

Istio EnvoyFilter CRD

Motivation – Why?

- Allows to solve for use cases not built into istio
- Allows use to use Istio as a general purpose envoy control plane

Why not?

- Breakglass config – correctness will not be validated by istio
- Complex to use
- Currently alpha – config yamls may break in future releases

EnvoyFilter

EnvoyFilter provides a mechanism to customize the Envoy configuration generated by Istio Pilot.

Field	Type	Description	Required
<code>workloadSelector</code>	<code>WorkloadSelector</code>	Criteria used to select the specific set of pods/VMs on which this patch configuration should be applied. If omitted, the set of patches in this configuration will be applied to all workload instances in the same namespace. If omitted, the <code>EnvoyFilter</code> patches will be applied to all workloads in the same namespace. If the <code>EnvoyFilter</code> is present in the config root namespace, it will be applied to all applicable workloads in any namespace.	No
<code>configPatches</code>	<code>EnvoyConfigObjectPatch[]</code>	One or more patches with match conditions.	Yes
<code>priority</code>	<code>int32</code>	<p>Priority defines the order in which patch sets are applied within a context. When one patch depends on another patch, the order of patch application is significant. The API provides two primary ways to order patches. Patch sets in the root namespace are applied before the patch sets in the workload namespace. Patches within a patch set are processed in the order that they appear in the <code>configPatches</code> list.</p> <p>The default value for priority is 0 and the range is [min-int32, max-int32]. A patch set with a negative priority is processed before the default. A patch set with a positive priority is processed after the default.</p> <p>It is recommended to start with priority values that are multiples of 10 to leave room for further insertion.</p> <p>Patch sets are sorted in the following ascending key order: priority, creation time, fully qualified resource name.</p>	No

Structure

- workloadSelector
 - Selects a workload (i.e. deployment)
- configPatches
 - A list of patches to add to the workload's sidecar

EnvoyFilter.EnvoyConfigObjectPatch

Changes to be made to various envoy config objects.

Field	Type	Description	Required
<code>applyTo</code>	<code>ApplyTo</code>	Specifies where in the Envoy configuration, the patch should be applied. The match is expected to select the appropriate object based on <code>applyTo</code> . For example, an <code>applyTo</code> with <code>HTTP_FILTER</code> is expected to have a match condition on the listeners, with a network filter selection on <code>envoy.filters.network.http_connection_manager</code> and a sub filter selection on the HTTP filter relative to which the insertion should be performed. Similarly, an <code>applyTo</code> on <code>CLUSTER</code> should have a match (if provided) on the cluster and not on a listener.	No
<code>match</code>	<code>EnvoyConfigObjectMatch</code>	Match on listener/route configuration/cluster.	No
<code>patch</code>	<code>Patch</code>	The patch to apply along with the operation.	No

Config Patches

- applyTo/match
 - applyTo: Where to apply to the patch? i.e. http filter list? Cluster list? Etc...
 - match: a filter to limit where to add the patch

Patch

- operation: merge/add/remove/...
- value: This is yaml/json of the Envoy config.
This is the **core** of the patch
 - This will go to envoy with minimal istio validation
 - Can use to enable envoy settings that are not exposed in istio

Demo and Further Reading

- <https://istio.io/latest/docs/reference/config/networking/envoy-filter/>