



E-News Update

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Regional Processing Models

The search for successful regional and global IT processing models has been a major focus of the last fifteen years across banks, insurance companies and telephone companies.

As a result of this focus and effort, the world of Mobile Network Operators (MNO's), banks and insurance is now much more homogeneous. Consumer perceptions, competition, regulation, cost of infrastructure and attitudes within industries have driven the successful development of regional processing models.

Credit cards are a good example of the global conformity that now dominates the retail finance industry. Credit cards have high customer numbers and high transaction volumes and are one of the major innovators in retail financial services.

Delivery in this high volume market has been achieved by regional and/or global IT processing. Players such as American Express deliver global consistency by very tight control over 3 mirrored processing sites, while Citibank delivers consistency by processing 85 countries from one site.

There are clear lessons from these and other examples that point the way in the development of a successful regional processing model for mobile payments. In this edition of e-news we will outline some of the issues that need to be considered.

Strategy and Structure for Regional Processing

A payments technology platform is only unique where financial system regulators and compliance agencies will influence not only the how but even the where transactions are processed. These compliance requirements are in a constant state of change. Further payment systems will touch potentially many more external points than a normal MNO system in terms of the variation of types.

Objectives for Regional Processing

Use scale to drive efficiency through:

- Lower technology procurement costs
- Group wide operational support
- Ease systems maintenance, database upgrades, hardware upgrades etc
- Centralized product development through a group wide framework (SDK)
- Continuity of service

Group standards to:

- Ensure a minimum service quality will be maintained across the group
- Improves ability to meet international scheme compliance
- Minimization of localized business processes and procedures
- Rationalized group staff training
- Ease problem resolution through a standard approach to audit logs, exception reporting, alerts
- Ease system integration through group wide APIs

Technology Structure and the Need for Agreed Operating Rules

- Adopt regional payment standards including messaging, payment channels and interface requirements to link into partner banks and merchants.
- Use an agreed range of product definitions and requirements with local modifications targeted at 10% of the base product. This allows consistency of product, process and measurement
- Ensure simplification of processing is maintained by using a standard set of operating rules, policies, technical requirements and procedures for all of an organisations countries. This will ensure the lowest cost of operating and ensure a 'straight through processing' model is achieved and managed
- Create 'certainty of service' with standardized operating procedures which outline maximum and minimum delivery times, specify full payment amounts and approve any fees and margins
- Provide risk mitigation through enhanced certainty of payment processes, procedures and policy
- Agree on the balance between local flexibility and regional control. This will allow cost benefits to be combined with local objectives.

Multi Country Models

There are three possible options as deployment models:

- Centralized
- Regional
- Localized

It would be wrong to force the small model, (especially centralized) on all operators.

The criteria should be based on:

- Regulatory constraints on payment processing off shore
- Size and diversity of the Subscriber base
- Level of localization required, regulatory and market
- Level of integration at the local level
- Operator in-house capability, (staff skill set)

It is conceivable for specific country operations to be supported centrally (or regionally) before maturing to a point where a local implementation of the technology can be supported by business volumes and product mix. In effect take a pragmatic view and not a philosophical view.

KEY ELEMENTS WITHIN PAYMENTS AND SUPPORTING TECHNOLOGY

The ability to establish and manage a regional payment network requires a structure and overview to ensure consistent performance. In essence this requires all transactions to be processed and managed and ensuring that each transaction balances with the required audit trail.

This can be summarized into three key requirements of any technology – speed, volume and diversity

Speed

The ability to transact payments at speed in country and across international borders is a fundamental requirement of any mobile payment network. The structure and management of high volume transactions requires a high performance platform that enables all transactions to be acceptable and processed in a fault tolerant environment.

GFG's mobile platform incorporates numerous design features and attributes that ensure fast processing. GFG's mobile platform uses the multi-tiers Spring Application Framework as light-weight container for the core transaction processor, services, and business functionality.

The use of Spring allows the mobile platform to be deployed in many different ways and that has allowed GFG to select the best architecture to support the customer's requirements such as scalability, remote processing, clustering, fault tolerance and fail-over.

In addition, GFG's mobile platform implements clustering and replication (Oracle's RAC) in association with databases for few reasons.

One of this is for performance, where processing speed can be spread process loads across multiple nodes; the second is scalability, since you can expect to get reasonable performance across a bigger system; and the third is for high availability.

This is all configured within the disciplines of banking industry standards to provide for an efficient integrated payment infrastructure. The intent is to ensure automated end-to-end payment processing reducing elements of potential payment processing delays.

Volume

All mobile payments network must be able to process large volumes of transactions with very high levels of accuracy and meet time targets. This requires a platform designed for scale and cost effective processing of payments.

The ability to deliver high volume banking standard performance is a key requirement in this area. GFG's platform uses multi-tiers Spring Application Framework that has the ability to handle volume growth by adding more nodes to its clustered environment. These nodes or processors can be the core transaction processor or database instance depending on the need arises.

However, the ability to handle volume is determined not only by application design, but also by underlying databases, transaction monitors, systems software, middleware and hardware platforms. A bottleneck in any one of these will impact the performance of the entire system.

The flexibility of the mobile platform has allowed GFG to select the best architecture to support the customer's requirements.

Diversity

Payment networks need to designed and managed to cope with diversity, both at consumer and transaction acceptance points but also within the network. The IT infrastructure will comprise many different operating environments, hardware configurations and the need to interface into different payment standards

Synchronizing mobile payments across a diverse environment requires experience and a flexible approach. GFG's platform uses Service-oriented architecture (SOA) to provide methods for application development and integration where business processes are packaged as interoperable services.

This allows heterogeneous IT infrastructure with different platform and applications to exchange data with one another as they participate in business processes. In addition, GFG's platform supports standard ISO8583 messaging for payment network interfaces.

PAYMENT PERFORMANCE ATTRIBUTES

Ensuring Data Accuracy

GFG's platform supports web based administrative modules through simplified and user friendly setup screens to ensure productivity and data accuracy. Handset user interface is designed to be user friendly for easy data capturing and to ensure data accuracy.

Speed of Processing

Near real time - however this is subject to payment network latency and the delay in SMSC.

Data Integrity

Complex financial transactions may involve passing the transaction to multiple interfaces for processing e.g. financial institution and mobile operator billing system. The transaction processor ensures the transaction integrity through the use of timers and reversal message facilities. All incoming / outgoing messages are logged and can be queried or reported on.

Data Security

End to end encryption for data transmission. Encryption keys are used to store sensitive data, to secure messages between interfaces and to protect specific fields within messages. Secure data is always stored in encrypted form within the database. Hardware Security Module (HSM) is used to manage encryption keys and Access through the Graphical User Interface is managed with individual username and password logon credentials. Users will only be granted access to parts of the system, based on their user access rights assigned to their security profile perform all encryption functions.

Resiliency

GFG's mobile platform is a payment system with redundancy to support service continuity. The key factor is the duplication of both processing capability and telecommunication links.

Performance

GFG's mobile platform is deployed in a clustered environment to support user requirement of scalability, remote processing, clustering, fault tolerance and fail-over. Additional nodes can be added to improve performance.

Compliance

GFG's mobile platform is compliant with industry standards such as Payment Card Industry Data Security Standards (PCI/DSS, Anti Money Laundering (AML) and Know Your Customer (KYC).

Data Synchronization

Oracle Enterprise Edition with Real Application Clusters (RAC) utilising the Oracle redo log capability for replication to disaster recovery (DR) adhoc query environment.

Audit and Recovery

GFG's mobile application logs all user access and be able to link all activities to individual users. Application has implemented an automated audit trail to track transaction and monitor access.

At the system level, the platform uses Oracle database auditing and recovery tools when disaster strikes.

Database Management

Oracle Enterprise Edition with Real Application Clusters (RAC) utilising the Oracle redo log capability for replication to disaster recovery (DR) adhoc query environment. However, the mobile payment platform is database agnostics where database mapping layer namely Hibernate is being used. As such the backend database platform can be other DBMS, such as MSSQL.

Change Management

Any request to system change is initiated through change request process. The migration of software releases to production is established by using Technical Readiness Notification (TRN) process. This is the process by which technical deliverables are advised to a pre-determined group. A TRN includes step-by-step technical installation details, dependencies.

The purpose of the process is to systematically track all modifications that are applied to each release.

In summary success beyond pilot stage requires a combination of these characteristics into a robust mobile payment platform that encompasses an ongoing knowledge of the evolving bank related messaging standards, security, processes and integration with banks.