Frequently Asked Questions for Intel® Optane™ Memory

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See answers to frequently asked support questions about Intel® Optane™ Memory and system acceleration.

View the Intel Optane Memory FAQ for more information like:

- How Intel Optane Memory is different than DRAM
- Availability
- Performance

About

What is Intel® Optane™ Memory and why consider it memory?

Intel® Optane™ Memory is a system acceleration solution for new 7th Gen Intel® Core™ Processor-based platforms. This solution uses the Intel® Optane™ Technology, based on 3D XPoint™ Memory Media, along with the Intel® Rapid Storage Technology (Intel® RST) driver. This new memory media is located between the processor and slower SATA-based storage devices (HDD, SSHD, or SATA SSD). We can store commonly used data and programs closer to the processor so the system can access information more quickly with improved overall system responsiveness.

Intel Optane Memory concatenates memory and storage into one virtual drive visible to the OS with an optimized system interconnect. It uses smart software like Intel® RST to accelerate performance and responsiveness of the PC. Intel Optane Memory is called memory because it uses a new memory media to store information closer to the processor. It's similar to the function of dynamic random access memory (DRAM).

What is system acceleration? What is system responsiveness? Does Intel Optane Memory make my PC feel faster?

- System acceleration refers to the effect that Intel Optane Memory has on a computer. It enables faster task completion and reduces the wait time compared to a computer without Intel Optane Memory.
- Responsiveness refers to how quickly the PC completes end user requests compared to the same PC without Intel Optane Memory, such as:
  - Start or boot
  - Search and find files
  - Save large files
  - Launch applications
- Yes, Intel Optane Memory makes the PC feel faster, more responsive, and accelerated.

How is Intel Optane Memory different from other NAND caching and caching solutions?

Intel Optane Memory is a brand-new technology. It's built to address the need for non-volatile, high-performance, high-endurance, low latency, and Quality of Service (QoS). The combination of these attributes in a memory technology sets it apart from anything else.

Intel Optane Memory is different from other NAND caching solutions for the following reasons:

- Revolutionary, new 3D XPoint™ Memory Media performs well even in low capacities (16 GB).
- Endurance to withstand multiple reads and writes to the module.
- Leading-edge algorithm in the Intel® RST driver creates a high-performance solution.
- Its user-friendly, intuitive installation, and easy set-up process helps you automatically configure a solution to match your needs.

Hardware and Software

What is the complete list of software and hardware requirements for the Intel Optane Memory Series for system acceleration?

View complete details for a system ready for Intel Optane Memory.

The SATA boot drive you're accelerating must contain:

- GPT partition
- 512B Sector format
- Windows® 10 64-bit operating system with at least 5 MB of continuous unallocated space at the end of the boot volume

Note	• PCIe NVMe* drives not supported for system acceleration • Secondary drives are not supported for system acceleration

Can I use Intel Optane Memory to accelerate my secondary drive?

No. Intel Optane Memory can only accelerate one SATA-based boot drive.

What type of form factors do you offer for Intel Optane Memory?

Intel Optane Memory module comes in an B and M key, M.2 form factor that uses a PCIe NVMe* connection.

What capacities is Intel Optane Memory offered in?

Intel Optane Memory is available in 16 GB and 32 GB capacities.

Why would I need 32 GB capacity instead of 16 GB? What is the difference in performance? Which capacity should I buy?

- The main difference between the 32 GB and 16 GB products is the number of applications they can accelerate.
- The 16 GB capacity is adequate for normal mainstream usage.
- The 32 GB module is necessary for power users who often use a variety of data-intensive applications such as prosumers and gamers.

Where can I find the NVMe* drivers for Intel Optane Memory?

Intel does not provide a vendor-unique NVMe* driver for this series. System acceleration requires the Intel RST driver version 15.5 or later. If the drive is not used for system acceleration, it is supported by the standard NVMe* Microsoft* in-box driver that comes with the Windows® 10 operating system.

Can I use Intel Optane Memory in my current 6th Gen Intel® Core™ Processor-based system?

No, 6th Gen Intel® Core™ Processor-based systems do not support Intel Optane Memory as a system acceleration solution.

Why do I need DRAM if I have Intel Optane Memory?

Intel Optane Memory system acceleration does not replace the DRAM in your system. It works alongside the DRAM to provide the best possible performance.

I already have my memory banks/slots full, do I have to replace DRAM with Intel Optane Memory?

No, Intel Optane Memory comes in the M.2 form factor and does not replace the DIMM/DRAM memory slots. As such, it does not impact the current DRAM that you have in place.

I want to set RAID up on my system. Can I accelerate these RAID volumes with Intel Optane Memory?

Intel Optane Memory cannot accelerate a RAID volume. An Intel Optane Memory volume can reside in the same system as a RAID volume. The operating system must be on the SATA drive accelerated by Intel Optane Memory.

Note	In a system with this configuration, we recommend using the Intel RST application to manage your RAID volume and Intel Optane Memory volume.

Performance

Can I see performance improvement immediately after enabling Intel Optane Memory?

Within three boot cycles after enabling Intel Optane Memory, it takes less time to boot to the OS. For applications and files, Intel Optane Memory automatically learns your computing behaviors to accelerate frequently used applications.

What is the power consumption and operating temperature for the Intel Optane Memory Module?

See the Product Brief for more information.

Do all applications show an increase in runtime performance?

Intel Optane Memory improves the launch time of applications and files that you use most often. Exactly how much improvement varies with each application.

Why does it take a long time to enable the Intel Optane Memory 32 GB module?

The 32 GB Intel Optane Memory Module is larger, so the enabling process may take longer. The process optimizes your system for Intel Optane Memory to ensure the best possible experience. The 32 GB module allows more accelerated applications. It's ideal for power users who use a variety of data-intensive applications, such as prosumers and gamers.

I typically run defrag on my HDD to optimize performance. Can I still defragment once it's accelerated with Intel Optane Memory?

Once you enable Intel Optane Memory, both Intel Optane Memory and the accelerated SATA drive appear as one SSD volume to the operating system. As a result, the options for defrag are not available.

Operating System

What operating systems does Intel Optane Memory support when used for system acceleration?

Intel Optane Memory requires Windows® 10 64-bit in order to be used as a system accelerator.

Is Linux* supported when using Intel Optane Memory for system acceleration?

No, the accelerated SATA drive must be running Windows® 10 64-bit.

I intend to have multiple operating systems on my system across multiple drives. Can Intel Optane Memory boost the performance of multiple drives?

No, Intel Optane Memory can accelerate one SATA-based boot drive that stores the Windows® 10 64-bit OS.

Note	A Windows 10 64-bit OS-based Boot drive is required for Intel Optane Memory. Data drives and non-Windows 10 64-bit drives are not supported.

Can I migrate or clone my current Intel Optane Memory volume to another Intel Optane Memory configuration?

We don't recommended direct data migration from a current Intel Optane Memory volume. Instead, we recommend you:

- Disable the Intel Optane Memory volume before migrating.
- Use your preferred third-party cloning or migration software to copy the data from one SATA drive to another.
- After migration is complete, re-enable the Intel Optane Memory volume.

Note	We recommend backing up all of your data before migrating. Intel is not responsible or liable for data loss or data recovery.

Can I set up acceleration with Intel Optane Memory after installing my operating system?

Yes. As long as you install the operating system with the proper system BIOS settings for Intel Optane Memory support. If you don't update these settings before OS installation, the Intel Optane Memory user interface may be able to update these settings for you. It depends on your motherboard BIOS support. Refer to the Intel Optane Memory User and Installation Guide or Video for more information.

During Intel Optane Memory setup, should I install the operating system on the SATA Drive or the Intel Optane Memory Module?

You should always install the operating system on the SATA drive you're accelerating. The Intel Optane Memory Module is completely erased when enabled for system acceleration. It can only set up on a system with the OS installed on the SATA drive.

Are Windows* recovery and restore points supported with an Intel Optane Memory volume?

The Intel RST driver shipped with the Windows* OS image does not support Intel Optane Memory by default. You can add the Intel RST 15.5 driver to the Windows* recovery image before Windows installation. This driver supports Intel Optane Memory. See System Configuration, Installation, and Management on a Computer Without the Operating System Installed for more information.

Other Questions

Can I disconnect my SATA drive after it's enabled with Intel Optane Memory and move it to another computer?

No, you have to disable Intel Optane Memory before you can move it to another computer. You can disable it via the Intel Optane Memory or Intel RST applications. Refer to the Intel Optane Memory User and Installation Guide or Video for more information.

What happens if I remove the Intel Optane Memory Module from my system after I enable it?

The module contains the boot files, so you can't boot until it's returned to the system with the associated SATA drive.

If I enable, then remove the Intel Optane Memory module from my system, does another OS see the associated SATA disk as a data drive?

No, the Intel RST driver sees the volume is separated It's placed offline and an OS on another disk in the system doesn't see it.

I use the Intel Optane Memory Module for data. Can I enable system acceleration?

When enabling for system acceleration, all data on the Intel Optane Memory Module is erased. We recommend you back up all data on the Intel Optane Memory Module before you enable system acceleration.

What happens to my data on the SATA drive if I lose or damage the Intel Optane Memory Module?

When you create an Intel Optane Memory volume, the SATA disk and Intel Optane Memory Module pair. If one is missing from the system, the disk goes offline, the OS doesn't see it, and it can no longer boot.

We recommend to using third-party software to recover data on the associated SATA disk.

Can Intel Optane Memory accelerate a SATA drive connected to a non-Intel® Chipset SATA AHCI Controller?

No, you must connect the SATA drive to the Intel® Chipset SATA AHCI Controller.

How can I disable acceleration with Intel Optane Memory?

You can disable system acceleration using the Intel Optane Memory user interface or with the Intel RST user interface. Some motherboard vendors provide this capability through the BIOS. Refer to the Intel Optane Memory User and Installation Guide or Video Guide for more information.

Other than more capacity, are there any other differences in functionality or performance between the 16 GB Intel Optane Memory and 32 GB Intel Optane Memory?

The main difference between the 32 GB and 16 GB products is the number of applications each can accelerate.

- The 16 GB capacity is adequate for normal mainstream usage.
- The 32 GB module is ideal for power users who often use a variety of data-intensive applications, such as prosumers and gamers.

I have a SATA SSD that supports Opal Security*. Does this security still function when enabled with Intel Optane Memory?

No, Opal Security* is not supported with Intel Optane Memory.

What software encryption is available for my Intel Optane Memory volume?

The following are supported:

- Microsoft BitLocker*, the Windows® 10 version or later
- Latest McAfee* Drivers

| Note | Enabling software encryption has an impact on system performance. |

How do I know if my system contains an Intel Optane Memory Module? How do I determine if it's enabled?

Within the OS, you can check the current disks in your system multiple ways:

1. Open the notification area menu on your desktop. Hover over the Intel Optane Memory notification area icon. If Intel Optane Memory is enabled, you see a balloon message indicating it is enabled.
2. Check in the Device Manager as noted below.

See How to Determine System Acceleration with Intel Optane Memory is Active for more information.

I have the Intel® Rapid Storage Technology (Intel® RST) application installed. Can I install the Intel Optane Memory application as well?

No, you can only install one of these applications at a time. However, you may use the latest Intel® RST to enable and manage your Intel Optane Memory.

Does Intel Optane Memory use write-back or write-through caching techniques?

Write-back is used to optimize for performance and responsiveness. This mode captures most host writes into the Intel Optane Memory Module first, and it updates the copy on the SATA disk during available system idle periods.