

iBonus™ Loyalty and Prepaid System Manual



Manual For:
iBonus Terminal™ version 4.0
iBonus Server™ version 3.0

Table of Contents

1	IBONUS TERMINAL	5
1.1	Installation.....	5
1.1.1	Connections	5
1.1.2	Power.....	5
1.1.3	POS connector (RS 232 Serial Port).....	5
1.1.4	Receipt Printer	6
1.1.5	Networks	6
1.1.6	Points to Note before Launching iBonus System	6
1.1.7	iBonus Cards	8
1.2	Configuration	11
1.2.1	Date, Time, Branch Code, Terminal Code and Network Settings	11
1.2.2	Date/ Time	11
1.2.3	Branch Code/ Terminal Code.....	11
1.2.4	Network Settings.....	12
1.2.5	Time Zone Settings and Auto Time Synchronization	13
1.2.6	Terminal Mode (Prepaid/ Bonus)	14
1.2.7	Administrator Password	14
1.2.8	Receipt Printing.....	15
1.2.9	Master Card: Read Key and Get Quota	16
1.3	Administration	17
1.3.1	Mode of expiry	17
1.3.2	Initialize Member Card	19
1.3.3	Creating Staff Card	20
1.3.4	Set Customer ID	21
1.3.5	System Reset and shutdown	21
1.3.6	Blacklist Staff Card.....	22
1.3.7	Bonus Rate	22
1.3.8	Deregister Terminal.....	23
1.3.9	Internationalization.....	24
1.3.10	Viewing Access Log.....	24
1.4	Staff Operations.....	24
1.4.1	Operation Map in Bonus Mode	25
1.4.2	Operation Map in Prepaid Mode	26
1.4.3	Staff Login/ Logout.....	26
1.4.4	Check Member Card Status.....	27
1.4.5	Card Purchase	27
1.4.6	Cash Purchase	28
1.4.7	Reload.....	28
1.4.8	Quick Reload	29
1.4.9	Manual Redeem.....	30
1.4.10	Undo Card Purchase.....	30

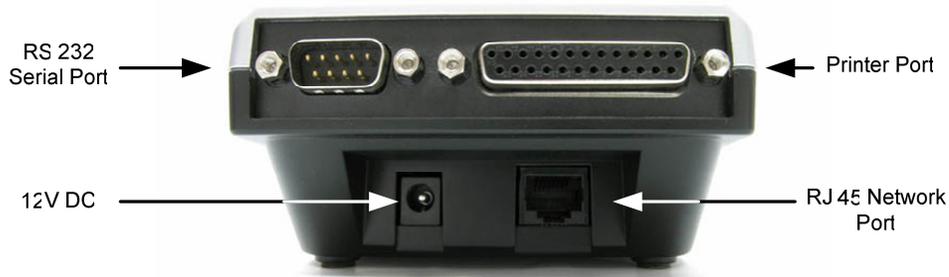
1.4.11	Undo Cash Purchase	31
1.4.12	Undo Reload	32
1.4.13	Undo Manual Redeem	32
1.4.14	Item Purchase	33
1.4.15	Item Redeem	34
1.4.16	Carry Forward	35
1.5	Advanced Staff Operations	36
1.5.1	Renew Member Card	36
1.5.2	Repair Member Card.....	39
1.5.3	Replace Member Card	41
2	IBONUS SERVER	45
2.1	Features	45
2.2	System Requirements	45
2.2.1	Recommended Hardware Requirements	45
2.2.2	Recommended Platform Requirements	45
2.3	Installation	45
2.4	Administration	46
2.4.1	Starting.....	46
2.4.2	Setting up Database.....	46
2.4.3	Changing Language.....	47
2.4.4	Loading Question File	47
2.4.5	Viewing the Access Log	47
2.4.6	Viewing the Event Log	47
2.4.7	Setting Expiry Mode	47
2.4.8	Tuning the Timing	48
2.5	Server.....	48
2.5.1	Starting.....	48
2.6	Reporting.....	49
2.6.1	Reporting Application	49
2.6.2	Report for Microsoft Reporting Service	51
2.6.3	Sample Reports	51
2.6.4	Installation.....	51
	APPENDIX	53
2.7	Hardware Specification of iBonus Terminal	53
2.8	Software Specification of iBonus Terminal	53
2.9	Smart Cards Format	53
2.9.1	Master Card	53

2.9.2	Member Card	56
2.9.3	Staff Card.....	61
2.10	SQL Statements for Creating Tables.....	62
2.11	Transaction Type.....	71
2.12	Request Status	72
2.13	House Cleaning Issues	73
2.14	Default Settings	73
2.14.1	iBonus Terminal	73

1 iBonus Terminal

1.1 Installation

1.1.1 Connections

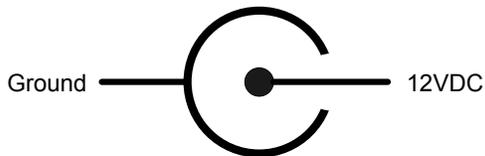


1.1.2 Power

iBonus Terminal comes with a power supply with 110-220 V input. Connect the power supply to iBonus Terminal.

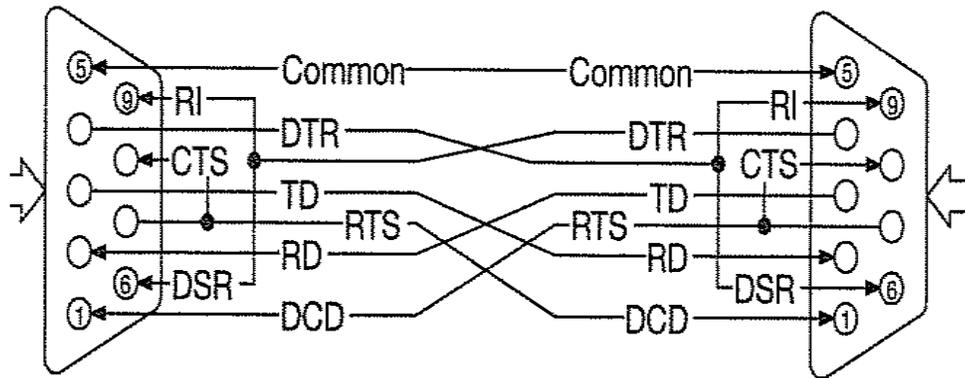
Voltage: 12V DC.

Maximum current: 600mA



1.1.3 POS connector (RS 232 Serial Port)

iBonus Terminal can connect to a Point of Sales device (POS) through RS-232 Serial port. To connect to a POS, a null modem cable should be used. A null modem cable is available in most computer shopping centers. The pin out of the cable is as follows:

Figure 1: schematic for serial port cable.

Pin out for null modem cable. The cable connecting iBonus Terminal and POS should be female 9-pin D sub.

iBonus provides a Windows based programming library in .DLL for system integrators who wishes to connect iBonus Terminal with POS devices.

1.1.4 Receipt Printer

iBonus Prepaid Terminal supports various POS receipt printers. The following is the general specification requirement of the printer.

Connector: Parallel port

Protocol: ESC/POS

Paper Width: 42 Characters per line

When printer is connected, a receipt is printed whenever any transaction is made.

Press the button **A** if you wish to reprint the receipt of the last transaction.

1.1.5 Networks

You can connect iBonus Terminal directly to your corporate network. To do so, you would need to assign an IP address to the product. It is possible to use the DHCP server in your network to dynamically assign the IP address, but it is suggested to assign a static IP address to the product to avoid problems.

iBonus Terminal can be connected to server with its IP being virtual IP (while the server is connected through WAN). The connection is established as long as the iBonus Terminal can be connected to port 3080 of the server. No port forwarding for the Terminal is required.

1.1.6 Points to Note before Launching iBonus System

1.1.6.1 Ordering Your Master Card

Demo Master Card is for demonstration purpose only. A master card particular for individual end user must be read by each Terminal unit before use. Demo version of terminal comes with demo cards. If your end user's system is launched

with demo card, any one who owns a demo card can be used in your end user's system.

Please read the chapter Master Card for detail.

Please state the followings clearly when you first order Master Card from Lucky Technology Ltd:

- End user's name
- Number of card issuing quota
- Decimal Mode or Integer Mode
- Maximum member card prepaid value
- Special concern about sector usage*

Read the session Master Card for detail.

When you reorder master card for getting more card issuing quota, Decimal Mode or Integer Mode and Maximum member card prepaid value cannot be changed. So they have to be right in the first order.

As each master card carries a unique range of card ID corresponding to number of quotas, for the consistency of card ID, we can't replace another master card with the same range of card ID. The master card must be kept in a safe place.

The system should not be reset when quota is loaded into the terminal.

Please state the followings clearly when you reorder Master Card for the same end user:

- End user's name
- Number of card Issuing Quota

1.1.6.2 Master Card Usage

The right master card should be read by the Terminal by using the Master Card Read Key function before launching.

1.1.6.3 Administrator Password

Administrator password must be changed before launching.

1.1.6.4 Expiry Date Settings

When a member card is converted from a brand new card, the expiry date and expiry mode is written to the card. Before the first member card is created, the expiry date extension setting should be set; otherwise, the expiry date field may be written with a wrong value or wrong mode.

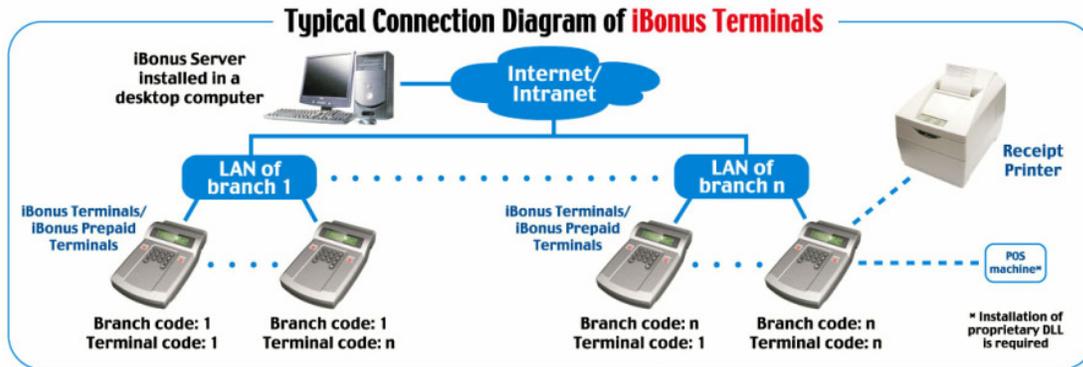
In order to prevent blacklist to be growing to be infinitely large, the cards being blacklisted or replaced are required to have an expiry date. The serial number of the blacklisted card is deleted from the blacklist one month after the expiry date of the card.

1.1.6.5 Date/ Time Settings

The correctness of the date/time of every Terminal is crucial for most operations in iBonus Terminal. The clock is suggested to synchronize with Internet clock.

Please read the chapter Time Zone Settings and Auto Time Synchronization at page 7.

1.1.6.6 Deployment



As there is no real time query between iBonus Server and Terminals, the data requirement of processing power of iBonus Server is low. iBonus Server can be installed in any Windows XP desktop computer. Different Terminals in different branches are identified by the difference in their branch code. Different Terminals within the same branch have the same branch code but different terminal code. Both branch code and terminal code range from 1 to 9999. The connection between Server and Terminal is always from Terminal to Server. Even the data is sent though the Internet and the terminal is set to have local IP, no NAT or port forwarding is needed for the Terminals. In one word, the connection can be established as long as the Terminal can ping the Server.

1.1.7 iBonus Cards

There are several types of card used in iBonus System:

- Blank Card
- Master Card
- Brand New Card
- Member Card
- Staff Card

1.1.7.1 Blank Card

Blank card is the Mifare card newly bought without being written by any Mifare devices

1.1.7.2 Master Card

Master Card has the following purposes:

- To ensure unique allocation of Member Card ID's
- To ensure the Terminal of different end users can only read their own cards
- To define maximum prepaid value for member cards
- To define sector usage for member cards and staff cards
- To define whether Integer Mode or Decimal Mode should be used

The following sessions explains each of them.

1.1.7.2.1 To ensure unique allocation of Member Card ID's

Each Master Card carries a range of card ID (4 bytes). The number of unique values in the range is the quota that the Master Card has. Lucky Technology Ltd. ensures that the range of each of the ID in the quota is unique among all master card issued. Therefore, every member card issued by iBonus Terminals in the world has unique card ID.

For example, a Master Card can assign a range of Member ID from 1000004550 to 1000004650 with the quota of 100. With this Master Card, new Member Card can be issued from any Terminal. Each master card can carry up to 25500 quotas logically. Lost Master Card will not be replaced.

Card ID is normally used as a unique identification of each Member or staff, but some companies may prefer to use their existing member ID nomenclature. In this case customer ID can be set for this purpose. Please read the chapter Set Customer ID for more detail.

1.1.7.2.2 To ensure the Terminal of different end users can only read their own cards

Each master card carries a company code and two sets of keys for accessing and decrypting the data in Mifare cards. Terminal won't response to the card with different company code or keys. Therefore it ensures that the cards of different iBonus systems won't mix up with each others'.

CAUTION: Demo master card can only be used for testing only. It and its quota must not be used for real deployment. Otherwise, the demo card used in different companies can be used in each others' Terminals.

1.1.7.2.3 To define maximum prepaid value for member cards

Each master card carries the maximum prepaid which can be stored in member cards. It limits the maximum possible loss of a member in case of losing cards.

The maximum possible value for maximum prepaid is as follows:

Decimal Mode: 83,886.07

Integer Mode: 8,388,607

1.1.7.2.4 To define sector usage for member cards and staff cards

For each Mifare 1K classic card used in iBonus Systems, sector 0 is used for storing serial number and other card factory information. Sector 1 is mandated to be used for storing iBonus Specific sector definition. Location of main sector, location and number of redemption sector(s) (item for storing redemption items or shopping items) can be customized. The unused sector will still be using the key

FFFFFF. For the definition of card sector please check out the chapter Smart Card Format.

Normally one main sector and 3 redemption sectors are defined for each master card.

1.1.7.2.5 To define whether Integer Mode or Decimal Mode should be used

There are some currencies which does not need decimal place during monetary transactions. For example: Japanese Yen. Master Card can set up the system to be decimal mode or integer mode.

In decimal mode, the maximum possible prepaid value in member card is 83886.07. The accumulated spending in member card is 21,474,836.47

In integer mode, the maximum possible prepaid value in member card is 8,388,607. The accumulated spending in member card is 2,147,483,647

iBonus Terminal does not response to cards with different value mode even the key and company code are matching.

1.1.7.3 Brand New Card

Brand new card is the card formatted from a blank card. It carries the key and company code corresponding to the master card the terminal is previously read. It can later on be changed in to staff card or member card.

1.1.7.4 Staff Card

Staff Card is used to login the iBonus Terminal so that the person who is responsible in each transaction can be tracked.

Advanced staff card functions, for example, undo transactions require the staff card to be presented again to prevent staff from carelessly misusing those functions.

Staff Card also protects the Terminal from being used by staff from different branches. The staff card can only be used on the Terminals of the same branch. The branch code can be defined or changed during Create Staff Card function.

Staff Card carries the maximum transaction limit that the staff can handle. It can be defined or changed by created staff card function.

Staff Card is created by Create Staff Card function. It can be created from a brand new card. Once a brand new card becomes a staff card, it cannot be changed in to a member card or vice versa.

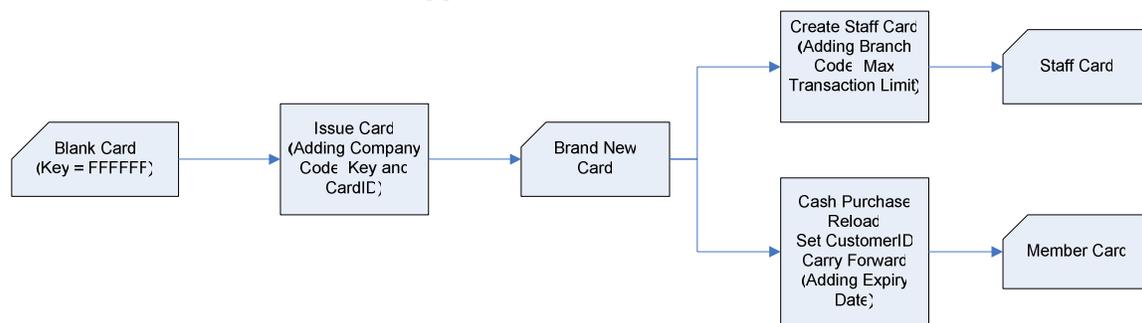
1.1.7.5 Member Card

Member Card is held by member for storing prepaid value, accumulated spending and bonus points.

Member Card is created from a brand new card. The following procedure converts a brand new card into a member card:

- Set Customer ID
- Reload
- Cash Purchase
- Carry Forward

1.1.7.6 Transition of Card Types



1.2 Configuration

1.2.1 Date, Time, Branch Code, Terminal Code and Network Settings

This section serves to show you how to set the system date, time, branch code, terminal code and network settings. The administrator password is required for the system administrator to access the system menu and to configure the system parameters.

1.2.2 Date/ Time

Date time can be set either on key pad in the Administrator's menu or through the browser. The real time clock inside iBonus is battery operated. It takes a day to charge up the battery and it can run the real time clock for about one day.

Please do the followings to ensure the clock running correctly:

- Do not switch off the iBonus Terminal
- Match the time with a time server by SNTP protocol.*

*Please read the session Time Zone Settings and Auto Time Synchronization.

1.2.3 Branch Code/ Terminal Code

The Branch Code (4 numeric digits) is used to identify a branch shop. The Terminal Code (4 numeric digits) is used to identify a terminal in a branch shop or office.

For example, there 2 shops identified by branch code 1001 or 1002. There are 4 Terminals in shop 1001 and 3 Terminals in shop 1002.

The seven Terminals will be identified as:

	Branch Code	Terminal Code
Terminal 1	1001	1
Terminal 2	1001	2
Terminal 3	1001	3
Terminal 4	1001	4
Terminal 5	1002	1
Terminal 6	1002	2
Terminal 7	1002	3

1.2.4 Network Settings

You can connect iBonus Terminal directly to your corporate network. To do so, you would need to assign a device name & an IP address to the product. It is possible to use the DHCP server in your network to dynamically assign the IP address, but it is suggested to assign a static IP address to the product.

The server IP address can be set in the Terminal. All connection between the Server and Terminal is origin from iBonus Terminal. If Terminal and Server is connected through the Internet, no network address translation or port forwarding is needed at the Terminal side.

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 5 to select the System Configuration menu. The current date is displayed. If necessary, enter the new date and then press the Func key to continue.	Date (M/D/Y) : 09/07/2004
The current time is displayed. Enter the new time and press Func key	Time (H:M:S) : 13:45:23
Enter the branch code. The value should be between 1 and 9999. Press the Func key to continue.	Branch Code : 1
Enter the terminal code. The value should be between 1 and 9999. Press the Func key to continue.	Terminal Code : 1

Enter IP address. Press the Func key to continue.	IP Address : 192.168.000.100
Enter sub net mask. Press the Func key to continue.	Subnetmask : 255.255.255.000
Enter gateway IP address. Press the Func key to continue.	Gateway : 192.168.000.200
Enter DNS IP address. Press the Func key to continue.	DNS : 192.168.000.200
Choose whether or not to connect to iBonus Server. Press 1 to choose yes. Press 2 to choose no. Press the Func to keep the old setting.	Connect server? Y/N (1/2)?Y
If yes is chosen. Enter the server IP address. Press the Func key to continue.	Server IP : 192.168.001.051
Enter server port. Default value should be 3080. Press the Func key to continue.	Server Port : 3080
Confirm the changes. Press 1 to commit changes. Press 2 or Func to discard changes.	OK to Accept Y/N (1/2)? No

1.2.5 Time Zone Settings and Auto Time Synchronization

iBonus Terminal can synchronize its time with SNTP server. Time zone has to be before auto time synchronization can be used.

To set the time zone:

1. Open web interface with browser
2. Click **Clock Setup** in the menu at the left hand side.
3. Enter password if it is prompted. (default user name :admin, default password: 123)
4. Change the value at the field **Location (Time Zone):**
5. Click **Save** to commit changes

To enable SNTP time synchronization:

1. Open web interface with browser
2. Click **Terminal Setup** in the menu at the left hand side.
3. Enter password if it is prompted. (default user name :admin, default password: 123)
4. Update the field **SNTP Time Server URL**

5. Check the check box **Status: Enable** right underneath
6. If domain name is entered at **SNTP Time Server URL, DNS Server IP** must be valid.

TIPS: SNTP server software for windows is available for download in some websites. It can be used to synchronize the time between Terminal and Server. The software can be installed in the computer for running iBonus Server. So that SNTP time synchronization can be used even without access to the Internet.

1.2.6 Terminal Mode (Prepaid/ Bonus)

Terminal can be either configured as Prepaid Terminal for dollar value manipulation or Bonus Terminal for bonus point manipulation.

To change the terminal mode:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown.	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 2 to select the Set Prepaid / Bonus menu. It will prompt you to select prepaid or bonus mode.	Prepaid / Bonus Mode (1/2)?
Enter 1 to select Prepaid mode	TUE 07 SEP 15:46 Prepaid Terminal
Enter 2 to select Bonus mode.	TUE 07 SEP 15:46 Bonus Terminal

1.2.7 Administrator Password

The **System Administrator Password** is used to access the system menu and to configure the system.

To change the administrator password:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 6 to select Set Password .	Set Password
Enter a new password.	Enter Password: ***

Press Func to re-enter password again.	
Press Func to save changes.	Reenter Password: ***
It is done!	Reenter Password: Updating...

1.2.8 Receipt Printing

iBonus Prepaid Terminal supports various POS receipt printers. The following is the general specification requirement of the printer.

Connector: Parallel port

Protocol: ESC/POS

Recommended paper width: 42 characters per line

The Configuration setting can be printed from the Terminal. Also, you can change the language printed on the receipt. It is in English by default.

A sample of configuration printout:

==== System Configuration ====

1. Branch Code: 0015
2. Terminal Code: 0147
3. System Mode: BONUS
4. Default Expiry Mode: Fixed Date
- month: 16 (relative)
5. Receipt Type: English

2006/09/10 15:45:33

When a printer is connected to the iBonus Terminal, a receipt is printed when a transaction is made. Press the button **A** if you wish to print the receipt of the last transaction again.

To change the print settings:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func	Enter Password: ***

(default password: 123).	
Enter A to select the Receipt Type menu. Default language is in English.	Default Language English
If there are additional languages available, simple select the language you wish to use.	Select Language: 1) Chinese, 2) Korean (1-2)?
Enter either 1 or 2 for the number of copies.	Number of Copies: (1/2)?
Enter 1 if you want to print the system configuration parameters.	Print Sys Config Yes/No (1/2)?

1.2.9 Master Card: Read Key and Get Quota

To perform master card operation in iBonus Terminal: (Please note that the master card operation can ONLY be operated with a Terminal which has zero quotas in it)

Note: When getting quota, iBonus Terminal will not response to the card with different company code.

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter B to select the Master Card menu. Enter 1 to read the information from master card. Enter 2 to fetch member card formatting quota.	Read Key/ Get Quota(1/2)?
If you choose 1 you can see the following screen. Present master card now.	Read MasterCard Waiting Card...
If you choose 2 you can see the following screen. Present master card now.	Get Quota Waiting Card...

1.3 Administration

1.3.1 Mode of expiry

The Expiry Date defines as the last date which the Member Card can be used and it is also related to the bad list control if the system is required to support lost Member Card replacement.

There are 3 different choices of Member Card expiry schemes:

1. Fixed Month
2. Relative to Card Initializing Date
3. Automatic expiry extension based on the last visit.

In scheme 1, Fixed Month, you simply decide which month of the year you want the Member Card to be expired. For example, the current month is February and the expiry month is set as January. The Member Card will not be able to use in January of next year.

In scheme 2, Relative to Card Initializing Date, you have to define the number of months relative to the Member Card Initializing Date. For example, if you set 12 months and the Member Card is initialized on January 2002, the Member Card will be expired on January 2003.

In scheme 3, Automatic Expiry Extension Based on the Last Visit, the expiry date will be automatically extended by the administrator defined periods (months) if Members purchase, redeem, or reload before the card expires.

Some points to note about the calculations of expiry date

If the mode of expiry is set to be fixed month mode, for example month of expiry is set to December, (i.e. the exact date of expiry is 31 Dec.), and the expiry date on the card is 31 Dec 2004, within the period between two months before the expiry day to two months before the expiry date of the next year, (i.e. 1 Nov 2004- 31 Oct 2005), the date of expiry of the card will be extended to 31 Dec 2005. If the card renewal is earlier than two months before the date of expiry (i.e. 31 Oct 2004 or before), the card won't be extended.

If the date of expiry assignment is relative to card initialization day, for example 12 months relative to the card initialization day. The date of expiry will be extended by 12 months based on the card expiry date. For example, if the card expiry date is 31 Dec 2004, within the period between two months before the expiry day to two months before the expiry day of the next year, (i.e. 1 Nov 2004- 31 Oct 2005), the date of expiry of the card will be extended to 31 Dec 2005. If the card renewal is earlier than two month before the date of expiry (i.e. 31 Oct 2004 or before), the card won't be extended.

To set expiry mode:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 3 to select the Set Expiry Mode menu.	Current Mode: NO EXPIRY
Press 1 to choose using server settings. Press 2 to set new expiry mode.	Server Settings? Yes/No (1/2)?
Press 1 to choose Yes.	Use Expiry Date Yes/No (1/2)?

To choose Fixed Month mode:

Press 1 to choose Fixed mode.	Fixed/ LastVisit Mode (1/2)?
Press 2 to choose absolute expiry month.	Relative / Abs. Month (1/2)?
Enter the expiry month by number and press Func to confirm.	1:Jan --> 12:Dec _
It is done!	Done!

To choose the mode of Relative to Card Initialized Date:

Press 1 to choose Fixed mode.	Fixed/ LastVisit Mode (1/2)?
Press 1 to choose relative expiry month.	Relative / Abs. Month (1/2)?

Enter the number of month relative to the member card initialize date. Press Func to confirm.	No. of Months: —
It is done!	Done!

To choose the mode of Automatic Expiry Extension Based on the time of last visit:

Press 2 to choose Fixed mode.	Fixed/ LastVisit Mode (1/2)?
Enter the number of month you want to extend for each member card transaction. Press Func to confirm.	#Extended Month —
It is done!	Done!

1.3.2 Initialize Member Card

New Member Card has to be initialized before it can be used. Only blank card with key FFFFFFFF can be initialized. The initialization process adds the necessary security key, data structure, Company Code, and a unique Card ID onto a blank card. After initialization, a “brand new card” is created. If any member card transaction is done on the card, like reloading money or adding bonus point, the card will be changed to a member card. A brand new card can be formatted to be a staff card as well. Only before any member card transaction is made, can the brand new card be converted to be a staff card.

Before any card initialization can be done, card formatting quotas have to be loaded from Master Card first. 100 quotas are loaded at a time.

Make sure that you have enough card formatting quotas loaded from master card. Please refer to master card section on how to do this.

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 1 to select the Init Card menu. The number of card formatting quota and the card ID of the next formatted card is shown on the screen.	Quota: 100 ID: 0000000100

Present a blank new card. Do not pick up the card until the writing is finished.	Writing.....
You can see a decrement and an increment in the value of quota and ID respectively. Present the next blank card again until the quota are used up or all card are formatted. Press ← to exit.	Quota: 99
	ID: 0000000101

1.3.3 Creating Staff Card

In order to identify the person in charge of all monetary transaction, a staff card is needed to login the iBonus Terminal before any such transaction can be done. The staff card can only be used among the different Terminals in the same branch.

Staff Card is a conversion from newly initialized Brand New Card. You need to initialize a blank card first. The Set Staff Card function will also define the maximum transaction allowed (default: 1,000, maximum value: 10,000).

The name and the Staff ID of the Staff can be entered later in the Terminal (see **Enter Member Name** and **Assign Member ID** in the administration menu).

To create a new staff card:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 4 to select the Staff Card menu. Press 1 to create new staff card.	Create/Blacklist (1/2)?
Enter the maximum value of every single transaction that the staff is allowed. Press Func to confirm.	Max Transaction: \$1,000.00
Present a newly initialized card.	Create StaffCard Waiting Card...
It is done!	Done! ID: 0000000100

1.3.4 Set Customer ID

Card ID is normally used as a unique identification of each Member, but some companies prefer to use their existing Member ID nomenclature. The existing Customer ID (maximum 16 digits) can be entered through Terminals. There is a transaction record stored in the Terminal for this assign Customer ID action.

If the value is typed wrongly duplication might occur.

To assign a member ID to the member:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 8 to select the Assign Customer ID menu. Enter the member's ID and press Func .	Customer ID: 123_
Present card.	123 Waiting Card...
It is done!	Member Card Updated OK!
Press Func to set another customer ID with an incremented value or enter any numbers to set manually.	Customer ID: 124
It is done!	Member Card Updated OK!

1.3.5 System Reset and shutdown

The access log, member-card initialization quota or everything can be reset to factory default. Also you can reboot or shutdown the Terminal.

To reset the Terminal:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 7 to select the Shutdown/ Reset menu. Enter	Reset Log Yes/No (1/2)?

the member's ID and press Func . Press 1 if you wish to reset the access log.	
Enter 1 if you wish to reset the Terminal back to factory default. Please note that company code is still remaining in the Terminal while to card initialization quota will be reset to zero.	Factory Default Yes/No (1/2)?
Enter 2 if you wish to reset the card initialization quota.	Reset Quota Yes/No (1/2)?
If you wish to reboot the Terminal without resetting anything simply answer no in the three questions above.	Shutting Down

1.3.6 Blacklist Staff Card

In order to be able to blacklist list a staff card, you need to enter a Staff ID to the staff card first.

To blacklist a staff card, the Terminal has to be connected with the iBonus Server. Steps are as follows:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 4 to select the Staff Card menu. Press 2 to blacklist a staff card.	Create/Blacklist (1/2)?
Enter the staff ID, i.e. member ID of the staff card. Press Func to confirm.	Staff ID: _
It is done!	Request Sent!

1.3.7 Bonus Rate

Bonus rate can only be \$1 = 1 point in bonus mode. Therefore this option cannot be changed when it is in Bonus Mode. However, when it is in Prepaid Mode, administration can set whether the same amount of bonus points comes with every Card Purchase transaction.

To change this option:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Prepaid Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 0 to select the Set Bonus Rate menu.	Current Setting \$1 = 1 point
Enter 1 to use bonus point. Enter 2 otherwise.	Use Bonus Yes/No (1/2)?
You can see the new setting displayed as shown.	New Setting \$1 = 1 point

1.3.8 Deregister Terminal

To de-register an iBonus Terminal from the iBonus Server, the Terminal has to be connected with the iBonus Server. Steps are as follows:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter 9 to select the De-register Terminal menu.	Deregister Terminal...
Press 1 to deregister the Terminal.	Are you sure Yes/No (1/2)?
Press ← if you wish to interrupt the deregistration process.	Send Transaction 15/100 done
If some transactions are not sent to server at the time when the ← is pressed, the following message is shown.	Transaction left 85
	Terminal not Deregistered

1.3.9 Internationalization

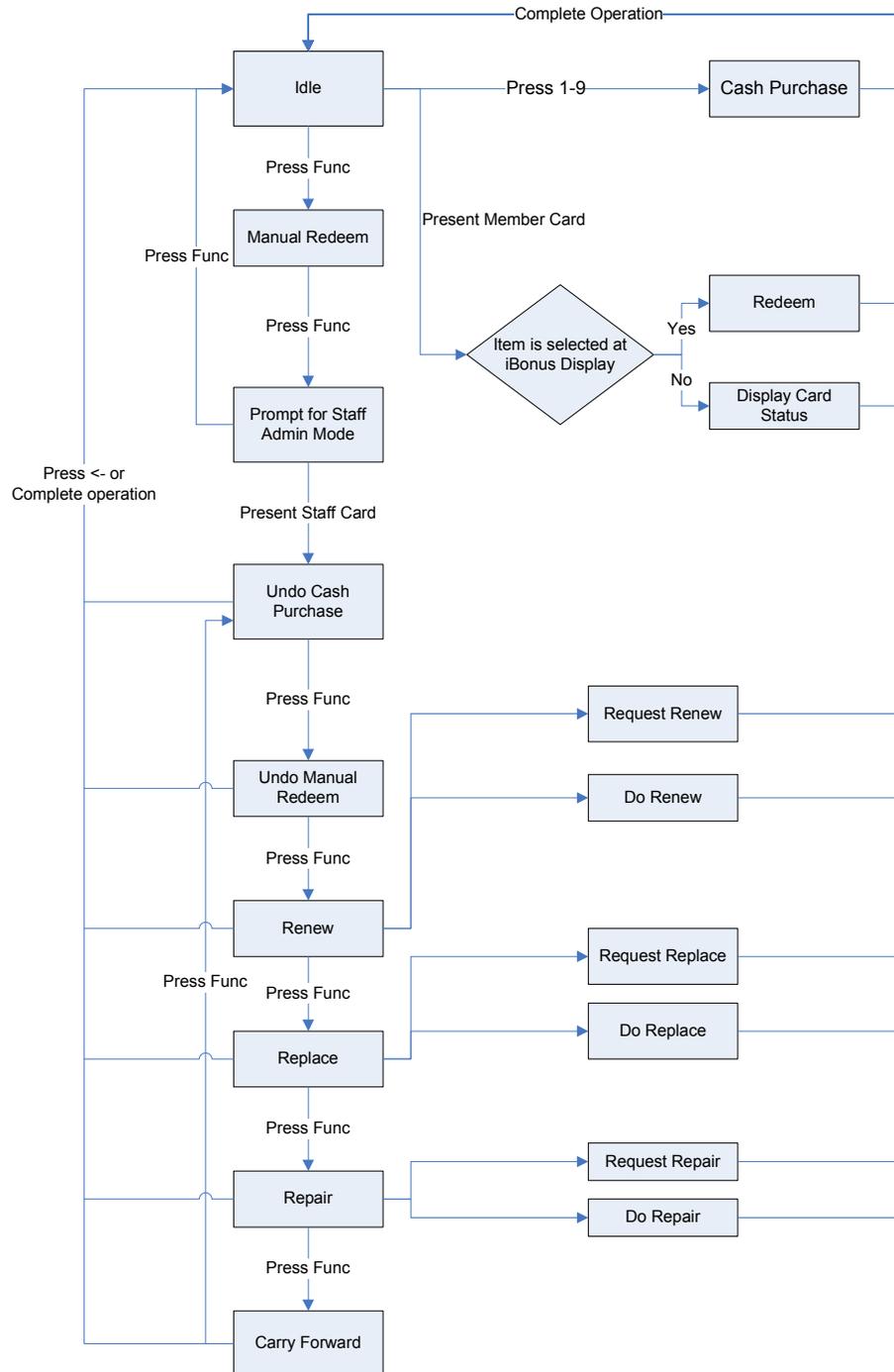
As the language file in iBonus Terminal defines the language of receipt and the language of the LCD. The language setting menu is in the receipting menu. To change the language settings:

While in Standby Mode, press the Func key to enter the Setup Menu. You will be prompted to enter the Administrator Password as shown	TUE 07 SEP 15:45 Bonus Terminal
Enter the Administrator Password and press Func (default password: 123).	Enter Password: ***
Enter A to select the Receipt Type menu. Default language is in English.	Default Language English
If there are additional languages available, simple select the language you wish to use.	Select Language: 1)Chinese, 2)Korean (1-2)?
Enter either 1 or 2 for the number of copies.	Number of Copies: (1/2)?
Enter 1 if you want to print the system configuration parameters.	Print Sys Config Yes/No (1/2)?

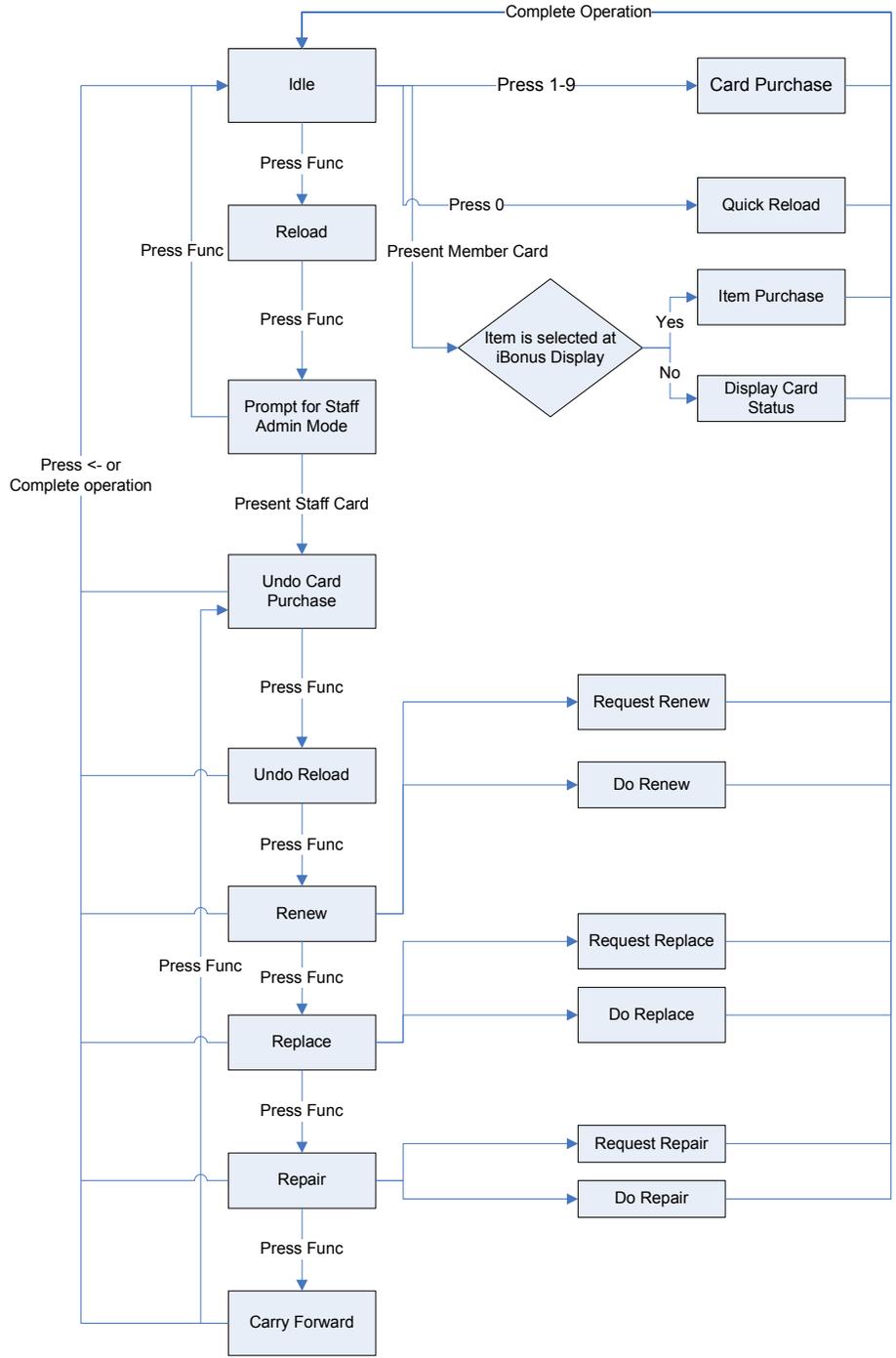
1.3.10 Viewing Access Log

1.4 Staff Operations

1.4.1 Operation Map in Bonus Mode



1.4.2 Operation Map in Prepaid Mode



1.4.3 Staff Login/ Logout

iBonus Terminal will not operate unless it is logged in using Staff card. When the iBonus Terminal is not used, staff should logout by the same Staff card. The date and time of the staff login and logout are recorded in the iBonus Terminal and the iBonus Server. Every upcoming transaction is associated to the staff ID as reference.

Action sent back to server:

Staff Login, Staff Logout

To login / logout the Terminal:

iBonus Terminal is idle. To get the iBonus Terminal in operation, operator is required to present its Staff Card.	TUE 07 Sep 15:45 Prepaid Terminal
After presenting Staff Card, iBonus Terminal can be used for deducting prepaid stored value from customer's card and reload customer's card.	TUE 07 Sep 15:45 Amount: \$
Present the Staff Card again. The Terminal is back to idle mode.	TUE 07 Sep 15:45 Prepaid Terminal

1.4.4 Check Member Card Status

Member Card status such as prepaid amount balance and bonus amount balance can be viewed simply just presenting a member card to the iBonus Terminal.

If some item is chosen in iBonus Display, member card status can't be checked until the item is redeemed or purchased.

While in Staff Operation Mode (after Staff Login), present a member card.	TUE 07 Sep 15:45 Amount: \$
The LCD will display the member ID.	Name : 123
The prepaid amount balance and bonus amount balance will show up follow by the member ID.	CARD: \$10.00 BONUS: 300

1.4.5 Card Purchase

Card purchase is a mostly used sales operation. This operation is for the staff keying in the sales value on the key pad and deduct the amount from the card. If bonus rate is on, every dollar of purchase brings with one bonus point. The sales value is rounded and added to the field bonus point.

Field(s) changed on the member's card:

Deducted: abyBalPrepaid.

Increased: dwAccSpending, abyBalBonus (if Bonus Rate is on)

Action sent back to iBonus Server:

Card Purchase

To deduct stored value from the member card:

While in Staff Operation Mode (after Staff Login), to deduct the card stored value, and increase the bonus point if set, (defined as Card Purchase), simply key in the amount.	TUE 07 Sep 15:45 Amount: \$
For example, to deduct 230 dollars, key in 2 3 0 0 0 . If the entry exceeds the Staff Card allowable transaction limit, it warns you.	Purchase [CARD]: \$230.00
By presenting the smart card, stored value will be deducted and the bonus points will be added to the card. The transaction is recorded.	CARD: -\$230.00 BONUS +230

1.4.6 Cash Purchase

Cash purchase is a mostly used sales operation in bonus mode. This operation is for the staff keying in the sales value on the key pad and the bonus point calculated from rounding the amount is added to the card.

Field(s) changed on the member's card:

Increased: dwAccSpending, abyBalBonus

Action sent back to iBonus Server:

Cash Purchase

To add bonus point to the member card:

While in Staff Operation Mode (after Staff Login), to add bonus points (defined as Cash Purchase) to the member card, simply key in the bonus point	TUE 07 Sep 15:45 Amount: \$
For example, to add 230 points, key in 2 3 0 0 0 . If the entry exceeds the Staff Card allowable transaction limit, it warns you.	Purchase [CASH]: \$230.00
By presenting the smart card, bonus points will be added to the card. The transaction is recorded.	CASH: \$230.00 BONUS +230

1.4.7 Reload

Reload charges up the stored value of the member's card.

Field(s) changed on the member's card:

Increased: abyBalPrepaid.

Action sent back to iBonus Server:

Reload

To reload the member card's stored value:

While in Staff Operation Mode (after Staff Login), to reload the card stored value, press Func once.	TUE 07 Sep 15:45 Amount: \$
For example, to reload 200 dollars, key in 2 0 0 0 0 . If the entry exceeds the Staff Card allowable transaction limit, it warns you.	* Reload Mode! * \$200.00
By presenting the smart card, stored value will be added to the card. The transaction is recorded.	==== Reload ==== CARD: +\$200

1.4.8 Quick Reload

In case of there is insufficient stored value in the member card to complete the card purchase transaction, by pressing the '0' button on the keypad, the amount right enough for the purchase will be reloaded to the card. Right on the same instance, the purchase transaction is also done. Therefore the card stored value in the card is 0 after Quick Reload if the amount for reload is not altered.

Field(s) changed on the member's card:

Set to 0: abyBalPrepaid.

Increased: dwAccSpending, abyBalBonus (if Bonus Rate is on)

Action sent back to iBonus Server:

Reload, Card Purchase

In some occasions, the stored value in the card is not enough. In such situation the transaction is not performed.	Insufficient
If you wish the reload the card value with the exact amount of insufficiency, press 0 right after seeing the previous screen.	TUE 07 Sep 15:45 Amount: \$
You can choose to present card now or alter the reload value before presenting card.	* Quick Reload * \$38.90
After presenting card, the summary of the transaction is shown.	Reload \$38.90 Purchase \$230.00

1.4.9 Manual Redeem

Manual redeem deducts the bonus point by manually key in the bonus point value.

Field(s) changed on the member's card:

Deducted: abyBalBonus

Actions sent back to iBonus Server:

Redeem

To enter the value of the redemption points manually:

While in Staff Operation Mode (after Staff Login), press Func to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Enter the value of the bonus point and present the member card.	= ManualRedeem = Bonus: 50
After presenting card, the summary of the transaction is shown.	Bonus: -50 Bal: 2000

1.4.10 Undo Card Purchase

Undo Purchase reverses the action of Card Purchase. In case, the customer wants to get a refund or there is a mistake when entering the Card Purchase value, undo purchase can be used.

Field(s) changed on the member's card:

Increased: abyBalPrepaid.

Deducted: dwAccSpending, abyBalBonus (if Bonus Rate is on)

Action sent back to iBonus Server:

Undo Purchase Card

To make adjustment on the member card:

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter staff admin mode.	* Staff Admin! * Wait StaffCard..
Enter the amount you want to adjust.	= UndoPurchase = Amount: \$

After entering the adjustment, Staff Card needs to be presented to confirm the transaction.	Confirmed! Staff Card OK...
When you see the screen as follows. Present member card to finish the adjustment.	= UndoPurchase = \$10.00
After presenting card, the summary of the transaction is shown.	CARD: +10.00 BONUS -10

1.4.11 Undo Cash Purchase

Undo Cash Purchase reverses the action of Cash Purchase. In case the customer wants to get a refund or in case of a mistake when entering the Cash Purchase value, undo cash purchase can be used. Staff can enter the value to be refunded on the keypad, and present the member’s card. The corresponding value is deducted from accumulated spending. The same value is rounded and deducted from bonus point.

Field(s) changed on the member’s card:
Deducted: dwAccSpending, abyBalBonus

Action sent back to iBonus Server:
Undo Purchase Cash

To make adjustment on the member card:

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter staff admin mode.	* Staff Admin! * Wait StaffCard..
Enter the amount you want to adjust.	= UndoPurchase = Amount: \$
After entering the adjustment, Staff Card needs to be presented to confirm the transaction.	Confirmed! Staff Card OK...
When you see the screen as follows. Present member card to finish the adjustment.	= UndoPurchase = \$10.00

After presenting card, the summary of the transaction is shown.	CARD: +10.00 BONUS -10
---	---------------------------

1.4.12 Undo Reload

Undo Reload reverses the action of Reload. In case the customer wants to get a cash-refund or in case of a mistake when entering the Reload value, undo Reload can be used.

Field(s) changed on the member's card:

Decreased: abyBalPrepaid.

Action sent back to iBonus Server:

Undo Reload

To make adjustment of reloading on the member card:

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter staff admin mode. Press Func once more.	* Staff Admin! * Wait StaffCard..
Enter the amount you want to adjust.	= Undo Reload! = Amount: \$
After entering the adjustment, Staff Card needs to be presented to confirm the transaction.	Confirmed! Staff Card OK...
When you see the screen as follows. Present member card to finish the adjustment.	= Undo Reload! = \$10.00
After presenting card, the summary of the transaction is shown.	= Undo Reload! = Card: -\$10.00

1.4.13 Undo Manual Redeem

Undo Redemption reverses the action of Redemption. In case the member wants to get back the bonus point or in case of a mistake when entering the value of Manual Redeem, Undo Redemption can be used. Staff can enter the bonus to be returned to the member and present the member's card. The corresponding value will be added back to the bonus point.

Field(s) changed on the member's card:

Increased: abyBalBonus

Action sent back to iBonus Server:

Undo Redeem

To make adjustment of bonus redemption on the member card:

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter staff admin mode. Press Func once more.	* Staff Admin! * Wait StaffCard..
Enter the bonus amount you want to adjust.	= Undo Redeem! = Bonus:
After entering the adjustment, Staff Card needs to be presented to confirm the transaction.	Confirmed! Staff Card OK...
When you see the screen as follows. Present member card to finish the adjustment.	= Undo Redeem! = Bonus: 10
After presenting card, the summary of the transaction is shown.	Bonus: +10 Bal: 2000

1.4.14 Item Purchase

Members can select their desired products on iBonus Display. The product description, price and the quantity is recorded on the card. When using Mifare Classic card, multiple items can be chosen from the display. After choosing the items from the iBonus Display, members should let the staff do the transaction on the iBonus Terminal. When the card is presented to the Terminal, it will display the products chosen by the members one by one, the staff can choose yes or no for whether or not to sell each of them. Then the member's card will be presented to the Terminal again to finish the transaction. The card stored value is actually deducted in that moment.

If bonus rate is on, every dollar of purchase will bring with one bonus point. The decimal place of the purchase is rounded. When purchasing multiple items, iBonus Terminal will send back to server one record for each single product. That will cause a rounding error greater than 1. iBonus Terminal will send to the server one action `Adjust Rounding Bonus`, thus eliminating the error.

Field(s) changed on the member's card:

Read: abyItemBonus, abyItemDes

Deducted: abyBalPrepaid.

Increased: dwAccSpending, abyBalBonus (if Bonus Rate is on)

Actions sent back to iBonus Server:

Card Purchase, Adjust Rounding Bonus (if Bonus Rate is on)

To perform the shopping transaction, make sure it is in Prepaid Mode:

While in Staff Operation Mode (after Staff Login), present the Member Card to the iBonus Terminal.	TUE 07 Sep 15:45 Amount: \$
iBonus Terminal will first display number of items to be purchased.	Total No. of item(s): 01
Then, iBonus Terminal will show the first item and prompt for confirmation Yes (1) / No (2)?	1: Fries x 2 Yes/No(1/2)?
It displays the next items for confirmation until all respective items are confirmed or declined.	2: GiftCoupon x 1 Yes/No(1/2)?
If there are no more items to be displayed, it will ask for presenting the smart card to finalize the transaction. Stored value will be deducted from the smart card, corresponding bonus point is added and a receipt will be printed out if a receipt printer is connected to the iBonus Terminal	Total \$50.00 Waiting Card...
After presenting card, the summary of the transaction is shown.	Amount: -\$50.00 Bal: \$200.00

1.4.15 Item Redeem

After choosing gift from iBonus Display, the selection is written into the member card. The transaction for deducting the bonus point is done in the iBonus Terminal.

Members can select their desired redemption item on iBonus Display. The description of the redemption item, bonus point and the quantity is recorded on the card. When using Mifare Classic card, multiple items can be chosen from the display. After choosing the items from the iBonus Display, members should let the staff do the transaction on the iBonus Terminal. When the card is presented to the Terminal, it will display the name of the redemption item chosen by the members one by one. The staff can choose yes or no for whether or not to redeem each of them. Then the member's card will be presented to the Terminal

again to finish the transaction. The bonus points are actually deducted in that moment.

Field(s) changed on the member's card:

Deducted: abyBalBonus

Actions sent back to iBonus Server:

Redeem

To perform the redeem transaction, make sure it is in Bonus Mode:

While in Staff Operation Mode (after Staff Login), present the Member Card to the iBonus Terminal.	TUE 07 Sep 15:45 Amount: \$
iBonus Terminal will first display number of items to be redeemed.	Total No. of item(s): 01
Then, iBonus Terminal will show the first item and prompt for confirmation Yes (1) / No (2)?	1: Fries x 2 Yes/No(1/2)?
It displays the next items for confirmation until all respective items are confirmed or declined.	2: GiftCoupon x 1 Yes/No(1/2)?
If there are no more items to be displayed, it will ask for presenting the smart card to finalize the transaction. Bonus point will be deducted from the smart card and a receipt will be printed out if a receipt printer is connected to the iBonus Terminal	Total 50 Waiting Card...
After presenting card, the summary of the transaction is shown.	Bonus: -50 Bal: 200

1.4.16 Carry Forward

Carry Forward is used for setting up the value of the member card. It is useful when an end user want to replace the member cards in the legacy system into iBonus System. Carry Forward can assign bonus point and monetary value into the brand new card or member card which has not done any value transaction before.

Field(s) changed on the member's card:

Increased: abyBalPrepaid.

Set to 0: dwAccSpending, abyBalBonus

Altered: abyMemberName

Action sent back to iBonus Server:

Carry Forward

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter Staff Admin mode.	* Staff Admin! * Wait StaffCard..
Press Func until seeing the screen as follows. Press A .	= CarryForward = Press 'A'...
Enter the initial stored value and press Func . (This will only be shown in Prepaid Mode)	Initial Value: \$100.00
Enter the initial bonus value and press Func .	Initial Bonus: 50
Present a brand new card or a member card with no previous transaction to confirm.	Waiting Card...
It is done!	Member Card Updated OK!

1.5 Advanced Staff Operations

1.5.1 Renew Member Card

Renew Member Card extends the date of expiry of the member's card. This function is useful only when both card and iBonus Terminal are using fixed date expiry mode. To renew a card, the staff chooses the request renew member card function and present the member card to be renewed. The iBonus Server waits for about a day for the data synchronization from all terminals and check whether the member card is blacklisted. If the card is not blacklisted, the iBonus Server will send back a reply to the origin iBonus Terminal. The staff chooses renew member card function and present the member card again, the card is renewed. The new expiry date is calculated as follows:

If the mode of expiry is set to be fixed month mode, for example month of expiry is set to December, (i.e. the exact date of expiry is 31 Dec.), and the expiry date on the card is 31 Dec 2004, within the period between two months before the expiry date to two months before the expiry date of the next year, (i.e. 1 Nov 2004- 31 Oct 2005), the date of expiry of the card will be extended to 31 Dec

2005. If the card renewal is earlier than two months before the date of expiry (i.e. 31 Oct 2004 or before), the card won't be extended.

If the date of expiry assignment is relative to card initialization day, for example 12 months relative to the card initialization day. The date of expiry will be extended by 12 months based on the card expiry date. For example, if the card expiry date is 31 Dec 2004, within the period between two months before the expiry date to two months before the expiry date of the next year, (i.e. 1 Nov 2004- 31 Oct 2005), the date of expiry of the card will be extended to 31 Dec 2005. If the card renewal is earlier than two month before the date of expiry (i.e. 31 Oct 2004 or before), the card won't be extended.

Action sent back to iBonus Server:

Request Renew, Renew

Since the iBonus Terminal only keeps the blacklist of the cards which are not yet expired. To renew a card, the iBonus Terminal has to check with the iBonus Server whether the card is in the blacklist. Therefore, there are 2 steps for renewing a member card: (1) Send Request to iBonus Server for Member Card renewal and (2) Renewal of Member Card after the request has been sent and verified by iBonus Server. The new expiry mode and date of the Member Card will follow the setting on the Terminal. Transaction actions will be logged.

1.5.1.1 Timing Issue

After receiving the `Request renew` transaction, the server will wait for all transactions to be sent back to server before letting the authorization of the renew transaction to be available for the request originating terminal to download, so that the Server will know whether the card is blacklisted very recently.

If one of the Terminals is not connected to the server, Server will wait for 3 days (by default) since last visit of the Terminal. After 3 days the Terminal is assumed not in service. Server will not be waiting for the Terminal and will send back the correct status of the corrupted card back to the request originating Terminal.

Therefore by default, it will take longest 3.5 days to have the card renew. In an unstable network, if you want to shorten the maximum card renew time, you can set Limit Visit in iBonus Server to be a shorter time. The trade off is that the card may be able to be renewed even it is blacklisted recently.

To send renewal request to iBonus Server:

While in Staff Operation Mode (after Staff Login), press Func twice to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter Staff Admin mode.	* Staff Admin! * Wait StaffCard..

Press Func when you see the screen as follows.	= UndoPurchase = Amount: \$
Press A when you see the screen as follows.	= Renew Card = Press 'A'...
Press 1 to choose request.	Request/Renew (1/2)?
When you see the screen as follows. Present member card to send the renew request.	Request to Renew Waiting Card...
The request is now sent back to the iBonus Server and waiting for authorization.	Request queued

After several minutes to one day (depends on the network architecture). The renewal can be performed as follows:

Proceed to this screen again by the step above. Choose 2 this time for renewal.	Request/Renew (1/2)?
When you see the screen as follows. Present member card to send the renew request.	Renew MemberCard Waiting Card...
When you see the screen as follows. Present member card to confirm.	Present the same MemberCard again
When the card is authorized from the Server, the card can be renewed.	Card Renewed!
If record is found but not authorized, it will show the message about the reason.	Card has already Renewed
The card being requested is blacklisted.	Card is blacklisted
Another terminal is trying to renew on the same card	Another Terminal doing the renew

The date setting of the Terminal is not correct so it can't derive the correct expiry date. Please check date setting of the Terminal.	Invalid renew date
--	-----------------------

1.5.2 Repair Member Card

Repair Member Card fixes the data corruption problem of the card. To repair a card the staff chooses the request repair function and presents the corrupted card to the Terminal. The Terminal tries to read the serial number of the corrupted card. Once successful, the Terminal sends to the iBonus Server a `Request Repair` with the card serial number. If it fails, staff should use `Replace Card` function instead. The server waits for the data sent from the other iBonus Terminals so that the most updated transaction on the card is collected. It sends back to the initiating iBonus Terminal the card information. The next day, the staff chooses the repair function and presents the corrupted card again. The Terminal tries to write the most updated information to the card. If it is successful, the action `Repair` is sent back to server. If fail, the staff should present a brand new card to the Terminal, so that the card is replaced instead of repaired and the action `Repair by Replace` is sent back to server.

Action sent back to iBonus Server:

`Request Repair`, `Do Repair`, `Repair by Replace`

1.5.2.1 Timing Issue and Card Salvage Value

After receiving the `Request Repair` transaction, the server will wait for all transactions to be sent back to server before letting the information of the corrupted card to be available for the request originating terminal to download.

If one of the Terminals is not connected to the server, Server will wait for 3 days (by default) since last visit of the Terminal. After 3 days the Terminal is assumed not in service. Server will not be waiting for the Terminal and will send back the corrupted card status back to the request originating Terminal.

Therefore by default, it will take longest 3.5 days to have the card repaired. In an unstable network, if you want to shorten the maximum card repair time, you can set `Limit Visit` in iBonus Server to be a shorter time. The trade off is that the Terminal, which lost connection with server might have some transaction of the card before it is damaged. The status of the repaired card might not be able to reflect the latest value of the lost card.

To send the request for repairing:

While in Staff Operation Mode (after Staff Login), press Func to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter Staff Admin mode.	* Staff Admin! * Wait StaffCard..
Press Func when you see the screen as follows.	= UndoPurchase = Amount: \$
Keep pressing Func until you see the screen as followings. Press A to enter repair card menu.	= Repair Card! = Press 'A'...
Press 1 to choose request.	Request/Repair (1/2)?
When you see the screen as follows. Present member card to send the repairing request.	Request to Repair Waiting Card...
The request is now sent back to the iBonus Server and waiting for authorization.	Request queued

After several minutes to one day (depends on the network architecture). The repairing can be performed as follows:

Go to this screen by the step above. Press 2 to choose repair.	Request/Repair (1/2)?
When you see the screen as follows. Present the damaged member card to complete the repair process.	Repair Card Waiting Card...
When you see the screen as follows. Present member card to confirm.	Present the same MemberCard again
When the card is authorized from the Server, the card can be repaired.	Card Repaired!
If record is found but not authorized, it will show the	Card has already Repaired

message about the reason.	
Customer ID of the Terminal is duplicated.	Customer ID Duplicated
Card record is not found in the database.	Error: Card Not Found
Another Terminal is trying to repair the same card.	Another Terminal doing the repair
If record is found but the card cannot be repaired, it is due to severe damaged on the card.	This Card Cannot be Repaired!
Present a brand new card.	Waiting Brand New Card...
The entire data of the corrupted card will be replaced by a brand new card.	Card Replaced!

1.5.3 Replace Member Card

Replace Member Card reissues a lost member's card. To replace a member card, the staff chooses request replace member card function, enters the member's name or member's ID and optionally date of birth of the member. The reference number is displayed on the LCD screen and jot down by the staff. If a printer is connected, a receipt with the reference number is printed. The reference number is for referring the replacement process. After receiving the request, the iBonus Server waits for a day for the data synchronization from all terminals. If the most updated card information shows that there is only one match of the information

and the card is not blacklisted, the card information will be sent back to the origin iBonus Terminal. The staff chooses the replace member card function, enters the reference number and presents the brand new card. The card information is written back to the card.

To enable the replacement function, the following condition has to be met.

1. The expiry function is active and there is an expiry day on the lost card.
2. Either unique member name is stored on the card (At least one transaction about the card is sent back to the server) or unique member ID associate with the lost card is stored in the iBonus Server's database.

iBonus Terminal does not write anything to disable the card. Whenever a staff finds that a member card is marked as blacklisted when trying to present it to an iBonus Terminal, the staff is supposed to confiscate the card.

Action sent back to iBonus Server:

Request Replace by Card ID, Request Replace by Customer ID,
Do Replace

In order to enjoy the glory of this function, the following requirement has to be met:

1. The expiry function is active and there is an expiry day on the lost card.
2. Either unique customer ID is stored on the card or unique member ID associate with the lost card is stored in the iBonus Server's database.

There are 2 steps: (1) Send Request for Member Card replacement and (2) Replacing of Member Card after the request has been sent and verified by iBonus Server. Transaction actions will be logged.

1.5.3.1 Timing Issue and Card Salvage Value

The server updates a blacklist including the lost card. By default, each terminal downloads the blacklist from the server 4 times a day. It means that it takes at most 6 hour for all Terminals to prohibit the use of the lost card. Server needs to see if the card is used within that period. Server will return to the request originating Terminal the status of the lost card done before the card is blacklisted in time. If the connection of every Terminal is fine, it will take at most 6 hour for the lost card detail to be ready for download for the request originating Terminal. Every terminal prompts the server for lost card detail once every 6 hours. So it takes at most 12 hours for the lost card status to be downloaded to the request originating Terminal.

If one of the Terminals is not connected to the server, Server will wait for 3 days (by default) since last visit of the Terminal. After 3 days the Terminal is assumed

not in service. Server will not be waiting for the Terminal and will send back the lost card status back to the request originating Terminal.

Therefore by default, it will take longest 3.5 days to have the card replaced. In an unstable network, if you want to shorten the maximum card replace time, you can set Limit Visit in iBonus Server to be a shorter time. The trade off is that the Terminal, which lost connection with server might have some transaction of the lost card before the card being blacklisted. The status of the replace card might not be able to reflect the latest value of the lost card.

To send request for Member Card replacement:

While in Staff Operation Mode (after Staff Login), press Func to enter Staff Admin mode.	TUE 07 Sep 15:45 Amount: \$
Present Staff Card to enter Staff Admin mode.	* Staff Admin! * Wait StaffCard..
Press Func when you see the screen as follows.	= UndoPurchase = Amount: \$
Keep pressing Func until you see the screen as followings. Press A to enter repair card menu.	= Replace Card = Press 'A'...
Press 1 to choose request.	Request/Replace (1/2)?
Press 1 if you know the customer ID stored in the card (iBonus Terminal can only enter customer ID in numerical format, you can choose 1 only if the customer ID is in such format). Press 2 if you know the member ID of the lost card.	CustomerID/ Card ID(1/2)?
If you have chosen 1 , enter the numerical customer ID and press Func .	Customer ID: —
If you have chosen 2 , enter the numerical member ID and press Func .	Member ID: —
Enter the date of birth as that in the lost card. If the date has not been entered before, leave is as 00/00/0000. Press Func to proceed	DOB (M/D/Y) : 00/00/0000
A receipt with the reference no. is printed. Keep the receipt. If the Terminal is not connected to a printer,	Request Sent! Ref: 12345

make sure that the reference number is noted. The number is required for the renewal process. Press Func or ← to finish.	
---	--

After the request is sent, the iBonus Server verifies the validity of the information and the card is not blacklisted. After several minutes to one day (depends on the network architecture). The card replacement can be performed as follows:

Follow the steps above. Go to the screen as follows. This time, press 2 to choose replace.	Request/Replace (1/2)?
The replacement record can be searched by 1) Reference Code, 2) Card ID, or 3) Customer ID. Enter 1 , 2 , or 3 to do replacement by using one of the above methods. Press Func to proceed.	Ref No: —
	Card ID: —
	Customer ID: —
Present a brand new card.	Waiting Brand New Card...
If the card replacement is accepted, present a newly initialized card to the Terminal. The card can now be used.	Card Replaced!
If record is found but not authorized, it will show the message about the reason.	Card has already Replaced
Customer ID is duplicated.	Customer ID Duplicated
Card being replaced is already blacklisted	Card is blacklisted

Card being replaced is not found.	Error: Card Not Found
Another Terminal is trying to replace the same card.	Another Terminal doing the replace

2 iBonus Server

2.1 Features

- Supports Microsoft Access Data Base and Microsoft SQL Server 2005
- Data connection is through ADO

2.2 System Requirements

2.2.1 Recommended Hardware Requirements

Depends on the scale and the capacity requirement, the recommended system requirement is as follows:

- CPU : Pentium 3GHz Core Duo
- RAM :1GB DDR2
- Harddisk : 80GB

2.2.2 Recommended Platform Requirements

- Microsoft Windows® XP Professional
- Microsoft .Net framework 2.0
- Microsoft SQL Server 2005 (optional)
- Internet Information Service (IIS) (for reporting)

2.3 Installation

The following procedure will install iBonus Server and iBonus reporting:

- Insert the iBonus Server CD
- Run the setup file <CD-ROM Drive Path>\ibonusserver\setup.exe
- Click <Next> >

- Click the radio box <I Agree> if applicable
- Click <Next >>
- Choose the path and whether everyone or the person who install the program can use the iBonus Program
- Click <Next > >
- Choose Language.
- Keep pressing Click <Next > > until the setup is finished

2.4 Administration

iBonus Server Administrative Tools has the following use:

- Providing wizard to create Microsoft Access™ or Microsoft SQL 2005 database
- Viewing transaction log
- Viewing event log
- Adjusting timing settings
- Setting Expiry Mode

2.4.1 Starting

The iBonus Server Administration Tools can be started by:

Click <start> → <iBonus Server 3> → <iBonusServerAdmin>

2.4.2 Setting up Database

To establish a database:

Click <Settings> → <Server config> → Click the tab <Database> → Click <Change> → Click <Ok> in the dialog box.

1. Create the database table:
 - a. Select database type. iBonus Server supports either MS Access or MS SQL Server 2005. MS SQL Server 2005 must be installed in advance if you wish to use it.
 - b. For Microsoft Access, enter the path, database file name, password and number of concurrent connection.
 - c. For Microsoft SQL Server 2005, enter Server Name, Authentication type, database path, database name, admin login, admin password and connection count.
 - d. Click <Create DB> to create the database table for iBonus Server.
 - e. Click <Next > >
2. Testing the database:
 - a. Click <Test settings>
 - b. If everything is fine <Next > >
3. Saving the settings
 - a. Click <Save settings>
 - b. Click <Yes> in the dialog box.
 - c. Click <Finish>

2.4.3 Changing Language

To change the language used in iBonus Server Administrative Tools:
Click <Settings> → <Language> → Click the language in the list.
Restart the iBonus Server Administrative Tools.

2.4.4 Loading Question File

The questionnaire file exported from iBonus Display can be imported to iBonus Server. The field memberInfo can be interpreted by the questionnaire.

Click <Settings> → <Load Question File> → Select the questionnaire file → Click <Open>

2.4.5 Viewing the Access Log

The server administration program can see the access log received from iBonus Terminal. By default all information in the access log is shown at the table as in different columns. You can hide some of the information of the access log for convenience during viewing.

At the menu bar click <View> → <Transaction Column Settings>

To hide the information in the field, click on the field names on in the table “Selected fields”. Then click <Remove <- >.

To show the information in the field, click on the field names on in the table “Available fields”. Then click <Add -> >.

The order of the fields can be arranged by selecting the field on the “Selected fields” then click <Up> or <Down>.

Click <Save> to apply the update and then click <Close>.

2.4.6 Viewing the Event Log

To view the even log, click <View> → <Full event log>.

2.4.7 Setting Expiry Mode

By default, iBonus Terminal follows the server’s expiry mode settings. After setting the expiry mode setting at the server, it will take some time for the Terminal to synchronize the settings. To change the expiry mode settings:

Click <Settings> → <Server Config>

In the expiry mode settings select Expiry Mode and Expiry Month.

Note: Please find the session mode of expiry for the detail on the meaning of Expiry Mode and Expiry Month.

Note: iBonus Terminal can override the server expiry mode setting by setting not following the server settings.

2.4.8 Tuning the Timing

Some timing can be tuned in iBonus Server. These timing is for setting how long an inactivation of iBonus Terminal is regarded as inactive, how long a (replace, repair, renew) request is regarded as expired, how often should a blacklist be downloaded, how long should the server log a warning in even log when no access log is received from iBonus Terminal and how often should the server start its batch process when no data is received.

Click <Settings> → <Server Config>

Adjust the value of Background Process Period

- Background process period, which states how often the server should start its batch process when no data is received.
- Limit Visit states how long the server regarded the Terminal as inactive when not receiving any signal from a Terminal. All (renew, repair and replace) request will be deleted when the Terminal is regarded as inactive.
- Limit Transaction Log states how long the Server and Terminal should emit warning after not receiving event from a particular Terminal.
- Limit Request Linger states how long a request is stayed in the Terminal before it is deleted.
- Limit Blacklist states how long the Server should emit warning after a Terminal is not downloading blacklist from the Server.

Note:

- Request replace, renew and repair authorization is $\text{Limit Transaction Log} / 2$
- Expiry Mode and the above timing settings are downloaded every 6 hours. It implies that changing the expiry mode settings and timing setting at server. 6 hours should be expected to take effect.

2.5 Server

iBonus Server collects transactions from Terminals. Technically speaking, it is Terminals which push transactions to Server. iBonus Server verifies the eligibility of renew, repair and replace request and authorizes or denies the pending request. It also generate blacklist initiated by replace requests.

2.5.1 Starting

By default iBonus Server starts it self during start up. If you start the iBonus Server manually, the following instruction should be followed.

The iBonus Server Administration Tools can be started by:

Click <start> → <iBonus Server 3> → <iBonusServer>

An icon appears at the Systray.

Right click on the icon → click <Administrative Tools> → click <Start Server>

2.6 Reporting

iBonus Server provides two types of reporting programs:

- Reporting application
- Report for Microsoft Reporting Service

Reporting Functions are provided in iBonus Server CD.

2.6.1 Reporting Application

Reporting Application is a simple reporting program for those who do not have reporting service installed in the Server. It can also act as a monitor to check the status of all Terminals.

To execute reporting Application:

Click <start> → <iBonus Server 3> → <iBonusReport>

The reporting program is divided to 3 areas:

1. Constraints
2. Grouping criteria
3. Result

TransactionTypeName	MemberInfo	MemberInfo	RCDID	TerminalSerialNo	CardID	CustomerID	LogDateTimeTerminal	LogC
Cash Purchase	16390		430	VK-2003-0229-12EF	1007	0	2007-01-30 10:30:21	2007
Cash Purchase	16384		1493	VK-2003-0229-12EF	9001	9999	2007-01-30 11:04:42	2007
Card Purchase	16402		1495	VK-2003-01BD-1239	9000	0	2007-01-30 11:04:43	2007
Card Purchase	16402		1592	VK-2003-01BD-1239	9000	9999	2007-01-30 11:07:44	2007
Cash Purchase	16384		1593	VK-2003-0229-12EF	9001	9999	2007-01-30 11:07:44	2007
Reload	16402		1599	VK-2003-01BD-1239	9000	9999	2007-01-30 11:07:54	2007
Cash Purchase	16384		1603	VK-2003-0229-12EF	9001	9999	2007-01-30 11:07:59	2007
Cash Purchase	16384		1612	VK-2003-0229-12EF	9001	9999	2007-01-30 11:08:12	2007
Cash Purchase	16458		3827	VK-2003-0229-12EF	1019	45	2007-01-30 12:22:12	2007
Redeem	16458		3834	VK-2003-0229-12EF	1019	45	2007-01-30 12:22:24	2007

iBonusReport let you set the following constraints:

Date time, member info, member profile, terminal and transaction type

The results can be grouped by the following fields:

Date, Card ID, Staff ID, Branch Code, Terminal Serial No, Item Description

The following reports are available as result:

Transaction Log, Type Summary, Cash Summary and Bonus Point Summary

2.6.1.1 Monitoring Terminal Status

To monitor terminal status

1. Click <Check> at menu bar
2. Click <Terminal status>

The terminal status report will be refreshed periodically.

2.6.1.2 Querying

To execute a report generation:

1. Enter the criteria at the constraint area.
2. Select the grouping criteria.
3. Select the maximum number of transaction you want to show.
4. Click <Go>

Note:

- If no constraint is selected, all transaction will be counted
- If no grouping is selected, transaction report is generated; Otherwise, Cash Summary and Bonus Point Summary are generated.
- Maximum number of transaction does not affect the summary report

2.6.1.3 Exporting Report to Excel

All the report can be exported to excel .CSV format.

To export the transaction report:

Click <File> on menu bar → Click <Export Transaction...> → Enter the path of the .csv file.

To export the summary report:

Click <File> on the menu bar -> Click <Export Summaries...> → Select one of the summary report at the sub menu. → Enter the path of the .csv file.

To export the summary report:

Click <File> on the menu bar -> Click <Terminal status...> → Select one of the summary report at the sub menu. → Enter the path of the .csv file.

2.6.2 Report for Microsoft Reporting Service

Sample reports for Reporting Service are provided. IIS is required for reporting server. Microsoft Reporting Service provides function which allows the result to be exported to excel, .tiff graphic, pdf and XML.

2.6.3 Sample Reports

The following reports are bundled:

AccessLog	That which queries the transaction log table
RenewRequests	That which queries the RenewRequests table
RepairRequests	That which queries the RepairRequests table
ReplaceRequests	That which queries the ReplaceRequests table
Terminals	That which queries the Terminal table
Staff	That which queries the Staff table
Member	That which queries the Member table
Grouping	That which summarizes the amount of different value transaction and group them by date, member card ID, staff ID, branch code and customer's age.
Redemption	That which summarizes the amount of different item redeemed (including manual redeem) at a particular time period. The time period can be branched to quarter, month, week and day.
Sales	That which summarizes the amount of all value type transactions at a particular time period. The time period can be branched to quarter, month, week and day.

For detail about the content of the database table, please see appendix.

2.6.4 Installation

Samples reports in reporting service are provided for basic queries. IIS is required for using Reporting Service.

Procedure for installing reporting service:

- Use web browser to browse to <http://localhost/Reports/>. Upload the reports files (.rdl) which are located in the <installation folder>/Reports/ of iBonus Server.

If the SQL Server is located in another computer, replace the path localhost by the path of the other computer.

- Create Data Source.
 - a. In Data Source, click new data source.
 - b. Specify a name, e.g iBonus
 - c. Specify your connection type. e.g Microsoft SQL Server
 - d. Specify the connection string of the database. e.g Data Source=localhost; Initial Catalog=iBonus
 - e. Specify the credential if you want the user to view the report securely. e.g The credentials stored securely in the report server.
 - f. Then type the user name and password that has privileged to view the report.
 - g. Click Apply
- Upload report files
 - a. Click Home -> Upload File
 - b. Please browse the .rdl file.
 - c. Specify a name of the report.
 - d. Click OK
 - e. Repeat step a - d till all the .rdl files are uploaded.
- Link up the report to the specified data source
 - a. Click on the link of a report e.g AccessLog
 - b. If it shows "The report server cannot process the report. The data source connection information has been deleted.". Click Properties → Data Source.
 - c. Click Browse button to use shared data source.
 - d. Select the data source you have just created.
 - e. Click OK
 - f. Repeat step a - e until all the reports have been setup.

Appendix

2.7 Hardware Specification of iBonus Terminal

Power	12VDC, 600mA
Cards Supported	Mifare Classic (1 Kbytes) Mifare Ultralight (512 bits)
Non-volatile memory	32MB
Volatile memory	32MB
Display	16 x 2 LCD with Backlight
Receipt Printer Connectivity	Yes ESC/POS protocol supported 42 characters per line
Communication ports	Ethernet (10-Base T), RS232 57600 bps, Parallel Port
Real Time Clock	Last for approx. 1 day without power
Environment	Temperature: 0-45°C/ 32-115°F Humidity: Max 95%, non-condensing
Footprint	4.22 (W) x 7.36 (D) x 2.56 (H) (in) 106(W) x 190 (D) x 65 (H) (mm)
Weight	0.35 kg

2.8 Software Specification of iBonus Terminal

Maximum number of transaction log stored	5,000 (Won't accept any transaction when buffer is full)
Maximum number of Card renew record stored	3,000 (Won't accept renew request when buffer is full)
Maximum number of Card replace record stored	1,000 (Won't accept replace request when buffer is full)
Maximum number of Card repair record stored	1,000 (Won't accept repair request when buffer is full)
Default Blacklist Update Period	6 hours

2.9 Smart Cards Format

2.9.1 Master Card

Name: wCompanyCode
Bytes: 2
Description: The code which represents the company who owns this block. The company code in the member card .and staff card created by the quota of this master card will be the same as this code.

Name: wIdentifier
Bytes: 2
Description:

The code which indicates this block contains master card information.

Name: <code>dwMasterID</code>

Bytes: 4

Description:

The card ID of the first member card, which will be formatted by the quota obtained from master card.

The range with in `dwMasterID` and `dwMasterID + byCardX100*100` is globally unit unique (unique across different company.)

Limit: 0-4,294,967,295

Name: <code>dwNextMemberID</code>

Bytes: 4

Description:

The card ID of the next member card, which will be formatted by the quota obtained from master card. It will be increased whenever any quota is obtained from the master card. Actual quota left in the card is calculated by $(byCardX100 * 100 - (dwNextMemberID - dwMasterID))$

Limit: 0-4,294,967,295

Name: <code>byCardX100</code>

Bytes: 1

Description:

The card formatting quota of this master card. The actual quota is one hundred times the value in this field. This field is not changed by the Terminal.

Limit: 0-255. I.e. A Master can initialize at most 25,500 cards.
--

Name: <code>abyMaxCardValue</code>

Bytes: 3

Description:

It limits the maximum member card prepaid amount that can be operated or reloaded in the terminal reading this master card.

The most significant bit of this field tells the Terminal whether or not to regard the actual prepaid amount is 1/100 as much as that stored in the field. If the bit is set to 0, the value in the field of prepaid amount is regarded as 100 as much as the actual value, so that it can store the value in the precision of two decimal places. If the bit is set to 1, the actual value of prepaid amount is regarded as equal to the integral representation of the field. In some countries whose currency does not have decimal place, system integrator can consider not to use decimal places in the card in order to have a larger maximum prepaid value.

Limit:

When MSb is set to 0: 0-83886.07

When MSb is set to 1: 0-8388607

Name: abyDESKey
Bytes: 8
Description: A 64 bit encryption key for encrypting the data stored in member card using DES3 encryption algorithm.

Name: abyKeyA
Bytes: 6
Description: Key A for accessing the Member cards using Mifare Classic card

Name: abyKeyB
Bytes: 8
Description: Key B for accessing the Member cards using Mifare Classic card

2.9.2 Member Card

Block for storing the basic information which is the same among Ultralight Mifare card and classic card:

Name: wCompanyCode
Bytes: 2
Description: The code which represents the company who owns this block. The company code in the member card .and staff card created by the quota of this master card will be the same as this code.

Name: wExpiryDay
Bytes: 2
Description: The date when the card expire. Its format is Year (7bit) Month (4 bit) Day (5bit) This field has three formats to operate in the four modes of operation of expiry day. 1. No Expiry Day: Format: The whole field set to zero. 2. Relative Month Fixed Month Format: The Day field is set to zero 3. Expiry date extended from last visit. Format: Year, month and day is set to the exact date of expiry.

Name: dwMemberID
Bytes: 4
Description:

The unique member ID of the card. This value is assigned during card initialization. The member ID is globally unique among all cards issued in all different companies.
--

Limit: 0-4,294,967,295

Name: dwAccSpending

Bytes: 4

Description:

The accumulated spending. The most significant bit of this field tells the Terminal whether or not to regard the actual prepaid amount is 1/100 as much as that stored in the field. If the bit is set to 0, the value in the field of prepaid amount is regarded as 100 as much as the actual value, so that it can store the value in the precision of two decimal places. If the bit is set to 1, the actual value of prepaid amount is regarded as equal to the integral representation of the field. In some countries whose currency does not have decimal place, system integrator can consider not to use decimal places in the card in order to have a larger maximum prepaid value.

Limit:

When MSb is set to 0: 0-21,474,836.47

When MSb is set to 1: 0-2,147,483,647

Name: wMemberInfo

Bytes: 2

Description:

Purpose of flag MSB B[15-12] of wMemberInfo:

B[15] for storing if the memberInfo is already transmitted to iBonus Terminal
 B[15] is set when, MemberInfo data is newly saved or modified and not yet read by iBonus Terminal. When the memberInfo is read by iBonus Terminal B[15] is unset.

B[14] is for storing whether the user's information is valid

It determines whether the language preference and the user's information are valid.

B[13-12] are for storing the language preference on iBonus display unit.

When B[13]=0 and B[12]=0 iBonus default language is preferred

When B[13]=1 and B[12]=0 iBonus alternate language 1 is preferred

When B[13]=0 and B[12]=1 iBonus alternate language 2 is preferred

When B[13]=1 and B[12]=1 iBonus alternate language 3 is preferred

The space left [11-0] in the member's card can let you add.

3 questions with 9-16 choices

or 4 questions with 5-8 choices

or 6 questions with 3-4 choices
or 12 questions with 2 choices

B[0] is the LSb of wMemberInfo

- The answers for the questions are stored from the LSB of wMemberInfo.
- For each question, at most 16 choices, which occupy 4 bits in wMemberInfo, are allowed.
- For each question, at least 2 choices, which occupy 1 bit in wMemberInfo, are allowed.
- If there are n choices in a question, ceiling (log2 (n)) bit are occupied.
- If the answer for a question with choice (1.. n) is x, x-1 is stored in the corresponding bitwise position.
- 0s are padded if the bit is not occupied by any questions.

Example:

The question setting in an iBonus is

Question 1: 3 choices (say choice 1,2,3)
Question 2: 16 choices (say choice 1,2,3,...16)
Question 3: 2 choices (say choice 1,2)
Question 4: 8 choices (say choice 1,2,3,...8)

The answer for question 1 occupies 2 bits, that is B[0-1]
The answer for question 2 occupies 4 bits, that is B[2-5]
The answer for question 3 occupies 1 bits, that is B[6]
The answer for question 4 occupies 3 bits, that is B[7-9]
B[10-11] are not used in this case, and are padded with 0s.

If the answer of the question of the questions is as follows:

Question 1: choice 2
Question 2: choice 11
Question 3: choice 1
Question 4: choice 8

The following will be stored. (commas are used to separate the answer for individual question)

01,2345,6,789,01
01,0101,0,111,00

Name: abyItemBonus

Bytes: 3

Description: The bonus point of the redemption item chosen in iBonus Display.
Limit: 0-8388607

Name: abyDOB
Bytes: 3
Description: Date of birth of the member. Byte 0: day Byte 1: month Byte 2: year counting from 1900

Name: abyBalBonus
Bytes: 3
Description: The bonus points left in this card.
Limit: 0-16,777,215

Name: abyBalPrepaid
Bytes: 3
Description: The monetary value stored in this card. The most significant bit of this field tells the Terminal whether or not to regard the actual prepaid amount is 100 th as much as that stored in the field. If the bit is set to 0, the value in the field of prepaid amount is regarded as 100 as much as the actual value, so that it can store the value in the precision of two decimal places. If the bit is set to 1, the actual value of prepaid amount is regarded as equal to the integral representation of the field. In some countries whose currency does not have decimal place, system integrator can consider not to use decimal places in the card in order to have a larger maximum prepaid value.
Limit: When MSb is set to 0: 0-83886.07 When MSb is set to 1: 0-8388607

Name: abyItemDes
Bytes: 11

<p>Description: The name of the redemption item/ product. <code>abyItemDes[0]</code> is a special character used for storing the quantity and identifying whether it is a redemption item or product. Bit 7(MSb) <code>abyItemDes[0]</code> indicates that it is a product when it is set. Bit 6 of <code>abyItemDes[0]</code> indicates that it is a redemption item when it is set. Bit 6 and 7 of <code>abyItemDes[0]</code> is mutually exclusive. Bit 0-4 of <code>abyItemDes[0]</code> stores the quantity. <code>abyItemDes[1..11]</code> stores the item description.</p>
<p>Limit: 10 characters for description, maximum quantity: 31</p>

<p>Name: <code>abyMemberName</code></p>
<p>Bytes: 10</p>
<p>Description: Member's name. It can be stored as 10 ASCII characters or 16 digits. It is normally used for storing characters. When entering member's name in the Terminal, it can store up to 16 digits. The format becomes: <code>abyMemberName[0]=0x0</code> <code>abyMemberName[1]=0x1</code> <code>abyMemberName[2-9]</code> is 64 bit integer.</p>
<p>Limit: 10 Characters or 16 digits stored in 64 bit integer.</p>

Extended block for storing the information of the redemption item or product chosen in iBonus Display which facilitates multiple redemption.

<p>Name: <code>wCompanyCode</code></p>
<p>Bytes: 2</p>
<p>Description: The code which represents the company who owns this block. The company code in the member card .and staff card created by the quota of this master card will be the same as this code.</p>

<p>Name: <code>wIdentifier</code></p>
<p>Bytes: 2</p>
<p>Description: The code which indicates this block contains Member card extended information.</p>

<p>Name: <code>abyItemBonus</code> (This field appears 3 times in this block)</p>
<p>Bytes: 3</p>
<p>Description: The bonus point of the redemption item chosen in iBonus Display.</p>
<p>Limit: 0-8388607</p>

Name: abyItemDes (This field appears 3 times in this block)
Bytes: 11
Description: The name of the redemption item/ product. abyItemDes[0] is a special character used for storing the quantity and identifying whether it is a redemption item or product. Bit 7(MSb) abyItemDes[0] indicates that it is a product when it is set. Bit 6 of abyItemDes[0] indicates that it is a redemption item when it is set. Bit 6 and 7 of abyItemDes[0] is mutually exclusive. Bit 0-4 of abyItemDes[0] stores the quantity. abyItemDes[1..11] stores the item description.
Limit: 10 characters for description, maximum quantity: 31

2.9.3 Staff Card

Name: wCompanyCode
Bytes: 2
Description: The code which represents the company who owns this block.

Name: wIdentifier
Bytes: 2
Description: The code for telling that this block is storing the staff card data.

Name: dwStaffID
Bytes: 4
Description: The unique staff ID. This value is assigned during card initialization. The member ID is globally unique among all cards issued in all different companies.

Name: abyBranchCode
Bytes: 5
Description: The code which storing the code of the branch, in which the iBonus Terminal can be operated by this staff card.
Limit: 1-9999

Name: abyMaxTransaction
Bytes: 3
Description: The maximum number of transaction where this staff can handle. The most

significant bit of this field tells the Terminal whether or not to regard the actual prepaid amount is 100th as much as that stored in the field. If the bit is set to 0, the value in the field of prepaid amount is regarded as 100 as much as the actual value, so that it can store the value in the precision of two decimal places. If the bit is set to 1, the actual value of prepaid amount is regarded as equal to the integral representation of the field. In some countries whose currency does not have decimal place, system integrator can consider not to use decimal places in the card in order to have a larger the maximum prepaid value.

Limit:

When MSb is set to 0: 0-83886.07

When MSb is set to 1: 0-8388607

2.10 SQL Statements for Creating Tables

```
CREATE TABLE [dbo].[AccessLog](
[RcdID] [int] IDENTITY(1,1) NOT NULL,
[TerminalSerialNo] [char](20) NULL,
[CardID] [char](20) NULL,
[CustomerID] [char](16) NULL,
[LogDateTimeTerminal] [datetime] NULL,
[LogDateTerminal] [int] NULL,
[LogTimeTerminal] [int] NULL,
[LogDateTimeServer] [datetime] NULL,
[DateOfBirth] [datetime] NULL,
[TransactionType] [smallint] NOT NULL,
[ExpiryDate] [int] NULL,
[Description] [char](20) NULL,
[Quantity] [smallint] NULL,
[Amount] [decimal](17, 2) NULL,
[BalPrepaid] [decimal](17, 2) NULL,
[BonusAmount] [int] NULL,
[AccSpending] [decimal](17, 2) NULL,
[MemberInfo] [smallint] NULL,
[StaffID] [char](20) NULL,
[TerminalCode] [smallint] NULL,
[BranchCode] [smallint] NULL,
[CompanyCode] [smallint] NULL,
[TransactionID] [char](20) NULL,
[CardSN] [char](16) NULL,
[BalBonus] [int] NULL,
[BlacklistVersion] [datetime] NULL,
[TransactionCounter] [int] NULL,
[RefCode] [int] NULL,
[ProposedExpiryDate] [int] NULL
) ON [PRIMARY];
```

AccessLog	The transaction log which store all access log sent from Terminals
RcdID	An auto increment field.
TerminalSerialNo	The serial number of the Terminal where this log is from
CardID	The CardID of the card involved in this transaction 0-4294967295
CustomerID	The CustomerID of the card involved in this transaction. 0-9999999999999999
LogDateTimeTerminal	The time when the transaction is done on the Terminal based on Terminal local time.
LogDateTerminal	The integer representation of the date value of LogDateTimeTerminal. It is created for the convenience of query. Format: yyymmdd
LogTimeTerminal	The integer representation of the time value of LogDateTimeTerminal. It is created for the convenience of query. Format: hhmmss
LogDateTimeServer	The time when the server receive this transaction
DateOfBirth	The date of birth of the member of the card involved in this transaction.
TransactionType	The code which identifies the transaction type.
ExpiryDate	The expiry date of the card involved in this transaction. If the expiry date is in last visit mode, the format is yyymmdd. If the expiry date isn't set in the card it will be zero. If the expiry date is fixed month mode the format is yyymm99.
Description	The item code of the gift of product selected from iBonus Display
Quantity	The quantity of the redemption transaction 1-31
Amount	The amount of money changed in this transaction 0-8388607.00
BalPrepaid	The amount of money of the card after this transaction.
BonusAmount	The amount of bonus point changed in this transaction. 0-16777215
AccSpending	The amount of accumulated spending in the card in this transaction. 0-2147483647.00
MemberInfo	The flag which represent the user's answer in the multiple choice question of iBonus Display
StaffID	The staffID of the staff who is responsible for this transaction.
TerminalCode	The Terminal Code of the Terminal
BranchCode	The Branch Code of the Terminal

CompanyCode	The Company Code of the Terminal
TransactionID	The number which serialize the transaction of the member card.
CardSN	The serial number of the card involved in this transaction.
BalBonus	The Bonus point in the card after this transaction.
BlacklistVersion	The version of blacklist saved in iBonus Terminal when this transaction takes place.
RefCode	The reference code used to identify the renew, replace and repair transactions.
ProposedExpiryDate	The expiry date calculated by the Terminal during renew.

```

CREATE TABLE [dbo].[TransactionQueue](
[RcdID] [int] IDENTITY(1,1) NOT NULL,
[TerminalSerialNo] [char](20) NULL,
[CardID] [char](20) NULL,
[CustomerID] [char](16) NULL,
[LogDateTimeTerminal] [datetime] NULL,
[LogDateTimeServer] [datetime] NULL,
[DateOfBirth] [datetime] NULL,
[TransactionType] [smallint] NOT NULL,
[ExpiryDate] [int] NULL,
[Description] [char](20) NULL,
[Quantity] [smallint] NULL,
[Amount] [decimal](17, 2) NULL,
[BalPrepaid] [decimal](17, 2) NULL,
[BonusAmount] [int] NULL,
[AccSpending] [decimal](17, 2) NULL,
[MemberInfo] [smallint] NULL,
[StaffID] [char](20) NULL,
[TerminalCode] [smallint] NULL,
[BranchCode] [smallint] NULL,
[CompanyCode] [smallint] NULL,
[TransactionID] [char](20) NULL,
[CardSN] [char](16) NULL,
[BalBonus] [int] NULL,
[BlacklistVersion] [datetime] NULL,
[TransactionCounter] [int] NULL,
[RefCode] [int] NULL,
[ProposedExpiryDate] [int] NULL,
[TerminalDescription] [char](40) NULL,
[IPAddress] [char](15) NULL) ON [PRIMARY];

```

TransactionQueue	The table which temporary stores the transactions
------------------	---

	sent back from Terminals which will later on be processed.
RcdID	An auto increment field.
TerminalSerialNo	The serial number of the Terminal where this log is from
CardID	The CardID of the card involved in this transaction 0-4294967295
CustomerID	The CustomerID of the card involved in this transaction. 0-9999999999999999
LogDateTimeTerminal	The time when the transaction is done on the Terminal based on Terminal local time.
LogDateTerminal	The integer representation of the date value of LogDateTimeTerminal. It is created for the convenience of query. Format: yyymmdd
LogTimeTerminal	The integer representation of the time value of LogDateTimeTerminal. It is created for the convenience of query. Format: hhmmss
LogDateTimeServer	The time when the server receive this transaction
DateOfBirth	The date of birth of the member of the card involved in this transaction.
TransactionType	The code which identifies the transaction type.
ExpiryDate	The expiry date of the card involved in this transaction. If the expiry date is in last visit mode, the format is yyymmdd. If the expiry date isn't set in the card it will be zero. If the expiry date is fixed month mode the format is yyymm99.
Description	The item code of the gift of product selected from iBonus Display
Quantity	The quantity of the redemption transaction 1-31
Amount	The amount of money changed in this transaction 0-8388607.00
BalPrepaid	The amount of money of the card after this transaction.
BonusAmount	The amount of bonus point changed in this transaction. 0-16777215
AccSpending	The amount of accumulated spending in the card in this transaction. 0-2147483647.00
MemberInfo	The flag which represent the user's answer in the multiple choice question of iBonus Display
StaffID	The staffID of the staff who is responsible for this transaction.
TerminalCode	The Terminal Code of the Terminal
BranchCode	The Branch Code of the Terminal

CompanyCode	The Company Code of the Terminal
TransactionID	The number which serialize the transaction of the member card.
CardSN	The serial number of the card involved in this transaction.
BalBonus	The Bonus point in the card after this transaction.
BlacklistVersion	The version of blacklist saved in iBonus Terminal when this transaction take place.
RefCode	The reference code used to identify the renew, replace and repair transactions.
ProposedExpiryDate	The expiry date calculated by the Terminal during renew.
TerminalDescription	The text which describes the terminal.

```

CREATE TABLE [dbo].[Member](
[CardSN] [char](16) NOT NULL,
[CardID] [char](20) NULL,
[CustomerID] [char](16) NULL,
[MemberInfo] [smallint] NULL,
[DateOfBirth] [datetime] NULL,
[ExpiryDate] [int] NULL,
[BalBonus] [int] NULL,
[AccSpending] [decimal](17, 2) NULL,
[BalPrepaid] [decimal](17, 2) NULL,
[LastVisit] [datetime] NULL,
[Blacklisted] [bit] NULL,
[Replaced] [bit] NULL,
[CustomerIDDuplicated] [bit] NULL,
[TransactionCounter] [int] NULL,
[ProposedExpiryDate] [int] NULL,
CONSTRAINT [PK_Member] PRIMARY KEY CLUSTERED
([CardSN] ASC)WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];

```

Member	The table which stores the detail of all member cards and brand new cards.
CardID	The CardID of the card. 0-4294967295
CustomerID	The CustomerID of the card. 0-9999999999999999
DateOfBirth	The date of birth of the member of the card involved in this transaction.
ExpiryDate	The expiry date of the card. If the expiry date is in last visit mode, the format is yyyyymmdd. If the expiry date isn't set in the card it will be zero. If the expiry date is fixed month mode the format is yyyyymm99.

BalPrepaid	The amount of money of the card.
AccSpending	The amount of accumulated spending in the. 0-2147483647.00
MemberInfo	The flag which represent the user's answer in the multiple choice question of iBonus Display
CompanyCode	The Company Code of the Terminal
TransactionID	The number which serialize the transaction of the member card.
CardSN	The serial number of the card.
BalBonus	The Bonus point in the card.
LastVisit	The time when this card last did transaction.
Blacklisted	The flag stating if this card is blacklisted
Replaced	The flag stating if this card is replaced
ProposedExpiryDate	The new expiry date requested during renew.

```
CREATE TABLE [dbo].[Staff](
[CardID] [char](20) NULL,
[CardSN] [char](16) NOT NULL,
[StaffName] [char](16) NULL,
[StaffInfo] [char](16) NULL,
[Blacklisted] [bit] NULL,
CONSTRAINT [PK_Staff] PRIMARY KEY CLUSTERED
([CardSN] ASC )WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];
```

Staff	The table which stores the detail of all staff cards.
CardID	The CardID of the card. 0-4294967295
CardSN	The serial number of the card.
StaffName	Not Used
StaffInfo	Not Used
Blacklisted	The flag stating if this card is blacklisted

```
CREATE TABLE [dbo].[Terminals](
[SerialNo] [char](20) NOT NULL,
[StatusCode] [smallint] NULL,
[Warning] [smallint] NULL,
[TimeLastTransaction] [datetime] NULL,
[TimeLastVisit] [datetime] NULL,
[UsingBlacklistVer] [datetime] NULL,
[IPAddress] [char](15) NULL,
[BranchCode] [smallint] NULL,
[TerminalCode] [smallint] NULL,
[Description] [char](40) NULL,
CONSTRAINT [PK_Terminals] PRIMARY KEY CLUSTERED
```

```
([SerialNo] ASC)WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];
```

Terminals	The table which stores the status, timing and info about every terminal.
SerialNo	The serial number of the Terminal
StatusCode	The status of the Terminal. active = 1 inactive = 2
Warning	The warning which states if there is anything abnormal about the terminal Can be the OR of the followings: Ok = 0 Exceed last visit = 1 Exceed transaction log =2 Exceed linger request =4 Duplicated branch code and terminal Code = 8 Blacklist not update = 16
TimeLastTransaction	The time when the Terminal sends back transaction.
TimeLastVisit	The time when the Terminal visit server.
Description	The item code of the gift of product selected from iBonus Display
TerminalCode	The Terminal Code of the Terminal
BranchCode	The Branch Code of the Terminal
CompanyCode	The Company Code of the Terminal
IPAddress	The IP address that the server recognize the Terminal as.
UsingBlacklistVersion	The blacklist version which is in the terminal.
Description	The text which describes the terminal.

```
CREATE TABLE [dbo].[RenewRequests](
[TerminalSerialNo] [char](20) NOT NULL,
[RefCode] [int] NOT NULL,
[CardSN] [char](16) NOT NULL,
[Status] [smallint] NULL,
[TimeChgState] [datetime] NOT NULL,
[ProposedExpiryDate] [int] NULL,
[RecordExpiryDate] [datetime] NULL,
CONSTRAINT [PK_RenewRequests] PRIMARY KEY CLUSTERED
(
[TerminalSerialNo] ASC,
[RefCode] ASC
)WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];
```

RenewRequests	The table which stores the detail of all renew request.
TerminalSerialNo	The serial number of the request originating terminal
RefCode	The ref code the which refer to the request
Status	The approval status of the request
TimeChgState	The time when the status is last changed
CardSN	The serial number of the card
ProposedExpiryDate	The new expiry date generated in the renew request operation.
RecordExpiryDate	The expiry date of this record.

```

CREATE TABLE [dbo].[ReplaceRequests](
[TerminalSerialNo] [char](20) NOT NULL,
[RefCode] [int] NOT NULL,
[CardSN] [char](16) NULL,
[Status] [smallint] NULL,
[TimeChgState] [datetime] NOT NULL,
[RequiredBlacklistVersion] [datetime] NULL,
[ExpiryDate] [int] NULL,
[CardID] [char](20) NULL,
[AccSpending] [decimal](17, 2) NULL,
[MemberInfo] [smallint] NULL,
[DateOfBirth] [datetime] NULL,
[BalBonus] [int] NULL,
[BalPrepaid] [decimal](17, 2) NULL,
[CustomerID] [char](16) NULL,
[TransactionCounter] [int] NULL,
[RecordExpiryDate] [datetime] NULL,
CONSTRAINT [PK_ReplaceRequests] PRIMARY KEY CLUSTERED
([TerminalSerialNo] ASC,
[RefCode] ASC
)WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];

```

ReplaceRequests	The table which stores the detail of all replace request.
TerminalSerialNo	The serial number of the request originating terminal
RefCode	The ref code the which refer to the request
CardID	The CardID of the card. 0-4294967295
Status	The approval status of the request
TimeChgState	The time when the status is last changed
RequiredBlacklistVersion	The blacklist version which the terminal is required to have before this request can be approved.
CustomerID	The CustomerID of the card. 0-9999999999999999
DateOfBirth	The date of birth of the member of the card involved

	in this transaction.
ExpiryDate	The expiry date of the card. If the expiry date is in last visit mode, the format is yyyyymmdd. If the expiry date isn't set in the card it will be zero. If the expiry date is fixed month mode the format is yyyyymm99.
BalPrepaid	The amount of money of the card.
AccSpending	The amount of accumulated spending in the. 0-2147483647.00
MemberInfo	The flag which represent the user's answer in the multiple choice question of iBonus Display
CompanyCode	The Company Code of the Terminal
TransactionID	The number which serialize the transaction of the member card.
CardSN	The serial number of the card.
TransactionCounter	The counter which serialize the member card transactions
BalBonus	The Bonus point in the card.
RecordExpiryDate	The expiry date of this record.

```

CREATE TABLE [dbo].[RepairRequests](
[TerminalSerialNo] [char](20) NOT NULL,
[RefCode] [int] NOT NULL,
[CardSN] [char](16) NULL,
[Status] [smallint] NULL,
[TimeChgState] [datetime] NULL,
[ExpiryDate] [int] NULL,
[CardID] [char](20) NULL,
[AccSpending] [decimal](17, 2) NULL,
[MemberInfo] [smallint] NULL,
[DateOfBirth] [datetime] NULL,
[BalBonus] [int] NULL,
[BalPrepaid] [decimal](17, 2) NULL,
[CustomerID] [char](16) NULL,
[TransactionCounter] [int] NULL,
[RecordExpiryDate] [datetime] NULL,
CONSTRAINT [PK_RepairRequests] PRIMARY KEY CLUSTERED
([TerminalSerialNo] ASC,
[RefCode] ASC
)WITH (IGNORE_DUP_KEY = OFF) ON [PRIMARY]
) ON [PRIMARY];

```

RepairRequests	The table which stores the detail of all repair request.
TerminalSerialNo	The serial number of the request originating terminal
RefCode	The ref code the which refer to the request
CardID	The CardID of the card.

	0-4294967295
Status	The approval status of the request
TimeChgState	The time when the status is last changed
CustomerID	The CustomerID of the card. 0-9999999999999999
DateOfBirth	The date of birth of the member of the card involved in this transaction.
ExpiryDate	The expiry date of the card. If the expiry date is in last visit mode, the format is yyymmdd. If the expiry date isn't set in the card it will be zero. If the expiry date is fixed month mode the format is yyymm99.
BalPrepaid	The amount of money of the card.
AccSpending	The amount of accumulated spending in the. 0-2147483647.00
MemberInfo	The flag which represent the user's answer in the multiple choice question of iBonus Display
CompanyCode	The Company Code of the Terminal
TransactionID	The number which serialize the transaction of the member card.
CardSN	The serial number of the card.
TransactionCounter	The counter which serialize the member card transactions
BalBonus	The Bonus point in the card.
LastVisit	The time when this card last did transaction.
RecordExpiryDate	The expiry date of this record.

2.11 Transaction Type

Type name	Value
ISSUE_MEMBER_CARD	1000
PURCHASE_CASH	1001
PURCHASE_CARD	1002
REDEEM	1003
RELOAD	1004
UNDO_PURCHASE_CASH	1005
UNDO_PURCHASE_CARD	1006
UNDO_RELOAD	1007
ADJUSTMENT	1008
UNDO_MANUAL_REDEEM	1009
CARRY_FORWARD	1010
SET_CUSTOMER_ID	1011
ISSUE_STAFF_CARD	2000
BLACKLIST_STAFF_CARD	2001
STAFF_LOGIN	2002
STAFF_LOGOUT	2003
STAFF_FORCED_LOGOUT	2004
REQUEST_REPLACE_CARD_BY_CARD_ID	3000
REQUEST_REPLACE_CARD_BY_CUSTOMER_ID	3001
DO_REPLACE	3002

REQUEST_REPLACE_AUTHORIZATION	3003
REPLACE_REQUEST_EXPIRED	3004
REMOVE_REPLACE_REQUEST	3005
REQUEST_REPAIR	3200
DO_REPAIR	3201
DO_REPAIR_BY_REPLACE	3202
REQUEST_REPAIR_AUTHORIZATION	3203
REPAIR_REQUEST_EXPIRED	3204
REMOVE_REPAIR_REQUEST	3205
REQUEST_RENEW_CARD	3100
DO_RENEW	3101
REQUEST_RENEW_AUTHORIZATION	3102
RENEW_REQUEST_EXPIRED	3103
REMOVE_RENEW_REQUEST	3104
REQUEST_MESSAGE_LIST	4000
FINISH_TRANSACTION	4001
UNREGISTER_TERMINAL	5000
READ_SETTINGS	6000
READ_TIME	6001

2.12 Request Status

Request Status Name	Number stored in database	Meaning
Pending	1	This status indicates that the request is waiting for data synchronization from all terminals
Authorized	2	The status indicates that the request is authorized and may be already downloaded by the corresponding terminal.
Customer ID Duplicated	3	The status indicates that the request is invalid due to customer ID duplication.
blacklisted	4	The status indicates that the request is invalid because the card is blacklisted
Card Not Found/Card Has no expiry date defined	5	The status indicates that the request is invalid due to the card information is not found.
Authorization right occupied	6	The same card is doing the same type of request in another Terminal and the request is already authorized.
Card Replaced	7	Card is already replaced
Authorization right preempted	8	When a new request on the same card and same type is begin added to the table

		Requests. Any corresponding pending record in the table Requests will be changed to this status.
Invalid renew date	10	The proposed expiry date is invalid

2.13 House Cleaning Issues

House cleaning can be done periodically by programming. Only the table AccessLog should be house cleaned. It is recommended to stop the server when house cleaning is being performed.

2.14 Default Settings

2.14.1 iBonus Terminal

Default IP: 192.168.0.100

Default user name: admin

Default password: 123