

Built-In Security in MacOS

Gatekeeper and Firewall

Focus on XProtect

A Look at the Silent Knight application

And XProCheck

Bruce Mitchell - Tom Bonanno September 19,2023



SIG



This new Mac malware is stealing passwords, credit card info and more — how to stay safe

Tom's Guide

Apple News

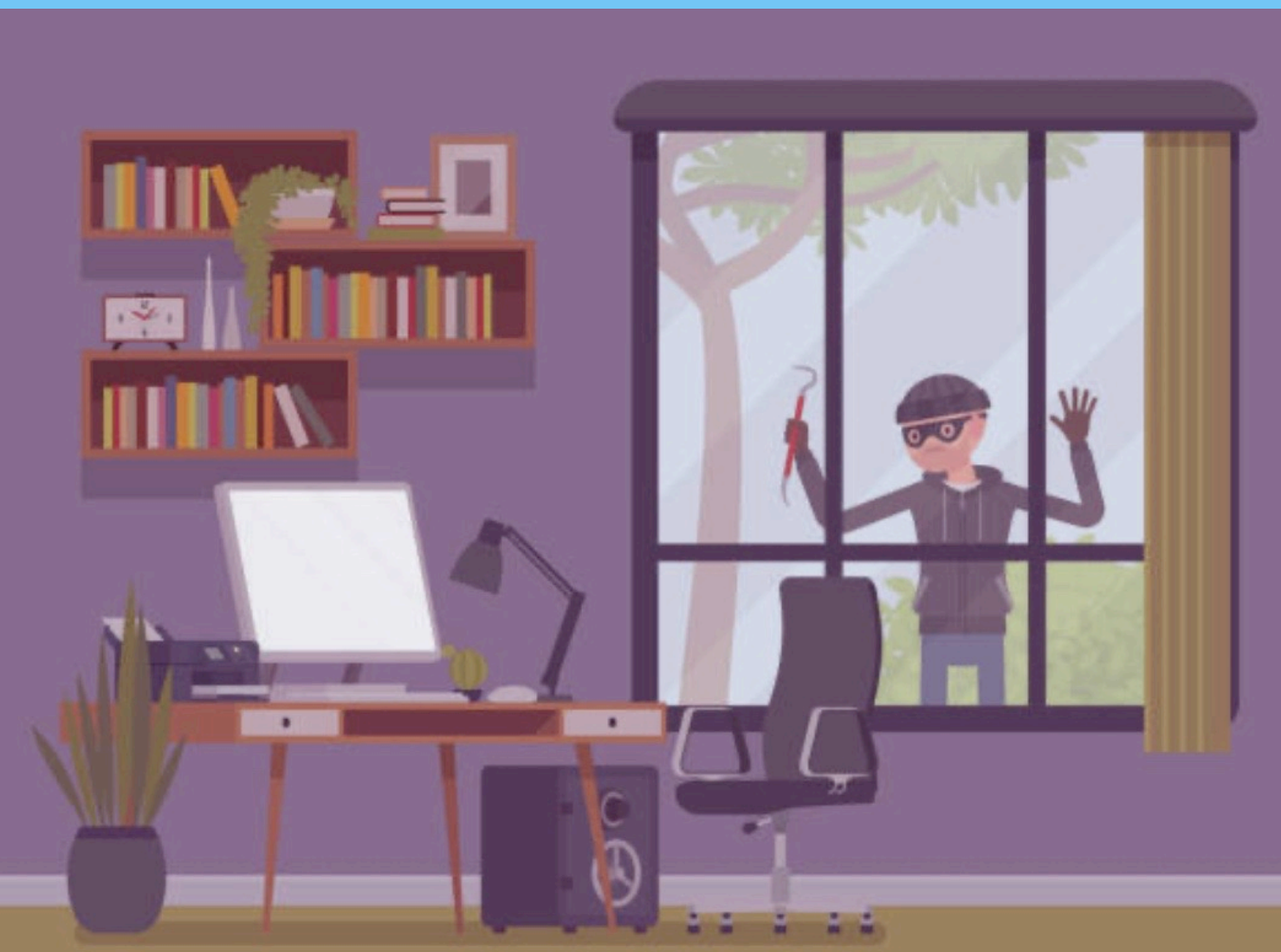
July 2023



This notorious Mac malware has resurfaced as an office productivity app — how to stay safe

[tomsguide.com](https://www.tomsguide.com)

August 2023



Imagine that your Mac is a house.

XProtect is like a security guard who patrols your house every day, looking for any sign of trouble.

If the security guard sees a burglar, he or she will call the police. XProtect is the same way. If it finds malware on your Mac, it will remove it.

It is time to be **proactive and be sure everything
that you can do has been done
to protect your privacy and security.**



In System Preferences or now in System Settings in our Mac OS

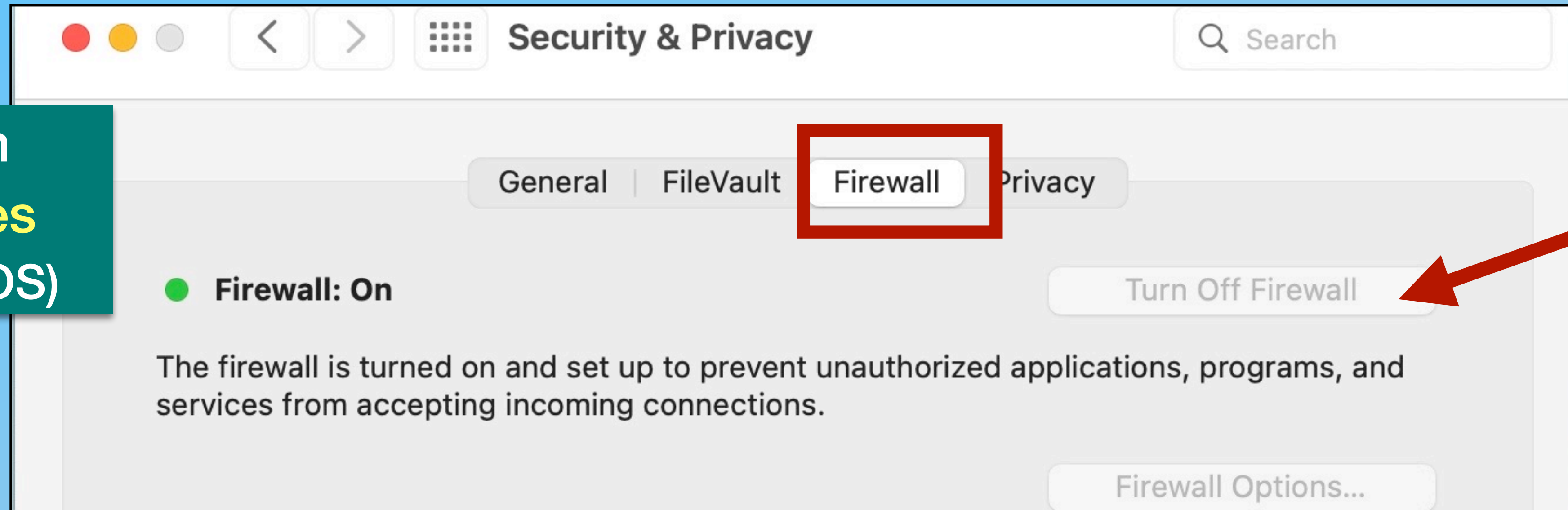
Under **Privacy and Security be sure these 2 are active:**

Firewall and GateKeeper

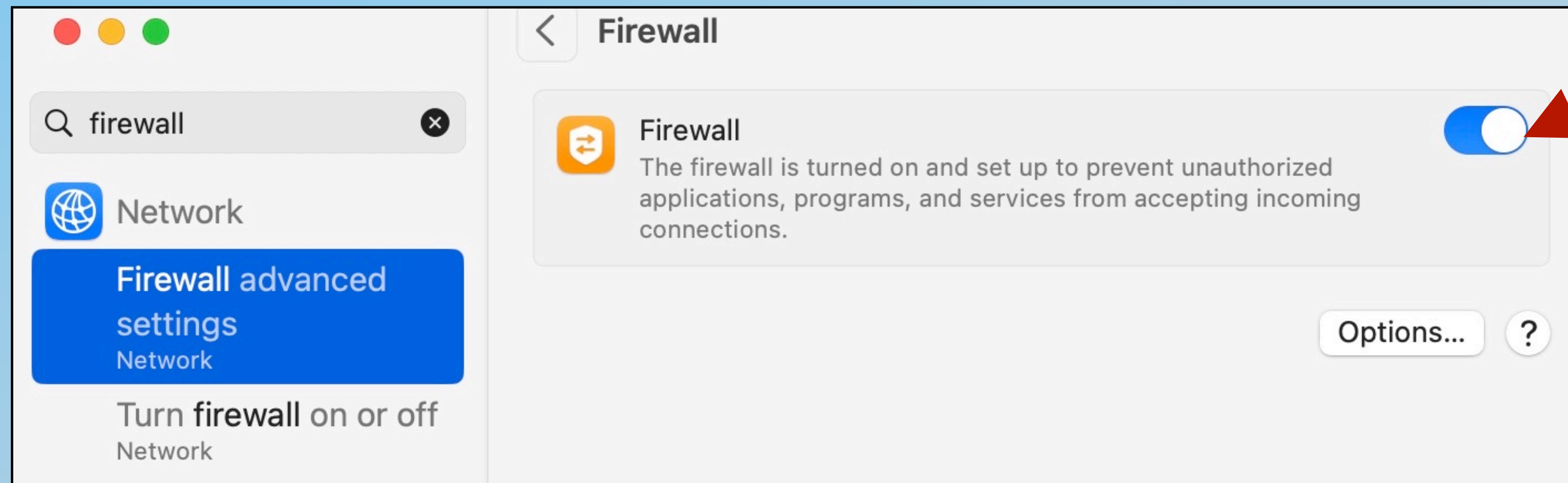
Older macs call it Security and Privacy. Newer Mac OS calls it Privacy and Security.

Firewall

in System
Preferences
(Older Mac OS)

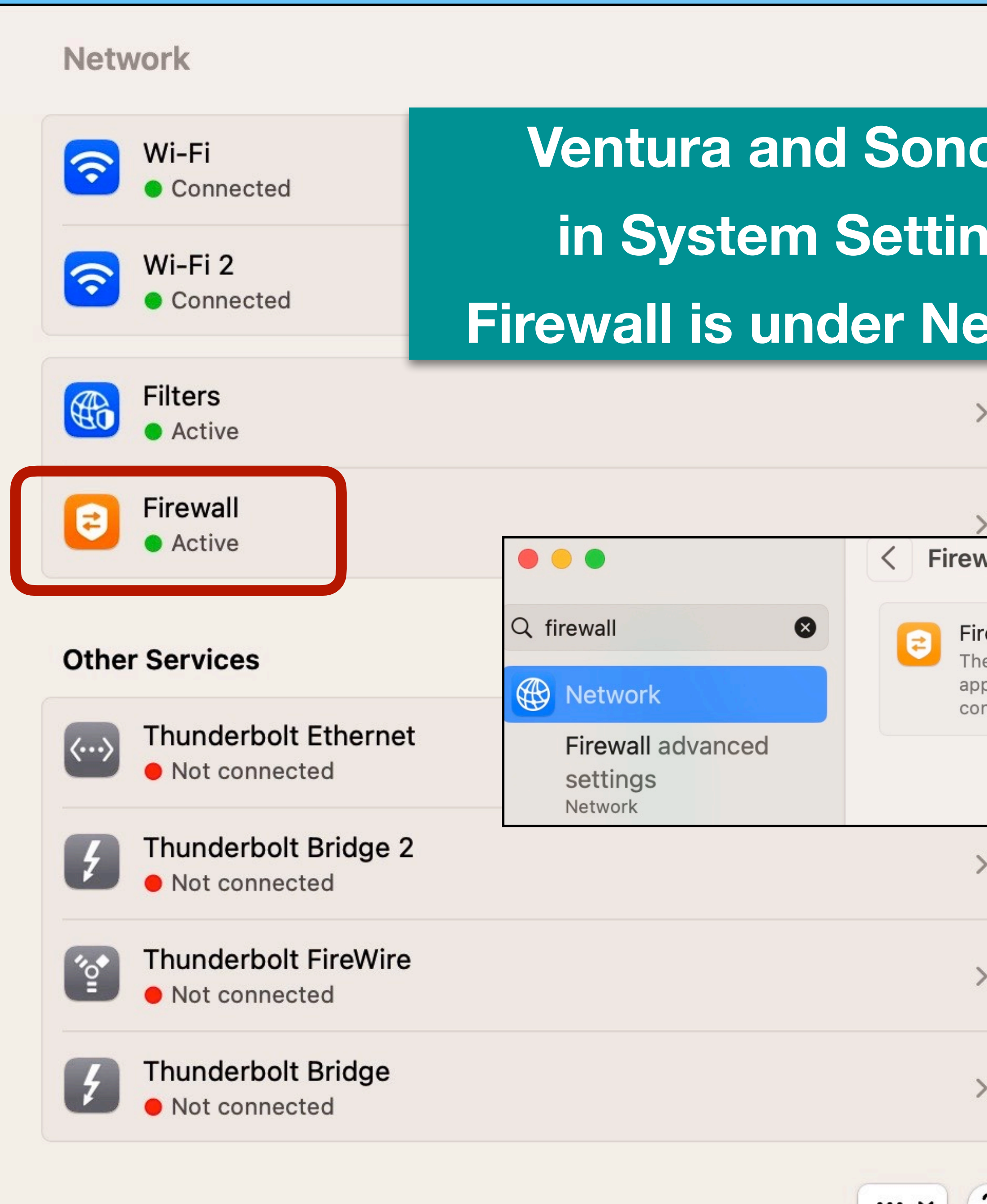


in System
Settings
under Network
(Ventura and
later)



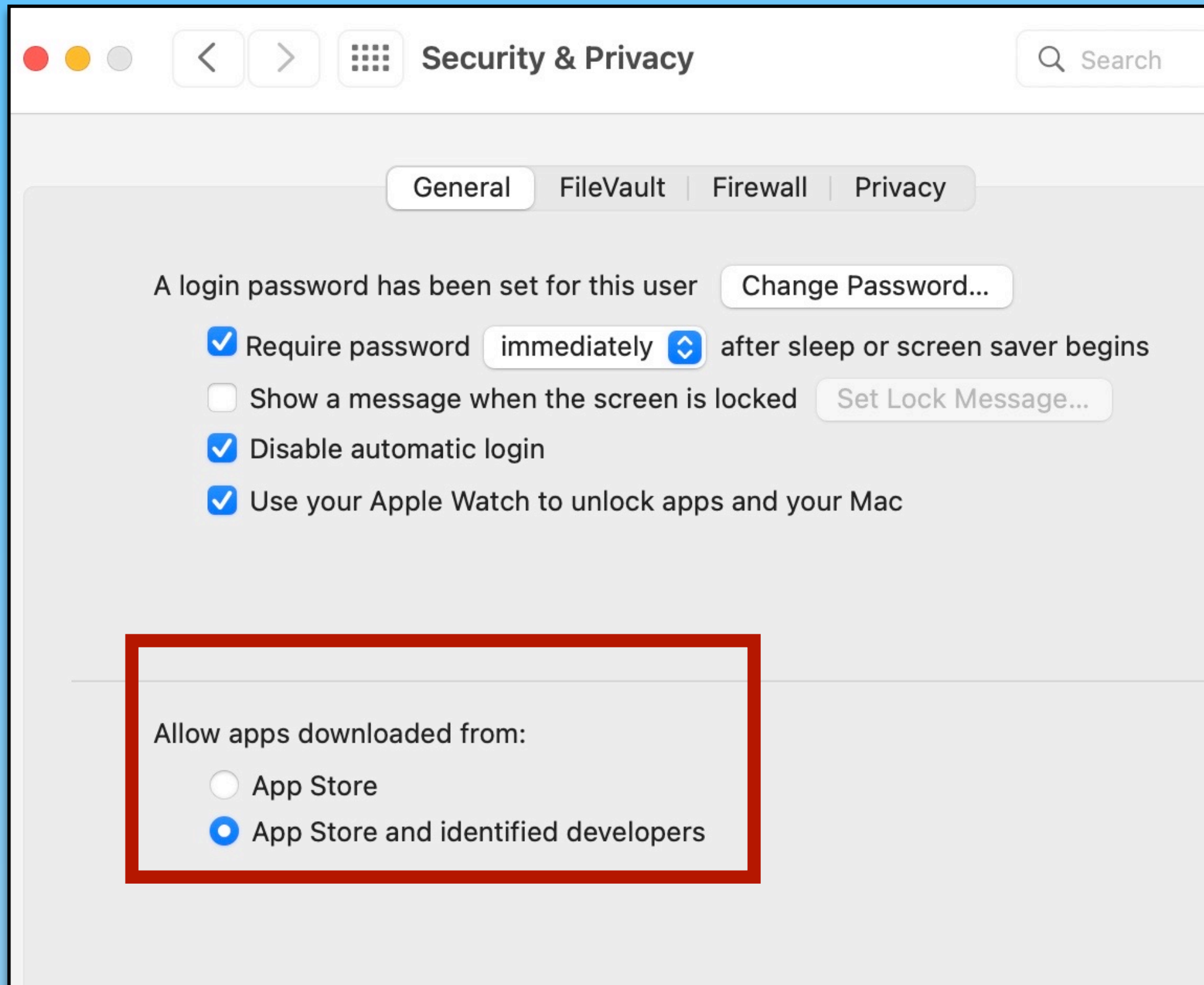
Make sure this is turned on in System Preferences or in System Settings

Ventura and Sonoma in System Settings Firewall is under Network

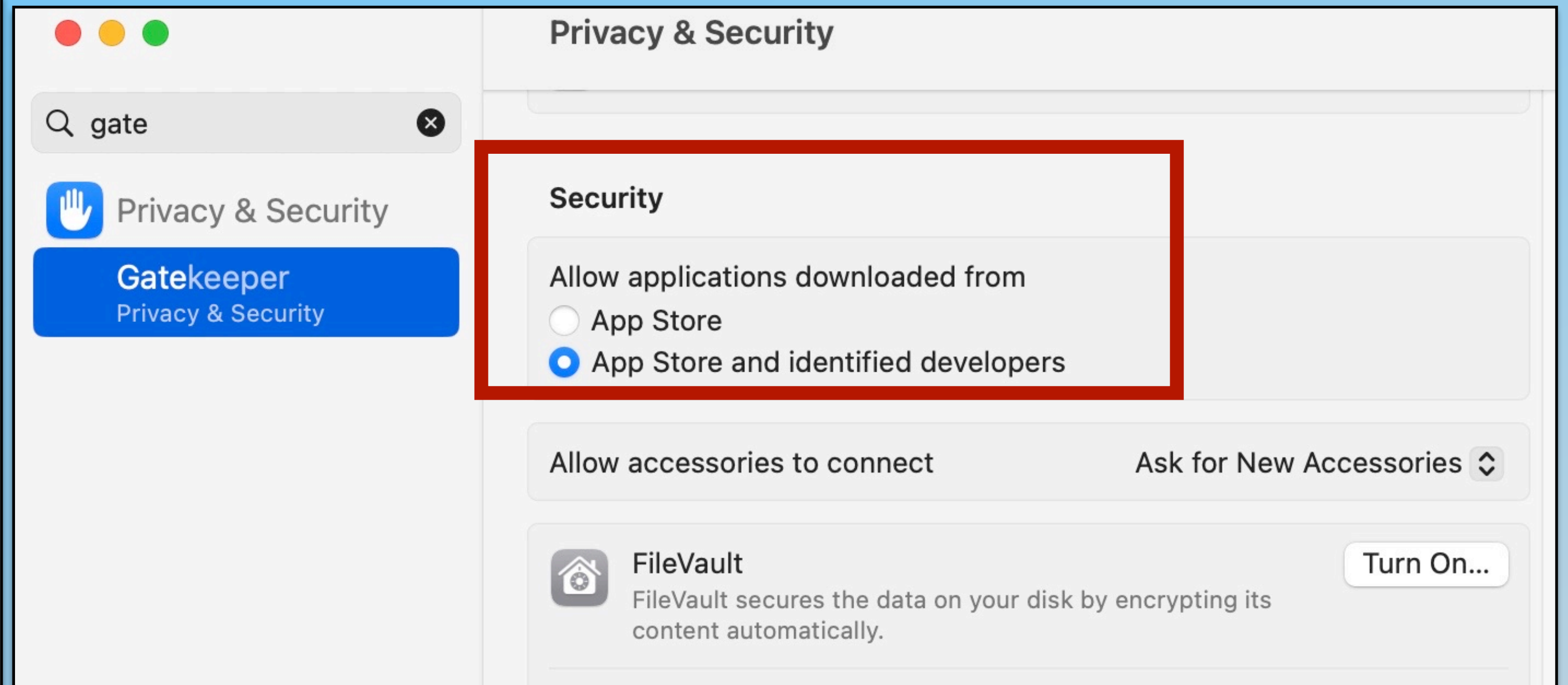


A firewall blocks unwanted contact initiated by other computers.

Gatekeeper



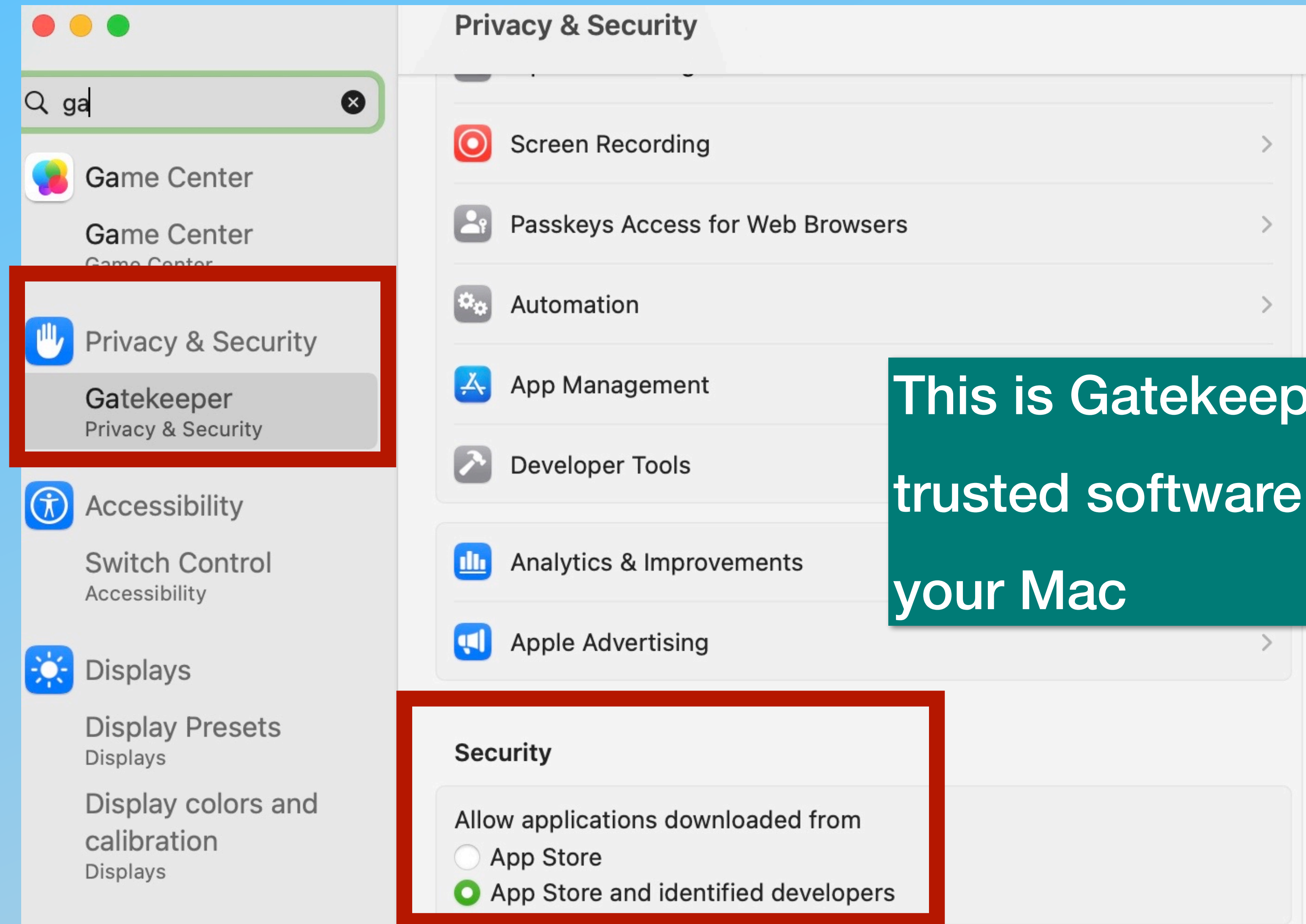
in System **Preferences**
(Older Mac OS)



in System **Settings**
(Ventura and later)

macOS includes a technology called Gatekeeper, that's designed to
ensure that only trusted software runs on your Mac.

Gatekeeper In Ventura



System Settings > Privacy & Security > Security



If you have any questions just ask.



Featured Presentation

XProtect and Silent Knight

XProtect

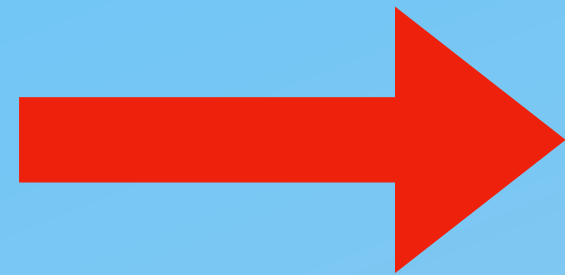
It only works on Macs running Catalina or later. That was 2019.

It doesn't totally replace the need for antivirus software.

Antivirus software can provide additional protection against malware that XProtect might not detect.

XProtect really started in 2009 with Snow Leopard, but features are less advanced.

**macOS
Software
Since
2001**



**All of these Mac OS
versions
run a version
of XProtect**

- [Mac OS X 10.0](#) – code named "Cheetah", released to end users on Saturday, March 24, 2001
- [Mac OS X 10.1](#) – code named "Puma", released to end users on Tuesday, September 25, 2001
- [Mac OS X Jaguar](#) – version 10.2, released to end users on Friday, August 23, 2002
- [Mac OS X Panther](#) – version 10.3, released to end users on Friday, October 24, 2003
- [Mac OS X Tiger](#) – version 10.4, released to end users on Friday, April 29, 2005
- [Mac OS X Leopard](#) – version 10.5, released to end users on Friday, October 26, 2007
- [Mac OS X Snow Leopard](#) – version 10.6, publicly unveiled on Monday, June 8, 2009
- [Mac OS X Lion](#) – version 10.7, released to end users on Wednesday, July 20, 2011
- [OS X Mountain Lion](#) – version 10.8, released to end users on Wednesday, July 25, 2012
- [OS X Mavericks](#) – version 10.9, released to end users on Tuesday, October 22, 2013
- [OS X Yosemite](#) – version 10.10, released to end users on Thursday, October 16, 2014
- [OS X El Capitan](#) – version 10.11, released to end users on Wednesday, September 30, 2015
- [macOS Sierra](#) – version 10.12, released to end users on Tuesday, September 20, 2016
- [macOS High Sierra](#) – version 10.13, released to end users on Monday, September 25, 2017
- [macOS Mojave](#) – version 10.14, released to end users on Monday, September 24, 2018
- [macOS Catalina](#) – version 10.15, released to end users on Monday, October 7, 2019
- [macOS Big Sur](#) – version 11, released to end users on Thursday, November 12, 2020
- [macOS Monterey](#) – version 12, released to end users on Monday, October 25, 2021
- [macOS Ventura](#) – version 13, released to end users on Monday, October 24, 2022
- [macOS Sonoma](#) - version 14, announced at WWDC 2023 on Monday, June 5, 2023

released in 2001

Main sources to learn about this:

macintouch.com

eclecticlight.co

Tom's Guide

Intego

Google Bard

Bing Chat GPT

Mac OS has built in security

No need to download XProtect as it is a feature of the Mac OS.

X Protect has been on Macs since 2009.

It is not an application, but Part of Mac OS.

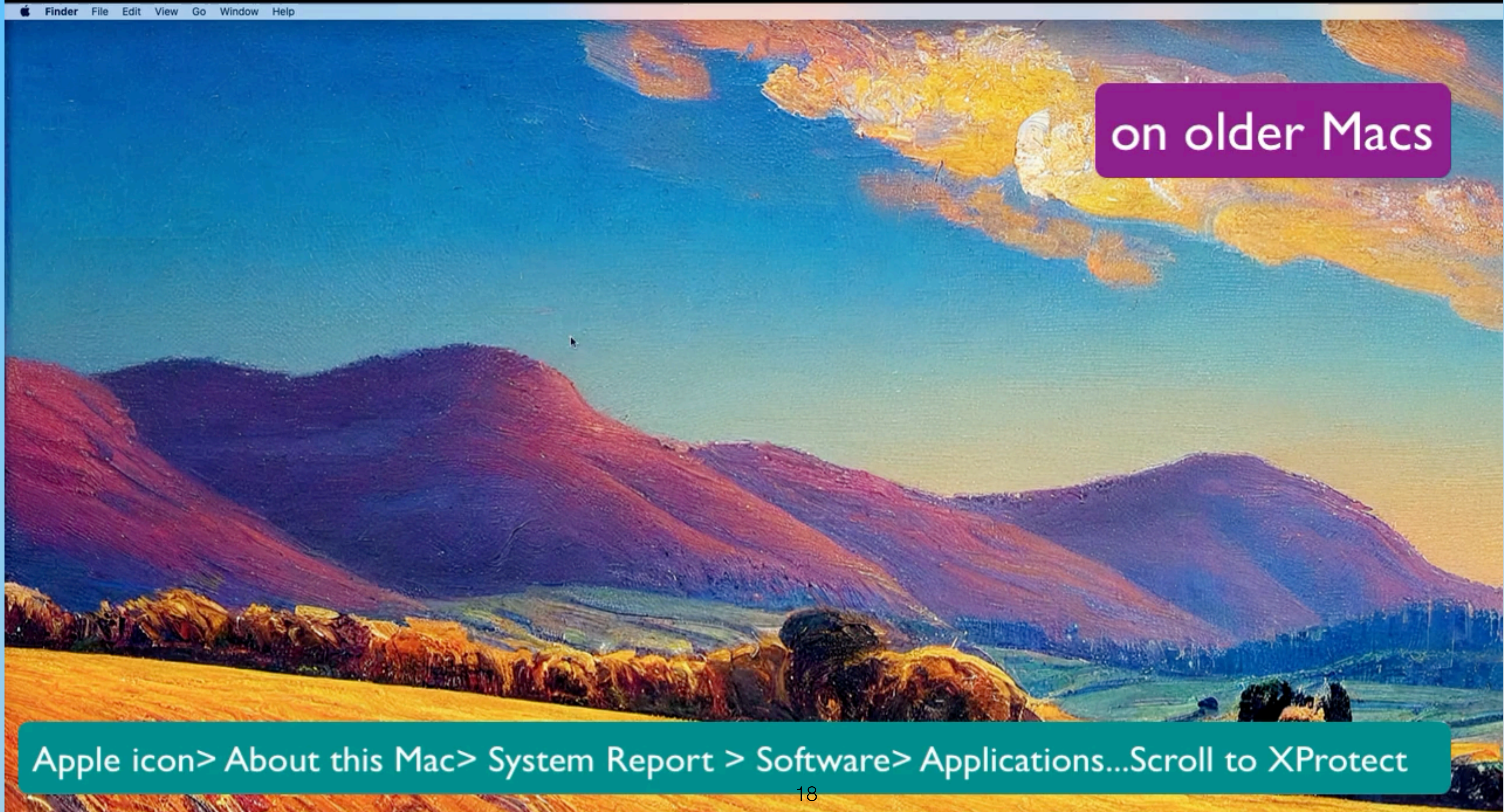
Apple quietly updates XProtect.

This is invisible running in the background.

So how does one know if everything is current and turned on?

**This is the hard way to learn if
XProtect is even turned on.**

On an older Mac OS running Catalina



on older Macs

Apple icon> About this Mac> System Report > Software> Applications...Scroll to XProtect



System Settings on a Silicon M1 Mac. Ventura 13.4.1

Finder File Edit View Go Window Help

Path: Apple icon >About this Mac >More Info >System Report
> Go to Software> ApplicationsThen scroll to find XProtect



Step by Step Slides 19-23

1



About This Mac

2

System Settings...

App Store...

Recent Items

Force Quit



Sleep

Restart...

Shut Down...

Lock Screen



Log Out



**Click on Apple Logo
Then About this Mac**

3

Click on More Info



MacBook Air


15-inch, M2, 2023

Chip	Apple M2
Memory	24 GB
Serial number	V [REDACTED]
macOS	Ventura 13.4.1


More Info...


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Search





Family


 Wi-Fi


 Bluetooth


 Network


 Notifications


 Sound


 Focus


 Screen Time


 General


 Appearance


 Accessibility


 Control Center


 Siri & Spotlight

 Privacy & Security

 Desktop & Dock

 Displays

 Wallpaper

 Screen Saver

About

iMac

24-inch, M1, 2021

Name

Tom iMac M 1

Chip

Apple M1

Memory

16 GB

Serial number


H4TFN062Q6X6

AppleCare+

Expires May 16, 2024

Details...

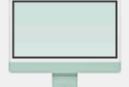
macOS

 macOS Ventura

Version 13.4.1 (a)

i


Displays

 Built-in Retina Display

24-inch (4480 × 2520)

Display Settings...

Storage

 Macintosh HD

720.5 GB available of 994.66 GB

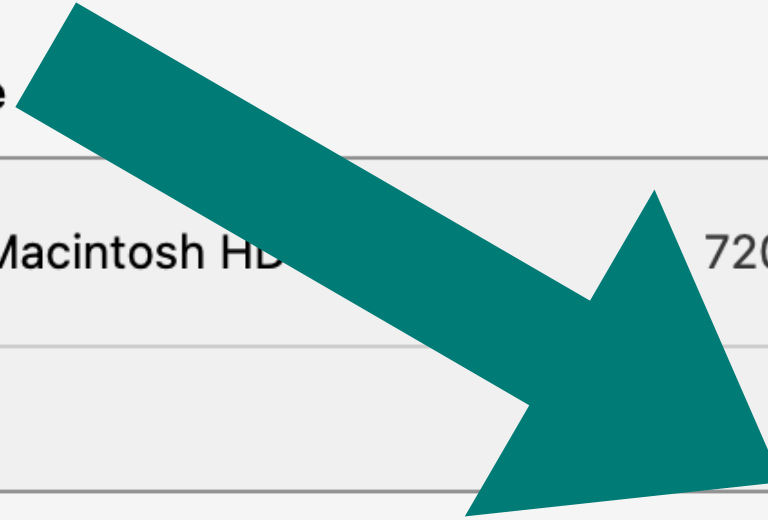
Storage Settings...

System Report...

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[ENERGY STAR® Compliance](#) - [License Agreement](#)

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System Report

iMac

> Hardware

> Network

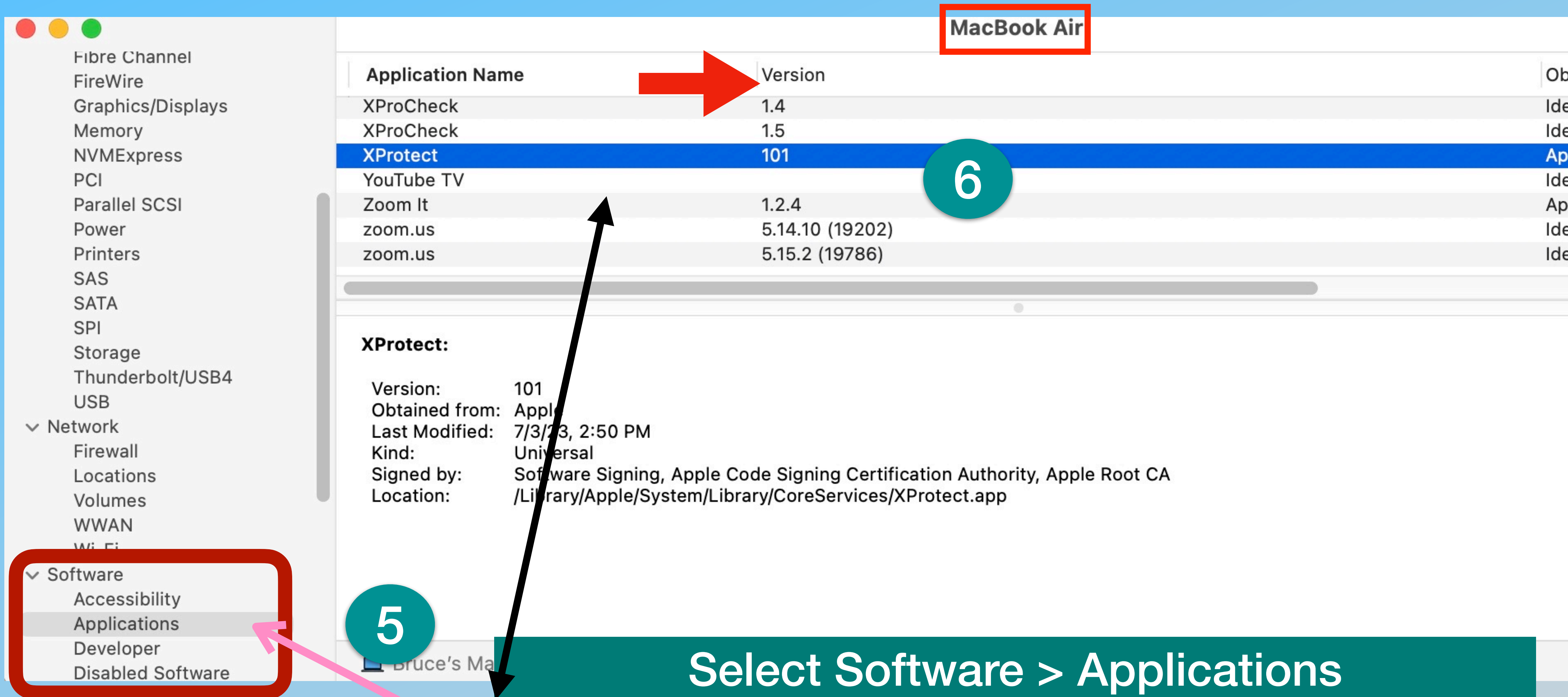
> Software

4

Hardware Overview:

Model Name:	iMac
Model Identifier:	iMac21,1
Model Number:	Z12V000QV
Chip:	Apple M1
Total Number of Cores:	8 (4 perform
Memory:	16 GB
System Firmware Version:	8422.121.1
OS Loader Version:	8422.121.1
Serial Number (system):	H4TFW0TN0
Hardware UUID:	6ABEF0BF-4
Provisioning UDID:	00008103-C
Activation Lock Status:	Disabled

Select Software in the Sidebar



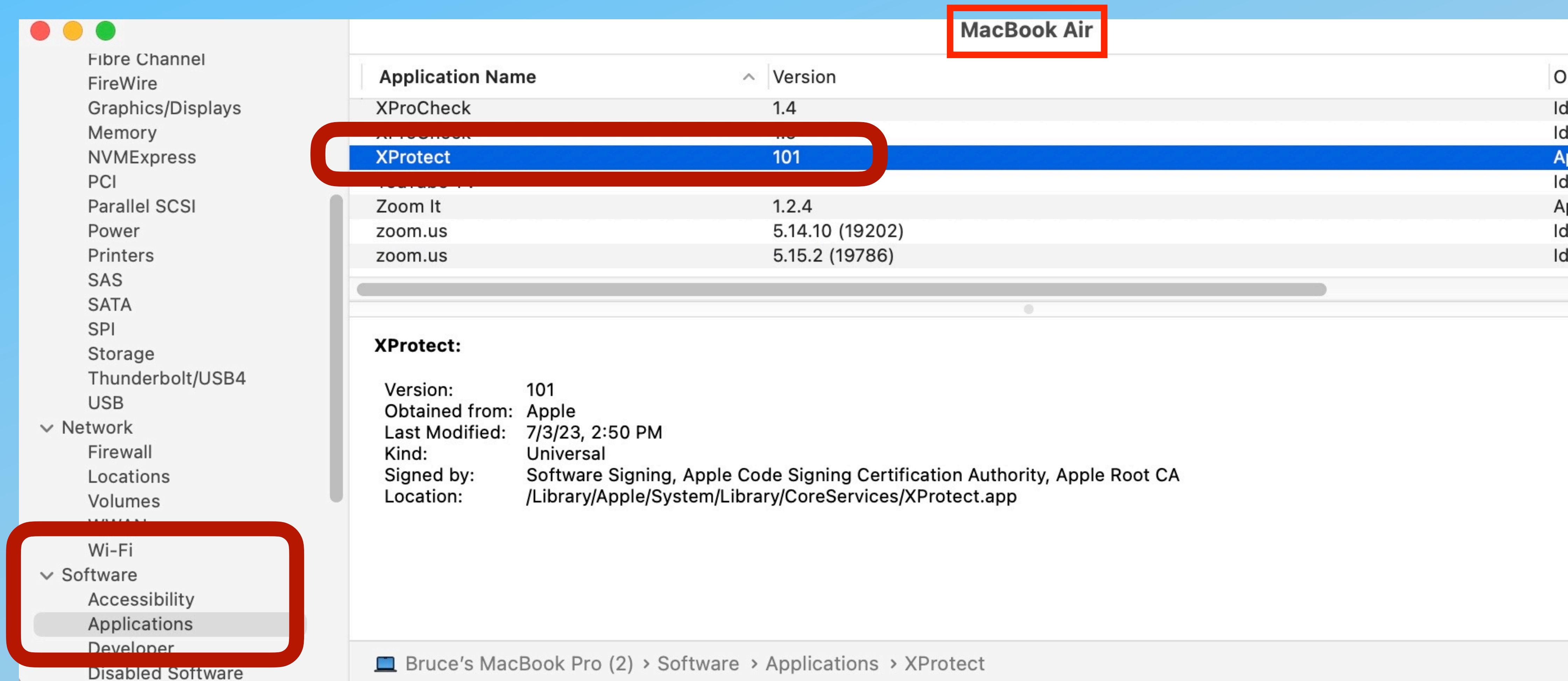
MacBook Air

Application Name	Version	Obtained from
XProCheck	1.4	Ide
XProCheck	1.5	Ide
XProtect	101	Ap
YouTube TV		Ide
Zoom It	1.2.4	Ap
zoom.us	5.14.10 (19202)	Ide
zoom.us	5.15.2 (19786)	Ide

XProtect:

Version: 101
Obtained from: Appl
Last Modified: 7/3/23, 2:50 PM
Kind: Universal
Signed by: Software Signing, Apple Code Signing Certification Authority, Apple Root CA
Location: /Library/Apple/System/Library/CoreServices/XProtect.app

Select Software > Applications
Then scroll to XProtect



So you found a number. What does it even mean?

1

Summary: check the version of XProtect

About This Mac

2

4

System Settings

6

Application Name

Version

XProCheck

1.4

XProCheck

1.5

XProtect

101

YouTube TV

Zoom It

1.2.4

zoom.us

5.14.10 (19202)

zoom.us

5.15.2 (19786)

XProtect:

Version: 101

Obtained from: Apple

Last Modified: 7/3/23, 2:50 PM

Kind: Universal

Signed by: Software Signing, Apple Code Signing Certification Authority, Apple Root CA

Location: /Library/Apple/System/Library/CoreServices/XProtect.app

5

Software

Software

3

MacBook Air

15-inch, M2, 2023

Chip Apple M2

Memory 24 GB

Serial number [REDACTED] YF

macOS Ventura 13.4

More Info...

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All Rights Reserved.

Path: Apple icon > About this Mac > More Info >
System Report
> Software > Applications

Then scroll to find XProtect

But one has no idea if that 101 is current.

XProtect Needs Updates

XProtect removes malware

Remediator was added to XProtect in March 2022.

XProtect consists of modules that briefly but regularly scan your Mac for specific nasties during periods of low user activity.

Remediator is the anti- virus/malware definitions part of XProtect trying to stay current to the latest nasties.

Remediator updates anti-virus definitions.

*** These nasties are malware, adware, spyware etc.**

Past presentation on Malware... https://www.tvaug.org/wp-content/uploads/2020/12/12.08.20_Understanding-Malware.pdf

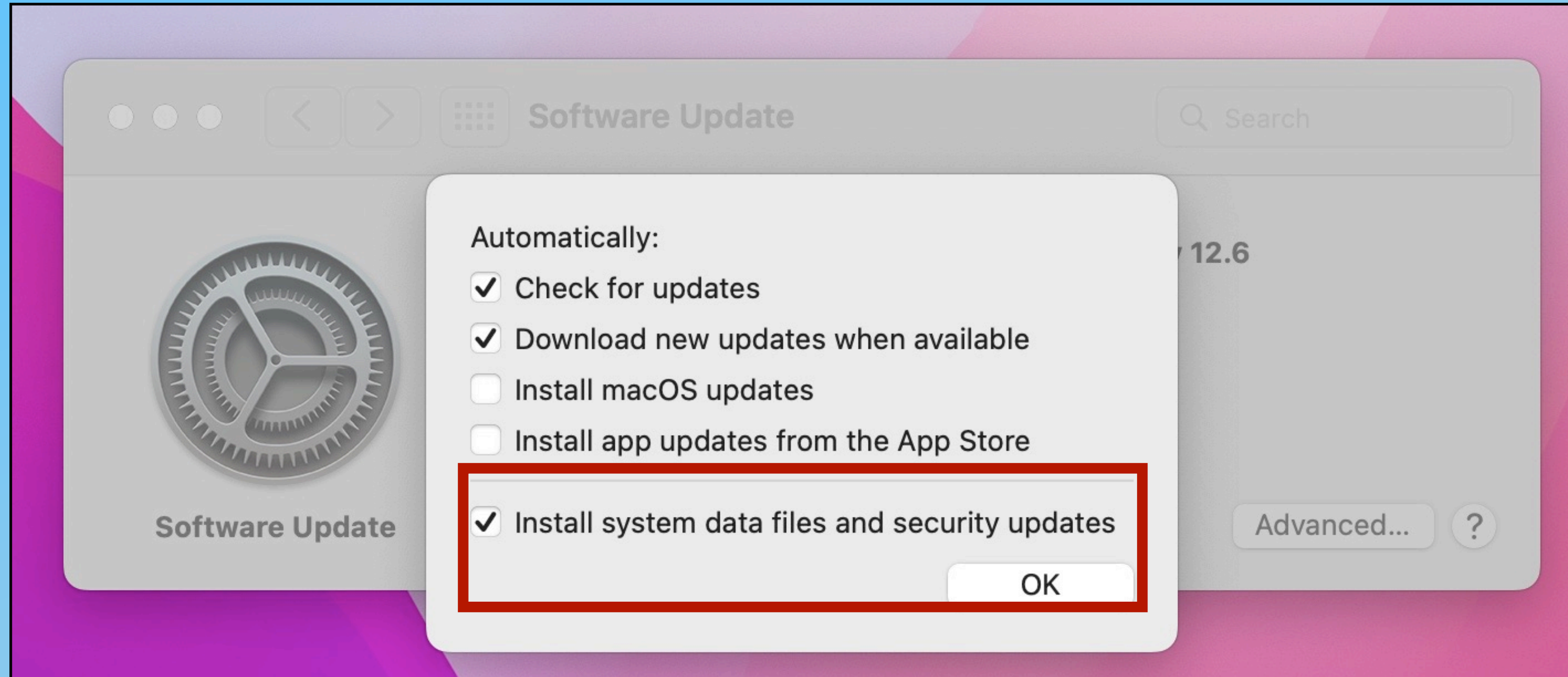
Apple has become more aggressive keeping XProtect updated as malware activity has increased in the past year.

**Lots of Remediator updates.
Remediator is just Apple's term for anti virus definitions.**

New attacks, new updates run quietly in the background.

*** * *Important* * ***

Enabled by Default on Mac Keep X Protect Updated in Background



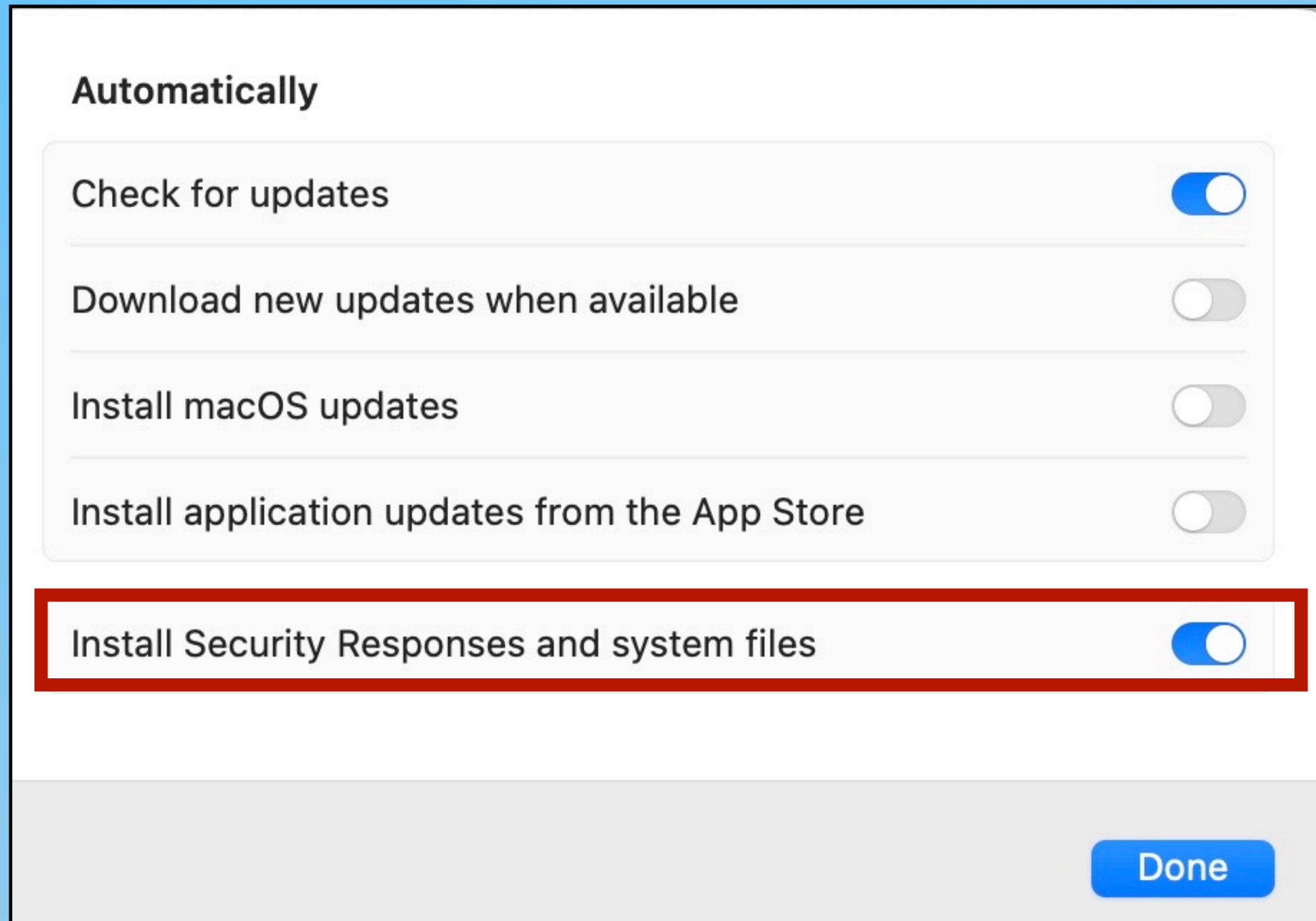
View in System Preferences

To Get automatic updates to XProtect to run in the background...

Older Mac OS Apple logo > System Preferences > Software Update > Advanced

*** * *Important* * ***

Enabled by Default on Mac Keep X Protect Updated in Background



View in System Settings Ventura Mac OS 16

To Get automatic updates to XProtect to run in the background...

In Ventura: System Settings > General > Software Updates> Click Automatically

To Recap:

XProtect removes harmful malware in the background

The app is invisible

It can't be found in the Applications folder.

It is part of the System OS.

Apple never discloses what malware it removed.

It is active and running when there is light activity.

This is another reason not to always shut down your Mac.

Just let it run in the background.

**There is an easier way to see if everything
is running in the background.**

I learned more about XProtect in the summer of 2022

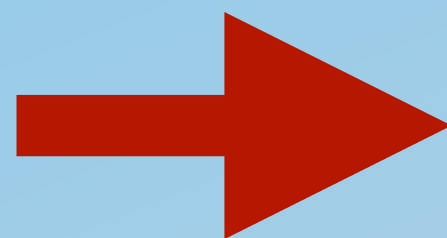
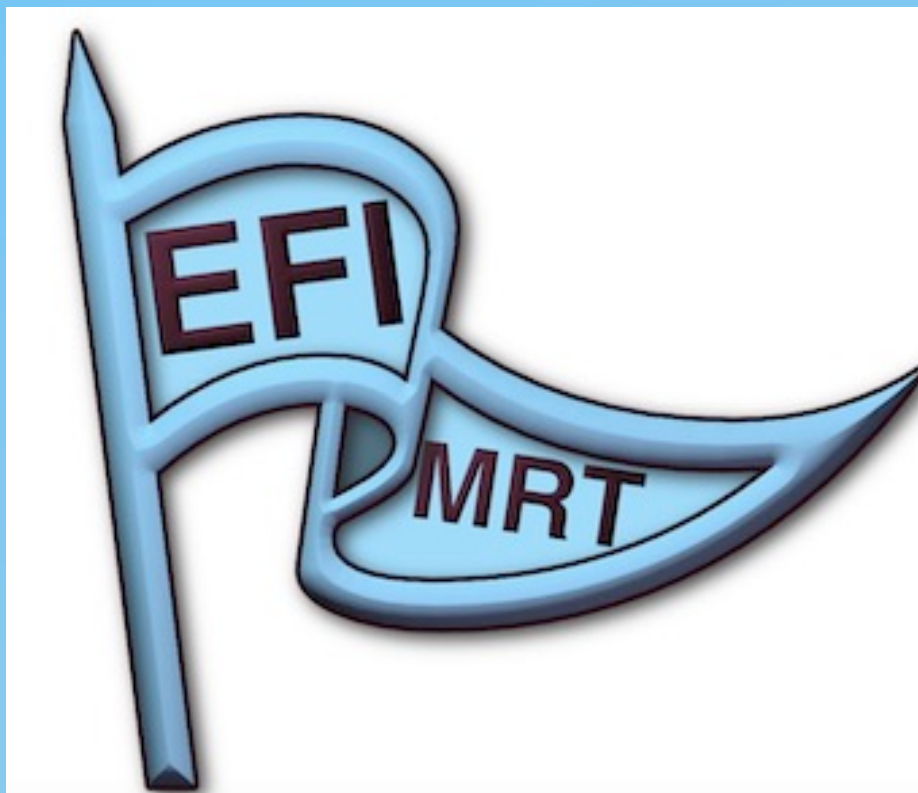
This free application give us an insight.

Silent Knight

3rd Party App

Security Integrity Check

to see if everything is active and current



SilentKnight 1.21 – checks security systems automatically
SilentKnight 2.6 – Catalina and later

What Silent Knight tells us

XProtect is responsible for checking apps and some other files indicating if they are malicious. It should always be enabled.

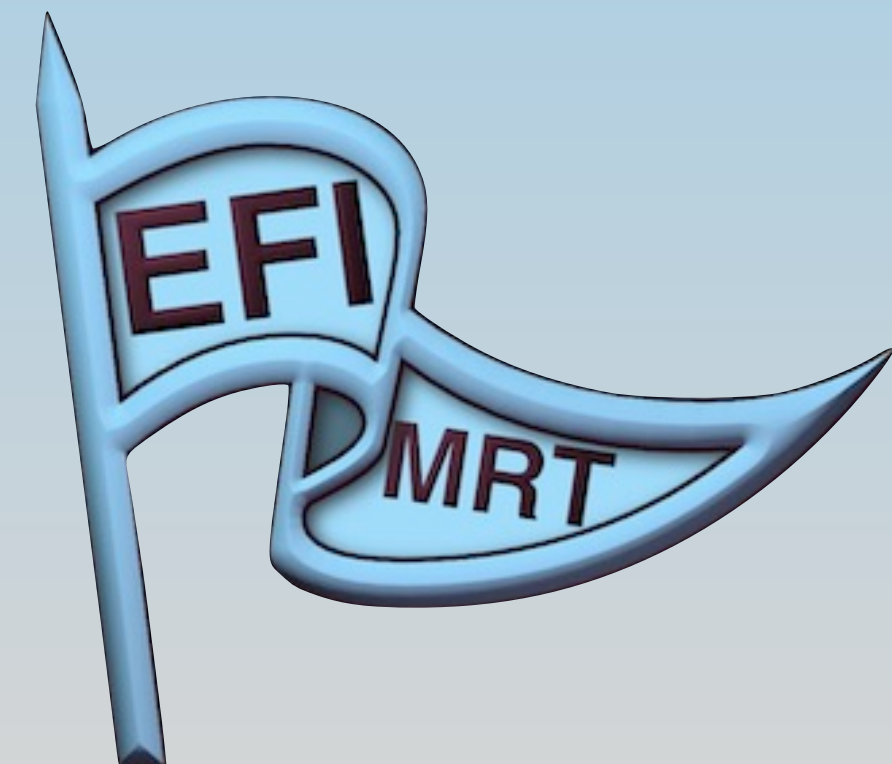
Apple periodically updates its signature and malware definitions (remediator) using **pushed security updates**.

So Silent Knight shows a System Integrity Check.

It lets you know the status of the System. If everything is updated and turned on.

Silent Knight is intended to:

- check that your Mac has the current firmware
- check that its security protection is current and hasn't fallen behind
- screen for major security issues, and warn you of them
- make it easier to keep your Mac's security data up to date.



So how do you find and download Silent Knight?

Where to find Silent Knight



**THE ECLECTIC LIGHT
COMPANY**

eclecticlight.co not .com

It isn't electric

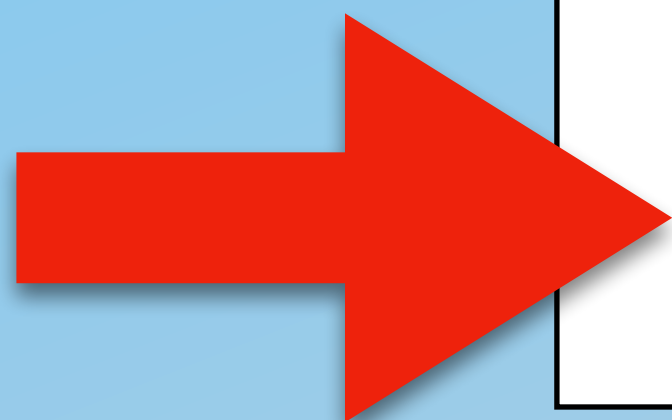
A shortcut to download Silent Knight

<https://eclecticlight.co/lockrattler-systhist/>

Updated! Check whether your Mac is up to date automatically. Covers firmware, security settings and data files, and now checks macOS malware scans. Has both a summary Help page and a detailed reference. Update improves XProtect Remediator scan checks.

SilentKnight 1.21 (Universal App for El Capitan, Sierra, High Sierra, Mojave, Catalina, Big Sur, Monterey and Ventura) – last version to run on El Capitan to Mojave

SilentKnight 2.6 (Universal App for Catalina, Big Sur, Monterey, Ventura and Sonoma)





SilentKnight.app



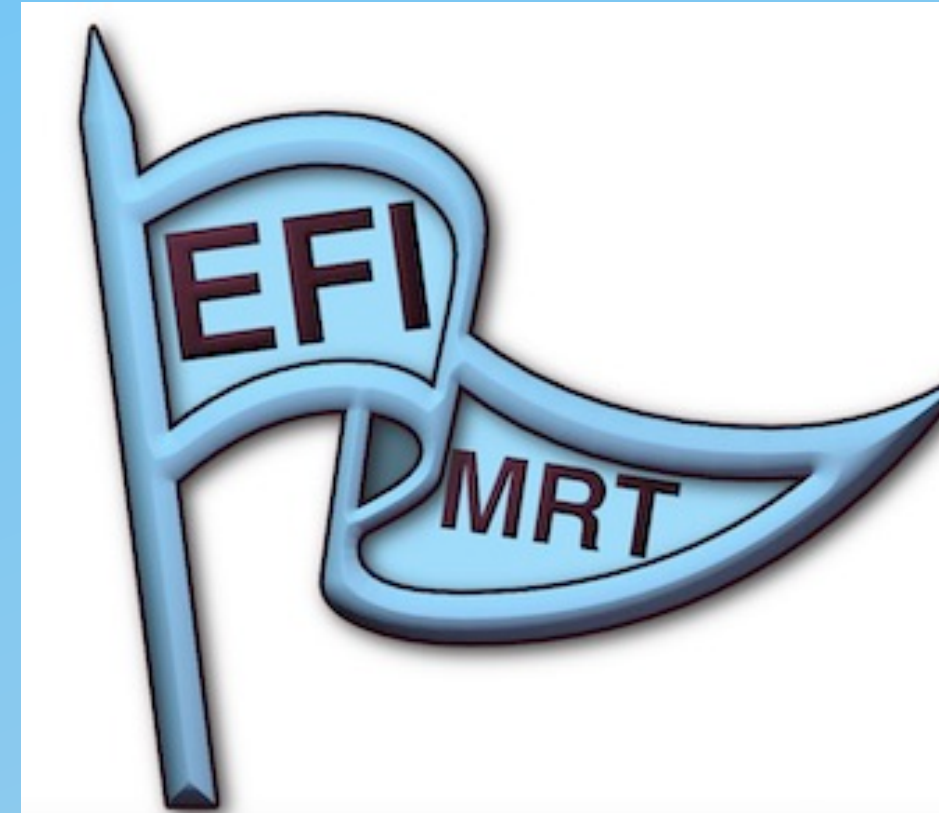
SilentKnightHelp.rtf



SilentKnig...erence.pdf

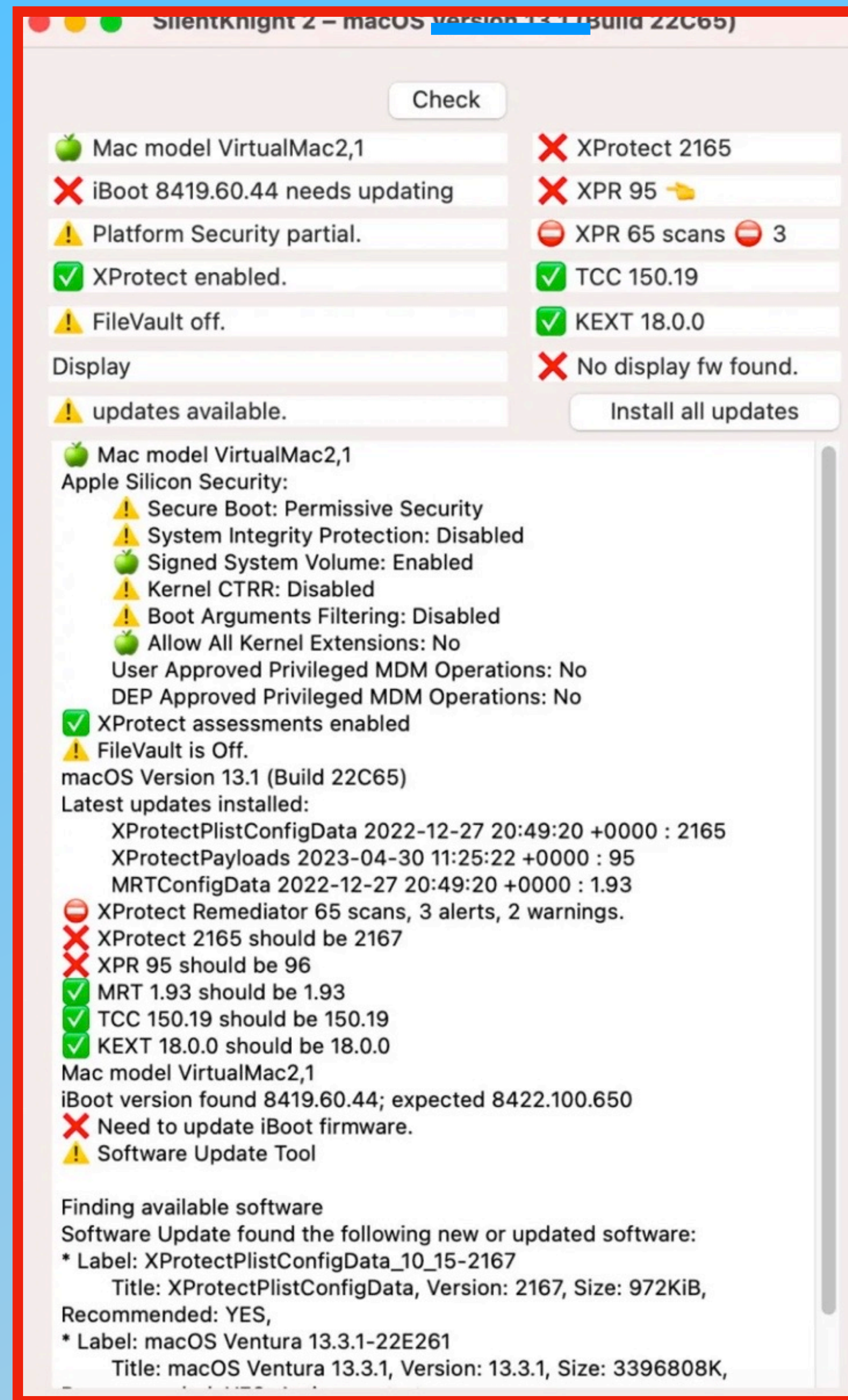
Put the Silent Knight app in the Applications folder.

Silent Knight



System Integrity Check

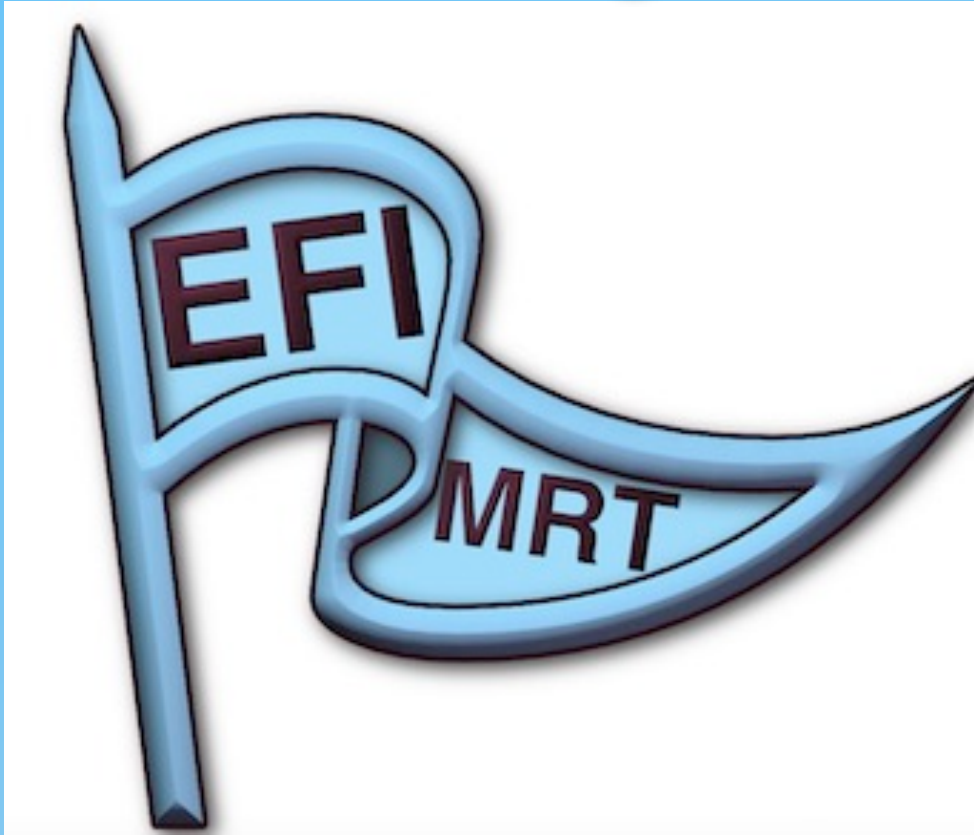
The macOS doesn't have a dashboard to warn you of dangerous, outdated security settings. But Silent Knight does.



This Mac has integrity issues.

System Integrity Check

Silent Knight icon



SilentKnight 2 – macOS Version 13.4.1 (Build 22F2083)

Check

Mac model Mac14,15

iBoot 8422.121.3.1.1 is up to date

Platform Security full.

XProtect enabled.

FileVault off.

XProtect 2169

XPR 101

XPR 42 scans

TCC 150.19

KEXT 18.0.0

no updates.

Mac model Mac14,15

Apple Silicon Security:

Secure Boot: Full Security

System Integrity Protection: Enabled

Signed System Volume: Enabled

Kernel CTRR: Enabled

Boot Arguments Filtering: Enabled

Allow All Kernel Extensions: No

User Approved Privileged MDM Operations: No

DEP Approved Privileged MDM Operations: No

XProtect assessments enabled

FileVault is Off.

macOS Version 13.4.1 (Build 22F2083)

Latest updates installed:

XProtectPlistConfigData 2023-07-07 01:45:25 +0000 : 2169

XProtectPayloads 2023-07-03 18:47:06 +0000 : 101

MRTConfigData 2023-07-03 18:47:03 +0000 : 1.93

XProtect 2169 should be 2169

XPR 101 should be 101

MRT 1.93 should be 1.93

TCC 150.19 should be 150.19

KEXT 18.0.0 should be 18.0.0

Mac model Mac14,15

iBoot version found 8422.121.3.1.1; expected 8422.121.1

iBoot firmware appears up to date.

XProtect Remediator 42 scans, 0 alerts, 0 warnings.

Software Update Tool

Launch Silent Knight and Click Check

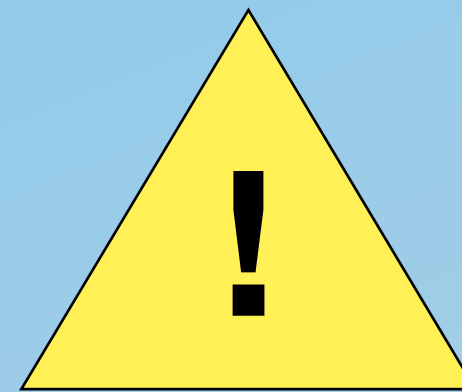


means current
Green is good

If not current there is a red X

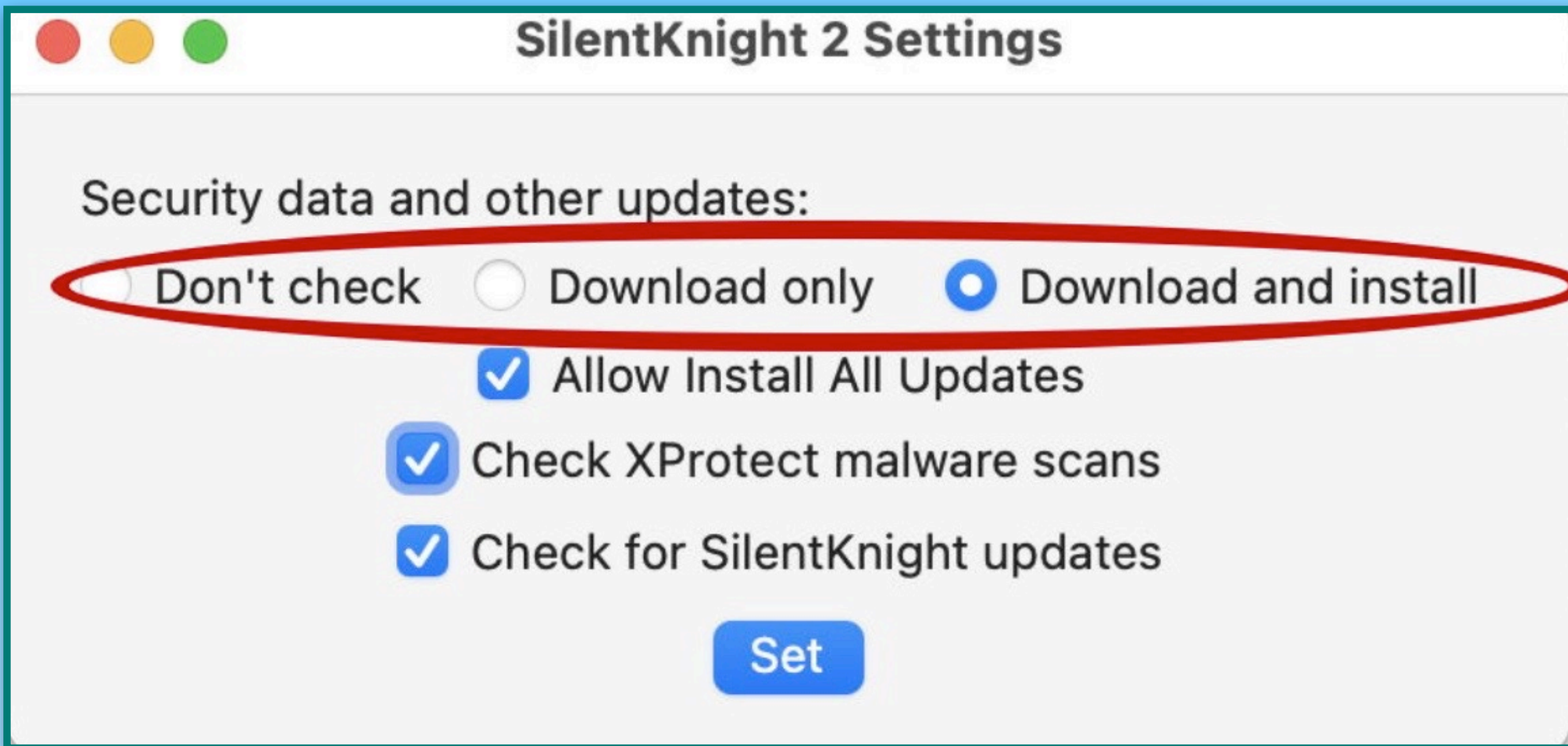
A yellow triangle is a caution.

It might mean something needs updating or isn't turned on.



Silent Knight Settings

Note that SilentKnight *never* downloads or installs any updates automatically: you always have to tell it to do that by clicking on the button, or using a menu command. You remain in control.



- **Don't check** means that whenever you open the app it won't check for Apple's updates at all
- **Download only** means that the app will check for updates with Apple, but when you choose to fetch them, they will only be downloaded and not installed. It adds to your work, and makes use more complicated, but it's available if you prefer.
- **Download and install** means that when you click on the button to **Install All Updates**, SilentKnight will both download and install all available security updates from Apple.

summary

Check

🍏 Mac model MacBookPro17,1	❌ XProtect 2162, 72
🍏 iBoot 7459.141.1 is up to date	✅ MRT 1.93
🍏 Platform Security full.	✅ TCC 150.19
✅ XProtect enabled.	✅ KEXT 17.0.0
⚠️ FileVault off.	✅ Gatekeeper 181, 8.0

⚠️ updates available. Install all updates

🍏 Mac model MacBookPro17,1

Apple Silicon Security:

- 🍏 Secure Boot: Full Security
- 🍏 System Integrity Protection: Enabled
- 🍏 Signed System Volume: Enabled
- 🍏 Kernel CTRR: Enabled
- 🍏 Boot Arguments Filtering: Enabled
- 🍏 Allow All Kernel Extensions: No

User Approved Privileged MDM Operations: No
DEP Approved Privileged MDM Operations: No

✅ XProtect assessments enabled
⚠️ FileVault is Off.

macOS Version 12.6 (Build 21G115)

Latest updates installed:

- XProtect 2022-08-20 03:20:29 +0000 : 2162
- XProtectRemediator 2022-09-08 15:08:35 +0000 : 72
- MRT 2022-07-30 02:04:15 +0000 : 1.93

❌ XProtect 2162, 72 should be 2162, 74

- ✅ Gatekeeper 181, 8.0
- ✅ MRT 1.93 should be 1.93
- ✅ TCC 150.19 should be 150.19
- ✅ KEXT 17.0.0 should be 17.0.0

Mac model MacBookPro17,1
iBoot version found 7459.141.1; expected 7459.141.1

🍏 iBoot firmware appears up to date.
⚠️ Software Update Tool

details

XProtect Remediator
needs an Update.
Thus a red X

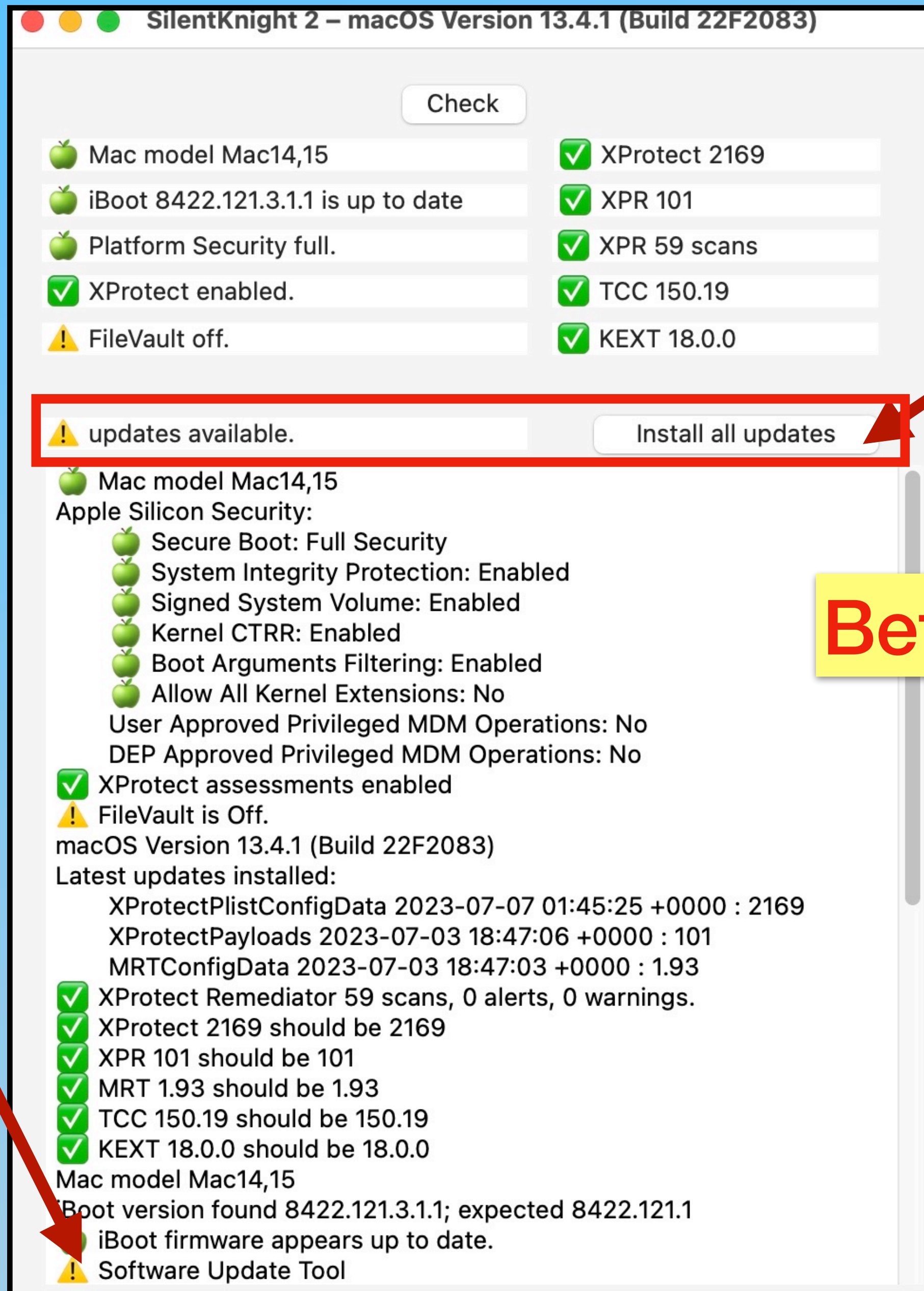
It should be a newer version

Just let the Mac run in the
background
or trigger an update

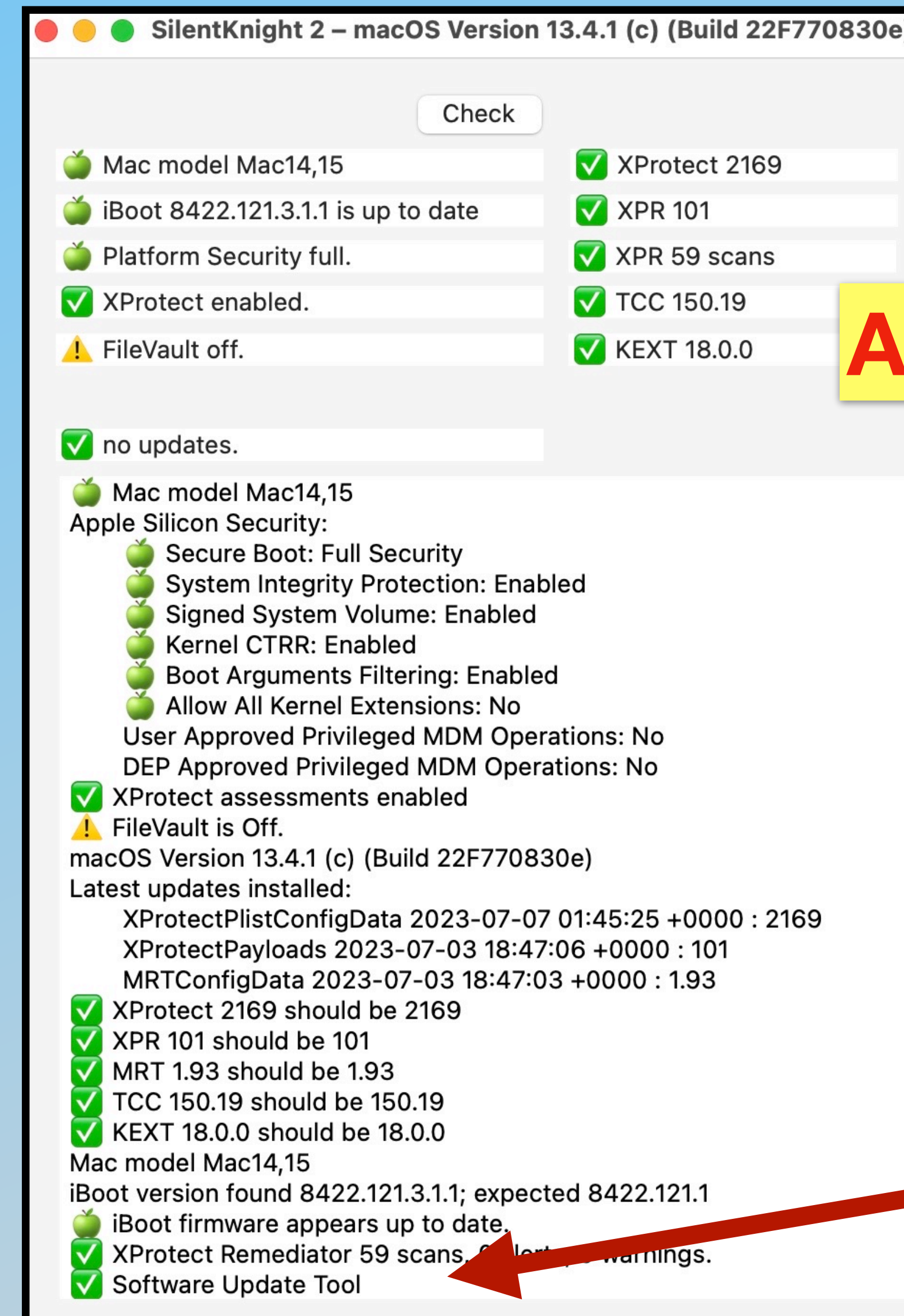
Remediator is just the
malware /antivirus definitions
that need updating in the background.

Silent Knight app Version 2.6.1

Click to install **Software Update Tool**



Before



After

Now it is updated.

SilentKnight 2 – macOS Version 13.5.2 (Build 22G91)

Check

Mac model Mac14,15

iBoot iBoot 8422.141.2 is up to date

Platform Security full.

XProtect enabled.

FileVault off.

XProtect 2171

XPR 111

XPR 48 scans

TCC 150.19

KEXT 18.0.0

no updates.

Mac model Mac14,15

Apple Silicon Security:

Secure Boot: Full Security

System Integrity Protection: Enabled

Signed System Volume: Enabled

Kernel CTRR: Enabled

Boot Arguments Filtering: Enabled

Allow All Kernel Extensions: No

User Approved Privileged MDM Operation

DEP Approved Privileged MDM Operation

XProtect assessments enabled

FileVault is Off.

macOS Version 13.5.2 (Build 22G91)

Latest updates installed:

XProtectPlistConfigData 2023-09-15 05:57:46

XProtectPayloads 2023-09-15 05:57:46

MRTConfigData 2023-07-03 18:47:03 +0000

XProtect Remediator 48 scans, 0 alerts, 0 alerts

XProtect 2171 should be 2171

XPR 111 should be 111

MRT 1.93 should be 1.93

TCC 150.19 should be 150.19

KEXT 18.0.0 should be 18.0.0

Mac model Mac14,15

XProtect 2171

The R in XPR 111 is the Remediator version

Green check means current

Last updated Sept.15

means just updated

MacBook Air

Application

XProCheck1.4

XProCheck1.5

XProtect111

YouTube TV

ZoomIt1.2.4

zoom.us5.14.10 (19202)

zoom.us5.15.12 (22445)

XProtect:

Version:111

Obtained from:Apple

Last Modified:9/15/23, 1:57 AM

Kind:Universal

Signed by:Software Signing, Apple Code Signing Certification Authority, Apple Root CA

Location:/Library/Apple/System/Library/CoreServices/XProtect.app

43

46



If you have any more questions just ask.



So **XProCheck** is another application created by the developer of Silent Knight.

It shows what XProtect found when it scans.

It provides a **log report**

So it is not as visual as Silent Knight.



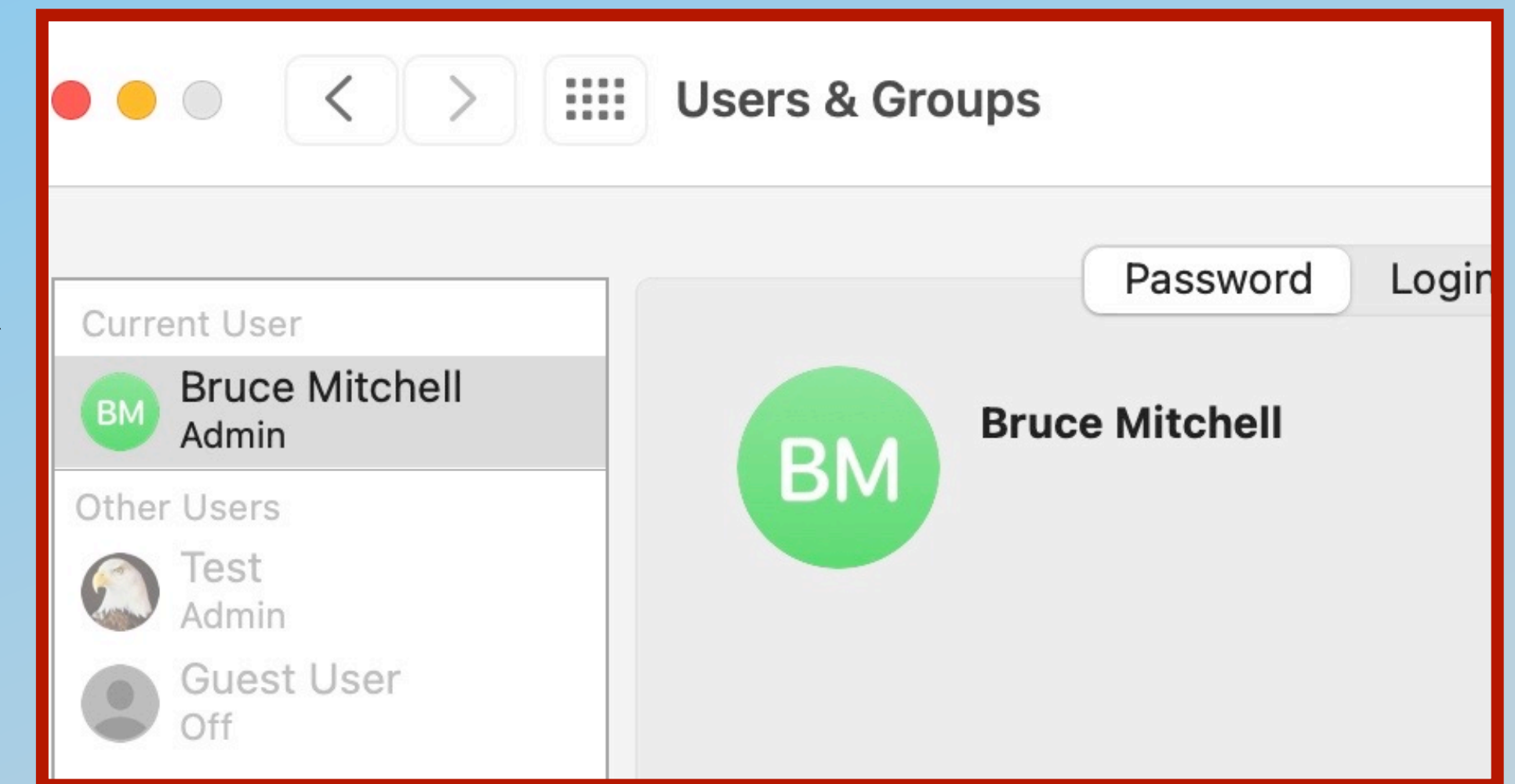


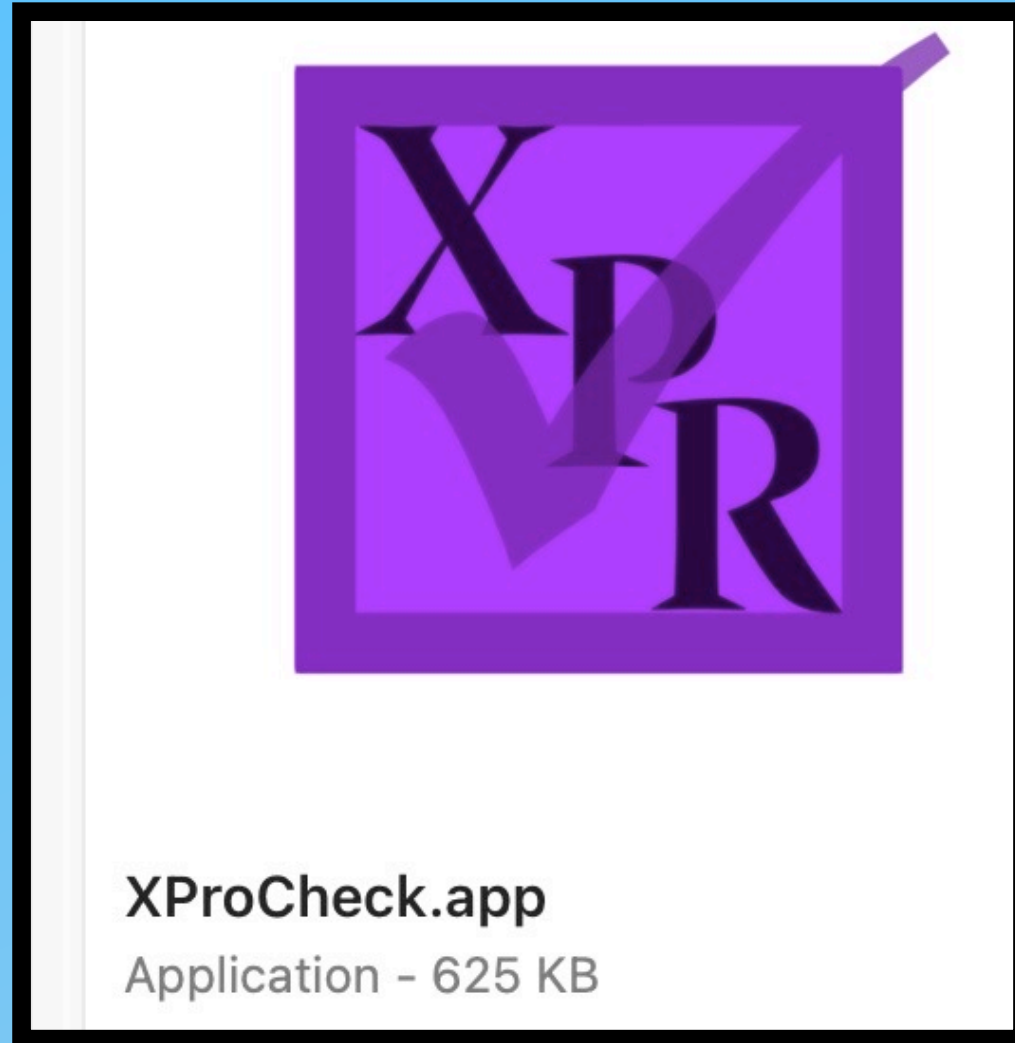
XProCheck 1.5

Requires the admin account to run the app.
It reports recent scans and findings found by XProtect
It also confirms you are using a current version of XProtect

As XProtect Remediator only reports the current status.

There is no other way of knowing whether if a file was detected or was removed malware. But XProCheck does!





Go to: <https://eclecticlight.co/downloads/>

Scroll until you see this.

Click
Here

XProCheck – *check on XProtect Remediator scans completed and reported in the log*

Product Page.

XProCheck 1.5 (Universal App for Catalina, Big Sur, Monterey and Ventura)

These are the malware
it scanned for in
XProtect.

The number **does not**
mean it found an issue.

No Threat Detected Status Code 20

You want to see No Threat Detected Status Code 20

XProCheck : XProtect Remediator version 101

Check for last 1 days

Check XProtect

Save

Run XProtect

Adload	3
BadGacha	3
ColdSnap	3
DubRobber	3
Eicar	2
FloppyFlipper	3
GreenAcre	3
KeySteal	3
MRTv3	3
Pirrit	3
RankStank	3
RoachFlight	3
SheepSwap	3
SnowBeagle	3
SnowDrift	3
ToyDrop	3
Trovi	9
WaterNet	3

XProtect Remediator scans completed in the last day:

2023-07-11 19:42:39.191 ColdSnap

NoThreatDetected status_code 20 time 0.0000989

2023-07-11 19:42:42.193 WaterNet

NoThreatDetected status_code 20 time 0.0001349

2023-07-11 19:42:43.126 Adload

NoThreatDetected status_code 20 time 0.0000530

2023-07-11 19:42:50.961 SheepSwap

NoThreatDetected status_code 20 time 0.0001160

2023-07-11 19:42:51.179 ToyDrop

NoThreatDetected status_code 20 time 0.0000970

2023-07-11 19:42:51.225 Trovi

NoThreatDetected status_code 20 time 0.0000581

2023-07-11 19:42:51.226 Trovi

NoThreatDetected status_code 20 time 0.0000089

2023-07-11 19:42:51.226 Trovi

NoThreatDetected status_code 20 time 0.0000080

2023-07-11 19:42:51.291 BadGacha

NoThreatDetected status_code 20 time 0.0000681

2023-07-11 19:42:51.578 KeySteal

Apple conceals the identity of the malware handled by XProtect. **Remediator** uses code names for malware, including GreenAcre, SheepSwap, SnowBeagle, SnowDrift, ToyDrop and WaterNet. Two are named after known malware families such as Adload and Geneio.

Adload
BadGacha
ColdSnap
DubRobber
Eicar
FloppyFlipper
GreenAcre
KeySteal
MRTv3
Pirrit
RankStank
RoachFlight
SheepSwap
SnowBeagle
SnowDrift
ToyDrop
Trove
WaterNet



Download following the link below and open the app

XProCheck – *check on XProtect Remediator scans completed and reported in the log*

Product Page.

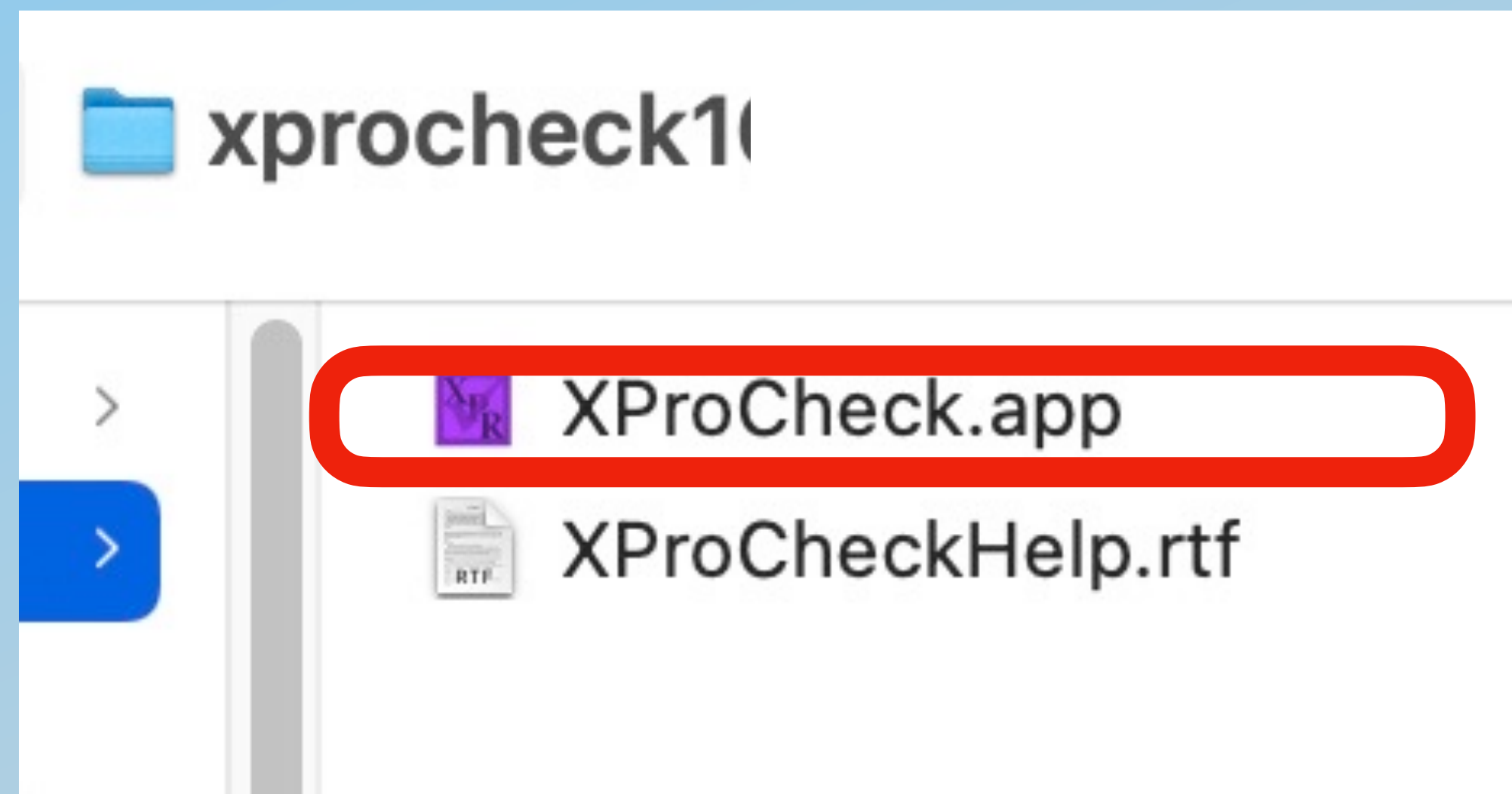
XProCheck 1.0 (Universal App for Catalina, Big Sur, Monterey and Ventura)



XProCheck

Version 1.5 (30)

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Link: <https://eclecticlight.co/consolation-t2m2-and-log-utilities/>



This requires:
any Mac running macOS Catalina 10.15 or later,
an admin user account to run in
a running Unified log (macOS).

XProCheck examines the logs of your Mac and reports completed scans performed by the new protection provided in macOS by XProtect Remediator, which is only installed on Macs running Catalina or later. This lets you:
confirm that your Mac has the active protection of XProtect Remediator, and check whether any scans have detected and remediated any malware.

As XProtect Remediator only reports the results of its scans in your Mac's log, there is no other way of knowing whether it has detected or remediated malware. macOS Ventura changes that, by making results known to third-party Endpoint Security software.

XProCheck can also instruct XProtect Remediator to run its standard set of scans, so you can check for malware when you wish.



If you have any questions just ask.



So where does that leave other anti virus programs like Intego Virus Barrier, Malwarebytes, Norton, BitDefender, etc.?

“While Apple offers its own antivirus protections in the form of Gatekeeper and XProtect, they don’t always work so well due to the fact that they rely on out-of-date methods for stopping infections. The best Mac antivirus programs on the other hand do a better job, quickly spotting new malware strains and double-checking suspicious files that have been “signed” with an Apple developer ID.”

Third Party Apps

<https://www.tomsguide.com/best-picks/best-mac-antivirus>

Intego gets high rankings **<https://www.comparitech.com/antivirus/best-mac-antivirus/>**

1. Intego VirusBarrier X9



[Intego](#) is one of a tiny number of internet security companies that make Mac security (not Windows) the priority. In fact, for many years, Intego offered only Mac AV scanning and removal tools. It's opened up its ecosystem to Windows, but its company focuses remains primarily dedicated to providing effective, industry-leading security for macOS and iOS devices.

In independent antivirus tests, Intego is among the best-known top performers. Its tool is AV-Test certified with near-perfect protection and performance scores, and perfect usability scores. Strong test scores combined with an abundance of useful features put it at the top of our list.

Intego also passed our review for billing practices. The company avoids significant upselling at checkout and only includes minimal extra add-on services. [For \\$39.99](#), Intego attempts to compete with the other top-performing services on price, representing good value for money.

Pros:

- + Perfect malware detection ratings
- + Excellent, consumer-friendly billing practices
- + No false positives in testing lab results

Cons:

- Some impacts on system performance and processing speeds



NetBarrier X9

Mac firewall and network protection.
Protecting your Mac from unauthorized
access.

The only Mac antivirus that can scan your iPhone or iPad for
malware

SPECIFICATIONS

macOS compatibility: macOS 10.12 or later

Browser extensions: No Firewall: Yes

Hardened/secure browser: No

Parental controls: Yes Password manager: No

Ransomware file protection: No

Scan scheduling: Yes Webcam protection: No

VPN: No

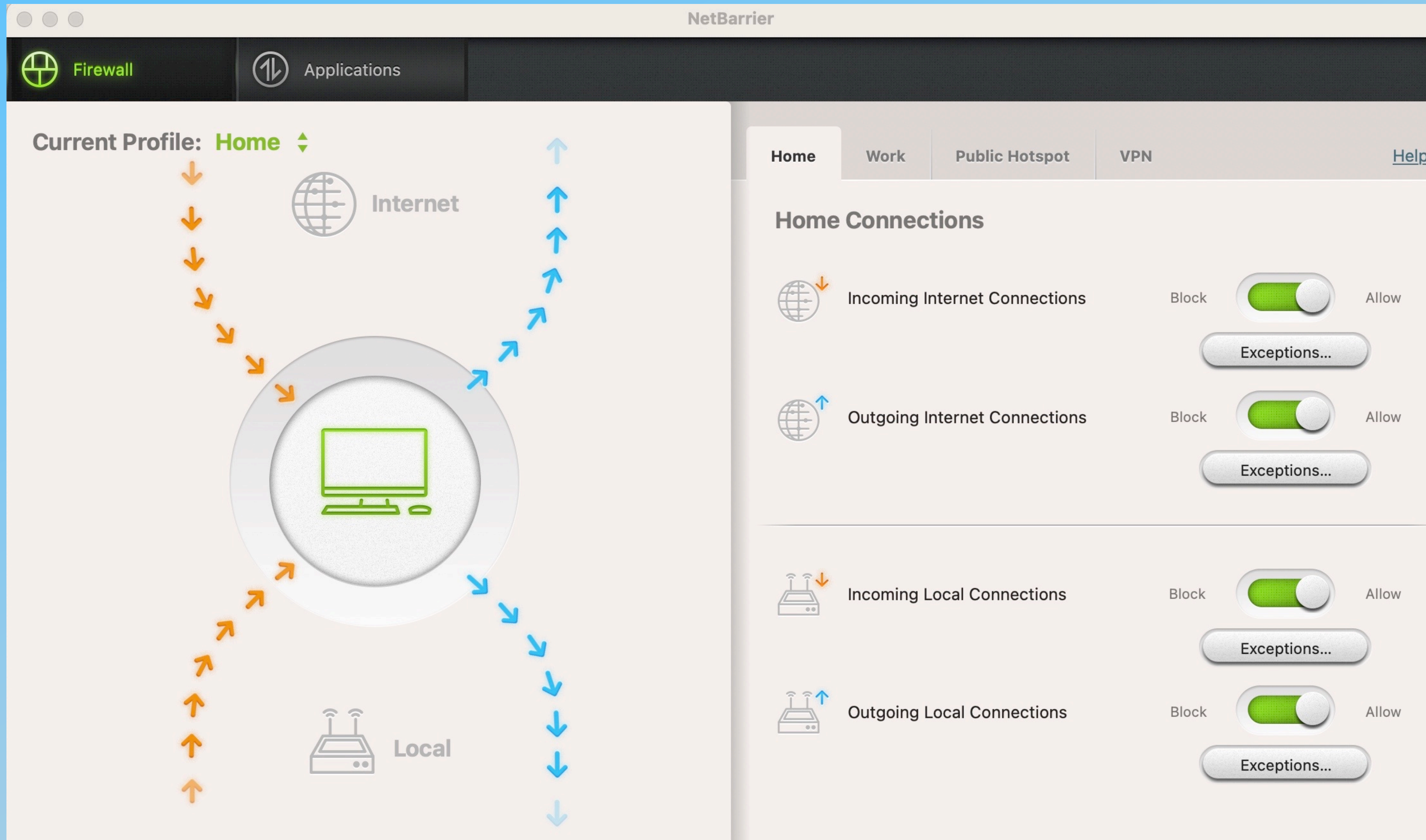
Support options: 24/7 email and live chat

We were very impressed with the interface of Intego's animated firewall which showed how data flowed into and out of our test system with color coded arrows. One thing that sets Intego Mac X9 apart from all of the other Mac antivirus programs on this list is that it can scan an iPhone or iPad for malware when they are connected to your Mac via USB cable.

<https://www.tomsguide.com/best-picks/best-mac-antivirus>

May 16, 2023

Intego Net Barrier Component



Summary

We talked about:

- **Firewall and Gatekeeper**
- **XProtect built-in malware protection**
- **Use Silent Knight for a System Integrity Check**
- **and XProCheck to see what XProtect found**

**Silent Knight
and
XProCheck
are third-party apps**

You might consider additional anti-virus software.

Demo Time

macOS Software Since the Beginning 2001

- [Mac OS X 10.0](#) – code named "Cheetah", released to end users on Saturday, March 24, 2001
- [Mac OS X 10.1](#) – code named "Puma", released to end users on Tuesday, September 25, 2001
- [Mac OS X Jaguar](#) – version 10.2, released to end users on Friday, August 23, 2002
- [Mac OS X Panther](#) – version 10.3, released to end users on Friday, October 24, 2003
- [Mac OS X Tiger](#) – version 10.4, released to end users on Friday, April 29, 2005
- [Mac OS X Leopard](#) – version 10.5, released to end users on Friday, October 26, 2007
- [Mac OS X Snow Leopard](#) – version 10.6, publicly unveiled on Monday, June 8, 2009
- [Mac OS X Lion](#) – version 10.7, released to end users on Wednesday, July 20, 2011
- [OS X Mountain Lion](#) – version 10.8, released to end users on Wednesday, July 25, 2012
- [OS X Mavericks](#) – version 10.9, released to end users on Tuesday, October 22, 2013
- [OS X Yosemite](#) – version 10.10, released to end users on Thursday, October 16, 2014
- [OS X El Capitan](#) – version 10.11, released to end users on Wednesday, September 30, 2015
- [macOS Sierra](#) – version 10.12, released to end users on Tuesday, September 20, 2016
- [macOS High Sierra](#) – version 10.13, released to end users on Monday, September 25, 2017
- [macOS Mojave](#) – version 10.14, released to end users on Monday, September 24, 2018
- [macOS Catalina](#) – version 10.15, released to end users on Monday, October 7, 2019
- [macOS Big Sur](#) – version 11, released to end users on Thursday, November 12, 2020
- [macOS Monterey](#) – version 12, released to end users on Monday, October 25, 2021
- [macOS Ventura](#) – version 13, released to end users on Monday, October 24, 2022
- [macOS Sonoma](#) - version 14, announced at WWDC 2023 on Monday, June 5, 2023

released in 2001

