



# Service Discovery Using IPAM and DNS (16.3+)

Avi Technical Reference (v17.1)

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Avi Vantage can be configured to provide automatic IP address allocation for virtual services and to provide authoritative DNS resolution for their virtual IP addresses. Use this article to learn:

- [What IPAM and DNS providers are supported](#)
- [What IPAM and/or DNS provider choices exist, on a per-cloud-type basis](#)
- [General configuration workflow](#)
- [Provider-specific IPAM/DNS profile configuration](#)
- [How to use these profiles in a virtual service configuration](#)

### IPAM and DNS Provider Support Matrix

This table lists all supported providers and what kind of services are accepted from them:

Provider	DNS	IPAM	IPAM+DNS simultaneously
Avi Vantage	Yes	Yes	Yes
Amazon Web Services (AWS)	No	Yes	No
Google Cloud Platform (GCP)	No	Yes	No
Infoblox	No	No	Yes
OpenStack	No	Yes	No

Specifically,

- If Avi Vantage is the chosen provider, the Avi Vantage user has the option to use IPAM, DNS, or both simultaneously
- If Infoblox is the chosen provider, both IPAM and DNS profiles must use Infoblox
- In AWS, GCP, and OpenStack environments, you can use the respective cloud-native IPAM services

### IPAM/DNS Support for Cloud Infrastructure

This table lists the IPAM and DNS provider support available for each type of cloud (infrastructure) configured in Avi Vantage:

Provider =>	Infoblox	Avi Vantage Internal		Cloud-native		
		IPAM+DNS	IPAM	DNS	IPAM	DNS
Cloud Infrastructure		IPAM+DNS	IPAM	DNS	IPAM	DNS
VMware vCenter	Yes	Yes	Yes	Yes	N/A	N/A
OpenStack	No	No	No	Yes	Yes (default)	N/A (not used)
Amazon Web Services	No	No	No	Yes	Yes (default)	Yes (default)
Google Cloud Platform	No	No	No	Yes	Yes	No
Containers (Mesos/Kubernetes/Rancher/Docker UCP)	Yes	Yes	Yes	Yes	Yes	No
Linux Server (bare metal)	Yes	Yes	Yes	Yes	Yes	No
No access	Yes	Yes	Yes	Yes	Yes	No

For example,

- When creating virtual services in OpenStack or AWS cloud, a separate configuration for IPAM is not needed/allowed, since the cloud configuration has support for IPAM natively in Avi Vantage.
  - "Default" means Avi accepts the cloud's IPAM/DNS support without additional action on the part of the Avi Vantage admin
  - Avi Vantage supports Route 53 when AWS is the cloud provider configuration in Avi.
  - "Not used" means, although the cloud supports DNS, Avi Vantage does not use it
- When creating a virtual service in "Linux Server" cloud in AWS/GCP environment, you can use the cloud-native IPAM solution of AWS/GCP
- Avi Vantage DNS service can be used with all these clouds.

## General Configuration Workflow

Initial configuration is common to both IPAM and DNS. This section lists the steps for configuring IPAM and DNS support. The configuration fields differ among the infrastructure types and the provider (Avi Vantage, Infoblox, AWS, GCP, and OpenStack). See the sections following this one for detailed steps.

1. Navigate to Templates > Profiles.
2. Click IPAM/DNS Profile.
3. Click Create and select the provider:
  - Internal
  - Infoblox
  - AWS (IPAM only)
  - GCP (IPAM only)
  - OpenStack (IPAM only)
4. Fill in the displayed fields. (Detailed steps are provided in the sections below.)
5. Click Save. The profile appears in the list.
6. Navigate to Infrastructure > Clouds, and edit the cloud setting.
7. Select the IPAM and DNS providers from the pull-down list. Either one or both need to be selected, based on the provider selected.

For example: if Infoblox is the IPAM provider, it must be the DNS provider as well.
8. (Optional) For east-west virtual services in this cloud, you need to additionally select east-west IPAM and DNS providers from the pull-down list. Either one or both can be selected.
9. Click Save.

New Cloud: test-cloud

Step 1: Select Cloud    Step 2: DHCP Settings

Use DHCP ?

Enable VIP Static Routes ?

Prefer Static Routes ?

IPAM Profile ?    DNS Profile ?

avi-ipam    avi-dns

Cancel    Previous    Save

Sample cloud configuration with IPAM & DNS from steps 1 through 9

## Configuring the IPAM/DNS Profiles by Provider Type

IPAM and/or DNS profiles can be configured to use the following providers:

- [Avi Vantage IPAM](#)
- [Avi Vantage DNS](#)
- [AWS IPAM](#)
- [GCP IPAM](#)
- [Infoblox IPAM and DNS](#)
- [OpenStack IPAM](#)

## Using IPAM/DNS in a VS Configuration

The following examples are cloud-independent.

IPAM only. With IPAM in play, selecting the Auto Allocate checkbox causes the Network for VIP Address Allocation selection box to appear. From a list of displayed networks and subnets a choice can be made; in this case, either `ipam-nw1` or `ipam-nw2` can be selected. From the selected network (`ipam-nw1`) an address for the VIP will be auto-allocated.

IPAM is the only option for this virtual service.

DNS only. With DNS in play, no list of networks is offered. Instead, one of several domains is offered. By selecting `.test.avi` from the list and accepting the default prefix (`vs`) in the Fully Qualified Domain Name field, the user is specifying `vs.test.avi` as the final FQDN.

• VIP Address •

VIP Address\* 10.160.160.99

Fully Qualified Domain Name vs .test.avi

Services .test.avi  
.test2.avi  
.test3.avi

+ Add Port

• Profiles •

Application Profile\* System-HTTP

TCP/UDP Profile\* System-TCP-Proxy

• Pool •

Pool  Pool Group

Pool Select a Pool

Ignore network reachability constraints for the server pool

Cancel Next >

DNS is the only option for this virtual service.

IPAM and DNS. With both IPAM and DNS available, the user can both specify a network from which to auto-allocate a VIP address and the FQDN (vs.test.avi) to which it will be associated.

New Virtual Service: vs

Step 1: Settings Step 2: Policies Step 3: Analytics Step 4: Advanced

Name\* vs Enabled  Virtual Hosting VS

• VIP Address •

VIP Address 10.0.0.1 Auto Allocate

Network for VIP Address Allocation\* ipam-nw1 - 10.160.160.0/24

Network Subnet\* 10.160.160.0/24

Fully Qualified Domain Name vs .test.avi

• Profiles •

Application Profile\* System-HTTP

TCP/UDP Profile\* System-TCP-Proxy

• Service Port • Switch to Advanced

• Pool •

The screenshot shows a configuration window for a virtual service. On the left, under 'Services', there is a text input field containing '80' and an 'SSL' checkbox. Below this is a '+ Add Port' link. On the right, there are two radio buttons: 'Pool' (which is selected) and 'Pool Group'. Below these is a dropdown menu labeled 'Pool' with the text 'Select a Pool' and a downward arrow. Underneath the dropdown is an unchecked checkbox labeled 'Ignore network reachability constraints for the server pool'. At the bottom left is a 'Cancel' button, and at the bottom right is a green 'Next' button with a right-pointing arrow.

Both IPAM and DNS are options for this virtual service.

**Note:**

1. If a DNS profile is configured under a cloud where the virtual service is being created, then the virtual service's IP cannot be determined from a fully qualified domain name; the user is expected to enter an IP address or select the Auto Allocate checkbox.
2. In the case of Infoblox, if there is a list of usable\_subnets/usable\_domains configured (refer to section for Infoblox above in this article), then the dropdown will consist only of those entries. If no such configuration is found, Avi Vantage will display the entire list of available subnets/domains from Infoblox.

**Related Reading**

- [Oracle Cloud Infrastructure IPAM Support on Avi Vantage](#)
- [Azure IPAM for OpenShift](#)