CASPER SECURE™ DRIVE BACKUP

USER GUIDE

v5.0

Future Systems SOLUTIONS

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Introduction

Casper Secure™ Drive Backup is designed specifically for users of drive encryption technologies looking for a safe, secure, and dependable backup, recovery, and data migration solution.

Casper Secure Drive Backup offers you these unique advantages:

- **Designed Specifically for Windows™ BitLocker™ and Symantec™ (PGP™) Drive Encryption Technologies** — Casper Secure completely eliminates the unnecessary downtime and security and compliance risks associated with other backup and recovery products. *With Casper Secure, your data is never placed in an exposed or unencrypted state — all data remains in its original encrypted state before, during, and after backup and recovery.*
- **Fast, Complete Encrypted Backups** — Casper Secure creates a complete, fully-encrypted backup of your encrypted Windows system drive in its *original* encrypted state. Everything remains encrypted throughout the process, so you can avoid the arduous and lengthy decryption and encryption steps that are required with other drive imaging and backup solutions. Casper Secure backs up everything, including the operating system, applications, settings, and all of your data.
- **Rapid, Fully-Encrypted Recovery** — Casper Secure completely eliminates the separate data restoration and re-encryption steps required by other drive imaging and backup solutions. Whether you need to recover a single file or your PC's entire system drive, recovery could not be faster or easier. You have complete and immediate access to all of the data on your backup; there are no additional passwords or exotic procedures to follow.
- **Bootable Backups Provide Instant Recovery** — Casper Secure can turn virtually any drive into an instantly bootable encrypted backup drive that you can use to boot and run your PC in an emergency. If your PC's system drive should fail, simply restart your PC to your Casper Secure Bootable Backup or remove the failed drive and replace it with the Casper Secure Bootable Backup. Either way, you can be back up and running in minutes, eliminating a day or more of unnecessary downtime.
- **Restore-Point Backups Provide Selectable Point-In-Time Recovery** — A Casper Secure Restore-Point Backup stores a complete image of your PC's encrypted system drive that you can use to restore selected files and folders or your PC's entire system drive to a previous point in time. Multiple Casper Restore-Point Backups can be stored on a single backup drive and can be restored directly to their original encrypted state without ever putting data at risk or requiring a separate, time-consuming data re-encryption step. SmartRestore™ technology makes recovery as easy as booting to a Casper Restore-Point Backup drive.
- **Ensures Compliance with Existing Security Directives** — Since all data is backed up, maintained, and restored in its original encrypted state, there are no new passwords to manage, and more importantly, there are no new security protocols or encryption technologies to vet. With Casper Secure, the backup is guaranteed to be as secure as the original.

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- **Safe and Dependable** — Advanced data verification technology ensures data has not been compromised during the imaging process by faulty RAM, a defective cable, failing disk or bad controller interface. In addition, a Casper Secure Bootable Backup can even be tested immediately after its creation by simply configuring the computer to boot from it — completely eliminating any worry about the integrity of the backup.
- **Quick and Easy System Drive Upgrades** — Casper Secure can quickly duplicate your encrypted system drive to another drive without requiring a laborious, time consuming and unsecure backup, restore, and re-encryption process. 1-Click SmartStart™ technology makes it extraordinarily easy to safely replace your PC's encrypted system drive with a larger drive for increased capacity or with a faster solid state drive for improved system performance.
- **Convenient and Easy-to-Use** — Casper Secure enables complete system backups to be performed at any time without leaving Windows, so there is never a need to restart the computer or stop work to create a backup. Easy to follow wizards and innovative technologies like 1-Click SmartStart™ make it easier than ever to create and maintain complete system backups for your encrypted PC.

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Getting Started

This User Guide is intended to provide you with an overview of the basic operations of Casper Secure Drive Backup. Additional information regarding Casper can be found in the help file or in one of the following supplementary guides:

Casper Secure SmartStart™ Guide: This guide provides an overview of Casper SmartStart. You should refer to this guide when you want to maintain a complete backup for your computer's system disk or when you want to replace your computer's system disk with a new disk to increase speed or storage capacity.

Casper Secure SmartRestore™ Guide: This guide provides an overview of Casper SmartRestore. You should refer to this guide when you need to restore a backup.

Casper Secure Startup Disk Creator Guide: This guide provides instructions for creating a Casper Secure Startup Disk, which may be required to restore a backup to the primary system drive.

System Requirements

- Windows 10, Windows 8.x, Windows 7, Windows Vista™, or Windows XP (SP3)[1]
- Windows BitLocker Drive Encryption[2], Symantec Endpoint Encryption (SEE), Symantec Encryption Desktop (SED) version 10.x, or PGP Desktop version 9.6x or later[3]
- 500MB available disk space
- 512MB RAM (1GB or more recommended)
- Backup device (additional internal or external hard disk drive)

[1] The Casper Restore-Point Backup and image file backup features are supported only when running on Windows 7 and later or when booting and running from the Casper Secure Startup Disk. The VHDX image file format is supported only when running on Windows 8 and later or when booting and running from a Casper Secure Startup Disk created with the Windows 8 or later ADK.

[2] Windows BitLocker Drive Encryption is currently supported only for drives using software encryption that have been formatted with the NTFS file system. BitLocker hardware encrypted drives and BitLocker encrypted drives that are formatted with the FAT file system can be copied only in their unencrypted state.

[3] Encrypted cloning and imaging is currently supported only for drives encrypted with software-based drive encryption. Self-encrypting drives (SED), including Opal compliant and Windows BitLocker eDrive compliant drives, may be copied in their encrypted state only when software encrypted.

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Installing Casper Secure Drive Backup

The installation process takes just a few minutes and an automated Wizard will guide you through the process. The instructions below outline in detail the steps for installing Casper Secure Drive Backup.

1. Start the **Casper Secure Drive Backup Setup** program
2. Read the **License terms and conditions** and then check **I agree to the License terms and conditions**
3. Click **Install**
4. Click **Finish** to close the Casper Secure Setup Program

Starting Casper Secure Drive Backup

In Windows 10, follow this procedure:

1. Click the **Start** button.
2. Click **All apps**.
3. Click the **Casper Secure Drive Backup 5.0** folder.
4. Click **Casper Secure Drive Backup**.

In Windows 8, select **Casper Secure Drive Backup** from the Windows **Start** screen. In Windows 7 and earlier versions, follow this procedure

1. Click the **Start** button.
2. Click **All Programs**.
3. Point to the **Casper Secure Drive Backup 5.0** menu.
4. Click **Casper Secure Drive Backup**.

Getting Help

For additional assistance, including troubleshooting information, please refer to the online help included with the program. To access help when running Casper Secure Drive Backup, select the **Help** menu or press **F1**.

Additional support for Casper Secure Drive Backup is also available on the Future Systems Solutions Web site at http://support.fssdev.com.

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Using Casper Secure Drive Backup

Casper Secure Drive Backup makes it easy to upgrade or maintain a backup of your Windows system hard disk, as well as other hard disks used on your computer.

When you use Casper Secure Drive Backup to clone a hard disk, Casper creates a snapshot, representing a single point-in-time view of the disk, and then copies it to another hard disk. The result is another hard disk that can be used as an immediate and complete replacement for the original hard disk.

When you use Casper Secure Drive Backup to create an image of a hard disk, Casper creates a snapshot of the disk and then copies it to a file. The result is a file representing a point-in-time image of the disk, which can be used later to restore the disk to the same state it was in when the image was created.

Casper SmartSense™ technology will begin the process of upgrading or creating a backup of your Windows system hard disk automatically when you attach a new hard disk to your computer. If the new disk is installed internally, or if Casper SmartSense is unable to detect the new disk, you can manually launch Casper SmartStart™ to begin the process. For more information about using Casper SmartStart to upgrade or maintain a backup of your Windows system disk, please refer to the **Casper Secure SmartStart Guide**.

To upgrade or maintain a backup for another hard disk on your computer, or customize the upgrade or backup process of your Windows system hard disk, you should refer to this Casper Secure User Guide or the Casper Secure Help included with the program. See **Getting Help** for more information.

You can use Casper Secure Drive Backup to maintain bootable backups and restore-point backups for your computer. Both provide unique recovery capabilities that you should consider before proceeding.

Bootable Backups

A bootable backup represents a separate backup device that you can use to temporarily boot and run your computer in an emergency or that you can use as an immediate and permanent replacement for your computer's Windows system disk. A bootable backup is sometimes referred to as a clone backup because it maintains a duplicate copy ("clone") of your Windows system disk.

Bootable backups provide the advantage of instant recovery because a separate data restoration process is unnecessary. Recovery is simply a matter of restarting your computer from the bootable backup. For example, if your Windows system disk fails or becomes corrupted, you can permanently replace it with your bootable backup or temporarily change your computer's boot sequence to designate your bootable backup as the preferred boot device.

Bootable backups also provide you with immediate access to all of your files and data. For example, you can use Windows Explorer to retrieve a specific file or folder directly from your backup without having to separately mount your backup or extract files or folders from the backup.

Because a bootable backup is a copy of your entire system hard disk made to another disk, it provides you with the ability to recover only a single point-in-time. For example, the backup will

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contain only those files and folders that were present on your Windows system disk when the backup was created or last updated. Each time you update a bootable backup, the prior contents of the backup are replaced with the current contents of your Windows system disk.

Using two or more separate disks to maintain additional bootable backups in a backup rotation is necessary when additional point-in-time backups are desired. This practice is also recommended to provide redundancy from backup corruption, which can occur when a bootable backup is interrupted during an update.

When relying strictly on a bootable backup to protect your computer, it is good practice to rotate the backup disk between each successive backup. For example, if you update your bootable backup weekly, you might use two separate disks to maintain two independent bootable backups for your computer. On the first week, you would back up your computer to your first backup disk. On the second week, you would back up your computer to your second backup disk. On the third week, you would back up your computer to your first backup disk again, and so on. In this way, should a problem develop with one of the backups, you can still fall back to the older backup to recover.

Using Casper to create and maintain a bootable backup for your computer system requires a hard disk large enough to accommodate all of the data on the current Windows system hard disk. For a desktop system, using a second internal hard disk, or one mounted in a removable (mobile) drive bay for the backup hard disk is ideal. If the desktop system supports booting from eSATA or USB hard disk type devices, using an external hard disk for the backup is also ideal. For a notebook computer, a secondary media bay or external USB, Firewire, or eSATA hard disk enclosure designed specifically for a 2.5” notebook hard disk is recommended to mount and attach the backup hard disk to the notebook. Using a 3.5” external desktop hard disk as the backup for a notebook is not recommended unless the notebook supports booting from eSATA or USB hard disk type devices.

NOTE: For a hard disk attached as an external USB device, booting from the backup hard disk may require the selection of additional BIOS or EFI Firmware options to completely enable booting. By default, some BIOS implementations disable USB boot support, or have it configured for floppy or ZIP drive emulation rather than hard disk drive (HDD) emulation. *If the computer’s BIOS or EFI Firmware does not support booting from external USB hard disk type devices, a bootable backup hard disk must be removed from its external enclosure and installed as a replacement for the internal hard disk in order to boot from it.* Alternatively, a restore may be performed by using the Casper Startup Disk to copy the external backup hard disk to the computer’s internal hard disk.

Restore-Point Backups

A restore-point backup represents a collection of separate backups stored on a single storage device that you can use to restore your computer’s Windows system disk to a previous point-in-time. A restore-point backup is also known as an image backup because it consists of one or more image files, each corresponding to the state of your Windows system disk at the time the image was created.

Because multiple restore-points may be maintained on a single backup device, restore-point backups provide additional recovery options that are not available when using a bootable backup. For example, if your Windows system disk fails or becomes corrupted, you can restore

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your Windows system disk to any one of the restore-points you have created. Likewise, when only a specific file or folder needs to be restored, you can choose a specific restore-point from which to retrieve the file or folder.

Unlike a bootable backup, a restore-point backup will not overwrite or replace any other data stored on the backup device. For example, the backup device for a restore-point backup can be almost any disk, including a disk that already contains other data such as photos, documents, music, etc.

Using Casper to create and maintain a restore-point backup for your computer system requires a storage device with free space that is at least several times greater than the amount of used space on your Windows system hard disk. An external USB or eSATA connected storage device with the prerequisite amount of free space is often ideal for maintaining restore-point backups. While the exact amount of free space depends on several factors, usually about three times the amount of used space on your Windows system hard disk is enough free space for Casper to create and maintain multiple restore-points for a restore-point backup. For example, if 150GB represents the current amount of used space on your Windows system disk, using a storage device with approximately 450GB of free space is generally sufficient to maintain a restore-point backup with a good variety of restore-points.

As with a bootable backup, when relying strictly on restore-point backups to protect your computer, it is good practice to rotate the backup device between successive backups. This will help to ensure a viable backup exists in the event one of your backup devices suffers an untimely mechanical failure or data corruption, which might otherwise prevent you from restoring a backup.

Unlike a bootable backup, recovery using a restore-point backup requires a separate restoration step from the Casper Secure Startup and Recovery Environment. For example, to restore your Windows system disk from a restore-point backup, you must boot your computer from a Casper Secure Startup Disk to perform the restore. Alternatively, when the Casper Secure Startup and Recovery Environment has been added to your backup device, you can boot your computer directly from your backup device to perform the restore. In most instances, Casper's SmartRestore™ technology will fully automate the restoration process for you. For details on creating a separate Casper Secure Startup Disk, please see the **Casper Secure Startup Disk Creator Guide**.

Choosing a Backup Type

For the greatest level of protection, maintaining a combination of bootable backups and restore-point backups on multiple devices in rotation is ideal. When this is not possible, the type of backup you choose to maintain will depend greatly on your specific situation and recovery needs.

If minimizing downtime is of utmost importance, maintaining two or more bootable backup disks in rotation will be preferable to a restore-point backup. On the other hand, if you frequently create or update content on your system, maintaining a restore-point backup might be a better choice.

Your travel habits may also influence your decision. For example, if you frequently travel with your computer, you may find it difficult to carry multiple backup disks. In this case, a restore-point backup might be the better choice because it can maintain multiple recovery points on a single backup disk.

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The following table summarizes the differences between the two backup types.

Comparison of Bootable Backups and Restore-Point Backups

	Casper Bootable Backup	Casper Restore-Point Backup
Contains a complete backup of your Windows system disk?	Yes	Yes
Can be used to boot and run computer if necessary?	Yes	No
Can be used to recover just one or more files?	Yes	Yes
Provides multiple restore points?	No	Yes
Type of storage device required	Dedicated internal or external hard disk device	Internal or external storage device
Other data can be stored on the backup storage device	No. Backup completely replaces existing content of storage device.	Yes. Backups can coexist with other new and existing files and folders on storage device.
Size of storage device required	Large enough to accommodate all of the data currently on Windows system disk	Free space equal to three times the amount of used space on current Windows system disk

NOTE: Restore-Point Backups require the Casper Image File Backup feature, which is available only on computers running Windows 7 and later.

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Creating and Maintaining a Bootable System Backup

Using Casper Secure Drive Backup to create and maintain a bootable backup for your computer system requires a hard disk large enough to accommodate all of the data on the current Windows system hard disk.

For a desktop system, using a second internal hard disk, or one mounted in a mobile drive rack for the backup hard disk is ideal. If the desktop system supports booting from eSATA or USB hard disk type devices, using an external hard disk for the backup is also ideal. For a notebook computer, a secondary media bay or external USB, Firewire, or eSATA hard disk enclosure designed specifically for a 2.5” notebook hard disk is recommended to mount and attach the second (backup) hard disk to the notebook. Using a 3.5” external desktop hard disk as the backup for a notebook is not recommended unless the notebook supports booting from eSATA or USB hard disk type devices.

The following examples illustrate various ways to create and maintain a bootable backup of your Windows system disk.

Example 1: Creating a Bootable Backup. This example demonstrates how to initialize a new disk for use as a complete backup replacement for your Windows system disk.

Example 2: Updating a Bootable Backup. This example shows how to manually update an existing bootable backup of your Windows system disk.

Example 3: Automating a Bootable Backup. This example illustrates how to fully automate a bootable backup.

Example 4: Automating a Bootable Backup to a Portable Device. This example shows how to automate a bootable backup maintained on a portable device such as a USB, Firewire, or eSATA connected disk.

Example 5: Performing a Bootable Backup On-Demand. This example demonstrates how to create a desktop shortcut to maintain a bootable backup on-demand.

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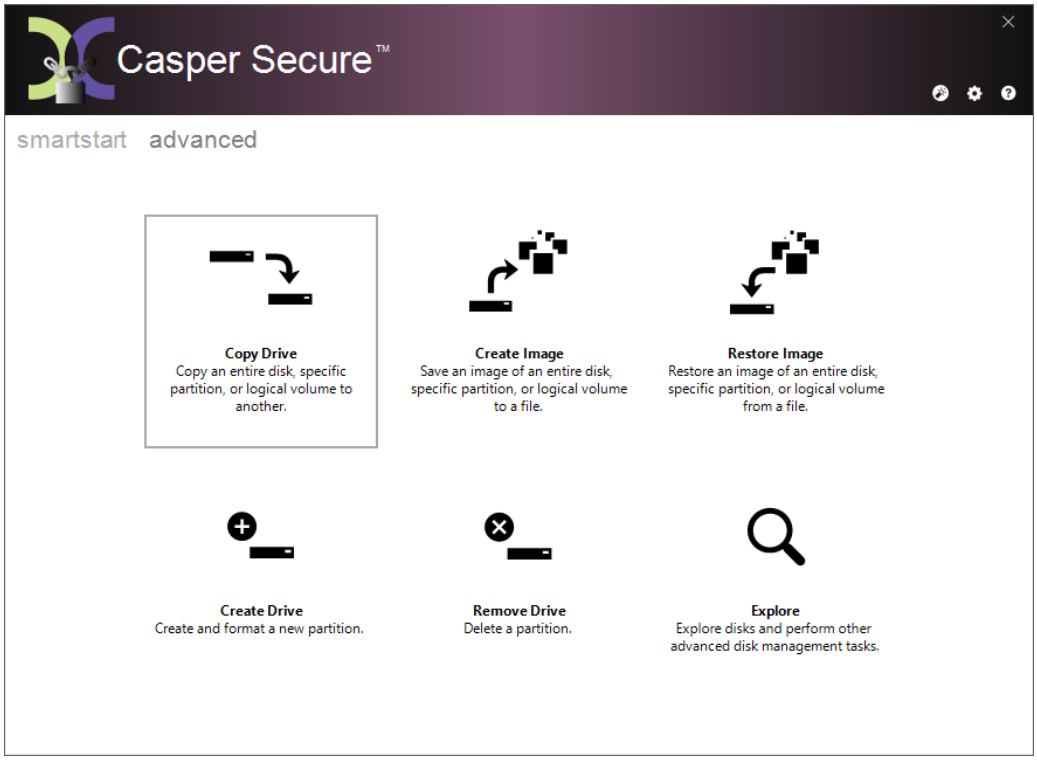
Example 1: Creating a Bootable Backup

Assuming the backup hard disk is currently installed or attached to the system, the following procedure illustrates how to clone the Windows system hard disk to the backup hard disk to produce a bootable backup on either a desktop or notebook system.

1. From the Casper console select the **Advanced** tab and then click **Copy Drive**.



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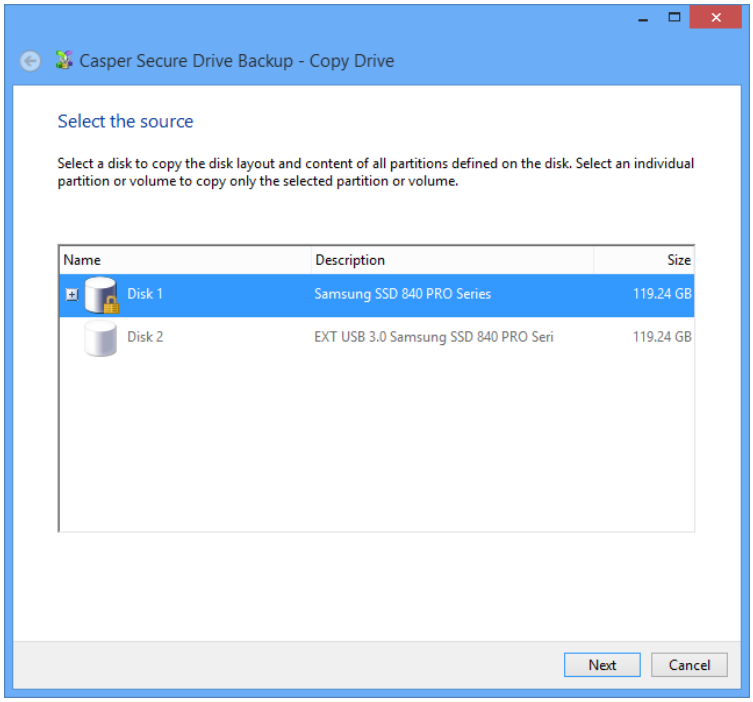
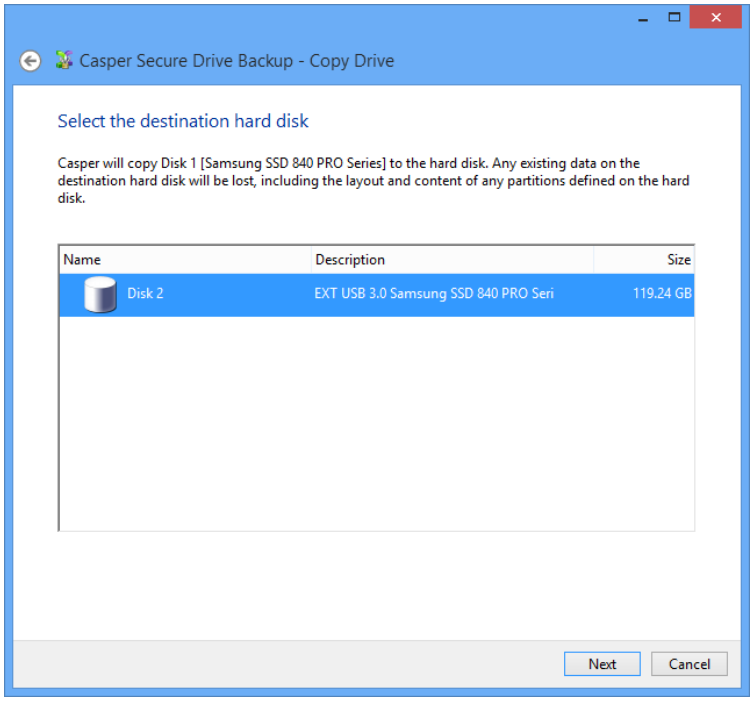
2. Select the hard disk to backup (e.g., the hard disk on which Windows is installed) as the source and click **Next**.



3. Select the backup hard disk as the destination and click **Next**.



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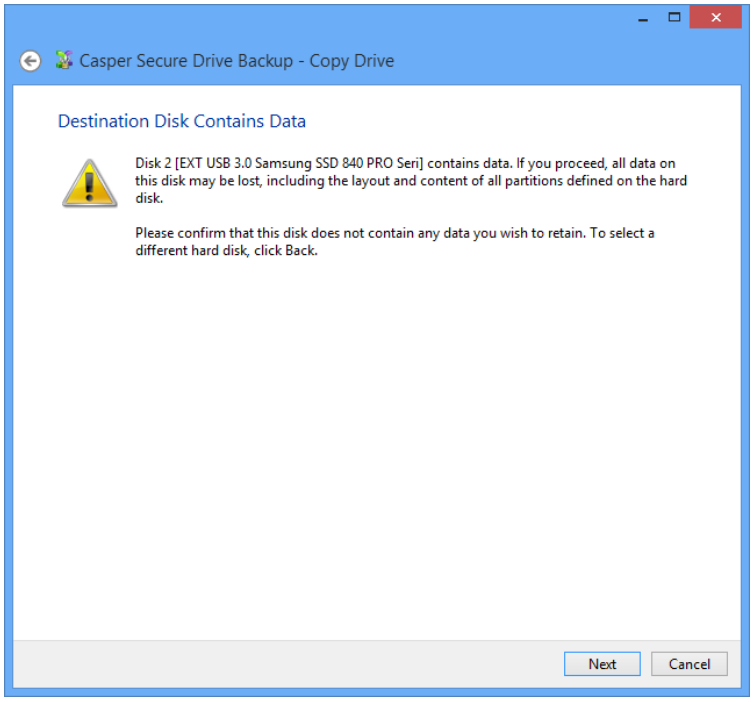
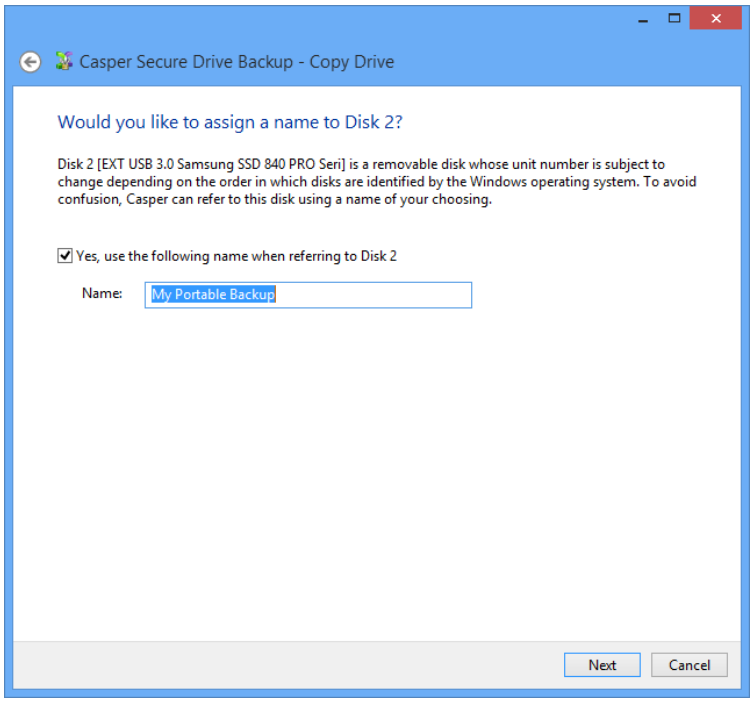
4. If the selected destination hard disk defines a partition or contains data, Casper will warn you that the contents will be overwritten. Confirm you have selected the correct hard disk to receive the backup and click **Next** to proceed.



5. When selecting an external hard disk as the destination, Casper will prompt you to assign a name to the disk. A name is optional. If you use multiple external hard disks, a name can make it easier to identify which external hard disk is being used for a Casper backup. Click **Next** to proceed.



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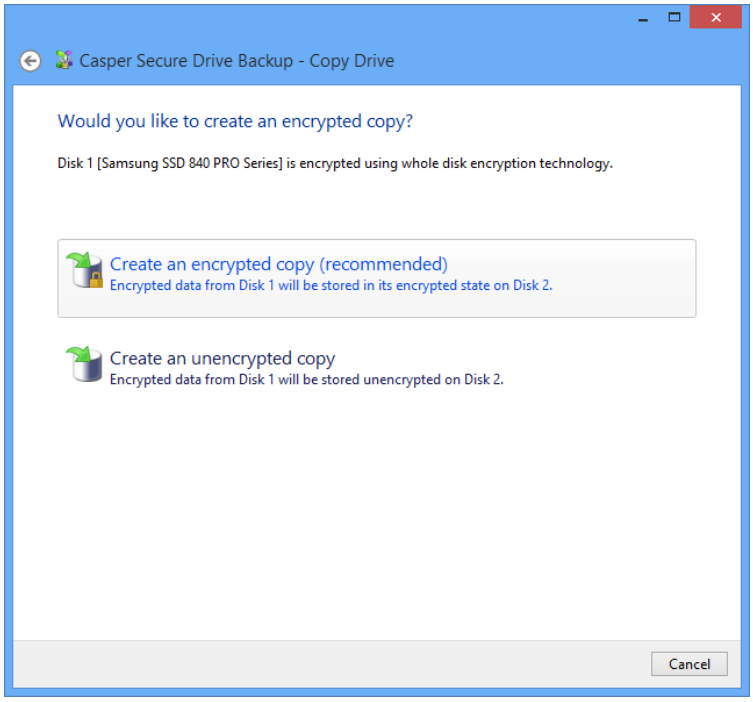
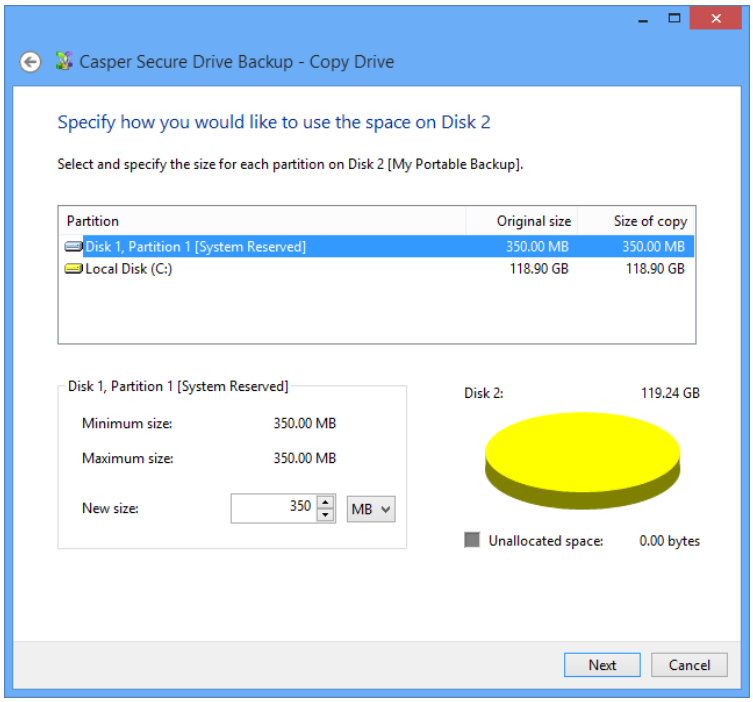
6. If the source hard disk is encrypted using drive encryption technology, Casper will offer the option of creating an unencrypted copy unless prohibited by administrative policy settings. Click **Create an encrypted copy**



7. When prompted to specify how the space on the backup hard disk is to be used, retain the default selection and click **Next**. If the destination hard disk is the same size or smaller than the source hard disk, Casper will ask you to manually configure how the space is to be used.



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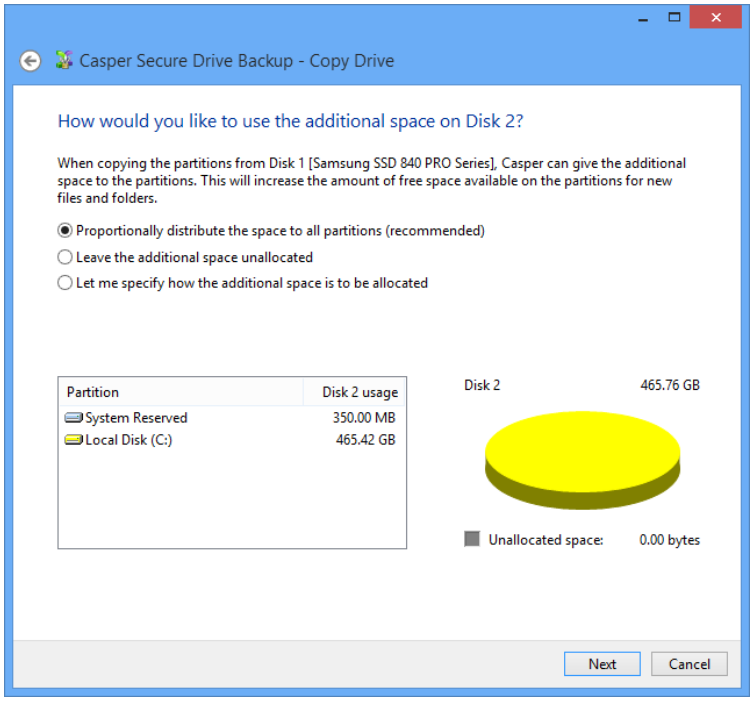
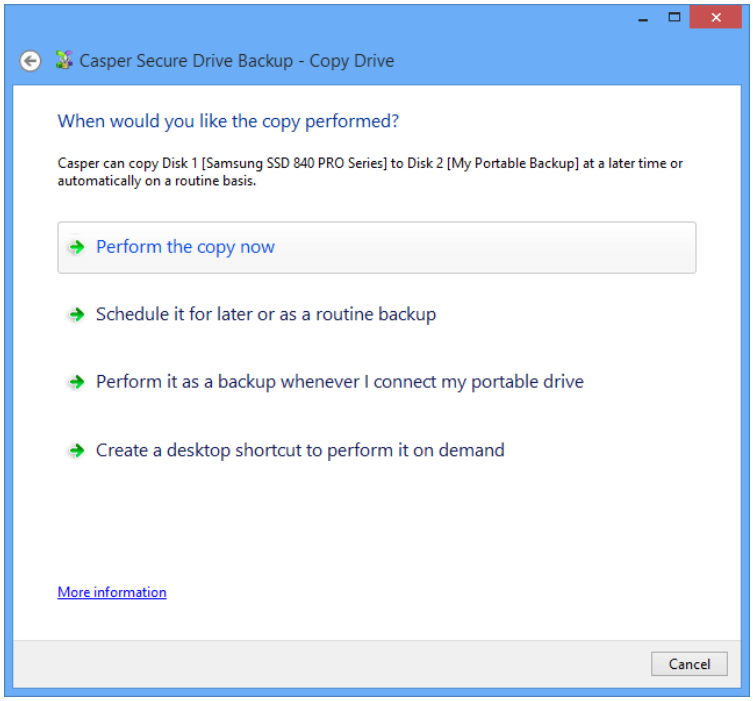
When the destination hard disk is larger than the source, the default option will be *Give all of the space to the partition* or *Proportionally distribute the space to all partitions* if there is more than one partition defined on the source disk.



Simply clicking **Next** to accept the default selection or value is generally best. For additional help with making a selection, press **F1**.

8. Click **Perform the copy now** to begin the cloning process.



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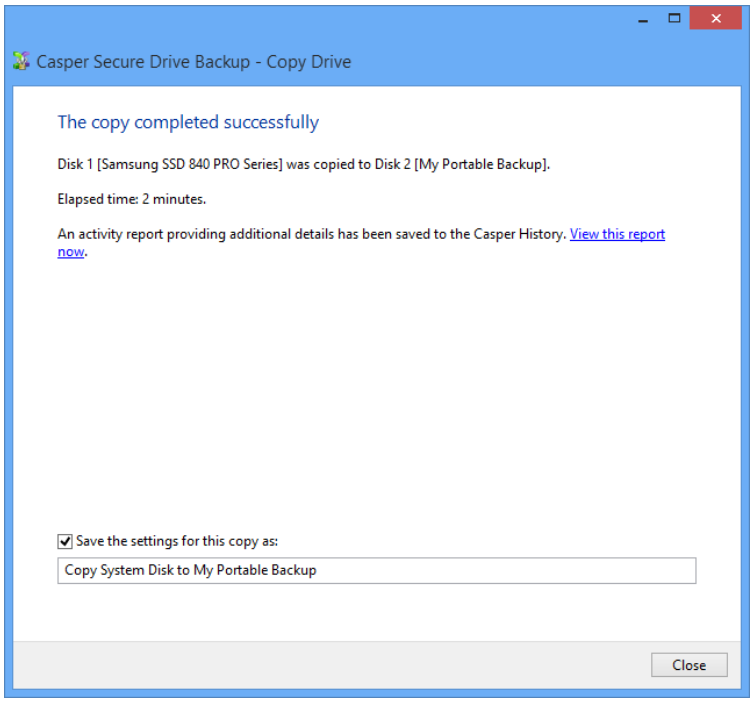
9. When Casper has completed the cloning process, click **Close**.



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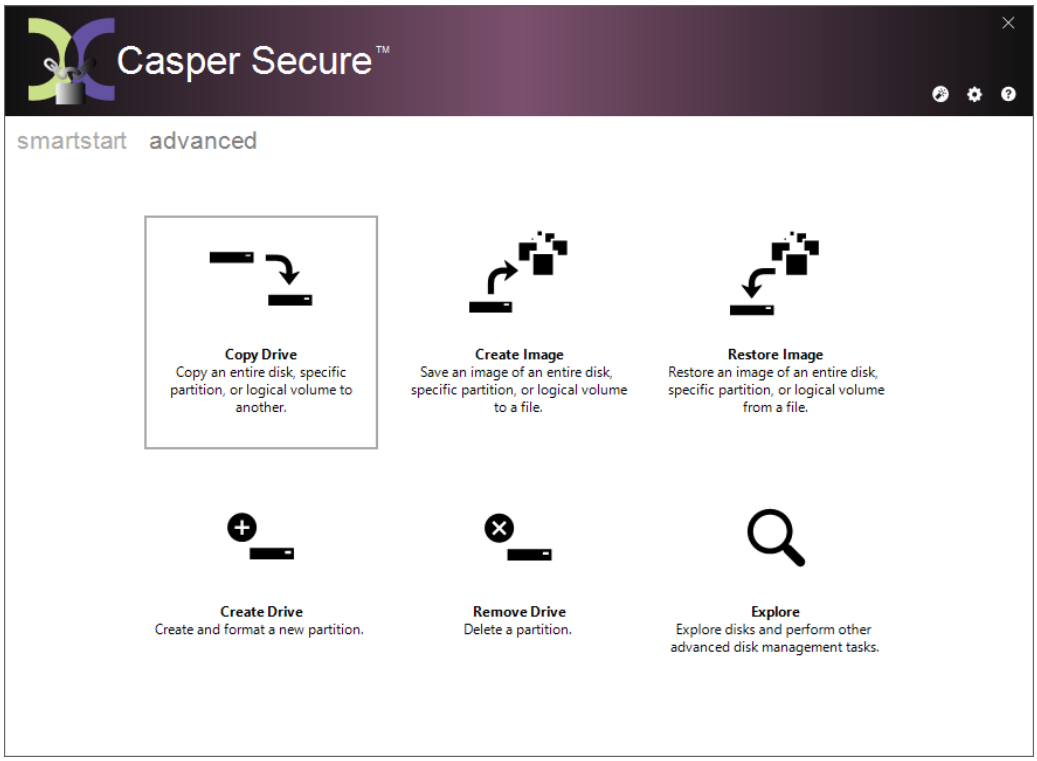
Example 2: Updating a Bootable Backup

You can manually update a bootable backup by repeating the procedure used to create the backup. When the settings for the copy have been saved as shown in the final step of the preceding example, Casper makes this process even easier. Assuming the backup hard disk is currently installed or attached to the system, the following procedure illustrates how a prior copy may be quickly repeated to update an existing bootable backup.

1. From the Casper console select the **Advanced** tab and then click **Copy Drive**.



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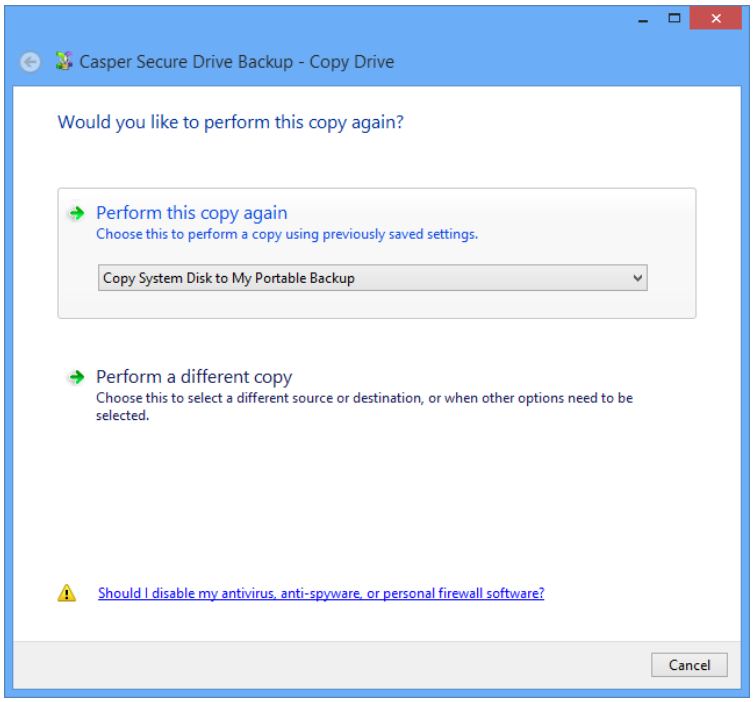
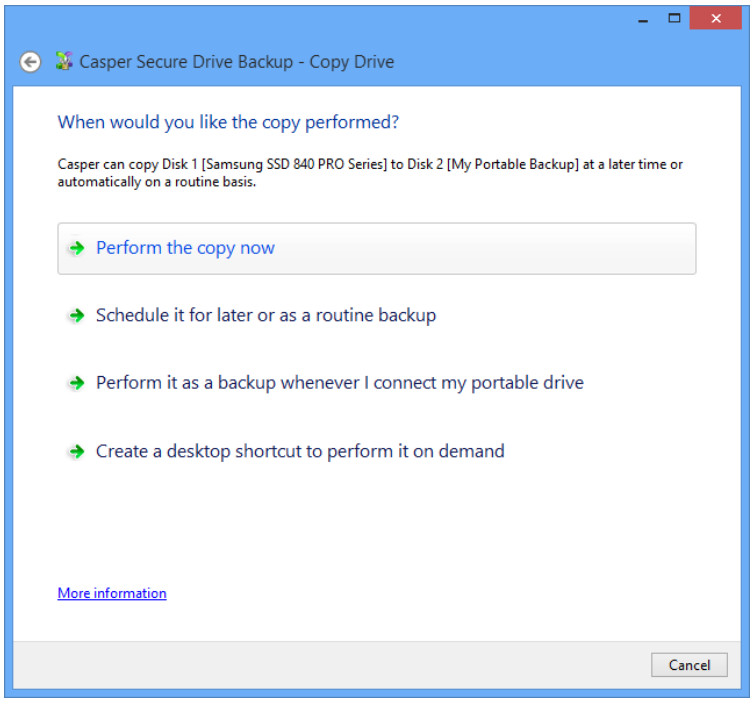
2. Select the copy to be repeated from the list provided and click **Perform this copy again**.



3. Click **Perform the copy now** to begin the cloning process.



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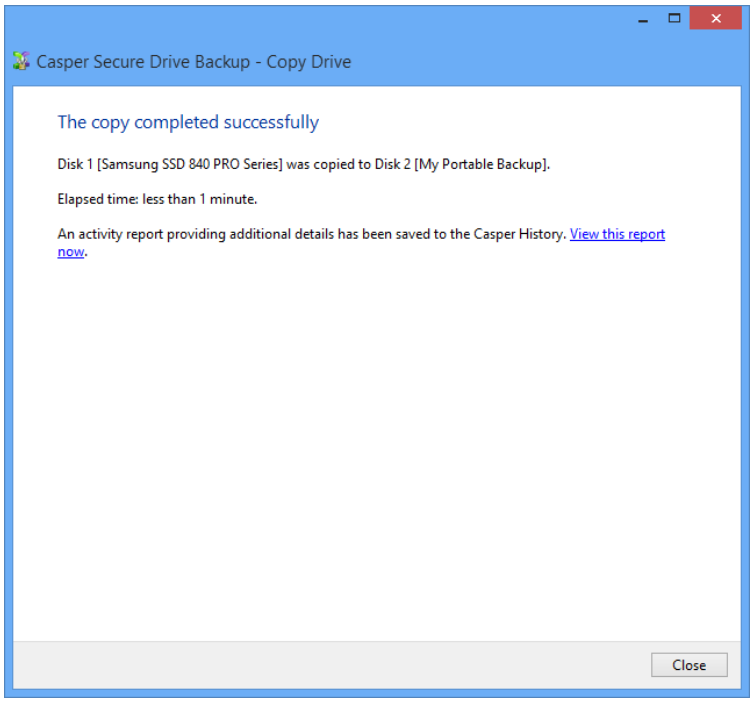
4. When Casper has completed the cloning process, click **Close**.



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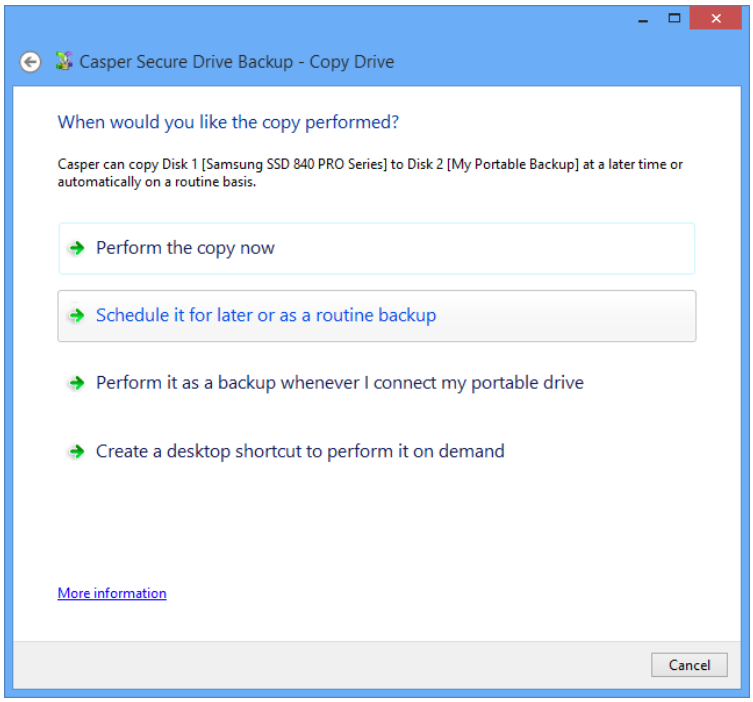
Example 3: Automating a Bootable Backup

You can fully automate the process of creating and maintaining a bootable backup for your computer by scheduling Casper to run on a routine basis. The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 1 or updating an existing backup as demonstrated in Example 2.

1. When prompted by the Copy Drive wizard, click **Schedule it for later or as a routine backup**.



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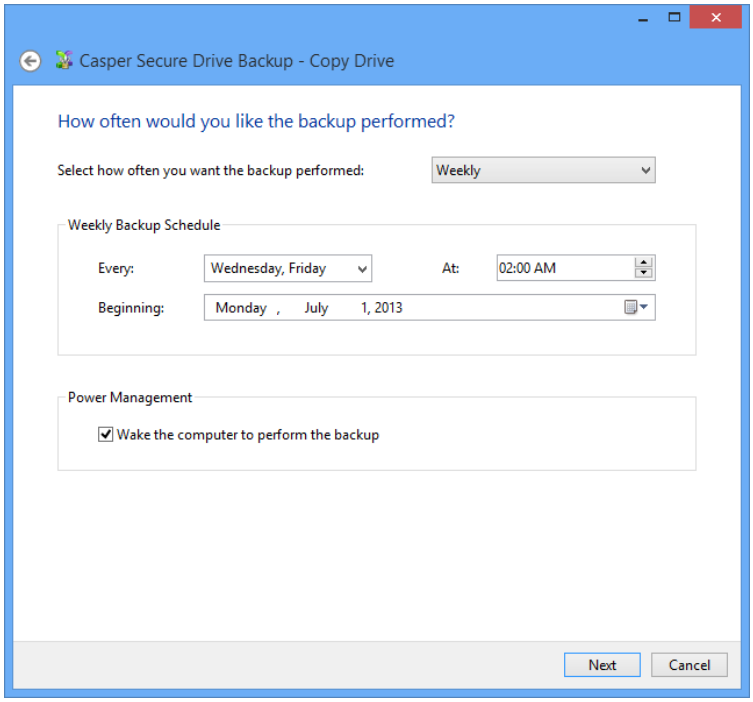
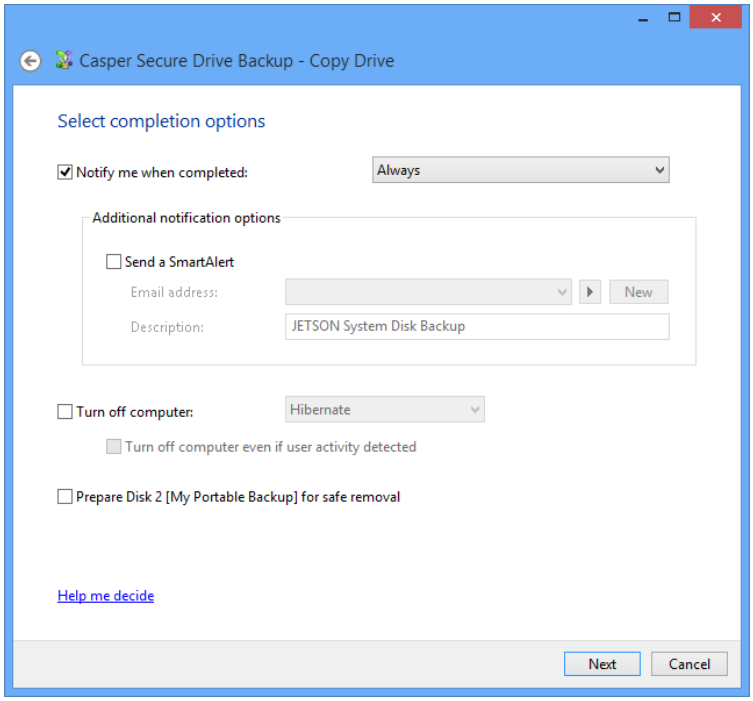
2. Select the schedule you would like Casper to follow to maintain the backup and click **Next**. For help with the schedule, press **F1**.



3. Select the desired completion options and click **Next**.



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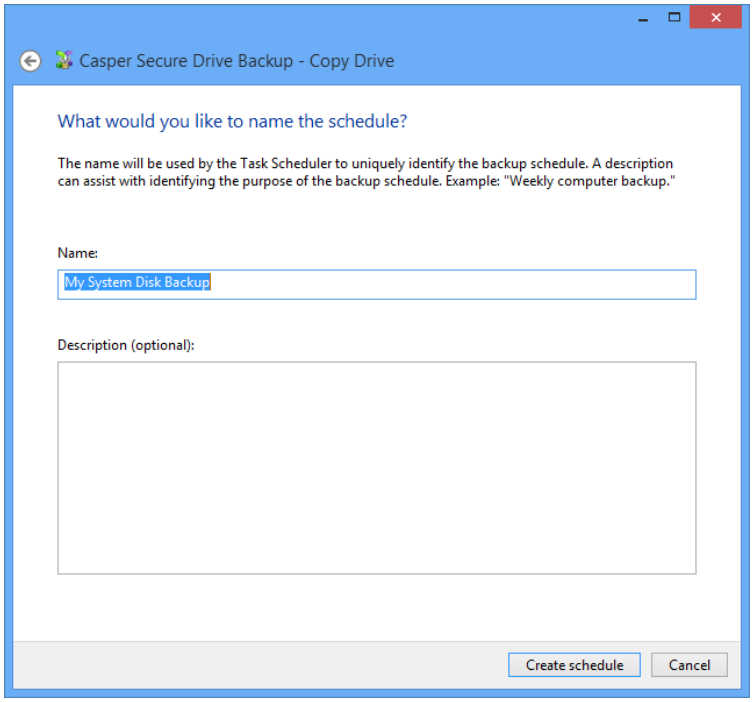
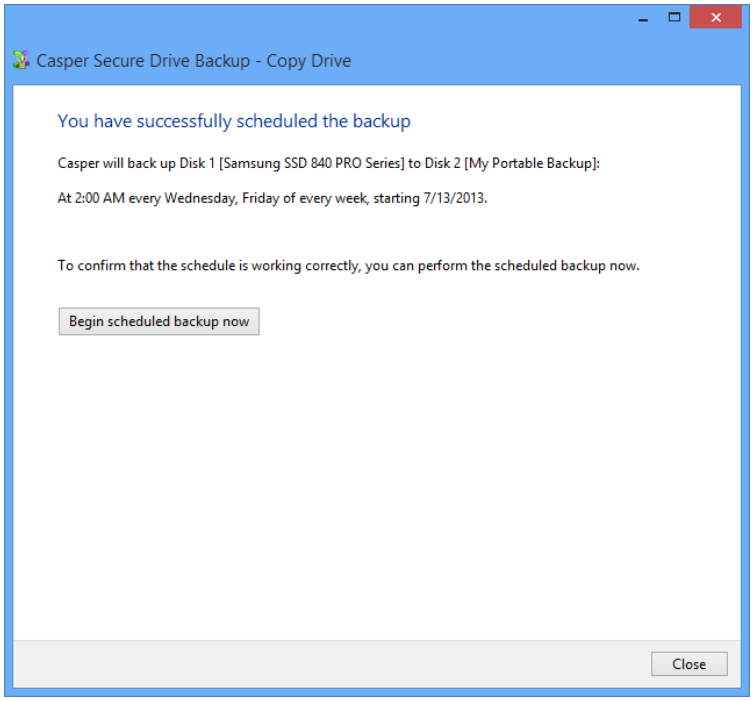
4. Enter a name for the schedule, or retain the name suggested by Casper, and then click **Create schedule** to add the copy schedule to your Windows Scheduled Tasks.



5. Click **Close** to return to the Casper console.



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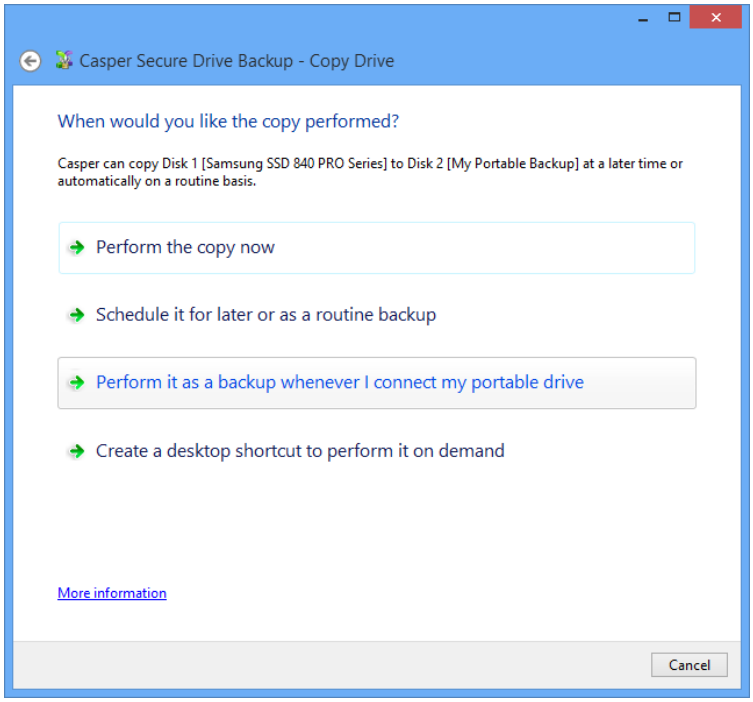
Example 4: Automating a Bootable Backup to a Portable Device

When using a portable device such as an external USB, Firewire, or eSATA drive for your backup, you can configure Casper to automatically perform a backup whenever you attach your backup drive.

Configuring a SmartSense Backup

The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 1 or updating an existing backup as demonstrated in Example 2.

1. When prompted by the Copy Drive wizard, click **Perform it as a backup whenever I connect my portable drive**.



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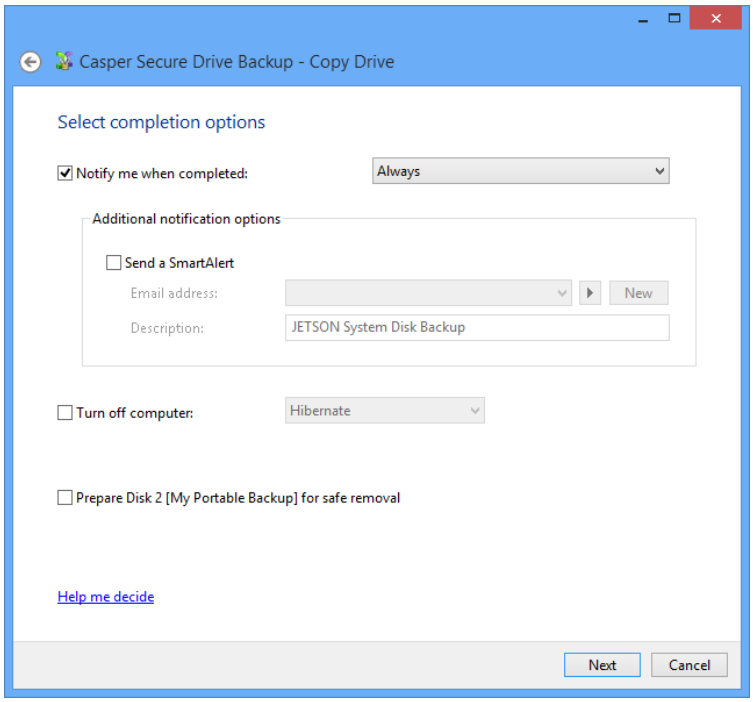
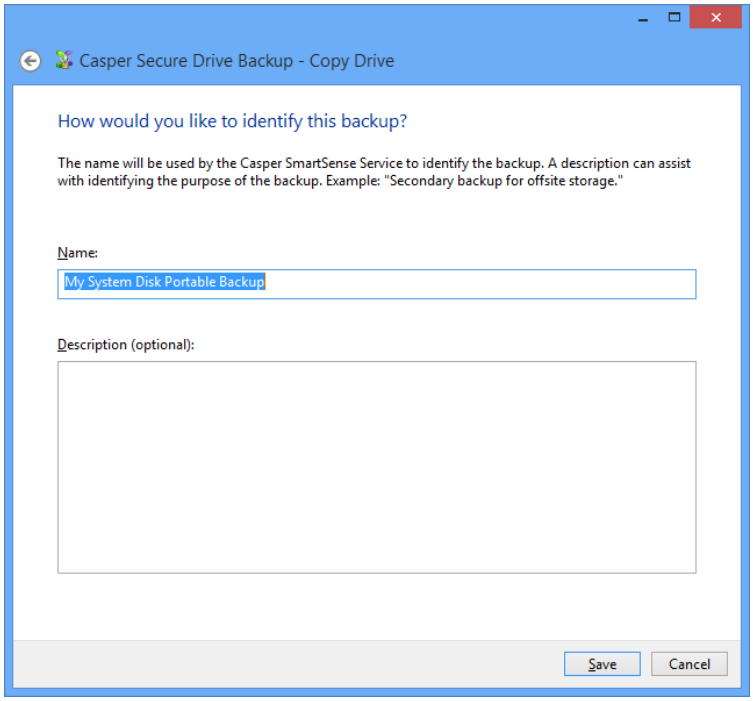
2. Select the desired completion options and click **Next**.



3. Enter a name to uniquely identify the backup, or retain the name suggested by Casper, and then click **Save** to register the backup with the Casper SmartSense Service.



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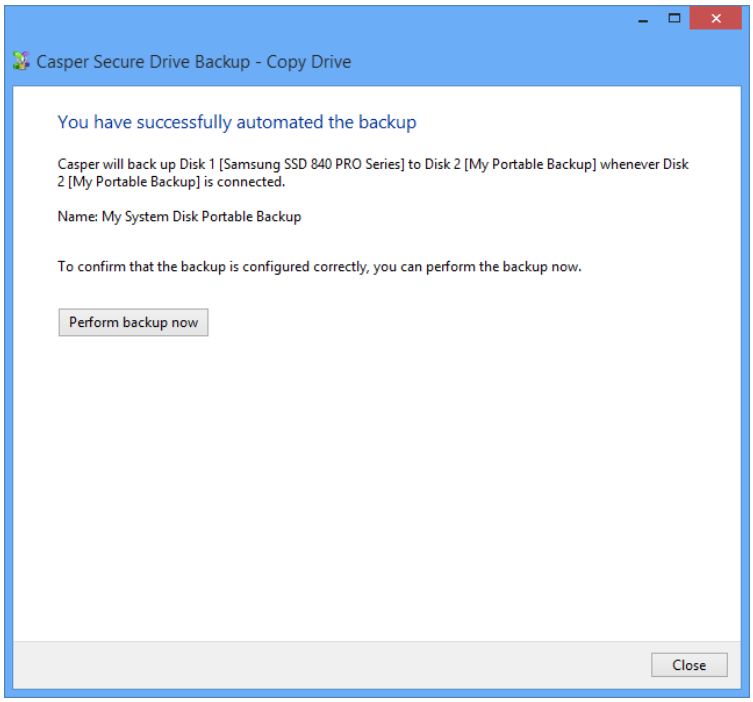
4. Click **Close** to return to the Casper console.



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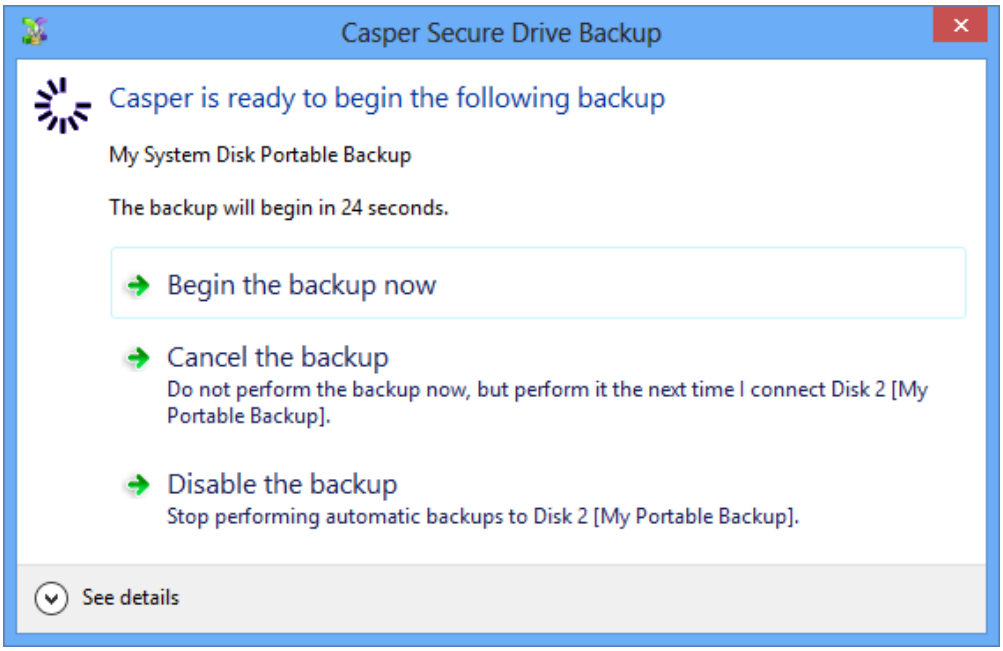
Starting a SmartSense Backup

Once your portable backup drive has been registered with the Casper SmartSense Service, the backup can be started by simply attaching the portable drive to the computer.



The backup will start automatically after a short delay. You can begin the backup immediately by selecting **Begin the backup now**. Click **Cancel the backup** to skip the backup or **Disable the backup** to skip the current backup and prevent future backups from beginning automatically.

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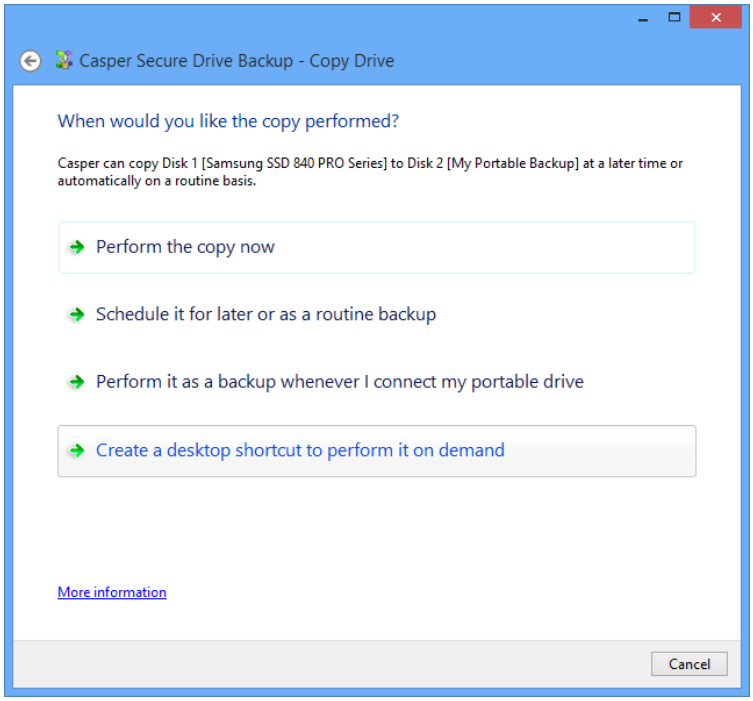
Example 5: Performing a Bootable Backup On-Demand

You can create a desktop shortcut to perform a bootable backup on-demand.

Creating a Desktop Shortcut for a Bootable Backup

The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 1 or updating an existing backup as demonstrated in Example 2.

1. When prompted by the Copy Drive wizard, click **Create a desktop shortcut to perform it on demand**.



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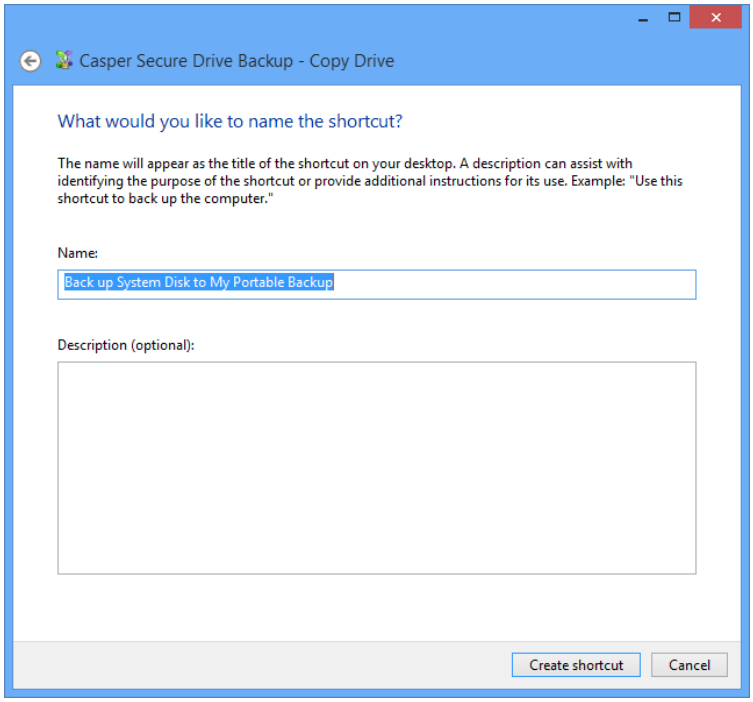
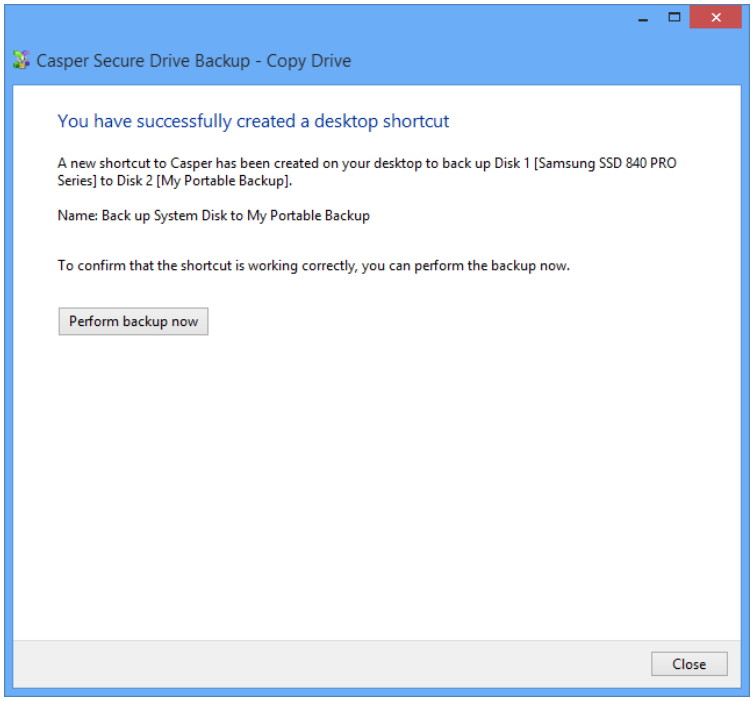
2. Enter a name for the shortcut, or retain the name suggested by Casper, and click **Create shortcut**.



3. Click **Close** to return to the Casper console.



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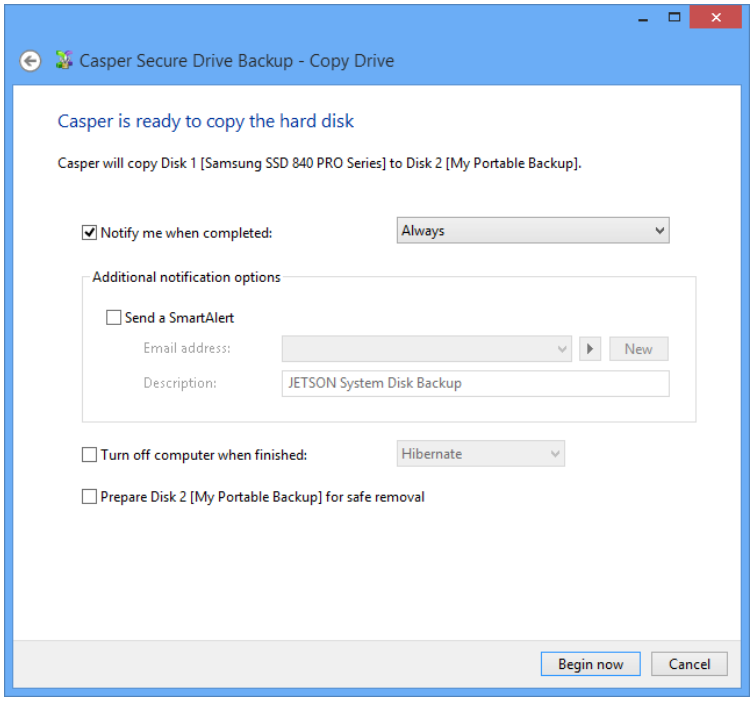
Performing a Bootable Backup On-Demand

After creating a desktop shortcut, you can use the Casper shortcut appearing on your desktop to begin the backup. Click **Begin now** to start the backup.



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Creating and Maintaining a Restore-Point System Backup

Using Casper Secure Drive Backup to create and maintain a restore-point backup for your computer system requires a storage device with free space that is at least several times greater than the amount of used space on your Windows system hard disk. An external USB or eSATA connected storage device with the prerequisite amount of free space is often ideal for maintaining restore-point backups. While the exact amount of free space depends on several factors, usually about three times the amount of used space on your Windows system hard disk is enough free space for Casper to create and maintain multiple restore-points for a restore-point backup. For example, if 150GB represents the current amount of used space on your Windows system disk, using a storage device with approximately 450GB of free space is generally sufficient to maintain a restore-point backup with a good variety of restore-points.

The following examples illustrate various ways to create and maintain a restore-point backup of your Windows system disk.

Example 6: Creating a Restore-Point Backup. This example demonstrates how to create a restore-point backup for your Windows system disk.

Example 7: Updating a Restore-Point Backup. This example shows how to manually update an existing restore-point backup by creating a new restore point.

Example 8: Automating a Restore-Point Backup. This example illustrates how to fully automate a restore-point backup.

Example 9: Automating a Restore-Point Backup to a Portable Device. This example shows how to automate a restore-point backup maintained on a portable device such as a USB, Firewire, or eSATA connected disk.

Example 10: Performing a Restore-Point Backup On-Demand. This example demonstrates how to create a desktop shortcut to maintain a restore-point backup on-demand.

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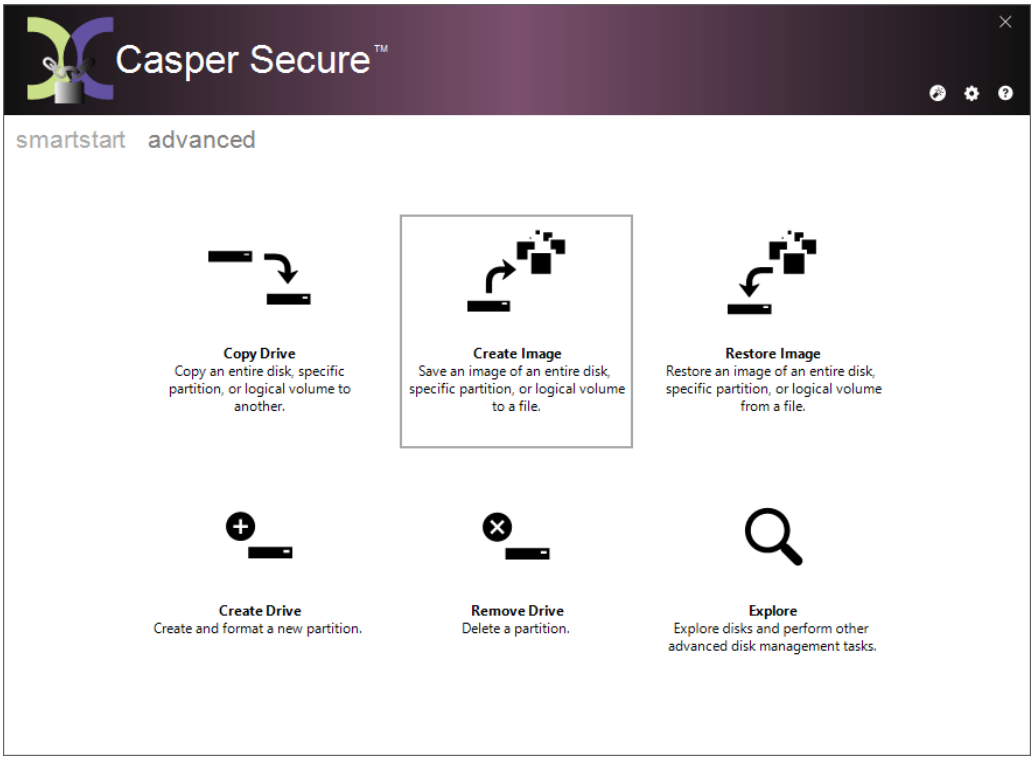
Example 6: Creating a Restore-Point Backup

Assuming the backup hard disk is currently installed or attached to the system, the following procedure illustrates how to create an image of the Windows system hard disk to produce a restore-point backup on either a desktop or notebook system.

1. Select **Create Image**.



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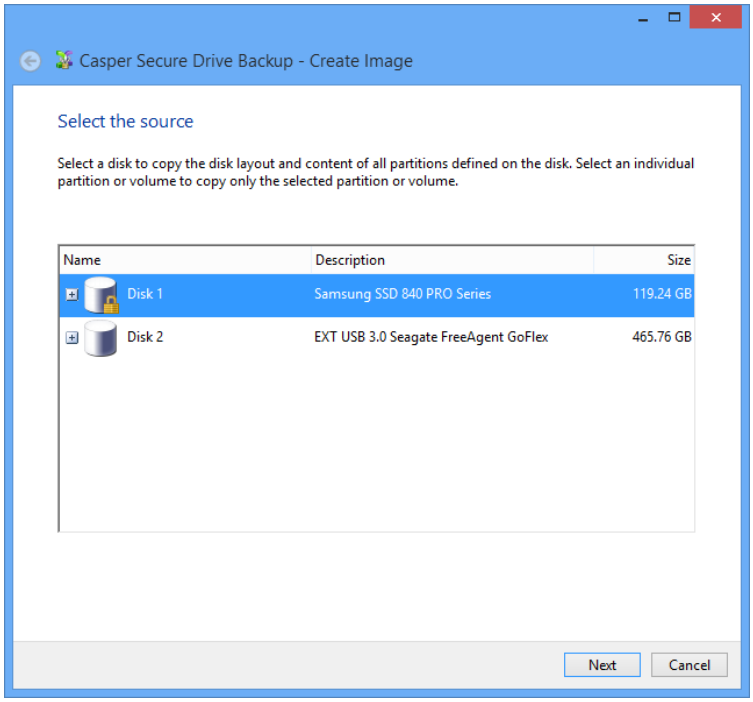
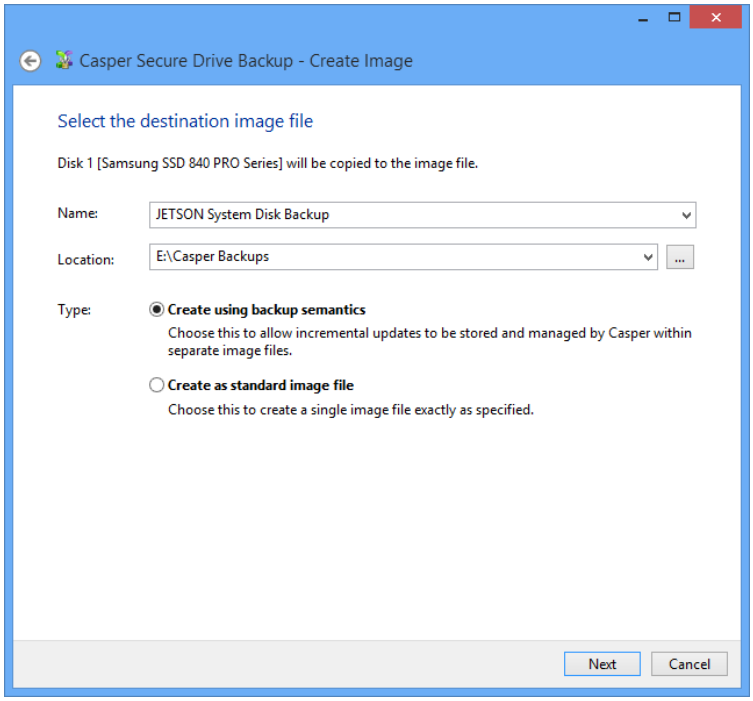
2. Select the hard disk to backup (e.g., the hard disk on which Windows is installed) as the source and click **Next**.



3. Enter a name for the restore-point backup, or retain the name suggested by Casper, and then select the location where the image file(s) will be stored. To allow future restore-points to be managed by Casper, choose **Create using backup semantics** and click **Next**. For additional help, press **F1**.



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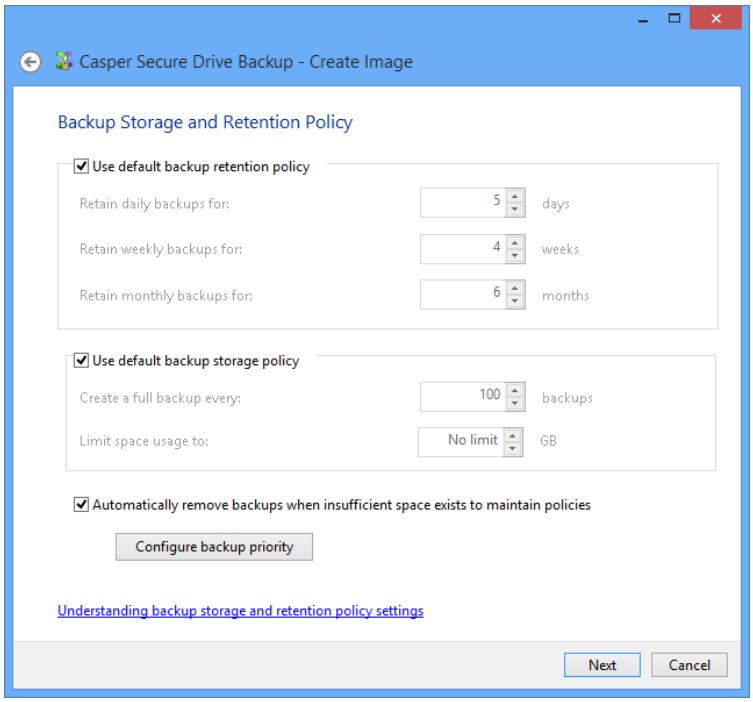
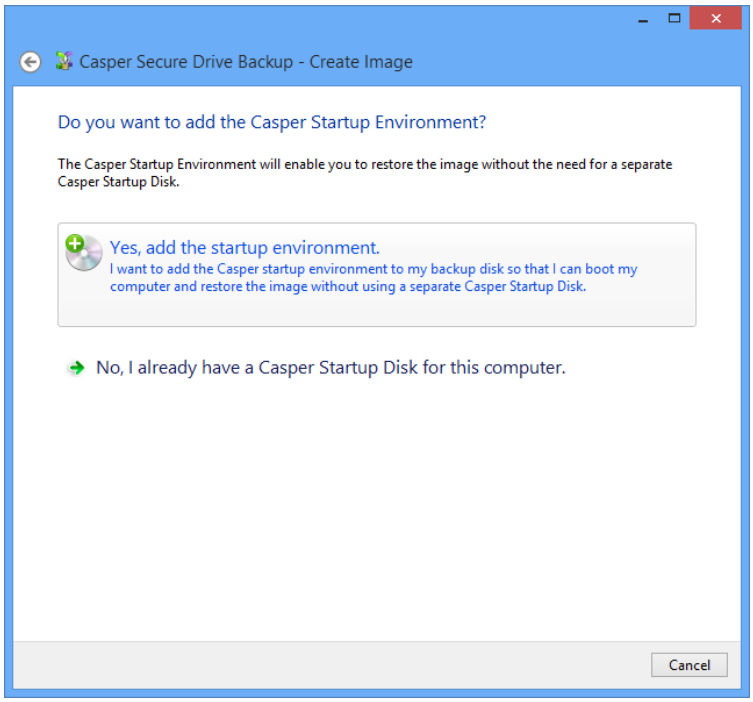
4. When using backup semantics, Casper will prompt you to specify the storage and retention policy for the backup. This policy governs how restore-points are created and managed. It also defines what happens when additional storage space is needed to create a new restore-point. Click **Next** to proceed.



5. If creating an image of the Windows System disk on a disk that can be used to boot the Casper Startup and Recovery Environment, Casper will offer to add the Casper Startup and Recovery Environment. This eliminates the need to create and use a separate Casper Startup Disk to restore the image. Click **Yes, add the startup environment**.



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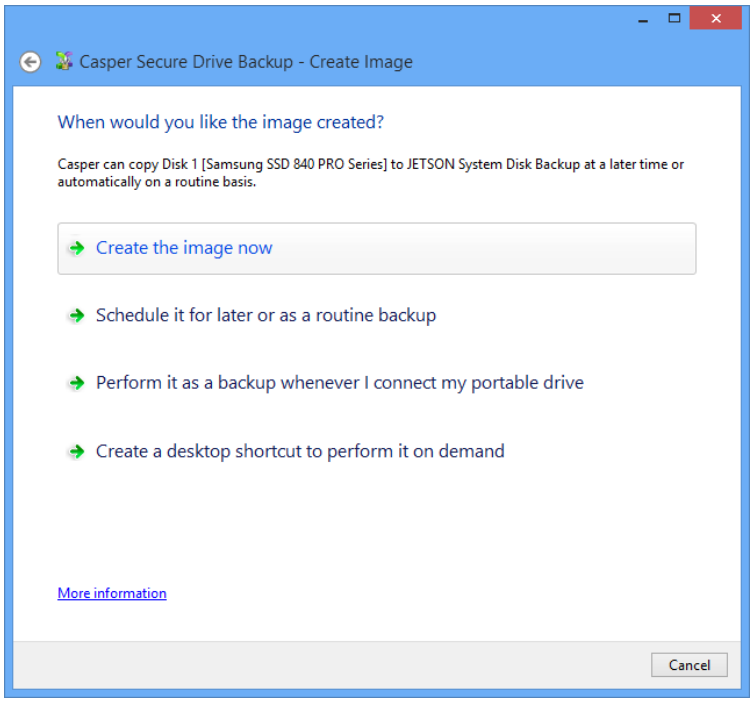
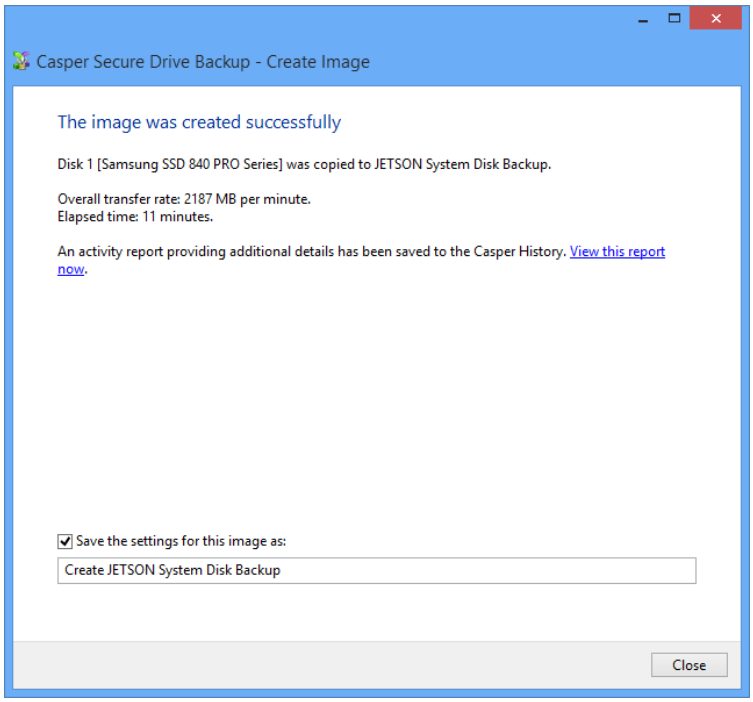
6. Click **Create the image now** to begin the imaging process.



7. When Casper has completed the imaging process, click **Close**.



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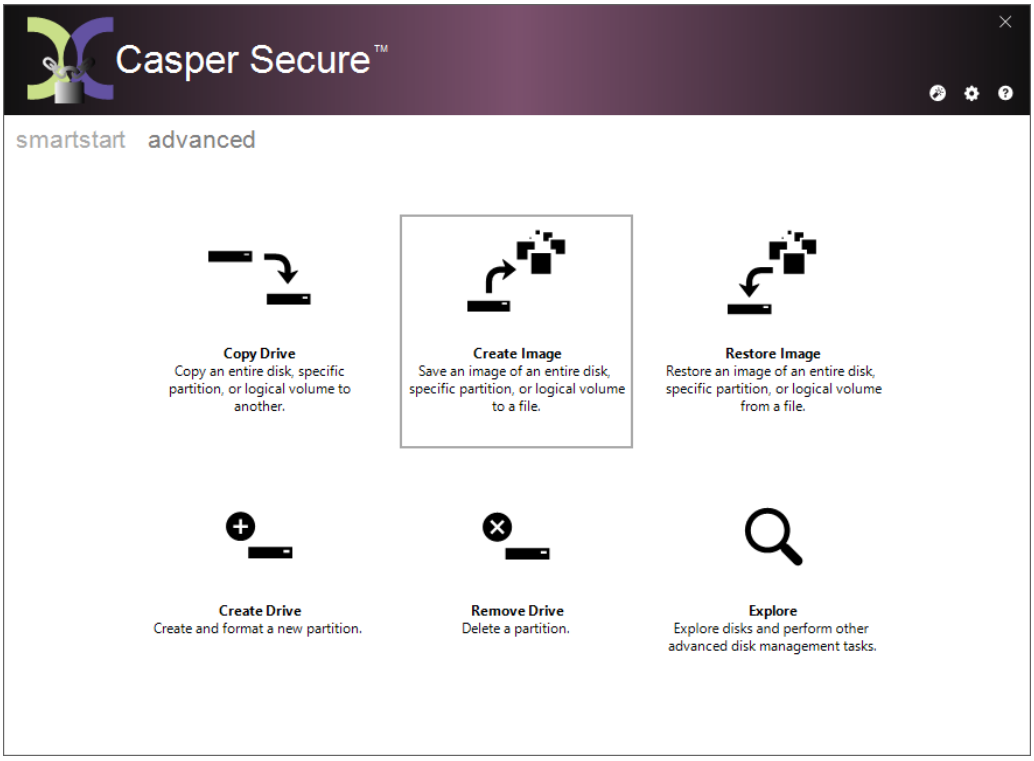
Example 7: Updating a Restore-Point Backup

You can manually update a restore-point backup with a new restore-point by repeating the procedure used to create the initial restore-point backup. When the settings for the image have been saved as shown in the final step of the preceding example, Casper makes this process even easier. Assuming the backup hard disk is currently installed or attached to the system, the following procedure illustrates how to quickly create the image again to produce a new restore-point.

1. Select **Create Image**.



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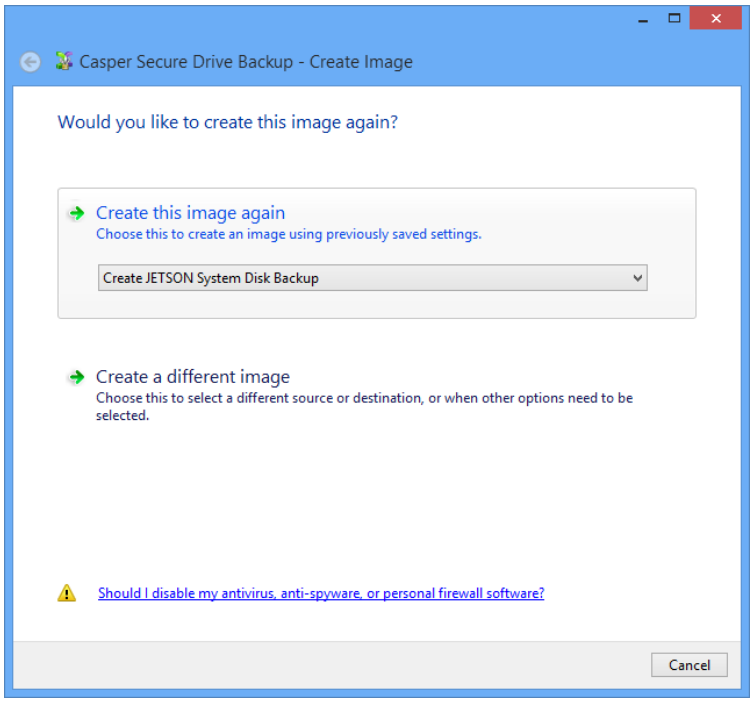
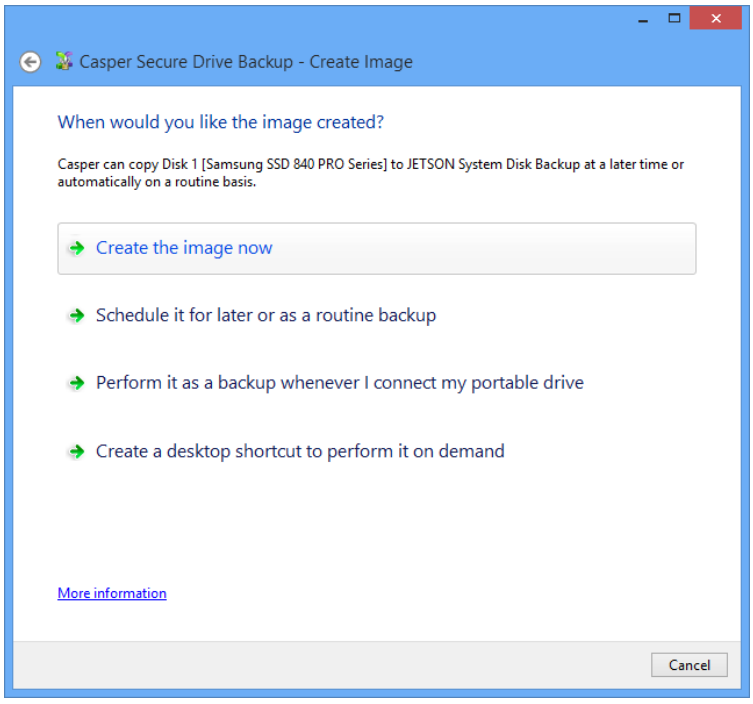
2. Select the image from the list provided and click **Create this image again**.



3. Click **Create the image now** to begin the imaging process.



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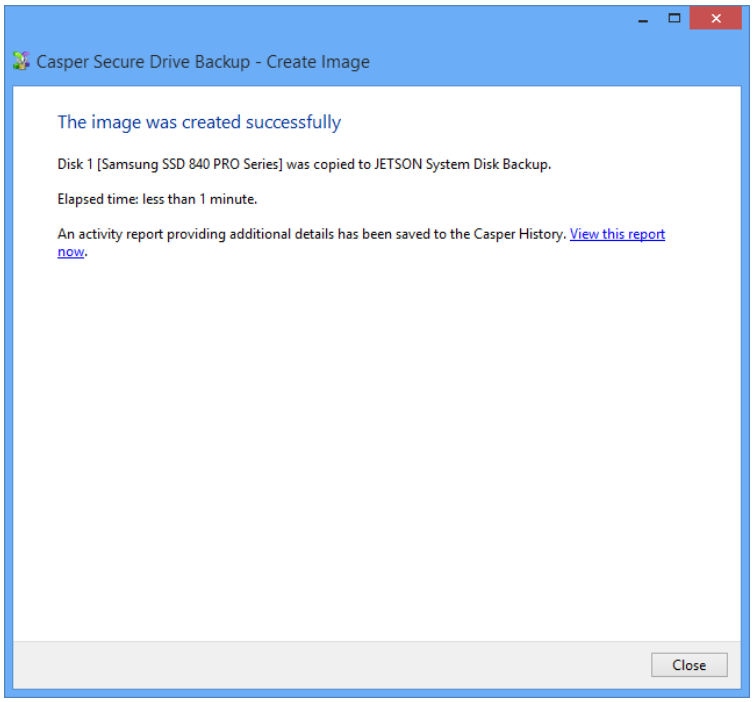
4. When Casper has completed the imaging process, click **Close**.



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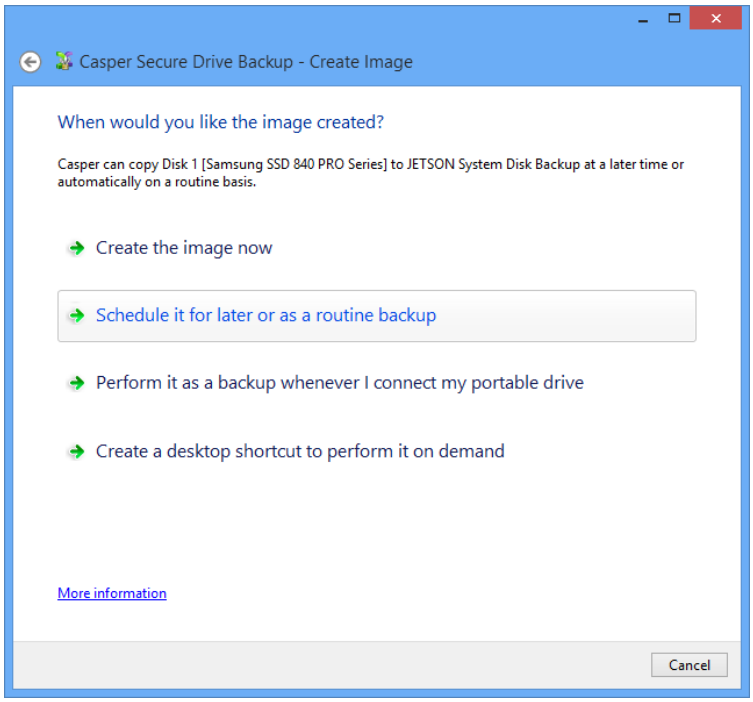
Example 8: Automating a Restore-Point Backup

You can fully automate the process of creating and maintaining a restore-point backup for your computer by scheduling Casper to run on a routine basis. The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 6 or updating an existing backup as demonstrated in Example 7.

1. When prompted by the Create Image wizard, click **Schedule it for later or as a routine backup**.



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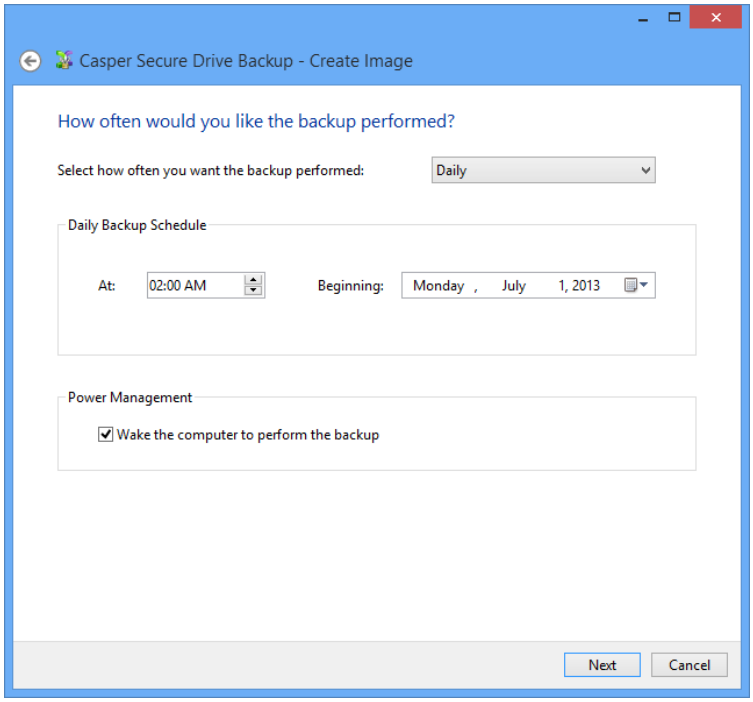
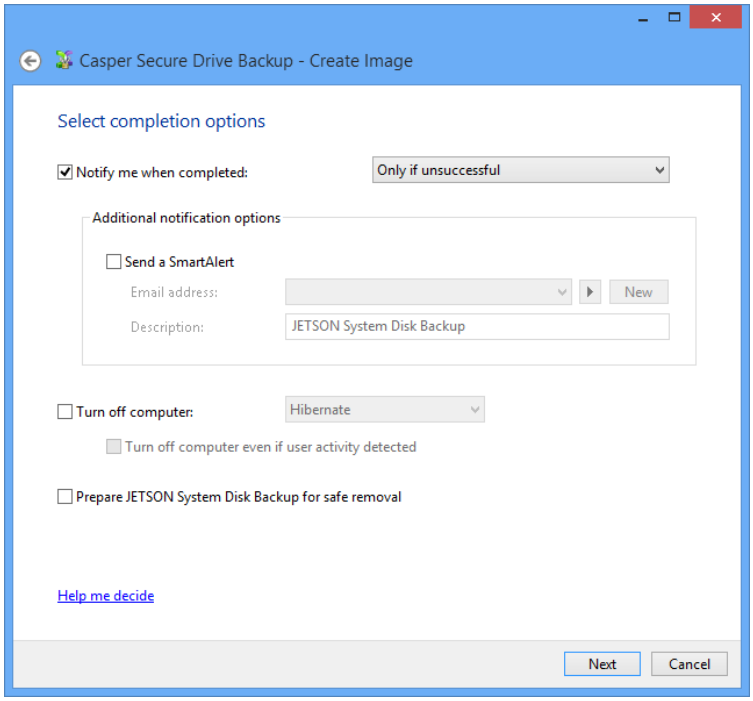
2. Select the schedule you would like Casper to follow to maintain the backup and click **Next**. For help with the schedule, press **F1**.



3. Select the desired completion options and click **Next**.



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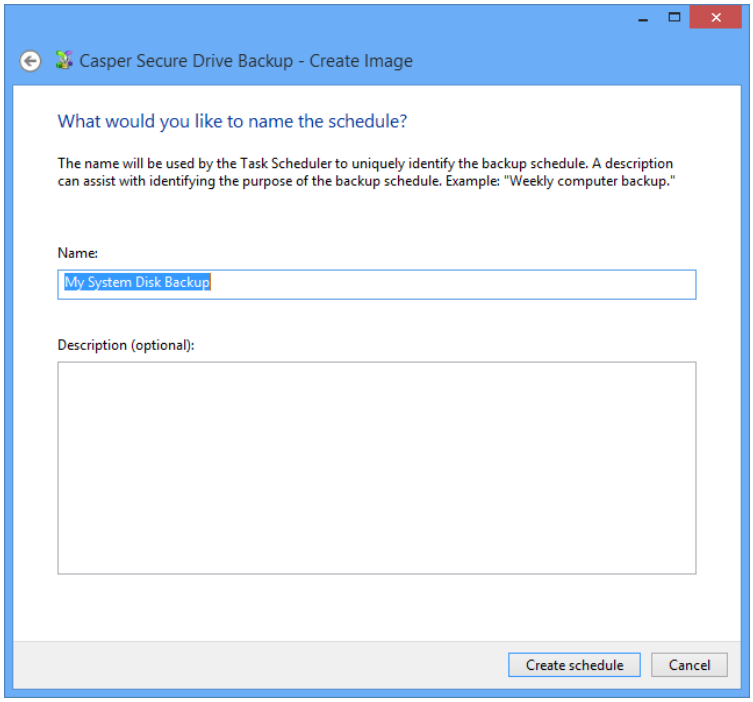
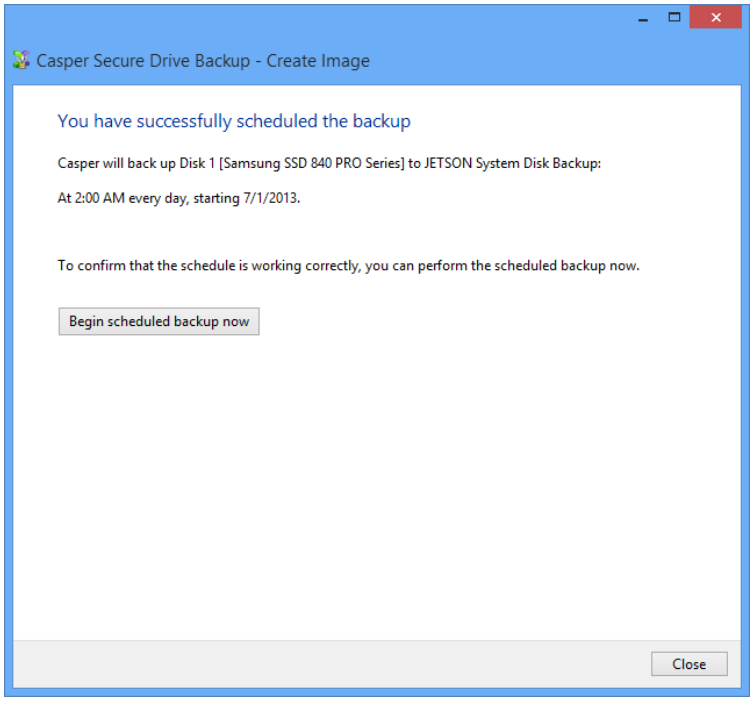
4. Enter a name for the schedule, or retain the name suggested by Casper, and then click **Create schedule** to add the copy schedule to your Windows Scheduled Tasks.



5. Click **Close** to return to the Casper console.



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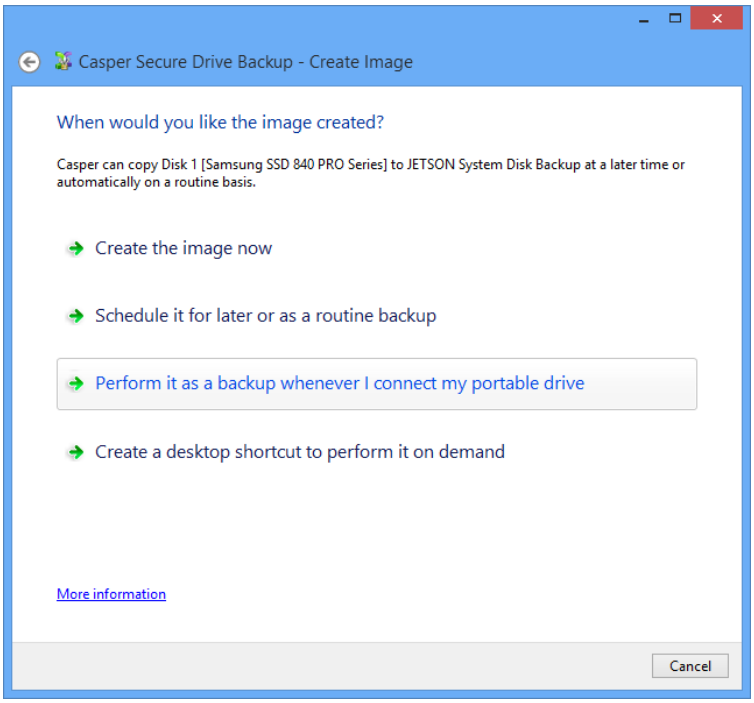
Example 9: Automating a Restore-Point Backup to a Portable Device

When using a portable device such as an external USB, Firewire, or eSATA drive for your backup, you can configure Casper to automatically perform a backup whenever you attach your backup drive.

Configuring a SmartSense Backup

The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 6 or updating an existing backup as demonstrated in Example 7.

1. When prompted by the Create Image wizard, click **Perform it as a backup whenever I connect my portable drive**.



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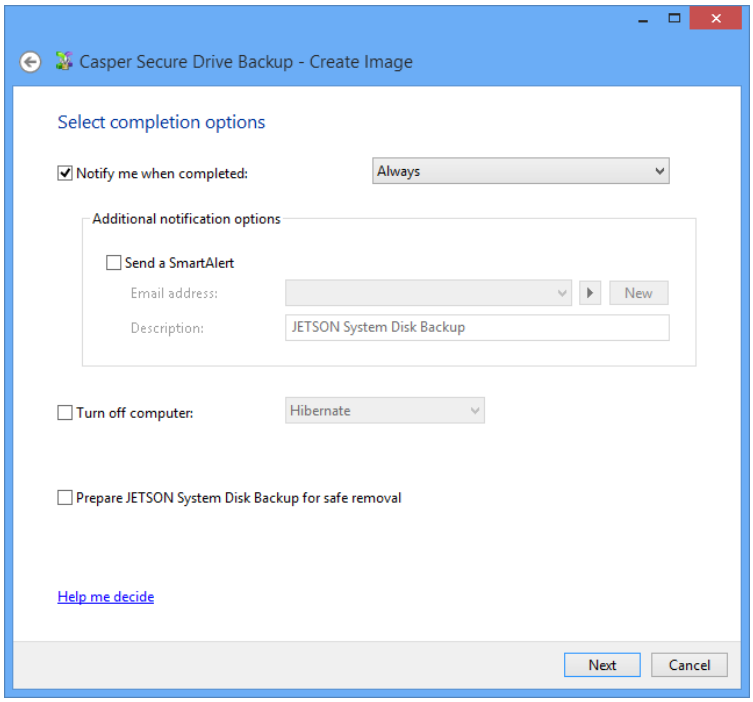
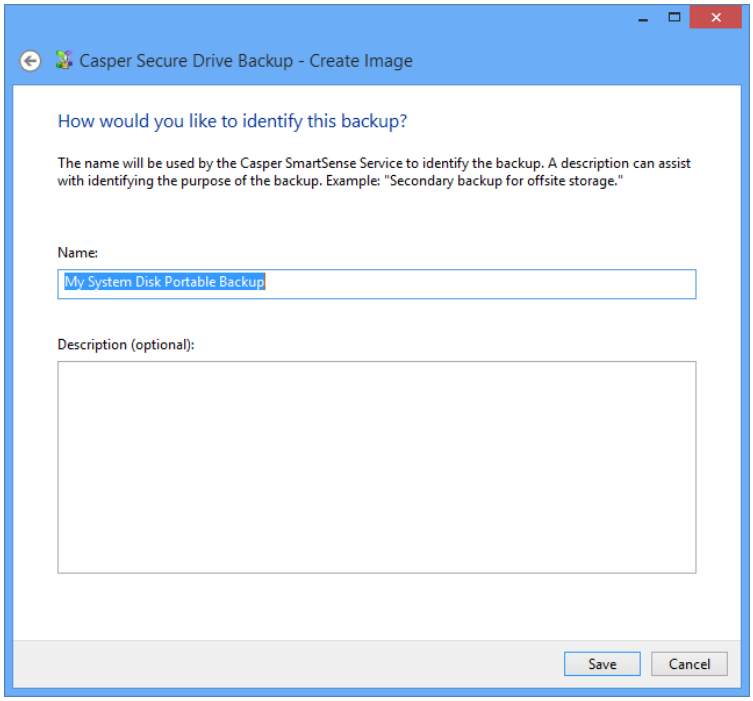
2. Select the desired completion options and click **Next**.



3. Enter a name to uniquely identify the backup, or retain the name suggested by Casper, and then click **Save** to register the backup with the Casper SmartSense Service.



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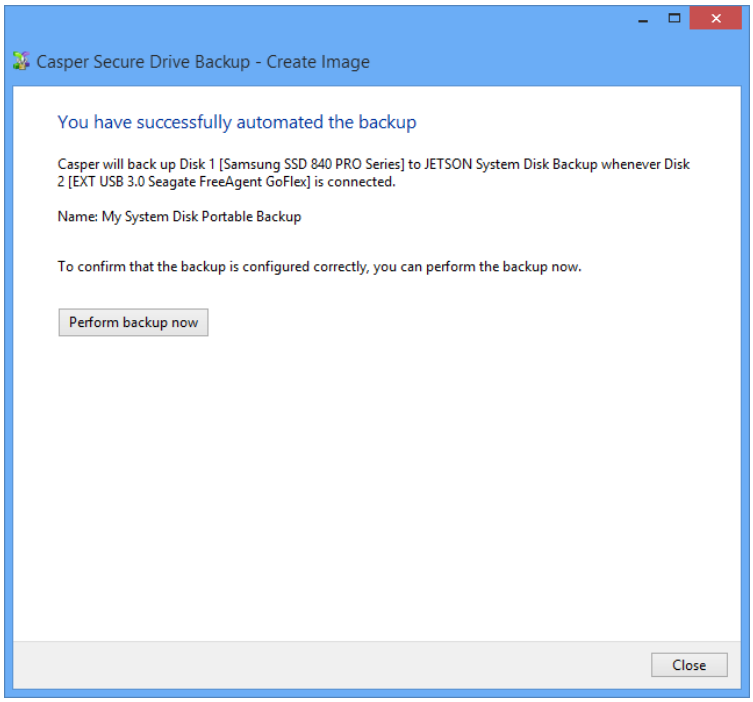
4. Click **Close** to return to the Casper console.



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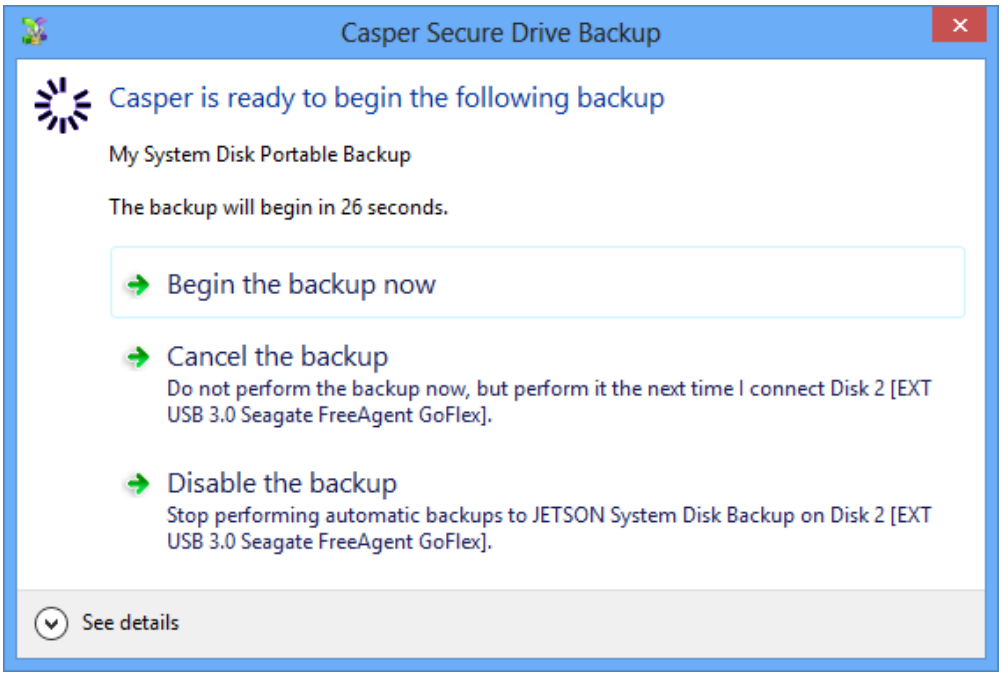
Starting a SmartSense Backup

Once your portable backup drive has been registered with the Casper SmartSense Service, the backup can be started by simply attaching the portable drive to the computer.



The backup will start automatically after a short delay. You can begin the backup immediately by selecting **Begin the backup now**. Click **Cancel the backup** to skip the backup or **Disable the backup** to skip the current backup and prevent future backups from beginning automatically.

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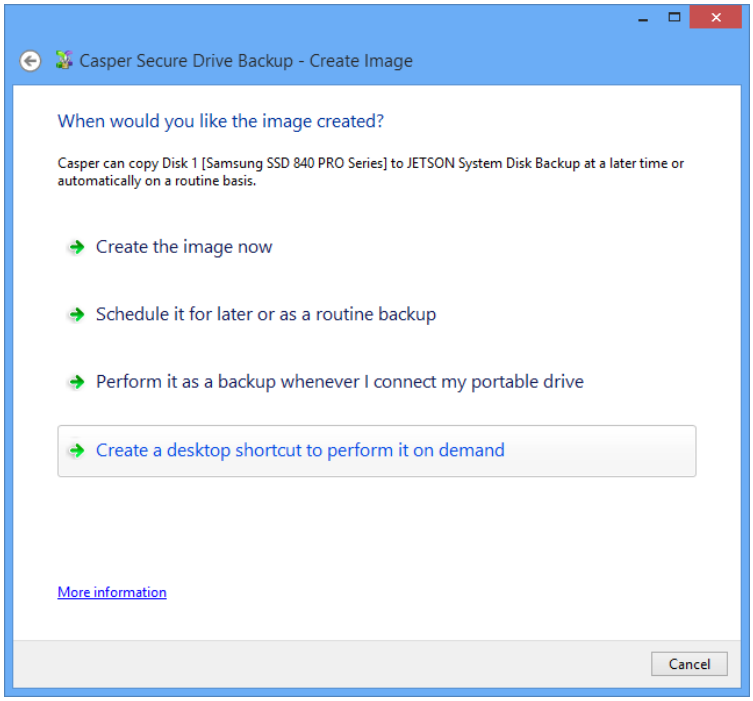
Example 10: Performing a Restore-Point Backup On-Demand

You can create a desktop shortcut to perform a bootable backup on-demand.

Creating a Desktop Shortcut for a Restore-Point Backup

The procedure outlined below is the same whether you are performing an initial backup as demonstrated in Example 6 or updating an existing backup as demonstrated in Example 7.

1. When prompted by the Create Image wizard, click **Create a desktop shortcut to perform it on demand**.



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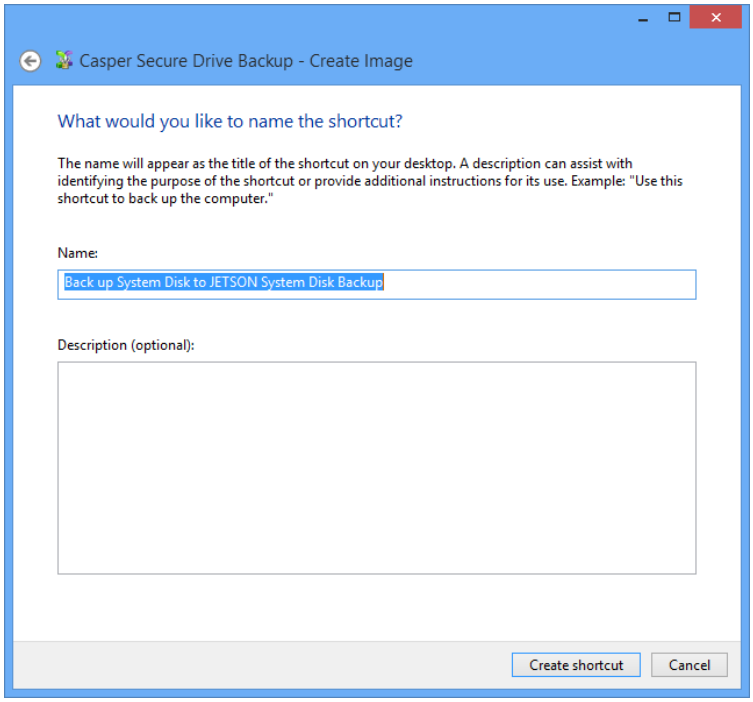
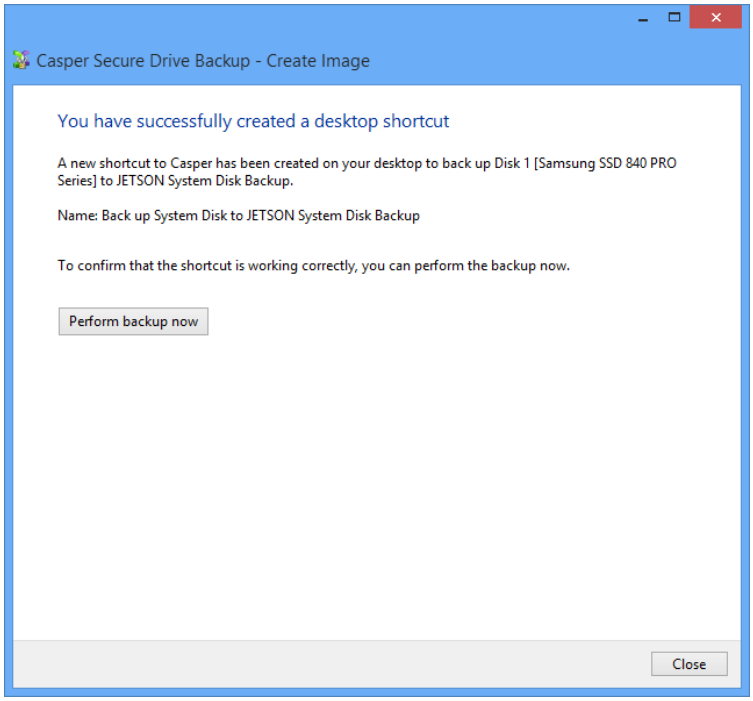
2. Enter a name for the shortcut, or retain the name suggested by Casper, and click **Create shortcut**.



3. Click **Close** to return to the Casper console.



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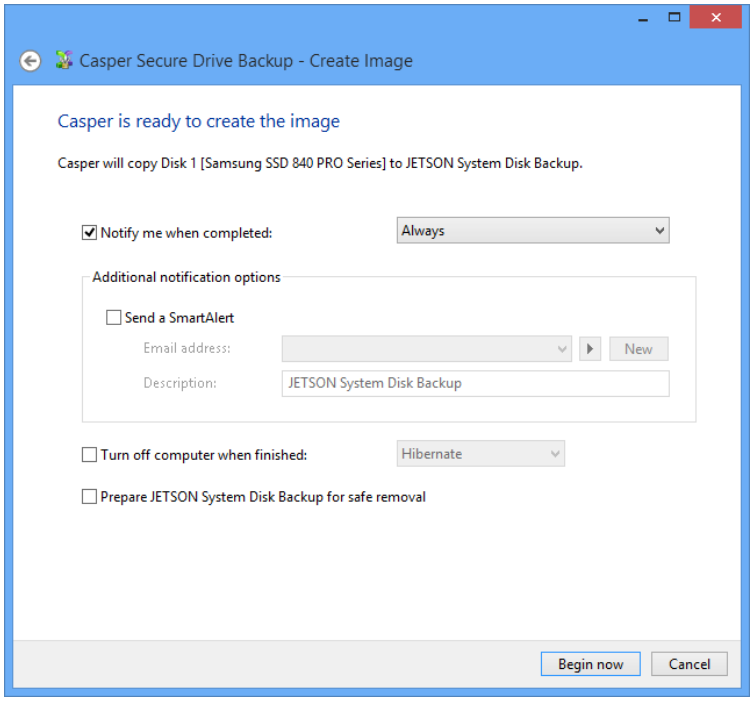
Performing a Restore-Point Backup On-Demand

After creating a desktop shortcut, you can use the Casper shortcut appearing on your desktop to begin the backup. Click **Begin now** to start the backup.



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Recovering from a System Disk Failure

If you have used Casper Secure Drive Backup to create a backup of your computer's Windows system disk, and the disk fails or its contents become corrupted, you can restore your computer to working order by using your Casper backup.

If you created a bootable backup, you can run your computer directly from your backup either by replacing your computer's existing Windows system disk with the backup hard disk or by temporarily reconfiguring your computer to boot and run directly from the backup hard disk. For details, please see **Booting from a Bootable Backup**.

If you are unable to boot your computer to your bootable backup, or if you created a restore-point backup, you must boot the computer to the Casper Secure Startup and Recovery Environment and restore the backup. Restoration may be made to either the existing Windows system disk or a replacement disk (e.g., when the existing disk is no longer operable). For details, please see **Restoring a System Backup**.

If you created a restore-point backup and added the Casper Secure Startup and Recovery Environment to the backup disk, you can boot your computer directly from the backup disk to perform the restore. When restoring a bootable backup, or when the Casper Secure Startup and Recovery Environment has not been added to the backup disk, the Casper Secure Startup Disk can be used to boot the computer to perform the restore. For details on creating and using a Casper Secure Startup Disk, please see the **Casper Secure Startup Disk Creator Guide**.

The following table summarizes the available system recovery options for each type of backup.

System Recovery Options

Casper Bootable Backup	Casper Restore-Point Backup
Permanently replace existing system disk with backup disk.	If Casper Secure Startup and Recovery Environment was added to backup disk, boot computer to backup disk and restore backup.
Temporarily configure computer to boot and run from backup disk and optionally restore backup.	Boot computer to Casper Secure Startup Disk and restore backup from backup disk.
Boot computer to Casper Secure Startup Disk and restore backup from backup disk.	

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Booting from a Bootable Backup

If you have used Casper Secure Drive Backup to create a bootable backup of your computer's Windows system disk, you can run your computer directly from your backup either by replacing your computer's existing Windows system disk with the backup hard disk or by temporarily reconfiguring your computer to boot and run directly from the backup hard disk. Either way, the backup hard disk will take on the identity of the original Windows system disk. For example, if your computer's system disk normally boots and appears as Local Disk (C:), your backup disk will boot and appear as Local Disk (C:) whenever your computer has been configured to boot and run from it. In addition, all of your programs, settings, and data will run and appear just they did on the original Windows system disk when your backup was created.

When the backup hard disk is installed as an internal hard disk, or attached externally as an eSATA or USB device, booting from the backup hard disk is accomplished by changing the boot priority setting in the computer's BIOS or EFI Firmware to designate the backup hard disk as the preferred boot device.

If the computer's BIOS or EFI Firmware does not offer an option to select the designated backup hard disk as the preferred boot device, or if the original hard disk fails completely, the backup hard disk must be reconfigured to replace the original hard disk. For an internally mounted backup hard disk, this is accomplished by changing the hard disk cable connection to make the backup hard disk the primary SATA drive or the master on the primary IDE/ATA controller. For a backup hard disk installed in a secondary media bay of a notebook, or installed in an external USB, Firewire, eSATA, or PCMCIA enclosure, the backup hard disk is removed from its enclosure and exchanged with the original, internally mounted hard disk.

> **NOTE:** For a hard disk attached as an external USB device, booting from the backup hard disk may require the selection of additional BIOS or EFI Firmware options to completely enable booting. By default, some BIOS implementations disable USB boot support, or have it configured for floppy or ZIP drive emulation rather than hard disk drive (HDD) emulation. *If the computer's BIOS or EFI Firmware does not support booting from external USB hard disk type devices, a bootable backup hard disk must be removed from its external enclosure and installed as a replacement for the internal hard disk in order to boot from it.* Alternatively, a restore may be performed by using the Casper Secure Startup Disk to copy the external backup hard disk to the computer's internal hard disk.

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Restoring a System Backup

If you created a restore-point backup, or if you are unable to boot your computer to your bootable backup, a system backup can be restored by booting your computer to the Casper Secure Startup and Recovery Environment.

If the Casper Secure Startup and Recovery Environment was added your backup disk, you can boot your computer directly from the backup disk to perform the restore. When restoring a bootable backup, or when the Casper Secure Startup and Recovery Environment is not present on the backup disk, the Casper Secure Startup Disk can be used to boot the computer to perform the restore.

Booting a computer from the Casper Secure Startup and Recovery Environment may take several minutes. Once it has completed the boot process, Casper SmartRestore™ will attempt to automatically identify your backup and prompt you to begin the restore. If SmartRestore is unable to locate your backup, the Casper Secure Drive Backup console will display. For more information on using Casper SmartRestore to perform a restore, please see the **Casper Secure SmartRestore Guide**.

The following examples illustrate how to manually restore a system backup when Casper SmartRestore is unable to locate your backup.

Example 11: Manually Restoring a Restore-Point Backup. This example shows how to manually restore a backup using the **Restore Image** wizard.

Example 12: Manually Restoring a Bootable Backup. This example demonstrates how to manually restore a bootable backup using the **Copy Drive** wizard.

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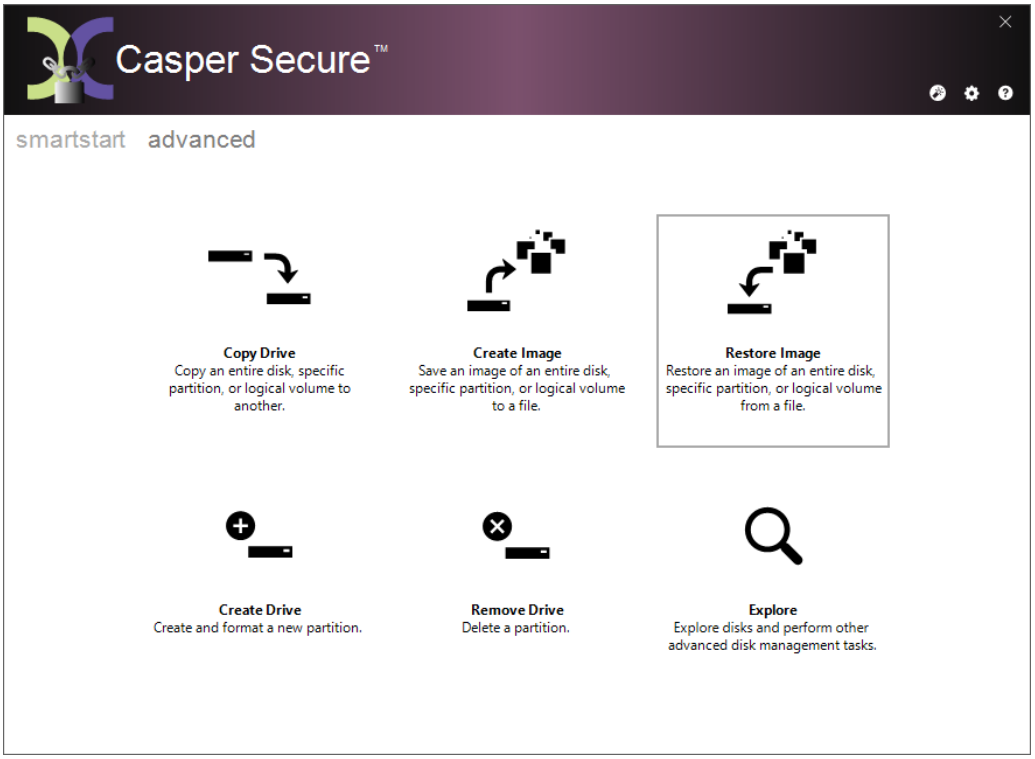
Example 11: Manually Restoring a Restore-Point Backup

Assuming the computer is presently booted to the Casper Secure Startup and Recovery Environment and SmartRestore was unable to locate your backup, the following procedure illustrates how to manually restore an image of the Windows system hard disk to either the original Windows system disk or a replacement disk.

1. Select **Restore Image**.



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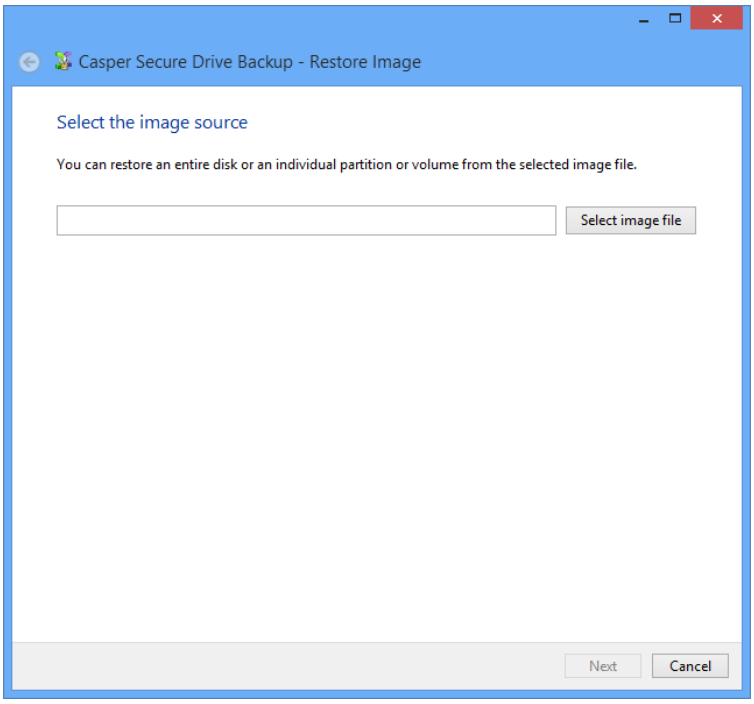
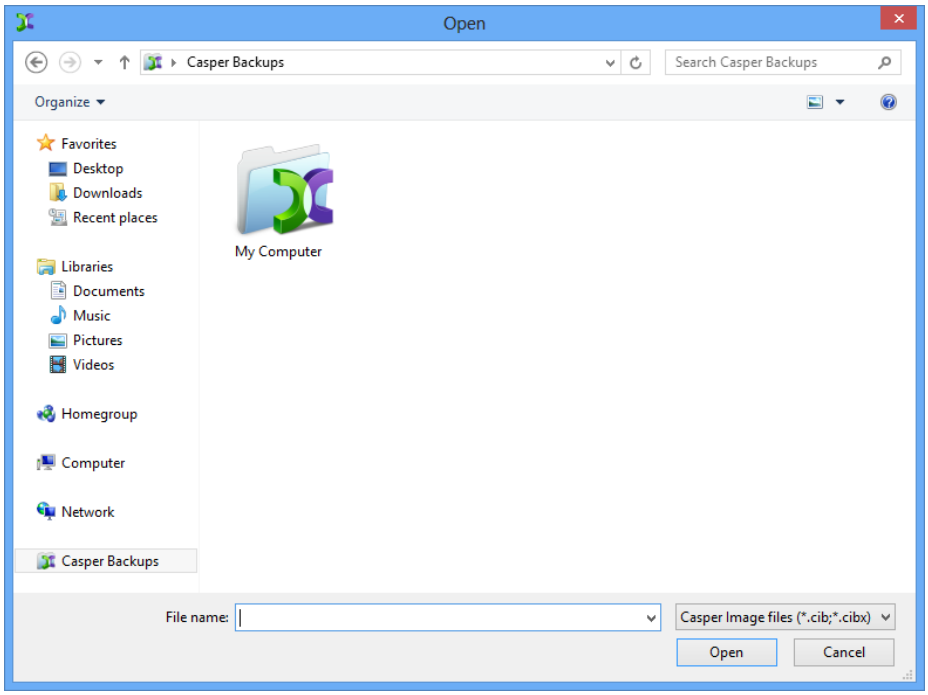
2. Click **Select image file**.



3. In the Open dialog, navigate to the folder that contains the backup you want to restore. By default, the **Casper Backups** folder will be selected. This special folder provides direct access to all of the restore-point backups that were discovered. Double-click the **My Computer** folder to see all of the restore-point system backups that were located for your computer.



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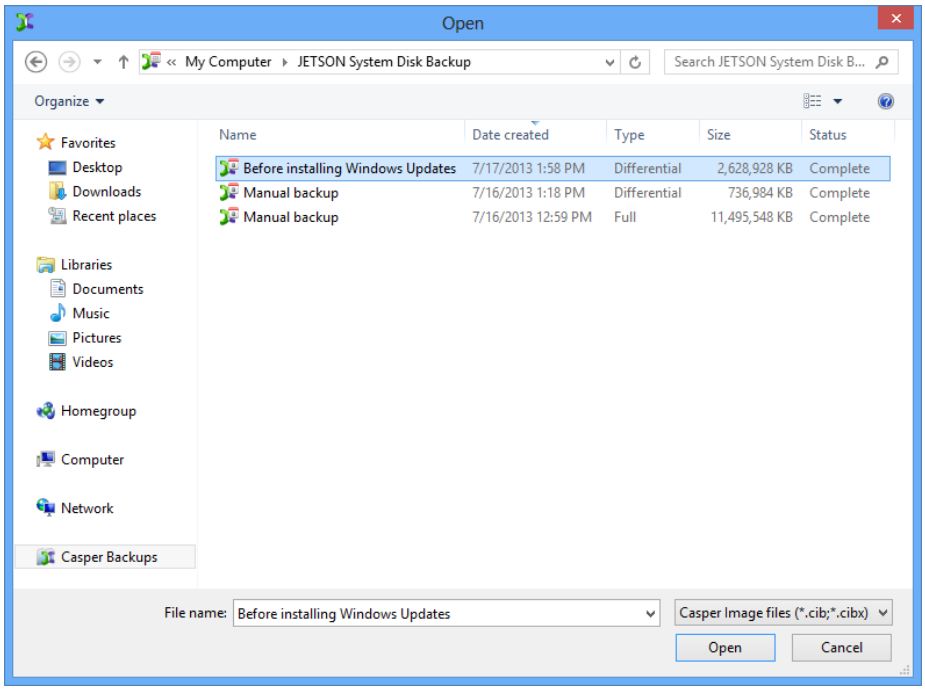
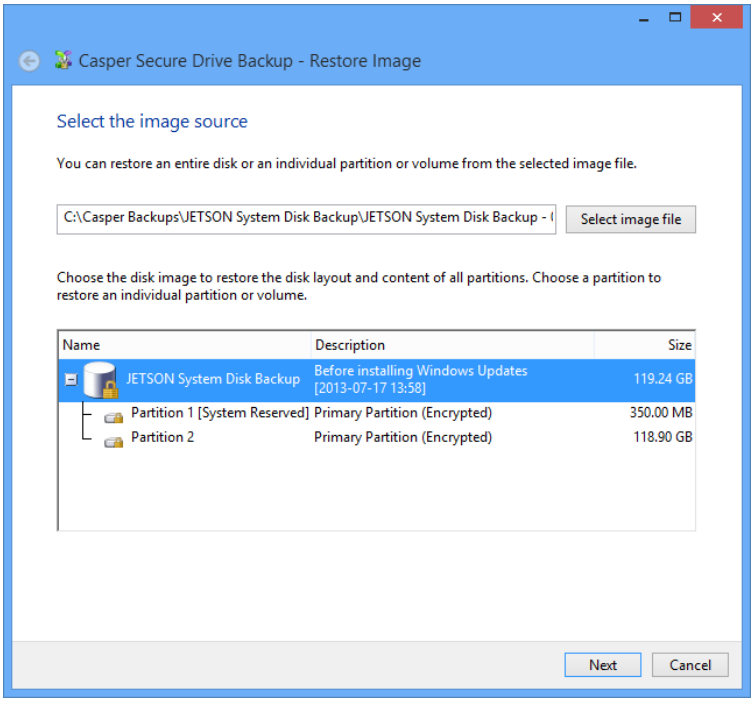
4. Select the image you want to restore and click **Open**.



5. Once the selected image has loaded, click **Next**.



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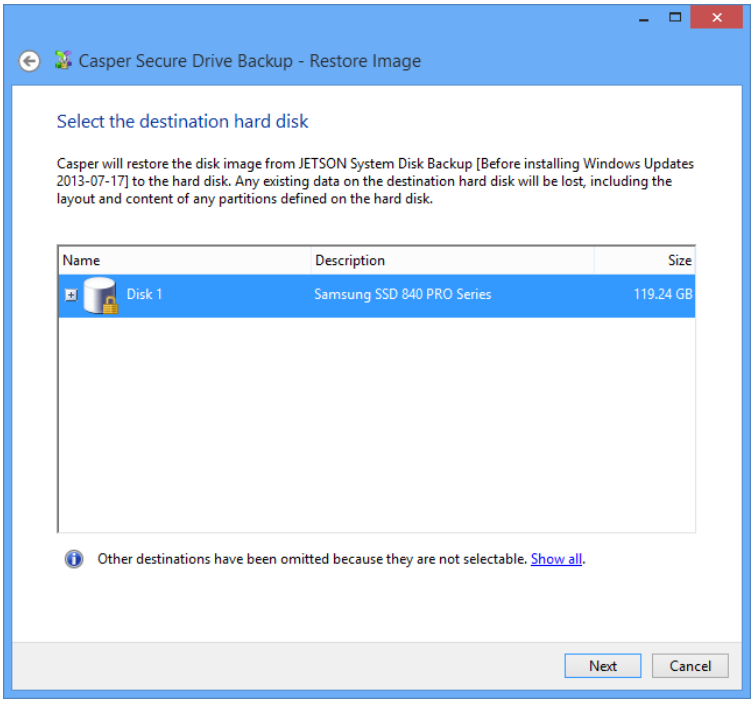
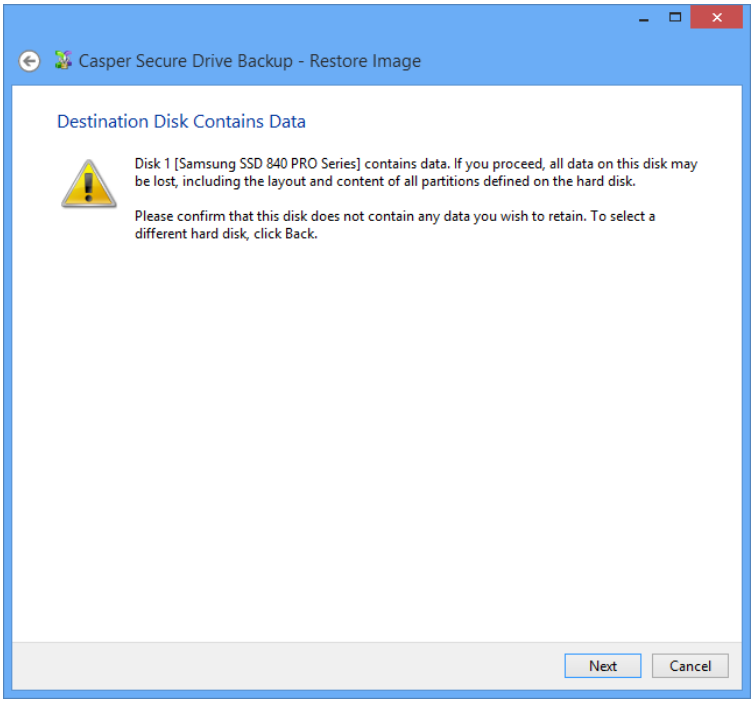
6. Select the hard disk that will become the restored Windows system disk as the destination and then click **Next**.



7. If the selected destination hard disk defines a partition or contains data, Casper will warn you that the contents will be overwritten. Confirm you have selected the correct hard disk to receive the restored image and click **Next** to proceed.



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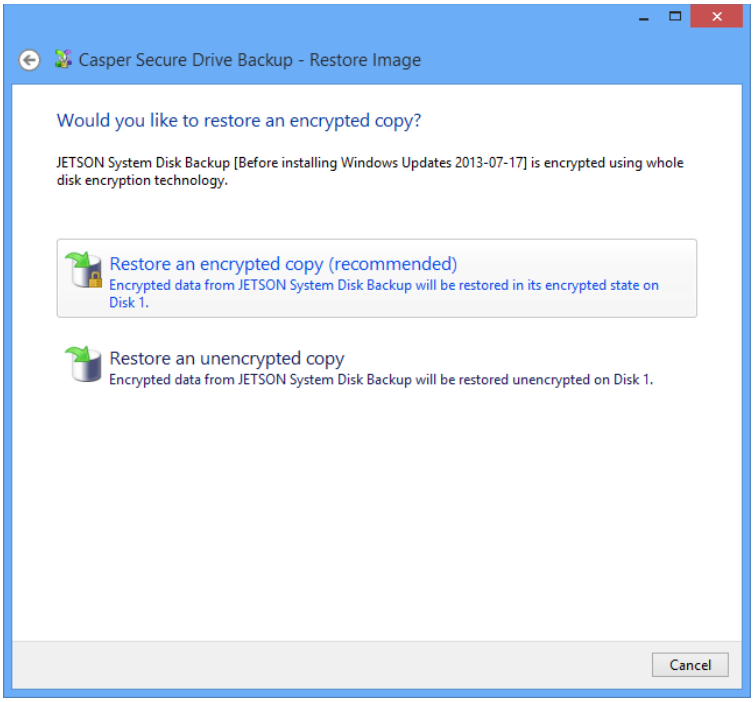
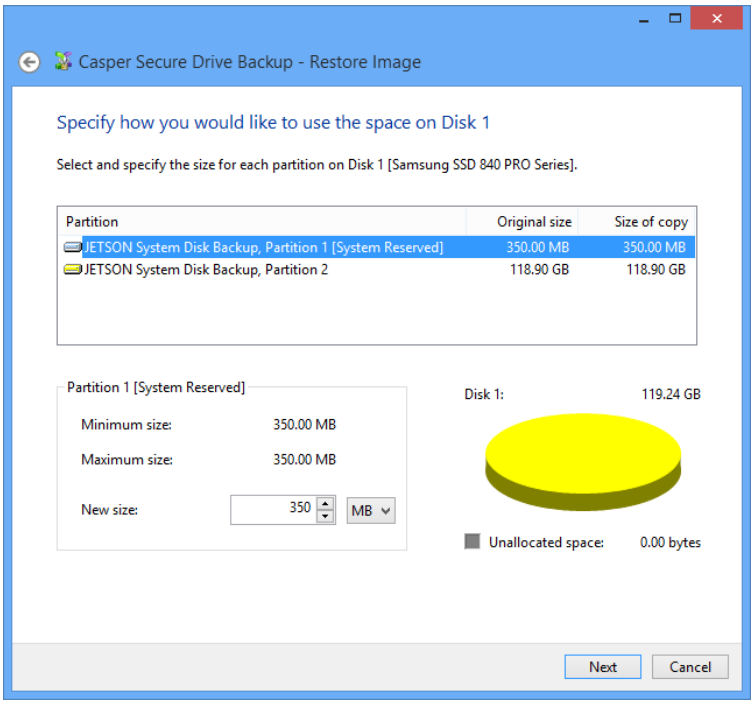
8. If the source disk image is encrypted using drive encryption technology, Casper will offer the option of restoring an unencrypted copy unless prohibited by administrative policy settings. Click **Restore an encrypted copy**



9. When prompted to specify how the space on the destination hard disk is to be used, retain the default selection and click **Next**. If the destination hard disk is the same size or smaller than the original, Casper will ask you to manually configure how the space is to be used.



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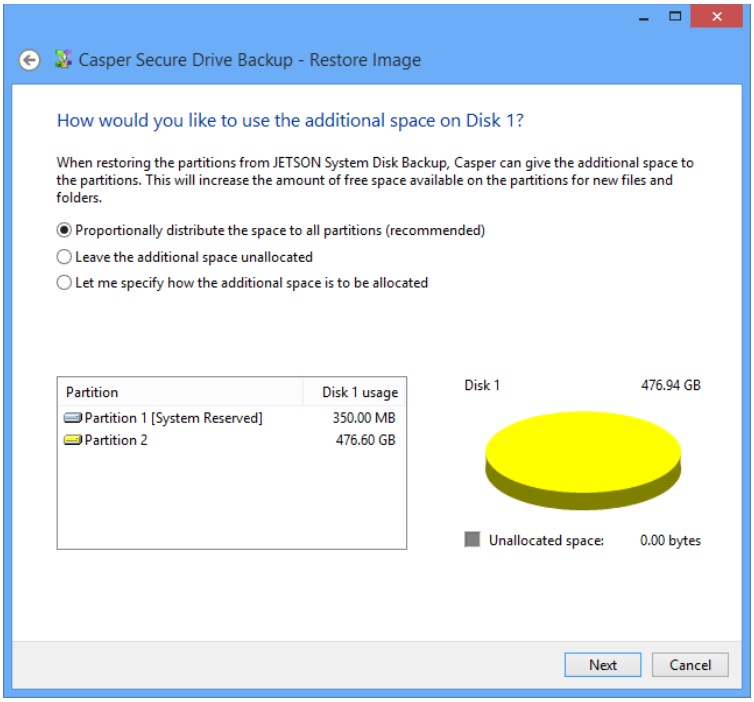
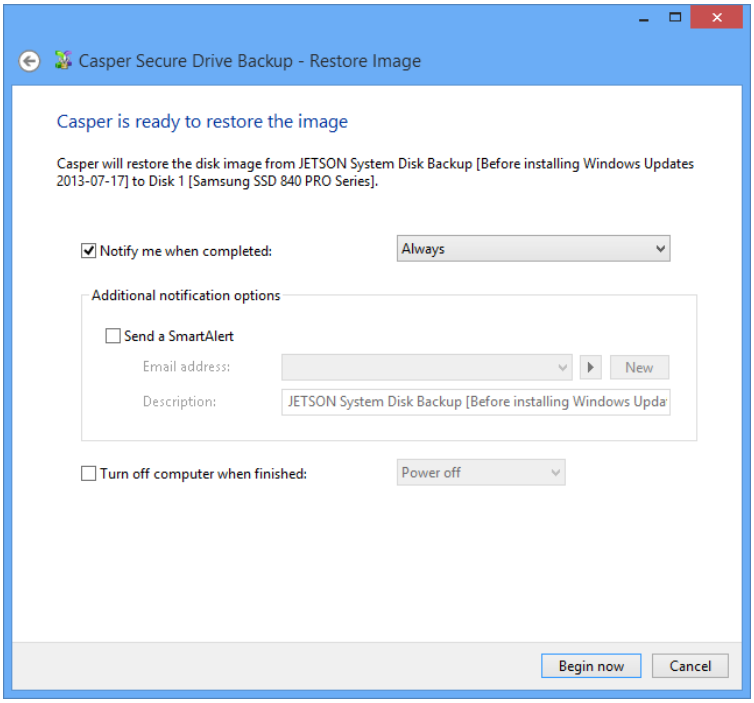
If restoring the image to a hard disk that is larger than the original, the default option will be *Give all of the space to the partition* or *Proportionally distribute the space to all partitions* when there is more than one partition defined in the image.



Simply clicking **Next** to accept the default selection or value is generally best.

10. Click **Begin now** to begin the image restoration process.



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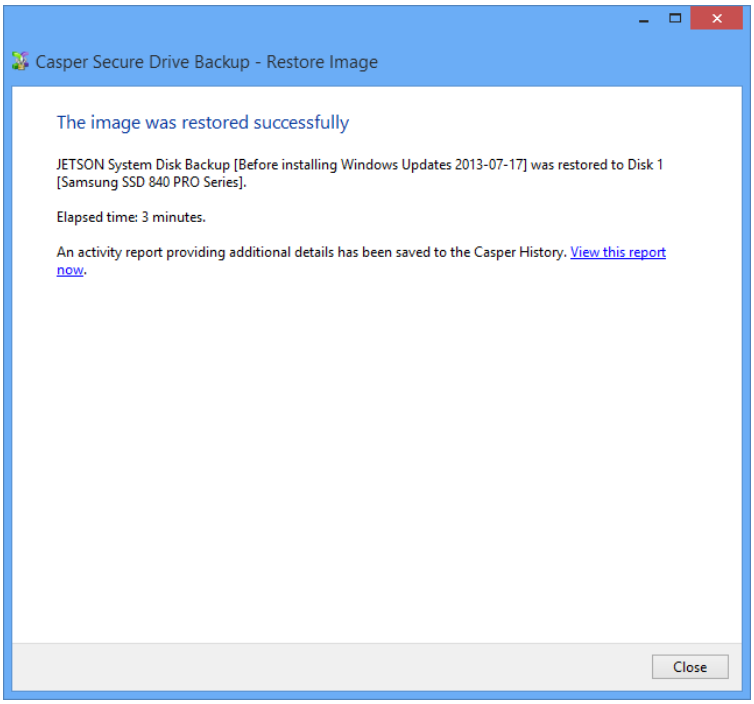
11. When Casper has completed the restoration process, click **Close**.



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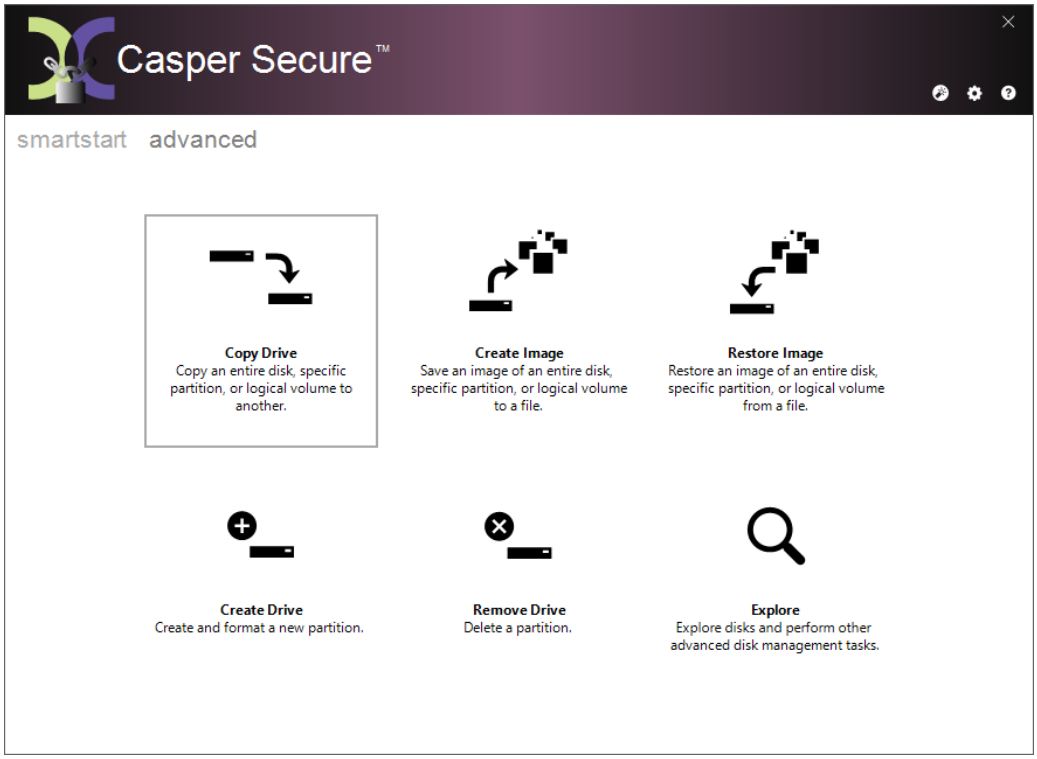
Example 12: Manually Restoring a Bootable Backup

Assuming the computer is presently booted to the Casper Secure Startup and Recovery Environment and SmartRestore was unable to locate your backup, the following procedure illustrates how to manually restore a bootable backup of the Windows system hard disk to either the original Windows system disk or a replacement disk.

1. Select **Copy Drive**.



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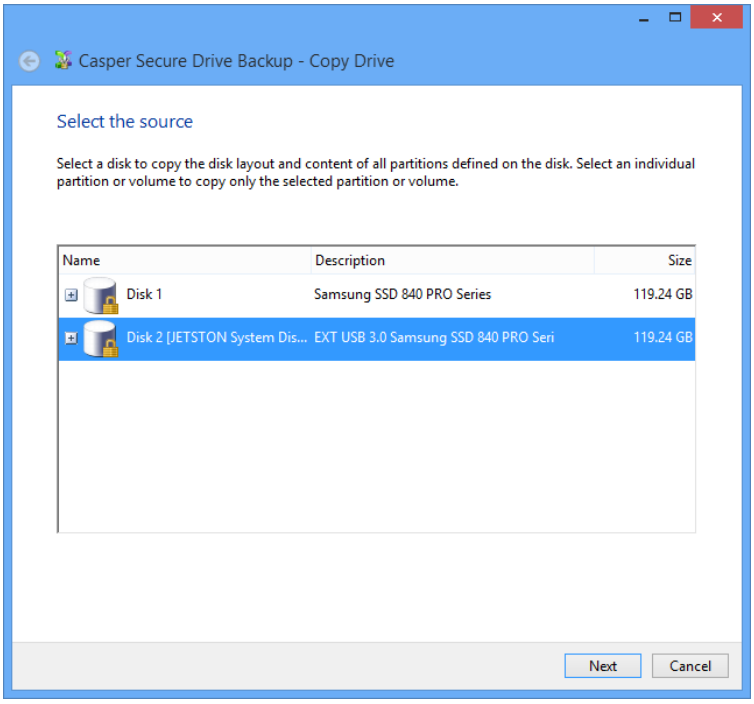
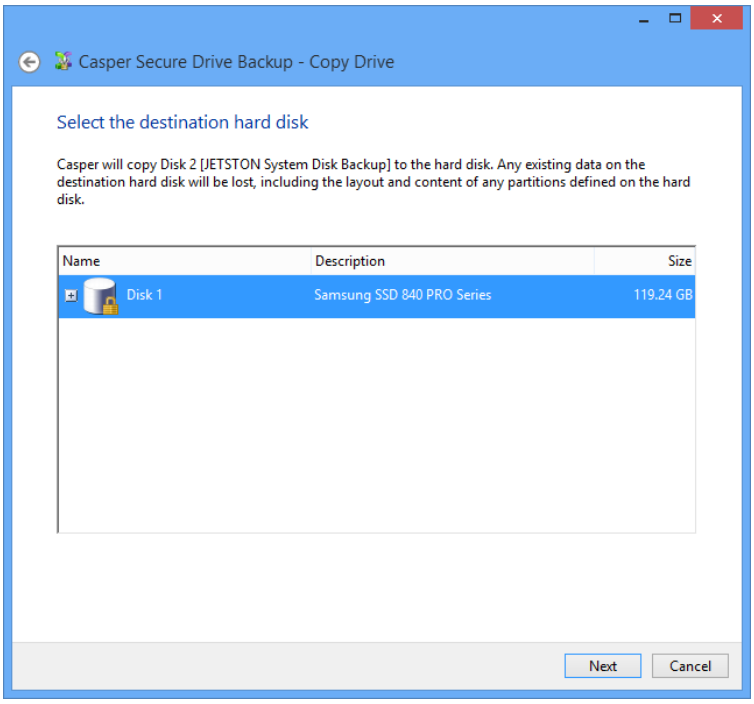
2. Select the hard disk containing the bootable backup to restore as the source and click **Next**.



3. Select the hard disk that will become the restored Windows system disk as the destination and then click **Next**.



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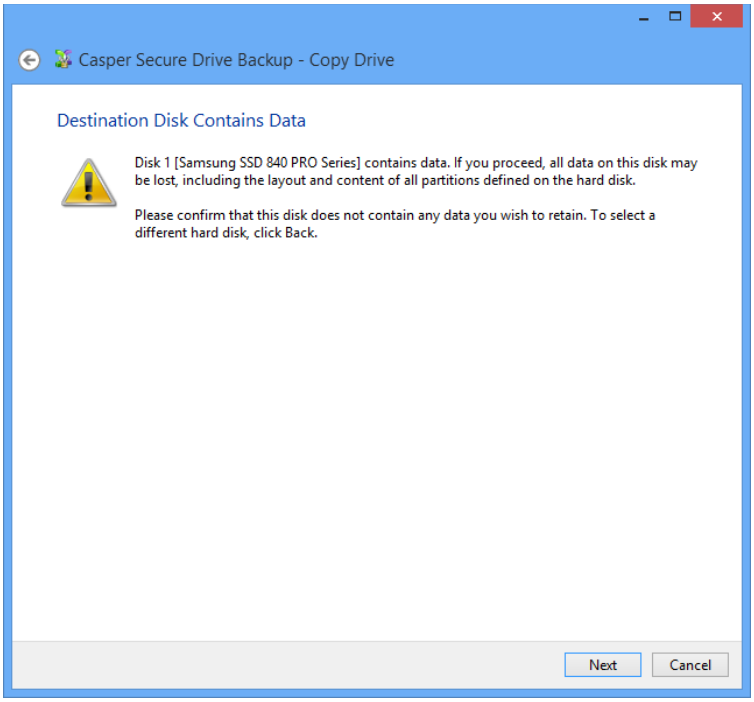
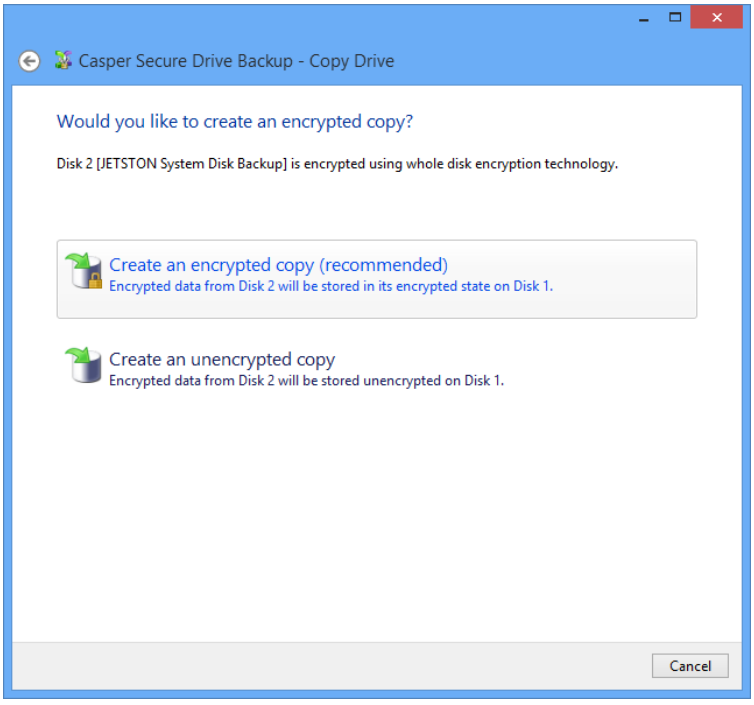
4. If the selected destination hard disk defines a partition or contains data, Casper will warn you that the contents will be overwritten. Confirm you have selected the correct hard disk to receive the restored backup and click **Next** to proceed.



5. If the backup disk is encrypted using drive encryption technology, Casper will offer the option of creating an unencrypted copy unless prohibited by administrative policy settings. Click **Create an encrypted copy**



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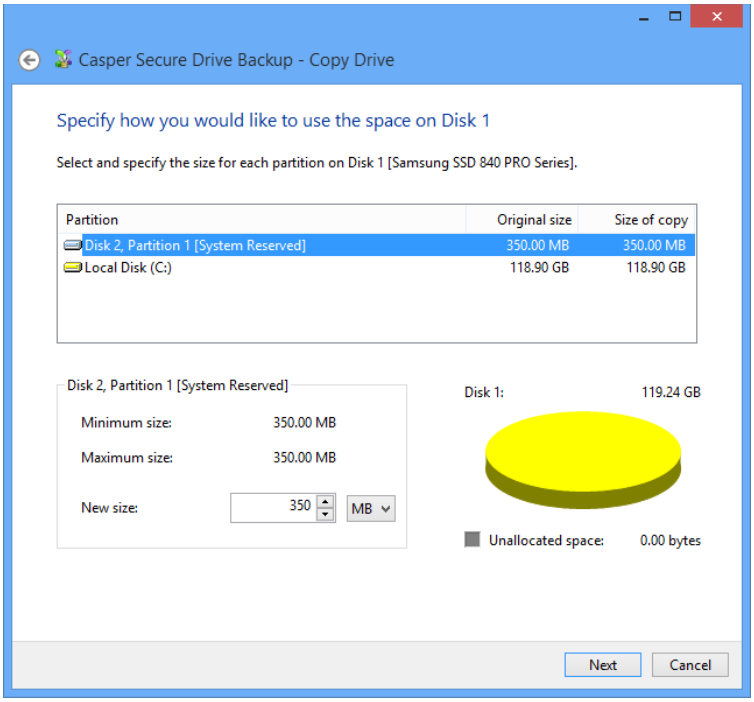
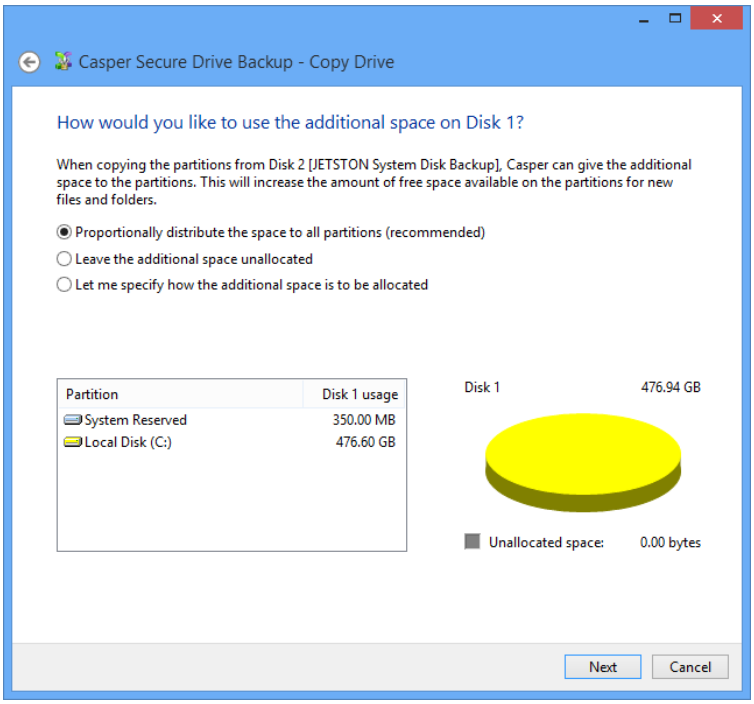
6. When prompted to specify how the space on the destination hard disk is to be used, retain the default selection and click **Next**. If the destination disk is the same size or smaller than the backup source, Casper will ask you to manually configure how the space is to be used.



When the destination hard disk is larger than the backup source, the default option will be *Give all of the space to the partition* or *Proportionally distribute the space to all partitions* when there is more than one partition defined on the backup source.



Simply clicking **Next** to accept the default selection or value is generally best.

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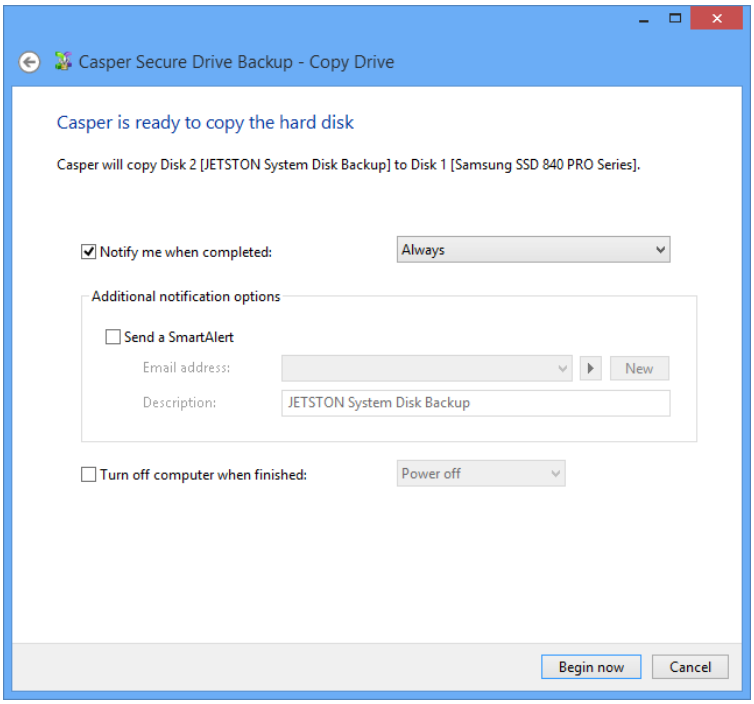
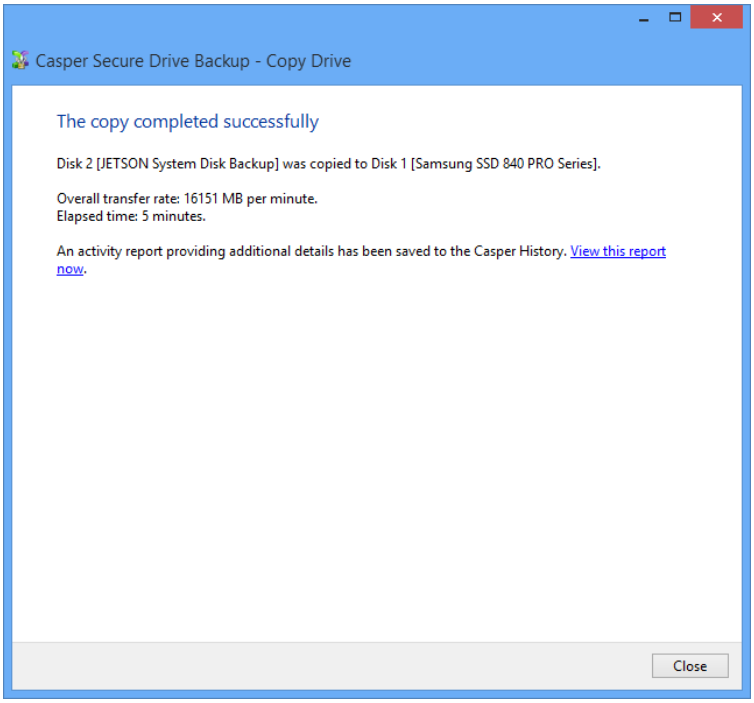
7. Click **Begin now** to begin the cloning process.



8. When Casper has completed the cloning process, click **Close**.



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Retrieving Specific Files and Folders from a Backup

You can retrieve a specific file or folder from a backup without booting to the backup or performing a restore. Because a bootable backup is a clone of your Windows system disk, it can be accessed in the same manner as the Windows system disk whenever it is connected to the computer. Similarly, the contents of a restore-point backup can be accessed in the same manner as the Windows system disk whenever it has been mounted.

The following examples illustrate how to access the contents of a backup to retrieve specific files and folders without booting or restoring the entire backup.

Example 13: Accessing the Contents of a Bootable Backup. This example shows how to browse a bootable backup using Windows Explorer to retrieve a file located in the [*My*] *Documents* folder.

Example 14: Accessing the Contents of a Restore-Point Backup. This example demonstrates how to use Windows Explorer to mount a specific restore-point within a restore-point backup and retrieve a file from the *Documents* folder of the backup.

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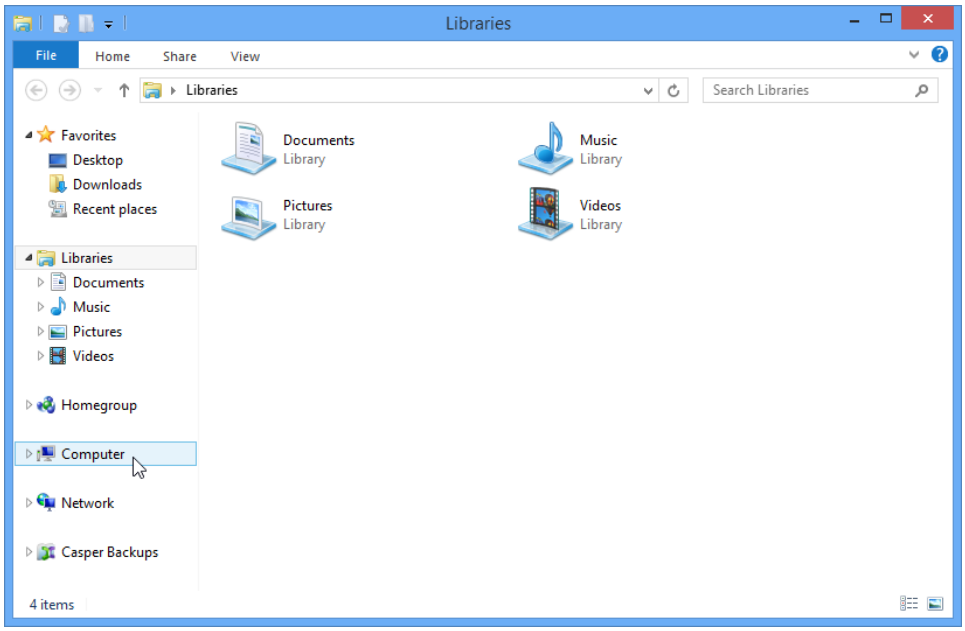
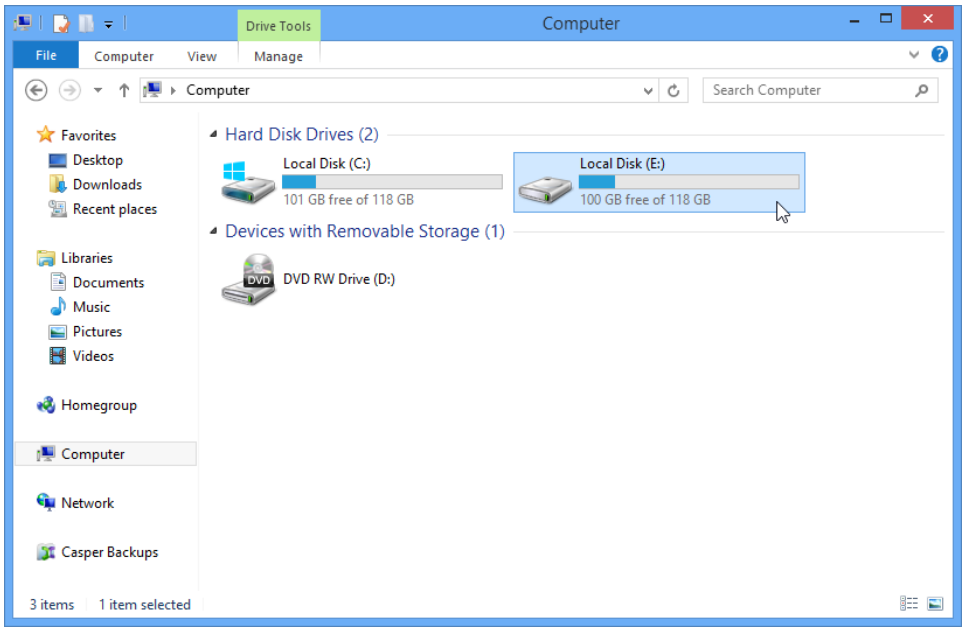
Example 13: Accessing the Contents of a Bootable Backup

Assuming the hard disk containing the bootable backup is currently installed or attached to the computer, the following procedure illustrates how to browse the contents of the backup to retrieve a specific file from the [*My*] *Documents* folder.

1. Open [**My**] **Computer / This PC**. On Windows 8.1 or later, start **Windows File Explorer** and then click **This PC**. On Windows 8, start **Windows File Explorer** and then click **Computer**. On Windows 7 and earlier, simply click [**My**] **Computer** on the *Start* menu.



2. Double-click the drive containing your bootable backup. In this example, **Local Disk (E:)** represents the drive letter assigned by Windows to the backup drive.



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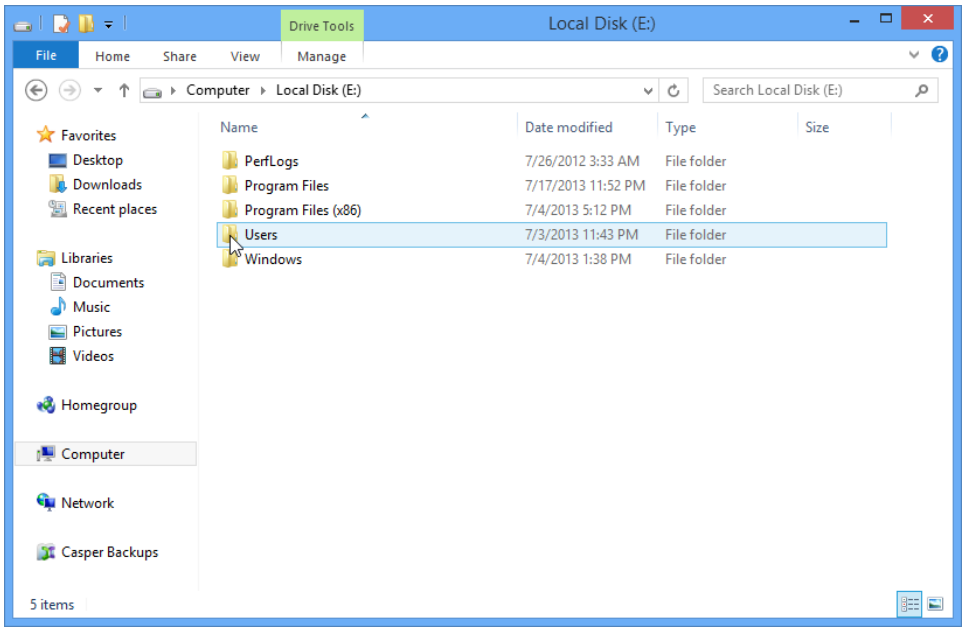
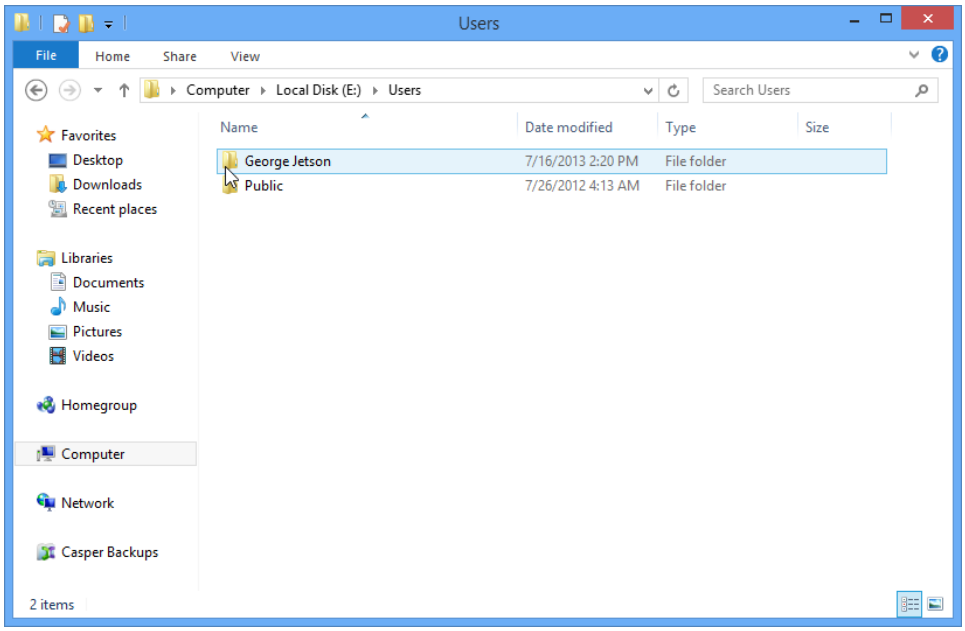
3. Double-click **Users** to open the Users folder.



4. Double-click the folder that corresponds to the account name with which you normally log onto your computer. In this example, the user logs on as **George Jetson.**



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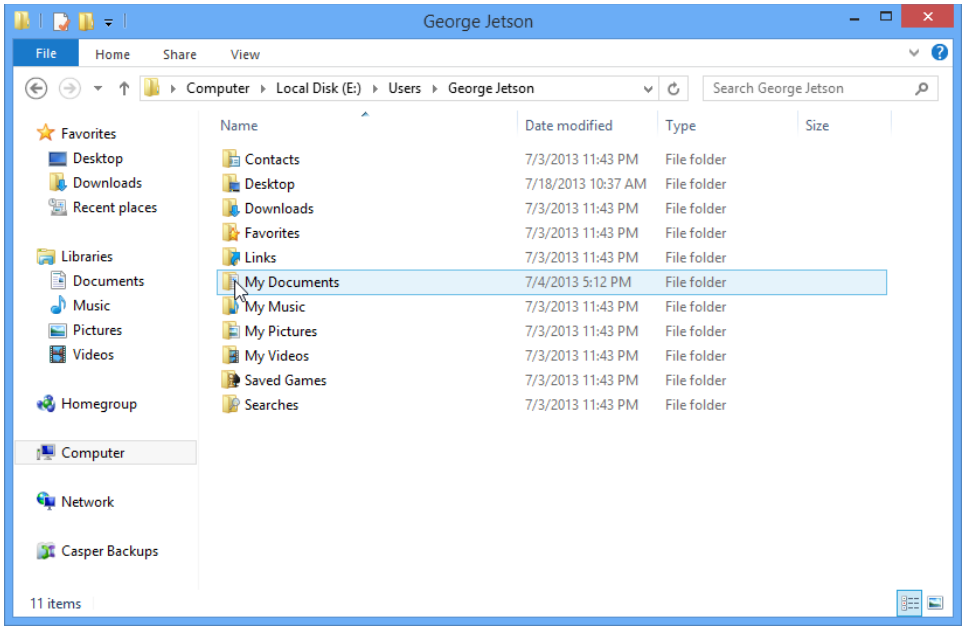
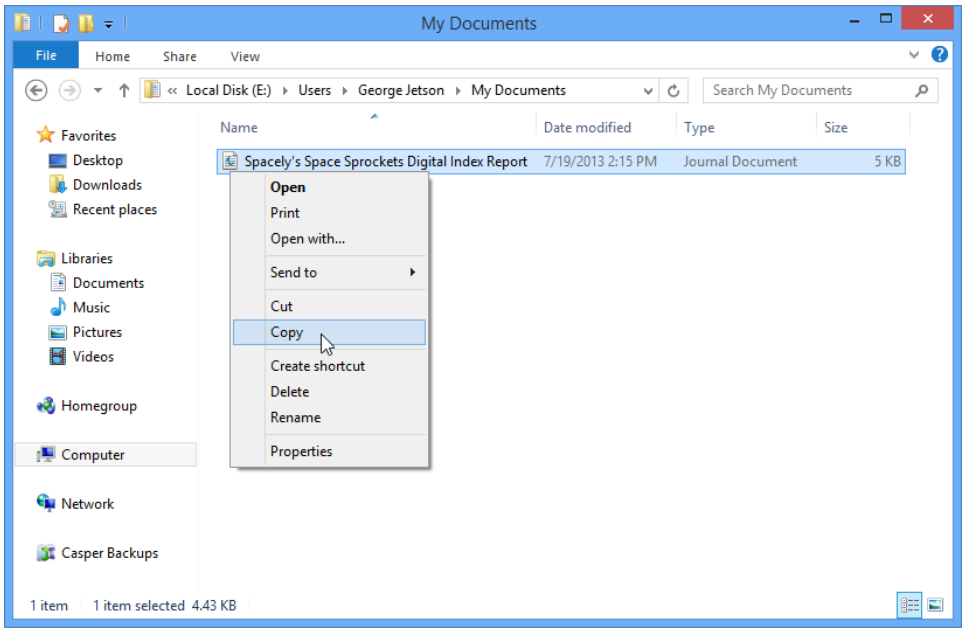
5. Double-click the [**My**] **Documents** folder to access the contents of your account's *Documents* folder. The contents of this folder will represent the original contents of the *Documents* folder appearing on your system drive when you created your backup.



6. Once you have located the desired file or folder, you can access or copy it as you would any other file on your original Windows system drive.



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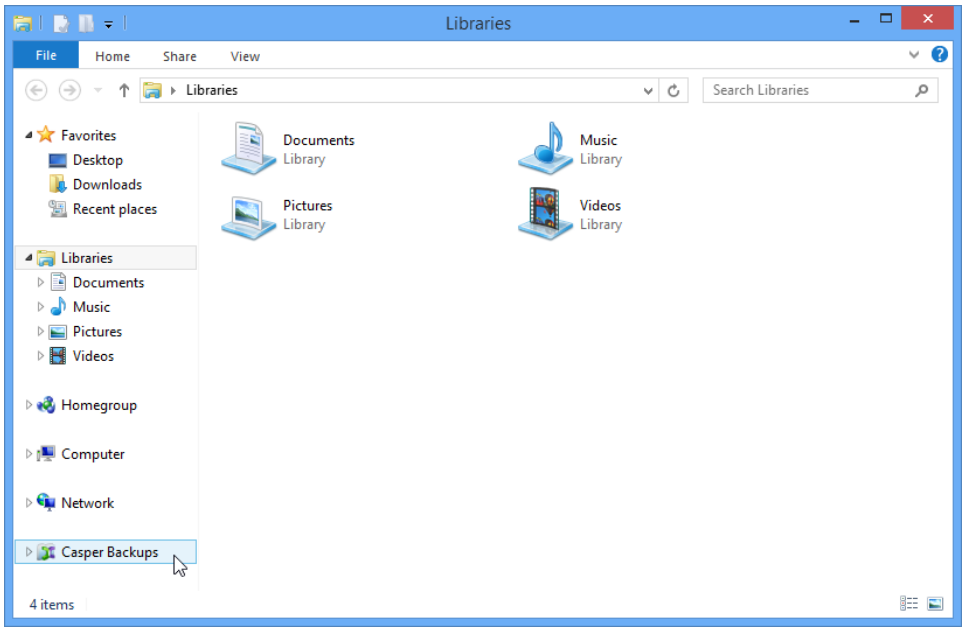
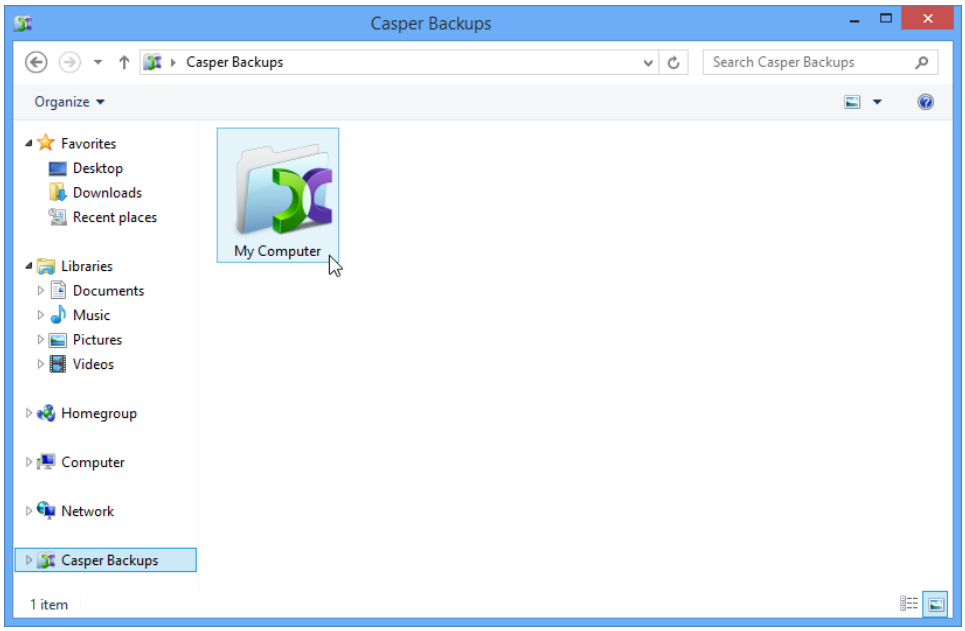
Example 14: Accessing the Contents of a Restore-Point Backup

Assuming the hard disk containing the restore-point backup is currently installed or attached to the computer, the following procedure illustrates how to mount a restore-point backup and retrieve a specific file from the *Documents* folder.

1. Open the **Casper Backups** folder. On Windows 8 or later, start **Windows File Explorer** and then click **Casper Backups**. On Windows 7, open **Windows Explorer** and click **Casper Backups**.



2. Double-click the **My Computer** folder to browse all of the restore-point backups discovered for your computer.



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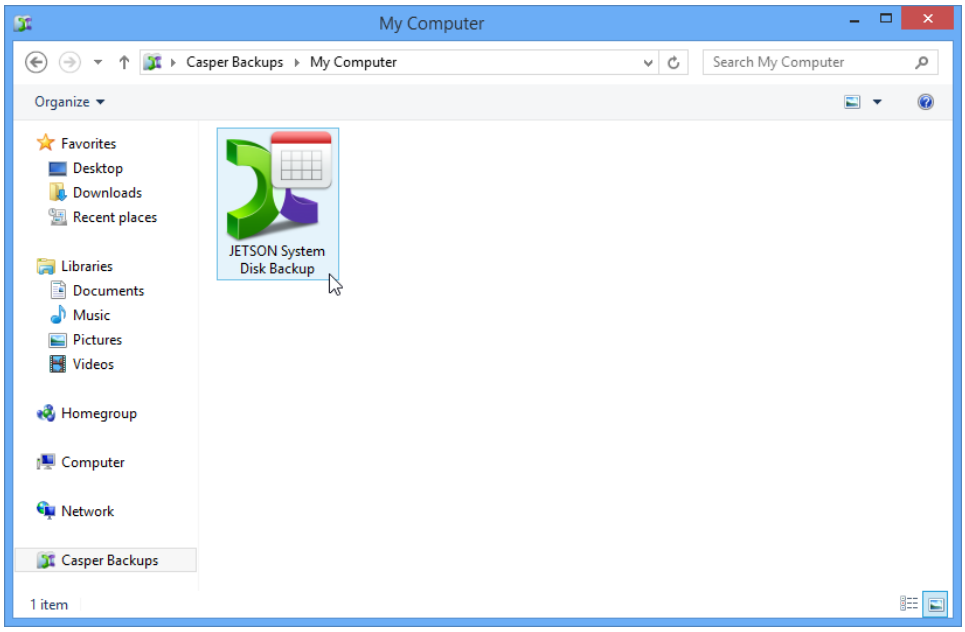
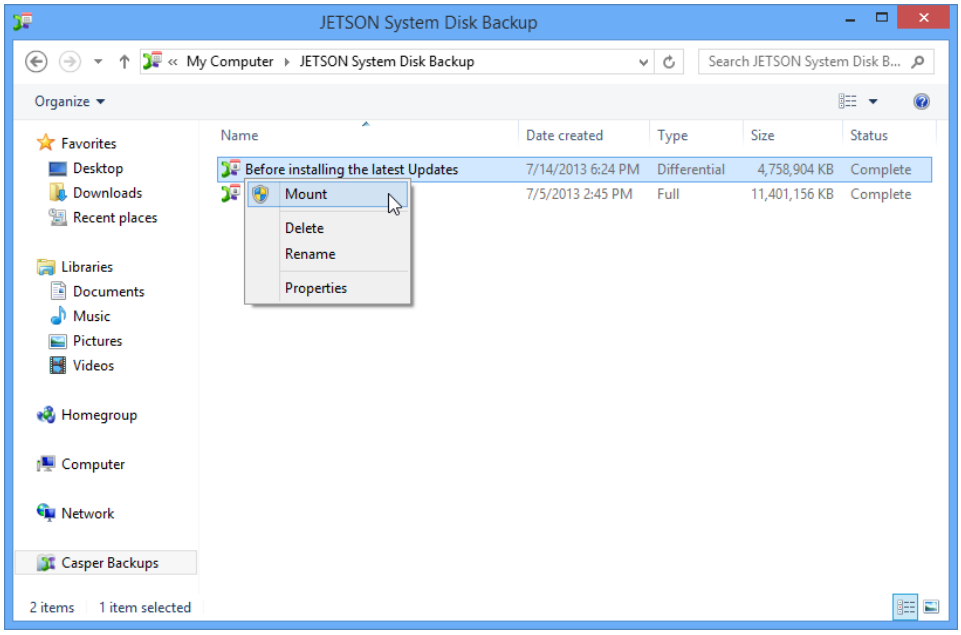
3. Double-click the backup containing the restore-point you want to access.



4. Right-click on the desired restore-point, and then click **Mount**.



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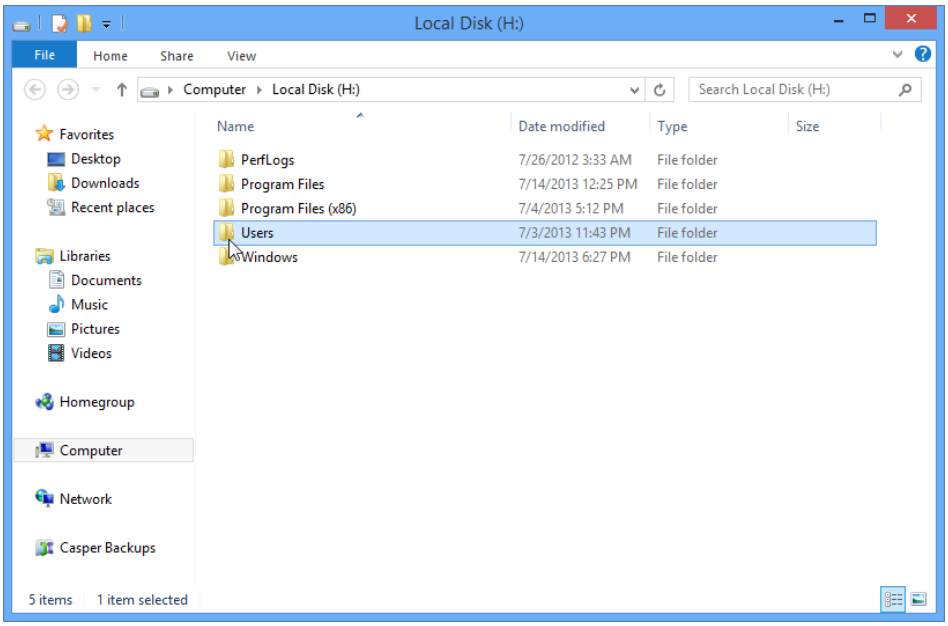
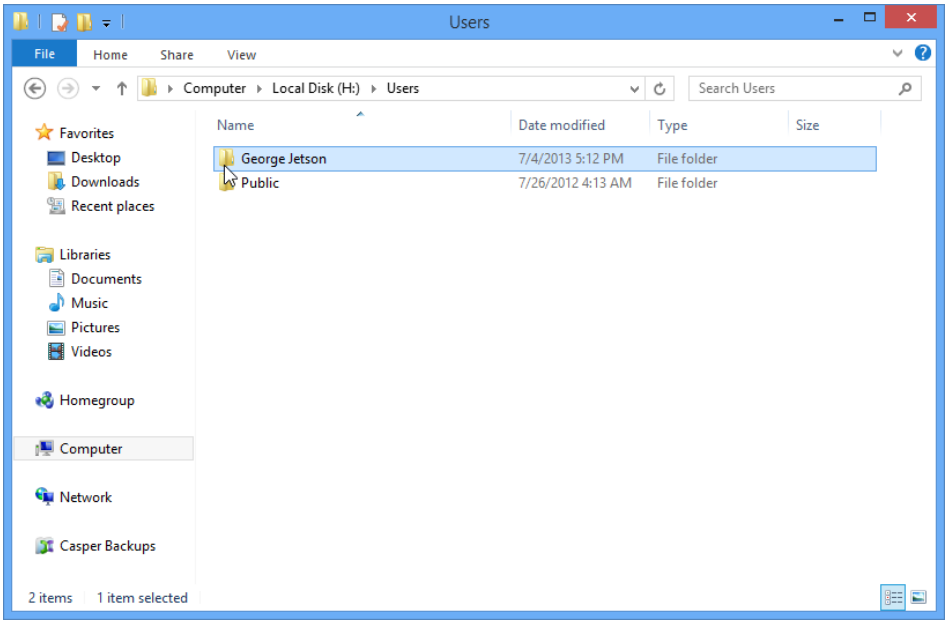
5. After the restore-point has been mounted and a drive letter has been assigned, a new Explorer window will open to reveal its contents. In this example, **Local Disk (H:)** was assigned to the restore-point when it was mounted. Double-click **Users** to open the Users folder.



6. Double-click the folder that corresponds to the account name with which you normally log onto your computer. In this example, the user logs on as **George Jetson.**



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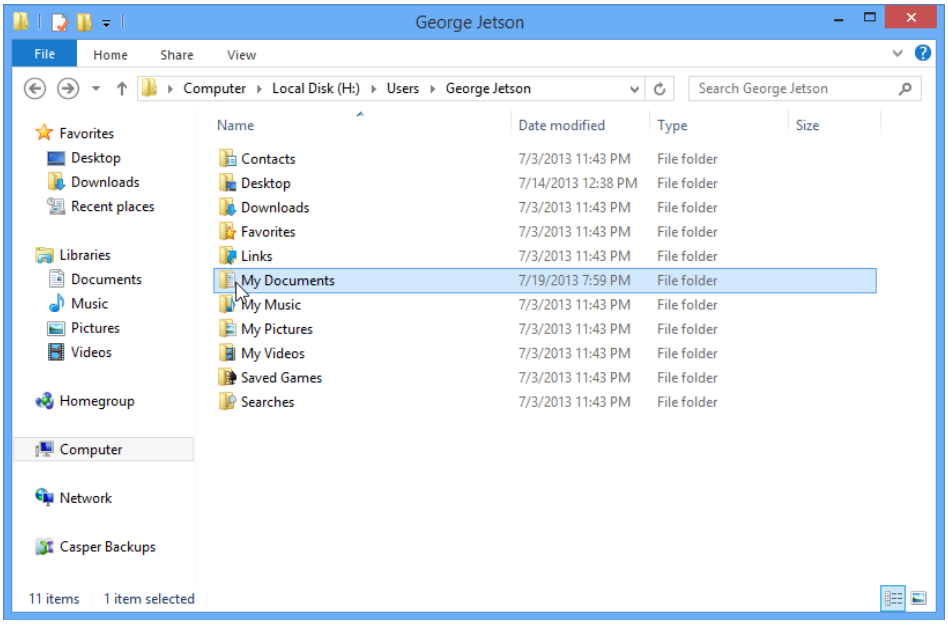
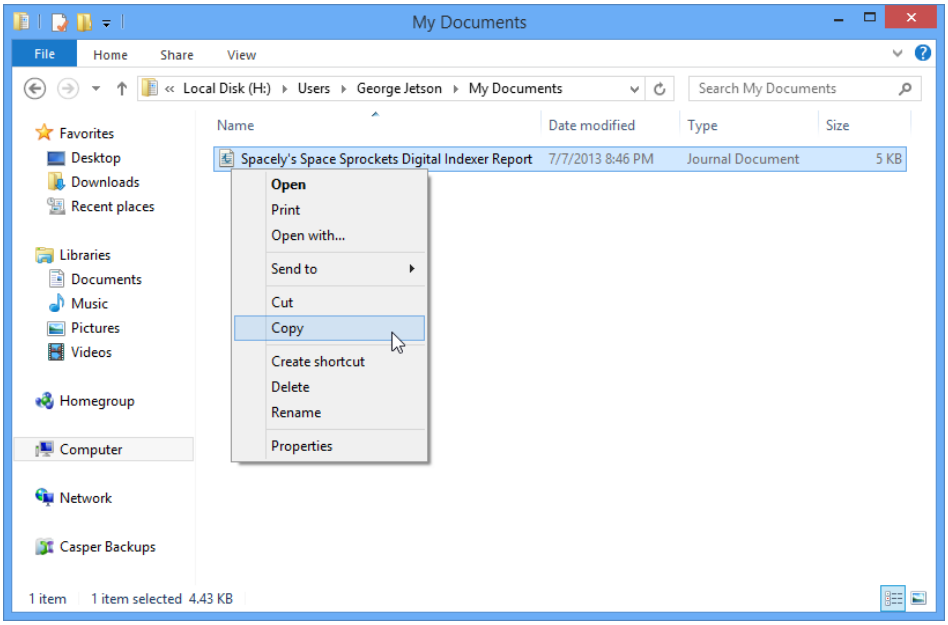
7. Double-click the [**My**] **Documents** folder to access the contents of your account's *Documents* folder. The contents of this folder will represent the original contents of the *Documents* folder appearing on your system drive when you created your backup.



8. Once you have located the desired file or folder, you can access or copy it as you would any other file on your original Windows system drive.



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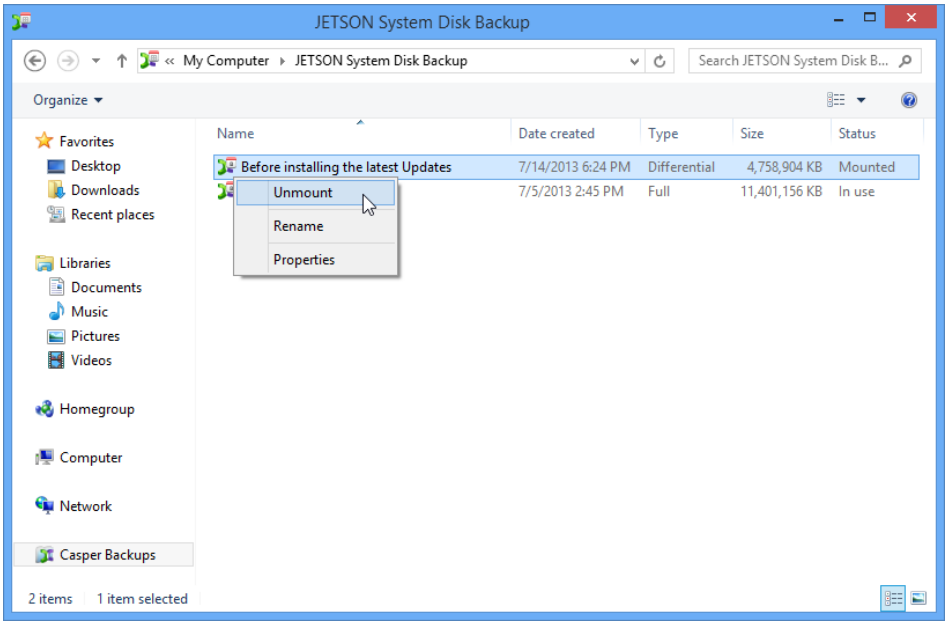
9. When you have finished accessing the contents of the restore-point, right-click on the restore-point and select **Dismount**.



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Upgrading a Hard Disk

The procedure for upgrading a hard disk is basically the same whether you are upgrading a hard disk in a desktop or a notebook. For a desktop system, the new hard disk is temporarily installed as a secondary hard disk in the computer or attached as an external hard disk using an external USB, Firewire, or eSATA hard disk enclosure or bridge adapter. For a notebook computer, a secondary media bay or external USB, Firewire, or eSATA hard disk enclosure or bridge adapter is required to connect the new hard disk to the notebook.

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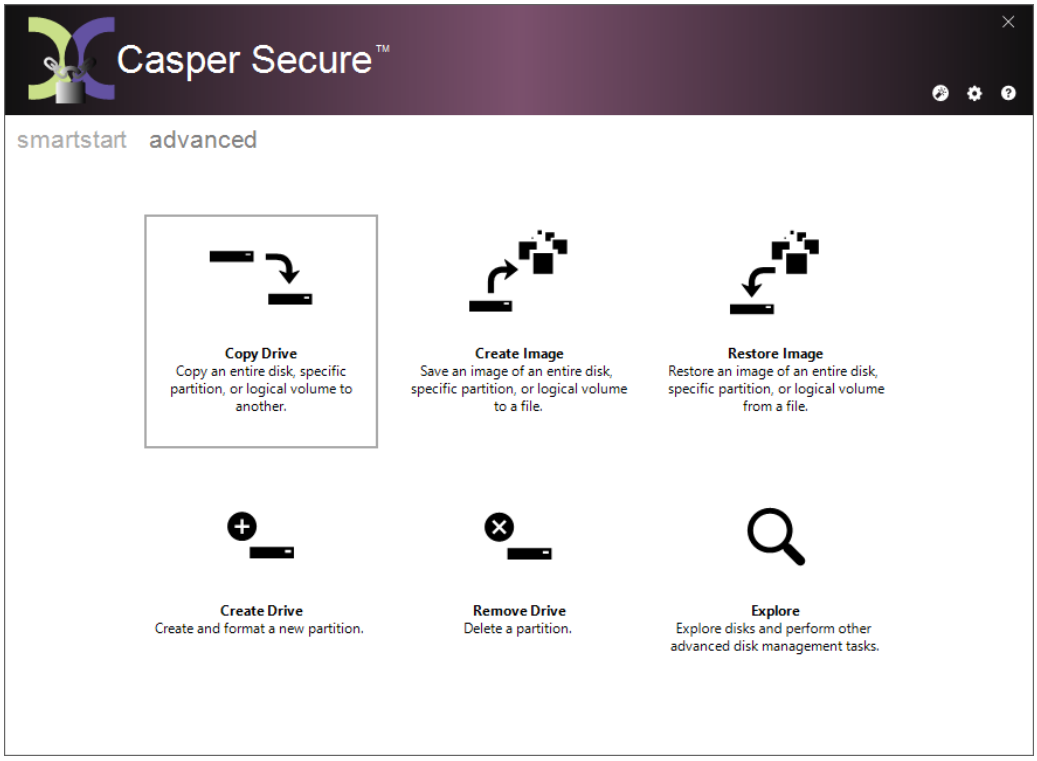
Example 15: Upgrading a Hard Disk

Assuming the new hard disk is currently installed or attached to the system, the following procedure illustrates how Casper Secure Drive Backup may be used to clone the original hard disk to the new hard disk and complete the upgrade.

1. Select **Copy Drive**.



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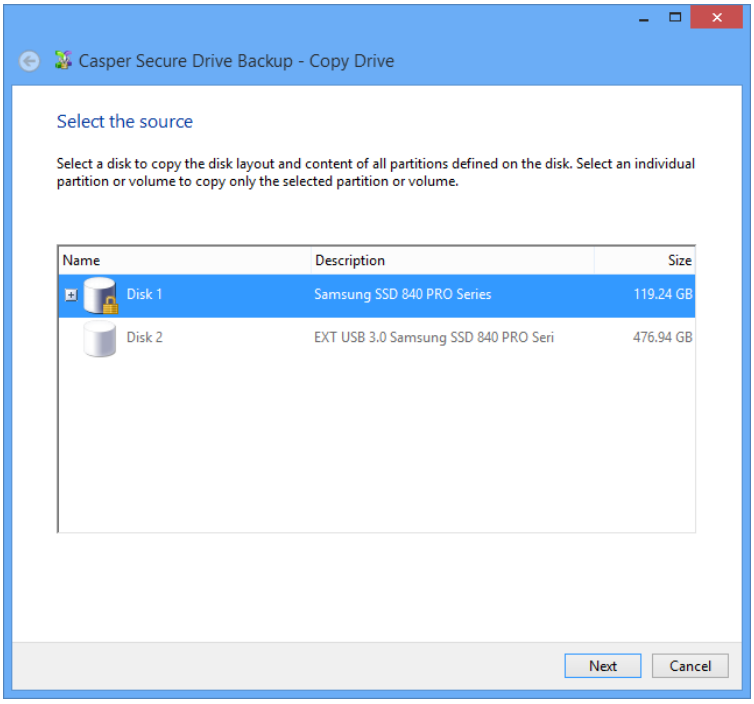
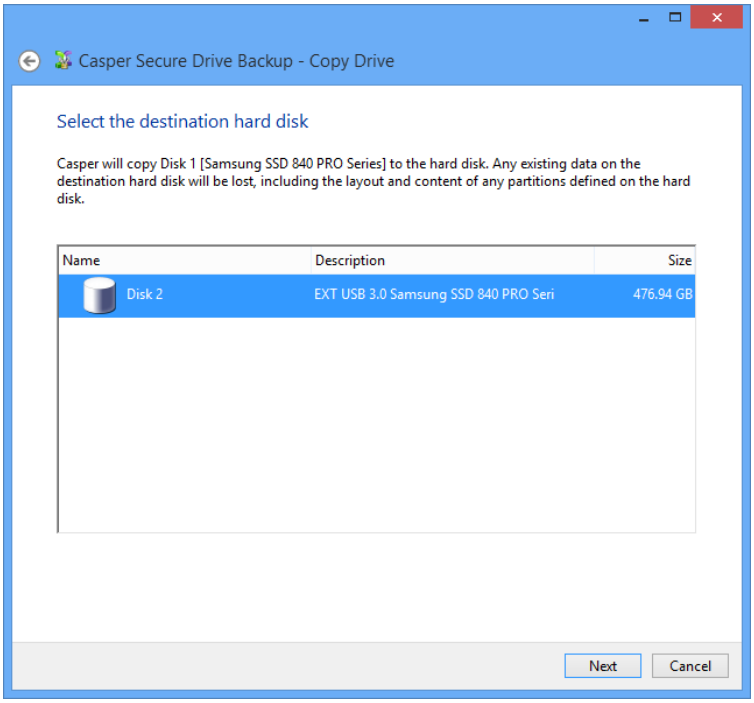
2. Select the hard disk to be upgraded (e.g., the hard disk on which Windows is installed) as the disk to copy and click **Next**.



3. Select the new hard disk as the destination and click **Next**.



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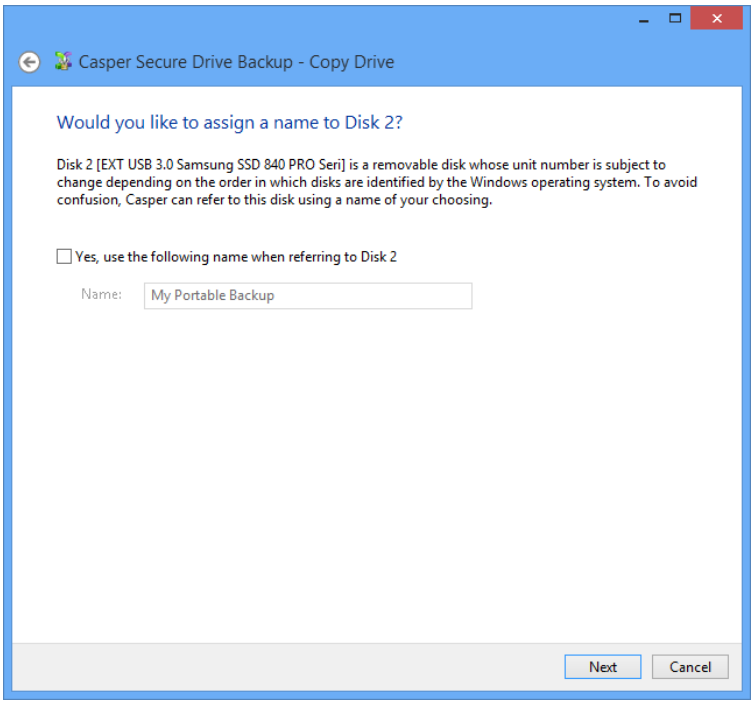
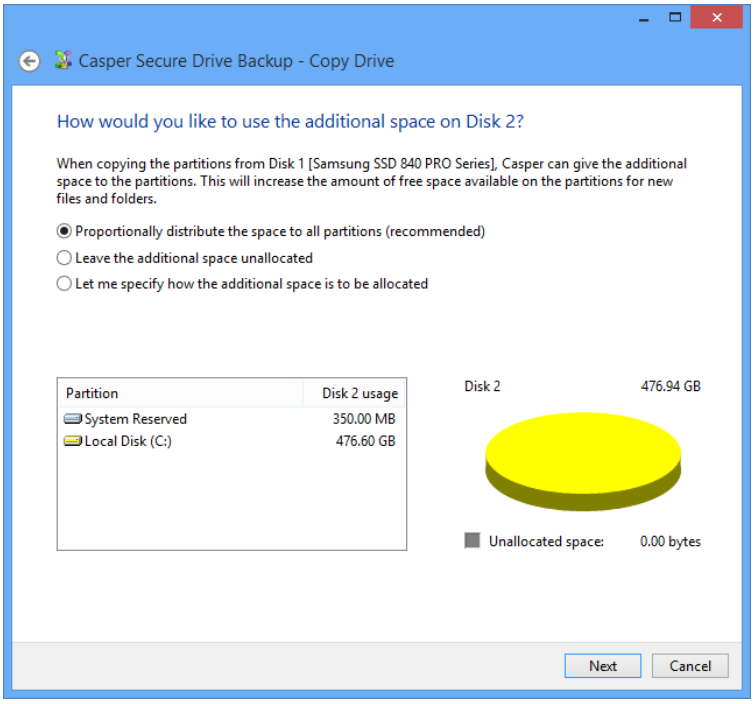
4. When the new disk is attached as an external hard disk, Casper will prompt you to assign a name to the disk. A name is unnecessary because the new disk will soon become the new Windows system disk. Uncheck **Yes, use the following name when referring to Disk 2**, and then click **Next** to proceed.



5. When prompted to specify how the additional space on the new hard disk is to be used, retain the default selection and click **Next**. When the new hard disk is larger than the original disk, the default option will be *Give all of the space to the partition* or *Proportionally distribute the space to all partitions* when there is more than one partition defined.



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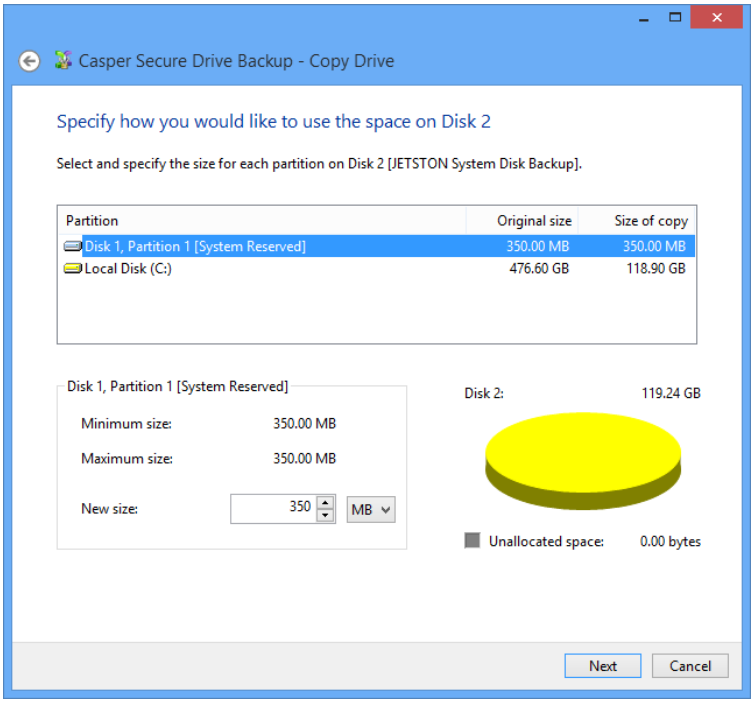
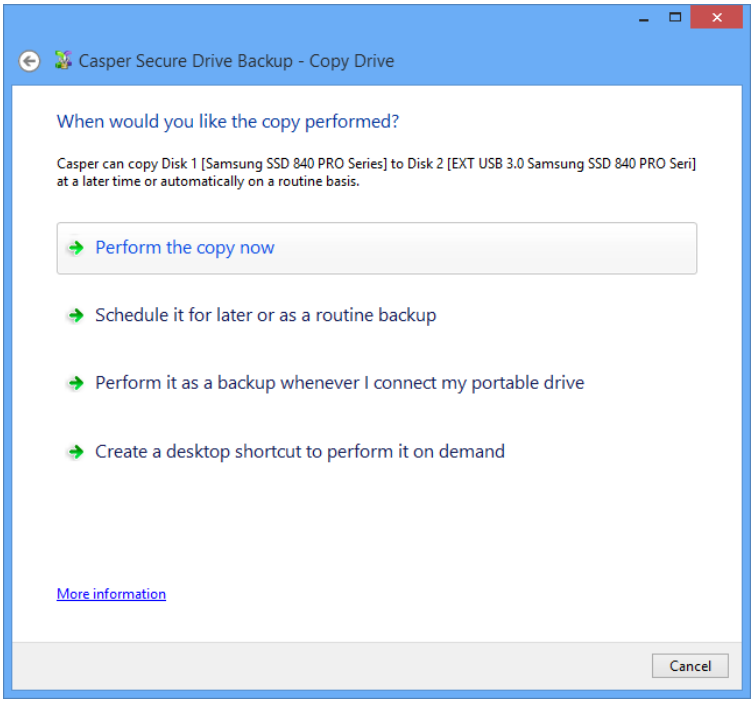
If the new hard disk is the same size or smaller than the original hard disk, Casper will ask you to manually configure how the space is to be used.



Simply clicking **Next** to accept the default selection or value is usually best. For additional help with making a selection, press **F1**.

6. Click **Perform the copy now** to begin the copy.



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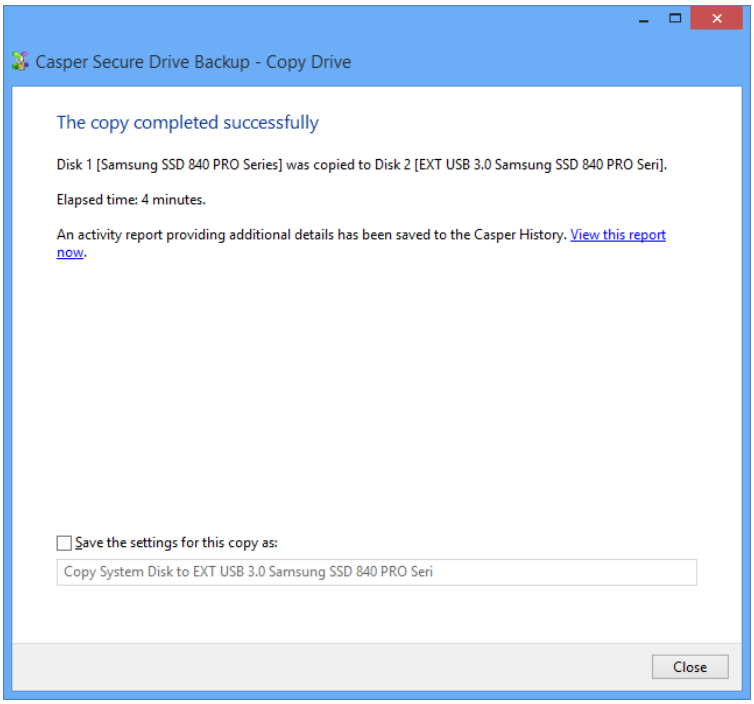
7. When Casper has completed the cloning process, click **Close**.



8. Shutdown and power-off the computer.
9. Reconfigure the computer to replace the original hard disk with the new hard disk.

   If the new hard disk is installed in a secondary media bay of a notebook, or installed in an external USB, Firewire, or eSATA enclosure, simply remove the hard disk from its enclosure and exchange it with the original hard disk.

   For a new hard disk that has been temporarily mounted as a secondary internal hard disk, remove the original hard disk and replace it with the new hard disk.

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