



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**

→ **Utilizar la herramienta -UltraTools-** para generar las direcciones Ipv6 → **fd::/64**

Formato: **fd** **8 bits**

Global Id **40 bits**

Subnet **16 bits**

Enlace: <https://www.ultratools.com/tools/rangeGenerator>

→ **Configurar para los interfaces:**

↳ **server1** → **enp0s8**

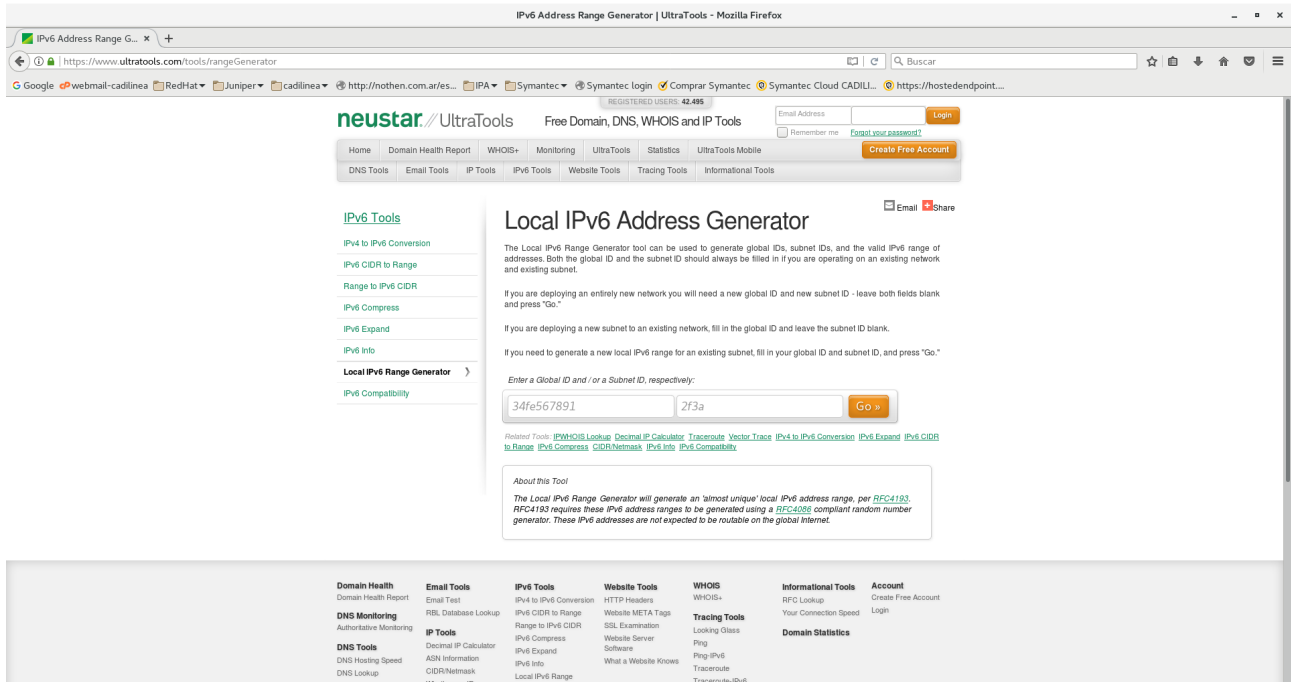
↳ **station1** → **enp0s8** → **(Debe pertenecer al mismo Global Id que server1)**

+++++ Bonus Pack +++++

→ **Realizar ping's de server1 a station1 y de station1 a server1**

→ **Establecer conexiones ssh para Ipv6.**

+++++
(Tiempo máximo estimado → 20 minutos)...
+++++





IPv6 Address Range Generator | UltraTools - Mozilla Firefox

https://www.ultratools.com/tools/rangeGeneratorResult?globalId=&subnetId=

REGISTERED USERS: 42,495

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IPv6 Tools

- IPv4 to IPv6 Conversion
- IPv6 CIDR to Range
- Range to IPv6 CIDR
- IPv6 Compress
- IPv6 Expand
- IPv6 Info
- Local IPv6 Range Generator
- IPv6 Compatibility

Local IPv6 Address Generator

The Local IPv6 Range Generator tool can be used to generate global IDs, subnet IDs, and the valid IPv6 range of addresses. Both the global ID and the subnet ID should always be filled in if you are operating on an existing network and existing subnet.

If you are deploying an entirely new network you will need a new global ID and new subnet ID - leave both fields blank and press "Go."

If you are deploying a new subnet to an existing network, fill in the global ID and leave the subnet ID blank.

If you need to generate a new local IPv6 range for an existing subnet, fill in your global ID and subnet ID, and press "Go."

Enter a Global ID and / or a Subnet ID, respectively:

8f4019e541 06b1

Related Tools: [IPWHOIS Lookup](#) [Decimal IP Calculator](#) [Traceroute Vector Trace](#) [IPv4 to IPv6 Conversion](#) [IPv6 Expand](#) [IPv6 CIDR to Range](#) [IPv6 Compress](#) [CIDR/Netmask](#) [IPv6 Info](#) [IPv6 Compatibility](#)

```

Prefix/L: fd
Global ID: 8f4019e541
Subnet ID: 06b1
Combine/CID: f08f:4019:e541:06b1::/64
IPv6 addresses: f08f:4019:e541:06b1::/64:XXXX:XXXX:XXXX:XXXX
Start Range: f08f:4019:e541:06b1:0:0:0:0
End Range: f08f:4019:e541:06b1:ffff:ffff:ffff:ffff
No. of hosts: 18446744073709551616

```

About this Tool

The Local IPv6 Range Generator will generate an 'almost unique' local IPv6 address range, per RFC4193. RFC4193 requires these IPv6 address ranges to be generated using a RFC4040 compliant random number generator. These IPv6 addresses are not expected to be routable on the global internet.

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IPv6 Address Range Generator | UltraTools - Mozilla Firefox

https://www.ultratools.com/tools/rangeGeneratorResult?globalId=8f4019e541&subnetId=

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If you are deploying a new subnet to an existing network, fill in the global ID and leave the subnet ID blank.

If you need to generate a new local IPv6 range for an existing subnet, fill in your global ID and subnet ID, and press "Go."

Enter a Global ID and / or a Subnet ID, respectively:

8f4019e541 24a1

Related Tools: [IPWHOIS Lookup](#) [Decimal IP Calculator](#) [Traceroute Vector Trace](#) [IPv4 to IPv6 Conversion](#) [IPv6 Expand](#) [IPv6 CIDR to Range](#) [IPv6 Compress](#) [CIDR/Netmask](#) [IPv6 Info](#) [IPv6 Compatibility](#)

```

Prefix/L: fd
Global ID: 8f4019e541
Subnet ID: 24a1
Combine/CID: f08f:4019:e541:24a1::/64
IPv6 addresses: f08f:4019:e541:24a1::/64:XXXX:XXXX:XXXX:XXXX
Start Range: f08f:4019:e541:24a1:0:0:0:0
End Range: f08f:4019:e541:24a1:ffff:ffff:ffff:ffff
No. of hosts: 18446744073709551616

```

About this Tool

The Local IPv6 Range Generator will generate an 'almost unique' local IPv6 address range, per RFC4193. RFC4193 requires these IPv6 address ranges to be generated using a RFC4040 compliant random number generator. These IPv6 addresses are not expected to be routable on the global internet.

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↳ Direcciones Generadas en el formato:

Prefix (7 bits)
1 1 1 1 1 1 0

Local (1 bit)
1

Global Id (40 bits)

Subnet (16 bits) Interface Id (64 bits)

↘ ↘ server1Prefix/L: fdGlobal ID: 8f4019e541Subnet ID: 06b1

Combine/CID: fd8f:4019:e541:06b1::/64

IPv6 addresses: fd8f:4019:e541:06b1::/64:XXXX:XXXX:XXXX:XXXX

Start Range: fd8f:4019:e541:6b1:0:0:0:0

End Range: fd8f:4019:e541:6b1:ffff:ffff:ffff:ffff

No. of hosts: 18446744073709551616

→ **fd8f:4019:e541:06b1::22/64**↘ ↘ station1Prefix/L: fdGlobal ID: 8f4019e541Subnet ID: 24a1

Combine/CID: fd8f:4019:e541:24a1::/64

IPv6 addresses: fd8f:4019:e541:24a1::/64:XXXX:XXXX:XXXX:XXXX

Start Range: fd8f:4019:e541:24a1:0:0:0:0

End Range: fd8f:4019:e541:24a1:ffff:ffff:ffff:ffff

No. of hosts: 18446744073709551616

→ **fd8f:4019:e541:24a1::33/64**↘ Configuración:↘ ↘ server1**[root@server1 ~]# ip a**

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
```

```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
   qlen 1000
   link/ether 08:00:27:25:35:42 brd ff:ff:ff:ff:ff:ff
   inet 192.168.1.150/24 brd 192.168.1.255 scope global enp0s3
       valid_lft forever preferred_lft forever
   inet6 fe80::8f73:7ab8:f88:794e/64 scope link
       valid_lft forever preferred_lft forever
```

```
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
   qlen 1000
   link/ether 08:00:27:08:80:20 brd ff:ff:ff:ff:ff:ff
   inet6 fe80::2a0e:f734:7466:12f3/64 scope link
       valid_lft forever preferred_lft forever
```



```
[root@server1 network-scripts]# nmcli connection add type ethernet con-name eth8 ifname enp0s8 ipv6.method manual ipv6.addresses fd8f:4019:e541:06b1::22/64
```

Conexión 'eth8' (df69379e-fcc6-46f4-a039-2bbaa70aa0d3) agregada con éxito.

```
[root@server1 network-scripts]# cat ifcfg-eth8
```

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=dhcp
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=no
IPV6ADDR=fd8f:4019:e541:6b1::22/64
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=eth8
UUID=df69379e-fcc6-46f4-a039-2bbaa70aa0d3
DEVICE=enp0s8
ONBOOT=yes
```

```
[root@server1 network-scripts]# nmcli connection up eth8
```

Conexión activada con éxito (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/11)

```
[root@server1 network-scripts]# ip a | grep inet6
```

```
inet6 ::1/128 scope host
inet6 fe80::8f73:7ab8:f88:794e/64 scope link
inet6 fd8f:4019:e541:6b1::22/64 scope global
inet6 fe80::6fdb:1228:f153:c13/64 scope link
```

```
[root@server1 network-scripts]# ping6 -c1 fd8f:4019:e541:6b1::22
```

PING fd8f:4019:e541:6b1::22(fd8f:4019:e541:6b1::22) 56 data bytes
64 bytes from fd8f:4019:e541:6b1::22: icmp_seq=1 ttl=64 time=0.055 ms

--- fd8f:4019:e541:6b1::22 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

↘ ↘ [station1](#)

```
[root@station1 ~]# ip a
```

```
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
```



```
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
qlen 1000
    link/ether 08:00:27:04:14:89 brd ff:ff:ff:ff:ff:ff
    inet 192.168.1.151/24 brd 192.168.1.255 scope global enp0s3
        valid_lft forever preferred_lft forever
    inet6 fe80::d48e:7c3f:9c17:1f76/64 scope link
        valid_lft forever preferred_lft forever
    inet6 fe80::8f73:7ab8:f88:794e/64 scope link tentative dadfailed
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP
qlen 1000
    link/ether 08:00:27:79:7a:7b brd ff:ff:ff:ff:ff:ff
    inet6 fe80::e3ad:c824:ee9c:fe81/64 scope link
        valid_lft forever preferred_lft forever
```

```
[root@station1 ~]# nmcli connection add type ethernet con-name eth8 ifname enp0s8
ipv6.method manual ipv6.addresses fd8f:4019:e541:24a1::33/64
```

Conexión 'eth8' (522b1c8b-3055-458d-904d-bcb6d8cf6ee4) agregada con éxito.

```
[root@station1 network-scripts]# cat ifcfg-eth8
```

```
TYPE=Ethernet
PROXY_METHOD=none
BROWSER_ONLY=no
BOOTPROTO=dhcp
DEFROUTE=yes
IPV4_FAILURE_FATAL=no
IPV6INIT=yes
IPV6_AUTOCONF=no
IPV6ADDR=fd8f:4019:e541:24a1::33/64
IPV6_DEFROUTE=yes
IPV6_FAILURE_FATAL=no
IPV6_ADDR_GEN_MODE=stable-privacy
NAME=eth8
UUID=522b1c8b-3055-458d-904d-bcb6d8cf6ee4
DEVICE=enp0s8
ONBOOT=yes
```

```
[root@station1 network-scripts]# nmcli connection up eth8
```

Conexión activada con éxito (D-Bus active path:
/org/freedesktop/NetworkManager/ActiveConnection/23)

```
[root@station1 network-scripts]# ip a | grep inet6
```

```
inet6 ::1/128 scope host
inet6 fe80::d48e:7c3f:9c17:1f76/64 scope link
inet6 fe80::8f73:7ab8:f88:794e/64 scope link tentative dadfailed
inet6 fd8f:4019:e541:24a1::33/64 scope global
inet6 fe80::2983:cd74:7b35:dae8/64 scope link
```



```
[root@station1 network-scripts]# ping6 -c1 fd8f:4019:e541:24a1::33
PING fd8f:4019:e541:24a1::33(fd8f:4019:e541:24a1::33) 56 data bytes
64 bytes from fd8f:4019:e541:24a1::33: icmp_seq=1 ttl=64 time=0.055 ms
```

```
--- fd8f:4019:e541:24a1::33 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
```

+++++ Bonus Pack +++++

↘↘ Adición de rutas:

```
[root@server1 ~]# yum install net-tools -y
[root@station1 ~]# yum install net-tools -y
```

↘ Con -ip- → NO PERMANENTE → server1

```
[root@server1 ~]# ip -6 route add fd8f:4019:e541:24a1::33/64 dev enp0s8
[root@server1 ~]# netstat -rn6 | grep fd8
fd8f:4019:e541:6b1::/64      ::                U  256      0   0 enp0s8
fd8f:4019:e541:24a1::/64   ::                U  1024     0   0 enp0s8
fd8f:4019:e541:6b1::22/128 ::                Un  0        2   5 lo
```

→ Para hacer que la ruta sea permanente:

```
[root@server1 network-scripts]# echo "fd8f:4019:e541:24a1::33/64" >
/etc/sysconfig/network-scripts/route6-eth8
```

```
[root@server1 network-scripts]# cat route6-eth8
fd8f:4019:e541:24a1::33/64
```

↘ Con -NetworkManager- → PERMANENTE → station1

```
[root@station1 ~]# nmcli connection modify eth8 ipv6.routes
fd8f:4019:e541:6b1::22/64
```

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

La conexión 'eth8' fue desactivada correctamente (ruta activa D-Bus: /org/freedesktop/NetworkManager/ActiveConnection/7)

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

Conexión activada con éxito (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/9)

```
[root@station1 ~]# netstat -rn6 | grep fd8
fd8f:4019:e541:6b1::/64      ::                U  100 0    0 enp0s8
fd8f:4019:e541:24a1::/64   ::                U  256 0    0 enp0s8
fd8f:4019:e541:24a1::33/128 ::                Un  0    1   0 lo
```

```
[root@server1 ~]# ping6 -c2 fd8f:4019:e541:24a1::33
```

```
PING fd8f:4019:e541:24a1::33(fd8f:4019:e541:24a1::33) 56 data bytes
64 bytes from fd8f:4019:e541:24a1::33: icmp_seq=1 ttl=64 time=0.396 ms
64 bytes from fd8f:4019:e541:24a1::33: icmp_seq=2 ttl=64 time=0.876 ms
```

```
--- fd8f:4019:e541:24a1::33 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1028ms
rtt min/avg/max/mdev = 0.396/0.636/0.876/0.240 ms
```

```
[root@station1 ~]# ping6 -c2 fd8f:4019:e541:6b1::22
```

```
PING fd8f:4019:e541:6b1::22(fd8f:4019:e541:6b1::22) 56 data bytes
64 bytes from fd8f:4019:e541:6b1::22: icmp_seq=1 ttl=64 time=0.290 ms
```



```
64 bytes from fd8f:4019:e541:6b1::22: icmp_seq=2 ttl=64 time=0.830 ms
```

```
--- fd8f:4019:e541:6b1::22 ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1006ms
rtt min/avg/max/mdev = 0.290/0.560/0.830/0.270 ms
```

```
[root@server1 ~]# cat /etc/hosts
```

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

```
192.168.1.150 server1.example.com server1
192.168.1.151 station1.example.com station1
```

```
fd8f:4019:e541:6b1::22 6-server1
fd8f:4019:e541:24a1::33 6-station1
```

```
[root@station1 ~]# cat /etc/hosts
```

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

```
192.168.1.150 server1.example.com server1
192.168.1.151 station1.example.com station1
```

```
fd8f:4019:e541:6b1::22 6-server1
fd8f:4019:e541:24a1::33 6-station1
```

```
[root@server1 ~]# ping6 -c1 6-server1
```

```
PING 6-server1(6-server1 (fd8f:4019:e541:6b1::22)) 56 data bytes
64 bytes from 6-server1 (fd8f:4019:e541:6b1::22): icmp_seq=1 ttl=64 time=0.118 ms
```

```
--- 6-server1 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.118/0.118/0.118/0.000 ms
```

```
[root@server1 ~]# ping6 -c1 6-station1
```

```
PING 6-station1(6-station1 (fd8f:4019:e541:24a1::33)) 56 data bytes
64 bytes from 6-station1 (fd8f:4019:e541:24a1::33): icmp_seq=1 ttl=64 time=0.717 ms
```

```
--- 6-station1 ping statistics ---
1 packets transmitted, 1 received, 0% packet loss, time 0ms
rtt min/avg/max/mdev = 0.717/0.717/0.717/0.000 ms
```

```
[root@server1 ~]# ssh -6 root@6-station1
```

```
The authenticity of host '6-station1 (fd8f:4019:e541:24a1::33)' can't be established.
ECDSA key fingerprint is SHA256:tKrxWBBgusdB247Qs9CTfhQdhKro4etkZi3O+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 '6-station1,fd8f:4019:e541:24a1::33' (ECDSA) to the list of known
hosts.
```

```
Last login: Fri May 11 21:59:24 2018 from 192.168.1.250
```

```
[root@station1 ~]#
```



```
[root@station1 ~]# ssh -6 root@6-server1
```

```
The authenticity of host '6-server1 (fd8f:4019:e541:6b1::22)' can't be established.  
ECDSA key fingerprint is SHA256:tKrxWBBgusdB247Qs9CTfhQdhKro4etkZi3O+WGFK0l.  
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 '6-server1,fd8f:4019:e541:6b1::22' (ECDSA) to the list of known  
hosts.  
Last login: Fri May 11 21:56:09 2018 from 192.168.1.250  
[root@server1 ~]#
```

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