

Real-Time Payments Systems in the United States

How Can U.S. Banks Prepare?



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1 Highlights

The United States has been at the forefront of innovation in the payments arena with a well-established Real-Time Gross Settlement (RTGS) system for high-value transactions. However, it lacks a comprehensive nationwide real-time system for low-value payments, which has been deemed by markets across the world as a necessary component of the payments space.

One of the areas demonstrating incredible development in the recent past is real-time posting and settlement of available funds. Globally, several countries have embraced and implemented real-time payments (RTP) systems, allowing customers to perform their transactions in real time. Following the success of similar systems in other countries across the world, the U.S. Federal Reserve System has issued a public consultation paper inviting industry stakeholders to submit recommendations for an RTP implementation.¹

This whitepaper explains the critical need for an RTP system in the United States and highlights successful implementations in select global markets. The report also explores the current U.S. payments landscape, the benefits that the United States could accrue with an RTP implementation, and the challenges the U.S. payments industry will face in implementing an RTP system. Finally, a set of recommendations has been compiled to propose to U.S. banks for consideration — to ensure a smooth and successful migration to a post-RTP U.S. market.



¹ "Payment System Improvement – Public Consultation Paper", Federal Reserve Banks, September 10, 2013

2 Introduction to Real-Time Payments Systems



People are expecting immediacy in many areas of their lives, including the ability to send and receive money”

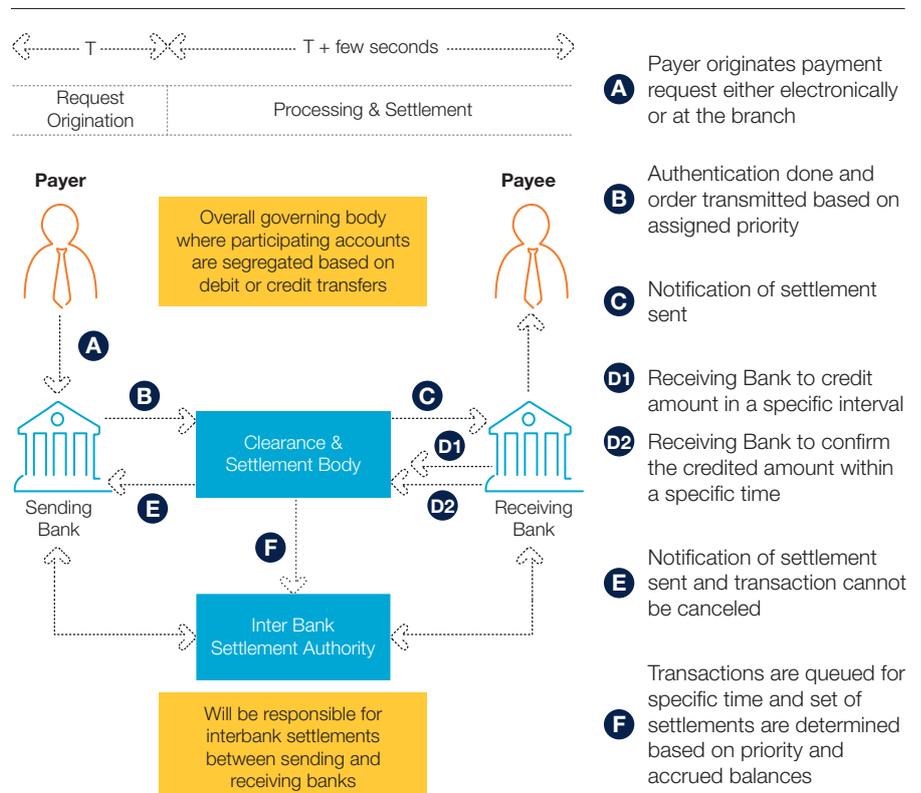
EVP of markets and strategy at a leading bank

2.1. How They Work

Typically, an RTP system conducts the validation process (checking account existence and availability of sufficient funds), provides clearance and settlement of transaction, and delivers assurance of payment to the payee (through messaging that provides immediate payment information to the beneficiary). This entire process should ideally be completed in real time, in approximately 2–15 seconds.²

Exhibit 1 illustrates the process involved in an RTP transaction. However, the infographic does not provide details of the infrastructure used to run a RTP system – implementation depends on the existing system being used in the respective countries as well as the proposed usage model.

Exhibit 1. **RTP System: Transaction Process Flow**



Note: Analysis shows that different RTP systems across the globe take a maximum of 15 seconds per transaction

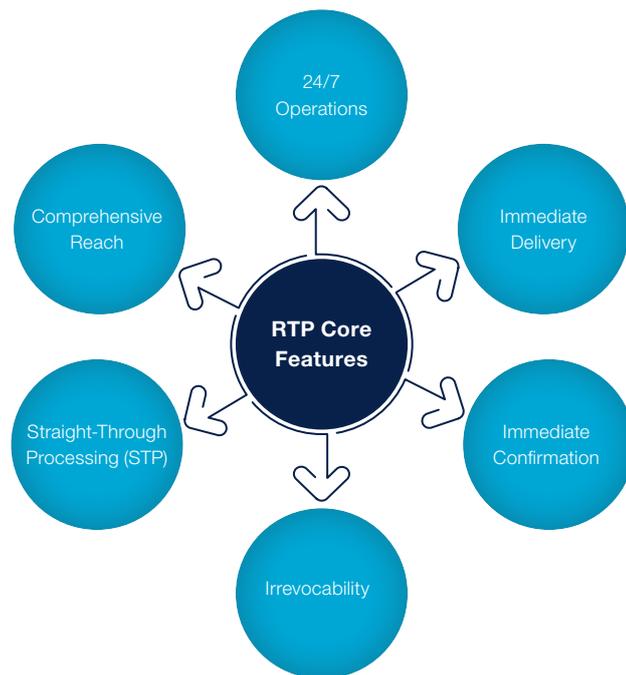
Source: Capgemini Financial Services Analysis 2014

² This timeframe has been noted due to observation that most of the systems fall in this range.

2.2. Features of an Ideal RTP System

The real time in real-time payments is not absolute in nature. There are RTP systems that have varying degrees of real time associated with them. An ideal RTP system should possess the core features depicted in Exhibit 2.

Exhibit 2. Core Features of an Ideal RTP System



Source: Capgemini Financial Services Analysis, 2014; "Tomorrow happened yesterday, How banks are building a business case for Faster Payments", VocaLink and PWC LLC UK, 2009

RTP system core features defined

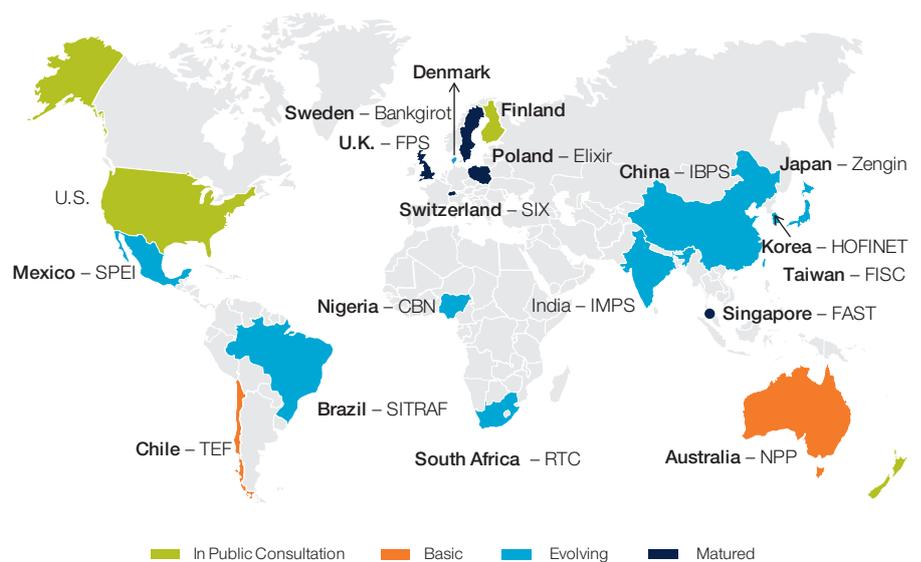
- **24/7 Operations:** Operates at all times ensuring a continuous clearing and settlement process
- **Immediate Delivery:** Clears and settles transactions in real time, delivering the requisite funds to the payee immediately
- **Immediate Confirmation:** Provides an instantaneous real-time message of payment confirmation to both the payer and the payee
- **Irrevocability:** Makes the transactions irrevocable due to its nature of fast payments, except in the case of unauthorized use conditions (e.g., fraudulent transactions)
- **End-to-End Straight-Through Processing (STP):** Helps in the significant reduction of settlement time
- **Comprehensive Reach:** Supports a range of payments channels, including mobile, to ensure a wider reach of real-time payments

2.3. Global Landscape

There is a global movement toward real-time payments and upgrades to the underlying clearing and settlement mechanisms. However, the approach taken to implement each of these RTP systems globally has been different for each implementation.

Several European countries, including the United Kingdom, Switzerland, and Poland, have become established leaders in the real-time payments arena, whereas certain mature markets, such as the United States, have been slow in terms of adopting RTP systems. Countries including Australia, Canada, and Finland are planning to implement RTP systems in the near future.

Exhibit 3. **Global Landscape of Real-Time Payments Systems across Select Markets**



Note: Progress of the different global markets in the RTP arena is based on Capgemini's definition of RTP systems

Source: Capgemini Financial Services Analysis, 2014

Comparative snapshot of different payments systems

Most of the payments systems in the world have varied features and functionalities of real-time payments processing that have been adopted due to the requirements of that particular market, available infrastructure, and the adoption rate of the stakeholders. For instance, while the Faster Payments Service (FPS) in the United Kingdom takes 15 seconds from submission of the request to acknowledgement from the beneficiary bank, SPEI, Mexico takes approximately less than a minute. In the United Kingdom, the real-time system operator is a non-profit organization (FPS

or Faster Payments Scheme Limited) whereas in Mexico the same RTP system is run by the country's central bank (Banco de Mexico), which offers low-value real-time payments through the already established high-value RTGS system SPEI. Exhibit 3 provides a snapshot of different RTP systems in select markets across the world.

Additionally, the infrastructure-based decisions for RTP systems are done based on the extent of leverage that the current system has to offer. For example, FPS in the United Kingdom leveraged the LINK ATM network to complement the then technology partner Voca, whereas in Poland, initially the industry wanted to use the already existing cards rails and technology, but since the banks faced stiff competition from card vendors, the idea was scrapped.

Exhibit 4. **Comparison across Select Global RTP Systems**

Criterion	FPS, U.K.	Bankgirot, Sweden	FAST, Singapore	SPEI, Mexico
Availability	24/7	24/7	24/7	23 hours per business day (7:00 p.m. – 6:00 p.m.)
Settlement Speed	15 seconds from submission to receipt of ACK from beneficiary bank, funds are available in <2 hours	Separately configurable service level agreement (SLA) for debtor agents and creditor agents (in seconds)	Will be part of the SLA set with MAS in Singapore	30 seconds per stage
Volume	735.6MM/year	N/A	N/A	Up to 2MM/day
Payments Mix	SIP is limited to £100,000, All members allow STOs of up to £100,000	Mobile payments are the first service offered	Maximum of SGD 10,000 for real-time payments	All amounts; 90% is below \$8K (equivalent)
Participants	All U.K. banks, 10 direct	All Swedish banks, 7 first-wave banks	All members of Singapore Clearing House Association (SCHA) are eligible	47 banks and 41 non-banks
USP	Allows direct corporate access to the scheme, with the bank needing to have the capability to authorize the withdrawal	<ul style="list-style-type: none"> ▪ No credit risk concerns ▪ No limitation on amounts ▪ Support for direct scheme access for billers ▪ Allows different payment flows and thereby the development of new payment products in different currencies ▪ Bank-focused management tools: Bank's dashboard, bank level configurations for settings and MIS 	<ul style="list-style-type: none"> ▪ Multiple settlement periods during the day (initially set at twice per business day) ▪ In the future will support multi-currency ▪ Supports eDDA – electronic mandates 	<ul style="list-style-type: none"> ▪ Very simple to use ▪ Only requires the beneficiary account ID, name, and the name of their bank ▪ Central Bank website provides tracking service ▪ Official receipt is issued by the beneficiary's bank within 30 minutes of crediting the funds to the beneficiary account

Source: Capgemini Financial Services Analysis, 2014; "The Need for Real-Time Payments in the US", René M. Pelegero, Retail Payments Global Consulting Group, June 10, 2013

Classification of systems based on posting and settlement speeds

Global RTP systems, based on their clearing and settlement speeds, can be categorized as real-time systems based on:

- Continuous settlement or
- Deferred net settlement systems.

While continuous settlement systems settle on an immediate basis, deferred net settlement systems settle on a net basis at the end of a pre-defined settlement cycle (typically at the end of the day, but sometimes during the business day).⁴

Some of the countries have designed their systems taking into account their existing infrastructure, settlement systems, and usability in the customers' context. While systems like CCA TEF in Chile and HOFINET in Korea are fast-batch systems running multiple settlement cycles in the day, systems like SIX in Switzerland and Elixir in Poland offer real-time posting and settlement of transactions.

Exhibit 5. **Snapshot of Payments Systems and their Posting and Settlement Speeds**

RTP System	Posting Speed	Settlement Speed	Volumes / Value
SIX (Switzerland)	Real time	Real time	1.7 million / 122 bn Swiss Francs (US\$135 bn)
SPEI (Mexico)	Maximum of 1 minute, 5 seconds end to end	Hybrid, clears and settles within seconds	700,000 / 640 billion pesos (US\$48 billion)
HOFINET (Korea)	Immediate	Deferred Net (next day)	46 million / KRW 33 trillion (US\$32 billion)
Zengin (Japan)	Real time	End-of-day net settlement for non-RTGS payments (over Value restrictions)	6 million / ¥ 11 trillion (US\$10.8 billion)
CIP SITRAF (Brazil)	97% released in <1 minute	Continuous net settlement	930,000 / 16.1 billion reales (US\$7.0 billion)
Faster Payments (U.K.)	15 seconds confirmation, posting within 2 hours	Deferred net settlement, 3 cycles per day	2.9 million / £2.3 billion (US\$3.9 bn)
Bankgirot (Sweden)	Near real time (15 seconds)	Multiple deferred central bank settlements per day	500,000 active users/1 billion SEK (US\$145m)
IMPS (India)	Real time	End-of-day net settlement	84,000 / Rs 547 million (US\$9 million)
Elixir (Poland)	Near real time (seconds)	Immediate	<1,000 / 3.1MM zł (US\$1 million)
FAST (Singapore)	Near real time (seconds)	Deferred settlement twice a day	Go live was in Q12014, data not available
NETS (Denmark)	Near real time; (less than 10 seconds, usually close to 1 sec)	Net, intra-day settlement	N/A since live date is in Q4 2014

Source: "Real-Time Payments – Case Studies from Around the World", Celent, Gareth Lodge, September 16, 2014

⁴ "Glossary of Terms Related to Payment, Clearing and Settlement Systems", European Central Bank, 2009

3 Current U.S. Payments Landscape

The current U.S. payments system is characterized by several inefficiencies that have triggered the need and demand for a universal real-time system. Some of these inefficiencies include persistent usage of checks, slower cross border payments, and absence of certain desirable features such as a faster validation process and immediate notification.



69% of consumer payers and 75% of business payees prefer instant or one-hour payment speed”

A recent Federal Reserve study

Furthermore, slower adoption of a real-time system in the United States has been primarily due to the relatively lower penetration levels of non-bank offered payment alternatives among consumers, as well as due to private sector-driven payments innovation, which may have satisfied the needs of early adopters with alternate methods. Due to this, the United States has RTP systems in a fragmented state that have resulted in a myriad of payments options rather than achieving the reach of a national real-time payments system.

Another problem in the U.S. payments industry is that although there are a multitude of payments systems operating in the country, only a few of them are either real-time or near real-time.

Among these systems, FedACH by NACHA (National Automated Clearing House Agency), has been contemplating the further enhancement of the already existing system, known as EPS (Expedited Payments System) in order to achieve real-time functionality. Some industry analysts are of the opinion that instilling real-time capabilities into the existing ACH network might help the Federal Reserve achieve its objective of a real-time system. Further details about the system have been detailed in the Appendix provided at the end of this document.

Exhibit 6. Existing Payments Systems in the U.S.

Federal Networks	Cards-Based Networks	Banks-Based Networks	Other Networks
The Clearing House	American Express	PayNet	Google wallet
FedACH	MasterCard	clearXchange	PayPal
	VISA	PayWithMyBank	popmoney
	PaySecure		WU Pay (Western Union)

Cards-Based Networks	Banks-Based Networks	Other Networks
Square	ISIS	REDcard
FedACH	DWOLLA	Bluebird

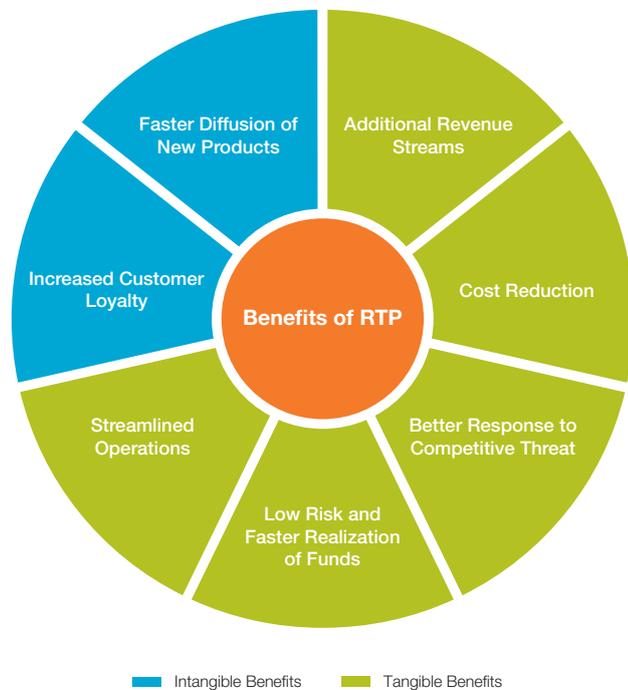
■ Real/Near Real-Time

Source: Capgemini Financial Services Analysis, 2014

3.1. Benefits

A U.S. RTP implementation will benefit multiple stakeholders, including retail consumers, banks, and government agencies. RTP will not only offer various options for banks to provide services to their small and medium-size enterprise clients, but also provide more efficient cash management and treasury services to corporations and large firms. RTP systems will further help financial institutions to provide the most convenient online and mobile banking experience and serve as a springboard for new payments services. Similarly, the government agencies can use RTP services for expedited emergency payments, as well as to distribute social services payments.

Exhibit 7. **Benefits of Real-Time Payments Systems in the U.S.**



Source: Capgemini Financial Services Analysis, 2014

An intangible benefit that banks might accrue due to RTP implementation is **increased customer loyalty**. This would occur due to improved convenience and speedier outcomes coupled with a better user experience of a faster system, leading to higher customer satisfaction. Similarly, another benefit could be **faster diffusion of new products** due to a central hub, as opposed to a series of bilateral links that would not only enable new products to reach a wider audience much more rapidly, but also be less expensive to upgrade.

The tangible benefits that can accrue to banks due to an RTP implementation are:

- **Incremental Revenue Streams:**
 - It is highly likely that two scenarios might emerge, one where the RTP infrastructure is managed by a federal agency and one where it is being managed by a consortium of member banks
 - In the former scenario, banks can charge a fee based on the type and volume of transactions processed using the RTP infrastructure (e.g., FPS in the United Kingdom), while in the latter, banks can invent new business models where they can set prices (e.g. IMPS member banks in India)
- **Cost Reduction:**
 - Banks can reduce the costs associated with using cash and checks as payment instruments
- **Response to Competitive Threat:**
 - Banks are facing stiff competition from non-banks, such as PayPal and Obopay, which can be addressed by RTP systems, thus helping banks to avoid loss of revenue
- **Low Risk and Faster Realization of Funds:**
 - Unlike in checks, real-time payment of funds will provide banks with lower risk of non-availability of funds
 - Real-time payments will result in lower float (interest accruing to banks when the money has left the payee account but has not yet reached the recipient)
- **Streamlined Operations:**
 - RTP systems will help bank accounts to once again become the center of the payments experience
 - The payments process will become more efficient as 24/7 service would result in better customer satisfaction



The size of the U.S. market is gigantic. Replacing the ACH system will be far harder than the U.K. had it”

**Sr. product marketing manager
at a leading electronic
payments software firm**

3.2. Challenges

Although there are clear benefits for the stakeholders with the implementation of real-time payments in the United States, most of the stakeholders are apprehensive about the implementation of RTP systems due to various probable challenges, including revenue, cost, and other operational challenges.

- **Revenue Challenges:** RTP services may cannibalize the revenue from existing bank services and offerings, thereby altering the product mix and impacting the existing revenue streams, such as cards and wire transfers. Also, ACH services are increasingly being used by customers, thereby making banks skeptical of losing their revenue from such services if real-time payments were to be implemented.



While additional near-real-time payments may be valuable to end users, increasing the speed of payments to near real-time will potentially increase the risk of fraud”

Leading U.S. Bank



There would be significant changes on the operational side for most financial institutions because they are not in the habit of processing retail payments on a real-time basis”

Prominent payments strategy firm

- **Cost Challenges:** Some of the banks have already invested in infrastructure-related initiatives and are reluctant to re-invest before recouping these investments.

For example, banks have recently invested in Check21 and ACH initiatives and would require time to recoup these investments in order to make new investments in a different technology/system.

Also, banks will incur increased operational overhead by operating 24/7. Finally, the cost of implementing real-time processing technology platforms and infrastructure, coupled with increased investment in compliance and fraud avoidance measures, are major concerns for implementing RTP systems in the United States

- **Other Operational Challenges:** Most banks are still using older legacy systems with delayed batch postings to their core banking systems, which would require financial institutions to upgrade their core banking platforms to enable real-time postings and availability to clients.

To overcome these challenges, the overseeing body implementing the RTP system in the United States should create a successful win-win business model for all the involved – stakeholders — low systemic risk for the regulator, additional revenue streams for banks, no existential threat for card processors, and affordable prices for customers.

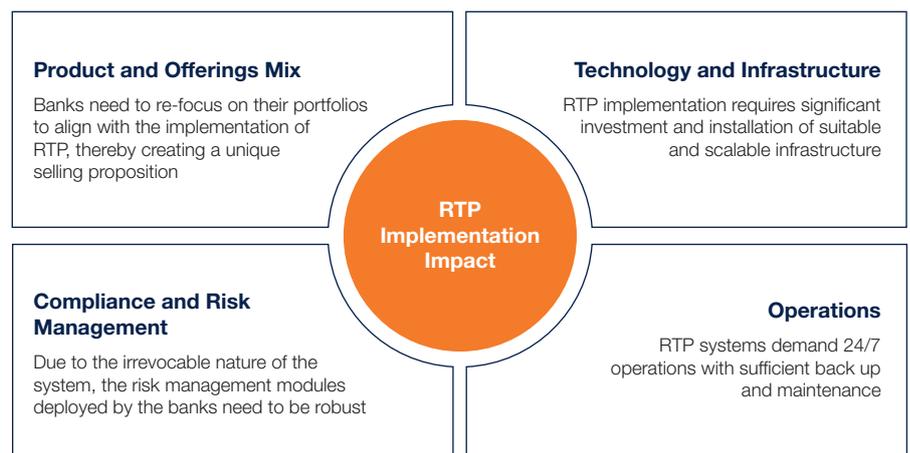
4

Impact on U.S. Banks

Despite the challenges faced by the U.S. payments industry in the implementation of an RTP system, based on the steps taken by the Federal Reserve, it appears that the United States is on the threshold of implementing a nation-wide comprehensive RTP system. This makes it critical for U.S. banks to realize the importance of offering RTP services and products — which by failing to do so they may face the threat of losing the first-mover advantage and thereby becoming uncompetitive.

At the same time, however, implementation of RTP will cause U.S. banks to revise their existing processes and structures to make them RTP compliant.

Exhibit 8. **Impact of Real-time Payments on U.S. Banks**



Source: Capgemini Financial Services Analysis, 2014

4.1. Impact on Product and Offerings Mix

The implementation of RTP is likely to impact the product mix of a bank. The impact is primarily expected in cash usage, as well as non-cash instruments, such as checks and credit card transactions. Some amount of low-value cash transactions might shift to RTP-enabled transactions. Also, check usage is expected to further decline due to the convenience offered by RTP and credit card transactions, and wire transfers are also likely to be impacted due to the associated cost factors.

However, banks will also need to manage the risk of RTP cannibalizing their existing cards business. Banks can minimize this impact by exploring potential revenue opportunities by leveraging RTP through introducing services such as same-day online bill payment, near-real-time remittances, account-to-account (A2A) transfers, and just-in-time supplier payments.

Similarly, banks can introduce offerings such as weekly payroll for hourly workers, which is also a key area of real-time system usage. A few U.S. banks have already launched RTP offerings, such as person-to-person payments through online and mobile channels. Also, customer demand for using a real-time system for outbound foreign money transfers can be leveraged by banks to come up with a RTP cross-border offering.

4.2. Impact on Infrastructure and Technology

The implementation of RTP will bring the need for additional infrastructure requirements, as well as upgrades in existing technology used by banks.

Banks need to modernize or augment their core systems in order to comply with the volume or traffic of transactions handled. High-capacity systems would have to be installed for handling the voluminous RTP requests and the bank’s operations should be capable of supporting super-low latency processing, which require near-real-time processing through the notification channels.

Additionally, banks should ensure that such systems are scalable with adaptable architectures for faster operations in line with volume growth and the messaging standards to be implemented should be based on ISO 20022.

Finally, since the real-time transactions are irrevocable, banks should ensure that the exception handling and error handling mechanisms are foolproof.

4.3. Streamlining Operations

In order to enable smooth adoption of real-time payments, banks may have to streamline their operations and be more responsive to RTP implementation. Some of the aspects the banks would have to focus on are listed in the table below:

Must Have (High Priority)	Good to Have (Medium Priority)	Nice to Have (Low Priority)
Compliance automation related to regulatory compliance, AML, anti-fraud mechanisms and automation of their documentation	Banks must invest in enhanced CRM systems as availability of timely and accurate information will help serve the customers better and improve the level of engagement	Capacity planning has to be done for catering to bigger payloads and scalability of systems
Tasks related to payments authorization, STP, intra-day transaction flow, and liquidity management based on regulatory compliance	Banks must devise robust dispute management procedures in order to facilitate easier complaint redress and speedier escalations. Such procedures developed for cards business are almost similar and re-using the same may help banks alleviate their costs	Banks have to be equipped to provide real-time banking capabilities in order to fully leverage the RTP network capability and to avoid any intra-bank operational lag
		Intelligent MIS comprised of a centralized repository of information and reports, would help in creating an enterprise view of the payments landscape and help the banks to set prices in the new environment

4.4. Increased Risk Management and Fraud Control Procedures

Due to the irrevocable nature of real-time payments, banks need to implement strong fraud control and risk management tools. It is essential for the banks and the Federal Reserve to manage counter-party risk, which could introduce a systemic risk in the U.S. financial system if not handled correctly.

As with all innovations in the financial services domain, real-time payments implementation has the potential to attract fraudulent activities and arriving at common security standards and fraud measures along with aligning operations will help banks in mitigating this risk.

Banks need to formulate extensive risk management policies in order to safeguard customer interests, as well as adopt new risk management approaches either through access control to the Clearing and Settlement mechanisms or through more frequent clearing cycles.

Biometric techniques, including voice recognition, fingerprints, iris and facial recognition may be used for additional customer privacy protection. Fraud screening will need to be accelerated to match the speed of payments. Multi-factor authentication and encryption techniques are other security measures that can be used to combat the risk of cyber attacks.

5 Real-time Payments in the U.S. – How Banks Can Prepare

5.1. RTP Adoption Roadmap

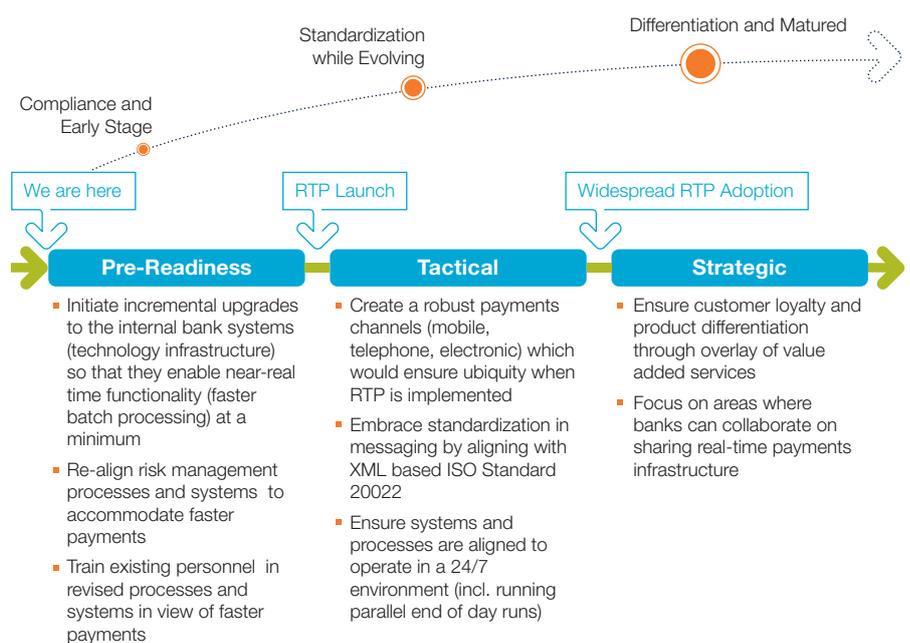
The impact of an RTP implementation impact banks significantly. Since implementation of a nationwide RTP seems inevitable, U.S. banks need to equip themselves suitably, and in a timely fashion, in order to ensure their readiness.

Banks across the world have modified and enhanced their service offerings in order to synchronize their operations with that of the overall RTP implementation. The evolution graph in Exhibit 9 provides recommendations for banks to ramp up along the maturity curve of the implemented RTP system.

The framework is divided into pre-readiness, tactical, and strategic buckets, with specified tasks and activities, to enable banks to implement an RTP system in a successful manner.

While initially banks should focus on compliance and statutory requirements, they may approach standardization while evolving through the system and eventually offer value-added services to their customers that can be priced accordingly.

Exhibit 9. Evolution Graph for U.S. Banks



Source: Capgemini Financial Services Analysis, 2014

By implementing this framework, U.S. banks will be able to create certain unique selling propositions that would help position them ahead of the competition in the industry. For example:

- **Early adopters win the race:** As evident in both the United Kingdom and Singapore, banks that joined the respective RTP schemes to become member banks walked away with the first-mover advantage. However, the correspondent banks also had opportunity to deliver in some cases, such as India. However, member banks will have the opportunity to evolve their business models through a proper analysis of the transaction costs involved.
- **Differentiation through niche or value-added services:** Banks can eventually couple additional services to the base RTP infrastructure to provide value-added services to their clients. These include cross-border payments and provisions for multi-currency transactions, including virtual currency like Bitcoin or Ripple.
- **Leading with customer education:** Banks can ease the process of transitioning through the adoption curve by educating consumers about RTP systems and the associated advantages and benefits.

The analysis demonstrates that RTP adoption in the United States is accelerating and banks can add a catalytic effect to the adoption by the industry and customers by taking some of the measures detailed in this whitepaper.

5.2. Key Takeaways

Some of the key takeaways for consideration in the U.S. RTP implementation:

- Banks should revisit their pricing strategies for offerings such as RTP services
- Banks should create an explicit business case in order to leverage the RTP infrastructure to provide suitable service offerings
- Banks should work on their product differentiation strategy for better positioning, for example, using real-time posting and settlement features targeted to different customer segments based on needs and priorities
- In most of the countries, person-to-person and business-to-business transactions were given preference over other transactions and U.S. banks may choose to offer these type of services in addition to others

6

Conclusion

There is a gradual adoption of real-time payments across the world that is aiding the change in the payment behavior of banks, consumers and corporations. In addition, the growth of online and mobile payments is helping to provide a further stimulus to the growth in the volume of real-time payments. The culmination of payments technology, telecommunications, the Internet, and point-of-sale channels has catapulted the need for an RTP system.

Adoption of RTP has become a strategic necessity for the U.S. payments industry. Multiple markets across the globe have transitioned or are transitioning to real-time payments and the payments industry in the United States stands to lose a lot by further delaying its adoption.

In cases where RTP systems have been implemented, countries are expecting to reap significant benefits. Singapore was recently added to the list of RTP countries with its implementation of the G3 system. A real-time system for low-value payments delivers convenience and immediate availability of funds coupled with low systemic risk that can benefit both the retail and small and medium size enterprise bank customers.

Although the initial investment by banks could be relatively high, as the adoption curve of the RTP system matures, banks would be able to attain their breakeven point sooner, while climbing up the curve by offering RTP services. The suggested roadmap is designed to help banks tread the path of a real-time system with ease and agility.

The case for the U.S. payments industry to adopt real-time payments is very strong, and judging by the recent spur of activity in this direction by the U.S. Federal Reserve, it appears that this initiative is going to witness traction in the near future. It is in the best interests of U.S. banks to kick-start their preparation of real-time payments.

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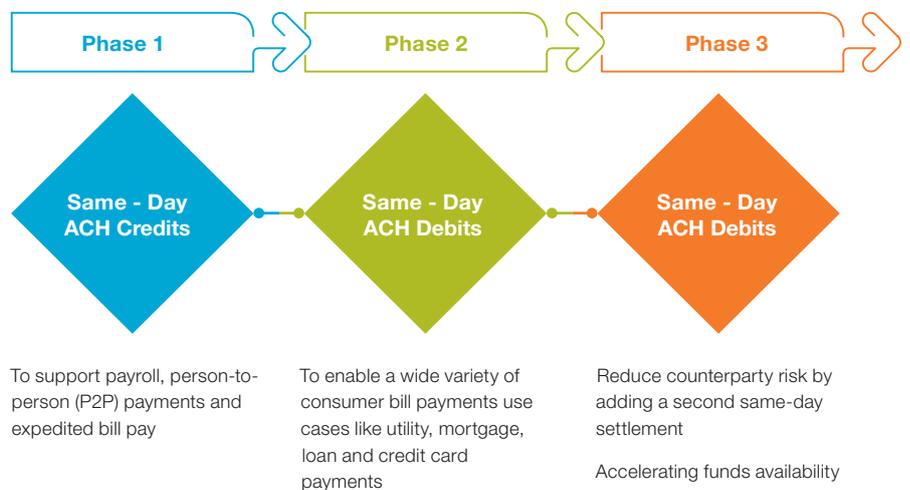
Appendix

Same-Day Automated Clearing House: An Alternative to U.S. RTP System?

Some of the smaller banks are providing real-time service offerings by leveraging the Automated Clearing House (ACH) network. For example, Corporate One, a federal credit union, has implemented International ACH, which is a cost-effective alternative to wire transfers and checks.

The Electronic Payments Association (EPA) has announced a phased approach (as depicted below) for moving from a single next-day settlement to a multiple same-day settlement for any ACH network transaction. The association aims to offer incremental value-added services in terms of functionality of the system through a phased implementation.

The National ACH Association (NACHA) and a few other industry experts are also of the opinion that if implemented correctly, ACH can emerge as the answer for an RTP system in the United States.



Source: www.nacha.org

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