Architecture Design

Crop Producon Analysis

Wrien By	Vinay Singh
Document Version	0.1
Last Revised Date	31-07-2023

DOCUMENT CONTROL

Change Record:

VERSION	DATE	AUTHOR	COMMENTS
0.1	29- July - 2023	Vinay Singh	Introducon and architecture defined
0.2	31 -July - 2023		Architecture & Architecture descripon appended and updated.

Reviews:

VERSION	DATE	REVIEWER	COMMENTS

Approval Status:

VERSION	REVIEW DATE	REVIEWED BY		APPROVED BY	COMMENTS

Contents

1. Introducon

1.1 What is Architecture design document?

Any soware needs the architectural design to represents the design of soware. IEEE defines architectural design as “the process of defining a collecon of hardware and soware components and their interfaces to establish the framework for the development of a computer system.” The soware that is built for computer-based systems can exhibit one of these many architectures.

Each style will describe a system category that consists of :

A set of components (eg: a database, computaonal modules) that will perform a funcon required by the system.

The set of connectors will help in coordinaon, communicaon, and cooperaon between the components.

Condions that how components can be integrated to form the system.

Semanc models that help the designer to understand the overall properes of the system.

1.2 Scope

Architecture Design Document (ADD) is an architecture design process that follows a step-by-step refinement process. The process can be used for designing data structures, required soware architecture, source code and ulmately, performance algorithms. Overall, the design principles may be defined during requirement analysis and then refined during architectural design work.

2. Architecture

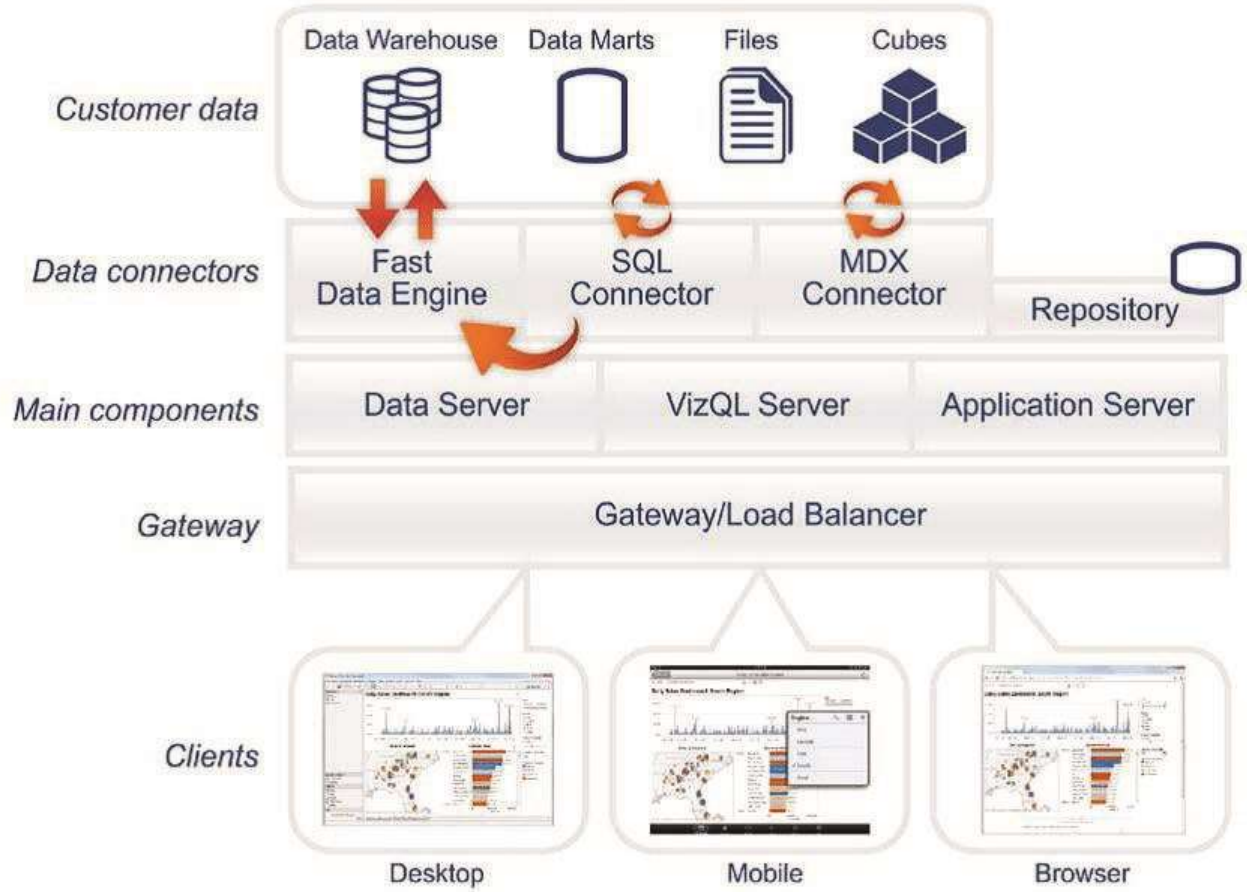


Tableau Server Architecture

Tableau has a highly scalable, n-er client-server architecture that serves mobile clients, web clients and desktop-installed soware. Tableau Server architecture supports fast and flexible deployments.

The following diagram shows Tableau Server's architecture:

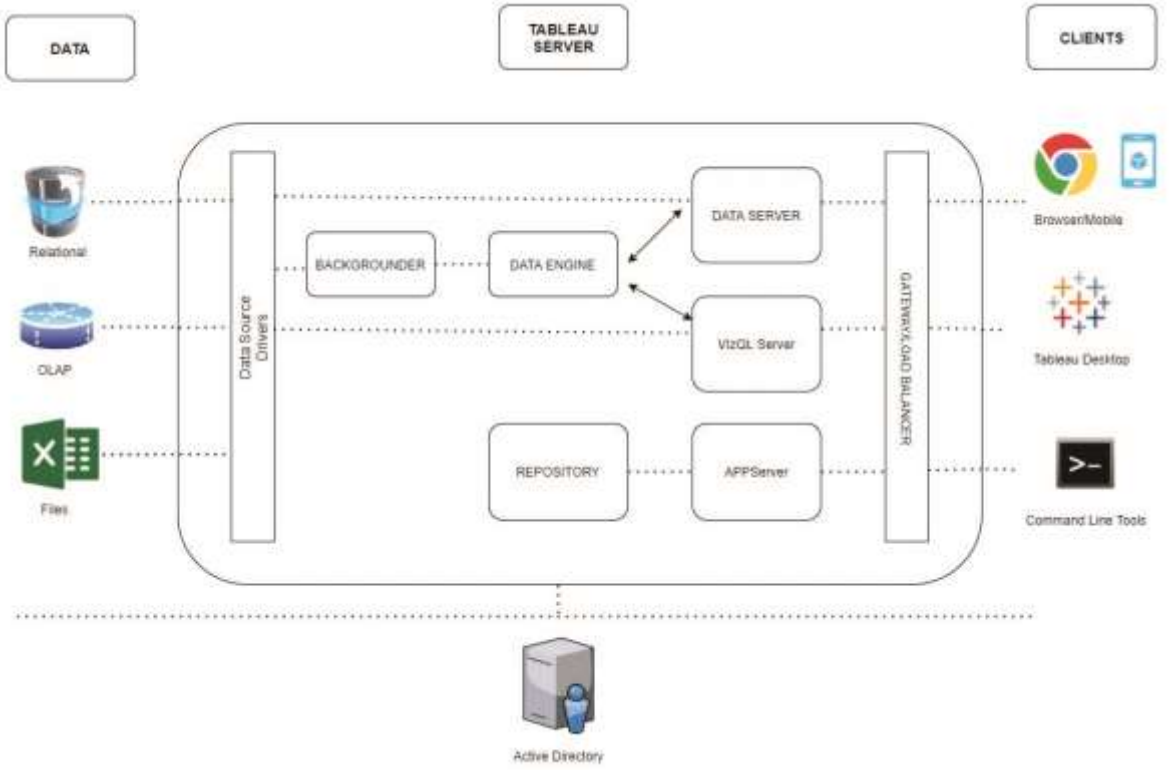


Tableau Server is internally managed by the mulple server processes.

1. Gateway/Load Balancer

It acts as an Entry gate to the Tableau Server and also balances the load to the Server if mulple Processes are configured.

2) Applicaon Server:-

Applicaon Server processes (wgserver.exe) handle browsing and permissions for the Tableau Server web and mobile interfaces. When a user opens a view in a client device, that user starts a session on Tableau Server. This means that an Applicaon Server thread starts and checks the permissions for that user and that view.

3) Repository:-

Tableau Server Repository is a PostgreSQL database that stores server data. This data includes informaon about Tableau Server users, groups and group assignments, permissions, projects, data sources, and extract metadata and refresh informaon.

4) VIZQL Server:-

Once a view is opened, the client sends a request to the VizQL process (vizqlserver.exe). The VizQL process then sends queries directly to the data source, returning a result set that is rendered as images and presented to the user. Each VizQL Server has its own cache that can be shared across mulple users

5) Data Engine:-

It Stores data extracts and answers queries.

6) Backgrounder:-

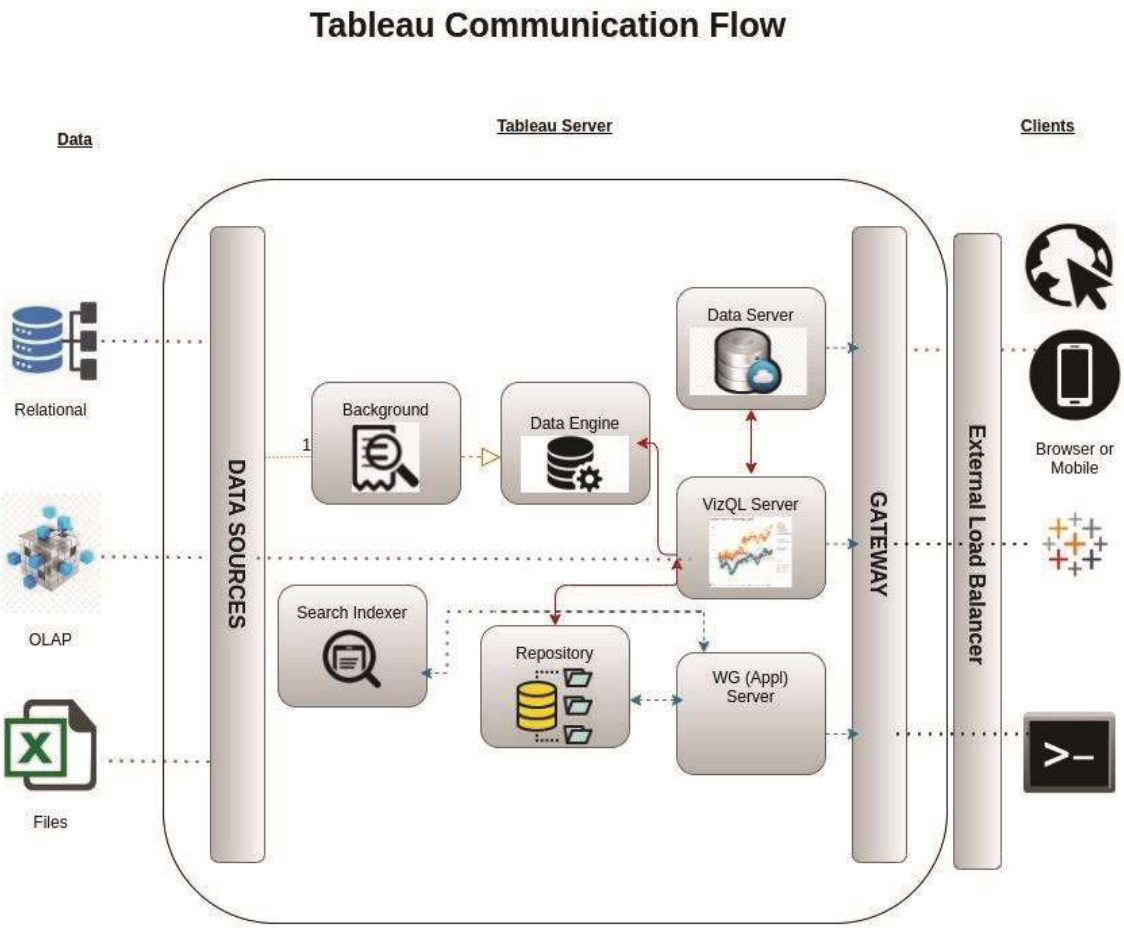
The backgrounder Executes server tasks which includes refreshes scheduled extracts, tasks iniated from tabcmd and manages other background tasks.

7) Data Server:-

Data Server Manages connecons to Tableau Server data sources

It also maintains metadata from Tableau Desktop, such as calculaons, definions, and groups.

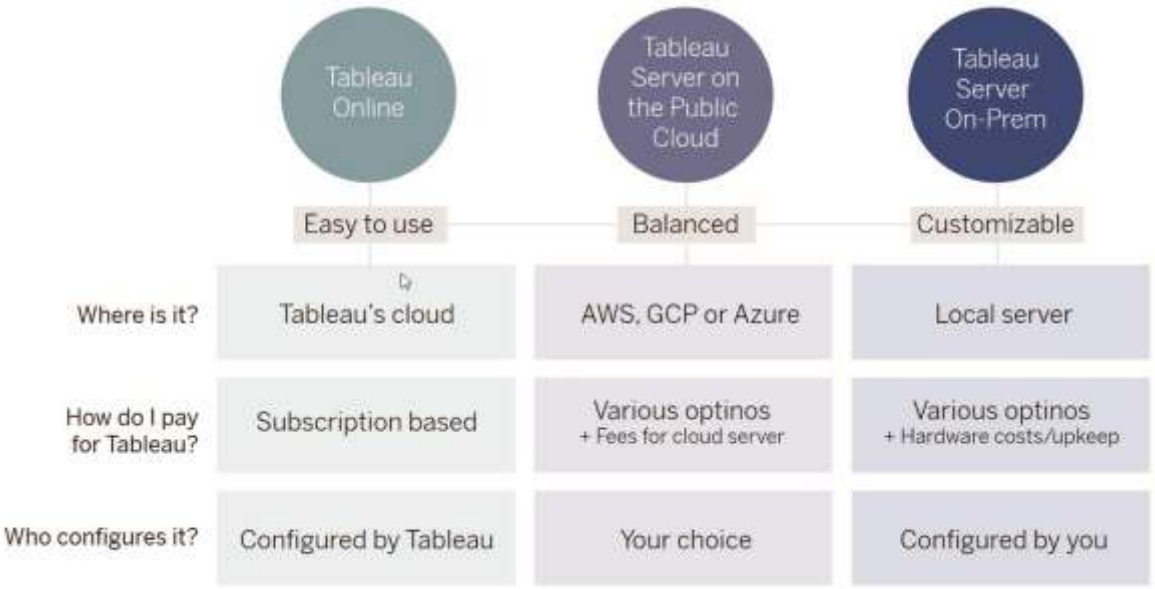
8) Tableau Communicaon Flow



3. Deployment Descripon

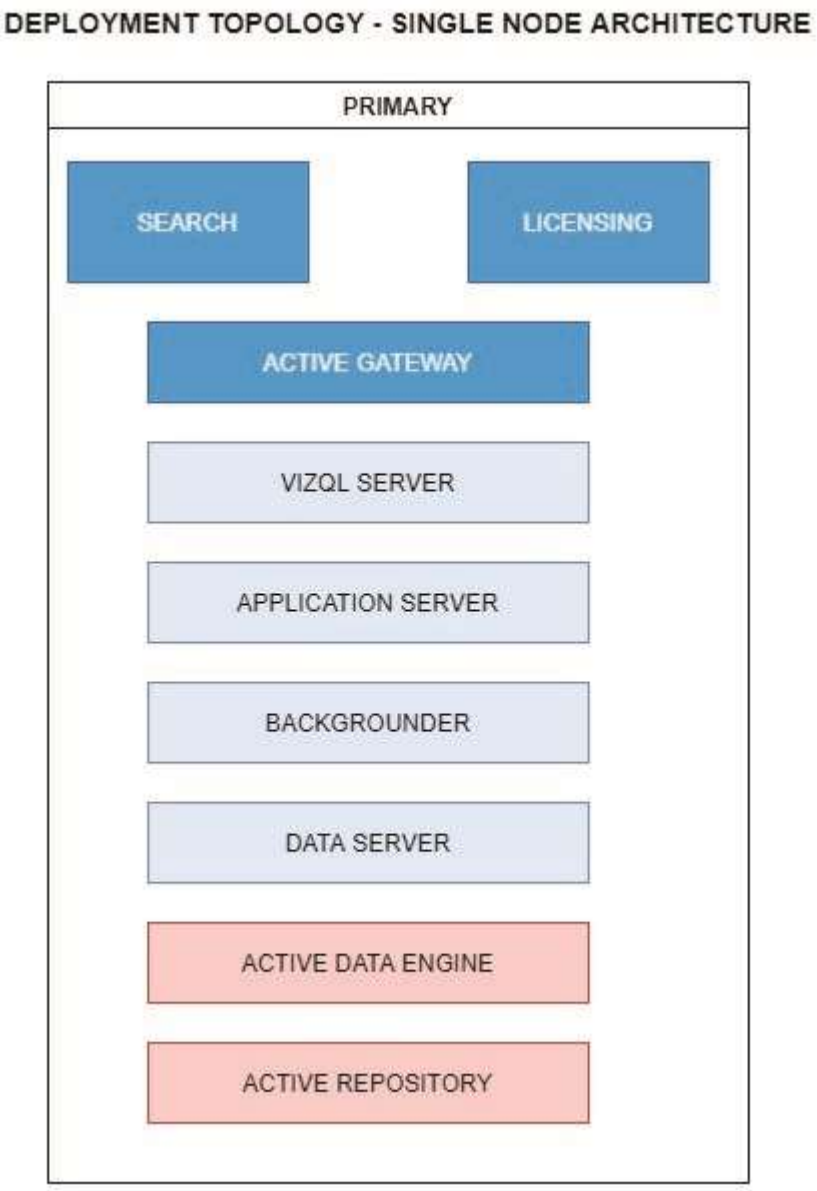
3.1 Deployment opons in Tableau

Tableau's analycs plaorm offers three different deployment opons depending on your environment and needs. The below graphic shows each opon at a glance:



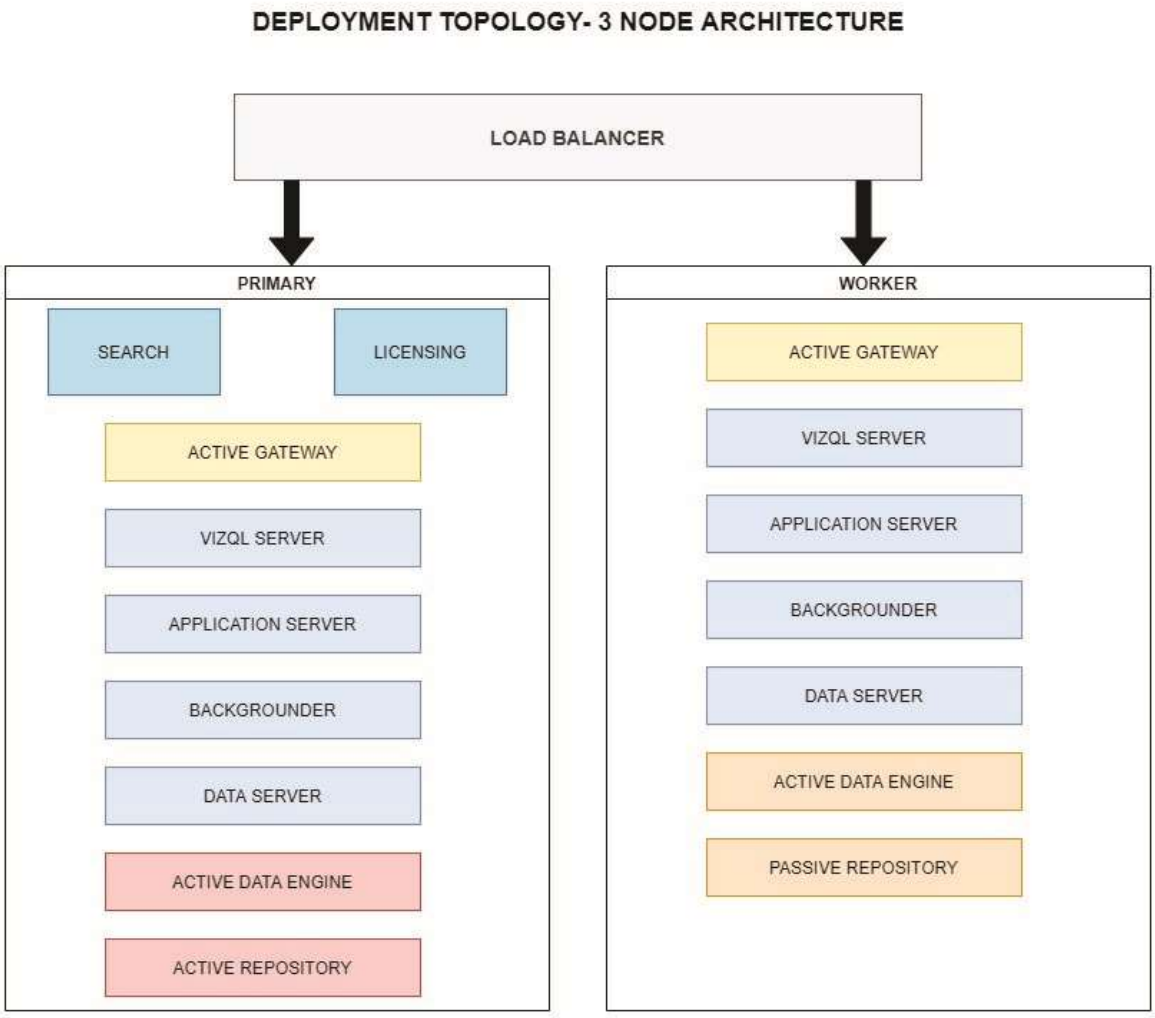
1. **Tableau Online** Get up and running quickly with no hardware required. Tableau Online is fully hosted by Tableau so all upgrades and maintenance are automacally managed for you.
2. **Tableau Server** deployed on public cloud: Leverage the flexibility and scalability of cloud infrastructure without giving up control. Deploy to Amazon Web Services, Google Cloud Plaorm, or Microso Azure infrastructure to quickly get started with Tableau Server (on your choice of Windows or Linux). Bring your own license or purchase on your preferred marketplace.
3. **Tableau Server deployed on-premises**: Manage and scale your own hardware and soware (whether Windows or Linux) as needed. Customize your deployment as you see fit.

3.2 Single Node Architecture



This architecture is a single node architecture. This is the most simple deployment topology.

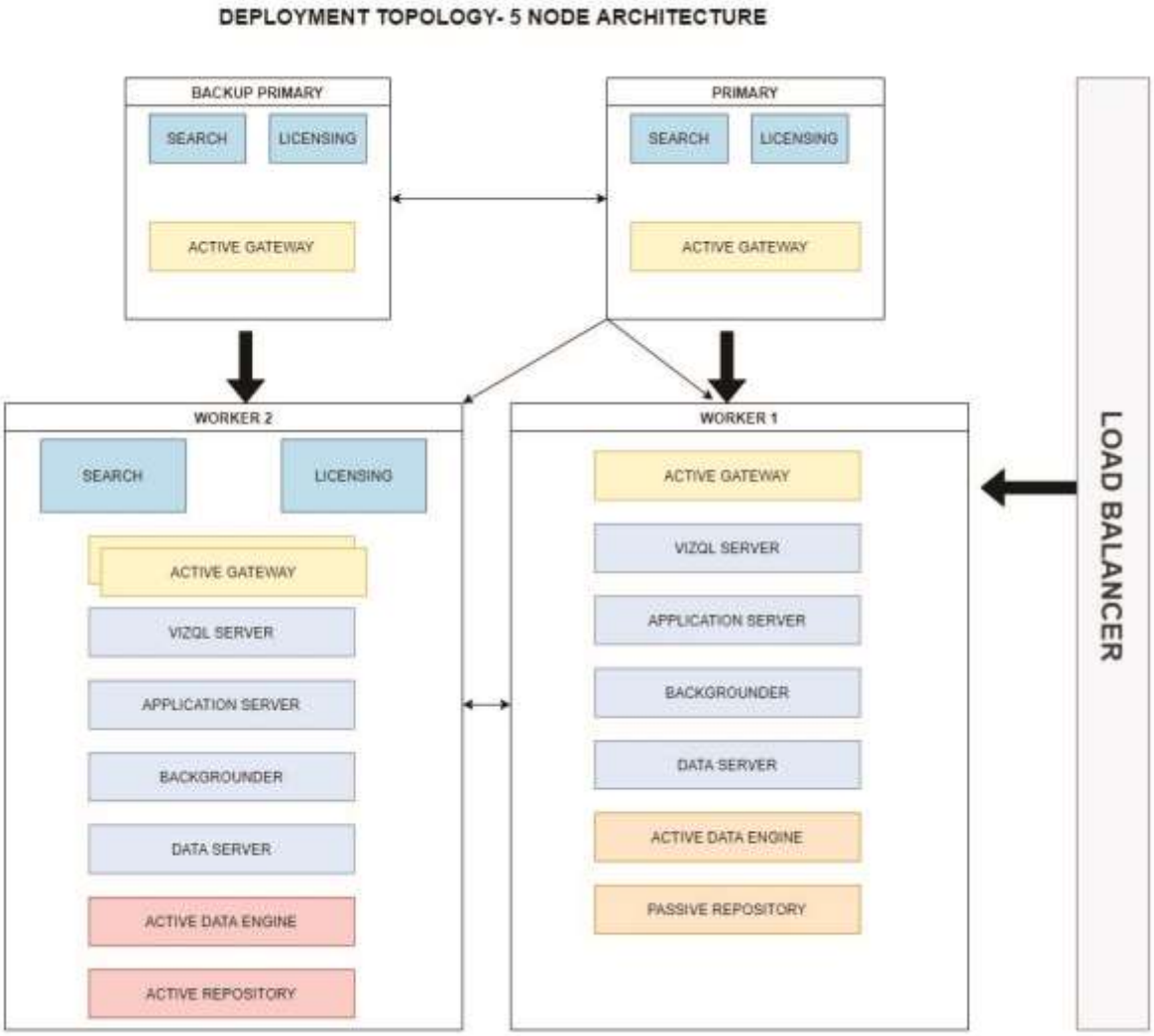
3.3) 3 Node Architecture



This architecture is a 3 Node Architecture which is more capable to handle concurrent requests.

If we need failover or high availability, or want a second instance of the repository, we must install Tableau Server on a cluster of at least three computers. In a cluster that includes at least three nodes, you can configure two instances of the repository, which gives our cluster failover capability.

3.4) 5 Node Architecture



When we install Tableau Server on a Five-node cluster, we can install server processes on one or both nodes. A five-node cluster can improve the performance of Tableau Server, because the work is spread across mulple machines.

Note the following about five-node clusters:

A five-node cluster does not provide failover or support for high availability.

You can't install more than one instance of the repository on a two-node cluster, and the repository must be on the inial node.