**Backup and Recovery Mechanisms**

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**Backup and Recovery Strategies**

To ensure uninterrupted operations and data availability, the following backup and recovery mechanisms will be established:

**Backup Strategy**

**Backup Types:**

1. **Full Backup** – Performed weekly to capture the entire data set.
2. **Differential Backup** – Executed daily to record changes since the last full backup.
3. **Transaction Log Backup** – Conducted every 4 hours to log changes and support point-in-time recovery.
4. **Real-time Replication** – Ensures continuous mirroring of critical systems to minimize downtime.

**Recovery Objectives**

* **Recovery Time Objective (RTO):** 2 hours — Maximum tolerable time to restore operations.
* **Recovery Point Objective (RPO):** 15 minutes — Maximum acceptable data loss timeframe.

**Backup Locations**

* **Primary Data Center** – Main storage site for backup data.
* **Geographically Dispersed Secondary Data Center** – Ensures availability in case of regional outages.
* **Cloud Backup** – Encrypted using military-grade standards for flexible and secure offsite storage.
* **Offline Tape Backups** – Used for archiving critical data and long-term storage.

**Recovery Procedure**

1. **Immediate System Isolation** – Contain potential threats and stop further damage.
2. **Comprehensive Damage Assessment** – Evaluate scope of data corruption or loss.
3. **Backup Restoration** – Retrieve data from the most recent clean backup.
4. **Data Integrity Verification** – Validate the completeness and correctness of restored data.
5. **Gradual System Restoration** – Resume services in stages to monitor stability.
6. **Post-Incident Analysis** – Document the event and update protocols for future resilience.

This comprehensive plan ensures that critical data remains protected and operations can be swiftly resumed after any failure or cyber incident.