DFU Mode on Apple Devices

What it is, when to use it, and how to enter it

What DFU mode is

DFU stands for **Device Firmware Update**. It is the lowest-level restore state on an iPhone, iPad, iPod touch, Apple TV, Apple Watch (via special cables), and Apple silicon or T2-equipped Macs. In DFU mode the device powers on its hardware and talks to a computer over USB, but it does **not** load iBoot (the bootloader) or the operating system. Only the code burned into the chip's read-only memory (the **BootROM**, or SecureROM) runs, waiting for a computer to send it signed firmware.

Because the BootROM cannot be modified by software, DFU mode works even when the bootloader, firmware, or operating system is corrupted. That makes it the last-resort way to bring a device back from a software failure.

How it differs from Recovery Mode

	Recovery Mode	DFU Mode
What runs	iBoot (the bootloader) loads and runs	Only the BootROM; iBoot is skipped
Screen	Shows a "connect to computer" graphic	Stays completely black (on most devices)
Repairs	Reinstalls or updates the OS	Rewrites firmware and bootloader as well as the OS
Data	Update option can keep your data	Restore always erases the device
When to use	First choice for most software problems	When Recovery Mode fails or the bootloader is damaged

When you would use it

- The device is stuck on the Apple logo or in a boot loop and Recovery Mode does not help.
- A software update or restore failed partway and left the device unbootable.
- Firmware or bootloader corruption that a normal restore cannot fix.
- Downgrading to an older iOS version that Apple is still signing (rarely possible, since Apple usually stops signing old versions within weeks).
- On Macs: "reviving" (reinstalling firmware only, keeping data) or "restoring" (full erase) an Apple silicon or T2 Mac that will not start.
- Technical work such as jailbreaks that rely on BootROM exploits (for example, checkm8 on A5–A11 chips).

Before you start

- **A DFU restore erases everything on the device.** Make sure you have an iCloud or computer backup.
- You need a computer: a Mac with Finder (macOS Catalina or later), or a PC with iTunes or the Apple Devices app.
- Use a good-quality USB cable plugged directly into the computer.
- After the restore, Activation Lock still applies; you will need the Apple Account password that was on the device.
- The button timing is strict. If the Apple logo appears, you held a button too long; just start again.

How to enter DFU mode

Connect the device to the computer first, then follow the steps for your model.

Device	Steps
iPhone 8 and later, iPhone SE (2nd gen+)	1. Press and release Volume Up. 2. Press and release Volume Down. 3. Hold the Side button until the screen goes black (about 10 s). 4. Keep holding Side and also hold Volume Down for 5 s. 5. Release Side but keep holding Volume Down for about 10 more seconds.
iPhone 7 / 7 Plus	1. Hold the Side button and Volume Down together for 8 s. 2. Release Side but keep holding Volume Down until the computer detects the device.
iPhone 6s and earlier, iPhone SE (1st gen), iPads with a Home button	1. Hold the Home and Power (Side/Top) buttons together for 8 s. 2. Release Power but keep holding Home until the computer detects the device.
iPads with Face ID / no Home button	Press and release Volume Up (the button nearest the top button), press and release Volume Down, hold the Top button until the screen goes black, then hold Top + Volume Down for 5 s, release Top and keep holding Volume Down for about 10 s.
Apple silicon Mac	Requires a second Mac running Apple Configurator. Connect the two with a USB-C cable to the correct DFU port, then hold the model-specific key combination (for laptops: power button plus left Control, left Option, and right Shift) for about 10 s. See Apple's support article for your model.

How to tell it worked

On an iPhone or iPad, the screen stays **completely black** while the computer reports that it has found a device in recovery mode that needs to be restored. If you see the Apple logo or a cable-and-computer graphic, you are in normal boot or Recovery Mode instead; repeat the steps. Then click **Restore** in Finder, iTunes, or the Apple Devices app. The computer downloads the latest signed firmware and reinstalls it.

How to exit DFU mode without restoring

Force-restart the device. On iPhone 8 and later: press and release Volume Up, press and release Volume Down, then hold the Side button until the Apple logo appears. On older models, hold the same two buttons used to enter DFU mode until the logo appears.

If DFU mode does not fix it

If a DFU restore fails repeatedly with errors (for example, errors 9, 4013, or 4014), the cause is often hardware: a failing logic board, storage chip, or cable/port. Try a different cable, USB port, and computer first; if it still fails, contact Apple Support or visit an Apple Store or Authorized Service Provider.