AMD StoreMI

Intelligent Tiered Storage Acceleration Software for Windows 10

QUICK START GUIDE

July 2019

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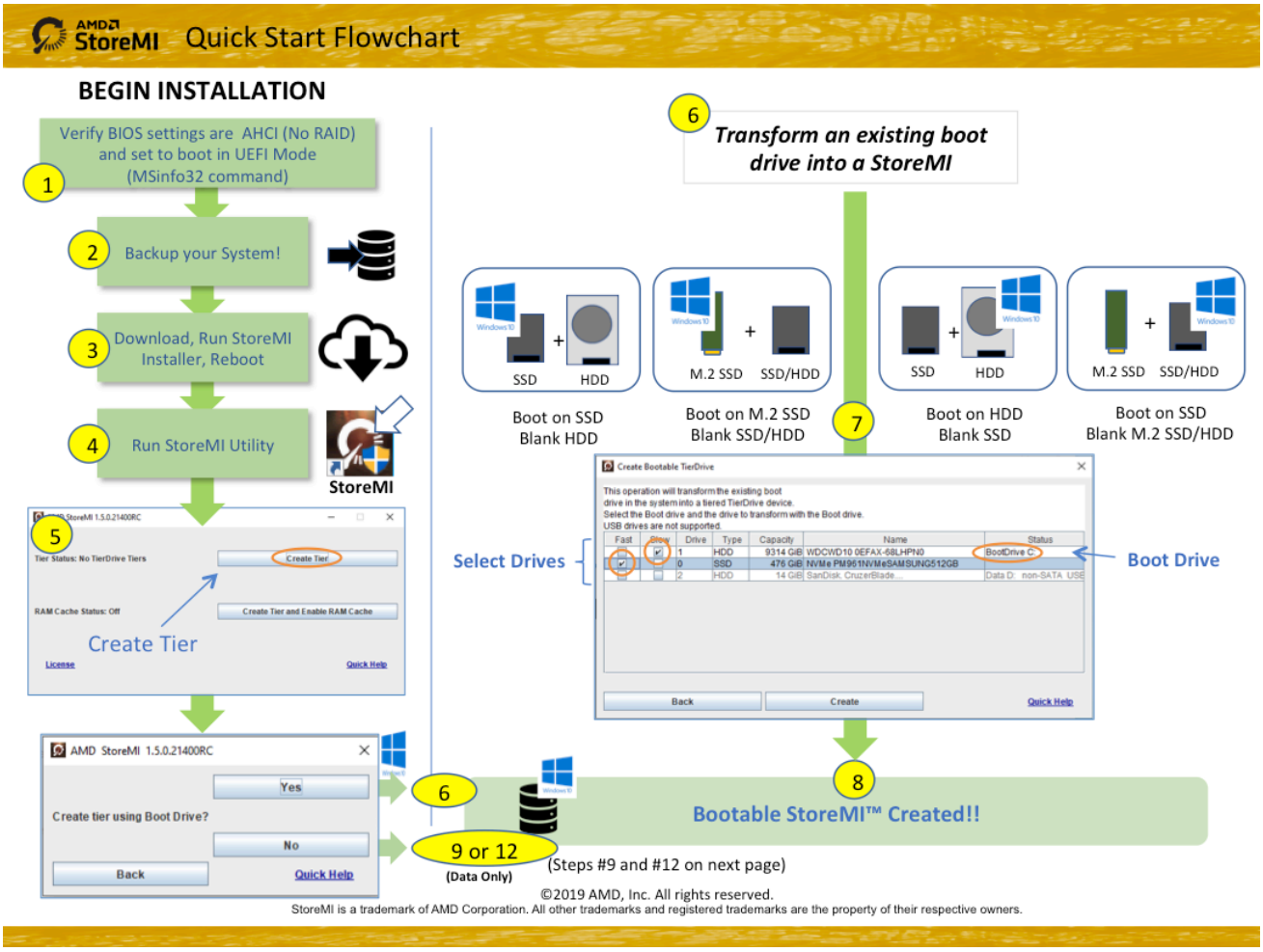
Quick Start Flowchart:



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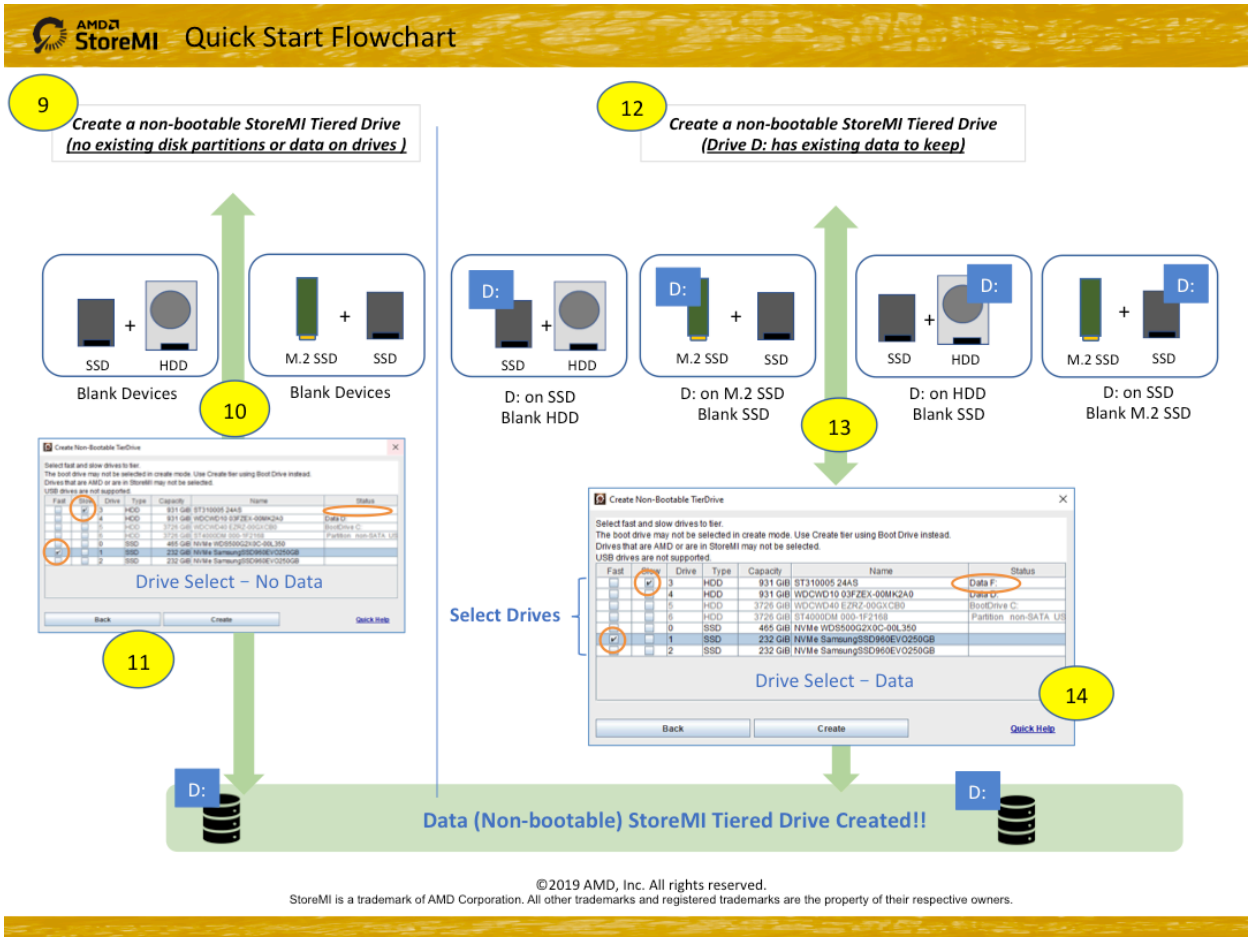


Quick Start Guide

AMD StoreMI™ is a tiered storage acceleration solution designed to run on AMD Socket sTR4 X399 or Socket AM4 500/400-series motherboards and Windows 10 64-bit systems. It utilizes up to 256GB of any solid state drive (SSD) as a fast tier, and combines it with a large-capacity mechanical hard disk drive (or second SSD) into a single drive letter as seen by Windows 10 operating system.

AMD StoreMI is not a caching solution; it utilizes advanced ***Machine Intelligence***, virtualization and automated MicroTiering™ to analyze the data blocks that are most often accessed and actually moves those blocks to the fastest storage tier. StoreMI operates consistently at the same performance levels as SSDs, continuously adapting to changing storage usage patterns in real time.

As a result, the user experiences the performance of the fastest tier SSD drive, combined with the large capacity and low-price advantages of the mechanical hard disk (or second SSD) in a single, large, and easy-to-manage drive.

Pre-Install Checklist

IMPORTANT: Backup the boot drive and important data, and follow the instructions below carefully! When upgrading to a StoreMI, the system boot and/or data drives will be converted to a virtual disk to fully accelerate or expand the storage in the system. Backing up protects from potential hardware storage device errors or failures that may occur during the conversion process.

If converting an SSD or NVMe boot drive that is larger than 256GB, additional steps are required. See the section ***Expand the Capacity of an existing SSD Boot Drive*** for additional information.

Check the following prior to upgrading your system to StoreMI:

- Your system meets the minimum configuration: AMD Ryzen, 4xx series motherboard with a minimum of 4G RAM (6G RAM to support RAM cache).
- Secure Boot is NOT enabled. Consult your system documentation for further details.
- There are no other SSD caching or AMD software RAID solutions installed.
- The BIOS SATA disk settings are set to AHCI, not RAID and there is no software RAID installed on the system.
- Microsoft's ***chkdisk*** or other third-party disk scan tools run error free on the boot drive
- A new unused SSD or HDD is available
- **If wishing to use bootable tiers > 2TB in size, the system must be configured to boot in UEFI mode with a UEFI bootable Windows OS installation as Windows 10 does not support > 2TB boot drives in Legacy MBR boot mode.**

Software Installation

Step 1: Download the AMD StoreMI installer to a temporary directory and double click the installer application.

Step 2: Follow the installer instructions to accept the license and install the AMD StoreMI software, drivers and JAVA (if not already installed) using the Express option. Ensure the system is connected to the Internet for this step if JAVA is not already installed.

NOTE: Prior to starting the Express install, you may optionally view the current disk configuration using the AMD Drive Controller information option to verify the drive setup.

Step 3: Reboot the system to complete the installation.

Entering License Key

AMD StoreMI does not require a license key, as it checks for an AMD Socket AM4 motherboard with a X399, 4xx and 5xx-series chipset when the system boots.

Create Bootable StoreMI Tiered Drive

If starting with a fresh Windows install, the OS can be installed on either the HDD or SSD. If the SSD is larger than the 256GB limit of StoreMI, it will be carved into two sections. The first section is used for tiering in the StoreMI and will be the size of the licensed capacity, and the second piece is presented as an additional virtual SSD device made up of the remaining unused capacity.

While installing the OS on the HDD initially simplifies the process, it is important to note that your initial performance will occur at HDD speeds. Once StoreMI's Machine Intelligence learns how you use your system, you will quickly start seeing the performance of the SSD.

Loading the OS on the SSD initially provides immediate SSD performance, and as the system learns your usage patterns, it will move your infrequently used applications to the HDD.

Adding SSD to Existing HDD Boot Drives

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI scans your system and only display those options that are available to you based on your system's configuration.

Case A: Tier created without enabling RAM Cache

Step 1: Select "Create Tier", and confirm by selecting "Yes".

Step 2: Choose the drives to create a StoreMI TierDrive.

All of the drives that are available in the system will be displayed. The boot drive is noted as such in the "Status". The "Type" of drive, HDD or SSD, is also listed. In the example above, the Operating System is on the HDD, and it is being combined with a blank SSD. Choose the HDD as the slow drive and the SSD as the fast drive. Note, if you make a mistake, and chose the wrong drives as the slow and fast drives, an error message will provide a warning.

Note, if a drive is grayed out, it is usually because it is in use as a data drive or has partitions on it. You will need to wipe the drive clean first using Windows Disk Manager or Diskpart command line tool, making sure to back up any important data on the drives beforehand.

Step 3: Transform the Boot Drive and Reboot. Once the appropriate drive has been selected, click **Create** to start the conversion process.

Reboot the system when prompted.

If the system is in UEFI mode, the following should display on reboot indicating that the boot drive has been successfully transformed into a StoreMI drive.

Step 4: Once Windows boots, open Disk Manager to verify the system has correctly booted from the StoreMI and to access the volume expand capability of Windows.

STEP 5: If not automatically completed, manually expand the boot volume to use the new capacity added by the SSD by right clicking on the C: partition in Disk Manager and selecting **Extend Volume ....**
In the extend dialog box, leave the defaults as-is if using all the capacity and click next.

The C: on the StoreMI is now expanded to use the SSD capacity and ready for use.

Case B: Tier created with RAM Cache Enabled

You also have the option at create time to enable 2GB of RAM Cache. This option will dedicate 2GB of your system memory as a Read Cache. Note that the option to enable or disable RAM Cache can also be changed anytime after the creation of the Tiered Drive using the system utilities. (This will be detailed in a later section)

The remainder of the install process is the same as Case A: Tier created without enabling RAM Cache

IMPORTANT: StoreMI may need to optimize the hibernate file to ensure it is stored on a SATA device attached to the primary SATA controller. Ensure these are complete BEFORE rebooting to ensure hibernate and shutdown operates properly. This process may take up to 30 minutes or more depending on system RAM size and the HDD speed. This typically occurs when converting NVMe SSD boot drives or non-primary SATA controller SSD boot drives e.g. M.2 SATA boot devices. Float the mouse pointer over the StoreMI icon in the system tray to verify of the process is complete.

Utilizing the Additional Capacity Over the SSD License Limit

The software supports up to 256GB fast tier capacity. An SSD without an operating system over 256GBwill be carved into two sections. The first section is used for tiering in the StoreMI and will be the size of the licensed capacity, and the second piece is presented as an additional virtual SSD device made up of the remaining unused capacity.

This will result in a new device appearing in the Disk Manager that may be formatted and used as

temporary storage.

IMPORTANT: A carve out SSD drive created using excess capacity over the license limit will be deleted whenever a Remove StoreMI operation is completed and the SSD removed. For this reason, ensure that any important data stored on this temporary drive is backed up before performing the transition.

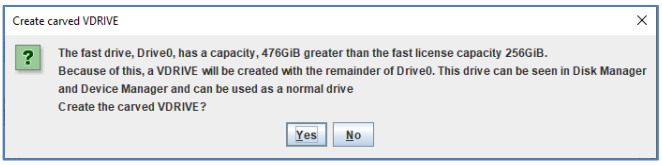
Expand the Capacity of an existing SSD Boot Drive

If the boot drive is an SSD, the software provides the ability to expand the capacity of the boot drive by adding a large capacity HDD or SSD and increasing the overall size of the boot volume.

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI scans your system and only display those options that are available to you based on your system's configuration.

Step 1: Select "Create Tier". Select an available blank SSD or HDD from the options presented.

IMPORTANT: For the case where you see the following message:



The SSD will be carved into two sections. The first section is used for tiering in the StoreMI TieredDisk and will the the size of the licensed capacity, and the second piece is presented as and additional virtual SSD.

Step 2: Choose the drive with which to create a StoreMI TierDrive.

Note, if a drive is grayed out, it is usually because it is in use as a data drive or has partitions on it. You will need to wipe the drive clean first using Windows Disk Manager or Diskpart command line tool.

Step 3: Transform the Bootdrive and Reboot. Once the appropriate drive has been selected, click **Transform** to start the conversion process.

Reboot the system when prompted.

Step 4: If not automatically completed by the software, you may manually extend the size of your new StoreMI with additional capacity added by the SSD or HDD using Windows Disk Manager as described in the earlier section for accelerating a HDD in steps 4 and 5.

Create a New Non-bootable StoreMI TierDrive (two new drives with no existing data)

To accelerate a data (non-boot) drive, Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI will scan your system and only display those options that are available to you based on your system's configuration.

STEP 1: Select the "Create Tier" option and then "No".

STEP 2: Select your Data drive (Status will say "data")and drive you would like to combine it with. Drives containing data can easily be identified in the Status column. Choose the "Create" button.

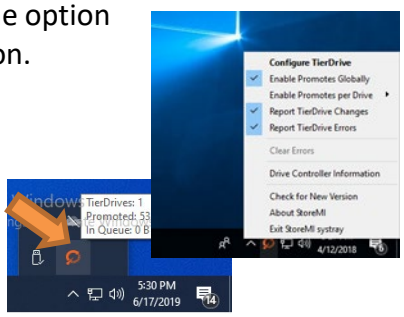
Your second drive should be blank. Pay special attention to which drives have an existing partition on them and which are available as unused/blank drives. If you select a drive with a partition, (Information in the **Status Column)**, the software will warn that all data will be deleted on the drive, are you sure? Only say YES if you intend to delete the data and you have any important data backed up safely. If you select an option that has no partitions, a new StoreMI with no file partition will appear in your Disk Manager.

STEP 3: The screen will identify how the new StoreMI drive will appear. If satisfied, click the "Next" button. The existing drive will temporarily go offline while it is converted to a StoreMI. Once complete, the data drive will reappear as a StoreMI. Appendix A, example A5, shows the Disk Manager configuration after converting a D: DATA drive to a StoreMI.

Enable the RAM cache Feature

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI will scan your system and only display those options that are available to you based on your system's configuration.

Select the Enable RAM Cache Setting. The drop down menu gives you the option or RAM Cache Off or 2G Cache. Select 2G Cache and hit the Create button.



Checking StoreMI Status

A system tray utility is provided for quick access to the StoreMI software status. In the lower right-hand corner of the desktop, either float over the AMD icon to see basic information about the StoreMI or right click to gain access to several high level control functions to start and stop the StoreMI activity.

The systray application may also be used as a shortcut for several other configuration or status functions, as well as turning the promotion/tiering functions off while running backups for example.

Troubleshooting

Software will not install - Not licensed for this hardware message

Check your system meets the minimum requirements outlined in the Pre-Install Checklist. This version of the software will only run on AMD Socket AM4 motherboards with a 4xx series chipset.

AMD RAID is installed on the system and StoreMI will not convert the boot drive

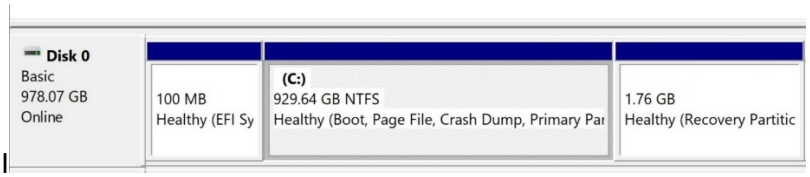
Bootable RAID systems are not supported by the StoreMI software.

My system no longer hibernates

If your system supports multiple storage controllers (use Microsoft Device Manager or the AMD installer utility to determine how many there are), hibernate may not be possible in all combinations. When using all SATA devices, ensure that all StoreMI disk devices are attached to the same SATA controller on the motherboard whenever possible. For Windows 7, attach the devices to ports 0 and 1.

Cannot transform my boot drive or remove due to recovery partition

Open Microsoft Disk Manager and check if there is a reserved partition on the boot drive after the primary C: boot volume.



If a reserved partition exists, then use a third-party tool to reduce the size of the C: partition by 3 or 4GB, and move the Recovery Partition to fill the 3-4GB capacity gap created between the C: and the reserved partition, then repeat the StoreMI utility operation. You may also do the opposite when expanding the boot drive.

My issue is not addressed here …

See www.AMD.com/support for additional information, an online FAQ and knowledge base which may contain more up to date information.

Intelligent Tiered Storage Acceleration Software for Windows 10

USER GUIDE

June 2019

Contents

User Guide

AMD StoreMI™ is a tiered storage acceleration solution designed to run on AMD Socket sTR4 X399 or Socket AM4 500/400-series motherboards and Windows 10 64-bit systems. It utilizes up to 256GB of any solid state drive (SSD) as a fast tier, and combines it with a large-capacity mechanical hard disk drive (or second SSD) into a single drive letter as seen by Windows 10 operating system.

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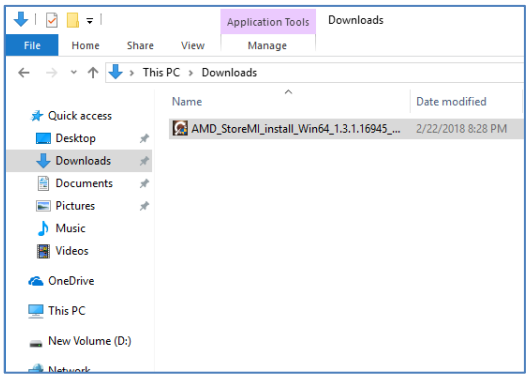
If converting an SSD or NVMe boot drive that is larger than 256GB, additional steps are required. See the section ***Expand the Capacity of an existing SSD Boot Drive*** for additional information.

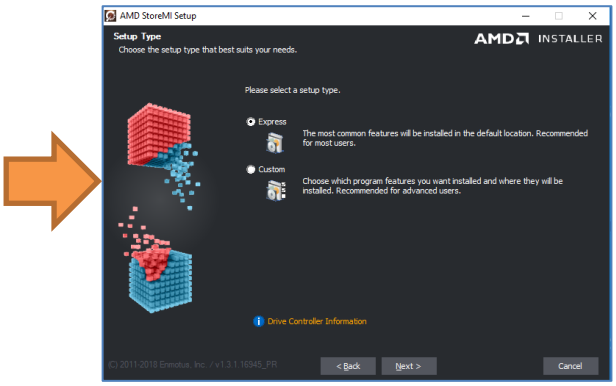
Check the following prior to upgrading your system to StoreMI:

- Your system meets the minimum configuration: AMD RyZen X399, 4xx or 5xx series motherboard with a minimum of 4G RAM (6G RAM to support RAM cache).
- Secure Boot is NOT enabled. Consult your system documentation for further details.
- There are no other SSD caching or AMD software RAID solutions installed.
- The BIOS SATA disk settings are set to AHCI, not RAID and there is no software RAID installed on the system.
- Microsoft's ***chkdisk*** or other third-party disk scan tools run error free on the boot drive
- A new unused SSD or HDD is available
- **If wishing to use bootable tiers > 2TB in size, the system must be configured to boot in UEFI mode with a UEFI bootable Windows OS installation as Windows 10 does not support > 2TB boot drives in Legacy MBR boot mode. When installing, be sure to boot your Windows install media with the UEFI option.**

Software Installation

Step 1: Download the AMD StoreMI installer to a temporary directory and double click the installer application.

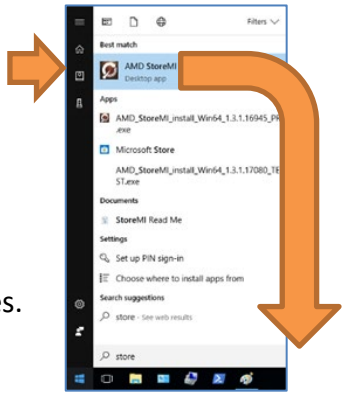




Step 2: Follow the installer instructions to install the AMD StoreMI software.

NOTE: Prior to starting the Express install, you may optionally view the current disk configuration using the AMD Drive Controller information option to verify the drive setup.

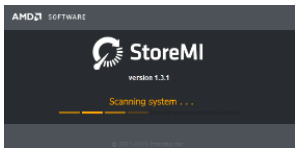
Step 3: Reboot the system to complete the installation.



Configuring StoreMI

Run the StoreMI wizard installed under the Windows Start, AMD program folder to setup the desired configuration. For Windows 10, click the Windows icon in the lower left corner or press the Windows key on the keyboard and type “StoreMI” to find and run the StoreMI configuration utility. The utility will first scan the system for all visible SSD and hard drives.

StoreMI will scan your system and only display those options that are available to you based on your system’s configuration. The primary consideration determined by either the absence or presence of a StoreMI TierDrive.



Entering License Key

AMD StoreMI does not require a license key, as it checks for an AMD Socket AM4 motherboard with an X399, 4xx or 5xx-series chipset when the system boots.

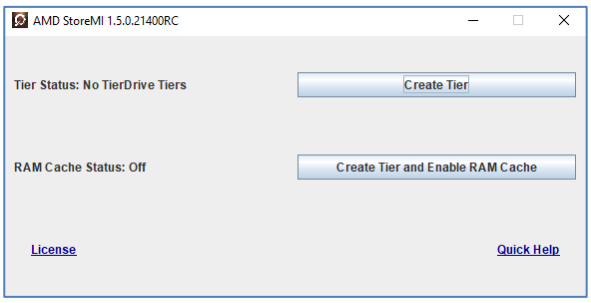
StoreMI Top Level Menu Options

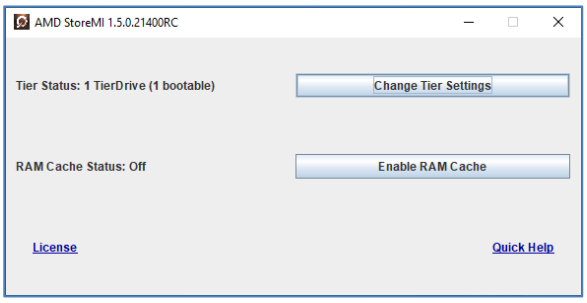
Depending on the current system configuration, you will be presented with one of two menus after your run the StoreMI wizard.

The first option comes up if no StoreMI TierDrives are present and gives you the option of creating a StoreMI TierDrive by tiering your fast and capacity storage devices. In addition, if you choose,

you can enable RAM Cache at the same time the tier is created.

The second option comes up if a StoreMI TierDrive is already present. It will allow you to change your existing tier settings. You can change the RAM Cache settings as well, either enabling or disabling it, depending on your current configuration.





StoreMI TierDrive Does Not Exist			
Top Level Menu	Secondary Menu	Description	Requirements
Create Tier (Optionally Enable Cache During Creation)	Bootable Tier (Select "YES")	Add a blank drive to an existing Windows OS boot drive	1. Windows OS installed on a HDD or SSD[1] 2. Blank Drive 3. No existing StoreMI TierDrive
	Non Bootable Tier (Select "NO")	Add a blank drive to another blank drive or to a non-boot drive with data	1. At most one non-boot drive with data in a Windows file system 2. At least one blank drive 3. No existing StoreMI TierDrive

StoreMI TierDrive Exists			
Top Level Menu	Secondary Menu	Description	Requirements
Change Tier Settings	Move All Data to Slow Media	Migrate all data to the slow drive in a tier, and release the fast drive from the FuzeDrive. This action does not remove the software.	A 2-disk StoreMI TierDrive exists
	Delete Data Tier	Deletes all of the data on a non-boot tier. Data should be backed up prior to this action as all data on tier will be lost.	An existing non-boot tier exists. This function is not allowed on a boot tier.
	Tier Media Reported to OS	Change how disk is reported to operating system between SSD or HDD	A StoreMI TierDrive exists
Enable RAM Cache	Change RAM Cache Settings	Enables or disables 2GB/4GB of RAM Cache	A StoreMI TierDrive exists

[1] Up to the licensed SSD Capacity size: 256GB

Create Bootable StoreMI TierDrive

If starting with a fresh Windows install, the OS can be installed on either the HDD or SSD. An SSD that exceeds this limit will be carved into two sections. The first section is used for tiering in the StoreMI and will be the size of the licensed capacity, and the second piece is presented as an additional virtual SSD device made up of the remaining unused capacity.

While installing the OS on the HDD initially simplifies the process, it is important to note that your initial performance will occur at HDD speeds. Once StoreMI's Machine Intelligence learns how you use your system, you will quickly start seeing the performance of the SSD.

Loading the OS on the SSD initially provides immediate SSD performance, and as the system learns your usage patterns, it will move your infrequently used applications to the HDD.

If the existing boot drive is an HDD and a new blank SSD or NVMe drive is available, this option will enable the user to convert the existing boot drive to a StoreMI. Alternatively, if the boot drive is already an SSD or NVMe drive, it will allow an existing boot drive's capacity to be expanded by adding a larger HDD or SSD. If the fast tier SSD is larger than the licensed capacity of 256GB, then any capacity greater than 256GB will be carved out into a separate volume.

If this option is grayed out, then the minimum requirements to convert the boot drive have not been met. For example, there are no blank unused SSDs or HDDs available

The software will support the following conversions:

Boot Drive	Blank Drive	What is Created
HDD	**SATA SSD or NVMe SSD**	A StoreMI TierDrive is created with a capacity approximately equal to the HDD plus the licensed SSD capacity limit[2] or size of the SSD, whichever is less. The performance will increase to the native SSD rates for frequently accessed data and programs.
SATA SSD or NVMe SSD	**HDD**	If less than or equal to the 256GB SSD capacity limit, a StoreMI TierDrive is created with a capacity approximately equal to the HDD plus the licensed SSD capacity limit or size of the SSD, whichever is less. Performance will continue at SSD rates for frequently accessed data and programs.
SATA SSD	**NVMe SSD**	A StoreMI TierDrive is created with a capacity approximately equal to the SATA SSD plus the licensed SSD capacity limit or size of the NVMe SSD, whichever is less. The performance will increase to the native NVMe SSD rates for frequently accessed data and programs.
NVMe SSD	**SATA SSD**	StoreMI TierDrive that is the approximate sum of the NVMe SSD and SATA SSD capacity. The capacity of the boot volume will increase to the size of the NVMe and SSD combined. Performance will continue at NVMe rates for frequently accessed data and programs.

Appendix A illustrates both pre and post StoreMI conversion scenarios and what to expect to see in standard applications such as Windows Disk Manager.

[2] Licensed SSD Capacity is 256GB

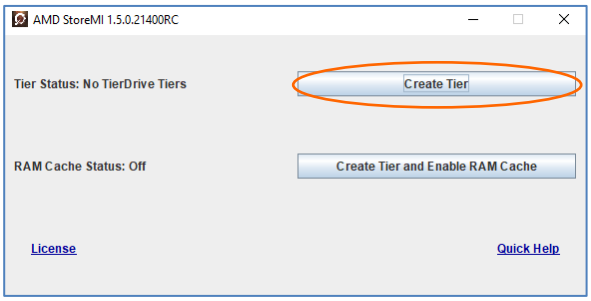
In the remainder of the document, NVMe SSD and SATA SSDs are referred to as simply an SSD.

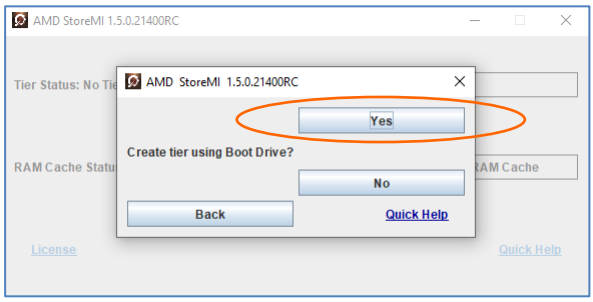
Adding SSD to Existing HDD Boot Drives

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI scans your system and only display those options that are available to you based on your system's configuration.

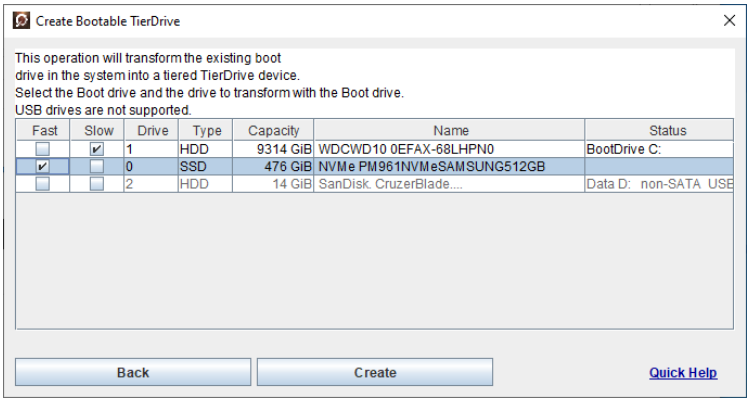
Case A: Tier created without enabling RAM Cache

Step 1: Select "Create Tier", and confirm by selecting "Yes".





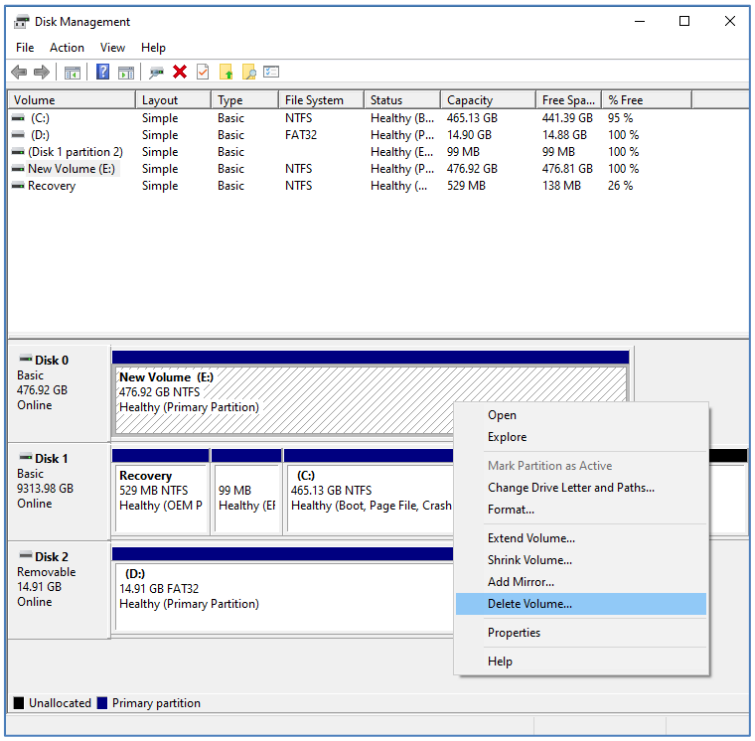
Step 2: Choose the drives to create a StoreMI TierDrive.



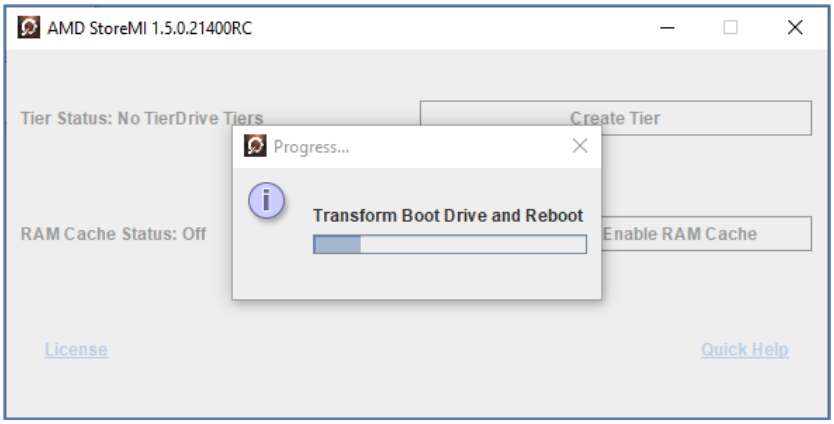
All of the drives that are available in the system will be displayed. The boot drive is noted as such in the "Status" column. The "Type" of drive, HDD or SSD, is also listed. In the example above, the Operating System is on the HDD, and it is being combined with a blank SSD. Choose the HDD as the slow drive and the SSD as the fast drive. Note, if you make a mistake, and chose the wrong drives as the slow and fast drives, an error message will provide a warning.

Note, if a drive is grayed out, it is usually because it is in use as a data drive or has partitions on

it. You will need to wipe the drive clean first using Windows Disk Manager or Diskpart command line tool, making sure to back up any important data on the drives beforehand.



Step 3: Transform the Boot Drive and Reboot. Once the appropriate drive has been selected, click **Create** to start the conversion process.

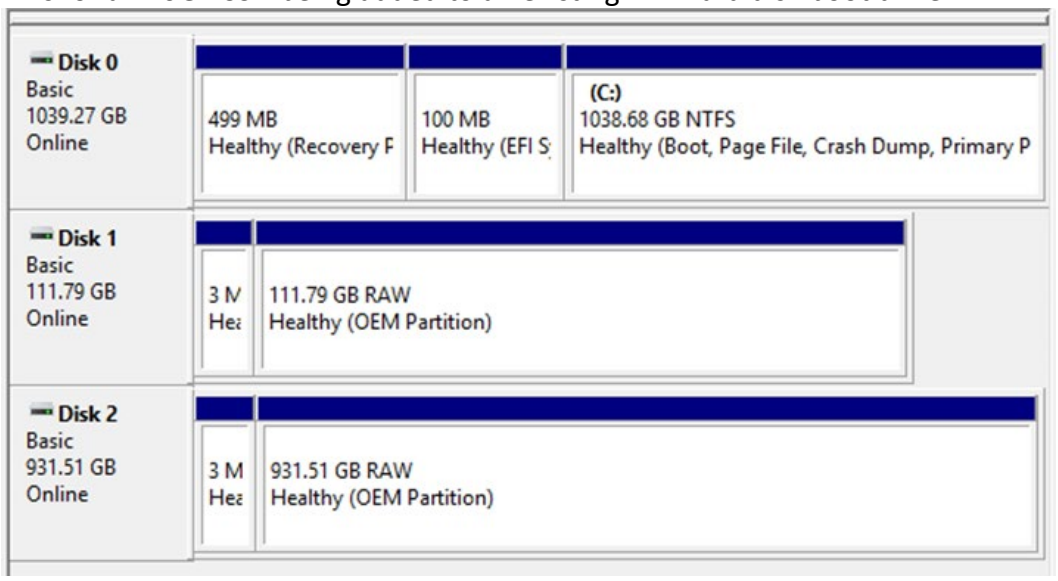


Reboot the system when prompted.

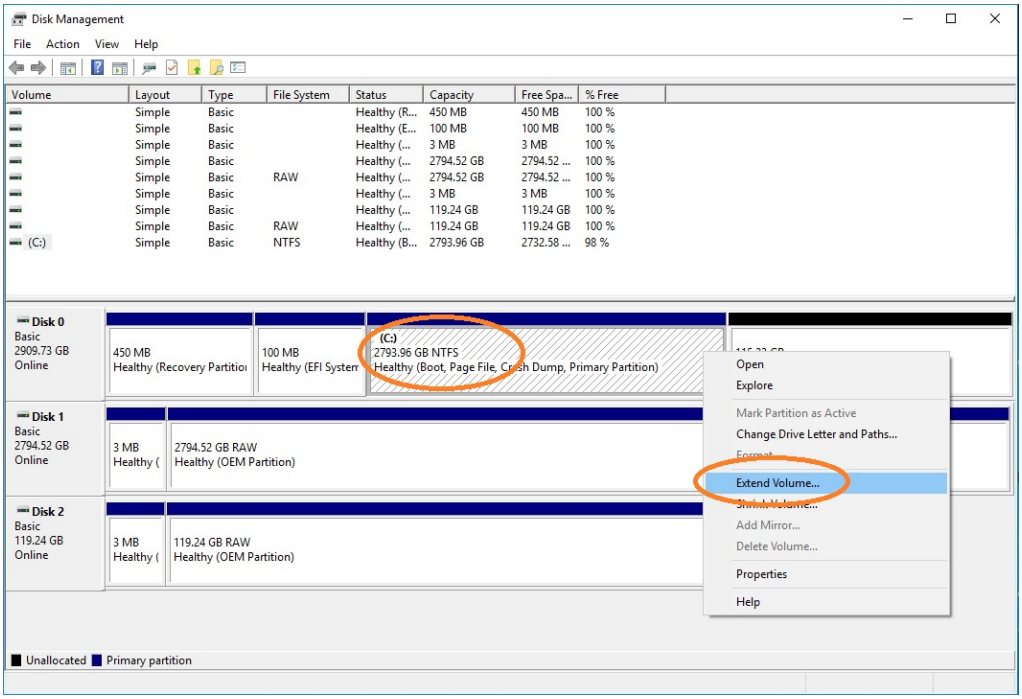
If the system is in UEFI mode, the following should display on reboot before the operating system boots indicating that the boot drive has been successfully transformed into a StoreMI drive.

NOTE: if this display is not visible, ensure that the BIOS is set to boot from the EFI partition on either of the two disks used as part of the StoreMI. Windows Boot Manager will not be visible in the BIOS boot order.

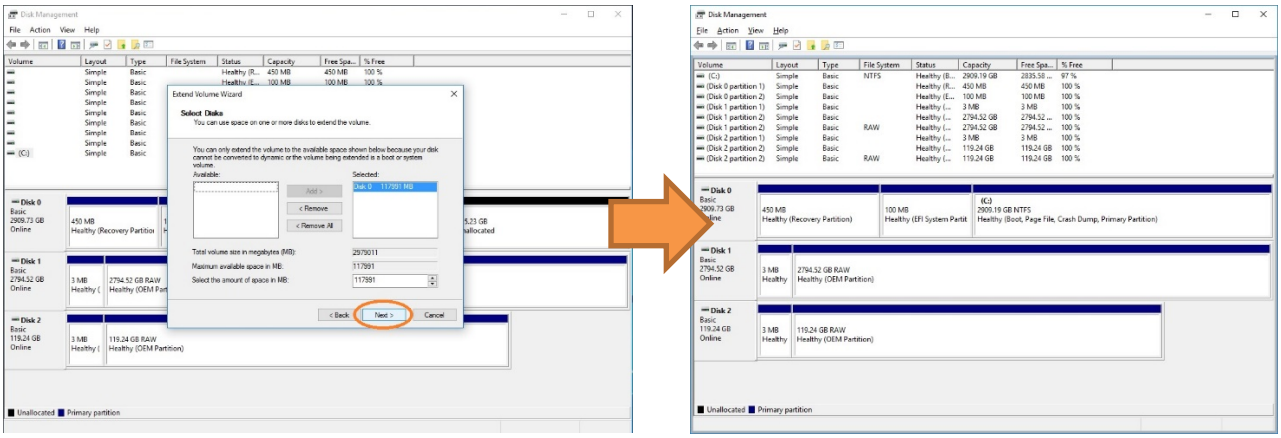
Step 4: Once Windows boots, open Disk Manager to verify the system has correctly booted from the StoreMI and to access the volume expand capability of Windows. The example shown below is for a 120GB SSD being added to an existing 1TB hard disk boot drive.



STEP 5: If not automatically completed, manually expand the boot volume to use the new capacity added by the SSD by right clicking on the C: partition in Disk Manager and selecting **Extend Volume ....**



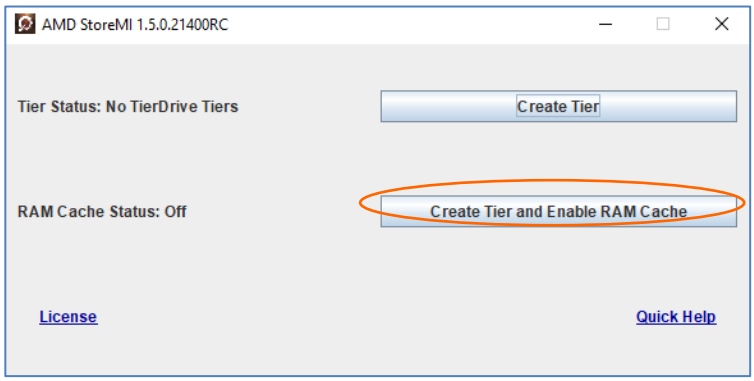
In the extend dialog box, leave the defaults as-is if using all the capacity and click next.



The C: on the StoreMI is now expanded to use the SSD capacity and ready for use.

Case B: Tier created with RAM Cache Enabled

You also have the option at create time to enable 2GB of RAM Cache. This option will dedicate 2GB of your system memory as a Read Cache. Note that the option to enable or disable RAM Cache can also be changed anytime after the creation of the Tiered Drive using the system utilities. (This will be detailed in a later section)



IMPORTANT: StoreMI may need to optimize the hibernate file to ensure it is stored on a SATA device attached to the primary SATA controller. Ensure these are complete BEFORE rebooting to ensure hibernate and shutdown operates properly. This process may take up to 30 minutes or more depending on system RAM size and the HDD speed. This typically occurs when converting NVMe SSD boot drives or non-primary SATA controller SSD boot drives e.g. M.2 SATA boot devices. Float the mouse pointer over the StoreMI icon in the system tray to verify of the process is complete.

The remainder of the install process is the same as Case A: Tier created without enabling RAM Cache

Utilizing the Additional Capacity Over the 256GB SSD Limit

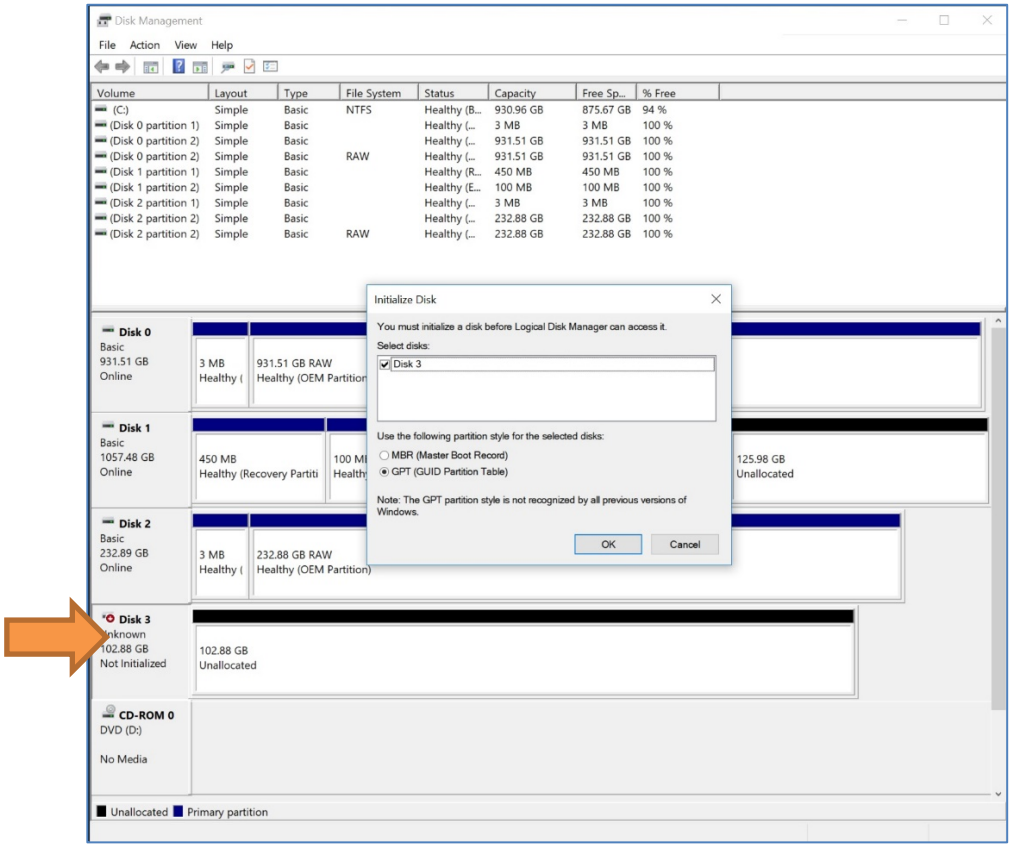
The StoreMI software supports up to 256GB fast tier capacity. A device that exceeds this limit will be carved into two sections. The first section is used for tiering in the StoreMI and will be the size of the licensed capacity, and the second piece is presented as an additional virtual SSD device made up of the remaining unused capacity.

This will result in a new device appearing in the Disk Manager that may be formatted and used as temporary storage.

IMPORTANT: A carve out SSD drive created using excess capacity over the license limit will be deleted whenever a Move All Data to Slow Tier operation is completed and the SSD removed. For this reason, ensure that any important data stored on this temporary drive is backed up before performing the transition.

Example: a 512GB blank NVMe drive is added to a 1TB HDD.

The result is a bootable 1.25TB StoreMI and a ~256GB virtual SSD device that may be formatted as a new data Disk 3 as illustrated in the following screen capture.

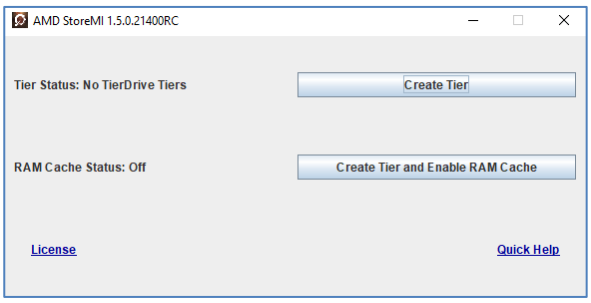


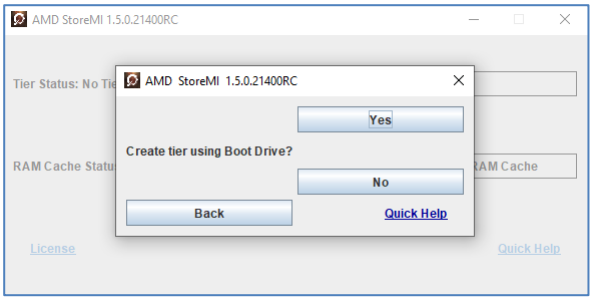
Adding an SSD with Capacity Greater than 256GB to an Existing HDD Boot Drive

The procedure for adding an SSD larger than 256GB to an existing HDD boot drive is similar to adding a 256GB or smaller SSD. The difference being in how the StoreMI creates the drive.

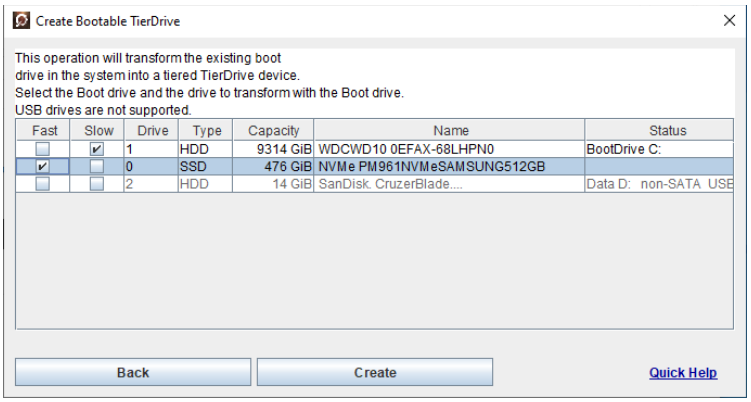
Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI will scan your system and only display those options that are available to you based on your system's configuration.

Step 1: Select "Create Tier", and confirm by selecting "Yes".

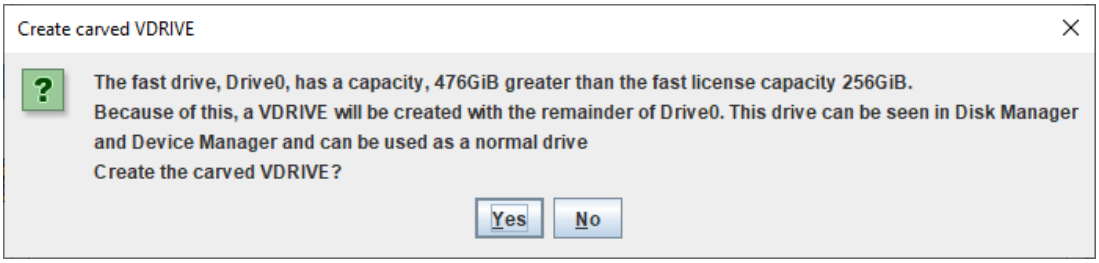




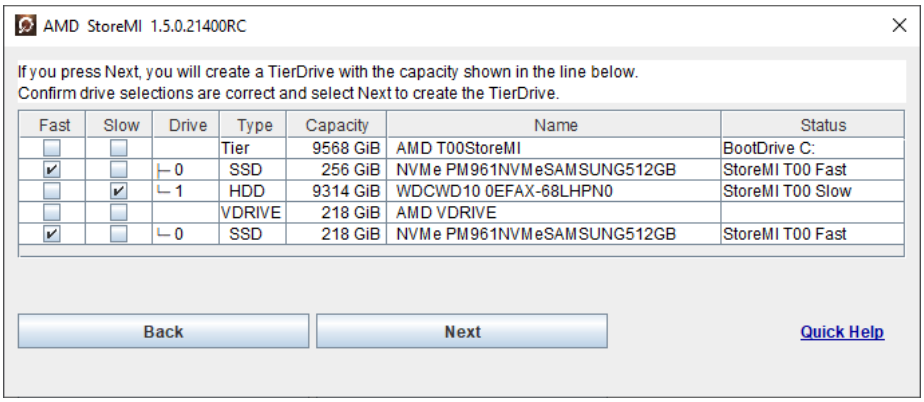
Step 2: Choose the drives that you would like to use in your tier.



Note in the graphic above that the SSD, Drive 0, is larger than the 256GB Fast Tier limit. The following message will be displayed notifying you that the fast drive capacity limit has been exceeded and the a carved VDRIVE will be created. This drive can be seen by the Disk Manager and can be used as a normal drive

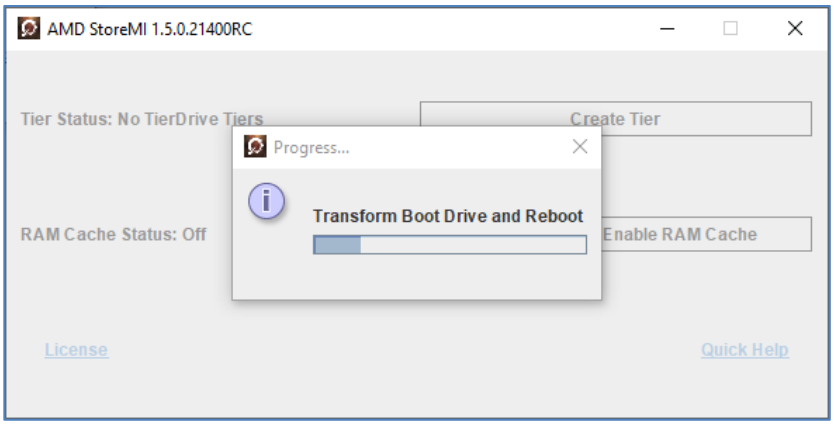


Step 3: Select YES. The system will display what your new drive configuration will look like.



In this example, the new StoreMI Tiered Drive (Boot Drive C:) is made from a 934BG HDD plus 256GB of the SSD. The total capacity of the StoreMI drive is 9568GB. The new VDRIVE is 218GB.

Step 4: Select Next and the new TierDrive will be created. You will see the message below.

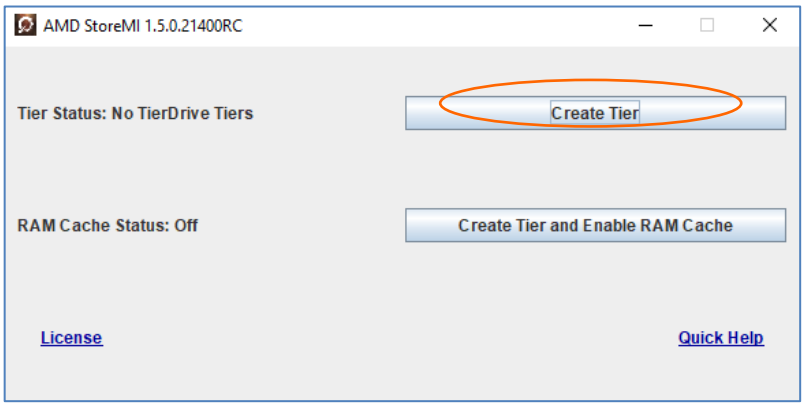


Expand the Capacity of an Existing SSD Boot Drive

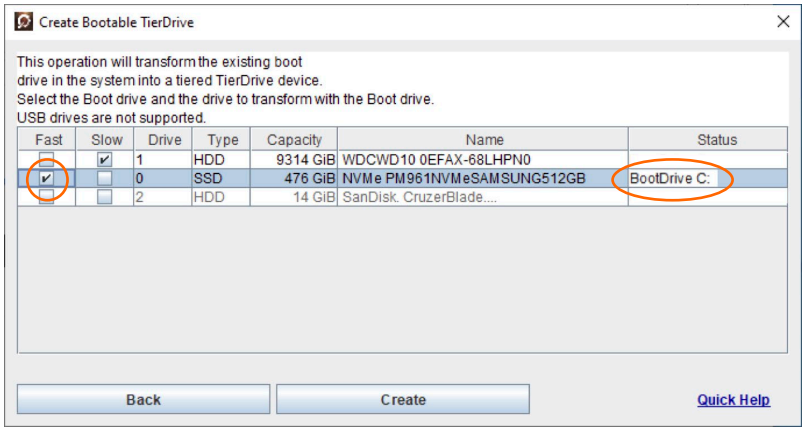
If the boot drive is an SSD, the software provides the ability to expand the capacity of the boot drive by adding a large capacity HDD or SSD and increasing the overall size of the boot volume.

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI will scan your system and only display those options that are available to you based on your system's configuration.

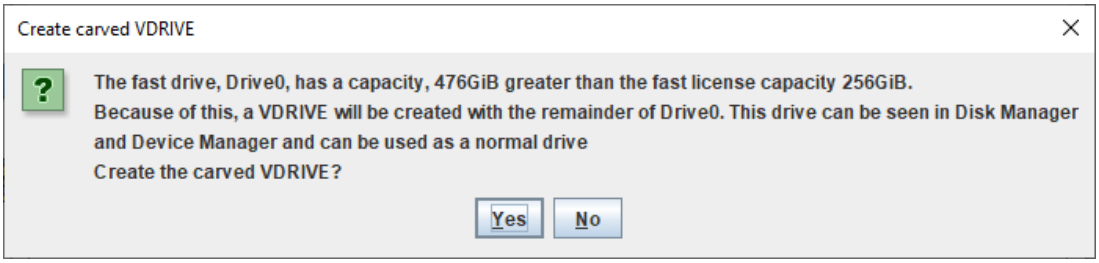
Step 1: Select "Create Tier". Select an available blank SSD or HDD from the options presented.



Step 2: Choose the drive to create a StoreMI TierDrive with.

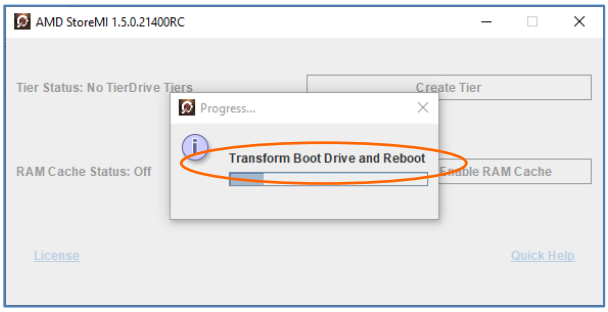


If the SSD is larger than 256GB, the following message will be displayed notifying you that the fast drive capacity limit has been exceeded and the a carved VDRIVE will be created. This drive can be seen by the Disk Manager and can be used as a normal drive



Note, if a drive is grayed out, it is usually because it is in use as a data drive or has partitions on it. You will need to wipe the drive clean first using Windows Disk Manager or Diskpart command line tool.

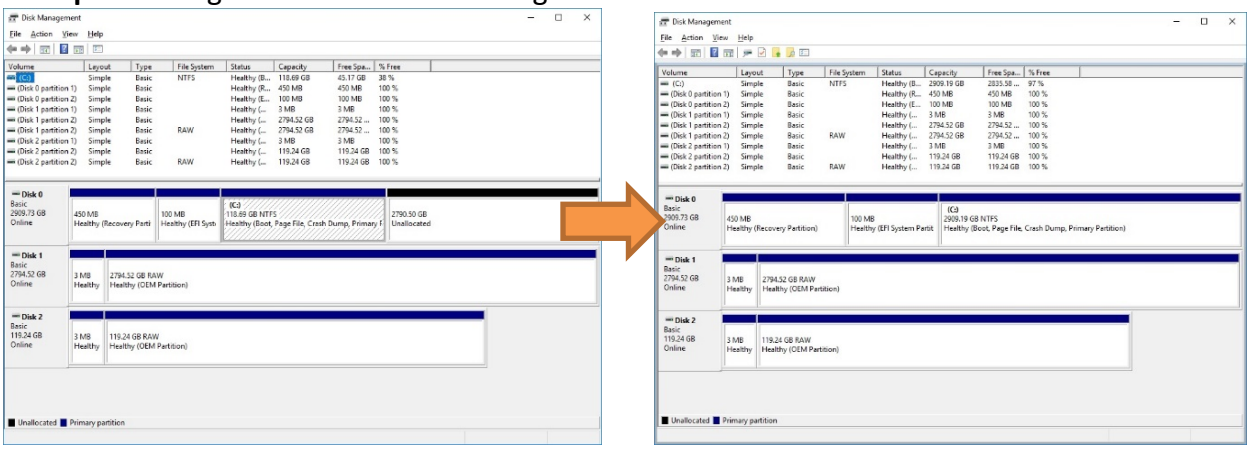
Step 3: Transform the Bootdrive and Reboot. Once the appropriate drive has been selected, click **Transform** to start the conversion process.



Reboot the system when prompted.

Step 4: If not automatically completed by the software, you may manually extend the size of your new StoreMI with additional capacity added by the SSD or HDD using Windows Disk Manager as described in the earlier section for accelerating a HDD in steps 4 and 5.

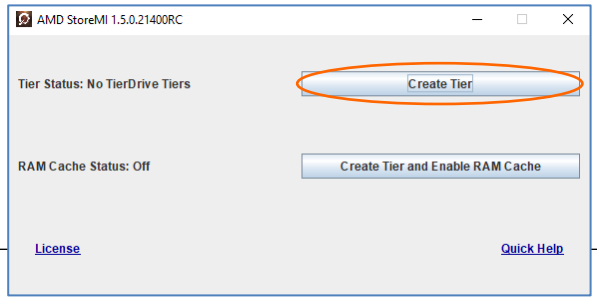
Example: Adding a 3TB HDD to an existing 120GB SATA SSD boot drive.

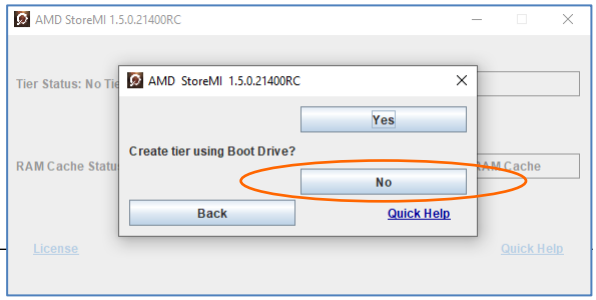


Accelerate or Expand a Non-boot Drive

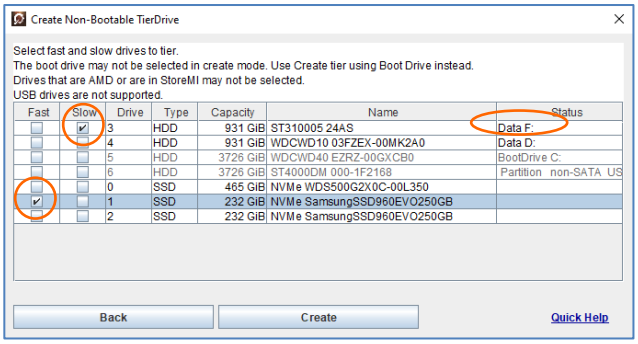
To accelerate a non-boot drive with an existing partition on it, or combine two blank drives, run the StoreMI Wizard as detailed in the “Configure StoreMI” section above. StoreMI will scan your system and only display those options that are available to you based on your system’s configuration.

STEP 1: Select the “Create Tier” option and then “No” on the following screen.

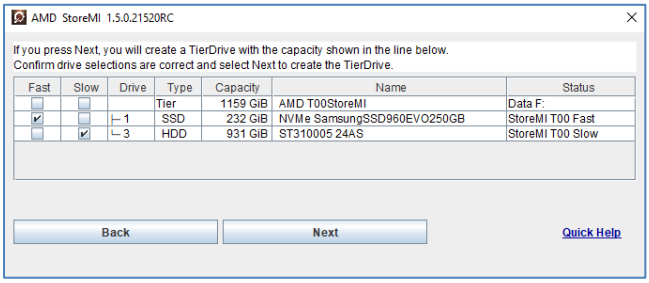




STEP 2: Select your drives. Unavailable drives, such as the Boot drive or USB drives will be grayed out and will not be able to be selected. Drives with partitions will say “Data” and the drive letter. Only one of the two drives may have data on it. Click the “Create” button.



STEP 3: The screen will identify how the new StoreMI TierDrive will appear. If satisfied, click the “Next” button. Any existing drives will temporarily go offline while they are converted to a StoreMI TierDrive. Appendix A, example A5, shows the Disk Manager configuration after converting a Data D: drive to a TierDrive. If both drives had no partitions, a new StoreMI TierDrive with no allocated partitions will appear in the Disk Management tool.



STEP 4: Use the Windows Disk Management tool to format and use the new StoreMI virtual disk that is created.

Convert StoreMI Tiered Drive To Single

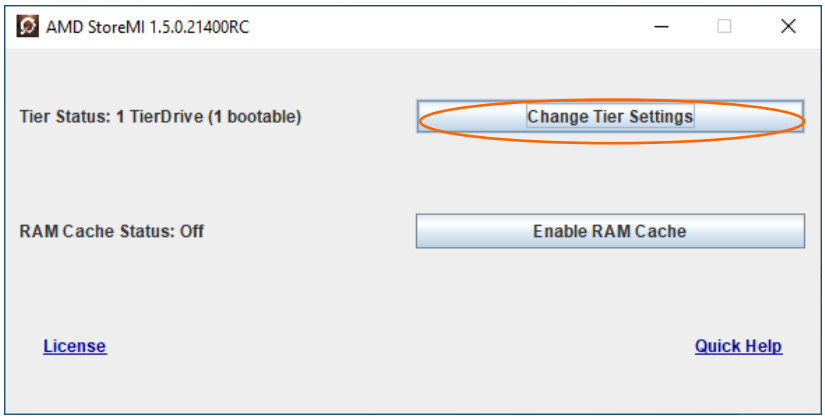
The StoreMI utility may be used to remove all acceleration using the “Move all data to slow media” option and return the system to utilize just the single HDD (or slow tier device) as a single disk drive.

This will free up any existing SSD to be used for other purposes and also support replacing the SSD with a different one if necessary. This action will also remove the RAM cache.

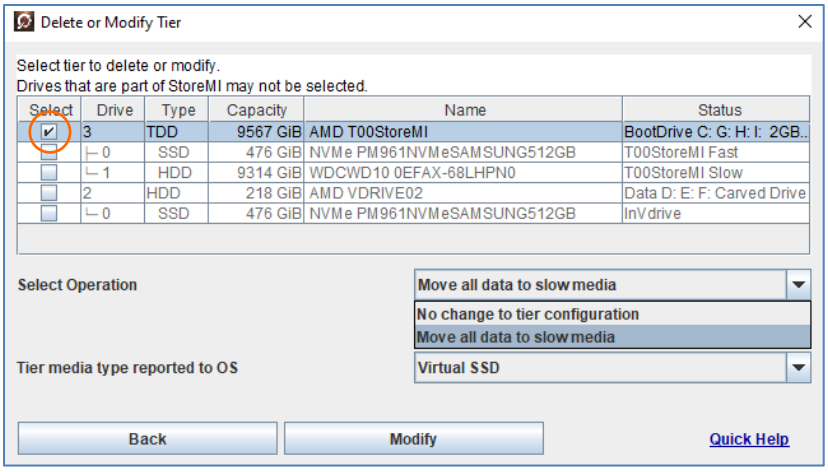
Note: this does not uninstall the software. It simply detaches the fast tier so a new fast tier device may be attached.

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI scans your system and only display those options that are available to you based on your system's configuration.

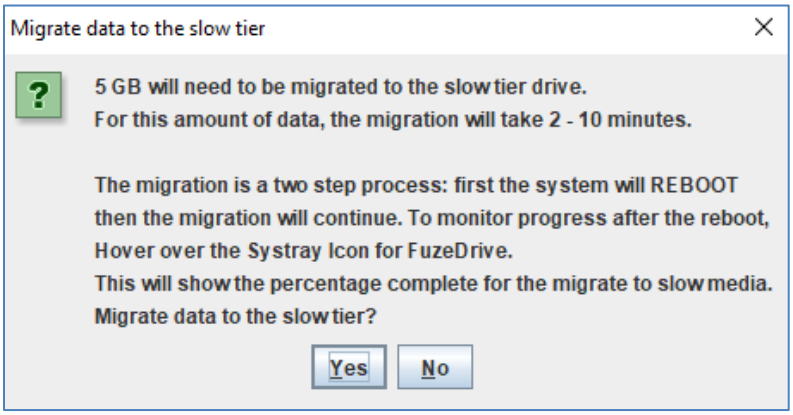
Step 1: Select "Change Tier Settings"



Step 2: Select the Tiered Drive which you want to move all the data to the slow tier. Select the Move all data to slow tier option.



Step 3: Select the "Modify" button. The following message will appear.



By hovering the cursor over the StoreMI icon in the Systray, you can easily monitor the progress of the migration.

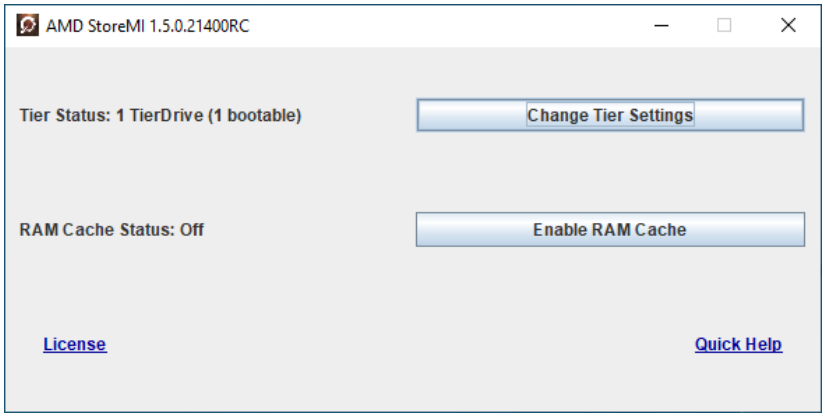
IMPORTANT: The system will reboot, so save any important work. Also, any carve out SSD drive created using excess capacity over the license limit will be deleted whenever a StoreMI is removed. For this reason, ensure that any important data stored on the temporary drive is backed up before performing the above operation.

When the "Move All Data to Slow Media" operation is selected, all data on the StoreMI Drive is moved to the slower media. The Enmotus configuration utility will attempt the shrink the last partition on the StoreMI Drive. If the shrink operation is not successful, user interaction may be needed to migrate data to a different drive in the system. 2GB of Meta data for the StoreMI Drive is also retained during this operation. If manually shrinking or moving partitions before running "Move All Data to Slow Media", please shrink partitions and move partitions so that the fast media capacity plus 2GB is unallocated. When the manual shrink is completed, Windows Disk Management Tool will show the right section of the StoreMI Drive as "unallocated ". The Move All Data to Slow Media operation works for configurations where there are multiple partitions on a StoreMI Drive. When the capacity of the fast media plus 2GB is free the "Move All Data to Slow Media" operation will proceed smoothly.

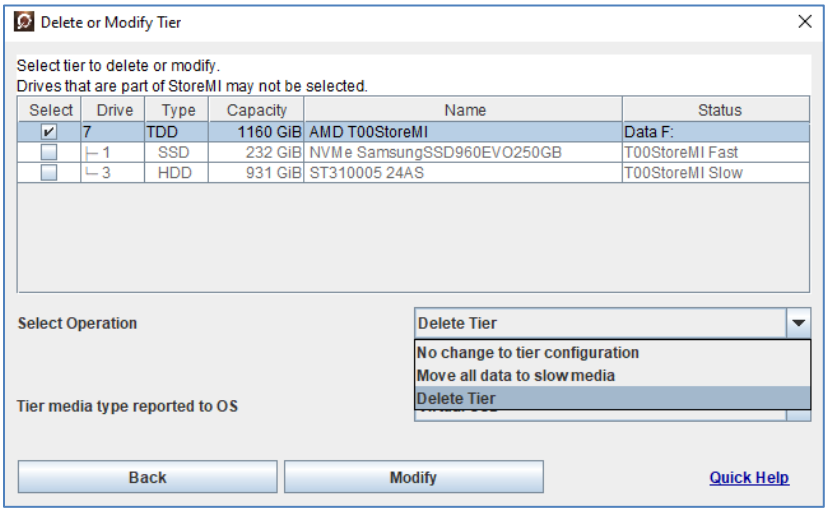
Delete Tier

The Delete Tier feature can be used to delete a StoreMI Data drive. All data on the drive will be destroyed so it is important to Backup your data before completing this operation. This feature DOES NOT work on a Boot Drive.

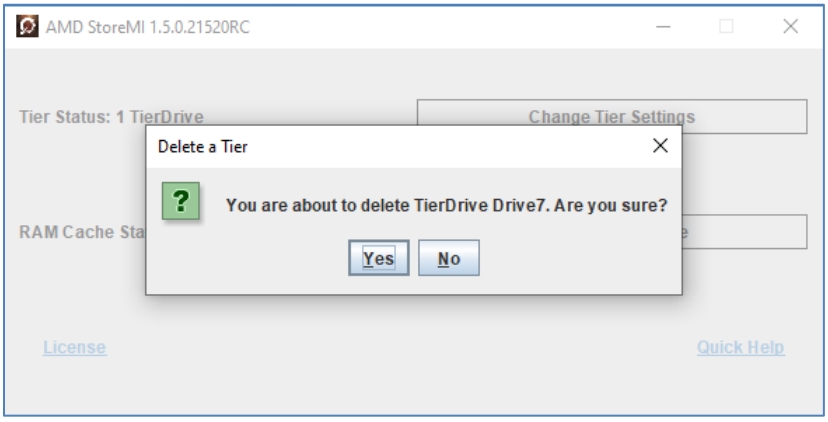
Step1: Select "Change Tier Settings".



Step 2: Choose the Data Tier you wish to delete. The Tier will be marked as “Data” in the status column. Choose “Delete Tier” option in the Select Operation drop down menu

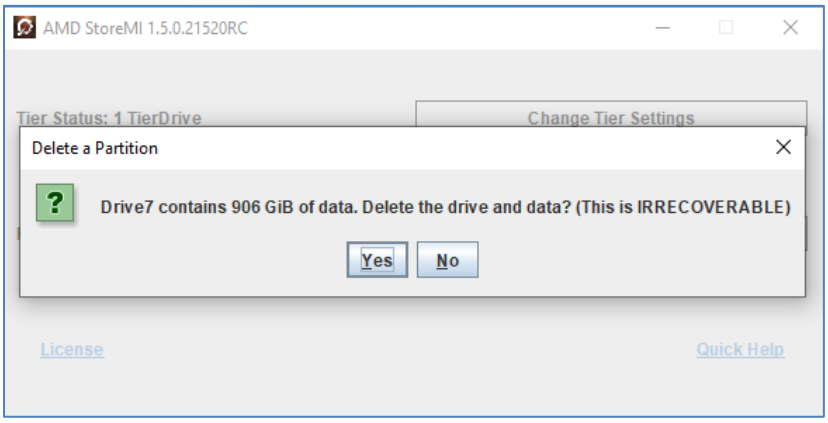


After choosing Modify, you will be presented with a confirmation screen. Choose yes if you wish to continue

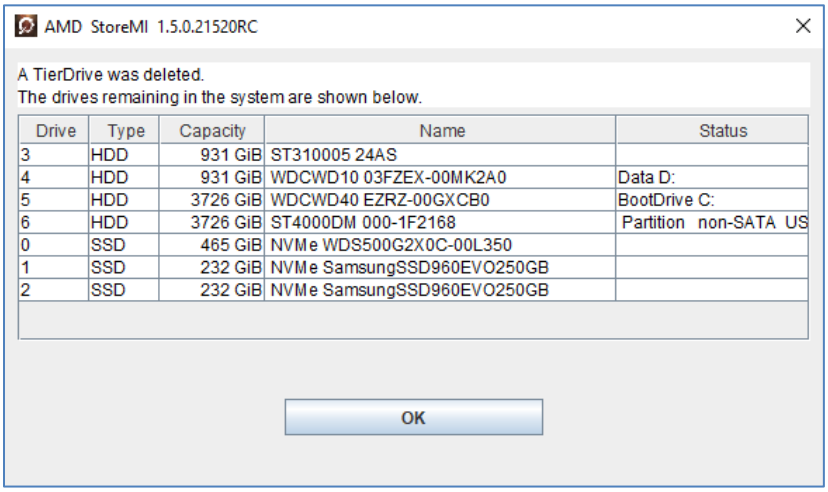


Step 3: The next screen shows you how much data will be deleted from the Data Drive. Make sure your data is backed up if you wish to keep the data.

NOTE: This is irrecoverable and ALL DATA ON THE DRIVE WILL BE DELETED.

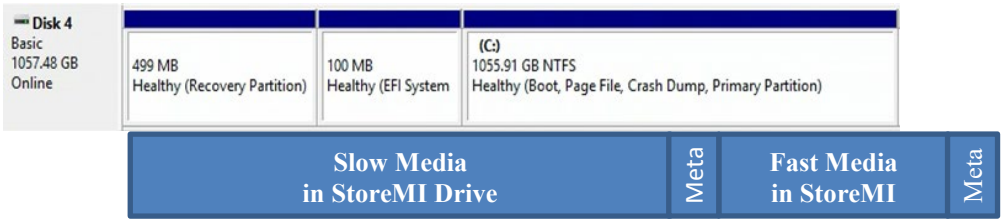


The final screen shows you the drives in your system after the Delete Data operation.

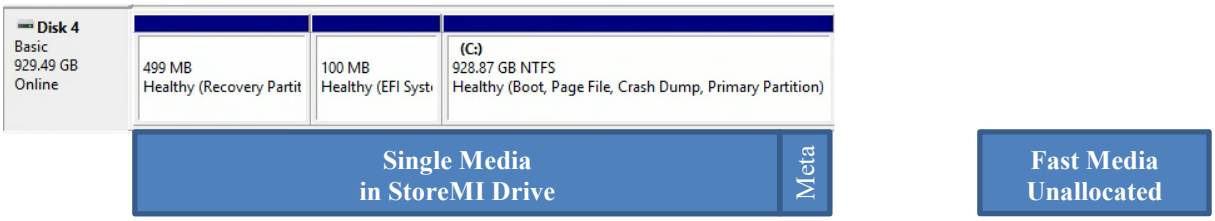


Drive	Type	Capacity	Name	Status
3	HDD	931 GiB	ST310005 24AS	
4	HDD	931 GiB	WDCWD10 03FZEX-00MK2A0	Data D:
5	HDD	3726 GiB	WDCWD40 EZRZ-00GXCB0	BootDrive C:
6	HDD	3726 GiB	ST4000DM 000-1F2168	Partition non-SATA US
0	SSD	465 GiB	NVMe WDS500G2X0C-00L350	
1	SSD	232 GiB	NVMe SamsungSSD960EVO250GB	
2	SSD	232 GiB	NVMe SamsungSSD960EVO250GB	

Configuration of StoreMI Tiered Drive when Starting Remove Operation



Configuration of StoreMI Tiered Drive after Remove Operation is Completed



Some situations may require the use of a partition movement tool. Enmotus can recommend MiniTool's Partition Wizard, a free Home-use tool for these types of operations.

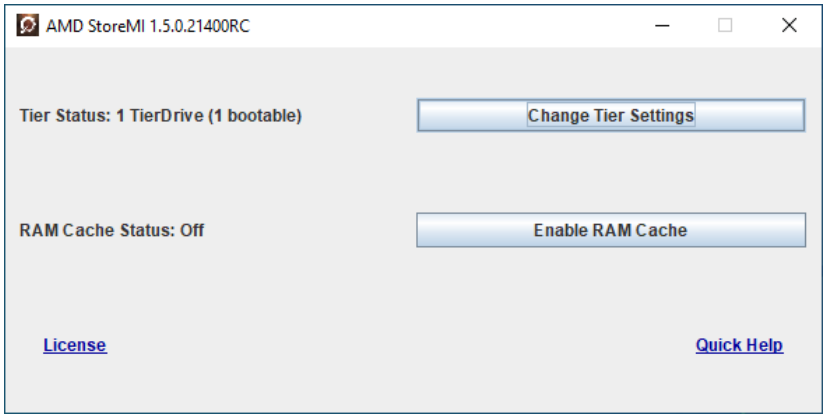
Change Settings

Use the change settings option in the StoreMI utility to change the following modes:

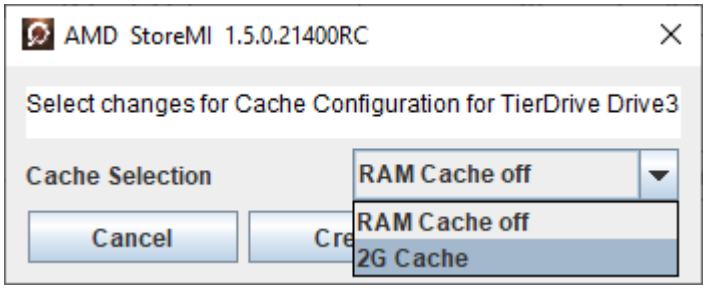
- RAM cache on/off
- VirtualSSD or VirtualHDD setting

Change RAM Cache Settings

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI's ***Machine Intelligence*** will scan your system and only display those options that are available to you based on your system's configuration.

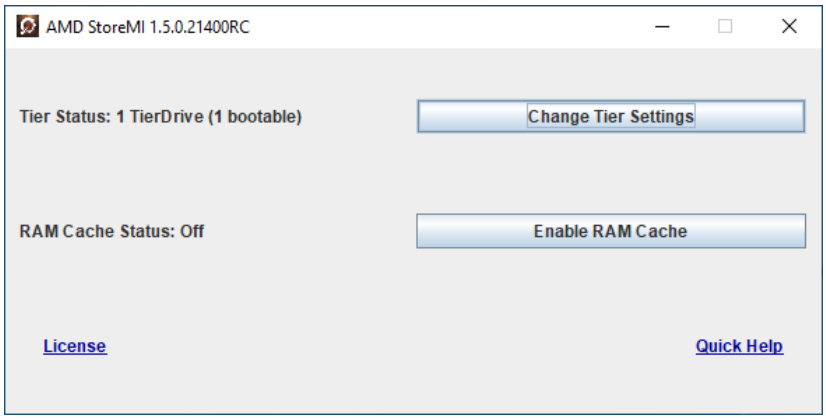


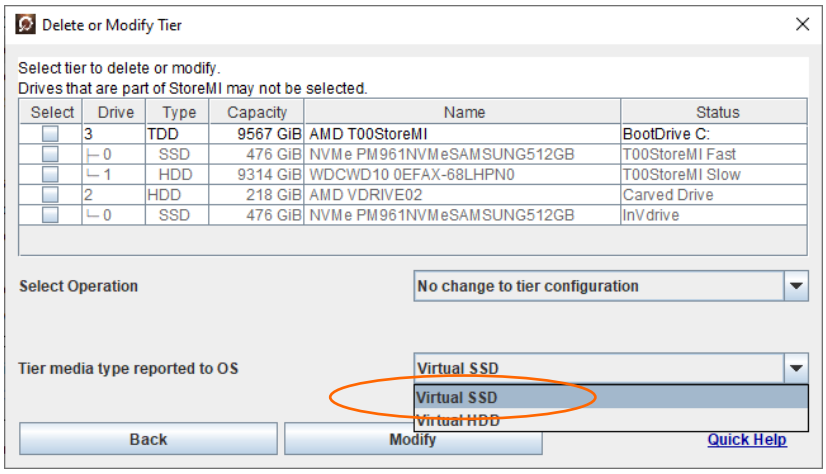
Select the Enable RAM Cache Setting. The drop down menu gives you the option or RAM Cache Off or 2G Cache. Select 2G Cache and hit the Create button.



Change Declared Disk Type Settings

Run the StoreMI Wizard as detailed in the "Configure StoreMI" section above. StoreMI's ***Machine Intelligence*** will scan your system and only display those options that are available to you based on your system's configuration.





Select	Drive	Type	Capacity	Name	Status
☐	3	TDD	9567 GiB	AMD T00StoreMI	BootDrive C:
☐	⊢ 0	SSD	476 GiB	NVMe PM961NVMeSAMSUNG512GB	T00StoreMI Fast
☐	└ 1	HDD	9314 GiB	WDCWD10 0EFAX-68LHPN0	T00StoreMI Slow
☐	2	HDD	218 GiB	AMD VDRIVE02	Carved Drive
☐	└ 0	SSD	476 GiB	NVMe PM961NVMeSAMSUNG512GB	InVdrive

Change StoreMI Declared Disk Type

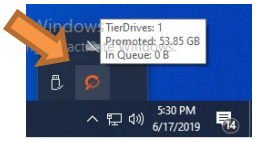
A StoreMI may be optionally declared to the operating system as either a virtual SSD or a virtual HDD.

In the case of the virtual SSD, this will support features such as TRIM commands when supported by the operating system. In this mode, StoreMI boot and data drives will be managed the same way as SSDs by Windows i.e. they will not be subject to defragmentation during the Windows background optimization processes. This is the default and preferred mode.

If the type is changed to VirtualHDD, then the StoreMI will be managed by the Windows OS as the same way hard drives are and will be subject to background defragmentation operations automatically performed by the OS.

Checking StoreMI Status

A system tray utility is provided for quick access to the StoreMI software status. In the lower right-hand corner of the desktop, either float over the StoreMI icon to see basic information about the StoreMI or right click to gain access to several high level control functions to start and stop the StoreMI activity.

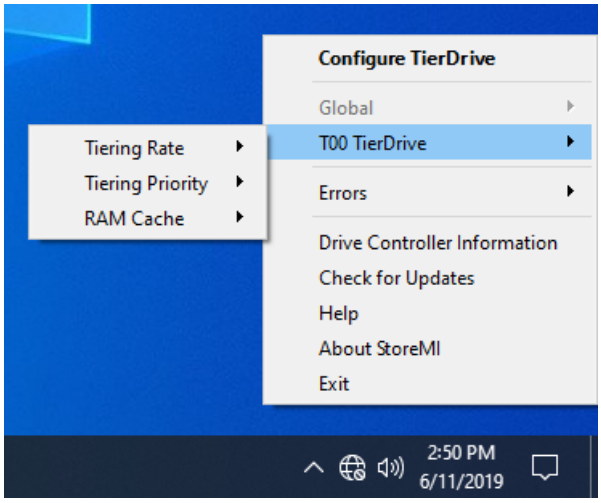


When floating the cursor over the the StoreMI icon, you can see how much data has been promoted since the creation of the tier, and you can also see how much data is in the queue to be promoted to the fast tier.

Configuring StoreMI Using Systray Utility

The systray application may also be used as a shortcut for several other configuration or status functions, as well as turning the promotion/tiering functions off while running backups.

Right Click on the StoreMI icon in the sytray to display all of the configuration options.



StoreMI Systray Configuration Options		
Configure TierDrive	Launches the StoreMI Utility	
T00 Tier Drive	Allows you to change StoreMI configuration settings	
	Tiering Rate	The tiering rate setting specifies how often data is moved and at what activity thresholds
		• Agressive
		• Normal
		• Slow
		• Off
	Tiering Priority	Priority determines the CPU priority being used for application vs tiering operation
		• High
		• Medium
		• Low
		• Off
	RAM Cache	Enables or disables RAM Cache feature
		• 2G
		• Off
Errors	Adjust error reporting	
	Disable Errors and Warnings	
	Clear Error Flags	
Drive Controller Information	Provides details on the drive controller	
Check for Updates	Checks to see if there is an updated version of StoreMI available	
Help	Provides additional help screen and documentation	
About StoreMI	Provides information about the latest version of StoreMI	
	Allows you to send dignostic information about your system for additional support	

Installing a New Operating System

When installing a new OS and reinstalling the StoreMI software, it will be necessary to properly clean the disk drives before they can be seen by the Windows setup procedure.

If installing Windows via the standard USB or DVD setup disk method, on reaching the point where Windows prompts to select the disk to install the OS to, the disks may not be visible or may show partitions showing the AMD "EnTier_ESP" partitions. It's important to note that using the Windows setup **Delete** option is insufficient to clean the disks properly.

Follow the instructions in **Appendix B** or consult the AMD online knowledge base at AMD.com/support to ensure the disks are fully cleaned.

Uninstalling StoreMI Software

A StoreMI system reformats the Windows raw disks in order to function properly. Once formatted, there is no supported way to revert back to the original boot drive as the data is spread across multiple drives.

Completely uninstalling the software is therefore not possible for bootable StoreMI TierDrives without utilizing a third party OS migration tool.

StoreMI may be uninstalled using standard Windows uninstall options via the setup or control panel. However, special steps are required if the StoreMI is a boot drive.

IMPORTANT: Backup all important data or the entire operating system BEFORE attempting to uninstall StoreMI entirely from the system as the following operations will result in the data on the StoreMI being deleted.

Step 1a: Backup or migrate any important data currently stored on the StoreMI drive to a separate disk drive using a commercially available data migration tool. Another blank hard disk or SSD attached to the system SATA controller is highly recommended for this step NOT a USB drive as we will need to be able to boot from this drive in later steps (unless the USB drive is transferable to the motherboard SATA ports).

OR

Step 1b: If using a 2-drive StoreMI configuration, convert the system to a single disk using the StoreMI **Remove StoreMI** option. This will free up the SSD which may be used to clone the StoreMI contents to. Note, check there is enough room for the OS to fit on the SSD before performing this operation.

Step 2: Boot the system from the migrated disk created in step 1a or 1b. Check the boot drive is operating as expected and the StoreMI is no longer the boot drive.

Step 3: Click on the Windows icon, type “StoreMI” to search for the AMD StoreMI utility and run the utility

IMPORTANT: The following step will erase all data from the StoreMI:

Step 4: Select “Change Settings” then “Delete” to remove the StoreMI, free the original drive(s) and make them usable by Windows.

Step 5: Uninstall the AMD StoreMI software from the cloned boot drive.

The system will no longer contain any StoreMI TierDrives.

Troubleshooting

Software will not install - Not licensed for this hardware message

Check your system meets the minimum requirements outlined in the Pre-Install Checklist. This version of the software will only run on AMD Socket AM4 motherboards with a X399,4xx/5xx series chipset.

AMD RAID is installed on the system and StoreMI will not convert the boot drive

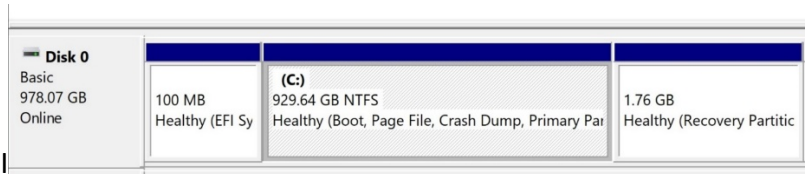
Bootable RAID systems are not supported by the StoreMI software.

My system no longer hibernates

If your system supports multiple storage controllers (use Microsoft Device Manager or the AMD installer utility to determine how many there are), hibernate may not be possible in all combinations. When using all SATA devices, ensure that all StoreMI disk devices are attached to the same SATA controller on the motherboard whenever possible.

StoreMI utility reports reserved partition and cannot transform my boot drive

Open Microsoft Disk Manager and check if there is a reserved partition on the boot drive after the primary C: boot volume.



If a reserved partition exists, then use a third-party tool to reduce the size of the C: partition by 3 or 4GB, and move the Recovery Partition to fill the 3-4GB capacity gap created between the C: and the reserved partition, then repeat the StoreMI utility operation.

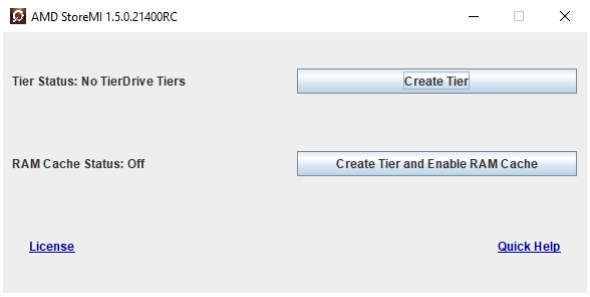
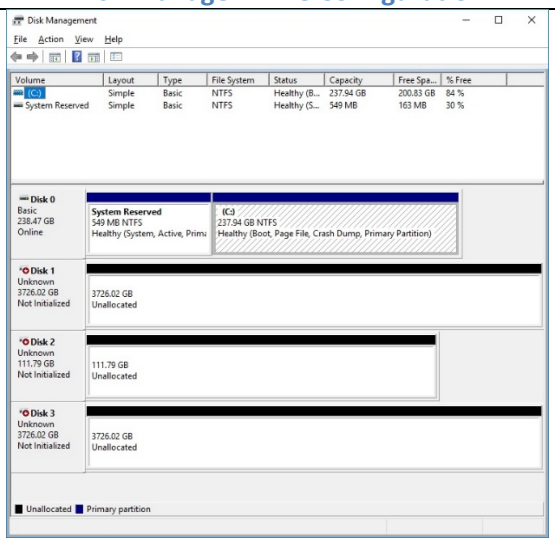
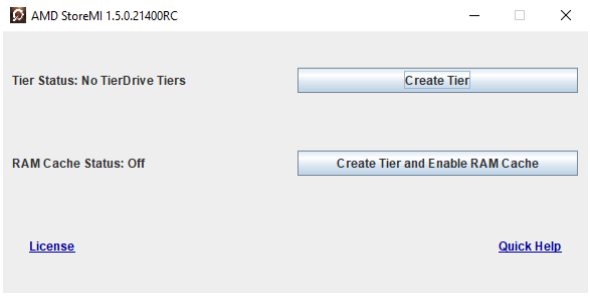
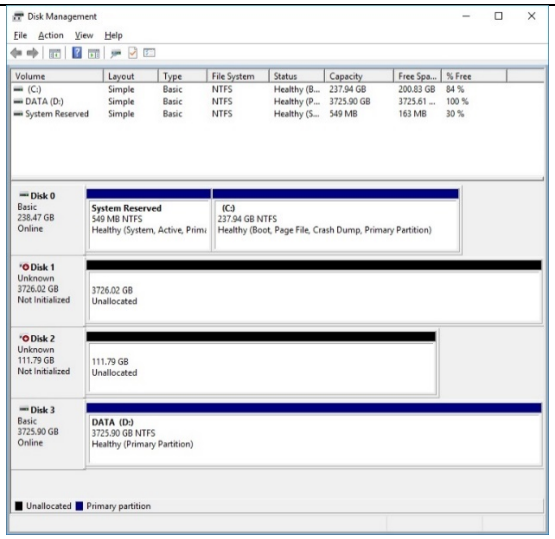
See www.AMD.com/support knowledge base for additional information.

My issue is not addressed here …

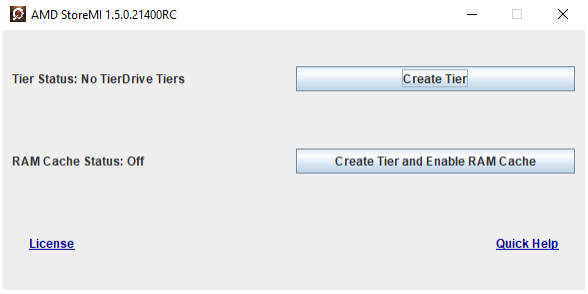
See www.AMD.com/support for additional information in the online FAQ and knowledge base which may contain more up to date information.

Appendix A: Example Drive Configurations and StoreMI Options

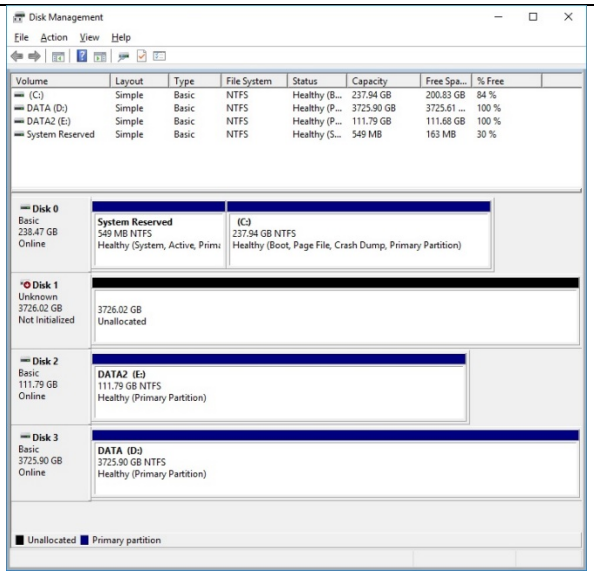
Pre-Convert Example Configurations

AMD StoreMI	Disk Manager Drive Configuration
A1.  ➢ SSD Boot Drive (C:) ➢ Blank SSD - available for slow tier for C: ➢ 2x Blank HDDs – both available for slow tier for boot drive or new non-bootable StoreMI	
A2.  ➢ SSD Boot Drive (C:) ➢ HDD DATA Drive (D:) ➢ Blank HDD - available for slow tier ➢ Blank SSD - available for fast tier for D: or slow tier for C:	

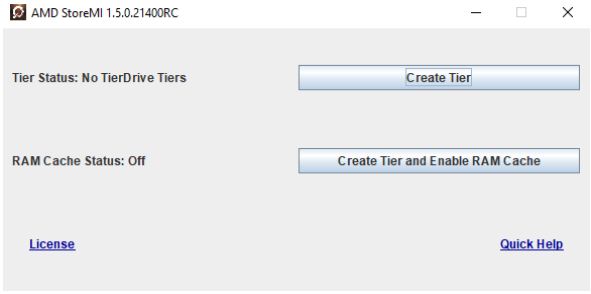
A3.



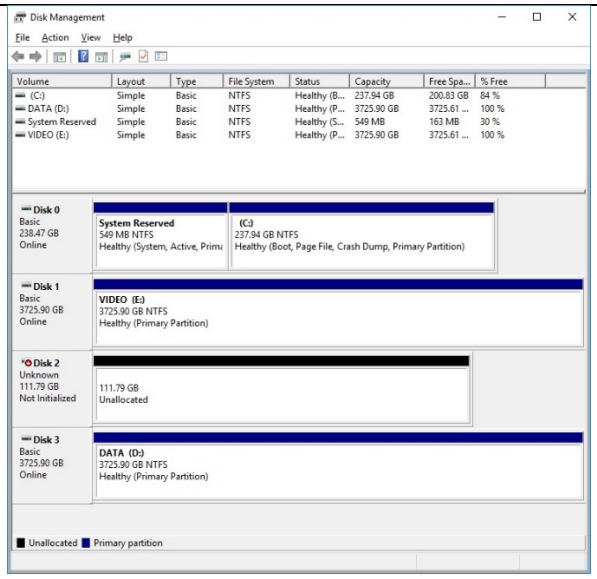
- SSD Boot Drive (C:)
- HDD DATA Drive (D:)
- SSD DATA2 Drive (E:)
- Blank HDD (available for slow tier)



A4.

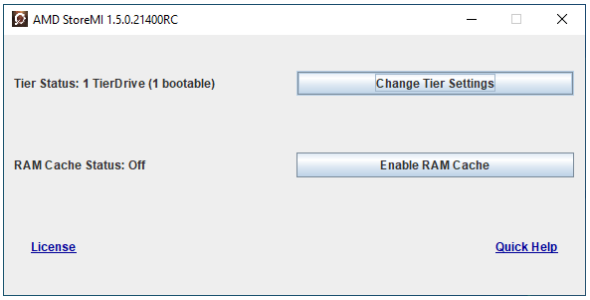


- SSD Boot Drive (C:)
- HDD DATA Drive (D:)
- HDD DATA Drive (E:)
- Blank SSD (available for fast tier for D: or E: or slow tier for C:)

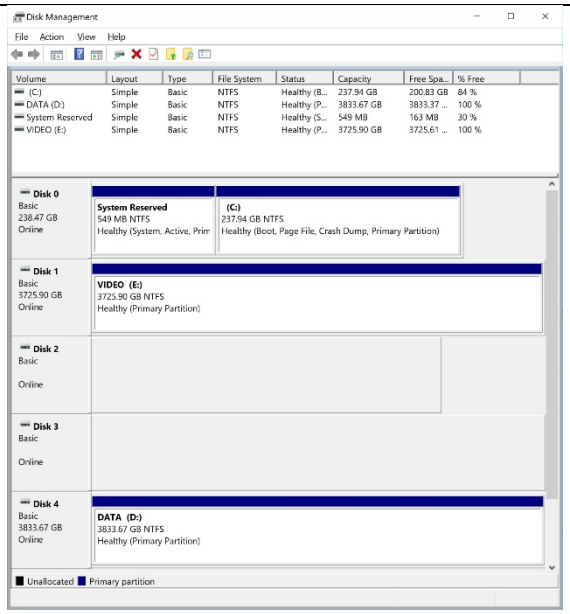


Post Conversion Examples

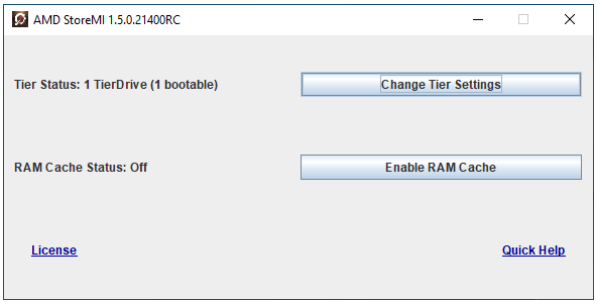
A5.



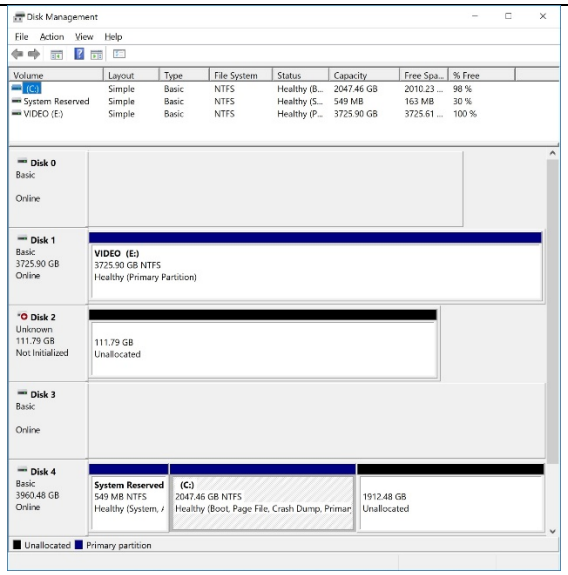
- SSD Boot Drive (C:)
- HDD DATA Drive (E:)
- StoreMI DATA Drive (D:)



A6.



- StoreMI Boot Drive (C:)
- HDD DATA Drive (E:)
- Blank unused SSD



Appendix B: Cleaning Disks Previously Used as a StoreMI during Windows Setup

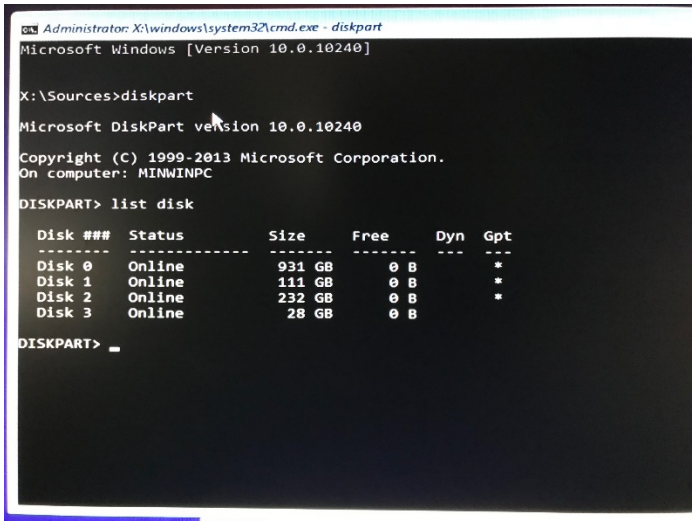
IMPORTANT: The following steps will completely erase all data from the drives. Ensure you have backed up all important data before using the following commands. Also ensure that you have selected the correct drive. Remove any drives that are not required for the installation if necessary to avoid confusion so that you only have the 1 or 2 drives used as a StoreMI connected, along with the USB or DVD Windows setup drive.

For EFI, the previously used disks will be labeled "EnTier_ESP" in the Windows disk select window. In the above example Drive 0 is one of the drives in question for example. Identify the other also (scroll down).

If you used your drives as data only StoreMIs, we will need to identify them using diskpart as they will not be visible in the Windows disk selection menu.

STEP 1: From the disk selection menu in the Windows setup process (where Windows asks where to install the OS to), press Shift and F10 keys at the same time to open a command line prompt.

STEP 2: Type **diskpart**, then type **list disks**.



For our example, we have three disks. Disk 0 and 2 were previously used as StoreMIs. Drive 1 is an extra data drive we are also going to clean while in diskpart.

STEP 3: Identify the Disks previously used as a StoreMI. Use the size of the disk if necessary and take special care NOT to accidentally select the Windows setup USB disk (for our example, Disk 3 above) or any other drives you may have left attached. It is highly recommended if you see multiple drives and you cannot clearly identify which were the StoreMI raw disks, shutdown your machine and disconnect any data drives or drives you do not want to touch, then reboot. They can be reattached later.

STEP 4: Select each of the disks and clean (i.e. delete all data and metadata off) them as follows (for the example above, disk 0 and 2 were the disks needed to be cleaned):

```
DISKPART> select disk 0

DISKPART> clean

DISKPART> select disk 2

DISKPART> clean
```

optionally for our example:

```
DISKPART> select disk 1

DISKPART> clean
```

then type

```
DISKPART> exit
```

STEP 5: Close the command prompt window and return to the setup disk select menu

STEP 6: Refresh the disk select window to show the clean drives. Any legacy BIOS mode or data StoreMIs should now correctly appear as empty drives and all StoreMI metadata will be safely removed.