Strong Customer Authentication for Apple Pay on Apple Watch Series 10 with S10 running watchOS 11.4

Guidance

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1. Introduction

This document contains references to other documents providing guidance for all security related topics specified in the Security Target.

Reference	Description
[AP]	Apple Pay Support *https://support.apple.com/apple-pay*
[APC]	Apple Cash Support *https://support.apple.com/apple-cash*
[APS]	Apple Platform Security, Dec 2024 *https://support.apple.com/guide/security*
[CHECK-SERIAL]	Check Your Service and Support Coverage (review your Apple warranty status) *https://checkcoverage.apple.com*
[DEVICE_ID]	PSD2 security certifications - Device Identity
[DISABLE]	If you forgot your Apple Watch passcode *https://support.apple.com/108348*
[INITCFG]	Set up your Apple Watch *https://support.apple.com/109015*
[PERSONAL-SAFETY]	Personal Safety User Guide for Apple devices Set a unique passcode or password on devices *https://support.apple.com/guide/personal-safety/welcome/1.0/web*
[SEC-ANNOUNCE]	Registration form for Apple security-announce mailing list *https://lists.apple.com/mailman/listinfo/security-announce/*
[SEC-ISSUE]	Get help with security issues *https://support.apple.com/111756*
[SEC-REPORT]	Report a security or privacy vulnerability *https://support.apple.com/102549*
[SEC-UPDATE]	Apple security releases *https://support.apple.com/100100*
[SERIAL]	How to find the serial number or IMEI for your Apple Watch *https://support.apple.com/108040*
[WATCHID]	Identify your Apple Watch *https://support.apple.com/108056*
[WATCHOSSLA]	A. watchOS Software License Agreement B. Apple Pay Supplemental Terms and Conditions *https://www.apple.com/legal/sla/docs/watchOS11.pdf*
[WATCHOSUPDATE]	Update your Apple Watch *https://support.apple.com/108926*
[USER_GUIDE]	Apple Watch User Guide *https://support.apple.com/guide/watch/welcome/watchos*

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2. Preparation Guidance

After either unpacking and powering up the device for the first time, or after a complete erase, the watchOS device presents a set of questions to the user as outlined in [INITCFG].

As part of the initial configuration, the user is asked to configure a passcode.

After completion of the initial installation steps, the user shall[1] enroll into Apple Pay and can elect to enroll into Apple Cash (if available). The enrollment process for Apple Pay is illustrated at [AP]. To enable Apple Cash, the guidance given at [APC] should be consulted.

In order to use the "Unlock with iPhone" feature the user needs to perform the configuration steps outlined in the "Lock or unlock Apple Watch" section of [USER_GUIDE].

3. Identification

Two guides [WATCHID] and [USER_GUIDE] Section "*Get information about Apple Watch*" are provided for identifying the device model and the installed software.

The following identifiers correspond to the TOE:

- TOE: Strong Customer Authentication for Apple Pay, on Apple Watch Series 10 with S10 running watchOS 11.4
- Device Model: Apple Watch Series 10
- watchOS version: watchOS 11.4

The other components of the TOE are tied to the device and watchOS versions listed above and are not configurable.

4. Operational Guidance

In addition to the initial configuration steps, various use cases and options are available for the security functions at runtime. All security related mechanisms are documented as follows.

In general, all security features of watchOS devices including authentication, system updates, Apple Pay, and Apple Cash are documented in [APS] sections "Apple Watch" and "Apple Pay" In addition, specific user guidance is given in the documents referenced in the subsequent sections of this document.

Apple provides a high-level document covering the watchOS Software License and Agreement [WATCHOSSLA] including supplemental terms and conditions for the use of Apple Pay services (Apple Pay and Apple Cash).

The only user role applicable to the TOE is the end user of the device, therefore, the functions and priveleges described in this document apply only to the end user.

There is only one operational mode in the certified configuration of the TOE.

[1] Enrolling into Apple Pay is not a mandatory step of the device setup process; however, it is required to install the TOE in its evaluated configuration

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4.1. Configure Passcode

Managing the passcode is provided with the configuration user interface specified in [INITCFG]. The guidance provides details about adding, changing, and removing a passcode.

To prevent anyone except the user from using their devices and accessing their information, the user should set a unique passcode or password that only the user knows. The Personal Safety User Guide [PERSONAL-SAFETY] and the "Lock or Unlock Apple Watch" section of [USER_GUIDE] provide guidance on setting up a passcode or password on devices.

To discourage brute force passcode attacks, there are escalating time delays after the entry of an invalid passcode, as specified in the Security Target (FIA_AFL.1/Delay Authentication failure handling).

4.2. Check warranty status

The documents [SERIAL] and [CHECK-SERIAL] allow the user to check the warranty status of their Apple devices.

4.3. Configure Unlock

The Apple Watch can be configured to be unlocked when the paired iPhone is unlocked. Guidance on this configuration is provided in "Lock or Unlock Apple Watch" section of [USER_GUIDE].

4.4. Update watchOS

The watchOS operating system can be updated following the steps provided in [WATCHOSUPDATE].

watchOS updates include all software and firmware relevant to Apple Pay and Apple Cash.

4.5. Apple Pay

With Apple Pay, users can enroll credit cards and debit cards to perform transactions using a watchOS mobile device. All transactions and usage scenarios that can be performed with Apple Pay are detailed in [AP].

4.6. Apple Cash

Apple Cash allows several different operations, including payments and transfer of money from a debit card to Apple Cash. All aspects related to Apple Cash are documented in [APC].

4.7. Operational failures

Two guides [DISABLE] and [USER_GUIDE] Section "*Restart Apple Watch*" are provided for handling the device in case:

- The User forgets the passcode

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- The device is not responding

4.8. Security updates, announces and registering

[SEC-ANNOUNCE] allows any user to sign up to be notified about security issues and updates.

[SEC-ISSUE] alerts users about security issues related to their Apple devices and corresponding actions to take.

[SEC-REPORT] provides any person, Apple customer or not, directions to report a security or privacy vulnerability.

[SEC-UPDATE] lists the latest security updates for Apple software products.

4.9. Unlock with iPhone

The “Lock or unlock Apple Watch” section of [USER_GUIDE] allows the user to unlock their device using a paired iPhone.

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Annex A – Card issuer Security Objectives

For Apple Pay services (Apple Pay and Apple Cash), the card issuer or its service provider is the third party in charge of:

- Management of user data for Apple Pay services
- Management of user data for Apple Cash services
- Processing Apple Pay transactions
- Processing Apple Cash transfers

The card issuers authorized to provision cards (for their cardholders, or to the cardholders of their affiliates) enforce the following Security Objectives:

Environment Security Objectives	Description
Cardholder and Apple Pay/Apple Cash Perso	The card issuer is responsible for verifying that the device User is authorized to perform a transaction on the payment account linked to the card used as a reference, before allowing the card personalization. The card issuer also ensures the robustness of the personalization data, to prevent attacks like forgery, counterfeit, or corruption.
Card Data	The card issuer is responsible for using the appropriate security measures to protect the confidentiality and the integrity of the sensitive card data and for guaranteeing the authenticity of the card data during enrolment.
Card Delete	The card issuer of a payment card provisioned on a device is informed after the User removes the card from that device, removes that device from the iCloud account, or performs a device Erase All Content and Settings. The card issuer ensures the provisioned card is removed from the User's payment account (i.e., the unlinking process of the DPAN from the FPAN, which is done by the card issuer or the corresponding TSP).
Apple Pay Transaction Verification	For Apple Pay, the cryptogram released by the Secure Element for an Apple Pay transaction is verified by the card issuer (or its service provider such as the payment network). The cryptogram validation result allows the card issuer to approve or reject the transaction. The payment is invalidated if this verification fails.
Statement	For Apple Pay, the card issuers ensure that the statement associated to the DPAN (list of transactions) is fully accurate and includes, but is not restricted to, the amount and recipient of each transaction. For Apple Cash, the payment card issuer ensures that the ledger associated to an Apple Cash account (list of transfers including completed/canceled/pending) is fully accurate.
Dynamic Linking	For eCommerce transactions, the card issuer (or its service provider) verifies the cryptographic based dynamic linking of the transaction data (including amount and payee). The payment is invalidated if this verification fails.
CDCVM	Payment networks or card issuers are responsible for ensuring that Express transactions can only be accepted for transit specific use by requiring that non-transit Apple Pay payment transactions have a successful CDCVM.

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Annex B – Apple Server Security Objectives

Apple servers are in charge of:

- Management of a User's iCloud account
- Management of User enrollment in Apple Pay
- Management of User enrollment in Apple Cash
- Management of watchOS releases
- Device's interface for processing Apple Pay transactions (contact S.Issuer)
- Device's interface for processing Apple Cash transfers (contact S.Issuer)

Apple servers enforce a range of security objectives:

Environment Security Objectives	Description
Anti-Replay	The Apple Pay server verifies that each payment (e-Commerce Apple Pay transaction or Apple Cash transfer) is not replayed. The payment is invalidated if this verification fails.
Apple Cash Transaction Verification	The Apple Pay server ensures that no Apple Cash transfer can be executed if the submitted quote (received by the server before the User approves) does not match the transaction data (received by the server once the device completes transfer processing). The modifications that the server is able to detect cover but are not limited to, modification on the amount and the recipient.
Dynamic Linking	For eCommerce transactions, the Apple Pay server preserves the cryptographic based dynamic linking of the transaction data (including amount and payee).
Genuine_Wallet	The Apple Wallet application is provided and signed by Apple.

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Annex C – User Security Objectives

The user of the TOE is responsible for:

- Taking appropriate measures to control access to the TOE
- Controlling which devices pair with the TOE

The user enforces the following security objective:

Environment Security Objectives	Description
User	The User is responsible for ensuring that: • They authorize all the Apple Pay/Cash activities that are performed on the device • The passcode is robust and protected • Only their own biometrics credentials are enrolled (they do not enroll biometrics of someone else) • Only their own iPhone is paired with the TOE and the paired iPhone is protected. This includes abiding by the iOS Software License Agreement and protecting the confidentiality of the paired iPhone's passcode

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Annex D – iPhone Security Objectives

The paired iPhone is responsible for:

- Protecting the confidentiality of the unlock secret of the Apple Watch Series 10
- Preventing unauthorized access to the “Unlock with iPhone” feature

iPhone enforces the following security objective:

Environment Security Objectives	Description
iPhone	The iPhone is responsible for ensuring the confidentiality of the unlock secret provided by the Apple Watch Series 10 during all its lifetime: from its inception at enabling of the “Unlock with iPhone” feature, during its storage, during its release for unlocking the Apple Watch Series 10, and when it is deleted when the feature is disabled. The iPhone is responsible for ensuring that it is protected by a passcode and not allowing someone else to enroll their biometrics.

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Change History

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