Project Design Phase-II

Technology Stack (Architecture & Stack)

Date: 31 October 2025
Team ID: NM2025TMID03626
Project Name: Streamlining Ticket Assignment for Efficient Support Operations

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Technical Architecture:

The deliverable includes the **technical architecture diagram** and supporting details in the following tables.
This project integrates **automated ticket routing** using ServiceNow and AI-assisted categorization modules to optimize support workflows at ABC Corporation.

The architecture features:

- A **web-based user interface** for support teams and administrators.
- **Application logic modules** that handle ticket classification, prioritization, and routing.
- A **cloud-hosted backend** for scalability and reliability.
- Integration with **AI/NLP services** for intelligent ticket categorization.
- **Dashboards** and **notification services** for real-time performance tracking.

Reference:
https://developer.ibm.com/patterns/ai-powered-backend-system-for-order-processing-during-pandemics/

Guidelines Followed:

- Includes all processes as application logic components.
- Provides clear demarcation between **frontend**, **backend**, and **cloud layers**.
- Indicates **external APIs** for integrations (email, AI services).
- Specifies **data storage and analytics components**.
- Shows interface with **machine learning models** for auto-categorization.

Table-1: Components & Technologies

S.No	Component Description	Technology
1.	**User Interface** — Agents and managers interact via a unified ServiceNow dashboard.	ServiceNow Web UI

S.No	Component Description	Technology
2.	**Application Logic-1** — Processes new tickets and identifies category and priority.	ServiceNow Flow Designer, Business Rules
3.	**Application Logic-2** — Routes tickets automatically based on predefined rules and team expertise.	ServiceNow Flow Designer, Script Includes
4.	**Application Logic-3** — Implements SLA monitoring and escalation alerts for overdue tickets.	SLA Engine, Scheduled Jobs
5.	**Application Logic-4** — Logs performance data for analytics dashboards.	ServiceNow Reporting, Performance Analytics
6.	**Database** — Stores all ticket, user, and routing rule data.	ServiceNow CMDB, Incident & Task Tables
7.	**Cloud Database** — Hosted on a secure cloud for scalability and redundancy.	ServiceNow Cloud Database
8.	**External API-1** — Integration with AI/NLP engine for ticket categorization.	Azure Cognitive Services / Google NLP API
9.	**External API-2** — Email notification integration for agent alerts.	ServiceNow Notifications API
10.	**Machine Learning Model** — Predicts ticket categories and urgency based on text content.	AI/ML Model using Python (TensorFlow or Azure ML)
11.	**Infrastructure (Server/Cloud)** — Fully hosted on a scalable SaaS environment.	ServiceNow Cloud (SaaS)

Table-2: Application Characteristics

S.No	Characteristic	Description	Technology
1.	**Open-Source Frameworks**	Limited use, primarily proprietary platform with optional AI open-source integration.	Python (for AI components)
2.	**Security Implementations**	Role-based access control, data encryption, and secure API communication.	RBAC, OAuth 2.0, ACLs
3.	**Scalable Architecture**	Cloud-based, supporting horizontal scaling to handle increased ticket volumes.	ServiceNow Cloud Architecture
4.	**Availability**	High uptime with redundancy through ServiceNow's distributed cloud infrastructure.	Load-balanced ServiceNow Instances

S.No	Characteristic	Description	Technology
5.	**Performance**	Optimized using asynchronous flows, AI pre-processing, and indexed queries.	Flow Designer, GlideRecord Optimization
6.	**Interoperability**	Seamless integration with external CRM and email tools.	REST APIs, IntegrationHub
7.	**Maintainability**	Modular design enables easy updates without downtime.	Scoped Applications
8.	**Monitoring & Analytics**	Real-time dashboards for routing performance and workload tracking.	ServiceNow Performance Analytics

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Would you