How Apple Pay keeps users' purchases protected

Secure Element

The Secure Element hosts a specially designed applet to manage Apple Pay. It also includes applets certified by payment networks or card issuers. Credit, debit, or prepaid card data is sent from the payment network or card issuer encrypted to these applets using keys that are known only to the payment network or card issuer and the applets' security domain. This data is stored within these applets and protected using the Secure Element's security features. During a transaction, the terminal communicates directly with the Secure Element through the near-field-communication (NFC) controller over a dedicated hardware bus.

NFC controller

As the gateway to the Secure Element, the NFC controller helps ensure that all contactless payment transactions are conducted using a point-of-sale terminal that's in close proximity to the device. Only payment requests arriving from an in-field terminal are marked by the NFC controller as contactless transactions.

After a credit, debit, or prepaid card (including store cards) payment is authorized by the cardholder using Face ID, Touch ID, or a passcode, or on an unlocked Apple Watch by double-clicking the side button, contactless responses prepared by the payment applets within the Secure Element are exclusively routed by the controller to the NFC field. Consequently, payment authorization details for contactless payment transactions are contained to the local NFC field and are never exposed to the Application Processor. In contrast, payment authorization details for payments within apps and on the web are routed to the Application Processor, but only after encryption by the Secure Element to the Apple Pay server.

Published Date: February 18, 2021

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Contactless passes in Apple Pay

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