Choice of CNI

Context and Problem Statement

Every Kubernetes instalation requires a CNI (Container Network Interface) for basic networking inside the cluster for:

- node-to-node networking
- Pod -to-pod networking
- service-definition and discovery
- etc

Diifferent CNI's and different Service Mesh projects offer different functionalities.

Decision Drivers

- Solution needs to be Open Source
- OSS Project needs to have good community adoption
- Also leveraging Cilium BGP-based LB funtion, integrates well and simplifies the overalll scope because we stay inside 1 OSS project ecosystem

Considered Options

- Flannel
- Calico
- Cilium

Decision Outcome

Chosen option: Cilium, because

- Cilium meets decision driver: 'needs to be Open Source'
- Cilium meets decision driver: 'good community adoption'
- Cilium meets decision driver: 'integration bonus with LB which we also use'

Aditionally, we find Cilium a good choice because:

- It has a large traction in the Kubernetes/CNCF community
- Cilium appears to have the performance advantage over other CNI implementations because of leveraging eBPF
- Cilium's use of eBPF appears to offer a security advantage over other CNI's
- The Cilium projects overall scope contains many functionalities that are likely to beu used in future (service mesh), and using Cilium as base CNI layer gives addional adtanage here in integration, ecosystem scope, etc
- Cilium project includes out-of-the-box observability tool; 'Hubble'

More Information

- For general aims in Kubit that may effect this desision, please see section 'Mission Statement' here
- More information about different CNI's provided by Rancher can be found here