoc. Tender Code and Description	Merchant Code in CentralSquare Cash Receipts (CentralSquare will provide)

POS Workstation Setup Tracking Worksheet

Workstation Description	Local IP	APL Installed?	Additional Notes