Next.js + MongoDB on Azure

A. User Traffic & Entry Points

1. **User Devices** (Web & Mobile)
   - Users access your Next.js application via **browsers (Chrome, Edge, Firefox, Safari) or mobile apps**.
2. **Traffic Sources**
   - Organic traffic (Google, Bing, Direct visits)
   - Paid Ads (Google Ads, Facebook, LinkedIn)
   - API integrations (Third-party services accessing your API)
3. **Azure Front Door / Azure CDN (Optional)**
   - **Enhances performance** by caching static assets (CSS, JS, images).
   - **Distributes traffic globally** to reduce latency.

B. Application Layer (Next.js API & Frontend)

4. **Azure App Service (Next.js Deployment - Node.js Runtime)**
   - Hosts your **Next.js server-side API routes** (`/api/...`) and **frontend React pages**.
   - Scales automatically **based on traffic load**.
5. **Next.js API Routes** (Serverless Functions)
   - Handles user authentication, product fetching, order processing.
   - Communicates with **MongoDB & external APIs**.
6. **Azure API Management (APIM) (Optional)**
   - Manages **rate limits, authentication & logging** for APIs.
   - Protects APIs from **malicious traffic**.

C. Database & Storage Layer

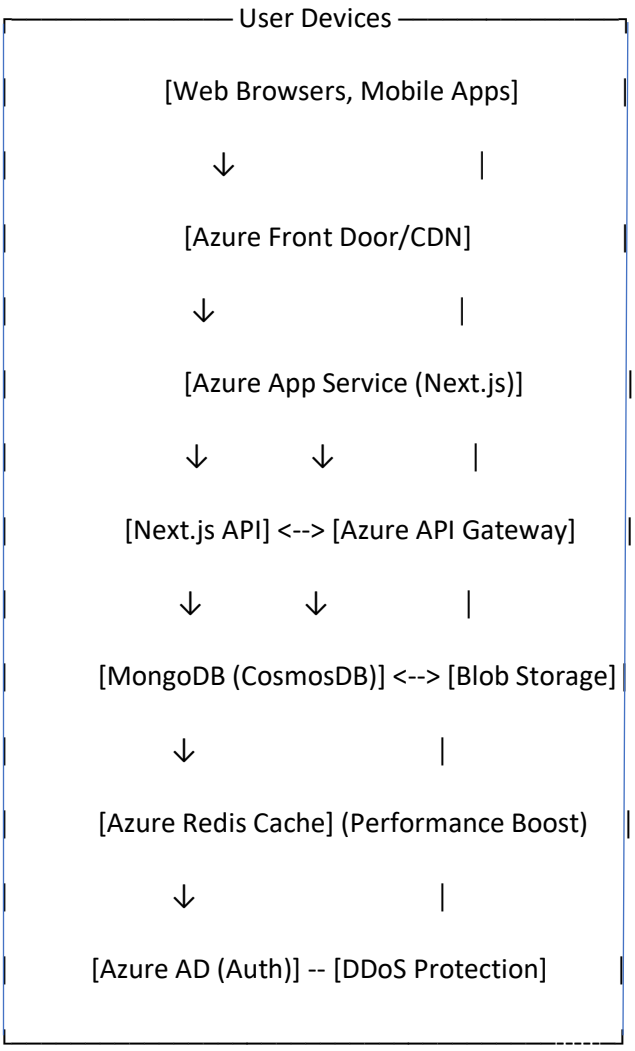
7. **Azure Cosmos DB (MongoDB API) (Database Storage)**
   - Stores structured/unstructured data such as **users, products, orders, payments**.
   - Auto-scales to **handle traffic spikes**.
8. **Azure Cache for Redis (Optional, Performance Boost)**
   - **Caches frequently accessed MongoDB queries** to **reduce response time**.
   - Helps **Next.js API endpoints serve faster requests**.

D. Authentication & Security

10. **Azure Active Directory (Azure AD) for User Authentication**
    - Handles **OAuth, JWT, Google/Facebook sign-ins**.
    - Protects against **unauthorized access**.
11. **Azure DDoS Protection & WAF (Web Application Firewall)**
    - Defends against **DDoS attacks, SQL Injection, and XSS attacks**.

- Protects Next.js API routes & MongoDB queries.

Network Diagram


User Devices
[Web Browsers, Mobile Apps]
[Azure Front Door/CDN]
[Azure App Service (Next.js)]
[Next.js API] <--> [Azure API Gateway]
[MongoDB (CosmosDB)] <--> [Blob Storage]
[Azure Redis Cache] (Performance Boost)
[Azure AD (Auth)] -- [DDoS Protection]

Content Delivery Network(CDN)

Content Replication:

Web content, such as images and videos, is duplicated and stored on multiple servers globally.

Geographic Distribution:

These servers, part of the CDN, are strategically placed in various locations around the world.

User Request:

When a user requests content, the CDN automatically determines the nearest server to fulfill the request.

Cache Mechanism:

Frequently requested content is stored on these servers, reducing the need to fetch it from the original server.

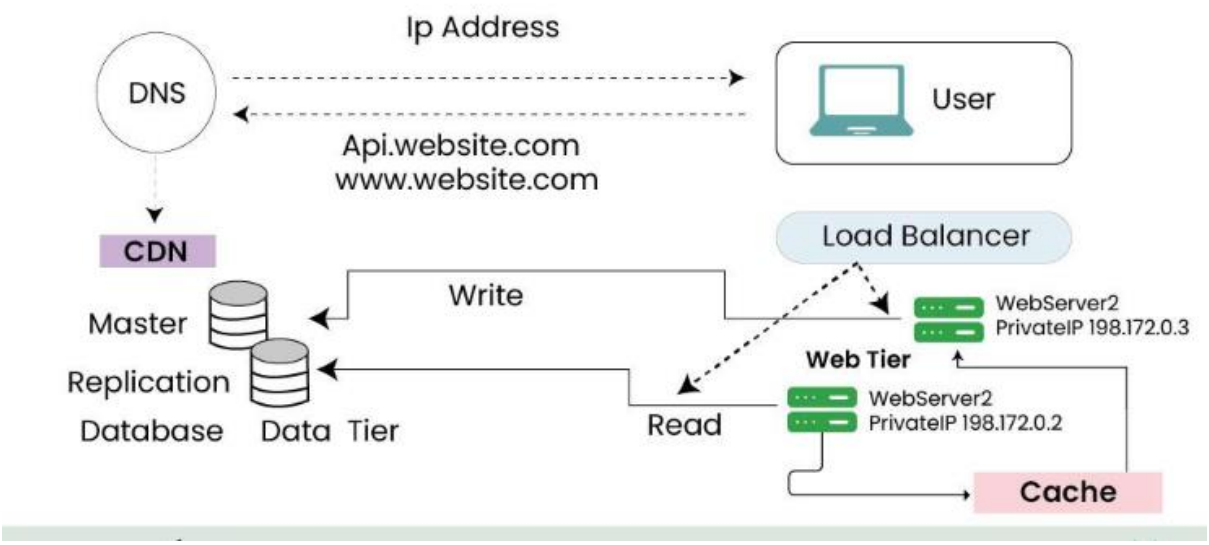
Load Balancing:

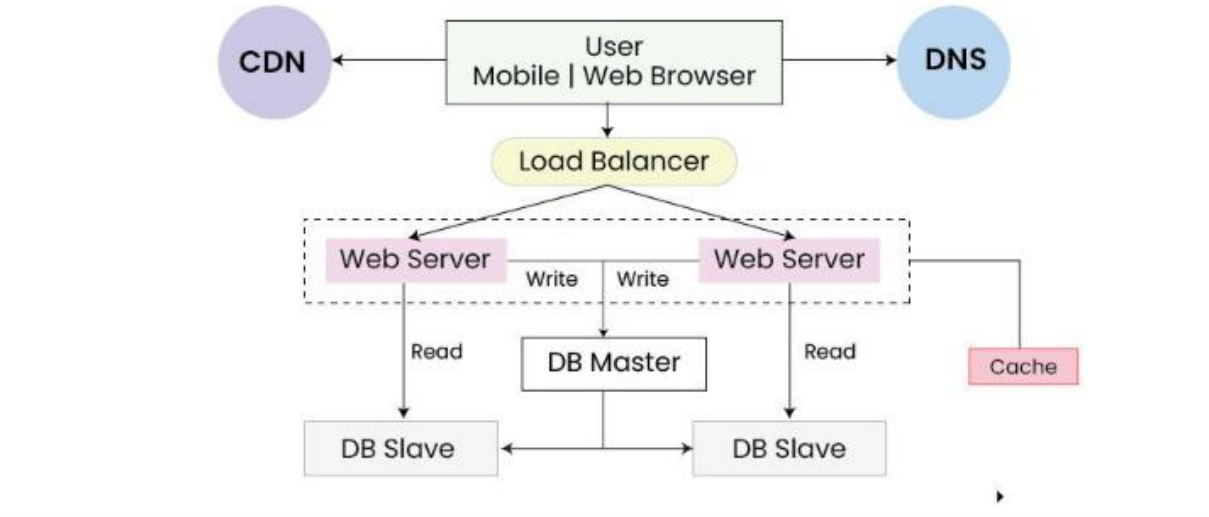
Traffic is evenly distributed among multiple servers, preventing overload on any single server.

Minimized Latency:

By serving content from nearby servers, the CDN reduces the time it takes for content to reach the user.

Diagram


Ip Address
DNS
User
Api.website.com
www.website.com
CDN
Load Balancer
Write
Master
Replication
Database
Data Tier
WebServer2
PrivateIP 198.172.0.3
Web Tier
WebServer2
PrivateIP 198.172.0.2
Read
Cache


CDN
User
Mobile | Web Browser
DNS
Load Balancer
Web Server
Write
Write
Web Server
Read
DB Master
Read
Cache
DB Slave
DB Slave