Communication Networks in Banking System:

As per the recommendations of the Saraf Committee, the Reserve Bank of India has set up a country wide data communication network for banks linking major centres of the country, known as INFINET (Indian Financial Network) and this network uses satellite communication with very small aperture terminals (VSATs) as earth stations.

VSAT network is a single closed user group network for the exclusive use of banks and other financial institutions. The VSATs are owned by individual banks and the RBI. The hub is owned by the RBI and the Institute for Development and Research in Banking Technology (IDRBT). Satellite services based on VSAT technology can establish reliable links to all sites. The central hub monitors and controls the flow of network traffic.

COMMUNICATION NETWORKS

BANKNET : The Bank recognised the pressing need to harness information technology for intra-bank and inter-bank communications in the 1980s5 and set up BANKNET. The design and implementation of BANKNET was entrusted to M/s. CMC.

Commissioned in 1991, BANKNET is a packet switched X.25 based network with nodes at Mumbai, Delhi, Chennai and Calcutta, and a switching centre at Nagpur with a mesh topology. In addition, Bangalore and Hyderabad are connected to Chennai through remote PADs. IBM 4381 mainframes at the 4 NCCs, connected to nodal Packet Switch Exchanges

(PSEs) through Front-End processors using NCP/NPSI (Network Control Program/Network Packet Switching Interface), provide messaging facility. BANKNET uses a store-and-collect transmission logic, provided by the Message Transfer Utility(MTU), in the systems.

User banks access BANKNET through leased lines at the respective local centres using asynchronous ports on PADs and PC/UNIX machines with COMET (Computerised Message

Transfer and File Transfer) software, developed in 'C'. The Message Transfer Utility enables 400 users to login at a time at each IBM node.

COMET has facilities for message creation, deletion, editing, ascertaining status of messages, listing and receiving acknowledgement etc. It also permits free format messages of 8 lines of 48 characters each.

Various message format templates, similar to SWIFT formats are available in **COMET**.

Message formats for funds transfer applications such as TT issue, TT Purchase and TT Confirmation, Bank transfer on own account, Bank transfer in favour of a third party, etc. are available. Similarly several message formats for critical data transmission activities such as reporting weekly statement of accounts, daily and monthly balances of Government accounts, agency transactions in Government accounts, transfer responding advices, foreign currency rates, advice of cheques for collection, balance queries, inter-city advices etc. too are available.

The Committees on Communication Network for Banks and SWIFT Implementation, chaired by Shri T.N.A.Iyer, Executive Director, Reserve Bank of India recommended the setting up of BANKNET and also suggested that banks in India should join the SWIFT Network.

BANKNET usage, however, fell far below expectations. The main reason for this was that BANKNET was far ahead of its time in the sense, that a critical mass in computerisation, change in work procedures necessitating the use of communication technology had not been reached at the user end. The users did not, therefore, feel the necessity to make use of the network resources. Coupled with this was the high rate of leased line failure of both the inter-city and intra-city data circuits. Another crippling factor was the reach of the network, which was limited to the number of BANKNET ports which a bank had. This essentially meant that the exchange of messages was limited to these nodes. The improper location of these ports at the banks' end was also an additional factor. The limitations of the COMET application software, which did not permit file transfer was yet another factor.

RBINet : RBINet, a communication software, developed in 'C' and available for both DOS and UNIX machines, allows free format messaging and file transfer on the existing BANKNET infrastructure with the help of UNIX servers installed at the 4 NCCs. Each RBINet user interacts with the local UNIX server through PADs connected to the X.25 switch. The UNIX servers in turn communicate with each other using TCP/IP over the X.25 protocol. The software allows free format messaging without any restrictions on the length of the message, enables file transfer of both ASCII-text and Binary (spreadsheets, data bases, programs etc.) files, facilitates dial-up access, and has security features such as end-to-end encryption, audit trail, etc.

RBINet is also being used by several Departments of the Bank for various applications such as (i) transmission of Sec 42(2) of the RBI Act, 1934, data by commercial banks to Regional offices of Department of Banking Operations and Development (DBOD) and furnishing of consolidated data by the Regional offices of DBOD to Central DBOD; (ii) Press Relations Division daily news

summary of important financial matters; (iii) Department of Economic Analysis and Policy Macro Economic Indicators on a weekly basis.

Society for Worldwide Inter-bank Financial Telecommunication (SWIFT) :

India was the 74th country to join the Society for Worldwide Inter-bank Financial

Telecommunication (SWIFT) network on December 2, 1991. The initial membership of Banks in India was 34. Using advanced data-processing and telecommunications technology, the SWIFT system is based on the following features:

Society for Worldwide Interbank Financial Telecommunication (SWIFT) is a safe and secure international messaging network that banks from many countries use to make payments from one country to another. This global network connects banks to communicate messages about securely transferring funds using a code. SWIFT was founded in 1973 by a Belgium-based society to facilitate financial and banking institutions to wire money to each other so that global trade could carry on easily and smoothly. SWIFT was set up out of fear that a single private and fully American entity Citibank, formerly First National City Bank, might control the global financial flows.

11,000 banking institutions use SWIFT

About 11,000 members (banking institutions) spread across 200 countries use SWIFT to send nearly 33.6 million transactions every day. In 2020, about 40 million messages with instructions to send trillions of dollars were sent each day over the platform. The banks find SWIFT transactions very safe as the messages are delivered over the network; these messages also help the banking system to honour the payment instructions swiftly.

Three data centres

Three data centres run the secure messaging network of SWIFT, located in the US, the Netherlands and Switzerland; a command and control centre is located in Hong Kong. These data centres share information in near real-time; however, if there are any lapses reported from any of the data centres, another centre can handle the transaction traffic. SWIFT uses submarine communications cables to transmit its data.

SWIFT currently provides services to financial institutions, including banks, exchanges, depositories, brokerages, asset management organisations, currency exchanges, security dealers and corporate treasuries.

The technology used by SWIFT

According to Crunchbase, SWIFT uses about 19 technology products and services for their smooth transactions, including HTML5, Google Analytics, and jQuery. About 61 technologies are used for SWIFT's website, including Viewport Meta, IPhone/Mobile Compatible, and SPF.

How is SWIFT using AI?

SWIFT offers its community a platform for messaging, standards for communicating, and value-added products and services for which AI technologies are used to enhance the quality.

AI for Reference Data is used to

– Re-structure data files that come from various sources worldwide

– Improve local language translations

– Clean data and provide missing data elements

For example, today, there is a lack of quality in the address field for some countries. SWIFT uses ML to structure that data better and improve the translation for enhanced data quality.

AI for Standards is used to

– Facilitate the migration to ISO 20022

– Investigate the logic and the pattern among different standards

– Validate new standards

For example, SWIFT performs AI research on different financial messaging standards to facilitate and automate the migration from any financial messaging standards to ISO 20022.

AI for Financial Crime compliance is used to

– Tune and improve fraud detection rules

– Identify uncharacteristic business relationships

– Optimise effectiveness and reduce false-positive cases

For example, SWIFT performs AI research for payment control solutions to derive a personalised payment rule for each customer automatically.

AI for Business Intelligence is used to

– Improve data quality

– Enhance products

– Perform profiling and peer group comparison for anomaly detection

For example, for SWIFT GPI, SWIFT performs AI research to determine the quickest, cheapest and most effective route that payment can take.

Although SWIFT has leveraged AI at various stages of their transactions, from messaging to fraud detection rules and detecting anomalous activities in financial SWIFT transactions using ML and behavioural analytics, it is only recently that SWIFT has announced a new AI platform. SWIFT is now leveraging a pivotal role in the financial industry to develop transformative AI solutions by enabling a high-performance AI platform that is future-ready for hybrid cloud.

Transformational AI

At Sibos 2021, Tom Zschach, chief innovation officer at SWIFT, said, “We see that the use of AI and predictive analytics is the key to delivering our strategy, which includes instant and frictionless payments. We are now focusing on building on AI and ML solutions to enhance our existing products. We are rolling out an enterprise-scale AI platform at SWIFT along with our technology partners. Red Hat will help us with the container platform. Kove, a software company, has given us software-defined memory, and C3.AI has given data ops, for machine learning ops and DevOps.”

In December 2021, at the AI Summit in New York, Red Hat and SWIFT presented details about using AI/ML and containers in the financial services industry. As the financial industry’s neutral and trusted provider, SWIFT is helping the community of over 11,000 financial institutions move value around the world reliably and securely at scale.