

ORACLE®

**ORACLE®**

**Accelerator Pack**

**FCUBS 14.4.0.0.0**

**SWITCH INTEGRATION GATEWAY**



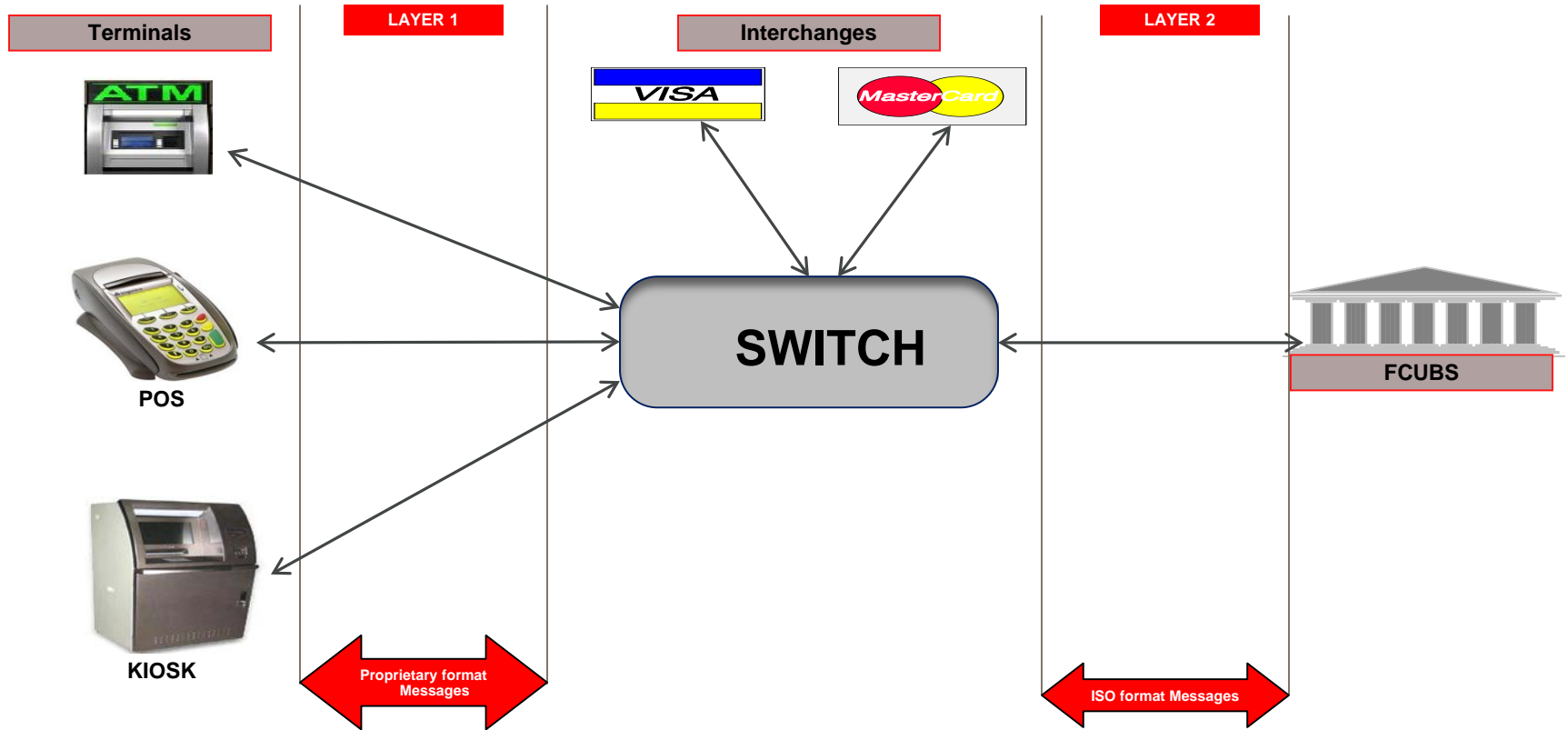
# Contents

- **SWITCH Interface Overview**
- **SWITCH Interface Architecture**
- **SWITCH Interface with FLEXCUBE**
- **Transactions Supported in SWITCH**

# SWITCH Interface Overview

- The Switch Interface gateway overview depicts the pattern in which various switch domain interacts with the FLEXCUBE Application in the switch centric network. .
  - ATMs and POS Terminals are connected and communicates with Switch Software using proprietary Message protocol, the format which is transmitted from ATM to switch interface.
  - Switch software is also connected with Interchanges like VISA and MasterCard to facilitate the transactions across the banks devices to allow more terminals access to the cards.
  - This forwards the transactions to FLEXCUBE switch interface after converting proprietary protocol into ISO8583 protocol message formats.
  - FLEXCUBE UBS Switch Interface process all transactions sent by Switch Software by validating each request against FLEXCUBE UBS Database and posts the transactions into FLEXCUBE System.

# SWITCH Interface Overview – contd...



# SWITCH Software

## Switch software functions in 2 layers,

As shown in the picture, In Layer1,

- Switch software maintains the terminals viz., ATM / POS interchange information.
- Maintains the card number to account number linkages.
- Verifies the PIN and the card status
- Receives card transactions from ATM / POS terminals

# SWITCH Software – contd...

As part of Layer2,

- The switch software Forwards the transactions to Host Banking Systems like FLEXCUBE
- Converts the received proprietary protocol messages from the terminal into ISO8583 protocol.
- Performs “stand-in” authorization incase of Link to application systems is down.
- Refreshes Account balances from Banking Systems .

# Transaction Overview

- Given the parties involved viz., Switch, Interchange and FLEXCUBE the transaction flow is facilitated by ISO 8583 protocol.
- ISO 8583 protocol helps to exchange information between Acquirer & Issuer.

In this scenario, Acquirer, is the bank that has deployed the terminals [ATM/POS] ,with switch software and interchanges connections established.

Issuer, is typically the bank that issues the cards and responds with Approval / Rejection messages to Acquirers.

- The transactions from the Issuer bank perspective could happen in 3 ways and thus it is categorized into ONUS, Remote ONUS and OFF-US.



# Business Overview

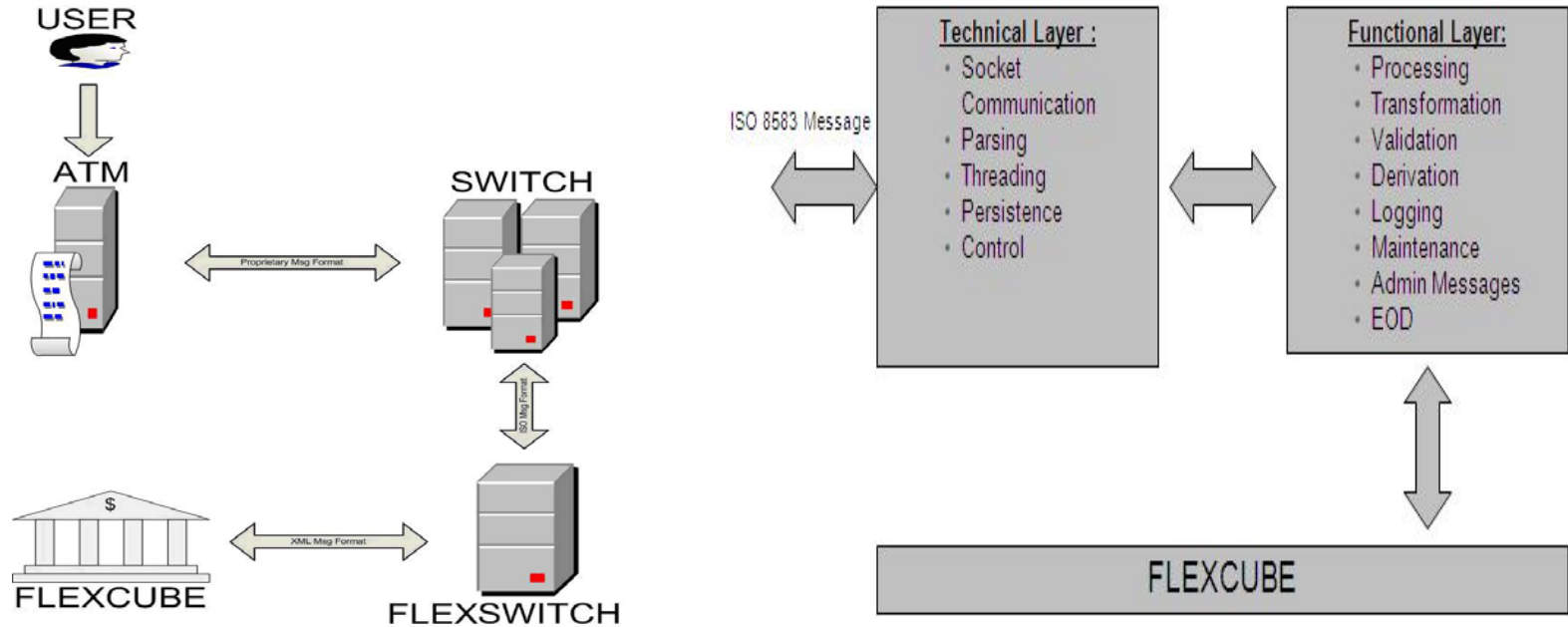
➤ Following are the typical business flow that happens in banks using ISO8583 Protocol as vehicle :-

- The Plastic cards are issued by the “Issuer Banks” referred as "Issuer".
- The Infrastructure is in place to enable the card transactions
- Acquiring devices ( ATM/POS) installed and connected to Switch software
- Interchanges ( VISA/ MasterCard ) connectivity available with Switch software
- Switch software integrated with Issuing bank software (like FLEXCUBE) using ISO8583 message protocol.
- The Plastic cards will be used at Acquiring point devices installed by Banks referred as "Acquirer“

# Business Overview – contd...

- Depending upon the category of the transaction, Switch software will route the transaction either to Issuing bank (FLEXCUBE) i.e. for ONUS or to Interchanges i.e. for remote ON-US and OFF-US.
- Issuing Bank need to respond to the “ISO messages” and provide ISO response to either honor or reject transactions.
- These transactions gets settled with Interchanges or Merchants following next day or later using batch programs
- In some situations, if the communication link goes down between Switch software and Issuer bank, certain Switch has the facility to authorize those transactions These transactions are called as “Stand-in” or STIP or Offline or SAF” transactions.
- SAF transactions are forwarded to Issuer bank once the link is up or processed as batch file upload at Issuer side. For such stand-in purpose, Switch need to get balance refresh regularly from issuing banks.

# SWIFT Interface Architecture



# SWITCH Interface Architecture – contd ...

- The Interface architecture diagram depicts the components that constitutes the technical and the functional layer for Flexcube to successfully interface with switch software.
- Technical layer would be responsible for switch connection and message format handling - catered by ISO 1987/1993/2003 protocol interface.
- The ISO8583 messages sent over the socket can have the length indicator either in ASCII / hex packed length format and also functions in 3 versions iz., ISO8583 - 1987, 1993 and 2003 version.
- The technical layer address to RAS Requirements i.e Reliable, Available and Scalable.
- Functional layer would be responsible for executing functionalities at Flexcube - i.e to switch transactions authorisation and posting into Flexcube.

# Technical approach

- Switch Interface process is subdivided in to two:
  - Communication between SWITCH and Switch Interface - Configuration 1 & Configuration 2
  - Communication between Switch Interface and FLEXCUBE

## Configuration 1:

- Communication between SWITCH and interface is through sockets
- SWITCH is client and Interface is server
- The configurable parameters will be maintained in a property file.
- When interface is started it reads the '*flexswitch.properties*' file and keeps the information in Global shared memory.
- The Socket server will be started as a POJO.
- It creates the maximum number of threads for Reading, Sending and keeps in the thread pool.[ Reader Thread pool, Sender Thread pool]
- This maximum number of threads are configured in '*flexswitch.properties*'.

# Technical approach – contd...

- Interface accept the connection from SWITCH For each connection one reader thread starts reading the socket. A set of sender threads waits on the Sender Memory Q.
- A thread is taken from Reader Thread pool and start receiving the message from socket (say TC1Read)
- If the No of bytes parameter is 0 then the ISO message is read as one block. Else the corresponding length of string stream is read from the socket
- When a Message comes , TC1Read takes a thread from the Sender Pool (say TC1Send) . TC1Send picks up the oldest message and processes further
- TC1Send picks the message from Sender Memory Q and does file logging.
- TC1Send picks then calls the Converter class.
- TC1Send send the message to Gateway EJB
- After getting the response from Gateway the response message is passed to converter class to get ISO format and then sent to Socket.
- The same thread writes the response back to the socket and then returns to the pool.

# Technical approach – contd...

## Communication between SWITCH and Switch Interface

- Configuration 2 :
  - Communication between SWITCH and interface is through sockets
  - The interface can be configured to call gateway in an asynchronous fashion also.
  - In this mode the TC1Send sends the message to Gateway In MQ.
  - Before sending the message in to MQ TC1Send will set the Client Id in the message ID.
  - Client id is a combination of port number of the connection and the system timestamp, and a random number thus making it unique per connection.
  - A hash map is created with this Client Id as key and Socket Object of this connection as value.
  - Response will be received in the Gateway Out MQ.
  - To write the message back to the socket threads from the Receiver Thread Pool will have to be used. This Receiver Thread Pool will be initialized on start up.
  - Receiving thread (TC1Receive) polls the response from GW out MQ (FIFO method).
  - The response message is passed to converter class to get ISO format. It identifies the Client Id of the message from the correlation ID and using the hash map obtains the socket object and writes the response back to this object and then continues to poll the Output MQ.

# Technical approach – contd...

## Communication between Switch Interface and FLEXCUBE

- Communication between Switch Interface and gateway is using the Gateway EJB/MDB that is exposed to the outside world for communication. GW will operate with its own transaction control. Any failure after receiving a response from GW will be handled as a timeout.

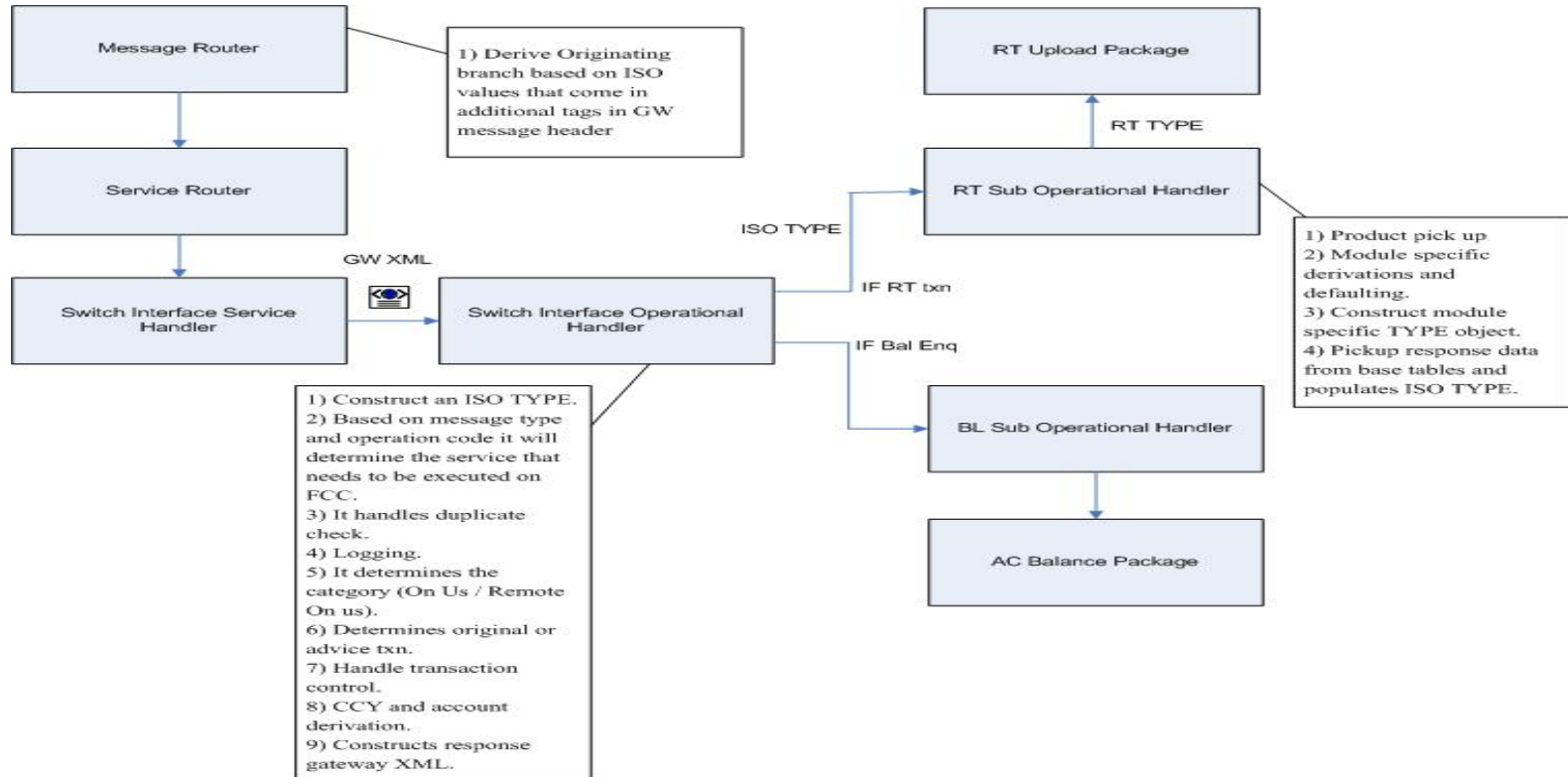


# Technical approach – contd...

## Switch Interface responsibilities

- Accept the socket connection/s from SWITCH
- Read the ISO message from socket
- Write the ISO message into a Memory Queue
- Read the ISO message from Queue and convert it into GW XML
- Send the request XML message to Gateway
- Accept the gateway response XML
- Convert gateway response XML to ISO response message
- Send the ISO response back to SWITCH through socket

# Functional Approach



# Functional Approach – contd...

- The source will be FLEXSWITCH.
- The originating branch is derived in the messaging schema using the Issuer BIN and Acquirer BIN. These two values are received in the additional parameters tag in the header. The originating branch is used as the BRANCH tag in the header.
- The service, operation received will be FCUBSSwitchService, SwitchTransaction.
- A new gateway service handler for FCUBSSwitchService will be created.
- This new service will have a XSD. The XSD will have all the ISO fields as individual tags.
- There will be an operation handler (switch interface operation handler) that will parse the incoming GW XML and construct an ISO TYPE object . Depending on the ISO version the fields from the GW XML will be mapped to fields in the ISO TYPE. The ISO version will be defined in Switch Integration Parameter table. Based on message class and operation code it will determine the service that needs to be executed on FLEXCUBE and calls the corresponding package (explained in the next point). It handles duplicate check (by logging into a table). It determines the category (On Us / Remote On us).

## Functional Approach – contd...

- For each service that will be used by ATM/POS the corresponding operation handler will be duplicated and tailored to meet the ATM/POS requirements
- The response message class is determined in the switch interface operation handler. Using the ISO TYPE that it receives it builds the response XML.
- Product maintenance and upload package will be enhanced to meet new requirements

# Customer Specific Maintenance

➤ User needs to Follow the Following set of Maintenance

- Customer Account Creation
- Card Customer
- Card Account Maintenance

# Customer Specific Maintenance – contd ...

## Customer Account Creation

- Create Customer Account for ATM/IVR and POS Operations
- The Checkbox “ATM” under ‘Preference’ tab should be Checked along with ATM Account number.

The screenshot displays the 'Customer Accounts Maintenance' window with the 'ATM Details' section highlighted. The window is divided into several tabs: Positive Pay, Provisioning Details, Escrow Transfer Details, Options, ATM Details, Sweep Required, and Account Facilities. The 'ATM Details' section is currently active, showing fields for Branch, ATM Account Number, and Daily Amount Limit. The 'ATM' checkbox is checked. The 'Account Facilities' section shows 'Cheque Book', 'Passbook', and 'CAS Account' checkboxes, with 'Passbook' checked. The 'Sweep Required' section shows 'Sweep In' and 'Sweep Out' checkboxes, with 'Sweep In' checked. The 'Options' section shows various checkboxes for cheque book preferences and reconciliation. The 'Provisioning Details' section shows 'Auto Provisioning Required' checked and 'Provisioning Currency' set to 'Local'. The 'Escrow Transfer Details' section shows 'Escrow Transfer Applicable' checked. The 'Positive Pay' section shows 'Positive Pay', 'Funding', and 'Mod 9 Validation Required' checkboxes, with 'Positive Pay' checked. The 'Cheque Book Preferences' section shows 'Auto Reorder of Cheque Book' checked. The 'Reorder Cheque Level' is set to 'Reorder No. of Leaves'. The 'Cheque Book Name 1' is 'MATHEW'. The 'Max No of Cheque Rejections' is '1'. The 'Date Time' is '2008-03-31 17:56:22'. The 'Mod No' is '1'. The 'Record Status' is 'Open'. The 'Authorization Status' is 'Authorized'. The 'Exit' button is visible in the bottom right corner.

Interest	Charges	Consolidated Charges	BIC	Instructions	Standing Instructions	Linked Entities	Reg	Account Status	Restrictions	Currency Limits	MIS
Statement	Limits	Joint Holders	Fields	Deposits Instruction	Billing Parameters	Account Signatory	Interim Transactions Report	Notice	Cards	Statistics	
Cheque Book Request	Debit Card Request	Deposit Linkage	Change Log								

Maker: 31582A02  
Checker: WASIM05  
Date Time: 2008-03-31 17:50:57  
Date Time: 2008-03-31 17:56:22  
Mod No: 1  
Record Status: Open  
Authorization Status: Authorized

# Customer Specific Maintenance – contd ...

- Card Customer**

- Create Card Customer . User needs to create a Card Customer which is identified as a Customer who are Eligible to have cards.

The screenshot shows a software window titled "Card Customer Maintenance". Inside, under the "Customer Details" section, there are three fields: "Branch Code" with the value "A01", "Customer Id" with the value "A01000054" (marked with a red asterisk), and "Customer Name" with the value "MATHEW". At the bottom of the window, there is a status bar with two tabs: "Fields" and "Cards". The "Cards" tab is active, showing a table with columns: "Input By", "Authorized By", "Modification Number", and two checkboxes. The data in the table is: "Input By" WASIM05, "Authorized By" WASIM05, "Modification Number" 1, and checkboxes for "Authorized" and "Open" both checked. There is also a timestamp "Date Time 2008-03-31 17:59:45" repeated under the first two columns. An "Exit" button is located on the far right of the status bar.

Input By	Authorized By	Modification Number	Authorized	Open
WASIM05	WASIM05	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Customer Specific Maintenance – contd ...

## Card Account Maintenance

- Create Card Account for a Customer . User needs to select the type of Card for the 'Card Customer' which is Mapped to a Customer Account

The screenshot shows a window titled "Card Accounts Detail" with the following fields and values:

- Branch Code \* A01
- Customer Id \* A01000054
- Customer Account Number \* A0100005401
- Debit/Credit Indicator: ☒ Debit, ☐ Credit

At the bottom, there is a status bar with the following information:

- Input By: WASIM05
- Authorized By: WASIM05
- Modification Number: 1
- Date Time: 2008-03-31 18:00:00
- Authorized: ☒
- Open: ☒
- Exit button



# Bank Specific Maintenance

➤ Bank Specific Maintenance can be Divided into two parts :-

- General Maintenance
- Card Specific Maintenance

# Bank Specific Maintenance – contd ...

## General Maintenance

➤ **User needs to follow the following set of Maintenance:-**

- **Country Maintenance**
- **Currency Maintenance**
- **Inter-Branch Parameter maintenance**

# Bank Specific Maintenance – contd ...

## Country Maintenance

- User needs to Maintain Country as currency needs to be maintained for Bank which in turn needs to be Linked with the Country

The screenshot shows a software window titled "Country Code Maintenance". It contains several input fields and checkboxes. The "Country Code" field is marked with an asterisk and contains "US". The "Country Name" field contains "UNITED STATES". The "ISO Country Code" field contains "US". There are fields for "Limit Currency" and "Overall Limit". A group of checkboxes includes "Blacklisted", "EU Member", "Generate 205" (which is checked), "IBAN Check Required", and "Clearing Code in BIC+". There is also a "Clearing Network" field. At the bottom, there is a "Fields" tab and a status bar with fields for "Input By", "Authorized By", "Modification Number", and checkboxes for "Authorized" and "Open". An "Exit" button is located in the bottom right corner.

Country Code *	US	Alternate Country Code	
Country Name	UNITED STATES	ISO Country Code	US
Limit Currency		Overall Limit	
<input type="checkbox"/> Blacklisted		<input type="checkbox"/> IBAN Check Required	
<input type="checkbox"/> EU Member		<input type="checkbox"/> Clearing Code in BIC+	
<input checked="" type="checkbox"/> Generate 205			
Clearing Network			

Fields

Input By	A31597M01	Authorized By	A31597M01	Modification Number	1	<input checked="" type="checkbox"/> Authorized	
Date Time	2007-11-27 11:31:06	Date Time	2007-11-27 13:31:57			<input checked="" type="checkbox"/> Open	

# Bank Specific Maintenance – contd ...

## Currency Maintenance

- User needs to Maintain Currency along with ISO Numeric Code .

The screenshot displays the 'Currency Definition' window in Oracle. The 'Currency Code' is set to 'USD' and the 'Currency Name' is 'US Dollar'. The 'ISO Numeric Currency Code' is '292'. The 'Country' is 'US' and the 'Position General Ledger' is '800000008'. The 'Decimals' are '2' and the 'Interest Method' is 'Actual/365'. The 'Spot Days' are '2', 'Foreign Exchange Netting Days' are '1', and 'Settlement Message Days' are '2'. The 'Cutoff Time' is set to '23' hours and '59' minutes. The 'Rounding' rule is 'Round Near' with a unit of '.01'. The 'Currency Format Mask' is '99,999,999,999'. The 'Euro Type' is 'Out Currency'. The 'Generate MT 103+' and 'CLS Currency' checkboxes are checked. The 'Index Flag', 'Euro Conversion Required', 'New Cover format Required', and 'Validate Tag 50F' checkboxes are unchecked. The 'Authorized' checkbox is checked, and the 'Open' checkbox is unchecked. The 'Exit' button is visible in the bottom right corner.

Field	Value
Currency Code	USD
Currency Name	US Dollar
Currency Type	
ISO Numeric Currency Code	292
Country	US
Position General Ledger	800000008
Decimals	2
Interest Method	Actual/365
Spot Days	2
Foreign Exchange Netting Days	1
Settlement Message Days	2
Cutoff Time (Days)	
Cutoff Time (Hour)	23
Cutoff Time (Minute)	59
Generate MT 103+	<input checked="" type="checkbox"/>
CLS Currency	<input checked="" type="checkbox"/>
Index Flag	<input type="checkbox"/>
Euro Conversion Required	<input type="checkbox"/>
New Cover format Required	<input type="checkbox"/>
Validate Tag 50F	<input type="checkbox"/>
Rounding Rule	Round Near
Rounding Unit	.01
Currency Format Mask	99,999,999,999
Euro Type	Out Currency
Authorized	<input checked="" type="checkbox"/>
Open	<input type="checkbox"/>

# Bank Specific Maintenance – contd ...

- Inter-Branch Parameter maintenance**

- User needs to Maintain 'Inter-Branch Parameter'. The inter-branch parameter is maintained for ATM/IVR and POS transactions between Head office and a Branch.

**Inter Branch Parameters Maintenance**

Branch 1 \* 000  
Description Bank Futura  
Branch 2 \* A01  
Description Bank Futura -Branch A01

**General Ledger**

Accounts A01  
Due To Branch 2 \* 267000101  
Description Due to A01 Branch from 000 Branch  
Due From Branch 2 \* 173000101  
Description Due from A01 Branch to 000 Branch  
Inter Branch Currency \* Account Currency

**General Ledger**

Accounts 000  
Due To Branch 1 \* 267000102  
Description Due to 000 Branch from A01 Branch  
Due From Branch 1 \* 173000102  
Description Due from 000 Branch to A01 Branch  
Inter Branch Currency \* Account Currency

**LBL\_CTN\_GL**

Due To Branch 2 \* 131120101  
Description Dues to A01 -  
Due From Branch 2 \* 131120102  
Description Dues From A01 -

**LBL\_CTN\_GL**

Due To Branch 1 \* 131120201  
Description Dues to 000 -  
Due From Branch 1 \* 131120202  
Description Dues From 000 -

**MIS Group**

Due to Branch 2  
Description  
Due from Branch 2  
Description

**MIS Group**

Due to Branch 1  
Description  
Due from Branch 1  
Description

**Fields**

Input By 31582A02 Authorized By 31582A01 Modification Number 1  
Date Time 2008-03-31 12:47:39 Date Time 2008-03-31 12:48:41  
☒ Authorized  
☒ Open

**Exit**

# Bank Specific Maintenance – contd ...

## Card Maintenance

- User needs to follow the following set of Maintenance : -
  - Card Status
  - Card Bin
  - Card Type
  - Card Product
  - Card Master Maintenance

# Bank Specific Maintenance – contd ...

- **Card Status**
- User needs to maintain Card Statuses . Status can be 'Issued' , 'Activated' , 'Blocked' etc.

The screenshot shows a software window titled "Card Status". Inside the window, there are two labeled text input fields: "Card Status" with the value "T" and "Description" with the value "Activated". The "Card Status" field has a red asterisk next to it, indicating it is a required field. At the bottom of the window, there is a "Fields" section containing a table of metadata. The table has four columns: "Input By", "Authorized By", "Modification Number", and a column for checkboxes. The values are: Input By A31605A02, Authorized By A29472M77, Modification Number 1, and checkboxes for "Authorized" and "Open" which are both checked. There is also an "Exit" button in the bottom right corner.

Input By	Authorized By	Modification Number	Authorized	Open
A31605A02	A29472M77	1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

# Bank Specific Maintenance – contd ...

- **Card BIN Maintenance**
- User needs to Maintain Card BIN
  - . Card BIN hold important details like “ATM count limit” . “POS Amount limit” etc

**Card BIN Maintenance**

Card BIN \* EUROCCDS  
Description Euro Cards  
Bank Institution Id EBUI1234

Default Renewal Unit Year  
Default Renewal Cycle 3

**ATM Limit**

ATM Limit Unit Day  
ATM Count Limit 10  
ATM Amount Limit 40000  
Remote ATM Limit Unit Day  
Remote ATM Count Limit 5  
Remote ATM Amount Limit 20000

**POS Limit**

POS Limit Unit Day  
POS Count Limit 10  
POS Amount Limit 40000  
Remote POS Limit Unit Day  
Remote POS Count Limit 5  
Remote POS Amount Limit 20000

**Fields**

Input By A31605A02  
Date Time 2008-03-31 17:35:50

Authorized By A29472M77  
Date Time 2008-03-31 17:39:41

Modification Number 1  
☒ Authorized  
☒ Open

**Exit**



# Bank Specific Maintenance – contd ...

- **Card Type Maintenance**

- User needs to Maintain Card Types . Card types denotes the types of cards that the bank can provide its Customers , Card types can be unique from one another. The uniqueness is provided in its characteristics like “ATM withdrawal amount” , “No. of POS transactions” etc which are provided in Card BIN , to which the Card type is linked

The screenshot shows the 'Card Type Maintenance' window. At the top, there are fields for 'Card Type \*' with the value 'EUROCARD' and 'Description' with the value 'EURO CARDS'. Below this is a section titled 'BIN Details' which contains a table with two rows: 'Card BIN \*' and 'EUROCCDS'. The 'Card BIN \*' row is highlighted. At the bottom of the window, there is a 'Fields' section with a table containing the following information:

Input By	Authorized By	Modification Number	1	Authorized
A31605A02	A29472M77			<input checked="" type="checkbox"/>
Date Time 2008-03-31 17:39:53	Date Time 2008-03-31 17:40:55			<input checked="" type="checkbox"/> Open

An 'Exit' button is located in the bottom right corner of the window.

# Bank Specific Maintenance – contd ...

- **Card Product Maintenance**
- User needs to Maintain Card Products .

◆ Debit Card Product Maintenance

Card Product \* VISA  
Description \* Visa debit card  
Card Type \* VISA  
Card BIN \_\_\_\_\_  
Expiry Date 2009-03-31  
Debit/Credit Card ☒ Debit Card ☐ Credit Card

GL Account \_\_\_\_\_  
GL Account \_\_\_\_\_ Transaction code \_\_\_\_\_

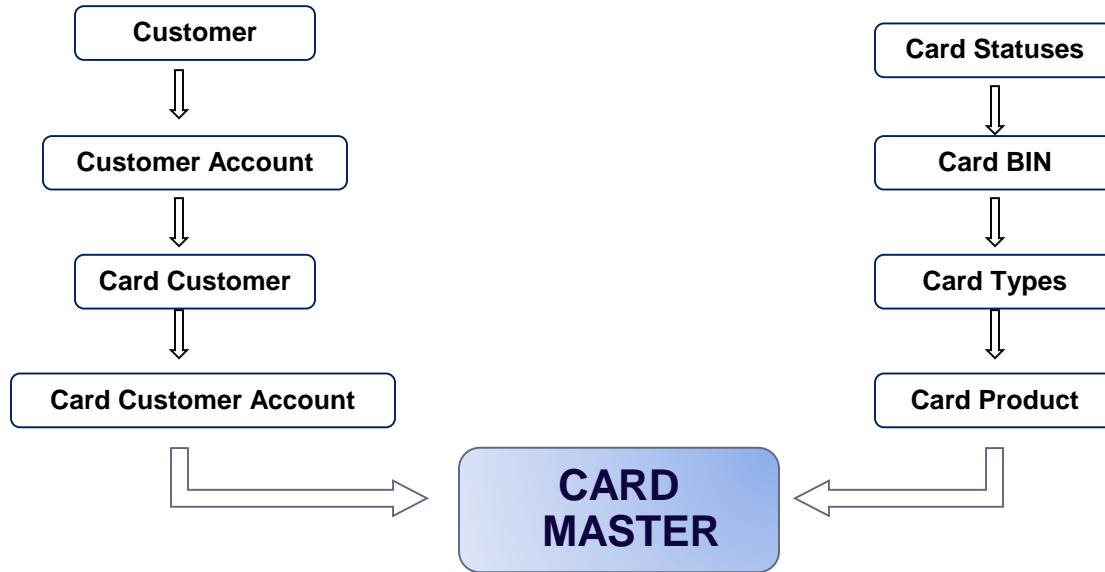
Excess Payment GL \_\_\_\_\_  
Excess Debit GL Acc \_\_\_\_\_ Debit Transaction Code \_\_\_\_\_  
Excess Credit GL Acc \_\_\_\_\_ Credit Transaction Code \_\_\_\_\_  
Card Agreement \* 1 year Validity External Product Ref No \_\_\_\_\_

Fields

Maker WASIM05	Date Time:	Mod No 1
Checker WASIM05	2008-03-31 17:59:02	Record Status Open
	Date Time:	Authorization Status Authorized
	2008-03-31 17:59:02	

Exit

# Linkage Between Card specific Maintenance and Customer Maintenance



# Bank Specific Maintenance – Card Maintenance

- **Card Master Maintenance**
- User needs to Maintain Card Master Maintenance . Using this maintenance the Customer Account along with the customer is Linked with the Card and Card Specific maintenance. User needs to Select “Card Status” as “Activated”

The screenshot displays the 'Card Master Maintenance' form, which is organized into several sections for data entry:

- Card Master:** Contains fields for Branch Code (A01), Request Reference Number (A01VISA080910001), Customer No (A01000054), Account No (A0100005401), Card products (VISA), and Card BIN (EUROCCDS).
- Customer:** Includes fields for Name On Card (MATHEW BELL), Owner ID Number, Additional Holder ID Number, Owner ID Type, Additional Holder ID Type, Hold Bill Indicator, Recovery Account, Additional Holder Date Of Birth, and Additional Holder Relation.
- Card:** Includes fields for Card Number (5555111122229090), Card Sequence Number (001), Card Application Date (2008-03-31), Card Issued Date, Card Renewal Date, Card Expiry Date, Activation Date, Issuer, Plastic Type, Credit Card Limit, and Primary Card No. There is a checkbox for 'Primary Card' which is checked.
- Status:** Includes fields for Dispatch Status (No), Pin Mailed Status (No), Last Status Updated (2008-03-31), Last Operation, Card Status (T), Delivery Channel For Card, Delivery Channel For Pin, and Dr/Cr Indicator (Dr).
- Renewal:** Includes Remarks, Renewal Unit (Year), Renewal Cycle (3), and Bill Cycle.
- ATM:** Includes fields for ATM Limit Unit (Daily), ATM Count Limit (10), ATM Amount Limit (40000), Remote ATM Count Limit (5), and Remote ATM Amount (20000).
- POS:** Includes fields for POS Limit Unit (Daily), POS Count Limit (10), POS Amount Limit (40000), Remote POS Limit Unit (Daily), and Remote POS Count Limit (5).

At the bottom of the form, there is a 'Fields' section with the following information:

- Maker: WASIM05, Date Time: 2008-03-31 18:02:02
- Checker: 31582A02, Date Time: 2008-03-31 18:03:21
- Mod No: 1, Record Status: Open, Authorization Status: Authorized

An 'Exit' button is located in the bottom right corner.

# Liability Maintenance

- Every customer of bank who enjoys credit facilities should be assigned or linked to a Liability Code category. Several customers can be linked to the same Liability Code. Liability linkage can be in two ways.
- Single Liability linked to multiple customers (i.e. a Customer Group)
- Single Liability linked to only one customer

# User Defined Status

- Path : Limits and Collaterals-> Operations -> Liability Input
- Fast Path : GEDMLIAB

The screenshot displays the 'Liability Maintenance' window in Oracle. The window has a menu bar with options: New, Copy, Close, Unlock, Print, and Enter Query. The main area contains several input fields with the following values:

Field	Value
Liability Number *	CLARK
Liability Name *	CLARK
Main Liability Number	
Branch *	000
Liability Currency *	GBP
Overall Limit	9,999.00
Utilized Amount	4,948,011.00
Category	
Revision Date	
Credit Rating	
Overall Score	0.00
User Defined Status	
Liability Clean Risk Limit	
Security Clean Risk Limit	
Security Pre Settlement Risk Limit	
Unadvised	<input type="checkbox"/>
Netting Required	<input type="checkbox"/>

At the bottom, there is a table with three columns: Score, Credit Rating, and Fields. The table contains one row with the following data:

Score	Credit Rating	Fields
Input ByFCUBS1	Authorized ByFCUBS1	Modification Number 1

Below the table, there are two date-time fields: 'Date Time2008-03-31 15:35:34' and 'Date Time2008-03-31 15:35:34'. To the right of these fields are two checkboxes: 'Authorized' (checked) and 'Open' (checked). An 'Exit' button is located at the bottom right of the window.

# Interface Specific Maintenance

Configurable in Interface(flexswitch.properties)

- Port numbers which is exposed to SWITCH (ATM and POS)
- Connecting POS and ATMs in same or different ports
- Bitmap type (ASCII/Binary) configurable.
- Maximum number of connections from SWITCH
- Maximum number of threads or reading from socket
- Maximum number of threads for calling gateway service.
- Logging required for debug and socket message.
- Log file path and file names
- ISO Version for the purpose of picking up the corresponding config file.
- RMI information for calling FLEXCUBE Gateway
- Head office branch code
- User id of interface to communicate to FLEXCUBE
- No of bytes that indicate length

# Interface Specific Maintenance – contd...

➤ User needs to follow the following set of Maintenance : -

- Upload Source Maintenance
- External System Maintenance
- External System Function Maintenance
- Upload Source Preferences maintenances
- User Maintenance
- Retail Teller Product Maintenance
- ARC Maintenance
- ATM/Debit Card FCC Account Mapping
- Network Details
- Terminal Details
- Product Type Maintenance
- Process Code Mapping



# Interface Specific Maintenance – contd ...

## ■ Upload Source Maintenance

- User needs to Maintain External Source as “FLEXSWITCH” which is External system for ATM and POS transaction.

Upload Source Maintenance

Source Code \* FLEXSWITCH

Description SWITCH Gateway

☒ Base Data From FLEXCUBE

☐ System Authorization Required

Fields

Input By 31582A02      Authorized By 31582A01      Modification Number 2      ☒ Authorized

Date Time 2008-03-31 14:59:41      Date Time 2008-03-31 15:00:31      ☒ Open      Exit

# Interface Specific Maintenance – contd ...

## ■ External System Maintenance

- User needs to Maintain External System as “FLEXSWITCH” which is External system for ATM and POS transaction.
- User must provide Queues (Default Response queue , Dead letter Queue , In Queue , Response Queue) in accordance to the Schema Setup

**External System Maintenance**

External System \* FLEXSWITCH Correlation Pattern Request Correlation Id

Description SWITCH USER

Request Message Input Only Queue

Response Message Full Screen Default Response Queue MDB\_QUEUE\_RESPONS

☐ XSD Validation Required ☒ Register Response Queue Message Id

Dead Letter Queue MDB\_QUEUE\_DLQ

External System Queues

In Queue *	Response Queue
<input type="checkbox"/> <u>MDB_QUEUE</u>	<u>MDB_QUEUE_RESPONS</u>

Fields **FTP Parameters**

Input By 31582A02 Authorized By 31582A01 Modification Number 3 ☒ Authorized ☒ Open **Exit**

Date Time 2008-03-31 17:24:46 Date Time 2008-03-31 17:38:39

# Interface Specific Maintenance – contd ...

## ■ External System Function Maintenance

- User needs to Maintain External System Function as “FLEXSWITCH.
- User must External System to ‘Service Name’ named ‘FCUBSSwitchService’ and ‘Function’ named ‘GWDEXFUN’.

The screenshot shows a window titled "External System Functions" with a blue header bar. The window contains several input fields for maintaining an external system function. The fields are arranged in two columns. The left column contains: "External System \* FLEXSWITCH", "Function \* DEGSWTXN", "Action \* NEW", "Service Name FCUBSSwitchService", and "Operation Code SwitchTransaction". The right column contains: "Description SWITCH USER". At the bottom of the window, there is a "Fields" tab and a status bar. The status bar displays: "Input By A31650A01", "Authorized By A31605A01", "Date Time 2007-11-27 20:39:19", "Date Time 2007-11-27 20:40:03", "Modification Number 1", and two checkboxes labeled "Authorized" and "Open", both of which are checked. An "Exit" button is located in the bottom right corner.

External System *	FLEXSWITCH	Description	SWITCH USER
Function *	DEGSWTXN		
Action *	NEW		
Service Name	FCUBSSwitchService		
Operation Code	SwitchTransaction		

Fields

Input By A31650A01      Authorized By A31605A01      Modification Number 1      ☒ Authorized      ☒ Open     

Date Time 2007-11-27 20:39:19      Date Time 2007-11-27 20:40:03

# Interface Specific Maintenance – contd ...

## ■ Upload Source Preferences maintenances

- User needs to Maintain Upload Source Preferences as “FLEXSWITCH”.
- With the help of the upload source preferences maintenances screen map the External system with the module ‘Switch’.

Upload Source Preferences Maintenance

Source Code \* FLEXSWITCH

Module Code \* SW

Error Handling

On Override \* Ignore

On Exception \* Reject

Post Upload

Status \* Authorized

Purge Days(Calendar)

☐ Allow Deferred Processing

☐ Allow EOD with Deferred

☐ Allow Delete

Fields

Input By WASIM05

Authorized By 31582A02

Modification Number 3

Date Time 2008-03-31 17:34:15

Date Time 2008-03-31 17:35:10

☒ Authorized

☒ Open

Exit

# Interface Specific Maintenance – contd ...

## ■ User Maintenance

- User needs to Maintain User as “FLEXSWITCH.
- The User need to have ‘Auto Authorize’ facility.

**User Maintenance**

**User Details**

User Identification \* FLEXSWITCH  
Name \* FLEXSWITCH  
User Reference  
Language \* ENG  
Home Branch \* 000  
Customer No  
Department Code  
Department Description  
Tax Identifier  
LDAP DN  
Time Level \* 9  
Amount Format  
Date Format  
☒ Auto Authorization  
Validate

**User Password**

Password .....  
Password Changed On 2011-09-30  
Email

**Invalid Logins**

**User Status** ☒ Enabled  
☐ Hold  
☐ Disabled  
☐ Locked

**Classification** ☒ Staff  
☐ Branch

Status Changed On  
Last Signed On

☐ Staff Customer Restriction Required

ELCM User ID ☐ Multi Branch Access

Start Date \* 2007-01-01  
End Date

**Maker/Checker and Date/Time**

Maker	Checker	Date/Time
32601T15	32601T15	2011-09-30 12:08:03
		2011-09-30 12:08:04

Mod No 1  
Record Status Open  
Authorization Status Authorized

Exit

# Interface Specific Maintenance – contd ...

## ■ Retail Teller Product Maintenance

- User needs to Maintain 'Retail Teller Product'. This must be maintained for maintained for each and every type of transactions such as Cash withdrawal, Cash deposit, POS transaction, Balance enquiry, Mini statement etc,
- In the “Preferences” tab of the “Retail Teller Product Maintenance” it is necessary to check the box ‘Switch product’, so that the product can be fetched in the “Switch Product” mapping screen

**Retail Teller Product Maintenance**

Product Code \* ACWD  
Product Description \* Atm Cash withdrawl  
Report Module RT  
Retail Teller  
Product Type \* OT  
Description Others  
Slogan Atm Cash Withdrawl  
Product Group \* ATM  
Product Group Description ATM related Maintenance  
Start Date \* 2008-03-31  
End Date  
Remarks

Exchange Rate Variance (%)  
Override Limit \* 3  
Stop Limit \* 100  
Rate Code \* Mid Rate  
Rate Type Preferred \* CASH

Preferences MIS UDF Branch/Currency Restriction

Maker 31582A01 Date Time: 2008-03-31 14:34:23 Mod No 1  
Checker 31582A02 Date Time: 2008-03-31 16:30:45 Record Status Open  
Authorization Status Authorized

**Preferences**

Product Code \* ACWD  
Product Description Atm Cash withdrawl  
Transaction Limit \* 40,000.00  
Block Expiry Days

☐ RD payments allowed  
☐ Cash GL Posting Allowed  
☐ Track Receivable  
☐ Reversal Includes Charges  
☐ Partial Reversal Allowed  
☒ Switch Product  
☐ Retail Lending Product  
☐ PC Transaction

# Interface Specific Maintenance – contd ...

## ■ ARC Maintenance

- User needs to Maintain 'ARC'. This must be maintained for each and every type of transactions such as 'Cash withdrawal', 'Cash deposit', 'POS transaction', 'Balance enquiry', 'Mini statement' etc . This maintenance is used to collect charges for a particular set of ATM operations like "Balance Enquiry" charges etc.
- *Description* as "TXN\_FEE" and "TXN\_PROCESS\_FEE" must be maintained under "Charge1" and "Charge2" tab respectively.

The screenshot displays the 'ARC Maintenance' window with the following sections:

- Branch:** ALL BRANCH
- Account Class/Product:** ACWD
- Description:** Atm Cash withdrawal
- Transaction Type:** ANY TYPE
- Currency:** USD
- IB Transaction:** No
- Account Class/Product:** Account Class, Product Type, Calendar, Working
- Float Days Basis:** Calendar, Working
- Customer Group:** \*\*
- Offset Details:** Branch \*\*, Account 171300005, Account Description ATM Switch
- Transaction Details:** Branch, Account, Account Description
- Transaction Code:** Offset Transaction Code CHW, Main Transaction Code CHW, Liquidation Product for Demand Draft, Netting Charges, Main Offset Accounting Entries Required
- Main Leg for the transaction:** Transaction Leg, Generate Transaction Advice, End Point, Bank Float Days, Description, Customer Float Days, Debit Account, Charge From Account, Management Information System, Generate MT101
- Exchange Rate Revaluation:** Profit Revaluation GL, Loss Revaluation GL
- Charge 1:** Basis, Charge Account 313500005, Account Description ATM Balance Inquiry, Transaction Code CHW, Charge Type Flat Rate, Currency GBP, Rate Code STANDARD, Netting, Slab Type None, Their Charge
- Charge 2:** Rate, Minimum Charge, Maximum Charge, Rate Type, Amount, Description TXN\_PROCESS\_FEE, MIS Head, Interest Basis, Delete
- Fields:** Maker WASIM05, Checker WASIM05, Date Time: 2008-03-31 15:16:57, Date Time: 2008-03-31 15:16:58
- Regulation:** Mod No 3, Record Status Open, Authorization Status Authorized, Exit

# Interface Specific Maintenance – contd ...

## ■ ATM/Debit Card FCC Account Mapping

- User needs to Maintain 'ATM/Debit Card FCC Account Mapping' in order to map "ATM/Debit Card number", "Card Account Number" and "Customer Account Number".

The screenshot shows a software window titled "ATM/Debit Card FCC Account Mapping". It contains several input fields with red asterisks indicating required fields. The fields are filled with the following values: ATM/Debit Card Number (5555111122229090), Card Account Number (9990010000540), Branch (A01), and Account Number (A0100005401). At the bottom of the window, there is a status bar with the following information: Input By (31582A02), Authorized By (WASIM05), Modification Number (1), Date Time (2008-03-31 18:11:52), and Date Time (2008-03-31 18:47:31). There are also two checkboxes, "Authorized" and "Open", both of which are checked. An "Exit" button is located in the bottom right corner.

ATM/Debit Card Number *	5555111122229090
Card Account Number	9990010000540
Branch *	A01
Account Number *	A0100005401

Input By	31582A02	Authorized By	WASIM05	Modification Number	1	<input checked="" type="checkbox"/> Authorized	<input type="button" value="Exit"/>
Date Time	2008-03-31 18:11:52	Date Time	2008-03-31 18:47:31			<input checked="" type="checkbox"/> Open	



# Interface Specific Maintenance – contd ...

## ■ Network Details

- User needs to Maintain 'Network Details' in order to map "Issuer" and "Acquirer" with their BIN. This is required as ATM/POS transaction interacts with Networks with the help of this BIN

The screenshot shows a web-based application window titled "Network Details". It contains several input fields and two data tables.

**Input Fields:**

- Network Id \* VISA
- Description VISA CARD NETWORKS
- Account Number \* 171300005
- Account Branch

**Acquirer Details Table:**

<input type="checkbox"/> Acquirer BIN *	Acquirer Description
<input type="checkbox"/> 555511	Bin for ON us
<input type="checkbox"/> 115555	Bin of Remote on US

**Issuer Details Table:**

<input type="checkbox"/> Issuer BIN *	Issuer Description
<input type="checkbox"/> 555511	Bin for ON us

**Footer Information:**

- Input By WASIM05
- Authorized By WASIM05
- Date Time 2008-03-31 11:26:21
- Modification Number 3
- ☒ Authorized
- ☒ Open
- Exit button

# Interface Specific Maintenance – contd ...

## ■ Terminal Details

- User needs to Maintain 'Terminal Details'. The term 'Terminal' is used to refers to an external entity from which a Switch Transactions either originates or Terminates. Typically , a Terminal is a ATM Dispenser machine or a POS equipment in a Super Market .
- The checkbox "Intelligent deposit" is checked if the Terminal can accept Cash Deposit.

Terminal Details

Terminal ID \* ATMCVR  
Channel ATM  
Originating Branch \* A01  
Cash General Ledger Number 111200001  
Merchant ID  
Terminal Address  
☐ Intelligent Deposit

Maker WASIM05 Date Time: 2008-03-31 11:29:47  
Checker WASIM05 Date Time: 2008-03-31 11:29:47  
Mod No 1  
Record Status Open  
Authorization Status Authorized

Exit

## ■ Product Type Maintenance

- 
- Product Type Maintenance
- FLEXCUBE Literal \* CAW
- Category \* On Us
- Customer Category \* ALL
- Network \* VISA
- Acquirer Country \* GB
- Channel \* ATM
- Product Code \* ACWD
- Input By WASIM05      Authorized By WASIM05      Modification Number 3      ☒ Authorized
- Date Time 2008-03-31 19:06:18      Date Time 2008-03-31 19:06:18      ☒ Open      **Exit**

# Interface Specific Maintenance – contd ...

## Process Code Mapping

- The Process code must have to be mapped with the respective channels with the help of the Process code mapping screen.
- The following are the FLEXCUBE Literals :-
  - 31 – Balance Enquiry
  - 21 - Cash Deposit
  - 01 - Cash Withdrawal
  - 38 - Mini Statement generation
  - 00 - Normal Purchase(POS)
  - 91 - Cheque Book Request
  - 40 - Funds Transfer
  - 77 - Merchant File Settlement

# Interface Specific Maintenance – contd ...

- Process Code Mapping – contd...

**Process Code Mapping**

**Details**

Process Code Type \* 01  
FLEXCUBE Literal \* CAW  
External Transaction Code 07  
Description CASH WITHDRAWAL

**Channel Details**

Channel

<input type="checkbox"/>	Channel
<input checked="" type="checkbox"/>	ALL
<input type="checkbox"/>	ATM
<input type="checkbox"/>	ATM

Maker WASIM05 Date Time: 2008-03-31 14:36:41 Mod No 5  
Checker WASIM05 Date Time: 2008-03-31 14:36:42 Record Status Open  
Authorization Status Authorized

**Authorization Status** A - Authorized U - Unauthorized  
**Record Status** C - Closed O - Open

Exit

# SWITCH Software

Switch software functions in 2 layers,

As shown in the picture, In Layer1,

- Switch software maintains the terminals viz., ATM / POS interchange information.
- Maintains the card number to account number linkages.
- Verifies the PIN and the card status
- Receives card transactions from ATM / POS terminals

As part of Layer2,

- The switch software Forwards the transactions to Host Banking Systems like FLEXCUBE
- Converts the received proprietary protocol messages from the terminal into ISO8583 protocol.
- Performs “stand-in” authorization incase of Link to application systems is down.
- Refreshes Account balances from Banking Systems .

# Transaction Supported in SWITCH

- Transactions supported for ATM/IVR/POS

ATM	IVR	POS
Balance Enquiry	Balance Enquiry	Cash Back
Cheque Book Request	Cheque Book Request	Merchant File Statement
Adhoc Statement Request	Adhoc Statement Request	Merchant settlement
Mini Statement Request	Mini Statement Request	Normal Purchase
Funds Transfer	Funds Transfer	Purchase Adjustment
Cash Withdrawal		
Cash Deposit		

# Hardware and Software

The Oracle logo, consisting of the word "ORACLE" in white, uppercase, sans-serif font, centered within a solid red rectangular background.

ORACLE®

# Engineered to Work Together



ORACLE®