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Side-X™ Test Tool

User Guide – Windows

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Remarks | Version | |
| 09/26/2019 | Initial draft | | 1.0 |

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# Overview

This document explains how to install and use the Side-X Test Tool on a Windows platform. It is a piece of software which is used to connect and communicate with the SideCard/SideSafe using Application Protocol Data Unit (APDU) commands. The application communicates with the SideCard/SideSafe via contact interface using ISO 7816 protocol. Requirements to run the Side-X Test Tool are defined below.

## Hardware Requirements

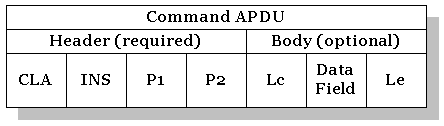
1. SideCard(which is pre-personalized)
2. Smart Card Reader
3. Desktop/Laptop System

## Software Requirements

1. Operating Systems
   1. Windows with Windows10 OS
2. Software
3. Side-X Test Tool
4. Java, JRE 1.6 onwards
5. Smart Card Reader Driver

# APDU Communication

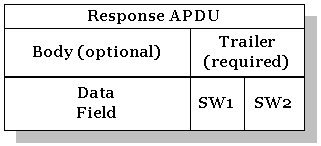
Application Protocol Data Unit command is a set of bytes. APDU communication involves sending a command APDU to the Firmware or Secure Element (SE) of a smart card, processing it, and receiving a response APDU. APDU commands are a queue of binary numbers of the following form:



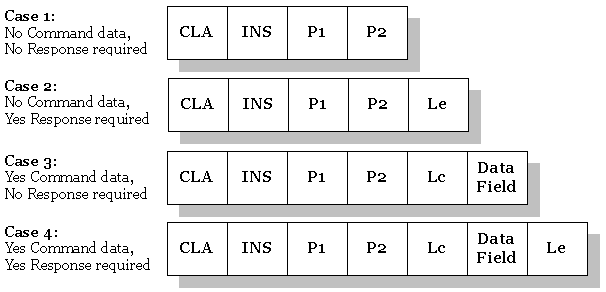
The first four sections, i.e. CLA, INS, P1 and P2 are mandatory in all APDU commands and **each one has one-byte length**. These one-byte length sections stand for Class, Instruction, Parameter1 and Parameter2 respectively.

The last three sections, i.e. Lc, *Data Field* (CData), and Le are optional. Lc represents the length of the CData field. Le specifies the maximum length of expected response data.

The **response APDU** is expected to contain response data with status words: SW1 SW2; which denote processing state in the smart card.

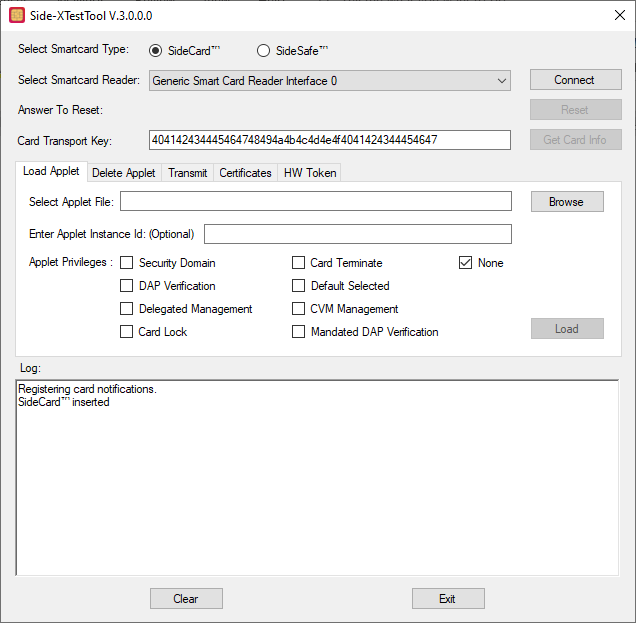


Different types of APDU commands:

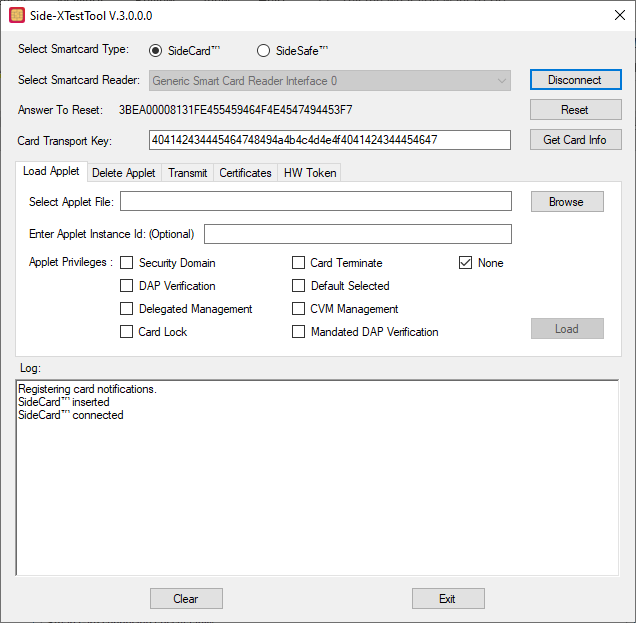


# Running Side-X Test Tool

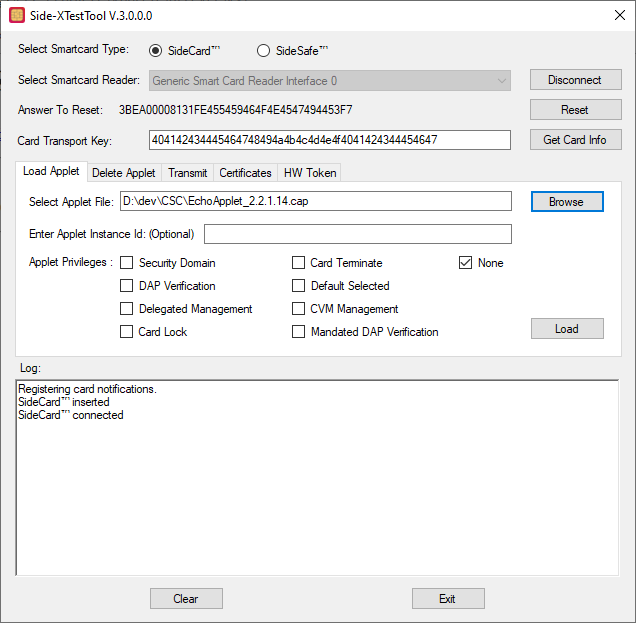
1. Connect smart card reader to the desktop/laptop system and make sure that the connected smart card reader is detected by the system/laptop. If not, please install appropriate smart card reader driver.
2. Insert SideCard into the smart card reader.
3. Open the Side-X Test Tool by double clicking on Side-X\_TestTool\_<X.Y.Z> icon

NOTE: The ‘Card Transport Key’ field displays the default key value which is required to authenticate with SideCard.  


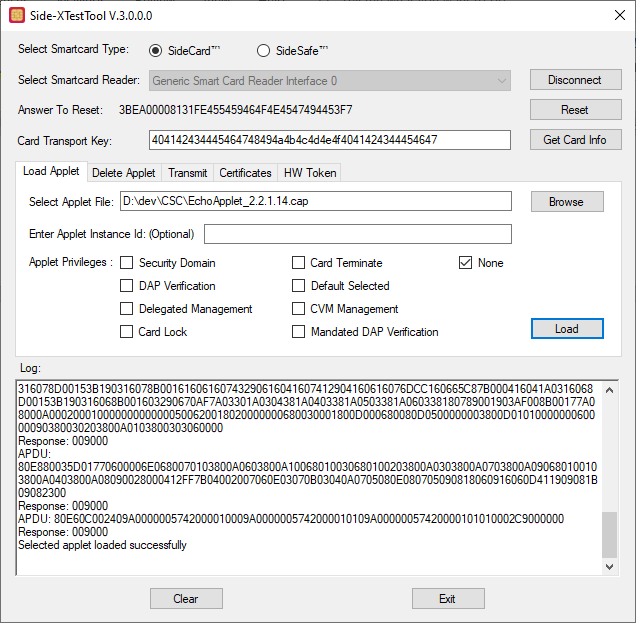
1. If the smart card reader name is not loaded, please re-connect Smart Card Reader to the system’s USB port and select ‘Reload’ button.
2. Choose the smart card reader and select ‘Connect’ button.
3. On successful connection, the SideCard’s ATR (Answer To Reset) value is displayed.



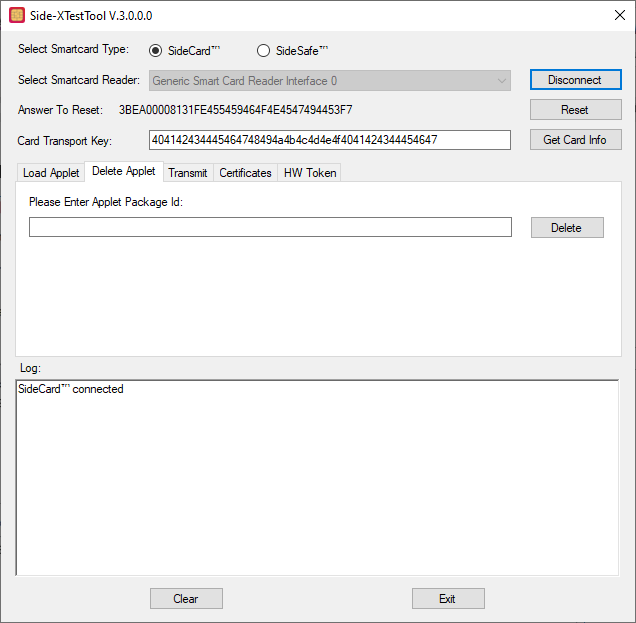
## Loading An Applet



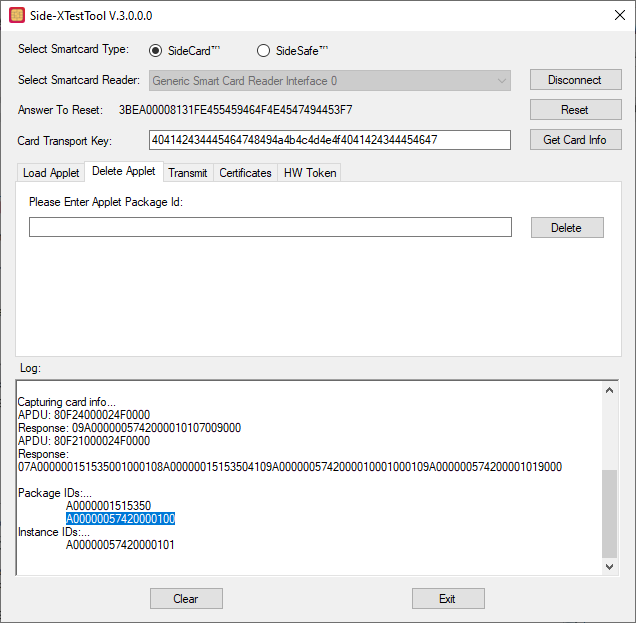
1. Select ‘Load Applet’ tab.
2. Choose the applet (\*.cap) file by clicking on the ‘…’ button. After selection of the applet file, optionally an instance ID for the applet can be provided.
3. Click on ‘Load’ button. If the operation is successful then ‘Selected applet: xxx.cap loaded successfully.’ message is shown in ‘Log’ section. Otherwise, an error message is displayed.

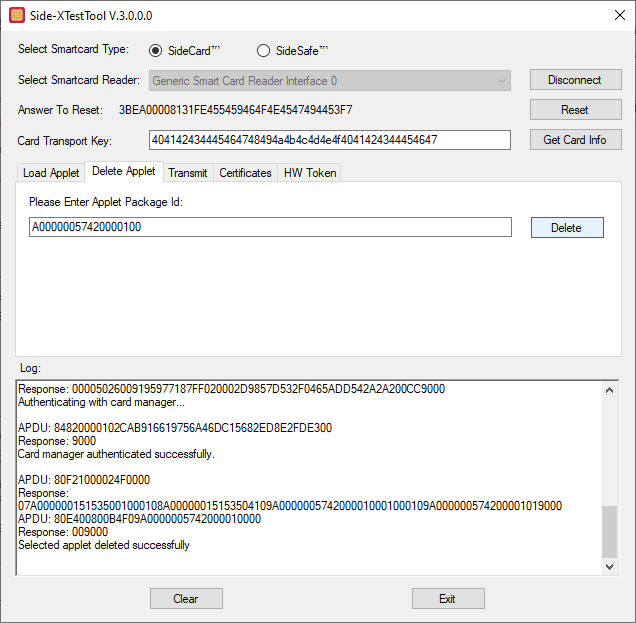


## Deleting An Applet



1. Select ‘Delete Applet’ tab.
2. Click on ‘Read Card Info’ button to display list of Package IDs and Applet AIDs available in the Smart Card.
3. Enter Instance ID or Package ID of the desired applet in the ‘Enter Instance/Package ID’ text field and click on ‘Delete’ button to delete the applet from the Smart Card.

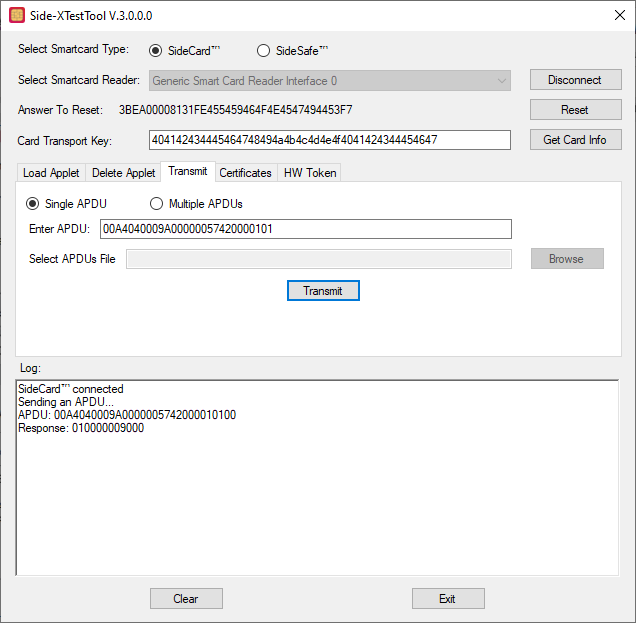




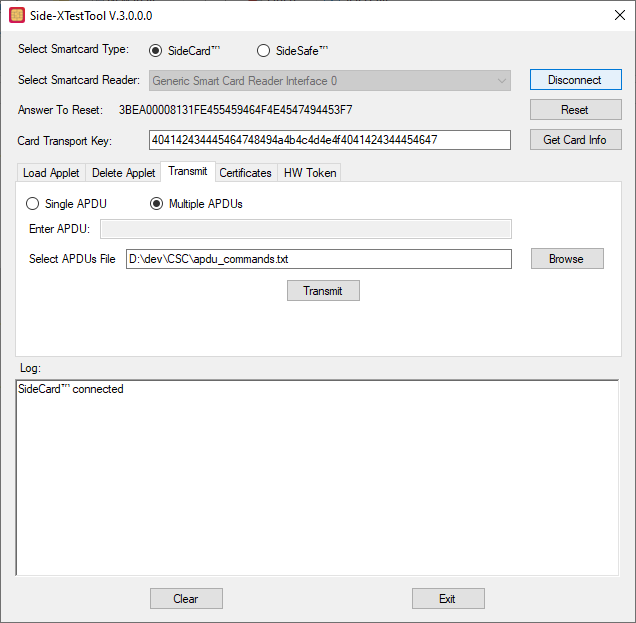
## Transmit Single APDU

### Using ‘Single APDU’ Option

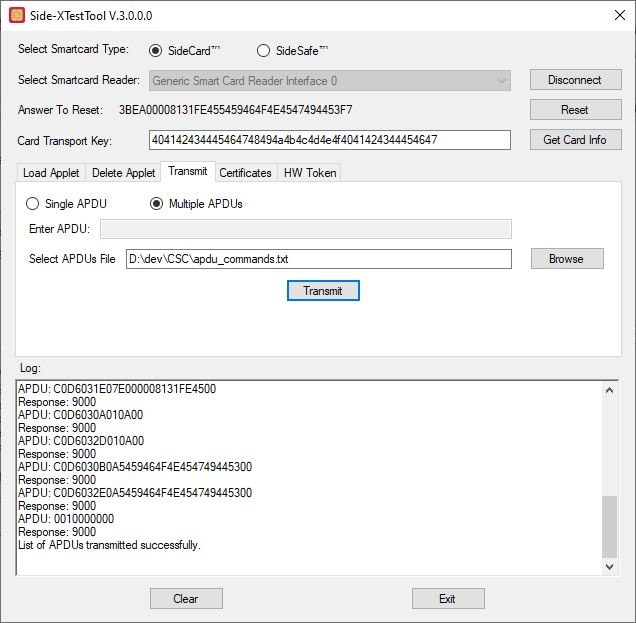
1. Select ‘Transmit’ tab.
2. Choose ‘Single APDU’ (default) radio button.
3. Enter an APDU command in ‘APDU’ field. It should be Hex string.
4. Click on ‘Transmit’ button to send the APDU command to the smart card and read the response.
5. APDU command and its response data along with status bytes is displayed in the ‘Log’ section.



## Transmit Multiple APDUs

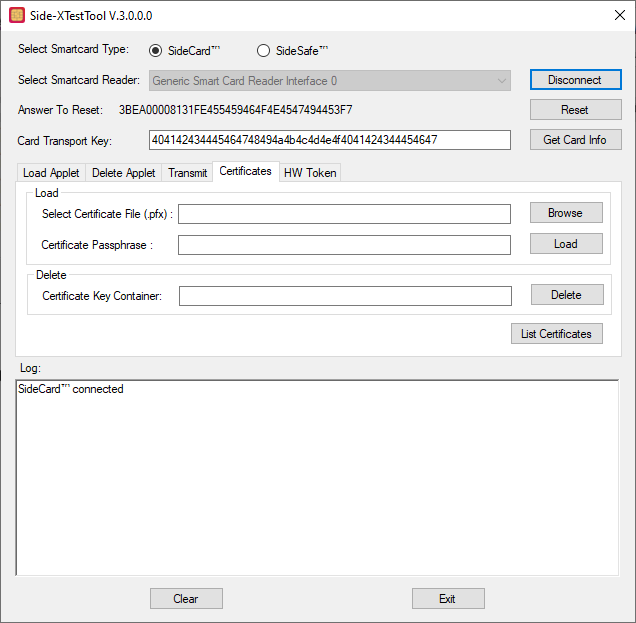


1. Select ‘Multiple APDUs’ tab.
2. Select the multiple APDUs text file by clicking on ‘…’ button.  
   NOTE: In the text file, any lines that start with ‘//’ or ‘#’ will be ignored.
3. Click on ‘Transmit’ button. All the APDU commands listed in the text file are sent to the smart card and the corresponding responses are also read. The ‘Log’ section will display all the command/response messages along with a total count of APDU commands transmitted.



NOTE: Please refer to Applet Specification document to form the list of APDUs

## Certificates

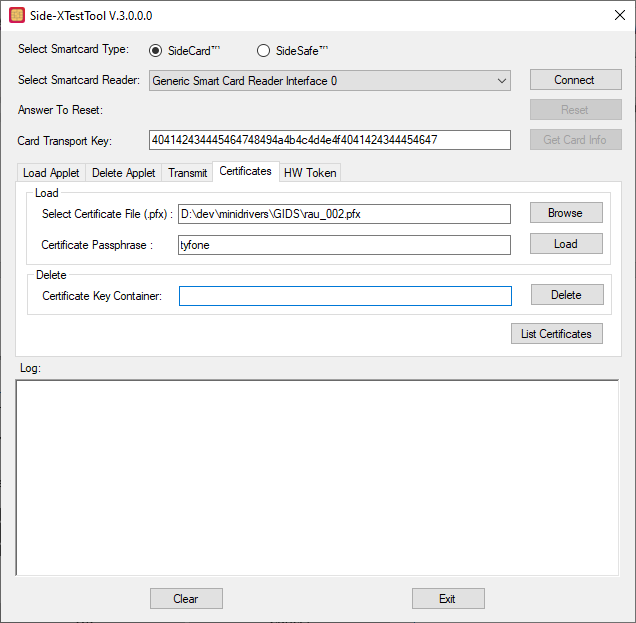


In this option you can view the list of certificates from connected smartcard. You can load or delete a .pfx certificate from the connected smartcard.

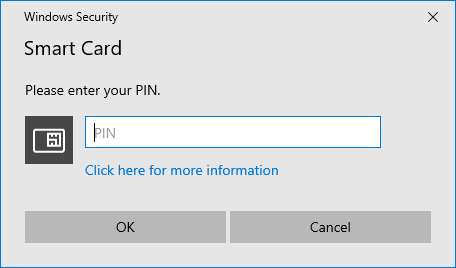
1. Load Certificate:

To load a certificate SideCard should have supported applet in it. For example, if the card loaded with GIDS applet then we can load a .pfx certificate.

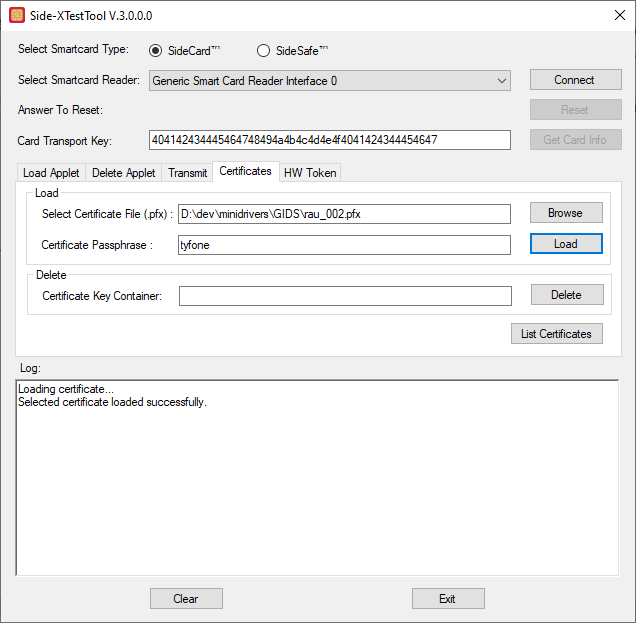
* 1. Select ‘Browse’ button and select a .pfx certificate
  2. Enter certificate passphrase if it has a passphrase or leave it as empty



* 1. Click ‘Load’ button to load the certificate



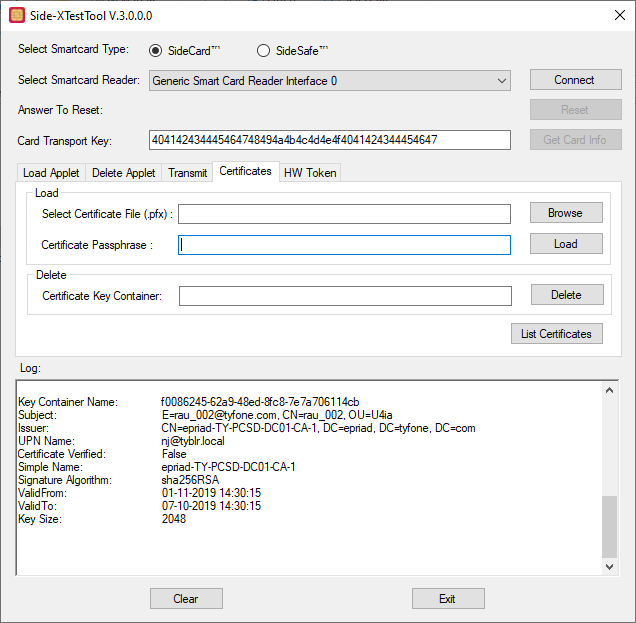
Enter smartcard PIN,



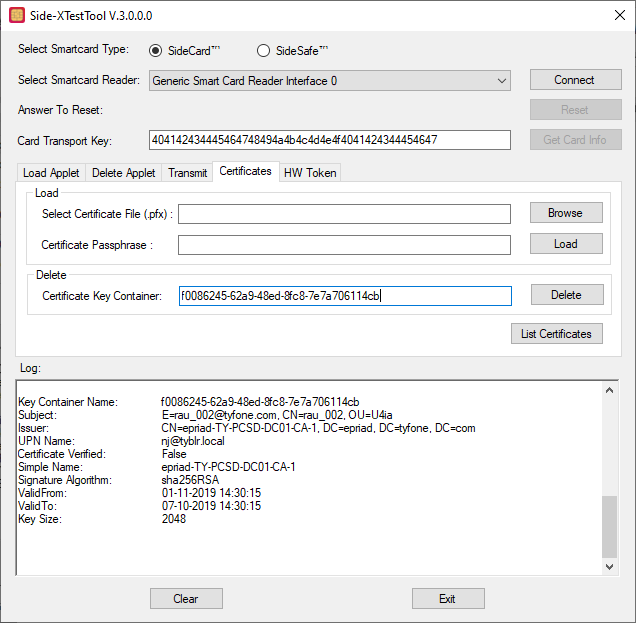
1. Delete Certificate

To delete a certificate from SideCard, it requires certificate key container name. Certificate key container names can get by ‘List Certificates’ option.

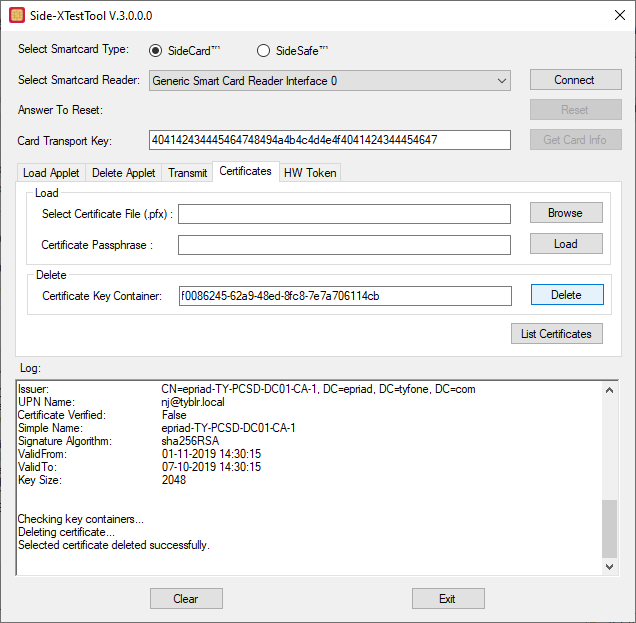
* 1. Click on ‘List Certificates’



* 1. Copy Key Container Name from the Log area and paste in Delete Certificate Key Container field.

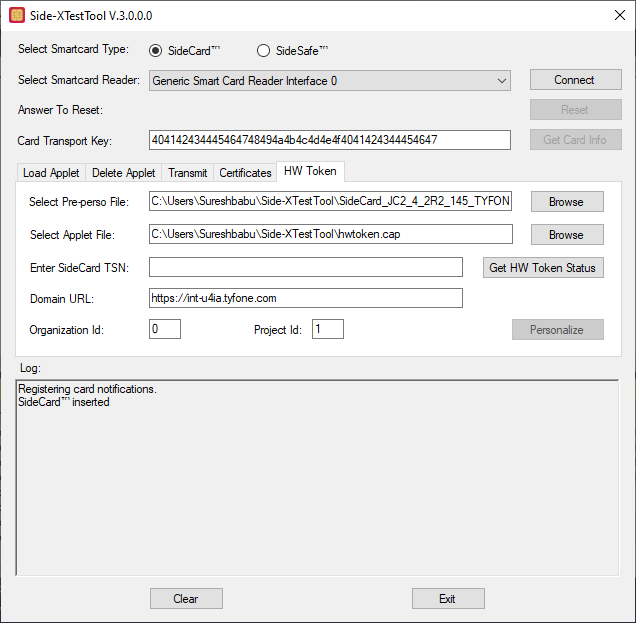


* 1. Now, click on Delete button

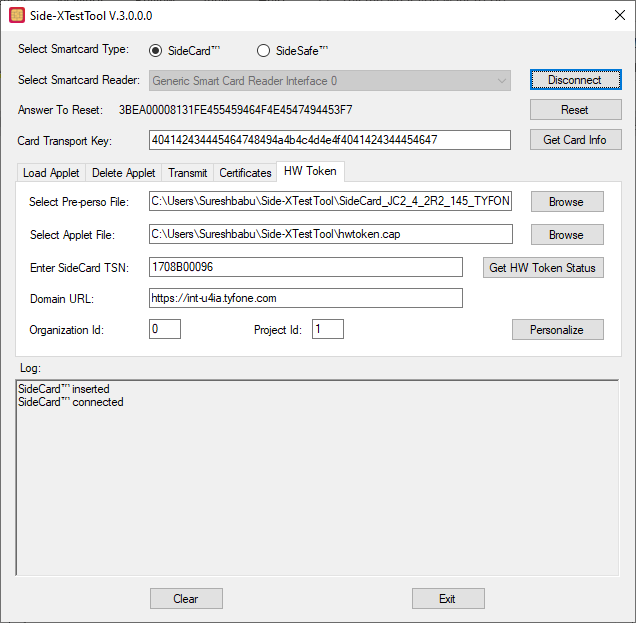


## HW Token

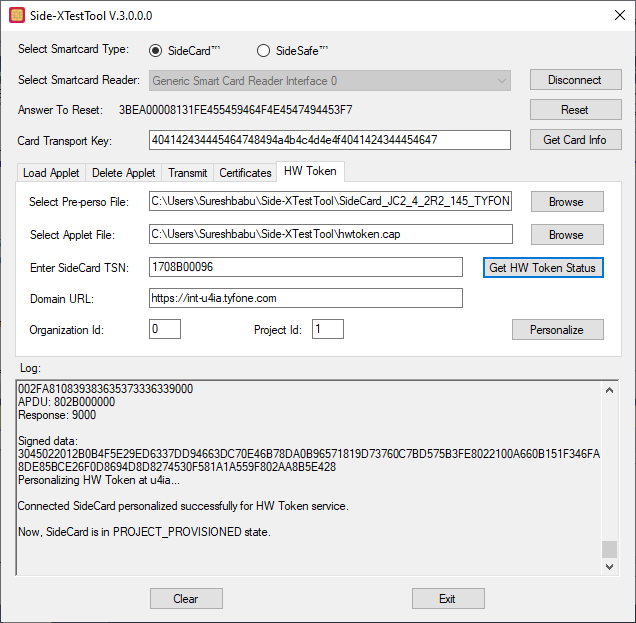
This section is to personalize the SideCard for HW Token service. In this feature default applet and pre-perso scripts are loaded. ‘Get HW Token Status’ button gives the provided SideCard TSN card status.



* 1. Enter SideCard TSN value in ‘Enter SideCard TSN’
  2. Click on ‘Connect’ button



1. For change of “Domain URL”, “Organization Id” and “Project Id” please contact administrator, otherwise keep the default value as it is. Now, click on ‘Personalize’ button.



If the card is ‘PROJECT\_PROVISIONED’ state means its ready to register with HW Token application.

# SideCard Communication Application Development

We use PCSC Smart Card communication APIs to communicate with our SideCard.

Refer:  
<https://docs.microsoft.com/en-us/windows/win32/api/winscard/>