Architecture Design

ANALYZING SWIGGY: BANGALORE DELIVERY OUTLET DATA

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1. Introduction

1.1 What is Architecture design document?

This document outlines the architectural design for implementing Analyzing Swiggy: Bangalore Outlet data analysis using Power BI, detailing system components and interactions.

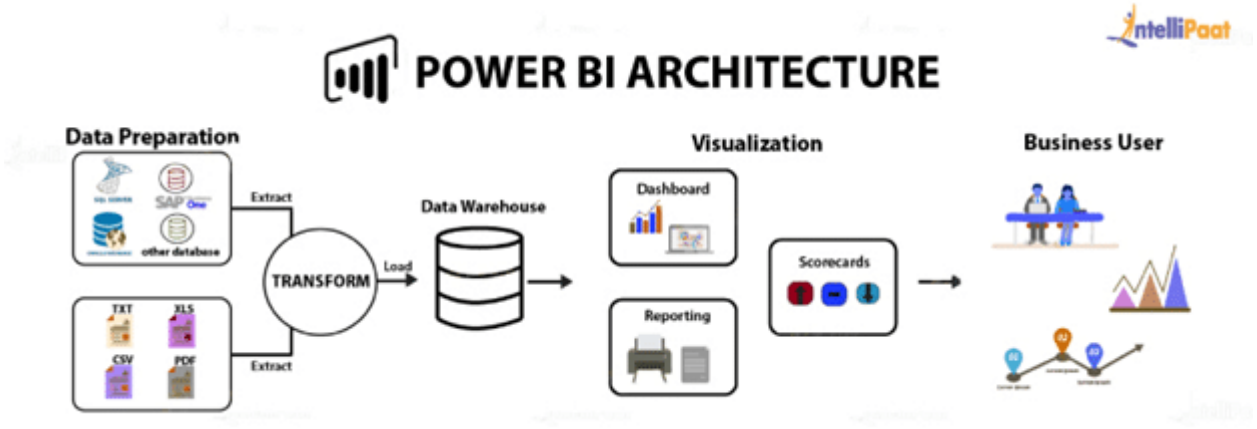
An Architecture Design Document (ADD) describes the conceptual model, structure, and behavior of a system. It serves as a blueprint for the system's development and deployment, ensuring that all stakeholders have a thorough grasp of its design. This article contains thorough explanations of the system's components, their relationships, and the underlying infrastructure necessary to run it.

1.2 Scope

Scope includes analyzing Swiggy data, sentiment, and trends to derive insights for business decisions using Power BI.

This paper describes an architectural design for analysing Swiggy's Bangalore delivery outlet data with Power BI. It describes the data extraction, transformation, and loading (ETL) method, important metrics and connections within the data, and the architecture for delivering the solution using Power BI.

2. Architecture



Power Bi Architecture

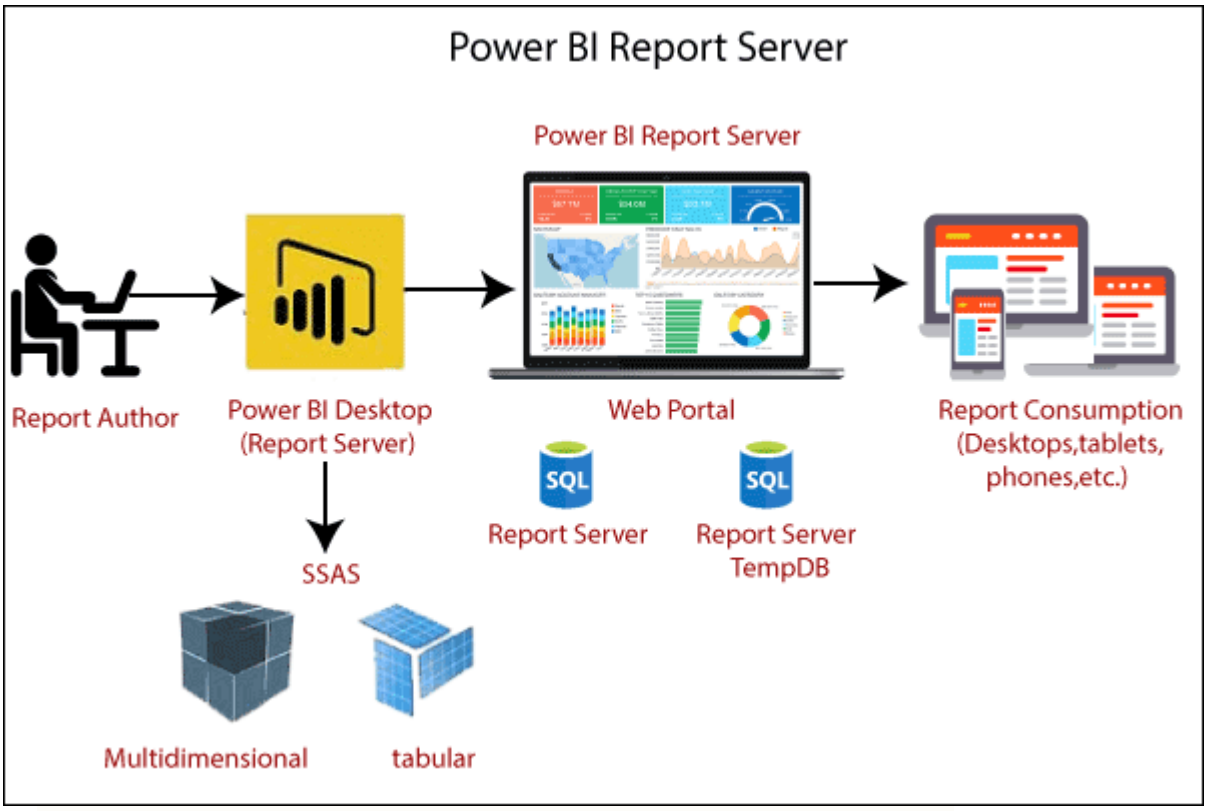
Power BI is a Microsoft business analytics solution that offers interactive visualizations and business intelligence capabilities through an easy-to-use interface that allows end users to generate their own reports and dashboards. Power BI's architecture consists of various components:

- Data Sources
- Power BI Desktop
- Power BI Service
- Power BI Mobile Apps
- Power BI Gateway
- Power BI Report Server

Power Bi Server Architecture

Details on the server-side architecture of Power BI, encompassing elements such as data connectors, data refresh, and security protocols.

The following diagram shows Power bi Server's Architecture:



Power bi Server is internally managed by the multiple server processes.

1. Gateway/Load Balancer

Explanation of how gateways and load balancers facilitate secure data connectivity and distribution within Power BI's ecosystem.

The gateway serves as a connection between the Power BI service and on-premises data sources, allowing for safe data transfer. The load balancer distributes network or application traffic across several servers to guarantee that no one server is overloaded, boosting speed and dependability.

2) Application Server:-

The application server in Power BI architecture manages the business logic and rules of the Power BI service, processing requests from the user interface and interacting with the data engine.

3) Repository:-

A repository for the Power BI server architecture document would include detailed diagrams, component descriptions, deployment options, and communication flows for reference and documentation purposes.

4) VIZQL Server:-

VIZQL (Visualization Query Language) server processes the queries generated by users' actions in Power BI. It converts data queries into visualizations efficiently.

5) Data Engine:-

The data engine oversees accessing the data, doing sophisticated computations, and returning the results to the application server. This is largely controlled by Power BI's VertiPaq engine, which is recognised for its in-memory storage and columnar compression techniques.

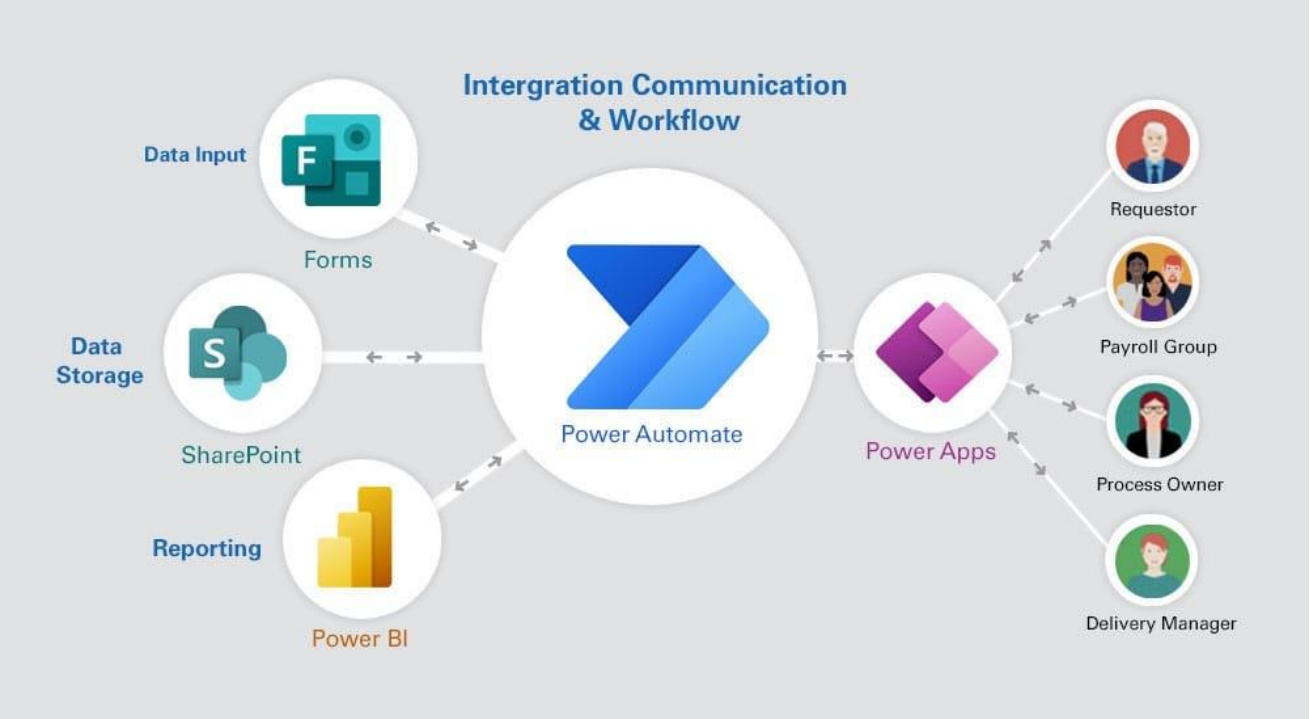
6) Backgrounder:-

Backgrounder handles the background tasks in Power BI, such as data refreshes, subscription processing, and other scheduled tasks. It ensures these processes do not impact the performance of the user-facing services.

7) Data Server:-

The data server manages the data storage and retrieval processes. It connects to various data sources, processes the data, and makes it available for querying by the data engine.

8) Power BI Communication Flow

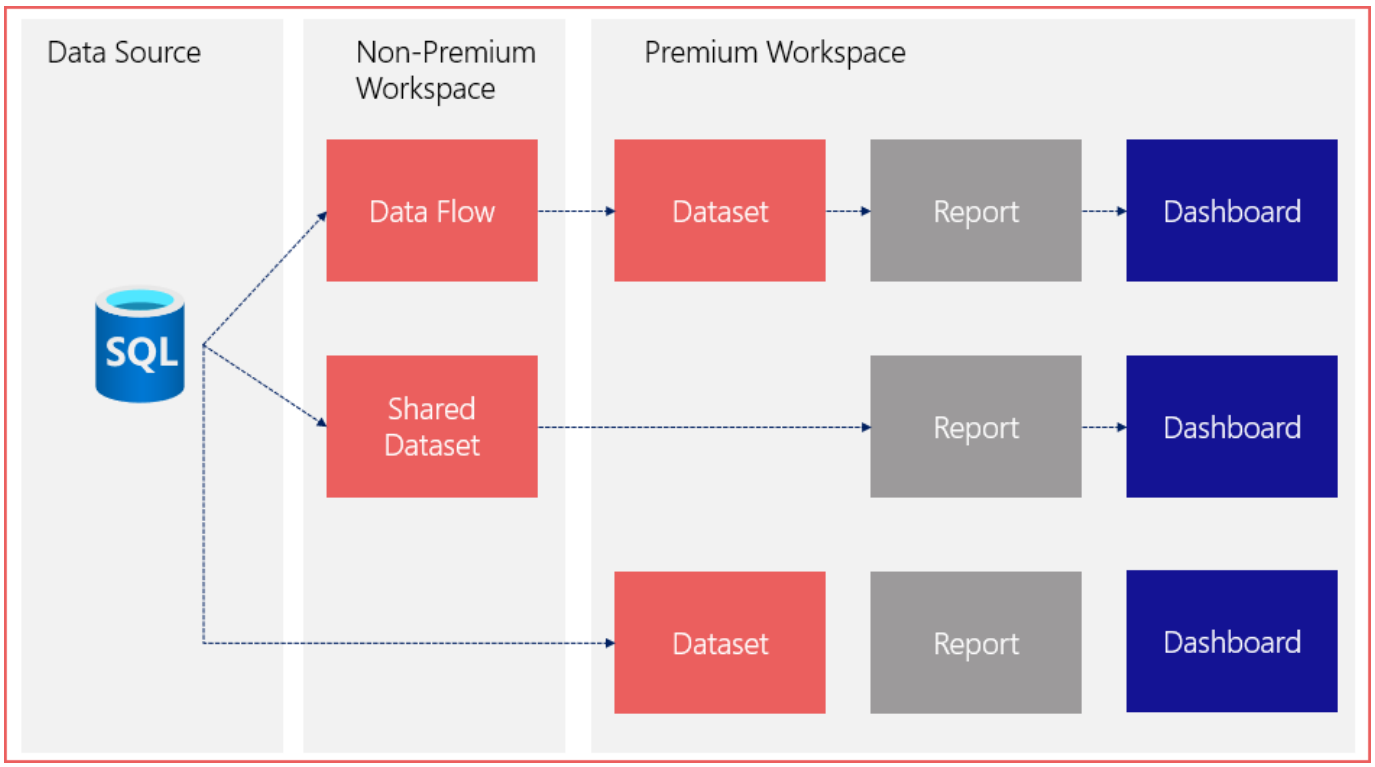


The Power BI communication flow involves interactions among various components for data retrieval and visualization. It begins with data sources, where data is extracted and transformed. Power BI Desktop or web interfaces connect to the Power BI Service, which manages report rendering, data storage, and user authentication. Visualization requests are processed by the VIZQL server, which communicates with the data engine for querying and aggregating data. Data refreshes are handled by the backgrounder process. Gateways facilitate secure data access. Finally, users interact with reports through web browsers or mobile devices, with data flowing securely between client-side interfaces and the Power BI cloud service.

3. Deployment Description

3.1 Deployment options in Powerbi

Overview of deployment choices, including Power BI Service, Power BI Report Server, and hybrid configurations.



1. Power BI Service (Cloud):
    a. Get started quickly with Power BI Service, a fully hosted solution by Microsoft.
    b. No hardware setup required; all upgrades and maintenance are managed automatically.
    c. Ideal for organizations looking for a hassle-free, cloud-based BI platform.
2. Power BI Report Server on Public Cloud:
    a. Benefit from the scalability and flexibility of cloud infrastructure while retaining control

over your BI environment.

b. Deploy Power BI Report Server on Amazon Web Services (AWS), Google Cloud Platform (GCP), or Microsoft Azure.

c. Choose between Windows or Linux environments based on your preferences.

d. Bring your own license or purchase directly from your preferred cloud marketplace.

3. Power BI Report Server On-Premises:

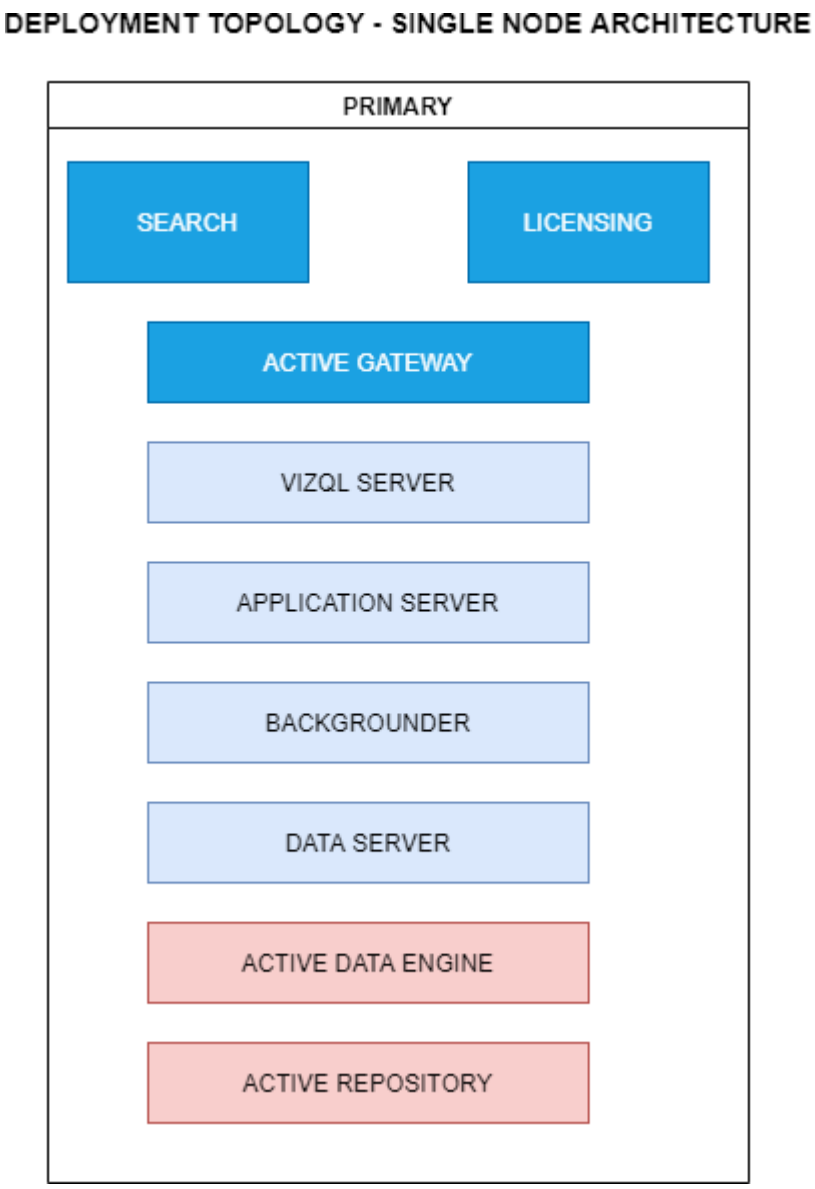
a. Manage and scale your Power BI infrastructure on your own hardware and software.

b. Install Power BI Report Server on-premises, allowing customization and full control over the deployment.

c. Support both Windows and Linux environments based on your organization's requirements.

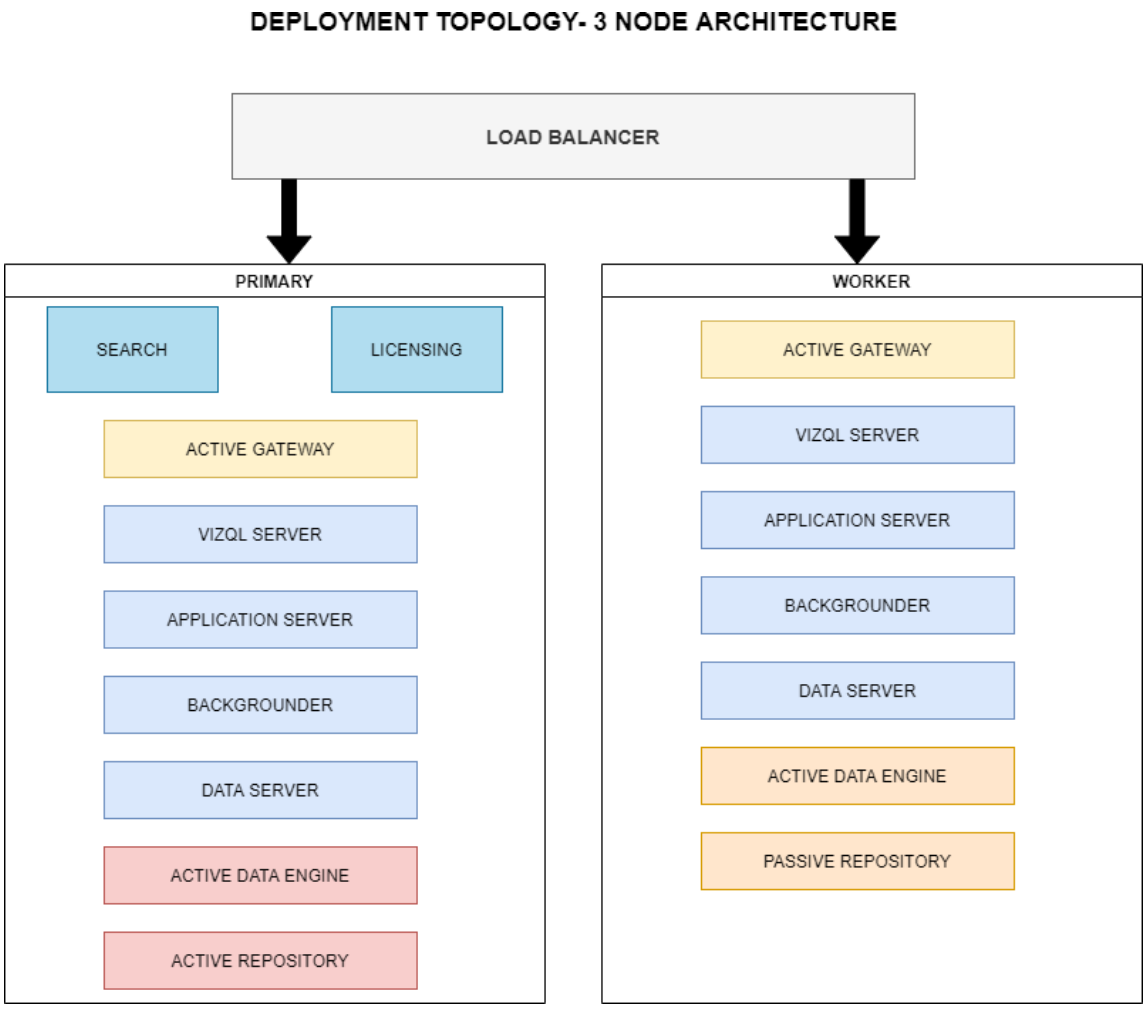
i. Each deployment option offers varying levels of control, scalability, and customization to suit different organizational needs and preferences for deploying Power BI.

3.2 Single Node Architecture



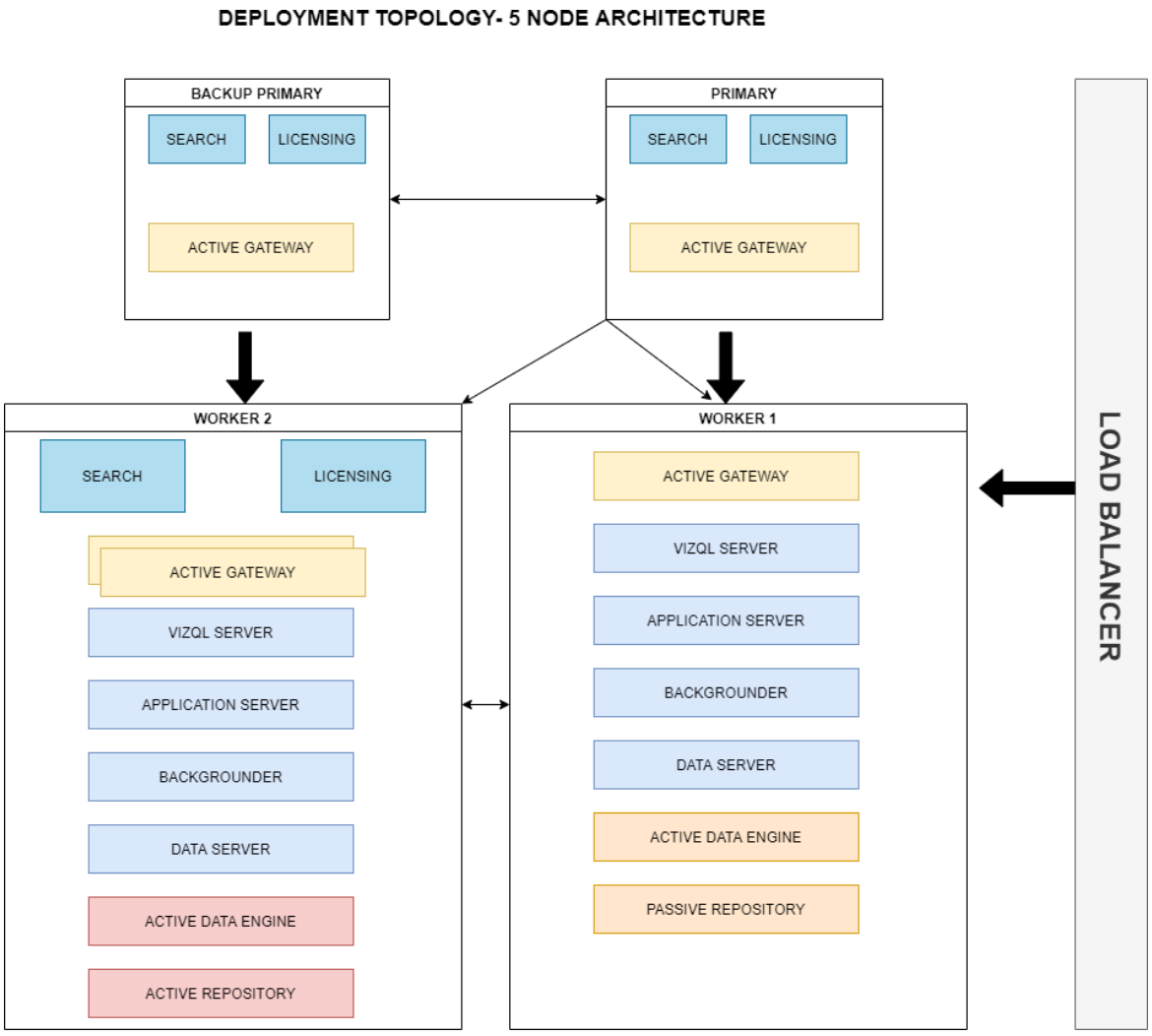
Description of a single-node Power BI deployment setup for smaller-scale Analyzing Swiggy Bangalore data analysis.

3.3) 3 Node Architecture



Explanation of a three-node Power BI deployment configuration for medium-scale data analysis and sharing.

3.4) 5 Node Architecture



Overview of a five-node Power BI deployment model suitable for large-scale, enterprise-level Swiggy data analysis projects.