



## **NATIONAL CTS – A way forward**

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With the implementation of Cheque Truncation on a Pilot basis in New Delhi, India, RBI has ushered a beginning to the era of paper cheques and instruments to be cleared and settled “as an electronic transaction”. Moving paper instruments like other forms of electronic transactions like EFT / RTGS – as a totally electronic transaction, RBI attempts to streamline paper instruments to be cleared and settled across the nation’s vast geography in a structured and time-bound fashion, eliminating the time delays associated with paper instruments.

*How to implement this “electronic cheque clearing system for paper instruments” across the country – an approach to technological considerations, infrastructure deployment, information dissemination and settlement dynamics is presented.*

## Learning from the Pilot Project at New Delhi –

RBI implemented the Pilot Project for CTS at New Delhi in a phased manner, with the first phase including only 10 pilot banks participating with inter-bank instruments amongst these pilot banks. In the next phase, all the member banks of the New Delhi clearing house were included in the Image based CTS. Slowly, all member banks were made to present all instruments as CTS clearing only – thus eliminating the parallel running paper exchange.

### Key learning’s:

1. CTS was a change to the fundamental process of cheque clearing – bank’s needed to change their core processes to process instruments as images.
2. Operation staff at all banks needed to be trained / re-trained according to the new process for handling clearing.
3. CTS necessitated centralization of the inward clearing process that drastically changed the staff allocation pattern at service branches. Centralization ensured that processes are handled by staff with the requisites skills (imparted to them during the process of implementation) more efficiently.
4. With CTS certain systemic inefficiencies in the old paper based clearing system were removed, while new ones were introduced caused by events like network outages, back-end systems being unable to cope with the volume of data / timelines for process completion etc. However, there is a sound underlying belief amongst all stakeholders that the system would overcome these challenges as it matures.
5. Banks have willingly adopted the new technology and invested in the necessary infrastructure. They now understand the technology and are making efforts to improve the processes internally to benefit from the efficiencies of the system.

### Policy level initiatives undertaken -

**Amending the Laws enabling “image equivalent” of the instrument to be settled as a representation of the original instrument**



The Negotiable Instruments Act, 1881 (N.I. Act) continues to be the predominant legal base for all cheque-based (instrument-based) payment systems in India. It has been amended time and again to accommodate new requirements and policies. The amendments in respect of the definition of 'cheque' by inclusion of the 'electronic image of a truncated cheque' and a 'cheque in the electronic form' have allowed for the introduction of CTS as a method of processing paper-based payment instruments. Simultaneous amendment to the Information Technology Act, 2000, making it applicable to the N.I. Act, has accorded legal status to the usage of electronic payment systems in Indian banking, enabling CTS to be a legally valid form of interbank settlement.

The Payment and Settlement Systems Act enacted by the Government in December 2007 empowers the Reserve Bank to regulate and supervise the payment and settlement systems and provides a legal basis for multilateral netting and settlement finality. The Act empowers the Reserve Bank to lay down the policies for regulation and supervision of the payment and settlement systems, authorise their setting up/continuance, for issuing directions, laying down standards, calling for information/data, initiating prosecution/levying penalties for violation of the provisions of the Act, its regulations and directions etc.

Standardization – a key to information exchange between clearing house and the participants. Due to the varying back-end banking systems deployed by the participants in the clearing system, standardization is key to achieving information exchange between the various back-end systems.

## **RBI has already defined some key standards –**

### **1. MICR information**

**2. XML based information** – a published set of standards that make use of XML schemas for data / acknowledgements etc that creates the template for use by any back-end system – enabling STP for any step.

**3. Electronification of the instruments** – imaging standards defined to truncate the instrument / convert the instrument to an electronic record. Multi-views for the instrument to enable physical inspection of the electronic record or automated system usage for inspection – enabling key verification processes to occur in back-end systems prior to settlement of the transaction.

**4. PKI enabled Digital Signing** – all data and electronic images are signed using PKI enabled digital certificates from the presenting Bank through their capture systems and clearing house interface systems, ensuring that all data received in the clearing system can be authenticated at any stage of processing in the system, enabling security in the process as a fundamental feature of the system.

## ***Some further standards required –***

**1. MICR Band information on each cheque** – 100% compliance to which should be ensured by RBI amongst all the participant banks on a all-India basis i.e. every Bank / organization that participates in the clearing of paper instruments, who is a creator /issuer of a financial instrument, should ensure that all instruments produced in the paper form should confirm to the standards as specified. This compliance should be enforced and any deviation should attract a non-acceptance of the instrument in any inter-bank settlement.



**2. Instrument physical features** – Apart from MICR Band, there is emergent felt need to standardize the way a paper-instrument looks – with in-built security features that enable automated verification of authenticity of an instrument. Cheque instrument physical attributes like size, paper type and quality etc needs to be standardized – to ensure that every banking organization / individual working in a bank – can unequivocally establish the authenticity of the instrument being presented by him /the bank – of an instrument issued / created by any banking organization in the country. RBI has already constituted a working committee to ensure that “Cheque Standards with security features” are created and implemented. This process should be completed and a standard set published by RBI and put in place a mechanism to ensure compliance. Technology imperatives like presence of UV Ink based logos / standard features should be incorporated in the standards so that the authentication of the veracity of the instrument can be automated to a large extent within the back-end system amongst banks.

**3. XML data definition** – The standardized information exchanged should enable all Banks to implement 100% STP by ensuring that all the required data like PayTo party name, date of the instrument being presented, Debit Account Number etc are all provided as part of the clearing data.

## The Way Forward : The National CTS “Grid Exchange”

The volume of paper-based clearing handled in India is the sixth largest in the world and during the year April 2007 to March 2008 about 1.46 billion cheques were cleared in the country. The total number of cheques cleared and the value during the last three years in India are as follows:

Type	Volume (In Billion) (April - March)			Value (Rupees in Lakh Crore)		
	2005-06	2006-07	2007-08	2005-06	2006-07	2007-08
<b>Total Cheques</b>	1.29	1.37	1.46	113.29	120.42	133.96
Of these						
i) MICR	1.03	1.14	1.22	94.74	104.35	115.29
ii) Non MICR	0.026	0.023	0.024	18.55	16.07	18.67

*(Source: Payment and Settlement Systems in India - A special address delivered by Shri V Leeladhar, Deputy Governor, Reserve Bank of India, at the conclave of Indian Banking – Vision 2010, organized by the Indian Banks’ Association on August 1, 2008 in Mumbai)*

At present, there are 1089 Bankers’ Clearing Houses operating in India, of which 1036 are managed by State Bank of India and its Associates, 17 by the Reserve Bank, and the remaining 36 by 12 nationalized banks. The mechanized cheque processing using MICR technology is available at 60 locations. The computerised clearing houses numbering 915 (including the 60 MICR centers), account for 84% of the total number of clearinghouses in the country.



*At the 60 locations that run on mechanized cheque processing using high-end reader sorters to process paper-based instruments, current settlement cycles ensure that the customer realizes the funds as clear balance in his / her account for Local Clearing instruments (same city) on a T+1 basis. In the remaining 1029 centers, where there is a manual exchange of paper instruments, customers realize clear funds in their account for local clearing instruments on T+0 basis. Inter-city instruments (Outstation) emanating at any location typically are settled on a T+7 basis the destination location of such instruments.*

A key objective for a national CTS system is to maintain these cycles in the short-run for Local Clearing and improve on these in the longer-run and drastically cut down the cycle time in Inter-City (Outstation) clearing. Any degradation to end-customer service, irrespective of the cause (amalgamation / consolidation of clearing houses etc) should be avoided, as that would result in added inefficiencies in the system.

***“The goal of settlement under the National CTS System should be to ensure that the funds are realized by the end-customer on a T+0 basis nationally, irrespective of the location of deposit”.***

At all the 1089 clearing houses, the clearing house operating bank mandates that all the members of the house maintain their clearing accounts and park sufficient funds to meet daily clearing obligations. This has resulted in a large pool of float funds being parked by banks to meet obligations arising out of paper clearing at all these locations. By sheer estimates, the total float funds maintained by all the banks at all the locations is in excess of 50 Billion Rupees.

***“The goal of settlement under the National CTS System should be to ensure that float funds are consolidated at a national level for all bankers reducing liquidity risks in the system and enabling RBI to administer and monitor the liquidity risks in the system on a real-time basis nationally”.***

## **An Implementation Approach...“Bottom Up”...**

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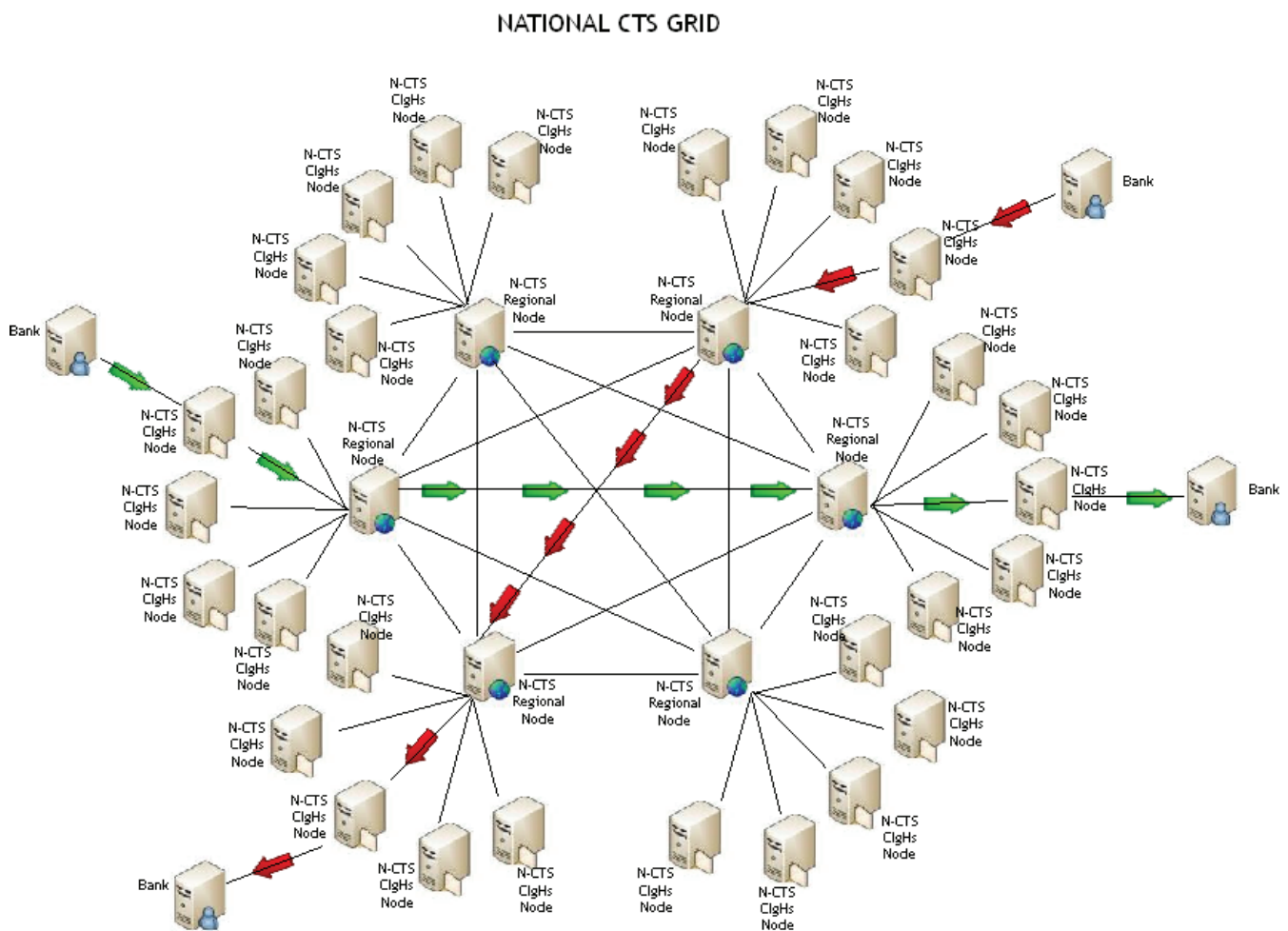
With over 75,000 bank branches, over 1.5 billion cheques being settled in a financial year, the Indian banking landscape poses a major challenge in creation of a National CTS System. With a view to maximize the end-customer benefit by taking the truncation point of the paperclearing as close to customer as possible (ideally at all the 75,000+ branches of which more than 50,000 are already networked, at additional convenient locations like ATMs sites etc), the National CTS System should be implemented as a large inter-connected “switching system” – very much akin to the telephone exchanges implemented across the country that offer seamlessly connectivity to each other and hence the end-customers.

Use of the MICR band information as “routing instructions”, XML based schemas as the common data definition, the image envelopes / binary files being the form of carrying the information along with PKI enabled digital signatures, the National CTS System should be able to switch transactions to the destination in real-time mode from the source. With standardized cheques



carrying security features like UV logos etc, the system should be able to validate the instrument images across all issuers of cheques and ensure that only genuine instruments enter the stream for settlement.

At each of the 1089 clearing houses, a web application should be deployed on Servers that can be accessed - last mile access from the branches / truncation points - through various modes like dial-up to the clearing house using PSTN, internet (through SSL) etc where every branch gets access to a common application through which it can lodge "truncated instruments" as Presentments - drawn on any branch in the country using "certified cheque scanners" that are implemented by the Banks and are able to retrieve images and data of instruments that are drawn on it. The web application should further allow any Bank / branch to return instruments drawn on it by affixing appropriate return reasons and provide returns of instruments presented by it in the system. The application should further allow import / export of Standardized XML based data from third-party systems allowing Bankers to deploy capture systems / inward processing systems of their own choice independently conforming to the standards.





## Technology and Infrastructure Deployment considerations:

- 1. Commodity Hardware usage** – Clearing House Servers running the National CTS System should be deployed on commodity hardware that are standardized, affordable, readily available and are easily serviceable by various IT organizations in the country. Each clearinghouse should have a standby server to ensure that the entire system is “highly available” using open technologies and standards for data replication – ensuring that the system meets the “mission-critical” nature of the service delivered.
- 2. Certified Cheque Scanners usage** – National CTS System should certify multiple brands of scanners including Multi-functional devices like Passbooks printers with Cheque Scanner, Printers scanning etc that incorporate detection of security features on instruments like presence of UV logos and other “standardized” security features. Banks deploy these at their branches for truncating instruments and can select appropriate installed device in the web application at run-time. Additionally, in centers where daily cheque volumes are low, the clearing house should provide such devices at the N-CTS ClgHs Node location so that bank branches can bring their instruments to the clearing house and truncate instruments from there – thereby reducing the investment required for the participants.
- 3. CTS Web Application** – The National CTS System should be a web application that would not require any installation process at the Bank branches. The application should deliver all the required features to enable a participant Bank to truncate an instrument and present for settlement. It should seamlessly connect to hardware devices like certified cheque scanners, USB tokens, smart card readers etc. The web application should provide the capabilities to “switch” the presentments to the destination through the “National CTS Grid Exchange” in real-time mode – ensuring that any transaction in the system can be settled on T+0 basis or T + Expiry Hours basis.
- 4. XML data definition** – The standardized information exchanged should enable all Banks to implement 100% STP by ensuring that all the required data like PayTo party name, date of the instrument being presented, Debit Account Number etc are all provided as part of the clearing data. Since most of the Banks in India have already implemented Core Account Systems (CBS), this would enable STP of transactions – allowing for the Settlement Cycles to be “Expiry Time” based rather than “Cycle Time” based. With such levels of STP enabled, Banks would be able to import transactions directly into their Core Accounting Systems and perform validation of Account Holder, Signature Verification, and Balance Verification and return instruments on such grounds before the expiry of the time permitted for returning an instrument. Data definition standards ensuring 100% STP will enable Settlement on “Expiry Mode” rather than “Cycle Mode” – enabling T+0 end-customer realization of funds.



## Information Dissemination:

The National CTS System should be 24x7x365 application that provides all transaction information at all times to the regulator of the system. For efficient administration and monitoring of the Payment and Settlement system, it would be imperative for the National CTS system to offer all information of transactions, presentments, returns through a variety of means like reports, alerts, notifications etc. enabling detection and remedial action being taken to ensure a sound, efficient and secure Settlement. Further, it should provide all information on transactions to all the participants in an efficient, clear and easy to understand manner.

## Settlement Dynamics:

Rolling Settlement – The National CTS System should allow for Rolling Settlement with End of Day netting of “expired” transactions with automatic rollover of “alive” transaction to the next business day. The End of Day netting of Settlement and the inter-bank settlement transactions should be lodged in RTGS system from a central location for all Banks across the nation. Any member Bank should be able to view its settlement position from the National CTS Web Application.

***“When and in any manner that it goes live, the National CTS System would be the largest system of its kind in the world”***



