



Backup Schedules

Types of schedules & how they impact recovery



NET3

PRIVATE CLOUD SERVICES

www.n3t.com

ABOUT NET3

Net3 is a leading Cloud Services Provider offering Infrastructure-as-a-Service (IaaS), Cloud Backup, and Disaster Recovery. Our wide range of offerings, paired with our customer support, provides customers with the freedom of choice and ensures cloud confidence for IT teams nationwide.



Data loss results in both tangible damages (such as financial) and intangible damages (such as reputation) to your business. The only way to protect your business from losing essential data is by backing up that data regularly and consistently. By scheduling backups, you eliminate the need for someone to remember to perform the backup manually - ensuring the backup will be completed automatically.

Regular and consistent backup schedules are different for every business and should adapt to individual business needs over the course of time. This whitepaper will give an overview of different types of schedules and what to consider with each one:

- Full Backup
- Differential Backup
- Incremental Backup
- Forever Incremental
- Forever Backup
- GFS Backup

TYPES OF BACKUP SCHEDULES

FULL BACKUP



A full backup copies all data in a given system, containing all the data from a single machine and provides a starting point for all the other backups. A single full backup provides the ability to completely restore all blocks of data from the point in time it was taken. All of the backed-up data is contained in a single restore point. Because we touch every block of data, full backups are the slowest backups to finish and the storage space required is the largest.



Slowest backups to finish



Largest amount of storage space required

DIFFERENTIAL BACKUP

A differential backup copies data that has changed since the last full backup. Since a differential backup will copy all changed data since the last full backup, duplicate data will not be backed up. An advantage of differential backups is that when data needs to be restored, it can be built from the last full backup and the last differential copy. However, since the size of the backup increases each time one is taken, the backup window duration and storage space needed are both increased.



Backup window duration is increased



Storage space needed is increased



INCREMENTAL BACKUP



An incremental backup copies everything that has changed since the last backup. Incremental backups provide a faster way of backing up data instead of consistently conducting full backups. The advantages include that they are the fastest backups, less storage space is needed, and you get a shorter backup window on days between full backups. A disadvantage is that a full restore can be slower than other backups since you will need both the full backup and all incrementals since.



Full restore can be slower than other backups

FOREVER INCREMENTAL

A forever incremental only collects changed data after the first full backup. These backup chains attempt to combine the ease of recovery in a full backup, and the efficiency of an incremental. Backup products such as Acronis and Veeam can create metadata that allows the backup to be restored from a single point and rolled into the initial full backup for a complete restore.



Efficient in time and storage space



Ease of recovery



GFS Backup (Grandfather, Father, Son)



A GFS backup combines full, differential, and incremental backups, attempting to increase efficiency while still getting a frequent full backup. Typically this is done on a schedule like this:

1st day of the month - Full Backup is taken

1st day of the week - Differential is taken

Every day of the week - Incremental is taken

This schedule shortens the chain of backup, but allows for quicker recovery times.

WHICH SCHEDULE IS BEST FOR YOU?

TYPES OF SCHEDULES	KEY USES	MORE INFO
FULL BACKUP	Good when data consistency is key and restorability is of the utmost importance. NET3 www.n3t.com	Storage space has to be plentiful. Ex: ERP servers and databases.
DIFFERENTIAL BACKUP	Not a backup schedule on its own. There must be a full backup to start the chain.	More bandwidth efficient.
INCREMENTAL BACKUP	Not a backup schedule on its own. There must be a full backup to start the chain.	Even more bandwidth efficient than differentials.
FOREVER INCREMENTAL	Good for cloud backup and used most recovery needs. Net3 does backups 99% of the time this way.	MOST bandwidth efficient.
GFS BACKUP	Good when critical file data is needed for long retention but does not have high rates of change.	Blend of different backup types and suitable for most backup applications.

All of these backup schedules are valid and will protect your data. Ransomware attacks, power outages, natural disasters, and simple human error are common causes of data loss and should be considered when choosing a backup schedule that best suits your organization's needs.

THINGS TO KNOW

BACKUP WINDOWS

Ask yourself, "What time can I start my backup so it ends at an appropriate time, so I am not impacting backup users?". Backup windows can be calculated by taking the amount of data to be backed up and dividing it by the speed of the connection between the backup location and the storage. Make sure to factor in current utilization of the network path and overhead for backup protocols.

RPO - RECOVERY POINT OBJECTIVE

At what frequency do backups need to be taken? How much data can I afford to lose? Estimated revenue loss for different levels of RPO's:

Daily Backups

RPO = 24 Hours
Revenue Lost = \$273,972.60

Snapshot-Based

RPO = Hours
Revenue Lost = \$45,662.10

Continuous Replication

RPO = Seconds
Revenue Lost = \$7,610.35

RTO - RECOVERY TIME OBJECTIVE

Your RTO is the amount of time it will take your business to resume normal operations after an outage. The downtime that comes with data loss can result in significant revenue and productivity loss.

How much time can our organization afford to be without this data during an outage?

How much time does our organization need to restore our data after an outage?

CONCLUSION

The simplest answer to "How often should I backup my data?" is to backup regularly and as often as necessary to decrease the impact of data loss. Backup schedules should be dependent entirely on the needs of your organization and the amount of risk that can be tolerated. The only way to really protect your business from losing critical data and the after affects associated, is to backup your data.

For more information about how to implement the best backup schedule for your business, contact us at sales@n3t.com!