

Streamlining EDI 835 processing through AI automation

Client

A third-party billing agency supporting emergency medical services providers

Company Size

500+ employees

Location

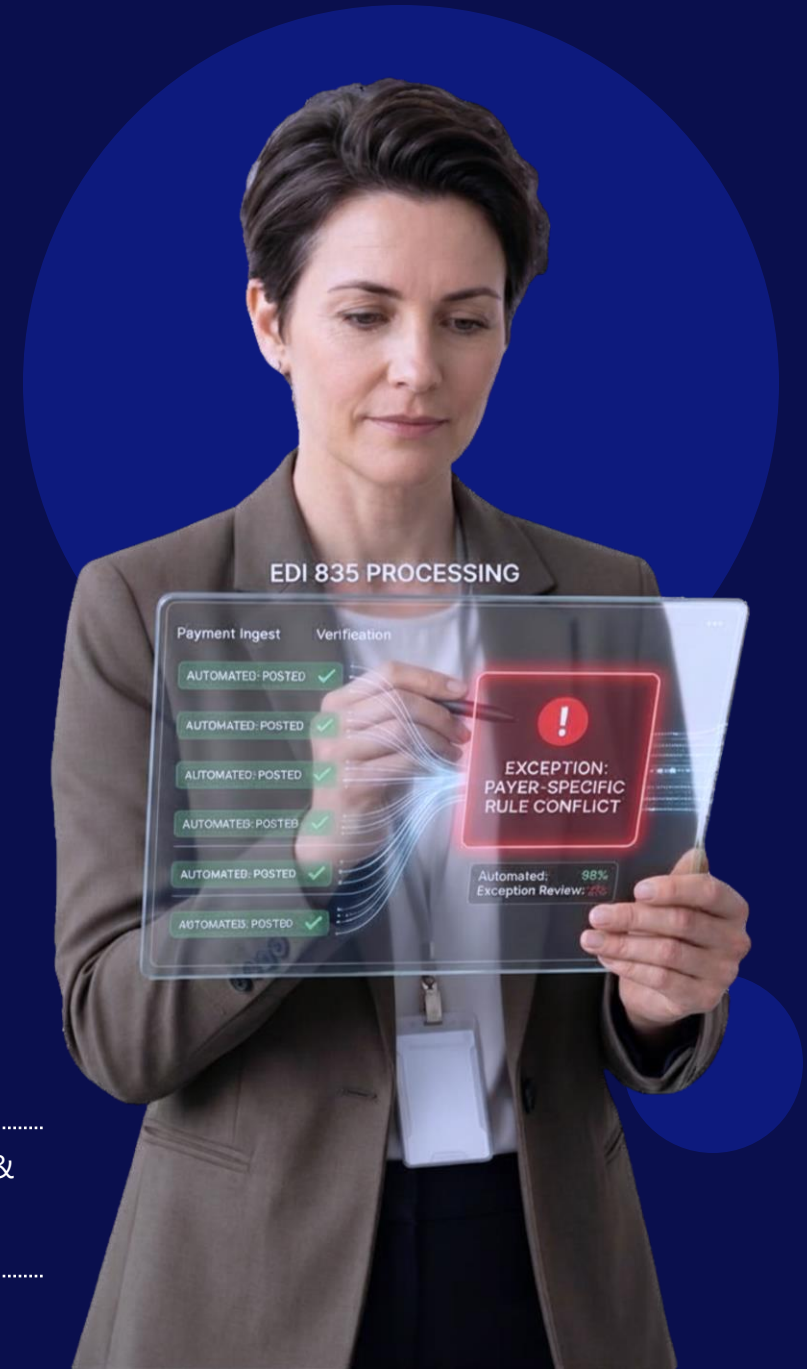
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A third-party billing agency supporting emergency medical services providers faced growing operational pressure from the increasing volume and complexity of Electronic Data Interchange (EDI) 835 transactions. Manual processing bottlenecked work as even simple cases required human review and complex payer-specific rules slowed efficiency for the 85,000 payments they processed per month.

To address this, Marlabs designed and implemented an AI-powered automation pipeline that intelligently ingests, verifies, and posts payments while also flagging exceptions for human intervention. The solution improved scalability, reduced manual effort, and enhanced accuracy. This set the stage for more streamlined revenue cycle operations and better financial reporting.



AI Strategy



Intelligent Automation



Agentic AI



Data Quality & Exception Management

The Challenge: Automating complexity in high-volume EDI processing



Objective: Reduce manual workload and increase efficiency in EDI 835 processing.



Existing Issues: Manual handling of simple and complex payment scenarios created operational bottlenecks.



Solution Needed: A scalable, AI-powered automation framework that supports both standard and payer-specific logic.



Outcome: Improved processing speed, reduced errors, and more efficient denial resolution workflows.



The client, a third-party billing agency for emergency medical services, struggled with the growing operational burden of manually handling a high volume of EDI 835 transactions. The lack of scalable automation made it difficult to keep pace with daily demand while maintaining accuracy across varying payer-specific rules.

The Solution: Implementing an AI-powered EDI automation pipeline

Marlabs delivered an AI-driven solution that automated the daily ingestion, verification, and posting of EDI 835 payment files. The platform used large language models (LLMs) to intelligently apply payer-specific rules (including those for Medicare) and route exceptions for manual resolution, which enhanced scalability while preserving compliance and accuracy.

Phase 1: Discovery & Process Mapping

Our team mapped the client's current EDI workflows and pain points to identify automation opportunities.

Workstreams:

- Transaction volume analysis
- Payer rule inventory
- Manual task mapping

Phase 2: Data Ingestion & Storage Automation

We automated ingestion of daily EDI 835 files from internal systems into cloud-based storage.

Workstreams:

- Secure file transfers
- AWS S3 storage configuration
- Data normalization

Phase 3: AI-Driven Verification & Payment Posting

The team deployed LLMs to cross-check data accuracy and automate posting of clean transactions.

Workstreams:

- AI rule application
- Payment classification
- Reconciliation tracking

Phase 4: Exception Management & Monitoring

We implemented logic to flag exceptions for manual processing with clear explanations. As part of this, we enabled real-time monitoring and feedback loops.

Workstreams:

- Exception routing
- Resolution suggestions
- Dashboards & alerts

Services and Technologies Used:

Services:

- AI Strategy
- Agentic AI
- Intelligent Automation
- Intelligent Document Processing
- Automated Data Quality Checks
- Exception Management Framework

Technologies:

- Programming & APIs: Python, FastAPI
- Cloud Storage & Databases: AWS S3, AWS RDS (MySQL, PostgreSQL)
- AI & ML Frameworks: AWS Bedrock, Langchain, MLLow
- Monitoring & Logging: Grafana Loki

The Results: Impact on the client organization

Marlabs' solution enabled the client to move beyond unsustainable manual processes and embrace intelligent automation for EDI 835 transactions. By reducing manual workload, accelerating denial resolution, and improving payment accuracy, the client positioned itself for long-term efficiency in revenue cycle operations. The project also laid the groundwork for expanding AI use across similar transactional workflows.



Automation Reduced Manual Processing: This initiative freed up staff by automating, conservatively, 85% of payment posting processes.



Scalable Operations: Our team established a framework for handling increasing transaction volume.



Faster Denial Resolution: We shortened turnaround time for resolving payer-specific issues.



Operational Visibility: We enabled real-time tracking of exceptions and resolution metrics.



Enhanced Payment Accuracy: This solution reduced posting errors by 95% and improved reconciliation across systems.



Compliance Assurance: Marlabs applied AI in a governed framework aligned with payer-specific requirements.