

December 11, 2013
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TO: Federal Reserve Financial Services
FedPaymentsimprovement.org

Re: U.S. Bank response to the Federal Reserve Payment System Improvement – Public Consultation Paper

U.S. Bank is pleased to respond to the Federal Reserve Payment System Improvement – Public Consultation and appreciates the opportunity to provide input to the challenges of improving the payment system. We believe it is essential that the banking industry play a key role in providing meaningful input on the future of consumer and business payments, future rule and regulation changes, tactics to guide future direction and clarity around the potential role for the Federal Reserve Banks going forward

The following are the U.S. Bank responses to the questions posed by the Consultation Paper:

GENERAL

Q1. Are you in general agreement with the payment system gaps and opportunities identified above? Please explain, if desired.

We agree with some, not necessarily all of the key gaps the Federal Reserve has identified in today's payment system:

Gap/Opportunity #2

As we look at developing a ubiquitous near-real-time payment solution, we should not rely totally on the experiences of the international community and the business case that formed their decision to move forward, but we should look to and understand the U.S. market demand vs. lack of capability.

Gap/Opportunity #3

While the U.S. Payment system does not have a capability defined as "near real time", Image Exchange, ARC, Debit and Credit Card systems, Remote Deposit Capture have accelerated the movement of funds and have provided customers (consumers and businesses) with faster access to the use of those funds, and in some cases use of funds on the same day. Near-real-time P2P does exist in number of non-bank providers. These non-bank providers operate inside their proprietary network and are able to provide this service as a result of their operating rules and processes. Their proprietary network is aware of all the posting and pending transactions of their customer and are therefore able to accurately predict the ability of the customer to fund a near-real-time payment. The US payment System is an open system and because of the complexity, FIs are not able to offer near-real-time capability without taking on additional risk.

Gap/Opportunity #7

This is not a gap or opportunity related to payment modernization. Rather, it is a characteristic of inefficient business processes. The establishment of a new payment channel or presentation channel will not address this.

i. What other gaps or opportunities not mentioned in the paper could be addressed to make improvements to the U.S. payment system?

We agree that collective identification and support of key improvements would be beneficial to achieving the desired outcome; however the enormity of this task, coordinating viewpoints from multiple participants is a significant. The challenge is that payment innovation and the justification of significant investments in payment infrastructure has become increasingly difficult due to the 'network effect', a needed majority of stakeholders to become involved to gain traction. Given competing priorities, whether it's compliance with new regulations or mandates, customer demand for new or enhanced services, infrastructure upgrades, fraud and risk mitigation, a new payment system solution must provide the prospect of a fair economic return for all stakeholders if payment system participants are to reprioritize and subsequently redirect capital and operating resources.

The paper neglects to address regulating the non FI payment process provider. There is inconsistent regulation of non-FI payment providers vs. FI payment providers. This inconsistency increases consumer and payment system risk through the loss of traditional, expected consumer protections, insufficient security standards, insufficient prudential regulation and system responsibility. To achieve ubiquity, safety, security in a faster near-real-time environment will require addressing the disparities between regulated and non-regulated payment providers.

In moving forward and developing a near-real-time capability, there needs to be set of rules that provide for finality of payment, certainty in remediation, and clarity of liability for all participants in the channel. Current rules and regulations allow for a significant time lapse between the payment origination and a repudiation claim, creating uncertainty in finality of payment. In a near-real-time payment and settlement environment, finality becomes a significant influencer in perceived value and safety and subsequent adoption. Both Reg. E and Dodd Frank will need to be modified or a new regulation created that will address and cover finality of payment and define liability to all participants in the channel.

Q2. Are you in general agreement with the desired outcomes for payment system improvements over the next 10 years? Please explain, if desired.

We are in general agreement with the desired outcomes for payment system improvements with some additional observations.

With respect to **outcome #1**, while the spirit of collaboration and consensus is important, it will be difficult to achieve universal support as collective agreement on all options may not be realistic. It is extremely challenging to do successful cross industry collaboration as different constituents have different business models and customers. A balance of cost, risk and consensus should be part of the evaluation.

Outcome 2 is a sound objective; however, solutions do exist in the marketplace. That they have not achieved ubiquitous acceptance is likely due more to the lack of market demand than technological gaps. We believe further definition of user types will allow payment system participants and facilitators to better design appropriate solutions. Detailed case studies may provide clarity around the use of existing payment channels to meet customer payment needs as well as helping to define a solution for near-real-time payment and clearing and settlement. For example, consumers may have different needs than corporate end users. In addition, while exploring new payment systems or networks is important, we also believe that enhancements and improvements to existing payment systems could potentially meet the needs of the end users. The Fed needs to examine existing payment solutions to determine why they have not reached their full potential.

In the explanatory text, the Fed states that there would be a “reduction in fraud for both banks and end-users.” There is no clear explanation as to why the Fed believes this to be an expected outcome of a new near-real-time payment channel. Unless there are rules addressing payment channel utilization, access and security/fraud controls on the presentation channel, we would expect fraud attempts and fraudulent transactions to increase.

Outcome 3 assumes that alternative solutions to check, that are low cost, provide needed remittance information and interface with existing business accounting systems exist or could be developed as part of the near-real-time payment capability. The current electronic alternatives to checks, such as ACH payments, do not offer some of the features desired by small and medium-sized business customers—e.g., full remittance information, the ability to make partial payments, and integration with widely used accounting software.

This outcome also fails to address the economic reality of the investment and operating cost for end users to convert from paper to electronic. Given the recent investments in image processing for checks, there is less incentive and a much less obvious business case for businesses and FIs to convert. As mentioned in our comment in Gap#2, we cannot rely on the conversion experiences of the international community, given their low utilization of check payments. As was pointed out in the Fed’s Chicago Payment Symposium (October 2012) business’s continued reliance on paper instruments points to a need for a new all-electronic solution that maintains the most desirable attributes of paper checks.

Outcome 4 assumes the demand for global cross border payment is significant but current cross border capabilities are lacking in speed, convenience and cost. There needs to be an affirmation of these assumptions for both the personal and business cross border payments that would warrant the investment in the infrastructure, rules, regulations, security and risk mitigation needed to secure the safety and soundness of near-real-time funds movement across borders.

i. What other outcomes should be pursued?

We believe the Fed should include as positive outcomes for the Payment system improvements over the next 10 years the following:

- Consistent and equal regulatory oversight and scrutiny for all payment providers that promotes and secures the security of the payment system and provides protection to end users, regardless of the payment service provider they chose to use.

- Clearing and settlement that occurs multiple times a day.
- Ensuring that the value is spread across participants; initiatives fail to reach their full potential when only a limited number of participants receive value.
- A system that doesn't increase settlement or fraud risks.

Q3. In what ways should the Federal Reserve Banks help improve the payment system as an operator, leader, and/or catalyst?

Current rules do not support a faster near-real-time payment or multiple clearing and settlement deadlines. The Fed should assume a role as the rule setting body similar to NACHA. The Fed should not have a direct competition interest in payment provisions. The role of the Fed as an operator has historically put it at odds with commercial enterprise in the Payment Systems while also acting as a regulatory body and rule maker.

The Fed should provide a leadership role:

- In facilitating cross border solutions in partnership with other global bodies.
- In defining/devising a solution to allow payments to be completed without the payee/payor needing to know account numbers.
- In providing the industry with a forum for further discussion and collaboration.

Q4. In discussions with industry participants, some have stated that implementing a system for near-real-time payments with the features described in the second desired outcome (ubiquitous participation; sender doesn't need to know the bank account number of the recipient; confirmation of good funds is made at the initiation of the payment; sender and receiver receive timely notification that the payment has been made; funds debited from the payer and made available in near real time to the payee) will require coordinated action by a public authority or industry group. Others have stated that current payment services are evolving toward this outcome and no special action by a public authority or industry group is required.

i. Which of these perspectives is more accurate, and why?

The preference is to let free market forces prevail rather than having the Fed mandate a course of action. However, without proper framework, rules and surveillance requirements the evolving solutions could run the risk of fraud, low confidence and low adoption.

ii. What other perspective(s) should be considered?

The Fed should also explore the impact of using legacy payment systems in a manner that they were not originally intended to support and to understand both the negative and positive impacts of this usage on the security of the payment system and all participants in the payment system.

The Fed should look at the short term and long term implementation of a near-real-time payment system and understand where and when, in the implementation timeline,

infrastructure, rules and regulations will need to be in place to support the near-real-time payment and the settlement and clearing of these payments.

Q5. The second desired outcome articulates features that are desirable for a near-real-time payments system. They include:

- a) Ubiquitous participation**
- b) Sender doesn't need to know the bank account number of the recipient**
- c) Confirmation of good funds is made at the initiation of the payment**
- d) Sender and receiver receive timely notification that the payment has been made**
- e) Funds debited from the payer and made available in near-real-time to the payee**

i. Do you agree that these are important features of a U.S. near-real-time system? Please explain, if desired.

These features are typically components or capabilities of a near-real-time system. Their importance is determined by market demand.

ii. What other characteristics or features are important for a U.S. near-real-time system?

Clear rules and regulations defining liability for all participants in the real time payment system.

Ability to:

- Support choice of delivery speed for either the sender or the receiver with associated opportunity for value tradeoffs.
- Support additional controls at operator, payor or payee choice base on payment type, dollar amount.
- Request funds from another party.
- Keep recipient from knowing the account number of the sender.
- Protect remittance and payment information end to end regardless of channel.
- Support multiple origination points or destinations.
- Support enhance data (e.g. remittance information, invoice number, etc.).
- Support multiple channels, e.g. voice, mobile, PC, MAC, etc.).
- Screen transactions against known fraud database, OFAC, etc.
- Offer 2 party payments (e.g. Insurance payments, where the insured and ultimate payee, perhaps a collision repair shop, must both be party to the payment).

Q6. Near-real-time payments with the features described in the second desired outcome could be provided several different ways, including but not limited to:

- a) Creating a separate wire transfer-like system for near-real-time payments that leverages the relevant processes, features, and infrastructure already established for existing wire transfer systems. This option may require a new front-end mechanism or new rules that**

would provide near-real-time confirmation of good funds and timely notification of payments to end users and their financial institutions.

- b) Linking together existing limited-participation networks so that a sender in one network could make a payment to a receiver in another network seamlessly. This option may require common standards and rules and a centralized directory for routing payments across networks.
- c) Modifying the ACH to speed up settlement. This option may require a new front-end mechanism or new network rules that would provide near-real-time confirmation of good funds and timely notification of payments to end users and their financial institutions. Payments would be settled periodically during the day.
- d) Enhancing the debit card networks to enable ubiquitous near-real-time payments.
- e) Implementing an entirely new payment system with the features described in the second desired outcome above.

- i. What would be the most effective way for the U.S. payment system to deliver ubiquitous near-real-time payments, including options that are not listed above?

Create the directory, standards and rules for a new near-real-time payment and clearing and settlement capability and foster the development of the interoperability of existing payment systems rather than build an entirely new payment infrastructure. However, co-opting an existing payment system to provide ubiquitous real-time payments may introduce unintended consequences which could negatively impact the success of the effort.

- ii. What are the likely pros and cons or costs and benefits of each option? What rule or regulation changes are needed to implement faster payments within existing payment processing channels?

Option a – Separate Wire Transfer

PROS

- allows the development of a clean payment channel governed by rules and regulations created to address the migration of payments to electronic and near-real-time movement.

CONS

- Cost and time to build infrastructure and develop payment capabilities.
- Cost for ongoing support.
- Significant amount of time before able to achieve desired outcome.
- Cost and time to define and build risk management system.
- Difficult to create a solution that would be perceived as highly valuable over existing solutions.

Option b – Linked Limited Participation Networks

PROS

- Opportunity to leverage existing payment system infrastructure investment.
- participants already familiar with networks

CONS

- Introduces significant risk to the payment system by allowing non-regulated non-FIs direct access to the payment channel.
- Cost and time to build and develop interoperability and directory.
- Cost and time to develop a new set of rules covering both FI and non-FI participants.
- Difficulty in achieving consensus across industry participants.
- Does not achieve ubiquity.

Option c – Modify ACH

PROS

- Opportunity to leverage existing payment system infrastructure investment.
- Opportunity to leverage existing systems/rules.
- Participants already familiar with networks.
- Already ubiquitous.

CONS

- Cost and time to define and build risk management system.
- Cost and time to develop a new set of rules.
- Difficult to create a solution that would be perceived as highly valuable over existing solutions.

Option d – Enhance Debit Card Network

PROS

- Opportunity to leverage existing payment system infrastructure investment.
- Participants already familiar with networks.

CONS

- Cost and time to define and build risk management system.
- Cost and time to develop a new set of rules.
- Difficult to create a solution that would be perceived as highly valuable over existing solutions.

Option e – Entirely New Payment System

PROS

- Allows the development of a clean payment channel governed by rules and regulations created to address the migration of payments to electronic and near-real-time movement.

CONS

- Cost and time to build infrastructure and develop payment capabilities.
- Cost and time to develop and implement new rules and regulations.
- Cost for ongoing support.
- Significant amount of time before able to achieve desired outcome.
- Cost and time to define and build risk management system.
- Cost and time to provide education to participants.

All Options - Rules/Regulations

Restating our response to Q1i, in moving forward and developing a near-real-time capability, there needs to be set of rules that provide for finality of payment, certainty in remediation, and

clarity of liability for all participants in the channel. Current rules and regulations allow for a significant time lapse between the payment origination and a repudiation claim, creating uncertainty in finality of payment. In a near-real-time payment and settlement environment, finality becomes a significant influencer in perceived value and safety and subsequent adoption. Both Reg. E and Dodd Frank will need to be modified or a new regulation created that will address and cover finality of payment and define liability to all participants in the channel.

iii. Is it sufficient for a solution to be limited to near-real-time authorization and confirmation that good funds are on their way, or must end-user funds availability and/or interbank settlement take place in near-real-time as well?

End-user funds availability and interbank settlement should take place near-real-time as well. Availability will ~~promote adoption~~promote adoption of the new payment system. The new payment channel's clearing and settlement must build in provisions for settlement risk and should develop effective methods for handling fraud, credit and liquidity risks similar to what the wire transfer and CHIPS payment networks employ today.

iv. Which payment scenarios are most and least suitable for near-real-time payments? (B2B, P2P, P2B, POS, etc.)

In order of suitability, most to least:

P2P, A2A, P2B, ~~B2C~~

We view B2B as a least suitable scenario for low value payments, or payments with significant amounts of remittance data.

POS is also suitable, but already exists today, and the card networks provide near-real-time payment capability to all participants in the card network.

Q7. Some industry participants have said that efforts to make check payments easier to use, such as by enabling fully electronic payment orders and/or by speeding up electronic check return information, will incrementally benefit the payment system. Others argue the resources needed to implement these efforts will delay a shift to near-real-time payments, which will ultimately be more beneficial to the payment system. Which of these perspectives do you agree with, and why?

The changes listed above only offer incremental improvements and retention of a check payment channel that has seen a significant decline in end user utilization. That decline has been primarily the result in a shift of consumer payment preference from check to electronic with business users continuing their use of check for both B2B and B2C. While Check 21, Image and the low rate environment have significantly reduced the float benefit for businesses to continue using checks, business users continue to find checks a more convenient and effective payment method. Remittance information continues to be a significant influencer in the ongoing use of checks by business. Rather than focusing limited resources on an incremental check channel improvement, efforts should be focused on developing near-real-time use cases that address a remittance

information solution for businesses as well as identifying conveniences, efficiencies, and cost benefits for both consumers and businesses.

Q8. How will near-real-time payments affect fraud issues that exist with today's payment systems, if at all?

We would anticipate a significant increase in the velocity of fraud attempts. Fraud attempts are directly correlated to the speed of funds transfer. Fraudsters will attempt to take advantage of the speed of payment which will mean at least in the short-term that fraud will increase.

i. Will near-real-time payments create new fraud risks? If yes, please elaborate on those risks.

Fraud is an existing problem; however, due to the inefficiency of the payment system, it has been manageable from an economic perspective. The velocity of fraud attempts is accelerating and with each new payment capability introduced, new fraud schemes make themselves known. The creation of a ubiquitous real time system increases that overall risk profile dramatically unless significant new identification and multi-layer authentication are also supported. Tighter controls and protection of account information would be essential. Authentication at the source and some level of payer validation is essential to maintain the integrity of the system.

The near-real-time payment system introduces operational cost risk and capital investment risk. With the creation and implementation of any new payment capability, comes new benefit, but counter to that, new risk. New risk creates new operating costs to monitor, report, detect, protect and prevent losses to the customer, the institution and the payment system. New detection systems and capabilities require FI investment, reprioritization and re-allocation of long term capital investments

Q9. To what extent would a ubiquitous near-real-time system bring about pivotal change to mobile payments?

It is difficult to predict the customer behavior change in a near-real-time payment environment. There are market solutions today that support mobile payments, but the vast majority are not near-real-time, they do not provide for immediately putting money into anyone's account which they can then turn around and immediately exchange for cash, transfer or use to make payments. Some allow money to be moved immediately, but only if the payee and payor are members of the same small, proprietary network. The proposed near-real-time is potentially turning a mobile phone into a mobile ATM, which, with a few clicks, can put cash into any account. The customer's behavior changes, not just for mobile payment, but for any payment channel that accommodates near-real-time payment, will be predicated on the customer's perceived value of that capability and the protection afforded to customer payment information.

Q10. What would be the implication if the industry and/or the Federal Reserve Banks do not take any action to implement faster payments?

If the banking industry does not move forward to expedite payment processing we could anticipate the non FI payment providers to continue the disintermediation of the FIs role in payments and subsequently run the risk of FIs becoming a non-entity in payment processing. The movement of payments out of a safe and sound payment system combined with the lack of consistent regulatory oversight for the non FI payment providers could lead to less payment protection to consumers and increased risk to customers, to the regulated FIs and to the payments system overall.

In addition, if there is no clear industry or Fed action toward the development of an efficient, risk controlled near-real-time payment capability, larger or more nimble FIs could partner outside of the payments domain and develop another proprietary solution, leaving some FIs as the “last man standing” in a legacy payment system that sees diminishing volume and increased cost and risk.

i. What is the cost, including the opportunity cost, of not implementing faster payments in the United States?

Q11. To what extent will the industry need to modernize core processing and other backend systems to support near-real-time payments?

Back end core processing systems (DDA) are predicated on an end of day, batch process, with next day exception processing. While core processing and back end systems have developed near-real-time capabilities (i.e. memo post), there needs to be development, implementation and integration of intraday balance control capability for settlement and clearing. In addition significant investment in risk management will need to occur.

i. What is the likely timeframe for any such modernization?

The timeframe is dependent upon the solution pursued; a new payment infrastructure would significantly lengthen the time frame for the modernization, while a solution that leverages existing payment infrastructure could be shorter. Given the size of the U.S. payment system, the number of participants (both FI and non FI), there is a significant effort that needs to be undertaken to ensure that all participants are driving toward an agreed upon timeline for modernizing their back end systems. Having gaps in the time line between a new payment system and a modernized core backend processing system introduces a number of risks to the payment system. The Fed, the industry, the non FIs, the vendors all need to understand the positive network affect if all participants are in agreement and the potential risk of a mandate from congress if all participants cannot come to agreement.

Q12. Some industry participants suggest that a new, centralized directory containing account numbers and routing information for businesses and/or consumers, to which every bank and other service providers are linked, will enable more electronic payments. A sender using this directory would not need to know the account or routing information of the receiver.

i. What are the merits and drawbacks of this suggestion?

Access to a proposed centralized directory of account and routing numbers for business and consumers must be regulated in its entirety and all users of this centralized database must adhere to a consistent level of regulation that is based on the users payment function and not on the business charter under which it is formed. This means all banks and service providers would need to operate under the payment rules and regulations that FIs are required to operate under. (i.e. AML, KYC).

Merits:

- Expanded reach to payers and payees.
- Recipients will feel more confident with electronic payments.

Drawbacks:

- The control mechanism to avoid fraudulent access to debit an account.
- A centralized rather than a federated directory would likely introduce unmanageable maintenance issues related to the “ownership” of entries.
- Consumer confidentiality – the directory cannot become a key piece of data that could ultimately link to customer records and impact privacy or increase the risk of fraud.
- Need near ubiquitous participation to provide true value.

ii. What is the feasibility of this suggestion?

We do not believe that a centralized directory would be a successful effort. Instead, we believe the Fed should explore alternatives such as a federated directory.

ELECTRONIFICATION

Q13. Some industry participants say that check use is an enduring part of the U.S. payment system and that moving away from checks more aggressively would be too disruptive for certain end users.

i. Is accelerated migration from checks to electronic payment methods a high-priority desired outcome for the U.S. payment system? (Accelerated means faster than the current trend of gradual migration.)

It would be a higher priority if the business demand increased. The Fed should let the free market determine the migration and utilization of payments from checks to electronics. There is no compelling business case to force or mandate the migration from check to electronic.

ii. Please explain, if desired.

The migration has begun and will continue and if there continues to be sufficient commercial demand for change, then the market will support that change. Solutions need to be in place for remittance processing before accelerated migration can occur. Once a solution is developed, market forces will expedite the migration, ~~with~~ with the customer ~~as the~~ as the ultimate decision maker in determining the value of speed.

iii. If yes, should the Federal Reserve Banks establish a target for the percent of noncash payments to be initiated via electronic means, by a specific date? For example: “By the year 2018, 95% of all noncash payments will be made via electronic means.”

No, the Federal Reserve Banks should not establish a non-cash payment electronification target. There is no need to establish an artificial target for the sake of establishing a target. Establishing an electronification target is an attempt to modify end user behavior and does not guarantee adoption of a new payment capability. Market forces will drive non cash payments to electronification if there is a value proposition for all the participants in the payment chain.

iv. What is the appropriate target level and date?

- N/A

Q14. Business-to-business payments have remained largely paper-based due to difficulties with handling remittance information. Consumer bill payments also are heavily paper-based due to the lack of comfort some consumers have with electronic alternatives. In addition, many small businesses have not adopted ACH for recurring payments due to technical challenges and/or cost constraints. The payment industry has multiple efforts underway to address these issues.

i. To what extent are these efforts resulting in migration from checks to other payment types?

These industry efforts have not been successful in migrating B2B payments from checks to other electronic payment types.

ii. What other barriers need to be addressed to accelerate migration of these payments?

Payment origination and receipt must maintain the same level of simplicity as check. Remittance info is important to accounting and recon for B2B and P2B. Both originators and receivers of checks are reluctant to embrace a payment capability that will require modification or re-engineering of their back end A/R and A/P systems without a corresponding offsetting value. AR/AP/Procurement solutions are highly fragmented and proprietary, and a new payment system needs to accommodate for that. As a result any payment solution that assigns a cost to the user without adding value will fail to achieve traction.

The level of the perceived problem should also be reconsidered. Many businesses do not rank accepting checks for payment high in their list of business problems. In today's low rate environment, float is ~~almost non~~almost non-existent as the value of funds is so low ~~and advances~~and advances in check clearing have already minimized mail float.

iii. What other tactics, including incentives, will effectively persuade businesses and consumers to migrate to electronic payments?

There are a number of market forces that would incent the movement of payments to electronification:

- Creating a payment capability that is needed and wanted by the market where users transition themselves.
- Creating product sets for the new payment system that adds value and efficiency.

- Value incentives that compel the use of electronic payments and allocate the true cost of paper based payment transactions.
- A electronic remittance solution for the B2B that operates with existing business AR and AP accounting systems limiting the need for capital purchase, technology changes and training for businesses.

iv. Which industry bodies should be responsible for developing and/or implementing these tactics?

CROSS-BORDER PAYMENTS

Q15. To what extent would the broader adoption of the XML-based ISO 20022 payment message standards in the United States facilitate electrification of business payments and/or cross-border payments?¹² For information on ISO 20022, see, for example, <http://www.iso20022.org/faq.page>.

The format by which payment information is exchanged is a small issue. For cross border payments managing different legal requirements, service levels, exception processes, customer service issues with time changes and language barriers are all much larger obstacles to delivering an efficient cross border payment service. Broader adoption is typically increased by ease of use, pricing for perceived value and endpoint reach. For domestic payments, small business, mid-size businesses may not have the tools, techniques or resources to use these standards.

Q16. What strategies and tactics do you think will help move the industry toward desired outcome four (4) - consumers and businesses have greater choice in making convenient, cost-effective, and timely cross-border payments?

- Defining and implementing consistent rules and process that provide clarity around settlement, exchange rates, timing and fees applied to cross-border payments.
- Providing 24/7 payment processing and multiple clearing and settlement times,
- Ease of use, coupled with the ability to exchange information about the payment.
- A framework of rules that protect the payment system, the process, the service provider, the payer and the payee.
- Supporting a set of multinational relationships to create an environment of innovation and development.

SAFETY

Q17. Payment security encompasses a broad range of issues including authentication of the parties involved in the transaction, the security of payment databases, the security of software and devices used by end users to access payment systems, and security of the infrastructure carrying payment messages.

i. Among the issues listed above, or others, what are the key threats to payment system security today and in the future?

All of the above. Rapidly changing technologies require payment network participants to continually adapt to existing, new and future threats and to invest in new security measures. End users need to focus this same effort on their authentication, the security of their software and the devices they use to access their accounts and the payment methods they choose. A central database of end user information, introduces another area that would require extraordinary security design. Overall, payment security needs to be a focus of not only the FIs, and network providers, but of the end users as well. The security of end-user software and devices presents a major threat, due to the huge disparity of technology and security knowledge among end-users.

ii. Which of these threats are not adequately being addressed?

Control over access to a customer's funding account, private data. Even if the account number or routing number isn't known, the directory needs to be secured against the exposure of key customer information to fraudsters that would allow them to gain access and affect a payment. Again, the security of end-user software and devices needs to be addressed to mitigate fraud risk.

iii. What operational or technology changes could be implemented to further mitigate cyber threats?

- Create a federated ~~directory that~~ directory that contains only identification tokens (e.g. email address, cell phone number) and payment tokens (i.e. a dedicated real-time, credit-push only account number).
- Confirmation of payer identity.
- Set baseline end-user software/device security requirements and confirm compliance of devices prior to connection.

Q18. What type of information on threat awareness and incident response activities would be useful for the industry?

Threat detection and awareness should be real time with the Payment system having dynamic flexibility to address known risks and adapt in real time.

- Known issues or awareness (i.e. ATM skimming).
- Compromised credentials, or security.

i. How should this information be made available?

Through existing networks, such as secret service, FBI, FS-ISAC for known or suspected issues and through a real time communication system to participants.

Q19. What future payment standards would materially improve payment security?

- Identification and authentication methods.
- Encryption of the entire network and all related data.
- Digital watermarking of the data for retrace-ability and forensic purposes.
- Authentication at both payer and payee ends.
- Authentication to access directory.
- Multi-layer security so if one layer is compromised the contingency layer(s) would remain intact.
- Improved mechanisms for creating transaction security awareness for end-users

i. What are the obstacles to the adoption of security-related payment standards?

Existing payment systems have their own proprietary security. There is the need to define the inter-operability between the near-real-time payment system and legacy payment systems. There is a risk to the payment system if one of the payment system's security controls is compromised.

- Implementation complexity and existing independently built infrastructures.
- The ability to achieve consensus on an interoperable approach.
- The need for new laws and regulation around the reliance on another party's assertion of security, interoperability.
- Potential inefficiencies that impact end users, such as requiring tokens and secondary authorizations, extending the time/effort spent by end users.
- End-user software and device security.

Q20. What collaborative actions should the Federal Reserve Banks take with the industry to promote the security of the payment system from end to end?

Act in the roles of leader and collaborator in the creation of an industry set of rules around authentication, verification, security and standards for all participants in the real time payment channel leveraging existing and emerging financial industry standards leveraging existing and emerging financial industry standards.

Provide the infrastructure and process to:

- Evaluate/assess the controls of all participants in the process.
- Evaluate/assess the viability and performance of all participants in the intraday settlement.
- Evaluate/assess the impact of the real time payment system on the stability, redundancy, and controls of all legacy payment systems.

Q21. Please share any additional perspectives on U.S. payment system improvements.

Conclusion