SIG-AWS Status & Roadmap

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Summary

- Goals:
  - Kubernetes integrations, interfaces, libraries, tools for all AWS services (IAM, storage, networking, loadbalancers, registry, security, monitoring/logging at the instance/container level)
  - Prow, Testgrid integrations for CI signal
  - Perf Dashboard for Scale testing signal
  - User group support for issues and feature requests
  - Documentation for all things Kubernetes on AWS

- Hosts 5 subprojects: https://github.com/kubernetes/community/tree/master/sig-aws#subprojects

- SIG Chairs: @d-nishi; @justinsb; @kris-nova

- SIG AWS Charter: https://github.com/kubernetes/community/blob/master/sig-aws/charter.md

Subprojects launched in Kubernetes 1.13

aws-alb-ingress-controller - Status

https://github.com/kubernetes-sigs/aws-alb-ingress-controller

What we did:

- Alpha released in Q4 '18, k8s v 1.13.
- Stabilized support for IP target mode (routes traffic directly from ALB to pod IP without Nodeport hop).
- Re-factored code to use controller-runtime library and to add aws sdk level caching.
- Added e2e test cases. Add CI signal under https://testgrid.k8s.io/
- Added more docs about setup/configure ingress controller.

What we plan to do:

- Add support to share one ALB across ingresses in different namespaces (Q1 '19)
- Propose adding the controller in out-of-tree ccm

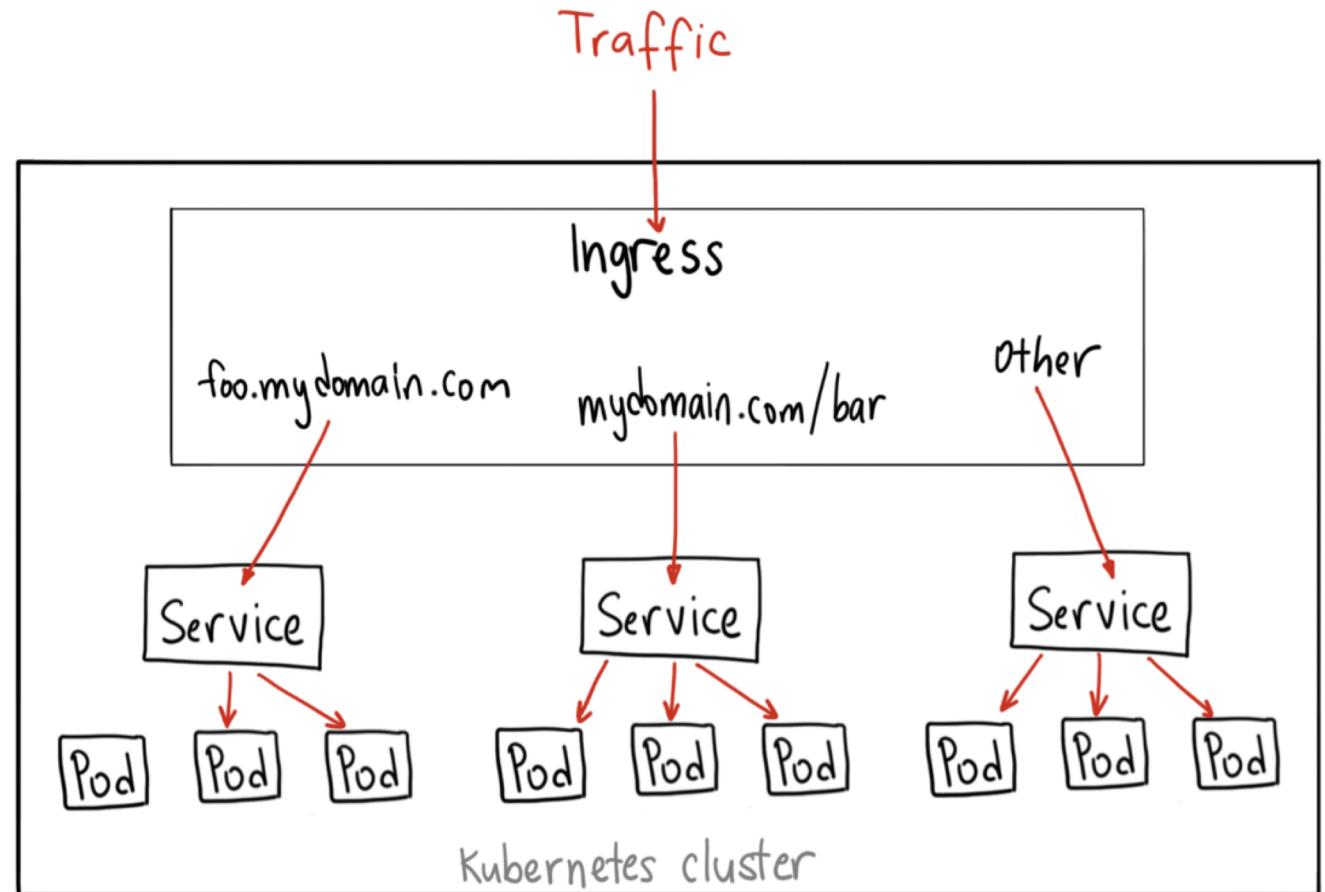Contact: @M00nF1sh, @bigkraig, @dnishi

Kubernetes Ingress

- Sits in front of multiple services.

- Acts as a "smart router" or entry point for http(s) traffic into the cluster

- Many implementations: ALB, Nginx, F5, HAProxy etc

- Default Service Type: ClusterIP
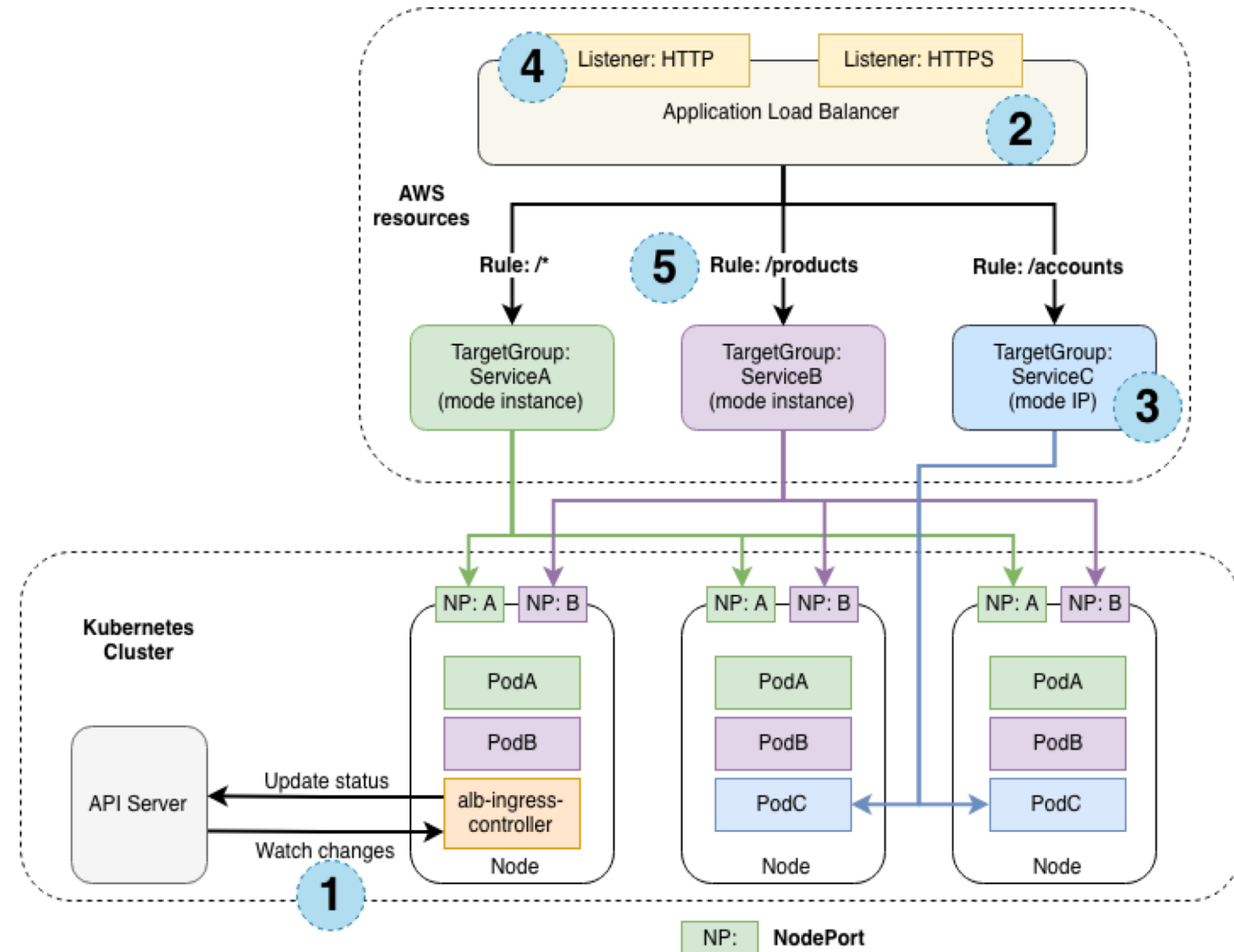
aws-alb-ingress-controller - Design

- Runs on the worker nodes.

- Enables host/path based routing, TLS termination, WebSockets, HTTP/2, AWS WAF integration, access logs, health checks

- Supports two traffic modes:

  - **instance mode:** Traffic starts from the ALB, reaches the NodePort for the service and is then routed to the Pods.

  - **ip mode:** Traffic starts from the ALB and reaches the Pods directly. Used with AWS CNI plugin for Kubernetes

aws-alb-ingress-controller - Demo

Demo

aws-ebs-csi-driver - Status

https://github.com/kubernetes-sigs/aws-ebs-csi-driver

What we did:

- Alpha released in Q4 '18, k8s v 1.13. Compatible with CSI 0.3.0 spec

- Actively developing features to reach parity with in-tree volume controller design
  - Added storage class parameters: fsType, volume type, encrypted volume, etc
  - Added volume scheduling support
  - CI signal is reported under: https://testgrid.k8s.io/sig-aws-ebs-csi-driver
  - Next step: basic integration testing (only the driver on EC2 instance)

What we plan to do:

- CSI Migration for AWS EBS Driver in-progress. Targeting Q4 '19 to complete the work.

Contact: @leakingtapan, @bertinatto, @d-nishi, @jsafrane
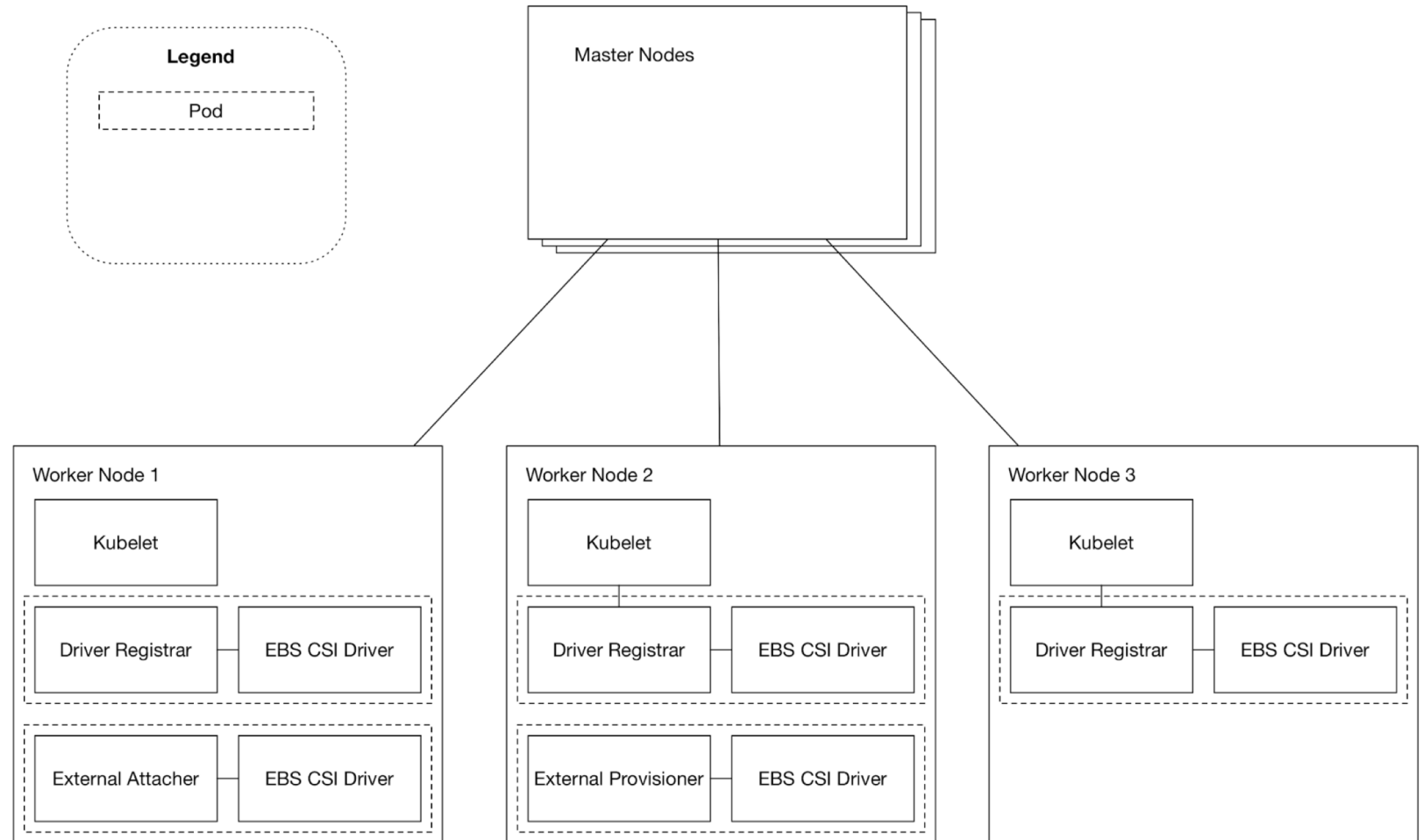
aws-ebs-csi-driver - Design

Runtime Deployment of the driver

aws-ebs-csi-driver - Demo

Demo

external cloudprovider-aws - Status

In-tree CCM:

- Add e2e tests for aws.

- Maintain until out-of-tree ccm is GA (Q3 '19).

- Deprecation period of 2 releases planned (Q3 '19).

Out-of-tree CCM:

- Alpha released in Q4 '18, k8s v 1.13.

- Extract cloud-provider-aws from k/k

- Move cloudprovider dependencies from k/k to k/utils and staging

- Scope testing for out-of-tree ccm.

- Integrate CI signal in testgrid https://testgrid.k8s.io/

Contact: @mcrute, @dnishi

external cloudprovider-aws

Demo

aws-k8s-tester - Status

What we did:

- Implements kubetest deployer interface (k8s.io/test-infra/kubetest)

- Creates an ephemeral EKS cluster to run Kubernetes e2e tests as periodic jobs

- Will be used for SIG AWS subproject CI signal and e2e tests

What we will do:

- Implement etcd conformance tests with Kubernetes

- Integrate with cluster-api work to standardize testing

Contact: @gyuho, @d-nishi

SIG Process Improvements

- Subproject Election through formal KEPS:

  https://github.com/kubernetes/community/tree/master/keps/sig-aws

- Subproject election process through lazy consensus followed by formal PR *[Contact: @d-nishi]*

- How can you get involved?

  - Formal Issue tracking and closure by AWS engineers: https://github.com/orgs/K8s-AWS-Issues/teams/github-issues

  - Pick issues labeled "Easy" or "Medium" to get started.

- Members & Approvers from AWS now include:

  - @crutem, @M00nf1sh, @gyuho, @shyamjvs, @leakingthepan, @d-nishi, @nckturner, @mattlandis

Other projects

aws-encryption-provider - Status

https://github.com/kubernetes-sigs/aws-encryption-provider

Status: Existing subproject

- Alpha in k8s v1.10. Requires etcd v3

- Integrates AWS-KMS-plugin with KMS provider on k8s control plane.

- Enables envelope encryption of data in etcd.

- Stores & manages config. data, auth. credentials independently.

- Design and Scale discussions pending AWS KMS teams.

- Testing and Documentation integration with upstream pending.

- *ASK: Use cases, User experience fb and Issues needed from users*
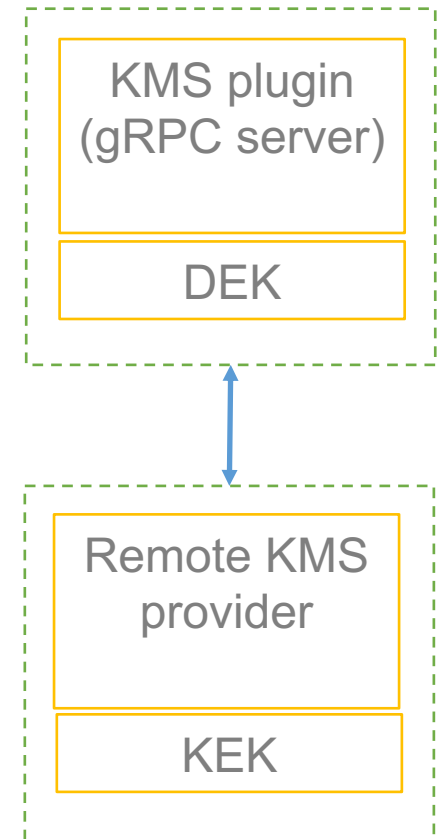
aws-iam-authenticator - Status

https://github.com/kubernetes-sigs/aws-iam-authenticator

Status: Existing subproject

- Beta/GA in k8s v1.14.

- Uses AWS IAM credentials to authenticate to a Kubernetes cluster.

- Modifying current configmap implementation to CRD is pending.

- Testing and Documentation integration with upstream pending.

cluster-api-aws – Status

https://github.com/kubernetes-sigs/cluster-api-provider-aws

Status: Co-owned subproject with SIG Cluster Lifecycle (@

- Alpha in k8s v1.13.

- Standardizes bootstrapping of a Kubernetes cluster using best practices from KOPS, KUBICORN

  - Bootstraps VPCs, gateways, security groups and instances.

  - Supports Amazon Linux 2, CentOS 7 and Ubuntu 18.04, using pre-baked AMIs.

  - Deploys Kubernetes control planes into private subnets with a separate bastion server.

  - Doesn't use SSH to bootstrap nodes.

  - Installs minimal components to bootstrap a control plane and workers.

  - Currently supports control planes on EC2 instances.

- *ASK: Feedback on User experience and Issues from testing needed from users (also for EKS)*

eksctl - Status

https://github.com/weaveworks/eksctl

Status: Proposed Subproject (@errordeveloper)

- CLI tool to create Amazon EKS clusters.

- Written in Go, and uses CloudFormation.

- Creates a cluster in minutes with one command – **eksctl create cluster**

etcd - Status

https://github.com/etcd-io/etcd

Status: Related project. CNCF Incubating project actively maintained by AWS (@gyuho)

- Future roadmap of etcd from the maintainers: <blog link>

- Summary of roadmap updates

    - Support non-voting member, improve membership reconfiguration

    - Support downgrade

    - Improve conformance testing with Kubernetes control plane
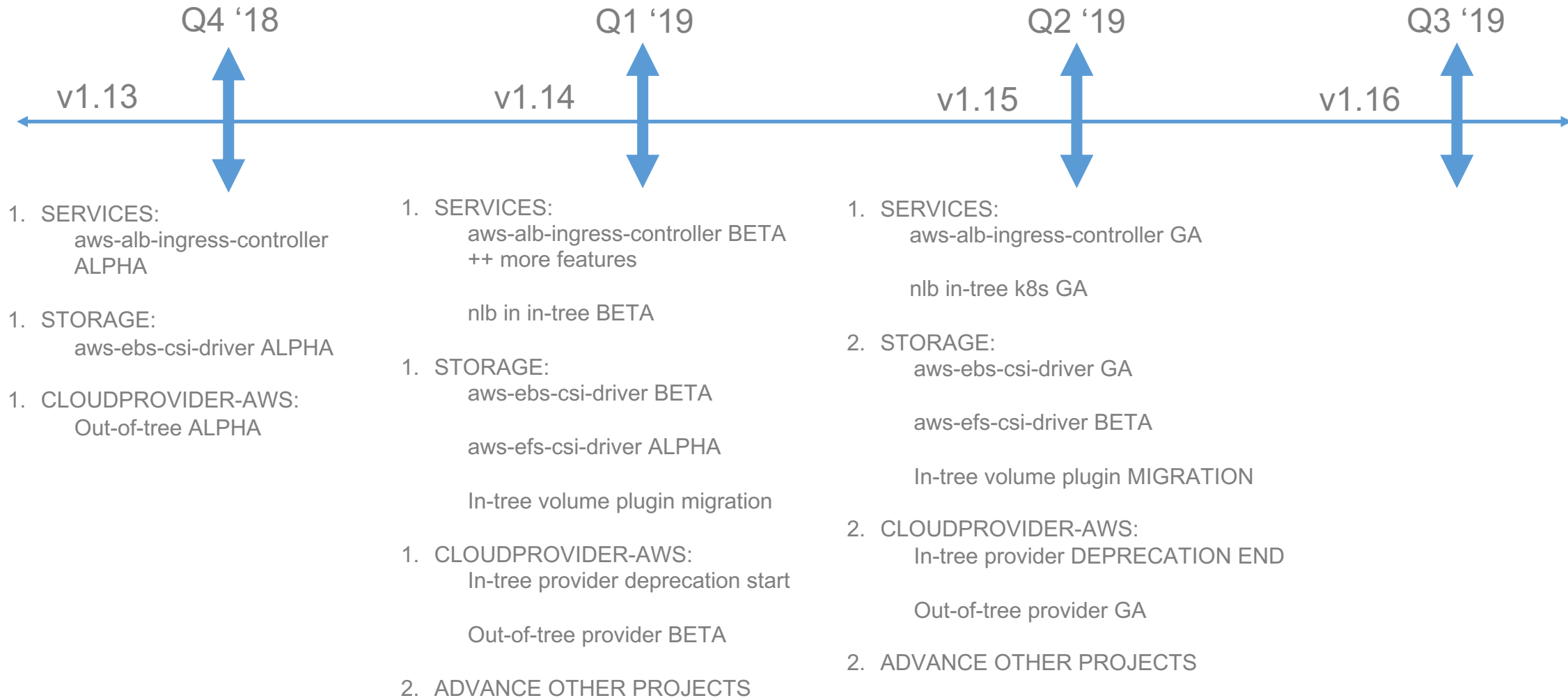
2019 Plan as of 11/12/2018
subject to changes

Q4 '18   Q1 '19   Q2 '19   Q3 '19

v1.13   v1.14   v1.15   v1.16

Q4 '18 (v1.13)

1. SERVICES:
   aws-alb-ingress-controller ALPHA

1. STORAGE:
   aws-ebs-csi-driver ALPHA

1. CLOUDPROVIDER-AWS:
   Out-of-tree ALPHA

Q1 '19 (v1.14)

1. SERVICES:
   aws-alb-ingress-controller BETA
   ++ more features

   nlb in in-tree BETA

1. STORAGE:
   aws-ebs-csi-driver BETA

   aws-efs-csi-driver ALPHA

   In-tree volume plugin migration

1. CLOUDPROVIDER-AWS:
   In-tree provider deprecation start

   Out-of-tree provider BETA

2. ADVANCE OTHER PROJECTS

Q2 '19 (v1.15)

1. SERVICES:
   aws-alb-ingress-controller GA

   nlb in-tree k8s GA

2. STORAGE:
   aws-ebs-csi-driver GA

   aws-efs-csi-driver BETA

   In-tree volume plugin MIGRATION

2. CLOUDPROVIDER-AWS:
   In-tree provider DEPRECATION END

   Out-of-tree provider GA

2. ADVANCE OTHER PROJECTS