

AOMEI® Backupper

User Manual



AOMEI Backupper

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1 Getting Started

This Chapter describes AOMEI Backupper's main features, the system requirements, supported file systems, operating systems and storage media.

Please take the time to become familiar with Backupper's powerful and comprehensive features before using Backupper for the first time.

Additional assistance, including screenshots, can be viewed at: www.backup-utility.com/help

A Glossary is contained in Chapter 8.

1.1 Overview of AOMEI Backupper

Backupper provides the following capabilities.

1. The ability to back up files, folders, hard disks, partitions, dynamic volumes, applications and system drives for later recovery when required.
2. A disk imaging and cloning tool that can be used to create an exact image of an entire hard disk drive and operating system for migration to another hard drive or SSD (Solid State Disk).
3. Supports the creation of rescue media using a CD-RW, DVD-RW, USB, etc. for bootable media creation.

1.2 System Requirements and Supported Operating Systems

Minimum Hardware requirements

- 500 MHz x86 or compatible CPU
- 256MB RAM
- Mouse or another pointing device (recommended)

Supported Operating Systems

- Microsoft Windows 10 (all editions, 32-bit and 64-bit)
- Microsoft Windows 8/8.1 (all editions, 32-bit and 64-bit)
- Microsoft Windows 7 (all editions, 32-bit and 64-bit)
- Microsoft Windows Vista (all editions, 32-bit and 64-bit)
- Microsoft Windows XP (all editions, 32-bit and 64-bit)
- Microsoft Windows Server 2019 (all editions)
- Microsoft Windows Server 2016 (all editions)
- Microsoft Windows Server 2012 and 2012 R2 (all editions)
- Microsoft Windows Server 2008 and 2008 R2 (all editions, 32-bit and 64-bit)
- Microsoft Windows Server 2003 and 2003 R2 (all editions, 32-bit and 64-bit)
- Microsoft Windows Home Server (WHS) 2011
- Windows Small Business Server (SBS) 2011

Supported File Systems

- NTFS
- FAT16
- FAT32
- ReFS
- Ext2/3
- ExFAT

For ReFS, Ext2/3, ExFAT file systems and other known file systems, Backupper will image, clone and manage each file with sector-by-sector.

Backupper supports almost all storage devices recognized by Windows, such as IDE, SATA, SCSI, SSD, USB external disks, RAID (Redundant Array of Independent Disks) and NAS (Network Attached Storage). Additionally, Backupper supports MBR (Master Boot Record) and GPT (Globally unique identifier Partition Table) disk standards and works effectively with the UEFI (Unified Extensible Firmware Interface) start-up process.

1.3 Install and Uninstall AOMEI Backupper

Install

Run AOMEI Backupper setup program **AOMEIBackupperSetup.exe**.

When the popup window appears, select "**Next**" and follow the wizard installation instructions.

After the installation process has completed, a prompt may appear to restart the computer to complete the installation.

Uninstall

Backupper can be uninstalled using one of following two methods.

1. Go to the Start Menu -> AOMEI Backupper -> Uninstall AOMEI Backupper

Or

2. Go to the Windows Control Panel -> Uninstall a program, right-click AOMEI Backupper and uninstall it.

To completely uninstall Backupper, a prompt may appear requesting the computer be restarted, which can be deferred until a later time.

2 Backup

It is essential to make regular copies of important data to ensure data is secure. If original data becomes corrupted, the data can be recovered from a backup image file.

Backupper can back up files, folders, disks, partitions, volumes, applications and system drive into a compressed image file(s) and supports full backup, incremental backup and differential backup, all of which can be scheduled to be carried out at configured times.

Backup guides are contained in the “**Backup**” menu at www.backup-utility.com/help.

2.1 Files and Folders Backup


In a few steps, personal files, working files and other important data can be backed up into specified image files.


As well as being able to specify which folders to back up, filters can be set, such as a file inclusion/exclusion mask, a folder exclusion mask and whether to exclude hidden files/folders and system files/folders.

To back up files/folders


1. In the left tab page, select “**Backup**” followed by “**File Backup**”.
2. Enter the backup name into the “**Task Name**” box, such as “My File Backup 123” to distinguish this backup from previously created backups.
3. Click either “**Add Folder**” or “**Add File**” and then select the files/folders to be backed up. Or, you can directly drag files/folders to add.
4. Select or type into the destination path to store the backup image file. If available, always select a destination storage medium that is different than the source medium. This will ensure that if the source drive fails, the data can be recovered from the destination medium.
5. Select “**Start Backup**” button to begin the backup process. Click “**Finish**” once the process has completed.

More advanced options for the current backup task can also be set as described in Chapter 3.

Selecting “**Add Folder**” will allow inclusion/exclusion and folder exclusion masks to be configured by expanding the “**Filter Settings**”: move the arrow of mouse to the added folder, then click the icon  to open Filter Settings Dialog.

Moving the arrow of mouse to the added folder/file, click the icon  to delete the folder/file when you don't want to back up it.

Note:

- After backup process starts, you can click the icon  in the lower left corner to set to **check backup integrity and/or Shut down/Restart/Hibernate/Sleep PC** after backup is completed.
- In order to avoid backing up temporary files, garbage files and other useless data, we suggest you perform a data clean up first and back up later.
- Files and folders in the Recycle Bin cannot be backed up.
- Backupper can effectively back up files like NTFS compressed files or EFS encrypted files, but the files will no longer have NTFS properties after restoration.
- Backupper can back up NTFS files along with their security permissions automatically, and also supports restoring each file's security permissions together with the file.
- We suggest you first put files you plan to back up into the same folder, and then back up this folder. To save all those files you would then only need to add one backup source to the Backup List, rather than several (Note: every item in the Backup list is called a backup source). This would make backup management more convenient. We suggest you do not add too many backup sources to the Backup list (e.g. the backup source count has reached 2000 or more).
- Some files may be in use by other programs exclusively, program will prompt to skip them.
- Some files don't have system permission (you can check permissions under properties of files/folders), program will prompt to skip them.

2.2 System Backup

Backupper provides a one-select solution to back up the system drive completely, including the operating system, applications, drivers, configuration settings, system files and boot files.

Backing up a system drive


1. In the left tab page, select "**Backup**" followed by "**System Backup**".
2. Enter a name for the backup in the "**Task Name**" box to distinguish the new backup from a previous backup.
3. Select or type into the destination path to store system backup image file.

4. Select the “**Start Backup**” button and wait for the process to complete.

Because System Backup is a single-select solution, the system partition and system reserved partition will be selected by default.

To customize advanced configuration for the current backup task, please see the Backup Options in Chapter 3.

Note:

- After backup process starts, you can click the icon  in the lower left corner to set to **check backup integrity and/or Shut down/Restart/Hibernate/Sleep PC** after backup is completed.
- Generally, system backup will back up “system” partition, “boot” partition(C: drive) and system’s recovery partition. It will not backup factory OEM recovery partition.
- For encrypted system partitions, Backupper will use sector by sector backup way by default.
- Backupper only supports backing up windows system.

2.3 Disk Backup

Disk backup will back up all files on the disk into a compressed image file, including all partitions/volumes and system files. If a system disk has been backed up then after restoration, the restored disk will be used to boot the computer.


Backupper supports backing up the Master Boot Record (MBR), GUID Partition Table (GPT), external hard drives, SSDs, USB storage and other devices that are recognized by Microsoft Windows.

Backing up a disk

1. In the left tab page, select “**Backup**” followed by “**Disk Backup**”.
2. Enter a name for the backup in the “**Task Name**” box, such as “My system disk backup 67” to distinguish the new backup from a previous backup.
3. Click “**Add Disk**”. In the popup window select the source disk(s) to backup.
4. Select or type into the destination path to store system backup image file.
5. Select the “**Start Backup**” button to begin the backup process.

To customize advanced configuration for the current backup task, please see the Backup Options in Chapter 3.

Note:

- After backup process starts, you can click the icon  in the lower left corner to set to **check backup integrity and/or Shut down/Restart/Hibernate/Sleep** PC after backup is completed.
- Backupper allows several disks to be backed up at a time. But, you only can select one disk from image file to restore at a time.
- Disk Backup can't list and back up dynamic disks. To backup volumes on dynamic disks, please use system or partition backup.
- For encrypted disks, Backupper will use sector by sector mode by default.
- If there are non-NTFS or FAT32 partition on the disk, Backupper will use sector by sector mode when backing up this partition.
- Backupper currently doesn't support backing up the disk with 4096 bytes/sector. But, you can save image file to 4096 disk.

2.4 Partition and Volume Backup


This option enables the backup of one or multiple partitions/volumes (including dynamic volumes) to an image file. This feature is the best choice if partitions and volumes (rather than the entire disk) are to be backed up.

Backup partitions/volumes

1. In the left tab item, select "**Backup**" followed by "**Partition Backup**".
2. Enter a name for the backup in the "**Task Name**" box, such as "My partition disk backup 52" to distinguish the new backup from a previous backup.
3. Click "**Add Partition or Volume**". In the popup window, select the partitions or volumes that need to be backed up.
4. Select or type into the destination path to store system backup image file.
5. Select the "**Start Backup**" button to begin the backup process.

To customize advanced configuration for the current backup task, please see the Backup Options in Chapter 3.

Note:

- After backup process starts, you can click the icon  in the lower left corner to set to **check backup integrity and/or Shut down/Restart/Hibernate/Sleep** PC after backup is completed.
- Backupper will back up in sector-by-sector mode for ExT2/3, ReFS, ExFAT and other non-Windows file systems.
- Backupper will back up encrypted partitions with sector by sector mode.

- Backupper allows several partitions to be backed up/restore at a time.
- For system partitions, we doesn't suggest that you use partition backup way.

2.5 File and Folders Sync

File Sync is a feature which allows synchronization to other locations. Use “**Schedule Sync**” or “**Real-time Sync**” to always keep important data in synchronization.

Synchronize files

1. In the left tab page, select “**Backup**” followed by “**File Sync**”.
2. Enter a name for the sync in the “**Task Name**” box to distinguish the new backup from other syncs.
3. Click “**Add Folder**” and then select the folder to be synced.
4. Select or type into the destination path that syncs to.
5. Select the “**Start Sync**” button to begin the sync process.

Schedule sync

Select the “**Schedule**” option upon which a dialog box will appear. Schedule the required sync task to sync files Daily, Weekly, Monthly, etc. Also, Real-time Sync or Event triggers can be used as a sync method.

Sync Options Window

General

- **Comments.** Allow a comment to be entered for the current operation in the comment box.
- **Notifications.** After enabling this option, email notification emails will be sent containing sync results.

Command

Run the specified program or script before or after backup or synchronization. For more details, please see the Command under Backup Options in Chapter 3

Advanced

“Automatically create a folder with the same name as the task in the target location” and “Save to global settings” is available.


Do not modify the source folder name otherwise the program will not be able to synchronize. If a name change is required, then edit the sync task in Backupper accordingly.

Real-time Sync

For Real-time sync task, it belongs to scheduled file sync task and Aomei Backupper can monitor source data which need to synchronize in real time. Click "Backup", select "File Sync" and you will enter in File Sync interface. After set the source and destination path of the sync task and then check "**Real-time Sync**" option to enable real-time sync.

In Real-time Sync settings, you can also tick "When deleting the source, files in the destination are also deleted" option so there is no need for you to manually delete these files from destination location.

Note:

- After sync process starts, you can click the icon  in the lower left corner to set to **Shut down/Restart/Hibernate/Sleep** PC after backup is completed.
- Backupper only supports one-way sync. That's to say, it only can sync from source to target
- For common/schedule sync, files/folders will not be deleted from target drive when they are deleted from source. You can use real-time sync with ticking "When deleting the source, files in the destination are also deleted".
- File Sync supports VSS (Volume Shadow Copy Service), therefore, it can normally synchronize files that are being used or occupied by other programs. but, you need to make sure that the "Volume Shadow Copy" service in your computer is enabled status. However, if some files are in use by other programs exclusively, they are not synchronized.
- If there are some special system files or folders with special security attributes in source folders, they are not synchronized, and program will prompt to skip them.
- After synchronizing file, any changes on target files and folder such as delete, add or rename one of them, will cause that target files or folder are inconsistent with source ones. This situation will not benefit for file management.
- If the target path was located in FAT/FAT32 partition, files larger than 4GB will not be synced to the target path. Because a single file larger than 4GB cannot be stored on FAT/FAT32 partition.
- Real-time sync temporarily has not yet used an executing interface or a tray notification to show sync progress. You only can check the status of files in the target path or the log.


2.6 Schedule Backup

Backupper can back up data automatically and periodically allowing data security to be greatly enhanced.

The following four methods are available to set up a backup schedule: **Daily Mode**, **Weekly Mode**, **Monthly Mode** and **Event Triggers**.

Set the scheduled backup

Method 1: Select the “**Backup**” option --> select a backup type (such as the “**System Backup**”) --> check “**Schedule**” --> to set the scheduled backup.

Method 2: Select a backup task in the Home screen --> click the icon  --> select “**Schedule Task**” --> to set the scheduled backup.

Schedule Settings-->General

Daily Mode

1. Set a future time point to perform the backup task once only.
2. Set a time point to perform the backup task once each day.
3. Set a time frame in a day first then choose the time interval between each backup.

The program will perform the backup at intervals of 1, 2, 3, 4 or 6 hours within the selected time frame each day.

Weekly Mode

1. Choose the day(s) for the backup task.
2. Set a time point. The program will automatically perform the backup at a given time point on the chosen day(s) each week.

Monthly Mode

1. Specify one day each month to perform the backup task. For example, perform the backup on the third Tuesday of each month.
2. Choose one day from the calendar to perform the backup task each month. Multiple days can also be selected on the calendar.

Event Triggers

There are four event trigger types: **User Logon**, **User Logoff**, **System Startup** and **System Shutdown**.

1. **User Logon**. Performs a backup automatically when a user logs on.

Once a log on to any user account (administrator or standard) occurs, the backup task is performed immediately.

If logging on an administrator account, a small Backupper tray appears in the bottom right corner of the desktop to show the backup progress. For logging into a standard account, the backup task is performed in the system background and the small Backupper tray is not displayed.

2. **User Logoff.** Perform a backup automatically when a user logs off.

Whenever a logoff of any user account (administrator or standard) occurs, the backup task is performed in the system background immediately.

If the Logoff backup has not been completed before the user logs on again, the backup task continues to run in system background. If the user logs as an administrator, then the small Backupper tray is displayed showing the backup progress.

If the system is to be shut down before the backup has completed, then Backupper will prevent the system from being shut down until the backup has been completed. After the backup has been completed, the system will automatically continue to shut down.

3. **System Startup.** Perform a backup automatically when the system starts up.

Once the system powers up, the backup task will run in background immediately even though an administrator or user has not yet logged into an account.

If the backup has not been completed after logging in, the backup will continue to run. If logged into an administrator account, the small Backupper tray is displayed showing the backup progress.

If the system is shutdown before the backup has completed, then Backupper will prevent system shutdown until the backup has completed. After the backup has been completed, the system will automatically continue to shut down.

In addition, a time can be set to delay performing the backup. For instance, if 5 minutes is set then the backup task will start 5 minutes after the system starts.

4. **System Shutdown.** Perform a backup automatically when the system is shutdown.

When a system begins to shut down, Backupper will prevent the shutdown as a backup must first be performed. Backupper will display backup information when system shutdown begins. Once the backup is completed (the length of which is dependent upon the amount of data to be backed up) the system will automatically continue to shut down.

If a system update is pending, the backup will run once the system update has completed.

If “**Run one time every day**” is selected in the bottom left corner, then the backup task will run only once a day.

USB plug in

When the program detects that source or target USB device of the backup task is plugged in, it will automatically back up the data from USB device or back up to USB device.

If “Run one time every day” is selected, then the backup task will run only once a day.

Real-time Sync

As for the feature, please see File and Folders Sync in Chapter 2.5.

Schedule Settings-->Advanced

Choose a way to perform the scheduled backup: Full Backup, Incremental Backup, Differential Backup. Incremental Backup is selected by default. For more detailed description about the three backup ways, please refer to “Incremental and Differential” tutorial located in the “Backup” menu at www.backup-utility.com/help.

For Daily/Weekly/Monthly mode, you can manually select use Windows Task Scheduler or install AOMEI service to run scheduled tasks. “Install a service to run scheduled tasks” is selected by default.

If “Run missed backup at the next system startup” is selected, when a scheduled task doesn’t perform at schedule time point due to some reasons, for example, computer is closed at schedule time point, the scheduled task will be perform again when system is started up at the next time.

Tips: Run missed backup at the next system startup only is performed one time.

If the task is enabled with Event Triggers or USB plug in, it is unable to manually specify neither Windows Task Scheduler nor AOMEI Service to perform this task. And, “Run missed backup at the next system startup” is also unavailable.

Note:

- Backupper currently can't wake up computer to perform scheduled backup. You can set to waked up the computer before schedule time via windows: right-click This PC-->manage-->system tools-->task scheduler-->select AOMEI backup tasks, select to wake the computer to run this task under Conditions. For set the option, you need to specify Windows Task Scheduler to perform this task.
- If you set shutdown event backup on Windows 10, please close “Fast Startup” under Control Panel-->Power Options-->System settings.

2.7 Backup (to) Network Attached Storage (NAS)

NAS is often used by file servers for business users. Backing up to a NAS will save local computer storage as well as ensuring the safety of the backup image.

Backupper also enables the backup data of NAS devices.

Backup to NAS

1. Click the destination path box in the Backup option once the source data has been selected.
2. When the window pops up, click **“Share/NAS”** on the left-hand side to open **“Network Location Management”** window, or open the drop down list of the destination path to **“Select a network share or NAS”**.
3. Select the **“Add Network Location”** button in the lower-left corner in **“Network Location Management”**.
Enter the **“Display name”** of the NAS (Optional).
Enter the IP address of the network location in **“Network Path”**,
“Anonymous” login is available. Or, disable **“Anonymous”**, then type into NAS username and password.
4. After the NAS device has been added, all the folders in the NAS will be listed in the right-hand side list box. Choose one folder as the destination path then select **“OK”**.

Backup NAS

Only File Backup/Sync way can select NAS's data as source.

1. Select the **“Backup”** tab on the left column then select **“File Backup”** or **“File Sync”**.
2. Click **“Add File”** or **“Add Folder”**, when the **“Open”** window pops up, click **“Share/NAS”** on the left-hand side to open **“Network Location Management”** window.
3. Select the **“Add Network Location”** button in the lower-left corner in **“Network Location Management”**.
Enter the **“Display name”** of the NAS (Optional).
Enter the IP address of the network location in **“Network Path”**,
“Anonymous” login is available. Or, disable **“Anonymous”**, then type into NAS username and password.
4. After the NAS device has been added, all the folders in the NAS will be listed in the right-hand side list box. Choose files/folders you want to backup/sync then select **“OK”**.

A guide is available in the **“Backup to NAS/Network”** tutorial located in the **“Backup”** menu at www.backup-utility.com/help.

Note:

- Backupper currently only support NAS with using SMB protocol.
- Real-Time Sync feature doesn't support syncing NAS.

- After added a network location, it will be retained under “**Network Location Management**”, so you don’t need to add again when creating backup task at next time.

2.8 Backup to Cloud Clients

Cloud drives (such as OneDrive, Dropbox, Google Drive, etc.) are very popular.

Backupper does support backing up/ syncing files or folders to a cloud drive if the system has installed the appropriate cloud Desktop App.

1. Select the drop-down menu of the destination path selecting box in the **File Backup/Sync** option.
2. Click “**Select a Cloud**” to open the list of cloud clients installed in the system. Select the required cloud client as the destination location for backups.

Before performing a backup, the desktop app of the destination cloud drive must be installed. For Dropbox, installation instructions are located at www.dropbox.com/install.


Note:

- Backupper only can choose a cloud drive desktop app as the target path for File Backup and File Sync.
- Backupper currently supports OneDrive, Google Drive, Box, Dropbox, SugarSync, hubiC and CloudMe.

2.9 Backup Management

Select “**Home**” on the left tab page to list backup/sync tasks with built-in shortcut options to start or manage backups. These include **Backup**, **Restore**, **Schedule task**, **Edit Backup** and so on. Backups can be listed by day, week, month or any other custom time.

Moving the mouse over any backup task you have created to select a task for further operations.

Directly start a new backup for the selected task via clicking the icon , a wizard will provide a guide through the process. It will create the incremental backup by default.

Click the icon  on the selected task, then list the following options:

Backup. Selecting full backup, incremental or differential backup type to perform. Following a full backup, an incremental or differential backup can be performed in the future based on the full backup. For a step-by-step guide,

please reference the “**Incremental/Differential Backup**” tutorial located in the “**Backup**” menu at www.backup-utility.com/help.

Restore. Selecting this option will display the “**Restore**” tab page to display a list of backups that can be restored.

Schedule. Displays the Daily, Weekly and Monthly schedule for automatic data backup. And, allow to modify the schedule settings. For more details, please see **Schedule Backup** in Chapter 2.6.

Edit Backup. Allow to modify the backup source, destination and edit task name. And, enable **Email notification**, enable **Backup Scheme**, enable **Command** etc. For more details, please see **Edit Backup** in Chapter 2.12.

Delete. Deletes the selected backup task or all backup files.

Shortcuts. Create a shortcut of a task to desktop so that you can directly click to start backup without opening Backupper.

Advanced.

- **Explore Image.** Mounts the image file to virtual drives for the data in the image to be viewed in “**My Computer**”. File Backup’s image file can’t be explored to virtual drives. You can explore or restore file backup .afi file to other location. For more details, please see **Explore Image Tool** in Chapter 6.2.
- **Check Image.** Checks the data integrity of the selected backup to ensure it can be successfully used to restore data. For more details, please see **Check Image Tool** in Chapter 6.1.
- **Merge Image.** Merge a incremental backup chain with multiple backups to one backup file. For more details, please see **Merge Image Tool** in Chapter 6.3.
- **Locate Image.** Opens the folder where backups are located.

Properties. Shows general information for the selected backup. And, view logs of the task.

2.10 Incremental and Differential Backup

As time progresses, there will be an increasing amount of data and files stored on the system drive, data partitions, etc. In order to ensure data integrity, it is important to backup changed data regularly.

There following three options are available: **Full**, **Incremental** and **Differential Backup**. The following describes the differences of each option and can assist with developing a backup plan.

For a step-by-step guide, please reference the “**Incremental/Differential Backup**” tutorial located in the “**Backup**” menu at www.backup-utility.com/help.

Full Backup

A Full Backup takes a snapshot of all the data on the selected folders, partitions or hard disks at the time the backup is performed and saves the backup to an Image file.

A Full Backup is always the basis of any incremental and differential backup. A Full Backup can be used to restore all the files and folders in its image to the system state when the image was created.

Once a Full Backup is performed, an Incremental or Differential Backup can be created, which are much quicker to create than a Full Backup as the images created are normally much smaller.

Incremental Backup

An Incremental Backup takes a snapshot of only changed and/or newly added files based on the previous related backup, be it a Full or Incremental Backup.

Data that have not changed is not backed up. Therefore, the time and image storage space required for an Incremental backup is normally much smaller than a full backup. A Full Backup must exist as the start point for a series of Incremental backups. A typical Incremental in time sequence backup progression would be as follows.

Full Backup, as basis

Incremental Backup 1

Incremental Backup 2

.....

Incremental Backup n.

All incremental Backup series image files share a sequential relationship so If any one of the incremental image files in the sequence is damaged or missing, then subsequent image files cannot be used for recovery.

When restore, only need to select an incremental backup file to restore, then data can be recovered to the state when the selected Incremental Backup was performed.

Implementing a Full Backup with a regular Incremental Backup regime is the most commonly-used backup scenario.

Differential Backup

A Differential Backup is always directly related to its originating Full Backup and will back up all data added and/or changed since the last Full Backup was performed.

Therefore, compared to a Full Backup, the backup time and image file storage space required are both normally much less. If one of the Differential Backup image files becomes damaged or lost, it will not affect the subsequent Differential Backup image files.

When restore, only need to select a differential backup file to restore, then data can be recovered to the state when the selected differential backup was performed.

If data is added and/or changed significantly then each Differential Backup will become progressively larger, because each one will contain more changes made since the last Full Backup was performed. Compared to an Incremental Backup, Differential Backup takes more time and requires more disk space.

2.11 Backup Scheme

The Backup Scheme (or Backup Strategy) feature automatically manages and saves disk space usage as a result of having many image files.

The Backup Scheme feature can be enabled by using one of the following methods.

Method 1. In the process of creating a backup task in the AOMEI Backupper paid version, select "**Schedule**" followed by the "**Scheme**" button to set it.

Method 2. Select the **Home** page followed by the **Backup** task. Then select "**Edit Backup**" -> "**Backup Scheme**".

Detailed Introduction of the Backup Scheme

● Full Backup Scheme

1. Always retain the latest xxx versions of full backup image files. When it exceeds the number of versions, the older full backup image file will be deleted automatically.
2. The Full Backup Scheme is like a circular queue. When the queue is full, and as new members want to join the queue, then the oldest members will be removed from the queue.

Example

It is assumed "3" is set, which means to always retain the latest 3 versions of full backup image files. When 3 versions are exceeded, the oldest version of the backup image file will be deleted automatically. So, if there are FULL.adi, FULL1.adi, FULL2.adi, and after creating a new full backup FULL3.adi, the older backup FULL.adi will be deleted automatically.

If you tick "Make a full backup before performing backup scheme" option, it will first create a FULL backup before backup scheme circular queue and the full backup will always be retained, the procedure is:

FULL→FULL1→FULL2→FULL3→FULL4 (delete FULL1)→FULL5 (delete FULL2)→FULL6 (delete FULL3)→FULL7 (delete FULL4)

If you don't tick the option, the procedure will be:

FULL→FULL1→FULL2→FULL3(delete FULL)→FULL4 (delete FULL1)→FULL5(delete FULL2)→FULL6 (delete FULL3)

Note: The minimum reserved version is 1, the maximum reserved version is 10.

● Incremental Backup Scheme

1. Always retain the latest xxx versions of backup image files. When the number of versions is exceeded, it will start the next group backup.
2. The Incremental Backup Scheme is like a group queue. The former group must be removed from the queue when the later group meets the requirement of joining the queue. A group is composed of a full backup and multiple incremental backups.

Example:

We assume that you have set "3", and this means you have chosen to keep 3 latest versions of image file. And 3 versions of image files will be regarded as a group. When next group is created, the older group will be deleted automatically. So if there is a group of backup image files as FULL.adi, INC1.adi, INC2.adi and after creating a new group of backup as FULL1.adi, INC3.adi, INC4.adi, then the older backup group including FULL.adi, INC1.adi, INC2.adi will be deleted automatically.

If you tick "Make a full backup before performing backup scheme" option, it will first create a FULL backup before backup scheme circular queue and the full backup will always be retained. The procedure is:

FULL (original full backup)→FULL1→INC1→INC2→FULL2→INC3→INC4(delete FULL1, INC1, INC2) →FULL3→INC5→INC6 (delete FULL2, INC3, INC4)

If you don't tick the option, the procedure will be:

FULL (original full backup)→INC1→INC2→FULL1→INC3→INC4(delete FULL, INC1, INC2) →FULL2→INC5→INC6 (delete FULL1, INC3, INC4)

Note: The minimum reserved version is 2, the maximum reserved version is 100.

● Differential Backup Scheme

1. Always retain xxx versions of backup image files. When it exceeds the number of versions, the older backup image files will be deleted automatically.

- The Differential Backup Scheme will create a full backup and multiple differential backups as one group. It will first delete the differential backup one by one during one group, then delete the full backup of the group.

Example

We assume that you have set “3”, and this means AOMEI Backupper will always retain the latest three versions of backup image file. When it exceeds 3 versions, the older backup image files will be deleted one by one. So if there are FULL1.adi, DIFF1.adi, DIFF2.adi and after creating backup FULL2.adi, then the older differential backup DIFF1.adi will be deleted automatically.

If you tick “Make a full backup before performing backup scheme” option, it will first create a FULL backup before backup scheme circular queue and the full backup will always be retained. The procedure is:

FULL(original)→FULL1→DIFF1→DIFF2→FULL2(deleteDIFF1)→DIFF3(deleteDIFF2)→DIFF4 (delete FULL1)→FULL2(delete DIFF3)

If you don't tick the option, the procedure is:

FULL(original)→DIFF1→DIFF2→FULL1(deleteDIFF1)→DIFF3(deleteDIFF2)→DIFF4(delete FULL)→FULL2(delete DIFF3)

Note: The minimum reserved version is 2, the maximum reserved version is 100.

● Space Management Scheme

- Please specify for the scheme that creates XXX backup versions as one group. It will run as the differential backup way and it is the extension of Differential Backup.
- The Space Management Scheme will create a full backup and multiple differential backups as one group. When backup versions exceeds one backup group, if the program detects insufficient space when performing the new backup, old backup image files will be deleted to free up disk space for storing the new backup image files.
- The scheme will first delete the differential backup one by one during one group, then delete the full backup of the group.

Example

We assume you set to create 3 versions as one group. So, it will generate FULL.adi, DIFF1.adi, DIFF2.adi, FULL1.adi, DIFF3.adi, DIFF4.adi. And when you create a new full backup FULL3.adi, the program detects that there is not enough space, then it will delete DIFF1.adi. And if there is still not enough space, it will continue to delete DIFF2.adi. And if space is still

not enough, delete FULL.adi..... DIFF3.adi.....until there is enough space for new backup.

If you tick “Make a full backup before performing backup scheme” option, it will first create a FULL backup before backup scheme circular queue and the full backup will always be retained. The procedure is:

FULL (original full backup)→FULL1→DIFF1→DIFF2→FULL2→DIFF3→DIFF4→FULL3→DIFF5→DIFF6→FULL4(If there is not enough space when doing this backup, Backupper will delete DIFF1 and if space is still not enough, Backupper will delete DIFF2...FULL1...DIFF3)

If you do not tick “Make a full backup before performing backup scheme” option, the procedure is:

FULL→DIFF1→DIFF2→FULL1→DIFF3→DIFF4→FULL2→DIFF5→DIFF6→FULL3(If there is not enough space when doing this backup, Backupper will deleteDIFF1 and if space is still not enough, Backupper will delete DIFF2...FULL..DIFF3...)

● Other Scheme

There are two ways to delete the previous versions of backup image file, as follows.

1. **By time.** When it exceeds XXX Days/Weeks/Months/Years, it will create a new full backup, and then delete all previous backup files.

For example, it is assumed you set to create a new full backup when it exceeds “3 days”. If it has created FULL.adi, INC1.adi, INC2.adi, INC3.adi, and INC4.adi during three days, then creating FULL2.adi automatically at the fourth day, these previous versions (FULL1.adi, INC1.adi... INC4.adi) will be deleted.

If you tick “Do not delete the image file of the first backup during disk space management” option, the procedure is:

FULL(original Full Backup)→ FULL1→ INC1→ INC2→ INC3→ INC4 → FULL2 (delete FULL1, INC1, INC2, INC3, INC4) → INC5→ INC6...→ FULL3 (delete FULL2, INC5, INC6...)

2. **By version.** Automatically delete the previous XXX versions of backup image files after the next full backup finishes.

For example, it is assumed you set to delete previous “3 versions”, so it will create a full backup after 3 backup versions and then delete previous 3 older versions. If there are FULL1.adi, INC1.adi and INC2.adi, then it will create FULL 2.adi, then delete FULL1.adi, INC1.adi and INC2.adi.

If you tick “Do not delete the image file of the first backup during disk space management” option, the procedure is:

**FULL (original Full Backup)→ FULL1→ INC1→ INC2→ FULL2
(delete FULL1, INC1 and INC2)→ INC3→ INC4→ FULL3 (delete
FULL2, INC3 and INC4)**


Note:


- If you have done several backups (Full, INC, DIF) before enabling backup scheme via "Advanced" -> "Edit Backup" -> "Backup Scheme" on a task, these backup files will not be deleted by the scheme.
- If you use different backup way on Schedule Settings and Backup Scheme, backup will be performed as the way in backup scheme. For example, you set an incremental schedule backup and select differential backup scheme, so it will create differential backups.
- If you have performed some backups with a backup scheme and then you change the backup scheme, for example, change Incremental Backup Scheme to Space Management Scheme, it will restart the backup queue with the new backup scheme and these backup files generated during using previous backup scheme will not be deleted.
- For Space Management Scheme, if backup versions don't exceed one backup group and then the storage space is insufficient, it will not delete old backup files to free up space. So, please confirm that there is enough space to save backup versions of one group.

2.12 Edit Backup

“**Edit Backup**” allows backups to be edited by changing the task name and/or the destination to save the image to another location.

To Edit the Backup

All the backups are listed in the Home Screen. Move the cursor to the backup task to be modified then click the icon  on the selected task, select “**Edit Backup**”.

1. On the top of the pop-up window, select the edit button  behind the Task Name, then type the new name into the editable box. Select “**OK**”.
2. If the selected backup task is a File or Folder backup, then select the Add File/Add Folder or Edit the source. For other backups, the source cannot be edited.
3. Select the destination path box to another path as the destination location to store the backup image.
4. Select “**OK**” to save all the changes.

In the **Edit Backup** window, there is an option to enable **Email notification** in the lower left corner. By selecting this option, an email will be sent containing the backup result. To learn more about email notifications, see Chapter 3.4.

In the **Edit Backup** window, there is an option to enable **Backup Scheme** in the lower left corner. By selecting this option, old backup files will be deleted automatically for managing disk space. To learn more about backup scheme, see Chapter 2.11.


In the **Edit Backup** window, there is an option to enable **Command** in the lower left corner. By selecting this option, run the specified program or script before or after backup or synchronization.

Note:

- Only File/Folder backup tasks offer the option to edit or add source files/folders. The source cannot be edited for system, disk and partition backups.
- Backupper can't directly change the target path from a NAS location to another NAS path. You can first modify the target path to a local location, and then change to new NAS path.
- When change target path, all backup images will also be migrated to new path.
- If there is no backup files in target path or backup task can't detect backup files, the target location can't be modified. You need to recreate the task.

3 Backup Options

The menu at the top of the Main screen and backup Options in the Backup page will allows parameters to be changed with help assistance provided.

Click  at the top of the Main screen to open menu, then select "**Settings**", it is possible to individually customize the global parameters when backing up data, including the compression level, splitting image, notifications settings, intelligent sector, VSS, etc.

In "**Options**" when creating a task, it is possible to set parameters for individual task, including the compression level, backup encryption, notification enabling, splitting image, intelligent sector, VSS, other.

3.1 Data Compression

In "**Settings**" or "**Options**"-->"**Advanced**", select a compression level. The Normal option is selected by default for data compression and is recommended. However Higher or None data compression can be selected if required, as described below.

- **None.** Data will be imaged without any compression resulting in a backup image file size equal to the original data.

- **Normal.** Data will be compressed to a moderate level and is the recommended compression level.
- **High.** A much higher compression level is used during the backup. The image file will be smaller than the other compression levels, but the backup will take longer to create.

Some computer files (such as .jpg, .pdf or .mp3) are already compressed. If the backup contains many such files, then the generated backup file may not significantly decrease in size even when the High compression level is used.

3.2 Encryption

Because an image file could normally be accessed and restored by anyone, encryption can be used with a password for protection from unauthorized access.

Enter the password into the password field to encrypt the data. A maximum of 64 characters can be entered. Do the following to enable encryption.

1. Select “**Enable encryption for backups**” in “**General**” of “**Options**” in the Backup page.
2. Type in the encryption password in the first field and then retype it into the second field to confirm the password.

It is not possible to recover a backup if the password is lost.

Currently Backupper does not support changing the password of after the backup has been created as the data is encrypted based on the password.

3.3 Splitting

Backup files can be split into several smaller files to fit into different smaller storage media. Backupper can automatically create a backup file into multiple parts during the backup process. In “**Settings**” or “**Options**”-->“**Advanced**” to set the way of splitting.


The splitting options available are listed below.

- **Automatic.** The image split size depends on the file system of the destination storage medium. For example, FAT32 partition only can save files less than 4gb.
- **Customize size.** Input the required file size value and future backup images will be split into segments of this size. The minimum supported file size is 50MB.
- **Choose a predetermined size.** Choose the storage medium type in the drop-down menu. Backupper will then split the image file to suit the selected medium.

3.4 Email Notifications

In unattended operations, a notification can be emailed containing the result of each backup.

To Configure Email Notification

Click  in the title bar-->select “**Settings**”-->select “**Notifications**”--> “**Enable email or SMS notification**” to configure the email information.

The following SMTP Servers can be used to send notification emails.

1. When the **AOMEI SMS** is selected, a phone number needs to be entered.
2. When the **Gmail** or **Outlook** Server is selected, the email address must be entered to which Backupper will send execution results, followed by the Outlook or Gmail account information for SMTP authentication.
3. When the **AOMEI Server** is selected, only the email address needs to be entered which Backupper will use to send the execution result to.
4. When the **Custom** Server is selected, the SMTP server information must be entered.

If the free edition of Backupper is being used then only the Outlook or Gmail servers can be selected.

Notification Settings

Specify when an email notification is sent, as follows.

1. The operation is completed successfully.
2. The operation fails.
3. User interaction is required.

Notification emails can be sent using HTML or text.

All conditions for sending email notifications are selected in the Notification Settings by default. A report will be provided if the operation is completed successfully or not.

For verifying settings are correct, Backupper will send a test message to the configured email address or phone number if “**Send for test**” is selected.

To Enable Email notifications for a Backup Task

1. When creating a backup task, select “**Enable notification**” in “**General**” of the “**Options**” in the Backup page.
2. Enable email notification for an existing backup task in the Home screen by selecting “**Edit Backup**” and then check “**Enable notification**”.

Note:

- When you set email notification with Custom server, Backupper requires SMTP authentication, it does not support anonymous access.
- When you set up email notification with Gmail server, it may send the test message failed, as far as we know, it is because Google enhanced Gmail's security level, you need to turn on access for less secure app in Google setting, then retry.
- Backupper doesn't configure multiple email addresses to receive the email notification. You can create an email group and add these email addresses, after that, you can put the group email address as the receiver of notification, so these email addressed under the group also will receive the email notifications.

3.5 Backup Mode

In “**Settings**” or “**Options**” to set backup mode when create system/partition/disk backup.

Intelligent Sector:

Intelligent Sector Backup. Only backs up used file systems sector. This will reduce the image file size and backup time.

Make an Exact Backup. Also called **Sector-by-Sector Backup**, this will back up all disks or partition sectors whether used or not.

Backup Service:

VSS (Volume Shadow Copy Service) is a backup technique of Microsoft, which allows the computer to continue to be used while a backup is in progress. If VSS is not used, then Backupper will automatically use its own backup service instead of performing a live backup. Choose one of the modes to begin the backup task.

It is highly recommended that the VSS service is used.

3.6 Command

Run the specified program or script before or after backup or synchronization

Enable **Pre-command** or **Post-command**:

Command: Browse to load a script file or executable program file.

Working directory: Type into a path to save the result of the Pre-command or Post-command execution.

Arguments: Set some arguments for the command if necessary.

The “**Terminate the operation if the command fails to execute**” and “**Do not perform the operation until the command execution is complete**” are selected by default.

Click “**Test**” button to verify the command.

Click “OK” button to save the command settings.

Note:

- Real-time sync doesn't support Pre-command and Post-command.
- Generally, the source path of the script file or executable program file will be filled into **Working directory** by default after you add the script file or executable program file to **Command**. You can change to other path manually.

3.7 Comments

A comment containing up to 1,024 characters can be entered in “**General**” of the “**Options**” in the Backup page to describe the backup task and distinguish it from other backup tasks.

3.8 Other

In “**Settings**” or “**Options**”-->“**Advanced**” to set other options.

Automatically create a folder with the same name as the task in the target location. It is ticked by default. So, it will create a folder with the task name under target path to save backup files or synced content. For example, you create a backup task named as Disk Backup, it will first create a Disk Backup folder under the target drive you selected and save backup images to here.

Automatically check the backup on completion. Backupper will check each backup upon completion automatically to verify the backup has been properly created.

Enable Large Windows Mode. This should enable large windows mode automatically when the monitor uses high resolution, such as 1920x1080, 2048x1536 or 2560x1440 pixels.

Don't show tray icon next time. Generally, schedule task will show a tray on task bar when performing. If you check the option, the tray icon will not appear when schedule task is performing automatically.

Join the User Experience Improvement Program. It is beneficial to help us improve the software.

Choose Language. Change the program language.

4 Restore

If unexpected problems occur (such as a system crash, data loss, disk corruption or failure) then Backupper will recover all data from a backup.

4.1 Files and Folders Restore

If original files and/or folders are lost or damaged, Backupper can use the **File Restore** feature to restore lost data back to their original state at the time they were backed up.

To restore files/folders

1. In the left tab page, select **“Restore”**, then select a backup task or image file to continue.
2. **Select Task:** all backup tasks are listed. Select a File Backup Task that want to restore, click **“Next”** button.

OR

Select Image File: in popup window, browse the drive that saved backup files to select an image file, click **“Open”** button.

3. Select a backup point based on the created time and backup type. Then, select the files and/or folders to be restored, click **“Next”**.
4. Select a destination path to save the files and/or folders. Choose either to **“Restore to original location”** or **“Restore to a new location”**.

Tips: there are several restore options in Settings:

“Restore NTFS Permissions” to maintain the original permission rights for the files or folders. Note: NTFS Permissions can only be restored to NTFS formatted drives.

“Replace existing files” to overwrite existing files with the same name.


“Restore only files” to only restore those selected files not included in the original path.

5. Select **“Start Restore”** to begin the restoration process. Click **“Finish”** once the process has completed.

For a step-by-step guide, please reference the **“Files/Folder Restore”** tutorial located in the **“Restore”** menu at www.backup-utility.com/help.

Note:

- Some files in destination may be in use by other programs exclusively that cannot be overwritten. In this event, Backupper will provide a prompt to resolve the problem and may result in restoring to a new location.

- When backing up files, Backupper automatically backs up the NTFS file permissions. Check the "**Restore NTFS Permissions**" option to make it easier to set file permissions during the restore process.
- If there are multiple backup versions, in step 3, you can select the appropriate backup point based on the the backup type and created time.
- After restore process starts, you can click the icon  in the lower left corner to set to **Shut down/Restart/Hibernate/Sleep** PC after backup completion.

4.2 System Restore

If the system has crashed or cannot boot, restoring the system from a system backup is a better solution than reinstalling the operating system.

To Restore the System

1. In the left tab page, select "**Restore**", then select a backup task or image file to continue.
2. **Select Task:** all backup tasks are listed. Select a System Backup Task that want to restore, click "**Next**" button.

OR

Select Image File: in popup window, browse the drive that saved backup files to select an system backup file, click "**Open**" button.

3. Select a backup point based on the created time and backup type and click the "**Next**" button.

If system backup file include multiple partitions, select "**Restore a partition in this system backup**" to restore only data of single partition. Note: the operation can't ensure the restored system will be bootable.

4. Specify the destination drive to restore if selecting "**Restore system to other location**" in previous step. Generally, the program will directly select the original location as destination by default. But, if the size or location of the original system drive has changed, you also need to specify the destination system drive manually.
5. In the "**Operation Summary**" page, preview the operation that will be executed and set desired advanced settings as follows:

The "**SSD Alignment**" option can also be selected to optimize the performance if the destination is an SSD.


When only one system drive is restored, there is "**Edit Partition**" option, which allows to change drive letter, partition type and edit the size of the partition.

If restore to dissimilar hardware, the “**Universal Restore**” should be selected.

6. Select “**Start Restore**” to begin the restore. Click “**Finish**” once the process has completed.

For a step-by-step guide, please reference the “**System Restore**” tutorial located in the “**Restore**” menu at www.backup-utility.com/help.

Note:

- If the system is regularly backed up, then each backup will generate an image at the time of backup so there may be multiple backup time points to select.
- The destination disk/partition will be totally overwritten. If the destination contains any essential data, it should first be copied or moved to another location.
- During a system restore, the program will prompt for the computer to be restarted which then enters “**Restart Mode**” for the restore operation.
- If you can’t boot into windows to run the program for the restore, you can create WinPE bootable media of AOMEI Backupper in advance, and then boot from WinPE media to do restore.
- If your system is in “EFI partition + system partition + recovery partition” layout, there may be more than one EFI partitions after restore to original disk. In this situation the restored system may not be bootable, you could try to delete the extra EFI partitions and only keep one. Then, it will boot up normally. Or, you can delete original system partitions on the disk and then restore.
- If system restore to original location by default, it will can’t select “**SSD Alignment**” and “**Edit Partitions**”.
- After restore process starts, you can click the icon  in the lower left corner to set **Shutdown/Restart/Hibernate/Sleep** PC after backup completion.

4.3 Disk Restore

If a disk is damaged or faulty resulting in data or partitions loss, then the (possibly replacement) disk can be fully restored to the state of the last backup.

To restore the disk

1. In the left tab page, select “Restore”, then select a backup task or image file to continue.
2. **Select Task:** all backup tasks are listed. Select a Disk Backup Task that want to restore, click “**Next**” button.


OR

- Select Image File:** in popup window, browse the drive that saved backup files to select an disk backup file, click “**Open**” button.
3. Select a backup point based on the created time and backup type and click the “**Next**” button.
 4. Select the disks/partitions in the image file that will be restored, as follows.
 - **Restore the entire disk** will list the disks contained in the selected image. Select one of the disks to restore followed by the “**Next**” button to continue.
 - **Restore a partition in the disk** will list the partitions that are contained in the image. Select one of the partitions followed by the “**Next**” button to continue.
 5. Select the Destination to restore the selected disk/partition to followed by the “**Next**” button.
 6. Enter the “**Operation Summary**” page to preview the restore operation to be executed and set desired advanced settings as follows.
 - a. **Edit Partitions.** To adjust the partitions size or location on the destination disk. The following options are available.
 - **Copy without resizing partitions.** Does not perform any changes.
 - **Add unused space to all partitions.** The destination disk partitions will be automatically resized to the entire disk, appropriate for the disk size.
 - **Manually adjust partition size.** Manually adjust the partition size and location by dragging a slider bar.
 - b. **SSD Alignment.** If the destination disk is an SSD then it is highly recommended that this option is selected to optimize SSD performance.
 - c. **Sector by sector restore.** Restore all sectors of the disk to the destination disk whether in use or not. The destination disk size must be equal to, or larger than, the source disk.
 7. Select “**Start Restore**” to begin the restore. Click “**Finish**” once the process has completed.

For a step-by-step guide, please reference the “**Disk Restore**” tutorial located in the “**Restore**” menu at www.backup-utility.com/help.

Note:

- Each backup will generate an image at a given time allowing multiple time points to be selected.

- The destination disk/partition will be totally overwritten. If the destination contains any essential data, then it should first be copied or moved to another location.
- If any applications are running on the destination partition/disk, Backupper will require the computer to be restarted and will then execute the restore operation in "**Restart Mode**".
- When you restore the disk image from GPT disk with 5 (or more) partitions to a MBR disk, it will prompt only 3 partitions can be restored. Because MBR disk only supports 4 primary partitions, however, AOMEI Backupper can't convert primary partition to logic automatically. In this case, you can convert the target MBR disk to GPT with Windows Disk Management or AOMEI Partition Assistant and then restore.
- If you back up multiple disks to an image file, you only select one disk to restore at a time.
- For Disk Backup, you can select single partition from disk image to restore.
- After restore process starts, you can click the icon  in the lower left corner to set **Shutdown/Restart/Hibernate/Sleep** PC after backup completion.

4.4 Partition/Volume Restore

This feature is used to restore a partition or volume. If the data on the partition is damaged, then the backed-up image file can be used for restoration.

To restore a partition/volume

1. In the left tab page, select "**Restore**", then select a backup task or image file to continue.
2. **Select Task:** all backup tasks are listed. Select a Partition Backup Task that want to restore, click "**Next**" button.
OR
Select Image File: in popup window, browse the drive that saved backup files to select an partition backup file, click "**Open**" button.
3. Select a backup point based on the created time and backup type and click the "**Next**" button.
4. The list or partitions or volumes contained in this image file are displayed. Select the partitions to be restored followed by the "**Next**" button to continue.
5. Select a destination partition, or an unallocated space, to which to restore the partition selected in the previous step. Click "**Next**" button.

6. Enter the "**Operation Summary**" page to preview the restore operation to be executed and set desired advanced settings as follows:


The "**SSD Alignment**" option can also be selected to optimize the performance if the destination is an SSD.

The "**Edit Partition**" option allows to change drive letter, partition type and edit the size of the partition..

8. Select "**Start Restore**" to begin the restore. Click "**Finish**" once the process has completed.

For a step-by-step guide, please reference the "**Partition/Volume Restore**" tutorial located in the "**Restore**" menu at www.backup-utility.com/help.

Note:

- Each backup will generate an image at a given time, so there will be multiple time points to choose from.
- The destination disk/partition will be totally overwritten. If the destination contains any essential data, then it should first be copied or moved to another location first.
- If any applications are running on the destination partition/disk, Backupper will require computer is restarted then will execute the restore operation in "**Restart Mode**".
- After restore process starts, you can click the icon  in the lower left corner to set **Shutdown/Restart/Hibernate/Sleep** PC after backup completion.

4.5 Universal Restore

Universal Restore allows the operating system (such as Windows 10) to be restored to a computer with dissimilar hardware. This allows the operating system to be recovered instantly in the case of a hardware failure and deploy the same operating system to many computers. It can also be used for other purposes, such as physical-to-virtual or virtual-to-physical migration.

To restore system to dissimilar hardware

Before restoring a system/disk image, please do the following.

1. Create a bootable media of AOMEI Backupper (see www.backup-utility.com/help/create-bootable-disk.html). Or, use PXE Boot Tool to perform the restoration (see www.backup-utility.com/help/pxe-boot.html).
2. If a system/disk backup image is available then use Backupper to locate the image file otherwise make a system/disk backup (see www.backup-utility.com/help/system-backup.html).

Restore to dissimilar hardware following the steps below.

1. Boot the target computer from bootable media or boot the target computers into the operation system BIOS then set PXE network boot mode. Using either method can boot into the Backupper WinPE or Linux system.
2. In the left tab page, select “**Restore**” and then locate the system/disk image file.
3. A pop-up window will be displayed. Select “**Yes**” to confirm a system restore will be performed.
4. If there are multiple backup versions, select a backup point based on the created time and backup type, then select the “**Next**” button.
5. Select a destination location to restore the image followed by “**Next**”.
6. Review the Operation Summary Window. Make sure that the option “**Universal Restore**” in the lower left corner is checked to restore the system image to dissimilar hardware otherwise the computer might be unable to boot after restoring.
7. Select “**Start Restore**” to perform the operation.

For further details, see www.backup-utility.com/help/how-to-operate-universal-restore.html.

Note:

- The system image cannot be restored to the drive where the image file is saved as the selected drive will be formatted before restoration begins.
- After restoring Windows to a computer with dissimilar hardware, it may be necessary to enter license codes to reactivate Windows, Office, etc.
- Some drivers (such as the video/sound card drivers, display driver, NIC drivers, etc.) are not installed by Universal Restore for dissimilar hardware. As these drivers will not affect system startup, they can be installed following the restoration.
- Universal Restore is available for system disk restore only. So, for disk backup image, it must be created for a running system disk.

4.6 Sector by Sector Restore

If system, disks or partitions backup was performed in sector by sector mode, which will back up all disks or partitions sectors including unused sectors and some deleted files. When restore in sector by sector mode, Backupper will copy all used and unused sectors to the destination disks or partitions. In a non-sector by sector restore, only used sectors will be restored with unused sectors ignored.

For a step-by-step guide, please reference the “**Sector by Sector Restore**” tutorial located in the “**Restore**” menu at www.backup-utility.com/help.

Note:

- When using sector by sector mode restore, the destination partition or disk size must be equal to or larger than the source.
- For encrypted partitions or non-NTFS/FAT32 partitions, Backupper will back up them with sector by sector mode by default. When restore, it will also use sector by sector restore by default.

4.7 Edit Partitions

The partitions size or location on the destination disk can be adjusted in disk restore/clone mode by opening the “**Operation Summary**” page and select “**Edit Partitions**” button.

In the Edit Partitions dialog, the following three options are available.

- **Copy without resizing partitions.** Does not make any changes.
- **Add unused space to all partitions.** The destination disk partitions will be automatically resized to the entire disk, as appropriate for the disk size.
- **Manually adjust partition size.** Manually adjust the partition size and location by dragging the slider bar.

Select the “**Edit Partition**” button in the Operation Summary page when a system drive or a partition is restored/clone. A popup window enables a drive letter to be assigned and set primary/logical to the partition. The graphical Partition Bar can be dragged and moved to change the size or location of the partition.

For a step-by-step guide, please reference the “**Edit Partitions**” tutorial located in the “**Restore**” menu at www.backup-utility.com/help.

Note:

- Restore system/partition image includes multiple partitions, Backupper can't support editing partitions on Operation Summary page.
- Clone system with multiple partitions, Backupper can't support editing partitions on Operation Summary page.
- Select sector by sector mode in disk restore/clone, "Edit partitions on the destination disk" button is unavailable.

5 Clone

Clone will migrate or transfer data directly to enable an exact and complete copy of a disk or partition to be made from one storage medium to another.

5.1 System Clone/System Migration

To change a new drive for better speed and performance (such as an SSD), or just want to migrate the operating system to another drive, System Clone can be used to clone all the related partitions which are necessary for transferring an operating system to another drive.

To Clone an Operating System

1. In the **Home Screen**, select “**Clone**” on the left column then select “**System Clone**”.
2. Select a destination location to migrate the system to the location then select “**Next**”. If the selected location is a used partition, a window will pop up to prompt that this partition will be deleted or overwritten. Select “**Yes**” to continue.
3. There are two optional functions within the **Operation Summary** Window.
Select the “**Sector by sector clone**” option to copy all system partition sectors, which may take some time to complete.

The “**SSD Alignment**” option can also be selected to optimize the performance if the destination is an SSD.

Tips: when only one system drive is cloned, there is “**Edit Partition**” option, which allows to change drive letter, partition type and edit the size of the partition.
4. Select “**Start Clone**” to perform the operation. Wait for the process to complete and then select “**Finish**”.

For a step-by-step guide, please reference www.backup-utility.com/help/system-clone.html.

Note:

- The system partitions do not need to be selected manually as Backupper will select the related system partitions by default.
- The destination location cannot be the source disk. Also, make sure the selected drive is large enough to contain the system partitions.
- For encrypted system drives, Backupper will use sector by sector clone way by default.
- After cloning successfully, shutdown the computer, remove the source drive from the computer then restart the computer to enter BIOS to set the cloned system disk as the first boot device. Boot from the destination disk.
- System clone only clone dynamic system volumes to basic disk.

5.2 Disk Clone

Disk Clone copies a hard disk drive to another disk drive. All data on the disk, including the operating system, applications, configuration settings and all partitions, etc., will be transferred to the destination disk.

This capability is especially useful when a system disk is about to run out of space and a larger capacity disk needs to be installed as a replacement. Disk Clone can also be used to migrate from HDD to SSD or for making a duplicate disk.

To Clone a Disk

2. In the left tab page, select the “**Clone**” option followed by “**Disk Clone**”.
3. Select the source disk to be cloned. Select “**Next**”.
4. Select the destination disk to which the source disk will be cloned, Select “**Next**”.

 Warning! All data on the destination HDD or SSD will be overwritten.

5. Preview the information of the source and destination disk. In the wizard page, set desired advanced settings as follows.
 - a. To adjust the partitions size or location on the destination disk, select the “**Edit Partitions**” button. The following options are available.
 - **Copy without resizing partitions.** Does not perform any changes.
 - **Add unused space to all partitions.** The destination disk partitions will be automatically resized to the entire disk, appropriate for the disk size.
 - **Manually adjust partition size.** Manually adjust the partition size and location by dragging a slider bar.
 - b. **Sector by sector clone.** Copies all sectors of the disk to the destination disk whether in use or not. The destination disk size must be equal to, or larger than, the source disk.
 - c. **SSD Alignment.** If the destination disk is an SSD then it is highly recommended that this option is selected to optimize SSD performance.
6. Finally, select “**Start Clone**”. Wait for the process to complete and then select “**Finish**”.

For a step-by-step guide, please reference the “**Disk Clone**” tutorial located in the “**Clone**” menu at www.backup-utility.com/help.

Note:

- A disk clone may take several hours depending on the size of the source disk.

- Any important data contained on the destination disk must be backed up first before the cloning operation begins as the data will be lost.
- If the destination disk is locked by other programs and/or applications, then Backupper will request the computer is restarted to execute the disk clone operation in "**Restart Mode**".
- If "**Sector by sector clone**" is selected, "**Edit Partitions**" option is unavailable.
- For encrypted disk, Backupper will use sector by sector clone way by default.
- If there are non-NTFS or FAT32 partitions on the disk, Backupper will use sector by sector way to clone these partitions.
- Disk clone doesn't support dynamic disk. Please use system or partition clone way.

5.3 Partition/Volume Clone

Backupper provides a feature to clone a single partition rather than the whole disk. For example, the (D:) drive could be cloned to (E:) or an unallocated space.

To clone Partition or Volume

1. In the left Tab page, select the "**Clone**" option, and then select "**Partition Clone**".
2. Select a partition or volume to be cloned as the source partition. Select "**Next**".
3. Choose an appropriate unallocated space or an existing partition as destination partition. Select "**Next**".
4. Preview the source and destination drive information. In the wizard page, set the desired advanced settings as follows.
 - a. **Edit Partition.** Enables a drive letter to be assigned and set primary/logical to the partition. The graphical Partition Bar can be dragged and moved to change the size or location of the partition.
 - b. **Sector by sector clone.** Copies all sectors of the drive to the destination disk whether in use or not. The destination drive size must be equal to or larger than the source drive.
 - c. **SSD Alignment.** If the destination disk is an SSD then it is recommended this option is selected to optimize SSD performance.
5. Finally, select "**Start Clone**". Wait for the process to complete and then select "**Finish**".

For a step-by-step guide, please reference the "**Partition/Volume Clone**" tutorial located in the "**Clone**" menu at www.backup-utility.com/help.

Note:

- A partition clone can take several hours depending on the size of the source partitions.
- The source partition cannot be selected as a destination partition.
- Any important data contained on the destination drive must be backed up first before the cloning operation begins as the data will be lost.
- If the destination drive is locked by other programs and/or applications, then Backupper will request the computer is restarted to execute the disk clone operation in "**Restart Mode**".
- For encrypted partition or non-NTFS/FAT32 partition, Backupper will use sector by sector clone way by default.
- Partition Clone only can clone dynamic volume from dynamic disk to a basic disk.

6 Tools

Tools are provided to enhance Backupper, as described in this Chapter.

6.1 Check Image Tool

The Check Image Tool tests the backup image data integrity to confirm the image can be used to successfully recover data.

To check the image

1. In the left Tab, select "**Utilities**" followed by "**Check Image**".
2. Select the backup to test. If the list box does not show the image to be checked then select "**Browse**" to locate the image.
3. Select a point-in-time and select the "**Next**" button to start the test. The Backup type and Created time will assist to determine the proper point-in-time to be tested.
4. When the process completes, select "**Finish**".

For a step-by-step guide, please reference the "**Check Image**" tutorial located in the "**Utilities**" menu at www.backup-utility.com/help.

Tips: Using "**Automatically check the backup on completion**" under Menu->Settings->Other to check each backup upon completion automatically to verify the backup has been properly created.

6.2 Explore Image Tool

The Explore Image Tool creates virtual drives to mount an image.

After mounting the image, the contents can be viewed in "My Computer". Files can be copied and pasted within the virtual drives.

To explore the contents of an image

1. In the main Tab page, select "**Utilities**" followed by "**Explore Image**".
2. Select the backup to explore from the list box. Select "**Next**" to continue.
3. Select a point-in-time and select the "**Next**" button to explore the image.
4. Assign a drive letter for the image partition and select "**Next**" to mount the image.
5. Wait for the process to complete and then select "**Finish**".

The data in the created virtual partitions can be explored using either "**Windows Explorer**" or "**My Computer**".

To detach the image

After mounting the image, Backupper will create virtual drives accessible in Windows Explorer. Once the necessary operations have been completed, it is advisable to detach the virtual drives by doing the following.

1. In the main Tab page, select "**Utilities**" followed by "**Explore Image**".
2. All current virtual drives will be listed. Select the appropriate virtual drives followed by "**Detach**" for the virtual drives to be removed.

Virtual drives are automatically detached when the computer shuts down.

For File Backup image file, it is not supported to mount it as a virtual drive, you can only use this feature to restore the contents to other location.

For a step-by-step guide, please reference the "**Explore Image**" tutorial located in the "**Utilities**" menu at www.backup-utility.com/help.

6.3 Merge Images Tool

The Merge Images Tool will restore data to a point-in-time specified by an incremental backup image. An incremental backup must always be restored along with its root Full backup, and sequentially with every other incremental backup created in between the two.

This can be a lengthy process if many incremental backups have been created since the first full backup.

For example, a task is created which creates an incremental backup each day to D:\work. One month later there could be as many as 31 image files. Every image file is a different version (also called a point-in-time). This tool enables a merge of all these backup versions into a single merged image file.

To merge image files

1. In the left Tab, select "**Utilities**" followed by "**Merge Images**".
2. Select a backup task to be merged. If backup is not shown in the list box, select "**Browse**" to locate the required backup. Select "**Next**" to continue.
3. All image files in the backup task can now be viewed, which are about to be merged into one. Select "**Next**" to continue.
4. Select a location to save the new, merged image file, which may be the original directory or another specified directory.
5. Select the "**Proceed**" button to begin the image files merger and wait for the process to complete.

For a step-by-step guide, please reference the "**Merge Images**" tutorial located in the "**Utilities**" menu at www.backup-utility.com/help.

It is suggested "**Create a task item for this merging operation**" is selected. Then, after merging, in the left tab, select "**Home**" to view the new backup item. When create incremental/differential backup on the new backup item, it will be based on the merged backup to create incremental/differential.

Note:

- "**Merge Images**" can only merge all correctly sequenced incremental backup images. If this backup task contains any version of a differential backup, then Backupper will advise it is not possible to merge the images.
- If a backup task comprises only one image file, then Backupper will take no action.
- Backupper does not delete the old image files or the merged backup task during the merging. You need to delete them manually.

6.4 AOMEI PXE Boot Tool

AOMEI PXE Boot Tool can boot many computers from one micro-system in the network by creating a Windows PE micro system with a third-party tool, also, a bootable Linux image or Windows PE image file created by Backupper.

AOMEI PXE Boot Tool can be used to make other clients or target computers boot from these micro systems. After booting, backup, restore or maintain system using tools offered with the image file.

Using the AOMEI PXE Boot Tool

Step 1. Install AOMEI Backupper in a server or PC that can be booted normally and launch it. Select "**Utility**" followed by "**AOMEI PXE Boot Tool**".

Step 2. Choose the environment to load the system and start the computer. There are three options.

1. **Boot the computer from AOMEI Windows system.** This is the recommended option allowing the tool to directly create a Windows PE system for a network boot.
2. **Boot from AOMEI Linux system.** This option will make other clients load a Linux system image in the network.
3. **Boot from custom image file.** Loads the special micro-system image created by AOMEI PE Builder (www.aomeitech.com/pe-builder.html) or other third-party tools.

Step 3. After selecting “**Start Service**”, AOMEI PXE Boot Tool will configure related data automatically and start the service to wait for the target computers.

Step 4. Set client computers within LAN for network boot by setting the “**Network Boot**” option in each client computer.

If a computer boots with UEFI mode enabled, then it is suggested setting the computer to traditionally boot mode in the BIOS (“**Legacy boot mode**”).

For a step-by-step guide, please reference the “**Create Bootable Disk**” tutorial located in the “**Utilities**” menu at www.backup-utility.com/help.

Note:

- It may take a few minutes for the PXE boot process to complete.
- All computers where PXE is applied will be under the same network segment.
- If there are many computers, the speed of network may be slow. It may be advisable to divide the network into a group(s) to boost network loading.
- AOMEI PXE Boot Tool can support booting UEFI machines currently but only the WIM file can be used for UEFI (not the ISO file). If the file is an ISO file, then it is suggested the computer boot mode is changed to “**Legacy Boot Mode**”.
- AOMEI PXE Tool contains a DHCP server that can be used if an existing DHCP server is not available. DHCP is offered by the LAN router.

6.5 Create Windows PE & Linux Bootable Disc Tool

Backupper allows the creation of both Windows PE (WinPE) and Linux kernel based bootable disc that can be used as rescue media for emergency usage.

To create a bootable disc, first prepare a blank CD/DVD-R/RW disc, USB media or external hard disk then select the “**Utilities**” tab followed by “**Create Bootable Media**”. In the pop-up window, there are two bootable disc types: **Windows PE** and **Linux**.

Creating a Windows PE Bootable Disc

1. If a USB device or CD/DVD is to be used as the bootable media, then insert it into the computer. "**Explore ISO File**" can also be chosen which enables the creation of an ISO image file.
2. Select "**Windows PE**" followed by "**Next**". Backupper will check whether the system meets the corresponding requirements. If not, then the Windows Creating Environment may need to be downloaded. Or, Windows AIK/ADK may need to be installed.
3. Select "**Next**" to create the Windows PE bootable disc.
4. Wait for the process to complete and select "**Finish**".

Creating a Linux Bootable Disc

Creating a Linux bootable disc is like the above steps for creating a Windows PE bootable disc where the only difference is that the bootable disc is created without meeting any requirement so there is no need to download and install Windows AIK/ADK. However, a Linux bootable CD might be less compatible and features, which only support Restore and Clone.

Backupper allows additional drivers to be manually added when creating a Windows PE bootable disc via **ADD Drivers** on **Select Bootable Media** page.

After the ISO file has been created, it can be burned to a CD/DVD by using the Windows 7 (and later) integrated burning utility by right selecting the .iso file, then select -> Open With -> Windows Disc Image Burner. The file can also be burned via third-party burning tools to a CD/DVD or USB device.

Note:

- Backupper doesn't creating WinPE/Linux environment to GPT USB media or external drive.

6.6 View Logs

The View Logs function displays the operations log information of what has been occurred. The information includes the operation type, the operation result, error code etc., to help determine what the error is, if any. The logs can be supplied to AOMEI to aid assistance.

To view the logs

1. In the left Tab, select "**Utilities**" followed by "**View Logs**".
2. The **log page** contains the following options.

Log List. Displays detailed information of the backup operation.

Display by date. In the lower left corner, select from the drop-down menu one of the items to list operations created during this period.

To clear the logs, go to “C:\Users\All Users\AomeiBR” or “C:\Documents and Settings\All Users\Application Data\AomeiBR” and then delete file “**brlog.xml**”. Leave all other .xml files alone. If “brlog.xml” is not found, then search the C drive to locate it.

Tips: Check logs of single task via clicking the task-->Advanced-->Properties-->View Logs.

6.7 Export/Import Configuration

The configuration file records all valid backup tasks and are normally listed within Backupper’s Home page. The configuration can be exported to a safe place so If the backup history is later lost then the configuration data can be imported to recover all Backupper backup tasks.

To export/import the configuration file

1. In the left Tab, select “**Utilities**” followed by “**Export/Import Configuration**”.
2. There are two options available.

Import Image. Import Image files(*.adi, *.afi) to reload backup tasks.

Import/Export task. Export the configuration file to another location. Import backup records to Backupper from the configuration file saved before.

More information can be found at: www.backup-utility.com/help/import.html.

Note:

- **Export task** will export the configuration of all backup and sync tasks to a .xml file. **Import** all tasks from the .xml file.
- **Import Task** only imports single backup task one time via browsing the corresponding backup files of the task.
- **Import Image** doesn’t support importing sync task.

6.8 AOMEI Backupper Command Line

For more advanced users, Backupper can be controlled from the Command Line instead of using the Windows interface by doing the following.

1. Select “**Start**” (bottom left-hand corner), enter “**cmd**” into the search box and right-click “**Command Prompt**” and select “**Run as administrator**”.
2. Navigate to the of AOMEI Backupper installation directory by typing the following command line.

cd C:\Program Files (x86)\AOMEI Backupper

If Backupper is installed in a different location, then enter that location instead.

- The options below specify all the Command line parameters that can be used to constitute a fully functional command, for which the following is an example.

AMBackup.exe /b new /t disk /s 0 /d "d:\disk" /n "Backup Disk 0"

This commands **AMBackup.exe** to start a new disk backup and backup disk 0, save the backup file to "D:\disk backup" and name the backup file as "Backup Disk 0".

Backupper's Command Line Syntax

- { } are **Required** parameters
- [] are **Optional** parameters
- | select one from many
- null no need to input any value

Show Help

Input	Description
AMBackup /?	Type "AMbackup /?" in the Command prompt to display help information
Output	Description
AMBackup {/b /c /r /l /?}	"AMBackup" has five functions, which are backup(/b), clone(/c), restore(/r), list(/l) and help(/?)
AMBackup /l /?	Display the concrete usage of the query command
AMBackup /b /?	Display the concrete usage of the backup command
AMBackup /c /?	Display the concrete usage of the clone command
AMBackup /r /?	Display the concrete usage of the restore command

Commands for creating a Backup

For a new backup, the required parameters are as follows.

Parameters	Description		
{/b}	Specify the following backup type. <table border="1" data-bbox="491 1863 1417 1939"> <tr> <td>new</td> <td>Create a new backup task</td> </tr> </table>	new	Create a new backup task
new	Create a new backup task		
{/t}	Specify the type of source, it could be one of the following.		

	system	will backup the system
	disk	will backup disks
	part	Will backup partitions
F{/s}	Source for the backup For a Disk backup, specify the disk number, e.g. /s 0. For a partition backup, specify the drive letter, e.g. /s C. For partitions without a letter, specify the partition number, e.g. /s 0:1	
{/d}	Destination path for saving the backup image, e.g. /d D:\Path\File	

For incremental and differential backup, the required parameters are as follows.

Parameters	Description						
{/b}	Specify the backup type.						
	<table border="1"> <tr> <td>inc</td> <td>Create an incremental backup based on the last backup</td> </tr> <tr> <td>dif</td> <td>Create a differential backup based on the last full backup</td> </tr> <tr> <td>full</td> <td>Create a subsequence full backup</td> </tr> </table>	inc	Create an incremental backup based on the last backup	dif	Create a differential backup based on the last full backup	full	Create a subsequence full backup
	inc	Create an incremental backup based on the last backup					
dif	Create a differential backup based on the last full backup						
full	Create a subsequence full backup						
{/s}	Specify the main body for creating incremental or differential backup, such as: “/s d:\backup\ab.adi” This results in creating an incremental or differential backup based on image “d:\backup\ab.adi”						

The following are some optional parameters.

Parameters	Description			
[/n]	Assign a name for the backup to distinguish it from others			
[/c]	Select the image compression level.			
	<table border="1"> <tr> <td>0</td> <td>No compression</td> </tr> <tr> <td>1</td> <td>Fast standard compression</td> </tr> </table>	0	No compression	1
0	No compression			
1	Fast standard compression			

	2	Higher compression level (may take a long time)
[/e]	Encrypt image file, e.g. /e "123" means "123" becomes the password of the image file.	
[/u]	Username. If the backup is to a network and the username is required to access the network. It is possible to set up the username by using this parameter, e.g. /u "admin"	
[/p]	Password. If the backup is to a to a network and a password is required to access the network, e.g. /p "123456".	
[/m]	Size in MB for splitting a large image file into smaller chunks. This specifies the maximum size of each part, e.g. /m 1490.	
[/r]	Backup the disk and partition in a sector-by-sector way.	
	0	Standard backup. This is the default backup option.
	1	Raw backup. This will perform a raw (pseudo forensic) sector-by-sector backup, e.g. /r 1

List the disk and partitions

Parameters	Description
[/l]	List disks and partitions on this computer. Use /l to show ALL disks on this computer, /l0 shows disk 0 partitions only where or /l1 shows disk 1. Note there is no space between the "/" and "0".

Examples

<p>System Backup</p> <p>1. System backup and assign a backup name.</p> <p style="text-align: center;">AMBackup.exe /b new /t system /d "d:\sys" /n "Backup System"</p> <p>2. System backup with no backup name.</p> <p style="text-align: center;">AMBackup.exe /b new /t system /d "d:\sys"</p>
<p>Disk Backup</p> <p>1. Backup disk 0</p> <p style="text-align: center;">AMBackup.exe /b new /t disk /s 0 /d "d:\disk" /n "Backup Disk0"</p>

2. Backup disk 0 and 1

AMBackup.exe /b new /t disk /s 0 /s 1 /d "d:\disk" /n "Backup Two Disks"

Partition Backup

1. Backup partition E

AMBackup.exe /b new /t part /s E /d "d:\part" /n "Backup Part E"

2. Backup partition E, F and G

AMBackup.exe /b new /t part /s E /s F /s G /d "d:\part" /n "Backup Parts"

Incremental & Differential Backup

1. Incremental backup: **AMBackup.exe /b inc /s "d:\sys\system.adi"**
2. Differential backup: **AMBackup.exe /b dif /s "d:\sys\system.adi"**
3. Incremental backup with password:

AMBackup.exe /b inc /s "d:\sys\c-drive.adi" /p "abc321"

Backup to Network

1. Backup to the shared network

AMBackup.exe /b new /t part /s E /d "\\192.168.0.100\Share\Imgfile.adi" /n "BackupToShare" /u "admin" /p "123456"

2. Backup to NAS

AMBackup.exe /b new /t part /s E /d "\\192.168.0.200\NAS\Imgfile.adi" /n "BackupToNAS" /u "admin" /p "123456"

Compression level and split image

AMBackup.exe /b new /t disk /s 10 /d "z:\folder" /n "Backup Disk10" /c 2 /m 500

Sector-by-Sector backup

AMBackup.exe /b new /t part /s f /d "d:\part" /n "Backup F Drive" /r 1

Encrypted Backup

AMBackup.exe /b new /t system /d "d:\sys" /e "mypassword"

List disks and partitions

1. List the disks in the system: **AMBackup.exe /l**
2. List the partitions on disk 0: **AMBackup.exe /l0**

For a backup restoration, the required parameters are as follows.

Parameters	Description
{/r}	Restore the backup of system, disk, partition or dynamic volume.
{/t} {system disk part}	Specify the restore type. "system" means to restore the system backup. "disk" means to restore the disk backup. "part" means to restore the partition backup or dynamic volume backup.
{/s}{D:\my backup\my backup.adi \\192.168.1.1.\my backup\my backup.adi}	Specify the path of the image file.
[/v]	Specify to use the latest backup version to restore because of an incremental or differential backup. The backup version corresponding to the current image file will be restored without this "/v" command.
[/i] {0 0:0}[null]	Specify the source, which means the disk, partition or dynamic volume to be restored in the image file. /i 0 means disk 0 or dynamic volume 0. / i 0:0 means partition 0 on disk 0. "null" means there is no need to specify the partition to be restored while performing system restore.
[/e]{"123"}	Specify the password for the image file
[/d]{0 0:0 D}[null]	Specify the destination location to restore to. "/d 0" means the destination location is disk 0. /d 0:0 means the destination location is partition 0 on disk 0. /d means the destination location is partition D. "null" means not to use "/d" and restore to the original location.
[/f] {fill original}	Adjust the size of the destination partition.

	<p>"fill" means to fill the entire destination partition after restoration</p> <p>"original" means to keep the same size as the source partition after restoration.</p> <p>This command is not available for dynamic disks.</p>
[/a]	Specify to use partition alignment to optimize an SSD.
[/u] ["admin"]	Specify the user's name to access the NAS share.
[/p] ["123"]	Specify the password to access the NAS share.
[/x]	Specify universal restore to restore a system to dissimilar hardware. It can only be used with "/t system" and "/t disk".
[/k]	Specify sector by sector restore. Only when the image file was backed up sector by sector, can it be restored using sector by sector restore.
[/o] {yes no}	<p>Switch the interactive prompt.</p> <p>"yes" means to execute automatically the next operation when interactive operation is needed</p> <p>"no" means to cancel the operation when interactive operation is required. By default, the program will wait for a user's confirmation.</p>

Examples

System Restore

1. Restore the system image named "backup.adi" on an NAS share to the original location using partition alignment to optimize for an SSD.

AMBackup /r /t system /s "\\192.168.0.222\system backup\system backup.adi" /u "admin" /p "admin" /a

2. Restore system in the image named "system backup10.adi" to the partition 0 on disk 0 and perform a universal restore.

AMBackup /r /t system /s "D:\system backup\system backup10.adi" /d 0:0 /x

3. Restore the system image named "system backup.adi" to the original location and prevent the interactive prompt.

AMBackup /r /t system /s "D:\system backup\system backup.adi" /o yes

4. Restore the system image named "system backup.adi" to the original location and terminate the operation when the interactive prompt occurs.

AMBackup /r /t system /s "D:\system backup\system backup.adi" /o no

Disk Restore

Restore the disk image named "disk backup.adi" to disk 2.

AMBackup /r /t disk /s "D:\disk backup\disk backup.adi" /i 1 /d 2

Partition Restore

Restore the partition image named "my backup.adi" to partition E where the image password is "123".

AMBackup /r /t part /s "F:\my backup.adi" /i 1:1 /d E /e "123"

Creating a Clone command

The required parameters are as follows.

Parameters	Description
{/c}	Clone system, disk, partition or dynamic volume.
{/t} {system disk part}	Specify clone type. "system" means system clone. "disk" means disk clone. "part" means cloning the partition or dynamic volume.

[/s] {0 0:0 D}	<p>Specify the source to be cloned. There is no need to specify the source while performing system clone.</p> <p>/s 0 means cloning disk 0.</p> <p>/s 0:0 means cloning partition 0 on disk 0.</p> <p>/s D means clone partition D or dynamic D.</p>
{/d} {0 0:0 D}	<p>Specify destination location.</p> <p>/d 0 means the specified destination location is disk 0.</p> <p>/d 0:0 means the specified destination location is partition 0 on disk 0.</p> <p>/d means the specified destination location is partition D or dynamic volume D.</p>
[/k]	Specify to use Sector by sector cloning.
[/a]	Specify to use partition alignment to optimize for an SSD.
[/l] {A~Z}	Specify the drive letter of the new partition after cloning.
[/f]{fill original}	<p>Adjust the size of the destination partition.</p> <p>"fill" means to fill the entire destination partition after cloning.</p> <p>"original" means to keep the same size as the source partition after cloning.</p> <p>This command cannot be used for dynamic disks.</p>
[/o] {yes no}	<p>Switch the interactive prompt.</p> <p>"yes" means to execute automatically the next operation when interactive operation is required.</p> <p>"no" means to cancel the operation when interactive operation is required.</p> <p>By default, the program will wait for a user's confirmation.</p>

Examples

System Clone

1. Clone system to partition D and using partition alignment to optimize for an SSD.

AMBackup /c /t System /d /a

2. Clone system to partition 1 on disk 2.

AMBackup /c /t System /d 2:1

3. Clone system to partition D in use and suppress the interactive prompt to complete the operation.

AMBackup /c /t system /d /o yes

4. Clone system to E partition in use and terminate the operation when the interactive prompt occurs.

AMBackup /c /t system /d E /o no

Disk Clone

Clone disk 1 to disk 2 and use partition alignment to optimize for an SSD

AMBackup /c /t Disk /s 1 /d 2 /a

Partition Clone

1. Clone partition E to partition D and use partition alignment to optimize for an SSD as well as Sector by sector clone.

AMBackup /c /t Part /s E /d /k /a

2. Clone partition 1 on disk 0 to partition 1 on disk 2. The new partition will be assigned a drive letter as X.

AMBackup /c /t part /s 0:1 /d 2:1 /l X

List Device Command

To list the devices, the required parameters are as follows.

Parameters	Description
<pre>[/l][0][[/s D:\backup.adi]][1 /s D:\disk- backup.adi][[/e]][/u] [/p][null]</pre>	<p>List disk, partition and dynamic volume.</p> <p>"/s" means the path of the specified image</p> <p>"/u" and "/p" means the user name and password to view the specified NAS shared path</p> <p>"/e" means the password of the encrypted image.</p>

Examples:

1. list all disk and dynamic volumes of the current system.

AMBackup /I

2. list all the partitions on disk 0 of the current system.

AMBackup /I 0

3. list the content of the backup image named backup.adi. If the image is a system, partition or dynamic volume backup, the partition(s) backed up will be displayed. If the image is a disk backup, then the disk(s) backed up will be displayed.

AMBackup /I /s D:\backup\backup.adi

4. list all the partitions on disk 0 of the disk backup named disk backup.adi

AMBackup /I 0 /s D:\disk backup\disk backup.adi

Note:

- You cannot back up data to disc (CD/DVD) by using command line. If you want to back up data to disc, please use AOMEI Backupper GUI.
- When you back up dynamic volume(s), but the dynamic volume has no drive letter, you should assign a drive letter for it first.
- If your partition has no drive letter, you can use the index of partition on the disk to specify this partition. For example, the partition is on the second location of the first disk, then you can use "1:2" to replace the drive letter. You can find the index of disks and partitions by program's inquiry command "/L".
- AOMEI Backupper command line program must be run with administrator privileges. If you are a non-administrator user, a window will pop up, in which you need to enter the correct account information to finish the backup process.
- When you back up data to NAS, you must provide a valid IP address, such as "\\192.168.0.10\foldername", in order to identify the network path.
- The command line of AOMEI does not yet support file backup operation.

7 Technical Support

Before seeking technical support, please first refer to our tutorials at www.backup-utility.com/help.

If further assistance is required, then please send an email to support@aomeitech.com.

To assist with a problem, please compress (zip) the “**log**” folder located in the Backupper installation directory, attach the compressed file to an email and send it to support@aomeitech.com.

AOMEI Backupper FAQs are located at the “Support” area of www.backup-utility.com/help/technical-faq.html and www.aomeitech.com/php/concept/knowledge.

Part FAQs are as follows:

7.1 AOMEI Backupper common FAQs

Backup FAQs:

Q: Why Outlook OST and PST file not being backed up?

A: By default, AOMEI Backupper uses Windows Volume Shadow Copy Service (VSS), in this way, Outlook OST file is excluded by VSS. To solve this problem:

Press Win+R, then Run “regedit” to open Registry

Navigate to

HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\BackupRestore\File
sNotToSnapshot

Delete the key value OutlookOST

Restart PC

For PST file, AOMEI Backupper currently doesn't support backup. We will improve the problem in later versions.

Q: AOMEI Backupper shows error “Failed to enable backup service. Please retry or reinstall the software...” when doing backup/sync.

A: Please check if you install AOMEI Backupper to a path contains semicolon (;). The installation path that contains semicolon will lead to AOMEI Backupper Service startup failure, please reinstall AOMEI Backupper into a path without semicolon.

Please check if the ABservice.exe is not running, please manually start it in Windows Services: press Win+R, then run “services.msc” to open the Windows Services Manager, if the status of AOMEI Backupper Schedule Service is not

running, please double click it, then manually click “Start” and make sure startup type is Automatic.

Q: Why task schedules weren't actually executed as the backup type you set full backup, incremental backup or differential backup in schedule settings?

A: It may be because you set scheduled task and backup scheme at the same time, but you select different backup type. For example, you select incremental backup in schedule setting while using differential backup scheme. If so, the program will ignore the backup type you set in schedule, but take backup operation according to the setting of backup scheme.

Q: Why cannot you run backup task again when you back up to CD/DVD?

A: AOMEI Backupper doesn't support to run backup task again when the destination is CD/DVD.

Q: Why can't see the small tray of AOMEI Backupper when the scheduled backup is performed with standard account?

A: AOMEI Backupper needs to acquire the administrator's permission to run the interface program, while only use system permission to run backup. The small tray is a part of the interface program. Under the standard account, AOMEI Backupper can't get the administrator's permission to run the interface program and so the scheduled backup will be performed without the small tray.

Event Backup FAQs

Q: The shutdown event backup doesn't run after you power off the computer?

A: The shutdown event backup is based on the shutdown of windows. You can click the “shut down” or “restart” button in Start Menu to enable the shutdown event. However, if you power off the computer, it directly cuts off the power to close the computer forcibly. In this situation, the program can't get the windows shutdown information to perform backup.

Q: The shutdown event backup doesn't run after you shut down the computer?

A: If you are using Windows 10, please check if you turn on Fast Startup under Control Panel-->Power Options-->System settings. If yes, please close it and then check if shutdown event backup will run.

Q: There is no image file after the shutdown event backup is executed.

A: Please check the following items:

- 1) There may be user interaction operation when the shutdown event backup is running. Because you can't see and respond the interaction during shutdown, the program cancels the backup and then turn off automatically. So, the image file is not produced. We suggest that you can run the backup manually in windows to check the interaction operation and then re-edit the backup to cancel interaction request during shutdown.
- 2) If you don't see the interaction request when you run the backup manually in windows, please make the backup run again during shutdown. If there still is no image file, please attach the log files under installation directory of the software to contact us.

Q: The event backup doesn't run after the event occurs.

A: Please check the following items:

- 1) Please check if AOMEI Backupper Schedule Service is enabled in Windows Services (you can run "services.msc" to open Windows Services). If not, you can enable it manually or reinstall the software. The AOMEI Backupper Schedule Service will enable backup program to run backup when the event occurs.
- 2) Please check if abnotify is running in Windows Task Manager. If not, please find the abnotify.exe under installation directory of AOMEI Backupper to run. However, if the backup task still can't run, please reinstall the software and backup again. The abnotify will tell AOMEI Backupper Schedule Service to enable backup program when the event occurs.
- 3) If AOMEI Backupper Schedule Service and abnotify are run normally , but the event backup still can't run, please attach the log files under installation directory of the software to contact us.

Q: The event backup doesn't run on this day after you check "Run one time every day" in event triggers.

A: If the backup task has been executed on this day, the event backup will not run again when the event occurs this day.

File Sync/Real-time Sync FAQs

Q: Why files larger than 4GB in the source directory may not be synced to the target path?

A: If the target path was located in FAT/FAT32 partition, files larger than 4GB will not be synced to the target path. Because a single file larger than 4GB cannot be stored

on FAT/FAT32 partition. Please re-select another target path and try again. If the partition where the target path was located is not FAT/FAT32, please contact our technical support and send the log folder in the installation directory.

Q: After real-time sync, why some files or folders in the target path cannot be accessed?

A: The possible reason is that the character of files or folders path exceeds the maximum path character allowed by Windows when these files or folders are synced to target path. Although the files or folders cannot be accessed, they are not damaged. You can access the files or folders by cutting the parent directory of them to another path with less character. If they are still inaccessible after cutting operation, please contact our technical support and send the log folder in the installation directory.

Q: In real-time sync, why some source files cannot be synced to the target path?

A: The possible reason is that these source files don't have system permission, while real-time sync operate is based on SYSTEM permission. At this point, you can add SYSTEM permission into the security attribute of the file and then try real-time sync again. If it still fails, please contact our technical support and send the log folder in the installation directory.

Q: How to view the progress of real-time sync?

A: Real-time sync temporarily has not yet used an executing interface or a tray notification to show sync progress. You only can view the progress when creating a new task and it is unable to view it later. To determine how the real-time sync is executed, you only can check the status of files in the target path or the log.

Q: In a real-time sync task, why source files cannot be immediately synced to the target path after the files have been deleted from the target path?

A: Real-time sync temporarily only supports one-way monitoring and one-way sync which mean it monitors the changes in the source files and sync them to the target path, but not to monitor the changes in the target path. Therefore, it will not perform a sync operation when any change occurs in the target path.

Note: Real-time sync tasks only support one-way sync. For example, sync from A to B. Do not create a real-time sync task from A to B, and then create another task from B to A. Otherwise, it may cause circulating sync which will increase CPU usage, make system running slow, and even lead to the source files corruption.

Q: After Word and Excel documents real-time sync, why there are many temporary files in the target path which are created when modifying Word and Excel documents?

A: Because real-time sync will monitor all subfolders and files (include temporary files) in the source folder, temporary files will also be synced when performing real-time sync.

Q: In the sync, why files aren't deleted from target path when they have been deleted from source?

A: For common/schedule sync, Backupper currently doesn't support delete files from the target location when deleting from the source. You can try to use Real-time sync and check "target files will be deleted when deleting the source files" option in the real-time sync setting.

Restore FAQs

Q: When you restore the disk image from GPT disk with 5 (or more) partitions to an MBR disk, you get the message said that system refuses to restore/clone more than 3 partitions because the destination drive not UEFI.

A: MBR disk only supports 4 primary partitions, however, AOMEI Backupper can't convert primary partition to logic automatically. So, it can't directly restore the GPT disk image with 5 (or more) partitions to MBR disk. In this case, you can convert the target MBR disk to GPT with Windows Disk Management or AOMEI Partition Assistant and then restore or clone.

Q: You received the following messages when you do restore or clone:

"Failed to add boot configuration, cannot enter Restart Mode. Please make a bootable disc by clicking "Utilities" -> "Create Bootable Media" and boot from a CD/DVD to realize the restore operation."

Or

"Failed to create the Windows PE bootable ISO image, the operation cannot proceed. Please try to make the Windows PE bootable ISO image by clicking "Utilities"-> "Create Bootable Media"."

A: If some partitions are occupied by other programs, the restore/clone operation will be performed under Restart Mode, for example, system restore to C: drive. However, AOMEI Backupper may fail to enter into Restart Mode automatically because of some unknown error, for example, the recovery environment is damaged or can't be found. To solve the problem with the following methods:

- Make a WinPE bootable disc by clicking "Utilities" -> "Create Bootable Media" and boot from the WinPE to restore/clone.
- Create WinPE iso (ampe.iso) via Utilities-->Create Bootable Media, and then put the iso to the installation directory of AOMEI Backupper. After that, please try to restore/clone again.

Q: You received the message: "Because the system partition exists in a dynamic disk or the image file exists in a dynamic volume. You can go to Utilities -> Create Bootable Media and make a Windows PE bootable CD (not Linux Bootable CD) and try again." when you do restore.

A: If there are programs still running on the destination partition during the restore process, the program will automatically restart the computer and run Backupper from the Linux or WinPE mode to complete restore process. This problem arises because an image file in a dynamic partition cannot be recognized by Linux environment. To solve the problem with the following methods:

- Copy this image file to a basic partition and then restore again.
- Click Utilities -> Create Bootable Media to create a WinPE Bootable media. A WinPE Bootable media is able to recognize image files in a dynamic volume. After that, please boot from WinPE bootable media to do restore.

Q: You received the message: "Because the image file exists in a share/NAS network, you need to make a bootable CD..." when you do a restore operation.

A: If the image file is saved in a shared folder or a NAS device, you will receive the above message if there are programs still running in the target partition which cannot close. To solve the problem, you only need to click Utilities -> Create Bootable Media to create a bootable media. Then, boot your computer from the bootable media to complete the restore process.

Q: You get the message: "Unable to get the backup information because the image file does not exist, or it can't be accessed..." when you click Restore or Advanced button on a backup task of Home screen.

A: The problem might be that the task can't locate the backup files due to unknown reason. You need to delete the task and then re-import the backup task by browsing the backup files under Utilities-->Import/Export Configuration. After that, the task will be listed on Home screen again.

Universal Restore FAQs

Q: After system is restored to other dissimilar hardware computers, why cannot it boot normally?

A: Please check the following items:

- 1) Please make sure that “Universal Restore” is checked, because when there is difference between computer where source system is installed and hardware environment of target computer, “Universal Restore” must be chosen, and restored operating system can be sure to boot normally.
- 2) Maybe computer disk mode (AHCI IDE RAID) is changed. Disk mode is not allowed to be changed after using universal restore. In other words, if disk mode is AHCI while restoring system, please stay disk mode the same as AHCI after restoring, If not, system will not boot normally; so does IDE RAID, and they need to stay the same with source disk on disk mode. (About disk mode, you can refer to BIOS manual).
- 3) Please make sure that Universal Restore operation is run under Windows or Windows PE bootable media, because AOMEI Linux bootable media can't support universal restore currently.
- 4) If the BIOS version of target computer that you restore system to is advanced than InsydeH20 Rev.3.7 version, you need to enter BIOS setting manually and set “OS Optimized Defaults” in the “Exit” item:
If the OS restored is Windows 7, you need set parameter as “Win7 OS”.
If the OS restored is Windows 8, you need set parameter as “Win8 64bit”.
If the OS restored is other Windows system, you need set parameter as “Other OS”.
- 5) Only in this way, different machine that is restored system will be sure to boot normally.

Q: About problem that activation overdue is prompted by computer that applied with universal restore while it booting.

After restoring legitimate Windows from one computer to others, it is normal that system prompted that system need to be activated again after it boots. Due to the fact that there is limitation to use activation code, therefore, you may need to activate system again with your activation code.

Q: About the problem that some applications need to be activated again after using universal restore.

A: After restoring Windows from one computer to others, it is normal that billing applications prompted activation again after it boots. Due to the fact that there is limitation to use activation code, therefore, you may need to reactivate those billing application or software again.

Q: About the problem that computer need to install graphics card, network card, and sound card drivers etc.

A: Universal Restore just makes sure system can boot normally after restoring system from one computer to others. For some drivers that are not relevant to system booting, such as graphic card, network card, and sound card drivers, etc, they need you to install manually.

Clone FAQs:

Q: When you clone the disk image from GPT disk with 5 (or more) partitions to an MBR disk, you get the message said that system refuses to clone more than 3 partitions because the destination drive not UEFI.

A: MBR disk only supports 4 primary partitions, however, AOMEI Backupper can't convert primary partition to logic automatically. So, it can't directly clone the GPT disk image with 5 (or more) partitions to MBR disk. In this case, you can convert the target MBR disk to GPT with Windows Disk Management or AOMEI Partition Assistant and then clone.

Other FAQs:

Q: Does AOMEI Backupper support backup, restore and clone dynamic volumes?

A: For MBR dynamic volumes, you can use System Backup and Partition Backup way (System/Partition Clone). Disk Backup/Disk Clone function is not supported yet. When restore, you can only restore to the original location or a basic disk.

For GPT Dynamic Disk, Backupper currently doesn't support backing up or cloning dynamic volumes on GPT disk. We will add this function in later versions.

Q: Does AOMEI Backupper support backing up and restoring a system drive based on UEFI?

A: Yes, it completely supports backup and restore for UEFI system drive.

Q: AOMEI Backupper can't find system partitions or can't list disks when running under Windows.

A: Please check the type of this drive. Backupper currently doesn't support eMMC storage device completely.

Or, please check whether or not the drive is 4096 bytes per sector. You can press Win+R, type "msinfo32" in the Run box, then open Components-->Storage-->Disks, then check the Bytes/sector of the drive. Backupper currently doesn't support

backing up or cloning drives with 4096 bytes per sector. But you can save backup files to 4096 drive.

Q: Why need to register again when running the portable version of AOMEI Backupper Technician that has been registered already?

A: The possible reason is that other edition of AOMEI Backupper has been installed in the current system. Two different editions cannot coexist in a system.

Q: Why can't generate a task via importing an image file?

A: It may because the image file you imported has the corresponding task in the task list of Home screen so there was no new task being generated after importing. In this case, you need to delete the corresponding task, then import again.

Q: When you connect your network drive via AOMEI Backupper, you get the message: "Failed to access the network path, please check if your username, password, and network path are correct." or "A specified logon session does not exist. Please detect if there is a directory name behind the network path, such as "\\192.168.0.100\directory_name", not "\\192.168.0.100". If the error still exists, you can reboot and try again....."

A: Please check if the devices or programs connected to NAS have reached the ceiling of NAS. If yes, you need to disconnect some devices or programs so that the AOMEI Backupper can connect the NAS to do the backup. If not, please delete the "NAS.xml" file under the path C:\ProgramData\AomeiBR. After that, please connect your NAS again.

Email Notification FAQs

Q: What does it mean about "User interaction required" in email notification?

A: The program needs to open an interaction window which is waiting to be interacted by user in the following situations when the program invokes the small tray to run the backup, such as schedule backup.

In the three situations, the interactive window is waiting for response three Minutes during backup/sync. If it does not get response, the program will choose a default one to process automatically.

- 1) The interactive window shows that you need to restart or skip files when you back up/sync these files accessed by other programs.
- 2) The interactive window requires NAS username and password when the program cannot connect the NAS.

- 3) The interactive window shows that you need to make more space available when there is not enough space to save backup in destination.

In the four situations, the interactive window is waiting for response until you do it.

- 1) The interactive window shows that you need to insert a new CD/DVD after the last CD/DVD is used up when you back up to CD/DVD.
- 2) The interactive window shows that the CD/DVD will be erased after you insert the CD-RW/DVD-RW when you back up to CD/DVD.
- 3) The interactive window shows that you need to register when the backup starts to run if the software is not registered or the trial has expired.
- 4) The interactive window shows that you need to confirm the operation when the program needs to reboot into WinPE environment to complete backup.

Q: Why does it send test email failed with message “Sorry, failed to send text message”?

A: For Gmail Server: When you set up email notification with Gmail server, you may encounter this issue, as far as we know, it is because Google enhanced Gmail’s security level, you need to turn on access for less secure app in [Google setting](#), then retry.

For Custom SMTP Server: AOMEI Backupper requires SMTP authentication, it does not support anonymous access. If you set up it without credentials, you will encounter this error.

WinPE Bootable Media FAQs

Q: You received the message: “Failed to create the bootable USB device...” when you clicking "Utilities" -> "Create Bootable Media" to create the bootable media.

A: In the "Select Bootable Media" dialog box, choose "Export ISO File" instead of "Burn To CD/DVD" or "USB Boot Device" to create ampei.iso file, and then burn the ISO file to USB, CD or DVD via third-party burning tools.

Q: You received the message: “Create WinPE ISO file failed...” when you click "Utilities" -> "Create Bootable Media" to create WinPE bootable media.

A: It might that there are some unknown errors in your recovery environment. You can try to recreate the WinPE with checking “Download WinPE Creating Environment from the internet”. Or, you can download and install Windows AIK or ADK from Microsoft site, and then create WinPE again.

Q: AOMEI Backupper can’t detect the internet under Windows or WinPE.

A: Please check the following items:

- 1) If you are using the virtual network that is connected to a proxy server under Windows, AOMEI Backupper can't detect the internet.
- 2) If it is connected via wireless network, AOMEI Backupper can't detect the internet under WinPE.
- 3) If AOMEI Backupper can't connect the internet in WinPE, maybe there is no network card driver. Please recreate the WinPE and add these drivers manually during creating. Or, you can check "Download WinPE creating environment from the internet", the PE creating environment is based on Windows 10 with lots of common drivers included, so you may not have to add drivers like network adapter or NVME/m.2 etc.

PXE FAQs

Q: Why does it fail to create a Windows PE bootable image file when using PXE?

A: It causes may be:

- 1) The environment required to create a Windows PE bootable image file is not present in the current system. In such case, the program will prompt you to install Windows AIK or ADK, and then restart program to try again.
- 2) The program is installed in the directory which includes non-English characters. In such case, the program will prompt you that it failed to create Windows PE bootable image file. Please use the "Create Bootable Media" function in AOMEI Backupper to create Windows PE bootable ISO image file, and then store it to the program installation directory. Alternatively, reinstall the program into English directory.
- 3) A bug has occurred. Please use "Create Bootable Media" function in AOMEI Backupper to create a Windows PE bootable ISO image file, and then store it to the program installation directory. Or, using "Boot from custom image file" option then select the bootable ISO image file manually.
- 4) If the "Create Bootable Media" function in server-side program is running, creating Windows PE bootable image file in the PXE function will fail. Please wait until the progress of "Create Bootable Media" in server-side program is completed, and then continue with the operation in the PXE function.

Q: Why does the client-side fail to boot from the network even after they have finished configuring PXE service in the server-side?

A: It causes may be:

- 1) If the server-side and client-side do not exist in the same network segment, the server-side neither receives the request from client-side nor sends data to the

client-side. The inability to communicate results in the client-side failing to use the PXE function to boot from server-side. In such a case, configure the server-side and client-side with the same network segment.

- 2) If the LAN on which the server-side and client-side exist does not have DHCP server, the client-side cannot obtain the IP address when booting from the network. To solve this problem, add a router with DHCP service to the LAN, or use third-party software such as TFTP32 to configure DHCP service on another computer.
- 3) The client-side using PXE function to boot from the network may be affected if the firewall of server-side is enabled. In such case, close the firewall of server-side.
- 4) Boot failure will occur if the client-side uses UEFI boot mode to start up from the network. Currently the PXE function in the program does not support UEFI boot mode. To correct this, enter into motherboard settings to change the UEFI boot mode into legacy BIOS boot mode.
- 5) It may be that the logged-in user in server-side is not an Administrator account. In such a case, the configured PXE service fails to start automatically after logging in. Please run AOMEI PXE Tool with administrator privileges, and then click "Start Service" button. Restart from the client-side to try again.
- 6) The client-side using PXE function to boot from the network must connect to the server-side through a wired network. The PXE function does not support communication through the wireless network card.

Q: Why does system startup fail when using PXE function to boot from the network?

A: It causes may be:

- 1) The selected bootable image file might have a problem. Please re-create a bootable image file via using AOMEI Backupper or AOMEI PE Builder.
- 2) If the selected bootable image file is too large, or the computer's memory too small, boot failure may occur because of insufficient memory. Please select a smaller bootable image file.

7.2 AOMEI Backupper common Error Codes

1.Information code 4098: Invalid parameter

Solution: Please try to rerun AOMEI Backupper and do the operation again.

2.Information code 4099: Uninitialized component or function cell

Solution: Please try to rerun AOMEI Backupper and do the operation again.

3.Information code 4101: Failed to create file

Solution: Please check items below:

- 1) Please check if the account you login has access permission for the destination location and check if there is enough free space to save the backup image.
- 2) If you are trying to make a full/incremental/differential backup based on a backup task that already exists, please make sure that backup task is valid. You may run “Check Image” feature in the “Advanced” menu to check whether it is valid. If it is invalid, you need to reload the task.
- 3) If you back up to NAS, you can try to map the network drive as a local drive in windows and then please set the mapped drive as the destination location. [Click here to learn more details.](#)

4.Information code 4102: Failed to read file

Solution: Please check items below:

- 1) If you get this error when performing a backup with “Check Image” option selected, please do not worry. Because the error is not related with backup so backup is completed. The error is shown during the checking image process, so you can separately check the image file through the following steps: Click Utilities-> Click Check Image-> Select backup task-> Choose a backup point-> Finish.
- 2) If the backup image is stored on a NAS or removable devices, the connection has might be broken before reading the image file. To fix this, you can copy the image file to local disk.
- 3) If the backup image is stored on a local disk, it indicates that some programs may have prevented Backupper from reading the image file. In this case, you can close these programs and try again. If you cannot find the programs, you can make a bootable media to do the backup again. [Click here to learn more details.](#)

5. Information code 4103: Failed to write file

Solution: Please check items below:

- 1) Check if your destination location has enough space to perform a backup.
- 2) Check if you have enough permission to read/write the destination location.
- 3) Check if your destination disks have bad sectors.
- 4) When you are doing the backup operation, you may shut down other threads which are accessing the directory of this destination.

- 5) Please make sure that you hook your external disks up or your network is in good condition when you fail to do the back up to external disks or NAS/Share.

6.Information code 4104: Invalid image file.

Solution: Please check items below:

- 1) If you get this error when performing a backup with the “Check Image” option selected, please do not worry, because the backup task is completed.
- 2) The error is shown during the checking image process, so you can separately check the image file through the following steps: Click Utilities-> Click Check Image-> Select backup task-> Choose a backup point-> Finish. If the error still exists, you’ d better recreate the backup.
- 3) If you get the error when you restore an incremental backup file, please try to restore previous incremental or original backup files.
- 4) In addition, if you restore backup under windows, maybe you can try to do the restore in WinPE mode.

7.Information code 4105/21: Not enough memory to process this command.

Solution: Please check items below:

- 1) Please check if there is enough memory to run the backup.
- 2) If the memory is enough big and the backup task is an incremental backup, please perform one full backup manually.
- 3) If you are performing a file backup with big data, we suggest you divide several backup task to run or use partition backup way.

8.Information code 4107: Failed to complete the operation / element not found or the image file not found

Solution: Please check items below:

- 1) If you get the error message during the backup process, please reinstall the software and then rerun the backup.
- 2) If you get the error message during the restore process, please select the image manually to restore. [Click here to learn more details.](#)

9.Information code 4110: Failed to decode the backup data

Solution: The error generally appears when the software run checking image.

Please try to explore the image. If you can explore it, so the image should be useful

and you can restore it. Maybe you can try to restore to other location to see if it is restorable.

10.Information code 4122: Failed to get bitmap

Solution: Please reinstall the software and then retry to do the operation.

11.Information code 4125: Failed to explore or preview the image

Solution: This might be the problem of exploring drivers. Please reinstall the software.

12.Information code 4130: Missing image files

Solution: The error generally appears in checking image after backup completed or directly clicking backup task to restore. Please select backup files manually to check or restore.

13.Information code 4140: The backup driver works improperly, you could restart the computer to solve the problem.

Solution: Please restart the computer and retry to do the operation. If the error still appears, please uninstall the program manually and then reboot the computer to reinstall the software.

14. Information code 4161: The destination path is not writable, please select a new path.

Solution: Generally the error appears in file sync process. If you are syncing files to NAS, please reconnect NAS and sync again. If you are syncing files to an external disk, please check if the external disk is hooked up or drive letter has been changed. In addition, please note that the account you login must have access permission for the destination location. [Click here to learn more details.](#)

15.Information code 4163: There's no need to backup the file or directory

Solution: Generally the error appears in file sync or file backup process. If you run the backup or sync at the first time, please check if the account you login has enough permission to access the source you want to backup/sync. If the error appears in scheduled backup, please run the backup once manually.

16. Information code 4164: The destination path is too long, please restore to the original location or change a shorter path and try again.

Solution: Generally the error appears when you do the file sync or file restore. Please check if the destination is greater than 256 bytes. If yes, please restore the original location or change a shorter path. Please note that the program counts the path bytes which include the bytes of the source path you backup/sync and the destination path.

17. Information code 4177: The destination path is too long, please change a shorter path and try again.

Solution: Generally the error appears when you do the file sync or file restore. Please check if the destination path is greater than 256 bytes. If yes, please change a shorter path. Please note that the program counts the path bytes which include the bytes of the source path you backup/sync and the destination path.

18. Information code 303: Invalid network path

Solution: Please check if the connecting port for the end user is used out. If it is, you need to disconnect some ports so that the AOMEI Backupper can connect the NAS to do the backup.

Please delete all "NAS.xml" files in the installation directory of the software and under the path (C:\ProgramData\AomeiBR). After that, please re-connect your NAS.

19. Information code 33/34: Failed to read sector (with bad sector)/Failed to write sector (with bad sector)

Solution: Please check if the disk has the bad sector with professional disk tool (such as HDTune or MHDD). If bad sectors are not detected, please send AOMEI Support Team the log files under installation directory of the software so that we can better analyze the problem. If you detect the bad sectors on the disk, you can try to fix it with disk tool or change a new disk. In addition, if you get the error during clone, maybe you can try to do the backup, not clone operation.

20. Information code 2: Failed to assign the drive letter

Solution: Generally the error appears during disk clone. But actually all data has been cloned and only the drive letters are not assigned successfully. You can assign drive letters manually with Windows disk management or AOMEI Partition Assistant.

8 Glossary

Term	Meaning
Backup	Backup refers to copying data into an image file which can be used to restore its contents to the original state if there is any data loss. Backupper supports creating image files for disks, partitions, volumes, etc.
Bootable Media	Bootable media can be a CD, DVD, USB external drive or flash drive that can be used directly to boot a computer into Windows, and which also contains a standalone version of Backupper. This bootable media can be used to restore system and partitions when the system is otherwise unable to boot. Once the operating system has been booted from the media, users can carry out a Restore operation using Backupper to recover lost data.
Differential Backup	<p>A Differential Backup is an image file containing all changed or newly added data based on the previous Full Backup. A Differential Backup must always be directly related to a Full Backup. As time progresses, each Differential Backup will contain more changes made in comparison with the original Full Backup and will therefore become progressively larger.</p> <p>Differential Backups can only be used in conjunction with their related Full Backup.</p>
Disk/Partition Clone	Clone refers to creating a duplicate of the source partitions/disk by copying them to a destination disk/partition sector-by-sector. Consequently, the destination disk/partition possesses identical content as the original. It is important to know that the cloning process will overwrite all the previous data on the destination partition/disk.
Full Backup	A Full Backup is an image file that contains a selection of files and folders, partitions or discs that can be completely restored to their original state, independently from any other image file.
Image File	An Image file is a file containing a 'snapshot' of the state of saved computer files, folders or partitions, allowing the data within to be faithfully restored to that state, if required.

Incremental Backup	<p>An Incremental Backup is an image file containing only changed or newly added data based on the previous backup created in time sequence. The first incremental backup in the sequence must always be preceded by a full backup. Compared to a Full Backup, the image file of an Incremental Backup is much smaller, and the backup operation will take less time. In addition, because multiple backups can exist in the sequence each relating to a different time point, users are able to pick a time in the past to which to restore data, if required.</p> <p>Incremental Backups can only be used in conjunction with their related Full Backup along with all the other Incremental Backups that were done in between.</p>
Recovery/Restore	<p>Recovery is the process of restoring files, system, partition or disk to a previous state from an image file or files, if there is a disk problem, such as a system crash, hardware or software failure, data loss, virus or hacker attack, etc.</p>
Sector	<p>On a hard disk, each track is divided into several sections, called a 'sector'. A sector is the smallest logical storage unit on a hard drive, and each sector holds a fixed amount of data. A sector size can be 512, 1024, 2048 or 4096 bytes.</p>
SSD	Solid State Disk