Corrigendum 1

Indian Highways Management Company Limited

Ref.: No. IHMCL/ETC/Acquirer Bank/2018 Date: 04 Oct. 2018

The following Corrigendum is hereby issued against RFP for Selection of Acquiring Bank across all Public Funded Toll Plazas on National Highways Published on dated 10.09.2018:

S. No.	Section in the RFP	Original Clause	Updated Clause
1.	Annexure A	The successful bidder shall carry out all roles/responsibilities of Acquirer Bank as defined in the documents by NHAI/IHMCL/NPCI.	The successful bidder shall carry out all roles/responsibilities of an Acquirer Bank as defined ~~in the documents by NHAI/IHMCL/NPCI~~ **via the following documents as appended.** - **Interface Control Document (ICD) 2.4. and ICD improvement document as provided in Appendix 1.** - **NETC Procedural Guidelines (PG) v 1.6 as provided in Appendix 2.** **Additionally, the successful Bidder also has to comply with the guidelines as captured in subsequent sections.** **It is however, clarified that in case of contradiction between guidelines of the RFP and the Corrigendum released and ICD or PG document, the guidelines provided in the ICD or PG document shall prevail the guidelines of the RFP and the Corrigendum released.**
2.		Certified copies of other documents: a. Certificate of Incorporation of the Bank;	Certified copies of other documents: a. Certificate of Incorporation of the Bank, **or equivalent documents like Gazette, Registration with Statutory bodies/Statutory Acts etc. as applicable;** b. Statutory Auditor certificate certifying the Net Worth of the Bank;

S. No.	Section in the RFP	Original Clause	Updated Clause
		b. Statutory Auditor certificate certifying the Net Worth of the Bank;	
3.	D.7.2	Low Balance List/Grey list: If the balance in the customer's account linked to the tag comes below a threshold limit, that Tag ID will be added to this list and the notification is sent to the customer for low balance. This list will be provided by the Service Provider.	~~Low Balance List/Grey list: If the balance in the customer's account linked to the tag comes below a threshold limit, that Tag ID will be added to this list and the notification is sent to the customer for low balance. This list will be provided by the Service Provider.~~ **Deleted**
4.	Annexure A F. Technical Requirements	F. Technical Requirements … iv. The vendor is required to go through NHAI / MoRTH / IHMCL documents on NETC acquiring and should comply to all technical and functional requirements.	F. Technical Requirements … iv. The vendor is required to go through ~~NHAI / MoRTH / IHMCL documents,~~ ~~**as captured in**~~ **Appendix 1 and 2 of this Corrigendum,** on NETC acquiring and should comply to all technical and functional requirements. **v. Vendor is also required to obtain Approval/Sign-off on the above documents by IHMCL/NPCI prior to project implementation.**
5.		4.5.1 IHMCL will announce the name of the Selected Bidder, which shall be awarded the task for acquisition of	4.5.1 IHMCL will announce the name of the Selected Bidder, which shall be awarded the task for acquisition of transactions for all toll plazas as provided in Annexure B. **It is clarified that out of these plazas, approximately 143 Toll plazas are equipped with HETC lanes, out of this 31 Toll Plazas are being operated with handled readers.**

S. No.	Section in the RFP	Original Clause	Updated Clause
		transactions for all toll plazas as provided in Annexure B.	**These Toll Plazas may be integrated via different System Integrators and IHMCL shall facilitate co-ordination between the Vendor and System Integrators. The Selected Bidder will coordinate with the existing System Integrator engaged at each Toll Plazas for development of new module or addition of any new feature for gathering additional information/key performance parameters for improvement of ETC System as per requirement of NETC programme.** **It is also clarified that the total toll collection across these plazas for the FY -2017-18 was stood at around Rs. 5,212.17 Crores, out of which ETC transactions penetration stood at approximately 20%. The current overall penetration of ETC transaction across all NH toll plazas is around 23-25%.**
6.	PART II: DEFINITIONS	NA	**"Public Funded" shall refer to toll plazas that are under jurisdiction of NHAI, and are allotted to respective agencies ("Toll Agencies") for purpose of Toll Collection.** **"Service Charge" shall refer to quoted % by the Vendor multiplied by the total electronic toll fee collected through FASTag.** **"Vendor" shall refer to the selected Bidder as per conditions specified in this RFP.**
7.	Form T3	Form T-3: Format for Power of Attorney	Form T-3: Format for Power of Attorney **It is clarified that Bidders may submit equivalent documents (for example, delegation of power, board resolution copy), in lieu of this document, as applicable**

S. No.	Section in the RFP	Original Clause	Updated Clause
8.	Part IV – Details of the selection process; Section 4.5 & Annexure -A (H) – Time period for the service	NA	**4.5.4 The Acquiring Bank shall be provided 45 days from the date of signing of the Contract for Go-Live of all Toll Plazas under the scope of this RFP.** **The engagement time period of 24 months will start from the date of signing of Contract Agreement.** **Upon completion of 24 months, IHMCL may consider extending the engagement on yearly basis upto a maximum of 5 years from the date of signing of Contract Agreement with same "% of acquired transaction value" as quoted by the Bidder for the RFP.**
9.	Annexure A	To contract with toll plaza operators and to deploy the acquiring host, that includes installation and management of NPCI and/or issuer bank public keys, adequately protected for integrity.	~~To contract with toll plaza operators and to deploy the acquiring host, that includes installation and management of NPCI and/or issuer bank public keys, adequately protected for integrity.~~ **Deleted**
10.	Annexure A	NA	**C.4 The Vendor is required to perform one-time testing with each of the Toll Plazas as per test cases provided by NPCI.**
11.	Annexure A	A 24x7, 365 days per year, robust online customer / Toll operator support facility for all sorts of issuing / acquiring related queries. Bidder support staff should be well trained	~~A 24x7, 365 days per year, robust online customer / Toll operator support facility for all sorts of issuing / acquiring related queries.~~ **The Vendor shall provide 24X7 Help Desk support for resolving queries relating to acquiring transactions. Vendor** support staff should be well trained to effectively handle queries raised by the **Toll Plaza Operator** ~~customer / employees etc~~. Bidder should provide MIS reports periodically

S. No.	Section in the RFP	Original Clause	Updated Clause
		to effectively handle queries raised by the customer / employees etc. Bidder should provide MIS reports periodically to IHMCL, for example: Volume of calls / per day, resolution % per day etc. Help desk should support all issuing and Acquirer queries.	to IHMCL, for example: Volume of calls / per day, resolution % per day etc. ~~Help desk should support all issuing and Acquirer queries.~~ **Vendor is also required to maintain a POS at each of the specified Toll Plazas for issuance of existing FASTags as well as IHMCL FASTags during business hours.**
12.	Annexure C	NA	**It is clarified that settlement(s) arising out of disputes not covered in this Annexure, if any, shall be handled on case to case basis.**
13.	Annexure F – Draft Agreement	g. Be a party to the master NETC agreement and follow all SLAs as provided in that document for the Acquiring Bank	g. ~~Be a party to the master NETC agreement and follow all SLAs as provided in that document for the Acquiring Bank~~ **Deleted**
14.	Annexure F – Draft Agreement	l. In the case of emergencies/ non-performing acquiring entities or in the case of a change in acquiring entity at a concessionaire-operated toll plaza, two months' notice will have to be provided to NHAI/ IHMCL. The two-month notice period may be	l. **Deleted** ~~In the case of emergencies/ non-performing acquiring entities or in the case of a change in acquiring entity at a concessionaire-operated toll plaza, two months' notice will have to be provided to NHAI/ IHMCL. The two-month notice period may be reduced subject to explicit written agreement between the Concessionaire/Toll Plaza Operator, the current acquiring entity and the new acquiring entity.~~

S. No.	Section in the RFP	Original Clause	Updated Clause
		reduced subject to explicit written agreement between the Concessionaire/Toll Plaza Operator, the current acquiring entity and the new acquiring entity.	
15.	Part IV – Details of Selection Process	4.4.5 IHMCL will announce the Bidder who quotes minimum Financial Bid as the Successful Bidder.	4.4.5 IHMCL will announce the Bidder who quotes minimum Financial Bid as the Successful Bidder. **In the event that two or more Bidders quote the same "quoted value" IHMCL may** **i) declare the Bidder having experience of ETC integration at more number of Toll Plazas under NETC programme as selected Bidder; or** **ii) in case such Bidders have no experience of ETC integration under NETC programme, declare the Bidder with higher net worth as selected Bidder; or** **iii) take any such measure as may be deemed fit in its sole discretion, including annulment of the bidding process.**
16.	Form T-2: Brief Information about the Applicant(s)	3. Name of the Statutory Auditor certifying the documents along with his/ her Membership number, if applicable:	3. Name of the Statutory**/Internal** Auditor certifying the documents along with his/ her Membership number, if applicable:
17.	NA	NA	**Appendix 1 - Interface Control Document (ICD) 2.4. and ICD improvement document**
18.	NA	NA	**Appendix 2 - NETC Procedural Guidelines (PG) v 1.6** **As available in NPCI website:**

<table>
<tr><th>S. No.</th><th>Section in the RFP</th><th>Original Clause</th><th>Updated Clause</th></tr>
<tr><td></td><td></td><td></td><td>https://www.npci.org.in/sites/all/themes/npcl/images/PDF/NETC_ETC_PG_V1_6.pdf</td></tr>
<tr><td>19.</td><td>Closing date and time</td><td>09 October 2018
(Up to 15:00 Hrs IST)</td><td><u>22 October 2018</u>
<u>(Up to 15:00 Hrs IST)</u>

<s>09 October 2018</s>
<s>(Up to 15:00 Hrs IST)</s></td></tr>
<tr><td>20.</td><td>3.4 Schedule of Bidding Process</td><td>
<table>
<tr><td>5.</td><td>Bid Due Date</td><td>09 October 2018 (Up to 15:00 Hrs IST)</td></tr>
<tr><td>6.</td><td>Physical submission of Bid Security/ Power of Attorney etc.</td><td>till 15:30 Hrs IST on 09 October 2018</td></tr>
<tr><td>7.</td><td>Opening of Technical Bids</td><td>at 15:30 Hrs 10 October 2018</td></tr>
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<tr><td>5.</td><td>Bid Due Date</td><td><u>22 October 2018</u>
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<tr><td>7.</td><td>Opening of Technical Bids</td><td><u>at 15:30 Hrs 23 October 2018</u>
<s>at 15:30 Hrs 10 October 2018</s></td></tr>
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Appendix 1 - Interface Control Document (ICD) 2.4. and ICD improvement document

Central Clearing House (CCH)

Interface Control Document

Version 2.4

Table of Contents

1 Introduction

1.1 Goal

This program aims to establish a non-stop toll regime in which a vehicle with a single passive RFID tag can pass through toll plazas on Indian highways and pay toll without actually stopping. The system envisaged by the program is complex, encompassing the function of a nation-wide clearing house in which all the related Concessionaires (operating the toll plazas) participate.

2 Business Rules

1. **Plaza Setup**:

Plaza is a point where Customer is charged with Toll amount when traveled through that Plaza. At each plaza type of tolling will be defined which is known as Price Mode.
Price mode can be,

- **Point Based**: Plazas are operated individually. Toll Amounts are collected, while crossing the particular plaza only.
- **Distance Based**: If two or more plazas are participating in ETC, toll amounts are collected based on the distance between two plazas. Concessionaire will send ETC transactions by pairing entry and exit points. The transactional data shall include plaza, entry point with corresponding laneID, exit point with corresponding Lane Id, transaction date/time captured by the respective lane system at both Entry and Exit points. CCH will use entry and exit points to price the trips based on the toll tariffs maintained in the system.
- **Custom Based**:
    - CCH is not going to calculate pricing and CCH will post the transactions with the amount available in the file for the particular transaction.
    - Concessionaires will send toll amount in Header and transactions level.
    - If the amount field in the header is null or if the amount in the header and sum of amount fields in the detail records doesn't match, we will reject the file.
    - If the amount field is null in transaction record, we will reject the transaction.
    - If the concessionaire sends the transaction with 0 amounts, we will post the transaction with 0 amounts.
    - CCH verifies the TOL amount sent by the concessionaire with the master data available at the CCH end.

2. **Pass Issuance Setup**:
   Based on plaza requirement following type of passes will be applied.
   - **Monthly Pass**:
     - Monthly Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then monthly pass expires at the end of the month and if Roll over time period applicable, then pass will be expired in calendar days of the specific month, from the pass issuance date. For example, if pass is issued on 2nd of February, then it will be expired on 1st of March. If pass is issued on 2nd of March, then it will be expired on 1st of April.
     - IsPassReversalApplicable: This attribute is applicable for monthly passes issued in Distance based tolling plazas.
       - If this attribute says "Yes", then if monthly pass is issued from plaza A to plaza B, automatically monthly pass will be applied to Plaza B to Plaza A.
       - If this attribute says "No", then if monthly pass is issued from plaza A to plaza B, monthly pass will not be applied to Plaza B to Plaza A. Customer need to purchase another monthly pass for Plaza B to Plaza A.
   - **Daily pass**:
     - Daily Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then daily pass expires at the end of the day and if Roll over time period applicable then pass will be expired in 24 hours.
     - Based on Plaza requirement daily pass can be issued automatically or can be issued manually.
     - For automatic daily pass 1st trip will be charged with regular tariff, second trip will be charged with (Regular tariff – Daily pass tariff) and from 3rd trip '0' amount will be charged.
     - For Manual daily pass no trip will be charged until pass expires. Manual pass can be issued from road user portal, Point-of-Sale, Internal and concessionaire portals.
     - Note: In the current system, Manual Daily passes are not implemented.
   - **Return pass**:
     - Return Pass time period can be either Calendar day or Roll over based on requirement. If Calendar day time period applicable then Return pass expires at the end of the day and if Roll over time period applicable then pass will be expired in 24 hours.
     - Based on Plaza requirement Return pass can be issued automatically or can be issued manually.
     - For automatic Return pass, 1st trip will be charged with regular tariff, second trip will be charged with (Regular tariff – Return pass tariff).
     - For Manual Return pass, for two trips, no toll will be charged until pass expires. Manual pass can be issued from road user portal, Point-of-Sale, Internal and concessionaire portals.
     - Note: In the current system, Manual Return passes are not implemented.
   - **Local Pass**: Local Pass can be issued at plaza based on the requirement. Customer need to submit the document to prove as local. Concessionaire, from Concessionaire portal, need to add customers as local, by verifying the documents. Once added, whenever customer travels in this plaza, CCH is going to charge local pricing tariff. There will be a

provision to inactivate the customer from Local from concessionaire portal. Local pricing is not applicable for distance based tolling plazas. At any given time, customer can be local to only one plaza.

- **Discount files for Passes**: Tags which are availed discounts like Monthly pass, Local pass, Daily pass, Local exemption, Global exemption will be included in Discount file which will be uploaded once a day by CCH. Concessionaires should update their systems accordingly. The initial file will be a FULL file and contains tags with active discounts (local pricing, monthly pass etc.). Subsequent exchanges will be Diff/Partial files containing changes since last update. Note: Based on the plaza requirements, for some plazas daily passes will be applied automatically and for some plazas daily passes will be issued manually. Daily passes which are issued manually, will be uploaded to corresponding TMS in discount file.
- CCH will generate Init/Full files on a weekly basis on every Monday at 1:00 AM for the Discount files. Whenever CCH Sends Init/Full file, TMS has to flush all the existing data corresponding to Discounts from their system and update with the data available in the Init/Full file.

3. **Toll Transactions:**
    - Whenever vehicle crosses the plaza, concessionaires need to record the transactions. At specified intervals, need to send these transactions in a toll transaction file to CCH.
    - The frequency for concessionaires to transfer toll transaction files is 15 minutes as per the SLA. CCH may change this frequency as per the demand.
    - Toll Transactions are of two types. Clean Transactions and Violation Transactions.
        - **Clean transactions** are processed as they are received every 15minutes and reconciliation files will be generated and sent to corresponding concessionaires on a daily basis. These reconciliation files will not acknowledge violation transactions.
        - **Violation Transactions**:
          If Concessionaire sends the transactions with IsViolation=1, CCH expects supporting Images with imagename in the file and corresponding images in a designated location assigned to each concessionaire on CCH SFTP server (\InBound\Images folder). Concessionaire can send two type of images. Wide Range image or Rear View Image. At least one image should be provided i.e., If Rear View Image is provided then Wide Range image is optional and vice-versa.

          If Images are provided, CCH will move transactions to image review. If either Images are not placed in designated location or Image Name is not provided in the transaction, then CCH will reject these transactions.

        - **Image Evidence Required**: If AVC vehicle class does not match with vehicle class tied to the tag for the clean transactions sent to CCH then these will be considered as violations by CCH. These transactions will be marked as rejected in the recon file with reason

code, 'IMGEVDREQ'. The transactions with reason code as 'IMGEVDREQ' will be held in CCH for further processing until image evidence is received from Concessionaire.
Concessionaire will need to provide the supporting image evidence and place the images in a designated location assigned to each concessionaire on CCH SFTP server (\InBound\ImageEvidence folder). Once the image is received for the transaction, CCH will move transactions to image review and Image auditor will review and take decision either to accept or reject the transaction. If Image auditor, rejects the transaction in image review because of image is not clear, CCH will reject the transaction with reason as "ImgRevRej".

CCH will resume processing based on the image auditor decision and will include the transaction and status in the violation reconciliation file sent to concessionaire once a day.

When concessionaire uploads the image for the image evidence required, the image name should be prefixed by unique transaction id assigned to the toll record that is sent to CCH in the toll transaction file. Please see below for naming convention.

Image name: <TransactionId>_<ImageName>.jpg

Example: 1234567890_Image1.jpg where 1234567890 is the unique transaction id assigned to the toll record in the transaction file, Image1 is the name assigned to the image per concessionaire requirements/naming convention currently in place.

- **Image Review Process**: Image auditor will review and take decision either to accept or reject the transaction. If Image auditor, rejects the transaction in image review because of image is not clear, CCH will reject the transaction with reason as "ImgRevRej".

  CCH will resume processing based on the image auditor decision and will include the transaction and status in the violation reconciliation file sent to concessionaire once a day.

  - **Reconciliation for Violation Transactions**:
    All the violation transactions that are received from a concessionaire will be consolidated for the entire day and a single reconciliation file will be generated, once processed (manual review by CCH) based on the SLA defined for the violation processing by CCH.

4. If concessionaires are not able to send the transactions to CCH on the same day, they can still send it as per SLA defined by CCH. Currently, in the system, it is configured for 7 days.
5. Blacklisted tag file will be uploaded every 15 minutes by CCH. Concessionaires shall update their systems as per the SLA defined by CCH. CCH will not be responsible to accept the transactions on the Blacklisted tags that have occurred after the time

period that was defined as part of the SLA. These transactions will be rejected by CCH.

CCH will generate Init/Full files on a weekly basis on every Monday at 1:00 AM for the Black list files. Whenever CCH Sends Init/Full file, TMS has to flush all the existing data corresponding to Black list from their system and update with the data available in the Init/Full file.

6. **Overweight pricing** – For transactions of vehicles that need to be charged higher toll for vehicle weight exceeding the allowed limit, concessionaire shall indicate the same to CCH on the transaction by setting 'IsOverweight' to true. Additional weight related data like WIM weight etc will need to be included in the transactional data sent to CCH. If overweight pricing is allowed for the plaza, CCH will charge the fare applicable for next higher vehicle class.

Note: CCH will not consider Over weight Pricing for Custom based tolling, even though concessionaire sends the transaction with IsOverweight = 1 and process the transaction with the amount available in the transaction record.

Note: As per existing CCH, Overweight pricing will not be applied in the current system.

7. CCH Service Providers: Providers like ICICI, Axis etc., who issues tags to customers, maintains customer accounts, vehicle information, recharges, and managing POS outlets.
8. Guarantee of payment for valid tags - CCH will honor all transactions on tags that were deemed "valid" Tag issued by authorized issuers. The Concessionaires have to validate such transactions. Tag EPC memory will contain the Header, GS-1 code, CCH Id, Tag Supplier id , Tag serial no, future use(for IHMCL) and check sum(for IHMCL). From the Tag EPC memory TMS will identify the CCH service provider.
   Refer section 11.2 and 11.3 for further information.

3 Technical Specifications

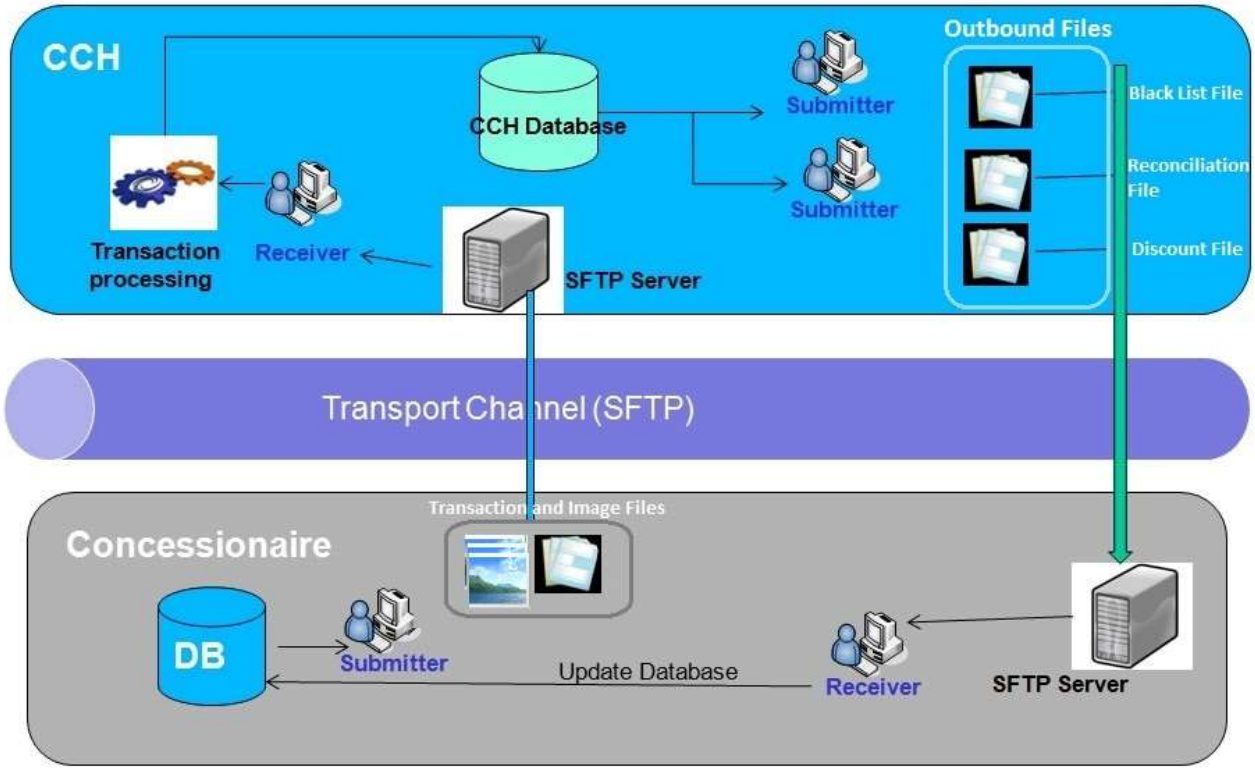
3.1 File Exchange Methodology

The file transfer mechanism utilizes the SFTP (secure file transfer protocol) over the Internet to exchange the data files to/from each concessionaire's SFTP server. The transfer files are created using concessionaire's proprietary software, but the files conform to the formats described in this document. The files are generated in an ASCII format. The sending concessionaire/CCH encrypts the file using GPG encryption tools, and the receiving CCH's/concessionaire's public key. This will also have the effect of compression of the data. The sending concessionaire/CCH then utilizes the SFTP protocol to send the encrypted files to the receiving CCH's/concessionaire's SFTP server. The CCH/concessionaire agency using its private key can therefore decrypt the received files. After decryption, the CCH/concessionaire processes the data with their own proprietary software.

Requirements

- CCH or each concessionaire must have a publicly accessible SFTP server, with or without a DNS entry on the Internet. SFTP exchange can be accomplished with only the IP address.
- CCH will provide a user-id and password to each concessionaire which will transmit files to SFTP Server. This is to prevent anonymous users from accessing the SFTP site.
- CCH/concessionaire shall install a GPG encryption package suitable for the platform they run on.
- Files will be encrypted before transmission to ensure the confidential data does not fall into unauthorized hands.
- Refer Appendix 11.6 for further information regarding File encryption and decryption

3.2 Process Flow Diagram



4 Processing Guidelines

4.1 File Naming Conventions

The file names (and extensions) are designed to be able to tell, at a glance, the information contained in the file, its source and its destination. All file names and extensions shall use lowercase characters.

The file extensions shall define the type of information contained in the file and shall be as shown in Table 1.

Table 1 - File Extensions

S. No	File Description	File Extension	Origination
1	Toll Transaction file	Tol	Originate
2	Toll Reconciliation file	Trc	Response
3	Blacklist tag file	Blt	Originate
4	Violation Reconciliation file	Vrc	Response
5	Discount File	Dis	Originate

File names shall use two distinct formats depending on whether the file is an Originate file or a Response file.

Originate file names shall have the format: **aa_bb_yyyymmdd_hhmmss.xxx**
Where the fields are defined as follows:

Table 2 - File naming convention

S. No	Description	Type	Delimiter	Comments
1	Aa	Alpha	Underscore "_"	Originating Agency
2	Bb	Alpha	Underscore "_"	Destination Agency
3	Yyyymmdd	Alpha	Underscore "_"	Created date of the file
4	Hhmmss	Alpha	Dot "."	Created time of the file
5	Xxx	Alpha		File Extension

Response file name (**Toll Reconciliation)** shall have the format:
aa_bb_yyyymmdd_hhmmss.xxx

Toll File Name
Ex: LTPTP_TPCCH_20120625_185342.tol
Toll Reconciliation
Ex: TPCCH_LTPTP_ 20120625_205041.trc
Violation Reconciliation (For the day)

Ex: TPCCH_LTPTP_ 20120625_205041.vrc

Blacklist Tags

Ex**:** TPCCH_LTPTP_ 20120625_091041.blt

Discount Files

Ex**:** TPCCH_LTPTP_ 20121101_144741.dis

Table 3 –Reference codes used during File Exchange process

S. No	Codes	Description
1	TPCCH/CCH	This code refers to Central Clearing House. This code shall be used in the inbound toll files and outbound files.
2	Agency code	This is a unique code assigned by CCH/CCHto a plaza participating in ETC. This is used as source agency code and destination agency code in the inbound and outbound files respectively.
3	Plaza Id(Toll zone id)	This is a unique id assigned by CCH/CCHto a plaza. This is used in the inbound toll files.
4	Lane Id	Lane id is a unique id assigned to the lane of a plaza. This id shall be defined and shared by Concessionaires at the time of master data exchange.

Note: The above details shall be shared with Concessionaire when they share the master data initially.

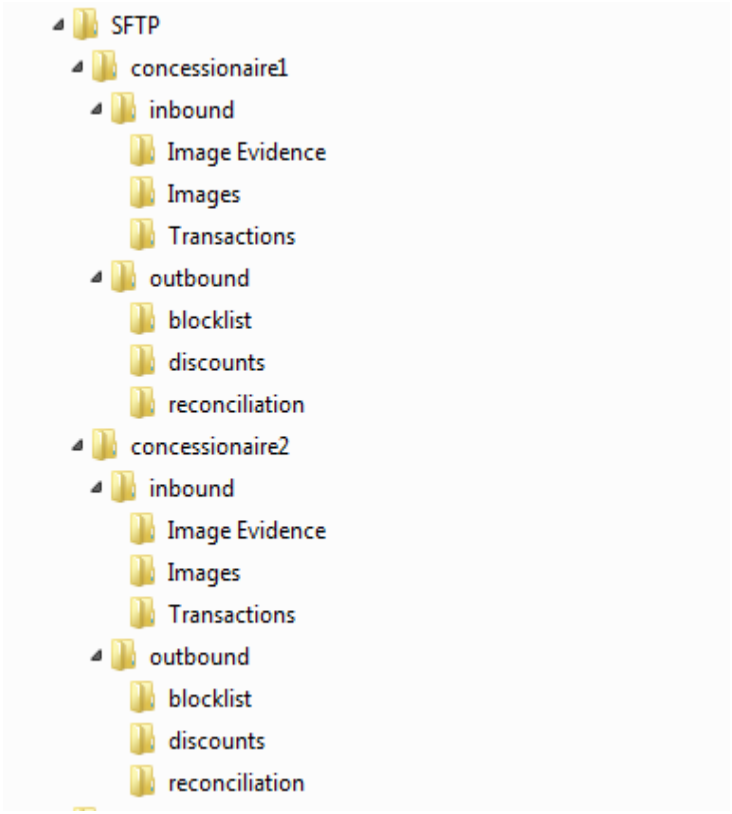
Table 4 – SLA's for File transfers:

S. No	File Description	Frequency
1	Toll Transaction file(.tol)	Every 15 minutes
2	Toll Reconciliation file(.trc)	Once a day
3	Blacklist tag file (.blt)	Every 15 minutes
4	Violation Reconciliation file (.vrc)	Once a day
5	Discount File (.dis)	Once a day
6	Sending of Toll transactions	Within 7 days
7	Violation Clearance	Within 7 days
8	Rejection of Blacklist transactions	15mins (after black list file uploaded to concessionaires)

4.2 File Transfer

Files will be exchanged between CCH and concessionaires on a regular basis as specified in the business requirements. The file exchange happens through SFTP Server. CCH will maintain the SFTP server for now. CCH create a unique folder for each concessionaire. The folder is password protected and concessionaire can access only their folder and not others. Concessionaire can place the file or read the file from that location.
Sender has to use temporary extension during the file transfer for local system to SFTP server. Once the file transferred successfully they can change the extension into proper extension. This will avoid two systems (Concessionaire and CCH) are accessing the same file during transits state.

Following is the SFTP folder structure.



5 General File Format Rules

The following rules apply to all files used in interoperability:

- All files will be in ASCII format.
- All files will use the comma “,” as the field delimiter.
- All files will use the line feed “LF” (hex 0A) as the record delimiter.
- Each file will contain:
  - A header record
  - Detail records

- A trailer record
- All numeric fields will be fixed size and with leading zeros.
- All date fields will be delimited with a forward slash "/".
- All time fields will be delimited with a colon ":".
- The Plaza/Lane combination will be pre-defined for validation and printing on patron statements
- Date fields will have the following format: YYYY/MM/DD
- Time fields will have the following format: HH:MM:SS
- Processing and file transfer take place 365/366 days per year.
- Transaction Number and Date must be a unique combination.
- Tag#, Plaza, Lane, Date, and Time must be a unique combination for tolls.
- Also, the transaction number cannot be 0.

6 Toll Transaction File

6.1 Toll Transaction Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
3	Destination Agency	Alphanumeric	5	,	Y	CCH
4	File Type	Alphanumeric	5	,	Y	TOLL/TOL-for Toll transaction File
5	File Date Time	DateTime	19	,	Y	Local Date/Time file was created in YYYY/MM/DD HH:MM:SS format
6	Record Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
7	Total Amount	Money	10	,	N	Optional. This is for future use. Total Amount for all transactions available in the current file.

8	FileID	Alphanumeric	12	CR &LF	Y	CCH's/concessionaire's end Unique file ID.

6.2 Toll Transaction Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Complete Transaction ID at concessionaire end
2	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id(assigned by CCH)
3	Lane Id	Alphanumeric	6	,	Y	Concessionaire Lane Id. Lane Id should not contain special characters and space.
4	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
5	Is Violation	Bit	1	,	Y	1 - violation transaction 0 - non violation Concessionaires have to identify the given transaction as violation or not. If it's a violation then the value set to "1". Note: CCH will not consider any violation if the flag is not set. Default value is "0"
6	Is Exempted	Bit	1	,	Y	1 means exempted transaction 0 means non exempted Concessionaires have to identify the given transaction is exempted or not. If it is

						exempted then they need to set this value as “1”. Note: CCH will not honor the toll amount to the concessionaire’s for any exempted transaction. This is used to track how many exempted transaction happened on the road. Default value: “0”
7	Tag Id	Hexadecimal	24	,	Y	First 80/96 bits of EPC Memory converted to Hexadecimal , For Details see the Appendix: 11.3
8	Tag Read Date Time	DateTime	19	,	Y	Local Date/Time for transceiver Reading date time, in the form YYYY/MM/DDTHH:MM:SS
9	Tag Vehicle Classification	Numeric	2	,	Y	Vehicle Class read from Tag User Memory.
10	AVC Vehicle Classification	Alphanumeric	5	,	Y	Vehicle classification identified by AVC
11	Wide Range ImageName	Alphanumeric	250	,	N	Optional. In case of IsViolation=1, then it is mandatory. At least one image should be provided i.e., If Rear View ImageName is provided then it is optional.
12	WRImageDate time	DateTime	19	,	N	Optional. Date Format: YYYY/MM/DDTHH:MM:SS
13	Rear View ImageName	Alphanumeric	250	,	N	Optional. In case of IsViolation=1, then it is mandatory. Atleast one image should be provided i.e., If Wide Range ImageName is provided then it is optional.

14	RVImageDatetime	DateTime	19	,	N	Optional. Date Format: YYYY/MM/DDTHH:MM:SS
15	Lane Status Id	Char	1	,	N	Status of the Lane. Possible values are : (Open) C (Close) Default Value: empty(" ") If Lane Status is "C" the record will not be accepted by CCH
16	Lane Mode Id	Char	1	,	N	Mode of the Lane. Possible values are : M (Maintenance) N (Normal) Default Value: empty(" ") If Lane Status is "M" the record will not be accepted by CCH
17	Toll Amount	Money	8	,	N	Optional filed. Toll amount is calculated by CCH. For Custom Based Tolling (PriceMode-"C"), this field is mandatory.
18	Vehicle Detection Method	Alpha	15	,	N	Optional field. Possible values are : Serial ASII Timeout Default value: empty(" ")
19	Is Straddle	bit	1	,	N	Optional, it's used for future use.
20	Is Buffered	bit	1	,	N	Optional, it's used for future use.
21	User Memory	Alphanumeric	50	,	N	Optional, it is used for future

	Text					use
22	LPNumber	Alphanumeric	12	,	N	Optional, concessionaire can send plate number if they are able to identify it. It will not be used in transaction processing. In case of dispute, this information will be handy to come to conclusion, Default value is empty " "
23	Confidence Level	numeric	1	LF	N	Optional, it is used for future use, Highest OCR confidence level of the image captured for the vehicles
24	Entry Toll Zone Id	Alphanumeric	6	,	N	Entry plaza id. Required for distance based tolling (price mode "D")
25	Entry Lane Id	Alphanumeric	5	,	N	Lane Id at Entry Plaza. Required for distance based tolling (price mode "D")
26	Entry Transaction Date Time	DateTime	19	,	N	Entry Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS Mandatory for distance based tolling (price mode "D")
27	PriceMode	Char	1	,	Y	'D' for Distance Based pricing 'P' for Point Based pricing. 'C" for Custom Pricing. Default value is 'P'
28	IsOverWeight Charged	Bit	1	,	Y	1 – If the vehicle is over loaded 0 – if the vehicle is not over loaded. Default value is 0
29	WIM Weight	Alphanumeric	10	,	N	This is mandatory if the 'IsOverWeightCharged' is true and pricing mode is other than 'C'.

30	Static Weight	Alphanumeric	10	,	N	Vehicle weight measured at static scale located at the plaza.
31	Attribute_1	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
32	Attribute_2	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
33	Attribute_3	Alphanumeric	20	,	N	This field will have additional agency specific data, if necessary
34	Attribute_4	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
35	Attribute_5	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
36	Attribute_6	Alphanumeric	30	,	N	This field will have additional agency specific data, if necessary
37	Attribute_7	Alphanumeric	50	,	N	This field will have additional agency specific data, if necessary
38	Attribute_8	Alphanumeric	50	,	N	This field will have additional agency specific data, if necessary
39	Attribute_9	Alphanumeric	200	,	N	This field will have additional agency specific data, if necessary
40	Attribute_10	Alphanumeric	1000	LF	N	This field will have additional agency specific data, if necessary

6.3 Toll Transaction Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

6.4 Toll Transaction Sample File Format

#HEADER,LTPTP,CCH,TOLL,2013/01/30 11:09:09,0000000005,0000000000,1000¶
8009123,021000,L1,2013/01/30 10:15,0,0,99000000010000003D4,2013/01/30
10:15:00,04,24,,,,,,,,,,,AP09CE0982,,,,,P,,,,,,,,,,,, ¶
8009124,022000,L2,2013/01/30 11:15,1,0,99000000010000003D5,2013/01/30
11:15:00,03,23,l2imagewide,2013/01/30 11:15:00,l2rearimg1,2013/01/30
11:15:02,O,N,,Serial,0,0,,AP09CE0982,1,,,,P,,,,,,,,,,,, ¶
8009124,022000,L2,2013/01/30 11:15,1,0,99000000010000003D6,2013/01/30
11:15:00,03,23,l2imagewide3,2013/01/30 11:17:00,l2rearimg4,2013/01/30
11:17:12,,,,,,,,AP09CE0934,1,,,,P,,,,,,,,,,,, ¶
8009124,024000,L2,2013/01/30 11:15,0,0,99000000010000003D7,2013/01/30
11:15:00,03,23,,,,,,,,,,,AP09CE0935,,024010,L1,2013/01/30 10:15,D,,,,,,,,,,,, ¶
8009127,021000,L1,2013/01/30 10:15,0,0,2013/01/30
10:15:00,04,24,,,,,,,,,,,AP09CE0982,,,,,P,1,200.45,200.45,,,,,,,,, ¶
#TRAILER,0000000005¶

7 Toll Reconciliation File

7.1 Toll Reconciliation Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding concessionaire
4	File Type	Alphanumeric	5	,	Y	TRC – Toll reconciliation file
5	File Mode	Alphanumeric	1	,	Y	Possible values are “F”-For full file “P”- Partial file
6	File Date Time	Date time	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Transaction Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	Accepted Count	Numeric	10	,	Y	Number of accepted transactions in a business day.
9	Accepted Amount	Money	8	,	Y	Total accepted Amount through trips in a business day.
10	Discounted Amount	Money	8	,	Y	Total discounted Amount applied for the trips in a business day.
11	File ID	Alphanumeric	12	,	Y	Unique file id.
12	Source File ID	Alphanumeric	12	LF	Y	Optional, it’s used for future use.

7.2 Toll Reconciliation Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Original Transaction ID generated by agency
2	CustomerTripID	Numeric	10	,	Y	CCH transaction process ID for an accepted trip
3	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id
4	Lane Id	Alphanumeric	6	,	Y	Lane Id
5	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
6	Tag Id	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory
7	Vehicle Classification	Alphanumeric	5	,	Y	Vehicle Classification on which toll amount will be calculated (AVC)
8	Accepted Amount	Money	10	,	Y	Accepted amount by the CCH.
9	Discounted Amount	Money	10	,	N	Optional, In case transaction has any discounts then this field is mandatory.
10	Response Code	Alphanumeric	1	,	Y	Response code. “A” for Accepted “R” for Rejected
11	Reason Code	Alphanumeric	10	,	Y	Description of the reason codes. It will be useful when there is a rejection. See Appendix 11.1
12	Plate Number	Alphanumeric	12	,	N	Plate Number of the vehicle. If transaction has plate number, then the same will be sent

13	Source File ID	Alphanumeric	12	LF	N	Optional.

7.3 Toll Reconciliation Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

7.4 Toll Reconciliation Sample File Format

#Header, TPCCH,LTPTP,TRC,F,2012/06/06 23:59:59,2012,0000000002,
0000000003,00.00,00.00 ,PTP0101011, PTP0101010¶
011001001,0110212122,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00, ,A,
,AP09BK4890,¶
011001002, 0110212123,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00,10.00,AD,
,AP09BK4890,¶
011001003,0110212123,E,E1,2012/06/06 23:59:59,01100110,2L,
10.00,10.00,R,012,AP09BK4891,¶
#TRAILER ,0000000003¶

8 Violation Reconciliation File

8.1 Violation Reconciliation Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alphanumeric	5	,	Y	VRC – Toll reconciliation file
5	File Mode	Alphanumeric	1	,	Y	Possible values are

						"F"-For full file "P"- Partial file
6	File Date Time	Date time	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Transaction Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	Accepted Count	Numeric	10	,	Y	Number of accepted transactions in a business day.
9	Accepted Amount	Money	8	,	Y	Total accepted Amount through trips in a business day.
10	Discounted Amount	Money	8	,	Y	Total discounted Amount applied for trips in a business day.
11	File ID	Alphanumeric	12	,	Y	Unique file id.
12	Source File ID	Alphanumeric	12	,	N	Optional default value is empty (" "), it may be used in future.

8.2 Violation Reconciliation Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Transaction Id	Alphanumeric	20	,	Y	Original Transaction ID generated by agency
2	CustomerTripID	Numeric	10	,	Y	CCH transaction process ID for an accepted trip
3	Toll Zone Id	Alphanumeric	6	,	Y	Concessionaire plaza id

4	Lane Id	Alphanumeric	6	,	Y	Lane Id
5	Transaction Date Time	DateTime	19	,	Y	Local Date/Time for Transaction date time, in the form YYYY/MM/DDTHH:MM:SS
6	Tag Id	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory in Hexadecimal format
7	Vehicle Classification	Alphanumeric	5	,	Y	Vehicle Classification on which toll amount will be calculated
8	Accepted Amount	Money	10	,	Y	Accepted amount by the CCH.
9	Discounted Amount	Money	10	,	N	Optional, In case the transaction has any discounts then this field is mandatory.
10	Response Code	Alphanumeric	1	,	Y	Response code. "A" for Accepted "R" for Rejected
11	Reason Code	Alphanumeric	10	,	Y	Description of the reason codes. It will be useful when there is a rejection. See Appendix 11.1
12	Plate Number	Alphanumeric	12	,	N	Plate Number of the vehicle. If transaction has plate number, then the same will be sent
13	Source File ID	Alphanumeric	12	LF	Y	Original Concessionaire File Id.

8.3 Violation Reconciliation Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are

						required.

8.4 Violation Reconciliation Sample File Format

#Header, TPCCH,LTPTP,VRC,F,2012/06/06 23:59:59,0000000002,
0000000003,00.00,00.00,PTP0101011, ¶
0001100100,1020023123,W,W1,2012/06/06 23:59:59,01100110,2L, 10.00, ,A,
,AP09BK4890 ,PTP0101010¶
0001100101,1020023124, W,W1,2012/06/06 23:59:59,01100110,2L, 10.00,10.00,AD,
,AP09BK4890,PTP0101010¶
0001100102,1020023125,E,E1,2012/06/06 23:59:59,01100110,2L,
10.00,10.00,R,012,AP09BK4891,PTP0101010¶
#TRAILER ,0000000003¶

¶---Line Feed Symbol (end of the current line cursor will be available at new line)

9 Black List Tag File

9.1 Black List Tag Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alpha	5	,	Y	BLT-for Black List tag File
5	Update Code	Alpha	5			- INIT for Initial load/full load. It will be weekly once - DIFF – Differential load
6	File Date Time	DateTime	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Record Count	Numeric	10	,	Y	Number of data records,

						excluding the Header and Footer Record, contained in this file.
8	FileID	Alphanumeric	12	CR &LF	Y	Unique Agency Batch ID.

9.2 Black List Tag Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Tag ID	Hexadecimal	24	,	Y	First 80/96 bits of EPC memory in Hexadecimal format
2	Status	Alphanumeric	1	,	Y	Current Status of the Tag. Possible values are "A"- Add to Black list "R" - Remove from Black list
3	Effective Date	Datetime	15	,	Y	Local Date/Time for Tag start effective date, in the form YYYY/MM/DD HR:MI:SS
4	Reason Code	Alphanumeric	10	,		Reason code. See Appendix 11.2

9.3 Black List Tag Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

9.4 Black List Tag Sample File Format

#HEADER,TPCCH,LTPTP,BLT,2012/06/06 23:59:59,0000000002,PTP0101010¶
01100110,A, 2012/06/06 23:59:59,¶
01100111,R, 2012/06/06 23:59:59,321¶
#TRAILER,0000000002¶

10 Discounts File

10.1 Discount File Header Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	7	,	Y	#HEADER
2	Originating Agency	Alphanumeric	5	,	Y	CCH
3	Destination Agency	Alphanumeric	5	,	Y	Corresponding Concessionaire
4	File Type	Alpha	5	,	Y	DIS-for Discount File
5	Update Code	Alpha	5			INIT for Initial/full load sent at least weekly on Monday at 1:00 AM. DIFF – Differential load
6	File Date Time	DateTime	19	,	Y	Local Date/Time file was created, in the form YYYY/MM/DD HH:MM:SS
7	Record Count	Numeric	10	,	Y	Number of data records, excluding the Header and Footer Record, contained in this file.
8	FileID	Alphanumeric	12	CR &LF	Y	Unique Agency Batch ID.

10.2 Discount File Detail Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Customer Id	Long	20	,	Y	CCH Customer Account#
2	Tag ID	Hexadecimal	24	,	Y	First 80(CCHGS1 tags)/96 (IHMCL Tags)bits of EPC memory in Hexadecimal format
3	Serial Number	Alphanumeric	50	,	Y	Serial Number of the tag (Decimal Format)
4	Vehicle Number	Alphanumeric	12	,	Y	License Plate Number of the vehicle
5	Start Effective Date	Date	10	,	Y	Local Date/Time for start effective date in YYYY/MM/DD format
6	End Effective Date	Date	10	,	Y	Local Date/Time for End effective date in YYYY/MM/DD format
7	Discount Type	Alphanumeric	2	,	Y	Available Values - MP- Monthly Pass LP – Local Pricing LN – Local Non Revenue GN – Global Non Revenue
8	Tariff Desc	Alphanumeric	50	,	Y	Discount Tariff name assigned by Concessionaire. E.g. ‘Local Personal Traffic’ ‘Local Commercial Traffic’ 'Local Non Revenue' 'Global Non Revenue'
9	Action	Char	1	LF	Y	It tells the discount is activated or deactivate. Possible values are ‘A’ for Activate

						'D' for De-Activate
10	Entry Toll Zone Id	Alphanumeric	6	,	N	Available Values : Default Value: empty(" ") Entry Toll Zone Id if price mode is 'D' and Discount type is MP.
11	Exit Toll Zone Id	Alphanumeric	6	,	N	Available Values : Default Value: empty(" ") Exit Toll Zone Id is mandatory if Discount Type is other than GN

10.3 Discount File Footer Record Format

S. No	Description	Type	Max length	Delimiter	Required	Comment
1	Record Code	Alphanumeric	8	,	Y	#TRAILER
2	Number of Records	Numeric	10	LF	Y	Number of records. Leading zeros are required.

10.4 Discount Sample File Format

#HEADER,TPCCH,LTPTP,DIS,2012/11/01 23:59:59,0000000005,PTP0101010¶
10001713,91000002201000000009,6847431406143016009728O9,AP09AC2727,
2012/10/01,2012/11/01,LP,Local Commercial Traffic,A,,021001¶
10001714,91000002201000000008,6847431406143016009728O8,AP09AC2726,
2012/10/01,2012/11/01,MP,,D,021000,021001¶
10001715,91000002201000000007,6847431406143016009728O7,AP09AC2756,
2012/10/01,2012/11/01,MP,,D,,021001¶
10001716,91000002201000000006,6847431406143016009728O6,AP09AC2746,
2012/10/01,2012/11/01,LN,Local Non Revnue,A,,021001¶
10001717,91000002201000000005,6847431406143016009728O5,AP09AC2736,
2012/10/01,2012/11/01,GN,Global Non Revenue,D,,¶
#TRAILER,0000000005¶

Note: Local Non Revenue and Global Non Revenue accounts are not included in current discount file process, but will be available in near future. Corresponding discount types are mentioned in this document under 10.2 section for the field Discount Type. System Integrators need to consider these discount types in their system.

11 Appendix

11.1 Reason Codes

S. No	Reason Codes	Description
1	INVALDFRMT	Any transaction received with data that is not in compliance with standards/conventions mentioned in the ICD will be rejected with reason 'INVALDFRMT'
2	INVALDDATE	Date/Time format recorded in the transaction is invalid or transaction received with future date will be rejected with reason 'INVALDDATE'. Valid format: YYYY/MM/DD HH:MM:SS
3	OLDTRIP	If the transaction date/time of a transaction falls behind threshold period. Ex: Threshold period is 7 days. In case CCH receives a 9 days older transaction, system will reject the transaction with reason 'OLDTRIP'.
4	DATADIFF	If data received in the transaction does not comply with the master data of Plaza, Lanes and Vehicle class configured in the system, such transactions will be rejected with reason 'DATADIFF'
5	DUPLICATE	Same tag-id, same plaza, same lane, same transaction ID, date time, and not accepted earlier. If a transaction received with a tagid, transaction Id, transaction date time, from a lane of a plaza is accepted by CCH then, another transaction received from same lane of that plaza with same tagid, same transaction Id and same transaction date time will be rejected with reason 'DUPLICATE'
6	INVALDTAG	If a transaction is received with a 1. Tag which does not belongs to CCHor 2. Tag-id is empty/having all zeros or 3. Invalid Header or 4. Invalid GM constant. then, that transaction will be rejected with reason 'INVALDTAG'
7	CLONEDTAG	Same tag-id, same transaction date time, different Plaza. If a transaction received with a tagid and transaction date time from one plaza is accepted by CCH then, another transaction received from different plaza with the same tag id and transaction date time within the defined threshold period will be rejected with reason 'CLONEDTAG'

8	MALTAG	Same tag-id, same plaza,same lane/different lane in same direction and within defined threshold time range. If a transaction received with a tagid, transaction date time, from lane direction of a plaza is accepted by CCH then, another transaction received from same plaza, with the same tag id, same lane direction and transaction date time within the defined threshold period will be rejected with reason 'MALTAG' Threshold time in the current system: **10 minutes**
9	BLKLISTTAG	Negative balance (tag is in blacklist)/lost tag / stolen tag. Transaction with a 'Black listed' tag i.e., a tag having negative balance or tag with status 'Lost/Stolen', 'TagInactive' or 'Damaged'
10	ACCEPTED	Transaction accepted without any difference in toll amount
11	DISCOUNTMP	Transaction Accepted with discount amount for a Vehicle/Account holding an active monthly pass for the plaza, where transaction occurred.
12	DISCOUNTDP	Transaction Accepted with discount amount for a Vehicle/Account holding an active Daily pass for the plaza, where transaction occurred.
13	DISCOUNTRP	Transaction Accepted with discount amount for a Vehicle/Account holding an active Return pass for the plaza, where transaction occurred.
14	DISCOUNTLP	Transaction Accepted with discount amount for a Vehicle/Account which is local for the plaza, where transaction occurred.
15	DISCOUNT	Transaction Accepted with discount amount
16	EXEMPTEDGNR	Transaction Accepted with zero toll amount for a Global Non-Revenue Vehicle/Account
17	EXEMPTEDLNR	Transaction Accepted with zero toll amount for a Local Non-Revenue Vehicle/Account
18	EXEMPTED	Transaction is accepted with zero toll amount
19	VEHCLSDIFF	Transaction accepted at Image review with corrected vehicle class rather than the Tag Vehicle class received in the transaction.
20	IMGREVREJ	Transaction rejected in image review due to non-availability of information such as no images, image not clear etc.
21	IMGEVDREQ	Transaction not marked as violation but AVC and Tag vehicle class mismatch

Note: ReasonCodes - DISCOUNTMP, DISCOUNTDP, DISCOUNTLP, DISCOUNTRP, EXEMPTEDGNR, and EXEMPTEDLNR are not available in the current CCH System. These reason codes will be available in future releases.

11.2 Blacklist Tag Reason Codes

S. No	Reason Code	Description
1	ACCNEGBAL	Account turned to negative balance
2	ACCPOSBAL	Account turned to positive balance
3	TAGDAMAGED	Tag damaged
4	CONBLKREQA	Concessioner requested for blacklist add
5	CONBLKREQR	Concessioner requested for blacklist remove
6	TAGINACTV	Tag in Inactive Status

11.3 Tag EPC Memory

Total EPC memory size is 96 bits (12 bytes)

ICICI:

S. No	Bits in order	Description
1	8	Header (constant)
2	28	General Manager (GS-1 issued Unique ID for ICICI. Similarly for other issuers)
3	8	Tag supplier ID
4	36	Unique Tag Serial No
5	16	EPC Validation (These 16 bits are for future purpose) Therefore, while sending the toll files, in the Tag Id field, TMS has to record the first 80 bits of EPC memory in Hexadecimal format for CCHGS1 tags.

Header: Header field shall contain the code 91

GS-1: GS-1 field shall contain the code 8907048

Tag Supplier Id: Tag supplier Id shall contain the 1 to 31

Unique Tag Serial No: Unique Tag Serial Number shall contain the hex decimal format 00 to FF

EPC Validation: Future use

IHMCL:

S. No	Bits in order	Description
1	8	Header (constant)
2	3	Filter
3	3	Partition
4	24	IHMCL Prefix
5	5	CCH ID
6	5	Tag Vendor Id
7	26	Vehicle Id
8	6	Future Use
9	16	Check Sum

Header: GIAI -96 coding scheme should be used for encoding in EPC memory of the RFID tags on the vehicles (8004).

Filter: Filter out the tag that needs to be read (0 fixed)

Partition: Determines the length of the entity identifier, which will be IHMCL who controls the EPC memory encoding specification (5 decimal fixed).

IHMCL Prefix: IHMCL Prefix field shall contain the code 8907272

CCH Service Providers: Up to 31 service providers

Tag Vendor Id: Up to 31 Tag Suppliers

Vehicle Id: Up to 6.7 crore unique id's per service provider, per tag vendor

Future Use: Any future application/bifurcation, if needed.

Check Sum: For checking the validity of the EPC encoding (Modulo 10 algorithm).

EPC Memory Encoding Illustration:

Hexa Decimal to Decimal Format conversion

Hexa Decimal Format: 34161FA8202200114DC00003

We need to convert the each Hexa decimal no to binary format as mentioned below

3	4	1	6	1	F	A	8	2	0	2	2	0	0	1	1	4	D	C	0	0	0	0	3
0011	0100	0001	0110	0001	1111	1010	1000	0010	0000	0010	0010	0000	0000	0001	0001	0100	1101	1100	0000	0000	0000	0000	0011

Binary Format for **34161FA8202200114DC00003**
00110100000101100001111110101000001000000010001000000000000010001010011011100000000000000000000011

We need to convert binary value to decimal as per the IHMCL memory allocation

Header	Filter	Partition	IHMCL Prefix	CCH ID	TAG Vendor ID	Vehicle ID	Future Use	Check Sum
8 bits	3bits	3bits	24bits	5bits	5bits	26bits	6bits	16bits
00110100	000	101	100001111110101000001000	00001	00010	00000000000100010100110111	000000	0000000000000011
52 (8004)	0	5	8907272	1	2	00017719	00	3

Decimal Serial No: 52058907272120001771900 3

Calculating the Check Sum value using Modulo 10 Algorithm

Number Positions	N1	N2	N3	N4	N5	N6	N7	N8	N9	N10	N11	N12	N13	N14	N15	N16	N17	N18	N19	N20	
Number without Check Digit	8	9	0	7	2	7	2	1	2	0	0	0	1	7	7	1	9	0	0		
Step 1: Multiply	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
BY	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1	3	1		
Add Results	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=	=		
To Create Sum	8	27	0	21	2	21	2	3	2	0	0	0	1	21	7	3	9	0	0	=	127
Subtract the sum from the nearest equal or higher multiple of ten = (130-127) = 3																					
Number with Check Digit	8	9	0	7	2	7	2	1	1	0	0	0	1	7	7	1	9	0	0	3	

11.4 Tag User Memory

S. No	Total User memory size is 512 bits (64 bytes) Bits in order	Description
1	96	Vehicle registration number
2	8	Vehicle class
3	408	Not confirmed yet

Vehicle Registration No: Vehicle registration number field shall contain the hex decimal format (Char to Hex decimal format)

Vehicle Class: Vehicle class field shall contain the hex decimal format (Decimal to Hex decimal)

Future use: Not using

Algorithm:

Step 1:
HexaVehicle # = Vehicle # convert from Decimal to Hexa
Step 2:
HexaVehicleClassId = Vehicle Class Id convert from Decimal to Hexa + "00"
UserMemoryData = HexaVehicle # + HexaVehicleClassId

Converting Registration number to HexDeciaml value
Example for Vehicle #: AP20AE5242 and vehicle class 20

Vehicle #: AP20AE5242 (Vehicle class id = 20)

Char[] arrayVehicleNum= new Vehicle Number.ToCharArray();

for each arrayVehicleNum convert DecimalToHexaDecimal

E.g.: AP20AE5242

A-Decimal value - 65 - hexavalue - 41
P-Decimal value - 80 - hexavalue - 50
2-Decimal value - 50 - hexavalue - 32
0-Decimal value - 48 - hexavalue - 30
A-Decimal value - 65 - hexavalue - 41
E-Decimal value - 69 - hexavalue - 45
5-Decimal value - 53 - hexavalue - 35
2-Decimal value - 50 - hexavalue - 32
4-Decimal value - 52 - hexavalue - 34
2-Decimal value - 50 - hexavalue - 32

HexValue = 41503230414535323432 (no of digits/length = 20)

Formatting Registration Number according to specified length

Maxvehiclelength=24 (allotted)

If (Hex **Value** lenght < 24)
then append leading zeros

If we add leading zeros we will get the following number
HexaVehicle #:000041503230414535323432

Converting Vechicle Class to HexDecimal

Vehicle class id = 20

VehicleclassId covert DecimalToHexaDecimal

VehicleclassId/16

E.g.: 20/16

Divider +Remainder=1+4 (Concatination)
append "00" right side of HexaVehicleClassId

HexaVehicleClassId: 1400

User Memory

UserMemoryData = 000041503230414535323432 + 1400
User Data: 0000**41503230414535323432** 1400
Vehicle Registration Number (AP20AE5242) Vehicle Class Id (20)

Usage of User Memory

Total User memory - 64 bytes
-We are using 13 bytes for writing user data into tag
-Out of 13 bytes we are using 12 bytes for vehicle registration number and another 1 byte for VehicleclassId

There will be another 51 bytes of user memory available for future use(64 -13 = 51 bytes).

11.5 Glossary of Terms

S. No	Terms	Definition
1	Concessionaires	The owner/operator of the facilities at which a transaction occurred.
2	AVI	Automatic Vehicle Identification
3	CCH	Central Clearing House
4	Lane Controller	Device which records data read from a transponder by overhead antennas, reads light curtains to provide for vehicle separation, treadles to determine axle count, and can control gates or barriers if the proper toll is paid via AVI or deposit of coins.
5	Plate	License plate of a vehicle; captured by violation enforcement System (VES) if present.
6	Transponder (tag)	Device to allow for automatic transaction identification, works by means of radio signal activation and returns the information programmed into by the Issuing Agency.

11.6 Encryption and Decryption

CCH and Concessionaire(s) should generate a public-private key pair and share their public keys.

Concessionaire needs to generate an OpenPGP key pair certificate and share the public key to CCH so that CCH shall encrypt the outbound files and transfer to the concessionaire SFTP server.

To create OpenPGP and X.509 certificates Gpg4win uses a key length of 2048 bit by default. The default algorithm for signing and encrypting is RSA.

Encryption/Decryption process doesn't include the digital signatures. The same key shall be used in future.

Encryption:

Concessionaire TMS has to use GnuPG tool and encrypt the TOL files using CCH public key (following binary format) and upload into SFTP server. CCH will decrypt those encrypted files with its private key.

Similarly, CCH will encrypt the outbound files i.e., Blacklist/Reconciliation/Discounts etc., using the Concessionaire TMS public key. TMS should decrypt the outbound files using their private key.

Decryption:

CCH uses GnuPG tool to decrypt the toll files uploaded into SFTP server, which are encrypted and by Concessionaire TMS using CCH public key.

Similarly, Concessionaire TMS has to decrypt the outbound files i.e., Blacklist/Reconciliation/Discount files, using the Concessionaire TMS private key. Concessionaire TMS should decrypt the outbound files using their private key.

Tools:

CCH is currently making use of gpg4win for encryption/decryption process. Download the gpg.exe from the link provided here (http://gpg4win.org/download.html).
This can be automated by accessing the Gnupg executable files and passing passphrase as arguments to the process.

11.7 Responsibilities

Items	Responsibility
Business Rules Update or Finalization	CCH Ltd.
Finalization of Agency Codes	CCH Ltd.
Finalization of Reason Codes	CCH Ltd.
Plaza and Lane names	Concessionaires
Violation clearance SLAs	CCH Ltd. and Concessionaires
Appendix section	CCH Ltd.

NETC

NATIONAL ELECTRONIC TOLL COLLECTION

Interface Control Document (ICD) 2.4 (b)

document Prepared by - Board of NPCI

A. Duplicate Transactions Rules

The current ICD 2.4 identifies duplicate transactions and CCH rejects them under two reject codes: i) Duplicate & ii) Maltag. We have observed that the current parameters don't fully eradicate the problem and does not even address the cross talk issue. Inorder to address these issues, it is suggested to implement the following business rules to check duplicate/mal tag transactions at toll plaza.

i. Toll transaction id should be unique per lane. Hence any subsequent transaction which is having the same transaction Id of a previously approved transaction on a particular lane for the specific plaza must be declined by acquirer.

ii. If any single tag has two successful transactions within time difference of less than or equal to 5 minutes in the same direction at the same plaza for the same acquirer, then the acquirer will decline the 2nd transaction. Once declined the 2nd transaction will become unsuccessful hence this declined transactions will not be considered for duplicate transaction validation.

Example Absolute Value of (ReaderReadTime1 – ReaderReadTime2) = Time Difference

Time Difference should be less than equal to 5 minutes

Tag id	Acquirer Id	Plaza/Merchant Id	Lane ID	Toll Transaction Id	Reader Read time	Acquirer Action
Tag1	123456	234567	L1	Txn1	10:00 am	Accepted
Tag1	123456	234567	L1	Txn2	10:03 am	Declined
Tag1	123456	234567	L1	Txn3	10:06 am	Accepted

iii. If any single tag has two successful transactions within time difference of less than or equal to 3 minutes in any direction at the same plaza for the same acquirer, then the acquirer will decline the 2nd transaction. Once declined the 2nd transaction will become unsuccessful hence this declined transactions will not be considered for duplicate transaction validation.

Example - Absolute Value of (ReaderReadTime1 – ReaderReadTime2) = Time Difference

Time Difference should be less than equal to 3 minutes

Tag id	Acquirer Id	Plaza/Merchant Id	Lane ID	Toll Transaction Id	Reader Read time	Acquirer Action
Tag1	123456	234567	L1	Txn1	10:00 am	Accepted
Tag1	123456	234567	L2	Txn2	10:03 am	Declined
Tag1	123456	234567	L3	Txn3	10:06 am	Accepted

The parameters 5 minutes & 3 minutes should be configurable at the acquirer host & should be defined & mutually agreed between acquirer & concessionaire basis the actual plaza layout. However the said values cannot be configured below +/-5 minutes for same direction & +/-3 minutes for any direction.
Note: All such transaction (same direction/opposite direction) shall be declined by the acquiring bank with the reject code "Duplicate"

B. Violation Transactions Processing: Identification of Violation Transactions & Image review process

To improve on the current issues faced by concessionaire during violation processing & to standardize the image review process at acquiring banks end the below mentioned changes are proposed in the existing Violation Transaction Process. These changes are being proposed within the ambit of ICD 2.4 specifications.

i. Identification for Violation Transactions at Acquiring Bank End

As per the existing process, the issuer banks issues the FASTag with the right Tag Vehicle Class (TVC) and update the right vehicle class on NPCI mapper. The same classification is mapped by the Acquiring bank at the toll plaza and is used for determining the AVC. Whenever there is a mismatch between AVC & TVC, the plaza marks all such transactions as Violation transactions and share the AVC & Image with the acquiring bank for processing these violations. Post implementation of Phase II of NETC program, all transactions are supposed to be processed as per the Mapper Vehicle Class (MVC). In order to eliminate any losses to the concessioners/plaza operator on account of any mismatch between the TVC & MVC, we propose the following changes:

As per the current ICD 2.4, "if AVC vehicle class does not match with vehicle class tied to the tag for the clean transactions sent to CCH, then these will be considered as violations by CCH. These transactions will be marked as rejected in the recon file with reason code, 'IMGEVDREQ'. The transactions with reason code as 'IMGEVDREQ' will be held in CCH for further processing until image evidence is received from Concessionaire."

We propose to use the above section in ICD 2.4 with a minor adjustment. Henceforth for implementing the above business rule, acquiring bank should consider mapper vehicle class for matching with the AVC instead of the tag class i.e. for all clean transactions where AVC is matching with Tag class but has a lower mapper class, then acquiring bank should raise the debit adjustment for the differential toll fare. i.e. Difference between toll fare as per Tag class and the toll fare as per the mapper vehicle class. This debit adjustment would be processed without any supporting image as the plaza has shared it as clean transaction. In all such cases the issuer will be held liable as the tag issuance and mapper class updation was done by the issuer bank.

In the NETC program, any debit adjustment can be processed only once the original transaction is settled hence all such debit adjustments will be processed only after the settlement of the original transactions as per Mapper vehicle class. Hence the TAT for settling all such debit adjustments (where MVC is lower than the TVC and is sent as a clean transaction) will be T+2 days. Acquiring bank shall process all such debit adjustment with the new reason code '1005- Tag class is greater than MVC'.

The Acquiring bank will also continue to process these transaction as per the PG guideline of NPCI, wherein they will not reject or hold these transactions (as defined in ICD 2.4) at the first instance, but will process them as per the mapper class. Hence for all such type of transactions concessionaire will get 2 separate credits. i.e . First credit is as per Mapper Class on T+1 day & second credit for the differential toll fare on T+2 days.

ii. **TRC/VRC Files**

As per ICD 2.4, the Acquiring Bank shared two reconciliation files with the concessioner/ plaza operators on a daily basis. Transactions which are marked as "clean transactions" are provided in TRC files and transactions which are marked as "is violation= 01" are provided in VRC files. The status of transactions as accepted or rejected is mentioned in the response code field of TRC/VRC files. The Acquirer Bank also need to provide valid reason codes for all accepted/rejected transactions.

Due to the change in transaction processing in phase II (post 3rd Dec 2016), NPCI had advised acquiring bank to process all the transaction as per the Mapper Vehicle Class, even if the transaction is marked as "is violation= 01" it will be processed as per MVC in the first go itself. The Acquirer Bank is supposed to conduct a proper audit of the violation cases and process the differential fare as Debit Adjustments within 3 days of original transaction processing and share the information over a mail to Concessioners. As this process has created a lot of reconciliation challenges for both Concessioner & Acquiring Bank, we are suggesting the below changes in the processing of TRC/VRC file:

- For all the clean transactions (is violation= 0) where the AVC matches with Mapper Class or is lower than the Mapper Class, these should be marked as accepted in the response code in TRC file. The toll fare to be calculates as per the Mapper Class. In case the AVC is lower than the mapper class acquiring bank will not raise the credit adjustment but such transactions would be open for chargeback in case of customer complaint.

- For all the clean transactions (is violation= 0) where the AVC is higher than the Mapper Class (as defined in section i above), these should be marked as accepted along with reason code 'VEHCLSDIFF' in TRC files. This will help the concessioners to identify such transactions and they can separately track the credits of differential toll fare when the debit adjustments are processed by the acquirer bank.

- If any transaction is sent as clean transaction & the AVC is not matching with TVC then all such transactions should be marked as accepted along with reason code 'IMGEVDREQ' in TRC files.

- For all the violation transactions (is violation= 1) where the AVC is higher than the Mapper Class & image is provided by concessionaire, these should be marked as accepted along

with reason code 'VEHCLSDIFF' in the VRC files. This will help the concessioners to identify that these transaction are in process for image review and they can separately track the credits of differential toll fare when the debit adjustments are processed by the acquirer bank.

- For all the violation transactions (is violation= 1) where the AVC is higher than the Mapper Class & Image is not provided by the concessionaire, all such transactions should be marked as accepted along with reason code 'IMGEVDREQ' in VRC files. This will give the concessioners a second chance to provide the vehicle image for further processing.
- For all the violation transactions (is violation= 1) where the AVC is lower than the Mapper Class should be marked as accepted in the VRC files. For all such transactions, Acquiring Bank shall not raise any credit adjustments. Any future disputes shall be handled by the Issuer bank through the chargeback process.
- For all the violation transactions (is violation= 1) where the AVC matches with Mapper Class should be marked as accepted in VRC file. For all such transactions, Acquiring Bank shall not raise any debit adjustment.
  Please refer the below mentioned table.

Transaction Type	Conditions	Image provided	Status in TRC/VRC	Reason Code in TRC/VRC	Concessionaire Action	Acquirer Action	Issuer Remarks
Clean (IsViolation=0)	AVC= MVC	NA	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA
Clean (IsViolation=0)	AVC< MVC	NA	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA
Clean (IsViolation=0)	AVC> MVC	NA	Accepted	VEHCLS DIFF	NA	1. Settlement as per Mapper vehicle class 2. Debit Adjustment for differential Toll fare	1.Change of mapper class within 3 days or 1.Blacklist & replace the tag within 3 weeks
Clean (IsViolation=0)	TVC ≠ AVC	NA	Accepted	IMGEVD REQ	Image should be shared within 1 day on (\InBound\ImageEvidence folder)	1. Settlement as per Mapper vehicle class 2. IF image review accepted , Debit Adjustment should be raised for differential Toll fare	1.Change of mapper class within 3 days for debit adjustment transactions

Transaction Type	Conditions	Image provided	Status in TRC/VRC	Reason Code in TRC/VRC	Concessionaire Action	Acquirer Action	Issuer Remarks
						3.If image review rejected , the same should be reported on concessionaire portal	
Violation (IsViolation=1)	AVC> MVC	Yes	Accepted	VEHCLS DIFF	NA	1. Settlement as per Mapper vehicle class 2. IF image review accepted , Debit Adjustment should be raised for differential Toll fare 3.If image review rejected , the same should be reported on concessionaire portal	1.Change of mapper class within 3 days for debit adjustment transactions
Violation (IsViolation=1)	AVC> MVC	NO	Accepted	IMGEVD REQ	Image should be shared within 1 day	1. Settlement as per Mapper vehicle class 2. IF image review accepted , Debit Adjustment should be raised for differential Toll fare 3.If image review rejected , the same should be reported on concessionaire portal	1.Change of mapper class within 3 days for debit adjustment transactions
Violation (IsViolation=1)	AVC= MVC	Yes	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA

Transaction Type	Conditions	Image provided	Status in TRC/VRC	Reason Code in TRC/VRC	Concessionaire Action	Acquirer Action	Issuer Remarks
Violation (IsViolation=1)	AVC= MVC	No	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA
Violation (IsViolation=1)	AVC< MVC	Yes	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA
Violation (IsViolation=1)	AVC< MVC	No	Accepted	-	NA	1.Settlement as per Mapper vehicle class	NA

Note: - As per ICD the current definition for 'VEHCLSDIFF' is Transaction accepted at Image review with corrected vehicle class rather than the Tag Vehicle class received in the transaction. We would like to change the definition to accommodate the proposed process. New Definition would be "Transactions where AVC/TAG class is higher than mapper class & is under review by the Acquiring Bank."

For all (clean) transactions in TRC files, where the response code is Accepted & the reason code is "**VEHCLSDIFF**" , the concessioner will get the differential toll fare for sure. The acquiring bank will process the Debit Adjustments without any supporting Image.

For all (violation) transactions in VRC files, where the response code is Accepted & the reason code is "**VEHCLSDIFF**", the concessioner will get the differential toll fare only for those transactions which will be successfully accepted by acquiring bank after the image review process.

For all transactions in TRC & VRC files, where the response code is Accepted & the reason code is "**IMGEVDREQ**", the concessioner need to upload the images within 1 day as per the process & path (\InBound\ImageEvidence folder) as defined in ICD 2.4. The concessioner will get the differential toll fare only for those transactions which will be successfully accepted by acquiring bank after the image review process. In case the concessionaire fails to upload the image within the defined TAT (1 day) he will not be paid the differential toll fare.

iii. **Change in Mapper Class/blacklist tag**

- Whenever the Issuer Bank receives a Debit Adjustment, they should investigate the debit adjustment data & immediately change the mapper class for the tags where they have

erroneously put a lower mapper class in NPCI system and the tag class is matching with the AVC. This activity should be completed by the Issuer within 3 days from the date of debit adjustment is affected in NPCI system.

- For cases, where the tag class issued is incorrect but the NPCI mapper class is correct (matching with actual vehicle class), Issuer should immediately blacklist such tags & replace the tags with the correct vehicle class within 3 weeks. For example if the Issuer bank has issued a tag with category VC10-(Truck 2 axle) but the actual vehicle class is VC 5- (LCV 2 axle) & mapper class mapped in NPCI system is VC-5. In such cases for all clean transactions sent by toll plaza, the acquirer bank will raise the debit adjustment as per the Tag class/AVC & customer account will be debited for higher toll fare amount. Hence to avoid such scenario issuer bank should blacklist such tags basis on the analysis of debit adjustment transactions.

Note :- In the scenario where the acquirer raises the DA with the reason code 1005- Tag class is greater than MVC (in NPCI System), **there will be no chargeback rights to issuer bank as it is the responsibility of the issuer banks to carry out the right issuance.**

iv. **Reconciliation of Transaction**

With the above proposed changes in the handling of TRC & VRC, it would be easier for the Concessioner & the Acquiring Bank to do the daily reconciliation. As a concessioner, one has to identify the following transactions from the TRC & VRC files

- All accepted transactions without any reason code: These are to be reconciled immediately.
- All accepted transactions with a reason code: These are to be actioned by the concessioner by providing additional images (IMGEVDREQ) or to be reconciled as a two step process for transactions marked as VEHCLSDIFF which would be processed by acquirer bank in due time. Both the reason codes indicate that the final status of the transaction is still pending from the Acquirer Bank. Once the violation is completely processed, the Acquirer Bank should provide the detailed status (accepted/rejected with valid reason codes) to the concessioner on their portal.
- All rejected transactions with a reason code: These transactions to be reviewed by the concessioner and to be reprocessed within the defined TAT if the reject reason parameter are curable.

Note: As we don't want to change any parameter of ICD 2.4, the concessioners would have to carry the daily reconciliation as per below:

- Daily transactional level reconciliation: Compare the toll transaction file & TRC/VRC files. In case of any discrepancy, check the portal or contact the Acquiring Bank.
- Daily financial level reconciliation: With the proposed changes, this will become a two-step process.
    - Step One: check all accepted transactions amount with the daily settlement file.

- Step Two: Check all accepted transactions with a reason code with the subsequent debit adjustment report on the concessioner portal for the next 6 days

Note :- As on today there is no TAT for the reconciliation process at concessionaire end due to which many old claims have been raised by the concessionaires. This is creating issue at issuers end as customers are not ready to accept any old debits. Further for processing of any old claim the changes needs to be done in NPCI system also which is not advisable. Hence to avoid this issue we propose that over and above the daily reconciliation, all concessionaire should carry out a monthly reconciliation at the month end & raise the claim if any within 30 days. Any liability or claims raised by the concessionaire after 30 days shall not be entertained and the acquirer/ issuer bank will not liable to honor any such claims.

e.g. For all transactions of April month, claim should be raised before May 31st .

Standardization Image Review Parameters:

Currently every acquiring bank follows different parameters for the image review for violation transaction processing. The below mentioned points should be considered for image review by all acquiring banks.

i. The auditor to check the image for a) VRN no & b) no of axles

ii. In case the VRN is not visible on the images, then the decision can be taken on the basis of the provided image only if the time difference between reader read time & time stamp of the image is within +/- 90 seconds.

iii. Profiler images can also be considered for processing of the violation transactions as an alternative to vehicle image. The concessioners have to provide the profiler images which will contain the transactions details- Trx no, date & time & VRN number (wherever the tag has a VRN no or else XXXX).

In case the Acquiring bank auditor is unable to take a judgement basis the poor image quality/ absence of profiler image/ poor profiler image, then all such transactions would be rejected by the acquirer bank with the reason code "IMGREVREJ".

C. Invalid Tag Definition:-

The current IHMCL GS1 tag specification are as follows.

Header: GIAI -96 coding scheme should be used for encoding in EPC memory of the RFID tags on the vehicles (8004).

Filter: Filter out the tag that needs to be read (0 fixed)

Partition: Determines the length of the entity identifier, which will be IHMCL who controls the EPC memory encoding specification (5 decimal fixed).

IHMCL Prefix: IHMCL Prefix field shall contain the code 8907272

CCH Service Providers: Up to 31 service providers

Tag Vendor Id: Up to 31 Tag Suppliers

Vehicle Id: Up to 6.7 crore unique id's per service provider, per tag vendor

Future Use: Any future application/bifurcation, if needed.

Check Sum: For checking the validity of the EPC encoding (Modulo 10 algorithm).

S. No	Bits in order	Description
1	8	Header (constant)
2	3	Filter
3	3	Partition
4	24	IHMCL Prefix
5	5	CCH ID
6	5	Tag Vendor Id
7	26	Vehicle Id
8	6	Future Use
9	16	Check Sum

Further as per the ICD 2.4 , the current definition for Invalid Tag is, If a transaction is received with a

1. Tag which does not belongs to CCHor

2. Tag-id is empty/having all zeros or

3. Invalid Header or

4. Invalid GM constant.

Then, that transaction will be rejected with reason 'INVALDTAG'

In the above definition there is no specific comment on validation of filter & partition filed to ascertain whether the tag read at plaza end is valid IHMCL GS1 tag or not. Hence we propose that at plaza level to ascertain the valid IHMCL GS1 TAG, plaza should also start validating Filter & Partition field. i.e. Plaza should validate only first 38 bits of the IHMCL GS1 tags. (Refer the below mentioned table)

S. No	Bits in order	Description
1	8	Header (constant)
2	3	Filter
3	3	Partition
4	24	IHMCL Prefix

D. File Transfer & SFTP Storage :-

Currently as per current ICD, CCH maintains the SFTP server & they create a unique folder for each concessionaire. The folder is password protected and concessionaire can access only their folder and not others. Concessionaire can place the file or read the file from that location.
However in ICD 2.4 the roles & responsibility of concessionaire & acquiring bank is not clearly mentioned in the document hence we would like to document clear roles & responsibilities for both the stakeholders.

a) Roles of Acquiring bank :-
   i. Creating SFTP location for their concessionaire as per SFTP structure mentioned in ICD 2.4.
   ii. Maintaining concessionaire wise user ids & password for SFTP locations.
   iii. Placing blacklist/discount files on SFTP location.
   iv. Placing TRC/VRC reconciliation files on SFTP location.
   v. Processing the toll transactions files from the SFTP & periodic deletion of the toll files from the sftp.
   vi. Providing ACK/NACK response for the toll transactions file uploaded by the concessionaires.
   vii. Acquirer bank has to maintain logs for the below mentioned activities :
      - Uploading time of blacklist/discount file on sftp by acquiring bank.
      - Copy/deletion of the blacklist/discount files from SFTP by concessionaire.
      - Uploading time of the toll transactions files/Vehicles images on SFTP by concessionaire.
      - Uploading the TRC/VRC reconciliation files on SFTP by acquiring bank.

b) Roles of Concessionaire :-

i. Placing of Toll transactions files on SFTP.
ii. Placing of vehicle images on SFTP for violation transaction transactions.
iii. Consuming the Blacklist/discount files & deletion from the SFTP location provided by acquiring bank. Concessionaires have to store these file on their local drives as per their requirement.
iv. Consuming the TRC/VRC reconciliation files and deletion from the SFTP location provided by acquiring bank. Concessionaires have to store these file on their local drives.
v. Concessionaire has to maintain logs for the below mentioned activities :
   - Consuming the Blacklist/discount files and deletion from the SFTP location provided by acquiring bank. Concessionaires have to store these file on their local drives.
   - Consuming and deletion the TRC/VRC reconciliation files from the SFTP location provided by acquiring bank. Concessionaires have to store these file on their local drives as per their requirement.
   - Storing the toll transactions files/Vehicle images on SFTP

The SFTP activity logs should have at least below mentioned fields.

i. Activity Name
ii. Activity start & end timestamp
iii. User ids
iv. In case of blacklist/discount files no of tags in transferred in respective init/diff files.
v. Toll plaza ids
vi. IP address of the system.

E. Blacklist /Discount Files Priorities.

As per existing logic of ICD 2.4, acquirer bank has to submit 'INIT' & 'Diff' file for blacklisted & low balance tags & Discount file for exempted tags & tags on which monthly & local pass passes are issued. Currently if any tag is added in low balance & on same tag monthly pass is issued, then in such scenarios no priorities are defined for blacklist & discount files for concessionaire in ICD 2.4. Hence to handle such scenario we would propose that the concessionaire should always give priority to blacklist files over the discount files & acquiring bank should strictly follow the below mentioned rules for preparing the blacklist & discount files.

i. Monthly Pass and Local Monthly Pass – User has paid for complete month to the specific toll plaza. The Acquiring Bank shall ensure to remove the Tag from BLT (if tag is in low balance) and the same will be in discount file only. Exception shall be followed only when this vehicle needs to be blacklisted for specific reasons.
ii. Global Exemption – This will not be included in Blacklist by Acquiring Bank. This will be in discount file only. If any tag is present in blacklist (01 of NPCI) as well as in global exemption (02 of NPCI) then such tag should be provided to the plaza, only in blacklist file instead on discount file.
iii. For Local Concession per trip – As the discount is provided per trip, the Tag need to be in positive Balance. If the same goes in low balance, acquirer Bank needs to include

the same in blacklist file. All such tags where the concession is provided on per trip basis, it will not be part of discount file. In the reconciliation file, you can mention these transaction with reason code 'DISCOUNTLP'.

F. SERVICE LEVEL PARAMETERS BETWEEN THE BANK & CONCESSIONAIRE/TOLL PLAZA OPERATOR

SERVICE LEVEL PARAMETERS BETWEEN THE BANK & CONCESSIONAIRE/TOLL PLAZA OPERATOR					
Process related					
Sr. No.	Service	Service Level	Recipient	Service Provider	Remarks
1	Sending clean ETC transactions from ETC system at the Specified Toll Plaza to ACQUIRER HOST	Sending clean transaction files in the specified format on a 10 minutes batch mode 24*7. This duration can be modified by IHMCL/NHAI at its discretion.	ACQUIRER HOST	Concessionaire/Toll Plaza Operator ETC system at Specified Toll Plaza	Clean transaction files should be sent in the file format as prescribed in the interface control document of CCH. Transactions sent in incorrect file format will be rejected by ACQUIRER HOST and would need to be re-sent within the defined SLA Proceeds of the transaction amount of such incorrect file formats will not be credited to Concessionaire/Toll Plaza Operator till file is re-sent in correct file format within the timeline specified by ACQUIRER HOST.

Sr. No.	Service	Service Level	Recipient	Service Provider	Remarks
3	ETC Transaction File/Violation File Acknowledgment	Once in a day. This duration can be modified by IHMCL/NHAI at its discretion.	Concessionaire/Toll Plaza Operator ETC system at Specified Toll Plaza	ACQUIRER HOST	ACQUIRER HOST shall send one reconciliation file for all clean ETC transactions (TRC) and a separate file containing violation transactions (VRC) which were shared by concessionaire as isviolation=01.. These files will be generated at midnight and posted in SFTP server.
4	Processing violation transactions post scrutiny of supporting document sent by Concessionaire/Toll Plaza Operator to ACQUIRER HOST	T +5 (T being settlement day) This duration can be modified by IHMCL/NHAI at its discretion.	Concessionaire/Toll Plaza Operator ETC system at Specified Toll Plaza	ACQUIRER HOST	
5	Frequency of sending Black List file to ETC system at Specified Toll Plazas	Every 10 minutes This duration can be modified by IHMCL/NHAI at its discretion.	Concessionaire/Toll Plaza Operator ETC system at Specified Toll Plaza	ACQUIRER HOST	
6	Populating the Black List file in ETC system and at all ETC lanes of all Specified Toll Plazas	i. Within 10 minutes of receipt from /ACQUIRER HOST	Concessionaire/Toll Plaza Operator ETC system at Specified Toll Plaza	Concessionaire/Toll Plaza Operator	Post 10 minutes TAT of blacklist file being sent by ACQUIRER HOST for updation at ETC system, any transaction file received by ACQUIRER HOST from ETC system of toll plaza containing the same blacklisted tag will be rejected by ACQUIRER HOST.

Sr. No.	Service	Service Level	Recipient	Service Provider	Remarks
11	Response on chargeback request forwarded by Service Provider/ACQUIRER HOST	3 Days	Service Provider/ACQUIRER HOST	ETC Concessionaire/Toll Plaza Operator	Concessionaire/Toll Plaza Operator has to respond within 3 days on all chargeback request forwarded by /ACQUIRER HOST.
Finance related points					
1	Credit of transactions to Concessionaire/ Toll Plaza Operator respective plaza current A/c (for all violation transactions, credit to be done as per the Mapper Class)	T +1 working day (T being transaction date)	Concessionaire/Toll Plaza Operator ETC Collection Current Account / Account specified by NHAI in case of Specified Toll Plaza operated by NHAI	ACQUIRER HOST	
2	Credit of Debit Adjustment funds for violation transactions to Concessionaire/Toll Plaza Operator respective plaza current A/c	Maximum T +6 working days (T being settlement day)	Concessionaire/Toll Plaza Operator ETC Collection Current Account / Account specified by NHAI in case of Specified Toll Plaza operated by NHAI	ACQUIRER HOST	
4	Process for handing claims/reversals initiated by ETC Concessionaire/Toll Plaza Operator	Will be treated on case-to-case basis	ETC Concessionaire/Toll Plaza Operator 's Collection A/c	ACQUIRER HOST	

G. Guidelines for Tag issuance

MORTH has issued guild lines for issuance the Tags to different type of vehicles. As per the MORTH the tag class should be identified on the basis of the GVW weight & no of axles only. While issuing of new tags all issuer banks should strictly adhered to the document issued by the MORTH and all acquirer and plaza operators should ensure the correct mapping at the time of plaza integration. Please refer below summary table:-

Tag Class	Class Description	NPCI Mapper Class	GVW Weight
4	Car / Jeep / Van/ Tata Ace and similar mini light commercial vehicle (LMV)	VC4 & VC20	GVW <=7,500 Kgs
5	Light Commercial Vehicle	VC5 & VC 9	GVW >7,500 Kgs but <= 12,000 Kgs
6	Three Axle Commercial Vehicles	VC 8 & VC 11	GVW > 16,200 Kgs but <= 25,000 Kgs
7	Bus/Truck	VC7 & VC 10	GVW > 12,000 Kgs but <= 16,200 Kgs
12	4 Axle	VC12	GVW > 25,000 Kgs but <= 36,600 Kgs
12	5 Axle	VC13	GVW > 36,600 Kgs but <= 45,400 Kgs
12	6 Axle	VC14	GVW > 45,400 Kgs but <= 54,200 Kgs
15	7 or More Axle	VC 15	GVW >54,200 Kgs
16	Heavy Construction Machinery (HCM)/Earth Moving Equipment (EME)	VC 16	NA

Appendix 2 - NETC Procedural Guidelines (PG) v 1.6

NPCI
भारतीय राष्ट्रीय भुगतान निगम
NATIONAL PAYMENTS CORPORATION OF INDIA

Procedural Guidelines

National Electronic Toll Collection Network (NETC Network)

2016

IHMCL

भा रा रा प्रा
NHAI

Document History

Version	Release Date	Author	Reviewed By	Approved By	Revision History
1.0	29th Feb 2016	Product Development	Product Development		First Version
1.1	1st March 2016	Product Development	Product Development		Internal Revision
1.2	7st March 2016	Product Development	Product Development		Internal Revision
1.3	6th April 2016	Product Development	Product Development		Internal Revision
1.4	31st May 2016	Product Development	Product Development		Internal Revision
1.5	15th September 2016	Product Development	Product Development		Internal Revision
1.6	15th December 2016	Product Development	Product Development		Internal Revision

Revision History:

Version 1.3

Version No.	Paragraph No.	Paragraph Title	Change Made	Date
1.3	3.1	Acquirer bank	Acquirer bank have to send all the transactions which are executed at the lane controller to NETC system i.e. successful, fail, decline etc.	06-04-2016

1.3	3.1.3	Pass Management for Acquirer bank	Pass management is required at acquirer end as the customer can approach toll plaza to purchase a pass by an alternate payment mode like cash, credit card, debit card, etc.	06-04-2016
1.3	3.2	Issuer bank's roles and responsibilities	Process of pass issuance by issuer bank will be implemented in second phase	06-04-2016
1.3	3.2.1.1	Tag manufacturing and personalization	Issuer banks will have to ensure robust inventory management for tags	06-04-2016
1.3	3.2.1.1	Tag manufacturing and personalization	Once the tags are personalized with EPC and issuer signatures, the tags are live	06-04-2016
1.3	3.3	Toll Plaza Operator	TPO have to send all the transactions executed at lane controller to ETC system i.e. successful, fail, decline etc.	06-04-2016
1.3	3.3	Toll Plaza Operator	TPO will have to accept new as well as existing tags issued by issuer bank for the period of 90 days from the date of project gone live	06-04-2016
1.3	4.4	ETC Payment System Architecture	WIM calculation will not be consider in current phase of the project but may be applicable in future phases as per the instructions from IHMCL/NHAI	06-04-2016
1.3	4.4	ETC Payment System Transaction process	NETC system will validate the tag status in the exception list at the time of transaction initiation and if the TID is present in black list/ low value exception list, the system will decline the transaction	06-04-2016
1.3	4.4	ETC Payment System Transaction process - Failure Scenarios	If the transaction is beyond 15 minutes, the TPO can send the transaction to the ETC system within 8 hours and the liability of the transaction lies with TPO in case there is insufficient balance in the customer account. In such transactions the issuer can raise chargeback and acquirer bank will not have any re- presentment rights	06-04-2016
1.3	4.4	ETC Payment System Transaction process -	If the transaction is beyond 8 hours, the TPO (through acquirer bank) does not have the rights to present the	06-04-2016

		Failure Scenarios	transaction. ETC system will decline all such transactions	
1.3	4.4	ETC Payment System Transaction process - Failure Scenarios	In case if the connection is resorted the TPO/ acquirer bank should ensure to process the transaction online to ETC system within 15 minutes from transaction initiation time	06-04-2016
1.3	4.4	ETC Payment System Transaction process - Failure Scenarios	ETC system will validate the tag's digital signature and will switch the transaction to the respective issuer. In all such scenario the acquirer needs to calculate the toll fare basis AVC vehicle class as the ETC mapper vehicle class does not exist	06-04-2016
1.3	5.5	Transaction Life Cycle	The pre requisite of Debit Adjustment is settled transaction, and the TAT is within 3 days for settled transaction	06-04-2016
1.3	6.1	Dispute Management by NPCI	In case of any unsettled disputes, NPCI will give the final verdict, but the customer has rights to raise the dispute in consumer court and bank ombudsman	06-04-2016
1.3	7.1	Risk Management at Issuer	Ensure only one tag is affixed against the registered vehicle class	06-04-2016
1.3	9.1	Compliance of Issuer	At the time of registration the issuer will ensure there is only one NETC tag on a vehicle, and will capture vehicle image. Issuing banks should keep the images for the period of at least one year. It is recommended to create an archive for storing of images for dispute purposes	06-04-2016
1.3	9.1	Compliance of Issuer	The issuer bank should ensure KYC of underline payment instrument link to NETC tag	06-04-2016
1.3	9.1	Compliance of Issuer	The issuer bank should mention/communicate all the charges applicable to tag holder for the ETC service	06-04-2016
1.3	9.2	Compliance of Acquirer	One toll plaza should be acquired by a single	06-04-2016

			bank at any point of time. Although the choice of selecting the bank will be with the TPO	
1.3	9.3	Compliance for Toll Plaza Operator	The TPO should provide minimum one dedicated lane and one hybrid lane for NETC	06-04-2016
1.3	9.3	Compliance for Toll Plaza Operator	The TPO should send zero transaction message every 15 minutes, in case there is no transactions on the ETC lane	06-04-2016
1.3	9.3.1	Audit	The TPO may conduct their internal audit	06-04-2016
1.3	10.1	RFID Tag Bureau Certification	For the existing Tag, ARAI certification standard will be consider as a preliminary criteria and NPCI will further certify the vendors	06-04-2016
1.3	Annexure VI	NDA - Article 12 :TERM	This agreement would remain valid from the date last written below until the termination or expiry of this agreement. The obligations of each party hereunder will continue and be binding irrespective of whether the termination/ expiry of this agreement for a period of five years after the termination/ expiry of this agreement	06-04-2016

Version 1.4

Version No.	Paragraph No.	Paragraph Title	Change Made	Date
1.4	3.1	Acquirer Bank	Acquirer bank has to maintain the image files by Toll plaza operator for a period of one year	31-05-2016
1.4	3.1.1	Integration with Toll plaza system	Toll plaza server will process the transaction and send it in the specified (IHMCL) format to the acquiring host	31-05-2016

1.4	3.1.2	Integration with NETC System	Toll fare calculation will be based on vehicle class received from NETC Mapper	31-05-2016
1.4	3.1.3	Toll fare Calculation	Toll plaza server/ Lane controller will check NETC Tag ID format and its occurrence in exception list	31-05-2016
1.4	3.1.4	Exception List handling	Acquirer should periodically fetch latest exception list from NETC system and send the same to toll plaza server every 10 minutes which will be updated to lane controllers within 10 minutes of its receipt by toll plaza server	31-05-2016
1.4	3.2	Issuer Bank's Roles and Responsibilities	Issuer Bank have to validate the digital signature of the tag. In case the signature validation fails the tag needs to be added in blacklist	31-05-2016
1.4	3.2.1.1	Tag Distribution - Tag manufacturing and personalization	Issuer bank will have to ensure the robust inventory management for live tags. The tags are said to be live, once the tags are personalized with EPC ID, toll table vehicle class, dummy vehicle registration number, and digital signatures.	31-05-2016
1.4	3.3	Toll Plaza operator	Toll plaza operator should provide at least one NETC lane in each direction	31-05-2016
1.4	3.4	Marketing and Branding	NETC Tag structure should also contain Tag ID encoded in the barcode or QR Code	31-05-2016
1.4	4.4	NETC Payment system structure	Transducer ID is TID and EPC ID is Tag ID	31-05-2016
1.4	4.4	NETC Payment system structure	Mapper will respond to the acquirer request with valid Tag details like vehicle class information, vehicle registration number, TID, etc.	31-05-2016

1.4	4.4	NETC Payment system structure	Issuer Bank is liable for the transactions up to 20 minutes of adding the Tag IDs in the NETC exception list	31-05-2016
1.4	4.4	NETC Payment system structure	The acquirer host and Toll plaza server should ensure that the transaction messages should reach NETC switch within 15 minutes of transaction initiation (i.e. the time at which vehicle passed NETC lane)	31-05-2016
1.4	4.4	NETC Payment system structure	If transaction is received after 15 minutes and within 3 days, NETC switch will process the transaction	31-05-2016
1.4	4.4	NETC Payment system structure	If transaction is received after 3 days of transaction initiation NETC switch will decline the transaction	31-05-2016
1.4	4.4	NETC Payment system structure	For all transaction received by acquiring host, toll fare will be calculated based on the NETC mapper's vehicle class and toll plaza operator will receive toll fare for that vehicle as per vehicle class defined on NETC mapper	31-05-2016
1.4	4.4	Failure scenarios	After 20 minutes of adding the Tag IDs in exception list NETC switch will decline the transaction and the liability of transaction lies with acquirer bank/ toll plaza operator	31-05-2016
1.4	4.4	Failure scenarios	In case of proved fraudulent transactions due to cloned tags, NHAI/ IHMCL will review and compensate the issuer on case to case basis	31-05-2016
1.4	7.1	Risk Management at Toll Plaza	Toll Plaza provide Exception list validations/verifications only.	31-05-2016

1.4	7.2	NETC Tag Authentication Method	1) Figure – Tag Static Data Authentication at Lane Controller/Toll Plaza Server: This process would be applicable once the changes are made at the lane controller to authenticate the tags. 2) Figure –Tag Signing Process: Hexa-decimal string of tag's TID and Tag ID [EPC ID] is concatenated to generate the Tag Static Data. This static data is hashed with SHA-256 cryptographic hash and signed using Issuer Private Key. The process is illustrated in above figure 3) Figure – Tag Static Data Authentication for Issuer: The Issuer host shall also validate the tag signature with the tag's TID, Tag ID [EPC ID] and User memory data received in the transaction message. Issuer Host shall Blacklist any tag with an invalid signature. 4) The current CCH Specification defined IHMCL/NHAI doesn't contain fields for TID and entire user memory block in the message definition. The Attribute_7 and Attribute_9 fields in CCH transaction message definition should be used by Toll plaza operator to pass TID and 512 bits of user memory from toll plaza server to Acquiring Host.	31-05-2016
1.4	7.4.2	Tag Production	1) Signing of static data: The issuer signs Tag ID and TID using an issuer private key to produce the Signed Static Tag Data. 2) Tag Signed data preparation: The tag manufacturer writes dummy vehicle registration number, vehicle class and the signature values onto the tag's User	31-05-2016

			memory as per the defined format.	
1.4	9.1	Compliance of Issuer	The issuer Bank should honour all the NETC transactions which are received from NETC System within Fifteen minutes for online transaction processing and 3 days with limited liability	31-05-2016
1.4	9.2	Compliance for Acquirer	Fifteen minutes for online transaction processing and 3 days with limited liability	31-05-2016
1.4	9.3	Compliance for Toll Plaza Operator	1) Toll Plaza Operator should ensure to transmit securely all the transaction processed records to the acquirer within specified TAT as per the SLA mentioned in Deed of Adherence (DOA). 2) The toll plaza operator should provide minimum one dedicated lane in each direction and one hybrid lane for NETC. 3) Fifteen minutes for online transaction processing and 3 days with limited liability. 4) If it is found that valid NETC tag is not read at the NETC lane and issuer bank provides evidence of precedence/subsequent transaction then the Toll Plaza has to pay the penalty per instance as decided by IHMCL/NHAI.	31-05-2016
1.4	10.2	RFID Reader certification	The reader certification will be applicable in the future phases of the NETC project	31-05-2016
1.4	Annexure VIII	Guidelines for DMS in NETC System	Chargeback can be raised for not registered NETC Tag	31-05-2016
1.4	Annexure VIII	Guidelines for DMS in NETC System	Representment can be raised on the proof of non-acceptance of chargeback	31-05-2016

Version 1.5

Version No.	Paragraph No.	Paragraph Title	Change Made	Date
1.5	3 4	Acquirer Bank Issuer Bank	The Acquirer and Issuer split into separate chapters to differentiate between the payment transaction, clearing & settlement and tag issuance.	15-09-2016
1.5	2.2	NETC steering committee	A separate NETC Steering Committee will be created as per the existing guidelines of NPCI.	15-09-2016
1.5	5.0	Operating procedure of Issuer & Acquirer	Operating procedures of acquirer and issuer is moved to section 3 and section 4 respectively	15-09-2016
1.5	10.0	Compliance of Issuer and acquirer	The compliance of acquirer and issuer is moved to section 3 and section 4 respectively	15-09-2016

Version 1.6

Version No.	Paragraph No.	Paragraph Title	Change Made	Date
1.6	NA	NA	Segregated the PG document into two parts: Part – I : Payment Clearing and Settlement and Part – II : RFID and Vehicle Identification	15-12-2016
1.6	PART I 4.2.2	Setting up customer service channel[Helpdesk]	Roles and responsibilities of helpdesk	15-12-2016
1.6	PART I 4.5	Issuer Bank	Process for linking RFID tag with payment instrument	15-12-2016
1.6	PART I 5.2	Operating procedures	Data retention and storage	15-12-2016
1.6	PART I 5.9	Process of blacklisting tags	Process of adding/removing tags in blacklist	15-12-2016
1.6	PART I 6.5	Clearing and Settlement	Credit chargeback and credit chargeback acceptance has been added in dispute life cycle	15-12-2016
1.6	PART I 6.5	Clearing and Settlement	The prerequisite of chargeback has been modified	15-12-2016
1.6	PART I 11.3	Member Banks Certification	NETC online and EGCS offline certification details	15-12-2016

1.6	PART II 1.0	RFID and vehicle identification	Introduction of RFID tag has been added	15-12-2016
1.6	PART II 2.0	NETC Lane	NETC lane section has been added	15-12-2016
1.6	PART II 3.0	FASTag - IHMCL GS1 Code	FASTag description has been added	15-12-2016
1.6	PART II 4.0	Transaction processing at Toll Plaza	Transaction processing is explained in this section	15-12-2016
1.6	PART II 5.0	Fraud Management at Toll Plaza	Process for compensating members from the IHMCL/NHAI compensation fund	15-12-2016
1.6	PART II 6.0	Customer Support at Toll Plaza	Customer complaint and transaction processing has been added	15-12-2016
1.6	PART II 7.0	Compliance for Toll Plaza Operator	Compliance for toll plaza operator has been added	15-12-2016
1.6	PART II 8.0	Toll Plaza On boarding and Off boarding by Acquirer	On boarding and Off boarding process for Toll plaza by Acquirer is explained	15-12-2016
1.6	PART II 9.0	Dispute Management process after roll over	Dispute Management process after roll over has been added	15-12-2016

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Topics covered include:

Part I – This section covers Payment, Clearing and Settlement

- **Section 1: An Overview of Electronic Toll Collection (NETC) -** This section covers overview of NETC and its objectives. Further, it talks about Definitions related to NETC Network, NETC Payment Model.

- **Section 2: Roles & Responsibilities of NPCI-** This section covers the roles & responsibilities of NPCI for smooth functioning of Electronic Toll Collection. The section describes NETC service offerings, Settlement Guarantee Fund, Pricing and audit by NPCI.

- **Section 3: Roles and Responsibilities of Acquirer Bank-** This section covers roles and responsibilities of Acquirer Bank & Toll Plaza operator in the NETC network, Marketing and Branding.

- **Section 3: Roles and Responsibilities of Issuer Bank-** This section covers roles and responsibilities of Issuer Bank in the NETC network, Marketing and Branding.

- **Section 5: Operating procedure for members-** This section covers the operating procedure, transaction processing, NETC Payment System Architecture, Tag holder registration & complaint, Indemnification, AML/KYC Compliance, Intellectual property rights, Non-Disclosure Agreement (NDA) for the members of NETC Network.

- **Section 6: ETC Global Clearing & Settlement (EGCS)-** This section covers complete clearing & settlement process which includes NETC Tag Validation, Online Transaction processing, Clearing and settlement, Transaction life cycle, report and reconciliations.

- **Section 7: Dispute Resolution-** This Section covers dispute management procedural guidelines and the disputes Resolution Mechanism define by NPCI.

- **Section 8: Security and Risk Management-** This section covers Security and Risk Management on risk mitigation approach for members and expands on NETC Security Guidelines, Security for NETC Tag Issuance, NETC tag reader authentication, Fraud Detection and Key storage.

- **Section 9: Administrative policies and procedures-** This Section covers administrative policies and procedures pertaining to fines, pending dues, invoicing process and penalties.

- **Section 10: Compliance** - This Section covers compliance for Acquirer Banks, Issuer Banks and Toll Plaza Operators.

- **Section 11: Certification -** This section covers certification procedure of members in NETC Network i.e. NETC tag bureau and NETC tag reader, Member banks certification (NETC online system and EGCS offline system).

- **Section 12: Member On Boarding** – This section covers member on boarding procedural guidelines.

Part II – This section covers RFID and vehicle identification

- **Section- 1.0: Introduction** – This section covers three main components of RFID based NETC system i.e. Front End, Middleware and Back End

- **Section- 2.0: NETC Lane** – This section covers description of NETC Lane which is a lane supporting electronic processing of toll payments allowing collection of toll while vehicle is in motion.

- **Section- 3.0: FASTag- IHMCL GS1 Code** – This section describes FASTag which is the brand name for the passive RFID tags used in the NETC program.

- **Section- 4.0: Transaction processing at Toll Plaza-** This section covers about the program that aims to establish a non-stop toll regime in which a vehicle with a single passive RFID tag can pass through toll plazas on Indian highways and pay toll without actually stopping.

- **Section- 5.0: Fraud Management at Toll Plaza-** This section covers different method to identify, analyse and handle risks involved at Toll Plaza.

- **Section- 6.0: Customer support at Toll Plaza-** This section covers prerequisite, tag holder complaint & transaction processing at toll plaza and related flow chart.

- **Section- 7.0: Compliance for Toll Plaza Operator-** This Section covers compliance for Toll Plaza Operators.

- **Section- 8.0: Toll Plaza On boarding and Off boarding by Acquirer-** This section describes the prerequisite and process of acquiring and reacquiring of toll plaza.

- **Section- 9.0: Dispute Management process after roll over-** This section covers dispute management after roll over with different examples.

- **Annexures** –This section covers Annexures of definition and abbreviations, application forms, NETC Transaction Flow, Letter of Authority, NON-DISCLOSURE AGREEMENT, KYC/AML Undertaking by members, Guidelines for Dispute Management System in NETC System and Tag & Reader Parameters.

List of Figures

Table of Contents

Section 1: Overview of Electronic Toll Collection

Section Covers:

- Short title of the service and commencement
- Objectives of ETC
- Definitions
- NETC Payment System Model

Part I – Payment, Clearing and Settlement

1.0 Overview of Electronic Toll Collection

1.1 **Short title of the Service and commencement**

Government of India has undertaken an initiative to build India's highway network. This emphasises the need for instituting toll collection points on large scale, which leads to a framework for creating an automated and interoperable electronic tolling structure across the country's highway network.

Indian Highway Management Company Ltd. (IHMCL) is engaged in the maintenance of National Highways of India and as part of this endeavour, National Highway Authority of India (NHAI) has given the responsibility to IHMCL for implementing Electronic Toll Collection (NETC) system at toll plazas of National Highways.

NHAI/IHMCL has authorized NPCI for providing a composite solution on Electronic Toll Collection which would take care of the clearing and settlement of electronic toll transaction to make it interoperable and secure.

The National Electronic Toll Collection – Procedural Guidelines (NETC-PG), 2016 have been framed for the guidance of participants and binding on all stake holders of NETC Payment system.

1.2 **Objectives of NETC**

The main objective is to evolve the current NETC ecosystem into four party scalable model (i.e. Issuer, Acquirer, NPCI and Toll Plaza Operator) from the existing single party model. It provides an opportunity to evolve a simple and robust framework which is secure, reliable, interoperable and capable of use across the country.

NETC payment system is based on open standards of RFID technology conforming to ISO 18000 6C and EPC Class 1 Gen 2 standards[1].

Following are some of the key features of National Electronic Toll Collection (NETC) payment system.

- To empower the customers to use NETC Tag to pay the toll fare by linking the tag to any of the bank account (Saving/Current/prepaid account).

1 Reference Nandan Nilekani Report dated 28-06-2010-www.nhai.org/etc report.pdf

- To facilitate electronic collection of toll, while the vehicle is in motion, which will reduce congestion around toll plaza.
- To facilitate inter-operability across members that issues tags to customers and that acquire toll plaza in a safe and secured manner for toll transactions.

- To serve the sub goal of Government of India
    - Electronification of retail payments
    - Reduce air pollution by reducing the congestion around toll plaza
    - Reduce fuel consumption
    - Reduce cash handling and enhance audit control by centralizing user accounts
- To enhance MIS reporting by data collection, such as vehicle count of the day, date, time etc. which can be easily obtained using electronic toll collection payment system.

1.3 **Definitions**

The acronyms/abbreviations used in this document and their meanings are listed in ANNEXURE – I.

1.4 **NETC Payment System Model**

The NETC Payment System (as outlined in Figure 1) consists of the following parties:

- Tag Holder
- Issuers
- NPCI
- Acquirer
- Toll Plaza Operator
- IHMCL/NHAI

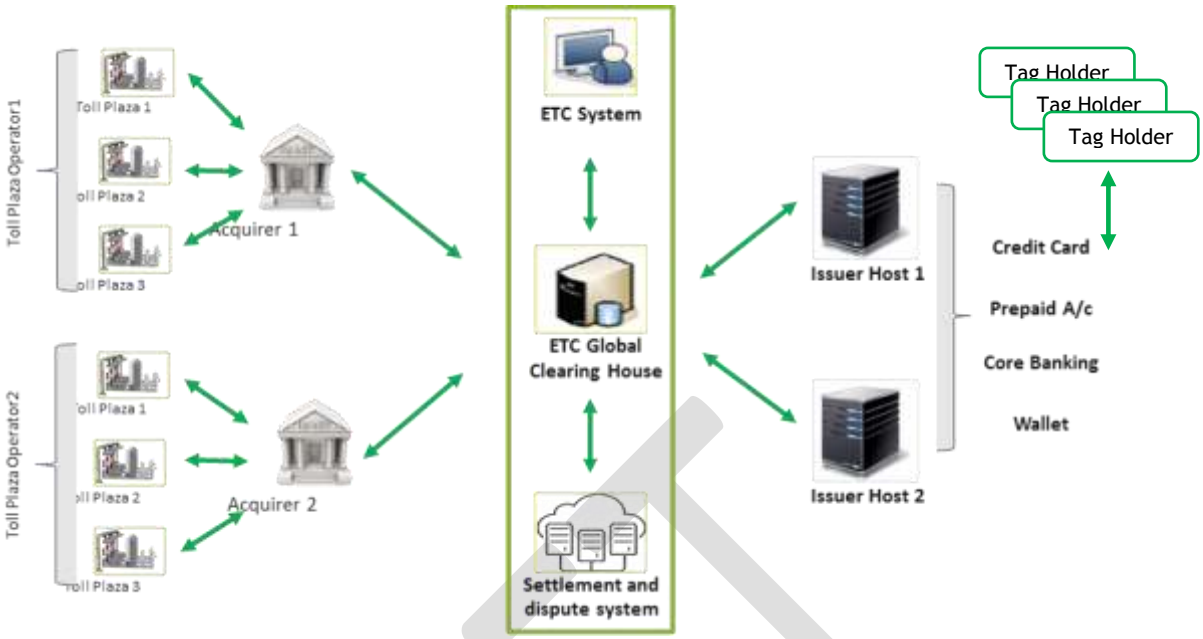


Figure 1 - NETC Payment System Model

TAG Holder

The customer enrols for an NETC Tag with the issuing bank by providing bank account number (Saving, Current, , Prepaid Account etc.) to be linked to NETC Tag ID for the deduction of toll fare.

Issuer Bank

The Issuer Bank is member of NPCI and issues the NETC Tag to vehicle owner for the payment through NETC System.

NPCI

NPCI will facilitate NETC Transactions among all member banks participating in 'NPCI network'. Further NPCI acts as centralized clearing and settlement body to settle the transactions and fee amount among the member banks.

Acquirer Bank

The Acquirer Bank is member of NPCI who acquires the Toll Plaza to facilitate the acceptance of NETC transaction for the payment through NETC Payment System.

Toll Plaza Operator

The Toll Plaza Operator provides infrastructure like NETC RFID Reader, Automatic Vehicle Classification, Weight in Motion, CCTV Cameras and Toll Plaza Server for the acceptance of NETC Tag for the payment through NETC Payment System.

IHMCL/NHAI

Indian Highway Management Company Ltd and National Highway Authority of India would be responsible for providing business and toll collection rules. They will also lay down the rules and regulation for the management of concessioners and will also monitor the scheme for National Electronic Toll Collection Network. IHMCL/NHAI will have access daily/weekly/monthly MIS reports and mapper data

Section 2: Roles and Responsibilities of NPCI

Section Covers:

- Role & Responsibilities of NPCI
- Member notification
- NETC steering committee
- Settlement guaranteed Funds
- Pricing
- Audit by NPCI

2.0 Roles and Responsibilities of NPCI

NPCI owns the NETC system which comprises of NETC Switch, NETC Mapper and ETC Global Clearing & Settlement system (EGCS) as illustrated in below figure 2. NPCI may undertake the operation and maintenance of the NETC network on its own or it may use the services of a third-party service providers for this purpose. NETC initiated transactions would be routed via bank through NPCI's NETC System.

ETC Global Clearing and Settlement system (EGCS) is the central clearing house for NETC transactions. NPCI act as clearing body for carrying out clearing and settlement functions between the member banks.

NETC Mapper is a repository of NETC Tag IDs maintained by NPCI and NETC Switch is used for the purpose of switching NETC transactions to the member banks.

The role of the NPCI includes the following:

- To specify the procedural guidelines for the scheme management and to verify compliance with them.
- To certify member banks, NETC tag personalisation bureau and vendors.
- To perform transaction switching between acquirers and issuers.
- To perform clearing and settlement for transactions on this network.
- To provide a central repository of NETC Tag IDs called NETC Mapper.
- To provide consolidated MIS reports to member banks and IHMCL/NHAI.

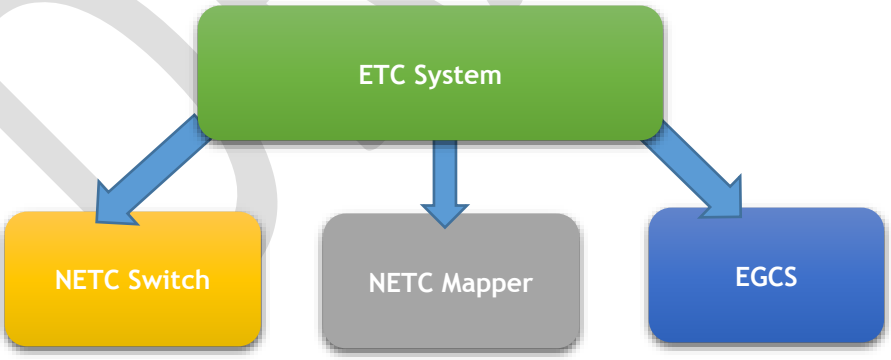


Figure 2 – NETC System

2.1 **Member notification**

NPCI would notify all the member banks regarding:

- Amendments in the NETC – PG – 2016, NPCI may issue amendments to the NETC-PG from time to time by way of circular. The revised versions of NETC-PG may also be issued incorporating new provisions periodically.
- New Amendments/software upgradation/hardware released pertaining to NETC System.
- Change in scheduled periodic maintenance hours.
- All notification issued shall be considered as part of procedural guidelines.
- Any other issues deemed important.

2.2 **NETC steering committee**

A separate NETC Steering Committee will be created as per the existing guidelines of NPCI. Its role is to discuss and deliberate on business, operational and technical issues of the NETC network. The committee comprises representatives from select members, IHMCL/NHAI and key officials of NPCI.

The NETC Steering Committee may invite ETC experts from other organizations for better insights. The committee would meet at least once in a quarter.. The list of members and the calendar of meetings in a year would be published in NPCI's website in the beginning of the calendar year and would be updated regularly.

2.3 **Settlement Guarantee Fund**

The general purpose Settlement Guarantee Fund (SGF) created by NPCI and the collateral posted by banks would be used for guaranteeing interbank settlement with RBI. Member banks will be informed about the SGF requirement and guidelines by separate circular.

2.4 **Pricing**

The pricing schedule for member banks will be regulated by NPCI based on guidelines from NHAI/IHMCL and circulated from time to time.

2.5 **Audit**

NPCI or any designated agency appointed by NPCI may conduct one or more regular or periodic financial and procedural audits of all the parties operating under the NETC Payment System at any time and from time to time for the purpose of determining compliance with the guidelines and rules.

Section 3: Acquirer Bank

Section covers:

- Roles & Responsibilities
- Compliance for Acquirer
- NETC Transaction - Payment and Settlement

3.0 Acquirer Bank

3.1 **Roles and Responsibilities**

Acquiring members would integrate their systems with toll plaza operators for the purpose of acquiring transactions happening on the NETC lanes. Acquirer would also integrate their system with NPCI's NETC system [NETC Switch and NETC Mapper] to facilitate the toll fare calculation.

The acquirer's role and responsibilities can be classified into following activities:-

- To integrate with Toll Plaza System and NETC System.
- To contract with toll plaza operators and to deploy the acquiring host, this includes the installation and management of NPCI and/or issuer bank public keys, adequately protected for integrity.
- Acquirer host may support both online and offline means of communication with toll plaza operator (preferably online).
- Acquirer should have feasibility to support primary and secondary systems to ensure connectivity with multiple endpoints.
- To process payment transactions and to pay the toll plaza operators for the processed transactions.
- To transmit the completed transaction records to the issuer in order to obtain the settlement within defined TAT.
- To send all the transactions which are executed at the lane controller to NETC system i.e. successful, fail, decline etc..
- To keep the image files provided by the toll plaza operators [i.e. AVC profile, Vehicle Image etc.] for a period of one year.
- To manage the business rules relating to toll fare calculation and share the exception list, Local exemption list(discount file list) with toll plazas.
- The acquirer should share vehicle class discrepancy (i.e. mismatch between AVC and mapper vehicle class) and exempted vehicle transaction details with toll plaza.
- To assists the disputes raised by Issuers or toll plaza operators. The acquirer is responsible for the resolution of disputes as per the applicable TAT.
- Providing support and helpdesk to Toll plaza operator.

3.1.1 **Integration with Toll Plaza System**

The toll plaza operator will deploy a toll plaza server to process the NETC Lane transactions. The toll plaza server will receive information from various systems installed on the NETC Lane (i.e. NETC RFID Reader, Automatic Vehicle Classification (AVC), Weight in Motion (WIM), and image capturing camera) either directly or from lane controller. Using this information an NETC transaction is initiated. The toll plaza server will process the transactions and send it in the specified format (as per IHMCL ICD document) to the acquiring host system for toll fare calculation and transaction

processing. The communication between toll plaza server and the acquirer host can be either online or offline (preferably online) depending on the network connectivity available at the toll plaza.

A toll plaza can be acquired by a single bank at any point of time. The choice of selecting the bank will be with the toll plaza operator.

3.1.2 Integration with NETC System

The acquirer bank will integrate their host system with the NETC System (NETC Switch and NETC Mapper) hosted by NPCI. The acquirer has to ensure the transaction data is in the specified format as defined by the NETC System interface specifications.

The acquiring host system contains the business rules for toll fare calculation. On receiving the transaction information from the toll plaza server the acquirer host will check the tag status from the NETC Mapper, calculate the toll fare based on the vehicle class received from NETC Mapper and present the transaction messages to NETC switch for further processing.

3.1.3 Toll Fare Calculation

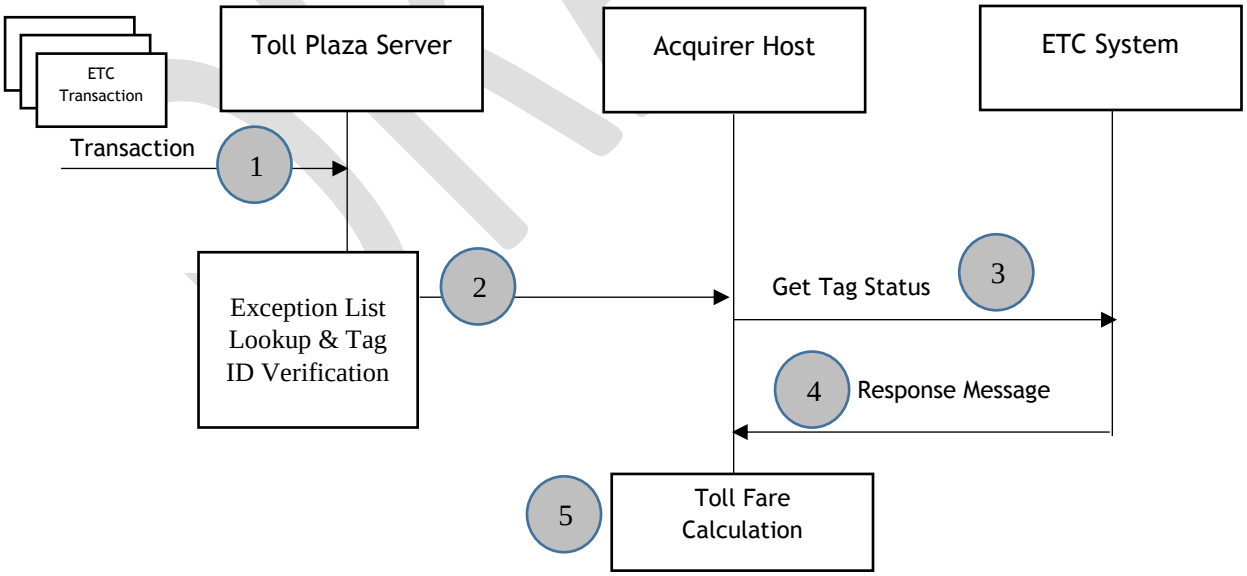


Figure 3 – Toll Fare Calculation

Process Flow –

1. The transactions from multiple NETC lanes at toll plaza will be sent to the toll plaza server.
2. The toll plaza server/lane controller will check the NETC Tag ID format and its occurrence in the exception list. In case the tag is in the exception list or not an authentic one, the toll plaza system will not allow the vehicle to pass through NETC lane.
3. The Acquirer host will request the NETC System for vehicle and issuing bank details using the Tag ID.
4. NETC System checks the Tag ID and responds with appropriate details (like vehicle class, vehicle registration number, issuing bank identifier etc.)
5. Using the above information the Acquiring host will calculate the toll fare. The business rules and configuration required for toll fare calculation is specified below.

   Business Rule Configuration

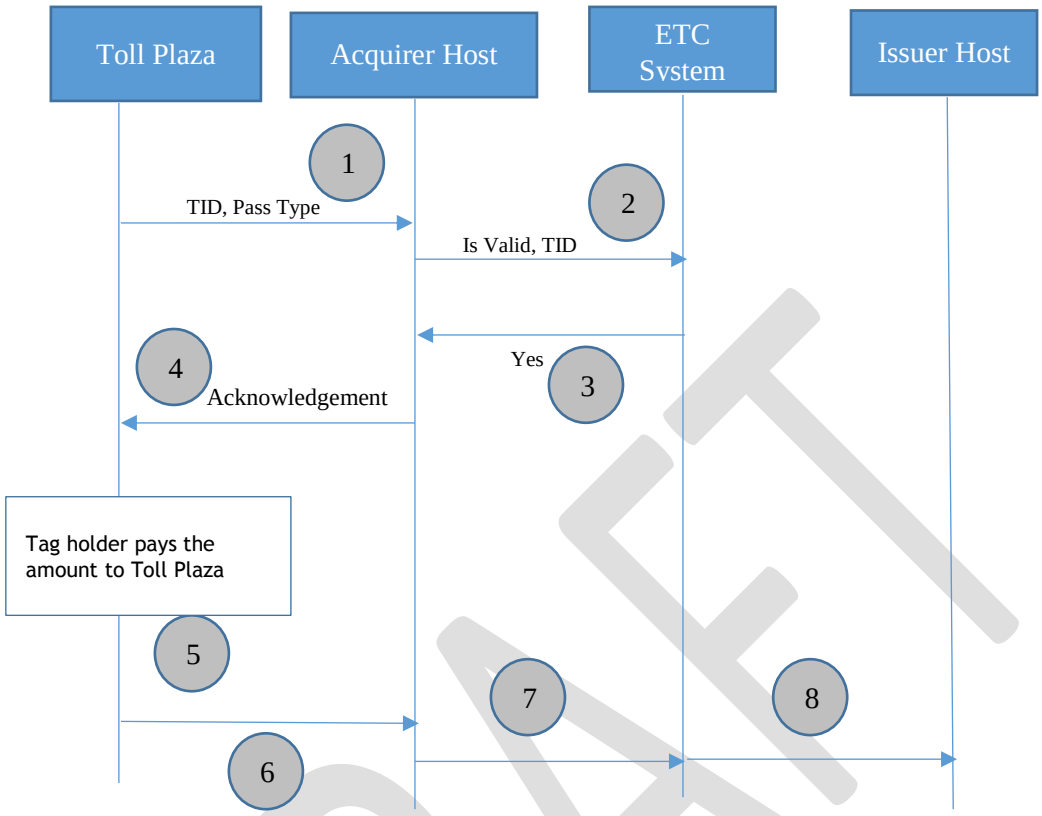
   The acquiring host system has to be configured with the applicable toll fare calculation business rules for the acquired toll plaza. The business rules might consists of:-

   a) **Standard fare rules** – This includes the rules for calculating toll fare as per the standard fare defined for the vehicle class.
   b) **Exemption rules** – This includes different types of concessions which will be regulated by one or more exemptions applicable for the toll plaza like-
      - Local resident exemption
      - Applicable discounts or concessions on purchase of monthly or quarterly pass
      - Distance based toll fare discount or concessions

   The standard and exemption rules are defined by the toll plaza operator (as per the norms stated by concerned authorities). The acquiring host should support all such business rules defined by the toll plaza operator.

Process of pass management through acquirer is illustrated below

Pass Management for Acquirer Bank



Pass MANAGEMENT Transaction Flow

Pass management is required at acquirer end as the customer can approach the Toll Plaza to purchase a pass. The tag holder must pay for the pass amount by an alternate payment mode like cash, credit card debit card etc.

1. Tag holder will approach the Toll Plaza operated point of sale, to purchase the pass. Acquirer bank's client application sends a pass issuance request to acquirer host with a tag id and selected pass type.
2. The request is passed on to the NETC Mapper which validates the tag id.
3. The mapper send the valid/invalid tag response to Acquirer Host
4. Acquirer host send the valid tag acknowledgement to the toll plaza [client application running at toll plaza]
5. Toll Plaza collects the payment from customer and adds the tag id in the pass management system of acquirer.
6. A pass payment info message is sent to the Issuer bank through the connecting host systems.

3.1.4 Exception list handling

NETC mapper contains tag exception lists (The exception lists are define in section 4.2.1.2). The acquiring host system has to synchronise the exception list with the toll plaza server.

The acquirer can get the exception list using one of the following methods

a. The transaction response message from Issuing Host system will contain the status of the tag i.e. the tag status will list the various exception types which are applied to the respective tag id.
b. The acquirer should periodically fetch the latest exception list from the NETC System and send the same to toll plaza server every 10 minutes. The Toll plaza server should update this exception list to lane controllers within 10 minutes of its receipt.
c. The acquirer also have an option to download the exception list from the SFTP server.

The detailed process of exception list handling is illustrated in annexure IV section 2.

3.1.5 Helpdesk for Toll plaza operator

The acquiring bank should provide helpdesk or toll free services to toll plaza operator for resolving any issues pertaining to NETC transaction. The acquirer bank and the toll plaza operator should mutually agree upon a process to handle the service request. It is the responsibility of the acquiring bank to ensure all the transactional conflicts are resolved for the toll plaza operator as per bilaterally agreed TAT.

1.

3.2 NETC Transaction - Payment and Settlement

National Electronic Toll Collection (NETC) payment system is based on unique identification of the vehicle using passive NETC tags. The tag is affixed to the vehicle's windshield, registered on NETC Mapper and destroyed as soon as it is removed or detached from the vehicle. The NETC Readers, deployed at the toll plaza, shall read and validate the tag data. The NETC system is designed to work along with additional systems deployed by toll plaza operators.

NETC Payment System Transaction Process

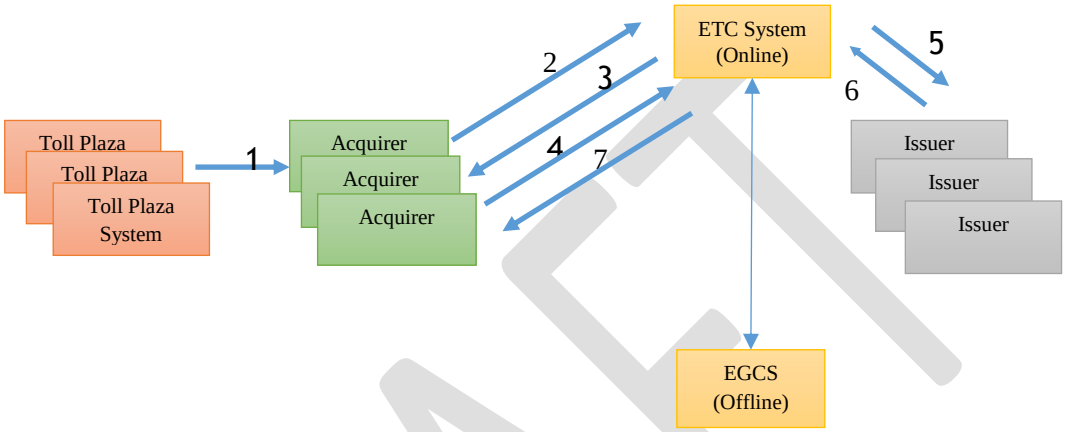


Figure 7 – NETC Payment System

The above diagram illustrates end to end flow of the NETC system. As per the design of NETC solution, there can be multiple acquirer and multiple issuer in the eco system. Hence the transactions from the acquirer host needs to be routed to the respective issuer bank in order to debit the tag holder's account. This is achieved by central NETC System designed and deployed by NPCI which will be responsible for acquiring all the transactions from different acquirers and switching it to the respective issuer bank.

Process Flow

1. All the data received from the NETC Lane i.e. RFID Reader (TID, Tag ID and user memory), AVC (vehicle class), WIM (weight of vehicle) & Image capturing device (image of the vehicle) are pushed to the Toll Plaza Server (directly or through a lane controller). Toll Plaza Server will forward the transaction data to the Acquirer host.

2. Acquirer host will request to the NETC mapper for Tag details. If Tag ID is present in the mapper, mapper will respond with the valid Tag details like, vehicle class information, Vehicle registration number, TID etc. If Tag ID is absent in the mapper, mapper will respond that tag is not registered.

3. After receiving Tag details from the NETC Mapper, Acquirer host will perform toll fare calculation using vehicle class received from the mapper. The mapper vehicle class will override the AVC vehicle class for toll fare calculation. Any mismatch or dispute need to be initiated using EGCS offline system.

4. Acquirer host will initiate a debit request to NETC system. NETC system will validate the tag status in the exception list at the time of transaction initiation. *Issuer bank is liable for the transactions upto 20 minutes of adding the tag ids in the NETC exception list.*

5. NETC System shall forward the debit request to Issuer Bank for debiting the account of the customer.

6. Issuer host will debit the linked tag holder account and send a SMS alert to the tag holder. The issuer host will send the response message to NETC System.

7. NETC system will notify the response to acquirer host.

The transaction processing between acquirer host, NETC switch and Issuer host is always online. The transaction settlement between the acquirer and toll plaza operator will be as per the agreed timelines between acquirer and toll plaza operator, not exceeding T+ 1 [settlement plus one] day. All clearing & settlement will processed through the EGCS system. The clearing and settlement process along with the transaction life cycle is defined in sections ETC Global Clearing and Settlement System.

The connectivity between the toll plaza server and the acquirer host can be real-time or near real-time basis (preferably real-time) the availability of network. The acquirer host and toll plaza server should ensure that the transaction messages should reach NETC Switch within 15 minutes of transaction initiation i.e. the time at which the vehicle passed the NETC lane. If transaction is received after 15 minutes and within 3 days, the NETC Switch will process the transaction, however the issuer will have right to raise the chargeback in case of insufficient balance in tag holder's account. If a transaction is received after 3 days of transaction initiation NETC switch will decline the transaction.

If vehicle class captured from NETC Lane using Automatic Vehicle Classification (AVC) does not match with the NETC mapper vehicle class [registered vehicle class], in such scenarios Acquirer will request the image of the vehicle from toll plaza

operator. Post auditing of the transactions and vehicle images by the acquirer, the acquirer can raise the debit or credit adjustment in EGCS system and send the reconciliation file [containing clean and violation/disputed transactions] to toll plaza.

Note: For all transaction received by acquiring host, toll fare will be calculated based on the NETC mapper's vehicle class and the toll plaza operator will receive the toll fare for that vehicle as per the vehicle class defined on NETC mapper. Any debit/credit adjustment will be settled as per the defined TAT.

Failure Scenarios:-

This section explains how the various failure scenarios are handled during the Online NETC transaction. The transaction flow mentioned above will be considered while describing the failure scenarios.

a. Reader at NETC lane is not able to read NETC Tag details
   In this scenario, where reader is not able to read the tag details, a mechanism has to be put by the Plaza operator; where the vehicle has to take exit path and the hand held portable RFID readers will be used to read the Tag Data to process the transaction.

b. Connection is lost between Lane controller and Toll Plaza Server
   In this scenario, where connection is lost between lane controller and Toll Plaza Server, the lane controller should authenticate the tag data, check the exception list and allow the authenticated vehicle to pass through.
   i. In case if the connection is resorted the lane controller should ensure to process the transaction online to NETC system within 15 minutes from the transaction initiation time.
   ii. If the transaction is beyond 15 minutes, the toll plaza operator can send the transaction to the NETC system within 3 days but in this scenario the liability of the transaction lies with toll plaza operator in case there is insufficient balance in the customer account. In such transactions the issuer can raise the chargeback and acquirer bank will not have any re-presentment rights. If the transaction is beyond 3 days the toll plaza operator (through acquirer bank) does not have the rights to present the transaction. The NETC system will decline all such transactions.

   Liability- *All such transactions which are raised post 15 minutes TAT but within 3 days of transaction initiation will have to be honored by the issuer. If the tag id was present in the NETC exception list, Issuer bank is only liable for the transactions up to 20 minutes of adding the tag ids in the NETC exception list.* After 20 minutes *the liability of the transactions lies with toll plaza operator.*

c. Connection is lost between Toll Plaza Server and Acquirer Host
In this scenario, when connection is lost between Toll Plaza Server and Acquirer Host, the transaction data can be shared with the acquirer host by mutually agreed process between toll plaza operator and acquirer, considering the below scenario's

i. In case if the connection is resorted the toll plaza operator/acquirer should ensure to process the transaction online to NETC system within 15 minutes from the transaction initiation time.

ii. If the transaction is beyond 15 minutes, the toll plaza operator/acquirer can send the transaction to the NETC system within 3 days but in this scenario the liability of the transaction lies with toll plaza operator/acquirer in case there is insufficient balance in the customer account. In such transactions the issuer can raise the chargeback and acquirer will not have any re-presentment rights. If the transaction is beyond 3 days the toll plaza operator/acquirer does not have the rights to present the transaction. The NETC system will decline all such transactions.

Liability- *All such transactions which are raised post 15 minutes TAT but within 3 days of transaction initiation will have to be honored by the issuer provided the tag id is not listed in the exception list at the time of transaction initiation. If the tag id was present in the NETC exception list, Issuer bank is only liable for the transactions up to 20 minutes of adding the tag ids in the NETC exception list..* After 20 minutes *the liability of the transactions lies with acquirer bank/toll plaza operator.*

d. Connection is lost between Acquirer Host and NETC Online System

i. In case if the connection is resorted the acquirer should ensure to process the transaction online to NETC system within 15 minutes from the transaction initiation time.

ii. If the transaction is beyond 15 minutes, the acquirer can send the transaction to the NETC system within 3 days but in this scenario the liability of the transaction lies with acquirer in case there is insufficient balance in the customer account. In such transactions the issuer can raise the chargeback and acquirer will not have any re-presentment rights. If the transaction is beyond 3 days the acquirer bank does not have the rights to present the transaction. The NETC system will decline all such transactions.

Liability- *All such transactions which are raised post 15 minutes TAT but within 3 days of transaction initiation will have to be honored by the issuer provided the tag id is not listed in the exception list at the time of transaction initiation. If the tag id was present in the NETC exception list, Issuer bank is only liable for the transactions up to 20 minutes of adding the tag ids in the NETC exception list.*. After 20 minutes *the liability of the transactions lies with acquirer.*

e. Tag id is not present in mapper
In this scenario, NETC system will validate the tag's digital signature/Tag ID and will switch the transaction to the respective issuer. In all such scenario the acquirer needs to calculate the toll fare basis the AVC vehicle class as the NETC mapper vehicle class does not exist.

Liability- *All such transactions which are raised within 3 days of transaction initiation will have to be honored by the issuer provided the tag id is not listed in the exception list at the time of transaction initiation. If the tag id was present in the NETC exception list, Issuer bank is only liable for the transactions up to 20 minutes of adding the tag ids in the NETC exception list.* After 20 minutes *the liability of the transactions lies with acquirer /toll plaza operator.*

In case of proved fraudulent transactions due to the cloned tags, NHAI/IHMCL will be review and compensate the issuer on case to case basis. NHAI/IHMCL will create a separate fund to compensate such fraudulent transactions, here on referred as "NHAI/IHMCL compensation fund". The process for compensating such fraudulent transaction is defined in Part – II of this document.

f. Connection is lost between NETC System and Issuer Host
In this scenario, when no connection is established between NETC system and Issuer Host, NETC system will try to connect with Issuer host three times. The transaction will be deemed to be accepted in case the retries fails.

3.3 **Compliance for Acquirer**

a) Acquirers are responsible for ensuring compliance with any privacy related regulations of the government which includes sharing of NETC transactions information with any third party. Also, responsible for payment of all government taxes related to the NETC project.
b) Acquirer should comply with proper KYC checks as stipulated by RBI and other regulatory bodies, regulating the activities of the members before registering a Toll Plaza Operator.

c) Acquirer should ensures that all the transactions which are originated at the toll plaza server (i.e. onus and off-us transactions) should be sent to the NETC System for processing.
d) The acquirer should ensure all the NETC transactions which are received from toll plaza server are processed in NETC system within

   Fifteen minutes for online transaction processing and 3 days with limited liability as explained in the chapter 3, section 3.2 Failure scenarios. (NETC system will decline the transactions which are received after the defined TAT)

e) Acquirer should ensure the correct implementation /configuration / updation of the business rules for the calculation of the toll fare.
f) The Acquirer should provide the helpdesk service to the toll plaza operators.
g) Acquirer should ensure to transmit all the transaction processed records within specified TAT.
h) Acquirer should perform daily reconciliation of transactions with the toll plaza operator.
i) One toll plaza should be acquired by a single bank at any point of time. Although the choice of selecting the bank will be with the toll plaza operator.
j) Prohibition to use NETC Logo/Trademark/Network

   - Upon termination of the NETC membership, the member should abstain from further use of the NETC trademark with immediate effect. Failure to comply with the same could invite legal proceedings.
   - Members that have been suspended from NETC membership would be deprived of the privilege to use the NETC for any transactions.
   - Any pending dispute pertaining to transaction errors not resolved before the member is suspended will be recovered from the respective member's settlement account.
   - The suspended member would not disclose any information regarding the NETC network or any knowledge gained through participation in the NETC network to outsiders. Failure to comply with the same would be treated as breach of trust and could invite legal penalties.

Section 4: Issuer Bank

Section covers:

- Roles & Responsibilities
- NETC RFID Tag Issuance
- Tag Holder Registration
- Addition and Removal of Tag ID in Exception list
- Compliance of Issuer

4.0 Issuer Bank

4.1 Roles and Responsibilities

The role of the issuer includes the following:

- To tie up with bureau for the issuance of NETC tag containing the digitally signed tag data, this includes the generation, distribution and installation of the necessary cryptographic keys in the tag to process NETC transactions.
- To create distribution infrastructure for issuance of the NETC tags. The issuer should also set up special camps for enrolment & registration of corporate/commercial vehicles.
- Issuer should also provide top up (for prepaid link account) facility through mobile and internet banking system.
- Inventory management of NETC tags.
- Integration of Issuing Host system with the NETC System.
- To manage the various exception list defined in the NETC Mapper.
- To register the tag holder onto the NETC Mapper.
- To process online transactions request received from NETC System and validate the digital signature of the tag. In case the signature validation fails the tag needs to be added in blacklist/ low balance exception list. The tag validation process at issuer end shall be enabled once the toll transaction messages contains the relevant fields required for tag's signature validation.
- To reimburse the acquirer for payment transactions.
- To securely transmit to any other parties the necessary cryptographic keys needed for the correct operation of the system.
- To assists the disputes raised by Tag holder. The Issuer is also responsible for the debit adjustment raised by acquirer as per the applicable TAT.
- Perform fraud monitoring by verification of the transaction data.
- To provide support and toll free helpdesk services to Tag Holders.

Note – Process of Pass issuance by issuer bank will be implemented in second phase.

4.2 NETC RFID Tag Issuance

Issuer is responsible for issuance of the NETC RFID tags to the vehicle owners and the member has to adhere to the process described below

1. Engage with NPCI empanelled tag manufacturers to procure and personalize the RFID tag
2. Set up customer touch points which will act as Point of Sales for Tag Issuance. E.g. Large merchants, Petrol pumps, vehicle dealers etc.

4.2.1 Tag Manufacturing and Personalization

NPCI Authorised Tag Manufacturers should be engaged by Issuing Banks to manufacture NETC Tags. These tags will be personalised by manufacturer

based on the keys provided by Issuing Banks as per the process illustrated below.

Banks will have to ensure the robust inventory management for tags. Once the tags are personalized with EPC ID, toll-able vehicle class, dummy vehicle registration number and digital signatures, the tags are live. Banks should ensure to have adequate risk management controls on tag movement after the tag personalisation.

Tag Personalization Process

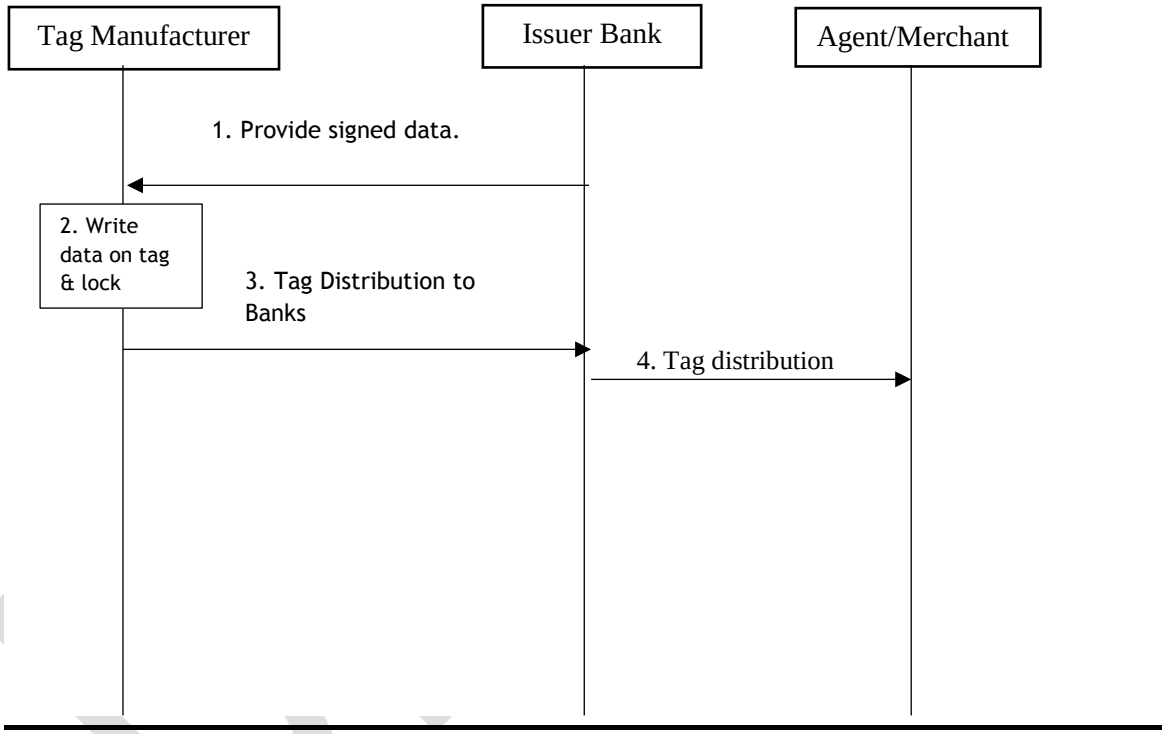


Figure 4 – Tag Personalization Process

1. Issuer bank shall send signed data to tag manufacturer
2. After getting data from the Issuer Bank, manufacture will write the signed data on the tag and lock it permanently
3. Personalised tags are then delivered to the Issuer Banks.
4. Issuer banks distribute the personalised tags to the various Agent/Merchant location for its issuance.

Failure Scenarios

1. Wrong personalisation of tags i.e. incorrect data is personalised in the tags.
2. If Tags are lost during the distribution process, then those tags must be blocked and destroyed or can be added to the blacklist.
3. Tags size and format must be as per the specifications of NPCI.
4. Tags Fixation rules should be met properly. The welcome kit booklet should have pictographic instruction of fixing the NETC tag.

Note: *Issuer has to ensure that necessary process to be implemented to avoid any of the above failure scenarios.*

4.2.1.1 Set up Touch Points for NETC Tags Issuance

Issuer bank can tie up with multiple agents to set up customer touch points called Point of Sale (POS). These agents can issue tags on behalf of issuing bank. It shall be the responsibility of the issuers to enter into necessary agreements with various entities such as Fuel Stations, Toll Plazas etc., for setting up POS.

The registration and fixation of tags to the vehicle windshield will be performed by the issuer bank. The primary functions that are performed at POS locations are:-

- Customer Registration (Tag Issuance, Fixation and Mapper Registration)
- Top-up facility

Issuer bank can register the vehicle owners to use the NETC services. Detailed process of registration is define in Annexure IV section 1.

Note: *End users or customers can pay for the tags either by Cash, Cards or Accounts etc. Issuing banks can charge the cost of NETC tags to the vehicle owner.*

4.2.1.2 Maintaining Exception List

Issuer should update various exception lists on NETC Mapper. The exception list will consists of:-

1. Blacklist: A blacklist is a list of tag ID which will not be accepted at toll plaza. The government authorities can request issuer or acquirer to add/remove the tag ID in the blacklist.
2. Low Balance List: If the balance in the customer's account linked to the tag comes below a threshold limit, that Tag ID will be added to this list and the notification is sent to the customer for low balance. This list will be provided by the issuer bank.

3. Exempted Vehicle Class List: No toll fare will be charged for the vehicles that come under this category as defined by the respective authorities from time to time. Few examples are mentioned below:-
    a) VVIP convoy
    b) Ambulance
    c) Fire brigade
    d) Police Vehicle

4.2.2 Setting up customer service channels [Helpdesk]

Issuer shall be responsible for providing toll free customer service number to the tag holder for their disputes and concerns. The customer service number needs to be mentioned on the NETC Tag, usage guide, website and any other mode of communication.

- User helpline to be available 24x7
- Issuers are also advised to have dedicated call centre agents for NETC program
- Issuer resolution reports by helpdesk to be made available as and when required by the regulating authority

4.3 Tag Holder Registration

Process for tag holder registration is defined in Annexure IV.

4.4 Addition and Removal of Tag ID in Exception list

Process of addition or removal of tag id in exception list is defined in Annexure IV section 2.

4.5 Tag linked account

4.5.1 KYC Compliance

The RFID tags issued by an issuer bank can be linked to any of the following accounts [underlying payment instrument]

a) Savings account
b) Current account
c) Prepaid account

It would be the responsibility of the issuer to check the KYC guidelines for the tag linked payment instrument [described above] as per the KYC guidelines issued by Reserve Bank of India from time to time. In case an existing customer of the member bank is willing to avail the RFID tag for the program, member can link one of the existing accounts [mentioned above] to the tag only if the KYC mandates as per Reserve Bank of India are in place for that account type.

4.6 Compliance of Issuer

a) Issuers are responsible for ensuring compliance with any privacy related regulations of the government which includes sharing of NETC transactions information with any third party. Also, responsible for payment of all government taxes related to the NETC project.
b) Issuer banks should comply with proper KYC checks as stipulated by RBI and other regulatory bodies, regulating the activities of the members before registering a customer for NETC. Similarly issuer banks has to comply with RBI policies & guidelines of respective products which will linked to the NETC tag.
    i. The issuer Bank should honour all the NETC transactions which are received from NETC System within Fifteen minutes for online transaction processing and 3 days with limited liability as explained in the chapter 3, section 3.2 Failure scenarios.
    ii. Debit adjustments raised by acquirer

    (NETC system will decline the transactions which are received after the defined TAT.)

c) The issuer bank should ensure the correct issuance and placement of NETC Tag on the vehicle and also ensure that only one NETC tag is affixed on the vehicle at any point of time. At the time of registration if the vehicle is already having prior NETC tag, the issuer should remove the existing tag and place new tag as per the norms specified.
d) At the time of registration the issuer may capture the vehicle image. Issuing banks should keep the images for the period of at least one year. It is recommended to create an archive for storing of images for dispute purposes.
e) The issuing bank should send the transaction alert (SMS) to the tag holder post transaction processing. The SMS should contain details of Toll Plaza, Toll Fare Amount and Date & Time etc.
f) The issuer bank should print the toll free helpdesk number on the NETC tag.
g) The issuer bank can maintain a security deposit for the NETC tag account.
h) The issuer bank should ensure KYC of underline payment instrument link to NETC tag.
i) The issuer bank should mention/communicate all the charges applicable to tag holder for the NETC service.
j) The issuer bank should send welcome kit booklet to the tag holder with pictographic instruction of fixing the NETC tag.
k) Prohibition to use NETC Logo/Trademark/Network.

- Upon termination of the NETC membership, the member should abstain from further use of the NETC Trademark with immediate effect. Failure to comply with the same could invite legal proceedings.

- Members that have been suspended from NETC membership would be deprived of the privilege to use the NETC Network for any transactions.
- Any pending dispute pertaining to transaction errors not resolved before the member is suspended will be recovered from the respective member's settlement account.
- The suspended member would not disclose any information regarding the NETC network or any knowledge gained through participation in the NETC network to outsiders. Failure to comply with the same would be treated as breach of trust and could invite legal penalties.

4.7 Reasons to add/ register tags in exempted vehicle class exception type

A vehicle can be exempted from paying the toll fare on NH toll plaza as per details defined by NHAI/IHMCL in Notification released on 5th December 2008. To avail global exemption from toll fare on NETC lane of national highways, a written order from appropriate authorities of government office is required. The written order should clearly define

- Period of the exemption
- Reason for exemption
- Number of tags to be issued for exemption

Note: All the involved documents must be maintained at the bank end and must be available for audit/verification.

4.7.1 Reasons to remove tags from exempted vehicle class exception type

A vehicle/tag can be removed from exempted vehicle class exception type on issue of a written orders from appropriate authorities of government office. The written order should clearly define the reason for removing the tags from exemption type.

Vehicle/Tag can also be removed from exempted vehicle class if the exemption period is expired.

Note: All the involved documents must be maintained at the banks end and must be available for audit/verification.

4.7.2 Exemption from Payment of fee on NH toll plazas

Ministry of Road transport and Highways Notification Dt. 3rd December 2010 GSR 950 (e) Rule 11 of National Highways Fee (Determination of rates and Collection) Amendment Rules 2010 Exemption from payment of Fee (1) No fee shall be levied and collected from a Mechanical Vehicle

a. Transporting and accompanying:

Vehicle Exempted : transporting and Accompanying : Below persons	**Period of Exemption**	**Reason for Exemption**	**No. of Tags to be issued**	**Documentation to be collected by Issuer**
President of India	1 Year or on expiry of contract agreement of hired vehicle.	As per GSR 950 (E) Dt. 3rd Dec 2010 National Highways Fee (Determination of Rates and Collection) Amendment Rules 2010	As desired by the competent authority	1. Declaration of use of vehicle for official duties; by competent authority of the concerned department. 2.Registration Certificate of the Vehicle/s for which Tags are to be issued. 3.Copy of vendor agreement in case of hired vehicles.
Vice President of India				
Prime Minister of India				
Chief Justice of India				
Governor of a State				
Lt. Governor of a Union Territory				
Cabinet Ministers of the Union				
The Chief Minister				
The Judge of Supreme Court				
Chairman of the Legislative Council of state				
Secretary of the House of People				

Vehicle Exempted : transporting and Accompanying : Below persons	Period of Exemption	Reason for Exemption	No. of Tags to be issued	Documentation to be collected by Issuer
Member of the Legislative Council of the state – within the state				
Speaker of a Legislative Assembly of the state				
The Chief Justice of High Court				
The judge of High Court				
Ministers of State of the Union				
Foreign Dignitaries on State visit.				
The Chief of Staff holding the rank of full General or equivalent rank				
The Member of Parliament				
The Army Commander or Vice – Chief of Army Staff and equivalent in other services				
The Chief Secretary to a state government within concerned state				

Vehicle Exempted : transporting and Accompanying : Below persons	Period of Exemption	Reason for Exemption	No. of Tags to be issued	Documentation to be collected by Issuer
The Secretary to the Government of India				
Secretary; Council of States				
Member of Legislative Assembly of the state – within the state				
The Awardee of Param Vir Chakra, Ashok Chakra, Vir Chakra	1 Year or on expiry of contract agreement of hired vehicle.	As per GSR 950 (E) Dt. 3rd Dec 2010 National Highways Fee (Determination of Rates and Collection) Amendment Rules 2010	As desired by the competent authority	On Production of photo identity card duly authenticated by competent authority for such award

b. Used for Official purpose by:

Vehicle Exempted: which is used for official purpose by	Period of Exemption	Reason for Exemption	No. of Tags to be issued	Documentation to be collected by Issuer
The Ministry of Defense including those which are eligible for exemption in accordance with the provisions of the Indian Toll (Army and Air force) Act 1901 and rules made thereafter, as extended to Navy also;	1 Year or on expiry of contract agreement of hired vehicle.	As per GSR 950 (E) Dt. 3rd Dec 2010 National Highways Fee (Determination of Rates and	As desired by the competent authority	1. Declaration of use of vehicle for official duties; by competent authority of the concerned department.

The Central and State armed forces in uniform including para military forces and police; An executive Magistrate; A firefighting department of organization The National Highways Authority or any other organization or person using such vehicle for inspection, survey, construction or operations and maintenance thereof; and		Collection) Amendment Rules 2010		2. Registration Certificate of the Vehicle/s for which Tags are to be issued. 3. Copy of vendor agreement in case of hired vehicles.

c. Used as Ambulance

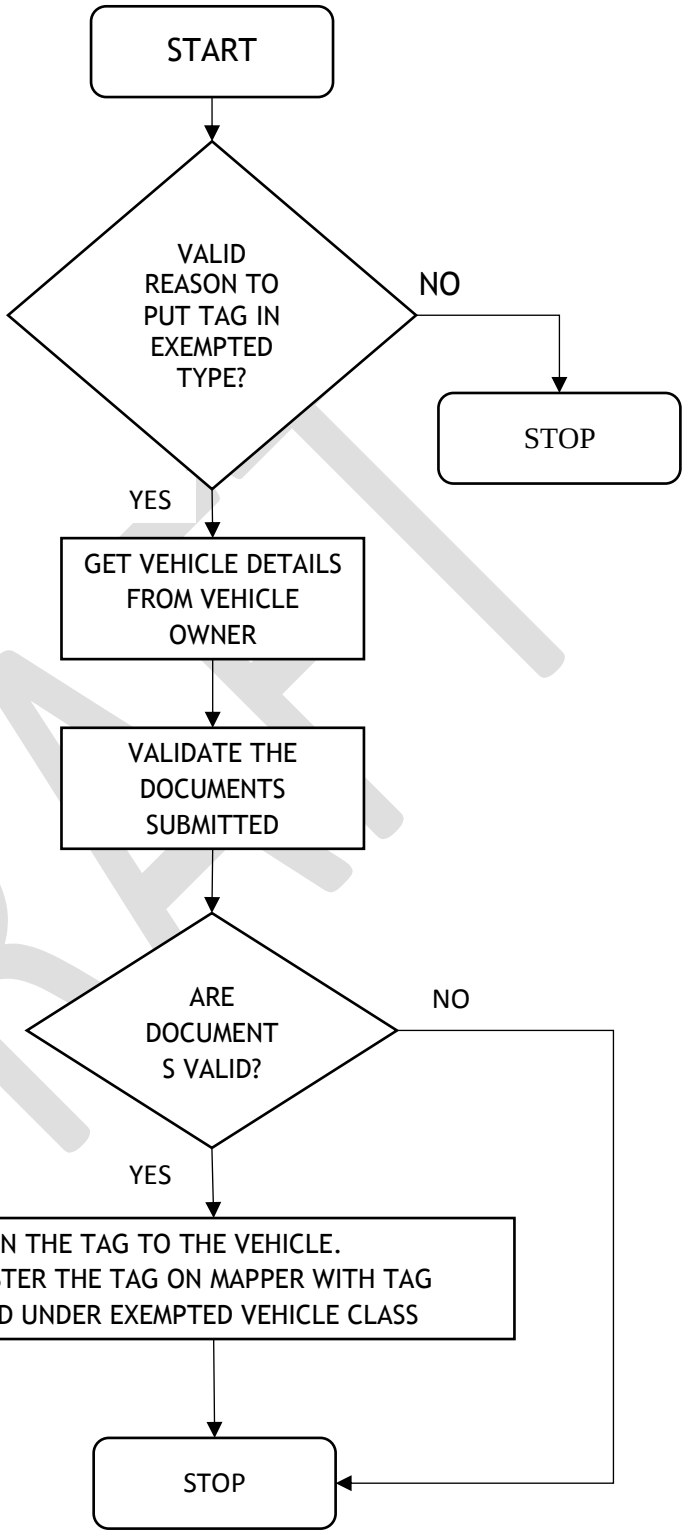
d. Used as funeral van

Note:

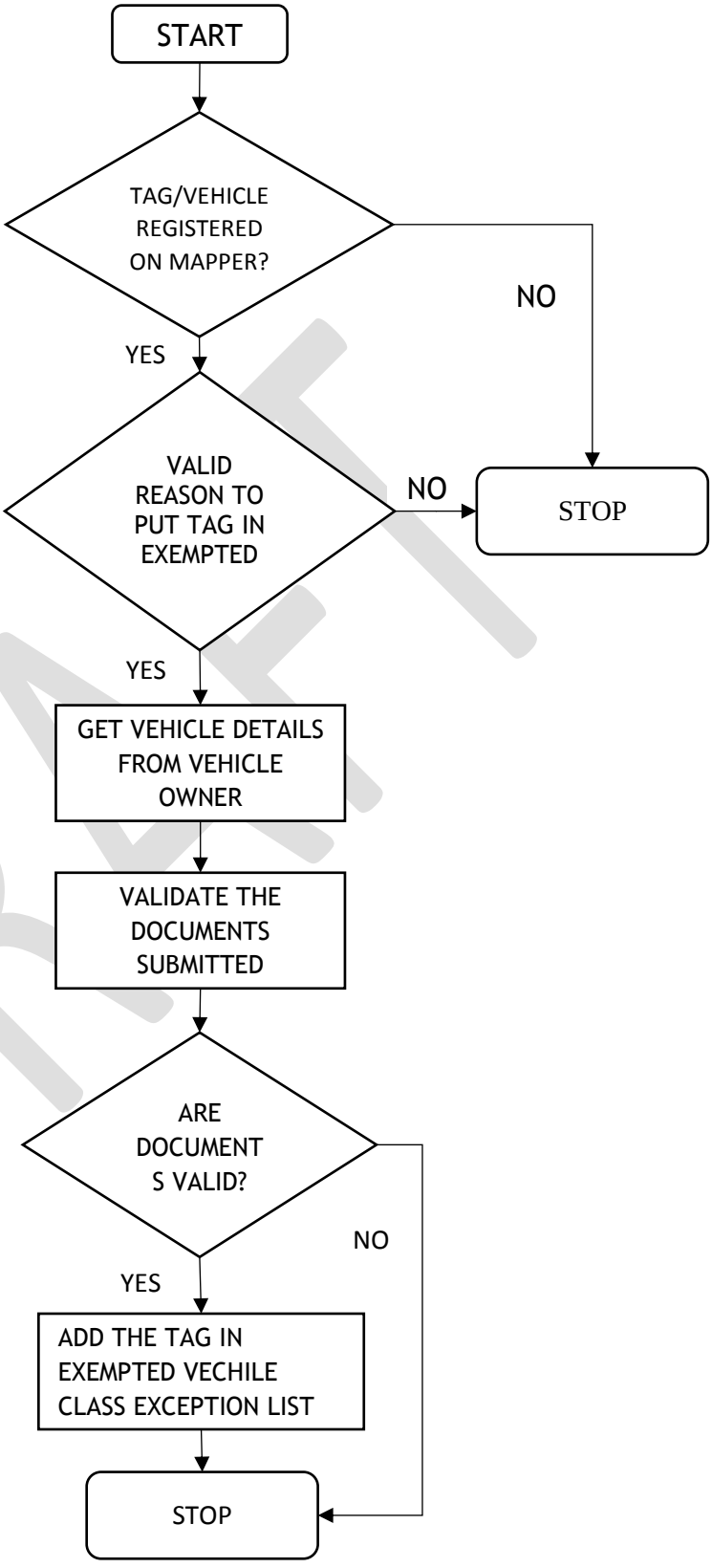
National Highways Fee (Determination of rates and Collection) Amendment Rules 2010 published by Ministry of Road transport and Highways Notification Dt. 3rd December 2010 GSR 950 (e) Rule 11 of National Highways Fee (Determination of rates and Collection) Amendment Rules 2010 Exemption from payment of Fee; has been used as the base for covering the global discount as this is the most recent rule in vogue for exemption of user fee and is applicable for all public funded projects. However various Concession Agreements between NHAI and Concessioners have various other exemptions. Exemptions as per various Concession Agreement will have to be configured by the acquirer based on the location and privileges.

NHAI should inform the concerned person / department regarding the document required for seeking FasTag under exempted category, asking them to approach the issuer for issuance of RFID Tags.

Flowchart: Register vehicle with tag in exempted VC exception type



Flowchart: Add registered tag in exempted VC exception type



Section 5: Operating procedure for members

Section covers:

- NETC availability
- Operating procedure
- Types of transactions covered and process flow
- AML/KYC compliance
- Intellectual property rights
- Non-Disclosure Agreement
- Cessation/Termination/Suspension of service
- Marketing & Branding

5.0 Operating procedure for members

5.1 NETC system availability

NETC system would be operational and available to all members round-the-clock with 99.9% uptime, excluding periodic maintenance with prior notice and force majeure events such as war and natural calamities. Periodic maintenance of the NETC System would be notified to all members 36 hours in advance unless an emergency or unscheduled maintenance activity.

5.2 Operating procedure

- **Operating hours:** Member banks participating in NETC network should maintain round-the-clock connectivity of their network for the NETC services with an uptime of 99.9% of their Host systems.
- **Accuracy of input Data:** Members should ensure that their host generates accurate input data in sync with reference to the NPCI-NETC System interface specification for NETC transaction.
- **Security of transactions:** The transaction messages/files between the toll plaza server and the acquirer host should be transmitted through a secured channel.
- **Data-**retention and storage: All payment system related data shall be preserved as per the preservation period applicable to the payment systems.
- NPCI will ensure that each member receives transaction and settlement reports. However, members should keep their books of accounts reconciled on a daily basis.
- Each member should conduct internal audits and audit of its processing agent, if any, to comply with the NETC-PG, 2016 at least once a year.
- If any member fails to fulfill its commitment towards other members participating in the NETC Network, thus, causing any loss in the form of settlement or transaction fees, the defaulting member would bear such losses completely. In such cases, funds available in the defaulting member's settlement account will be used to settle claims at the earliest.
- Members are required to ensure to provide a round-the-clock help desk service.
- Members are required to ensure all the accounts should be reconcile on daily basis.
- Members are required to have a separate operations team to handle inter member/customer's complaints.
- Members should have primary infrastructure, back up/high availability, and disaster recovery (DR). DR should be in a different location. The toll plaza

operator should ensure the availability of DR system within 12 months of going live on NETC network.

- Further, members should have robust infrastructure in terms of application, network and hardware capabilities to perform NETC transactions in a secure and a desired manner. Robust infrastructure refers to scalable hardware, applications and network backup links to handle desired transaction volumes seamlessly.

5.3 Types of transactions covered and process flow

There are two types of transaction processing

Online Transaction Processing

NETC System consist of NETC Mapper and NETC Online Switch. NETC Mapper is a repository of Vehicle Information, Vehicle Owner Information, NETC Tag Details, Bank Information and Exception List. While NETC Switch is used for switching the NETC transactions to the member banks.

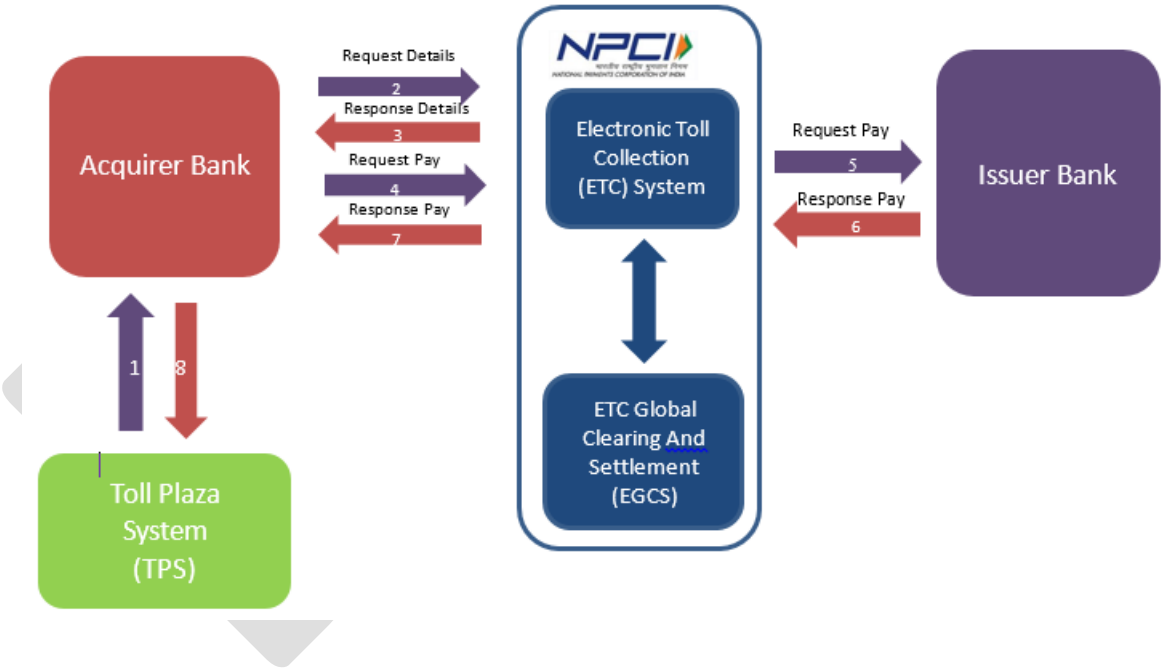


Figure 5 – Online Transaction Processing Flow

The member banks host systems (issuing & acquirer) communicates with NETC System, via the XML Message formats, using available Application Programming Interface (API).
Refer to the NETC Systems' message specification for the APIs and XML message formats.

Offline Transaction Processing

All the offline transactions will processed through the EGCS system. Refer to the ETC Global Clearing & Settlement system (EGCS) section for offline transaction processing.

5.4 AML/KYC Compliance

All NETC members should comply with proper KYC checks as stipulated by RBI and other regulatory bodies, regulating the activities of the members before registering a customer for NETC. Members will have to submit to NPCI, a duly signed declaration in this respect in the form given in ANNEXURE VII.

5.5 Intellectual property rights

NPCI will own, hold, possess, and acquire the intellectual property rights to all these documents prepared for the NETC System, jointly with IHMCL & NHAI.

5.6 Non-Disclosure Agreement (NDA)

All members participating in the NETC network are required to sign NDA with NPCI as given in ANNEXURE VI. Each member should treat NETC related documents strictly confidential and should not disclose to alien parties without prior written permission from NPCI. Failing to comply with this requirement would invite severe penalties. However, the participating members can disclose the NETC-PG, 2016 and other supporting documents to its employees or agents, but only the parts that are related to their specific areas of their respective operations.

5.7 Cessation/Termination/Suspension of service

NETC member would cease to be a member in any of the following events shown in the figure below:

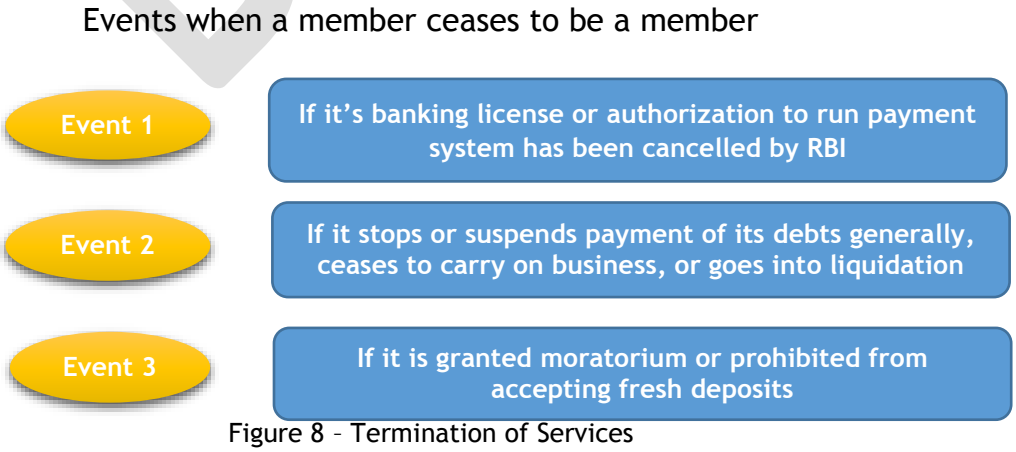


Figure 8 – Termination of Services

NPCI may terminate/suspend the NETC membership under any one or more of the following circumstances:

- The member has failed to comply with or violated any of the provisions of the NETC-PG, 2016 as amended from time-to-time, or member commits a material breach of NETC-PG, 2016, which remains un-remedied for thirty days after giving notice.
- The current account with RBI of the member bank is closed or frozen.
- The member bank is amalgamated or merged with another member bank.
- Steps have been initiated for winding up the business of the member.
- Suspension or cancellation of RTGS membership.

In case the issuing bank voluntarily opts out of the membership, Issuing banks needs to ensure that all the tag linked accounts are reconciled and closed.

After the withdrawal of NETC membership the member bank must support all the relevant dispute processing till the end of transaction life cycle.

Process of Termination/Suspension of NETC Membership

- NPCI should inform the member in writing regarding termination/suspension of its membership from the NETC System.
- If NPCI is of the opinion that the non-compliance/violation is not curable, NPCI may suspend/terminate the NETC System with immediate effect. However, the member would be given an opportunity to post decisional hearing within thirty days and will be communicated the order confirming or revoking the termination/suspension passed earlier.
- NPCI may at any time, if it is satisfied, either on its own motion or on the representation of the member that the order of suspension/termination of membership may be revoked, may pass the order accordingly.
- If the non-compliance/violation is capable of remedy but cannot be reasonably cured within thirty days, the termination/suspension will not be effective if the member in default commences cure of the breach within thirty days and thereafter, diligently peruses such cure to the completion within sixty days of such notice of violation.
- On revocation of termination of membership order the entity should be entitled to apply for membership afresh in accordance with NETC procedural Guidelines. However, no automatic restoration of membership to NETC will be granted by NPCI.

5.8 Marketing & Branding

NPCI operates the NETC Payment System. NETC Marks includes the NPCI Logo, Brand Name, Slogan and other ancillary marks. The member shall accept NPCI's ownership of NETC marks. The member agrees that it will not object or challenge or do anything adverse, either legally or publicly against the NETC marks. The member will not modify, adopt, register or attempt to modify, adopt or register, any names, trademarks, service marks, trade names, logos, or any word or symbol that is remotely similar to or bears any resemblance to NPCI marks, as a part of the member's trade name, company name, product names, marks, copyright or otherwise.

All the participants of NETC payment network must take prior approval from NPCI for printing the NPCI/IHMCL/NHAI logos.

NPCI mandates issuers to print the FASTag logo on the NETC tag. NETC Tag structure must contain

- FASTag logo,
- IHMCL/NHAI(MoRTH)/NPCI logo
- Issuer Bank logo
- Toll Free Helpdesk number of the issuer bank
- Tag ID encoded in the barcode or QR code

In addition to the above the issuer should also provide the welcome kit consisting of pictorial procedure for affixing the tag onto the vehicle.

5.9 Process of Blacklisting Tags

5.9.1 Reasons for adding tags in blacklist

- A vehicle can be blacklisted from passing through NETC lane on written orders from appropriate authorities of government agencies as listed below:
  - Reserve Bank of India
  - NHAI/ IHMCL
  - Centre/ State law enforcement agency
  - Police
  - Defence

- Tags stolen/misplaced at Issuer's place
- Tag of a stolen vehicle can be blacklisted if a copy of FIR is available

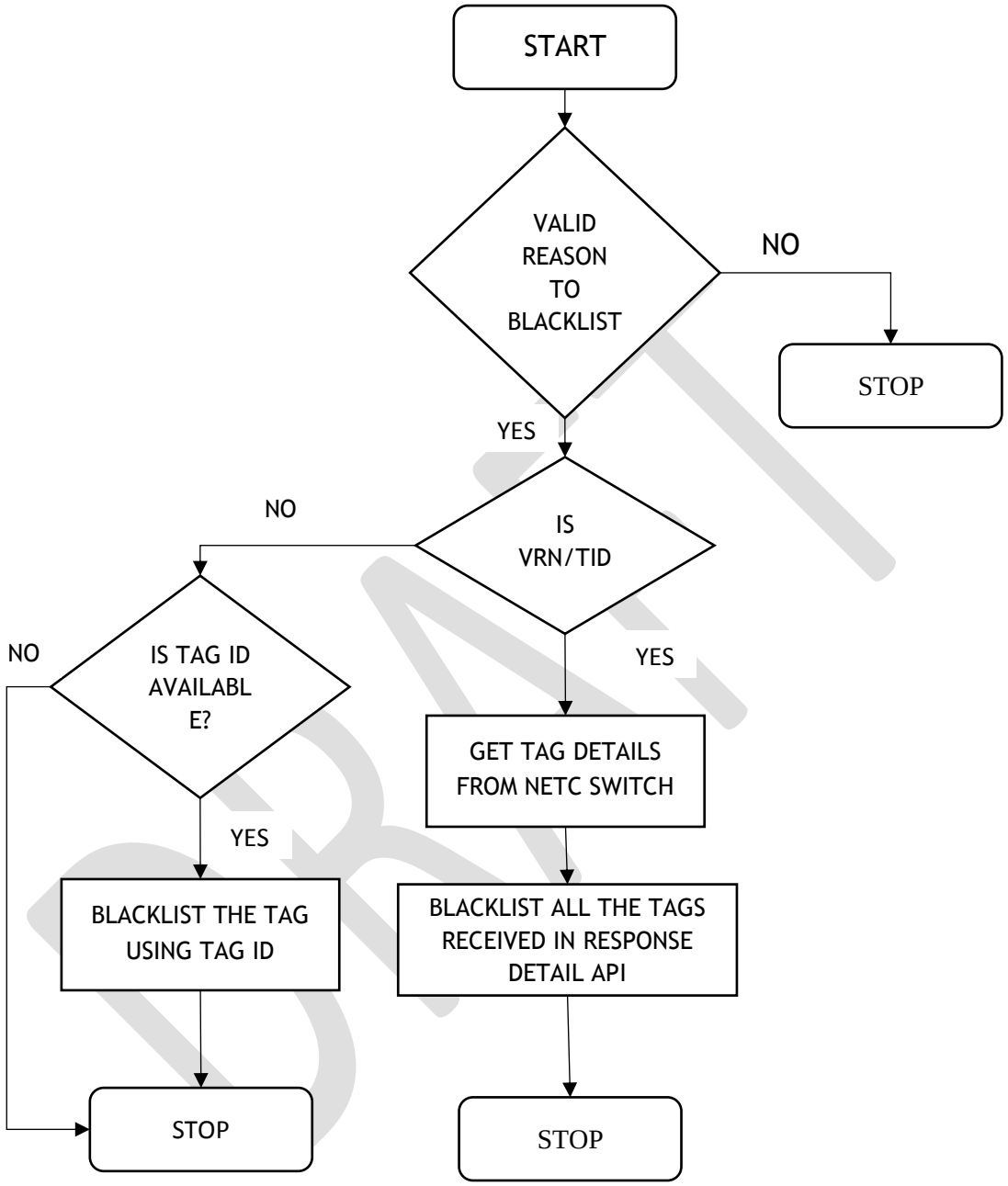
Note: All the involved documents must be maintained at the banks end and must be available for audit/verification.

5.9.2 Reasons for removing the tags from blacklist

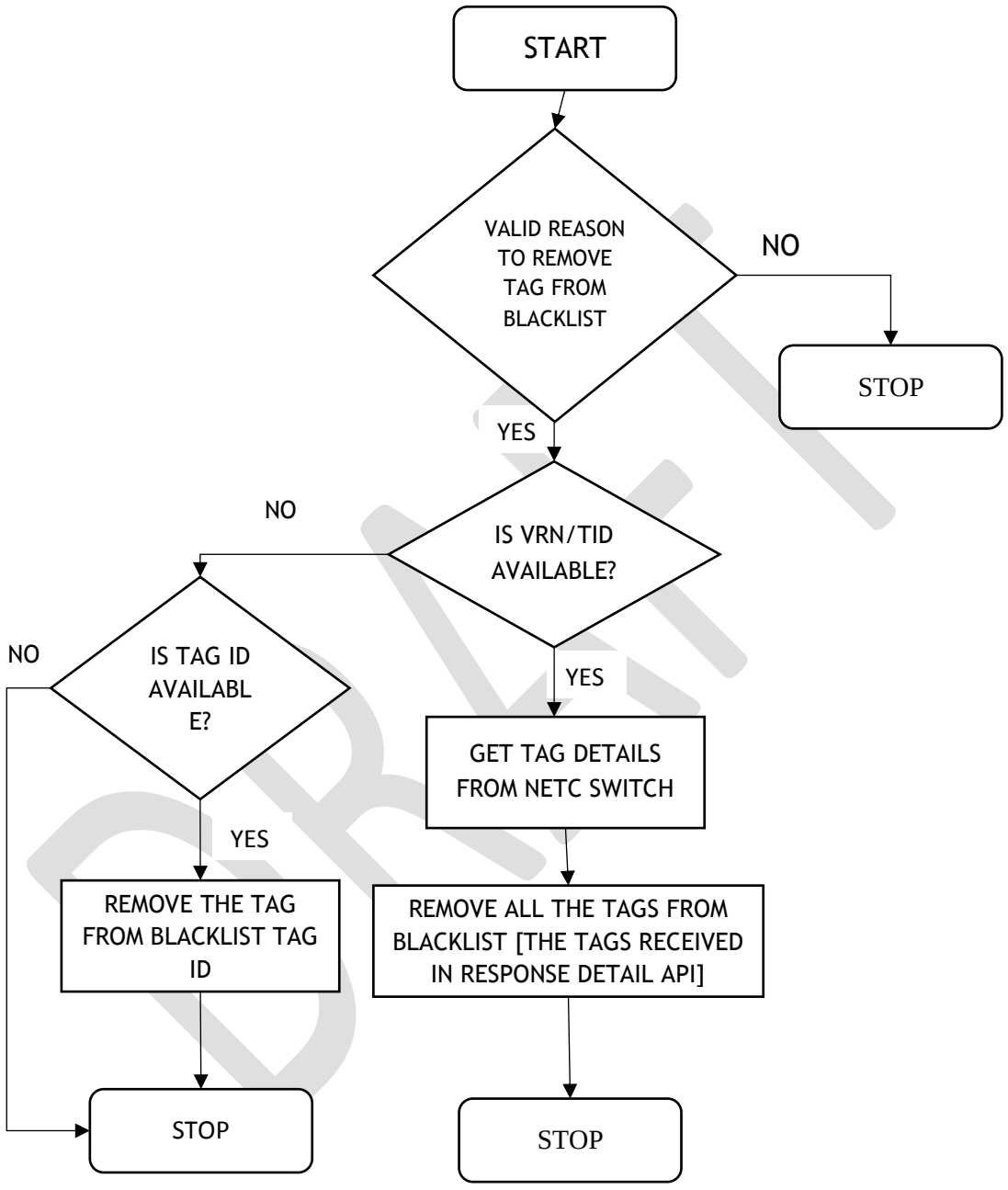
- Written approval to remove the tag from the authority which had requested to add the same tag in blacklist

  Note:
  All the tags added in blacklist for a vehicle must be removed if request is to remove the vehicle from blacklist
  Only the bank which has added the tag in blacklist can remove the tag from blacklist.

Flowchart: Adding Tag in Blacklist



Flowchart: Removing Tag in Blacklist



Section 6: ETC Global Clearing and Settlement

Section covers:

- Request NETC Tag Details
- Online Transaction Processing
- Clearing & Settlement
- Clearing & Settlement Cycle
- Calculating Net Position
- Net Settlement Activity Reports
- Reconciliations
- Adjustment to Settlement
- Settlement between NPCI and NHAI\IHMCL

6.0 ETC Global Clearing & Settlement System (EGCS)

NPCI clears the NETC transactions through ETC Global Clearing and Settlement System (EGCS) designed to process, clear and settle transactions passing through NPCI's NETC switch and to support the Dispute Resolution Process for the transactions processed through EGCS.

6.1 Request NETC Tag Details

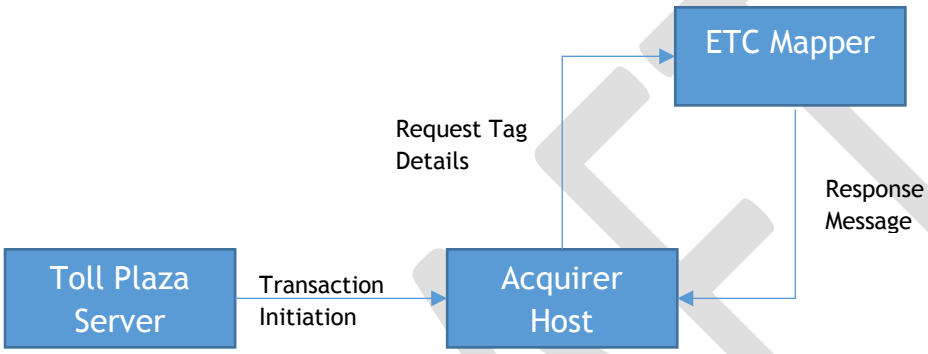


Figure 9 – NETC Tag Validation

Transaction is initiated by toll plaza server (TPS) and sent to the acquirer host for further processing. Acquirer host sends request message to the NETC mapper for tag details.

6.2 Online Transaction Processing

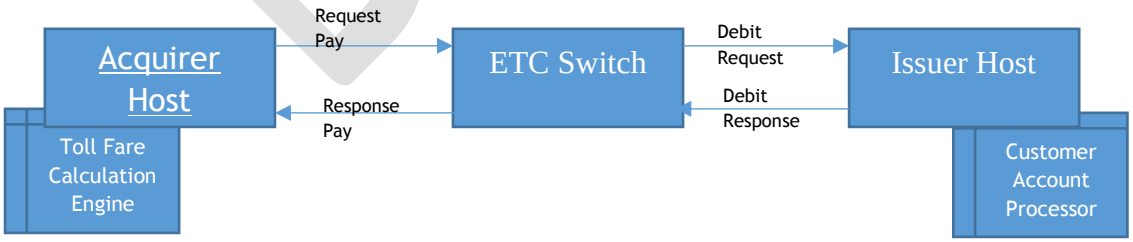


Figure 10 – Online Transaction Processing

Post receiving the tag details response from the NETC mapper, acquirer host calculates the toll fare and sends a debit request to issuing host through NPCI's NETC

switch. Issuer host debits the tag holder's account and sends a response back to the acquirer host through NPCI's NETC switch. On receipt of the response message, the acquiring host completes the transaction processing.

All transaction which are processed by the NETC system to the issuer will be considered as successful transactions for the clearing and settlement in subsequent settlement cycle. The issuer must honour all such transactions irrespective of whether issuer is able to debit the tag holder account.

6.3 **Clearing & Settlement**

In NETC system, there is no need for the acquirer to present a separate clearing file, post online transaction processing. Each processed transaction is considered directly for settlement by the EGCS system.

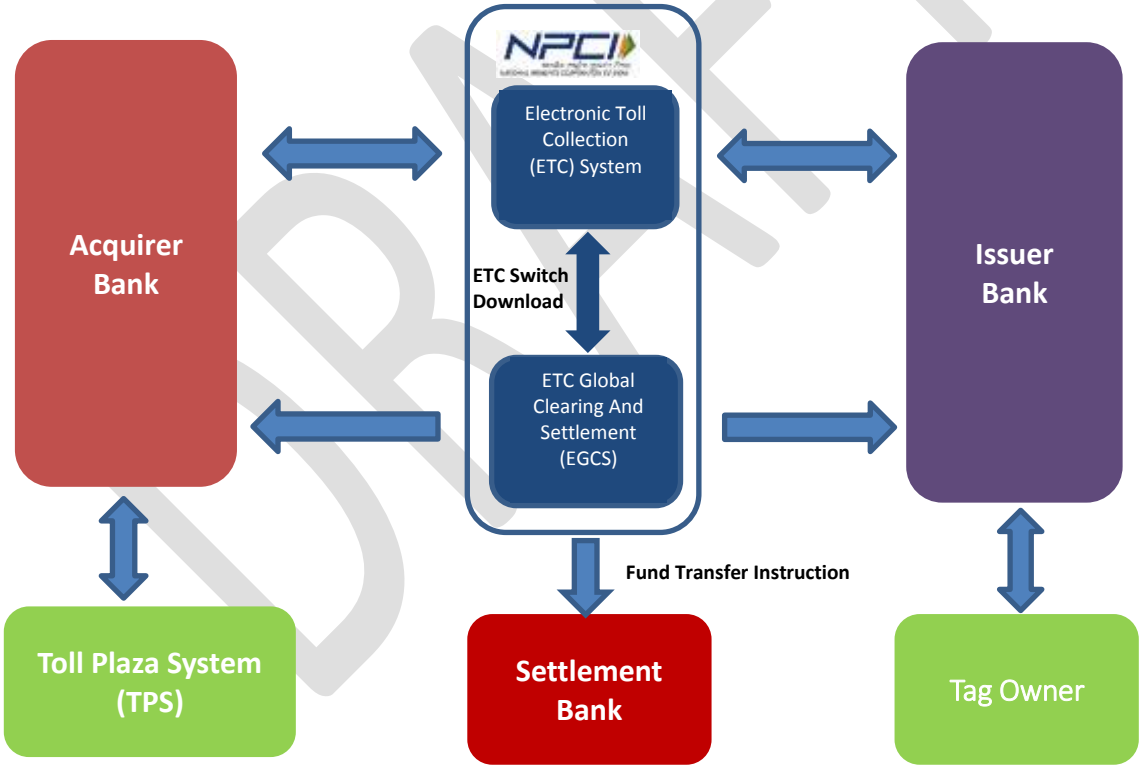


Figure 11- Clearing & Settlement

From the above processing workflow it can be seen that all the transactions received on NETC switch from the acquirer host are downloaded onto the EGCS system, which further processes the data to arrive on the net settlement amount for each member

(issuer / acquirer). NPCI and member banks exchange funds to complete settlement for clearing and billing activities. The settlement service is the facility within which funds are exchange between issuer, acquirers and NPCI to settle transaction and fee amount. The net settlement information is sent to the settlement bank which performs the physical transfers of funds. EGCS system provides response files to the members (issuers and acquirers) which clearly indicate the transactions that have been processed to arrive at the net settlement amount.

6.4 Clearing and Settlement Cycle

NETC Settlement Cycle							
First Settlement		**Second Settlement**		**Third Settlement**		**Fourth Settlement**	
Transaction Day & Time	**Settlement Day & Time**	**Transaction Day & Time**	**Settlement Day & Time**	**Transaction Day & Time**	**Settlement Day & Time**	**Transaction Day & Time**	**Settlement Day & Time**
Monday (17:30:01-23:00:00)	**Tuesday** (09.00)	**Monday + Tuesday** (23:00:01 – 10:00:00)	**Tuesday** (11:30)	**Tuesday** (10:00:01 – 14:00:00)	**Tuesday** (15:30)	**Tuesday** (14:00:01-17:30:00)	**Tuesday** (18:30)
Tuesday (17:30:01-23:00:00)	**Wednesday** (09.00)	**Tuesday + Wednesday** (23:00:01 – 10:00:00)	**Wednesday** (11:30)	**Wednesday** (10:00:01 – 14:00:00)	**Wednesday** (15:30)	**Wednesday** (14:00:01-17:30:00)	**Wednesday** (18:30)
Wednesday (17:30:01-23:00:00)	**Thursday** (09.00)	**Wednesday + Thursday** (23:00:01 – 10:00:00)	**Thursday** (11:30)	**Thursday** (10:00:01 – 14:00:00)	**Thursday** (15:30)	**Thursday** (14:00:01-17:30:00)	**Thursday** (18:30)
Thursday (17:30:01-23:00:00)	**Friday** (09.00)	**Thursday + Friday** (23:00:01 – 10:00:00)	**Friday** (11:30)	**Friday** (10:00:01 – 14:00:00)	**Friday** (15:30)	**Friday** (14:00:01-17:30:00)	**Friday** (18:30)
Friday (17:30:01-23:00:00)	**Saturday** (09.00)	**Friday + Saturday** (23:00:01 – 10:00:00)	**Saturday** (11:30)	**Saturday** (10:00:01 – 13:30:00)	**Saturday** (15:00)	----	-----
Saturday (13:30:01-23:00:00)	**Monday** (09.00)	-----	-----	-----	-----	-----	-----

Saturday + Sunday (23:00:01 – 23:00:00)		**Sunday + Monday** (23:00:01 – 10:00:00)	**Monday** (11:30)	**Monday** (10:00:01 – 14:00:00)	**Monday** (15:30)	**Monday** (14:00:01 – 17:30:00)	**Monday** (18:30)

The above table explains the multiple clearing and settlement cycle

1. There will be four switch cut-over in day as mentioned in the above table.
2. Settlement fund of three settlement cycle will be paid to the acquirer bank on the same day and Settlement funds of settlement cycle 23:00 will be paid on the next working day.
3. In case of RTGS holiday, transaction between 23:00:01-23:00:00 hrs will be settled in the first settlement cycle of the immediate succeeding RTGS working day.

6.5 Clearing and Settlement Cycle

A transaction lifecycle may consist of multiple stages; however each transaction does not need to pass through every stage of the lifecycle stated below. The lifecycle of a transaction can end at any of the below mentioned stages. Supporting documents to be provided by the member banks as applicable.

The various types of messages supported by NPCI are as follows:

1. **Credit adjustment:** These messages are generated by acquirer to settle the credit amount to the issuer for NETC Toll transactions. Credit adjustment will be done by the acquirer.
2. **Debit adjustment:** These messages are generated by the acquirer to settle the debit amount to issuer for NETC Toll transactions. Debit adjustment would be raised by the acquirer for scenarios listed under section 3.2 - NETC Transaction - Payment and Settlement.
3. **Chargeback:** It is a message through which the issuer demands a full or partial reversal of an amount earlier charged to a Tag holder's account. A chargeback is always accompanied by a reason due to which it is being demanded.
4. **Chargeback acceptance:** It is notification message generated by the acquirer to indicate an acceptance of the chargeback raised by the issuer.
5. **Credit Chargeback:** It is a message generated by issuer to raise a refund to acquirer, that is issuer credit (gives) back full or partial excess amount to acquirer.

6. Credit chargeback acceptance: It is notification message generated by the acquirer to indicate an acceptance of the credit chargeback raised by the issuer.
7. **Re-Presentment:** It is a message by which the acquirer presents the transaction again to the issuer either to correct a defect in the chargeback or to indicate disagreement with the chargeback raised by the issuer.
8. **Re-Presentment acceptance:** It is a notification message initiated by the issuer to indicate acceptance of the re-presentment message transmitted by the acquirer.
9. **Pre-Arbitration:** This message is generated by the issuer if its chargeback is refused by the acquirer and the issuer wants to raise a pre-arbitration case in response.
10. **Pre-Arbitration acceptance:** This message is generated by the acquirer to indicate an acceptance of the pre-Arbitration raised by the issuer. The acquirer may accept the Pre-arbitration fully or partially.
11. **Pre-Arbitration declined:** This message is generated by the acquirer to decline/reject the pre-arbitration raised by the issuer.
12. **Arbitration:** This message is generated by the issuer to indicate a filing of arbitration case with NPCI. It is generated only if the issuer's previously raised pre-arbitration is refused by the acquirer but the issuer wishes to continue the dispute cycle.
13. **Arbitration acceptance:** This message is generated by the acquirer to indicate an acceptance of the arbitration raised by the issuer. This means that the acquirer agrees to the conditions raised in the arbitration and accepts the demands of the issuer.
14. **Arbitration continuation:** This message is generated by the acquirer to indicate its rejection of the arbitration raised by the issuer. After generation of the arbitration continuation message by the acquirer, NPCI decides the case and gives a final verdict on it through arbitration verdict.
15. **Arbitration verdict:** NPCI generates and forwards this message to the members to indicate its verdict on arbitration.
16. **Arbitration withdrawn:** Issuer can withdraw an arbitration raised earlier through this message.
17. **Compliance acceptance:** This message is generated by a member to indicate that it accepts the compliance case raised against it and the conditions mentioned therein.
18. **Compliance continuation:** This message is generated by a member in response to a compliance raised against it, to indicate that it does not accept the conditions raised in the compliance and that NPCI should give the verdict on the case.
19. **Compliance:** This message is generated by a member to indicate that it is filing a compliance case against another member. The message contains details of the compliance issues which caused the originating member to file the case. A member may generate a compliance case only if its previous pre-compliance case raised against another member on the same issue has been declined.

20. **Compliance verdict:** NPCI generates and transmits this message to the concerned members to give its verdict on a previously raised compliance, in case it has received a compliance continuation message from the charged party.
21. **Good faith:** This message is generated when a good faith case is filed by a member.
22. **Good faith acceptance:** This message is generated by a member to indicate its acceptance of a good faith case raised by another member. Good faith acceptance can be full/partial.
23. **Good faith declined:** This message is generated by a member to indicate that it rejects the good faith case concerning it raised by another member.

Life Cycle Stage	Initiating Member	Pre-requisite	Description	TATs [in calendar days]	Transfer of Fund
Settled Transaction	NPCI	Online Transaction Processing	Online processed transactions are downloaded from the NETC switch onto the EGCS system and settled with the member banks.	Transaction or Transaction + 1 day	Applicable [Issuer Bank receives the Debit and Acquirer Bank receives Credit]
Credit Adjustment	Acquirer Bank	Settled Transaction	These messages are generated by acquirer to settle the credit amount to the issuer for NETC Toll transactions.	30 days	Applicable [Acquiring Bank receives the Debit and Issuing Bank receives Credit]
Debit Adjustment	Acquirer Bank	Settled Transaction	These messages are generated by the acquirer to settle the debit amount to issuer for NETC Toll transactions. • Debit adjustment initiated on the settled transaction needs to be honoured by the	Within 3 days for Settled Transaction	Applicable [Issuer Bank receives the Debit and Acquirer Bank receives Credit]

			issuer subject to applicable dispute rights.		
Chargeback	Issuer Bank	Settled Transaction (For transaction type – Debit and Dispute type Credit Adjustment and Debit Adjustment)	Issuer Bank may initiate a chargeback for the full or partial transaction amount within the specified time frame applicable to the specific message reason. • Once processed, a chargeback is not allowed to be withdrawn. • Chargeback can be raised for full or partial transaction amount.	40 days	Not Applicable
Chargeback acceptance	Acquiring institution	Chargeback	Acquiring institution may accept the chargeback initiated by the issuing institution.	10 days from the chargeback processing date	Applicable [Acquirer Bank receives the Debit and Issuer Bank receives Credit]
Credit Chargeback	Issuing institution	Settled Transaction	Issuer Bank may initiate a credit	40 days	Not Applicable

		(Transaction type-Credit and Dispute type Credit Adjustment	chargeback for the full or partial transaction amount within the specified time frame applicable to the specific message reason. • Once processed, a credit chargeback is not allowed to be withdrawn. • Credit Chargeback can be raised for full or partial transaction amount.		
Credit Chargeback acceptance	Acquiring institution	Credit Chargeback	Acquiring institution may accept the credit chargeback initiated by the issuing institution. A credit chargeback not accepted by the acquirer within given TAT is to be deemed accepted by the acquiring institution.	10 days from the credit chargeback processing date	Applicable [Acquirer Bank receives the Credit and Issuer Bank receives Debit]
No Re-presentment	NPCI	Chargeback	Any chargeback not re-presented within the	10 days from the	Applicable

			specified re-presentment due date is deemed to be accepted by acquiring institution.	chargeback processing date	[Acquirer Bank receives the Debit and Issuer Bank receives Credit]
Re-presentment	Acquiring institution	Chargeback	Acquiring institution may present the transaction to the issuing institution either to correct an earlier transaction processing defect or to indicate disagreement with the chargeback raised by the Issuing institution. Re-presentment gives rights to the acquiring institution to shift the transaction liability to issuing institution.	10 days from the chargeback processing date	Not Applicable
Re-presentment-acceptance	Issuing institution	Re-presentment	Issuing institution may accept the re-presentment initiated by the acquiring institution.	10 days from the re-presentment processing date	Not Applicable

			Any Re-presentment-acceptance not accepted or pre-arbitration not raised within the specified re-presentment due date is deemed to be accepted by issuing bank.		
Pre-Arbitration	Issuing institution	Re-presentment	When applicable, the issuing institution may use this message as a final attempt to mutually resolve the disputed transaction before Arbitration is filed with NPCI to resolve the dispute. This message requests the acquiring institution to accept the liability of the disputed transaction. • Once processed, a Pre-arbitration is not allowed to be withdrawn.	10 days from the re-presentment processing date	Not Applicable

Pre-Arbitration acceptance	Acquiring institution	Pre-arbitration	An acquiring institution that receives a pre-arbitration attempt may provide their acceptance. • Once processed, a Pre-arbitration acceptance is not allowed to be withdrawn.	Acquiring institution must respond within 10 days following the Pre-arbitration processing date.	Applicable [Acquirer Bank receives the Debit and Issuer Bank receives Credit]
Pre-Arbitration decline	Acquiring institution	Pre-arbitration	An acquiring institution that receives a pre-arbitration attempt may provide their decline confirmation. • No response to a Pre- arbitration within specified TAT will be deemed declined. • Once processed, a Pre-arbitration decline message is not allowed to be withdrawn.	An acquiring institution must respond within 10 days following the Pre-arbitration processing date.	Not Applicable

			• On receipt of pre-arbitration decline message issuing institution may raise arbitration case.		
Arbitration Case Filing	Issuing institution	Pre-Arbitration	The Issuing institution may file an arbitration case to NPCI for a decision on the dispute. • NPCI decides which party is responsible for the disputed transaction. The decision by NPCI is final. • Once processed, arbitration is allowed to be withdrawn.	Issuing institution must raise arbitration request with NPCI within 25 days following the re-presentment date.	Not Applicable
Arbitration Case-acceptance	Acquiring institution	Arbitration	An acquiring institution that receives an arbitration attempt may provide their acceptance.	Within 10 days from arbitration received date	Applicable [Acquirer Bank receives the Debit

					and Issuer Bank receives Credit]
Arbitration Case-continuation	Acquiring institution	Arbitration	Deemed continuation if no response from acquiring institution	If no response received from the acquiring institution within 10 days from arbitration received date	Not Applicable
Arbitration Case-withdrawn	Issuing institution	Arbitration	Issuing institution can withdraw arbitration case	Within 10 days from arbitration raising date	Not Applicable
Arbitration Case-verdict	NETC Arbitration Committee	Arbitration	NPCI Arbitration Committee will provide ruling on arbitration case	NPCI Arbitration Committee will give verdict within 15 calendar days following the arbitration	Applicable [as per the verdict]

				initiation date	
Pre-compliance	Issuing Bank Or Acquiring Bank	Settled Transaction	The initiating member (either the issuing Bank or acquiring bank) can raise a pre-compliance case to the opposing member for A rule violation or dispute that could not be resolved by the above stages. • Once processed, a Pre-compliance is not allowed to be withdrawn.	Initiating Member Bank raising Pre-compliance should ensure that they are within time frame to raise compliance in case of Pre-compliance decline or no response from opposing party	Not Applicable
Pre-compliance acceptance	Issuing Bank Or Acquiring Bank	Pre-compliance	The Member bank that receives a pre-compliance attempt may provide their acceptance confirmation. • Once processed, a Pre-compliance	Receiving institution must provide acceptance within 15 calendar days following	Applicable [Case to case basis]

			acceptance is not allowed to be withdrawn.	the Pre-compliance receipt date	
Pre-compliance decline	Issuing Bank Or Acquiring Bank	Pre-compliance	The Member Bank that receives a pre-compliance attempt may provide decline confirmation. • Once processed, a Pre-compliance decline is not allowed to be withdrawn. • On receipt of pre-compliance decline message counter member bank may raise compliance case.	Receiving member bank must provide decline confirmation within 10 days following the Pre-compliance receipt date	Not Applicable
Compliance Case	Issuing Bank Or Acquiring Bank	Pre-compliance	When applicable, a member that has no chargeback, re-presentment, pre-arbitration or arbitration right may use compliance as a	Within 60 days following the transaction settlement date	Not Applicable

			final attempt to file a complaint against another member for violation of the NPCI operating regulations. If the initiating Bank is unsatisfied with the pre-compliance response from the opposing Bank, the initiating Bank may appeal to NPCI to provide a decision on the disputed matter. • Once processed, compliance case is allowed to be withdrawn.		
Compliance Case-acceptance	Issuing Bank Or Acquiring Bank	Compliance	The Member Bank that receives a compliance attempt may provide their acceptance confirmation.	Within 10 days from compliance received date.	Applicable [Case to case basis]
Compliance Case-continuation	Issuing Bank Or	Compliance	Deemed continuation if no response from receiving Bank.	If no response received from the	Not Applicable

	Acquiring Bank			compliance receiving Bank within 10 days from compliance received date	
Compliance Case-withdrawn	Issuing Bank Or Acquiring Bank	Compliance	Initiating Bank can withdraw compliance case.	Within 10 days following the compliance processing date.	Not Applicable
Compliance Case-verdict	NPCI Compliance Committee	Compliance	NPCI Compliance Committee will provide ruling on compliance case.	NPCI Compliance Committee will give verdict within 15 days following the compliance processing date	Applicable [As per verdict]
Good-Faith	Issuing Bank Or Acquiring Bank	For settled transaction	This message may be used by either Bank (acquiring / Issuing) to request for transaction funds from the other	Within 60 days of settlement of transaction.	Not Applicable

			Bank in good faith, if the other options listed above are not applicable or available.		
Good-Faith attempt acceptance	Issuing Bank Or Acquiring Bank	Good-faith	The Bank that receives a good faith attempt may provide their acceptance confirmation. • Once processed, a Good Faith acceptance is not allowed to be withdrawn. • Kindly refer Good Faith section for details.	Within 30 days from Good faith received date	Applicable [Case to case basis]
Good-Faith Attempt Decline	Issuing Bank Or Acquiring Bank	Good Faith	The bank that receives a good faith attempt may provide their decline confirmation. • Once processed, a Good Faith decline is not allowed to be withdrawn. • On receipt of Good Faith decline message	Within 30 calendar days from Good faith received date	Not Applicable

			counter bank does not have any rights to pursue the case further. • In case of Good Faith attempt decline or no response from the receiving Bank, the initiating member Bank has no further recourse		

6.6 Calculating Net Position

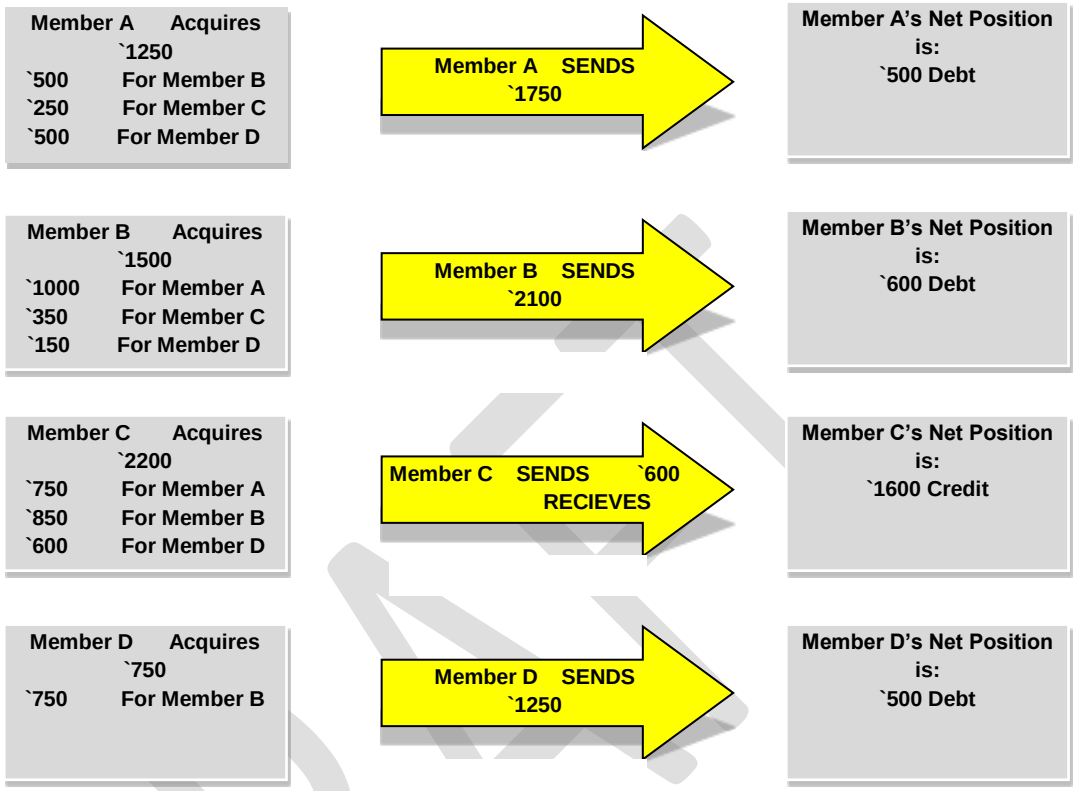


Figure 12- Calculating Net Position

The above diagram shows NPCI calculates the net settlement among the members A, B, C & D.

Please note the example above is only for illustration purpose and doesn't consider any interchange or other fees that maybe applicable during clearing and settlement of transactions. In this example all members (A, B, C & D) have both an acquiring and issuing business. In case of Member A, It acquires transactions totalling Rs`1250 for cards issued by members B, C & D (Rs`500, Rs`250 & Rs`500 respectively). Further it can be seen that Member A, issued cards are acquired for transactions totalling Rs`1750 by members B & C (`Rs1000 & `Rs750 respectively). Thus Member A needs to receive Rs`1250 for acquiring done on behalf of other members and needs to pay Rs`1750 to other members for acquiring of its cards done by other members. These gross positions are netted to arrive at a single net settlement amount, which in case of Member A is a debit of Rs`500. Similarly the net position of each

member is calculated. It can also be noted that at the sum of the net positions for every member, will always total to a sum of zero.

6.7 Net Settlement Activity

This activity involves deriving the net settlement position for each of the members

- Here each successful cleared record is picked up and the net settlement effect for the transaction is derived for every member
- Transaction amount & Interchange amount paid out to the members is populated in each cleared message (in four settlement cycles).
- Service Tax will be charged as applicable.
- Separate Net Settlement entries will reflect in member settlement account for NETC transactions.
- As described in the clearing and settlement cycle sections. On Holidays or Sundays, the net settlement amount arrived at for each settlement bin, is not provided to the clearing house for fund transfer; instead the net settlement amount for that day will be provided on the subsequent working days along with that day's settlement file. There will be separate net settlement file for each day.

6.8 Reports

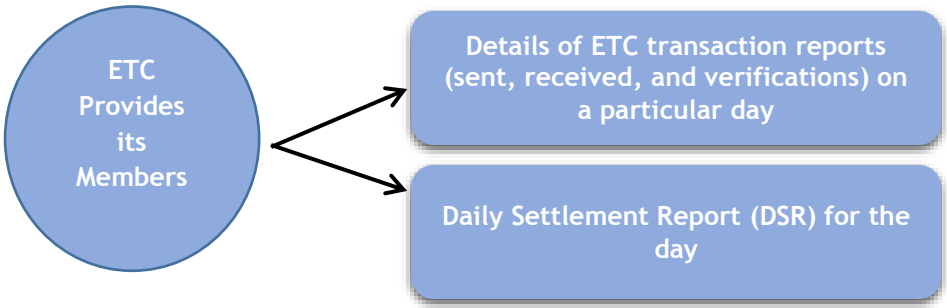
The report manager of the EGCS system allows the member banks to download various pre-defined MIS reports. The document manager of EGCS manages the document uploads and downloads and ensures linking of the various documents with specific dispute cases.

EGCS system will create various MIS reports and daily settlement reports will shall be shared with NHAI/IHMCL.

6.9 Reconciliation

Members will be provided with the following reports:

Reports made available to NETC members



The reports in the above figure are part of the interface specification manual. NPCI would ensure that all members receive these reports, while the members should ensure daily reconciliation of their settlement accounts.

6.10 **Adjustment to settlement**

Discrepancies relating to reconciliation/adjustment done by members, based on reports furnished by NETC are the responsibility of the participating members. Such discrepancies should be resolved by members as per the settlement procedures set forth in the NETC-PG.

6.11 **Settlement between NPCI and NHAI\IHMCL**

NHAI/IHMCL will open an account with a schedule bank in India. NHAI/IHMCL will provide the standing instruction to this designated settlement bank for debiting its account towards interchange amount.

NPCI will debit the interchange amount from this bank's designated settlement account with RBI on daily basis. NPCI will further distribute the interchange amount with the member banks on a daily basis.

Designated settlement bank needs to submit the "Letter of Authority" which authorizes NPCI to use its settlement account with RBI for the purpose of settlement of NETC transactions. The specimen form can be found in Annexure V – Letter of Authority.

Section 7: Dispute resolution

Section covers:

- Dispute management by NPCI
- Mutual Assistance
- Disputes Resolution Mechanism
- Dispute Processing

7.0 Dispute resolution

7.1 Dispute Management by NPCI

The procedure for handling disputes in the NETC Network is as follows:

- NPCI maintains a database for all transactions performed by the members.
- Only valid disputes are processed by the EGCS System.
- EGCS System validates and processes disputes raised by members and are settled along with previous business day approved transactions.
- The members can use this EGCS for raising the adjustments, downloading adjustments reports and daily settlement files.
- In case of any unsettled disputes, NPCI will give the final verdict, but the customer has rights to raise the dispute in consumer court and bank ombudsman.

7.2 **Mutual Assistance**

- A member bank must try to offer mutual assistance to other member banks to resolve disputes between tag holder, issuing bank, acquiring bank & toll plaza operator.
- If a Tag holder or a Toll Plaza Operator accepts financial liability for a transaction, the related member bank must reimburse the other member bank directly through refund, fund collection or disbursement options as applicable.

7.3 **Disputes Resolution Mechanism**

- NPCI has set up a Panel for Resolution of Disputes (PRD) comprising four members and the President to look into unresolved interbank settlement disputes as per the directives of the Department of Payments and Settlement Systems of the Reserve bank of India vide notification: DPSS.CO.CHD.No:654/03.01.03/2010-2011 dated September 24, 2010.

- NETC network would continue to operate under the contract during the PRD proceedings unless the matter is such that the operation with disputing members cannot possibly be continued until the decision of the PRD or the Appellate Authority at RBI is pronounced, as the case may be.

7.4 **Disputes Processing**

- All members' banks have to process dispute stages through NETC system. Disputes can be raised in NETC system by the following two methods:

- **Web-UI – EGCS:** Selecting a transaction on the NETC system and raising the relevant dispute request.
- **File Staging:** Raising the relevant dispute request through file staging on NETC System.

- Dispute management is a process through which NETC member banks can determine the validity and liability of a financial transaction.
- EGCS provides an electronic platform to raise and resolve disputes among member banks having provision to exchange documentary support and details for the relevant transaction done through NETC System.
- For each dispute record processed, a Dispute Reference Number will be created, which will be a unique across the NETC System.
- Dispute can be closed by the member banks, however in certain circumstances NPCI will have the authority to close the dispute if it exceeds the timelines that are specified in the system, with due intimation to the concerned banks. Reopening of the dispute may be allowed in exception cases.
- The audit log details are to be maintained for all actions carried out during the dispute resolution life cycle of the records, for a period as would be decided by NPCI and shared with participating member banks, toll plaza operator.
- Disputes may be created by Toll plaza operators, Acquirer Bank, Issuer Bank, Tag owners. Tag owners & Toll plaza operator must route their disputes to their member banks through EGCS application.

Annexure VIII explains the Dispute Management System for NETC-PG, 2016 and settlement guidelines.

Section 8: Security and Risk Management

Section covers

- Risk management at Issuer and Toll Plaza
- NETC Tag Authentication Method
- Security for NETC Tag Issuance
- Issuing Portfolio
- Fraud Detection Key Storage – General Guidance

8.0. Security and Risk Management

8.1 Risk management at Issuer, Acquirer levels and Toll Plaza Operator

Risk Management at Acquirer

- Multiple requests from same toll plaza with same transaction number in order to avoid duplicate transactions.
- Adequacy of collateral lodged with NPCI.
- Fraud check (online or offline).
- Population of correct values in the financial message request.
- Any other limit checks applicable for the members mandated by regulatory guidelines.

Risk Management at Issuer

- Ensure the correct tag is issued and only one tag is affixed against the registered vehicle class.
- Message validation coming from NETC System.
- Checks on requests from the same Tag ID within same time period or at far toll plaza location.
- Maximum limit for toll transaction in a day for the linked tag account.
- Fraud check (online or offline) using tag signature validation

Risk Management at Toll Plaza

- Exception list validations/verifications.
- Fraud check.
- Population of correct values in the financial message request.
- Any other limit checks applicable for the members mandated by regulatory guidelines.

8.2 NETC Tag Authentication Method

Tag Authentication by Lane Controller

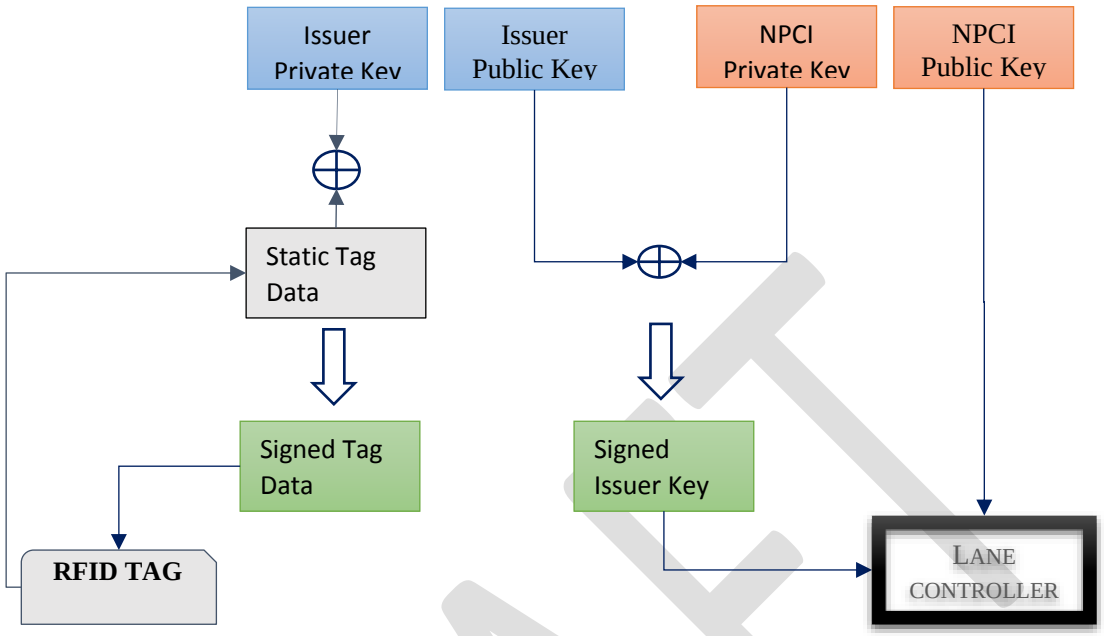


Figure – Tag Static Data Authentication at Lane Controller/Toll Plaza Server

Tag Static Data Authentication (TSDA) is the offline authentication method. This means that the Toll plaza server or Lane controller or issuer host uses this method to authenticate the tag and tag data. The system verifies static signature of tag data, in order to assure that this data has not been altered.

TSDA is a mechanism where the host system uses a digital signature based on public key techniques to confirm the legitimacy of critical tag-resident static data. The relationship between the data and the cryptographic keys is shown above. It should be noted that the issuer host should support signature validation to authenticate the tag data.

Note: This process would be applicable once the changes are made at the lane controller to authenticate the tags.

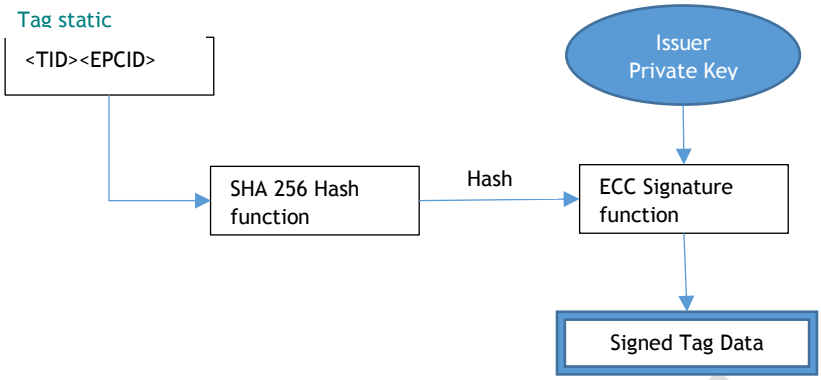


Figure – Tag Signing Process

Hexa-decimal string of tag's TID and Tag ID [EPC ID] is concatenated to generate the Tag Static Data. This static data is hashed with SHA-256 cryptographic hash and signed using Issuer Private Key. The process is illustrated in above figure

Tag Authentication by Issuer Host

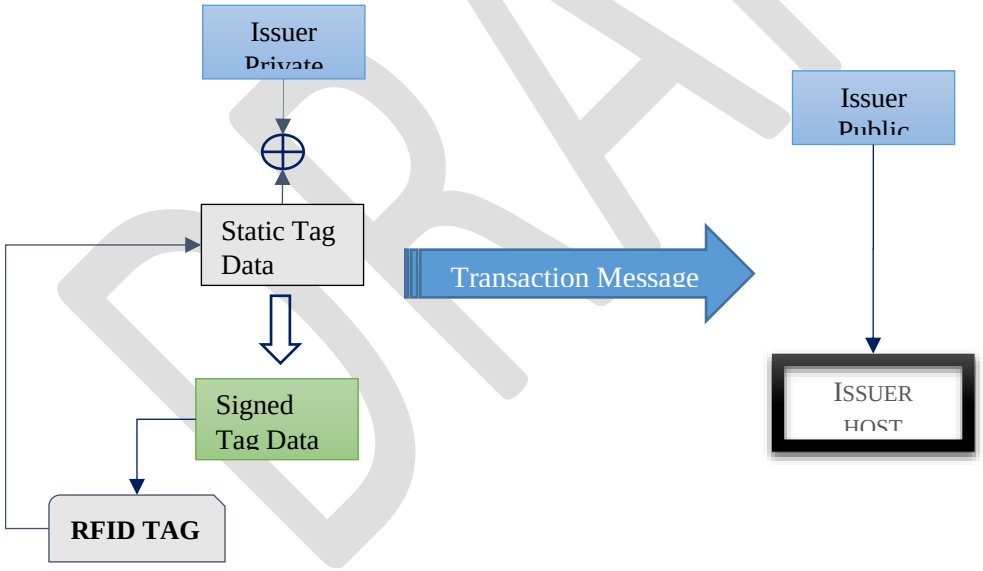


Figure – Tag Static Data Authentication for Issuer

The Issuer host shall also validate the tag signature with the tag's TID, Tag ID [EPC ID] and User memory data received in the transaction message. Issuer Host shall Blacklist any tag with an invalid signature.

Note: The current CCH Specification defined IHMCL/NHAI doesn't contain fields for TID and entire user memory block in the message definition. The Attribute_7 and

Attribute_9 fields in CCH transaction message definition should be used by Toll plaza operator to pass TID and 512 bits of user memory from toll plaza server to Acquiring Host.

8.3 **Security for NETC Tag Issuance**

This section addresses the security related functions that need to be performed by an NETC tag issuer.

- The generation, management and secure storage of the asymmetric issuer public/private key pairs.
- The transfer of the Issuer Public Keys to NPCI for certification.
- The storage of Issuer Public Key certificates and the NPCI public keys for verification of these certificates.
- The use of an issuer private key to sign tag data for use in tag authentication.
- The secure transport of keying material necessary for tag personalization to the tag manufacturer factory.

8.4 **Issuing Portfolio**

Issuers perform the following activities during the life of a tag issuance programme

- **Preparation -** To be completed prior to any tag issuance,
- **Tag production (TSDA)** - the steps for issuing tags employing Tag Static Data Authentication,
- **Tag issuance** - the steps to provide vehicle owners with newly produced NETC tags

8.4.1 Preparation

The following activities need to be performed by an issuer prior to any tag issuance. They also need to be performed when keys change or certificates expires.

Key Pair Generation. The issuer needs to securely generate and store one or more public/private key pairs. This requires the use of protected memory in a physically secure device, utilising a random or pseudo-random number generator and primarily-checking routines.

Issuer Key Pairs – the private key signs tag data. The public key is sent to NPCI to obtain an Issuer Public Key certificate.

The Issuer Public Key should be managed in such a way that it is unchanged when sent to the NPCI for certification. The issuer needs to transfer each Issuer Public Key to the NPCI and receive in return a signed public key certificate. The Issuer Public Keys should be transferred in such a way that NPCI can verify their integrity and origin. Upon receipt of a public key certificate from NPCI, the issuer should verify it using the relevant NPCI Public Key

8.4.2 Tag Production

The following security relevant steps need to be performed by an issuer for each NETC tag issued.

Tag Static data preparation: The tag manufacturer generates and writes EPC ID onto the tag's EPC memory as per the defined format. Once written the EPC memory is locked to ensure that EPC memory is protected from any further write operations. Tag ID (Transducer ID) should be unique and come from the chip manufacturer.

Signing of static data: The issuer signs Tag ID and TID using an issuer private key to produce the Signed Static Tag Data.

Tag Signed data preparation: The tag manufacturer writes dummy vehicle registration number, vehicle class and the signature values onto the tag's User memory as per the defined format. Once written the user memory is locked to ensure that user memory is protected from any further write operations.

8.4.3 NETC Tag Issuance

The personalised NETC Tag must be securely and separately transferred to the vehicle owner. The member bank should ensure all the security guidelines are followed for acceptance of tag from the tag manufacturers and delivery of tag to the respective banking correspondent.

Privacy issues

Issuers should be aware that there may be privacy concerns with data that is available over the RF interface of a tag. It is therefore recommended that personal data not be sent over this interface as part of a normal transaction and should not be available using any command over the RF interface.

8.5 Fraud Detection

The issuer should use the tag data in the online transaction processing for its risk evaluation. The results of reader processing are defined in the Reader Verification Results (RVR). Other fields in the request, such as the Transaction identifier should be verified for its genuineness. Incoming values that were present on the tag such as the EPC ID and TID should be checked to assure they match the personalised value. The member banks should graduate to real time risk management systems over the period of time. The member bank should also adhere to the risk management practices as prescribed by RBI circulars and policies.

Issuer bank must audit the engaged bureau depending upon their internal audit policy.

8.6 Key Storage – General Guidance

Keys can be stored in a 'hardware' location such as an HSM or a 'software' location such as on a host computer system. Keys are protected by a variety of physical means such as the tamper resistance of an HSM and the logical protection of an operating system in HSMs and host computers. The member banks should use HSM to store the cryptographic keys and the toll plaza servers can use software system to store the public keys.

Section 9: Administrative policies and procedures

Section covers

- Fines
- Pending dues
- Invoicing

9.0 Administrative policies and procedures

9.1 **Fines**

All members should comply with the NETC-PG, as framed by NPCI. NPCI reserves the right to impose penalty on the members for violating these guidelines. Penalty may include imposing a fine of an amount equal to the one-time membership fee on members participating in the NETC network or suspending/terminating end-to-end (host-to-host) connectivity of the member for frequent violations of these guidelines. NPCI reserves the right to either notify the member or impose penalty on the member depending on the member's past record. No fine would be imposed, if the rectification is done within the stipulated time provided by NPCI. Failure to abide by NETC-PG, 2016 would also be subject to steering committee recommendations/legal action.

9.2 **Pending dues**

All members should clear all pending dues such as fines, settlement dues, and other liabilities within the stipulated time provided by NPCI. Failure to settle all dues within the stipulated time could result in suspension/termination of the member from further participation.

9.3 **Invoicing**

Fines will be billed separately and would be sent to the respective members. These fines would be payable to NPCI in accordance with the terms and conditions defined in the invoice.

Section 10: Compliance

- Compliance for members

10.0 Compliance

Members of NETC network need to adhere to the compliance requirement and maintain the integrity of NETC payment system. The compliances, not limited to following, are brand compliance, certification compliance, Toll Plaza System management, third party compliance, vendor compliance. Members of NETC Network also need to adhere with compliance guidelines issued by the RBI, NPCI and IHMCL/NHAI from time to time basis.

The compliances for acquirer and issuer are defined above in thesection 3 and section 4 respectively

Section 11: Certification

Section covers certification for:

- RFID Tag Bureau Certification
- RFID Reader Certification
- Member Banks Certification

11.0 Certification

11.1 **RFID Tag Bureau Certification**

NPCI [or third party agencies appointed by NPCI] will certify the tag manufactures and Tag personalisation bureau. The certified tag manufactures will be eligible to supply RFID tags to participating member banks. The certification will include but not limited to the following cases:-

1) Tamper evident
2) Relative humidity
3) Operating temperature
4) Storage temperature
5) ISO, EPC Reference Standards and data encoding
6) UV Exposure
7) Form factor
8) Tag read rate
9) Data transfer rate

For the existing TAG, ARAI certification standard will be consider as a preliminary criteria and NPCI will further certify the vendors

11.2 **RFID Reader Certification**

NPCI [or third party agencies appointed by NPCI] will certify the RFID reader. The certified reader manufactures will be eligible to supply RFID readers to participating toll plaza operators. The certification will include but not limited to the following cases

1) Antenna testing
2) Read rate monitoring
3) Reader signal strength
4) Reader Application testing

Note: The reader certification will be applicable in the future phases of the project.

11.3 **Member Banks Certification**

11.3.1 NETC Online System Certification

NETC online system specification is capable of supporting both acquirers and issuers. NETC Switch supports routing of transactions between issuer and acquirer through NPCI network. The members need to be certified for successful processing of NETC transactions on the NPCI network.

11.3.2 ETC Global Clearing and Settlement System (EGCS) certification

NPCI has developed ETC Global Clearing and Settlement System (EGCS) which is a web and file based Clearing, Settlement & Dispute Management System for processing of NETC transactions. EGCS System takes the transactions information from the NETC online switch for clearing and settlement, the member need not to submit any data file for clearing and settlement. The members need to certify themselves with NPCI for EGCS.

11.3.3 Certification pre-requisites

The following pre-requisites need to be adhered before applying for the certification process:

i. The member should have a test UAT system to start the testing for certification before moving to the production system. The member should not carry out any testing in the production system
ii. The member should successfully complete the sandbox testing before commencing for certification
iii. The member should have a dedicated team and system to undertake testing, certification and audit of the system.

Section 12: Member On-boarding

Section covers certification for:

- Membership Fees
- Acquirer Bank On-boarding process
- Issuer Bank On-boarding process

12.0 Member On-boarding

NETC membership is open to all banks. Participating banks needs to submit the "Letter of Authority" which authorizes NPCI to use their settlement account with RBI for the purpose of settlement of NETC transactions. The specimen form can be found in Annexure V – Letter of Authority.

NETC membership can also be availed by the sub member banks through the sponsor banks which are the members of NETC payment system.

Applicants intending to participate in NETC may apply for membership in the format given in ANNEXURE – II.

12.1 Membership Fees

Membership fee for the NETC program will be applicable as per the circulars issued by NPCI from time to time.

12.2 Acquirer On boarding

Form to be submitted by Acquirer
Signed Agreement & forms: As per annexure
Non-Disclosure Agreement: As per Annexure VI
Toll Plaza ID & Reader manufacturer details

Upon on-boarding of Acquirer NPCI will issue the below:
Participant ID
Acquirer ID
NPCI Public Key
Functional and Technical Specifications

12.3 Issuer On boarding

Form to be submitted by Issuer

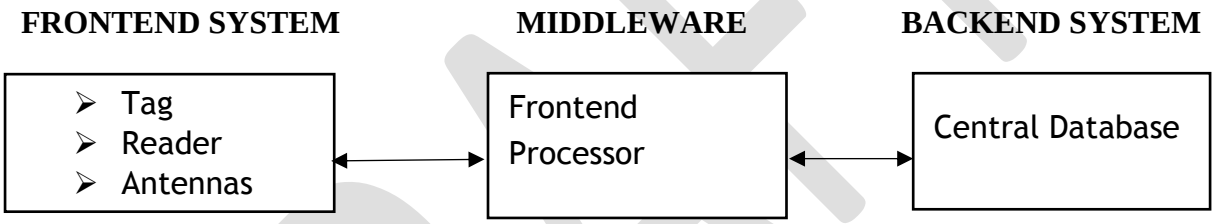
Signed Agreement & forms
Non-Disclosure Agreement: As per Annexure VI
Tag Manufacturer details
Issuer Public Key

Upon on-boarding of issuer NPCI will issue the below
Participant ID
EPC ID Range
NPCI's signed issuer key
Functional and Technical Specifications

PART II – Radio Frequency Identification (RFID) and Vehicle Identification

1.0 Introduction

RFID based NETC system consists of three main components. The first one is the front end system, which consists of the tags, readers and antennas. The second is the middleware, which consists of a frontend processor and a link to the central database where all the product information is stored. The last part of the RFID system is the backend system, which consists of the central database and an application which brings usefulness to the tag information retrieved from the tagged objects by the RFID middleware.



In NETC program "The NETC Lane" on the toll plaza acts as the front end system which works as per the theory defined in subsequent para. The "Lane Controller and/or Toll plaza server" acts as the front end processer which executes the transaction at the toll plaza. The acquiring host, NPCI switch and the issuing host contributes towards the backend system where NPCI Mapper is acting as central database. The frontend system and the middleware are the currently under purview of IHMCL/NHAI.

1.1 RFID Background

A passive RFID system is based on the backscatter principle which works in the following way (Figure 1). The RFID reader transmits a signal in the form of EM (Electromagnetic) waves. An RFID tag within the field of the RFID reader receives the waves and converts the EM waves into voltage, to power the chip and electronic circuit in the tag. The tag thus transmits back a modulated signal containing the RFID code.

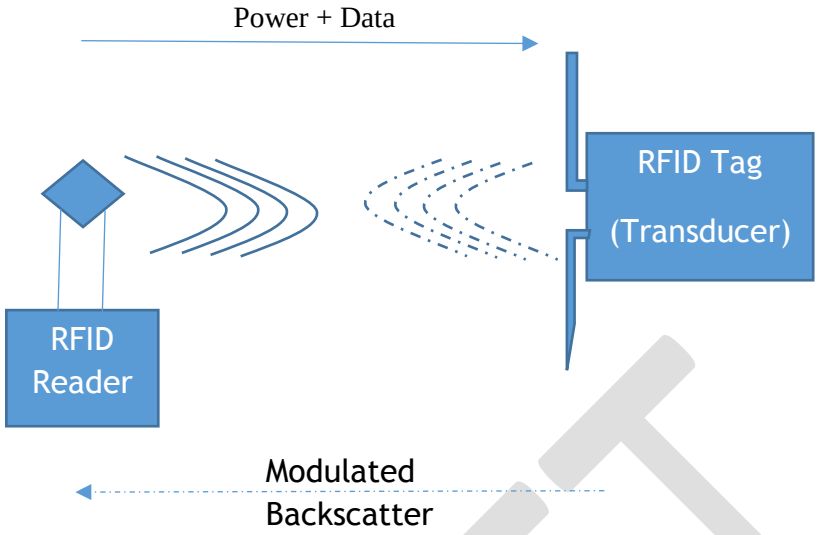


Figure 1 - Working of typical RFID System

There exists a communication between the tag and the base station antenna through the electromagnetic waves reflected by the tags. This kind of communication is called the backscatter coupling. A backscatter type RFID system consists of a tag, reader, antenna and a computer controller. The chip in the tag helps in responding to the commands sent by the reader through the antenna obeying a definite protocol. The NETC toll ecosystem will use passive RFID tags in compliant with EPC class 1 generation II standards. The air interface should follow ISO 18000 6C standards.

2.0 NETC Lane

Toll Plaza consists of various lanes for passage of vehicles. NETC Lane is a lane supporting electronic processing of toll payments allowing collection of toll while vehicle is in motion. Each Toll Plaza can have more than one NETC Lane. The data captured from the NETC Lane is sent to the Toll Plaza Server for further processing. NETC Lane consists of fixed RFID antennas, NETC tag readers, automatic vehicle classification system, image capturing camera, weight in motion system and a computerized system (Toll Plaza Server) for uniquely identifying each vehicle.

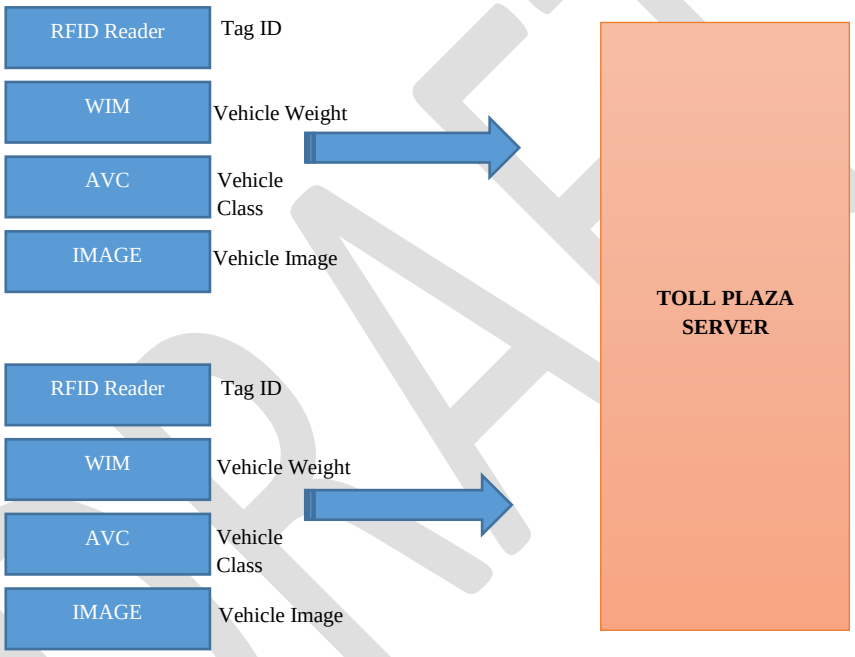


Figure 6 – NETC Lane

The above diagram illustrates various NETC lanes which are present on a Toll Plaza.

Various systems which are installed at the NETC lane are:

I. **NETC tag Reader**
It is a device installed at Toll Plaza that is used to read information from the NETC tag which is affixed on the vehicle. The RFID reader transmits a signal in the form of EM (Electromagnetic) waves. An RFID tag within the field of the RFID reader receives the waves and transmits back the RF backscatter.

II. **Automatic Vehicle Classification (AVC)**

It is an alternative system which is used by toll plaza operator to identify the vehicle class. Usually an infrared profiler is used to generate the vehicle profile which in turn is matched with the pre-defined or standard vehicle profiles.

III. **Weight-in-motion (WIM)**
These devices are designed to capture and record vehicle weight. Vehicle separators are used to distinguish between the automobiles aligned in queue. Unlike static scales, WIM systems are capable of measuring weight of the vehicle, traveling at a reduced or normal speed. The weight from WIM system will be used by acquiring banks to calculate the toll fare of overweight vehicles. WIM calculation will be not be consider in current phase of the project but may be applicable in future phases as per the instructions from IHMCL/NHAI.

IV. **Image Capturing Cameras**
It is used to capture the image of vehicles passing through the NETC lane. This image will be used to resolve any disputes raised by the customers or toll plaza operator.

The input from all the above systems are required for proper functioning of NETC solution. All the information generated from these systems are synchronized and sent to the Toll Plaza Server for further processing.

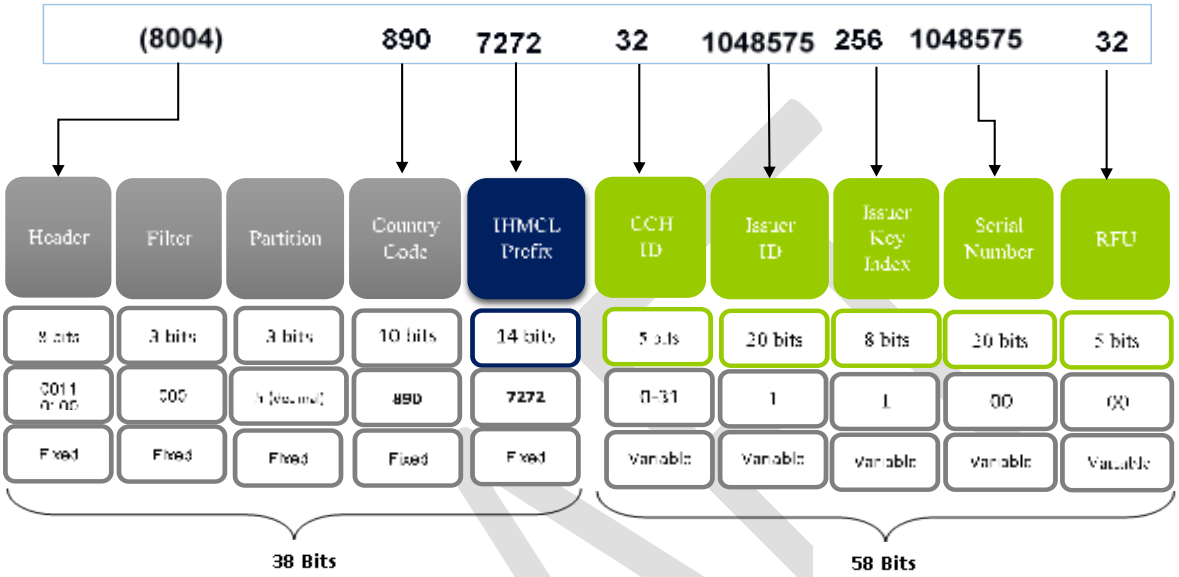
Indian Highways Management Company LTD (IHMCL) will be implementing NETC system on the toll **plazas** of national highways of India.

3.0 FASTag – IHMCL GS1 Code

FASTag is the brand name for the passive RFID tags used in the NETC program. FASTag are passive RFID tags affixed on the windshield of the vehicle and are used to identify the vehicle uniquely. The data encoded in the FASTag is defined as per the GS1 standards detailed below.

EPC Memory - Tag Encoding Specification

IHMCL - GS1 Code = 8907272



Segment	Bits	Remarks
CCH ID	5	Fixed to 01
Issuer ID	20	Up to 1048575 issuer ids
Issuer Key Index	8	256 keys per Issuer ID
Vehicle ID	20	1048575 vehicles per key per Issuer ID
RFU	5	Reserved for future use

4.0 Transaction processing at toll plaza

This program aims to establish a non-stop toll regime in which a vehicle with a single passive RFID tag can pass through toll plazas on Indian highways and pay toll without actually stopping. The system envisaged by the program is complex, encompassing the function of a nation-wide clearing house in which all the related Concessionaires (operating the toll plazas) participate.

The Plaza setup for processing FASTag transactions [i.e. NETC Lane and any other infrastructure required at toll plaza] is the responsibility of the toll plaza operator as per the guidelines issued by IHMCL/NHAI. The transaction processing rules are defined by IHMCL in CCH document ver 2.4 The toll plaza operator and acquiring bank has to adhere to the CCH specifications for processing and acquiring the toll transaction.

There is no separate KYC requirement from NHAI/IHMCL for the issuance of FASTag. The issuer member will only adhere to the KYC requirements for the underlying payment instrument while linking it to FASTag.

5.0 Fraud Management at toll plaza

Toll plaza operator is responsible for the NETC lane as per the details mentioned. In case the toll plaza operator has not adhered to the security guidelines and any transaction proved to be fraudulent due to non-adherence of security guidelines leading to cloning of tags, will be reviewed and compensated by IHMCL/NHAI on case to case basis. IHMCL/NHAI will create separate funds to compensate such fraudulent transactions, referred as “NHAI/IHMCL compensation fund”.

Any transaction initiated from unsigned NETC tags will not be compensated from the “NHAI/IHMCL compensation fund” [effective once the signature validation process is implemented at the toll plaza]

Identified Risk	Risk Analysis	Risk Handling
Hardware/Software Malfunction and Data theft	1. Remote access of hardware 2. Improper working of hardware [Reader/Lane Controller/Toll Plaza Server/AVC/CCTV Camera] 3. Data loss in event of malfunction or mishap 4. Ensure correct authentication of tags and securing of public keys	1. **All the servers, computers etc. at the toll plaza must he hardened as per the process outlined in the document. 2. IHMCL/NHAI has provided mandatory guidelines and procedures for operation of NETC Lanes. The toll plaza operator shall adhere to these guidelines. 3. Data backup and disaster management procedures are defined in the document. These

	5. Server Time synchronisation for all the stakeholders	shall be followed to mitigate the risk. 4. **Correct key management procedures as per the document to be followed to mitigate the risk. 5. All the servers and computers at toll plaza which are participating in the NETC program must have time synchronised with the NETC system via Acquiring host.
Network Connectivity	1. Delayed reporting of transaction for processing in NETC system 2. Eavesdropping during data transmission 3. Message integrity and authenticity	1. The toll plaza operator shall ensure the uninterrupted network connectivity so that transactions can be processed within defined TAT. 2. **All the data transfer between toll plaza server and Acquirer host shall be performed in an encrypted channel as per NETC network security guidelines. 3. **All the messages shall be digitally signed considering correct key size as per the NETC security guidelines.
Data backup	1. The transaction data not available for the dispute processing	1. The data backup guidelines must be followed and the data archives must be kept. The transaction data retention period shall be as per RBI guidelines.

**In case the toll plaza systems are not as per the defined security guidelines which leads to fraudulent cloned tag transaction. The liability of such proved fraudulent transactions will be compensated from "NHAI/IHMCL compensation fund" to the appropriate stakeholder.

5.1 Cloned Tag transactions

The transactions are said to be initiated from a cloned tag if

1. Multiple transactions processed for same tag at two different toll plazas in near time.
    a. Time taken by the vehicle to travel from one toll plaza to another is called "Near Time" if the speed at which the distance covered between the toll plazas is greater than 120 km/hr.

Speed = Distance between two different toll plazas / Time taken by vehicle to travel the distance

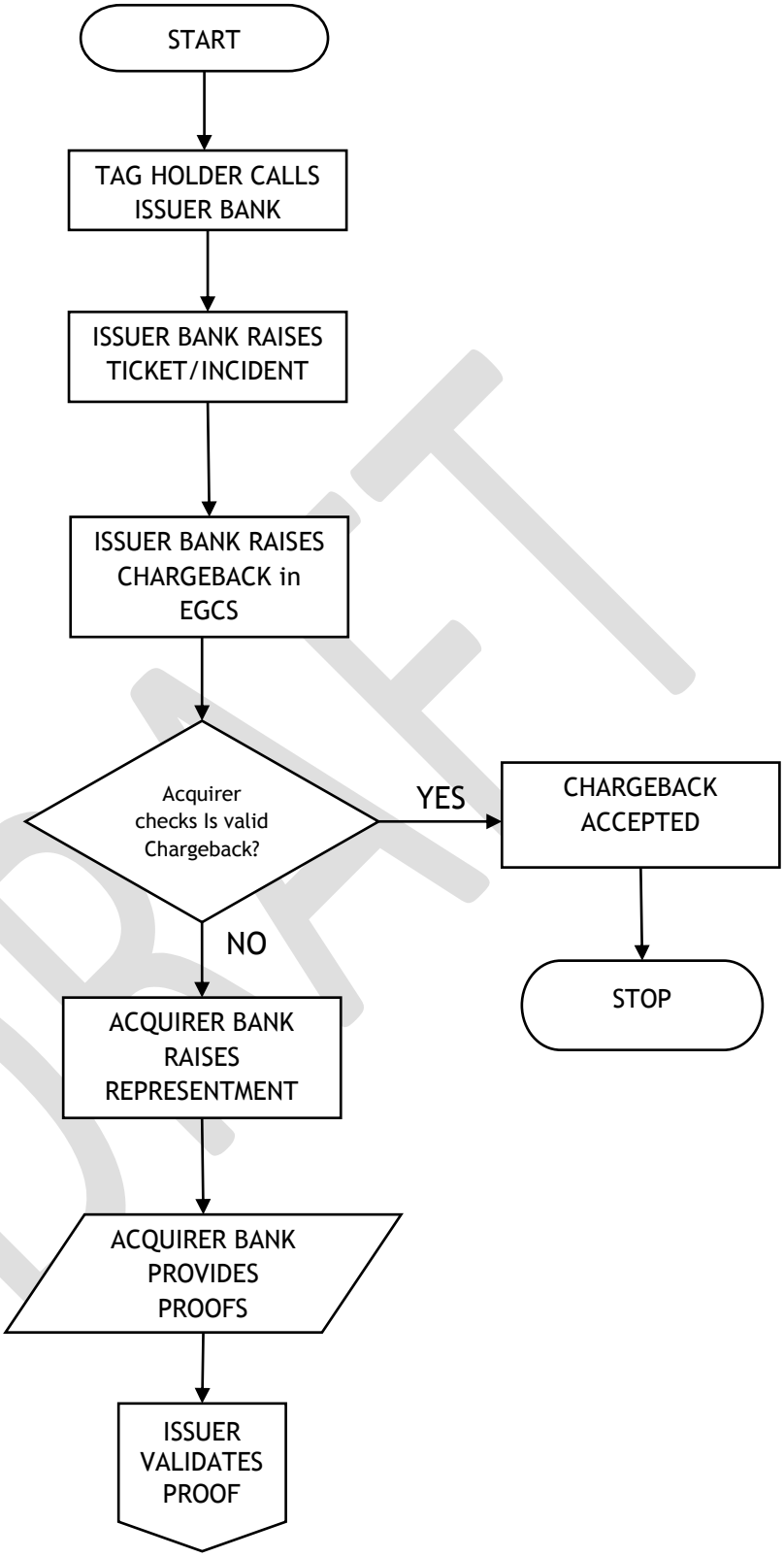
Let d be the distance between two toll plazas and t be the time taken by the vehicle to travel d.

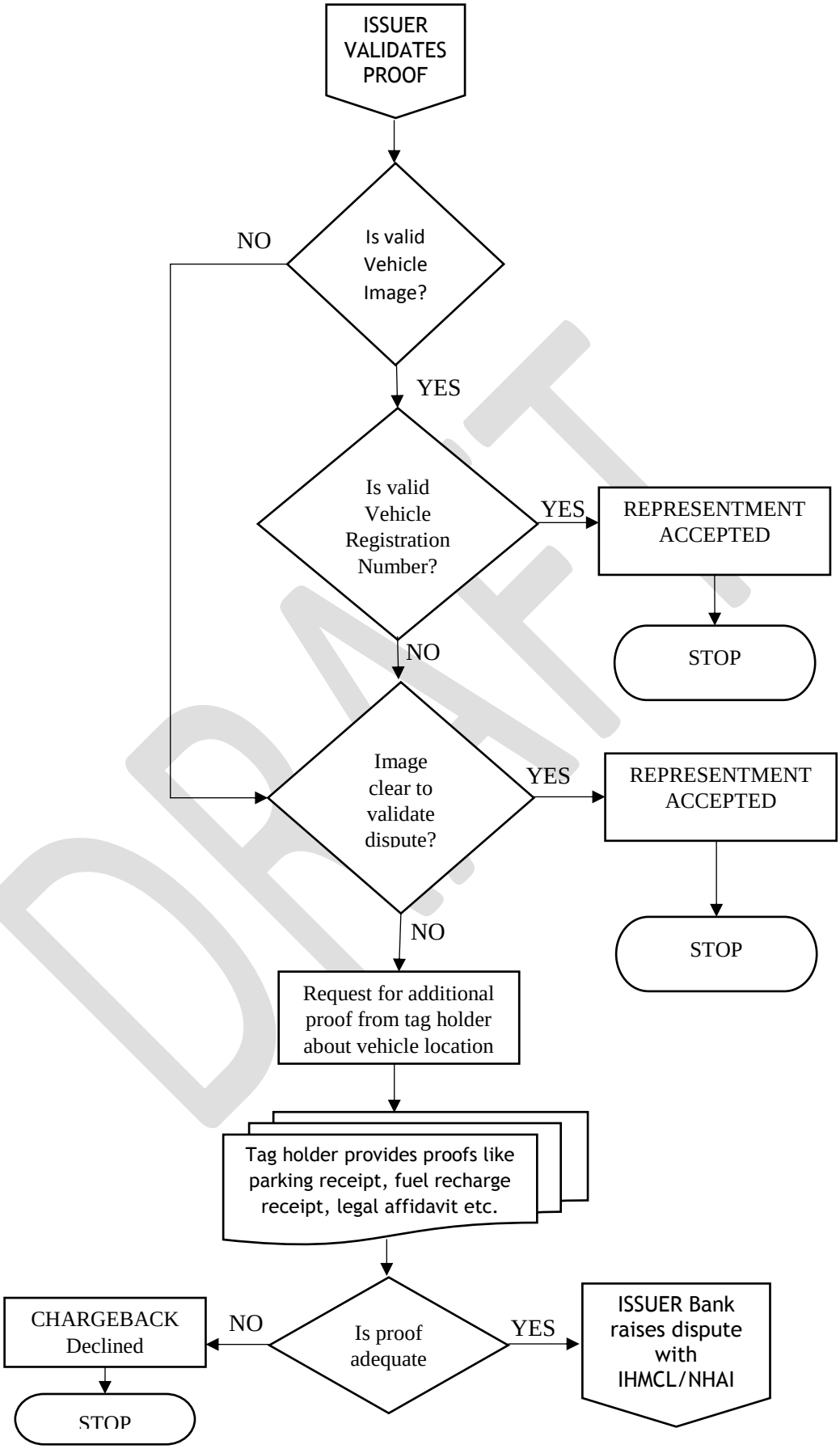
Therefore Speed = d/t;

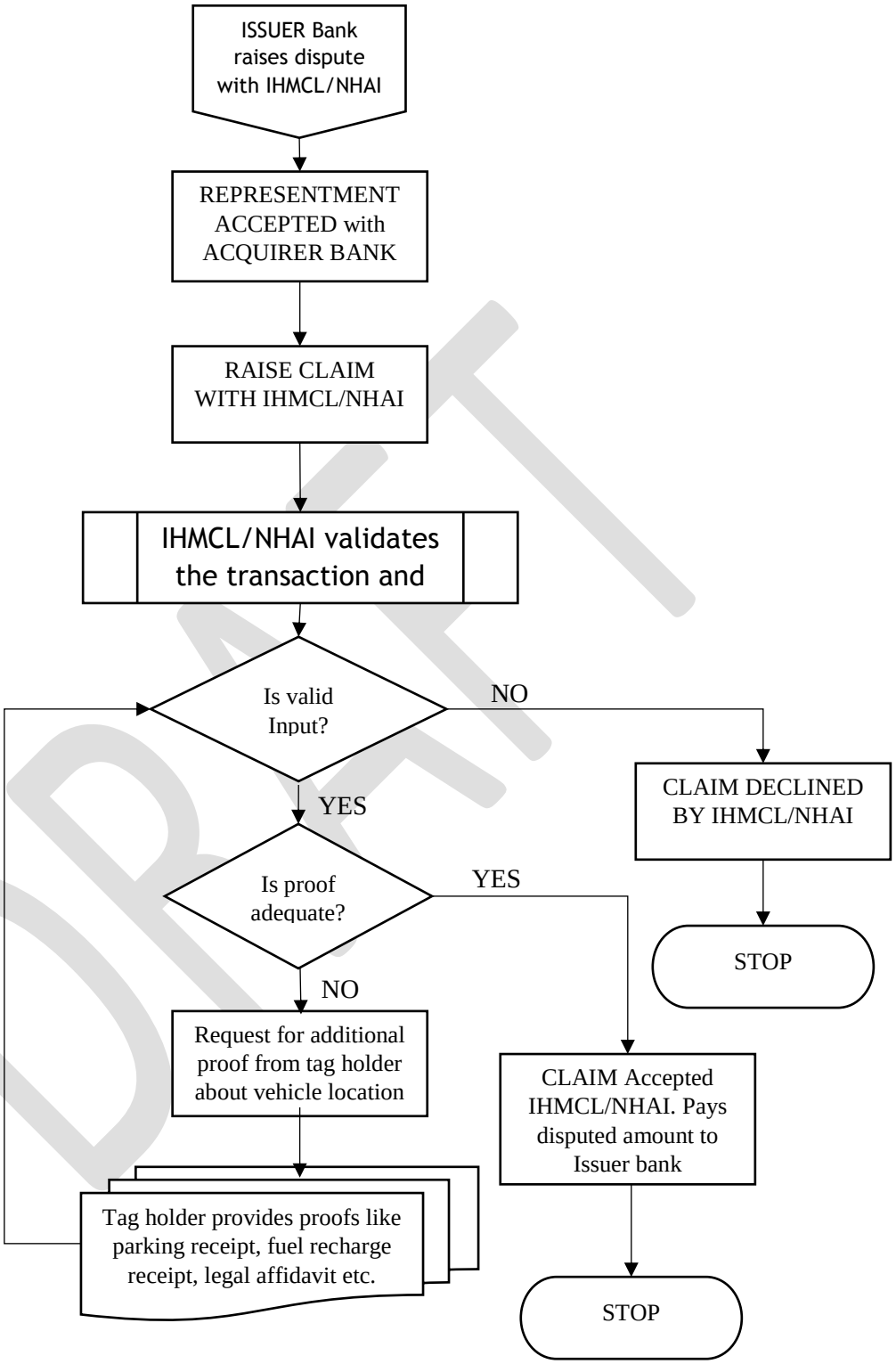
If Speed is greater than 120 km/hr then t is near time.

2. Service not rendered i.e. vehicle is proved to be located at different location as per defined near time rather than the toll plaza at which the transaction has been initiated for the vehicle.
    a. Any government organisations' receipt/documentation which contains the vehicle registration number on the receipt/documentation.
    b. Any video/image of the vehicle with valid timestamp.

To safeguard the risk, IHMCL/NHAI has made provisions for the fraud fund and the claims of these fraudulent transactions will be performed by IHMCL/NHAI on case to case basis as per the process defined in flowchart below.







6.0 Customer support at Toll Plaza

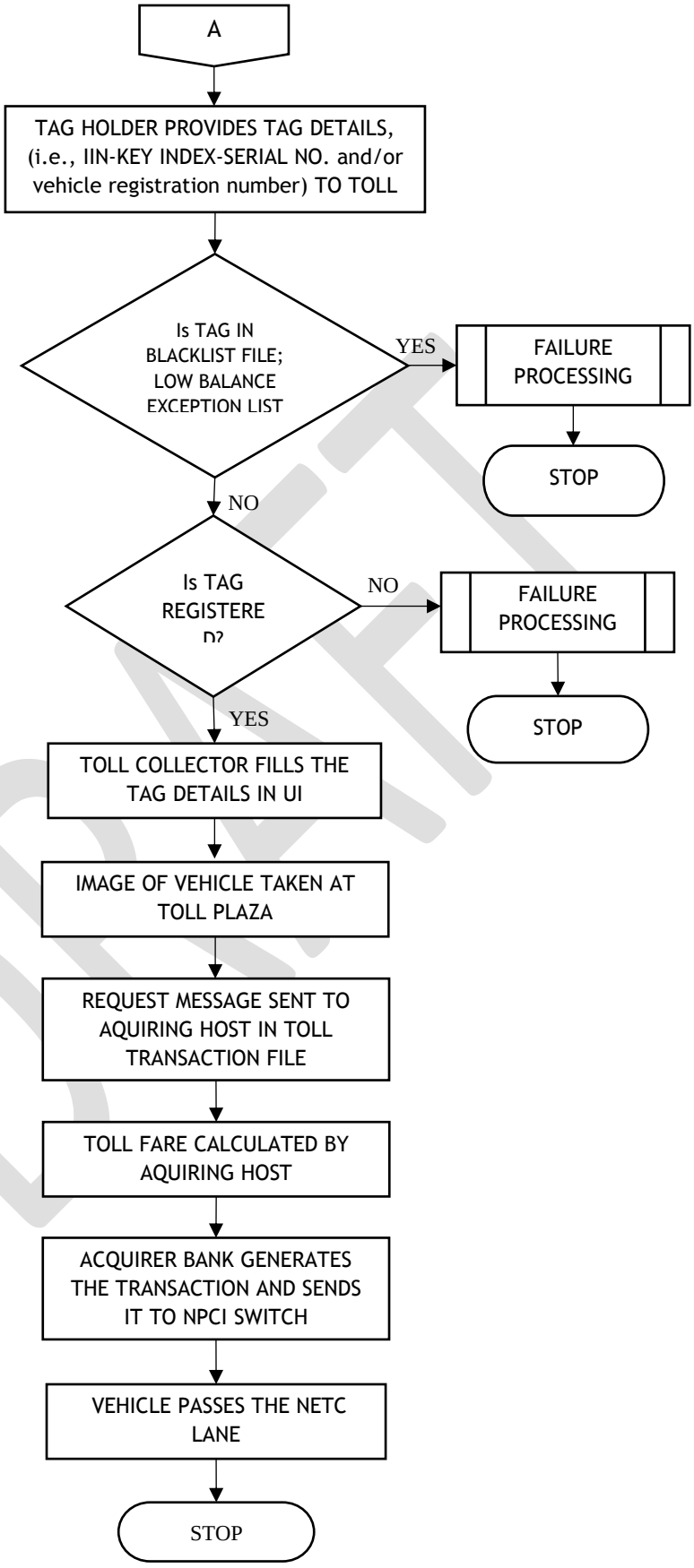
In case the tag holder's tag is not read at the toll plaza and vehicle is not allowed to pass through the NETC lane, the toll plaza operator has to abide to the following process to support the end customer.

6.1 Pre-requisite

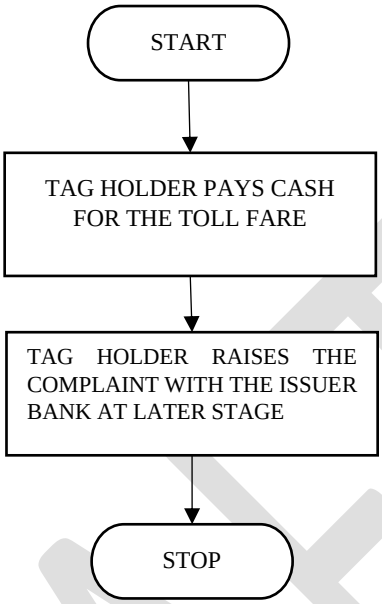
- Tag Holder is registered on NETC mapper with following provisions in place
    - The tag affixed on the windshield of the vehicle issued by a valid issuer bank must be used for the transaction
    - Correct vehicle registration number should be mapped to the tag id on NETC Mapper
- The tag is linked to an active account by the Issuer bank

6.2 Tag Holder Complaint and transaction processing

- Customer complaint can be processed at the toll plaza as per the flowchart described below
- Both Issuer and Acquirer bank should authenticate the root cause of the failure
    - In case the tag was not valid or correctly personalised the issuer bank should replace the tag at no additional cost to tag holder within 48 hours of reporting such issue.
    - In case the acquiring host system is not functioning, the acquiring host should rectify the issues within 7 working days of identification of the issue. In case the toll plaza system has the issue, then the toll plaza operator should rectify the issues within 7 working days of identification of the issue. Acquiring bank should report the same to IHMCL/ NHAI.



FAILURE PROCESSING



7.0 Roles and responsibilities of Toll Plaza Operator

- Toll plaza operator has to enter into an agreement with an acquirer.
- Toll Plaza Operator has to ensure the infrastructure required for providing the necessary transaction information as defined in section 3.2 “NETC Transaction – Payment and Settlement”
- The Toll Plaza Operator has to abide by rules outlined by NHAI and IHMCL to participate in NETC system for toll collection, including that of PG and circulars issued by NPCI.
- The toll plaza operator must ensure the connectivity between the acquiring host and toll plaza server is maintained as per the TAT.
- To send all the transactions which are executed at the lane controller to NETC system i.e. successful, fail, decline etc.
- The toll plaza operator should support primary and secondary systems to ensure multiple connectivity with the acquirer host.
- The toll plaza operator must adhere to the security standards outlined in the “Security and Risk management” section 8.0.
- Toll Plaza Operator must ensure 24 x 7 working of toll plaza server with proper disaster recovery. Toll Plaza Operator must maintain the backup of transactional data, images, audit trails etc. for a period of one year. Ensure the generation of transactional messages as per specified format and transmit the payment transaction details to the acquirer.
- Toll plaza operators should provide evidence [i.e. AVC profile, Vehicle Image etc.] as and when required by acquiring bank.
- The Toll Plaza Operator must ensure that the toll plaza server has the updated exception list and same needs to be updated to lane controller defined SLA in the deed of adherence.
- The toll plaza operator should provide at least one NETC lane in each direction.
- The toll plaza operator should also provide the handheld readers as back up option in case the stationery reader in the NETC lane is not operational.
- The toll plaza operators will have to accept new as well as existing tags issued by the issuer bank for the period of 90 days from the date of project gone live.

Note:
Toll plaza operator may opt for a monitoring application which will notify real time status of all the components involved in the NETC process.
Closed loop circuit: Electromagnetic Induction Circuit may be used at the NETC Lane to identify incoming & outgoing of a vehicle. This may also help the reader in reading the tags on the vehicles in queue.

8.0 Compliance for Toll Plaza Operator

a) Toll Plaza Operator should ensure to transmit securely all the transaction processed records to the acquirer within specified TAT as per the SLA mentioned in Deed of Adherence (DOA).
b) The toll plaza operator should provide minimum one dedicated lane in each direction for NETC.
c) Toll Plaza Operator should have backup portable readers in case the NETC tag is not read by the fixed readers.
d) Maintaining the updated exception list at toll plaza server.
e) Lane controller/toll plaza server should have the ability to detect multiple tag affixed on the same vehicle
f) The toll plaza operator should ensure all the NETC transactions which are received from lane controller should reach to NETC system through its acquirer within
    iv. Fifteen minutes for online transaction processing and 3 days with limited liability as explained in the chapter 3, section 3.2 Failure scenarios.

    (NETC system will decline the transactions which are received after the defined TAT)

g) Toll Plaza Operator should ensure that non tag vehicles are not allowed to pass through the NETC lanes. They should enforce the provision for laying a fine/penalty on such vehicles.
h) Toll plaza operator should provide the required infrastructure for functioning of NETC lane.
i) Toll Plaza Operator should ensure the availability of NETC lane as per the IHMCL/NHAI guidelines.
j) Toll plaza operator must maintain back up of transaction data, images, audit trails and any other information related to NETC transactions for the period of one year.
k) Toll Plaza operator has to abide by the policies and guidelines outlined by the NHAI/IHMCL.
l) Toll plaza operator should ensure the periodic audit of NETC infrastructure.
m) The image captured for NETC transaction should be clear as per the specification.
n) Any fraud detected at toll plaza for NETC transactions should be immediately reported to acquiring bank for blacklisting.
o) If it is found that valid NETC tag is not read at the NETC lane and issuer bank provides evidence of precedence/subsequent transaction then the Toll Plaza has to pay the penalty per instance as decided by IHMCL/NHAI.

IHMCL/NHAI should ensure the compliance of toll plaza operators.

8.1 Audit

NPCI or any designated agency appointed by NPCI may conduct one or more regular or periodic procedural audits of the Toll Plaza Operator and its Third Party or both, at any time and from time to time for the purpose of determining compliance with the NETC guidelines and rules. The Toll Plaza Operator and its Third Party must fully cooperate with and promptly supply NPCI with all information and material upon request.

The Toll Plaza Operator should ensure:-

- The toll plaza operator may conduct their internal audit
- The Toll Plaza Operator should retain audit reports that states when, who, what audited.
- Issue report of all non-compliance to the acquiring bank responsible for area audited.
- The acquiring bank will review regularly to all non-compliance issues raised during both internal & external audits. The acquiring bank should regularly review all non-compliance issues raised during both internal & external audits.

Audit logs should be produced & maintained for all activities, backed up regularly, secured, & retained at least for one year by the Toll Plaza Operator.

9.0 Toll Plaza On-boarding and Off-boarding by Acquirer

NETC transactions on the Toll plazas are sent to Acquirer bank for the purpose to transaction processing. In order to acquirer the toll plaza the banks and the toll plaza operators/concessioners needs to adhere to following process.

The NHAI toll plaza acquiring is categorised into two sections i.e.

a. Acquiring of new toll plaza
b. Re-acquiring of toll plazas

9.1 Pre-requisite for acquiring toll plazas

- Toll plaza must be authorised by NHAI/IHMCL to operate the NETC lane
- Acquiring bank must be certified by NPCI for the NETC program
- Toll plaza must have operational NETC lane as per the guidelines provided the NHAI/IHMCL
- Acquiring bank and Toll plaza operator/concessioner must adhere to CCH ver 2.4 for processing the NETC transactions.
- Toll plaza operator/concessions must provide a consent letter to the acquiring bank for acquiring the toll plaza
- Acquiring bank must self-certify them based on the toll plaza PoC test cases shared by NPCI.
- Provide the toll plaza ids to NPCI for on-boarding of toll plaza on NPCI system

9.2 Acquiring of new toll plazas

Any toll plaza which has not initiated any NETC transaction using FASTag is said to be a new toll plaza i.e. cash lane might be operative but the NETC lane was not operative.

- The acquiring banks must confirm that the NETC lane is operative as per the guidelines of NHAI/IHMCL.
- The connection to the NPCI system and the toll plaza server must be established.
- The acquiring bank must configure the toll fare calculation business rules, AVC mapping and pass fare rules on the acquiring host system.

On successful completion of above activities the acquiring banks can plan the go-live schedule with NPCI and on the agreed date, NETC lane on the plaza can be effectively made to go-live.

9.3 Re- Acquiring of toll plazas

A bank willing to acquire a toll plaza which is already processing transaction from NETC lane through an acquiring bank has to adhere to the process outlined in this sub-section.

- The new acquiring banks must provide written confirmation on the start date. The obligations of the new acquirer will be in effect from the start date specified
- To facilitate the smooth roll over of the acquiring system one hour of downtime will be allowed at the NETC lanes of the toll plaza on an agreed date-time between existing acquirer, new acquirer, NPCI and toll plaza operator. It will be the responsibility of the new acquirer to inform the switch-over to all the stakeholders.
- Toll plaza operator/concessionaire must ensure that all the transactions initiated at the NETC lane before the switchover must be processed by the existing acquiring bank. If toll plaza operator/concessionaire has failed to process the transaction with the existing acquirer, then these unprocessed transactions will not be settled. It is the responsibility of the new acquirer to ensure the compliance and also get a confirmation from toll plaza operator on the same.
- The new acquiring bank must configure the toll fare calculation business rules, AVC mapping and pass fare rules on the acquiring host system.
- The connection to the NPCI system and the toll plaza server must be established by the new acquirer.
- The new acquiring bank must configure the details of existing pass schemes in the new acquiring host.
- The existing acquiring bank must support all the stakeholders in settlement of the disputes raised by tag holder in the settled transaction for the period of 6 months
- The existing acquiring bank must obtain a no objection certificate from the toll plaza operators/ concessionaire and shall settle any pending amount within two months of the termination of the current contract

On successful completion of above activities the acquiring banks can plan the go-live schedule with NPCI and on the agreed date NETC lane on the plaza can be effectively made to go-live.

10.0 Dispute Management process after roll over

Any disputes raised for the transactions processed before the roll over date should be honoured by the previous acquirer and the toll plaza operator as per the TAT defined in the NETC PG.

Examples 1:

Transaction details [Before Rollover]

Toll Plaza ID: 1234
Issuer Bank ID: 111111
Existing Acquirer ID: 222222
New Acquirer ID: 333333
Transaction ID/RRN: NETCNOV00001234
Transaction Amount: Rs. 100/-

CHARGEBACK [After Rollover]
Issuer bank “111111” raised a chargeback of Rs. 25/- on acquirer “222222” for RRN “NETCNOV00001234”

Acquirer “222222” will process the chargeback raised by the issuer with toll plaza “1234” as per guidelines defined NETC PG

Note: The new acquiring bank “333333” will not be party to this disputed transaction. As mentioned above the previous acquirer will be liable to resolve the dispute and have to support the entire dispute lifecycle defined in NETC PG

Examples 2:

Transaction details [Before Rollover]

Toll Plaza ID: 1234
Issuer Bank ID: 111111
Existing Acquirer ID: 222222
New Acquirer ID: 333333
Transaction ID/RRN: NETCNOV00001234
Transaction Amount: Rs. 100/-

DEBIT ADJUSTMENT [After Rollover]

Toll plaza operator has found vehicle class mismatch and is running short of money for transaction id “NETCNOV00001234”. The toll plaza operator raises the debit adjustment with Acquirer bank “222222” of Rs. 25/- The issuer “111111” account gets debited for said debit adjustment transaction.

Note: The new acquiring bank “333333” will not be party to this disputed transaction. As mentioned above the previous acquirer will be liable to resolve the dispute and have to support the entire dispute lifecycle defined in NETC PG

Annexures

Annexure – I: Definitions and Abbreviations

NETC RFID Acronym

- **AVC** Automatic Vehicle Classification
- **AVI** Automatic Vehicle Identification
- **EDI** Electronic Data Interchange
- **EGCS** ETC Global Clearing and Settlement
- **EPC** Electronic Product Code
- **NETC** National Electronic Toll Collection
- **GUI** Graphical User Interface
- **IHMCL** Indian Highway Management Company Limited
- **ISO** International Organisation for Standards
- **kbps** kilobits per second – a unit of speed of data communication
- **MHz** Megahertz – a unit of frequency of a signal
- **MIS** Management Information System
- **MOP** Method of Payment
- **NHAI** National Highway Authority of India
- **NPCI** National Payments Corporation of India
- **RBI** Reserve Bank of India.
- **RFID** Radio Frequency Identification
- **RFU** Reserved for Future Use
- **RTGS** Real Time Gross Settlement System.
- **RVR** Reader Verification Result
- **SFTP** Secured File Transfer Protocol.
- **SGF** Settlement Guarantee Fund
- **TID** Transducer ID
- **UHF** Ultra High Frequency

NETC RFID Glossary

A

Active Tag: An RFID tag that uses a transmitter to return information as opposed to reflecting a signal back from the reader as many passive tags do. Most active tags are battery powered, though they may gather energy from other sources.

Acquirer Bank: The bank that processes NETC transactions on behalf of Toll plaza Operator.

Agile Reader: An RFID reader that reads tags operating at different frequencies or using different methods of communication between RFID tag and reader.

Antenna: The conductive element to send and receive tag data.

B

Backscatter: RFID tags using backscatter technology reflect radio waves at the same carrier frequency back to the tag reader, using modulation to transmit the data.

C

Circular-Polarized Antenna: A UHF reader antenna that produces radio waves in a circular pattern. As the waves move in a circular pattern, they have a better chance of being received, though circular polarized antennas have a shorter read range than linear-polarized antennas.

Commissioning: The process of writing a serial number by the manufacturer on to a tag and associating that number with the tagged product in a database.

Compliance Label: A label that indicates conformance to industry standards for data content and format.

Concentrator: A device that communicates with several RFID readers for the purpose of gathering data, which it then filters and passes on the information to a host computer.

D

Data Transfer Rate: Number of characters that can be transferred from an RFID tag to a reader over a specified time. Baud rate defines how quickly readers can read information on an RFID tag, and is different from read rate, which refers to how many tags can be read over a specified time.

Dead Tag: An RFID tag that cannot be read by a reader.

Documents as proof in dispute: NETC electronic logs (generated by the Toll Plaza Server, Acquirer Host, Issuer Host, Mapper etc.) for the disputed transaction uploaded in the form of scanned file or image.

Digital Signature: A digital signature is mathematical scheme for demonstrating the authenticity of digital message or documents. A valid digital signature gives the recipient reason to believe that the digital message was created by the known sender and the sender cannot deny of having sent the message. Also the integrity of the message is ensured i.e. message is not altered in the transit.

Dumb Reader: A tag reader with limited computing power that converts radio waves from a tag into a binary number, passing it to a host computer with little or no filtering.

E

ETC Global Clearing and Settlement (EGCS): When an NETC Tag owner uses his tag on the toll booths, the acquiring institution reimburses the Toll Plaza operator for the successful transaction. The acquiring institution then settles the transaction related funds with the RFID Tag issuing banks by submitting the transaction to NPCI. The NETC transaction would be done through RFID technology. The movement of transaction data from acquiring institution to NPCI and from NPCI to issuing institution and vice versa is called Clearing. The movement of funds between Acquiring Bank, Issuer Bank and NPCI for the day is called Settlement. The process of clearing & settlement between member banks would be handled by EGCS System.

Electronic Product Code: A serial number created by the Auto-ID Centre that will complement barcodes. The EPC identifies the manufacturer, product category and individual item.

Encryption: Altering data so that it cannot be read by those for whom it is not intended. In RFID systems encryption is used to protect stored information or to prevent the interception of communications between RFID tag and reader.

EPC Generation 2: The standard ratified by EPC Global for the air-interface protocol for the second generation of EPC technologies.

EPC Global: A non-profit organization set up by the Uniform Code Council and EAN International, the two organizations that maintain barcode standards, to commercialize EPC technology.

F

Factory Programming: Some read-only RFID tags must have their identification number written into the microchip at the time of manufacture. This is known as factory programming. That data cannot be overwritten or modified.

False Read: When a tag reader reports the presence of an RFID tag that does not exist. Also called a phantom transaction or false read.

Fixed Reader: An RFID interrogator mounted to a permanent or non-mobile structure enabling users to read RFID tag numbers attached to movable items.

H

Harvesting: The way passive RFID tags gather energy from RFID reader antennas.

I

Interoperability: The ability for RFID tags and readers from different vendors to communicate. Interoperability testing assesses the ability of different systems to exchange information and use the data that has been exchanged.

Interrogation Zone: Area in which a tag reader can provide enough energy to power up a passive tag and receive back information. Also known as the read field or reader field. RFID tags located outside the interrogation zone do not receive enough energy from the reader to produce a signal.

ISO 10536: International standard for proximity cards.

ISO 14443: International standards for proximity smart cards.

ISO 15693: International standard for vicinity smart cards.

ISO 18000: International standards for the air interface protocol used in RFID systems for tagging goods in a supply chain.

ISO 7816: International standards covering smart cards physical and electrical characteristics and communication protocols.

ISO/IEC 24730: Standard that defines two air interface protocols and a single application program interface (API) for real-time locating systems (RTLS) for asset management. It is intended to allow for compatibility and encourages interoperability of products for the growing RTLS market.

Isotropic: Isotropic antennas radiate energy equally in all directions.

Issuer Bank: The bank which issues RFID Tags to the customer.

L

Linear-Polarized Antenna: An antenna designed to focus radio energy from the reader in one orientation or polarity, thereby increasing the read distance and providing increased penetration through dense materials. In order to be read accurately, RFID tags designed to be used with a linear polarized antenna must be aligned with the reader antenna.

M

Member Banks: All the banks participating in NETC network either as Issuer or Acquirer.

N

NPCI: It is an umbrella organization for all retail payments system in India. It was set up with the guidance and support of the Reserve Bank of India (RBI) and Indian Banks' Association (IBA).

Near-Field Communication (NFC): RFID tags closer than one full wavelength away from the tag reader are said to be "near field," while those more than one full wavelength away are "far field." Near field signals decay as the cube of the distance from the antenna, while far field signals decay as the square of distance. Passive RFID tags that use far field communications (UHF and microwave systems) have a longer range than tags using near field communications (low- and high-frequency systems).

Nominal Range: The read range at which at which an RFID tag can reliably be read.

Null Spot: An area in the RFID tag reader field that does not receive radio waves.

O

One-Time Programmable Tag: It is the RFID tag memory that can be programmed once and is then write-protected. After the memory is written to it is considered read-only memory.

Orientation: Position of a reader antenna in reference to a tag antenna. In UHF systems reader antennas can be linear- or circular-polarized. When using a linear polarized antenna the tag and reader must be in alignment to achieve the maximal reading distance.

P

Passive Tag: RFID tags lacking a power source and transmitter are powered by radio waves from the reader that are converted by the tag antenna into current.

Portal: An RFID interrogator gateway where tagged items are moved through a portal reader to collect RFID tag data.

Programming a Tag: The act of writing data to an RFID tag. When a serial number is first written to a tag it is called "commissioning".

R

Radio Frequency Identification (RFID): A technique for identifying unique items using radio waves. Typically a tag reader communicates with an RFID tag, which contains digital information.

Read: The process of retrieving RFID tag data by broadcasting radio waves at the tag and converting the waves the tag returns to the tag reader into data.

Reader: A reader is a device installed at the toll plaza which reads the tag data and signature for tag authentication.

Read Range: The distance from which tag readers can accurately and reliably communicate with RFID tags. Active tags have longer read ranges than passive tags because they have their own power source for signal transmission. In passive tags the read range is controlled by frequency, reader output power, antenna design, and the method used to power up the tag.

Read Rate: A specification describing how many tags can be read within a given period or the number of times a single tag can be read within a given period. Alternatively, the maximum rate that data can be read from a tag expressed in bits or bytes per second.

Read-Only: RFID tag memory that cannot be altered unless the microchip is reprogrammed.

Reader Field: The area a tag reader can cover. Tags outside the field do not receive radio waves emitted by the tag reader and cannot be read.

Reader Talks First: A passive UHF reader initially communicates with RFID tags in its read field by sending energy to the tags. The tags do not transmit until the reader requests them to do so.

Reverse Channel: The path energy travels from the RFID tag to the interrogator, or reader. It is also sometimes called the back channel.

RFID Tag: A microchip attached to an antenna and packaged so that it can be attached to an object. Programmed with a unique serial number, an RFID tag receives signals from a tag reader and sends signals back to the reader. RFID tags can be active, passive or semi-passive.

S

Settlement Agency: The bank or Financial Institution, which has been appointed by NPCI for settlement of NETC transaction. Currently, NPCI will itself perform settlement through RTGS. All member banks are expected to submit RTGS mandate with RBI authorising NPCI to debit or credit their Deposit Account Department (DAD) account with the settlement amount.

Settlement Account: It means the Deposit Account Department (DAD) account of the member bank at the Reserve Bank of India (RBI) that will be utilized to settle payments for all NETC transactions.

Settlement Period: It is the period between two NETC Switch cutovers. Cutover will be initiated at 23.00 each day.

Settlement Guarantee Fund (SGF): Funds contributed by banks to guarantee settlement of Payments made on their behalf by other banks.

Skimming: Reading an RFID tag covertly.

Smart Reader: A reader that can filter data, execute commands and perform functions similar to a personal computer.

Synchronization: Process of controlling the timing of tag readers that are close together so they don't interfere with one another during the read process.

T

Tag: A microchip attached to an antenna and packaged so that it can be attached to an object. The RFID tag receives signals from a tag reader and sends signals back to the reader. RFID tags can be active, passive or semi-passive. Passive RFID Tag would be used in NETC implementation in India.

Tag Owner: Customers who purchase the tag from the Issuing Bank to affix it on their vehicles.

Tag Talks First: How tag readers in a passive UHF system identify tags in their field. When RFID tags enter the reader's field they immediately announce their presence by reflecting back a signal, which is useful in an environment where items are moving quickly.

Toll plaza operator: A person or an entity who collects or registers tolls.

Transceiver (Reader): A device that both transmits and receives radio waves.

Transponder: RFID tags are sometimes referred as transponders because they can be activated when they receive a predetermined signal. Unique Identifier is the unique serial number that identifies a transponder

U

Ultra-High Frequency (UHF): The frequency band from 300 MHz to 3 GHz. RFID tags typically operate between 866 MHz to 960 MHz so they can send information faster and farther than high- and low frequency tags

V

Validation: A process by which a reader verifies the RFID Tag affixed on the vehicle.

Annexure – II: Application for Membership of Electronic Toll Collection (NETC)
(On the Letter Head of the Applicant Member)

The Chief Executive Officer

National Payments Corporation of India

1001A, The Capital, B Wing, 10th Floor,

Bandra Kurla Complex,

Bandra (E), Mumbai - 400051

Dear Sir,

Subject: Membership for Electronic Toll Collection (NETC)

We would like to participate in the Electronic Toll Collection (NETC) and agree to abide by the Terms & Conditions stipulated therefor.

Kindly take a note of details provided below:

Name of the Organization	
Location of the Acquirer Server	
NETC Contact Person Name	
Telephone Number	
Fax Number	
Email Id	
Details (Hardware, Software & Network)	

The above application is being made under the Authority of our Board and certified true copy of the Board Resolution should be submitted once we receive an In Principle approval from NPCI.

Authorised signature(s)

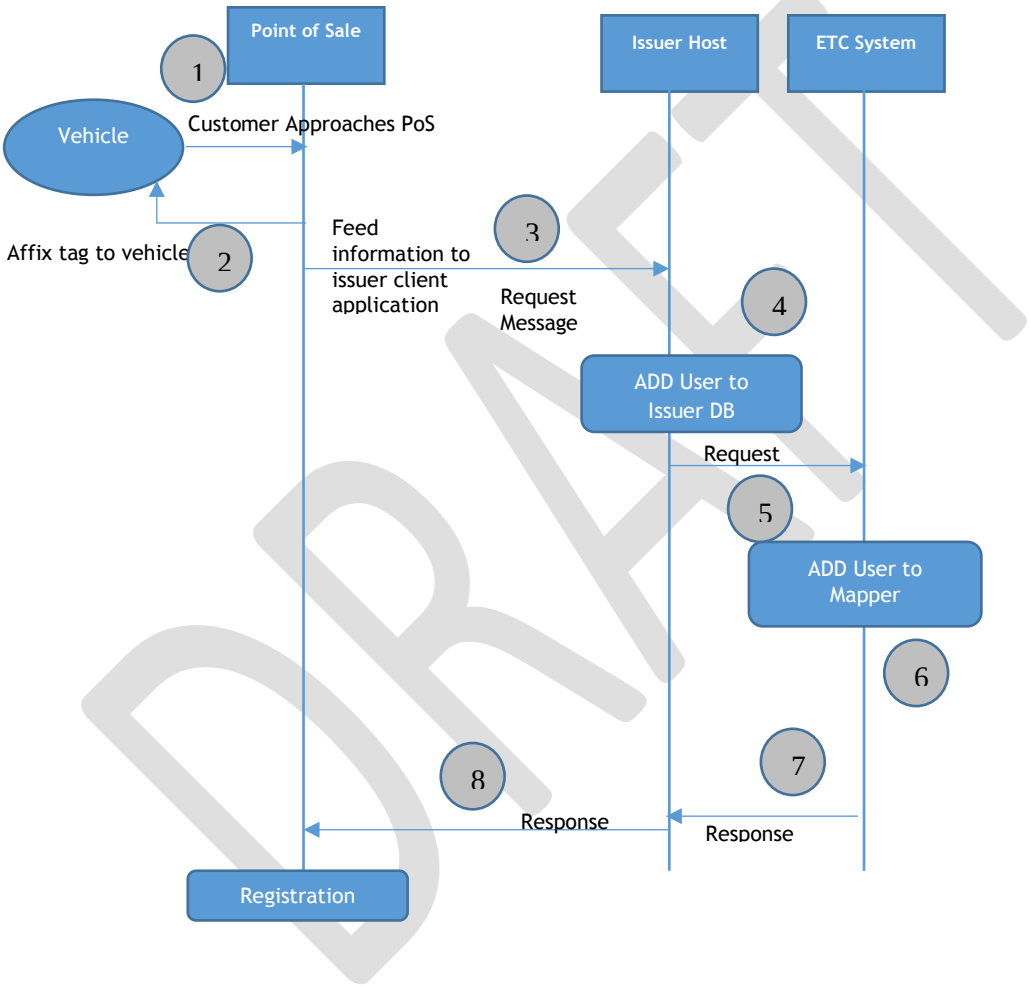
Applicant Member's Name:

NFS Member since:

Annexure – III – List of Member banks for NETC

Annexure – IV: NETC Transaction Flows

Section – 1: Registration Flow



The vehicle owner approaches the issuer bank POS with the required documents. Post document verification, tag and vehicle details will be registered in Issuer Host database and subsequently to the NETC System. If required the tag can be added in the exception list, thus completing the process.

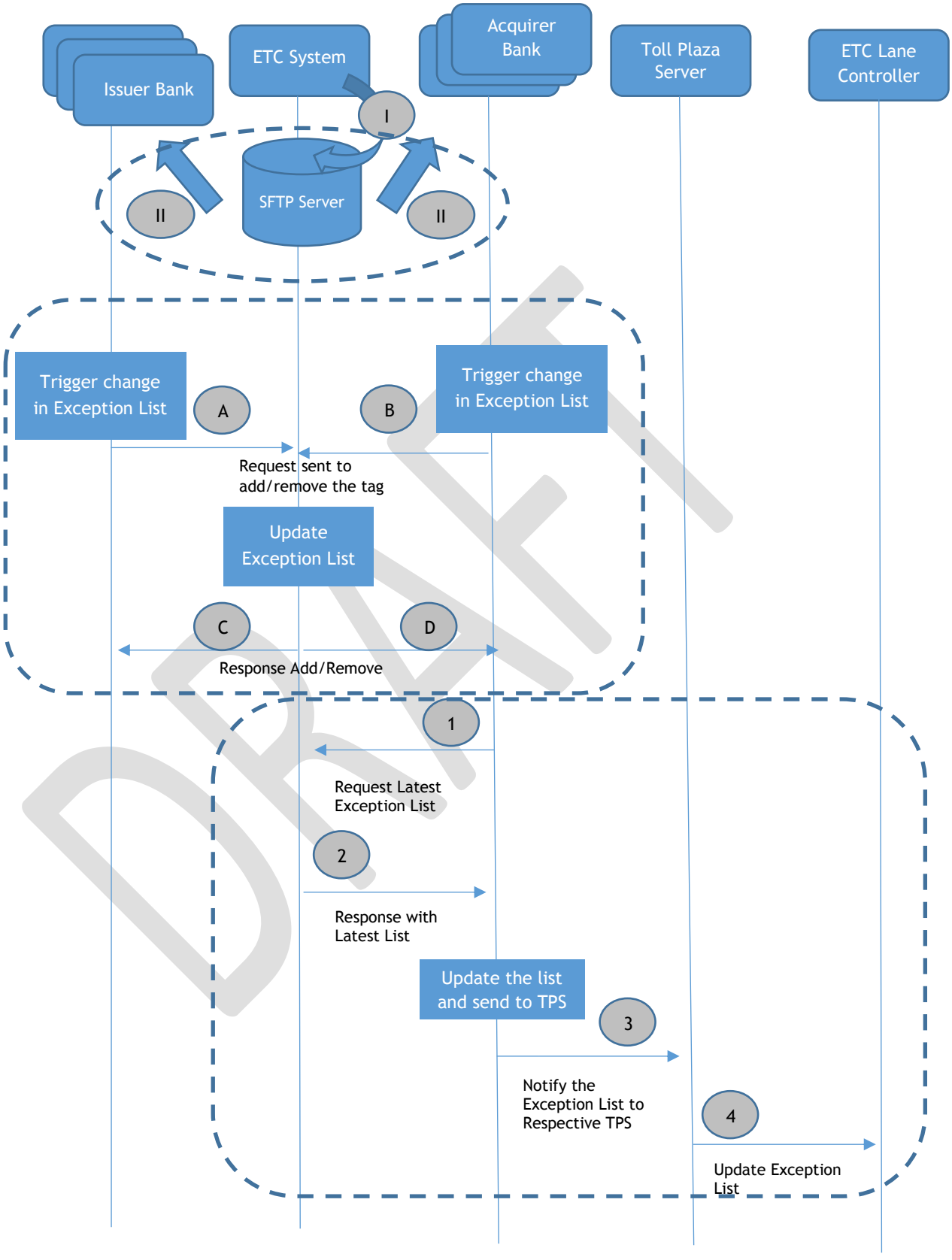
Registration Transaction Flow

1) For purpose of registration, a vehicle owner can approach Point of Sale and collect the tag by submitting the required documents to issuer bank (or the point of sales).
2) After collecting the documents, vehicle images and security deposit, tag issuer will verify the documents (Vehicle Registration Number, Driving License, and other IDs specified by issuing banks) and affix the tag to the windshield of the vehicle as per the specification.
3) Tag issuer will feed the information of the vehicle owner (Vehicle Info., Owner Info., Tag Info., Bank Info., and Exception Type) to issuer bank's client application which is linked to the Issuer Host. The Point of Sale (Client Application) will initiate a request to add the vehicle owner details to the Issuer Database. The Point of Sale unit checks if the tag needs to be added in the Exception List (depending on various factors like Vehicle is of "*Exempted Vehicle Class*", etc.).
4) The Issuer bank system adds all the User details provided by the tag issuer client application in their database and map the Tag ID to one of the customer account. [Savings/Current / Prepaid account etc.]
5) The issuer bank host will send the Tag ID as request message to add the tag and vehicle details to the NETC Mapper.
6) NETC Mapper after receiving Tag ID, adds all the details provided by the Issuer bank host in the Mapper's database and update the Exception list if required.
7) NETC Mapper then sends acknowledgement as response message to Issuer host that tag has been added successfully in the mapper database.
8) After receiving acknowledgement message from the NETC mapper, the Issuer Host forwards the response message to the Client Application at the Point of Sale.

Thus the registration process is complete.

Note: - KYC needs to be performed as per the RBI guidelines at the issuer end for the mapped account.

Section – 2: Exception List Handling



The various types of exception lists are stored in the NETC Mapper. The exception list can be updated by Issuing/Acquiring bank. The above diagram describes process of addition and removal of tag id in the exception list.

Process for addition and removal of tag id in exception list are as follows:

A) The issuer host will initiate a request to the NETC system to add a tag in the exception list whenever there is low balance in the account of tag holder. Similarly the issuer will initiate the request of removal of tag id from the exception list whenever the tag holder funds the bank account. In the similar way the issuer host can request the addition or deletion of tag ids in blacklist.

B) The acquirer host will initiate a request to the NETC system to update and modify the blacklisted tags.

C) The NETC system will add/remove the Tag id's in the requested exception list & send the response to the issuer host.

D) The NETC system will add/remove the Tag id's in the requested exception list & send the response to the acquirer host.

I) NETC system will update the exception list files on SFTP server at defined intervals.

II) The member banks can also download the exception lists files using the secure file transfer protocol.

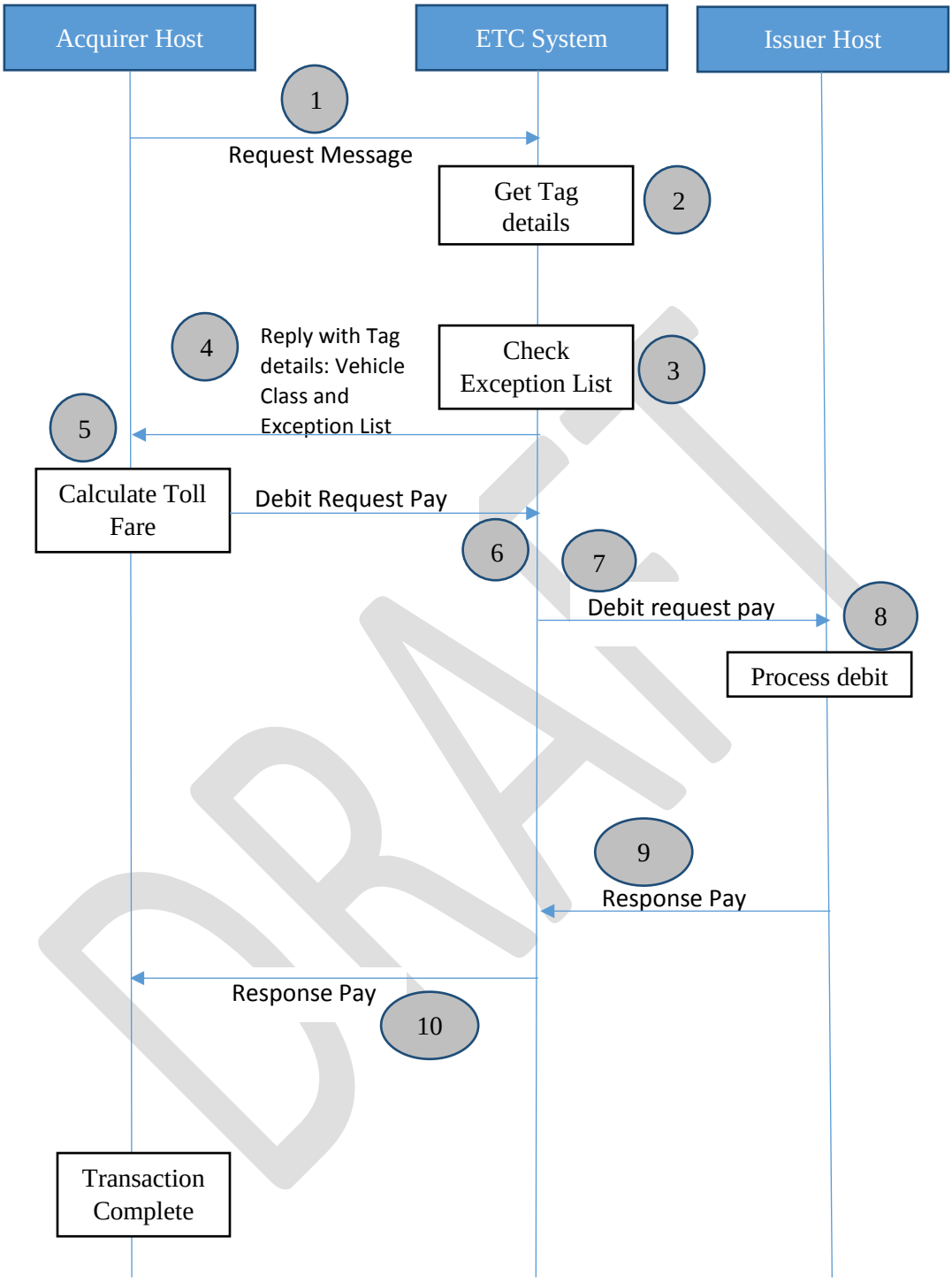
1) The acquirer banks' host will request for the latest exception list from the NETC system at defined intervals.

2) The NETC system will respond with the latest exception list to the acquirer banks for updation.

3) The Acquirer bank will update the exception list on acquiring host and send it to respective toll plaza server.

4) The toll plaza server would further update the exception list in the lane controller installed at toll plaza.

Section – 3: Query Tag Status



In process of Query tag status, The Acquirer Bank Host will send the tag id to the NETC mapper to check if the tag is registered by issuing bank in the Mapper. Acquirer Host system will calculate the toll fare based on the vehicle class returned on this command.

Process flow of Query tag vehicle status:

1) Acquirer Host posts a query request to get the Tag and bank details registered onto the Mapper.
2) The Mapper performs the command processing for GET_TAG_DETAILS i.e. verifies if the Tag ID is present in the Mapper database.
3) Mapper also check if the tag ID is present in one or more exception list.
4) If successful, Mapper will reply to the acquiring bank host with the tag details, bank details, Vehicle Class and related Exception Type. In case there is a mismatch of exception list at Acquiring Bank's end, then the exception list available from the mapper will supersede.
5) The Acquirer Host system will then calculate the toll fare based on the vehicle class returned from the Mapper.
6) Acquirer Host system will send the debit request to NETC Switch to process the payment using the RequestPay command.
7) NETC Switch will then request the Issuer bank host to debit the customer's account linked to NETC tag id.
7) Issuer Host will process the debit request by deducting requested toll fare from the linked customer account.
8) On successful debit an acknowledgement is sent back to the NETC Switch. In case the debit fails, the Issuer Host should keep the debit request in the queue for future processing i.e. NETC System will recognise the debit request received by Issuing host as successful.
9) The NETC switch further send the acknowledgement to the Acquirer, thus concluding the transaction.

Annexure – V: Letter of Authority

[On Non Judicial Stamp Paper/Franking/e-Stamping of value of Rupees Five Hundred Only)

To,

The Regional Director,
Reserve Bank of India
Mumbai

Dear Sir,
Our Current A/c No._____and Settlement A/c No_____ with the Reserve Bank of India (RBI) Mumbai.

1. National Payments Corporation of India (herein referred to as the NPCI), has admitted us as member of the National Electronic Toll Collection (NETC), which is an arrangement through which switching and processing of electronic transactions over their network would be allowed.
2. Accordingly, we hereby authorize and request you that as and when a settlement instructions is received by you from the NPCI relating to our transactions in the said NETC Network, you may, without reference to us, debit/credit our above Current Account/s with such sums as may be specified by the NPCI in its settlement instructions, notwithstanding any dispute that may exist or arise between us and the NPCI.
3. The settlement instruction for debiting/crediting our Current Account/s with you would be conclusive proof of debit/credit of our Current Account/s relating to our transaction in the said NETC Network as referred to in point 2 above and it would not be necessary for us to admit and /or confirm the fact of such debit/credit by means of separate advice to you and/or NPCI.
4. We hereby further unconditionally and irrevocably undertake to arrange for the requisite funds in our Current Account with Deposit Account Department, Reserve Bank of India, Mumbai to meet the demand of NPCI. We would be bound by this undertaking and would be liable therefor under all circumstances.
5. The mandate and undertaking would not be revoked by us except with the prior concurrence of both the NPCI and the Reserve Bank of India (the RBI) and you may act upon this mandate till such time this authority is revoked in writing and all actions taken by RBI in pursuance of this mandate would be absolutely binding on us, without any risk or responsibility to the RBI.

Thanking You,
Yours faithfully,
For and on behalf of the Applicant

Annexure – VI: NON-DISCLOSURE AGREEMENT

NON-DISCLOSURE AGREEMENT

This Agreement is made and entered on this -------- day of ----------, 2011 ("**Effective Date**") between

NATIONAL PAYMENTS CORPORATION OF INDIA, a company incorporated in India under Section 25 of the Companies Act, 1956 and having its registered office at **1001A, The Capital, B Wing, 10th Floor, Bandra-Kurla Complex, Bandra (East) Mumbai-400 051** (Hereinafter referred to as "NPCI", which expression would mean and include unless repugnant to the context, its successors and permitted assigns);

AND

_____, a company registered in _____and having its registered office at _____ (Hereinafter referred to as "-------", which expression would mean and include unless repugnant to the context, its successors and permitted assigns).

The term "Disclosing Party" refers to the party disclosing the confidential information to the other party of this Agreement and the term "Receiving Party" means the party to this Agreement which is receiving the confidential information from the Disclosing Party.

NPCI and ----- would hereinafter be jointly referred to as the "Parties" and individually as a "Party".

NOW THEREFORE

In consideration of the mutual protection of information herein by the parties hereto and such additional promises and understandings as are hereinafter set forth, the parties agree as follows:

Article 1: PURPOSE

The purpose of this Agreement is to maintain in confidence the various Confidential Information, which is provided between NPCI and ------ to perform the considerations (hereinafter called "Purpose") set forth in below:

To protect the confidential information in the Electronic Toll Collection (NETC) network service, NFS, incidental operations and any other business operation with NPCI, from disclosure to third parties.

Article 2: DEFINITION

For purposes of this Agreement, "**Confidential Information**" means the terms and conditions, and with respect to either party, any and all information in written, representational, electronic, verbal or other form relating directly or indirectly to the Purpose (including, but not limited to, information identified as being proprietary and/or confidential or pertaining to, pricing, marketing plans or strategy, volumes, services rendered, customers and suppliers lists, financial or technical or service matters or data, employee/agent/ consultant/officer/director related personal or sensitive data and any information which might reasonably be presumed to be proprietary or confidential in nature) excluding any such information which (i) is known to the public (through no act or omission of the Receiving Party in violation of this Agreement); (ii) is lawfully acquired by the Receiving Party from an independent source having no obligation to maintain the confidentiality of such information; (iii) was known to the Receiving Party prior to its disclosure under this Agreement; (iv) was or is independently developed by the Receiving Party without breach of this Agreement; or (v) is required to be disclosed by governmental or judicial order, in which case Receiving Party would give the Disclosing Party prompt written notice, where possible, and use reasonable efforts to ensure that such disclosure is accorded confidential treatment and also to enable the Disclosing Party to seek a protective order or other appropriate remedy at Disclosing Party's sole costs. Confidential Information disclosed orally would only be considered Confidential Information if: (i) identified as confidential, proprietary or the like at the time of disclosure, and (ii) confirmed in writing within Seven (7) days of disclosure.

Article 3: NO LICENSES

This Agreement does not obligate either party to disclose any particular proprietary information; to purchase, sell, license, transfer, or otherwise dispose of any technology, services, or products; or to enter into any other form of business, contract or arrangement. Furthermore, nothing contained hereunder would be construed as creating, conveying, transferring, granting or conferring by one party on the other party any rights, license or authority in or to the Confidential Information disclosed under this Agreement.

Article 4: DISCLOSURE

1. Receiving Party agrees and undertakes that it would not, without first obtaining the written consent of the Disclosing Party, disclose or make available to any person, reproduce or transmit in any manner, or use (directly or indirectly) for its own benefit or the benefit of others, any Confidential Information save and except both parties may disclose any Confidential

Information to their Affiliates, directors, officers, employees or advisors of their own or of Affiliates on a "need to know" basis to enable them to evaluate such Confidential Information in connection with the negotiation of the possible business relationship; provided that such persons have been informed of, and agree to be bound by obligations which are at least as strict as the recipient's obligations hereunder. For the purpose of this Agreement, Affiliates would mean, with respect to any party, any other person directly or indirectly Controlling, Controlled by, or under direct or indirect common Control with, such party. "Control", "Controlled" or "Controlling" would mean, with respect to any person, any circumstance in which such person is controlled by another person by virtue of the latter person controlling the composition of the Board of Directors or owning the largest or controlling percentage of the voting securities of such person or by way of contractual relationship or otherwise.

2. The Receiving Party would use the same degree of care and protection to protect the Confidential Information received by it from the Disclosing Party as it uses to protect its own Confidential Information of a like nature, and in no event such degree of care and protection would be of less than a reasonable degree of care.

3. The Disclosing Party would not be in any way responsible for any decisions or commitments made by Receiving Party in relying on the Disclosing Party's Confidential Information.

Article 5: RETURN OR DESTRUCTION OF CONFIDENTIAL INFORMATION

The parties agree that upon termination/expiry of this Agreement or at any time during its currency, at the request of the Disclosing Party, the Receiving Party would promptly deliver to the Disclosing Party the Confidential Information and copies thereof in its possession or under its direct or indirect control, and would destroy all memoranda, notes and other writings prepared by the Receiving Party or its Affiliates or directors, officers, employees or advisors based on the Confidential Information and promptly certify such destruction.

Article 6: INDEPENDENT DEVELOPMENT AND RESIDUALS

Both parties acknowledge that the Confidential Information coming to the knowledge of the other may relate to and/or have implications regarding the future strategies, plans, business activities, methods, processes and or information of the parties, which afford them certain competitive and strategic advantage. Accordingly, nothing in this Agreement will prohibit the Receiving Party from developing or having developed for it products, concepts, systems or techniques that are similar to or compete with the products, concepts, systems or techniques

contemplated by or embodied in the Confidential Information provided that the Receiving Party does not violate any of its obligations under this Agreement in connection with such development.

Article 7: INJUNCTIVE RELIEF

The parties hereto acknowledge and agree that in the event of a breach or threatened breach by the other of the provisions of this Agreement, the party not in breach will have no adequate remedy in money or damages and accordingly the party not in breach would be entitled to injunctive relief against such breach or threatened breach by the party in breach.

Article 8: NON-WAIVER

No failure or delay by either party in exercising or enforcing any right, remedy or power hereunder would operate as a waiver thereof, nor would any single or partial exercise or enforcement of any right, remedy or power preclude any further exercise or enforcement thereof or the exercise of enforcement of any other right, remedy or power.

Article 9: JURISDICTION

If any dispute arises between the parties hereto during the subsistence or thereafter, in connection with or arising out of this Agreement, the dispute would be referred to arbitration under the Indian Arbitration and Conciliation Act, 1996 by a sole arbitrator mutually agreed upon. In the absence of consensus about the single arbitrator, the dispute may be referred to joint arbitrators, one to be nominated by each party and the said arbitrators would nominate a presiding arbitrator, before commencing the arbitration proceedings. Arbitration would be held in Mumbai, India. The proceedings of arbitration would be in the English language. The arbitrator's award would be final and binding on the parties.

Article 10: GOVERNING LAW

This Agreement would be governed exclusively by the laws of India and jurisdiction would be vested exclusively in the courts at Mumbai in India.

Article 11: NON-ASSIGNMENT

This Agreement would not be amended, modified, assigned or transferred by either party without the prior written consent of the other party.

Article 12: TERM

This Agreement would remain valid from the date last written below until the termination or expiry of this Agreement. The obligations of each Party hereunder

will continue and be binding irrespective of whether the termination / expiry of the Agreement for a period of five years after the termination / expiry of this Agreement.

Article 13: INTELLECTUAL PROPERTY RIGHTS

Neither Party will use or permit the use of the other Party's names, logos, trademarks or other identifying data, or otherwise discuss or make reference to such other Party or infringe Patent, Copyrights, in any notices to third Parties, any promotional or marketing material or in any press release or other public announcement or advertisement, however characterized, without such other Party's prior written consent.

Article 14: GENERAL

1. Nothing in this Agreement is intended to confer any rights/remedies under or by reason of this Agreement on any third party.
2. This Agreement and the confidentiality obligations of the Parties under this Agreement supersedes all prior discussions and writings with respect to the Confidential Information and constitutes the entire Agreement between the parties with respect to the subject matter hereof. If any term or provision of this Agreement is determined to be illegal, unenforceable, or invalid in whole or in part for any reason, such illegal, unenforceable, or invalid provisions or part(s) thereof would be stricken from this Agreement.
3. Any breach of any provision of this Agreement by a party hereto would not affect the other party's non-disclosure and non-use obligations under this Agreement.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement by their duly authorized representatives as of the Effective Date written above.

NATIONAL PAYMENTS CORPORATION OF INDIA	**TYPE COMPANY NAME**
By:	By:
Name:	Name:
Designation:	Designation:

Annexure – VII: KYC/AML undertaking by members

(Member's Letter Head)

KYC/AML Undertaking By Members

We _____(Name of the member) registered office at _____have agreed to become member -of the NETC Payment System Network sponsored by the National Payments Corporation of India, registered office at 1001A, The Capital, B Wing, 10th Floor, Bandra Kurla Complex, Bandra East, Mumbai 400051 and for that purpose :

We hereby declare and undertake to the NPCI that:

i) Our Organization has an established Know Your Customer (KYC) /Anti Money Laundering process (AML) and that we would comply with all the Reserve Bank of India norms on KYC and AML.

We would offer NETC only to those customers who register their Tag IDs for NETC services and who undergo our KYC / AML verification processes.

Date: Sd…

Place: (Authorized Signatory.)

Annexure- VIII: Guidelines for Dispute Management System in NETC System

Disputes in NETC System

S No.	Action	Reasons	Dispute Category
01	Debit Adjustment	• Toll Fare calculation error • Vehicle class mismatch • Not an Exempted Vehicle	Short funds with Acquirer
02	Credit Adjustment	• Customer account is debited multiple times • Toll Fare calculation error	Excess credit with Acquirer
03	Chargeback	• Services not availed • Duplicate processing single issuer • Duplicate processing multiple issuer • Toll Fare calculation error • Vehicle class mismatch • Illegible/Invalid evidence • Exempted Vehicles	Customer Dispute
	Chargeback	• Fraudulent multiple transactions	Fraud
	Chargeback	• Not NETC tag	Tag Validation Errors
	Chargeback	• Transactions processed or Debit Adjustment raised	Insufficient Funds
04	Re-presentment	• Supporting Documents for Services availed • Supporting Documents for multiple passing • Proof of non-acceptance of chargeback • Proof of Tag ID not present in Exception List • Proof of Toll Fare calculation	Customer Dispute

		• Proof of Vehicle class • Valid & Legible Documents • Proof of not an Exempted Vehicles	
		• Proof of valid transactions	Fraud
		• Proof of successful validation	Tag Validation Errors