



# Guide to Network Tokenization for Safer, Smarter and Faster Payments



Network Tokenization



# Introduction

Imagine you've launched a streamlined payment solution, making it easier than ever for merchants to take payments. Yet, behind the scenes, your organization is vulnerable. Fraud rates are climbing, and incorrect billing details are stalling transactions. Not only do these issues reduce your merchants' revenue and profits, but they shrink your company's too.

Merchants' customers also feel the impact of declined payments. The frustration is immediate. Was it a typo? An expired card? Or worse, a security breach? Soon, they abandon the transaction, taking their business elsewhere, often permanently.

Failed payments cost the global economy an estimated \$118.5 billion in labor, lost business and fees. Additionally, **35% of cardholders will likely part ways with a merchant after a single card decline.**

These issues harm your company's reputation, create a lackluster customer experience (CX) and erode trust. Although many businesses face these realities today, some are fighting back. Their solution of choice? Network tokenization.

In this whitepaper, we'll explore the growing adoption of network tokens and outline the critical questions and considerations for implementing them successfully.



# 35%

of cardholders will likely part ways with a merchant after a single card decline.

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# What Are Network Tokens and How Do They Work?

**Network tokens** replace a card's sensitive data, such as a Primary Account Number (PAN), with a unique string of numbers and letters. Card networks such as Visa and Mastercard issue network tokens to token requestors.

In the payments world, token requestors are often payment processors, payment facilitators (PayFacs), independent sales organizations (ISOs) and software companies. Token requestors can request and manage tokens for their merchants or customers.

Card networks create and attribute tokens to specific merchants, devices or transactions.

A token holds no value if intercepted, unlike a card number, making payments more secure. These tokens are also interoperable across acquirers and gateways. They are dynamic and lifecycle-aware, auto-updating upon card re-issuance.

In contrast, gateway or provider tokenization replaces a card's PAN with a token only usable within that specific gateway's ecosystem. Tokens become useless if you change gateways, and customers must re-enter their card information. Also, a gateway token doesn't update automatically when the card network reissues cards.



# How Do Network Tokens Make Transactions Safer?

With global [payment fraud reaching \\$91 billion by 2028](#), organizations face pressure to strengthen security. Yet, the traditional protective measure, encryption, can be vulnerable to reversal using the right decryption keys. The same encrypted card number can also be reused.

Network tokens hold no exploitable value as there is no way to get the original card number from the token, and each token is unique per merchant, device or transaction type, making them a generally more secure alternative.

Other security-enhancing features include:



## Preventing the Transmission and Storage of Sensitive Card Data

Encryption plays a vital role in securing payment data during transmission by rendering it unreadable to unauthorized parties. Network tokenization builds on this foundation by replacing sensitive card data altogether, meaning the actual card number is never transmitted or stored. This approach further reduces the risk of fraud and data breaches. In fact, tokenization has proven so effective that it helped companies avoid an estimated \$650 million in fraud losses in a single year.

## Secure Environments to Store Network Tokens

Merchants don't have to store sensitive customer data. Instead, payment providers can securely manage and store tokens in protected areas called "vaults." This approach limits merchants to handling only non-sensitive token data, which simplifies compliance requirements, lowers associated costs and enhances overall payment security.

# \$91B

**Annual payment fraud losses could hit \$91 billion globally by 2028**

[Source Link](#)

# 60%

**Network tokens can reduce fraud by 60%**

[Source Link](#)

# 40%

**of data breaches involved information stored across multiple locations**

[Source Link](#)

# Who Are Network Tokens for?

**Network tokenization is to payment processing what safety features are to cars: an invisible protective layer that reduces risk without disrupting the customer experience. It benefits everyone involved in the payment process, including payment providers, PayFacs, ISOs, software companies, merchants and their customers.**

The technology means safer transactions, safeguarding merchants' and shoppers' funds while providing a seamless checkout experience. Simultaneously, tokenization helps businesses build strong reputations with customers, while helping them avoid costly legal disputes that can result from data breaches and fraud.



# Industry Applications of Network Tokenization

To understand the transformative power network tokens hold, let's look at the following use cases:

## Subscriptions

Imagine a meal kit delivery service that bills customers weekly. Payment failures can cause revenue unpredictability and disappointed customers. Network tokens help by:

- Preventing delivery disruptions from outdated cards, which generates higher customer retention rates
- Lowering fraud exposure and instances by only handling non-sensitive token data
- Improving payment approval rates to stabilize income
- Enhancing customer experience by enabling uninterrupted, seamless payments and fewer failed transactions

## eCommerce

Consider an online retailer facing frequent fraud attempts and payment failures. At the same time, they're dealing with the challenge of keeping customers happy and recovering failed payments. Tokenization can bolster this type of organization by:

- Driving higher approval rates and fewer false declines using automatic card updates and secure token storage
- Providing a smoother, more reliable checkout experience that builds customer trust and encourages repeat business and customer loyalty
- Reducing the risk of payment-related data breaches and fraud through built-in card data protection

## SaaS Platforms

Consider a project management platform that allows contractors or consultants to send and pay invoices directly in its app. Payment declines from reissued cards are causing involuntary churn and customer frustration, while manual fraud monitoring and payment recovery efforts are putting strain on internal teams. Network tokens can assist this business by:

- Building consistent cash flow and eliminating manual card updates through auto-updates
- Boosting customer retention by supporting payment automation, driving fewer payment interruptions and false declines
- Protecting funds continuously, optimizing resources and automating payment management and fraud monitoring



# What Are the Benefits of Network Tokenization?

Beyond safeguarding payment data from fraud, tokens also transform how businesses manage payments. The advantages include:

## Increased authorization rates and customer retention:

Many businesses don't notice when customer cards expire, leading to lost income. Automatic card updates when a card is replaced ensure uninterrupted transactions for subscriptions and recurring payments. So, merchants experience higher payment approvals, revenue and a more stable customer base. Merchants leveraging Visa network tokens see a [4.3% lift in approval rates](#).

## Operational efficiency:

Manual work such as updating card details, stagnates operations. These types of tasks are also costly and error-prone, siphoning resources and stifling growth. Using tokens makes payment management more efficient and productive by freeing up resources to support core business tasks.

## A seamless CX that fuels growth:

[Nearly one out of five shoppers abandon their carts](#)

due to lengthy or complicated checkout processes. Network tokenization helps reduce friction by making online payments faster and more secure. The smoother the checkout experience, the more likely customers are to complete their purchases, leading to higher conversion rates.

## Global payment optimization:

International payment networks support network tokens. This allows businesses to securely process transactions across multiple regions. As a result, businesses can scale more confidently and effectively with cross-border expansion to serve global customers.

**Jared Drieling**

Chief Innovation Officer  
TSG (The Strawhecker Group)

**“Merchants adopting network tokens are seeing tangible benefits, including reduced fraud and improved approval rates. Led by the likes of MasterCard and Visa, network tokenization represents a significant advancement in securing payment transactions while enhancing the overall efficiency of digital commerce. With the adoption of network tokens on the rise, we’re seeing a safer and more efficient payments ecosystem that’s better equipped to support the growing demands of digital commerce.”**

**Chris Gains**

Chief Executive Officer  
International Payment Solutions

**“Network tokens offer tremendous value to our merchants and their customers. By leveraging network tokens with NMI Customer Token Vault, we’ve seen a noticeable improvement in approval rates for subsequent transactions and expect ongoing reductions in fraud and chargebacks. For small business owners, this is a significant advantage and builds trust from the very start, paving the way for seamless recurring sales.”**

# How Do Network Tokens Fit Into the Broader Compliance Conversation?

Network tokenization supports regulatory compliance requirements, particularly the [Payment Card Industry Data Security Standard](#) (PCI DSS). It mandates over 300 stringent measures to protect cardholder data, including encryption, access control and network security. By replacing sensitive card data with non-sensitive tokens, network tokenization helps reduce the scope of PCI compliance and adds an extra layer of protection against data breaches.

PCI DSS tells you what to protect and how to do it, while tokenization helps you execute these obligations more effectively.

This complementary combination creates a more robust and resilient payment infrastructure. It also limits the data subject to compliance requirements, simplifies compliance audits, cuts associated costs and enhances customer trust.

For example, consider a tele-healthcare provider that processes payments for virtual consultations. By replacing patient payment card details with tokens, the company can remove exploitable payment data from its systems. This setup also upgrades data security and reduces the healthcare company's PCI DSS obligation. The team can then focus more on patient care and business expansion.

# 30%

**Reduction in fraud with network tokens vs. PANs**

[Source Link](#)

# 650M

**Tokenized payments saved companies globally \$650 million in fraud between 2023 and 2024**

[Source Link](#)

# Can Network Tokens Help Us Save Money?

Secure payment technology can be a trade-off between complexity and unclear return on investment (ROI). Network tokenization eliminates this problem by offering more than security upgrades; it provides several low-effort ways to unlock financial gains across your business ecosystem. These include:

## A Superior CX from Safer and More Streamlined Transactions

From completing puzzles to prove you are a human to timing out 3D secure checks, clunky payment processes sour customer relationships. Tokens remove this friction to increase conversions and ROI. Businesses prioritizing their [CX see up to a 7% revenue increase](#), up to a 2% profitability uptick and a 10% rise in shareholder returns. Additionally, [network tokens reduce fraud by up to 60% on average](#).



# 7%

Businesses prioritizing CX see up to a 7% increase

# 60%

Network tokens [reduce fraud by up to 60% on average](#)

## Lower Interchange Rates that Drive Down Costs

Network tokenization offers enhanced security which reduces chargebacks and fraud. As a result, card networks have reduced interchange rates for network token transactions. For example, in April 2022, Visa enforced a rate increase of 9-10 basis points for purchases without tokens. Companies can save up to 10 basis points (0.1%) on network tokenized transactions. This shift makes payments more cost-effective across a business ecosystem.

# 0.1%

Companies can save up to 10 basis points (0.1%) on network tokenized transactions

## Improved Customer Retention From Uninterrupted, Automated Service

Network tokens automatically update expired or replaced card details, helping save payments that would have failed due to outdated card data, and ensuring a smooth checkout experience. This helps merchants avoid lost sales and keeps customers happy, reducing the risk of churn.

To visualize the potential financial gains from tokenization, let's look at the following example. A SaaS platform has 100,000 monthly subscribers. Each pays \$20 monthly, amounting to \$2 million in monthly takings. The financial efficiencies could entail the following:

### Fraud reduction and CX optimization:

Assuming a 0.5% fraud rate, the platform would incur \$10,000 in monthly losses. Launching network tokens could create a 60% reduction in fraud, leading to \$6,000 in *monthly savings*

### Interchange fee reduction:

With a standard interchange fee of 2%, the platform pays \$40,000 in monthly fees. A 0.1% drop from adopting network tokens would save \$2,000 *monthly*

### Revenue preservation savings:

Given a 2% payment failure rate due to outdated cards, the platform risks losing \$48,000 monthly. Network tokenization can mitigate these failures, saving \$48,000 *monthly*

Altogether, these changes amount to \$56,000 monthly or over **\$670,000 in annual savings**.



# How Do Network Tokens Improve the Payment Experience?

Network tokens enhance the payment experience across multiple areas. Beyond the advantages of reduced fraud, users can expect the following benefits:

## Improvements for Merchants

### **Reduced Payment Recovery Workloads**

Network tokens' automatic card updates reduce manual payment recovery needs. This feature creates a smoother experience for staff while freeing up resources to scale and improve service delivery.

### **Less Need for Manual Updates**

Network tokens update card details across services and devices, saving merchants time and reducing manual effort and associated errors.

### **Support for Loyalty Programs and Conversion Rate Optimization Initiatives**

With secure data storage, network tokenization powers one-click purchases, rewards and personalized offers that increase customer satisfaction and repeat business.

### **Seamless Multichannel Payments**

Network tokens enable seamless payments across web, app and subscription channels. This feature positively impacts merchants' conversion rates and reputation.

### **Futureproofed Payments Infrastructure**

Network tokens help businesses navigate evolving security best practices, compliance and customer expectations. Adoption is a long-term investment in payment innovation.

### **Improved Cash Flow Visibility**

Network tokenization's higher approval rates and fewer payment failures enable better insight into liquidity and enhanced budgeting and forecasting.

## Improvements for Consumers

### Improved Return and Refund Experiences

Network tokenization facilitates faster and more accurate refunds. Customers receive their money back promptly, encouraging repeat purchases and keeping them satisfied with the overall experience.

### Flawless, Safe Cross-Device and Cross-Channel Payments

Consumers can shop across websites, mobile apps and in-store without re-entering payment details. This seamless omnichannel experience makes it easier for customers to pay, increasing user convenience and satisfaction.

### Accelerated Payments and One-Click Checkouts

Consumers value speed and convenience most in their payment experience. Network tokens fulfill these desires by supporting faster transaction approvals and one-click checkouts.

### Faster Rewards Management

Securely stored customer card data makes linking a customer's payment to their rewards program easier. Merchants can apply relevant perks at checkout without extra logins and steps.

### Reliable Subscription Services

The automatic card update feature allows consumers to enjoy uninterrupted access to subscriptions without needing to track and update payment details as cards expire and get replaced.

Account number problems cause a third of failed payments.





# When Should I Get Started and How?

Early investment in network tokens offers significant competitive advantages. As the payment industry evolves, network tokens will become the standard for secure, optimized transactions. Early adoption helps you outperform competitors and adapt faster to market shifts. You'll also fine-tune the payment process, helping you stay compliant.

## Understanding the Risks of Digital Transformation in Payments

While network tokenization can unlock real benefits for many organizations, implementing it as part of a broader digital transformation requires careful planning. Approximately 70% of digital transformations fail, not because the technology doesn't work, but because businesses choose solutions that don't fit their infrastructure, lack a clear roadmap or skip collaboration with relevant teams.

In payments, this can lead to higher costs, integration delays and missed opportunities to improve the customer experience. Addressing these issues in an adoption plan that aligns with business goals and involves key stakeholders is essential for long-term success.

**70%**

Approximately  
70% of digital  
transformations fail



# Best Practices for Adopting Network Tokenization

Successful adoption of network tokenization requires a phased and strategic approach. Breaking down implementation into manageable stages enables confident testing, refining and scaling. Follow these key steps and considerations for a successful launch.

## Phase 1: Lay the Foundation

Using the four Ps framework (People, Portfolio, Process, Platform) to inform your network tokenization strategy lays a solid foundation for implementation.

### People

Identify the key organizational stakeholders required for the project. This group includes your product, engineering, compliance and customer support staff. Sales teams must also participate to understand how tokenization impacts offerings.

#### To identify appropriate collaborators, ask:

- Who should we include in the decision-making process?
- How will tokenization affect internal and external stakeholders?
- What training and resources will teams need to support the transition?

### Portfolio

Examine how network tokenization will fit into your payments ecosystem. This includes integrating existing systems such as payment gateway and fraud prevention tools. Understanding how network tokenization works alongside your current offerings will ensure compatibility.

#### During this process, be sure to ask:

- How does network tokenization align with our existing payment infrastructure?
- What impact will network tokens have on our payment stack?
- What additional value will this solution bring to merchants and their customers?

# Best Practices for Adopting Network Tokenization

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### Process

Map out how implementing network tokens will impact payment workflows and CX. For instance, understand how automatic card updates will impact your user journeys. Also, identify which processes need adjustment to support network tokenization. This information will reveal potential gains and areas of improvement.

#### Consider asking the following:

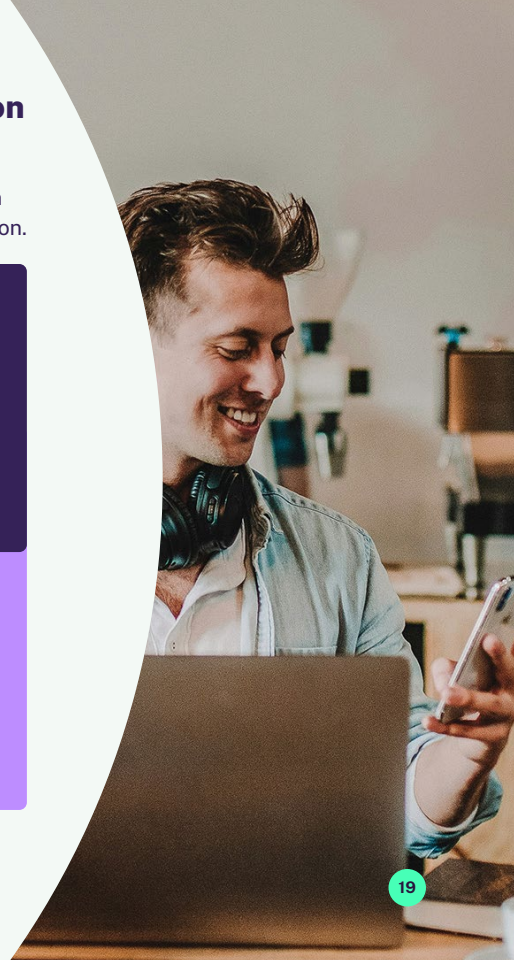
- What payment touchpoints will benefit the most from tokenization?
- How will tokenization improve the end-user experience?
- What changes must we make to support seamless adoption?

### Platform

Look for providers with solid experience in tokenization. The provider should also have robust security features, API integrations and a strong compliance track record.

#### To build a shortlist, ask:

- Can the vendor support global network tokenization across multiple regions and payment types?
- What security measures are in place to protect the tokens?
- Is the integration process API-based or plug-and-play?



# Best Practices for Adopting Network Tokenization

## Phase 2: Analyze Vendors

Selecting the right payment partner for network tokenization is essential to successful implementation. Consider the following to choose a suitable vendor from your shortlist:

### Step 1: Conduct an Initial Evaluation

Assess whether the provider can tailor their tokenization solutions to your business needs. Ensure the partner complies with industry standards such as PCI DSS and employs robust security measures. Also, research customer reviews, testimonials and third-party endorsements.

#### Questions to ask:

- What differentiates the solution from others in the market?
- How does the provider stay updated with evolving compliance requirements?
- Is there any data on performance improvements from existing clients?

### Step 2: Evaluate Technical Integrations

The network tokenization solution should integrate seamlessly with your existing payment infrastructure. Scalability is also essential to ensure long-lasting business results. Assess whether the solution can accommodate future growth and technological advancements.

#### Questions to ask:

- How easily can the solution integrate with our existing systems?
- How does the provider handle token lifecycle management, including expiration, detokenization and token reuse policies?
- How scalable is the solution for our vertical and business needs?

### Step 3: Analyze Support and Maintenance Capabilities

Reliable customer support is critical to solving issues promptly and maintaining high service quality. Investigate whether the vendor offers support channels such as dedicated account managers, hotlines, or live chat. The vendor should also provide a roadmap for future enhancements and updates. Also, verify their processes for addressing security breaches or outages.

#### Questions to ask:

- What support channels are available, and what are their opening and response times?
- What's the historical uptime or system availability rate over the past 12 months?
- What protocols are in place in case of a breach or outage?

# Best Practices for Adopting Network Tokenization

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### Step 4: Create a Cost Versus ROI Analysis

Understanding the financial impact of network tokenization supports decision-making and stakeholder buy-in. Compare implementation costs versus the long-term savings and revenue gains. Understand the platform's cost structure, including fees. Finally, clarify how the prospective payment partner charges for their solution.

#### Questions to ask:

- What's the estimated payback period for the solution, and what's the ROI?
- What payment model and pricing scales does the vendor operate on?
- Are there any setup, onboarding, or maintenance costs?

### Step 5: Conduct an Implementation Review

Improving tokenization solutions and processes is essential to optimize outcomes and maximize returns. Track and assess the solution's impact on fraud reduction, authorization and customer satisfaction rates. Look for a vendor that uses phased rollouts and testing to determine fit. Also, understand how the provider identifies areas for performance improvement.

#### Questions to ask:

- How do you measure the success of the implementation?
- What processes do you have in place for ongoing optimization?
- What tools are available for tracking performance?

# Unlock Network Tokenization's Transformative Power With NMI

Network tokenization ensures security, compliance, efficiency, CX and revenue optimization go hand in hand. This approach creates a scalable and adaptable payment infrastructure that fits your business, customer and market needs. Given these benefits, early adoption of this technology provides a competitive advantage.

The key to success is selecting a partner that simplifies adoption while offering comprehensive security features. NMI addresses these needs with advanced tokenization technologies like our [Customer Token Vault](#), which makes it easy to harness the benefits of network tokenization without complicating your payment stack.

## With our solutions, you'll gain access to:

- Secure storage for network tokens in the same vault as our in-house gateway tokenization system
- The strongest security protocols for Visa and Mastercard network tokens
- Seamless fallback protection to ensure payment card data protection when network tokens aren't available or unsupported with our native gateway tokenization
- Built-in automatic card updates to support uninterrupted subscriptions and recurring billing
- Improved approval rates and a smoother customer checkout process
- A future-proofed tokenization system that changes with your business

The future of payments is already here. As your trusted payments partner, we'll equip you to stay ahead in this fast-moving landscape. [Reach out to learn how we can support your next chapter in payment innovation.](#)



**Contact us:**  
[hello@nmi.com](mailto:hello@nmi.com)  
[www.nmi.com](http://www.nmi.com)