

What are Incremental and Differential backups?

Information

Incremental and Differential backups are the primary means by which ZCB reduces the size of backup runs after the Full Backup. Incremental and Differential backups are very similar, but have several key differences in how they function.

There are also some requirements that must be met for Incremental and Differential backups to perform their intended function.

1. Both Incremental and Differential backups require that a Full Backup be completed first.
2. You must retain your most recent Full Backup at all times for a complete restore.
3. Use of Incremental and Differential backups will create dependencies between backup runs.
4. You can mix Incremental backups with Differential backups for File System backups.
 - a. Other backup types, such as databases, cannot mix Incremental and Differential backups.
5. File System backups can be done as Incremental backups, Differential backups, or both.
 - a. Backups of other data types, like certain applications, may not support Incremental and/or Differential backups.
 - b. System State backups can be run as Full Backups only.
 - c. Refer to your User Guide for details.
6. No matter which you choose, we recommend you perform a regular Full Backup.

Differential Backups

A Differential backup will back up any data that has changed since the last Full Backup. Because they contain all changed data since the last Full Backup, Differential backups will start small but grow in size. Each one will be larger than the one before it, until you perform the next Full Backup. The rate of growth depends on the amount of data you change. For many, it is slow. For others, quite fast.

Performing a new Full Backup will reset the Differentials back to their smallest size.

To perform a full restore of all data, you will need the most recent Full Backup and the most recent Differential backup.

Incremental Backups

An Incremental Backup will back up any data that has changed since the last backup, be it Full, Differential, or Incremental.

This means that all Incremental Backups will be small in size, compared to a Full backup. There is no growth in file size over time, unlike Differential backups. The exact size of the backup depends entirely on how much data changes between backups.

A full restore of all data involving Incremental backups needs:

1. The most recent Full backup.
2. The most recent Differential backup, if one was done.
3. Every Incremental backup that was taken since the most recent Full or Differential backup.

Which is better?

Incremental backups are generally much smaller in size than differential backups, but they can make the restore process slower over a period of time.

Differential backups, on other hand, offer a good tradeoff between "time to backup" and "time to restore".

To reap the benefits of both incremental and differential backups, you may combine both types in a single backup set. A backup set that mixes both incremental and differential backups may look like this:

- Do a full backup every 3 months
- Do differential backups every month
- Do incremental backups every day