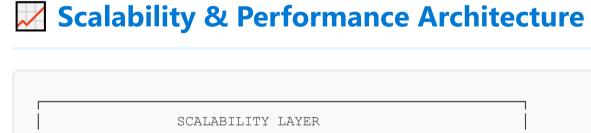
TEBSarvis Solution Architecture Intelligent IT Service Management Solution **High-Level System Architecture** ENTERPRISE INTEGRATION LAYER ServiceNow Jira Zendesk Service Other Management ITSM MODEL CONTEXT PROTOCOL (MCP) Bi-directional ITSM Platform Communication • Real-time Data Ingestion • Context Enrichment Ticket Enhancement • Proactive Notifications API GATEWAY LAYER Azure API Management REST APIS GraphQL WebSocket Endpoints Federation Real-time PRESENTATION & INTERFACE LAYER Web UI Teams/Slack Mobile API Dashboard Bots Clients Apps AZURE FUNCTIONS LAYER (Serverless Compute) /recommend-/search-similar-/ask-assistant resolution incidents |/detect-patterns | |/proactive-/health-check alerts MULTI-AGENT ORCHESTRATION LAYER (A2A Protocol Hub) Agent-to-Agent Communication Bus • Task Delegation • Context Sharing • Collaborative Decision • Load Balancing • Failover Handling • Performance Monitor REACTIVE AGENTS PROACTIVE AGENTS Resolution Pattern Alerting Agent Detection Agent GPT-4 + RAG ML + Rules Agent ML Clustering Engine Search Agent Semantic + Vector Search Conversation Agent NLP + Context Context Agent Metadata + Enrichment RAG + INTELLIGENCE LAYER RETRIEVAL AUGMENTATION GENERATION • Vector Search Context • Response Synthesis • Semantic Enrichment Multi-agent Matching • Metadata Collaboration Integration • Quality Assurance • Hybrid Query AZURE SERVICES LAYER Azure OpenAI Azure Cognitive Azure Cosmos DB • GPT-4 Turbo Search • Document Store Embeddings Vector Store Query Engine • Chat Complete • Hybrid Search • Real-time Sync Azure Machine Azure Event Azure Monitor Learning Hubs Observability Performance • Pattern ML • Real-time • Anomaly Det. Streaming • Health Metrics **Enterprise Integration Layer** ITSM PLATFORM CONNECTORS Jira Zendesk REST API REST API Webhook Webhook Webhook APIs OAuth 2.0 OAuth 2.0 OAuth 2.0 MODEL CONTEXT PROTOCOL • Bi-directional Data Synchronization • Context Enrichment Pipeline • Real-time Event Processing • Schema Mapping & Transformation • Error Handling & Retry Logic **Supported ITSM Platforms ♦** Model Context Protocol • Real-time data synchronization ServiceNow Context enrichment pipeline Jira Service Management • Schema mapping & transformation Zendesk Freshservice Event-driven processing BMC Helix ITSM Error handling & retry logic Ivanti Neurons ManageEngine ServiceDesk Plus **Multi-Agent Communication Architecture** Message Bus & Orchestration | Event Stream | | Coordination Task Queue & Dispatch & Pub/Sub Engine AGENT NETWORK Resolution \longleftrightarrow Search \longleftrightarrow Conversation \longleftrightarrow Context Pattern Detection \longleftrightarrow Alerting Agent Communication Protocols: Async Message Passing Context Sharing • Collaborative Decision Making Load Balancing • Fault Tolerance **©** Reactive Intelligence Agents Proactive Intelligence Agents Pattern Detection Agent: Identifies incident clusters and recurring trends **Resolution Agent:** Generates ranked solution recommendations using historical data **Alerting Agent:** Monitors patterns and generates early warnings **Search Agent:** Performs semantic similarity matching across knowledge bases **Conversation Agent:** Handles natural language interactions and Q&A **Context Agent:** Enriches inputs with metadata and environmental context **RAG Intelligence Pipeline** RAG PROCESSING PIPELINE RETRIEVAL AUGMENTATION GENERATION | → | • Context | → | • Multi-Agent Semantic Metadata Quality Matching Integration Validation Hybrid Source • Response Query Attribution Ranking FEEDBACK LOOP • Resolution Success Tracking • Model Performance Monitoring • Continuous Learning Integration **Retrieval Components Augmentation Features Generation Capabilities** • Vector similarity search using Azure • Context enrichment with metadata • Multi-agent response synthesis Quality validation and ranking OpenAl embeddings Source attribution and validation • Semantic matching with contextual • Environmental factor integration • Natural language optimization understanding Historical pattern correlation Confidence scoring • Hybrid query processing (semantic + keyword) Multi-modal data retrieval **Data Flow Architecture ITSM Platform** → **MCP** → **API Gateway** → **Azure Functions Multi-Agent Orchestrator Reactive Agents Proactive Agents Pattern Detection, Alerting Resolution, Search, Conversation, Context**



Load Balancer

Azure App

Monitoring

Application

Insights

Gateway

Auto-Scaling

Azure

CDN

Door

Functions

Azure Front

4 Auto-Scaling Features

Agent Interaction Patterns

New Incident \rightarrow Context Agent \rightarrow Search Agent \rightarrow Resolution Agent

↓ ↓ ↓ ↓
Metadata Similar Cases Solutions

Collection Retrieval Ranking 1

L----→ Conversation Agent ←---

Natural Language Response

Pattern Detection Agent

Distributed Cache

Global Distribution

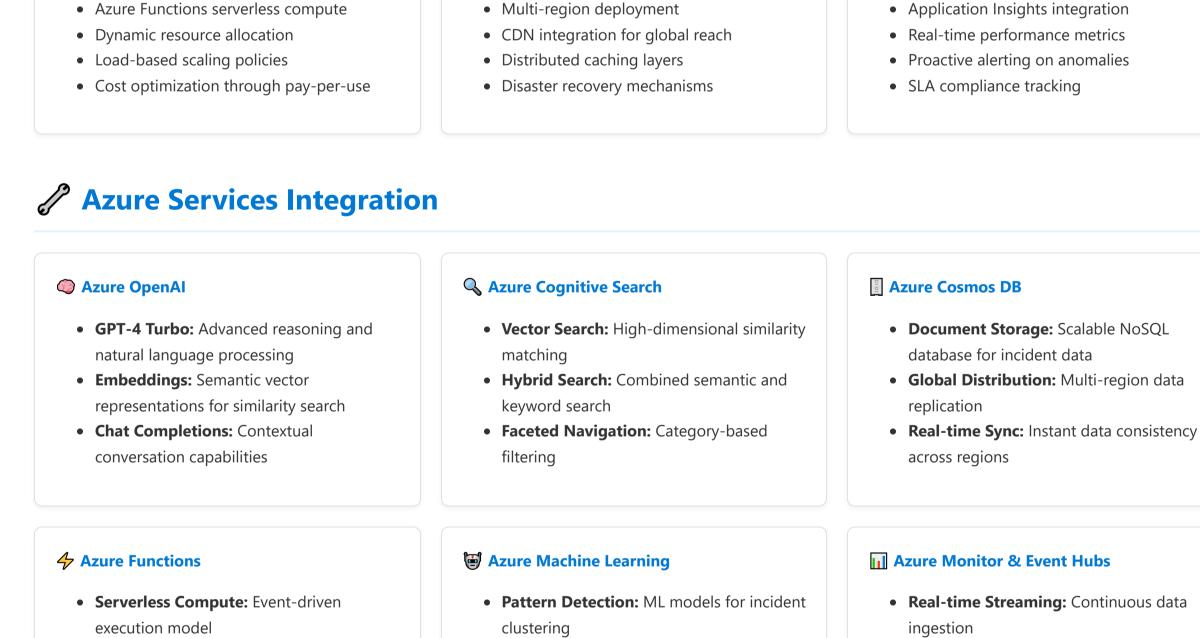
Disaster Recovery Multi-Region

Backup & Failover

Redis/Cosmos DB

Trend Analysis Update

Incident Resolution Workflow



identification

/search-similar-incidents

/proactive-alerts

Hybrid search capabilities

• Real-time anomaly detection

Threshold-based monitoring

Vector-based semantic matching

failures

Global Distribution

RAG Pipeline

Azure OpenAI, Cognitive Search, Cosmos DB

Intelligent Response → **ITSM Platform Update**

ML Analytics

Azure ML, Event Hubs, Monitor

Proactive Monitoring Workflow

Real-time Data Stream → Pattern Detection Agent

Clustering & Analysis

Anomaly Detection

Alerting Agent

Stakeholder Notifications

Preventive Recommendations

III Performance Monitoring

• **Performance Metrics:** System health

• **Alerting:** Proactive notification system

Natural language query processing

• Domain-specific knowledge retrieval

Multi-turn conversation support

• Source attribution and citations

Follow-up question suggestions

• Comprehensive trend reporting

• Business impact assessments

Forecasting and predictions

• Statistical analysis of incident patterns

• Seasonal and temporal correlations

monitoring

/trend-analysis

// /recommend-resolution • Semantic analysis of incident descriptions Historical pattern matching • Multi-solution ranking with confidence

• Step-by-step resolution guidance

• Resource requirement estimation

• Auto-scaling: Dynamic resource allocation

• Integration Hub: Seamless connection to

@ API Endpoints & Capabilities

all Azure services

scores

A/detect-patterns

• Incident clustering using ML algorithms • Trend analysis and root cause correlation • Pattern evolution tracking • Systemic issue identification

Predictive pattern modeling

- System Integration Workflow
- 7. Response Generation: Multi-agent collaboration produces intelligent response 8. Platform Update: Results integrated back into ITSM platform 9. Continuous Learning: System learns from resolution outcomes

Key Innovation Highlights

Multi-Agent Collaboration

Cloud-Native Architecture

effectiveness.

Built-for-cloud design using Azure's latest

First ITSM solution to implement true multi-Model Context Protocol ensures deep integration with existing ITSM platforms without agent AI collaboration using A2A protocol, enabling specialized expertise and fault-tolerant disrupting established workflows. operations.

services, ensuring scalability, reliability, and cost-

• Similarity confidence scoring • Historical success rate analysis

• Contextual filtering by category/priority

• **Anomaly Detection:** Real-time outlier

• **Predictive Analytics:** Forecasting system

- Predictive failure warnings Automated stakeholder notifications Escalation management
- **Complete End-to-End Process Flow** 1. Incident Creation: New ticket created in ITSM platform
- 2. MCP Processing: Model Context Protocol captures and enriches data 3. API Gateway: Request routed through Azure API Management 4. Agent Orchestration: A2A protocol coordinates specialized agents

© Seamless ITSM Integration

5. RAG Processing: Retrieval, augmentation, and generation pipeline 6. Azure Services: OpenAI, Cognitive Search, Cosmos DB, ML services

Predictive Intelligence Combines reactive problem-solving with proactive pattern detection and predictive analytics for complete ITSM intelligence.