

## Tips On Temporary Directory Setup For Your Backup Set

The setup of the temporary directory is an often overlooked and customers typically tend to use the default setting which is fine for simple file or cloud file backup sets. But for non-file backup sets like databases or virtual machines this is a very important backup set setting. The location of the temporary directory and or the free space allocated to the temporary directory can make or break a successful backup (and restore) and impact on the overall performance.

### 1. How does AhsayOBM/AhsayACB use the temporary directory?

AhsayOBM/AhsayACB makes use of the temporary directory for both backup and restore jobs.

#### **For a backup job, it is used to temporarily store the:**

- ▶ Backup set index files, an updated set of index files is generated after each backup. The index files are synchronized to each backup destination at the end of each backup job.
- ▶ File list.
- ▶ Incremental/differential delta files generated during backups.
- ▶ For some backup sets, i.e. VMware (non-VDDK) or database the actual database files will be spooled to the temporary folder (AhsayOBM makes a copy of the entire database and saves the database files in the temporary directory) in order to achieve a consistent snapshot for backups.

#### **For a restore job, it is used to temporarily store the:**

- ▶ Full and incremental/differential delta files retrieved from the backup destination.
- ▶ Merging of full incremental/differential delta files as part of the restore process.

## 2. What factors determine the disk space usage or free space required for the temporary directory?

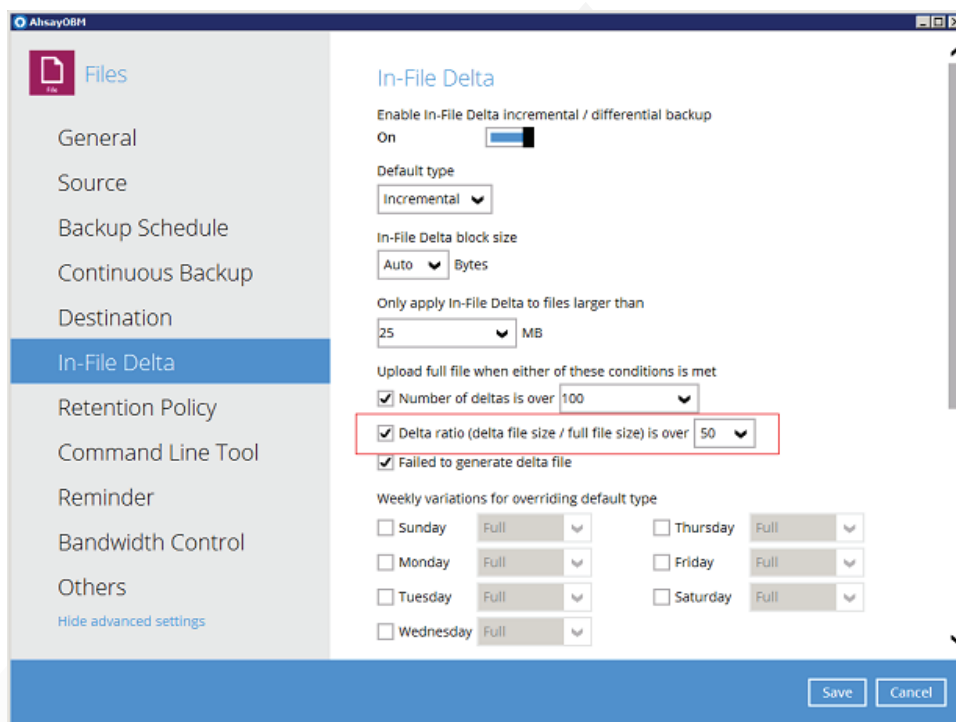
The following factors will have to be taken into account when determining the free space required for the temporary directory drive or partition:

### 1. Backup set type:

For database backup sets; MS SQL Server in ODBC mode or Lotus Domino/Oracle/MySQL on Linux platform, AhsayOBM needs to make a copy of the entire database in the temporary directory. The free space required on temporary directory must be at least equal to the size of the database you have selected for backup. For example, if you intend to make a backup of a 1TB MS SQL Server database in ODBC mode, the location where you define temporary directory must have at least 1TB of free disk space to accommodate the database file(s).

### 2. In-file delta - Delta ratio setting

The default "Delta ratio" setting is 50% for all backup set types, which means that AhsayOBM/AhsayACB can generate an incremental or differential delta of up to 50% of the full file size. If you are backing up a very large files or databases, for example a backup of a 1TB database, then you will need to reserve up to 500GB of free space in drive where your temporary directory is located in order to accommodate the delta file.



### 3. Number of concurrent destinations configured on the backup set:

When generating incremental or differential delta files, each individual concurrent backup destination will require its own individual delta file. Therefore the disk space required for the drive where your temporary directory is located will increase with each additional concurrent backup destination.

### 3. Is there a quick way to calculate the minimum free space required?

Database backup sets which uses the spooling method require additional free disk space than backup sets which utilize Microsoft Volume Shadow Copy Service (VSS) to obtain a consistent snapshot.

You can use the following formula to calculate the free space required for the temporary directory depending on the backup set type.

#### 1. For backup sets with spooling

Backup Set Type	Operating System
MySQL Database Server	Windows /Linux/ Mac OS X
Oracle Database	Linux
Lotus Domino	Linux
MS SQL Server ODBC mode	Windows
MS Windows System Backup *	Windows
MS Windows System State *	Windows

\* Both MS Windows System Backup and MS Windows System State the image can be spooled to a separate partition to the Ahsay temporary directory.

$$\text{Total File Size Spooled} + [(\text{Total File Size} \times \text{Delta Ratio}) \times \text{number of concurrent backup destinations}] = \text{minimum Free Space Required}$$

#### Example:

Backup of 1TB MS SQL Server using ODBC mode with default delta ratio setting of 50% will require up to 1.5TB of free space on the temporary directory location.

Database Size	Delta Ratio 50%	Concurrent Destinations	Free Space Required
1TB	500GB	1	1.5TB
1TB	500GB	2	2TB
1TB	500GB	3	2.5TB
1TB	500GB	4	3TB

### 3. Is there a quick way to calculate the minimum free space required? (Continued)

#### 2. Backup set without spooling

Backup Set Type	Operating System
File	Windows /Linux/ Mac OS X
MS SQL Server VSS mode	Windows
MS Exchange Database	Windows
MS Hyper-V	Windows
Office 365 Exchange mail	Windows / Mac OS X
Cloud File	Windows / Mac OS X
VMware (Non-VDDK)	Windows / Mac OS X
VMware (VDDK) †	Windows

† A VMware ESXi/vCenter backup using VDDK mode, the incremental/differential delta files are directly generated by VMware host itself and therefore the temporary directory is not used for this purpose.

$$\text{(Total File Size x Delta Ratio) x number of concurrent backup destinations} \\ = \text{minimum Free Space Required}$$

#### Example:

Backup of 1TB Hyper-V guest with default delta ratio setting of 50% will require up to 500GB of free space on the temporary directory location.

Database Size	Delta Ratio 50%	Concurrent Destinations	Free Space Required
1TB	500GB	1	500GB
1TB	500GB	2	1TB
1TB	500GB	3	1.5TB
1TB	500GB	4	2TB

**Caution:** The calculations are based on the current database size, they do not take into account database growth over time. It is recommended for fast growing databases the minimum free space required should be reviewed on regular basis to avoid potential backup problems.

#### 4. What are the default settings for temporary directory location?

The default location is dependent on the O/S platform of the machine where AhsayOBM/AhsayACB is installed on.

Operating System	Temporary folder default location
Windows	%USERPROFILE%\temp
Linux/Unix	/root/temp
Mac OS X	/Users/%username%/temp
Synology NAS	/root/temp

#### 5. Where should the temporary directory be located?

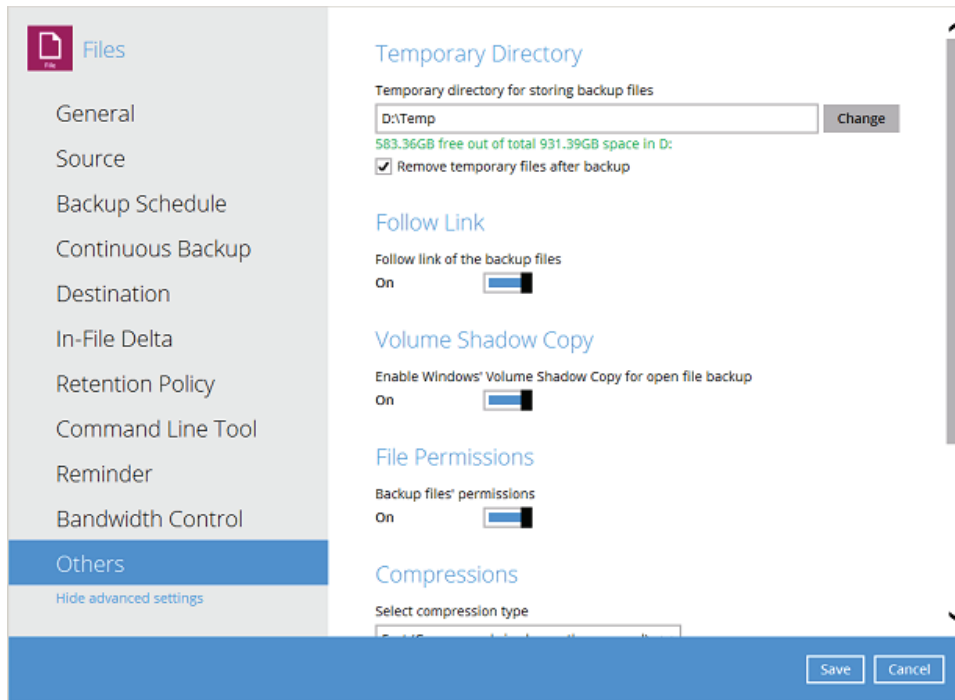
As large files are copied or saved to the temporary directory as part of a database backup or restore job, to ensure optimal backup and restore performance the location of the temporary directory should be on **a local drive** rather than a network drive.

It is **NOT** recommended to set the temporary directory on:

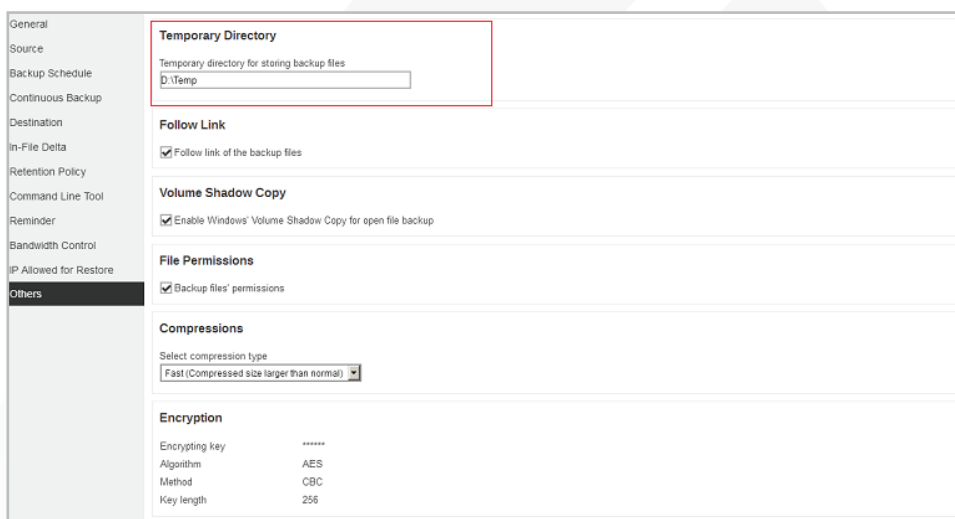
1. The O/S or system drive, if the system drive runs out of disk space this could cause the machine to crash.
2. The same drive as the database files as this could affect the performance of the production system.

## 6. Where can I find the temporary directory settings?

On the AhsayOBM/AhsayACB backup client the temporary directory settings can be found in **[Backup Set] > [%BackupSet\_Name%] > [Others]**

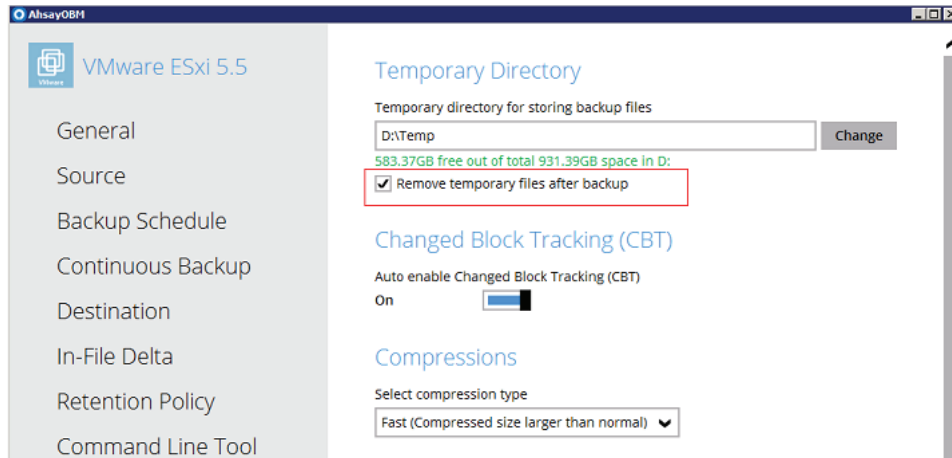


On AhsayCBS user web console the temporary directory settings can be found in **[Backup / Restore] > [User] > [Backup Set] > [%BackupSet\_Name%] > [Others]**



## 7. Do I have to manually delete these files in on the temporary folder drive in order to ensure there is sufficient free space?

AhsayOBM and AhsayACB will automatically remove any temporary files when a backup job has completed by default †. This feature is configured by selecting the **“Remove temporary files after backup”** option on the backup set.



In some cases where AhsayOBM/AhsayACB is unexpectedly terminated, i.e. the process is killed in Windows Task Manager or AhsayOBM /AhsayACB crashes during a backup job, before it has had an opportunity to delete the temporary files then it is recommend to manually delete the files in the temporary folder.

† This setting is not available for ShadowProtect Backup Sets

## 8. Are there any other factors to take into account?

### 1. Anti-virus software

If the machine has anti-virus software installed please make sure the temporary directory is excluded. As some anti-virus software may lock or quarantine files created by AhsayOBM/AhsayACB such as incremental/differential delta files and most importantly the backup index files, causing backup or restore errors.

### 2. Exclude the temporary folder from backup source

AhsayOBM/AhsayACB may local its own index files as part of the backup job if these files are included in the backup source. So make sure the temporary folder is excluded from the backup source.