3-4-1 Examining Data Recovery Activities and Strategies

After completing this episode, you should be able to:

- Identify and explain the significance of implementing recovery strategies, given a scenario.

Description: In this episode, the learner will examine common recovery methods such as in-place, point-in-time, and bare-metal recoveries. We will explore bulk and granular recovery, the significance of a Recovery Time Objective (RTO), the relationship to recovery strategies, and more.

- Describe data recovery

    - IBM - "the process of restoring lost, corrupted, accidentally deleted, or otherwise inaccessible data to its server, computer, mobile device, or storage device (or to a new device if the original device no longer works)."
    - Reference: https://www.ibm.com/topics/data-recovery

- Describe common recovery methods (or types)

    - In-Place recovery

        - Restores data directly over the existing production environment, replacing the original data.
        - Pros - quick restoration, ideal for minimal downtime.
        - Cons - risky as it can lead to data loss if the recovery fails.

    - Parallel recovery

        - Restores data to a secondary system that runs alongside the primary system, allowing for validation without downtime.
        - Pros - safer, as it does not overwrite existing data.
        - Cons - resource-intensive, requiring additional infrastructure.

    - Point-in-Time recovery

        - Restores data to a specific moment before data loss or corruption occurs, using log data.
        - Pros - allows precise recovery to pre-disruption state.
        - Cons - requires comprehensive logging and can be complex to configure and execute.

    - Bare-metal recovery

        - Rebuilds a system from the ground up, directly on new hardware, without the need for a pre-installed operating system.
        - Pros - enables full system recovery on new, potentially diverse hardware
        - Cons - time-consuming and requires having compatible hardware available.

    - Virtual machine snapshots (NOTE - VM snapshots are not a viable data recovery solution)

        - Quickly reverts VMs to a previous state for fast operational recovery.
        - Pros - extremely fast recovery times and very useful in virtualized environments.
        - Cons - Not a full backup solution; dependent on underlying VM and storage system integrity.

- Recovery Options

    - Bulk

        - Restores large volumes of data at once, typically used after significant system failures.
        - Pros - effective for large-scale disasters.
        - Cons - lacks precision, potentially wasting resources when only specific data needs recovery.

    - Granular

        - Targets specific files, folders, or data items for restoration.
        - Pros - efficient when only certain data pieces need recovery.
        - Cons - time-consuming if the backup system lacks good indexing

- Describe the relationship with recovery implementations

    - A critical factor in choosing a recovery strategy.

    - The chosen method must align with the organization's RTO to ensure business continuity.

- Describe a Recovery Time Objective

    - The maximum acceptable length of time that a system, application, or network can be down after a failure or disaster occurs.

- Describe a couple of examples
  - In-place recovery
    - Might be chosen for its speed if the RTO is tight.
  - Parallel recovery
    - Might be preferred if the RTO allows for a longer downtime but requires higher data integrity.