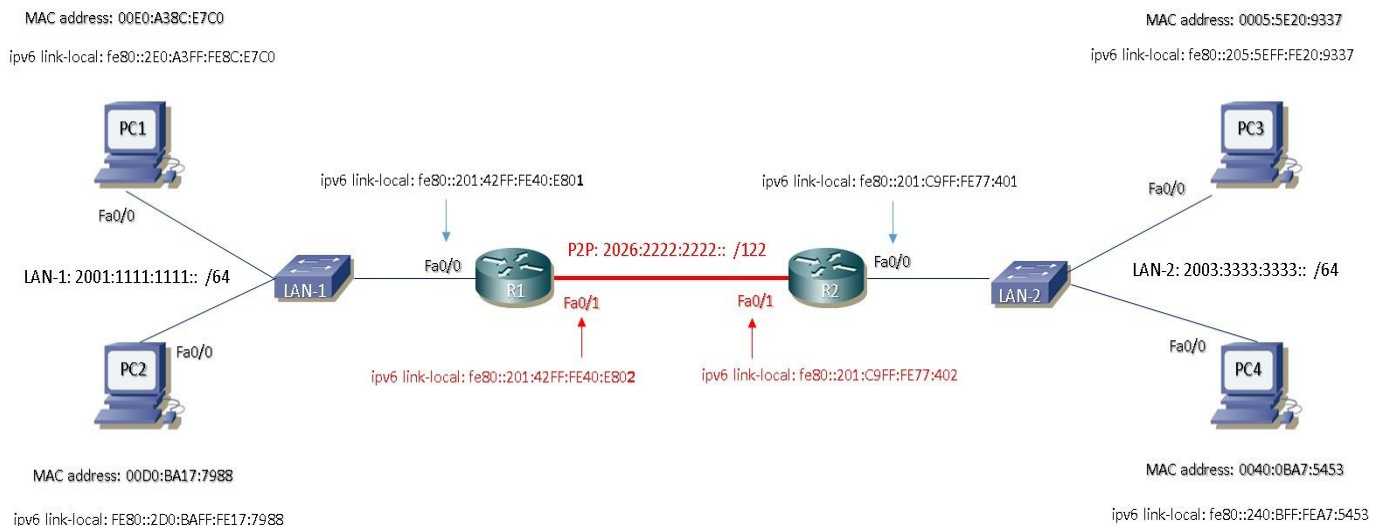


Configurazione SLAAC Stateless Autoconfiguration IPv6 domain



Gli steps prevedono:

PCs: Nessuna configurazione IP statica; in IPv6 config settare la modalità Auto-Config

I PC otterranno dai rispettivi Routers i seguenti parametri:

- a) IPv6 address
- b) Default Gateway address

I routers:

- 1) In modalità globale settare il comando `ipv6 unicast-routing`;
- 2) L'interfaccia verso la rete interna LAN deve essere configurata con:
 - a. `ipv6 enable`
 - b. `ipv6 address autoconfig`
 - c. `ipv6 address < LAN-interna ipv6 address-subnet /64 >`
- 3) L'interfaccia verso la rete CORE di collegamento del remote router deve essere configurata con:
 - a. `ipv6 enable`
 - b. `ipv6 address < P2P ipv6 address-subnet >`

- 4) Il collegamento tra le differenti isole IPv6 è stabilito mediante il routing:
- a. Statico
 - b. RIPng
 - c. OSPFv3

Appena fatta questa procedura i PC otterranno la seguente configurazione:

PC1:

FastEthernet0 Connection:(default port)

Physical Address.....: 00E0.A38C.E7C0
Link-local IPv6 Address.....: FE80::2E0:A3FF:FE8C:E7C0
IPv6 Address.....: 2001:1111:1111:0:2E0:A3FF:FE8C:E7C0/64
Default Gateway.....: FE80::201:42FF:FE40:E801
DNS Servers.....: ::
DHCPv6 Client DUID.....: 00-01-00-01-2B-0D-C3-EE-00-E0-A3-8C-E7-C0

PC2:

FastEthernet0 Connection:(default port)

Physical Address.....: 00D0.BA17.7988
Link-local IPv6 Address.....: FE80::2D0:BAFF:FE17:7988
IPv6 Address.....: 2001:1111:1111:0:2D0:BAFF:FE17:7988/64
Default Gateway.....: FE80::201:42FF:FE40:E801
DNS Servers.....: ::
DHCPv6 Client DUID.....: 00-01-00-01-40-77-87-80-00-D0-BA-17-79-88

PC3:

FastEthernet0 Connection:(default port)

Physical Address.....: 0005.5E20.9337
Link-local IPv6 Address.....: FE80::205:5EFF:FE20:9337
IPv6 Address.....: 2003:3333:3333:0:205:5EFF:FE20:9337/64
Default Gateway.....: FE80::201:C9FF:FE77:401
DNS Servers.....: ::
DHCPv6 IAID.....: 1731170596
DHCPv6 Client DUID.....: 00-01-00-01-E5-D8-69-80-00-05-5E-20-93-37

PC4:

FastEthernet0 Connection:(default port)

Physical Address.....: 0040.0BA7.5453
Link-local IPv6 Address.....: FE80::240:BFF:FEA7:5453
IPv6 Address.....: 2003:3333:3333:0:240:BFF:FEA7:5453/64
Default Gateway.....: FE80::201:C9FF:FE77:401
DNS Servers.....: ::
DHCPv6 Client DUID.....: 00-01-00-01-12-A0-3D-A9-00-40-0B-A7-54-53

Vediamo ora la configurazione dei due routers con la modalità static route P2P

R1:

```
R1#sh running-config
Building configuration...

Current configuration : 721 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R1
!
ip cef
ipv6 unicast-routing
!
no ipv6 cef
!
spanning-tree mode pvst
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2001:1111:1111::1/64
ipv6 address autoconfig
ipv6 enable
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address 2026:2222:2222::1/122
ipv6 enable
!
interface Vlan1
no ip address
shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2003:3333:3333::/64 2026:2222:2222::2
!
!
end
```

R2:

```
R2#sh running-config
Building configuration...

Current configuration : 721 bytes
!
version 12.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname R2
!
ip cef
ipv6 unicast-routing
!
```

```

no ipv6 cef
!
!
spanning-tree mode pvst
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2003:3333:3333::1/64
ipv6 address autoconfig
ipv6 enable
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address 2026:2222:2222::2/122
ipv6 enable
!
interface Vlan1
no ip address
shutdown
!
ip classless
!
ip flow-export version 9
!
ipv6 route 2001:1111:1111::/64 2026:2222:2222::1
!
!
end
!

```

Tabella di routing di R1

```

R1#sh ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external

C 2001:1111:1111::/64 [0/0]
via ::, FastEthernet0/0

L 2001:1111:1111::1/128 [0/0]
via ::, FastEthernet0/0

S 2003:3333:3333::/64 [1/0]
via 2026:2222:2222::2

C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1

L 2026:2222:2222::1/128 [0/0]
via ::, FastEthernet0/1

L FF00::/8 [0/0]
via ::, Null0

```

Tabella di routing di R2:

```
R2#sh ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external
```

```
S 2001:1111:1111::/64 [1/0]
via 2026:2222:2222::1
```

```
C 2003:3333:3333::/64 [0/0]
via ::, FastEthernet0/0
```

```
L 2003:3333:3333::1/128 [0/0]
via ::, FastEthernet0/0
```

```
C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1
```

```
L 2026:2222:2222::2/128 [0/0]
via ::, FastEthernet0/1
```

```
L FF00::/8 [0/0]
via ::, Null0
```

Prove di Ping da R1:

```
R1#ping ipv6 2026:2222:2222::2 → P2P subnets
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 2026:2222:2222::2, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/1 ms

```
R1#ping ipv6 2003:3333:3333:0:240:BFF:FEA7:5453 → IP del PC3
```

Type escape sequence to abort.

Sending 5, 100-byte ICMP Echos to 2003:3333:3333:0:240:BFF:FEA7:5453, timeout is 2 seconds:

!!!!

Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/2 ms

Vediamo ora la configurazione dei due routers con la modalità RIPng

R1:

```
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2001:1111:1111::1/64
ipv6 rip RIPng enable
ipv6 address autoconfig
ipv6 enable
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address 2026:2222:2222::1/122
ipv6 rip RIPng enable
ipv6 enable
!
ipv6 router rip RIPng
redistribute connected
!
!
R1#sho ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external

C 2001:1111:1111::/64 [0/0]
via ::, FastEthernet0/0

L 2001:1111:1111::1/128 [0/0]
via ::, FastEthernet0/0

R 2003:3333:3333::/64 [120/2]
via FE80::201:C9FF:FE77:402, FastEthernet0/1

C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1

L 2026:2222:2222::1/128 [0/0]
via ::, FastEthernet0/1

L FF00::/8 [0/0]
via ::, Null0
```

R2:

```
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2003:3333:3333::1/64
ipv6 rip RIPng enable
ipv6 address autoconfig
ipv6 enable
!
interface FastEthernet0/1
no ip address
duplex auto
```

```

speed auto
ipv6 address 2026:2222:2222::2/122
ipv6 rip RIPng enable
ipv6 enable
!
ipv6 router rip RIPng
redistribute connected
!
!
R1#sh ipv6 route
IPv6 Routing Table - 6 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external

R 2001:1111:1111::/64 [120/2]
via FE80::201:42FF:FE40:E802, FastEthernet0/1

C 2003:3333:3333::/64 [0/0]
via ::, FastEthernet0/0

L 2003:3333:3333::1/128 [0/0]
via ::, FastEthernet0/0

C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1

L 2026:2222:2222::2/128 [0/0]
via ::, FastEthernet0/1

L FF00::/8 [0/0]
via ::, Null0

```

Vediamo ora la configurazione dei due routers con la modalità OSPFv3

R1

```

interface Loopback0
ip address 192.168.1.1 255.255.255.255
ipv6 address FD11:192:168:1::1/128
ipv6 ospf 1 area 0
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2001:1111:1111::1/64
ipv6 address autoconfig
ipv6 enable
ipv6 ospf 1 area 0
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address 2026:2222:2222::1/122
ipv6 enable
ipv6 ospf 1 area 0
!
ipv6 router ospf 1
router-id 192.168.1.1
log-adjacency-changes
!
!

```

```
R1#sh ipv6 route
IPv6 Routing Table - 8 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external
```

```
C 2001:1111:1111::/64 [0/0]
via ::, FastEthernet0/0
```

```
L 2001:1111:1111::1/128 [0/0]
via ::, FastEthernet0/0
```

```
O 2003:3333:3333::/64 [110/2]
via FE80::201:C9FF:FE77:402, FastEthernet0/1
```

```
C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1
```

```
L 2026:2222:2222::1/128 [0/0]
via ::, FastEthernet0/1
```

```
C FD11:192:168:1::1/128 [0/0]
via ::, Loopback0
```

```
O FD11:192:168:2::2/128 [110/1]
via FE80::201:C9FF:FE77:402, FastEthernet0/1
```

```
L FF00::/8 [0/0]
via ::, Null0
```

R2

```
interface Loopback0
ip address 192.168.2.2 255.255.255.255
ipv6 address FD11:192:168:2::2/128
ipv6 ospf 1 area 0
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address 2003:3333:3333::1/64
ipv6 address autoconfig
ipv6 enable
ipv6 ospf 1 area 0
!
interface FastEthernet0/1
no ip address
duplex auto
speed auto
ipv6 address 2026:2222:2222::2/122
ipv6 enable
ipv6 ospf 1 area 0
!
ipv6 router ospf 1
router-id 192.168.2.2
log-adjacency-changes
!
!
```



```
R2#sh ipv6 route
IPv6 Routing Table - 8 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
U - Per-user Static route, M - MIPv6
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
D - EIGRP, EX - EIGRP external

O 2001:1111:1111::/64 [110/2]
via FE80::201:42FF:FE40:E802, FastEthernet0/1

C 2003:3333:3333::/64 [0/0]
via ::, FastEthernet0/0

L 2003:3333:3333::1/128 [0/0]
via ::, FastEthernet0/0

C 2026:2222:2222::/122 [0/0]
via ::, FastEthernet0/1

L 2026:2222:2222::2/128 [0/0]
via ::, FastEthernet0/1

O FD11:192:168:1::1/128 [110/1]
via FE80::201:42FF:FE40:E802, FastEthernet0/1

C FD11:192:168:2::2/128 [0/0]
via ::, Loopback0

L FF00::/8 [0/0]
via ::, Null0
```