



Bank of Mauritius

Mauritius Automated Clearing and Settlement System

Participant Procedures

Bank of Mauritius
Amended in July 2014
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1. PRELIMINARY

1.1 Relationship of these Procedures with the MACSS Terms and Conditions

The MACSS Terms and Conditions and the Procedures are complementary documents. The definitions used in the Terms and Conditions will apply to these Procedures.

The Mauritius Automated Clearing and Settlement System (MACSS) has two main components: a Real Time Gross Settlement System (RTGS) for interbank real time fund transfer, and a clearing component where clearing transactions are settled on a net basis. RTS/X is the software name for the RTGS component of MACSS.

1.2 Inconsistency with MACSS Terms and Conditions and SWIFT Requirements

If a provision of these Procedures is inconsistent with the Terms and Conditions, the provision of the Terms and Conditions will prevail.

These Procedures describe in some sections the requirements of the SWIFT network and FIN Y-Copy service. These requirements may change. In the event that a Procedure is inconsistent with any mandatory requirement of SWIFT, the SWIFT requirement will prevail to the extent of that inconsistency.

1.3 Amendments to the Procedures

A record of the date on which changes are advised and become effective will be maintained by the Central Bank and included in advices to Participants. Updated versions of these Procedures will be issued to Participants from time to time.

1.4 Participant Requests for Procedural or System Changes

Participants may submit proposals for procedural or system changes to the Central Bank directly or via any appropriate consultative committees established by the Central Bank for that purpose from time to time. Such proposals should be in writing and fully describe the purpose and benefits of the proposed change. The Central Bank will consider such proposals but the implementation of any procedural or system change will be at its sole discretion.

1.5 Associated User and SWIFT Documentation

These Procedures describe how Participants will interact at a business level with each other and the Central Bank. Separate documentation describes how the MACSS and SWIFT systems support these interactions at the operator level. Participants should make reference to the following associated documentation as necessary.

- SWIFT FIN Copy Service Description
- SWIFT User Handbooks
- MACSS Web Monitoring Workplace

2. SYSTEM OVERVIEW

2.1 Real Time Gross Settlement (RTGS)

The Mauritius Automated Clearing and Settlement System (MACSS) is the Mauritian Real-time Gross Settlement (RTGS) system. The concept of RTGS is to enforce, through the system, the processing and settlement of payments and other interbank transactions on a gross basis in real-time. This eliminates settlement and systemic risks associated

with arrangements wherein settlement is conducted on a net basis at the end of a cycle. RTGS ensures irrevocable receiver finality – a significant consumer advantage.

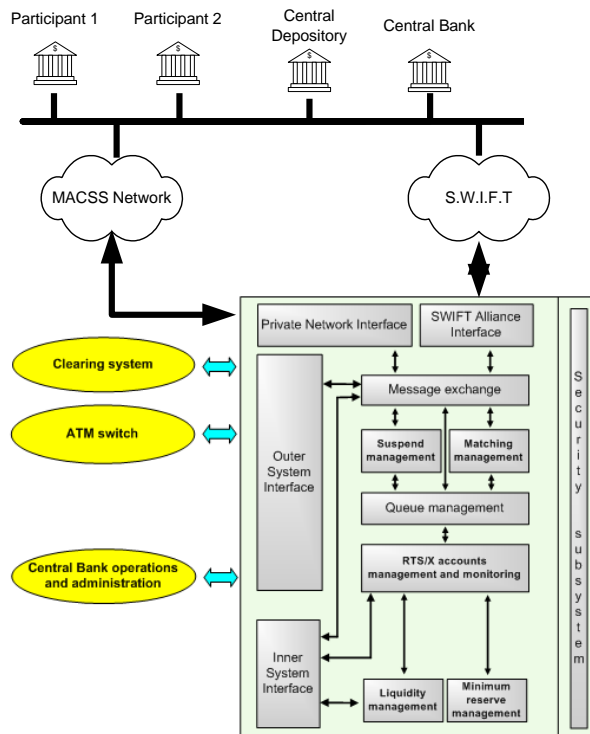
Not all transactions need to be subjected to the disciplines of RTGS. RTGS in Mauritius will co-exist with deferred net settlements of obligations arising from the exchange of low value-high volume payment types (eg. Cheques, EFT, CDS and card transaction). These net settlements will be processed over specific cycles on MACSS.

2.2 System Components

MACSS uses three main components:

- (i) SWIFT, including the FIN Y-Copy Service, the FIN Network and Participants' SWIFT interfaces;
- (ii) the Participant Webstation or Server; and
- (iii) the Central System with its associated Workstation facilities at the Bank of Mauritius ("the Central Bank").

The overall architecture is depicted in the following diagram.

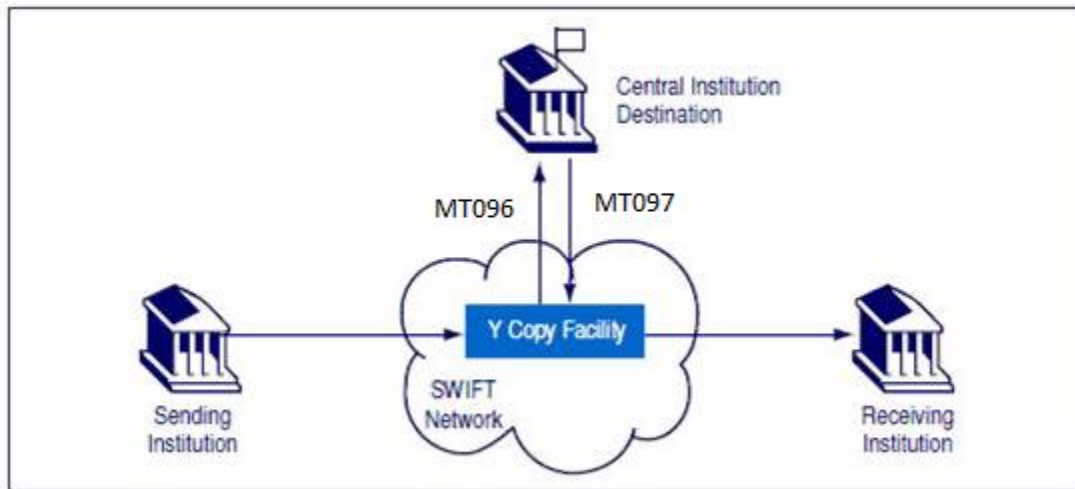


2.2.1 SWIFT FIN Y-Copy

MACSS uses the SWIFT network for the exchange of RTGS payment instructions. All MACSS Participants, including the Central Bank, are connected to SWIFT via SWIFT CBT interfaces.

SWIFT monitors the payment traffic of members of the MACSS Closed User Group and will direct any payments designated as MACSS RTGS payments to the FIN Y-Copy Service. FIN Y-Copy will extract information from the original payment message to create a new message. This message holds a minimum set of information to allow settlement across accounts of the sending and receiving Participants at the Central Bank. Y-Copy holds the original payment instruction pending receipt of an authorisation or rejection message from the Central Bank. On receipt of a positive authorisation, FIN Y-Copy forwards the settled payment instruction to the receiving Participant.

The basic process flow is illustrated below:



MACSS also uses the FIN network for the exchange of a limited range of non-value messages

2.2.2 MACSS Participant Interface (Webstation or Server)

Each MACSS Participant has either a MACSS Webstation or Server. MACSS uses the Participant Webstation or Server and a local network to support RTGS-related commands and enquiries.

The Server option is used by Participants that have multiple workstations within their organisation. Participants are responsible for installing and managing their internal connections to the Server.

The MACSS Participant Interface supports access to non-value functions including:

- on-line access to account balance and activity information;
- on-line access to previous day transactions and statements;
- download transactions and statements in XML format;
- monitoring of MACSS Central System operational status; and
- message broadcast to participants by the Central Bank.

2.2.3 MACSS Central System

The Central System performs three main roles. It handles the processing of:

- RTGS settlement accounting on behalf of Participants and associated liquidity management facilities;
- the Central Bank's own inward and outward RTGS payments; and
- non-RTGS Account Transfers across Participants' accounts initiated by the Central Bank.

3. OPERATING SCHEDULES

3.1 MACSS Operating Day

MACSS Operating Day means a day on which the Central Bank is open for the settlement of transactions with banks in Mauritius and MACSS is operating.

Participants should be in a position to receive and send MACSS Payment Instructions and other MACSS-related messages whenever MACSS is operating.

3.2 Operating Hours and Sessions

The Central Bank will seek to operate MACSS within a fixed schedule during each operating day. There will be discrete sessions within the MACSS day. Different transactions and processes will apply during these sessions. The MACSS operating schedule is described in the table below:

	EVENT	ACTIVITIES AND AVAILABLE TRANSACTIONS
9h00	Start-of-Day	MACSS start-of-day
9h30	Operating Day Commences	Third parties' transactions
16h30	Initial Cut-Off	Closed to new payments, except for bank-to-bank (MT2XX series) Account Transfers. Queue clearance may be effected by application of gridlock resolution tools by the Central Bank and by deletion of queued payments by Participants. Participants must arrange to have sufficient available funds to allow reversal of ILF drawings prior to Final Cut-off.
16h45	Final Cut-Off	No further inputs accepted. At session close, queue/settlement processing will cease and any transactions still in queues will be rejected with MT097 issued to SWIFT
17h00 (As determined by Central Bank)	System Close	End-of-day processes, e.g. reports, archiving etc.

Changes to the schedule whether during the normal course of business or due to unexpected circumstances will be advised to Participants by the MACSS operator.

3.3 Ad Hoc Changes to MACSS Operating Sessions and Hours

Ad hoc adjustments to the operating schedule may be required from time to time to deal with unforeseen contingencies. The Central Bank will extend or reduce operating times and sessions at its sole discretion.

Requests by Participants for an extension to an operating day or session will be considered on a case-by-case basis. Participants must not rely on obtaining an extension. The Central Bank will, as a general principle, entertain a request for extension only in critical circumstances. Participants will be advised of ad hoc changes as necessary.

4. ROUTING**4.1 BIC Maintenance**

As MACSS uses SWIFT for exchange of payment instructions, each Participant will be identified by its SWIFT BIC. Participants must advise the Central Bank prior to initiating any changes to their BIC with SWIFT.

Current BICs of MACSS Participants are given in Attachment F.

4.2 Branch Identification

Each Participant will, wherever possible, identify the branch of the bank at which the beneficiary account is domiciled.

5. PROCESSING OF PAYMENTS

5.1 Interest Adjustments

This section has been left intentionally blank.

5.1A In Order Payments

For payments which are in order, Participants must apply the fund to the beneficiary's account within thirty minutes from receipt thereof.

5.2 Return of a Settled Payment Sent by Error

Sending Participants can withdraw unsettled transactions from their settlement queues, but once a payment has been settled across the MACSS accounts, the sending Participant has no ability to recall that payment.

A Participant may request return of a payment using the SWIFT authenticated free form messages MT199 and above. The receiving Participant must make its own assessment as to whether it should comply with such a request.

5.3 Payments which cannot be applied

A receiving Participant must disgorge a received and settled payment in the event that it is unable to apply the payment, i.e.

- the receiving Participant is unable to apply the payment due to incorrect or inconsistent account details; or
- the account designated in the payment instruction is closed.

Participants must return such payments to the sending Participant **within one hour from receipt thereof.** If the original payment is received less than an hour before Final Cut-off, the payment return must be effected with thirty minutes of the start of the next Business day.

A return payment must be initiated as a new MT202 bank-to-bank message instruction. The return instruction must contain the reference number of the original instruction and clearly indicate "Return Payment".

6. SWIFT Y-COPY CLOSED USER GROUP (CUG)

6.1 Overview

The Central Bank has entered into a contract with SWIFT for the provision of FIN Y-Copy services to support the settlement of MACSS payment instructions exchanged between Participants.

The FIN Y-Copy service uses the facilities of the FIN messaging service, which it enhances by copying selected information to the Central Bank for settlement authorisation. This Store-Copy-Authorise-Forward facility is based on a relationship between Participants of a closed user group (CUG).

A FIN Y-Copy CUG consists of:

- sending and receiving institutions (Participants); and
- a central institution (the Central Bank).

The sending Participant prepares its message for transmission to the receiver using FIN in the usual way. The sender adds a code, indicating that the message is to be copied and transmits it. FIN Y-Copy intercepts the FIN message and then copies selected components to the Central Bank. FIN Y-Copy holds the message in a temporary queue until the Central Bank sends the appropriate authorisation or rejection, after which the message is either delivered to the receiver or the sender receives an abort notification.

6.2 Closed User Group Administration

The Central Bank will administer the FIN Y-Copy Service, including the determination of the membership of the CUG, the message types to be supported by the CUG and various other aspects of the FIN Y-Copy service. SWIFT is responsible for implementing the Central Bank's FIN Y-Copy requirements.

6.3 CUG Member Details

A Participant must seek the Central Bank's approval prior to submitting any requests to SWIFT for any amendment to its SWIFT identity or capabilities that may impact on its participation in the MACSS CUG.

6.4 Y-Server Bank Identifier Code (BIC)

Each Participant must maintain a single current Bank Identifier Code (BIC) for use in MACSS.

Banks that maintain multiple identities in SWIFT for related or subsidiary entities may only nominate one BIC as a destination for MACSS payments.

Bank Identifier Codes of MACSS Participants are listed in Attachment F.

6.5 Y-Copy Service Identifier

A sending Participant must include a three character Service Identifier Code in an outgoing SWIFT payment message for it to be intercepted and copied by the SWIFT Y-Copy service.

The Service Identifier Code (placed in Field 103 of the user header) for MACSS is **MUP**.

6.6 Message Types Accepted in the MACSS Closed User Group

The following SWIFT Message types will be available for use in the MACSS CUG.

No.	Message type	Description	To/From whom may be sent
1.	MT103	Single customer payment transfer	Participant→RTS/X, RTS/X→Participant (Copy); CB→RTS/X, RTS/X→CB (Copy)
2.	MT202	General Financial Institution transfer	Participant→RTS/X, RTS/X→Participant (Copy); CB→RTS/X, RTS/X→CB (Copy)
3.	MT900	Debit confirmation. Confirms debiting of an account when related transfer is settled using RTGS service. Separate payment within clearing service is not accompanied with MT900 notification. The only MT900 is generated and sent to each Participant who has Net Debit position at the end of clearing session.	RTS/X→Participant, RTS/X→CB
4.	MT910	Credit confirmation. Confirms debiting of an account when related transfer is settled using RTGS service. Separate payment within clearing service is not accompanied with MT910 notification. The only MT910 is generated and sent to each Participant who has Net Credit position at the end of clearing session.	RTS/X→Participant, RTS/X→CB
5.	MT192 or MT292	Request to reject non-settled (non-cleared) transfer previously sent to the system	Participant→RTS/X; CB→RTS/X
6.	MT195/STAT or MT295/STAT	Request for a status of transfer	Participant→RTS/X;

No.	Message type	Description	To/From whom may be sent
			CB→RTS/X
7.	MT195/DUPL or MT295/DUPL	Request to get a copy of transfer previously sent to the system	Participant→RTS/X; CB→RTS/X
8.	MT195/PRTY or MT295/PRTY	Request to change a priority of non-settled transfer	Participant→RTS/X; CB→RTS/X
9.	MT985/STAT	Account status request	Participant→RTS/X; CB→RTS/X
10.	MT985/SQDC	Request for RTGS payments queue summary information and Clearing payments not cleared yet	Participant→RTS/X; CB→RTS/X
11.	MT920	Request to get an account balance report (MT942) or interim transaction report (MT941)	Participant→RTS/X; CB→RTS/X
12.	MT196/CANC or MT296/CANC	Reply on request to reject non-settled (non-cleared) transfer previously sent to the system	RTS/X→Participant; RTS/X→CB
13.	MT196/STAT or MT296/STAT	Reply on a request for a status of transfer	RTS/X→Participant; RTS/X→CB
14.	MT196/DUPL or MT296/DUPL	Reply on request to get a copy of transfer previously sent to the system	RTS/X→Participant; RTS/X→CB
15.	MT196/PRTY or MT296/PRTY	Reply on request to change a priority of non-settled transfer	RTS/X→Participant; RTS/X→CB
16.	MTn96/ERRC	This message is generated if error occurs in related request message processing.	RTS/X→Participant; RTS/X→CB
17.	MT986/STAT	Reply to related account status request	RTS/X→Participant; RTS/X→CB
18.	MT986/SQDC	Reply on related request for RTGS payments queue summary information and Clearing payments not cleared yet	RTS/X→Participant; RTS/X→CB
19.	MT986/PCPR	Notification for Participant having no enough funds to cover their Net Debit position	RTS/X→Participant
20.	MT941	Interim transaction report that is generated by related MT920 request	RTS/X→Participant; RTS/X→CB
21.	MT942	Account balance report that is generated by related MT920 request	RTS/X→Participant; RTS/X→CB
22.	MT940	Final Statement report on all settlement operations with specified account within a current business day. Includes RTGS payments only. Contains payment details.	RTS/X→Participant; RTS/X→CB
23.	MT950	Final Statement report on all settlement operation with specified account within a current business day. Includes RTGS payments only	RTS/X→Participant; RTS/X→CB
24.	MT971	Net balance positions from Clearing systems or other Net system (e.g. Depository or Stock exchange) for operations performed on net basis.	Net system→RTS/X

No.	Message type	Description	To/From whom may be sent
25.	MT971	An answer to that system(s) in case related transaction is rejected.	RTS/X→Net system
26.	MTn90	Advice of Charges, Interest and Other Adjustments	RTS/X→CB
27.	MTn91	Request for Payment of Charges, Interest and Other Expenses	RTS/X→Participant
28.	MTn98	Proprietary format message. It is used as envelope to send messages of proprietary types	Participant→RTS/X →Participant; Participant→RTS/X →CB; CB→RTS/X →Participant
29.	MT199/ TEXTMESSAGE or MT999/ TEXTMESSAGE	This message represents an e-mail sent from one Participant to another one. CB may be issuer or receiver of this message as well.	Participant→RTS/X →Participant; Participant→RTS/X →CB; CB→RTS/X →Participant
30.	Set of system requests MT199 or MT999	Request to change corresponding parameter of the system. It doesn't contain field :21:.	Participant→RTS/X (restricted set); CB→RTS/X (full set)
31.	Set of system replies MT199 or MT999	Reply on related request. Reply contains field :21:.	RTS/X→Participant (restricted set); RTS/X→CB (full set)

Message formats are contained in the SWIFT User Handbook.

6.7 MACSS Settlement Messages

The FIN Y-Copy service uses the following message types to carry out the settlement leg of the process.

MT096	FIN Copy to Central Institution Message
MT097	FIN Copy Message Authorisation/Refusal Notification

The incoming payment message will be intercepted, copied and stored pending receipt of a positive or negative response from MACSS. The MACSS Y-Copy service operates in “partial” copy mode, ie. only some information is included in the MT096 sent to MACSS for settlement processing. The following Fields are included in the MT096 to MACSS.

MT	Field Tags to be Copied	
100	20	32A
102	20	32A

103	20	32A
202	20	32A
205	20	32A
<i>Tag 20 = Transaction Reference Number</i>		
<i>Tag 32A = Value date, Currency Code, Amount</i>		

Header and Trailer data is also copied.

MACSS will process the MT096 and respond to FIN Y-Copy with an MT097. The MT097 will either authorise or reject the MT096 request for settlement depending on the outcome of MACSS testing processes.

A positive MT097 authorisation response from MACSS will contain the following settlement-related information:

- Timestamp of settlement completion; and
- MACSS transaction reference number.

FIN Y-Copy will forward the successfully settled payment instruction (eg. MT103) to the receiving Participant with these details contained in the header block of the message.

A negative MT097 rejection response will be returned to FIN Y-Copy. MACSS will append a two digit code to Field 432 of the MT097. This Abort Notification Code describes the reason for the rejection of the MT097 by MACSS.

6.8 Abort Notification (MT019) and Abort Reason Codes

Where FIN Y-Copy is unable to complete processing of a payment instruction it will send an Abort Notification (MT019) to the sending Participant, advising the reason for the rejection.

Reasons for rejection will be assigned a two-digit Abort Reason Code. This will appear in Field 432 of the Abort Notification (MT019). The Abort Reason Code may be assigned by SWIFT or MACSS depending on the reason and point in the process at which rejection occurred.

The table below lists SWIFT and MACSS-assigned Abort Reason Codes.

SWIFT Assigned Codes

Code	Reason
01	Message too old (remained undelivered for n days)
02	Too many unsuccessful delivery attempts
03	Destination disabled
04	Operator aborted
05	Message could not be recovered after a major system failure because it was user encrypted
06	Message Type incompatible with CBT mode
11	Message is too old, but was authorised
12	Too many delivery attempts, but message was authorised
13	Destination is disabled, but message was authorised
14	Message is too long, but was authorised
21	Message is too old and was bypassed
22	Too many delivery attempts and the message was bypassed
23	Destination is disabled and message was bypassed
24	Message is too long and was bypassed
32	Message is too old and was not authorised
33	Copy message to the copy service server was aborted
99	Other

MACSS Generated error Codes

An exhaustive list of MACSS error codes is available as a separate document “MACSS – RTS/X Error Messages”

6.9 Sender Notifications (MT012)

On receipt of a positive MT097 Authorisation response from MACSS, FIN Y-Copy has the capacity to send a Sender Notification (MT012) to the sending Participant. Sender Notification (MT012) is an optional FIN Y-Copy service that is not used in MACSS.

6.10 SWIFT FIN Y-Copy Charges and Reverse Billing

SWIFT will charge each Participant directly for messaging costs associated with FIN Y-Copy treatment of payment instructions initiated by them. These charges are determined by SWIFT.

Messages initiated by MACSS to Participants will also be charged to Participants by SWIFT under a “reverse billing” arrangement, ie. SWIFT charges are usually levied against the sender of a SWIFT message.

7. MACSS-SPECIFIC MESSAGE CONTENT REQUIREMENTS

7.1 Beneficiary Identification

Participants will, wherever possible, identify intended beneficiaries of payment messages using both account name and number.

7.2 Transaction References

Participants must ensure that all MACSS Payment messages contain a reference number. This reference must be unique within any calendar year.

7.3 Value Dates

MACSS will only accept transactions with a current Value Date. Any payment messages received by MACSS with a Value Date other than the current operating day's date will be rejected by the system.

7.4 Multi Currency

MACSS transactions can be denominated in Mauritius Rupee (MUR), United States Dollar (USD), Great Britain Pound (GBP), EURO (EUR), South African Rand (ZAR) and Swiss Franc (CHF). The appropriate currency code should be used for payment instructions.

7.5 Ministry of Finance and Contributions Network Payments

The Ministry of Finance will maintain accounts within the MACSS system so that it may directly receive and disburse payments. It will, however, not have its own SWIFT BIC or identity, but rather stand in the system as if it were a department of the Bank of Mauritius, i.e. payments in favour of the Ministry of Finance would be sent to the Bank of Mauritius BIC (BOMMMUPLXXX) quoting the relevant Ministry of Finance account number in the Beneficiary Customer field of the MT103 (Field Tag 59).

The following Ministry of Finance accounts will reside in MACSS and the correct account number should be included in all payments in favour of the Ministry of Finance.

Account Number	Account Name
01401000001	The Accountant General's General Account
01401000003	National Pensions Fund
01401000005	MRA-PAYE/TDS/PF/PSF
01401000023	The Accountant General's Treasury Bills Account
01401000025	MRA-VAT/TSL
01401000031	MRA-Customs
01401000032	MRA-Corporate Tax/APS
01401000038	Mauritius Revenue Authority 1
01401000039	Mauritius Revenue Authority 2
01401000050	MRA-Payment Modes other than Cash and Cheques

02401000001	Accountant General GBP Account
02401000038	Mauritius Revenue Authority GBP Account
03401000028	Accountant General USD Account
03401000038	Mauritius Revenue Authority USD Account
04401000001	Accountant General ZAR Account
04401000038	Mauritius Revenue Authority ZAR Account
07401000001	Accountant General CHF Account
07401000038	Mauritius Revenue Authority CHF Account
09401000035	Accountant General EUR Account
09401000038	Mauritius Revenue Authority EUR Account

For payments made under the Contributions Network Project scheme, data field 72 of the MT103 will be used to carry data to identify and reconcile the payment.

The following format is to be applied:

72:/CNP/?Unique Reference No(24 Alpha)? //PAYE Reg No(12 Alpha)?VAT Reg No(10 Alpha)? NPF Reg.No (8 Alpha)? //Tax Period(6 Numeric)?
--

The following format is to be applied for CNP-Registrar of Companies payments:

72:/CNP/? Unique Reference No????? //Job No?Form Code? //Amount ccy? Exchange Rate?

The following format is to be applied for Tradenet (Customs) payments:

72:/CUS/?Tradenet Reg.No? // Serial No? Declarant Mailbox No?
--

The delimiter character is "?", the first field will start with the delimiter character and the last field will end with the same delimiter character. The "CNP" code is used between the SWIFT special delimiter character "/" to indicate that the data following the code will be used for the CNP Project, for customs payments the "CUS" code will be used instead of "CNP". The SWIFT Field 72 will contain the above CNP or Registrar of Companies or Customs fields in the order specified in the above examples.

Multiple CNP or Registrar of Companies or Customs payments may also be effected by the use of SWIFT MT102. In each transaction detail of MT102, Field 59 will hold the beneficiary customer Account Number (i.e 01401000025 the MRA- VAT/TSL Account is used for CNP Payments or 01401000001 the Accountant General's general account is used for CNP-Registrar of Companies payments or 01401000031 the MRA-Customs

Account is used for Customs payments etc) and Field 70 will hold the data to identify and reconcile the payment. (i.e. the equivalent of Field 72 in a MT103 CNP or Registrar of Companies Payment or Customs Payment)

The format of Field 70 will be as follows:

70:/CNP/? Unique Reference No. (24 Alpha)?

// PAYE Reg. No. (12 Alpha)? VAT Reg. No. (10 Alpha)? NPF Reg.No (8Alpha)

//Tax Period (6 Numeric)?

The format of Field 70 will be as follows for CNP MT102 Registrar of Companies payments:

70:/CNP/? Unique Reference No ?????

//Job No.?Form Code? Currency Code?

//Amount ccy? Exchange Rate?

The format of Field 70 will be as follows for Customs MT 102 payments:

70:/CUS? Tradenet Ref No?

//Serial No? Declarant Mailbox No?

Field 50 may hold the details of one or several customers.

Any changes made to the above solution (convention) will be agreed by all parties to the CNP and Tradenet Systems and will be documented in the MACSS Procedures.

8. SECURITY

8.1 Participant's Responsibility to Ensure Security of MACSS Operations

Both SWIFT and MACSS provide security facilities to protect data, payments in transit, and to control user access. Participants are responsible for ensuring the integrity of transactions, data and user access within their own organisations.

8.2 Actual or Suspected Breaches of Security

Any actual or suspected breach of security must be reported to the Central Bank.

8.3 SWIFT FIN Y-Copy Double Authentication

SWIFT security and control arrangements are described in the SWIFT FIN Copy Service Description and in the FIN Security Guide of the SWIFT User Handbook.

To make the MACSS FIN Y-Copy service fully secure, a double-authentication mechanism is used.

Standard FIN messages use an authentication mechanism based upon Relationship Management Application (RMA) between the sender and receiver. The resulting message authenticator is called the Message Authentication Code (MAC).

To support MACSS Y-Copy a second message authentication mechanism is used based on the SWIFT PKI infrastructure and SWIFT enforces use of PKI signatures for the whole message exchange as far as double authentication is enabled in FINCopy service profile. Particularly SWIFT generates two signatures for every message to be sent through the FINCopy service (first signature from sender to receiver and the second one from sender to RTS/X). Then RTS/X's SAA checks sender to RTS/X signature and passes sender to receiver signature within incoming MT096 message to RTS/X. After the settlement RTS/X generates MT097 which includes sender to receiver signature. Then RTS/X's SAA signs that message with RTS/X to receiver signature and sends to receiver. Thus receiver gets a message which is double authenticated (both on sender to receiver and RTS/X to receiver segments).

MACSS has its own BIC for the receipt and despatch of Y-Copy messages. This BIC is not used for any other purpose. Ordinary payments to and from the Central Bank will be exchanged via the Bank of Mauritius' own BIC (see Attachment F). The MACSS BIC address must, however, be used by Participants for bilateral key exchange with MACSS.

The MACSS BIC address is BOMMMUPAXXX

The two authentication results are inserted into the trailer block of the user-to-user message to be sent, with the PAC trailer immediately after the MAC trailer. The PAC generated is calculated on the fields to be copied to the Central Bank and the MAC of the original message.

When generating MT097, MACSS will calculate a second PAC. The message finally arriving at the receiving Participant will contain a MAC calculated by the sender and a PAC calculated by MACSS. The second PAC is based on the fields copied, the MAC of the original message and Field 115 (Field 115 will contain settlement details appended by MACSS).

8.4 Frequency of Key Exchange

Key exchange between Participants and between MACSS and Participants will be required at six monthly intervals. The Central Bank may require more frequent or ad hoc key exchanges to take place.

New keys must be exchanged immediately if there is any actual or suspected breach of key security.

8.5 MACSS Webstation Security

Participants will use Webstations or proxy servers to access the application through the MACSS network. Webstations, whether attached to proxy servers or directly attached to the network, will support the functions listed in Section . Line encryption will be provided over the link between the Participant Webstation or proxy server and the Central Bank.

Participants each have a single Webstation or proxy server connection to MACSS. Participants can attach further Webstations to their proxy server, should they wish to do so. However, the system will only provide a secure link to the device attached to the network and the security of additional devices in Participant premises will be the responsibility of the Participants.

MACSS will provide access security with user-ids, passwords and functionality limitations that may be controlled by the appropriate authority in the Participant organisations. It is the responsibility of each Participant to establish and enforce appropriate user access and password policies within their organisations.

9. TECHNICAL, SECURITY AND BACK-UP STANDARDS

Participants will perform a periodic self-assessment of the integrity and resilience of their own internal MACSS arrangements. This self-assessment will be in the form described at Attachment E.

The self-assessment will cover such issues as:

- physical site security;
- system problems and downtime;
- occurrences of fraud;
- adequacy of throughput capacity; and
- adequacy of contingency arrangements and facilities.

The Attachment E self-assessment is to be submitted to the Central Bank under signature of a most senior officer of the Participant.

10. BUSINESS CONTINUITY PLAN

10.1 Contingency Event Contact Points

Each Participant must nominate a contact person and his alternate for responding to enquiries or exchanging information in the event of processing problems. A list of Contact persons is given in Attachment A.

10.2 Definition of a Contingency Event

A contingency event is any event that disrupts or has the potential to disrupt the normal exchange and settlement of transactions in MACSS. The different scenarios that may disrupt normal MACSS operations and the actions to be taken under each scenario are described in **Attachment H – MACSS Business Continuity Plan**.

10.3 Advising System Outages

If a Participant experiences any technical or operational problem that prevents it from processing payments and other MACSS-related messages, it must advise the Central Bank within 15 minutes of becoming aware of the problem.

Participants must immediately advise the Central Bank of any change in their situation.

10.4 Advice to other Participants

The Central Bank will advise other Participants at its discretion where the problem appears likely to be protracted or potentially disruptive to the overall operation of the system, eg. close to end-of-day Cut-off.

Other Participants must make their own judgement as to whether to continue to send payments in favour of the disabled Participant.

10.5 Obligation to attempt re-establishment of CBT Connection

Participants must attempt to re-establish their SWIFT CBT connection within a minimum delay.

10.6 Listings of Critical Account Transfers for Central Bank Input

In certain circumstances the Central Bank may, at its discretion, accept from a disabled Participant a listing of critical transactions for input by the Central Bank as Account Transfers. These would be restricted to critical bank-to-bank transactions. Only basic accounting information will be accepted for input, ie. beneficiary Participant, amount and transaction reference. Listings must be in the form shown at Attachment C. The listings may also be submitted in electronic format as detailed in Attachment CII through the MACSS email facility to the address macss@bom.mu or by memory sticks delivered to the Bank. Participants must submit such listings only after obtaining the consent of the Central Bank.

10.7 Other Contingency Events

Other system disabling events may arise and must be dealt with on a case-by-case basis. In these situations, the provisions of 2.11 and 3.4 of the Terms and Conditions will apply.

10.8 Contingency Event Record

Each participant must maintain a written record of all Contingency events and system problems. This record should include details of date, time, nature of problem, action taken to rectify and time of rectification. The Central Bank will review this record monthly. Copies are to be forwarded to the MACSS Help Desk Supervisor (refer 15.2) within two working days of the end of each calendar month.

10.9 Testing of Contingency Arrangements

The Central Bank will test its own MACSS disaster recovery arrangements at least quarterly, that is, on the second Tuesday of the months of February, May, August and November. In case, the day earmarked for tests falls on a non-business day, Participants will be advised about alternate arrangements. All Participants are required to participate in the test.

Participants with their own disaster recovery sites and systems will have to carry at least one disaster recovery test yearly and provide the report to the Central Bank.

10.10 Transition to MACSS Disaster Recovery Site

In the event that it is necessary to move MACSS operations to the Central Bank's disaster recovery site, Participants will be advised of any action that needs to be taken. It is intended that the transition to the disaster recovery site will be largely transparent to Participants. Participants will need to establish a new Logon session from their Webstation or server to the Central Bank's disaster recovery site.

11. QUEUE MANAGEMENT

A detailed description of the MACSS advanced queue management and gridlock resolution is provided in attachment G

12. INTRADAY LIQUIDITY FACILITIES (ILF)

12.1 Overview

To assist Participants to meet their intraday liquidity requirements under RTGS, the Central Bank may, at its discretion, extend Intraday Liquidity Facilities to Participants. These facilities must be fully secured by eligible collateral securities.

The Central Bank will establish the amount and collateral arrangements for the ILF with each Participant.

12.2 Clearance of ILF Drawings Prior to End-of-Day

A Participant must provide sufficient liquidity to its account prior to Final Cut-off to allow any outstanding amount(s) to be reversed

Additional liquidity may be sourced during the period between Initial and Final Cut-offs by draw down under Participant's overnight facilities with the Central Bank.

13. MINIMUM BALANCE REQUIREMENTS

The Central Bank may require a Participant or Participants to maintain a minimum balance in their MACSS accounts. This minimum balance will be enforced by MACSS, i.e. transactions that would reduce balance below the minimum will be rejected to the Participant's queue for later retesting.

The Central Bank will advise Participants of its intention to impose a minimum balance requirement and the level of each Participant's minimum required balance (if any).

14. NET SETTLEMENT BATCHES

14.1 Conduct Net Settlements over MACSS Accounts

A Net Settlement Batch is an Account Transfer involving multiple debits and credits, initiated by the Central Bank to settle net obligations arising from the conduct of a payment or securities clearing system.

The following net settlement batch arrangements are in operation:

- Cheque Clearing Settlement Batch
- Central Depository & Settlement CO (CDS) Settlement Batch
- Electronic Fund Transfer (EFT) Settlement Batch

The Central Bank may introduce additional net settlements at its discretion.

14.2 Conduct of settlements of clearing

Settlement for cheque and electronic fund transfers will be carried out as specified in the PLACH Rules.

14.2.1 Cheque Settlement Batch Failure Due to Insufficient Funds

Participants must ensure that there are sufficient available funds in their accounts to allow immediate processing of the batch.

Each Participant must nominate a senior officer that the Central Bank will contact in the event that a settlement fails as a result of insufficient available funds. These contacts are listed in Attachment D. Participants must make immediate arrangements to fund their accounts to enable completion of the settlement.

Final Cut-off in MACSS will not be applied until completion of the Cheque Clearing Settlement. The requirement (3.1) that Participants be ready to receive and send MACSS Payment Instructions and other MACSS-related messages whenever MACSS is operating will hold until Final Cut-Off is applied.

14.3 Conduct of Central Depository and Settlement (CDS) Settlements

The CDS Settlement will be conducted once daily. Settlement of transactions, once made through the MACSS, will be final and irrevocable. The Central Bank will act exclusively on instructions received from the CDS and Participants and shall not be liable, in any way, for any consequence, claims or obligations which may arise as a result thereof. The onus to ensure the accuracy of the settlement instructions shall reside with the CDS.

Settlement will be carried out in Mauritius Rupee (MUR), United States Dollar (USD), Great Britain Pound (GBP) and EURO (EUR).

The following time schedule will apply to these settlements in normal circumstances:

10h30	Central Bank receives Settlement Summary from CDS
11h00	Written payment instructions received from all settlement parties

12h00 Settlement completed and confirmation issued to CDS

14.3.1 Failure to Receive Valid Written Instructions

In the event that the Central Bank:

- does not receive a written payment instruction from a Participant;
- receives a written instruction for an amount that does not agree with the amount shown in the Settlement Summary from CDS; or
- identifies that the batch debit and credit amounts do not net to zero;

The Central Bank will contact Participants and CDS as necessary.

If required, CDS will immediately provide the Central Bank with an amended Settlement Summary. Any Participant with an amended settlement position must provide the Central Bank with a new or amended written instruction by no later than 11h45.

14.3.2 CDS Settlement Batch Failure Due to Insufficient Funds

Participants must ensure that there are sufficient available funds in their account to allow immediate processing of the batch. Each Participant must nominate a senior officer who will be contacted by the Central Bank in the event that a settlement fails as a result of insufficient available funds. These contacts are listed in Attachment D.

If the batch cannot be processed by 12h00 due to insufficient funds, CDS will be immediately informed.

CDS will provide the Central Bank with an amended Settlement Summary by no later than 14h00. Any Participant with an amended settlement position must provide the Central Bank with a new or amended instruction by SWIFT by no later than 14h00.

The Central Bank will submit a new batch settlement.

Final Cut-off may be deferred at the Central Bank's discretion to allow resolution of the batch failure.

15. SYSTEM ADMINISTRATION AND USER ASSISTANCE

15.1 SWIFT User Assistance

Participants experiencing SWIFT-related problems should make use of their ordinary SWIFT Customer Support Centre facilities, in accordance with the SWIFT User Handbook.

15.2 MACSS Help Desk

The Central Bank will establish and maintain a MACSS Help Desk to assist Participants with their use of the MACSS system and to address any service difficulties encountered. The Help Desk will be available throughout the MACSS Operating Day. Help Desk Contact details are as follows:

Bank of Mauritius
Sir William Newton Street
Port Louis
Phone: 2023935 or 2023872
Fax: 211 4434

IT Support	Mr. A Dowlut
Email address:	(arvind.dowlut@bom.mu)

	Mr. D Thakoor Phone: 202 3935
Email address:	(dthakoor@bom.mu)

Operations Support	Mr. J K Choolhun Phone: 202 3872
Email address:	(jayvind.choolhun@bom.mu)
	Fax: 211 4434

15.3 Intraday Liquidity Contact

All requests/enquiries regarding the Intraday Liquidity Facility should be directed to:

Bank of Mauritius
Sir William Newton Street
Port Louis
Attention: Sanjay Ramnarainsingh
Phone: 202 3846

16. SYSTEM CHANGES AND CHANGE CONTROL

16.1 MACSS System Changes and Change Control

The provisions of 2.12 and 2.13 of the Terms and Conditions generally govern MACSS system changes.

The Central Bank will manage planned system changes as follows:

- the Central Bank will issue advices and instructions to Participants prior to implementation of planned system changes;
- accompanying amendments to Procedures and other system documentation will be issued where appropriate; and
- any modifications will be tested prior to implementation in a production environment. Participants may be required to assist the Central Bank in the conduct of this testing.

16.2 SWIFT Standards Changes

The Central Bank will review SWIFT advance information on upcoming SWIFT applications and standards and will determine whether an upcoming change is likely to impact on MACSS operations. The Central Bank will inform Participants about these changes and advise what actions would be required from Participants. Participants must implement any SWIFT changes that impact on the operations of MACSS.

16.3 Changes to Participant MACSS Hardware or Communications

Any proposed hardware or communication changes to the MACSS Webstation or server at Participant sites, must be ratified by the Central Bank prior to implementation. The Central Bank may, at its discretion, refuse to ratify any change that does not conform to MACSS standard configuration requirements.

17. FEES AND CHARGES

In accordance with clause 4.1 of the MACSS Terms and Conditions, the Central Bank will calculate fees and charge these to Participants' accounts. Fees will be claimed on a monthly basis at the end of each calendar month. Participants will be provided with invoices giving details of the fees and charges. Attachment B sets out current MACSS Fees and Charges.

18. PAYMENT THROUGH MACSS TO THE COMESA REGIONAL PAYMENT AND SETTLEMENT SYSTEM (REPSS)

18.1 Participation in REPSS

Only central banks of COMESA member states are Participants in REPSS. Commercial banks of these countries have access to REPSS through their respective central banks. Access of commercial banks in Mauritius to REPSS will be limited only to Participants of MACSS through the Central Bank.

18.2 Responsibilities of the Central Bank for commercial banks' access to REPSS

Commercial banks will have access to REPSS through the Central Bank subject to the following terms and conditions:

1. The Central Bank will register commercial banks with the COMESA Clearing House for participation in the REPSS;
2. The Central Bank will accept instructions for payment through REPSS only from banks which are Participants in MACSS.
3. The Central Bank will send payment instructions to REPSS based on incoming payment SWIFT messages from commercial banks.
4. The Central Bank will not be responsible for any messages rejected by REPSS on account of information wrongly provided to it by commercial banks.
5. The acceptance of funds and their application in the accounts of the beneficiary commercial bank will depend solely on the central bank of the beneficiary country. The Central Bank will not be held liable in any way if funds are returned on account of inadequate or incorrect information provided by a commercial bank.
6. The Central Bank will charge back to the commercial bank, any fee arising as a result of the funds being returned.

18.4 Responsibilities of Commercial Banks

1. Commercial banks will send payment instructions for REPSS through SWIFT MT103/MT202 format messages.
2. Commercial banks will be responsible for verifying and providing the under mentioned mandatory information in respect of the beneficiary:
 - a) Beneficiary bank's BIC and branch code, if applicable
 - b) Name of Beneficiary
 - c) Address of Beneficiary
 - d) Account number of Beneficiary
3. Field 72 of the SWIFT message will mention that the payment should be made through REPSS.
4. Commercial banks will ensure that their accounts in the currency of payment is adequately funded.

5. Commercial banks will carry out all verification and controls with regards to the prevailing AML/CFT provisions.
6. All payments made through REPSS are final and irrevocable. In case funds are transferred by error, or the amount transferred is incorrect, commercial banks will negotiate return of funds directly with the beneficiary commercial bank without involving the Central Bank.

18.5 Business days and Hours of Operation

1. REPSS will operate on MACSS Operating Days.
2. In case a participant member country is on holiday, REPSS will not accept payments destined for that country. A business calendar will be provided to commercial banks in advance.
3. In the event that the settlement has to close business due to unforeseen circumstances such as cyclone, strike or riot, the Central Bank will notify all participants immediately and suspend settlement for that date. The clearing process will, however, continue.

REPSS will be open for business according the following schedule:

Start of Exchange Session:	11h00
End of Exchange Session:	16h00

The Central Bank will accept incoming payment instructions for REPSS from 9h30 to 15h00.

18.6 Currency of settlement

REPSS will settle payments in United States Dollars (USD) and EURO (EUR).

18.7 Processing of incoming payments

Incoming payments will be credited to the account of the beneficiary commercial bank on the day of receipt of funds and in the currency of receipt after the settlement in REPSS, through MT103/MT202 SWIFT payment instructions.

Beneficiary banks should apply the funds to beneficiaries' accounts or return funds, as appropriate, in line with the provisions of Section 5 of these Procedures.

18.8 Fees and Charges

The usage of REPSS is currently free. The CCH may at its own discretion impose a cost structure for usage of REPSS which it may amend from time to time with notice to the Participants.

ATTACHMENT A - PROCESSING PROBLEM CONTACT POINTS

No	Participant		Principal Contact	Secondary Contact
1	ABC Banking Corporation Ltd	Name Phone Fax	Alexandre Li 206 8000 208 0088	Stephane Prosper 206 8003 208 0088
2	Afrasia Bank Ltd	Name Phone Fax	Micheal Mariejeanne 2138841 2318850	Pradeep Mookool 2138845 2318850
3	Bank of Baroda	Name Phone Fax	Ravin Ballgobin 2106535 2083892	K Foolmaun/ S Bholah 2106535 2083892
4	Barclays Bank Mauritius Limited	Name Phone Fax	Sunil Seewooruttun 4041190 4678148	Josie Appasamy 4041181 4678148
5	Habib Bank Limited	Name Phone Fax	Ali Haider 2177602 2163829	Sudhir Jogoo 2177618 216 3829
6	SBI (Mauritius) Ltd	Name Phone Fax	Deva Pillay Valoo 2034940 2080039	Samy Periacarpen 2034923 2112850
7	National Commercial Bank Ltd	Name Phone Fax	Djameela Issimdar 4054400 2134795	Salim Sohawon 4054400 2134795
8	SBM Bank(Mauritius) Ltd	Name Phone Fax	Anil Gujalu 2021111 202 1234	D Bissoon 202 1293 202 1234
9	Bank One Limited	Name Phone Fax	Yousuf Dilloo 202 9252 2085388	Feisal Chundoo 2029242 2101493
10	The Hongkong and Shanghai Banking Corporation Ltd	Name Phone Fax	Pravin Ramjada 4030330 4030300	Jimmy Yeung 4030395 4030300
11	The Mauritius Commercial Bank Ltd	Name Phone Fax	Jean Hughes Juste 4044188 208 7054	Christophe Montenet 4044146 208 7054
12	Mauritius Post and Cooperative Bank Ltd	Name Phone Fax	Maoumar Al Pooloo 20799922 208 7270	N Aullyjane 2079852 208 7270
13	Banque des Mascareignes Ltée	Name Phone Fax	Sunil Sonea 2071005 210 2300	Sameer Joomratty 2078710 2122997

14	Standard Bank (Mauritius) Limited	Name Phone Fax	Nevin Akabothu 4025252 4025050	Iven Vyapooree 4025246 4025050
15	Standard Chartered Bank Mauritius Ltd	Name Phone Fax	Deena Shivparsad 4036500 4665161	Parweez Rajaballee 4036500 4665161
16	BanyanTree Bank Ltd	Name Phone Fax	Rajiv Barnard 4681101 -	Shikha Elaheebocus 4681101 -
17	Century Banking Corporation Ltd	Name Phone Fax	Shaz Nawaz Paraouty 2133400 2139200	Yasvincoomar Boojhawon 2133400 2139200
18	Deutsche Bank (Mauritius) Ltd	Name Phone Fax	Dhristee Caullychurn 2027878 2027898	Preetam Canhye 2027878 2027898
19	HSBC Bank (Mauritius) Limited	Name Phone Fax	Sharvesh Emrith 4030967 4030300	Mauren Chu 4030920 4030300
20	Investec Bank (Mauritius) Limited	Name Phone Fax	Purnima Bhikajee 207 4028 2074003	Shirley Bissessur 207 4041 2074003

ATTACHMENT B - MACSS FEES AND CHARGES

1. MACSS Fee

- The MACSS fee will consist of a monthly participation of Rs35,000, a fixed per message fee of Rs25 and a time varying surcharge fee ranging from Rs2.50 to Rs10.00 as follows:

Block	Time of settlement at the Bank		Charge per transaction
	From	To	
1	9h00	14h30	No charge
2	14h31	15h30	Rs 2.50
3	15h31	16h30	Rs 5.00
4	After 16h30		Rs 10.00

- The MACSS statement message will be billed at Rs50.
- A fee of Rs100 will be applied for each payment instruction posted manually by the Central Bank on behalf of Participants.

ATTACHMENT C - REQUEST FOR ACCOUNT TRANSFER INPUT**[Requesting Bank Letterhead]****FACSIMILE**

TO: Head Payment Systems and MCIB Division
 Bank of Mauritius
 Sir William Newton Street
 PORT LOUIS
 Fax Number 230XXXX

Attention:

Date:

REQUEST FOR ACCOUNT TRANSFER INPUT

Dear Sir,

In accordance with section 10.6 of the MACSS Participant Procedures, we submit the following list of transactions for input to the MACSS system on our behalf. We confirm that we have received permission to make this request *[Name of Authorising Officer at Bank of Mauritius and time]*.

Amount	Bank to be Credited	Transaction Reference Number

Yours faithfully

AUTHORISED SIGNATURES

.....
 Bank of Mauritius Use Only

Time of Request Receipt:.....

Account Transfers effected (time and name of Authorising Officer).....

ATTACHMENT D - SETTLEMENT BATCH FAILURE CONTACTS

No	Participant		Principal Contact	Secondary Contact
1	ABC Banking Corporation Ltd	Name Phone Fax	Alexandre Li 206 8000 208 0088	Stephane Prosper 206 8003 208 0088
2	AfrAsia Bank Ltd	Name Phone Fax	Micheal Mariejeanne 4035572 2318850	Oomesh Mutty 2138878 2138852
3	Bank of Baroda	Name Phone Fax	Ravin Ballgobin 2081504 2083892	Mrs S Bholah 2081505 2083892
4	Barclays Bank Mauritius Limited	Name Phone Fax	Sailesh Ghoorah 4041883 2081813	Nicolas Soobroydoo 2071803 2081813
5	National Commercial Bank Ltd	Name Phone Fax	Mamtaz Ali Ghani 2087703 2134788	Salim Sohawon 2087363 2134788
6	Habib Bank Limited	Name Phone Fax	Tanzilah Bhurtun 2177607 2163829	Nazlee Boodhoo 2177604 2163829
7	Bank One Ltd	Name Phone Fax	Yousuf Dilloo 2029200 2085388	Ranjeet Rhugoonauth 202 9200 208 8491
8	SBM Bank(Mauritius) Ltd	Name Phone Fax	Deviyanee Sumputh 202 1201 202 1234	Mukesh More 202 1248 202 1234
9	SBI (Mauritius) Ltd	Name Phone Fax	Deva Pillay Valoo 2034940 2080039	Samy Periacarpen 2034923 2112850
10	The Hongkong Shanghai Banking Corporation Ltd	Name Phone Fax	Pravin Ramjada 4030330 4030300	Surendra Hauzaree 4030362 4030300
11	The Mauritius Commercial Bank Ltd	Name Phone Fax	Peter Bakewell Haddon 2025298 2087054	Dej Panchoo 202 5290 208 7054
12	Mauritius Post and Cooperative Bank Ltd	Name Phone Fax	Maoumar Al Pooloo 2079922 208 7270	Abdullah Bundhoo 2079859 208 7270
13	Banque des Mascareignes Ltée	Name Phone Fax	Sunil Sonea 2071005 210 2300	Pooja Gungabissoon 207 8702 2122997
14	Standard Bank	Name	Benoit Akye	Ernest Francoise

	(Mauritius) Limited	Phone Fax	4025200 4025050	4025205 4025050
15	Standard Chartered Bank Mauritius Ltd	Name Phone Fax	Deena Shivparsad 4036500 4665161	Parweez Rajaballee 4036500 4665161
16	BanyanTree Bank Ltd	Name Phone Fax	Rajiv Barnard 4681101 -	Shikha Elaheebocus 4681101 -
17	Century Banking Corporation Ltd	Name Phone Fax	Shah Nawaz Paraouty 2133400 2139200	Yasvincoomar Boojhawon 2133400 2139200
18	Deutsche Bank (Mauritius) Ltd	Name Phone Fax	Dhristee Cullychurn 2027878 2027898	Preetam Canhye 2027878 2027898
19	HSBC Bank (Mauritius) Limited	Name Phone Fax	Sharvesh Emrith 4030967 4030300	Mauren Chu 4030920 4030300
20	Investec Bank (Mauritius) Limited	Name Phone Fax	Purnima Bhikajee 207 4028 2074003	Shirley Bissessur 207 4041 2074003

ATTACHMENT E - MACSS SELF-ASSESSMENT RETURN**Participant: [Name]****Self Assessment for [Year]**

Return are to be submitted at the end of June each year

A. OPERATIONAL PROCEDURES & CONTINGENCY PLANNING

Questions	Response	Remarks
1. Does your organization have fully documented operational procedures for MACSS?		
2. Does your organization have a documented contingency plan for its MACSS operations?		
3. Were the contingency scenarios of MACSS tested over the past year?		
4. Does your organization have a full-fledged fallback site? Please mention the location and type of Disaster Recovery facility.		
5. At what frequency does your organization carry out fallback connectivity tests? Please provide dates and outcome of tests.		

B. MACSS- RELATED FRAUD

Questions	Response	Remarks
1. Has your organization experienced any MACSS-related, actual or attempted, fraud during the past year?		
2. If so, was this reported to the Central Bank in accordance with the MACSS Terms and Conditions?		
3. Was the means of the fraud identified and rectified?		
4. Did the fraud result in any financial loss to your organization or to its customers?		
5. If so, is recovery still being sought?		

C. SYSTEM DOWNTIME AND RESILIENCE

Questions	Response	Remarks
1. Have your MACSS operations been subject to significant or recurring downtime or disruption?		
2. If so, were these reported to the Central Bank and recorded in a Contingency Event Log in accordance with the MACSS procedures?		
3. Are you satisfied that your MACSS-related systems have sufficient capacity and resilience to service your MACSS payment traffic in a timely and safe manner?		

D. SECURITY MANAGEMENT

Questions	Response	Remarks
1. Does your organization have a security policy for MACSS-related operations? And if so, does the procedure manual cover management of access rights?		
2. Please provide		
(i) name(s) of persons who manage access rights		
(ii) number of user change requests		
(iii) number of password change/reset requests		
(iv) total number of users		

E. GOVERNANCE ARRANGEMENTS

Questions	Response	Remarks
1. Does your organisation have an effective internal control framework, including an adequate and independent audit function?		
2. Does your organisation carry out annual independent IT audits of its systems? And if so, provide the reports to the Bank.		
3. Please describe the type of SWIFT Connectivity (in-house or outsource). In case of outsource, please mention the name of provider.		
4. Briefly describe your SWIFT Contingency arrangements.		

ATTACHMENT F - PARTICIPANT BANK IDENTIFIER CODES (BICs)

Participant	Bank Identifier Code
ABC Banking Corporation Ltd	ABCKMUMUXXX
Afrasia Bank Ltd	AFBLMUMUXXX
Bank of Mauritius	BOMMMUPLXXX
Bank of Baroda	BARBMUMUXXX
Banque des Mascareignes Ltée	BAIMMUMUXXX
BanyanTree Bank Limited	BTBLMUMUXXX
Barclays Bank Mauritius Limited	BARCMUMUXXX
Bank One Limited	FSCBMUMUXXX
Century Banking Corporation Ltd	CBCLMUMUXXX
Deutsche Bank(Mauritius) Ltd	DBMLMUMUXXX
Habib Bank Limited	HABBMUMUXXX
HSBC Bank (Mauritius) Limited	HSBCMUMUXOBU
Investec Bank (Mauritius) Limited	IVESMUMUXXX
Mauritius Post and Cooperative Bank Ltd	MPCBMUMUXXX
National Commercial Bank Ltd	BBCLMUMUXXX
SBI (Mauritius) Ltd	INILMUMUXXX
Standard Bank (Mauritius) Limited	SBICMUMUXXX
Standard Chartered Bank (Mauritius) Limited	SCBLMUMUXXX
SBM Bank(Mauritius) Ltd	STCBMUMUXXX
The Hongkong Shanghai Banking Corporation Limited	HSBCMUMUXXX
The Mauritius Commercial Bank Ltd	MCBLMUMUXXX

ATTACHMENT G: QUEUE MANAGEMENT & GRIDLOCK RESOLUTION

1. Standard Queue Management Rules in the RTS/X

RTS/X manages one queue per settlement account, where unsettled payments are stored and processed according to their priority level [refer to item 2] and their timestamp (priority + FIFO algorithm).

A single credit transfer is a settlement affecting two settlement accounts (payer-payee).

RTS/X can effect such a transaction only provided there is:

- no queued payment order with a higher level of priority;
- no queued payment order with the same level of priority but older than the one in question;
- sufficiency of funds;
- the settlement account of the payer/payee is not blocked for debit/credit correspondingly.

If any one of these conditions is not satisfied, the payment order is stored in the waiting queue or rejected (according to a system configuration).

There is one waiting queue per each settlement account.

The following rules are applied to processing and settlement of payment orders in the RTS/X:

1. The time of accepting of payment order is the time of registering the related message in the system, i.e. receiving it at the Central Node from the Participant through the private network or from the SWIFT network.
2. After validating the message, RTS/X checks if the payment order should be presented to the Settlement engine for further processing. The presenting of the payment order to the Settlement engine will be suspended in case of:
 - i. The payment order has future value date;
 - ii. The accounts to be credited or debited are blocked for the related operations;
 - iii. The Participant that owns the debit or credit account is suspended;
 - iv. The settlement process is frozen at the moment.
3. Payment orders that satisfy to the checks in items (1) and (2) above are presented to the Settlement engine as payment transaction.
4. The payment is placed into a queue in accordance with the chosen algorithm (Priority+FIFO in this case) if there are insufficient funds to settle the payment transaction or if there are already queued payment transactions to the account with the same or higher priority. This time is registered as time of queuing.
5. The queue management algorithm processes the payment transactions in a queue according to the Priority+FIFO algorithm, where the FIFO aspect of the algorithm is based on the queuing time of the payment transactions.

When a payment transaction is settled, the system checks if there are any transactions in the queue for the account(s) credited during the settlement of the payment transaction. If that is the case, the first transaction in the queue with the highest priority level is submitted to the settlement process.

If it cannot be settled then the process is stopped until:

- a new payment transaction comes into the system;
- any other function influencing on queue ordering is processed by RTS/X.

If a newly arrived payment order can be settled then:

- The same procedure is performed for the next transaction in the queue for the same account;
- The credited account is kept in memory for later settlement process initiation for queued payment transactions presented to this credited account (if any).

This process continues until there are no transaction that can be settled for the accounts involved in these cascade settlements (or until all queues become empty).

For transactions with «time-out» execution or rejection, the system handles each transaction's presence time within the queue. If the transaction still remains in the queue after this period of time, then it is rejected.

RTS/X activates the queue management process for each account involved after the processing of any operation that may influence payment queues (e.g., suspension/activation of Participant, locking/unlocking of account, changing of priority of payment order, cancellation of payment order, etc.

As it follows from the queue management algorithm described above, if there is a queue to any account it does not influence on settlement process for the payment orders presented to other accounts.

Each Participant may manage and monitor his queue via “transactional” interface and via WEB-interface.

A Participant (at his request) is allowed to inquire through the aggregated information about the total number and amount of his instructions in the queues using MT985/MT986 messages.

The Account Balance Monitor provides advanced queue monitoring and statistical analysis (including aggregation) of the current queue situation for authorized BOM staff.

2. Priorities and their groups

RTS/X supports 99 priority values for message transfers. These priorities are divided into groups.

Following priority scheme will be used in RTGS:

- Priority 1 – exceptional priority, may used by system administrator under exceptional and urgent circumstances only. Any payment with priority 1 should pass through additional authorization;
- Priority 2 – REPO operations;
- Priority 3 – Clearing operations;
- Priority 4 – Buy-back operations;
- Priority 5 – covers all payment between BOM and participants including ForEx, payroll, etc;
- Priorities 6-9 – Central Bank internal operations, GL transactions;
- Priorities 10-99 – Participant's operations that may be queued in case of lack of funds (using of priority value 10 for urgent transfers, 20 – for normal-priority transfers and 30 for low-priority transfers is recommended).

Logically, each group may be considered as a separate queue. It means that each Participant should have special access rights to send payments to each of such logical queues or to move payment from one queue to another. Inside a queue, payments are processed according to a

Priority+FIFO algorithm. Payment instructions are sequenced in a queue according to this Priority+FIFO algorithm. Participants or authorized CB personnel may change the position of a payment instruction in the queue by changing the value of its priority (MT195/MT295). No payments with a lower priority may be settled if a payment with higher priority is waiting for settlement (except in special cases such as gridlock resolution).

Participants are allowed to send payments to a given group, to modify their position in the queue, either by changing their priority or by withdrawing and re-sending them later (which modifies the time-stamp, and consequently the order in the queue). Changing the priority to the same value also leads to moving of a transfer to the tail of a queue.

If no priority is defined in the credit transfer, RTS/X imposes the lowest priority.

Each priority group may be allocated with “settle-or-reject” tag. If this tag is “On”, any payment with priority within this priority group will be rejected (instead of to be queued) in case of insufficiency of funds. RTS/X prohibits change priority value of payment orders between priority groups with different value of “settle-or-reject” tag.

Whenever payment orders of a given participant are queued, processing occurs when:

- A payment order that credits the participant’s account is received;
- The sequence of payments in the queue is modified either by withdrawal of a queued credit transfer, changing of priority of any payment in a queue, settlement of the first payment in the queue, execution of the gridlock resolution procedures provided by RTS/X.

If the total number or value of queued instructions is greater than the parameters set for this account (or for all accounts in the system), an alarm is generated to Account Balance Monitor.

When a queue is not empty, RTS/X tries to settle the older credit transfer with the higher level of priority when one of the following events occurs:

- the payer’s settlement account is credited;
- the priority of queued transaction was changed;
- the order of the queue is modified by any of the events:
 - the optimization procedure is executed,
 - withdrawal of a queued credit transfer is executed,
 - the older credit transfer with the highest level of priority is settled.

3. Priority changing

Each Participant and BOM may control the queue by re-ordering of the payment instructions in a queue (using “Change priority” message MTn95) or canceling payments in a queue (using “Cancellation” message MTn92). A Participant may change position of a payment instruction sent by him earlier by changing the value of its priority.

BOM’s RTS/X configuration supports:

- Allowing payment cancellation by the Participant who issued this payment instruction;
- Allowing any payment instruction cancellation by authorized BOM staff.

Participants may:

- Change a priority of payment instructions: Participants may change priority of non-settled payment instructions sent by them to the system earlier. Changing of priority value of Payment instruction moves this instruction on the new position in the queue according to the queuing technique applied. MTn95 message is used for change priority requests;
- Cancel their (non-settled yet) payment instructions. The MTn92 message is used for cancellation requests.

The RTS/X generates a notification MTn96 message to the Participants for each rejection or payment priority change request. A positive notification contains an acknowledgement of operation. A negative notification/answer contains an error description.

BOM authorized staff may:

- Change priority of any non-settled payment instructions in the system. The MTn95 is used to change priority requests;
- Cancel any non-settled payment instructions in the system under exceptional case. The MTn92 message is used for cancellation requests.

RTS/X generates notification MTn96 message to BOM authorized staff who issued the cancellation or changed priority request as well as to the Participant who issued the corresponding payment instruction, for each rejection or payment priority change.

A positive notification contains an acknowledgement of operation. A negative notification/answer contains an error description.

All unsettled transactions will be cancelled by the system at the end of the day. Participants are allowed to cancel and re-prioritize their own queues during the allowed timing. Participants will only be allowed to view their projected balances at the interbank payment window period. Incoming queues are not viewable by the participant.

4. Removing payments from the queues

For one settlement account, when the number or total value of queued instructions is greater than predefined parameters, an alarm is generated within Account Balance Monitor Workplace. These parameters may be independently set for each account.

Payment order will be removed from a queue if:

- payment is settled;
- payment is cancelled (by MT192/MT292).

If at the end of day some instructions remain queued, administrator may provide (or not) the additional liquidity. All queued payments that are not affected by these provisions, and thus not settled, are rejected by RTS/X.

It is also possible to send payments to RTS/X with a future value day. They will remain in the database until the specified business day comes.

5. Reconciliation of balances

At the beginning and at the end of the day a special procedure for reconciliation between account balances kept in RTS/X and correspondent account balances kept in CB General Ledger is performed (subject of availability of necessary functionality in GL according to business flow description).

6. Gridlock Resolution: Activation methodology

Gridlock occurs when two or more payment queues are blocked due to shortage of funds, although when all queued payments are settled, there may be no shortage of funds. RTS/X includes a special module intended to resolve intra-day payment gridlock. The system detects gridlock situation and selects those payments that can be settled on a Net basis whilst preserving the normal business conditions attached to the transactions.

RTS/X automatically detects possible Gridlock and issues the appropriate alarm. The following parameters are set for this purpose:

- 1) Number of payment instructions queued by the system,
- 2) Amount of funds in payment instructions queued by the system,
- 3) Number of payments that were queued since last posting operation by the system.

If any of the above set parameters is reached, the RTS/X issues an alert to the System Administrator(s) informing him about this situation.

Two algorithms are in use in Gridlock Resolution Subsystem:

- 1) "Simulated net balance" is a number of consecutive applications SCBCP ("sequential constrain bank clearing problem") with addition criterion function on volume or value optimization.
- 2) "Bypass FIFO" - attempt to execute documents by way of their receipt. If to execute the document it is not possible - it is passed. It is applied cyclically while there are facts of execution of documents. Criterion function as such is absent.

The System Administrator(s) may check all position of accounts in the system including «Virtual balances» using the Account Balance Monitor workplace. The System Administrator(s) decides if the Gridlock Resolution procedure should be initiated.

The Gridlock resolution mechanism is initiated manually and requires special authorization of the BOM System Administrator.

During the Gridlock resolution process, payment instruction queues are frozen and new payment instructions are not "taken into account" until the process is complete. After re-activation of normal exchange period these new payment instructions will be activated automatically on queue-ordering basis.

ATTACHMENT H - MACSS BUSINESS CONTINUITY

The MACSS application has been setup at the Bank's Main and Disaster Recovery (DR) sites in an active-active mode. In case of failure of the application at the main site, the application resumes from the DR site without loss of transactions and apparent interruption of payment stream from participant as payment instructions are sent via SWIFT. Only the URL of the transaction monitoring, which is a passive service has to be switched to the server at the DR site.

In light of the above, the following scenarios are envisaged:

Case 1: Failure of SWIFT operations at the Bank of Mauritius Main site

1. All SWIFT operations of the Bank of Mauritius can be resumed from the DR site within half an hour. Switching to DR site occurs without loss of messages or data. Participants can continue to send their payment messages which will be queued on SWIFT.
2. Once SWIFT services are re-established, all payments will be resumed from the last completed transaction.
3. No action is required from Participants.

Case 2 Failure of the MACSS at the Main site

The MACSS operator shall immediately inform all the participants by broadcasting the message via SWIFT, fax or email. The Bank of Mauritius will activate the MACSS Disaster Recovery (DR) site and resume processing.

Participants must send messages normally but direct the web monitoring URL to the DR site

Case 3 : Failure of the MACSS Network

This failure will only affect monitoring. The switch of MACSS network to fibre optic technology with built in redundancy will make this possibility extremely remote. In case of complete unavailability of the MACSS network, the Bank will establish procedures to inform balances through a help desk and send MT950 statement messages to all Participants.

Case 4: Failure of SWIFT at the Bank's main and DR sites

The Bank will switch to private network processing using the MACSS network. Participants will have to direct their SWIFT messages to this network.

Case 5 : Failure of the SWIFT System at a Participant site

The Participant shall start its SWIFT contingency procedures immediately.

The Participant will not be able to send payments, but will be able to receive funds.

The settlement and notification procedures shall not change and the Participant will receive its SWIFT notifications once connected back to SWIFT.

Participants may request urgent payment to be carried out by the Central Bank using any secured pre-agreed communication between Participants and the Central Bank.