

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

Date	03 November 2023
Team ID	NM2023TMID04191
Project Name	How to Create Brand Name, Brand Mail and Brand Logo in Canva

Technical Architecture:

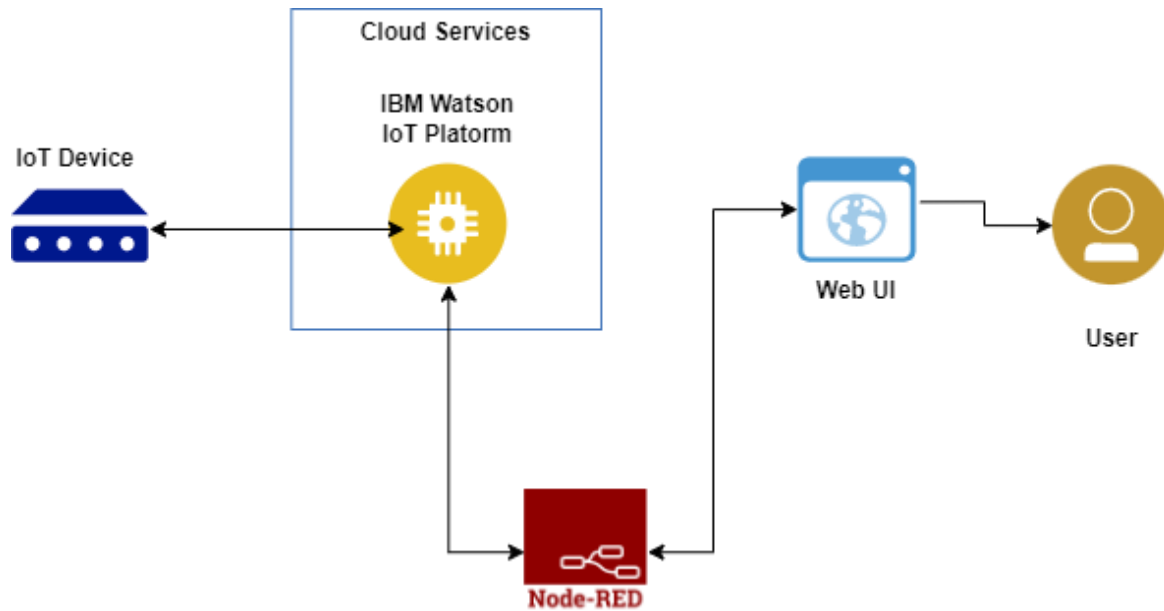


Table-1: Components & Technologies:Smart billing system for water suppliers

S.No	Component	Description	Technology
1.	User Interface	The user interface component provides the visual interface through which users interact with the billing system.	IBM Cloud App Connect
2.	Application Logic-1	This component encompasses the core business logic and functionality of the smart billing system.	IBM Cloud Functions
3.	Application Logic-2	This component focuses on additional functionalities related to billing and customer management.	IBM Cloud Foundry
4.	Application Logic-3	This component incorporates advanced functionalities specific to the smart billing system.	IBM Watson Machine Learning
5.	Database	The database component stores and manages the persistent data of the billing system.	IBM Db2
6.	Cloud Database	This component represents a cloud-based database solution for the smart billing system.	IBM Db2 on IBM Cloud
7.	File Storage	The file storage component is responsible for storing and managing files associated with the billing system.	IBM Cloud Object Storage
8.	External API-1	This component represents an external application programming interface (API) that the smart billing system integrates with.	IBM Cloud API Connect
9.	External API-2	This component represents another external API that the smart billing system integrates with.	IBM Watson Assistant

10.	Machine Learning Model	This component incorporates machine learning algorithms or models used in the smart billing system.	IBM Watson Studio
11.	Infrastructure (Server / Cloud)	The infrastructure component includes the physical or cloud-based servers, networking, and computing resources that host and support the smart billing system.	IBM Cloud Infrastructure

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Open-source frameworks provide pre-built functionalities and libraries that can accelerate development and offer flexibility.	Django Node.js with Express.js Spring Boot React or Vue.js
2.	Security Implementations	Security implementations are crucial to protect sensitive customer data, prevent unauthorized access, and ensure data integrity.	Encryption algorithms (AES, RSA), secure authentication (OAuth, JWT), secure communication protocols (HTTPS), input validation, and data sanitization practices.
3.	Scalable Architecture	A scalable architecture enables the system to handle increasing loads and accommodate growing data and user demands.	Docker and Kubernetes for containerization and orchestration, Apache Kafka or RabbitMQ for message queues, Redis or Memcached for caching, and Apache Cassandra or MongoDB for distributed databases.
4.	Availability	Availability ensures that the smart billing system remains accessible and functional without significant downtime or disruptions.	Load balancing technologies such as Nginx or HAProxy, high-availability clustering solutions like Pacemaker and Corosync, automatic backup tools like rsync or Bacula, and monitoring and alerting systems such as Nagios or Prometheus.

S.No	Characteristics	Description	Technology
5.	Performance	Performance optimizations focus on enhancing system response times, throughput, and efficiency to deliver a smooth user experience.	Varnish or Squid, MySQLTuner or pgTune, Celery or Apache Kafka, zlib or gzip