About DHCP Options

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Dynamic Host Configuration Protocol (DHCP) is a network protocol that assigns network configuration parameters, like IP addresses, through DHCP servers. Virtual Private Clouds (VPCs) enable you to set DHCP options for instances you launch into them.

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VPCs and DHCP Options

Instances you launch in a VPC receive a private DNS name per private IP address, and if you attach an External IP address (EIP) to them, a public DNS name. These DNS names are configured by a domain name server specified in the DHCP options set associated with the VPC. This DHCP options set also determines which NTP server is used for your instances in the VPC.

When creating a VPC, a default set of DHCP options is created and automatically associated with the VPC. You can also create your own with the options of your choice and associate it with your VPC, which replaces the default one. For more information about the default DHCP options set and the default values applied to your VPC, see the Default DHCP Options Set section below.

When creating a DHCP option set, you can specify the following elements:

- The domain name server (DNS) and the domain name to use for the instances launched into your VPC.
  In the `domain-name-servers` option, you can specify the IP addresses of up to four domain name servers.
  If you specify a custom domain name server, you can also specify a custom DNS hostname for your instances using the `domain-name` option.

  > To use the OUTSCALE domain name server in a custom DHCP options set, you need to specify the following values:
  > - `domain-name-servers`: `OutscaleProvidedDNS`
  > - `domain-name`: `<region_name>.compute.internal`
  > For more information, see the Default DHCP Options Set section below.

- The NTP server to use to synchronize these instances with machines in another network, for example through a VPC peering connection, a VPN connection, or a DirectLink connection.
  In the `ntp-servers` option, you can specify the IP addresses of up to four NTP servers.

  > - If the NTP servers you specify are not in a network that is already routed in the route tables of your VPC, you need to add a route to their IP address. For more information, see Creating a Route.
  >
  > - If you do not specify any NTP server and if you launched the instance using an official OUTSCALE machine image (OMI), a default OUTSCALE NTP server is used. This NTP server is configured within the official OMI and you do not need to add any route for it.

The DHCP options sets you create are available for your account and you can associate them with one or more of your VPCs. However, a VPC can have one associated DHCP options set only at a time.

You cannot modify a DHCP options set after its creation. You can however replace the DHCP options set used by your VPC with either another custom one that you created or the default one. For more information, see Modifying the DHCP Options Set Associated with a VPC.

When you modify the DHCP options set associated with a VPC, the options it contains are automatically applied to both existing instances and instances that you launch afterward. Existing instances apply these options within a few hours after you modify the DHCP options set, depending on their DHCP lease renewal frequency. You do not need to restart the instances. You can however force the renewal of your DHCP lease using the `dhclient` command for Linux instances, or the `ipconfig/renew` command for Windows instances.

You can delete a DHCP options set you created at any time, but you cannot delete the default one for your VPC. For more information, see Deleting a DHCP Options Set.

Default DHCP Options Set

The default DHCP options set contains the following options:

- `domain-name-servers`: `OutscaleProvidedDNS`, mapping to 3DS OUTSCALE's domain name server.
- `domain-name`: The domain name for your Region, which follows the `<region_name>.compute.internal` format. For example, a instance with the 10.0.1.5 private IP address in the eu-west-2 Region has the hostname `ip-10-0-1-5.eu-west-2.compute.internal`.

The default DHCP options set does not contain any NTP server, but one is automatically configured within official OMIs. To use another NTP server, you need to create a DHCP options set including the `ntp-servers` option, and add the corresponding route to the server if needed. For more information, see the VPCs and DHCP Options section above.

The `OutscaleProvidedDNS` domain name server is owned by 3DS OUTSCALE. The first IP address of the CIDR block of your VPC is reserved for this server. For example, in a VPC with the 10.0.0.0/16 CIDR block, the IP address of the server is 10.0.0.1.