**Ingress Controller**

**TL;DR**

An ingress controller is a piece of software that provides reverse proxy, configurable traffic routing, and TLS termination for Kubernetes services. The another important issue to should be solved is to expose the services, which are serving to end-user as frontend or API, to out of Kubernetes cluster with some rules. Ingress Controller technology is pointed to all of these topics across Kubernetes environments.

**Ingress Controller Decision**

As a result of architectural design, we made shortlist for ingress controller vendor: NGINX, HAProxy or Traefik.

After discuss, we decided to go with NGINX because of strong community and adaption with AKS. NGINX is a free, open-source, high-performance HTTP server and reverse proxy, as well as an IMAP/POP3 proxy server. NGINX is known for its high performance, stability, rich feature set, simple configuration, and low resource consumption.

**Installation to AKS**

Installation process is done with official Helm Charts of NGINX. Before this, you should be sure that Helm v3 client is installed on your bastion server. You can check the version of Helm with following command:

* **helm version**

If not installed, please follow the instructions as stated below link:

* [**https://helm.sh/docs/intro/install/**](https://helm.sh/docs/intro/install/)

After you are ready to use Helm client, add the official stable helm repositories, which contains the NGINX ingress controller Helm chart.

* **helm repo add stable-2** [**https://kubernetes.github.io/ingress-nginx**](https://kubernetes.github.io/ingress-nginx)

**or**

* **helm repo add stable** [**https://charts.helm.sh/stable**](https://charts.helm.sh/stable) **(we use this repository)**

The first one of repositories officially comes from NGINX. The second one is official helm repository. You can find news about this official repositories from following links:

* **https://helm.sh/blog/new-location-stable-incubator-charts/**
* [**https://github.com/kubernetes/ingress-nginx/tree/master/charts/ingress-nginx**](https://github.com/kubernetes/ingress-nginx/tree/master/charts/ingress-nginx)

The second repository is very well matched with the requirements and with this repository , you can set easily internal load balancer configuration. (please see the installation command at the end of document)

After adding the repository, the namespace is created, which is hosted the NGINX ingress controller, with the help of this command:

* **kubectl create ns nginx**

Optionally, to see all configurable options with detailed comments, visit the chart's values.yaml, or run these configuration commands:

* **helm show values ingress-nginx/ingress-nginx**
* [**https://github.com/kubernetes/ingress-nginx/blob/master/charts/ingress-nginx/values.yaml**](https://github.com/kubernetes/ingress-nginx/blob/master/charts/ingress-nginx/values.yaml)

At the end for creation of NGINX ingress controller, the command is ran as shown below:

* **helm install nginx stable/nginx-ingress --namespace nginx --set controller.service.annotations."service\.beta\.kubernetes\.io/azure-load-balancer-internal"=true --version 1.27.0**