

Bank's Requirements for participating in CTS

Mumbai- Implementation Meeting

Mumbai- 18th Jan. 2013



AGENDA

CTS Components

CTS Participation

Image Specifications

Network Specification and Security

CHI Hardware Specifications

CHI Software Specifications

CTS Components - 3 Pillars

Banks Capture

Cheque Scanning & IQA Validations

File Generation

Banks CHI

File Validation & Sending Response

Aggregation & Submission to CH

NPCI CH

File Validation & Settlement

Clearing Session Management, Reports, MIS

CTS Bank Level Infrastructure

At Branch Level (if imaging done at Branch Level)

- Cheque Scanner/s
- Capture Software + Class 2 (SHA2 Digital Signature Certificate)
- Network Connectivity between branches/service branches (especially in Grid Cities)

At Mumbai Service Branch Level (where CHI located)

- CHI Server + Class 3 (SHA2 Digital Signature Certificate)
- CHI Software - To be procured from M/s. NCR
- CHI Third party software mentioned in CHI Specification
- Image Archival mechanism for RBI mandatory period

Capture / Cheque Scanner System

- Capture System converts Physical cheque into images (.xml format as mentioned in CHI Specs)
- Capture System comprises of,
 - Cheque Scanner,
 - Scanning Software to perform required validations mentioned in CHI specs
 - User wise Class 2 (SHA2 Digital Signature Certificate) for applying DS on images & data files.
- Banks need to integrate Capture/Scanning Software
 - With CHI for seamless FTP to CHI server
 - With Core Banking System (CBS) or other internal systems if required
- NPCI has not prescribed any empanelled list of Scanners/ Capture Service Providers/ Hardware Vendors
- Banks need to follow prescribed internal policy of procurement

Clearing House Interface

- CHI acts as a Gateway Application Software for CTS Participation
- CHI Software/Licence are to be procured from M/s. NCR Corporation India Pvt. Ltd. (Contact details shared)
- Hardware required as per CHI Specification to be procured
- Class 3 (SHA2 Digital Signature Certificate) to be obtained from IDRBT, Hyderabad (Online application)
- Banks need to integrate CHI with Capture/Scanning Software for seamless FTP to CHI server

TYPE OF CHI	VOLUME CAPACITY(ITEMS/DAY)	No of CHI Servers
Mini CHI	Upto 10000	One
Small CHI	10000 to 30000	One
Medium CHI	30000 to 100000	One
Large CHI	100000 to 250000	Two (1-App, 1-DB)
Very Large CHI	250000 to 400000	Two (1-App, 1-DB)

Assumptions:-

- 1.) Average image size per item consisting of 3 views is 75 Kbytes (using a Q-Factor between 25-30)
- 2.) Sizing has also taken into account that 40% of the total volume at the CHI should be processed in a peak-hour.

NPCI net linking CHI to CH

Based on bank's confirmation for NPCI net,

- ❑ NPCI has issued, Purchase Order for Network Bandwidth & equipment delivery
- ❑ Option II (high availability) is mandatory for Western Grid- Mumbai CTS
 - ❑ Considering Criticality of Mumbai Cheque Clearing Activity
- ❑ Now all direct member banks will have dual NPCI net connectivity from
 - ❑ Tata Tele Communication Ltd.
 - ❑ Reliance Communication Ltd.
- ❑ NPCI net connectivity charges (bank wise) shared vide letter/email to each banks opted for NPCI net earlier
 - ❑ Link equipment delivery started
- ❑ Network Firewall is not part of NPCI deliverable

AGENDA

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Image Specifications

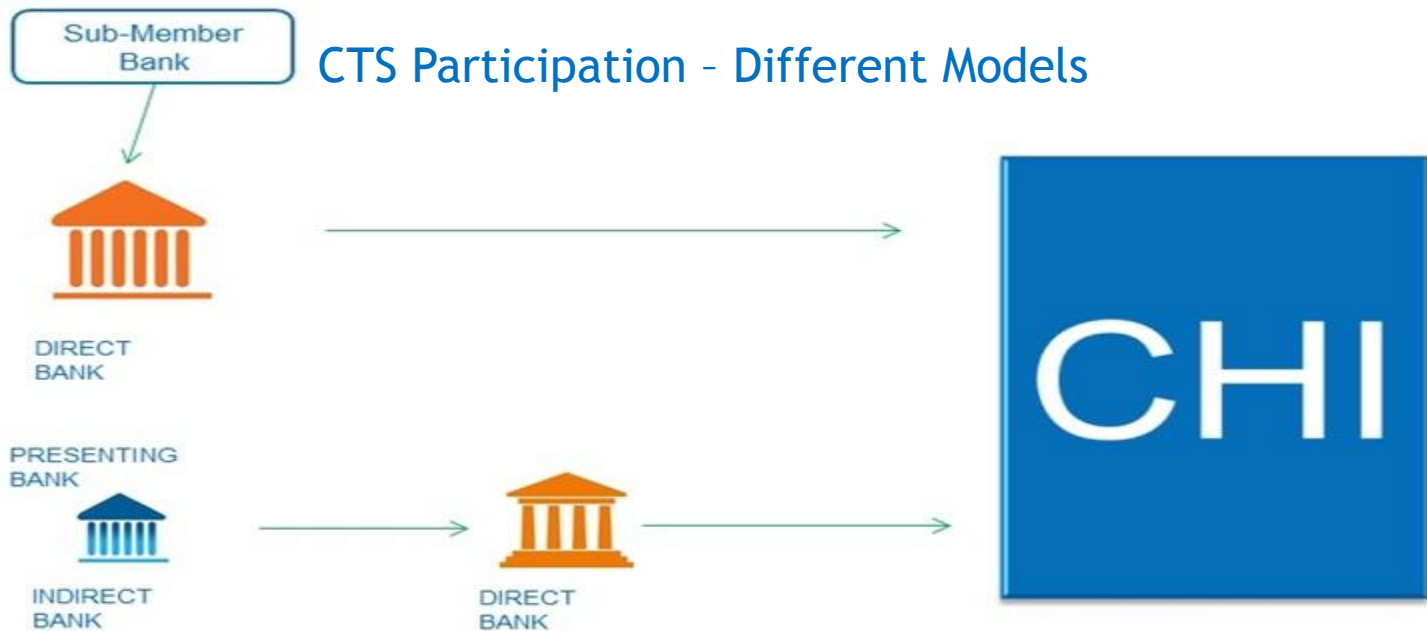
Network Specification and Security

CHI Hardware Specifications

CHI Software Specifications

CTS Participation - Different Models

- It is the responsibility of each Commercial Banks (or its designate) intending to participate in the Cheque Truncation System, to procure the required hardware, hardware security modules (HSM), connectivity equipment and base platform software (Operating System, Database, Application Server, third party software)
- Banks have option to join CTS either as Direct Bank, Indirect Bank or Sub-member Bank.



CTS Participation - Infrastructural Requirement

Direct Banks

- ❑ Capture Software/Solution
- ❑ NPCI Net
- ❑ CHI Infra
- ❑ Class II digital certificates
- ❑ HSM & System certificates for DS & encryption of data
- ❑ HSM & System

Indirect Banks

- Arrangement with Direct bank
- Capture Solution
- Class II digital certificate

Infrastructure requirement for each category of participation models.

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

CTS Participation - Type of Capture

Bank Infrastructure



Cheques Scanned at Branches

OR



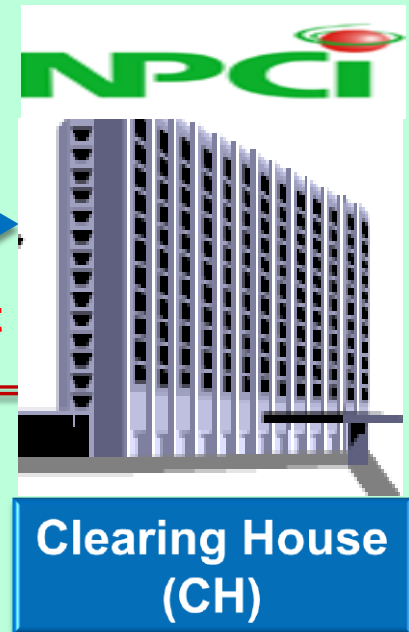
Cheques Scanned at Service Branch

Bank's Network

Bank's Network

Clearing House Interface (CHI)

NPCI Infrastructure



NPCINet

Clearing House (CH)

AGENDA

CTS Components

CTS Participation

Image Specifications



Security

CHI Hardware Specifications

CHI Software Specifications

Image Specification

- RBI/NPCI has set their detailed image requirements that are necessary for smooth operation of all parties participating in the Clearing House.
- Gives confidence to drawee banks in image based cheque clearing leading to reduction in cheque frauds.
- As compared to old cheques, revised/standardized cheque images requires less space for storage and bandwidth for transmission.
- The three types of image captured and transmitted are -
 - Front Gray Scale (Minimum DPI: 100, Format: JFIF, Compression: JPEG)
 - Front Black & White (Minimum DPI: 200, Format: TIFF, Compression: CCIT G4)
 - Rear Black and White (Minimum DPI: 200, Format: TIFF, Compression: CCIT G4)

Cheque Type	Avg. Size in kb	Bandwidth/Storage
Old Cheque	75	
CTS 2010 Cheque	45	

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CTS Components

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Security

CHI Hardware Specifications

CHI Software Specifications

Security

- All data interchanged between participants are both digitally signed and encrypted. The PKI infrastructure is used for this purpose.
- The CHI will be integrated with HSM (Hardware Security Module) to provide a higher level of security.
- In HSM, the PKI public and private keys will be stored inside the hardware module thus making it inaccessible, tamper proof and highly secure.
- Network Security is through Public Key Infrastructure and is in accordance with appropriate India Acts & IDRBT practice.
 - Hash algorithm SHA-2
 - Padding algorithm pkcs#1
 - RSA asymmetric encryption with 2048 bit key length
 - Triple DES (3DES, TDES) symmetric encryption with 168 bit key length
 - Certificates in X.509v3 format

AGENDA

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Hardware Comparison of CHI

CHI Type	Mini	Small	Medium
Dual Intel Pentium Xeon Processor E5-2637	2C, 5M Cache, 3.00Ghz, 8.00 GT/s Intel QPI	2C, 5M Cache, 3.00Ghz, 8.00 GT/s Intel QPI	2C, 5M Cache, 3.00Ghz, 8.00 GT/s Intel QPI
Memory	16GB (DDR3, 1600 MHz)	16GB (DDR3, 1600 MHz)	24GB (DDR3, 1600 MHz)
SCSI RAID Enabled Backplane (or external SCSI/SAN Fibre Connect) Disk Drive Specification(RAID 1 on separate disk Spindles/SAN Volumes)	15K RPM	15K RPM	15K RPM
Disk 1 in Raid 1 (2 disks)	80 GB	80 GB	80 GB
Disk 2 in Raid 1 (2 disks)	28 GB 10 GB	56 GB	180 GB
Disk 3 in Raid 1 (2 disks)	20 GB 20 GB 30 GB	22 GB 22 GB	40 GB 20 GB
Disk 4 in Raid 1 (2 disks)	-	15 GB 30 GB	20 GB 60 GB
LUNA PCI E 7000 HSM from Safenet Inc	1	1	1
Windows 2008 (64 bit) Standard edition with appropriate CALs to handle the users within the Bank	Windows 2008 (64 bit)	Windows 2008 (64 bit)	Windows 2008 (64 bit)
Volume Handling Capacity	10,000 4,000 items in peak hour	30,000 12,000 items in peak hour	1,00,000 40,000 items in peak hour

Hardware Comparison of CHI

CHI Type	Large		Very Large	
Dual Intel Pentium Xeon Processor	E5-2637 ,2C, 5M Cache, 3.00 GHz, 8.00 GT/s Intel QPI	E5-2637, 2C, 5M Cache, 3.00 GHz, 8.00 GT/s Intel QPI	E5-2643, 4C, 5M Cache, 3.30 GHz, 8.00 GT/s Intel QPI	E5-2643, 4C, 5M Cache, 3.30 GHz, 8.00 GT/s Intel QPI
Memory	32GB (DDR3, 1600MHz)	32GB (DDR3, 1600MHz)	32GB (DDR3, 1600MHz)	32GB (DDR3, 1600MHz)
SCSI RAID Enabled Backplane (or external SCSI/SAN Fibre Connect) Disk Drive Specification(RAID 1 on separate disk Spindles/SAN Volumes)	15K RPM	15K RPM	15K RPM	15K RPM
Disk 1 in Raid 1 (2 disks)	80 GB 20 GB	80 GB 20 GB	80 GB 20 GB	80 GB 26 GB
Disk 2 in Raid 1 /10 (2 disks)	225 GB	25 GB 30 GB	360 GB	40 GB 48 GB
Disk 3 in Raid 1 /10 (2 disks)	225 GB	20 GB	360 GB	40 GB
Disk 4 in Raid 1 (2 disks)	-	20 GB	30 GB	40 GB
Disk 5 in Raid 1 (2 disks)	-	15 GB	-	24 GB
Disk 6 in Raid 1 (2 disks)	-	150 GB	-	250 GB
LUNA PCI E 7000 HSM from Safenet Inc	1		2	
Windows 2008 (64 bit) Standard edition with appropriate CALs to handle the users within the Bank	Windows 2008 (64 bit)	Windows 2008 (64 bit)	Windows 2008 (64 bit)	Windows 2008 (64 bit)
Volume Handling Capacity	2,50,000 1,00,000 items in peak hour		4,00,000 1,60,000 items in peak hour	

AGENDA

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CHI Software Specification

- The CHI requires the commercial versions of the following software for its operation. It is the responsibility of the commercial banks to procure a license of software for installation.

#	Software	Version (Additional Details)
1	Oracle Standard Edition - 64bit	11.2 (5 Named User licenses)
2	IBM WebSphere Application Server - Express Edition	8.0 (280 PVUs)
3	IPSwitch WSFTP Server	7.5.1
4	Netal SL4NT Logger	3.2
5	CD Creator Software	(Roxio or Similar)

- The following Third-Party Software components are included with NCR CHI Software. Commercial Banks are NOT required to procure separate licenses for these components.

#	Software	Version (Additional Details)
1	IPSwitch WS FTP Professional	2006
2	Crystal Reports	11.0
3	Java Runtime Environment (JRE)	1.5
4	MSXML	4.0
5	PERL	5.6
6	MDAC	2.8
7	Adobe Reader	10.0
8	Oracle Client - 32 bit	11.2

High Availability - Cluster

Cluster CHI Approach

- The HA Capability for the CHI in the CTS environment is implemented using Microsoft Windows 2008 Cluster.
- In a CHI cluster deployment, the environment is “Active - Passive”. In this type of environment, servers are configured in “cluster”; the first installed server acts as a primary node. If the primary node fails, one of the nodes in the cluster (or the alternate) acts as the primary node. This switch over to passive server will happen automatically using the windows cluster services.
- The Hardware configuration for the Stand-by server will be exactly same as the primary server as mentioned in sections above.
- In this mode the data will be stored on an external storage shared between the Active & passive server.
- Additional third party licenses will be required on the stand-by server.
- The Operating System used on both the active & passive servers in this clustered environment will Windows Server 2008 Enterprise Edition.

Disaster Recovery

Alternate CHI Server

- If an alternate CHI server has been set-up as a backup server, it is the responsibility of the bank to procure the hardware, platform software and the necessary HSM for the enablement of the backup CHI.
- The CHI system administrator must use the daily backup and restore process available at the CHI and keep the stand-by CHI in an operational readiness state. This will be the responsibility of the bank.
- The Hardware configuration for the Stand-by server has to be similar as the primary server.

Thank You

For more information Visit our Web Site NPCI.org.in
and download CHI Specification V2.0

or

Contact

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