

CLOUD & DATABASE INFRASTRUCTURE | ANALYTICS & DATA PLATFORMS

Zero Tolerance for Failure: Rebuilding a Seven-Hospital ETL Pipeline Mid-Crisis

How APSIS stopped nightly Caboodle ETL failures that were cascading into reporting outages across an entire hospital network

Service Area Epic Caboodle / ETL / SQL Server	Organization Type Multi-Hospital Network (7 Facilities)	Engagement Length Eight Weeks	Outcome 100% nightly ETL success rate
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THE SITUATION

The data team at a seven-hospital network had been fighting the same war every morning for eleven weeks. The Caboodle ETL — the overnight pipeline that loads Epic clinical and operational data into the enterprise analytics environment — was failing. Not occasionally. Routinely.

When the ETL failed, it didn't fail quietly. Downstream reporting jobs that depended on fresh data simply didn't run. Quality dashboards serving seven hospitals went dark. Revenue cycle reports that should have been in leadership inboxes by 7:00 AM weren't there. Clinical operations teams were making decisions on day-old data. In a seven-hospital system where executives rely on near-real-time analytics for capacity management and throughput decisions, day-old data isn't a minor inconvenience. It's an operational problem.

The organization's internal team had applied three rounds of fixes. None held. They'd opened a high-priority case with Epic. The support ticket was active but moving slowly. They needed someone who could walk in, diagnose the root cause rather than the symptoms, and rebuild the pipeline to a standard it hadn't had before.

"We'd been fighting these failures for nearly three months. Our team was exhausted. The Epic ticket was going nowhere fast. What APSIS brought was a completely different diagnostic approach — they weren't looking at what failed, they were asking why it was designed the way it was."

— Director of Enterprise Analytics, Hospital Network

WHAT WAS ACTUALLY WRONG

The symptoms were obvious: nightly ETL failures, inconsistent data, cascading downstream outages. The root causes took systematic diagnosis to surface:

- **TempDB misconfiguration:** The SQL Server TempDB was running as a single data file, creating severe I/O contention during the high-volume ETL window. This alone was causing lock waits that cascaded across dependent jobs.
- **Job sequencing design flaw:** Multiple ETL jobs were scheduled to run in parallel where they had implicit dependencies. When one job ran long — which happened regularly — downstream jobs started before their input data was ready, writing corrupt or incomplete records.
- **Data integrity gaps:** Inconsistencies had been accumulating in the Caboodle environment for weeks due to partial-load runs that completed without error codes but wrote incomplete data sets, creating silent corruption in downstream reports.

- **No monitoring baseline:** There was no alerting infrastructure to catch failures in real time. The team was finding out about ETL failures when clinical operations staff called to report missing reports — always after the fact.

THE APSIS APPROACH

The Challenge

- 11 consecutive weeks of nightly ETL failures across a 7-hospital pipeline
- TempDB single-file I/O contention blocking ETL execution during peak windows
- Parallelized job design with implicit dependencies causing corrupt partial loads
- Silent data integrity issues accumulating in Caboodle for weeks
- No real-time monitoring — failures discovered after clinical impact

The APSIS Approach

- Deployed APSIS Caboodle/SQL Server specialist with Epic ETL architecture experience
- Rebuilt TempDB across eight equal data files per SQL Server best practice, eliminating I/O bottleneck
- Redesigned ETL job sequencing with explicit dependency chaining — no parallel execution without confirmed prerequisites
- Conducted full data integrity audit across Caboodle; identified and corrected 23 tables with inconsistent records from partial loads
- Implemented SQL Server Agent alerting and a custom monitoring dashboard surfacing job status, runtime trends, and failure prediction

RESULTS

100%

ETL success rate

Maintained for 6+ weeks post-engagement

23

Tables remediated

Silent data corruption corrected

<60s

Failure alert time

Down from hours of unknown failure

The night the rebuilt pipeline ran for the first time, every job completed successfully. The following morning, quality dashboards were populated, revenue cycle reports were in leadership inboxes before 7:00 AM, and the data team — which had been on morning crisis calls for eleven weeks straight — had a normal day.

The monitoring infrastructure APSIS implemented changed the operational posture entirely. Instead of discovering failures after clinical staff called in, the data team now receives alerts within 60 seconds of a job anomaly. Trend data on runtime allows them to anticipate degradation before it becomes failure.

The seven-hospital network retained APSIS for **ongoing Caboodle managed services support** following the engagement — a direct result of the confidence built during the stabilization work.

THE BROADER CLINICAL IMPACT

Data infrastructure failures are rarely just IT problems. When the Caboodle ETL failed, the downstream effects touched clinical operations directly: capacity managers were flying blind, throughput decisions were based on yesterday's census, and quality reporting gaps created risk for an organization under continuous regulatory scrutiny.

The stabilization APSIS delivered wasn't just a technical fix. It restored the analytical foundation the health system's clinical and operational leadership depends on to run seven hospitals. That's a different kind of outcome — and it's the kind of outcome that only comes when the team solving the problem understands both the technical architecture and what the data is actually used for.

APSYS CAPABILITIES DEMONSTRATED

Cloud & Database Infrastructure

- Epic Caboodle architecture and ETL design
- SQL Server TempDB engineering and I/O optimization
- ETL job sequencing and dependency architecture
- Data integrity audit and remediation
- Monitoring framework design and implementation

Managed Services Capability

- Ongoing Caboodle managed services — retained post-engagement
- 24-hour monitoring with proactive alerting
- Root cause diagnosis vs. symptom treatment
- No disruption to active clinical operations during work
- Retained as long-term data infrastructure partner

ABOUT APSIS SOLUTIONS INC.

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apsisinc.com | 813-999-4853

info@apsisinc.com