The New Payments Platform: Fast-Forward to the Future

To successfully navigate Australia's New Payments Platform initiative, banks must rethink their entire payments portfolio, and embrace a holistic approach that addresses requirements from internal, regulatory and payments perspectives.

Executive Summary

Thanks to digitization, information now travels at lightning speed. More consumers use mobile phones for transacting and interacting digitally through social media and e-commerce sites than for traditional voice calls and SMS texting. The payments domain is no exception; today's bank customers demand new digital-age payment instruments that enable real-time payments and settlements — a concept that was born out of need and is now growing rapidly across the globe. FPS in the UK and G3 in Singapore are two cases in point.

Enter The New Payments Platform (NPP), a real-time payments infrastructure in Australia that is expected to be operational by mid-2017. Australian banks will continue to maintain a significant commitment to existing payment systems; bilateral processes will enable payment structures to function in parallel with NPP. The silver bullet for NPP is adopting strategies from both as a balanced solution. Thus, a prudent NPP solution should incorporate strategically-focused features within the existing payments landscape while adapting to the changes required to adopt NPP real-time payments.

It is therefore critical to develop a clearly defined, all-inclusive NPP solution for implementation and sustainability. This will help lower costs, increase productivity, shorten implementation cycles and reduce implementation errors.

This white paper evaluates the most common and effective features and solutions for real-time payment implementations, based on our experience in implementing real-time payments frameworks throughout the globe. We will also discuss the elements of similar real-time payment systems worldwide, the key drivers and features of NPP, and analyze the impact of payment value-chain processes, systems and industry players.

Comparing Real-Time Payment Platforms Worldwide

It is important to understand the evolution and key features of real-time payments structures worldwide, the similarities they share with NPP, and learn from their successes and shortcomings. There are some significant differences between real-time payments and existing payment platforms, such as RTGS/Low Value Payment Systems.
For example, real-time payments systems offer:

- Clearing, posting and settlement – in seconds.
- The ability to make payments outside of normal business hours (even 24x7x365 in most cases).
- Messaging standards that enable richer remittance information with transactions.
- Alternate customer address identifiers, such as mobile, e-mail ID, etc., from their existing bank account number.

We have classified the real-time payment evolution process into five phases: innovators, early adopters, early majority, late majority and laggards (see Figure 1).

**Innovators**

This category includes:

- Net settlement (except Mexico for real-time settlement)
- Posting to destination account in seconds
- Extended business hours concept
- Proprietary network and message formats

**Early Adopters**

This category offers:

- Net settlement
- Posting to destination account in seconds, to a maximum of two hours
- 24x7x365 payment (except South Africa, where downtime is left up to individual banks)
- SWIFT/Vocalink network and ISO message formats

**Early Majority**

This classification features:

- Net settlement (except Sweden for real-time settlement)
- Posting to destination account in seconds
- 24x7x365 payment (except China and Poland, where downtime is left up to individual banks)
- Proprietary network and message formats (except Sweden, which uses ISO20022)
- Alternate address identifiers (only in India and Sweden)

**Late Majority**

This category includes:

- Net settlement
- Posting to destination account in seconds
- 24x7x365 concept
- Proprietary network and ISO message formats

**Australia’s NPP vs. Global Models**

Australia’s NPP is one example of a fast retail payment system. However, when contrasted with global models, the Reserve Bank of Australia incorporates additional benefits (see Figure 2 for NPP features vs. global features).

- Real-time settlement; most countries opted for net settlement. Real-time processing will mitigate systemic settlement risk for NPP participants.
- To enable beneficiaries to use funds in real time and improve the efficiency of managing funds, RBA has adopted 24x7x365 payment
and posting in seconds. This maps closely to international trends.

- RBA proposes to use ISO20022, which is becoming a globally accepted messaging standard. This will significantly expand to a 140-character information limit from the current 18-character limit in the direct entry system.

- RBA also prudently chose to use alternate identifiers, such as mobile numbers, in line with the latest international trend. This will offset the risk of exception flows and incorrect details, given the lengthy BSB (Bank State Branch) account numbers and key-ins.

## The Primary Drivers of NPP

The NPP (from a real-time payments and global adoption perspective) is driven by the dynamics of industry, regulatory standards, business and technology (as illustrated in Figure 3).

### Industry

Industries are guided by several requirements that emanate from both players and participants:

- A mechanism for rapidly dispatching goods to payers.
- A vehicle for increasing GDP, production index and strength of domestic currency.

## The NPP vs. Other Global Payment Models

Areas in light grey outline global real-time payment features and the orange circle details NPP’s features.

Figure 2
• Immediate messaging and settlement — a requirement underscored by roughly 49% of respondents in the Glenbrook Payment Survey.3

• The Intense peer pressure from successful real-time payments systems from world economies (i.e., FPS, UK).

Regulatory
Regulatory drivers, which originate from a central-bank and government perspective, include:

• The mandatory initiative from central banks following the gaps identified by the RBA in its review of the payments system (which was a catalyst for change).

• Requirements around timeliness, reliability and auditing.

• Assurance of tracking the end use of funds.

• Industry-level governance.

• Reduction of excess cash in the system.

Business
The issues driving businesses have to do with evolving customer sentiments and market dynamics, including:

• Demands for real-time payments from bank customers.

• The need to protect and increase payment revenue for banks.

• The necessity to increase straight-through processing (STP) in payments and reduce payment operations overhead.

• The call for unrestricted banking hours for sending and receiving payments.

• The need to reduce risk and fraud.

• The ability to increase market agility around payments.

• A way to provide better cash management for corporates.

Technology
The factors that drive technology stem from:

• The evolution and adoption of new technologies.

• A commitment to achieve business/IT resiliency for payments.

• The need to achieve 24x7 connectivity.

• An increase in the use of mobile phones and associated technologies.

• Potential opportunities to reuse technology.

Key Features of the NPP
Design
The distinctive feature of Australia’s NPP is its “layered” design. Basic infrastructure, overlay services and fast settlement are three layers acting as one to meet the objective of real-time payment. The basic infrastructure focuses only on inter-ADI (authorized deposit-taking institutions) connectivity. Overlay services center on additional value-added services to promote competition and innovation. Fast settlement services facilitate immediate settlement of obligations between participants. (See Figure 4 below).

![Figure 4](image-url)
Clearing, Posting and Settlement

In the NPP system, processes happen in real time—from exchanging payment instructions and calculating payment obligations between participants (i.e., the clearing process) to making funds available to the recipient (posting) and exchanging account settlement obligations. Many countries have opted for net settlement with a time lag that can vary from minutes to hours. This is known as near-real time. However, Australia employs real time in all clearing, posting and settlement processes as advanced features.

Richer Remittance Information

Currently, existing payment methods such as direct entry restrict remittance information (which can be sent along with the payment) to a maximum of 18 characters. NPP’s planned adoption of ISO20022 messaging will result in richer remittance information (up to 140 characters). This will help ensure better communication, along with improvements in the quality of reconciliation between sender and receiver.

Addressing Payments

Currently, Australian payment systems identify a sender and beneficiary through the six-digit BSB code and nine-digit account number. However, NPP offers alternate identifiers, such as an account holder’s mobile number and e-mail ID. Very few countries with real-time payments have opted for this advanced feature.

Hours of Availability

Another feature of Australia’s NPP is 24x7x365 availability of banking outside of normal work hours, with no downtime. Traditionally, this feature has increased last-minute due-date payments from bank customers for advance taxes, government fees, advance excise duty payments, income tax, etc.

The High-Level Impact of NPP Throughout the Payment Value Chain

To align with NPP, existing payment processes covering end-to-end payments will require numerous alterations. For example, anti-money laundering (AML) and fraud detection; validations; advising gateways (SMS, e-mail); accounting; fees; general ledger posting and liquidity management will have to be processed in real time. Figure 5 shows the impact of NPP on processes across the payment value chain.
Systems Affected by NPP

At a high level, NPP will require changes to the following systems:

- **Customer channels** must be adapted to process real-time transactions from various channels; new channels must be built (e.g., agency banking channels).

- **Risk management systems** must have the ability to mitigate risks and comply with regulatory processes within the service level agreement (SLA) regarding an NPP transaction.

- **Enterprise service bus/payment hub** depends on the capability of middleware to interface with channels, engines and processing systems in real time.

- **Engines (existing payment engine or new NPP processor/core banking/liquidity/CIS)** will require updating the payment rules, developing a new method of payments and posting accounts in real time for incoming and outgoing messages – all within NPP timelines.

- **The payment gateway** must be able to interface with the NPP central infrastructure built by SWIFT.

- **Data management systems’ reference data** must be available to process NPP transactions.

Figure 6 highlights the entire spectrum of required system changes.

**Retail Channels**

Channels are the most important source of NPP payment capture. Hence, there is a need to thoroughly review existing retail channels. Systems that power these, such as ATMs, online banking, mobile banking, banking by phone, branch/teller, etc., must be reviewed from both functional and non-functional standpoints. The changes resulting from NPP are around real-time payment requirements, such as UI, SLAs (five seconds E2E), business rules, appropriate formats and interfacing capabilities with payment engines, for example.

**Corporate Channels**

Corporate channels like Internet banking, file upload gateway, digital banking, corporate mobile banking, etc., must also be assessed from functional as well as non-functional perspectives. New channel requirements (e.g., the agency banking channel) need to be analyzed and included in the planning phase.

Remaking the Payment Systems Backbone

![Image of a construction crane with various systems blocks including Retail & Corporate Channels, AML, NPP Payment Engine, Fraud, Enterprise Service Bus, Data Management, Core Banking, Legacy Applications, Liquidity & Reconciliation, Messaging & Gateway.]
Corporate channels should be capable of receiving secondary feedback messages, which are passed on to appropriate channels from the payment engine. Consequently, these channels must be able to update information based on feedback from the payment engine and interfacing requirements. Other key tasks include updating corporate group limits, authorizing limits based on a user’s entitlements and multi-layer authentication, for example.

Fraud Management
As stated earlier, channels are the most important source of NPP payment capture. Hence, there must be a complete review of channel security standards, given that irrevocable payments can be made in real time. Security of the electronic payments systems is an area that requires consistent improvement; NPP only adds to its significance, since payments are processed in real time.

Anti-Money Laundering
To comply with regulatory requirements, banks must perform anti-money laundering (AML) checks as part of real-time payment processing. AML regulatory requirements for NPP are yet to be known. However, AML was a key challenge during implementation of real-time payments in other countries. This adds stress to the AML system, since decisions must be made within seconds.

Enterprise Service Bus
An NPP payment will require many systems to interface in real time. Most banks are using the payment hub as their integration layer for this function. Therefore, it is vital to analyze the capabilities of the payment hub and confirm the enhancements required to adhere to the new timelines of NPP. This should be within the agreed-upon service level agreements (SLA) among internal systems.

NPP Payment Engine
The NPP Payment Service requires a robust, scalable payments infrastructure to meet the straight-through processing (STP) requirements specified by NPP. Nonetheless, many legacy domestic payment platforms cannot cope with the real-time processing adopted by NPP. Hence, the rules and queues of the NPP payment engine must be carefully assessed. For example, “R” series transactions (reject, return, refusal, refund, etc.) should have appropriate queues, rules and profiles to be handled by the NPP payment engine, which should have the ability to interface with the bank customer’s advising gateways, such as SMS, e-mail, etc.

Reference Data Management (Addressing Identifier/Richer Remittance Information)
NPP features a mandated alternate address identifier for customers, such as their mobile number and e-mail id. A new reference data component for these identifiers is needed in order to integrate with SWIFT’s NPP central address identifier database. In addition, reference data must be modified to accommodate richer remittance information of up to 140 characters from the existing 18 characters.

Credit Data Management (Future-Dated Payments, Iterative Decision and Credit risk)
NPP will bring substantial changes to credit processes, policies and infrastructures, due to the shift from the two-to three-day business cycle to the 24x7x365 real-time payments model. Most standing-order and diarized payments transactions will be released a few hours after midnight. Hence, retail credit-risk profiling needs to be modified according to real-time payments standards.

Core Banking and Legacy Applications
NPP will impact core banking systems and other legacy applications used by the bank to support existing payment processes and services. For example, the CIS system will have to be updated to meet NPP’s standards for address identifiers for new and existing customers. The core banking system will also need to be upgraded to meet the agreed-upon SLA posting time as measured in seconds.

If the bank has other legacy applications, such as balance inquiry and updates, accounting, posting, fees engine, etc., then those systems will need to be analyzed to achieve real-time interface efficiency. The existing customer on-boarding process will also have to be scrutinized to include NPP requirements (e.g., mobile number updated in the NPP addressing database, etc.).

Liquidity and Reconciliation
As stated earlier, NPP will create major challenges for banks, given that settlement will take place in real time. Each ADI must operate within a settlement limit monitored by central bank systems. These limits are interchangeable between RITS and FSS (the settlement service for NPP). Thus, the bank’s liquidity must be closely monitored, particularly during non-operating hours and holi-
days. This requires that each inward and outward payment operate in real time — from the bank posting to the liquidity management system.

Considering the operational cost of a single payment, posting to general ledger can be in real time or batch. In a batch environment, settlement advices from RBA are posted into a sub account (e.g., exchange settlement account), then posted in batches to GL. In a real-time environment, settlement advices are posted in real time to the general ledger system. This process can be customized according to an individual bank’s requirements and cost-optimization considerations.

**Routing Validation, Messaging Standards (ISO20022) and Gateway**

Routing to the new NPP clearing mechanism involves more than just sending payments to a new network node. The NPP initiative introduces a new routing destination for payments — meaning new interfaces, message formats and networking capabilities. Changes in message formats must comply with ISO20022, and will dictate a re-engineering of the process. However, when this requirement is coupled with the implications of inherent routing and exception handling, banks will need more than a quick-fix solution.

NPP also entails considerable changes to the existing inward and outward gateways and the inward and outward APIs, in order to comply with all NPP standards and ensure effective communication with NPP’s central infrastructure.

**The Impact on Key Players**

As previously noted, NPP represents a once-in-a-generation paradigm shift in the payments landscape. It impacts key players across the payments industry — from banks, card operators and payment processors to government agencies. Figure 7 above offers our assessment of the high-level implications for key players in the payment industry.
Quick Take

The Elements of an NPP Solution

- **NPP gateway.** The NPP gateway is compatible with ISO20022 messaging standards for NPP Payments and SWIFT protocol. If the bank has an enterprise-wide payment infrastructure, the NPP gateway module can be built as an adapter. Otherwise, a new NPP gateway must be developed to interface with the NPP’s central infrastructure.

- **Reference data management.** Based on the SWIFT solution for NPP infrastructure, real-time updates are required to address identifiers such as mobile numbers, e-mail IDs, etc. This will apply to existing and new customers during the client on-boarding process.

- **Interfacing systems.** The solution should address the need for other internal systems to process and provide information on a real-time basis. For example, accounting and reconciliation systems, fraud checks, limit monitoring and AML systems should comply with NPP requirements on real-time processing. If banks have an enterprise service bus/payment hub for message transformation, then they will need to build the required interfaces. Otherwise, necessary adapters must be modified/built to accommodate richer remittance information.

- **Security.** The framework should provide security across channels, as well as rules to support two-factor authentications in those channels. Corporate and branch channels would also support two-factor authentications.

- **Channels.** The solution should support changes to channels and the development of new channels as required. The underlying factors to the solution are minimal redesign, and SOA and business process optimization – all through a holistic approach that supports the independent processing of NPP payments.

- **Inward payment handler.** This is a newly built component that receives all inward payments for the instance. These payments are stored in the database for reference. After validation, messages are configured to be sent to the retail payment engine. Based on the response from the retail payment engine, feedback messages are sent to the NPP central infrastructure. This component can be configured to the payment engine’s requirements.

- **Performance.** The performance of the new solution is paramount to the success of the NPP initiative. NPP requires a robust, scalable payments infrastructure to meet STP requirements - equipped to handle demanding high-volume payments and afford 24x7x365 availability. Since many domestic legacy payment platforms cannot cope with this requirement, the performance capabilities of the payment infrastructure must be carefully analyzed.

- **Encryption.** Security of electronic payments systems remains a constant concern, and NPP only compounds this issue since transactions are in real time and STP in nature. As a result, there is a greater need to review channel security standards since this can affect real-time irrevocable payments. The solution should therefore address the use of secured protocols to communicate between the two systems involved in NPP processing at both end points. This encryption will be classified into software- and hardware-based solutions. Software-based solutions include secure electronic transmission and public/private key infrastructure but few encryption mechanisms. The RSA security token enables two-factor authentication and also encryption.
The Key Components of an NPP Platform

A comprehensive solution framework should accommodate the requirements of NPP and also address the aforementioned challenges. It must enhance an institution’s business capabilities and enable banks to take the best advantage of the new system. An NPP solution should be able to:

- Process high-volume transactional loads.
- Ensure compliance with the SLA for the NPP processing window, as specified by the customer proposition (five seconds).
- Keep cross-platform chatter (i.e., mainframe to mid-range) to a minimum to reduce network latency and message transformation.
- Use parallel processing wherever possible.
- Check an inbound payment’s validity and provide a response in less than five seconds.

The following components are required for the NPP solution framework:

NPP Payment Processor

The NPP payment processor can be a configurable off the shelf (COTS) product or custom-built solution. It is expected to support additional overlay services and perform key activities such as:

- Validation
- E-enrichment
- AML lookup
- Account lookup
- Balance inquiry and updates
- Account posting requests
- Liquidity management updates
- Updating alternate address identifier with the NPP switch through the gateway
- Routing
- Returns
- Repairs
- Notification and confirmation of payments
- Advising gateway updates

The solution should achieve high STP rates and offer queuing, repair and exception handling of payments.

There are two scenarios to consider:

- **Scenario One**: A single NPP payment processor handles both outward and inward payment messages.
- **Scenario Two**: The NPP payment processor handles outward payment messages, and acts as a “store and forward” module for inward payment messages to an existing payment engine.

Given that banks’ operating environments vary to a great extent, both options should be considered for solution optimization and customization.

**Scenario One: Single NPP Payment Processor**

This scenario is better suited to COTS products in cases where banks are building an NPP payment processor as a standalone product. The potential business benefits include a single business-rules repository, easier configurations and customizations, as well as maintenance of fall-back systems and processes, for example. In this scenario, the impact of scalability and volume requires close monitoring, since both inward and outward messages are handled in a single instance.

**Scenario Two: Outward Message Processing and “Store and Forward” for Inward Messages**

In this scenario, the NPP payment processor takes care of outward message processing. It acts as a “store and forward” for sending incoming messages to the existing payment engine for processing. This approach enables more scalability for addressing higher-volume processing requirements. In the case of a network outage, messages can be more easily tracked, since they are stored in the NPP processor; forwarding messages are based on retail payment engine requirements.

**The Way Forward: Overlay Services**

Overlay services are specifically tailored to individual financial institutions and their customers’ needs. These services are built over basic infrastructure (BI). The initial convenience service (ICS) is the first such overlay service that offers person to person (P2P) mobile payments. Many more overlay services are expected over time. They will have a huge impact on banks. Possible future overlay services will cut across many industries, and affect banks’ customers. For example, a customized overlay service for “superannuation” will impact the pension industry and banks that serve this segment.

Figure 8 (next page) illustrates possible overlay services that are likely to emerge.
These overlay services will impact several bank customer segments (See Figure 9).

Banks will continue to operate in a competitive and innovative space, especially after NPP. Australian payment regulators have taken a multi-layered approach – keeping basic infrastructure and overlay services separate to drive innovation and promote competition. It is our view that several overlay services will be offered in the near future. Hence, banks must retain agility in their payments architecture to include further overlay services and keep change-over costs to a minimum.

It is thus imperative to build a carefully planned, all-inclusive NPP solution that will remain viable, profitable, efficient and serviceable from internal, regulatory, payments and customer perspectives alike.

The Potential Impact of Future Overlay Services

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Figure 9

High Impact | Medium Impact | Low Impact
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Footnotes

2 FPS refers to the Faster Payment System in the UK and G3 refers to the Real-Time Payment System in Singapore.
3 http://paymentsviews.com/2013/05/01/immediate-funds-transfers-are-happening/.
About the Authors

Sachin Gulhane is a Senior Consulting Manager within Cognizant Business Consulting’s Wholesale Banking Practice. He has 14-plus years of experience in the area of transaction banking, corporate payments and cash management. He has been involved in payments and cash management consulting at Cognizant, where he has led several consulting and transformational engagements in the payments area. He holds a Bachelor of Engineering degree and a Master’s degree in Business Administration. Sachin can be reached at Sachin.Gulhane@cognizant.com.

Sivaraman Kuppuswamy is a Consulting Manager within Cognizant Business Consulting and is based in India. He has over fifteen years of professional experience spread across cash management, payments, corporate banking, and business consulting and product management in Australia, Europe, the U.S. and Asia. He has delivered payment transformation consulting engagements in business change and IT transformations throughout the payment value chain. Prior to joining Cognizant, Sivaraman was a product manager in SWIFT MERVA with IBM India. He holds a Master’s degree in International Business Administration. He can be reached at K.Sivaraman@Cognizant.com.

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