How To Install TPM 2.0 on your PC for Upgrading to Windows 11

TO UPGRADE TO WINDOWS 11 OR ADD BETTER SECURITY TO YOUR COMPUTER, YOU NEED TO ENABLE THE TPM MODULE ON YOUR WINDOWS PC.

This guide will teach you how to check, enable, and install a TPM 2.0 module to meet Windows 11 security requirements. This guide assumes that you meet all but security requirements for Windows 11 and have a device with Windows 10 installed.

You do not need technical knowledge to follow this guide but may need to open your computer to access the motherboard.

Summary

What is TPM 2.0?

If you have tried to upgrade to the Windows 11 operating system and checked the system requirements, you may have wondered - What is TPM 2.0, and how do I *add the TPM module to my PC?*

TPM is short for *Trusted Platform Module*. It is a security chip attached to your motherboard to secure your computer data and provides your computer with a digital key. It is also known as a 'security encryption processor' because it manages and stores encryption keys. The key is REQUIRED to access any information stored on your system. Since it's physically chipped in your machine, attackers will likely have **no luck** spoofing, tampering with, or defeating its protections. If the computer is hacked, your identity, and operating system files, will not be exposed, and the key cannot be leaked out.

TYPES OF TPM

〉 *Hardware-based TPM*

These are the added physical chips that would plug into your computer's motherboard in a 'TPM Header.'

〉 *Firmware TPM (fTPM)*

Firmware TPM offers the same security protocols without needing an added physical chip. An fTPM looks precisely like a TPM chip for your operating system and applications that also meets the Windows 11 TPM requirements.

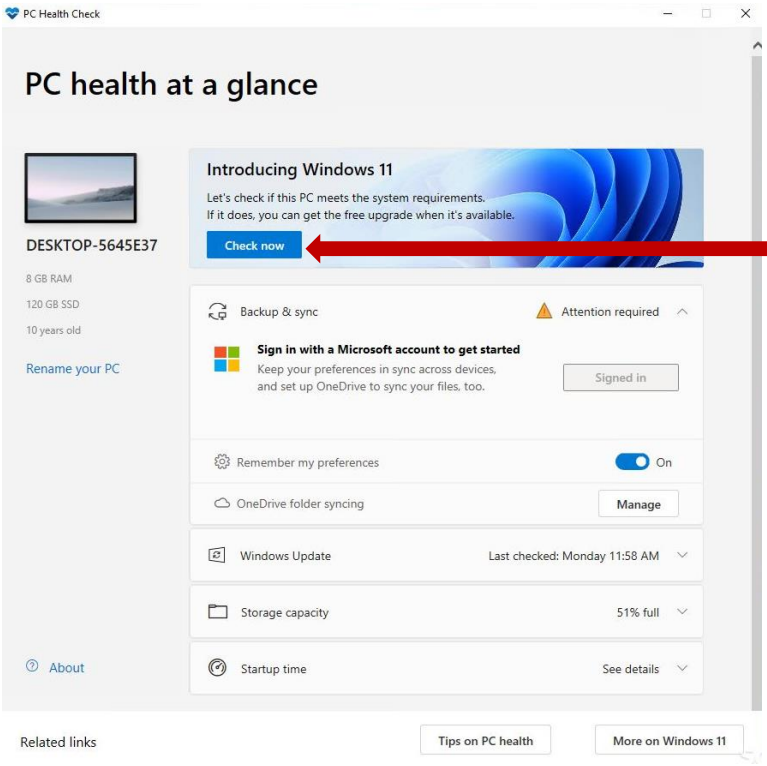
Since firmware TPMs are built into the processor, they vary by your CPU manufacturer. The TPM module is PTT for Intel processors and fTPM for AMD processors. The critical difference is that computers with Intel PTT (Platform Trust Technology), or AMD's built-in firmware version, don't require a dedicated crypto-processor or memory and lower the cost, power, and space needed.

Before You Begin

〉 CHECK IF YOUR DEVICE IS WINDOWS 11 ELIGIBLE

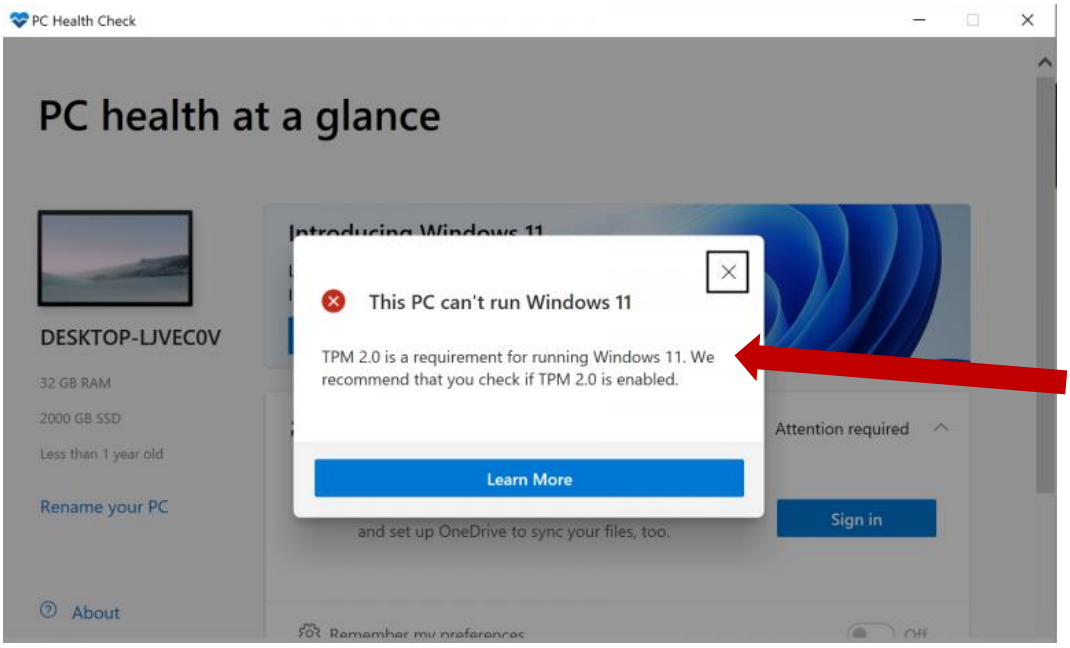
The PC Health Check app is Microsoft's official app to check if your PC is compatible with Windows 11. To get started, follow these steps:

1. Download and install the PC Health Check app from the official website.
2. After the installation is complete, click the Check now button.



Click on **Check Now** to begin scanning.

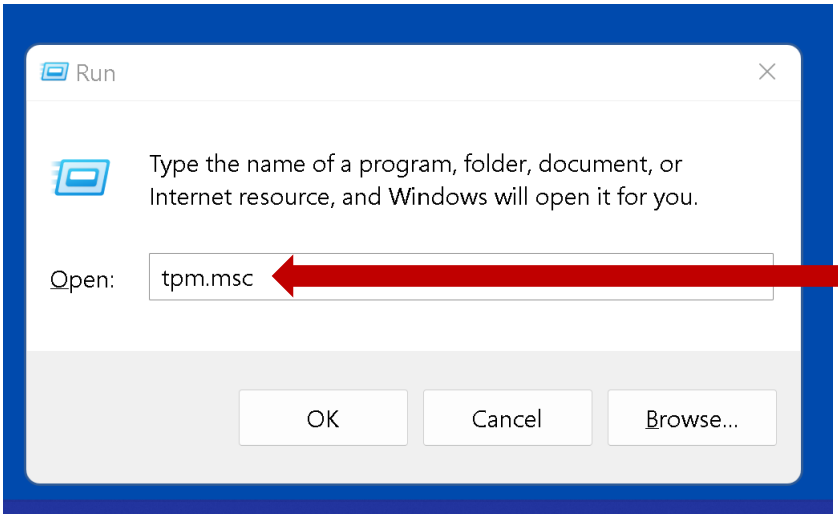
3. Here, we expect a popup that says our PC can't run Windows 11, with the message 'TPM 2.0 is a requirement for running Windows 11,' as shown below.



So, now we know that our computer meets all requirements EXCEPT the TPM 2.0. In the next section, we will check if we can find a supported TPM module for our computer.

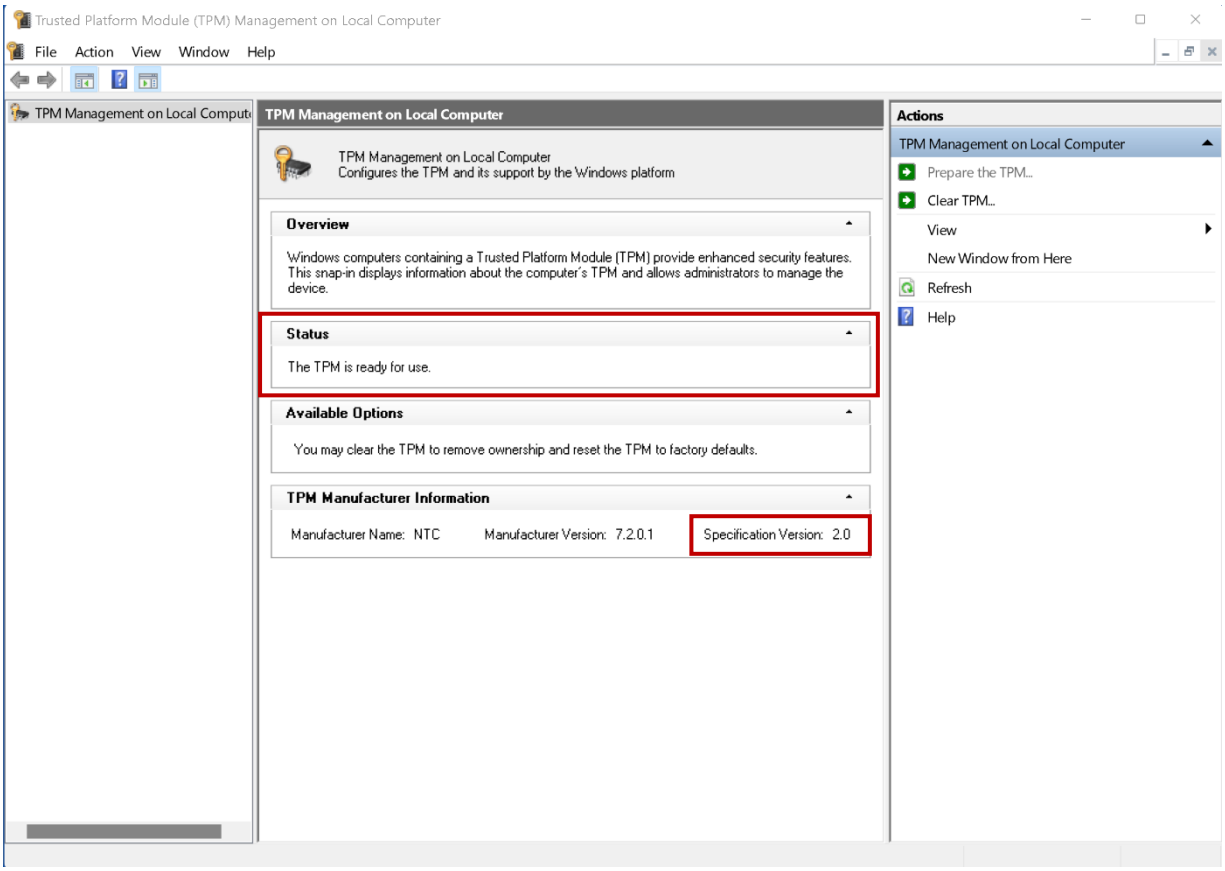
〉 CHECK IF YOUR DEVICE HAS A SUPPORTED TPM MODULE OR FTPM/PTT

1. To check if you have a TPM module, press **Win + R** to open the Run prompt and type **tpm.msc**

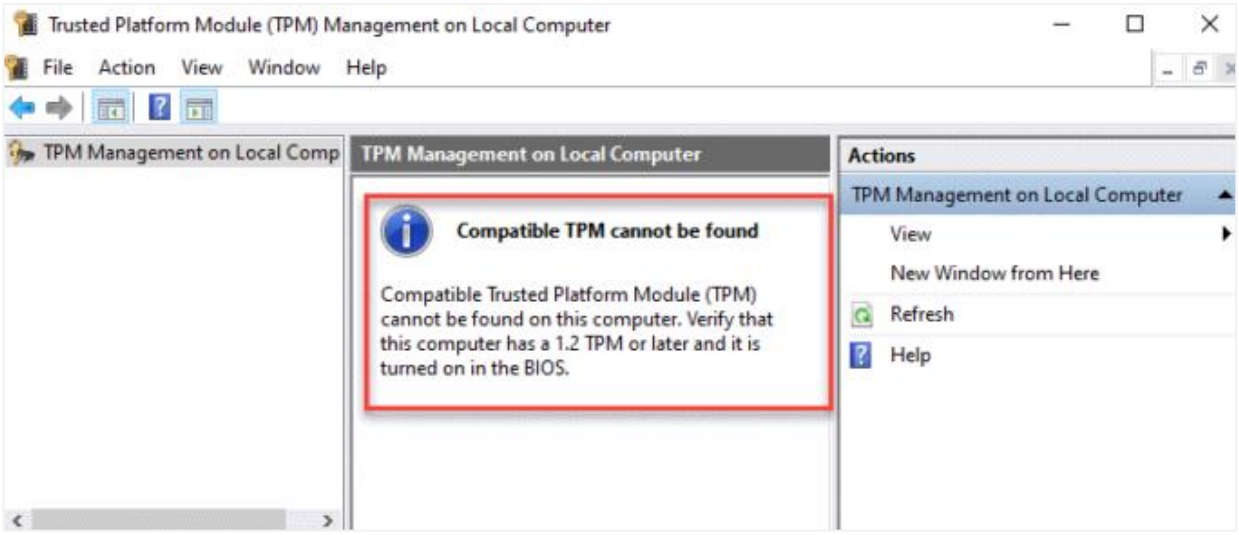


Press **Win + R** and type **tpm.msc**

2. Next, click **OK**. You should now see the **TPM Management console** with your TPM status.
3. If you have a TPM enabled on your computer, you should see information about the TPM on your TPM Management console. For example, we can see that this computer has a TPM with specification 2.0, and it is 'ready for use.' If you have a different version of the TPM module, you will see that in the **Specification Version** under **TPM Manufacturer Information**.



If you do NOT have a TPM module or are disabled, you will see a ‘Compatible TPM cannot be found’ message on your TPM management console, as shown below.



The following section has a step-by-step guide to fix the TPM not found error.

Fix the ‘Compatible TPM Cannot Be Found’ Error

Note: Ensure you meet all other Windows 11 requirements before you begin.

Microsoft has required manufacturers to include TPM 2.0 in all new devices starting July 28, 2016. With this time point as the boundary, there are several different scenarios. Please check which method applies to you.

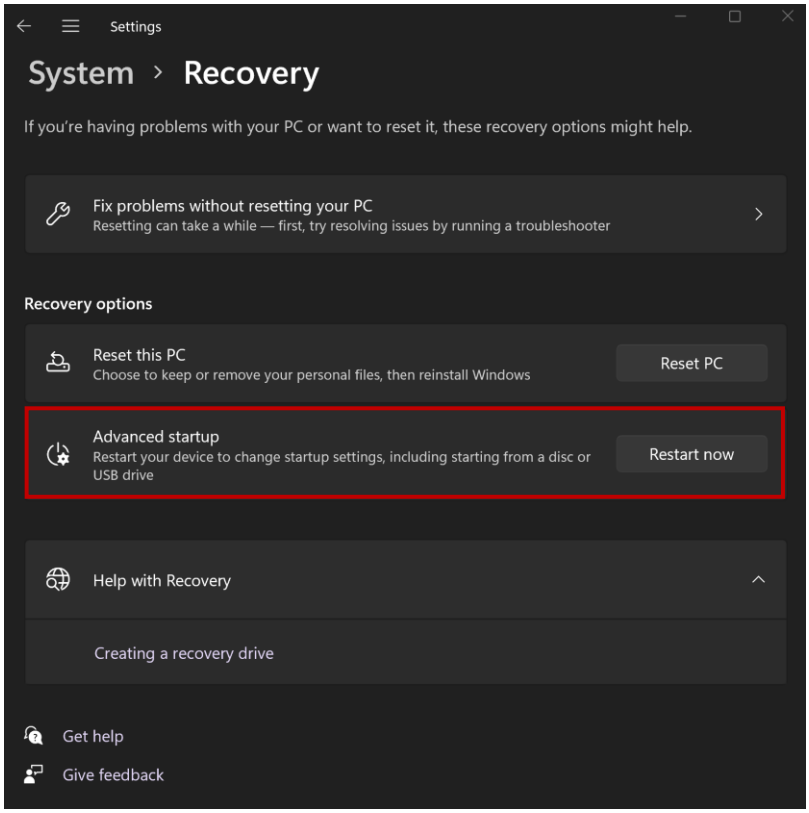
- If your computer was manufactured BEFORE 2016:
  1. But it has a lower version of the TPM chip installed (TPM 1.2); you can try a firmware upgrade.
  2. But it has no support for the TPM chip, then you have no choice but to upgrade your computer to a modern version.
- If your computer was manufactured AFTER 2016:
  1. But it has a TPM 2.0 chip installed but may be disabled by default, so you will need to enable it.
  2. If it does not have a TPM chip, you can buy one and install it on the motherboard.

In the next section, we will assume your computer was manufactured after 2016 and see how to install TPM 2.0 for these two scenarios.

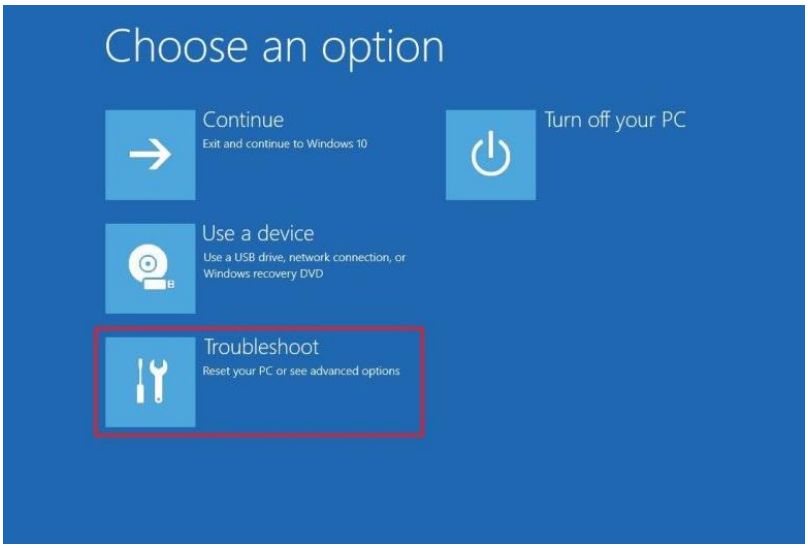
ENABLE EXISTING TPM MODULE

Step 1: Enable supported TPM via UEFI BIOS

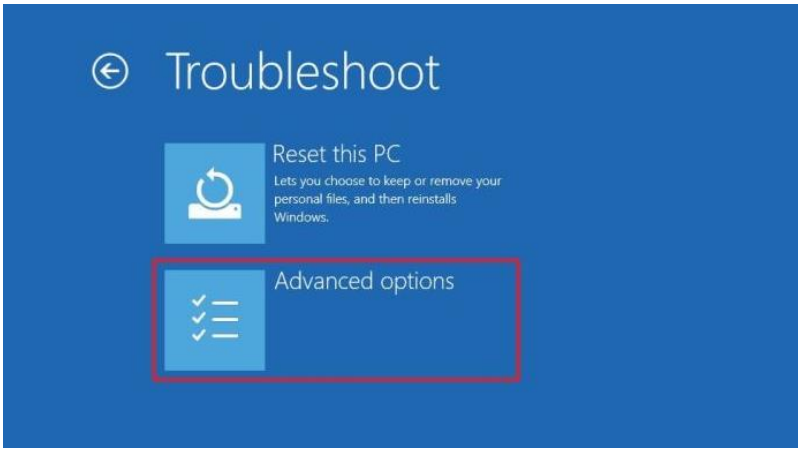
1. To enter your computer’s BIOS, go to **Recovery** under your System in Settings. Click on **Restart Now** under Advanced Startup.

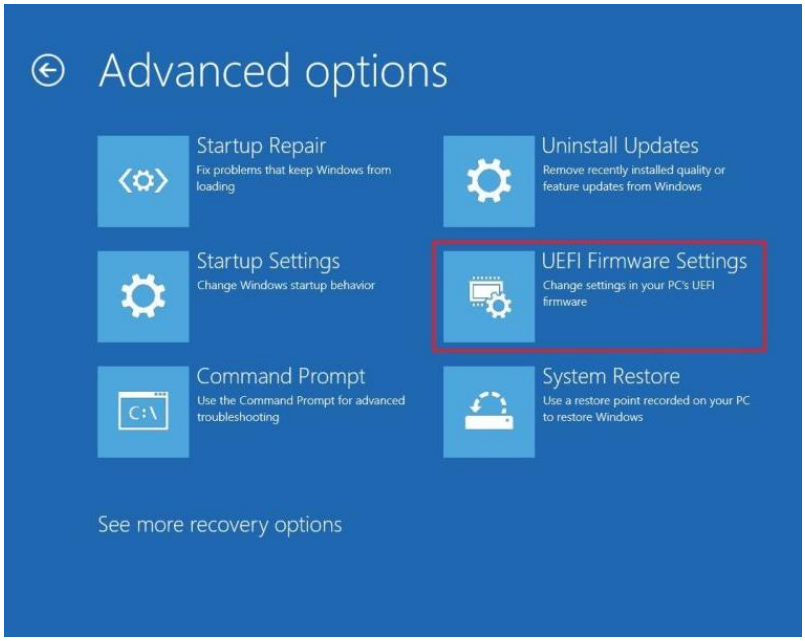


2. Click on **Troubleshoot**.



3. Click on **Advanced Options**, then select **UEFI Firmware Settings**.





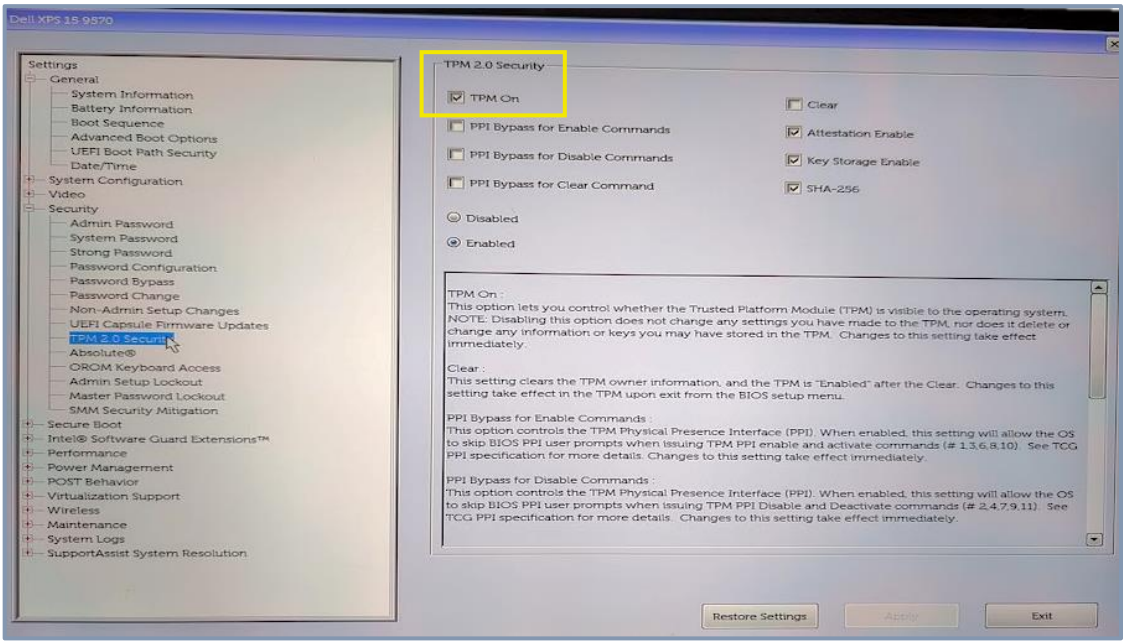
4. Under UEFI Firmware Settings, click **Restart Now**.

Alternatively, you can enter UEFI mode from the firmware menus upon boot. See step 1 of To boot to UEFI or BIOS.

Step 2: Enable fTPM or TPM module in UEFI Firmware Settings

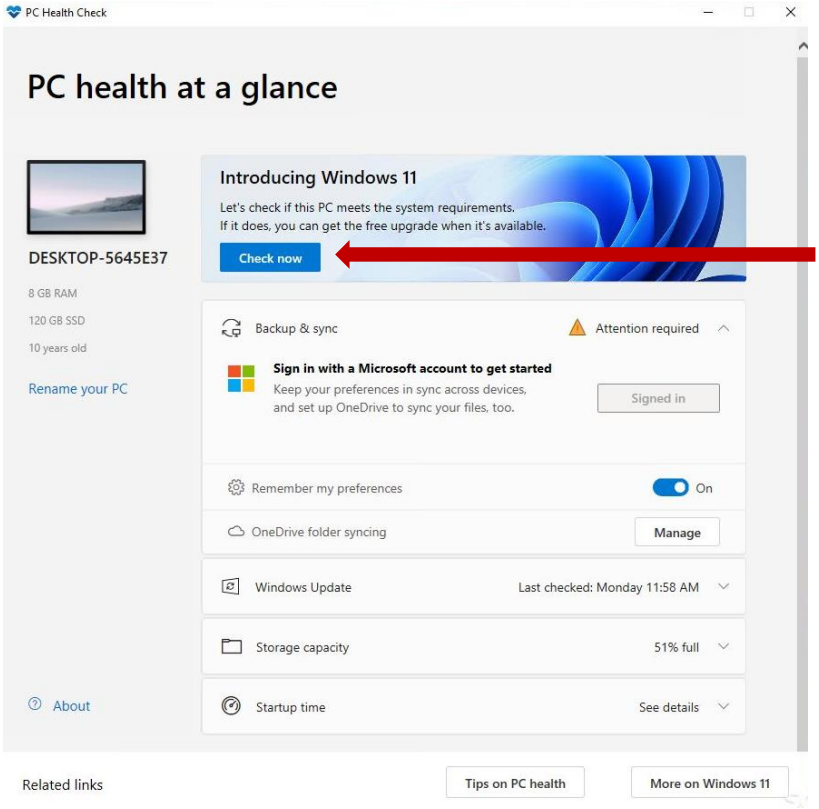
1. You will find the setting under Security > Trusted Computing and see Security Device / Security Device Support with an option to enable it, and AMD fTPM switch > AMD CPU fTPM or TPM Device selection > Intel Platform Trust Technology (PTT), depending on your CPU processor. Below are examples of UEFI BIOS settings to enable the TPM (marked in yellow).

If your PC has a physical module installed, you will see the information and option to enable it. Below is an image of UEFI settings for enabling TPM on my Dell 9570 laptop (marked in yellow).



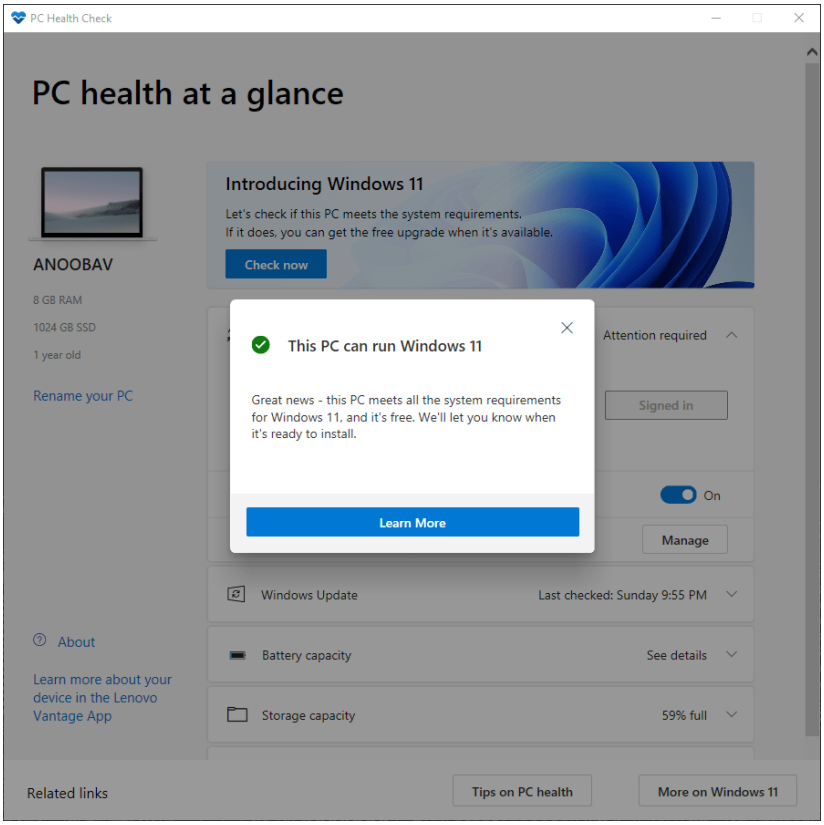
Step 3: Run PC Health Check app to confirm

1. Open the **PC Health Check app** and click the **Check now** button.



Click on **Check Now** to begin scanning.

2. Once the Windows 11 Compatibility check is complete, you should see a popup stating, ‘This PC can run Windows 11’ on your window.



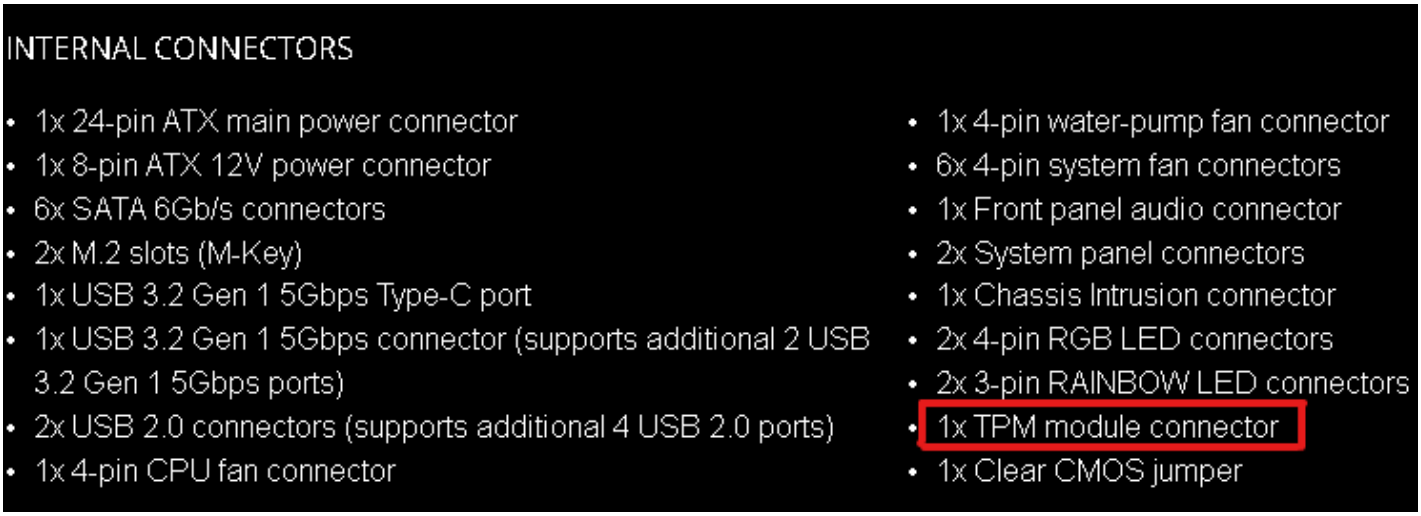
Now you are all set!

REPLACING/INSTALLING ONBOARD TPM 2.0 MODULE

Step 0: Check if your motherboard has a TPM Header

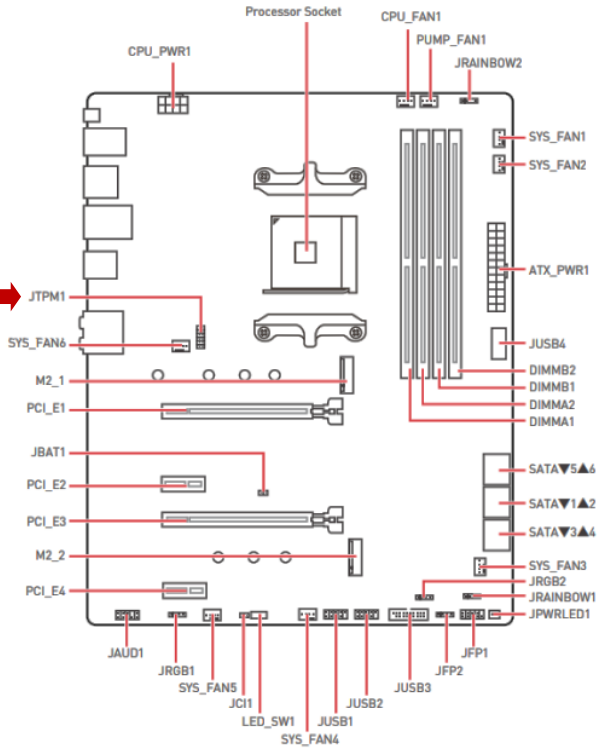
Motherboards typically have a TPM header to install a TPM module manually. You can check your motherboard’s technical/ product specifications and locate your motherboard model number on the manufacturer’s website or google it.

For instance, let us pick up the MAG B550 TOMAHAWK motherboard. On the MSI site, you will see the TPM header (marked in red) under internal connectors if you check the details for product specifications. This means that the MSI B550 motherboard can install the TPM module.



You can also physically inspect your motherboard or look for the TPM connector in the product manual. It usually is around the RGB header or COM ports. For reference, in the MAG B550 TOMAHAWK, the TPM header is beside the COM port.

See **JTPM1**, above SYS_FAN6

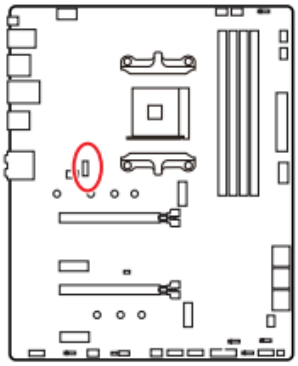


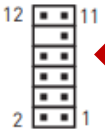
Step 1: Buy a compatible TPM 2.0 module

To find a compatible TPM 2.0 module, look to your PC's manufacturer's website. Get the exact number of pins on the layout of your TPM header. For instance, the MAG B550 TOMAHAWK motherboard manual shows a 12-1 PIN header following the PIN layout. Hence, I must buy a 12-1 PIN TPM 2.0 module. The TPM module you buy must have the same PIN layout as your TPM header. In my case, the TPM module must have a lockout PIN in the 5th row (see image).

JTPM1: TPM Module Connector

This connector is for TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details and usages.





PIN layout

1	SPI Power	2	SPI Chip Select
3	Master In Slave Out (SPI Data)	4	Master In Slave In (SPI Data)
5	Reserved	6	SPI Clock
7	Ground	8	SPI Reset
9	Reserved	10	No Pin
11	Reserved	12	Interrupt Request

Ideally, it would be best if you bought the TPM module from your motherboard manufacturer since it is easy to check compatibility. For instance, MSI's website has a compatibility list with information about the pin layout. But sometimes, due to high demand, it may be expensive and hard to find on Amazon, Best Buy, or Walmart. So, I recommend checking sites like Newegg and B&H to see a reasonably priced TPM module.

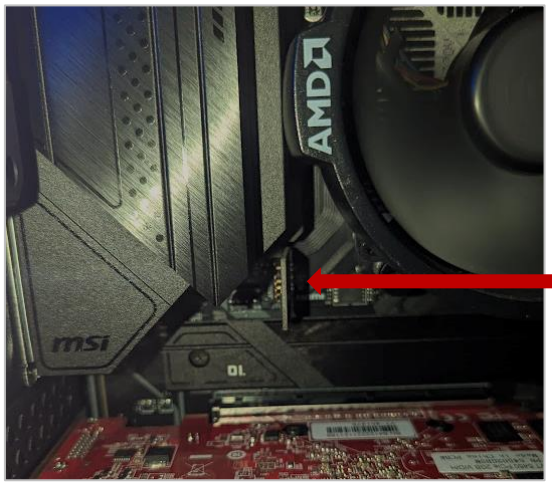
Step 2: Installing the TPM 2.0 module on your motherboard

PROCEED WITH CAUTION - Unplug your power cable and place the PC on a static-free surface before opening it!

Once you buy your TPM module, install it on the motherboard.

1. You must open your PC case to access the motherboard. You can unscrew the PC plate without any tools or, at most, with a Phillips screwdriver.

2. Using your motherboard manual, locate the TPM header and swiftly plug in the TPM module.



TPM 2.0 module in the TPM header

Step 3: Follow instructions from Option 1 to enable the installed TPM 2.0 Module.

Most TPM modules work right out of the box, but sometimes you may need to enable the TPM from the UEFI BIOS settings. Follow the instructions from Option 1 to ensure your installed TPM 2.0 module works.

Conclusion

Note: Ensure your PC meets all other Windows 11 requirements before attempting to resolve the 'Compatible TPM Cannot Be Found' error.

Most computers should have TPM 2.0 installed on their motherboard but turned off by default. To check if your computer has a disabled TPM module, follow this guide to enable the module or fTPM. If you do not see a TPM module, you can buy one online and manually install it. All you need is a compatible motherboard and a Phillips screwdriver!