

**Objetivo:**

- Configuración IPv4 *server1.example.com* y *station1.example.com* Para: enp0s3
 - ↳ Parámetros de conexión Ipv4: /etc/hosts:

```
192.168.1.150 server1.example.com server1
192.168.1.151 station1.example.com station1
```
- Instalar Servidor Dhcpv6 → StateFul
 - ↳ server1 → enp0s8

```
Dhcpv6 Server → 2001:db8::1/32
range6 → 2001:db8::160 2001:db8::165
```
 - ↳ station1 → enp0s8

```
Dhcpv6 Client → Para el rango dhcp6 de -server1-
```
- Establecer ruta de conexión TEMPORAL *ssh* para Ipv6 hacia *server1*.
- Establecer ruta de conexión PERMANENTE *ssh* para Ipv6 hacia *server1*.
- Comprobar -scope/RFC- con la herramienta → '*ipv6calc*'. Instalar Repositorios => EPEL.

+++++
 (Tiempo máximo estimado → 10 minutos)...
 +++++

↳ server1→ Construcción de la conexión eth8.

```
[root@server1 ~]# nmcli connection add type ethernet con-name eth8 ifname enp0s8
ipv6.method manual ipv6.addresses 2001:db8::1/32
Conexión 'eth8' (652dbd10-d087-4f91-ab89-49e6c643edd5) agregada con éxito.
```

```
[root@server1 ~]# ip -6 a show enp0s8
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 state UP qlen 1000
inet6 2001:db8::1/32 scope global
    valid_lft forever preferred_lft forever
inet6 fe80::f817:156e:68bd:2f96/64 scope link
    valid_lft forever preferred_lft forever
```

```
[root@server1 ~]# ping6 -c1 2001:db8::1
PING 2001:db8::1(2001:db8::1) 56 data bytes
64 bytes from 2001:db8::1: icmp_seq=1 ttl=64 time=0.055 ms
```

```
--- 2001:db8::1 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.055/0.055/0.055/0.000 ms
```

[root@server1 ~]# cat /etc/sysconfig/network-scripts/ifcfg-eth8

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=no
IPV6ADDR=2001:db8::1/32
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
```



```
IPV6_ADDR_GEN_MODE=stable-privacy  
NAME=eth8  
UUID=652dbd10-d087-4f91-ab89-49e6c643edd5  
DEVICE=enp0s8  
ONBOOT=yes
```

→ Configuración del Servidor dhcpv6 -Stateful-

```
[root@server1 network-scripts]# yum install dhcp
```

```
[root@server1 ~]# rpm -qd dhcp  
/usr/share/doc/dhcp-4.2.5/dhcpd.conf.example  
/usr/share/doc/dhcp-4.2.5/dhcpd6.conf.example  
/usr/share/doc/dhcp-4.2.5/ldap/README.ldap  
/usr/share/doc/dhcp-4.2.5/ldap/dhcp.schema  
/usr/share/doc/dhcp-4.2.5/ldap/dhcpd-conf-to-ldap  
/usr/share/man/man1/omshell.1.gz  
/usr/share/man/man5/dhcpd.conf.5.gz  
/usr/share/man/man5/dhcpd.leases.5.gz  
/usr/share/man/man8/dhcpd.8.gz  
/usr/share/man/man8/dhcrelay.8.gz
```

```
[root@server1 ~]# rpm -qc dhcp
```

```
/etc/dhcp/dhcpd.conf  
/etc/dhcp/dhcpd6.conf  
/etc/openldap/schema/dhcp.schema  
/etc/sysconfig/dhcpd  
/var/lib/dhcpd/dhcpd.leases  
/var/lib/dhcpd/dhcpd6.leases
```

```
[root@server1 network-scripts]# cp /usr/share/doc/dhcp-4.2.5/dhcpd6.conf.example  
/etc/dhcp/dhcpd6.conf
```

```
[root@server1 ~]# cat /etc/dhcp/dhcpd6.conf |grep -v '^#' |grep ';$'  
default-lease-time 2592000;  
preferred-lifetime 604800;  
option dhcp-renewal-time 3600;  
option dhcp-rebinding-time 7200;  
allow leasequery;  
option dhcp6.domain-search "example.com";  
option dhcp6.info-refresh-time 21600;  
dhcpv6-lease-file-name "/var/lib/dhcpd/dhcpd6.leases";  
subnet6 2001:db8::/32 {  
    range6 2001:db8::160 2001:db8::165;  
}
```

```
[root@server1 ~]# systemctl enable dhcpd6.service
```

```
[root@server1 ~]# systemctl start dhcpd6.service
```

```
[root@server1 ~]# firewall-cmd --permanent --add-service=dhcpv6  
success
```

```
[root@server1 ~]# firewall-cmd --reload  
success
```

```
[root@server1 ~]# firewall-cmd --list-services  
ssh dhcpv6-client dhcpv6
```



↳ station1

→ Construcción de la conexión eth8.

```
[root@station1 ~]# nmcli connection add type ethernet con-name eth8 ifname enp0s8
ipv6.method dhcp
Conexión 'eth8' (c09a0c57-744c-4ce6-810d-371c11f591c5) agregada con éxito.
```

```
[root@station1 ~]# cat /etc/sysconfig/network-scripts/ifcfg-eth8
```

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=none
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=no
DHCPV6C=yes
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=eth8
UUID=c09a0c57-744c-4ce6-810d-371c11f591c5
DEVICE=enp0s8
ONBOOT=yes
```

→ Configuración del cliente dhcpv6.

```
[root@station1 ~]# cat /etc/dhcp/dhclient6.conf
interface "enp0s8" {
    send host-name "server1.example.com" ;
}
```

```
[root@station1 ~]# dhclient -cf /etc/dhcp/dhclient6.conf -6 -d
```

```
Internet Systems Consortium DHCP Client 4.2.5
Copyright 2004-2013 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/
```

```
Listening on Socket/enp0s8
Sending on Socket/enp0s8
PRC: Soliciting for leases (INIT).
XMT: Forming Solicit, 0 ms elapsed.
XMT: X-- IA_NA 27:d8:36:9a
XMT: | X-- Request renew in +3600
XMT: | X-- Request rebind in +5400
XMT: Solicit on enp0s8, interval 1090ms.
XMT: Forming Solicit, 1090 ms elapsed.
XMT: X-- IA_NA 27:d8:36:9a
XMT: | X-- Request renew in +3600
XMT: | X-- Request rebind in +5400
XMT: Solicit on enp0s8, interval 2250ms.
XMT: Forming Solicit, 3340 ms elapsed.
XMT: X-- IA_NA 27:d8:36:9a
```



```
XMT: | X-- Request renew in +3600
XMT: | X-- Request rebind in +5400
XMT: Solicit on enp0s8, interval 4500ms.
XMT: Forming Solicit, 7850 ms elapsed.
XMT: X-- IA_NA 27:d8:36:9a
XMT: | X-- Request renew in +3600
XMT: | X-- Request rebind in +5400
XMT: Solicit on enp0s8, interval 9340ms.
...
```

```
[root@station1 ~]# cat /var/lib/dhclient/dhclient6.leases
default-duid "\000\001\000\001"\221f.\010\000\3306\232";
```

```
[root@server1 ~]# cat /var/lib/dhcpd/dhcpd6.leases
# The format of this file is documented in the dhcpd.leases(5) manual page.
# This lease file was written by isc-dhcp-4.2.5
```

```
server-duid "\000\001\000\001"\221I\323\010\000'S\214";
```

```
ia-na "\2326\330\000\004\036\002\300\334,oy=.$Z>\205\221]\271" {
  cltt 5 2018/05/18 09:51:04;
  iaaddr 2001:db8::164 {
    binding state active;
    preferred-life 604800;
    max-life 2592000;
    ends 0 2018/06/17 09:51:04;
  }
}
```

```
[root@station1 ~]# ping6 -c2 2001:db8::164
PING 2001:db8::164(2001:db8::164) 56 data bytes
64 bytes from 2001:db8::164: icmp_seq=1 ttl=64 time=0.064 ms
64 bytes from 2001:db8::164: icmp_seq=2 ttl=64 time=0.123 ms
```

```
--- 2001:db8::164 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 999ms
rtt min/avg/max/mdev = 0.064/0.093/0.123/0.031 ms
```

→ **Añadir ruta -TEMPORAL-**

```
[root@station1 ~]# ip -6 route add 2001:db8::1/32 dev enp0s8
[root@station1 ~]# ssh -6 root@2001:db8::1
The authenticity of host '2001:db8::1 (2001:db8::1)' can't be established.
ECDSA key fingerprint is SHA256:tKrxWBBgusdB247Qs9CTfhQdhKro4etkZi30+WGFK0I.
ECDSA key fingerprint is MD5:8e:e8:c9:59:e8:58:f3:f1:44:28:d9:aa:70:98:29:76.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '2001:db8::1' (ECDSA) to the list of known hosts.
Last login: Fri May 18 11:51:39 2018 from 192.168.1.250
[root@server1 ~]#
```

→ **Añadir ruta -PERMANENTE-**

```
[root@station1 ~]# ip -6 route del 2001:db8::1/32 dev enp0s8
[root@station1 ~]# ssh -6 root@2001:db8::1
ssh: connect to host 2001:db8::1 port 22: Network is unreachable
[root@station1 ~]# yum install net-tools
[root@station1 ~]# netstat -rn6 -A inet6 |grep 2001
2001:db8::164/128      ::                U  101 0    0 enp0s8
```



```
2001:db8::180/128      ::                U 101 0 0 enp0s8
2001:db8::/32        ::                U 101 1 28 enp0s8
2001:db8::164/128    ::                Un 0 2 7 lo
2001:db8::164/128    ::                U 101 0 0 enp0s8
2001:db8::180/128    ::                U 101 0 0 enp0s8
2001:db8::/32        ::                U 101 1 28 enp0s8
2001:db8::164/128    ::                Un 0 2 7 lo
```

```
[root@station1 ~]# nmcli connection modify eth8 ipv6.routes 2001:db8::1/32
```

```
[root@station1 ~]# cat /etc/sysconfig/network-scripts/route6-eth8
```

```
2001:db8::1/32
```

```
[root@station1 ~]# nmcli connection down eth8
```

La conexión 'eth8' fue desactivada correctamente (ruta activa D-Bus:
/org/freedesktop/NetworkManager/ActiveConnection/2)

```
[root@station1 ~]# nmcli connection up eth8
```

Conexión activada con éxito (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/3)

```
[root@station1 ~]# ip -6 route show | grep 2001
```

```
2001:db8::164 dev enp0s8 proto kernel metric 101 pref medium
2001:db8::180 dev enp0s8 proto kernel metric 101 pref medium
```

```
2001:db8::/32 dev enp0s8 proto static metric 101 pref medium
```

→ Conexión ssh -6.

```
[root@station1 ~]# ssh -6 root@2001:db8::1
```

```
Last login: Fri May 18 12:04:05 2018 from 2001:db8::164
```

```
[root@server1 ~]#
```

→ ipcalc6.

```
[root@station1 ~]# yum install epel-release.noarch
```

```
[root@station1 ~]# yum install ipv6calc
```

```
[root@station1 ~]# ipv6calc -qi 2001:db8::164
```

Address type: unicast, reserved, global-unicast, productive, iid, iid-local

Registry for address: reserved(RFC3849#4)

Address type has SLA: 0000

Interface identifier: 0000:0000:0000:0164

Interface identifier is probably manual set

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