

# RiskProfiler Cloud Architecture

RiskProfiler application includes 4 front facing application:

* ElasticSearch REST API
* Kibana Dashboard
* Pygeoapi
* RiskProfiler website
* S3 public bucket for file distribution

These applications are hosted on various AWS services as illustrated in the diagram. The components in the diagram are described below.

**Transit Gateway:** Used for routing traffic between VPCs and to the Internet. It is deployed and managed by CIOSB.

**AWS ALB Kibana Dashboard and ElasticSearch API:** Application Load Balancer with network interfaces deployed in Edge VPC to provide public access to Kibana dashboard and ElasticSearch REST APIs. This load balancer handles requests for two host names (dashboard.riskprofiler.ca, api.riskprofiler.ca) and forwards the requests to the AWS ELB for Kibana or ElasticSearch.

**AWS ELB Kibana Dashboard:** Elastic Load Balancer for exposing Kibana Dashboard Kubernetes service in AWS EKS cluster. The network interfaces for this load balancer are deployed in Private VPC OZ subnets. It forwards the requests to auto scaling group of Kibana nodes in OZ subnets.

**AWS ELB ElasticSearch API:** Elastic Load Balancer for exposing ElasticSearch Kubernetes service in AWS EKS cluster. The network interfaces for this load balancer are deployed in Private VPC OZ subnets. It forwards the request to auto scaling group of ElasticSearch Nodes in RZ subnets.

**AWS EKS:** AWS managed Kubernetes service. Used for hosting ElasticSearch and Kibana applications. It includes two sets of auto scaling EC2 nodes that are deployed in OZ and RZ subnets.

**Pygeoapi API:** Consists of two AWS services (API Gateway and Lambda) as a serverless solution for Pygeoapi application. The application itself runs as a Lambda function. It uses ElasticSearch as a data provider and the communication is done through the Lambda network interfaces that are deployed in the Private VPC OZ subnets.

**AWS Aurora Postgresql DB:** AWS serverless Postgresql database. The data in this database is only being used for populating indices in ElasticSearch using scripts that extract and process the data. The network interfaces for this database are deployed in Private VPC RZ subnets.

**RiskProfiler Website:** Static website with the source code hosted in a private S3 bucket and is served securely through AWS CloudFront.

**AWS S3 Public Bucket:** Publicly accessible read-only S3 bucket for file distribution.

**EC2 Operations Host:** An EC2 instance for accessing EKS and other services inside the Private VPC. The access to this instance is accessible only through CIOSB’s bastion host.

**EC2 CIOSB Bastion Host:** EC2 instance for accessing Operations Host instance inside Private VPC.

# Public Endpoint

|  |  |  |  |
| --- | --- | --- | --- |
| Environment | Dev | Stage | Prod |
| Pygeoapi API | <https://geo-api.dev.riskprofiler.ca> | <https://geo-api.stage.riskprofiler.ca> | <https://geo-api.riskprofiler.ca> |
| ElasticSearch API | <https://api.dev.riskprofiler.ca> | <https://api.stage.riskprofiler.ca> | <https://api.riskprofiler.ca> |
| Kibana Dashboard | <https://dashboard.dev.riskprofiler.ca> | <https://dashboard.stage.riskprofiler.ca> | <https://dashboard.riskprofiler.ca> |
| Wordpress | <https://dev.riskprofiler.ca> | <https://stage.riskprofiler.ca> | <https://riskprofiler.ca> |