**ATM Download Training**

**Loadset, Loadset Group & Download Application**

A load refers to the complete set of customization data that is sent to one specific ATM in order to prepare it for service.

A load comprises the following:

* **States and Screens**: A load contains the states and screen in the single loadset group associated with the specific terminal
* **FITs**: (Financial Institution Tables) FITs profiles are defined in the Download Builder and may apply to ATMs across download applications.
* **Security Keys**: These are defined per terminal in the Hardware Security Module Configuration Console
* **Miscellaneous Configuration parameters**: These are defined per download application.

**Loadset, Loadset group & Download Application**

**Loadset** is a grouped of states and screens.

* **Standard** : Contains the states and screens required for a standard set of transactions on a typical ATM
* **Administration**: Contains the states and screens required for administration function activated when the ATM is put into supervisor mode
* **Card before Cash**: Contains the states and screens that defines a card before cash interaction i.e. one in which the cardholder is prompted to take the card before the cash is dispensed.
* **Intellicam**: A set of states and screens that relates to intellicam

Loadsets are assigned priorities. This determines the order in which they are downloaded to the ATM. All states and screens are numbered and two loadsets may include states and screens with the same numbers. If this occurs the states and screens that belong to the loadset with ***higher priority number*** are downloaded to the ATM last and overwrite the corresponding states and screens in any prior loadset.

**Loadset group** is a logical group of loadsets to provide functionality for a specific type of ATM. Combining loadsets is achieved through another grouping mechanism namely loadset group. Each loadset group has a version number, which is used to determine the most recent loadset group downloaded to an ATM.

* **Basic**: Includes Standard loadset plus loadsets for no-us and not-on-us transactions
* **Card before Cash**: This loadset group adds the Card before Cash loadset to the Basic loadset group.
* **FEP Basic, FEP NCR**

**Download Application**

Large numbers of states and screens can be defined in the Download Builder. A number of loadsets are defined in the Download Builder by default. Download applications are usually defined for broad categories of ATMs grouped by the message protocol they use. Download is a collection of states, screen, FITs, miscellaneous configuration parameters and response code mappings for ATMs of a similar type. A download application comprises various building blocks including loadset and loadset group. The following download applications are provided by default:

* Example Diebold 911
* Example Diebold 912
* Example NDC+
* Example Fujitus; 911

When configuring a new terminal in the Self-Service Framework, you will associate it with a specific download application and one loadset group defined for that application. This determines the load that will be sent to the ATM.

**Adding and Editing Loadset**

**Importing and Exporting Download**

To import loadset state

Click Import in the menu bar and select Loadset state

NB if the loadset is not there, click on add loadset, Ensure the correct download application is selected in the Download Application pane.

**Export and Import Download Application**

**Create a Download Application from AccessBankDL**

Navigate to Postilion's AtmApp Data directory

**C:\Program Files\Postilion\AtmApp\Data**

Then run command prompt

Home 
Favo rites 
Desktop 
Downloads 
Recent places 
Share 
View 
Name 
edge_export_import.cfg 
export_import.cfg 
ata 
Date modifia 
2/21/2020 
2/21/2020 

Type the following command into the console:

**postjava\_atmapp postilion.atmapp.application.ExportAndImport –b c:\data.txt**

Administrator: C:\Windows\System32\cmd.exe 
icrosoFt Windows [Uersion 6 -3.96%] 
(c) 2013 Microsoft Corporation. All rights reserved. 
postilion .atmapp.applicat 
ion . ExportRndImport —b c 

Once it completes, modify the **export\_import.cfg** file in the data directory to reflect these changes

export_import.cfg - Notepad 
File Edit Format View Help 
Type= Download Application 
Source Download App Name=Access8ankDL 
New Download App Name=Access8ankDL_Manit 
Replace Keybuf=Yes 
Replace Option Timer Profile=Yes 

The highlighted lines simply create a new download application from the old one, giving it a new name - **AccessBankDL\_Monit**.

Enter the correspoding command to import the **AccessBankDL** download application as a new copy, **AccessBankDL\_Monit**.

Administrator: C:\Windows\System32\cmd.exe 
icrosoFt Windows [Uersion 6 -3.96%] 
(c) 2013 Microsoft Corporation. All rights reserved. 
postilion .atmapp.applicat 
ion . ExportRndImport —b c 
(INFO) The export is completed. 
postilion .atmapp.applicat 
ion . ExportRndImport —r c 

The result is the creation of the **AccessBankDL\_Monit** download application:

ATM Download Builder - SQL Server 
Find Options Help 
File Edit 
Loadsets 
Active Grid 
Import 
Export 
D ownIoadA lications 
AccessBankDL 
AccessBankDL Monit 
AccessBankDL Test 
Accessa ankDL_T esting 
Bio Scan 
Example Dialup Diebold 81 1 
Example Dialup Diebold 812 
Example Dialup NDC+ 
Example Diebold 81 1 
Example Diebold 812 
Example Fuiitsu 81 1 
Example NDC+ 
FirstBankDL test 
Languages Key Buffers 
Loadsets 
Loadset 
Loadsets States 
FITs 
mptions and Timers Application 
Screens 
Device-Dependent Dounloads 
Version NI 
2008 
2004 
2003 
2003 
2005 
2008 
2002 
4003 
Currencies 
Loadset Priority 
INSTANT PIN SELECTION 
Airtime Top-up 
Alt media - GBP 
Alt Media, Dual CuL 
Alternate media 
Card Before Cash 
Loadset Grou s 
Loadset Group 
Alt media - 
Alt media dual currency 
Alternate media 
Basic 
Basic - GBP 
Card Before Cash 
Dual Currency 
FEP Basic 

**Modifying Download Application: Screen**

Screens determine what is displayed to cardholders at the ATM. The ATM display screen prompts users to make selections and provide information at various stages of a transaction.

Screen Data

In defining screen data, the text that will be displayed, the colors that will be used and the positioning of items on the display screen are determined. The screen data is dependent on several factors including the size of the display used.

The alphanumeric values on the left and top of the screen layout indicate the y and x coordinates used to position text. The triangle pointers indicate positions of the function display keys (FDKs).

|  |  |
| --- | --- |
| **Data sent to the ATM** | **Description** |
| {FF} | Clear screen, reset foreground and background colors |
| {ESC}[23m | Set the foreground color to yellow |
| {ESC}[34m | Set the background color to Blue |
| {SO}098 | Overlays the arrows symbols for the necessary FDKs |
| {SI}BDSELECT PAYMENT MERCHANT | Insert the cursor at the screen position BD(the y coordinate B and x coordinate D) Insert the text |
| {SI}MAMERCHANT ID | Insert the cursor at the screen position MA(the y coordinate M and x coordinate A) Insert the text |
| {SI}OA< MORE | Insert the cursor at the screen position OA(the y coordinate O and x coordinate A) Insert the text |
| {SI}L7PROCEED | Insert the cursor at the screen position F4(the y coordinate F and x coordinate 4) Insert the text |
| {SI}I7INQUIRY | Insert the cursor at the screen position I7(the y coordinate I and x coordinate 7) Insert the text |
| {SI}@@ | Return cursor to the reset |

**Modifying Download Application: State**

States control the flow of cardholder’s interaction with the ATM

**Card Read State A (State 000)**

The card read state is the start state and displays a screen prompting the cardholder to insert a bank card. Only track 2 data is read. This is determined by the read conditions (002). Track 2 information is stored in a track read buffer

**State B**

PIN entry state, in this screen you are prompted to enter in a PIN. The entered PIN is packed into a PIN block and encrypted using the KWP shared with AtmApp. The state data tells us that local PIN verification will not be used. The PIN will be sent to an upstream entity to be verified. The encrypted PIN block is stored in a PIN buffer. The next state that you are directed to is a FIT switch state (Next state)

**State D**

Is the Key Buffer to forward transaction

**State D depend on the following;**

* Clear mask
* Preset mask

**State E**

Four FDKs selection function. Operation Key Buffer location = 1+2+4=007

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |
| A | B | C |  |  |  |  |  |

**State F** Is the amount entry state, the state allows you to set the transaction amount, expressed in the minor denomination which will be stored in an amount buffer

**State H** is the Information Entry state

**State W** is the FDK Switch

**State Y** is the Eight FDKs selection function

**State I** is the transaction in progress state, this state represents the conclusion of the information-gathering part of the transaction. This state sends a transaction request message to AtmApp and executes the transaction reply command received from the ATM processor.

The information in the transaction request message is defined in this particular state. The following information is sent to AtmApp.

* Track 2 information
* Operational Key buffer
* Amount buffer
* PIN buffer (A buffer)
* General purpose buffers B and C

Valid values for track 1/3 or CIM data, track 2 data, operational key buffer data, PIN buffer data are:

|  |  |
| --- | --- |
| **Value** | **Description/Interpretation** |
| 000 | Do not send data |
| 001 | Send data |

Valid values for the general purpose buffer parameter are in the range 000-003. The values inserted in this field can be interpreted as:

|  |  |
| --- | --- |
| **Value of Parameter** | **Description/Interpretation** |
| 000 | Send no buffers |
| 001 | Send Buffer B |
| 002 | Send Buffer C |
| 003 | Send Buffers B and C |
| 004-007 | Reserved |

After sending the appropriate information to AtmApp, the ATM waits for a transaction reply, which informs the ATM of the state to go to complete the transaction as authorized.

**State J** is the close state (EJECT STATE)

The state machine on the ATM resumes processing from next state specified in the transaction reply (next state). The state closes off the transaction

**Key Buffers**

**Calculating Process**

State D are called Clear Key (D) state provides a way of clearing and resetting the operation key buffer. It uses the bit weighting of each of the eight positions of the operational key buffer.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | C | D | F | G | H | I |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |

Two operations are typically involved:

* **Clear mask**: Indicate which positions should be retained- all other unset positions are clear.
* **Preset mask**: Opposite effect. The value indicates which bits will be replaced affected by corresponding FDK letter.

For instance if you want to retain position 0, 1, 2, 4, 5 and 6, you need to set the clear mask value to 115

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|  |  |  |  |  |  |  |  |

The original key buffer is set as follows: Retained Positions

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 4 | 5 | 6 |
| 1 | 2 | 4 | 16 | 32 | 64 |

Clear mask = 1+2+4+16+32+64=119

**Example 1**

Key Buffer for an inquiry transaction is ADDABA

Calculate 1. Clear mark 2. Preset mask

**Solution**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |
| A | D | D | A | B | A |  |  |

A Preset mask = 1+8+32= 41=041

B Preset mask = 16=016

C Preset mask = 000

D Preset mask = 2+4+ 6= 006

Clear mask = 1+2+4+8+16+32=063

**Example 2**

A Preset mask = 065

B Preset mask = 018

C Preset mask = 004

D Preset mask = 008

Calculate the Key Buffer for the transaction and the clear mask

**Solution**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 1 | 2 | 4 | 8 | 16 | 32 | 64 | 128 |
| A | B | C | D | B |  | A |  |

A Preset mask = 065= 1+64

B Preset mask = 018= 2+16

C Preset mask = 004

D Preset mask = 008

Key Buffer is ABCDBA

Clear mask = 1+2+4+8+16+64= 95=095

**Question** Calculate the Preset masks and clear mask for these key buffer ACAAAB

**KEY Buffer Depends on the following;**

* Operation Code Buffer
* Institution ID
* Transaction type
* Transaction Behavior

**RESPONSE INFORMATION AND RESPONSE CODE**

AtmApp translates the ATM message into the ISO 8583 message format expected by Transaction Manager. Transaction Manger delivers the transaction to the host (authorizes the transaction against balances maintained by PostCard) and returns a response message to AtmApp. AtmApp examines field 39 of the response from Transaction Manager to determine the outcome of the request. (In the following case, 00 – Approved or completely successful) and matches it in the Response Information table.

On finding a match, it determines the appropriate response action by the mapping response code to response info.

The response information description also tell AtmApp which state to send the ATM to (next state) so that the transaction may be completed as authorized.

{FF}

{ESC}[23m

{ESC}[34m

{SO} 091 = Host Response Info

{SO} 102 = Please Take Your Card

{SI}C@

**Your Response Info Depends on the following;**

* Transaction Behaviors
* Code
* Next state