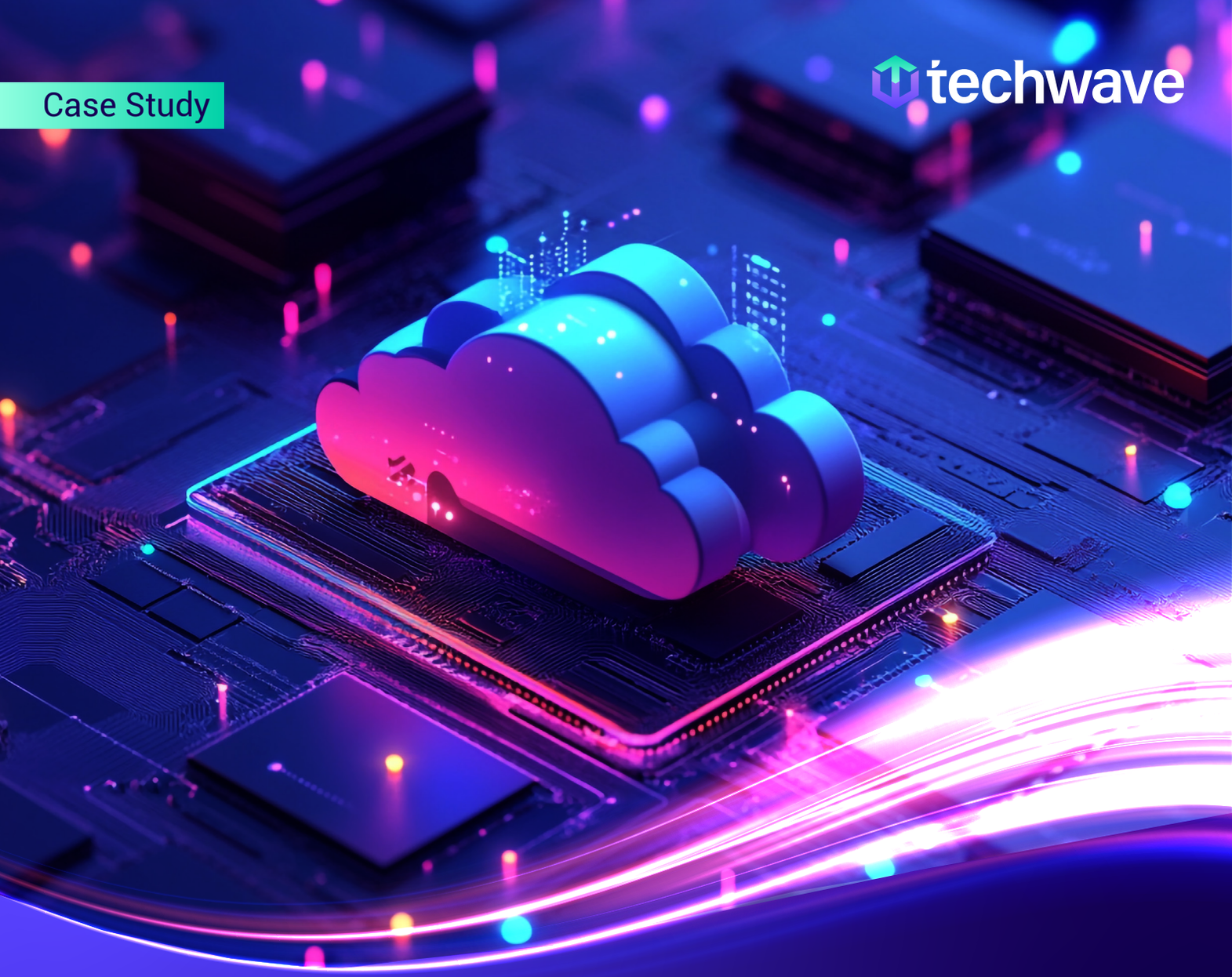
Case Study

techwave



Hybrid Cloud Success: SAP Decoupling with AWS-Native APIs

60% SAP cost reduction and 2 to 3x transaction capacity, built on an existing ERP foundation

About Client

The client is a global manufacturing and industrial tools organization with a strong international footprint across 20+ countries, generating approximately $100M in annual revenue. The business supports complex supply chain, distribution, and financial operations, working closely with an extensive network of distributors, partners, and customers. Its model combines manufacturing, importing, and multi-channel distribution, requiring high system reliability, seamless partner integrations, and scalable digital platforms to support ongoing expansion and modernization.

Executive Summary

A stable SAP core was holding the business back, not because it was broken, but because the architecture around it had not evolved to match digital-first market demands.

The client had built a solid ERP foundation through its partnership with Techwave since 2017, but the traditional on-premises architecture had become a competitive liability. The business needed to modernize without replacing SAP, maintaining the proven core while enabling e-commerce scale, real-time partner connectivity, and the capacity for unlimited growth.

Techwave designed a **cloud-native, API-first integration platform on AWS** that decoupled integration from ERP entirely, delivering a 60% SAP cost reduction, 2 to 3x transaction capacity, 99.9%+ availability, and days-to-market for new partner connections. The engagement is a proof point that modernization does not require rip-and-replace: it requires strategic architecture that builds on proven investments while enabling exponential growth.

Business Challenges

A stable ERP core masked growing architectural debt: performance, observability, and scalability were all constrained by an integration model that was never designed for digital-first demand.

Performance bottlenecks in hybrid architecture

The SAP backend struggled to meet throughput requirements for modern e-commerce workloads. Latency in VPN and network layers created inconsistent experiences for external partners, impacting business agility.

Limited observability and troubleshooting depth

Restricted access to platform-level logs meant every incident required a formal support ticket, slowing resolution cycles and preventing the organization from achieving full-stack visibility.

Unsustainable point-to-point integrations

A growing digital ecosystem of B2B partners and e-commerce portals demanded scalable integration capability. Point-to-point connections were not sustainable, but building a standardized API layer required expertise the internal team did not have.

Over-provisioned infrastructure costs

Always-on peak-capacity servers meant the client paid for maximum load at all times, regardless of actual usage, creating unnecessary cost overhead across the infrastructure estate.

Techwave's Strategy and Solutions

Rather than replacing SAP at significant cost and risk, Techwave built an intelligent integration layer on AWS that could scale independently, preserving the client's proven core while unlocking digital agility.

API Gateway-based digital integration platform

Implemented AWS API Gateway as the unified integration layer for the client's external ecosystem, decoupling partners, web portals, and future channels from direct SAP dependency with secure, token-based access control and rate management.

SAP modernization through backend optimization

Fine-tuned SAP BAPIs and backend programs, optimized database queries and RFC calls, and restructured custom ABAP developments inherited from the 2017 engagement, eliminating performance constraints without replacing the ERP core.

Enhanced network performance and low-latency pipelines

Redesigned VPN routing, implemented caching strategies, and established connection pooling, reducing transaction latency from 2 to 3 seconds down to 200 to 300 milliseconds across the hybrid stack.

Security embedded as an architectural design element

Applied STRIDE-based threat modeling at API design stage, with AWS WAF for DDoS protection, least privilege IAM roles per function, Cognito-based JWT token authentication, and AWS Secrets Manager handling credential storage and automatic rotation across all integration layers.

AI in SDLC

AI capabilities were embedded across the development lifecycle to accelerate delivery, improve code quality, and guide optimization based on real usage data.

AI-assisted code reviews

Identified inefficiencies and performance risks early in the development cycle, before they reached production.

Automated test generation

Generated test coverage across edge cases and negative scenarios, strengthening validation across complex API workflows.

Intelligent regression test selection

Reduced build times by selecting only the tests relevant to each change set, without sacrificing coverage confidence.

Usage analytics for feature prioritization

Real usage patterns guided optimization decisions and feature prioritization, grounding roadmap decisions in actual behavior rather than assumption.

Business Outcomes

Every major constraint on performance, cost, availability, and speed was measurably resolved, and several were eliminated entirely.

60%	2 to 3x	99.9%+	70 to 80%
SAP licensing cost reduction, scaling to 80% at volume	Transaction capacity with elastic serverless scaling	API availability, under 8 minutes downtime per month	Latency reduction, from 2 to 3 seconds to 200 to 300 ms

Days-to-market for new integrations

Partner onboarding reduced from 10 to 15 weeks down to 5 to 7 days through standardized security patterns, reusable templates, and automated deployment pipelines.

Full-stack observability

Operations teams shifted from reactive support tickets to proactive monitoring with direct dashboards, distributed tracing, and automated alerting.

20 to 30% infrastructure cost reduction

Pay-per-use serverless model eliminated always-on over-provisioned servers, with costs now scaling with actual usage rather than peak-capacity assumptions.

Unified digital transaction fabric

A single API platform provides consistent transaction handling, unified audit trails, and security governance applied uniformly across all partners and channels.

Before vs After

The transformation converted every major architectural constraint into a measurable competitive advantage, without touching the ERP core.

Before	After
• Per-user SAP licensing across 50+ partners	• Single technical user, 60% licensing cost reduction
• 2 to 3 second API transaction latency	• 200 to 300 ms response times, 70 to 80% faster
• 95 to 97% API availability	• 99.9%+ availability, under 8 mins downtime/month
• 10 to 15 week partner onboarding	• 5 to 7 day onboarding, 90% faster
• Always-on peak-capacity servers	• Serverless pay-per-use, 20 to 30% cost reduction
• Point-to-point partner integrations	• Standardized API platform across all channels
• Multi-day incident resolution via support tickets	• Hours-to-resolution via direct dashboards and tracing

Metric	Before	After	Improvement
SAP Licensing Costs	Per-user model, 50+ partners	Single technical user	**60% reduction (80% at scale)**
Transaction Capacity	Limited by backend	Elastically scalable	**2 to 3x increase**
API Availability	95 to 97%	99.9%+	**40 to 60% fewer outages**
SAP Connection Churn	High, new per request	Connection pooling and reuse	**40 to 60% reduction**
Infrastructure Costs	Always-on peak servers	Serverless pay-per-use	**20 to 30% reduction**
Partner Onboarding	10 to 15 weeks	5 to 7 days	**90% faster**
Transaction Latency	2 to 3 seconds	200 to 300 ms	**70 to 80% faster**
Platform Observability	Restricted access	Full-stack dashboards	**Complete visibility**
Troubleshooting Cycles	Multi-day via support tickets	Hours via direct visibility	**50 to 80% faster**
Security Governance	Per-partner hardening	Centralized enforcement	**100% consistency**

Transformation Timeline

An eight-year relationship, evolving from foundational ERP support into a cloud-native, API-first architecture that positions the client for exponential digital growth.

2017
Foundation

SAP Application Managed Services

Established the foundational SAP AMS partnership, building a stable and well-supported ERP core that would underpin all future modernization work.

Modernization Phase
Architecture

Cloud-Native Integration Design

Designed the AWS API Gateway-based integration platform, decoupling SAP from external integrations and establishing the security, routing, and governance framework.

Delivery Phase
Optimization

Backend Optimization and Network Re-Architecture

Fine-tuned SAP BAPIs, optimized queries and RFC calls, redesigned VPN routing, and implemented caching and connection pooling to drive the 70 to 80% latency reduction.

Current State
Scale

Serverless Scale and AI-Augmented Delivery

Elastic serverless architecture now handles seasonal peaks automatically, while AI-assisted development practices accelerate delivery velocity and improve code quality across the platform.

20+ Years
Empowering the Enterprises

600+ Clients
Across 5 Continents

Global Delivery
Worldwide Delivery Centers

Expertise
In ERP, Digital, and Engineering

About Techwave

Headquartered in Houston, TX, Techwave provides Global Technology and Engineering Services and Solutions to more than 600+ clients across 5 continents. Our expertise in ERP & Analytics, Software Engineering, AI/ML, Cloud Engineering Services, and Strategic Sourcing provides the end-to-end digital capabilities that empower our clients to maximize the value realization from their digital investments. Our CMMI Level 5 and ISO 9001:2015 certifications demonstrate our ability to deliver excellence to all our clients.