



GSLB Site Selection with Fallback and Preferred-Site Options

Avi Technical Reference (v20.1)

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As outlined in [Avi DNS policy](#), three types of policy actions can be mated with policy matches. In the Avi UI those actions are referred to as:

1. Allow/Drop Query
2. Query Response
3. GSLB Site

This article focuses on the third action (often called GSLB site selection) and its `fallback_site_names` and `is_preferred_site` options.

Note: Site selection was introduced in release 17.1.5. The ability to define a single fallback site and set the preferred-site option were introduced in release 17.2.5. Starting with release 17.2.7, the fallback site limit was increased from 1 to 16.

Illustrative Use Case

A simple use case illustrates how the feature might be used: * There are three GSLB sites, one in Paris, one in Lyons, and one in Antwerp. * Avi's geolocation algorithm is in play, and in most cases will choose the site closest to the client. * A client situated close to the French-Belgian border would normally be directed to Antwerp based on proximity, but, since the client is in France (or some other criterion is matched), the GSLB-site-selection action instead returns the VIP of a site having the site name "FRANCE."

How It Works

Site selection features are engaged by defining a DNS policy rule. A rule match bypasses whatever chosen [GSLB load-balancing algorithm](#) might be associated with the virtual service. By way of review, by default there are five ways to effect a match, as shown in figure 1. More can be added.

The screenshot shows a web interface for creating a new DNS Policy Rule. The title is "New DNS Policy Rule: Rule 1". There is a close button (X) in the top right corner. Below the title, there is a "Name" field with a red asterisk and a help icon, containing the text "Rule 1". To the right of the name field is a green toggle switch with a white checkmark, indicating it is turned on. Below the name field is a section titled "Matches". Under "Matches", there is a dropdown menu with the text "Add New Match" and a downward arrow. The dropdown menu is open, showing five options: "Client IP", "Protocol", "Query Name", "Query Type", and "Geographical Location". At the bottom of the form is a grey "Submit" button.

Figure 1. The five match types.

Whatever the match, if one is made, the action will be taken, as follows:

1. Avi Vantage looks for a VIP whose `site_name` parameter is equal to the desired value ("FRANCE" in the above use case). Note: There may be more than one VIP with the given site name, in which case the first one found is returned.
2. If not one matching site is healthy and reachable, Avi checks to see if any sites have been defined as fallback sites (up to 16 may be defined). If such is the case, the VIP of the first healthy and reachable fallback site found is returned.
3. Finally, if not one of the fallback sites are healthy and reachable, if the `is_site_preferred` parameter has been set to True, then rather than return no address at all, the DNS VS reverts to the GSLB algorithm in force. In our use case example, Antwerp would be chosen.

New DNS Policy Rule: Rule 1

Name* ⓘ
Rule 1

Matches

Geographical Location ⓘ

is is not Use EDNS Client IP ⓘ

Geolocation Name ⓘ
Geolocation Name

Geolocation Tag ⓘ
ALASKA_HAWAII

Add New Match

Actions

GSLB Site ⓘ

GSLB Site Name* ⓘ
SACRAMENTO

Submit

Figure 2. Setting the client geolocation tag and GSLB site name.

- **Geolocation Tag ?** A string value associated with clients having IP addresses that may span a number of geolocation names representing a wide geography. I.e., client IP addresses in locations Alaska and Hawaii might be collectively tagged ALASKA_HAWAII. Note: a geolocation tag is not to be confused with a geolocation name.
- **GSLB Site Name ?** Usable only when GSLB services have been configured for the DNS virtual service, this field enables the system to override the [GSLB load-balancing algorithm](#) that otherwise would apply. A single GSLB site name can be associated with more than one VIP.

The `is_site_preferred` parameter is a per-application Boolean that is set when defining the action. If True, then when no suitable IP address in the list is found, rather than return nothing, the Avi DNS VS returns a healthy member from the list from which the GSLB algorithm normally returns an IP address.

Avi CLI Configuration

The below CLI `show` commands should be helpful for configuring fallback sites and using them in the DNS policy site selection action. You can see that GSLB pool members in GSLB service `avi.com`'s `cluster_uuid` is the third-party `cluster_uuid`. Also, you can see how the site selection has been set in DNS policy `dns_policy_5`.

```
[admin:10-10-27-253]: > show gslb glb-1
+-----+
| Field          | Value                                     |
+-----+
| uuid           | gslb-90412d33-fa47-4dc5-bcc2-7cb229461585 |
| name           | glb-1                                     |
| dns_configs[1] |                                             |
| domain_name    | avi.com                                   |
| dns_configs[2] |                                             |
| domain_name    | avi.us                                    |
| sites[1]       |                                             |
| cluster_uuid   | cluster-5fe7a684-12f1-4c85-a702-861eddd7313c |
| name           | default                                   |
| ip_addresses[1] | 10.10.27.253                             |
| port           | 443                                       |
| username       | admin                                     |
| password       | <sensitive>                               |
| member_type    | GSLB_ACTIVE_MEMBER                       |
| enabled        | True                                      |
| dns_vses[1]    |                                             |
| dns_vs_uuid    | virtualservice-77230146-d9d6-4349-be2a-b4cbe4f55b47 |
| leader_cluster_uuid | cluster-5fe7a684-12f1-4c85-a702-861eddd7313c |
| send_interval  | 15 sec                                    |
| clear_on_max_retries | 20                                       |
| view_id        | 0                                         |
| third_party_sites[1] |                                             |
| cluster_uuid   | tp_cluster-1083375b-8f6a-4925-8108-b21d871bb302 |
| name           | SanFranciscoDC                           |
| enabled        | True                                      |
| third_party_sites[2] |                                             |
| cluster_uuid   | tp_cluster-074c37ec-0d73-4d6b-98d8-998561f0ff7d |
| name           | LosAngelesDC                              |
| enabled        | True                                      |
| third_party_sites[3] |                                             |
| cluster_uuid   | tp_cluster-0739f270-0be9-4a7e-81f7-bde80d2c6ff4 |
| name           | LasVegasDC                                |
| enabled        | True                                      |
| third_party_sites[4] |                                             |
| cluster_uuid   | tp_cluster-d793dbc8-ac76-49c4-bd41-52fede77a25b |
| name           | PortlandDC                                 |
+-----+
```

```

| enabled | True |
| third_party_sites[5] | |
| cluster_uuid | tp_cluster-bfddcd68-bbb0-472b-8f3c-ad0c9944c0b7 |
| name | SanDiegoDC |
| enabled | True |
| third_party_sites[6] | |
| cluster_uuid | tp_cluster-db7750ad-4fe7-44c9-8884-236a0a1184ca |
| name | MumbaiDC |
| enabled | True |
| maintenance_mode | False |
| is_federated | True |
| tenant_ref | admin |
+-----+
[admin:10-10-27-253]: > show gslbservice gslb-1
+-----+
| Field | Value |
+-----+
| uuid | gslbservice-e413e0b0-2d3f-4d5f-ac79-14621943ddb9 |
| name | gslb-1 |
| domain_names[1] | cloud1.avi.com |
| domain_names[2] | cloud2.avi.com |
| groups[1] | |
| name | group1 |
| priority | 15 |
| algorithm | GSLB_ALGORITHM_ROUND_ROBIN |
| members[1] | |
| cluster_uuid | tp_cluster-1083375b-8f6a-4925-8108-b21d871bb302 |
| ip | 10.90.91.101 |
| ratio | 1 |
| enabled | True |
| members[2] | |
| cluster_uuid | tp_cluster-074c37ec-0d73-4d6b-98d8-998561f0ff7d |
| ip | 10.90.91.111 |
| ratio | 1 |
| enabled | True |
| members[3] | |
| cluster_uuid | tp_cluster-0739f270-0be9-4a7e-81f7-bde80d2c6ff4 |
| ip | 10.90.91.121 |
| ratio | 1 |
| enabled | True |
| members[4] | |
| cluster_uuid | tp_cluster-d793dbc8-ac76-49c4-bd41-52fede77a25b |
| ip | 10.90.91.131 |
| ratio | 1 |
| enabled | True |
| members[5] | |
| cluster_uuid | tp_cluster-bfddcd68-bbb0-472b-8f3c-ad0c9944c0b7 |
| ip | 10.90.91.141 |
| ratio | 1 |
| enabled | True |
| members[6] | |

```

```

| cluster_uuid          | tp_cluster-db7750ad-4fe7-44c9-8884-236a0a1184ca |
| ip                    | 10.90.91.201 |
| ratio                 | 1 |
| enabled               | True |
| num_dns_ip            | 1 |
| controller_health_status_enabled | True |
| health_monitor_scope | GSLB_SERVICE_HEALTH_MONITOR_ALL_MEMBERS |
| enabled               | True |
| use_edns_client_subnet | True |
| wildcard_match        | False |
| site_persistence_enabled | False |
| pool_algorithm        | GSLB_SERVICE_ALGORITHM_PRIORITY |
| min_members           | 0 |
| is_federated          | True |
| tenant_ref            | admin |
+-----+
[admin:10-10-27-253]: > show dnspolicy dns_policy_5
+-----+
| Field                | Value |
+-----+
| uuid                 | dnspolicy-765105c0-4433-48d1-b6b1-5c331e2474a0 |
| name                  | dns_policy_5 |
| rule[1]              | |
| name                  | rule_1 |
| index                 | 1 |
| enabled               | True |
| match                 | |
| geo_location          | |
| match_criteria        | IS_IN |
| use_edns_client_subnet_ip | True |
| geolocation_tag       | SantaClaraClients |
| action                | |
| gslb_site_selection   | |
| site_name             | SanFranciscoDC |
| is_site_preferred     | False |
| fallback_site_names[1] | MumbaiDC |
| fallback_site_names[2] | LosAngelesDC |
| fallback_site_names[3] | LasVegasDC |
| fallback_site_names[4] | PortlandDC |
| fallback_site_names[5] | SanDiegoDC |
| tenant_ref            | admin |
+-----+
[admin:10-10-27-253]: >

```