

13.1 The development of payment and settlement systems conforming to the best international standards has been a key objective of the Reserve Bank. A milestone was crossed during 2003-04 with the commencement of the Real Time Gross Settlement (RTGS) as a facility available for quick, safe and secure electronic mode of funds transfer. Preparation of the draft legislation relating to payment and settlement systems was another important development. The legislation aims at providing a sound legal basis to various payment and settlement systems operating in India and empowers the Reserve Bank to regulate and supervise such systems.

13.2 This Section profiles the significant expansion of activity in the payment systems in India and the key drivers – retail payments and the rising popularity of card-based transactions, large value payments propelled by rising turnover in the inter-bank clearing, Negotiated Dealing System (NDS) and foreign exchange clearing segments. Noteworthy landmarks in the evolution of payment systems highlighted in this Section are the implementation of Real Time Gross Settlement (RTGS) system, the Special Electronic Funds Transfer (SEFT) system and the foundation being laid for the constitution of a Board for Payment and Settlement Systems as an apex regulatory authority. Reviewing developments in the settlement systems in India in 2003-04, the Section highlights the continuing preponderance of paper-based (cheque) clearing and the preparatory steps being taken to introduce cheque truncation to improve the speed and efficiency of paper-based settlement systems. The implementation of Online Tax Accounting System (OLTAS) to IT-enable tax payment as well as tax administration is brought out in this Section along with developments relating to the Indian Financial Network (INFINET) and Structured Financial Messaging Solution (SFMS). The role of central counter parties (CCPs) in minimising settlement risks is underscored. The Section concludes with a review of the growing role of information technology (IT) within the Reserve Bank and the special emphasis being laid on information security and disaster recovery management.

### PAYMENT SYSTEMS

13.3 The overall turnover through the various payment and settlement systems rose by 1.4 per cent

during 2003-04 to Rs.1,60,15,716 crore. This was mainly in the form of retail payment such as Electronic Clearing Services (ECS), Magnetic Ink Character Recognition (MICR) and Non-MICR clearing (Table 13.1). The substantial increase in repo transactions (outside the Reserve Bank's LAF) and the onset of foreign exchange clearing resulted in a sizeable increase in the value of turnover under the Negotiated Dealing System (NDS) and the foreign exchange clearing.

### Retail Payment Systems

13.4 Retail payment systems constitute the bulk of the volume of payment transactions of the country. The settlement of the retail systems is typically

**Table 13.1: Payment System Indicators – 2003-04**

Component	Volume (000s)	Value (Rupees crore)	
1	2	3	4
<b>Systemically Important Payment Systems (SIPS)</b>			
1. Inter-bank Clearing	1,142 (1,039)	30,46,666 (60,65,825)	
2. High Value Clearing	13,172 (7,207)	30,23,290 (28,86,263)	Cheques of Rs. 1 lakh and above
3. NDS	265 (203)	25,18,323 (15,45,673)	Settlement through CCIL
4. Forex Clearing	331 (200)	23,18,530 (6,58,035)	Settlement through CCIL
5. RTGS @	76@	2,031	
<b>Total-SIPS (1 to 5)</b>	<b>14,910 (8,649)</b>	<b>109,08,840 (111,55,796)</b>	
<b>Others</b>			
6. MICR Clearing	6,24,360 (4,79,189)	20,35,934 (18,43,726)	At 39 centres
7. Non-MICR Clearing	3,34,039 (3,61,400)	30,05,139 (27,45,307)	Includes all other paper based clearing
8. Electronic Clearing	29,046 (23,660)	29,933 (10,222)	Comprising ECS, EFT and SEFT
9. Cards	1,85,501	35,870	Including credit, debit and smart cards
<b>Total-Others (6 to 9)</b>	<b>11,72,946 (8,64,249)</b>	<b>51,06,876 (45,99,255)</b>	
<b>Grand Total</b>	<b>11,87,856 (8,72,898)</b>	<b>1,60,15,716 (1,57,55,051)</b>	

@ : RTGS became operational on March 26, 2004; 76 transactions took place by end-March, 2004.

Note : Figures in parentheses represent data for 2002-03.

accomplished in the form of Deferred Net Settlement (DNS) Systems. The predominant mode of retail payments comprises the cheque clearing system (constituting the MICR and Non-MICR clearings). Other systems, which include electronic systems such as the Electronic Clearing Service (ECS – Debit and Credit), Electronic Funds Transfer (EFT), the Special EFT (SEFT) and card based systems (credit, debit, ATM and smart cards), are gaining acceptance. While ECS-Credit and ECS-Debit systems are for bulk payments akin to the automated clearing houses (ACH) elsewhere, the EFT and SEFT systems are for individual transactions. The ECS-Credit, EFT and SEFT systems are credit transfer based modes of payments, whereas the ECS-Debit system is based on direct debits. All the retail electronic payment modes have grown considerably during the year, reflecting their growing popularity (Table 13.2).

### Smart Cards

13.5 The Reserve Bank partnered a pilot project on smart cards in 1999 in order to provide for large scale usage of smart cards for financial transactions. With the spread of rapid technological developments and the potential of the usage of smart cards for many purposes, the Reserve Bank teamed up with the Government of India, the academia, banks and the card industry to conduct another pilot project for the use of smart cards for multiple purposes. The Multi-Application Smart Card Project is in the nature of a commercial pilot conducted jointly by the Indian Institute of Technology (IIT), Mumbai and the Institute for Development and Research in Banking Technology (IDRBT), Hyderabad. It has participation from banks and industry stakeholders such as card manufacturers, terminal providers and network service providers. The

pilot project is expected to address various issues relating to technology, security, regulatory and supervisory concerns and legal implications. It would enable the identification of common, inter-operable and open standards for use on a large scale. The project is aimed at including applications relating to banking, insurance, postal services, citizen identification and health, apart from financial applications such as credit, debit and e-purse all on a single card.

13.6 With a view to providing for transfer of funds electronically across a large number of bank branches in the country as a forerunner to the nationwide funds transfer system (NEFT), the Special Electronic Funds Transfer (SEFT) System was introduced from April 1, 2003. It has succeeded in ensuring faster credit transfers to branches that are computerised and networked even though they are situated at locations where the Reserve Bank does not have a presence. The settlement is centralised at Mumbai and the system provides for same day funds settlement with multiple settlements during the day. SEFT covers 2,312 branches of 29 banks situated in 127 cities across the country. This system has facilitated the introduction of the T+2 rolling settlement system by stock exchanges in the country.

13.7 Card based transactions have emerged as the most preferred among all the retail electronic modes of payments due to proliferation and increasing usage of debit cards.

### Large Value Payment Systems

13.8 Large value payment systems in India comprise the Inter-Bank Cheque Clearing and the High Value Clearing for paper based systems; the Negotiated Dealing System (NDS), the Inter-Bank Foreign Exchange Transactions Clearing and Settlement System (Forex Clearing) and the Real Time Gross Settlement System (RTGS) for the electronic mode based systems. During the year, RTGS was introduced parallel with the existing Inter-Bank Cheques Clearing system with the ultimate objective of migrating to the RTGS completely (Box XIII.1). RTGS would be extended throughout the country covering around 3,000 bank branches in about 275 centres.

13.9 The RTGS system requires continuous funding for settling transactions. Internal funding by participants may, therefore, prove costly on account of opportunity costs, leading to delay in outgoing payment instructions. The provision of intra-day credit facilities extended either by the market or by the central bank is regarded as a circuit-breaker. Liquidity

**Table 13.2: Retail Electronic Payment Transactions – 2003-04**

Type	Volume of transactions (000s)	Growth in volume (per cent)	Value of transactions (Rs. crore)	Growth in value (per cent)
1	2	3	4	5
ECS-Credit	20,315 (18,753)	8.33	9,676 (6,862)	40.99
ECS-Debit	7,874 (4,538)	73.51	2,241 (1,033)	116.95
EFT	775 (370)	109.46	15,711 (2,327)	575.16
SEFT	82		2,304.99	
Credit Cards	97,405		17,268	
Debit Cards	86,379		18,513	
Smart Cards	1,717		89	

**Note:** Figures in parentheses represent data for 2002-03.

**Box XIII.1****RTGS Implementation in India**

With the commencement of the operations of the Real Time Gross Settlement (RTGS) system from March 26, 2004 India crossed a major milestone in the development of systemically important payment systems (SIPS) and complied with the Core Principles framed by the Bank for International Settlements (BIS). It was a 'soft' launch with four banks, besides the Reserve Bank, as participants. In addition to the service provider, the Reserve Bank is also a participant in the RTGS System. Currently, there are 71 direct participants in the RTGS system. Scheduled banks, primary dealers and clearing houses numbering around 125 are the targeted members.

The RTGS system started with pure inter-bank transactions. Customer based inter-bank transactions were permitted to be settled through the system, effective April 29, 2004. The RTGS system will be fully integrated with the accounting system of the Reserve Bank and other payment systems and services.

Salient features of the RTGS system are:

- Payments are settled transaction by transaction for high value and retail payments;
- Settlement of funds is final and irrevocable;
- Settlement is done on a real time basis and the funds settled can be further used immediately;
- It is a fully secure system which uses digital signatures, and Public Key Infrastructure (PKI) based encryption for safe and secure message transmission;
- There is a provision for intra-day collateralised liquidity support for member banks to smoothen the temporary mismatch of fund flows.
- RTGS provides for transfer of funds relating to inter-bank settlements as also for customer related fund transfers.

More than 75 per cent of the value of inter-bank transactions, which was earlier being settled through the deferred net settlement systems (DNSS) based Inter-bank clearing, is now being settled under the RTGS.

requirements for settlement of transactions under the RTGS system are met through intra-day liquidity

support to the members by the Reserve Bank on a collateralised repo basis (Box XIII.2).

**Box XIII.2****Intra-day Liquidity under RTGS System**

Payment systems based on discrete time are known as deferred net settlement systems (DNSS), while continuous-time settlement systems are referred to as real time gross settlement (RTGS) systems. Under DNSS, each participant pays/receives only the net amount. Typically, the central bank acts as the settlement agency by debiting/crediting current accounts maintained by the participants with it. The RTGS system, on the other hand, embodies settlement of transactions instantaneously, *i.e.*, on a gross basis, thereby completely obviating the need for any clearing arrangement in the transaction. The advantage of DNSS is a lower level of collateral/settlement balance requirement for effecting payment transactions as against higher level of collateral/settlement balance under RTGS system. Settlement risk in the event of default is, however, higher under DNSS.

The Reserve Bank would provide the intra-day liquidity (IDL) to RTGS participants. This may eliminate liquidity risk but the credit risk is transferred from the participants to the central bank. Cross-country experiences in dealing with credit risk show that central banks may (i) adopt strict membership standards for participants; (ii) require full collateralisation with suitable margin; and (iii) enforce participant-wise caps for granting intra-day credit.

The underlying principle in an intra-day credit facility is that participants must extinguish it by the close of the day by *fiat* money to the central bank. Thus, the stock of reserve money which expands during the course of the day returns to its initial level. The Reserve Bank would charge Rs.25 per transaction following the recommendations of the Working

Group on Intra-day Credit Facility (Chairman: Shri A. B. Telang). In order to minimise credit risk, IDL would be provided against Central Government marketable securities with appropriate haircut up to a limit of three times of net owned funds (NOF) (Tier-I capital) as per the latest audited balance sheet. It is imperative to ensure that there exists a firewall between the intra-day and inter-day markets so that users would not have any incentive to use such funds for speculative purposes. Accordingly, if a participant is unable to extinguish its intra-day repo position during the course of the day, the outstanding amount would attract a penal rate pegged at twice the Bank Rate or twice the corresponding day's maximum call money rate, whichever is higher. If this breach (*i.e.*, spillover to the overnight loan) occurs once, the participant would have to pay the penalty, besides being cautioned by the Reserve Bank. The account would also be placed under surveillance. If it happens for a second time in a six-month period, the intra-day facility would be suspended by the Reserve Bank and supervisory surveillance would be triggered. For restoration of the intra-day facility, reasonable evidence has to be provided to the Reserve Bank that prudential treasury management is in place. If after restoration, it recurs for the third time during the six-month period, the intra-day facility would be withdrawn permanently. For this purpose, the six-month period would cover April-September and October-March and intra-day maturity would be defined as the length of the official working hours in a day.

**Reference**

1. Reserve Bank of India (1999), 'Report of the Working Group on Intra-day Credit Facility'.

13.10 The RTGS has the capability to settle retail payments also. Along with the RTGS and the SEFT, banks in almost all the commercially important centres of the country have the capability to offer their customers country-wide electronic modes of fund transfer services.

13.11 The apex-level National Payments Council (NPC) has overseen the reforms in the payment and settlement systems since 1999. In order to create the appropriate regulatory and supervisory infrastructure for the payment and settlement systems in the country, a Board for Payment and Settlement Systems is proposed to be constituted (Box. XIII.3). The Board, which would comprise members of the Central Board of Directors of the Reserve Bank, would oversee the overall functioning of the payment and settlement systems of the country. A Department of Payment and Settlement Systems within the Reserve Bank would assist the Board in carrying out its functions

## **SETTLEMENT SYSTEMS**

### **Paper Based Clearing**

13.12 Cheque clearing continued to be the most important retail settlement system in terms of volume,

with its share being 81 per cent in total transactions recorded during 2003-04. MICR-based clearing operations, which commenced in 1986 at the four major metropolitan centres, is emerging as an efficient method for processing paper based funds movement. Expansion of the coverage of MICR technology is being pursued in a phased manner. During the year, 12 more centres (Rajkot, Allahabad, Gwalior, Jodhpur, Varanasi, Kozhikode, Thrissur, Bhubaneswar, Nashik, Raipur, Jabalpur and Vishakapatnam) commenced MICR based clearing using state-of-the-art reader sorter-based processing capabilities, taking the total number of MICR Centres to 39. These centres account for about 70 per cent of the cheque volumes of the country.

13.13 The Reserve Bank initiated arrangements with the State Bank of India to set up back-up MICR Cheque Processing Centres. While the back-up centres at Chennai and Mumbai were set up in 1998 and 1999 respectively, the centres at Delhi and Kolkata were made operational during 2003-04. Testing of the back-up centres with full volumes is conducted periodically to take care of any contingency. Centres situated nearby can operate as back-up centres for one another.

### **Box XIII.3**

#### **Board for Payment and Settlement Systems**

Cross-country experience indicates that there are special administrative arrangements for regulation and oversight on payment and settlement systems. These arrangements are in the form of a board, council or a committee, constituted either within the ambit of central banks or under specific statutory provisions. In Australia, the Reserve Bank Act (1959) gives the Payments System Board the responsibility for determining the Reserve Bank of Australia payments system policy. The European Central Bank (ECB) has set up the Payment and Settlement Systems Committee (PSSC) to deal with issues of oversight and development of payment systems. In contrast, the South African Reserve Bank regulates and oversees the activities of the payment system management body, called the Payments Association of South Africa (PASA) and of its members. In Canada, the regulatory responsibility for payments system is shared between the Bank of Canada and the Ministry of Finance.

Efforts are also underway in India to build the infrastructure for effective regulation and supervision of payment and settlement systems in anticipation of the statutory changes envisaged under the draft 'Payment and Settlement Systems Bill'. A Board for Payment and

Settlement Systems (BPSS) is proposed to be constituted under the Reserve Bank of India Act, 1934, which will be in the form of a Committee of the Central Board of Directors of the Reserve Bank. The mandate of the BPSS would cover:

- Laying down policies for regulation and supervision of the payment and settlement systems, both electronic and non-electronic systems as well as domestic and cross-border systems;
- Laying down the standards for both existing and future payment and settlement systems;
- Determining the criteria for access to membership, continuance of membership, removal from membership as well as denial of membership of entities to the various payment and settlement systems;
- Fixing and administering penalties for violation of rules/guidelines/directions.
- Pending the enactment of the Payment and Settlement Systems Act, the BPSS will create the necessary administrative structure within the existing rules and regulations for ensuring the effective regulation and supervision of the payment and settlement systems.

13.14 Reduction of the time taken for processing of paper-based instruments has been engaging the attention of the Reserve Bank. To the extent that the physical instrument needs to be transported from the collecting bank branch to the drawee bank branch, delay is in-built into the paper based instrument clearing mechanism. Cheque truncation is one of the measures adopted in several countries to remove this systemic handicap. Payment instruments do not get transported all the way, but get stopped or truncated at a point in the cycle and thereafter, only information about the instrument and/or its image flows electronically to the drawee bank branch for payment. A Working Group on Cheque Truncation and E-cheques (Chairman: Dr. R.B. Barman) was constituted to recommend a suitable model of cheque truncation for India. The Group submitted its report in July 2003 (Box XIII.4). Preparatory steps for implementation of cheque truncation on a pilot basis were initiated in the National Capital Region of Delhi during the year.

13.15 The use of Automated Teller Machines (ATM) has been growing rapidly and this has helped in optimising the investments made by banks on infrastructure. Encouraged by the Reserve Bank, banks joined together in small clusters to share their ATM networks during the year. There are five such ATM network clusters functioning in India. In order to facilitate inter-operability among these clusters at the national level, the IDRBT has initiated the process of setting up a National Financial Switch to facilitate apex

level connectivity of other switches established by banks. The total number of ATMs installed by the public sector banks stood at 8,219 at end-March 2004 as compared with 5,963 ATMs at end-March 2003.

13.16 Guaranteed settlements minimise risks in net settlement systems. The role of central counter parties (CCPs) is very crucial in this regard. The risk management policies, procedures and practices of the CCPs have been receiving international attention. The BIS Task Force on Risk Management for the CCPs - a joint Group of the Committee on Payment and Settlement Systems (CPSS) and the International Organisation of Securities Commission (IOSCO) - released its recommendations on CCP in January 2004 (Box XIII.5).

#### Online Tax Accounting System (OLTAS)

13.17 Implementation of OLTAS was initiated during the year on a pilot basis. Jointly developed by the Government and the Reserve Bank, the OLTAS has several benefits in terms of streamlining tax payment procedures, improving tax administration and building up an information base as an input for policy formulation (Box XIII.6).

13.18 The implementation of OLTAS has been undertaken in a phased manner. It was introduced on a pilot basis in June 2003 covering 48 branches of 16 banks in four cities. Currently, OLTAS Pilot Project – IV, which spans all the designated banks, branches

#### Box XIII.4

##### Cheque Truncation Model for India

The Working Group on Cheque Truncation and E-cheques recommended an image based cheque truncation at the presenting bank for all cheques, irrespective of value, beginning with the four metro centres. The physical cheques will be truncated within the presenting bank to derive maximum efficiency and settlement will be generated on the basis of the current structure of the MICR fields. Electronic images will be used for payment processing. Grey Scale technology for image capture will be used for imaging. The preservation period of paper instruments will be one year and that of the electronic images will be eight years. A centralised agency per clearing location will act as an image warehouse for banks. Minimum entry norms for the warehouse agency such as technical competency, efficiency orientation and size of resources have been recommended.

Deployment of Public Key Infrastructure (PKI) to protect data and image flow over the network and to establish authenticity, non-repudiation and integrity and use of digital signatures is another recommendation of the

Group. Certification process based on Information Security Audit guidelines of the Reserve Bank for participants has been recommended. Countermanding payments and recording stops will be allowed till the time of payment, as is the existing practice. The implementation of cheque truncation will result in accelerated cheque clearing and settlement process, especially for the outstation cheques.

A pilot cheque truncation project is to be undertaken in the National Capital Region of Delhi and nearby areas. Tenders for the procurement of the central system for the Clearing House at Delhi were floated and the process of evaluation of the technical bids received from vendors is currently under progress. Banks have been advised to take initial steps for procuring the requisite systems at their end.

#### Reference

1. Reserve Bank of India (2003), 'Working Group on Cheque Truncation and E-cheques', July.

### Box XIII.5

#### Central Counter Parties

A Central Counter Party (CCP) is an entity which interposes itself between counterparties to financial contracts in one or more markets, becoming the buyer to every seller and the seller to every buyer. By doing so, the CCP assumes the counterparty risk associated with each buyer and seller. Central counterparties play an important role in ensuring smooth clearing and settlement of financial transactions through containment of settlement risk. CCPs have long been used by derivatives exchanges and a few securities exchanges and trading systems. In recent years, they have begun to provide their services to Over-The-Counter (OTC) markets also, including the markets for fixed income securities for outright as well as repo transactions like the Clearing Corporation of India Limited (CCIL).

The effectiveness of a CCP's risk controls and the adequacy of its financial resources are critical aspects of the infrastructure of the markets it serves. A risk management failure by a CCP has the potential to disrupt the markets. Therefore, securities regulators and central banks have a strong interest in risk management systems of the CCP. In November 2001 the Committee on Payment and Settlement Systems (CPSS) of the central banks of the Group of Ten countries and the Technical Committee of the International Organisation of Securities Commissions (IOSCO) issued a report entitled Recommendations for Securities Settlement Systems (RSSS). Under Recommendation 4, each CCP is to rigorously control the risks that it assumes. The Task Force on Securities Settlement Systems, with representatives from central banks and security regulators from 19 countries and other international organisation like the IMF, the World Bank and the BIS, was mandated to develop standards for risk control by CCPs. The report of the Task Force, released for public comments, recommends:

- A well-founded, transparent and enforceable legal framework for each aspect of CCP activity in all relevant jurisdictions;
- Sufficient financial resources and robust operational capacity to meet obligations arising from participation in the CCP;
- Calculation of the CCP's credit exposures to participants on a daily basis and holding collateral which, in normal market conditions, covers its potential

losses from closing out positions held by a defaulting participant;

- Maintenance of sufficient financial resources to withstand a default by the participant to which it has the largest exposure in extreme but plausible market conditions that produce losses not fully covered by collateral requirements;
- Clear and transparent default procedures to ensure that the CCP can take timely action to contain losses and liquidity pressures.
- Holding assets in instruments with minimal credit, market and liquidity risks.
- Identification of sources of operational risk and minimising them through the development of appropriate systems, controls, procedures and business continuity plans;
- Money settlement arrangements that eliminate or strictly limit settlement risks - funds transfers to the CCP should be final when effected;
- Clear statement of obligations with respect to physical deliveries, with risks from these obligations identified and managed;
- CCPs that establish links either cross-border or domestically to clear trades should design and operate such links in ways that observe the other recommendations contained in the report.
- Cost-effectiveness in meeting the requirements of users while maintaining safe and secure operations;
- Effective, clear, and transparent governance arrangements for a CCP ; and
- Provision of sufficient information to market participants to identify and evaluate accurately the risks and costs associated with using its services.
- A CCP should be subject to transparent and effective regulation and oversight.

#### Reference

1. Bank for International Settlements (2004), *'Recommendations for Central Counterparties, Consultative Report of Committee on Payment and Settlement Systems'*, January.

and centres, is in progress on a live mode. Of the 11,000 bank branches connected, more than 5,150 branches collected 8.58 lakh challans that were transmitted under the OLTAS project during the quarter January-March 2004.

#### *Payment System Infrastructure and Utilities*

13.19 The Indian Financial Network (INFINET), established by the IDRBT as the secure, exclusive

communication backbone for the banking and financial sectors, registered further growth during the year with the membership going up to 163. The bandwidth of the network was considerably enhanced to meet the growing demand and for improving performance and availability. The terrestrial links of the network between the metropolitan centres were upgraded to 4 mega bytes per second (mbps) from 2 mbps, while the links connecting other centres were upgraded to 2 mbps

**Box XIII.6****Online Tax Accounting System**

The Income Tax Department has set up a National Tax Information Network (TIN) to act as a repository of all taxpayer related information, including payment and refund of taxes. It would enable assesseees to pay taxes and get refunds electronically, besides providing the Income Tax Department with information for accounting in a scientific and accurate manner. As a part of TIN, an Online Tax Accounting System (OLTAS) has been conceived. Under the OLTAS, a network of about 11,000 branches of various banks authorised for collection of tax receipts has been

established. The Reserve Bank and the Tax Information Repository at the National Securities Depository Ltd. (NSDL) are also part of the OLTAS. Data are captured from the challans submitted by tax payers tendered at the designated bank branches and transmitted electronically to the repository. The collection and transmission of data on tax collections is on a T+1 cycle basis. The OLTAS works in a fully secured environment, with data being transmitted using encryption facilities and digital signatures for enhanced security.

from 64 kilo bytes per second. The link between Mumbai and Hyderabad was quadrupled to 8 mbps. Furthermore, connectivity to INFINET was enabled through Integrated Services Digital Network (ISDN) channels to provide redundancy so that additional mode of access is available. The INFINET has become a hybrid network with satellite, terrestrial and ISDN connectivities. Wireless connectivity in the form of radio frequency links is also being tested to enhance its robustness.

13.20 The INFINET's Structured Financial Messaging Solution (SFMS), which is a domestic messaging system similar to the system of the Society for Worldwide Interbank Financial Telecommunication (SWIFT), was upgraded during the year to allow transmission of files in a secure manner. Initiatives are being contemplated for providing access to SFMS through the Internet. This would facilitate the usage of SFMS by a larger section of the financial community and provide for seamless integration of messages with members of the INFINET as also with other financial sector participants.

13.21 As part of measures aimed at enhancing the facilities available through INFINET, the IDRBT is constantly providing upgrades to the network. Some of the activities planned for the near future include the provision of increased bandwidth in the form of

increasing the capacity of the leased lines between the major metropolitan centres to 8 mbps and across other cities to 2 mbps. The Network Management System (NMS) at the IDRBT would closely monitor availability of the network so that the high levels of availability (which is in excess of 99.9 per cent) are maintained.

**INFORMATION TECHNOLOGY IN THE RESERVE BANK**

13.22 The primary role of information technology (IT) within the Reserve Bank is to support its business objectives and to provide efficient customer services. A Strategic Information Technology Plan (SITP) is being prepared to provide the framework for effective management of information technology resources in the Reserve Bank. The plan is built on an IT management model based on both centralised and decentralised IT management, decision making and support.

13.23 Information security is a key requirement in a technology intensive environment. A comprehensive Information Security Policy (ISP) covering the various information assets of the Reserve Bank was prepared following international best practices and codes, including the ISO 17799 code on Information Security (Box XIII.7).

**Box XIII.7****Information Security Policy**

The objective of the Information Security Policy is "to provide the Reserve Bank with a critical minimum information security framework to address and manage various security risks to information assets and quality maintenance". These assets include information processing facilities, information system functions, information shared electronically, information transmitted by mail or through other communication media, information transmitted through computer network or

other electronic means and information stored or reprinted on paper.

The IS Policy categorises information based on its nature of sensitivity. The Policy will apply to all the units of the Reserve Bank, subsidiaries and managed affiliates which share IT resources. It will also apply to all service providers who perform any function of relevance. The policy will be supplemented by the best practices, procedures and guidelines for IT / Information Security.

**Box XIII.8**

**Disaster Recovery Management and Business Continuity Plan**

The Disaster Recovery Management and Business Continuity Plans (BCP) have gained significance after the events of September 11, 2001. Considerable emphasis is placed on regular review, updating and testing of disaster recovery and business continuity plans.

The Reserve Bank has adopted a dual strategy for its DRS/BCP - one for mission critical applications and the other for other applications. The approach towards Business Continuity is to ensure that in case of any contingency, operations are resumed within a minimal time gap of two hours in the case of mission critical applications and within a day in the case of others. While both the applications will have off-city recovery and business continuity site/s, the mission critical applications

will have on-city recovery and continuity site as well. The IT resources and assets will be consolidated in the form of Data Centres both at the Primary Site and at the Recovery and Continuity site/s. Data processing requirements of the Central Office Departments (CODs) would be provided by the systems at the Data Centre. Normal day-to-day operations of the regional office (RO) applications and other locations would work independently, *i.e.*, independent of the Data Centres but would provide means to upload daily transactions to these Data Centres. In case of an emergency, the affected COD/RO would operate the computer systems from the Data Centre/s either remotely from the affected location or from its application from any of the two Data Centres.

**IT Efforts in the Reserve Bank**

13.24 One of the key objectives for IT implementation within the Reserve Bank is to ensure desktop computing capability for every employee, which would result in a 1:1 ratio in respect of computers and employees. An Intranet of the Urban Banks Department (UBD), which acts as a common platform for communication between its regional offices and the central office, was made operational. The Centralised Public Debt Office Module under the integrated PDO-NDS-SSS system was implemented in all 14 Public Debt Offices (PDOs) of the Reserve Bank. Live operations on the Primary Market Operations (PMO) Module commenced from October 20, 2003. The second phase of the Centralised Funds Management System consisting of the Funds Transfer module with latest Public Key Infrastructure (PKI) - based security is ready for implementation. It will provide Straight Through Processing (STP) capability for banks. The Integrated Establishment System (IES) - a platform for establishment related payments/recoveries apart from payroll processing - is scheduled to be operational by July 2004.

13.25 In order to provide internet banking services to the customers of the Reserve Bank, a secured Internet Website was established and is currently under testing. This system will facilitate two-way electronic access to those constituents who are not members of the INFINET. A blue print for an Enterprise Knowledge Management System (EKMS) will be implemented in stages.

**Disaster Recovery Management**

13.26 Critical importance was attached to the back-up and disaster recovery management systems in 2003-04. Two geographically dispersed sites were identified as back-up/disaster recovery and data centres are being set up at these locations. The back-up site established for mission critical applications was tested for live operations during the year (Box XIII.8).

**Outlook**

13.27 The Reserve Bank is committed to providing a safe, secure, efficient and integrated payment and settlement system for the country. The operationalisation of the RTGS would greatly facilitate the optimum utilisation of funds. The draft bill on the constitution of the Board for Payment and Settlement Systems under the Reserve Bank of India Act, 1934 would provide an explicit legal sanction to the Reserve Bank's oversight of payment and settlement systems. The INFINET is emerging as the communication backbone for the banking and the financial sector. Cheque truncation is expected to reduce the delay in payment system considerably. Continuous efforts towards upgradation of technology within the Reserve Bank would help in improving its customer services. Initiatives for setting up disaster recovery management would gather momentum with comprehensive business continuity plans to anticipate disasters and cope with them.