Synoptek

Tax Services Company Accelerates Innovation with Multi-model Custom AI Copilot

Customer Overview

Customer

A top-tier tax resolution services company

Profile

The client offers up to $1,000,000 in services and has extensive experience in resolving IRS notices, inquiries, and audits.

Industry

Financial Services

Services

Custom AI Copilot Development

Business Need

As a nationwide provider of tax resolution and protection services, the client supports millions of customers each year through high-volume inquiries, compliance requests, and time-sensitive case updates. However, as customer demand grew and processes became more complex, it faced increasing pressure to modernize how information was accessed, shared, and managed across teams.

The client therefore sought to enhance its customer service and internal operations by implementing an AI-driven conversational system that could adapt to diverse business requirements. The goals extended beyond using a single large language model (LLM); it needed an intelligent application that could:

- Support multiple Bedrock models, including open-source LLMs, for cost flexibility and performance optimization.

- Enable teams to create custom prompts that could evolve with business processes.

- Allow users to develop and maintain a proprietary knowledge base, ensuring responses are aligned with domain-specific expertise.

- Integrate seamlessly with back-end systems and APIs.

- Ensure scalability, security, and cost efficiency as AI usage grows.

- Provide analytics and logging to track usage, optimize performance, and support continuous improvement.

However, several challenges stood in the way:

- No existing infrastructure to support multi-model orchestration.

- Lack of a central system to store prompts, knowledge base entries, and interaction histories.

- Need for real-time search capabilities while maintaining low latency and cost control.

- Requirement for strong governance, role-based access, and data encryption.

- A need for containerized, cloud-native deployment with high availability.

The client partnered with Synoptek to develop a fully customized AI platform that addresses these challenges and provides a scalable, secure, and enterprise-ready AI Copilot.

Solution and Approach

Synoptek designed and delivered Prometheus, a cloud-native web application providing dynamic AI model selection, custom prompt engineering, knowledge base management, and secure API-driven automation.

Infrastructure Setup

We deployed a robust AWS environment that included:

- Amazon S3 and Amazon RDS (PostgreSQL) to store interactions, prompts, logs, and knowledge base data.

- Amazon Bedrock and integrated open-source models (e.g., Llama).

- Amazon ECR, ECS/Fargate, or AWS App Runner for container deployment.

Application Development & API Integration

A Python-based backend and SvelteJS frontend were implemented, featuring:

- Multi-model selection that allows users to choose between different AI models dynamically based on task, accuracy, or cost.

- Custom prompt management that enables administrators to create, edit, and manage reusable prompts tied to different workflows.

- Knowledge base management that allows users to upload documents, data, or proprietary information.

- Real-time integrated search services that provide up-to-date information when needed.

- Error handling & logging with comprehensive retry logic and CloudWatch logging to ensure reliability and traceability.

Containerization & Deployment

The entire solution was containerized using Docker, enabling streamlined CI/CD pipelines, automatic scaling for demand spikes, high availability, and easy updates. Images were securely stored in Amazon ECR and deployed using ECS/App Runner for seamless management.

Security, Access Control & Governance

- SSO-based user authentication

- RBAC permissions for prompts and knowledge base editing

- VPC-enabled security within the AWS cloud environment

Testing & Go-Live

- End-to-end integration testing across all models

- Performance stress testing under simulated peak usage

- Training sessions and comprehensive documentation for administrators and end users

Business Benefits

The implementation of the Prometheus Copilot provided the client with a future-proof AI platform that delivers measurable operational and strategic value. With the Custom AI Copilot, the client can:

- Select between premium AWS Bedrock models and cost-effective open-source alternatives.

- Reduce unnecessary API usage through batch optimizations and monitoring.

- Ensure consistent, business-aligned outputs through custom prompt creation.

- Improve accuracy as AI models learn from proprietary knowledge base training.

- Achieve automatic scaling during peak loads through containerized AWS deployment.

- Maintain uninterrupted service with a high-availability architecture.

- Strengthen data protection with RBAC, encryption, and comprehensive audit logs.

- Provide fast, accurate answers with real-time web search and dynamic model selection.

- Scoped future AI automation and new custom model or internal tools through a scalable foundation.

- Accelerate innovation with a modular architecture that allows rapid integration of new models, APIs, and workflows.

About Synoptek

Synoptek delivers accelerated business results through advisory-led, transformative full-life-cycle systems integration and managed services. We partner with organizations worldwide to help them navigate the ever-changing business and technology landscape, build solid foundations for their business, and achieve their business goals.

Synoptek

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