

# Software Requirement Specification for Kubesimpctl

By Kubesimplify

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Github Link: <https://github.com/dipankardas011/Kubesimpctl> (Subjected to change)

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# Changelog

Name	Date	Remark	Status	Version

# Purpose

Kubernetes Distribution that can create clusters and HA clusters in local as well as on cloud platform

# Abstract

Using Different cloud providers APIs(AWS, GCP, Azure, etc) to create and manage K8s clusters in a single CLI call!







For the Local cluster, it uses API calls to Docker for creating both HA or multi-node clusters

# Project Scope

Users who use Kubernetes and want a simpler CLI tool that can handle multiple clusters through a single CLI interface

will simplify the cluster creation and deletion rather than using all sorts of tools to create and delete clusters on cloud providers.

# Symbols

- -> UnPlanned
- -> Started
- -> EarlyStage(Latest)
- -> Development
- -> Testing
- -> Added

# Functional Requirements

## 1. Local Kubernetes Cluster

### 1.1. Local Kubernetes cluster (Docker containers)

Using Containers to create nodes and connect them together

#### 1.1.1. Create Cluster

##### STATUS

##### 1.1.1.1. Create Profile

*Description:* Create Kubernetes Cluster with the given name, name is unique among different clusters and used for each cluster for its naming

*Input:* user provides cluster name with valid parameters Ex. no. of nodes

*Output:* Created the profile with the given name

##### 1.1.1.2. Create Nodes

*Description:* Creating node for the cluster as per the requests

*Output:* Status of node creation is displayed

##### 1.1.1.3. Configure Control Nodes & Worker Nodes

*Description:* Configure the nodes install the required components

*System:* Scripts to configure the nodes and connect to the control node

*Output:* Status of Kubernetes on all the nodes

##### 1.1.1.4. Get Kubeconfig file

*Description:* Copy the Kubeconfig file from control plane to the host computer

*Output:* Saved the file to some default location

#### 1.1.2. Delete Cluster

##### STATUS

##### 1.1.2.1. Delete Profile

*Description:* User gives the profile to delete

##### 1.1.2.2. Delete Nodes

*Description:* Cleanup the nodes/containers associated with the profile

##### 1.1.2.3. Delete Context

*Description:* Remove the profile from the list

*Output:* Deleted the Profile/Cluster successfully

#### 1.1.3. View Clusters/Profiles

##### STATUS

##### 1.1.3.1. Get the Profiles

*Description:* View all the cluster with are available to be used

*Output:* List of all the profiles

#### 1.1.4. Context Switch

##### STATUS

##### 1.1.4.1. Switch Current Profile

*Description:* user can switch from the current profile to another one. For example from (default) to prod-cluster

*Output:* Current context switched

#### 1.1.5. Start/Stop Clusters

##### STATUS

##### 1.1.5.1. Get the cluster/profile name

*Description:* user can stop their cluster and restart the cluster when needed.

*Output:* Cluster <> Stopped/Started

#### 1.1.6. Check requirements

##### STATUS

##### 1.1.6.1. Check Prerequisites

*Description:* The user needs to check the requirements and which commands are not available

*Output:* requirements which are Available, Not-Available

## 2. Cloud Provider Cluster

### 2.1. Amazon EKS

#### 2.1.1. Create Cluster

##### STATUS

#### 2.1.2. Delete Cluster

##### STATUS

#### 2.1.3. View Clusters/Profiles

##### STATUS

#### 2.1.4. Context Switch

##### STATUS

### 2.1.5. Check requirements

**STATUS**

## 2.2. Azure AKS

### 2.2.1. Create Cluster

**STATUS**

### 2.2.2. Delete Cluster

**STATUS**

### 2.2.3. View Clusters/Profiles

**STATUS**

### 2.2.4. Context Switch

**STATUS**

### 2.2.5. Check requirements

**STATUS**

## 2.3. Civo K3s

### 2.3.1. Create Cluster

**STATUS**

- Read the apikey from .civo.json from the local system and

### 2.3.2. Delete Cluster

**STATUS**

### 2.3.3. View Clusters/Profiles

**STATUS**

### 2.3.4. Context Switch

**STATUS**



### 2.3.5. Check requirements

STATUS

## Non-Functional Requirements

### 1. Constraints

#### Local System

Hardware: RAM > 6Gi and CPU > 3 cores

Software: Linux, Windows, and macOS with Docker

#### Cloud providers

Hardware: N/A

Software: Depends on providers (PaaS)

### 2. Safety

- Local Environment
  - Deleting one cluster does not delete other cluster's containers
  - Preserve the data till the cluster is deleted
- Cloud provider
  - As PaaS offering infrastructure is provider's responsibility, but the application and operational safety is the responsible of admins

### 3. Security

- LocalEnvironment
  - The containers should not be accessible by other containers running
- Cloud provider
  - Application security and other operational security like RBAC, etc.

## SDLC Model

@@END

## Related links

<https://kubernetes.io/docs/reference/ports-and-protocols/>

<https://github.com/dipankardas011/Kubesimpctl/blob/main/docs/proposals.md>