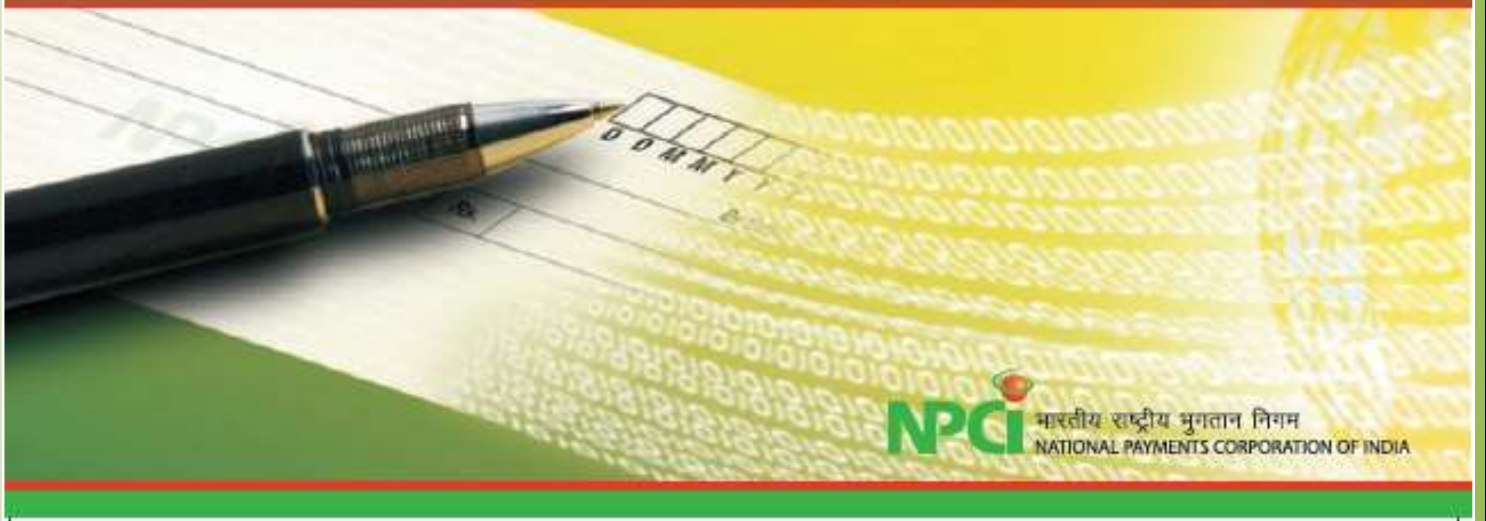


CTS - Best Practice Guidelines

Compilation of suggestions received from Bankers

Grid Cheque Truncation System



NPCI

INDEX

Contents

1.0 About CTS	5
1.1 What is Cheque Truncation?.....	5
1.2 CTS Process Flow	6
1.3 Participation Models	6
1.4 Benefits of Cheque Truncation	9
2.0 GRID CTS	10
2.1 What is Grid in CTS?.....	10
2.2 GRID Process flow.....	10
2.3 Settlement & Reconciliation in CTS GRIDs	11
2.4 GRID Coverage:	12
2.5 Standard Operating Procedure for NON CTS 2010 cheques	13
2.5.1 Introduction	13
2.5.2 Clearing House (CH)	13
2.5.3 Procedure at Presenting Bank.....	14
2.5.4 Procedure at the drawee bank	15
2.5.5 Returns handling.....	16
3.0 CTS Governance.....	17
3.1 Extension & Blockage in CTS	17
4.0 Outward Clearing Process.....	18
4.1 Pick Up & Movement of Cheques.....	18
4.2 Physical Scrutiny.....	20
4.3 Capturing & uploading data in CHI.....	20
4.4 Paper to follow process (P2F)	21
4.4.1 Government Cheques:.....	21
4.4.2 IQA Failure.....	21
4.4.3 Return code 39 & 40.....	21
4.4.4 Requests for Paper	22
4.5 Download Reports & Files	22

4.6 P2F Process flow.....	23
4.6.1 At the bank	23
4.6.2 At the clearing House (Exchange across table)	24
4.6.3 P2F Cut-off time:	25
4.7 Don'ts for Outward clearing.....	25
5.1 Process	26
5.2 P2F inward items Processing.....	26
5.3 Returns Processing.....	26
5.4 Don'ts for inward clearing.....	26
6.0 Technology	27
6.1 Requirements.....	27
Based on the volume banks intending to have their own infrastructure can choose any of the following variants of CHI.....	27
6.2 Process	28
6.3 Start of Day	28
6.4 Monitoring.....	29
6.5 End of Day.....	29
6.6 Extension	30
6.7 Network Bandwidth Calculation	30
6.8 Disaster Recovery (DR) for CTS.....	33
6.9 Disaster Recovery (DR) process.....	33
7.1 How the uniqueness of the cheque would be imparted to the image?	34
7.2 What is Cheque manipulation?.....	35
7.2 Cheque Manipulations.....	35
7.2.1 Counterfeiting of checks	35
7.2.2 Forgery:	36
7.2.3 Alteration	36
7.2.4 Magic Pen:.....	38
7.3 Checks & Balances:.....	39
7.4 CTS 2010 Standards.....	40
7.4.1 Paper (At Manufacturing Stage)	40
7.4.2 Watermark (At Manufacturing Stage)	40

7.4.3 VOID pantograph (At Printing Stage)..... 40

7.4.4 Bank’s logo printed with ultra-violet ink (At Printing Stage) 40

7.4.5 Field placements of a cheque 40

7.4.6 Mandating colors and background 40

7.4.7 Clutter free background 40

7.4.8 Prohibiting alterations / corrections on cheques 41

7.4.9 Printing of account field 41

7.5.0 Use of UV feature on cheque images..... 41

8.0 Controls..... 42

8.1 Internal Clearing Process 42

8.2 Outward Clearing Process..... 43

8.3 Internal Process 44

8.4 Customer Awareness..... 44

9.0 Risks & Mitigations 46

10.0 Contacts..... 47

1.0 About CTS

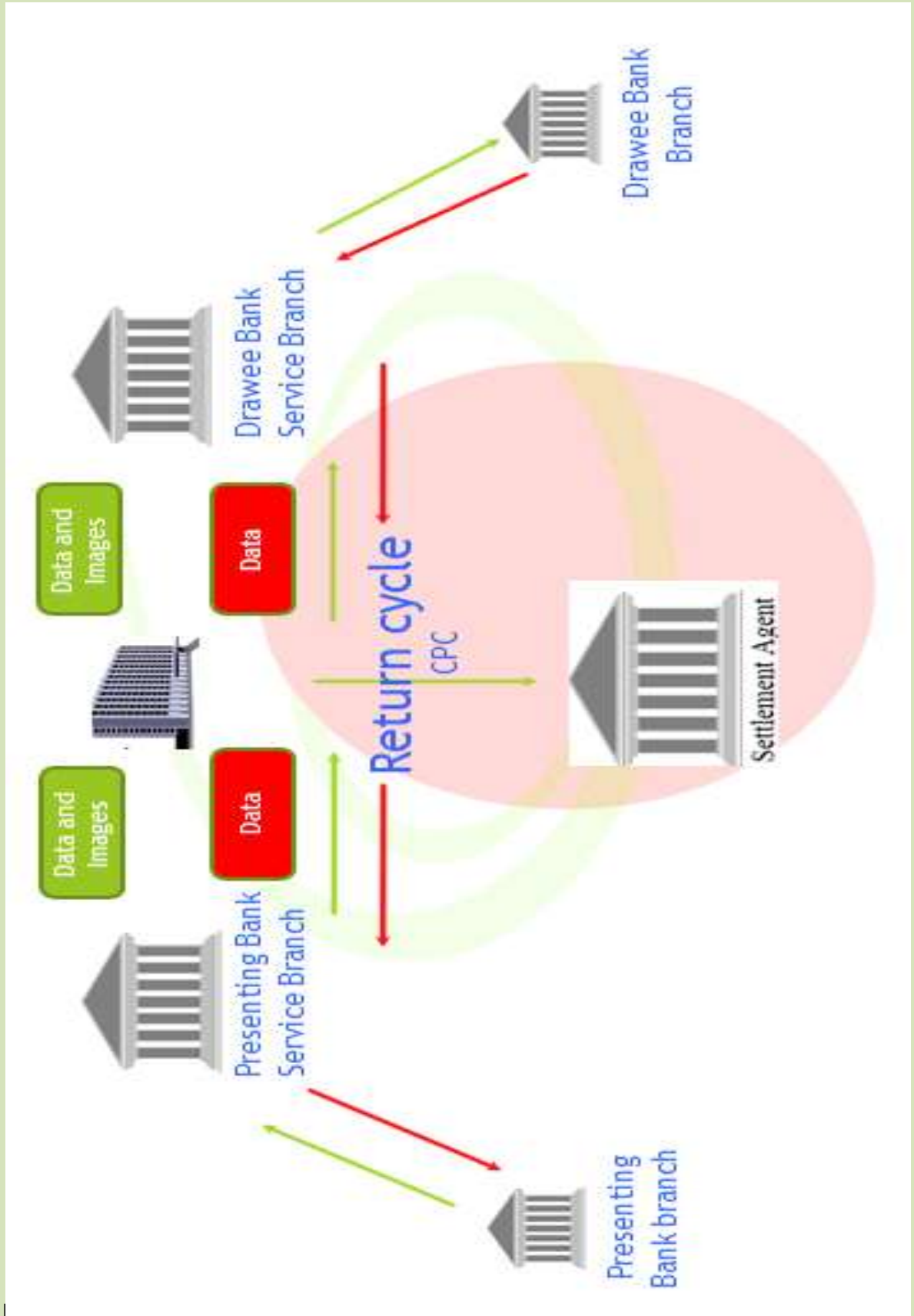
1.1 What is Cheque Truncation?

Truncation is the process of stopping the flow of the physical cheque issued by a drawer at some point with the presenting bank en-route to the drawee bank branch. In its place an electronic image of the cheque is transmitted to the drawee branch by the clearing house, along with relevant information like data on the MICR band, date of presentation, presenting bank, etc.



- 1) 'CTS' is the Process of stopping the physical movement of cheques from Banks to clearing house.
- 2) The Electronic images of the cheques are captured for processing.
- 3) The following 3 different images bearing the following standards are captured
- 4) Front Gray scale (Minimum DPI:100, Format: JFIF, Compression :JPEG)
- 5) Front Black and White (Minimum DPI:200, Format: TIFF, Compression: CCIT G4)
- 6) Back Black and White (Minimum DPI : 200,Format : TIFF, Compression: CCIT G4)
- 7) The MICR data in the Cheques will be captured as present on MICR band.
- 8) Amount is captured manually using the capture solution.
- 9) Captured images along with the data are exchanged across the banks.
- 10) The Images and Data are getting transmitted over the secured network.
- 11) The Settlement of the CTS happens on the basis of MICR data captured from the cheques.
- 12) Physical cheques are retained at the presenting bank itself

1.3
Part 1
National
1.2 CTS Process Flow

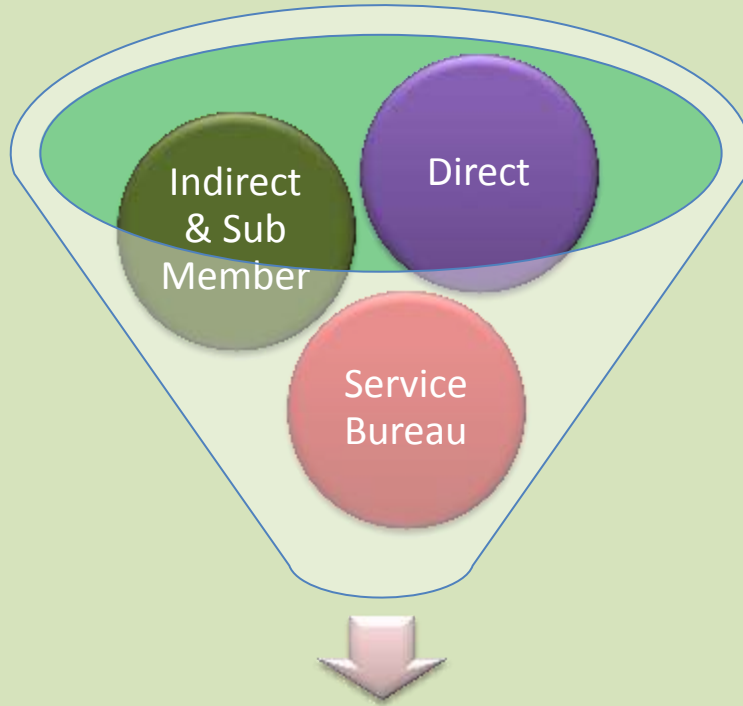


pation Models

- 1) Direct: Bank having its own Capture and CHI infrastructure and participates on its own.
- 2) Indirect: Bank having its own Capture infrastructure however it uses the CHI infrastructure of another bank.
- 3) Sub Member: Sub member is the one who is an extended branch of another bank. They will not have their own MICR code and identity in the clearing process. They will route all their transactions through the sponsor bank and settlement will happen in the books of sponsor bank.
- 4) Service Bureau: Capture infrastructure is established by the vendor and they will have an arrangement with a third party bank for using their CHI infrastructure.

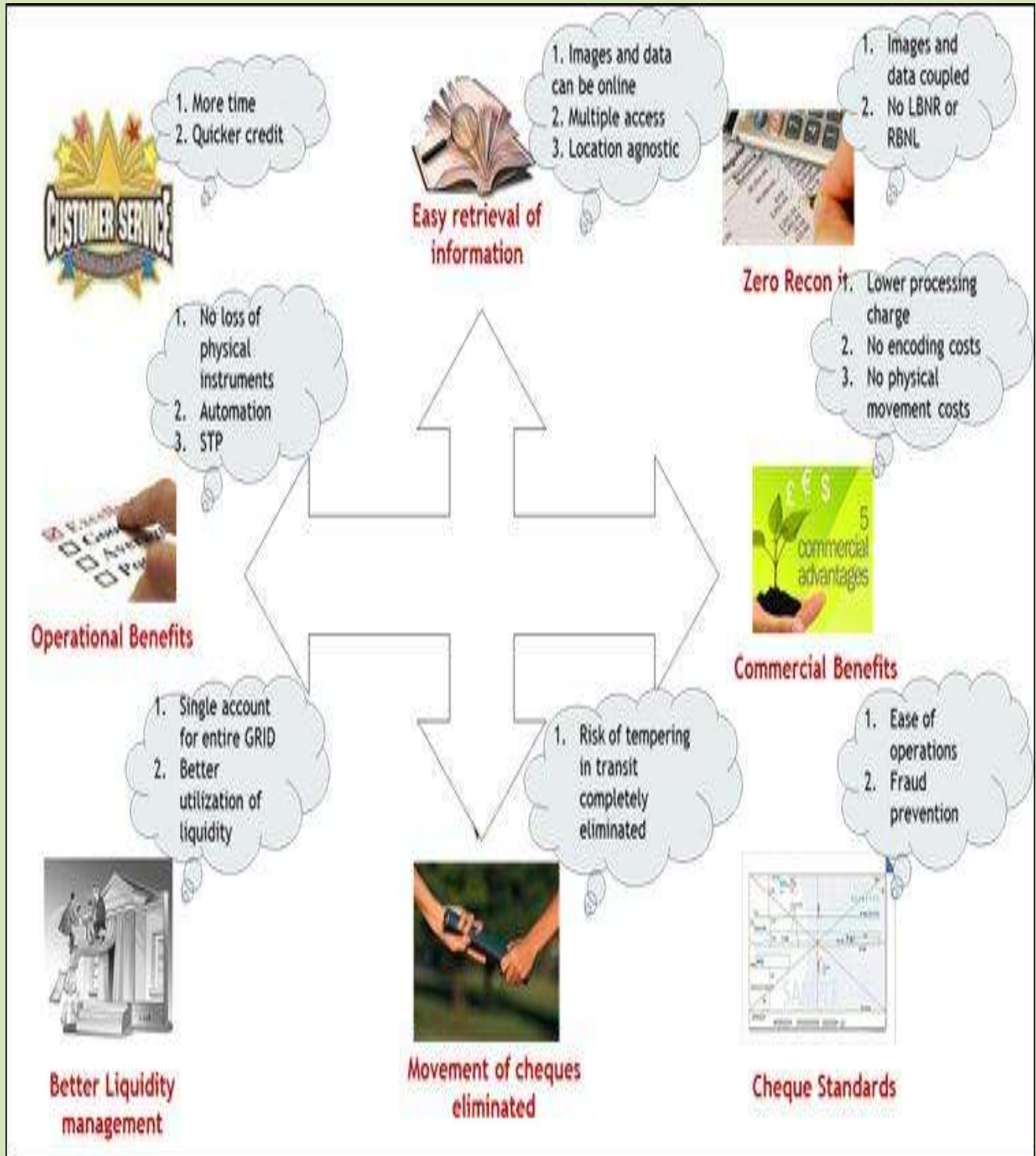
Infrastructure requirement for each category:

Membership	CHI Infrastructure	Capture Solution	Settlement Account
Direct	YES	YES	YES
Indirect	NO	YES	YES
Sub Member	NO	YES	NO
Service Bureau	NO	YES	YES



Participation Models

1.4 Benefits of Cheque Truncation



2.0 GRID CTS

2.1 What is Grid in CTS?

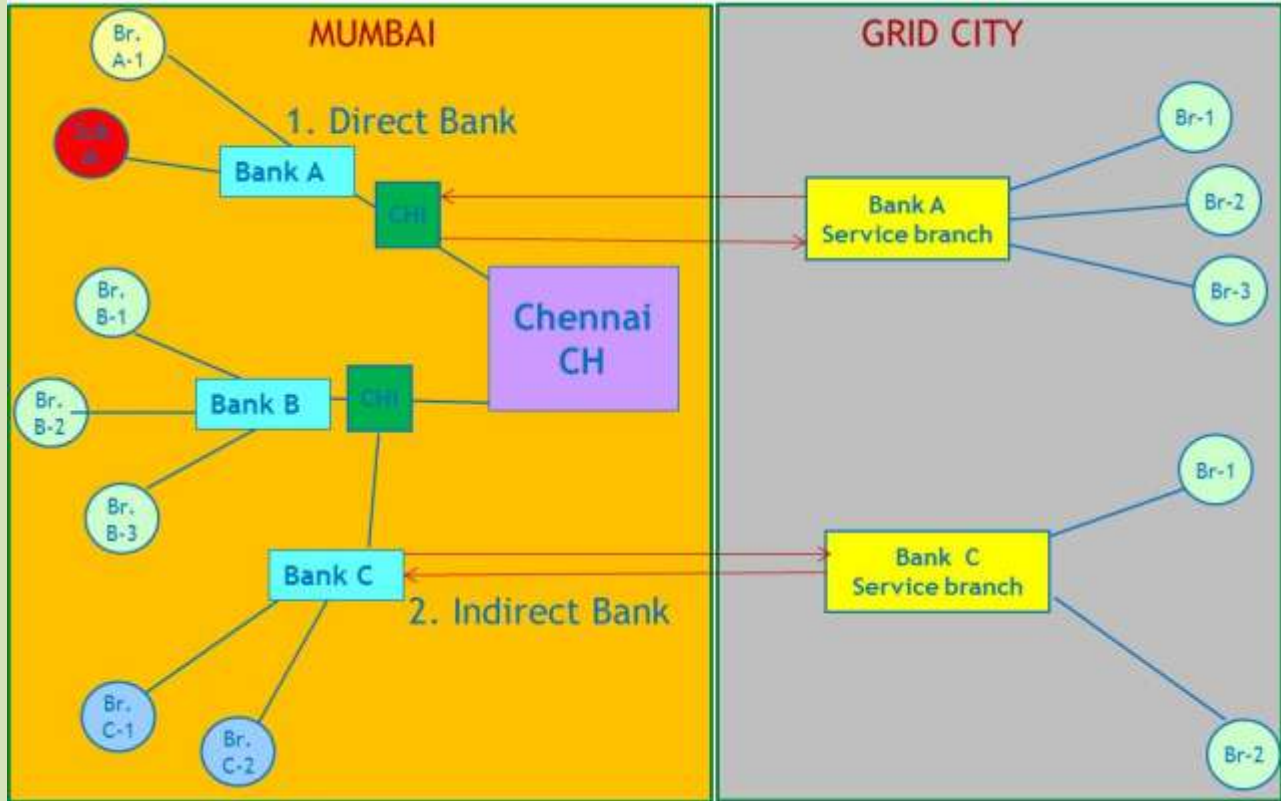
Grid-based Cheque Truncation System (CTS) has been launched in Chennai, Mumbai and Delhi covering several States/Union territories with the objective of streamlining the procedures in cheque clearing system.

All the States/Union Territories covered by the above grid follow different schedule of holidays declared under Negotiable Instruments Act 1881 by the respective Governments. As local clearing houses are gradually being subsumed into the CTS, it has become necessary to devise a policy of uniform holidays so as to ensure the smooth functioning of grid-based CTS operations.

2.2 GRID Process flow

- 1) There will be only one CHI per bank in a Regional Clearing house i.e. for the GRID.
- 2) The bank can connect to clearing house via one center (e.g.) the Southern states and Kolkata will be connected via its Chennai center.
- 3) At the Bank, they have to set up scanners and Capture system at their branches in different cities which is part of the GRID.
- 4) The files which are processed at the respective cities will be consolidated at the bank level and the same will be sent to their CHI in Chennai.
- 5) There will be a single settlement for each bank in the GRID i.e. for southern GRID the settlement will be generated at Chennai.
- 6) The Paper to follow process one of the critical activities where the exchange of Government cheques and IQA failed cheques will be handled locally at the respective location itself.
- 7) The banks which have opted for the centralized processing need to have a process for confirming the Paper to follow instruments received by their branches in the respective GRID city.
- 8) Banks should document complete process flow which comprises of clearing process with respect to GRID clearing. Such a document should cover the outward clearing, inward clearing, returns processing, P2F confirmation and the related reconciliation.





2.3 Settlement & Reconciliation in CTS GRIDs

- 1) In GRID scenario there will be a single settlement for the banks participating in the GRID.
- 2) Bank should have a process in place so that respective city service branch /main branch tally their Presentment and Returns items and amount and ensure that there is no pending reconciliation.
- 3) In case of bank using other bank's account for settlement then they should ensure reconciliation on daily basis.

2.4 GRID Coverage:

S. No.	Southern Grid	Northern Grid	Western Grid
1.	CHENNAI	NEW DELHI	MUMBAI
2.	BANGALORE	AGRA	AHMEDABAD
3.	KOLKATA	ALLAHABAD	PUNE
4.	HYDERABAD	AMRITSAR	SURAT
5.	COIMBATORE	BHILWARA	NAGPUR
6.	ERNAKULAM	DEHRADUN	VADODARA
7.	MADURAI	GORAKHPUR	INDORE
8.	VIJAYAWADA	JAIPUR	RAJKOT
9.	VISAKHAPATNAM	JALANDHAR	NASIK
10.	TRICHY	JAMMU	BHOPAL
11.	PONDICHERRY	JAMSHEDPUR	GOA
12.	MANGALORE	JODHPUR	GWALIOR
13.	TIRUNELVELI	KANPUR	RAIPUR
14.	SALEM	KOTA	KOLHAPUR
15.	TIRUPUR	LUCKNOW	AURANGABAD
16.	ERODE	PATNA	JABALPUR
17.	GUWAHATI	RANCHI	SOLAPUR
18.	HUBLI	UDAIPUR	JAMNAGAR
19.	KOZHIKODE	VARANASI	BHAVNAGAR
20.	TRIVANDRUM	LUDHIANA	ANAND
21.	TRICHUR	CHANDIGARH	
22.	BELGAUM		
23.	MYSORE		
24.	BHUBANESHWAR		
25.	CUTTACK		

2.5 Standard Operating Procedure for NON CTS 2010 cheques

2.5.1 Introduction

- 1) This standard operating procedure is issued in terms of paragraph 2(a) of RBI circular number DPSS.CO.CHD. No. /133/04.07.05/2013-14 dated July 16, 2013 detailing the procedure for processing CTS 2010 and Non-CTS 2010 instruments in the three CTS grid locations (Chennai, Mumbai and New Delhi). The following is the gist of the circular
- 2) Different sessions will be run for CTS 2010 and Non-CTS 2010 instruments.
- 3) Sessions for Non-CTS 2010 instruments will be run at the following frequency
 - a. From 1st Jan to 30th Apr., 2014
 - i. Thrice a Week on Monday, Wednesday & Friday
 - b. From 1st May to 31st Oct., 2014
 - i. Twice a Week on Monday & Friday
 - c. From 1st Nov. 2014 onwards
 - i. Once a Week on every Monday
- 4) Segregation of instruments will be handled by the presenting bank.
- 5) If Non-CTS 2010 instruments are presented in incorrect session then the drawee bank can return all such instruments as detailed in paragraph 3(vi)/4(ii).
- 6) Since government cheques are cleared under P2F, non-CTS 2010 government cheques can continue to be presented in CTS clearing every day w.e.f. January 2014 till further notice

Based on the circular cited above the following changes need to be done at CH's end and participating bank's end for implementation.

2.5.2 Clearing House (CH)

- 1) New clearing type(11) will be defined for specific days on which Non-CTS 2010 instruments in addition to the existing clearing(type no.01).
- 2) Clearing for Non-CTS 2010 instruments (clearing type no.11) will be run on the following days with value date on the next working day.
 - a. Monday
 - b. Wednesday
 - c. Friday
- 3) Corresponding returns sessions will be conducted on the following days(value dates)
 - a. Tuesday
 - b. Thursday

c. Saturday

** In case of holiday falling on any of the above scheduled session days the presentation session will be preponed to the previous working day and return session will be conducted next available working day to the holiday. The tentative list of days on which the special session will be conducted are indicated in Annex I

- 4) Session timings will be decided by the clearing house.
- 5) Session differentiation will be handled through clearing type in the file formats
- 6) When the instruments are presented by the banks with relevant clearing type, the CHI based on the clearing type provided in the CXF file attaches the files to relevant session.
- 7) Blockage will be applicable to all sessions.
- 8) Extension will be applicable to a specific session.
- 9) Inward files, session reports settlement will be generated separately for each clearing type.
- 10) Daily reports pertaining to system log will continue to be common for all sessions.
- 11) The holiday calendar will be common to all sessions.
- 12) There will be single P2F session (combined) for both the presentation session.

2.5.3 Procedure at Presenting Bank

- 1) The onus of segregating CTS 2010 & Non-CTS 2010 instruments is on the presenting bank.
- 2) Banks should ensure that they have the internal process to segregate CTS 2010 and Non-CTS 2010 instruments.
- 3) Based on the technical details provided in the Annexure II, banks should do suitable changes in the capture system to allow the user to choose relevant clearing type for each set of instruments and handle acknowledgement, inward and return files received from CHI.
- 4) It should be ensured that the presentation files are generated separately for each of the clearing types.

- 5) While scanning the instruments care should be taken to ensure the instruments are presented with relevant clearing type. Banks should ensure that they use the relevant clearing type for Non-CTS 2010 instruments (clearing type no.11) as per the schedule provided above to ensure no inconvenience is caused to the customers/other participating banks.
- 6) Upon the commencement of special session for non-CTS-2010 instruments, drawee banks will return the Non-CTS 2010 instruments, if any, presented in the regular CTS clearing, under the reason code '37-Present in proper zone'. Such returned instruments will have to be re-presented by the collecting bank in the immediate next special clearing session for Non-CTS 2010 instruments in accordance with the instructions contained in RBI circular no. DPSS.CO.CHD.No.2030/03.06.01/2012-2013 dated May 7, 2013.
- 7) Separate settlement reports/data will be supplied to member banks pertaining to Non-CTS 2010 instruments drawn on them.
- 8) Ensure that reconciliation process is in place to handle multiple sessions and settlements accordingly.
- 9) Segregate the P2F instruments of both the sessions and present the same in the P2F session. There will be a combined P2F session per day.

2.5.4 Procedure at the drawee bank

- 1) Should have the facility in the capture system to identify the data pertaining to different clearing type and sessions and process them separately/independently.
- 2) In terms of the instructions contained in paragraph 2(b) of RBI circular DPSS.CO.CHD.No. /133 / 04.07.05 / 2013-14 dated July 16, 2013, if the presenting bank presents an instrument in an improper zone, then the drawee bank can return all such cheques with reason code '37-Present in proper zone'
- 3) Banks should use appropriate return reason code provided for all such returns. Due care should be taken to ensure returns are made in the appropriate clearing type as the return sessions for Non-CTS 2010 instruments will be run only on specific days.
- 4) It should be ensured that the return files are generated separately for each of the clearing types.

- 5) Extension for returns continues to work on the basis of clearing session number. Therefore banks need to take care while approaching President of the Grid Centre (RBI) for extension by quoting the relevant session number as well as the clearing type, for which, extension is required.
- 6) Ensure that reconciliation process is in place to handle multiple sessions in different clearing types and settlements accordingly.

2.5.5 Returns handling

- 1) Separate returns sessions will be opened for both the types of instruments as is followed for presentation clearing.
- 2) Extension will work on session number for relevant clearing type.
- 3) While requesting for extension to the President of the Grid, banks should take adequate caution to ensure that they mention the relevant presentation session numbers along with clearing type for which extension is sought
 - a. For example the following are the indicative clearing type numbers
 - i. CTS 2010 instrument - 01
 - ii. Non CTS 2010 instrument - 11

In the above example if the bank want to request for extension for CTS 2010 instruments then they should quote the relevant session number of clearing type. If extension is required for Non-CTS 2010 instruments, then should quote session number associated with the clearing type i.e. 11. If the extension is required for all the instruments received then they should quote both the session numbers of relevant clearing type.

- 4) Request for extensions for returns under clearing type number 11(Non-CTS 2010) will be considered only on exceptional circumstances. Such requests can be made only by an officer in charge of clearing operations in the controlling office.
- 5) In case extension is granted for non-CTS 2010, such instruments should be returned only in the next available return for Non-CTS 2010 instruments and not with the next return session for CTS-2010.
- 6) Banks should put in place reconciliation process to ensure the debits/credits received for the returns of CTS 2010 and Non-CTS 2010 instruments.

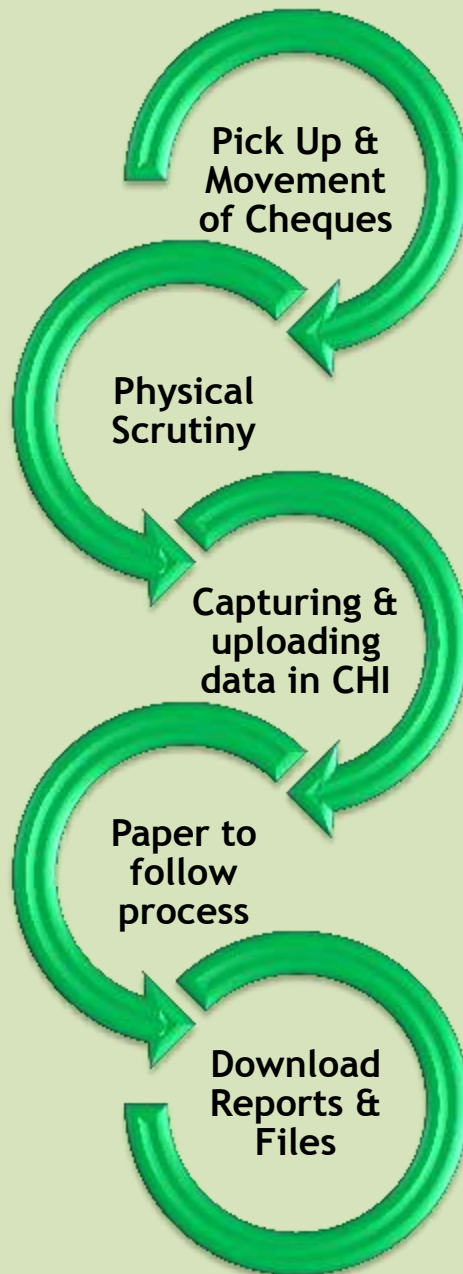
3.0 CTS Governance

- 1) Procedural guidelines adopted by member banks of the Clearing House
- 2) RBI GM, National Clearing Cell is the President of the Clearing house
- 3) NPCI is operating the system on behalf of RBI
- 4) Clearing House jurisdiction extended to all the centers in the GRID
- 5) Uniform Holiday policy for all locations across different states in the GRID
- 6) Settlement in the accounts maintained with RBI, DAD at various locations
- 7) Panel for Resolution of Disputes (PRD) constituted to settle disputes among the member banks

3.1 Extension & Blockage in CTS

- 1) Member banks requesting time/day extension have to send the extension request in specified format to NCC under respective GRID.
- 2) When is there a strike/bank holidays; member banks can request for blockage of inward files. The request for blockage has to be submitted to NCC at the earliest.
- 3) NCC will provide the consolidated extension list to NPCI where necessary extension will be marked in the system accordingly.
- 4) NPCI will provide a flash message of list of banks given extension.
- 5) Member banks should download the ERF files and upload the same in the capture system.
- 6) Based on the ERF remaining files are processed and settlement should be made by the banks.
- 7) On Extension or Blockage member banks should only act on the information generated from the ECPIX system. Message of NPCI is only an additional measure however the system generated report is final.

4.0 Outward Clearing Process



4.1 Pick Up & Movement of Cheques

- 1) Banks having scanning capabilities at branches can collect instruments from customer/drop boxes for same day processing last minutes in CTS
- 2) Banks having processing centers can do pick-up in late evening so that the same can be processed in morning.
- 3) Banks having outsourcing model can directly deliver the instrument to their vendor location by keeping an official their location to save time & risk involved in movement of instruments.
- 4) To get the benefit of electronic data transmission member banks have been requested to include payee name in the outward file format. Since payee name can be extracted from the Core Banking System (CBS) at the time of capture it will completely eliminate the manual enrichment of data by the drawee bank as is being done now.



4.2 Physical Scrutiny

Presenting Banker's to verify the genuineness of the cheque. This is very important as per the amended Negotiable Instrument Act 1881; presenting bank is responsible for the genuineness of the cheques. The member banks have to enforce KYC (Know Your Customer) norms in letter and spirit.

- 1) Introduce slab wise verification for higher amount.
- 2) UV lamps for verification of instruments above a threshold.
- 3) Ensure that there is no alteration in the instrument except date field.
- 4) In case of suspicion contact customer/drawee bank for genuineness.



4.3 Capturing & uploading data in CHI

- 1) Presenting Bank has to verify for the correctness of account number & name. If these details are not matching with master data then the bank has to decide on whether to process such instruments or not
- 2) Process "Drawn on self" or "On-Us" instruments internally.
- 3) Capture the Short Account number in the MICR field which helps the Payee bank in automation of their process.
- 4) Balancing the amount and number of instruments captured as per the deposit slips against the total number and amount of the scanned images of the cheques pertaining to that deposit slip.
- 5) In case of any difference then locate the difference and take corrective action then and there.
- 6) Repair rejects of the MICR line appropriately.



- 7) Process the outward clearing data in core banking software to ensure that the account number and the name matches with the deposit slip details.
- 8) Monitor the outward file bundling.
- 9) Manually close the bundles which are processed in the last 15 minutes before session closing

4.4 Paper to follow process (P2F)

Under cheque truncation system sometimes banks are required to submit the physical instruments to enable the drawee bank to process such instruments. In such cases failure to submit the physical instruments within the stipulated time might lead to the instrument being returned to the presenting bank leading to loss of time to the customer in realizing the proceeds of the cheques. The banks would be required to send paper along with the scanned images in the following situations:



4.4.1 Government Cheques:

Government cheques are the ones which are issued by Government departments. Such cheques can be identified on the following basis:

- 7 digit account number and a 3 digit transaction code
- 6 digit account number and transaction code in the range 20-27 and

Such cheques should always be presented in physical form as it is mandatory to return the physical cheques to the respective department for their internal processing.

4.4.2 IQA Failure

The banks need to perform IQA validations at the capture system. Each image shall have an IQA indicator tag indicating the outcome of the IQA test carried out by the capture system. Any image of a cheque that fails to meet the image quality as from time to time by NPCI is treated as IQA failure.

4.4.3 Return code 39 & 40

When the instrument has been returned by the drawee bank with reason code 39 (Image not clear, present again with paper) or reason code 40 (Present with document).

4.4.4 Requests for Paper

In terms of Section 64(2) of the Negotiable Instruments Act, “where an electronic image of a truncated cheque is presented for payment, the drawee bank is entitled to demand any further information regarding the truncated cheque from the bank holding the truncated cheque in case of any reasonable suspicion about the genuineness of the apparent tenor of instrument, and if the suspicion is that of any manipulation, forgery, tampering or destruction of the instrument, it is entitled to further demand the presentment of the truncated cheque itself for verification. The cheque so demanded will be retained by the drawee bank if the payment is made accordingly”. When the drawee bank requests for the physical instrument to be submitted.

- 1) Identify all the government cheques and segregate at the time of capture.
- 2) Generate paper to follow instrument report to get the detail of cheque no, drawee bank/branch and Unique identification number of the instruments.
- 3) Segregate all the IQA failure instruments that have been part of various processed bundles.
- 4) The IQA failure cases along with the government cheques should be tallied with paper to follow instrument reported generated from CHI.
- 5) Prepare a bank wise envelopes for easy distribution.
- 6) Tally all the P2F instruments to be received before leaving the premises of NPCI.
- 7) In case of any discrepancy, like instruments not received, excess instruments received and instruments pertaining to other banks received, then banks should highlight the discrepancy with the clearing house officials.

4.5 Download Reports & Files

- 1) All reports & files are to be downloaded immediately after the Session completion.
- 2) Tally the outward clearing totals with the settlement report for final reconciliation.



4.6 P2F Process flow

4.6.1 At the bank

- 1) Banks should identify all the government cheques and segregate them as it is mandatory to present the government cheques in physical cheques.
- 2) As provided in capture system specifications banks should ensure that the functionality to identifying the IQA failure cases and government cheques should be built in capture system.
- 3) After processing the data in CHI and getting confirmation from CH (completion of clearing session for the day) that all the cheques have been processed a paper to follow instrument report should be generated from CHI.
- 4) This report will provide complete details like cheque no, drawee bank/branch and unique identification number details of the instruments which have been identified by CHI for paper to follow processing.
- 5) All the IQA failure instruments that have been part of various processed bundles should be segregated.
- 6) The IQA failure cases along with the government should be tallied with paper to follow instrument reported generated from CHI.
- 7) If any missing instrument is there the same should be identified and the physical instrument should be fetched.
- 8) Once the physical instruments are tallied with the paper to follow instrument report, then the instruments should be segregated bank/branch wise.
- 9) A bank/branch wise listing of all the instruments should be prepared and instruments should be attached with the respective listing of the banks. The list should provide
 - Serial No.
 - Instrument No.
 - Amount
- 10) The instruments along with the listing should be kept in separate envelops. Each envelop should be marked with the name of the bank to which the instruments should be submitted and the number of instruments kept in that envelop.



4.6.2 At the clearing House (Exchange across table)

- 1) Envelops pertaining to the banks should be handed over to the representative of the bank to which the physical instruments should be sent.
- 2) The banks should also bring the report of paper to follow instruments to be received by them.
- 3) The instruments so received should be tallied with the list of instruments as per the paper to follow instruments to be received report generated from CHI.
- 4) If the physical instruments are tallied with the report then the receiving bank's representative should provide an acknowledgement to the presenting bank for having received the instruments.
- 5) It is suggested that for this purpose banks should maintain a register in the following format.
 - Date
 - Name of the bank to which instruments are to be submitted
 - Number of instruments to be submitted
 - Name of the receiver
 - Signature of the receiver
- 6) The physical instruments can be moved by the receiving banks to their respective offices for inward processing.
- 7) In case of any discrepancy, like instruments not received, excess instruments received and instruments pertaining to other banks received, then banks should highlight the discrepancy with the clearing house officials.
- 8) The clearing house officials should maintain a register to notify such discrepancies in the register. The register should have the following details.
 - Complaint number
 - Name of the bank raising the discrepancy
 - Name of bank from which excess or short instruments have been raised
 - Number of instruments excess/short
 - Details of instruments that have been received in excess/not received

4.6.3 P2F Cut-off time:

The timings for exchange of physical instruments will be announced by the Clearing House from time to time, if modified. The entry to the receptacles area would be regulated by access control and only authorized personnel can enter the area. The instruments drawn on each banks could be collected by the bank's authorized personnel after the closure of the timings.

4.7 Don'ts for Outward clearing

- 1) Don't wait for the last minute to complete the processing of instruments. If for some reason if the network fails then it will be difficult to complete the processing.
- 2) Don't process any instrument which looks suspicious without further investigation.
- 3) Balancing is a compulsory activity. Do not neglect balancing as it will cause clearing differences.
- 4) Don't process any instrument which does not conform to the image specifications without keeping them separately for physical presentment.
- 5) Don't mix government cheques with other as they have to necessarily be sent for paper to follow. If these instruments are mixed with other instruments then it will be difficult to sort them out for physical presentment.
- 6) Don't process an instrument which is materially altered as it will get returned.
- 7) Don't insist on the drawee bank signing the return memo.
- 8) Don't keep the return marking pending beyond the session validity period as returns can't be marked beyond the validity time.
- 9) Don't postpone reconciling the outward clearing with the credits in the settlement account debits with the returns.
- 10) Don't process a paid instrument or duplicate file, ensure internal controls are in place for handling this.
- 11) Don't process any instrument which is scanned beyond the time limit specified by NPCI.



5.0 Inward Clearing Process

5.1 Process

- 1) Check whether the images of all the instruments have been received by the bank
- 2) Do the technical scrutiny of the instruments
- 3) Signature verification should be done. It is suggested to have slab based passing rules for inward cheques.
- 4) In case of any suspicion on the appearance of the cheque/image not clear then please contact the presenting bank to provide the original instrument to verify the genuineness of the instrument.
- 5) Tally the debit received in the settlement account with the inward clearing total.

5.2 P2F inward items Processing

- 1) Ensure that all the P2F instruments listed are collected.
- 2) Perform technical scrutiny for the physically received items.

5.3 Returns Processing

- 1) Ensure that the instruments are returned with appropriate reason.
- 2) Check the final settlement report against returns data received.
- 3) When a physical cheque received gets returned for any reason return the physical instrument itself apart from marking the return in the system.
- 4) Ensure that altered instruments are not passed in the clearing even if they are authenticated by the drawer's signature. Exception to the rule being date field.
- 5) Don't wait for the last minute upload & send the return files to CH in blocks.
- 6) Manually close the bundles which are pushed in the last 15 minutes before session closing.

5.4 Don'ts for inward clearing

- 1) Don't pass any cheque without technical scrutiny
- 2) Don't leave the premises of NPCI without tallying paper to follow instruments. In case of any discrepancy raise the same with NPCI officials.
- 3) Don't postpone reconciliation of instruments received against the debits received and returns



with the credits received in the settlement account. Any slippage will lead to clearing differences.

6.0 Technology

6.1 Requirements

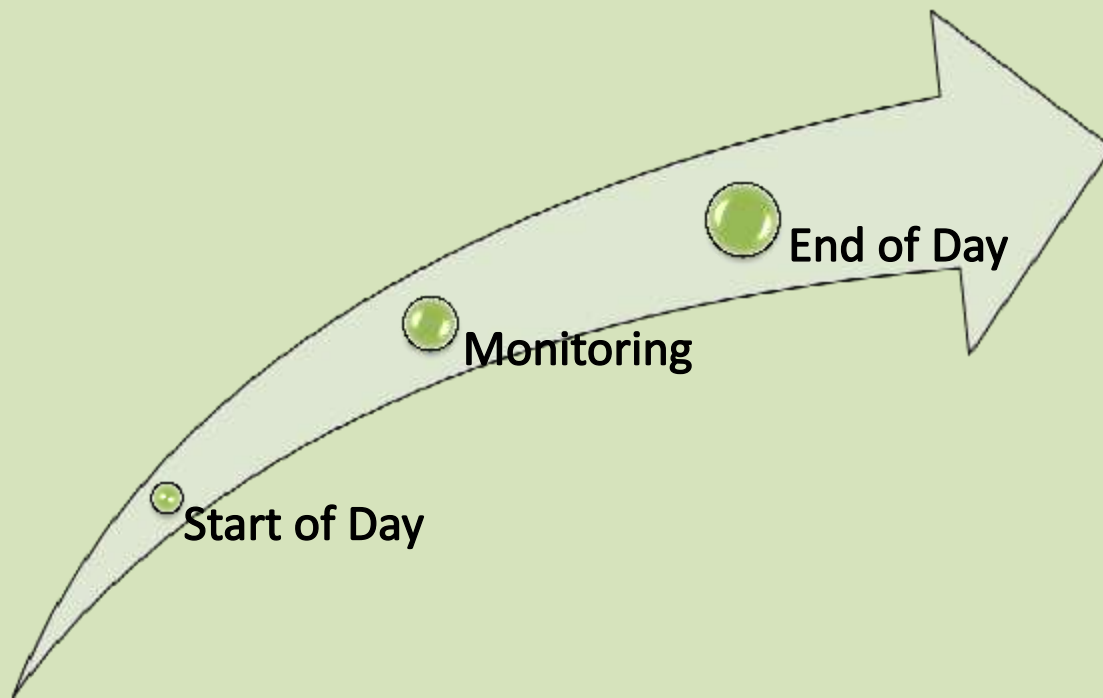
To participate in CTS clearing the member banks depending on their model of participation should arrange for all or a few (as may be applicable) items listed below.

- A. Clearing House Interface (CHI) Server
- B. Capture Solution
- C. Network
- D. Scanner
- E. Digital Certificates
 - a. Class II for capture system and Class III for CHI to be obtained from IDRBT

Based on the volume banks intending to have their own infrastructure can choose any of the following variants of CHI

S. No.	Type of CHI	Processing Ability
1	Mini	1 - 10,000
2	Small	10,000 - 30,000
3	Medium	30,000 - 1,00,000
4	Large	1,00,000 - 2,50,000
5	Very Large	2,50,000 - 4,00,000
6	XL	4,00,000 - 5,50,000
7	XXL	5,50,000 - 8,00,000

6.2 Process



6.3 Start of Day

Following activities are required to be carried out in SOD

- 1) Backups are taken
- 2) Free space available on drives
- 3) Size of log files
- 4) Status of EBS, Oracle, Syslog and Media Manager services
- 5) Restarting EBS and IBM Web Sphere services
- 6) Reporting unusual behavior or issue to the Helpdesk team
- 7) Taking corrective actions
- 8) Network and FTP connectivity
- 9) Version of CHT and WCS file

Technical team can confirm the status to operations team for starting the day operations when SOD is completed

6.4 Monitoring

Once the data moves from the capture system to CHI then the users have to continually monitor the CHI and have to perform the following tasks.

- 1) Monitor attachment of capture files to a session
- 2) Monitor load, validation and bundling of outward exchange file
- 3) Final settlement position
- 4) View settlement reports
- 5) Generate Inward files

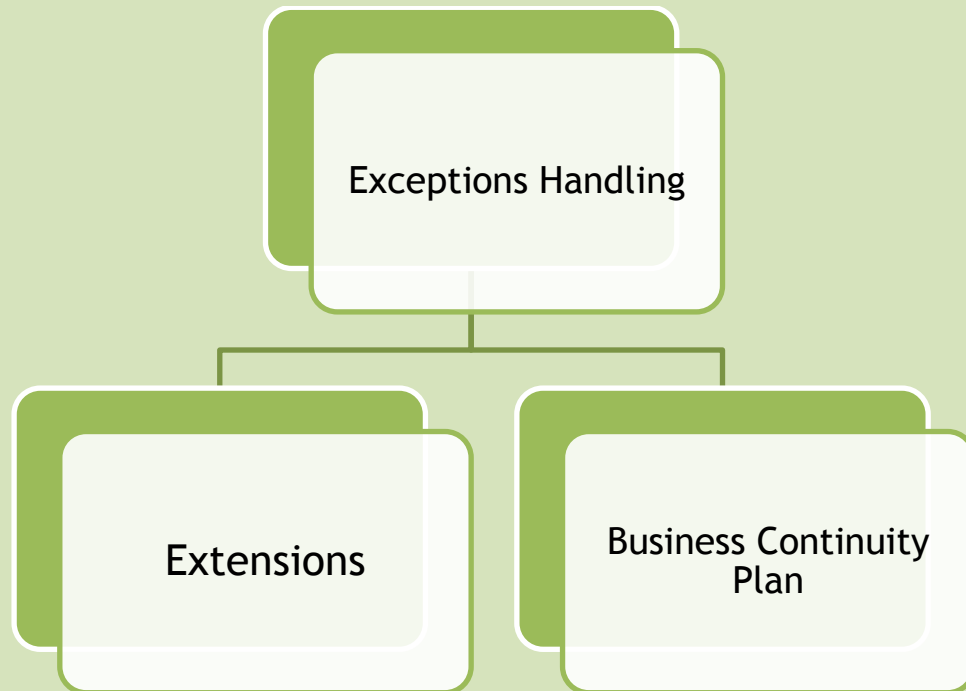
On observing any unusual behavior or issues in the ECPIX, bank to immediately contact NPCI helpdesk, as delay in reporting of issue will reduce the available time for rectification of problem before session closure.

6.5 End of Day

Activities to be carried out by Data Center team

- 1) No files are pending in Bundle monitor screen or in outward exchange screen
- 2) Sufficient disk space available for backup
- 3) Receipt of OACK (Outward Acknowledgement) and Response files at the capture system
- 4) All reports and files are downloaded
- 5) Monitor the Oracle Data guard
- 6) Monitoring the system errors and taking corrective action
- 7) Verify the count of sub jobs for System.CleanupA job
- 8) Successful generation of reports and its distribution to member banks, if applicable

Technical team should submit the EOD Status to operations team



6.6 Extension

- 1) Bank's granted extension will be intimated via CHI Messages.
- 2) Banks will also get Extension Request Files (ERF)
- 3) Verify CHI Messages and ERF files before releasing credits to the clients. Don't release customer credits for the cheques drawn on banks for which extension is granted.

6.7 Network Bandwidth Calculation

The networking capacity required has been approximated as per the formula below. The banks are requested to choose a suitable router and communication equipment to handle the workload as computed below.

Computation of required network capacity:

a) Determine your peak day item volume by summing:

- 1) Outward volume for the biggest peak day
- 2) Inward volume for the biggest peak day

b) Multiply by 0.0001537

The formula is:

$$\text{Network capacity (Mbps)} = \frac{(\text{itemvolume} * 85\text{KB} * 0.40 * 10\text{bits})}{(1024 * 3600 * 0.6)}$$

Example:

Outward volume on biggest peak day is 13,500 items, inward volume on biggest peak day is 11,800; sum is 25,300 items. Now multiply by 0.0001537 results in 3.888 Mbps of required network capacity (minimum). The assumptions in place for the network capacity are:

- 1) That the maximum image size is being transferred - namely 85KB
- 2) That the busiest hour of the day moved 40% of the total item volume
- 3) That a network can only be used up to 60% of its theoretical maximum
- 4) That 10-bits represents the data plus network overhead
- 5) There are 1024 KB in a MB and 3600 seconds per hour

Sample Bandwidth Calculation

S.No.	Network Traffic of CHI (Items per day)	Type of CHI	Bandwidth Required
1.	Volume < 5,000	A	2 Mbps
2.	5,000 - 20,000	B	8 Mbps
3.	20,000 - 30,000	B	16 Mbps
4.	Volume > 30,000	C	32 Mbps

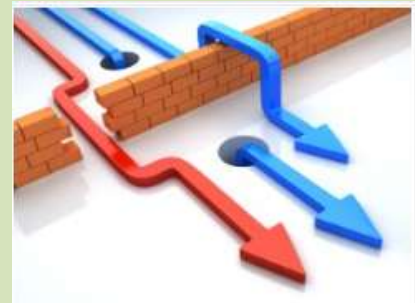


6.8 Disaster Recovery (DR) for CTS

- 1) 100% Redundancy built in the primary site for all the hardware and network.
- 2) NPCI has built DR site for all the 3 grids.
- 3) Site specific database at DR site with Oracle Data Guard based data replication is available.
- 4) If necessary Oracle flash back facility allows roll back to the Start-of-Day.
- 5) NPCI to initiate the DR, no dependency on banks to perform any activity to switch to DR.
- 6) DR Application will send switch-over message to all the CHIs of the site.
- 7) Synchronization by application between sites for reconciling the files received.
- 8) DR Application will publish list of files already received to the respective CHIs.
- 9) CHIs to reconcile the list and resend the missing exchange files.
- 10) DR drill conducted every quarter for each site.

6.9 Disaster Recovery (DR) process

When a disaster is declared Clearing House & CH may be unable to operate the normal processing from Chennai, in such a scenario the operation will take place from Mumbai DR site.



Banks are required to perform following activities

- 1) Stop EBS services & IBM web sphere services.
- 2) Start IBM web sphere service & EBS services.
- 3) Failed outward files at CHI to be resent by using retry option available at System monitor screen.
- 4) No need to resend the files which are already accepted at CH.
- 5) Go to system monitor and retry the errors pertaining to current session.
- 6) Continuously monitor outward and inward exchange files screen.
- 7) In case files are continuously failing, contact NPCI Helpdesk. In case Helpdesk is not available kindly contact NPCI officials.
- 8) Post the session closure, immediately download all the session reports and inward files. These files will not be accessible to the banks if the system is switched back to the primary site.
- 9) In case of any issues please get in touch with the help desk.

7.0 Manipulation

Manipulation is intentional deception made for personal gain or to damage another individual. Defrauding people or entities of money or valuables is a common purpose of manipulation.

7.1 How the uniqueness of the cheque would be imparted to the image?

- 1) The images captured at the presenting bank will be transmitted to the Clearing House and then to the drawee branches with digital signatures of the presenting bank.
- 2) Thus each image would carry the digital signature, apart from the physical endorsement of the presenting bank, in a prescribed manner.
- 3) In order to ensure only images of requisite quality reach the drawee branches, there will be a quality check process at the level of the Capture Systems and the Clearing House Interface.
- 4) If the image is of not as per the specifications then system will tag the same as Paper to Follow instrument (P2F) for which physical instrument should be handed over by the presenting bank to the drawee bank.

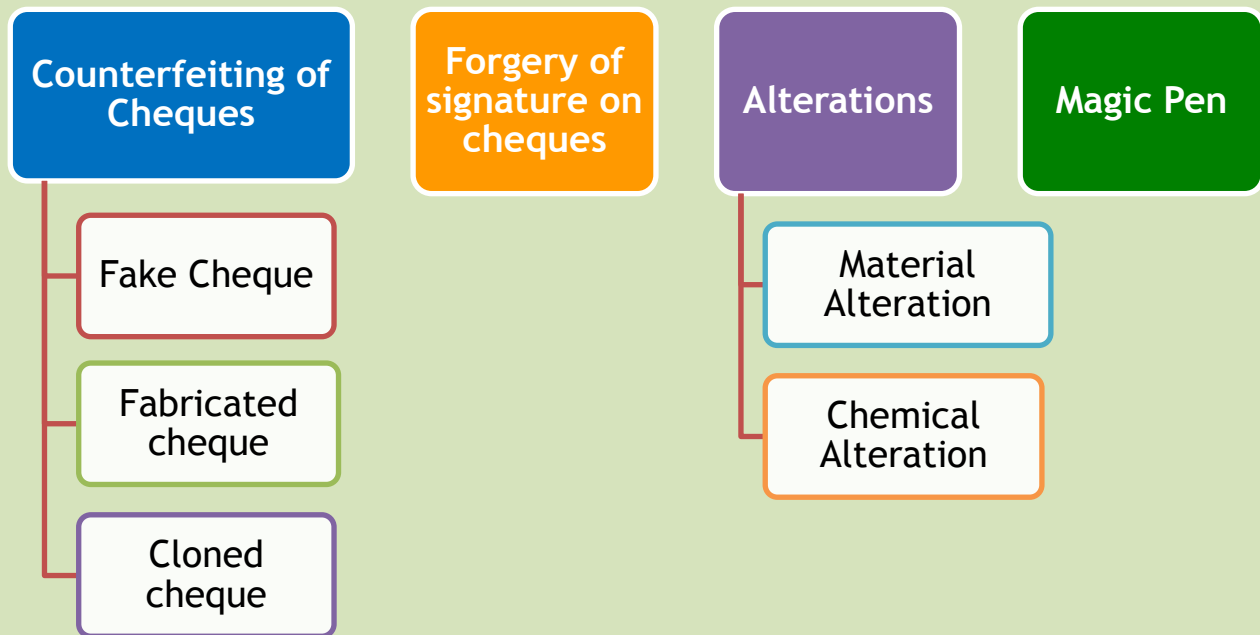


7.2 What is Cheque manipulation?

Cheque manipulation refers to a category of criminal acts that involve making the unlawful use of cheques in order to illegally acquire or borrow funds that do not exist within the account balance or account-holder's legal ownership. Most methods involve taking advantage of the float (the time between the negotiation of the cheque and its clearance at the cheque-writer's bank) to draw out these funds. Specific kinds of cheque manipulation include cheque washing, forgery, etc.



7.2 Cheque Manipulations



7.2.1 Counterfeiting of checks

Check counterfeiters use today's sophisticated color copiers to copy valid checks. Exact imitations of genuine checks can be created with readily available desktop publishing capabilities and then using desktop publishing software to change some of the check

information, allows the counterfeiter to include many valid check components into the imitation and get it printed on a high quality laser printer.

The different type of counterfeiting is:

- 1) Fake Cheque
- 2) Fabricated Cheque
- 3) Cloned Cheque

1) Fake Cheque: 1. Color Photocopy of the Instrument

2. Scanned & Printed Cheques

2) Fabricated Cheque: Portions of 2 Separate leaves used to make the cheque

3) Cloned Cheque: Manipulators printing the instruments similar to the ones issued by banks

7.2.2 Forgery:

It usually involves the use of legitimate blank checks, with a false imitation of the payer signature on the signature line. Many cases of forged signatures are perpetrated by a person known to the valid payer.



7.2.3 Alteration

Alterations are defined as valid check with certain fields changed. When the payee name is changed, payment is made to the wrong person. The courtesy and/or written amount can be increased, resulting in overpayment to the payee.

1) Material Alteration -

Altering / changing the field names in the stolen / misplaced cheques

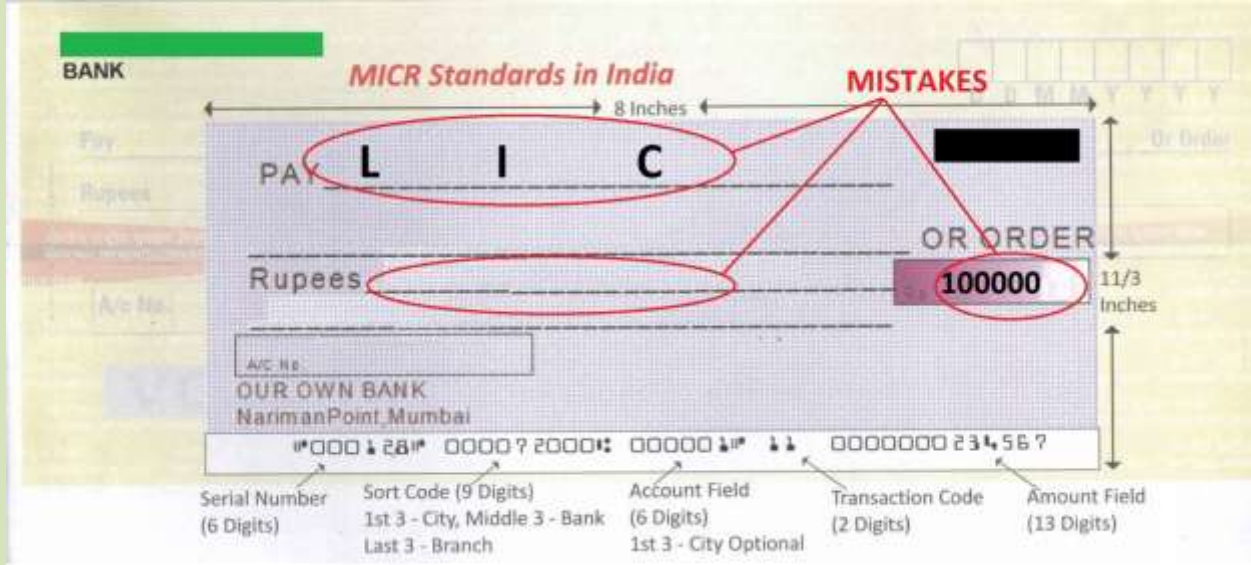
2) Chemical Alteration -

Using the chemicals to erase and modify the contents in the cheque with different information

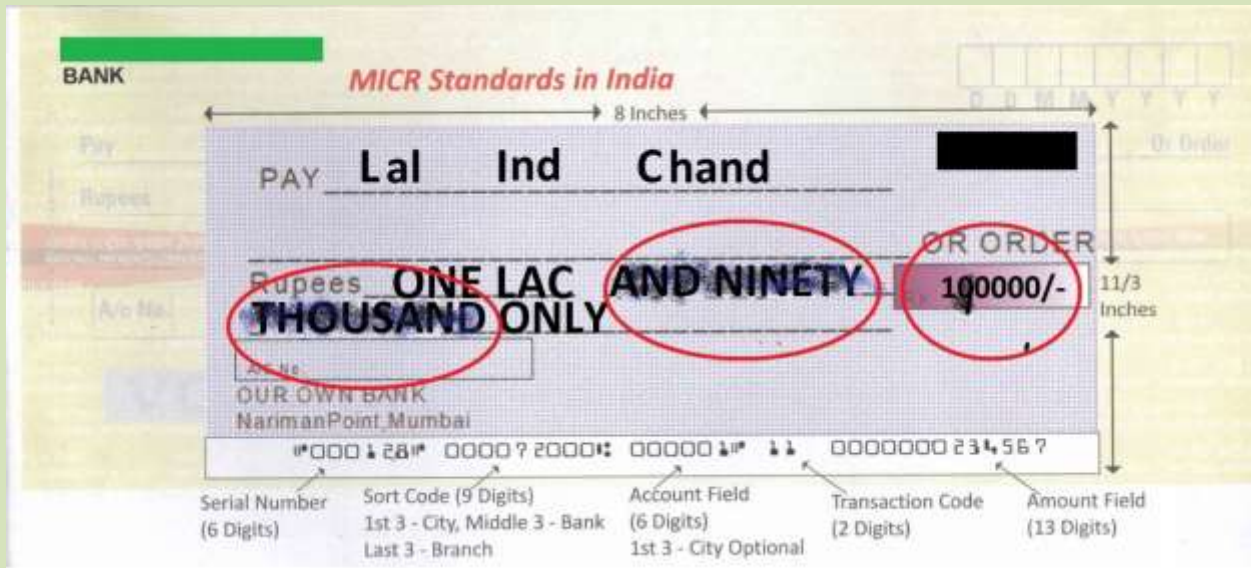


Examples:

Alteration of Payee Name



Alteration of Amount



7.2.4 Magic Pen:

A pen with ink which evaporates after sometime, the third party can then fill up the details of his own



7.3 Checks & Balances:

- 1) Banks / Customers should use "CTS 2010" cheques which are not only image friendly but also have more security features.
- 2) Banks should exercise care while stamping the cheque forms, so that it does not interfere with the material portions such as date, payee's name, amount and signature.
- 3) It is necessary to ensure that all essential elements of a cheque are captured / filled in cheques / image during the scanning process and banks / customers have to exercise appropriate care in this regard.
- 4) Safe guards should be built in the process where the instruments are handled by third parties like courier pick up, drop box collection, outsourcing, etc.
- 5) Customers should preferably use dark colored ink while writing cheques and avoid any alterations / corrections thereon
- 6) As per the RBI guidelines on CTS2010 standards, the drawee bank should return the instruments with material alternation even if such alternation has been authenticated by the drawer. Exception being date field
- 7) Customers must ensure that details in the cheque should be written without leaving any space in between, giving no room for any insertions in between.
- 8) Apart from above mentioned control measures, the customers/ banks must have awareness about CTS 2010 standards viz void pantographs, Micro lettering, UV Logo, etc.



7.4 CTS 2010 Standards

7.4.1 Paper (At Manufacturing Stage)

CTS-2010 Standard paper should not glow under Ultra-Violet (UV) light i.e., it should be UV dull.

7.4.2 Watermark (At Manufacturing Stage)

All cheques shall carry a standardized watermark, with the words “CTS-INDIA” which can be seen when held against any light source.

7.4.3 VOID pantograph (At Printing Stage)

This feature should not be visible on the scanned image at the resolution specified in CTS but should be clearly visible in photocopies and scanned color images as resolution used in such cases would be above the prescribed CTS standards.

7.4.4 Bank’s logo printed with ultra-violet ink (At Printing Stage)

Bank’s logo shall be printed in ultra-violet (UV) ink. The logo will be captured by / visible in UV-enabled scanners / lamps. It will establish genuineness of a cheque.

7.4.5 Field placements of a cheque

Placement of significant fields on the cheque forms shall be mandated. However, placement of additional fields shall be left to banks. This will enable data capturing by Optical / Image Character Recognition (OCR / ICR) engines in offline mode and help banks in automating their payment processes.

7.4.6 Mandating colors and background

Light / Pastel colors shall be mandated for cheques so that Print / Dynamic Contrast Ratio (PCR / DCR) is more than 60% for ensuring better quality and content of images. The colors will be finalized in consultation with IBA / NPCI.

7.4.7 Clutter free background

Background of cheques shall be kept as clutter free as possible for improving quality and clarity of images.

7.4.8 Prohibiting alterations / corrections on cheques

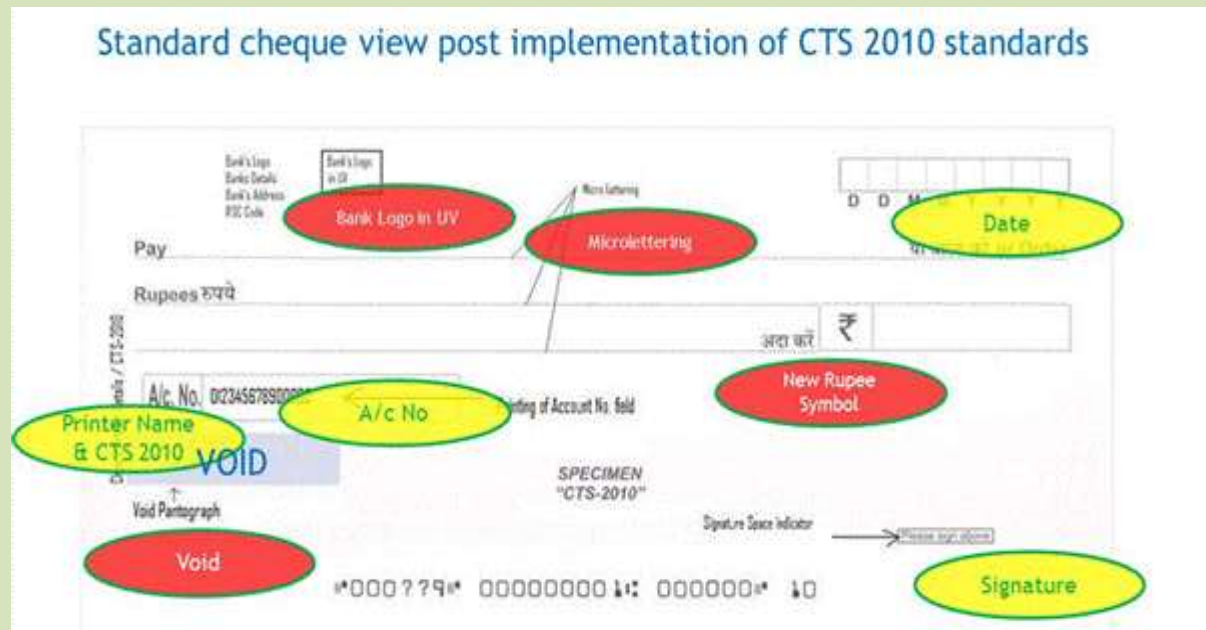
No changes / corrections should be carried out on the cheques (other than for date validation purposes, if required).

7.4.9 Printing of account field

All cheques should, as far as possible, be issued with the account number field pre-printed. This should be considered must for current account holders and corporate customers.

7.5.0 Use of UV feature on cheque images

Though bank's logo in UV ink is a strong deterrent for forgery and duplicate cheques, there are challenges in terms of increased image size, stabilization of UV technology in CTS environment, availability of UV-enabled scanners, etc., in implementing this feature. However, the benefits outweigh the limitations and hence this feature shall be incorporated.



8.0 Controls



8.1 Internal Clearing Process

- 1) Technical Scrutiny of the instruments
- 2) Verify the signature on the cheque
- 3) If Image not clear/looking suspicious then ask for physical instrument from the presenting bank
- 4) Reconcile the Paper to follow Inward items
- 5) Do not process any P2F instrument without verifying physical instrument
- 6) In case of CTS 2010 Instrument check for VOID pantograph
- 7) Return any cheque with material alteration even if such an alteration is duly authenticated by the drawer of the cheque (exception being date field)
- 8) Be very careful in case of instruments for which MICR reject repair performed by the presenting bank
- 9) System provides an indicator for reject repair being done for an instrument
- 10) Thoroughly check the instrument before clearing the same

- 11) In case of high value transactions, it is suggested to seek confirmation of the account holder

8.2 Outward Clearing Process

- 1) Monitor the process of Cheque movements from drop boxes and ATM sites to the processing Centre
- 2) Slab wise Verification - for high value cheques - it is suggested to have dual checking
- 3) UV lamp verification
- 4) Check for any alterations, erasures on the cheques
- 5) Check the quality of paper, printing and uneven spaces (if any)
- 6) Be alert while high value instruments are getting presented through dormant or inoperative accounts
- 7) If it is a CTS 2010 standard instrument then look for Void pantograph
- 8) Processed CTS instruments should be stored with proper processed seal to avoid duplication. Please refer to the CTS procedural guidelines
- 9) In case of suspicion, please check up with the customer before presentation

10) MICR rejects

- In case of Xerox copy or duplicate instrument there is a very high possibility of MICR reject at the time of scanning.
- At the time of scanning, if the MICR code can't be read by the scanner, the instrument will be shown as MICR reject.
- Before updating the MICR code manually the bank should ensure the following
 - **Verify the reason for MICR reject.**
 - Double check whether all the CTS2010 features of the instrument are in order.
 - Whether the account to which the instrument is being collected is an active account.

8.3 Internal Process

- 1) Ensure that KYC done for all the new accounts as per the guidelines issued, from time to time, by RBI
- 2) Monitor the transactions of all the new accounts for a period as may be decided
- 3) Upper limit may be set for ATM and internet based transactions of new accounts till such time bank is comfortable with the operation of the account
- 4) All the cheque leaves pertaining to an account closed should be defaced and then shredded
- 5) Document the standard operating procedures
- 6) Staff dealing the customer accounts and cheques should be given fraud awareness training on regular basis
- 7) Provide the details of beneficiary in the account statement of the customer
- 8) Verify the credentials of any agency or person engaged to carry out activities on behalf of the bank
- 9) Follow the RBI norms and act accordingly on the accounts where cheques are frequently returning for insufficient funds especially high value cheques
- 10) Should a manipulation in cheque occur in your bank - share the modus operandi with fellow bankers so that they will be alert on such type.

8.4 Customer Awareness

- 1) At the time of receipt of cheque book, make sure all of the cheques are there, and that none are missing. Report missing cheque to your bank at once
- 2) Store cheque book, deposit slips, bank statements and cancelled cheques in a secure and locked location
- 3) Always issue Account Payee cheques
- 4) Don't leave blank spaces on the payee and amount lines
- 5) Draw a Line after the name, amount and wherever empty space was left



- 6) Always use ball-point pen
- 7) Never Pre-sign the cheques
- 8) Always write the details of the cheques issued in the appropriate column provided in the cheque book
- 9) Reconcile / Review Bank statements regularly
- 10) Start using CTS 2010 standards cheques
- 11) Never give your account number and other credentials to anybody
- 12) Unless needed, destroy old cancelled checks, account statements, deposit slips, ATM receipts
- 13) At the time of closure of an account, return unused cheques to the bank
- 14) Use alternate channels of payment for High Value transaction

9.0 Risks & Mitigations

Sl. No.	Risk	Mitigation
1	Cheque Manipulation	<ul style="list-style-type: none"> ➤ CTS 2010 Cheque Standards ➤ Procedural Guidelines ➤ KYC ➤ UV Scanning
2.	Security in transit	<ul style="list-style-type: none"> ➤ Public key Infrastructure
3.	Network Failure	<ul style="list-style-type: none"> ➤ Redundancy Option available with different Service Providers ➤ Media Acceptance
4.	CHI Failure	<ul style="list-style-type: none"> ➤ Cluster and Alternate CHI
5.	CH Failure	<ul style="list-style-type: none"> ➤ DR/BCP site at Mumbai
6.	Settlement Risk	<ul style="list-style-type: none"> ➤ Settlement in Central Bank money ➤ Governed by RBI guidelines on Unwinding
7.	Loss of P2F	<ul style="list-style-type: none"> ➤ Talled and exchanged

10.0 Contacts

Escalation Matrix

Operations

Southern Grid

	Name	Landline Number	Mobile Number	Email ID
Level 1	NCR Helpdesk	044 - 28160714/15		ctschennai-support@npci.org.in
Level 2	Sathish A.C.	044 - 28160728	9894123499	Sathish.ac@npci.org.in
	Kannan R	044 - 28160718	9894668553	kannan.r@npci.org.in
Level 3	P.Ramasubramani	044 - 28160723	7667018181	p.ramasubramani@npci.org.in

Western Grid

	Name	Landline Number	Mobile Number	Email ID
Level 1	NCR Helpdesk	022- 26573150 (Ext. 230)		ctsmumbai-support@npci.org.in
Level 2	Jeffrey Landis	022- 26573150 (Ext. 212)	8879772788	jeffrey.landis@npci.org.in
	Tarique Siddiqui	022- 26573150	8879772858	tarique.siddiqui@npci.org.in
Level 3	Prasad Bapat	022- 26573150 (Ext. 231)	8108186549	Prasad.bapat@npci.org.in

If query is unresolved, you may escalate to Mr. Rajesh Kapoor (AVP) at 8879772830 (rajesh.kapoor@npci.org.in)

Northern Grid

	Name	Landline Number	Mobile Number	Email ID
Level 1	NCR Helpdesk	011-23324996/23324997		ctsdelhi-support@npci.org.in
Level 2	Pratap Parida	011-23765093/23765094	9810432455	pratap.parida@npci.org.in
	Sorabh Mohindru	011-23765093/23765094	9810712915	sorabh.mohindru@npci.org.in
Level 3	Vishwas Sohal	011-23765093/23765094	8968961184	vishwas.sohal@npci.org.in
	Vipin Dwivedi	011-23765093/23765094	7667014777	vipin.dwivedi@npci.org.in

If query is unresolved, you may escalate to Mr. Paresh Kulkarni (AVP) at 08879772790 (paresh.kulkarni@npci.org.in)

Escalations for all 3 Grids over and above the matrix:

Mr.Giridhar G.M. - Vice President and Head CTS & NACH Operations

Mobile Number: 9884437373 / Email ID: Giridhar.gm@npci.org.in

Mr. Vipin Surelia - Senior Vice President and Head NACH & Cheque Clearing

Mobile Number: 8108108604 / Email ID: vipin.surelia@npci.org.in

Network

***Escalation Matrix for CTS Network Support**

S.No	Team / Individual	Level	Contact no	Mobile No.	Email ID
1	L1 Support Team (24 X 7)	L1	044-66966023-24	-	npcinetl1chn@npci.org.in
2	L2 Support Team (24 X 7)	L1	044-66966021-22	-	npcinetl2chn@npci.org.in
3	Lakshmi Prasad / Abhishek Anand / Srikanth Mollety	L2	044-66966015 & 044-66966019	07305711511 / 07305659294 / 9566238091	Srikanth.Mollety@npci.org.in / lakshmiPrasad.jaddu@npci.org.in / abhishek.anand@npci.org.in
4	Prabhakaran M	L3	044-66966014	9962025885	Prabhakaran.m@npci.org.in
5	Balasubramanian	L4	044-66966010	9382194911	k.balasubramaniam@npci.org.in

NOTE* - All the member banks are requested to follow above escalation matrix for any CTS Network/Technical issues

NOTE ** - The local team mentioned below can be contacted for Local support Issues (if any).

****Local Network Support (Mumbai)**

S.No	Team / Individual	Level	Contact no	Mobile No.	Email ID
1	Vijaya Bhaskar K	L2	-	8108186552	vijaya.kunduru@npci.org.in
2	Rajendra Gour	L4	-	8108122814	rajendra.gour@npci.org.in
3	K Venkatesh	L5	-	8879772709	k.venkatesh@npci.org.in

****Local Network Support (Delhi)**

S.No	Team / Individual	Level	Contact no	Mobile No.	Email ID
1	Itti Rawat	L2	-	9711567872	itti.rawat@npci.org.in
2	Ashutosh Srivastava	L2	-	9540902035	ashutosh.srivastava@npci.org.in
2	Jothibasua Vaikundam	L3	-	9818699289	jothibasua.vaikundam@npci.org.in

Application / IT Team

CHENNAI		
Name	Contact No	Landline No
1st Level		
Krishna Sharma	8938174850	044-28160707
Mohit Singh	9791095306	044-28160743
Bhagabati Dash	9025011390	044-28160708
2nd Level		
Sumit Paricharak	9930314040	022-40503354
3rd Level		
Srikrishna Vaidyanathan	7667433336	044-28160796
MUMBAI		
Name	Contact No	Landline No
1st Level		
Shweta Mishra	9791095306	-
Akshaya Shrivastava	8879772707	-
Meenakshi Singh	8108122818	-
Mahan Sanghvi	8879772773	-
2nd Level		
Sumit Paricharak	9930314040	022-40503354
3rd Level		
Srikrishna Vaidyanathan	7667433336	044-28160796

Delhi		
Name	Contact No	Landline No
1st Level		
Mohit Singh	9791095306	044-28160743
Krishna Sharma	8938174850	044-28160707
2nd Level		
Sumit Paricharak	9930314040	022-40503354
3rd Level		
Srikrishna Vaidyanathan	7667433336	044-28160796
HYDERABAD		
Name	Contact No	Landline No
1st Level		
Mohit Singh	9791095306	044-28160743
Krishna Sharma	8938174850	044-28160707
2nd Level		
Radhakrishna Akkela	8978899957	040-67299333
3rd Level		
Srikrishna Vaidyanathan	7667433336	044-28160796