Software Design Document

Service of Validity of a Passport

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Revision History

Date	Version	Description	Author
20.05.2019	1.0	Initial version	Alexey Borovkov

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Introduction

This document provides a high-level architecture of the Service of Validity of a Passport. The document defines goal of the architecture, the use cases supported by the system, architectural styles and components that have been selected. The document provides a rationale for the architecture and design decisions made from the conceptual idea of its implementation.

System Purpose

Service of Validity of a Passport serves to provide clients actual information about persons passport's data based on data retrieved from the database of invalid passports of Federal Migration Service of the Russian Federation.

Usage Data flow Diagram

Product Features

This system is designed to serve only one purpose - to get an answer if a given passport is valid or not. To provide such functionality the system should implement:

a) obtaining, storing information about all invalid passports

b) searching given passport inside internal data storage.

Assumptions and dependencies

This system should obtain information from the Federal Migration Service website, which provides it via CSV file format in compressed view. Nowadays this file contains more than 120 millions of records and we suppose that this data volume will continue to grow slowly.
Federal Migration Service says that information on their website updates daily. So, to provide fresh data to clients we should foresee updating with the same frequency.

FMS file can be accessed by this address:
http://guvm.mvd.ru/upload/expired-passports/list_of_expired_passports.csv.bz2

Non-Functional Requirements

The system should satisfy these **constraints**:

- Uptime 99%
- Response time 1ms

The system should have these **qualities:**

- Fault tolerance during data updating

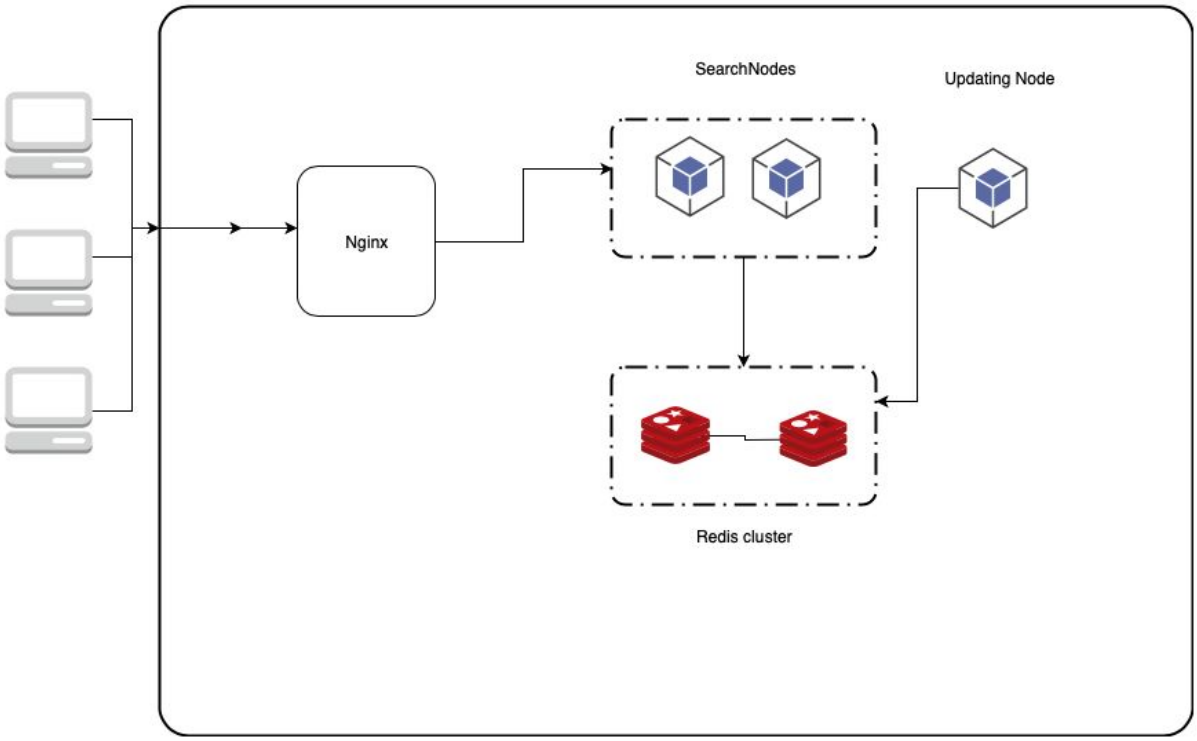
Structure

The purpose of this section is to describe the static structure in terms of its logical components and their interconnections.

Overview

Service of Validity of a Passport consists of the following components:

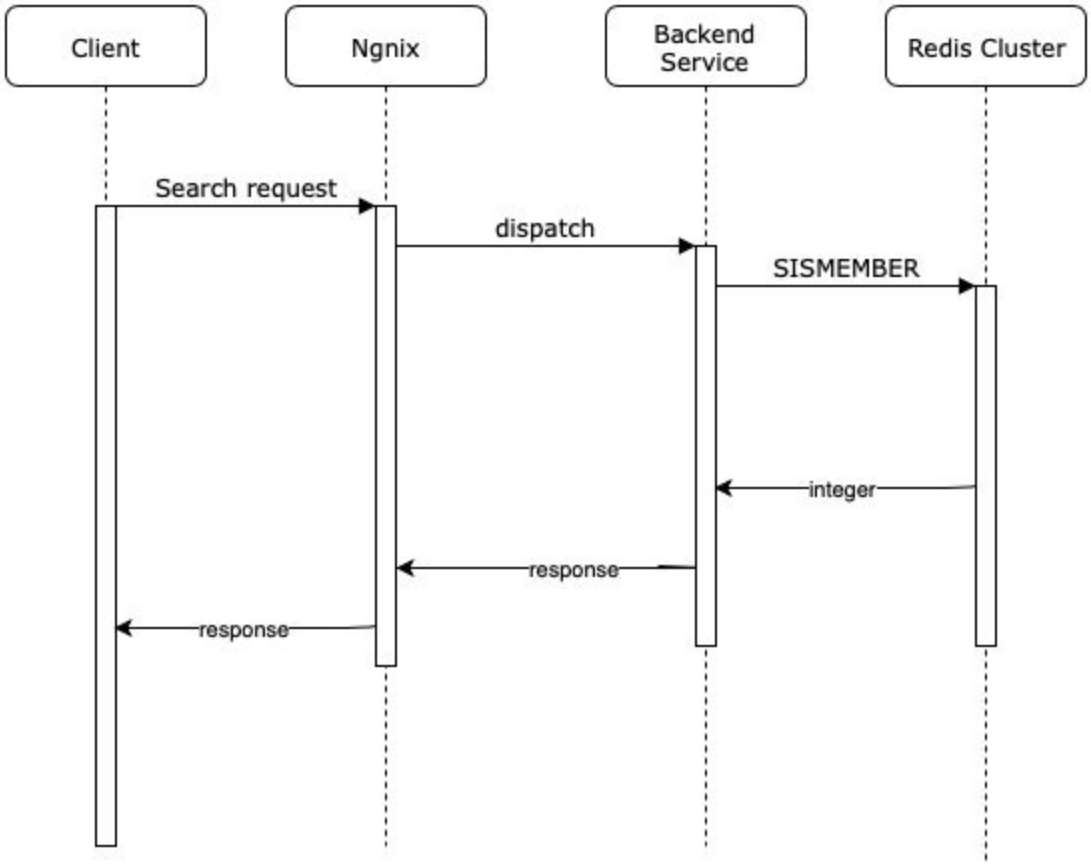
- **Backend Service** - PHP application that implemeting EMS file obtaining, storing file's information and handles the passport search queries.
- **Redis Cluster** - that acts as data persistence storage.
- **Ngnix** - that acts as load balancer



Dynamic Behavior

The dynamic behavior section specifies the behavior of the system into more details.

Search request use case will be performed in this order



Uploading information process description.

This process consists from several stages:

1. File uploading
2. Checking md5 of file and comparing it with prev uploaded
3. Splitting file on several chunks
4. Processing chunk: writing its data to SET structure in Redis
5. Removing processed chunk

Considerations of the process.

1. To achieve fault tolerance its rationally to split file on chunks which each size does not exceeds 100.000 records.
2. Cron daemon can be used to provide chunk processing
3. Splitted chunks can be stored in directory which name contains current date

Conclusion

Described architecture covers all use cases specified into assignment requirements. Its contains minimal required system behavior.

Tasks and estimates

Task	Category	Description	Estimate
Passport query	dev	Check if redis contains information about given passport	0.5 day pessimistic
Database File uploading, processing	dev	Upload file, check md5, split into chunks, process chunk, etc	1-1.5 days pessmistic
System configuration	adm	Setup Linux server, php, fpm,	1 day