

Project Design Phase-II Technology Stack (Architecture & Stack)

Date	31 January 3035
Team ID	LTVIP2026TMIDS54383
Project Name	Educational organisation using service now
Maximum Marks	4 Marks

Technical Architecture – ServiceNow Based Application

Architectural Overview

The application follows a **three-tier architecture** consisting of Presentation Layer, Application Layer, and Data Layer. The system is built on the ServiceNow platform and integrates cloud services, databases, external APIs, and AI services to process requests efficiently.

Architecture Flow (Conceptual):

User → ServiceNow Portal → Application Logic → External APIs / ML Services → Database → File Storage → Response to User

Table 1: Technical Architecture Components

S.No	Component	Description	Technology
1	User Interface	Web portal for users to submit requests, orders, or incidents	ServiceNow Service Portal, HTML, CSS, JavaScript
2	Application Logic – 1	Business logic handling workflows, approvals, automation rules	ServiceNow Business Rules, Script Includes (JavaScript)
3	Application Logic – 2	Speech or input processing for automation	IBM Watson Speech to Text
4	Application Logic – 3	Conversational assistant for user interaction	IBM Watson Assistant
5	Database	Stores application data such as users, requests, transactions	ServiceNow Relational Database (MySQL-based)

6	Cloud Database	Cloud-based storage for scalable data access	IBM Db2 /
7	File Storage	Stores attachments, reports, and uploaded documents	ServiceNow Attachment Storage / IBM Cloud Object Storage
8	External API 1	Fetch external environmental or contextual data	IBM Weather Company API
9	External API 2	User verification or identity validation	Aadhaar API (Government Integration)
10	Machine Learning Model	Predictive analytics or classification of requests	Object Recognition / Prediction Model
11	Infrastructure (Server / Cloud)	Application deployment and hosting environment	ServiceNow Cloud, Cloud Foundry, Kubernetes

Table 2: Application Characteristics

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks used for frontend and integrations	Bootstrap, REST APIs, Node.js
2	Security Implementations	Data protection and access control mechanisms	SHA-256 Encryption, HTTPS, Role-Based Access Control (RBAC), IAM, OWASP Guidelines
3	Scalable Architecture	Supports increasing number of users through modular design	Three-tier Architecture, microservices, Cloud Scaling
4	Availability	Ensures application uptime and reliability	Load Balancers, Distributed Servers, Cloud Failover

S.No	Characteristics	Description	Technology
5	Performance	Handles high request loads efficiently	Caching, CDN usage, Optimized Queries, Async Processing

Architecture Explanation

The system is developed using the ServiceNow cloud platform where users interact through the service portal. Requests are processed through business logic and workflows. AI services like IBM Watson enable intelligent interaction and automation. Data is stored in cloud databases while files are stored separately for scalability. External APIs provide additional services such as weather or identity verification. The architecture ensures security, scalability, high availability, and optimized performance.

References:

<https://c4model.com/> <https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/> <https://www.ibm.com/cloud/architecture> <https://aws.amazon.com/architecture>
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