

Load balancer with service turn-off

Task 6

Product description

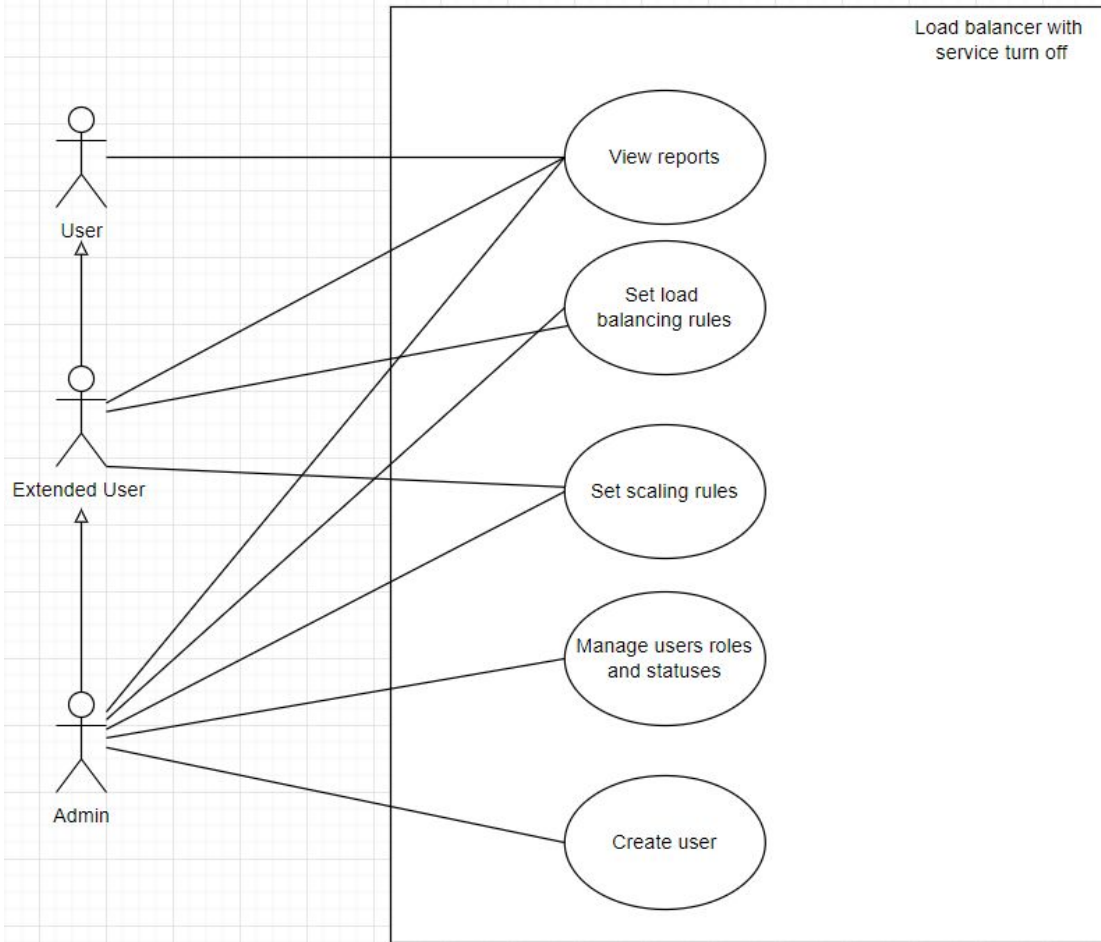
Product Description: A cloud-native service designed to enhance application scalability and performance in Kubernetes (K8s) environments, specifically targeting machine learning (ML) applications with unique scaling and resource requirements.

Team: Sergey Lokhmatikov, Andrey Tamplon, Roman Kuzmenko, Vasiliy Lopatkin

Repo: https://github.com/Lokhmat/k8s_nemesis

Report: <https://clck.ru/3DmXdX>

Use case diagram



Interaction analysis: CRC cards

User	
Responsibility	Colaborator
Knows user info	UserManager

MetricsCollector	
Responsibility	Colaborator
Collects metrics from pods	Pods Metrics

LoadBalancer	
Responsibility	Colaborator
Sets and holds load balancing algorithm Balances requests	Pod

userManager	
Responsibility	Colaborator
Creates, reads, updates and deletes users Knows current users	AdminPanel User

Metrics	
Responsibility	Colaborator
Holds overall metrics and metrics for pod	PodMetrics

ScalingEngine	
Responsibility	Colaborator
Sets scaling rules Manages cluster scaling Holds list of scaling rules	Pod ScalingRule

AdminPanel	
Responsibility	Colaborator
Coordinate operations between components, Returns metrics Sets load balancing algorithm and scaling rule	UserManager System

PodMetrics	
Responsibility	Colaborator
Metrics specific to the pod	Pod

ScalingRule	
Responsibility	Colaborator
Holds thresholds for scaling engine	Threshold

System	
Responsibility	Colaborator
Coordinate operations between components, Returns metrics Sets load balancing algorithm and scaling rule Link to LoadBalancer ScalingEngine MetricsCollector	LoadBalancer ScalingEngine MetricsCollector Pod

Pod	
Responsibility	Colaborator
Holds Id and status of a pod	

Threshold	
Responsibility	Colaborator
Holds threshold values	

Interaction analysis: Cooperation

Cooperation table

	View report	Set Load Balancing Rules	Setting scaling rules	Manage user roles and statuses	Create user
User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
User Manager	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Admin Panel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
System	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
MetricsCollector	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Metrics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PodMetrics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Pod	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
LoadBalancer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>ScalingEngine</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<u>ScalingRule</u>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Threshold	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Updated class diagram

