**Azure Pipeline Resilience**

Explore Azure Data Factory (ADF) features that support pipeline resilience, so failures don’t break your data flows, and issues are easy to detect, track, and recover from.

This can then be implemented into our pipeline.

**Retry and Error Handling Capabilities**

**Key Features:**

* **Retry Policies (per activity):**
  + Set retry count and retry interval on each activity.
  + Helps recover from transient failures (e.g. API flakiness, temporary unavailability).
* **Timeouts:**
  + You can set a timeout duration to stop long-running/hanging activities.
* **Dependency Conditions:**
  + Use Success, Failure, Completed, Skipped to control flow behaviour.
* **Custom Error Routing:**
  + Add logic branches (If Condition, Switch, Until, Try-Catch pattern using failure paths).
  + Can route failed outputs to logging or alternative recovery steps.
* **Fail Activity Intentionally:**
  + Use a Fail activity to deliberately stop the pipeline when logic detects invalid states (e.g. bad schema).

**Monitoring and Alerting**

**ADF Monitoring Tools:**

* **Monitoring Pane (UI):**
  + Real-time status of pipeline, activity runs, duration, errors.
  + Filters by status/time/pipeline.
* **Log Analytics Integration:**
  + Export logs to Azure Monitor for deeper analysis and dashboards.
* **Alerts:**
  + Alerts can be set on metrics like:
    - Pipeline failures
    - Activity duration thresholds
    - Trigger failures
  + Delivery via Email, SMS, Webhook, etc.
* **Auto Purge:**
  + Set retention on logs - default is 45 days, extendable to 365.