

# How to revive or restore Mac firmware

Rarely, a Mac with Apple silicon or the Apple T2 Security Chip might stop responding and need to be revived or restored by another Mac.

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## When to revive or restore

If the firmware stored in its memory needs to be revived or restored, a Mac with Apple silicon or the Apple T2 Security Chip might become unresponsive. This can occur in certain rare circumstances, such as when a power failure interrupts macOS installation. Symptoms can include:

- Starts up to an [exclamation point in a circle](#)
- Shows the [status indicator light pattern](#) for firmware recovery mode
- Starts up to a blank screen (but there are other causes and [solutions for a blank screen](#))

To resolve without erasing any of your files, revive the firmware of your Mac. If reviving is unsuccessful, you can restore instead.

## What you need to revive or restore

- The affected Mac, which is the [Mac with Apple silicon](#) or [Mac with the Apple T2 Security Chip](#) that you're reviving or restoring. Other Mac models don't apply.
- Another Mac, which you will use to revive or restore the affected Mac. This Mac must be using [macOS Monterey or later](#).
- A USB-C to USB-C  cable that supports data and charging, such as the Apple USB-C Charge Cable included with some Apple products. It works with [ports on Mac](#) that accept a type USB-C connector: Thunderbolt 4, Thunderbolt / USB 4, Thunderbolt 3, or USB 3. *Don't use a Thunderbolt 3  cable.*

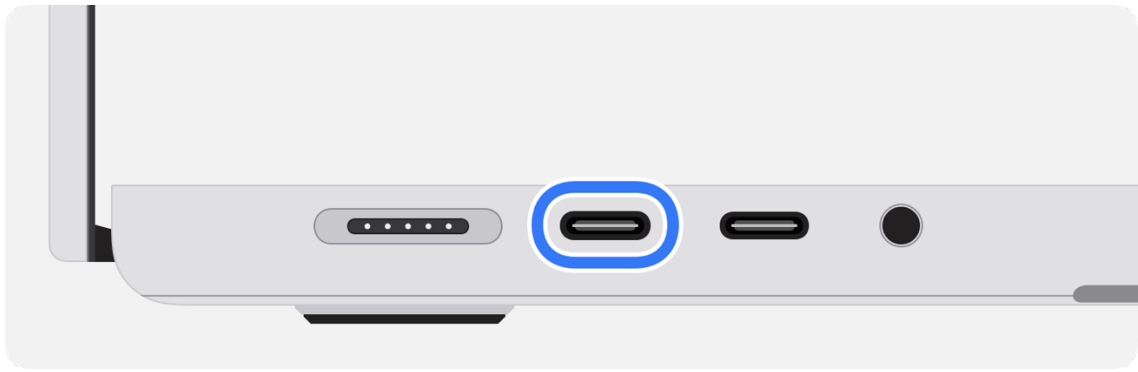
## How to set up your computers to revive or restore

Follow these steps based on whether the affected Mac is a laptop computer or desktop computer, and whether it's a [Mac with Apple silicon](#) or a [Mac with the Apple T2 Security Chip](#). You will use the USB-C cable to connect the two computers, then enter DFU (device firmware update) mode on the affected Mac.

### Laptop computer

1. On the affected MacBook Pro or MacBook Air:
  - Plug the Mac into power.
  - Mac with Apple silicon: Facing the ports on the left side of the Mac, plug the USB-C cable into the leftmost USB-C port.
  - Mac with T2 chip: Facing the ports on the left side of the Mac, plug the USB-C cable into the rightmost USB-C port.

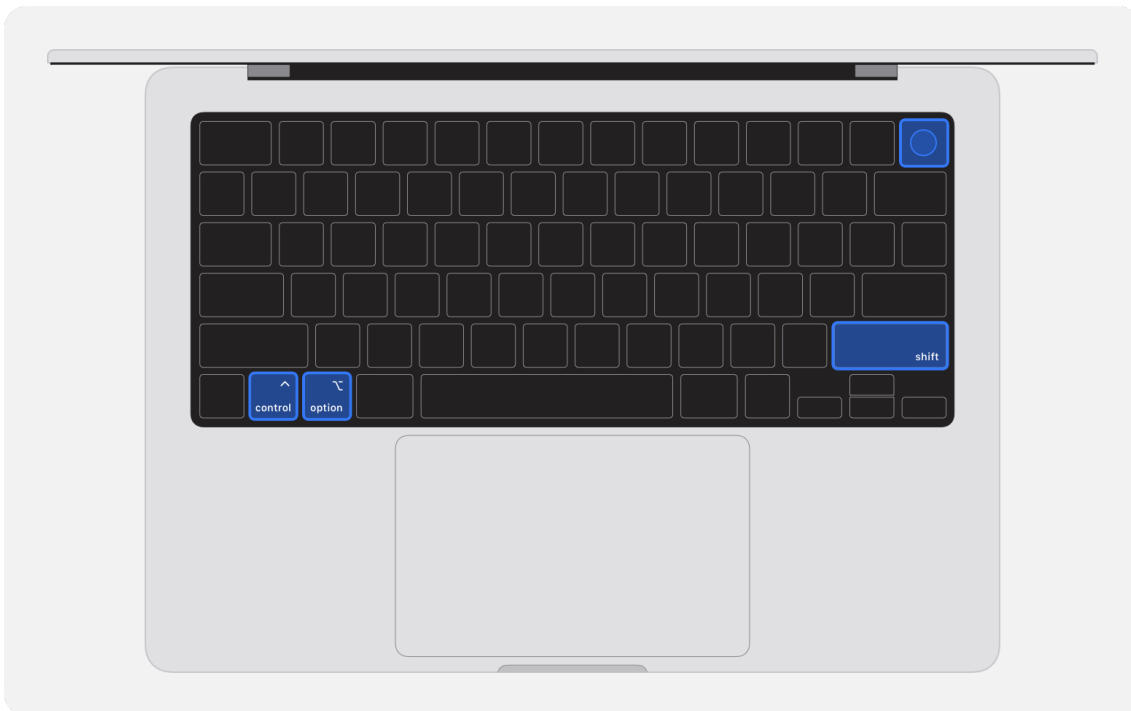
The left side of every laptop has a USB-C port farthest to the left (leftmost) and farthest to the right (rightmost). This is the leftmost USB-C port on one laptop model:



This is the rightmost USB-C port on another laptop model:



2. On the other Mac:
  - Plug the Mac into power.
  - Plug the other end of the USB-C cable into any USB-C port.
  - Make sure that the Mac is connected to the internet.<sup>1</sup>
3. On the affected Mac, enter DFU mode:
  - a. Press and hold the power button for up to 10 seconds, until the Mac turns off. (If your Mac has a Touch ID button, it's also the power button.)
  - b. Press and release the power button, then *immediately* press and hold all four of these together on the built-in keyboard:
    - Control ^ on the left side of the keyboard
    - Option ⌥ on the left side of the keyboard
    - Shift ⇧ on the right side of the keyboard
    - Power button
  - c. Mac with Apple silicon: Keep holding all four keys for about 10 seconds, then release all keys except the power button. After about 3 seconds, release the power button.
  - d. Mac with T2 chip: Keep holding all four keys for about 3 seconds, then release all keys.



4. [Follow the steps below to revive or restore.](#)

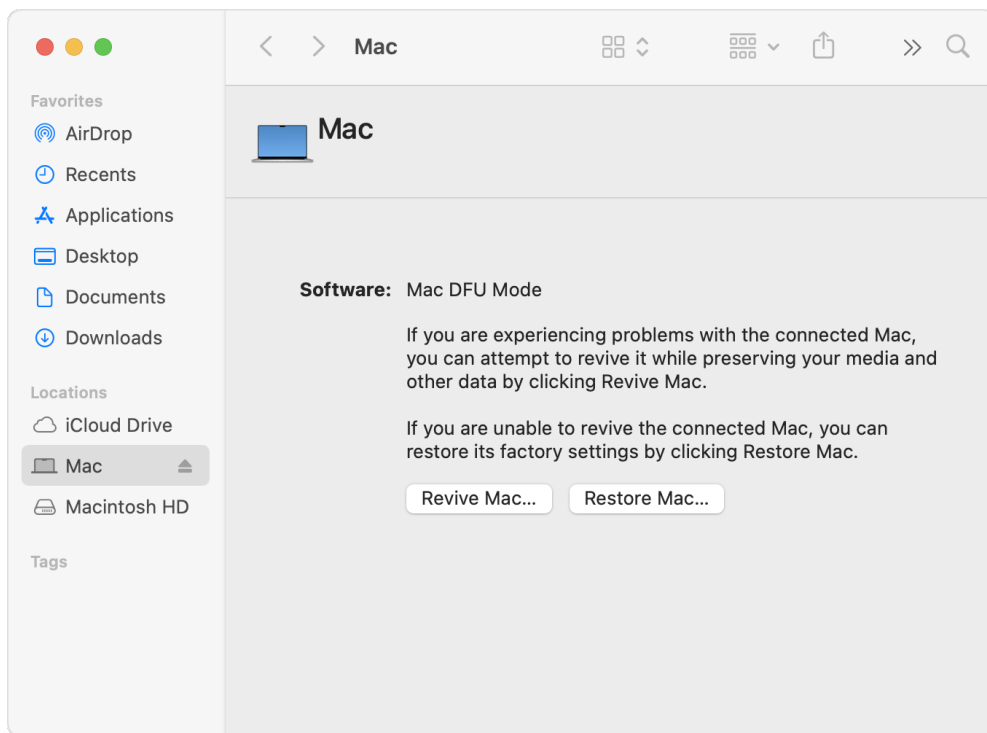
## Desktop computer

1. On the affected desktop computer:
  - iMac: Facing the back of the Mac, plug the USB-C cable into the rightmost USB-C port.
  - Mac mini with Apple silicon: Facing the back of the Mac, plug the USB-C cable into the leftmost USB-C port.
  - Mac mini with T2 chip: Facing the back of the Mac, plug the USB-C cable into the rightmost USB-C port.
  - Mac Studio: Facing the back of the Mac, plug the USB-C cable into the rightmost USB-C port.
  - Mac Pro with desktop enclosure: On the top of the Mac, plug the USB-C cable into the USB-C port farthest from the power button.
  - Mac Pro with rack enclosure: On the front of the Mac, plug the USB-C cable into the USB-C port closest to the power button.
2. On the other Mac:
  - Plug the other end of the USB-C cable into any USB-C port.
  - Make sure that the Mac is connected to the internet.<sup>1</sup>
3. On the affected Mac, enter DFU mode:
  - a. Unplug the Mac from power.
  - b. Press and hold the power button.
  - c. Keep holding the power button while plugging the Mac into power.
  - d. After about 3 seconds, release the power button.
4. [Follow the steps below to revive or restore.](#)

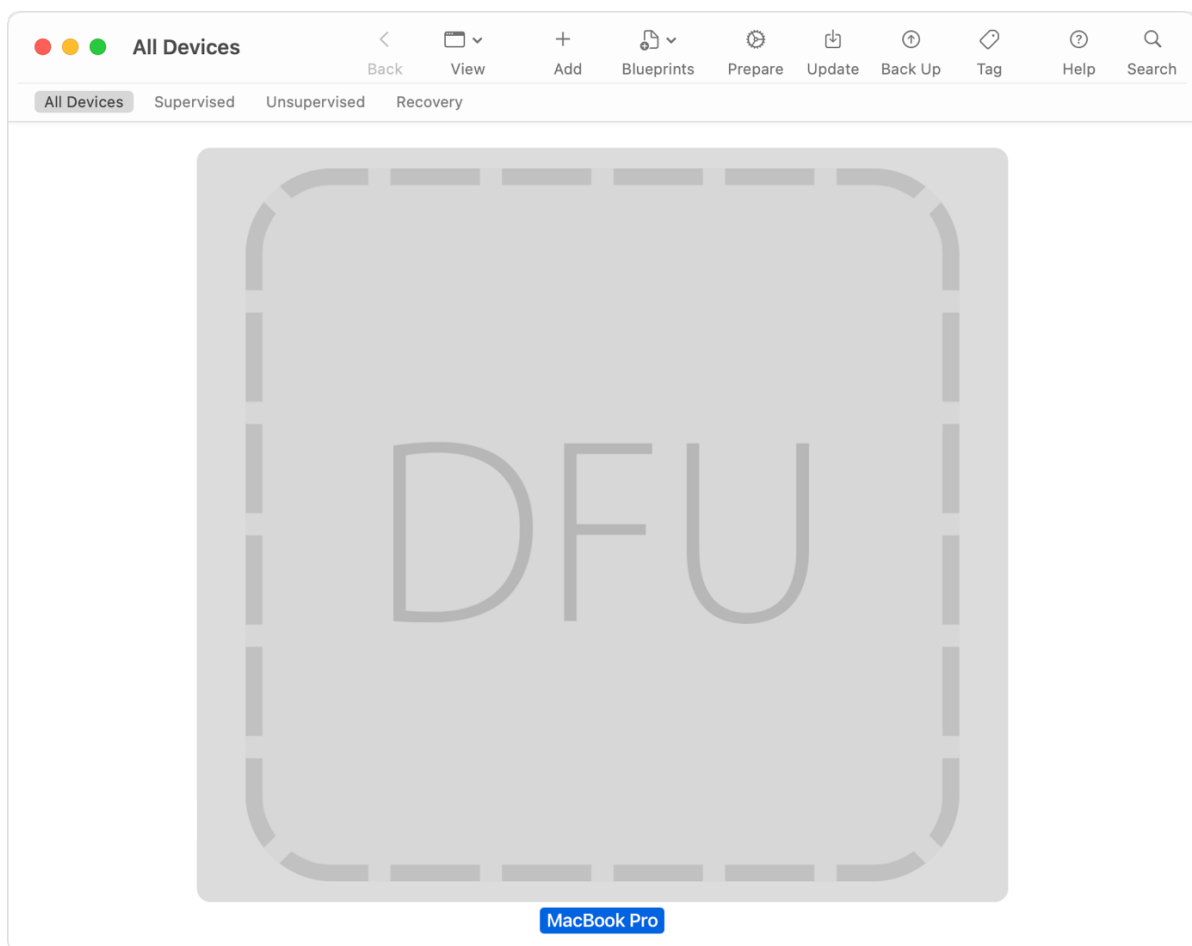
## How to revive or restore

After [setting up your computers](#), use either the Finder or Apple Configurator to revive or restore the affected Mac, depending on which macOS the other Mac is using.

*This shows a Mac ready to revive or restore from the Finder (macOS Sonoma or later):*



This shows a Mac ready to revive or restore from Apple Configurator (macOS Monterey 12.4 or later):



## Revive

Try reviving first. It can be faster than restoring, and it doesn't erase your Mac.

1. If using the Finder (requires macOS Sonoma or later):
  - a. In the sidebar of a Finder window, select "Mac," as pictured above. [Don't see it?](#)
  - b. Click Revive Mac on the right, then click Continue to confirm. A progress bar in this window shows

that the revive is underway.

2. If using Apple Configurator (requires macOS Monterey 12.4 or later):
  - a. Open Apple Configurator, which you can [download from the App Store](#).<sup>2</sup>
  - b. In the Apple Configurator window, select "DFU" for the affected Mac, as pictured above. [Don't see it?](#)
  - c. From the menu bar, choose Actions > Advanced > Revive Device. A progress bar in this window shows that the revive is underway.
3. When the revive is complete, the affected Mac restarts automatically. If it shuts down instead, press the power button to turn it on.
4. If asked, select a volume to recover (such as Macintosh HD), then click Next.
5. If asked, select a user you know the password for, and enter that user's login password. Click Next, then click Restart.
6. Mac with Apple silicon: The revived Mac loads startup options, which includes [Options with a gear icon](#). Select your startup disk (such as Macintosh HD), then click the Continue button that appears below it.
7. The revived Mac finishes starting up and the process is complete.

## Restore

If your Mac can't be revived, follow these steps to erase it and restore it to factory settings.

1. If using the Finder (requires macOS Sonoma or later):
  - a. In the sidebar of a Finder window, select "Mac," as pictured above. [Don't see it?](#)
  - b. Click Restore Mac on the right, then click Restore and Update to confirm. A progress bar in this window shows that the restore is underway.
2. If using Apple Configurator (requires macOS Monterey 12.4 or later):
  - a. Open Apple Configurator, which you can [download from the App Store](#).<sup>2</sup>
  - b. In the Apple Configurator window, select "DFU" for the affected Mac, as pictured above. [Don't see it?](#)
  - c. From the menu bar, choose Actions > Restore, then click Restore to confirm. A progress bar in this window shows that the restore is underway.
3. When the restore is complete, the affected Mac restarts automatically. If it shuts down instead, press the power button to turn it on.
4. If asked, select a Wi-Fi network or attach a network cable.
5. Mac with Apple silicon:
  - a. If asked, enter the Apple ID and password previously used with this Mac.
  - b. When the setup assistant opens, use it to finish setting up your Mac.
6. Mac with T2 chip:
  - a. The restored Mac shows a spinning globe as it starts up from macOS Recovery over the internet. Choose your language when asked.
  - b. If asked, enter the Apple ID and password previously used with this Mac. Then click Exit to Recovery.
  - c. When you see the list of utilities in Recovery, choose the option to [install or reinstall macOS](#).
  - d. After macOS installation, the Mac restarts and opens the setup assistant. Use it to finish setting up your Mac.

## If you don't see your Mac in the window

After setting up your computers, if the affected Mac doesn't appear in the Finder or Apple Configurator:

- If you're using the Finder, choose Finder > Settings from the menu bar. Click Sidebar at the top of the settings window, then confirm that "CDs, DVDs, and iOS Devices" is selected.
- Disconnect the USB-C cable from the affected Mac, then press and hold the power button for up to 10 seconds to turn off the affected Mac. Reconnect the USB-C cable to the correct port, then try again to enter DFU mode. Proper timing of key presses is important.

- Try a different USB-C cable. It must support both data and charging.

If you can't complete a revive or restore or you still need help, please [contact Apple Support](#).

1. If you're using a web proxy or firewall, it must allow network traffic from your Mac to Apple's network, 17.0.0.0/8. If you're not sure, consult your router manual or internet provider. Learn more about [using Apple products on enterprise networks](#).
2. If the App Store says that Apple Configurator can't be installed, make sure that you're [signed in to the App Store](#). If prompted to download an older compatible version, allow the download, then use the older version.

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Helpful?    Yes    No

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