3-2-1: Examining Backup Types

After completing this episode, you should be able to:

- Identify and explain data backup types, given a scenario

Description: In this episode, the learner will examine backup types such as full, incremental, and differential backups. We will also explore archive attributes, the pros and cons of choosing a backup type, and more.

- Describe the significance of the archive bit in backups
    - A file attribute used by some backup software to indicate whether a file has been modified since the last backup, helping to determine which files need to be included in differential and incremental backups.
    - Viewing archive bits using Windows Command Prompt

```
attrib <filename>.txt

attrib doc1.txt
```

- Describe common backup types
    - Full Backup
        - ♠ Captures all files and data within a system at the point of backup.
        - ♠ Archive bit
            - ♠ Does not rely on the archive bit, copies all data regardless of changes.
        - ♠ Usage
            - ♠ It is the most comprehensive type of backup available.
        - ♠ Pros - Simplifies recovery as it contains a complete dataset.
        - ♠ Cons - Requires substantial storage space and longer execution time, increasing operational costs.
    - Incremental Backup
        - ♠ Backs up only the files that have changed since the last backup
        - ♠ Archive bit
            - ♠ Utilizes the archive bit to identify modified files.
        - ♠ Usage
            - ♠ This method only captures the changes made after the most recent backup, making it highly efficient in terms of storage.
        - ♠ Pros - Faster and uses less storage space than full backups.
        - ♠ Cons - Restoration can be time-consuming as it requires the last full backup and all subsequent incremental backups.
    - Differential Backup
        - ♠ Stores all changes made since the last full backup
        - ♠ Archive bit
            - ♠ Utilizes the archive bit to determine which files have changed during the period.
        - ♠ Usage
            - ♠ A balance (or compromise) between full and incremental backups, offering moderate storage accrual
        - ♠ Pros - Quicker recovery than incremental as only the last full backup and the last differential backup are needed.
        - ♠ Cons - Uses more storage than incremental backups, as data volume can grow until the next full backup.
    - Incremental Forever
        - ♠ Uses a full backup initially, and from that point onwards, only incremental backups are

made.
        - Older incremental backups are consolidated over time.
        - Can significantly reduce storage needs but may require more complex management to ensure data recoverability.
- Describe snapshots
    - A read-only point-in-time copy of a data set or disk state, often used for virtual environments
    - Archive bit
        - Snapshots do not directly interact with the archive bi
    - Usage
        - Serve as a quick reference point for system states and changes.
    - Pros - Quick to create and often used for system restores, testing, or backup verifications.
    - Cons - Not a substitute for traditional backups, as they depend on the source data's integrity.
- Describe the role backups play in an RPO
    - Recovery Point Objective (RPO) - the maximum amount of data you can afford to lose if there's a failure
    - The RPO defines how often to back up the company's data to ensure that you can recover your files and keep your operations running smoothly.
    - Aligning backup intervals and methods with RPO ensures that data loss is minimized, supporting rapid recovery and maintaining continuity in business operations.