

Conference of IT Heads of Banks

College of Agricultural Banking

Reserve Bank of India

8th December 2008



Introduction

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Agenda

- About Distra
- Background on Real-Time Payments
- Case Study – Faster Payments
- Final Thoughts

About Distra

- Payments and distributed technology company
- Privately held with offices in Sydney, Singapore and London
- Solutions for real-time payments – retail, consumer and wholesale channels
- Clients include top tier banks and Financial Institutions
 - Citigroup, VOCALINK, Barclays Plc, National Australia Group



Global Partners



2002: Development Partner
 2005: alliance discussions
 2006: platform certifications
 2007: joint client implementations



2001: Development Partner
 2002: Teaming Agreement
 2006: Voca FP platforms
 2008: AsiaPac Marketing Strategy



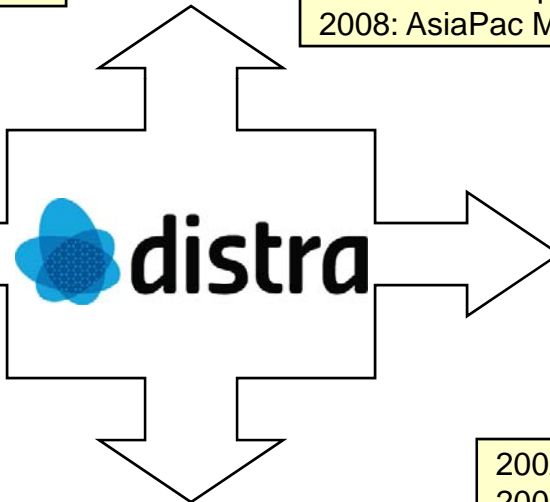
2006: Faster Payments Initiative
 2007: Deployment in 4 banks & CI
 2008: FPS Production



2002: VDPS Teaming Agreement
 2003: evaluated for CBA project
 2005: Utility Initiative



2004: Development Partner
 2005: SQL Server certification



2004: Oracle ISV Partner
 2005: Global Payments Initiative
 2006: Global Tier 1 Strategic Partner
 2006: Faster Payments Initiative

2002: Development Partner
 2003: Global Alliance Agreement
 2004: evaluated for CBA project
 2005: joint marketing initiative
 2007: joint NonStop strategy
 2008: Key Regional Account



What is Distra Switch?

- Distra Switch is a high performance, scalable, fault tolerant next generation payments switch
- Switch is the core of a real-time payments architecture
- Provides functionality to support processing of payments – acquiring, routing and processing, authorisation, limits, settlement etc
- Not just payments – healthcare, airlines
- Technically, the Distra Switch -
 - Built on open standards technology
 - A contemporary and distributed fault-tolerant architecture
 - Component software architecture provides easy extension
 - Executes on many platforms with complete reliability



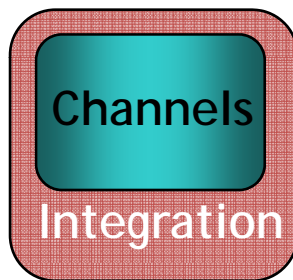
Technology

- Open systems solution, written entirely in Java
- Distributed, efficient and scalable architecture, cross-site operation
- Highly available and reliable system - no need or reliance on high end fault-tolerant hardware
- Utilizes Oracle database for ease of reporting, data extraction and warehousing
- Real-time monitoring, management dashboard views etc
- SOA compliant Web Services interface - integration into management portals



Innovative Architecture

- mission critical
 - fault-tolerant, distributed, replicated
 - failover and recovery
- Optimised for message switching applications
- message types, length NOT CONSTRAINED
- greater business agility



Retail Payments

Wholesale Payments

Other
Payments/non
Payments

Mission Critical Application Server (MCAS)

Headline Functionality

- Channels
 - Interchange, POS, ATM, IVR
 - Mail-order, telephone-order
 - Internet
 - Batch/File
 - IVR
 - Gateways
- Transaction processing
 - Multi-party transaction management
 - Routing options – BIN/BIC etc
 - Message enrichment
 - Duplicate check
 - Hotlist/Blacklist/Negative List
 - PIN validation
 - Scheme support (CVV/EMV)
- Payment Types
 - Debit/Credit card
 - Standing/Diarized Payments
 - Immediate/Online Payments
 - Batch Initiated
- Authorisation
 - Stand-in using Positive/Shadow accounts
 - Multi currency
 - Usage/Activity Limits
 - Floor Limits
 - Multi-Host Routing
 - EMV
 - Store-and-Forward
- Integration
 - Card Issuing Systems
 - Fraud/AML
 - EXI/Web Services
 - SNMP Management
 - Settlement/reconciliation
- Other
 - PCI Compliance
 - Multi Institution
 - Secure Auditing
 - HSM Security
 - Reporting
 - Data Warehouse Integration

Production/Benchmarks

- IBM Innovation Centre, Sydney

- Benchmark for Tier 1 UK Bank
- Configuration

- IBM System p Model p570
 - 8-Way POWER5 1.9GHz
 - 32GB RAM
 - configured as 2x4 way/16GB partitions
- AIX5.3 / IBM JRE V1.5 / Oracle 10g

- Results

- Target result of 1250 TPS @ 37.2% CPU Utilization
- Linear CPU Utilisation vs Load

- Barclays Bank Plc

- IBM System p Model p570x2
- IBM Test Centre, Montpellier, France
- 1,200 Transactions Per Second sustained
- 70M+ Transactions over 40 hours
- JVM Failure not noticed by IBM/Barclays

- SUN Microsystems Scotland

- Benchmark for European National Processor
- Configuration

- 2 x SUN M8000
 - 8 way SPARC64 VI CPU @ 2.4GHZ
 - 64GB RAM
- Solaris 10/SUN JRE 1.5.1/Oracle 10G
- Sun StorageTek 6540 SAN, with
 - 4 x 16 discs of 146GB at 15K RPM each
 - SAN Controller configured with 16GB cache

- Results

- Target result of 1,200 TPS @ 21.4% CPU Utilisation

- HP Enterprise Systems Laboratory, US

- Configuration

- 1*HP DL 580 G2 servers (4*Intel R Xeon 3.0 GHz)
- 1*HP DL 580 G2 servers (4*Intel R Xeon 3.0 GHz)
- Eva7410 SAN

- Results

- ~2000TPS

Real-Time Payments

Definition of Real-Time

- What is Real-Time?
 - Pay anywhere, anytime
 - With instant completion
- Why Real-Time
 - Instant gratification
 - Evolves business models
- An improved distribution model
- Ability to do immediate business



Drivers of Real-Time?

- Consumer Pressures
 - Transact in real-time
 - 24x7
- Visibility
 - Liquidity and position
 - Reduction on fraud and ML
- Regulation
 - Government intervention
 - UK Faster Payments
- Competition to Banks
 - Retailers, Telcos, PayPal
 - Innovative and leverages services



Why not Real-Time?

- If it ain't broke...
 - Don't fix it
 - Technological arguments against
- Benefits of delayed processing
 - Costs
 - Longevity of old systems
- Reluctance to change
 - Training and retooling
 - Legacy thinking
- Profit
 - Float
 - US FED report 16 cents per cheque accrued in float interest (1995)



Consider Evolution of Music Industry

- Previously...

- Walk to the record store (9-5)
- Purchase the LP
- Take it home take it home and play it
- Dub it for friends
- Localised distribution

Worked,
Slow,
Relatively inconvenient
Stores tied to record company

- Then...

- Drive to the mega mall (almost 24/7)
- Buy the CD
- Rip and file share
- Regional

Faster,
More economical,
more variety
Distribution threatened

- Now...

- iTunes
- Select – Click – Load
- Global

Instant,
Economical benefits,
Distribution by 3rd Party

Evolution of Payments?

- Previously...

- Cheques, store accounts, cash
- Localised usage
- Walk to bank (9-5)
- Pay by exchange

Worked,
Slow,
Relatively inconvenient,
Bank owned customer

- Then...

- Drive to the ATM
- Use credit cards
- Automate payments

Faster,
More economical,
More flexibility
Bank shared customer

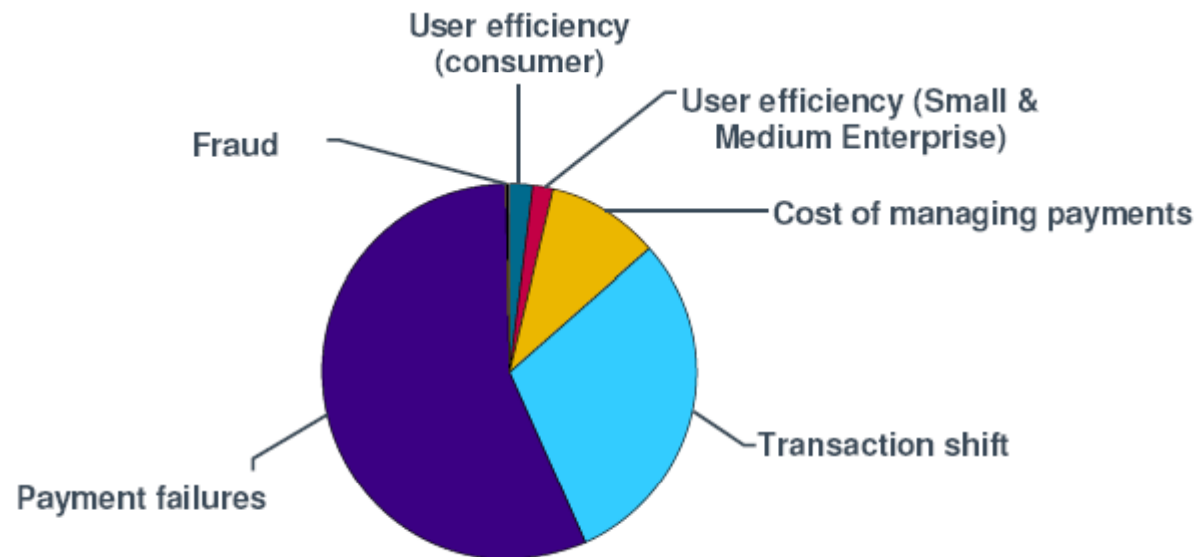
- Now...

- Instant transfer
- Point – click – pay
- Micro payments, mobile commerce, P2P

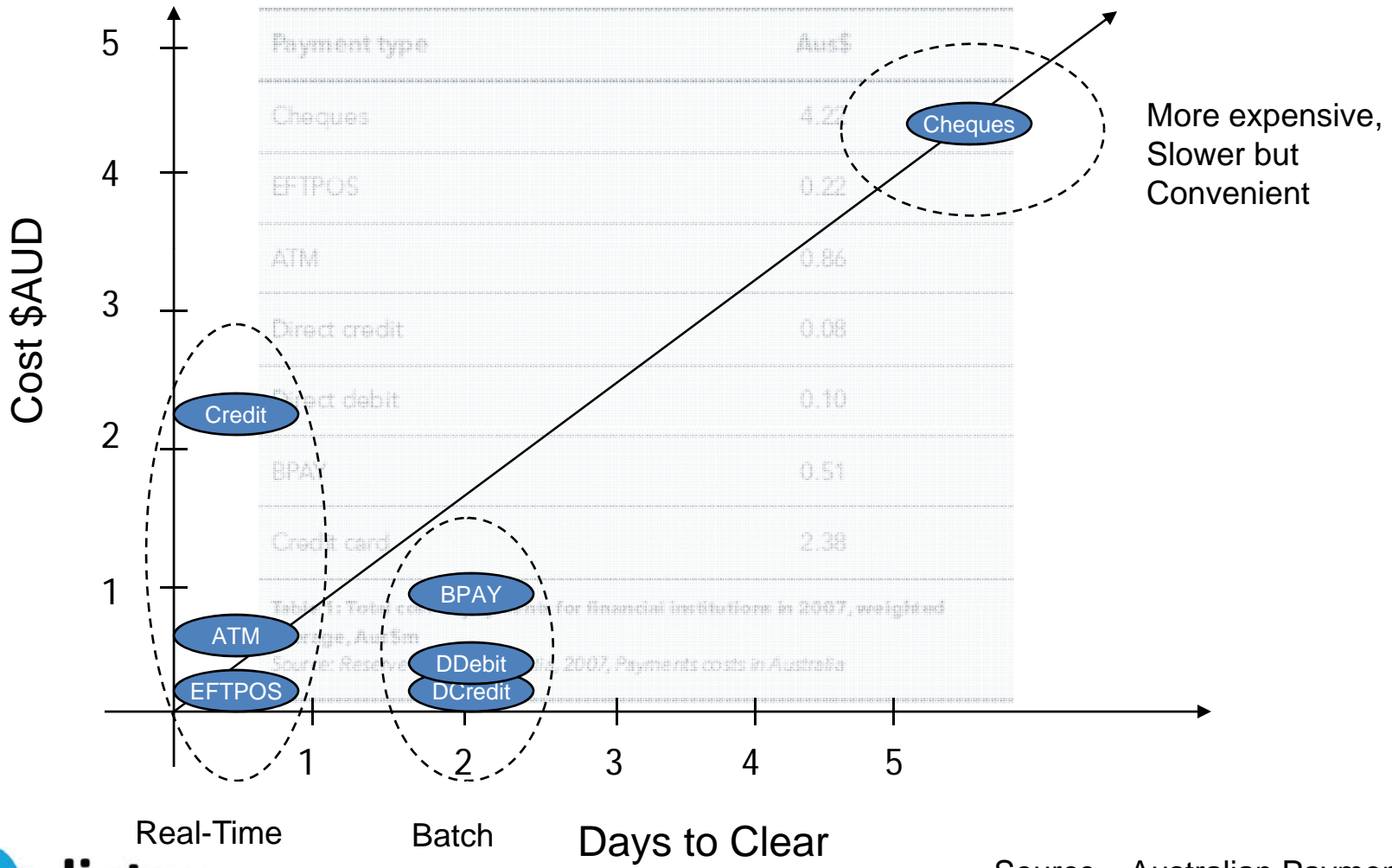
Instant,
Economical benefits,
Non Bank relationships

Economic Benefits of Real-Time

- Study of Real-Time payments in Australia
- If progressively rolled out in 2010 it could:
 - Reduce costs of payments by \$1 Billion
 - Improve GDP, potentially 0.12% by 2020



Cost vs Speed vs Convenience



UK Faster Payments

Background

- Cruickshank Report in 2000, Office of Fair Trading criticisms
 - Lack of innovation
 - Banks holding float
- Goals of Faster Payments
 - Reduction of the 3 day clearing cycles to real-time.
 - Meet the OFT expectations particularly with respect to personal customers
 - Achieve the maximum “reach” within the banking community
 - Build a 21st century system for 21st century customers
 - 24X7 availability
 - Multi-channel delivery, (internet, mobile, call centre)
 - Self service operation to reduce bank operating costs
 - Widely available, well understood, but future-proof technology
 - Enable account transfers between banks with the same ease and certainty as if the accounts were held at the same bank

Background

- VocaLink awarded contract to provide the service and manage scheme, selected Distra to provide key elements of the real-time payment flow
- Nick Masterson-Jones, Director of Information Technology for VocaLink, said:

"We selected Distra's technology as a key component of our solutions because its uniquely innovative architecture provides a combination of real-time performance, reliability and agility."



Benefits for the Bank

- A new bank revenue stream
 - Real-time service offers bank new channel and product capability
- Choice of Participation model
 - Both Direct and Indirect participation models are possible
- Increased efficiency - the real-time service operates on
 - Straight through processing principles
 - Self-service model putting customers in control (with automated support) and reducing bank costs. making the service a cheaper alternative payment method for banks.
- Interoperability
 - Standards based messaging will enable data interoperability with other payment schemes,
 - use existing network connectivity where appropriate

Benefits for the Bank

- Real-Time risk controls:
 - Settlement exposure limits are not exceeded.
 - Transaction value limits per transaction types
- Efficient use of liquidity:
 - Netting arrangements and settlement points can be tuned to enable the most efficient use of bank liquidity.
 - Enable settlement through a variety of mechanisms, using standardised SWIFT interfaces
- Seamless integration:
 - VocaLink supported gateway to facilitate integration with existing systems
 - Option to manage infrastructure
- Competition
 - Remain centre of payments
 - Compete with non banks e.g. PayPal

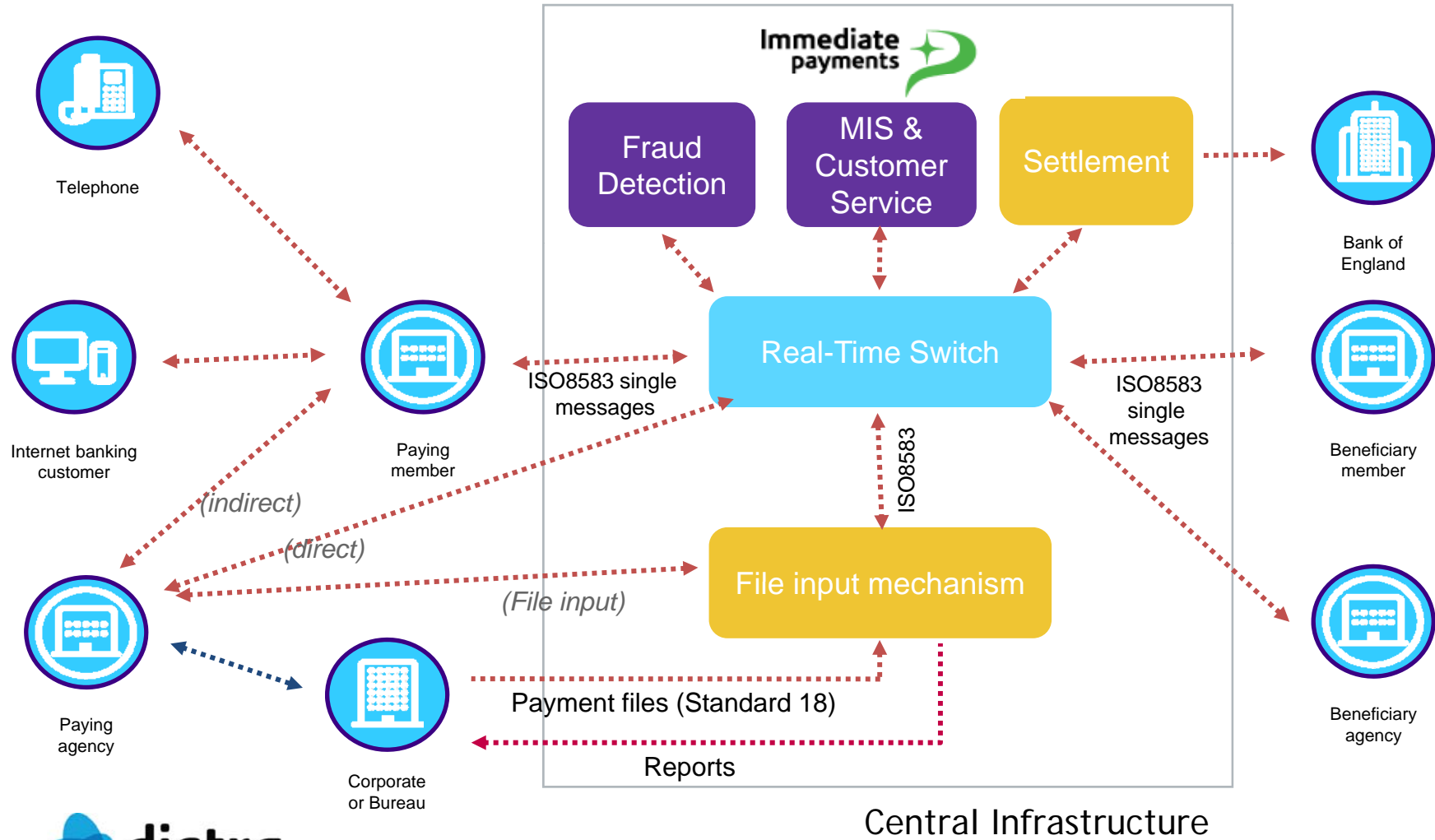
Benefits for the Customer

- Flexibility and convenience:
 - Integrated with existing Internet and Telephone banking channels
 - Expansion to new channels
- Guaranteed payments:
 - Real-Time payments are irrevocable.
- Immediate transfers:
 - Consumers will be able to make same-day payment transfers at a much lower cost, paying bills instantly.
 - Significantly improves corporate cash management

Benefits for the Customer

- Reassurance for bank's business customers:
 - Allowing real-time fund receipt monitoring,
 - Confidence in urgent business critical transfers
- Seamless integration:
 - Proven and managed solution
 - Integration with existing systems and new channels (e.g. mobile)
- Available when the customer needs it:
 - Operating round the clock 24 hours a day, seven days a week through a fail-safe, fault-tolerant operation

UK Faster Payments Overview

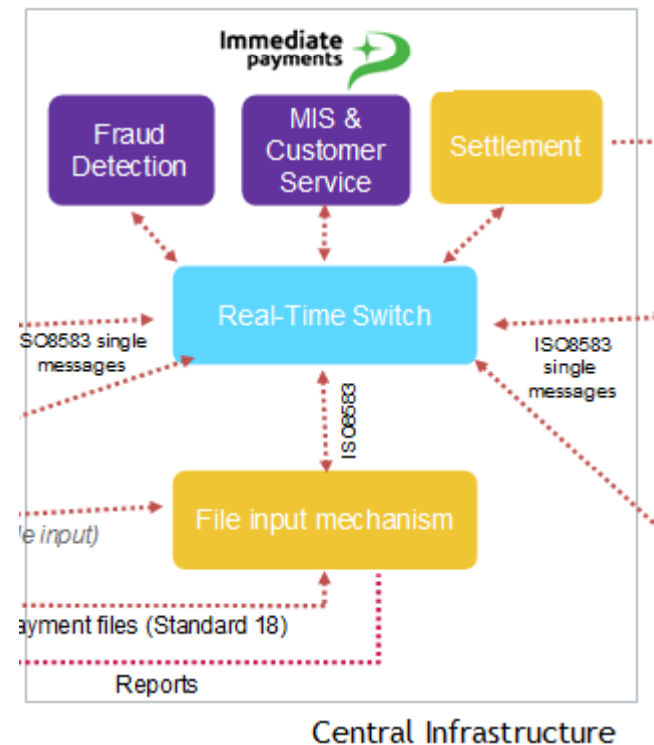


UK Faster Payments Overview

- Single Payments;
 - Initiated by paying bank customer
 - Strong authentication – fraud checks online within bank
 - Payment released to real-time switch by direct participant
 - Payments irrevocable from this point if accepted by beneficiary
 - Payer is notified of success via switch which increments settlement position (within 15 seconds)
- Process is real time - any failure is backed out and the transaction aborted automatically.
- 12 Tier 1 participants, agency relationships for smaller banks and financial institutions
- Immediate and Standing order payments

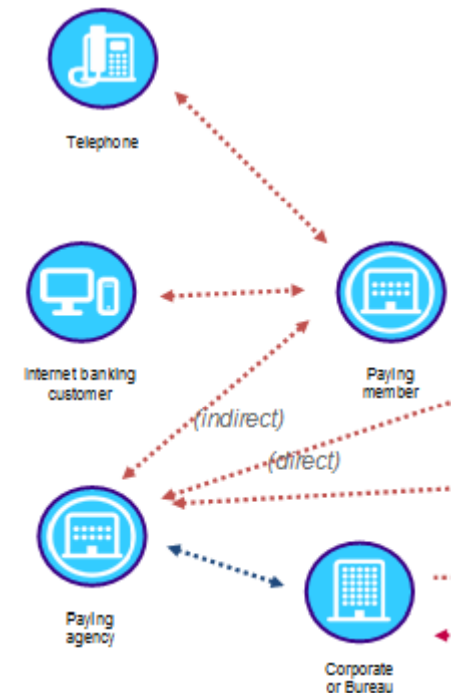
Central Infrastructure

- Standards Messaging;
 - ISO8583 Bases
 - Strong Security – 3DES Secured by HSM
- Routing of bank to bank messages
- Generates USM for management purposes
- Performs risk checks (item value, net sender cap, fraud) and routes to beneficiary
- Manages settlement via Deferred Net Settlement model via Bank of England at several points during day
- Process is real time - any failure is backed out and the transaction aborted automatically.



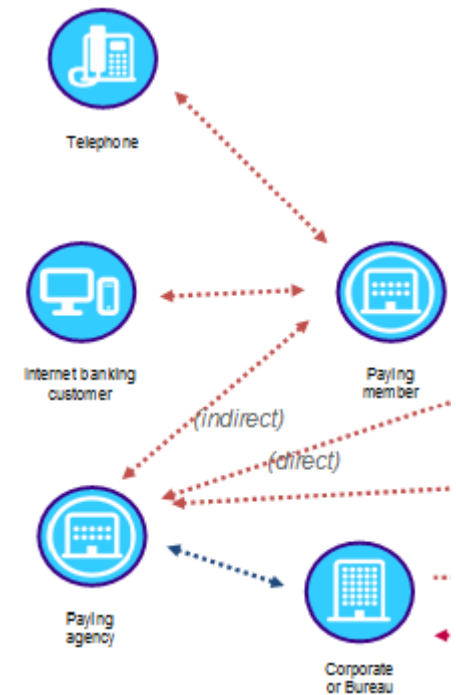
Bank Infrastructure

- Interfaces CI and internal bank systems
- Conforms to CI messaging and accepts all supported messages
- Routing and validation of incoming and outgoing transactions
- Authorisation for offline account systems
- Reconciliation with CI
- Processing of unsolicited messages
- Access to the Faster Payments Network for agency banks and corporate customers;
- Management of the International Sort Code Directory (ISCD);



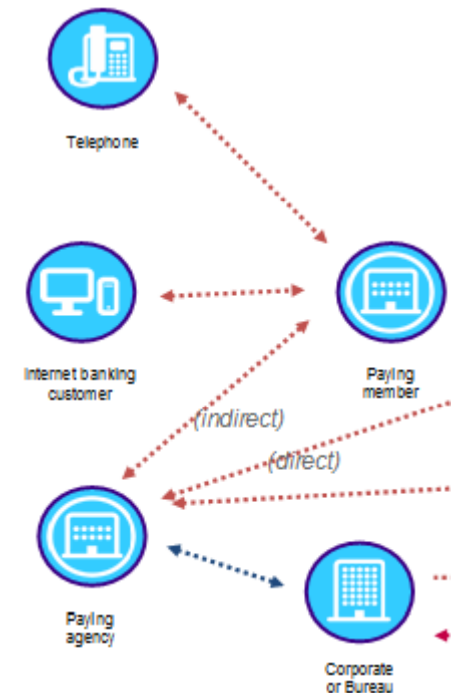
Gateway Features

- Routing
 - Sort Code
 - Account Number
 - Account type
- Validation against Scheme rules
 - Limits etc
- Shadow Account Authorisation
 - Internal balances
 - File refresh
 - Extract for post
- Stand-in processing for Agency Banks
- Intra-bank payments – internal routing



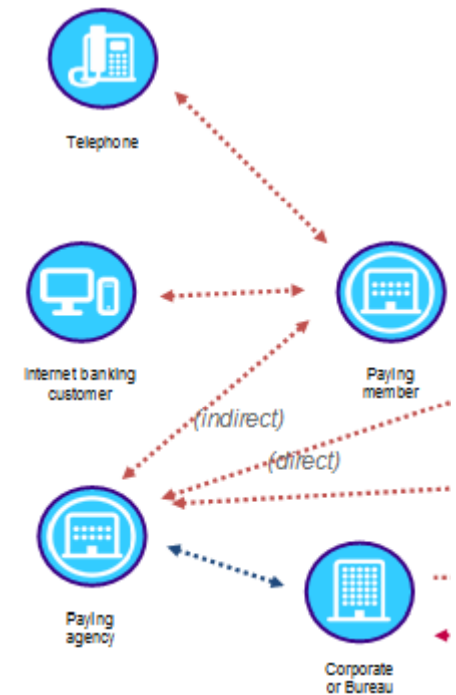
Gateway Features

- Back office integration
 - Standards interface
 - ISO20022/8583
 - MQ
 - Bespoke per client
 - Customised through Distra component model
- User management and access control;
- Scalability and extensibility; High availability and performance on commodity enterprise hardware.



Gateway Features

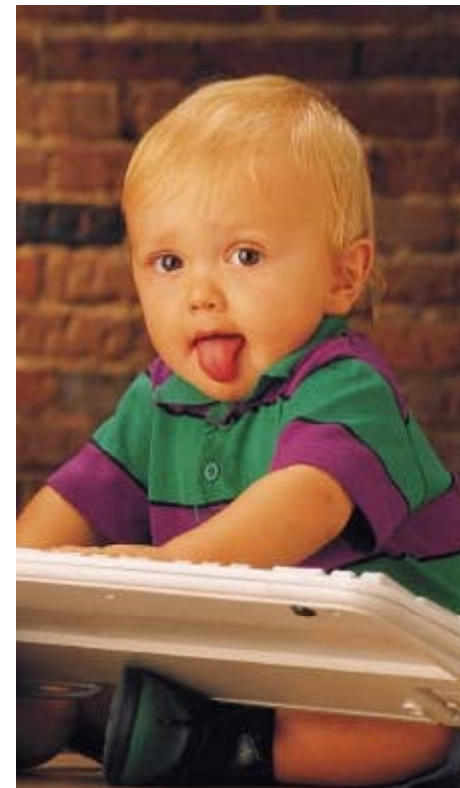
- GUI Dashboard – Real Time Visibility
 - Business dashboard provides:
 - Payment queries and reconciliation analysis;
 - Bilateral positions with other Faster Payments member banks in the current settlement cycle; and
 - Positions with agency banks in the current settlement cycle.
 - Transaction lookup and research
 - Operational analysis dashboard provides
 - Faster Payment Network status;
 - Payment throughput;
 - SLA breaches; and
 - Latency.
 - Management dashboard provides
 - Configure limits
 - Manage links and connections
- Built to be client customisable



Final Thoughts

Learning from Faster Payments

- It can be done!
- Role of scheme is key
 - Rules and regulations
 - Compliance
 - Communication
- Implementation and Migration
 - Flexibility required
 - Timelines will vary, allow for followers
- Existing instruments
 - Integrate or replace?

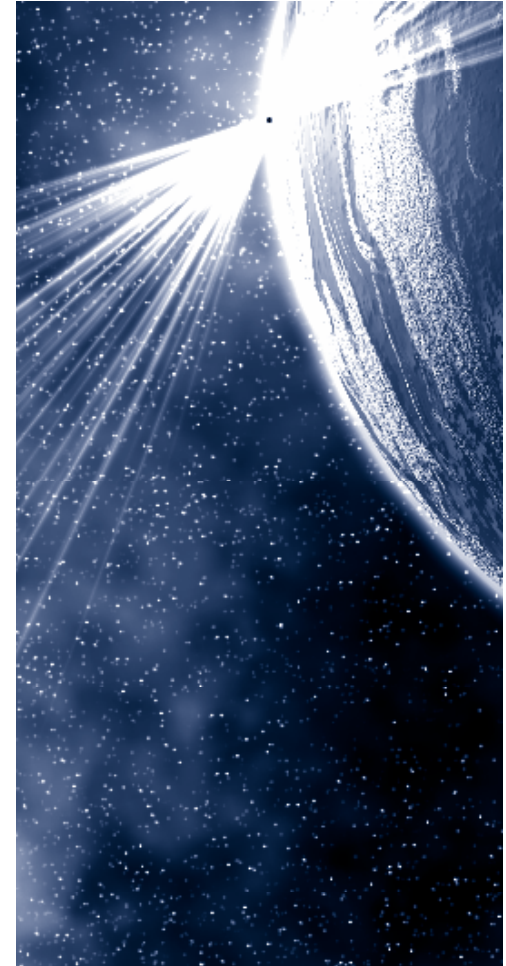


Distra Product Evolution

- Other markets developing, following Faster Payments
- Distra productising, standard deployment in CI or Gateway role
- Flexibility in Distra's technology provides ease of localisation and customised capability, working with partners and clients direct
- One current non Faster Payment Client deploying gateway to manage internal payments

Final Thoughts

- Innovate – it is not difficult 😊
- Select proven and cost effective technology
- Real-time end-to-end
- As a scheme, build infrastructure, enable others
 - Think roads and tolls
- As a bank, build products and services
 - Think cars and trucks, businesses, services



Thank You

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