WCP cluster specific ServiceEngineGroup/VipNetwork: Marker based support in Avi/AKO

This page documents the steps to configure Avi Controller, in order to enable WCP Cluster specific SEG and VIP networks. This is done to configure the ServiceEngineGroup and Network objects in the Avi Controller with specific Marker values. Follow the steps before enabling Workload Management in the cluster, in order to use the feature.

Step 0.

At this point make sure the following things are present:
- NSX Advanced Load Balancer (Avi LB) is configured.
- vCenter cluster is ready for Workload Management enablement.

Step 1.

Fetch the VC UUID and vCenter Cluster Managed ObjectID
Fetch the vCenter UUID using PowerCLI.

```
> $vcenter = Connect-VIServer <vc-endpoint> -User <vc-username> -Password <vc-password>
> $vcenter.InstanceUuid
cf31f94b-a2b7-4fa8-85ca-9ef221e3d373
```

vCenter UUID is the **InstanceUuid** mentioned in the command output (**cf31f94b-a2b7-4fa8-85ca-9ef221e3d373**).

In order to fetch the vCenter cluster Managed ObjectID, use the following command

```
> get-cluster
Name                           HAEnabled  HAFailover DrsEnabled DrsAutomationLevel
                                          Level
----                           ---------  ---------- ---------- ------------------
domain-c57                     True       1          True       FullyAutomated
```

domain-c57 is the intended vCenter Cluster on which we want to enable Workload Management.

Using the outputs from commands executed in this step we create the `Marker` that will be used by the Avi Controller configuration in the subsequent steps.

The Marker must be of the following format
<vCenter Cluster Managed ObjectID/Cluster Name>:<vCenter UUID>

for instance:
domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373

The Marker **domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373**, will be further used by Avi to uniquely identify the Workload Management enabled vCenter Cluster.

Step2:

Configure Service Engine Group (SEG) and Vip Network in Avi Controller with the Marker. Configuring the Marker in the SEG and the Network is a way to match the WCP Cluster with the intended SEG/VipNetwork. In case the Markers are not configured on the Avi Controller objects, AKO defaults take precedence. The default SEG that will be used is Default-Group, and the Network used for VIP assignment will be one of the usable networks configured in the Cloud's Ipam (without any selection).

The following section will walk you through configuring the SEG (**custom-segroup**) and intended VIP Network **(custom-vip-network)** to be used with WCP Cluster **domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373**.

The marker to be configured in both these objects (SEG and network) is of the following format

```
"markers": {
        "key": "clustername",
        "values": ["wcp-cluster-guid"],
}
```

PS: Command outputs have been truncated using '...'.

Step2.a

Login to the Avi Controller shell.

Step2.b

Create the SEG if not created already, and then update the SEG with marker configuration as shown below.

```
[admin:10-102-67-155]: > configure serviceenginegroup custom-segroup
Updating an existing object. Currently, the object is:
+--------------------------------------+-------------------------------------------------------+
| Field | Value |
+--------------------------------------+-------------------------------------------------------+
| uuid | serviceenginegroup-4c77b90b-3827-4aac-857d-8b46f6fcb88c |
| name | custom-segroup |
...
+--------------------------------------+-------------------------------------------------------+
[admin:10-102-67-155]: serviceenginegroup> markers
New object being created
[admin:10-102-67-155]: serviceenginegroup:markers> key clustername
[admin:10-102-67-155]: serviceenginegroup:markers> values domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373
[admin:10-102-67-155]: serviceenginegroup:markers> save
[admin:10-102-67-155]: serviceenginegroup> save
+--------------------------------------+-------------------------------------------------------+
| Field | Value |
+--------------------------------------+-------------------------------------------------------+
| uuid | serviceenginegroup-4c77b90b-3827-4aac-857d-8b46f6fcb88c |
| name | custom-segroup |
...
| markers[1] | |
| key | clustername |
| values[1] | domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373 |
+--------------------------------------+-------------------------------------------------------+
```

Step2.c

Similarly, configure the Vip Network with the marker.

```
[admin:10-102-67-155]: > configure network custom-vip-network
Updating an existing object. Currently, the object is:
+--------------------------+--------------------------------------------------------------+
| Field | Value |
+--------------------------+--------------------------------------------------------------+
| uuid | dvportgroup-281-cloud-ac002cbd-f9d2-4811-a220-f5b2eac291d1 |
| name | custom-vip-network |
...
+--------------------------+--------------------------------------------------------------+
[admin:10-102-67-155]: network> markers
New object being created
[admin:10-102-67-155]: network:markers> key clustername
[admin:10-102-67-155]: network:markers> values domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373
[admin:10-102-67-155]: network:markers> save
[admin:10-102-67-155]: network> save
+--------------------------+--------------------------------------------------------------+
| Field | Value |
+--------------------------+--------------------------------------------------------------+
| uuid | dvportgroup-281-cloud-ac002cbd-f9d2-4811-a220-f5b2eac291d1 |
| name | custom-vip-network |
...
| markers[1] | |
| key | clustername |
| values[1] | domain-c57:cf31f94b-a2b7-4fa8-85ca-9ef221e3d373 |
...
+--------------------------+--------------------------------------------------------------+
```

Step2.d

Make sure that the configure network is included in the IPAMDNSProfile's **usable_networks**. Note that creating the Ipam Profile and attaching it to the Cloud is already part of configuring Avi Controller. In the following case the IPAM Profile **avi-ipam** will be configured on the Cloud **Default-Cloud** already. So there is no need to create the IPAM Profile in this step. We just proceed with updating the IPAM profile configuration with the marker based network.

```
[admin:10-102-67-155]: > configure ipamdnsproviderprofile avi-ipam
Updating an existing object. Currently, the object is:
+------------------------+------------------------------------------------------------+
| Field                  | Value                                                      |
+------------------------+------------------------------------------------------------+
| uuid                   | ipamdnsproviderprofile-b69be3fe-90e4-4af5-b982-5ec721481126 |
| name                   | avi-ipam                                                   |
| type                   | IPAMDNS_TYPE_INTERNAL                                      |
| internal_profile       |                                                            |
|   ttl                  | 30 sec                                                     |
|   usable_networks[1]   |                                                            |
|     nw_ref             | vip-network-                                               |
1                                                                                     |
...
| tenant_ref             | admin                                                      |
+------------------------+------------------------------------------------------------+
[admin:10-102-67-155]: ipamdnsproviderprofile> internal_profile
[admin:10-102-67-155]: ipamdnsproviderprofile:internal_profile> usable_networks nw_ref custom-vip-network
New object being created
[admin:10-102-67-155]: ipamdnsproviderprofile:internal_profile:usable_networks> save
[admin:10-102-67-155]: ipamdnsproviderprofile:internal_profile> save
[admin:10-102-67-155]: ipamdnsproviderprofile> save
+------------------------+------------------------------------------------------------+
| Field                  | Value                                                      |
+------------------------+------------------------------------------------------------+
| uuid                   | ipamdnsproviderprofile-b69be3fe-90e4-4af5-b982-5ec721481126 |
| name                   | avi-ipam                                                   |
| type                   | IPAMDNS_TYPE_INTERNAL                                      |
| internal_profile       |                                                            |
|   ttl                  | 30 sec                                                     |
|   usable_networks[1]   |                                                            |
|     nw_ref             | vip-network-                                               |
1                                                                                     |
|   usable_networks[2]   |                                                            |
|     nw_ref             | custom-vip-                                                |
network                                                                               |
...
| tenant_ref             | admin                                                      |
+------------------------+------------------------------------------------------------+
```

Step3.

Post this, after WCP is enabled on the cluster, the virtual services will be created with SEG configured as **custom-segroup** and the Vips will be assigned from the **custom-vip-network.** There are no extra configurations required on the WCP cluster post enablement, or AKO running the supervisor cluster.