

Alternative to existing Core Banking System [CBS]

Motivation behind the Introduction of CBS

1. Prior to the introduction of Core banking System [CBS] , in order to make any transaction a customer needed to go to his/her home branch of the concerned bank / post office with transaction instrument (deposit / withdrawal) cash (for depositing) and sometimes the relevant pass book too. The branch personnel , during any transaction, used to verify the following :
 - i. The Account Number of the concerned customer from the relevant Ledger Folio.
 - ii. The signature of the customer as has been recorded in another paper ledger in case of any withdrawal.
2. Before completing any transaction , the concerned branch person also had to record the transaction details both in the folio of the relevant paper ledger as well as in the pass book of the customer.
3. This took time but used to cater to the various needs of ALL the customers of that bank branch / post office branch. independent of any other external factors like link availability, central server operability etc.

The Problems faced with such a Modus Operandi / The Key motivation behind the introduction of Core Banking System. [CBS]

- a) The whole process of updating of each customer record as well as entering each transaction in corresponding ledger involves paperwork exclusively which is not only environment unfriendly but also poses a problem of storage as well as archiving . This also posed a hindrance of prompt retrieval .
- b) In most cases in order to carry out a transaction , it was almost mandatory for the concerned customer to go to his/her home branch personally, Any third party transaction initiated by any customer in any non home branch either took significantly long time or not allowed at all.
- c) The old system also posed a problem in smooth inter bank / inter post office transfer / Third party transfer since it requires written communication to be exchanged between the participating branches also involving the local Head / Regional Office .Recording such transactions posed another major problem in the form of large paper work as well as significant time & effort to pass relevant messages and taking actions in response.

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The advantages/ Pros of Core Banking System. [CBS]

- (1) In the existing CBS Architecture there exists a STAR network in which there lies a Central Server Pool to which ALL the different clients situated at the different branches are connected using dedicated links. All necessary data about each customer as well as the related accounts information are stored in the Central Server Pool and all necessary access as well as updating are carried out in the central server pool only.
- (2) The CBS had been introduced to replace the paper ledger as well as give flexibility to any customer to be able to access and also carry out transactions in his/her account from any CBS enabled branch / through online net banking facility via mobile/ laptop /desktop by just accessing the Master Ledger maintained at the Central Server Pool .
- (3) CBS had ushered in **unique identity codes for any bank branch / post office branch [IFSC]** and also *has introduced **unique customer ids** for each customer as well as some global numbering scheme for different types of customer accounts.* CBS has also facilitated introduction of ATM Kiosks.
- (4) CBS had also facilitated the introduction of KYC [Know Your Customer documents] like PAN Card, AADHAR Card, Voter Card , Passport , Driving License each of which can be linked to any customer thereby facilitating the removal of so called fake accounts used exclusively for money laundering.
- (5) It provides better control over access rights to any information related to any account for any customer.
- (6) In a Centralized Server Based System it is easy to implement security mechanism.
- (7) CBS also provides better scalability since all it needs to establish a new client is to provide that client with necessary connectivity to the server pool without affecting any other clients.

The Disadvantages/ Cons of Core Banking System [CBS] in it's present form :

- (1) Inclined towards on line Transaction i.e. suitable for Computer Literate as well as Tech Savy people , a far cry in a country like India.
- (2) Any of the branch (client) functionality is solely dependent on its link to the Central server / server pool . Link breakdown completely makes that concerned branch (client) non functional.

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The Disadvantages/ Cons of Core Banking System [CBS] in it's present form (Contd.):

- (3) The turnaround time needed for validation of each & every transaction carried out at any branch any time at the central server pool also slows down the whole operation thereby causing an increase in the service time for each user at the counter, another cause for customer annoyance.
- (4) Since ALL transactions as well as Account Information is maintained in a Central Server Pool it is susceptible to Hacking by Intruders which may affect millions of remotely situated customers without their knowledge.
- (5) All disputes / complaint needs to be forwarded to the Central Server Pool Team hence ALL Redressal mechanisms gets delayed which may cause financial loss to the concerned customer.

Alternative CBS Architecture Proposal is based on the following Premises

[Over the Counter Customer Service can never be Disrupted]

- i. In a country like India , about 90-95% of the people do prefer to carry out ALL types of banking transactions especially cash deposit & cash withdrawal from across the bank / post office counter in person. So any delay / suspension of such over the counter service due to some remote failure like LINK failure , central server down will leave ALL such customers aggrieved. So primary emphasis should be maintaining over the counter service at ALL branches just as in the age of paper based ledger days.
- ii. Online transactions , though introduced for last several years , is either still NOT popular because most people views such transactions skeptically . Moreover most of the customers are ill equipped to carry out on line transactions either due to lack of operational knowledge or they are afraid that each online transactions make the corresponding account vulnerable to cyber crime initiated by online fraudsters.

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Alternative CBS Architecture Proposal is based on the following Premises
(contd.)

- iii. Most ordinary bank / post office customers assume that computers will act as a replacement of the paper ledger thereby enabling to expedite ALL transactions . No one is going to accept the fact that because of some problem at a remote place OR malfunctioning of some remote computer one cannot perform deposit / withdrawal in one's home branch or more importantly one loses money due to some remote hacking.
- iv. Each & every bank / post office branch used to keep & maintain records of ALL it's local customers in it's paper ledgers hence **when migrating to computer based banking it is highly possible to store / transfer ALL these records (about the home branch customers) in a server maintained within the branch itself. It is also desirable that ALL transactions (remote / local) pertaining to each of the home branch customers are recorded and maintained in the corresponding branch server itself.**
- v. All disputes should be first resolved at the concerned home branch and if not possible THEN only should be forwarded to the Central Section thereby ensuring prompt & timely Redressal.
- vi. Summarizing , we are proposing a model of Distributed Data Base with each branch server representing a node of it and in addition a Central Server Pool maintains a copy of each of these data bases with only VIEW option. Only the branch servers will allow ANY type of transaction for any account maintained in that branch.

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Proposed Alternative frame work

Distributed cum Hierarchical Client Server Architecture

- A. Each branch is equipped with its own **dedicated server** that **contains all data about each of its home branch customers as well as** record & maintain **ALL** transactions related to each of the home branch customer (**analogous to previous paper ledger culture**). Each of these branch servers will be linked to the central server pool like currently prevailing CBS , only Branch servers capability needs to be enhanced and home branch customers data needs to be imported from the Central Server to the relevant branch servers.
- B. **The Central Server pool linked to each of the branch servers like existing CBS** will maintain a copy about the following :
- i. **Customer Profile** : That includes among other things the following :
 - a. **Name.** [Shared with the concerned Branch].
 - b. **Customer id.** [**Allotted CENTRALLY** Shared with the concerned Branch].
 - c. **KYC Details** [AADHAR Card(Mandatory) , PAN Card (Mandatory), Passport , Driving License etc. Uploaded by the USER on line / By the Customer's home branch to the Central Server , **Linked up to the requisite Main Data Base (ITAX, AADHAR etc.)** . Can be retrieved by any Branch for verification].
 - d. **Customer Unique Identity** : [Signature + Some form of Bio Metric Data like Left Thumb Impression (needs to be validated with submitted KYC document like AADHAR) Shared with the concerned Branch]
 - e. **Customer Contact Details** [Address (Mandatory) Mobile/ Phone (Mandatory) , e-Mail (Optional). Shared with the concerned Branch].
 - f. **Customer Account Details** : [View options in Central Server, All Transactions happening at the Copy residing in Home Branch / Client Machine , **REGULAR** Update option in a periodic fashion (**WRITE BACK** option) **AFTER** Banking Hours].

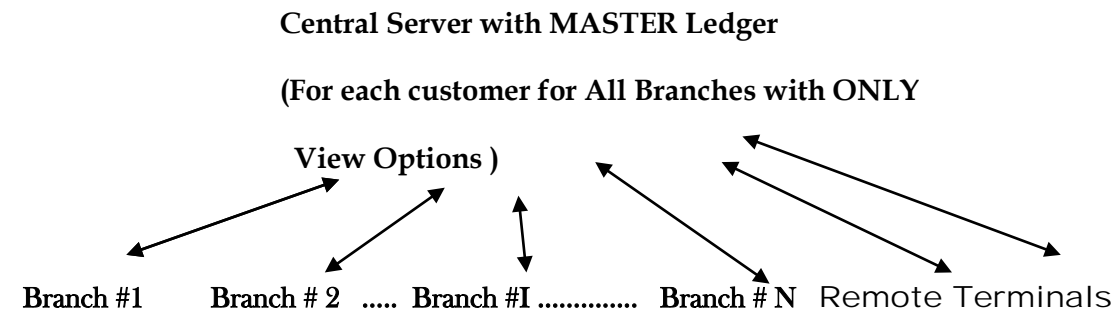
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Proposed Alternative frame work (Contd.)

Distributed cum Hierarchical Client Server Architecture

- C. All transactions [local (over the counter) and/or Remote (including ATM)] related to any particular account needs to be authenticated and carried out at the corresponding home branch only **with ALL remote transaction requests (including ATM / Debit / Credit Card Transactions) routed through Central Server Pool.****
- D. Regular Updating of the Central Server Pool (in the WRITE BACK mode) for ALL transactions happening at each branch Data Base Servers. Encrypted Transmissions over the Links are needed.**
- E. Any Link Failure between any Branch Machine with the Central Server Pool will BLOCK ALL remote transactions for THAT Particular Branch routed through the Central Server Pool.**
- F. During Business / Office Hours Local / Over the Counter Transactions always takes precedence over any Remote / Non Local Transaction request.**
- G. Open Source frameworks will be used to implement the Entire Software (if required in House).**

The Architectural Layout of the Scheme



(All Information about ALL Customers of the Home Branch

maintained Exclusively at that Branch only WITH FULL TRANSACTION Rights)

[Remote Transactions Initiated by Any Remote Terminal (ATM Machine, Net Banking , Mobile Banking) are s Routed Through the Central Server Pool to the corresponding Branch Server only]

The Time Interval needed :

- (1) Designing of Branch Server Schema ----- 6 Months / 1 Year**
- (2) Importing Branch Customer Data from the Central Server Pool ---
6 Months**
- (3) Validation of Remote Transactions Update ---- 1 Year.**
- (4) Validation of over the counter / local transactions – 3 Months.**
