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The United States of America FinTech Research and Development Program

# A Comparative Analysis of the Federal Reserve's FedNow Service and Stablecoin-based Liquidity in USD Account-to-Account Transfers

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# I. Executive Summary

## A. Background and Purpose of the Study

The financial landscape has seen significant changes with the introduction of digital currencies and the emergence of blockchain-based solutions. Traditional financial institutions are increasingly adopting digital currencies, and central banks, including the Federal Reserve, are exploring real-time payment systems to improve the speed and efficiency of transactions. The purpose of this study is to compare the Federal Reserve's FedNow Service, a real-time payment system for USD account-to-account transfers, with stablecoin-based liquidity solutions such as USDC, DIA, and USDT that rely on host tokens (ETH, Polygon Matic, and Stellar Lumens) for gas fees.

## B. Key Findings and Recommendations

1. FedNow offers real-time, 24/7/365 availability for USD transfers without the need for gas fees or host tokens, making it a more straightforward solution for users seeking liquidity in USD. However, it faces challenges in adoption and integration, as well as regulatory and compliance issues.
2. Stablecoin-based liquidity solutions provide decentralization, borderless transactions, and programmability. However, they are dependent on host tokens for transactions, which can lead to challenges related to price volatility, scalability, and network congestion.
3. The ease of use and accessibility of FedNow may outweigh the benefits of stablecoin-based solutions for individuals and businesses seeking liquidity in USD. However, the latter may be more appealing for users seeking decentralization and programmability.
4. To improve the user experience and liquidity in both systems, it is recommended that:
  - a. The Federal Reserve work with financial institutions and technology providers to facilitate the adoption and integration of the FedNow Service, while addressing regulatory and compliance concerns.
  - b. Stablecoin providers and blockchain networks explore solutions to mitigate the challenges associated with dependency on host tokens, price volatility, and network congestion.
  - c. Financial institutions, businesses, and individuals stay informed about the evolving landscape of digital currencies and payment systems to make informed decisions about the best options for their needs.

# II. Introduction

## A. Overview of the Federal Reserve's FedNow Service

The Federal Reserve's FedNow Service is a real-time payment system designed to enable instant payment and settlement of transactions between banks, businesses, and consumers in the United States. Launched in response to the growing demand for faster and more efficient payment systems, FedNow aims to provide a secure, cost-effective, and reliable platform for USD account-to-account transfers. The service operates 24/7/365, enabling financial institutions to process payments in real-time, regardless of the time or day. As a centralized payment system, it is regulated and overseen by the Federal Reserve, ensuring compliance with relevant laws and regulations.



## **B. Overview of Stablecoin-based Liquidity Solutions (e.g., USDC, DIA, USDT)**

Stablecoins are digital assets designed to maintain a stable value by pegging them to a reserve of assets, such as fiat currencies or other cryptocurrencies. Among the most popular stablecoins are USD Coin (USDC), Decentralized Information Asset (DIA), and Tether (USDT), which are typically pegged to the US Dollar. These stablecoins provide a more stable alternative to other cryptocurrencies and offer an efficient means for transferring value in digital form. They are often used as a medium of exchange and a store of value in the cryptocurrency ecosystem, facilitating transactions between different digital assets.

Stablecoin-based liquidity solutions rely on underlying blockchain networks, such as Ethereum (for ERC-20 tokens), Polygon Matic, and Stellar Lumens. These networks provide the necessary infrastructure for processing transactions, managing digital assets, and maintaining security and transparency.

## **C. The Role of Gas Fees and Host Tokens in Stablecoin Transactions (ETH, Polygon Matic, Stellar Lumens)**

Gas fees are transaction costs associated with executing operations on blockchain networks like Ethereum, Polygon Matic, and Stellar Lumens. They serve as an incentive for network validators (miners or nodes) to process transactions and maintain the network's security. The fees are typically paid in the native cryptocurrency of the respective blockchain – Ether (ETH) for Ethereum, MATIC for Polygon Matic, and Lumens (XLM) for Stellar.

In the context of stablecoin transactions, gas fees play a crucial role as they determine the cost of transferring stablecoins between accounts. Users must hold a sufficient balance of the host token (ETH, MATIC, or XLM) to pay for gas fees when initiating a stablecoin transaction. If a user runs out of the required host token, they may be unable to complete the stablecoin transaction, creating challenges in terms of accessibility and usability for users seeking liquidity in USD.

## **III. FedNow Service: Real-Time Liquidity of USD Transfers**

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### **A. Features and Benefits of FedNow**

#### **1. Real-time Settlement**

FedNow enables instant payment and settlement of transactions between banks, businesses, and consumers. Unlike traditional payment systems, which often involve delays and batch processing, FedNow ensures that funds are transferred and settled in real-time. This feature significantly improves the speed and efficiency of transactions, providing immediate access to funds and reducing counterparty risk.

#### **2. 24/7/365 Availability**



The FedNow Service operates continuously, 24 hours a day, seven days a week, and 365 days a year. This around-the-clock availability ensures that payments can be processed at any time, regardless of weekends or holidays, offering greater convenience to users and facilitating the smooth flow of funds in the economy.

### 3. **Fraud Prevention and Risk Management**

As a centralized payment system overseen by the Federal Reserve, FedNow incorporates robust security measures and risk management practices. The service includes built-in fraud prevention tools, such as transaction monitoring and suspicious activity reporting, to help detect and prevent fraudulent transactions. Additionally, the Federal Reserve provides guidelines and oversight to ensure that participating financial institutions comply with relevant laws and regulations, further enhancing the security and reliability of the system.

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## B. Challenges and Limitations of FedNow

### 1. **Adoption and Integration**

One of the primary challenges faced by the FedNow Service is encouraging widespread adoption among financial institutions and technology providers. To achieve its full potential, the system needs to be integrated into existing banking and payment infrastructures, which may require significant investments in technology and resources. Smaller financial institutions, in particular, may face challenges in adopting the FedNow Service due to limited resources and technical expertise.

### 2. **Regulatory and Compliance Issues**

As a centralized payment system, FedNow operates under the purview of the Federal Reserve and must adhere to strict regulatory and compliance requirements. While this ensures the system's overall security and reliability, it may also impose additional burdens on participating financial institutions. They must comply with the necessary laws and regulations, which may involve increased reporting, monitoring, and auditing requirements. This regulatory burden may deter some financial institutions from adopting the FedNow Service or may limit the speed at which the service can be implemented and expanded.

## IV. Stablecoin-based Liquidity: USD Account-to-Account Transfers

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### A. Overview of Stablecoin Systems (USDC, DIA, USDT)

Stablecoin systems like USD Coin (USDC), Decentralized Information Asset (DIA), and Tether (USDT) are designed to provide a stable value by pegging them to a reserve of assets, typically the US Dollar. These systems offer an efficient means for transferring value digitally, serving as a medium of exchange and a store of value in the cryptocurrency ecosystem. They facilitate transactions between different digital assets and provide a degree of stability compared to other cryptocurrencies, whose values are often more volatile.



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## B. Role of Host Tokens and Gas Fees (ETH, Polygon Matic, Stellar Lumens)

Host tokens, such as Ether (ETH) for Ethereum, MATIC for Polygon Matic, and Lumens (XLM) for Stellar, play a critical role in stablecoin transactions. They are used to pay gas fees, which are transaction costs associated with executing operations on their respective blockchain networks. Gas fees serve as an incentive for network validators to process transactions and maintain network security. Users must hold a sufficient balance of the host token to pay for gas fees when initiating a stablecoin transaction.

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## C. Benefits of Stablecoin-based Liquidity

### 1. **Decentralization**

One of the main advantages of stablecoin-based liquidity solutions is decentralization. Unlike traditional financial systems and centralized payment platforms like FedNow, stablecoin transactions occur on decentralized blockchain networks, reducing the potential for single points of failure and providing users with greater control over their assets.

### 2. **Borderless Transactions**

Stablecoin-based liquidity solutions enable borderless transactions, allowing users to transfer funds across countries and regions seamlessly. This feature can significantly reduce transaction costs and increase the speed of international transfers compared to traditional banking systems, which often involve multiple intermediaries and higher fees.

### 3. **Programmability and Flexibility**

Stablecoin systems built on programmable blockchain networks, such as Ethereum, Polygon Matic, and Stellar Lumens, offer a high degree of flexibility and customization. Users can create and deploy smart contracts that automate processes and facilitate complex transactions, enabling new financial services and products that may not be possible with traditional payment systems.

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## D. Challenges and Limitations of Stablecoin-based Liquidity

### 1. **Dependency on Host Tokens for Transactions**

A significant challenge for stablecoin-based liquidity solutions is the dependency on host tokens for transactions. Users must hold sufficient host tokens to pay gas fees, which can create barriers to entry and complicate the transaction process, especially for those unfamiliar with cryptocurrency ecosystems.

### 2. **Price Volatility of Host Tokens**



The price of host tokens, such as ETH, MATIC, and XLM, can be highly volatile, causing fluctuations in gas fees and affecting the overall cost of stablecoin transactions. This volatility may deter some users from adopting stablecoin-based liquidity solutions and create uncertainty in transaction costs.

### 3. Scalability and Network Congestion

Scalability is a critical challenge for many blockchain networks that support stablecoin transactions. As the number of users and transactions on these networks increases, network congestion can occur, leading to slower transaction processing times and higher gas fees. This issue can limit the effectiveness of stablecoin-based liquidity solutions in high-demand situations and may require ongoing improvements in network infrastructure to address scalability concerns.

## V. Comparison: FedNow vs. Stablecoin-based Liquidity

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### A. Ease of Use and Accessibility

FedNow offers a more straightforward solution for users seeking liquidity in USD, as it operates natively in USD and does not require gas fees or host tokens for transactions. In contrast, stablecoin-based liquidity solutions require users to hold host tokens and navigate the complexities of gas fees, which may pose challenges, particularly for users with limited cryptocurrency experience.

### B. Cost-effectiveness (Gas Fees vs. Traditional Transaction Fees)

The cost-effectiveness of FedNow and stablecoin-based liquidity solutions depends on various factors, including transaction volume, network congestion, and the price of host tokens. While traditional transaction fees associated with FedNow may be more predictable and stable, gas fees for stablecoin transactions can be volatile and subject to network conditions. In certain cases, stablecoin-based solutions may offer lower transaction costs, particularly for cross-border transfers. However, users must weigh the potential savings against the complexities and uncertainties associated with gas fees and host tokens.

### C. Speed and Reliability of Transactions

FedNow provides real-time settlement and 24/7/365 availability, enabling instant payment processing and ensuring consistent transaction speeds. On the other hand, stablecoin transactions are subject to network congestion and varying confirmation times, which can lead to delays and inconsistent processing speeds. While blockchain networks supporting stablecoins are continuously working on scalability improvements, the speed and reliability of transactions may still vary.



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## D. Security and Risk Management

FedNow benefits from the centralized oversight and regulation provided by the Federal Reserve, ensuring robust security measures and risk management practices. Stablecoin-based solutions, being decentralized, lack a centralized authority to enforce security measures, and users must rely on the security protocols of the underlying blockchain networks. While decentralization can reduce single points of failure, it also places more responsibility on users to manage their assets securely.

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## E. Regulatory Compliance and Oversight

As a centralized payment system, FedNow operates under the purview of the Federal Reserve and must adhere to strict regulatory and compliance requirements. This ensures the system's overall security and reliability but may impose additional burdens on participating financial institutions. In contrast, stablecoin-based liquidity solutions are subject to a more complex and evolving regulatory landscape, with varying degrees of oversight depending on the jurisdiction and the specific stablecoin. Users and financial institutions must carefully navigate these regulatory environments, which can create uncertainties and challenges in terms of compliance and legal requirements.

## VI. Conclusion

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### A. Summary of Key Findings

The comparison between the Federal Reserve's FedNow Service and stablecoin-based liquidity solutions highlights several key findings. FedNow provides a more straightforward solution for users seeking liquidity in USD, with real-time settlement and 24/7/365 availability, while also benefiting from centralized oversight and regulation. Stablecoin-based solutions offer decentralization, borderless transactions, and programmability, but they are dependent on host tokens for transactions, which can create challenges related to price volatility, scalability, and network congestion.

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### B. Implications for Financial Institutions, Businesses, and Individuals

The choice between FedNow and stablecoin-based liquidity solutions depends on the specific needs and preferences of financial institutions, businesses, and individuals. Those prioritizing ease of use, consistent transaction speeds, and regulatory compliance may prefer FedNow. In contrast, those seeking decentralization, borderless transactions, and programmability may opt for stablecoin-based solutions.

Financial institutions should consider the potential benefits and challenges of each system in the context of their business models, customer needs, and regulatory requirements. Businesses and individuals must weigh the trade-offs between the two systems in terms of



ease of use, cost-effectiveness, speed, security, and regulatory compliance when making decisions about their preferred payment and liquidity solutions.

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## C. Recommendations for Improving the User Experience and Liquidity in Both Systems

To enhance the user experience and liquidity in both FedNow and stablecoin-based systems, the following recommendations are suggested:

1. The Federal Reserve should collaborate with financial institutions and technology providers to facilitate the adoption and integration of the FedNow Service, while addressing regulatory and compliance concerns. Efforts should be made to ensure that the system is user-friendly, cost-effective, and compatible with existing banking and payment infrastructures.
2. Stablecoin providers and blockchain networks should explore solutions to mitigate the challenges associated with the dependency on host tokens, price volatility, and network congestion. This may involve developing more efficient consensus mechanisms, implementing layer 2 scaling solutions, or exploring alternative methods for paying gas fees.
3. Financial institutions, businesses, and individuals should stay informed about the evolving landscape of digital currencies and payment systems. By keeping abreast of developments in both centralized and decentralized payment solutions, they can make informed decisions about the best options for meeting their liquidity needs and maximizing the potential benefits of digital currency technology.