使用首碼委派功能的 DHCPv6 的組態範例

目錄

簡介

本文檔介紹如何使用字首委派功能配置DHCPv6（IPv6的動態主機配置協定）伺服器和客戶端。此功能可用於管理鏈路、子網和站點地址更改。

在此示例配置中，名為*DHCPv6 server*的路由器啟用了字首委派功能，並充當委託路由器。委託路由器自動執行為請求路由器（即DHCP客戶端）分配字首的過程。 一旦伺服器將字首委託給客戶端，則連線到請求路由器的區域網(LAN)的介面具有使用所接收字首塊的IPv6地址。然後，請求路由器在路由器通告消息中通告此地址。客戶端路由器（即本地網路中的路由器）可以使用autoconfig選項從DHCP客戶端通告的路由器通告消息中提取全域性IP地址。

必要條件

需求

嘗試此組態之前，請確保符合以下要求：

- 瞭解IPv6編址和基本連線
- 實施DHCP for IPv6知識

採用元件

本文件所述內容不限於特定軟體和硬體版本。

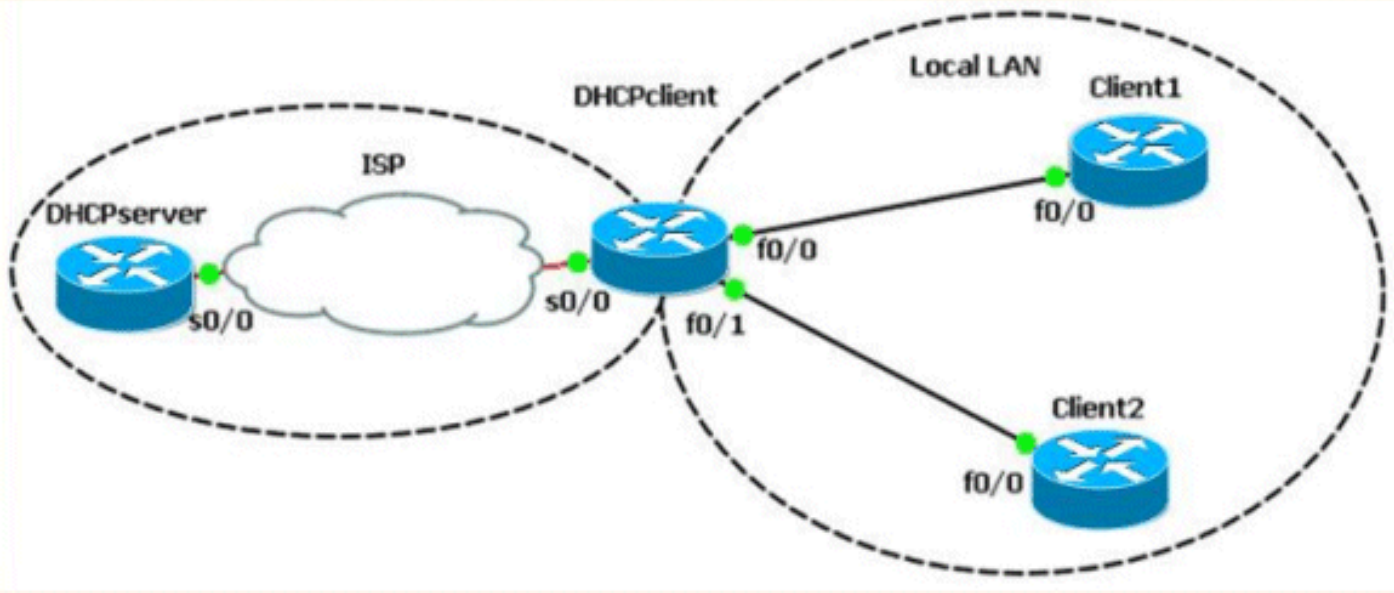
本檔案中的組態是根據Cisco IOS®軟體版本軟體12.4(15)T 13上的Cisco 3700系列路由器。

設定

本節提供用於設定本文件中所述功能的資訊。

網路圖表

本檔案會使用以下網路設定：



組態

本檔案會使用以下設定：

- DHCP伺服器組態
- DHCP使用者端組態
- 本地LAN客戶端1和2配置

以下影片連結演示了在Cisco支援社群 上提供的Cisco IOS路由器上配置DHCPv6所涉及的步驟：

在Cisco IOS中配置DHCPv6


```
DHCPSERVER#show running-config

version 12.4
!
hostname DHCPSERVER
!
ipv6 unicast-routing
ipv6 dhcp pool dhcpv6
!--- The DHCP pool is named "dhcpv6." ! prefix-delegation pool dhcpv6-pool1 lifetime 1800 600 !-
-- The prefix delegation pool name is "dhcpv6-pool1." ! dns-server 2001:DB8:3000:3000::42
domain-name example.com ! interface Serial0/0 no ip address ipv6 address 2010:AB8:0:1::1/64 ipv6
enable ipv6 dhcp server dhcpv6 clock rate 2000000 ! ipv6 local pool dhcpv6-pool1
2001:DB8:1200::/40 48 !--- The prefix pool named dhcpv6-pool1 has a prefix of length !--- /40
from which it will delegate (sub)prefixes of length /48. ! end


DHCPCLIENT#show running-config

version 12.4
!
hostname DHCPCLIENT
!
ipv6 unicast-routing
!
interface Serial0/0
no ip address
ipv6 address autoconfig default
!--- The autoconfig default adds a static ipv6 !--- default route pointing to upstream DHCP
server. ! ipv6 enable ipv6 dhcp client pd prefix-from-provider !--- The DHCP client prefix
delegation is !--- given the name prefix-from-provider. ! clock rate 2000000 ! interface
FastEthernet0/0 no ip address duplex auto speed auto ipv6 address prefix-from-provider
::1:0:0:0:1/64 !--- The first 48 bits are imported from the delegated !--- prefix
(2001:db8:1200) and the ::/64 is the client !--- identifier that gives the interface Fa0/1 the
```

```
!--- global IPv6 address 2001:DB8:1200:1::1/64. ! ipv6 enable ! interface FastEthernet0/1 no ip
address duplex auto speed auto ipv6 enable ipv6 address prefix-from-provider ::1/64 !---
Similarly, the global IPv6 address !--- for fa0/1 is 2001:DB8:1200::1. ! end
```

本地LAN配置

客戶端1

```
CLIENT1#show running-config

version 12.4
!
hostname CLIENT1
!
ipv6 unicast-routing
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address autoconfig
!--- The clients can run autoconfig to get an IPv6 !--- address
depending on the router advertisements !--- sent by the DHCP client
(requesting router). ! ipv6 enable ! end
```

客戶端2

```
CLIENT2#show running-config

version 12.4
!
hostname CLIENT2
!
ipv6 unicast-routing
!
interface FastEthernet0/0
no ip address
duplex auto
speed auto
ipv6 address autoconfig
ipv6 enable
!
end
```

驗證

使用本節所述的命令驗證設定。

> **附註**：為了節省空間，本節中的某些輸出將換行到新行。

在DHCP伺服器上

本節中的輸出顯示了活動客戶端的數量為1，還顯示了其他配置引數資訊，例如域名伺服器地址和首選生存時間資訊。

show ipv6 dhcp pool

```
DHCPv6 pool: dhcpv6
  Prefix pool: dhcpv6-pool1
  preferred lifetime 600, valid lifetime 1800
  DNS server: 2001:DB8:3000:3000::42
  Domain name: example.com
  Active clients: 1
```

show ipv6 dhcp binding 命令提供有關客戶端的資訊，其中包括客戶端的DUID、IAPD、字首以及首選和有效生存期。

show ipv6 dhcp binding

```
Client: FE80::C002:FFF:FEB4:0
  DUID: 00030001C2020FB40000
  Username : unassigned
  Interface : Serial0/0
  IA PD: IA ID 0x00060001, T1 300, T2 480
  Prefix: 2001:DB8:1200::/48
  preferred lifetime 600, valid lifetime 1800
  expires at Mar 02 2002 01:26 AM (1707 seconds)
```

在DHCP客戶端上

show ipv6 dhcp interface命令顯示介面S0/0是在客戶端模式下配置的，還顯示DNS伺服器地址和從DHCP伺服器接收的域名的詳細資訊。

show ipv6 dhcp interface

```
Serial0/0 is in client mode
  State is OPEN
  Renew will be sent in 00:04:37
  List of known servers:
  Reachable via address: FE80::C003:FFF:FEB4:0
  DUID: 00030001C2030FB40000
  Preference: 0
  Configuration parameters:
  IA PD: IA ID 0x00060001, T1 300, T2 480
  Prefix: 2001:DB8:1200::/48
  preferred lifetime 600, valid lifetime 1800
  expires at Mar 01 2002 10:59 AM (1777 seconds)
  DNS server: 2001:DB8:3000:3000::42
  Domain name: example.com
  Information refresh time: 0
  Prefix name: prefix-from-provider
  Rapid-Commit: disabled
```

快速乙太網介面Fa0/0和Fa0/1上的show ipv6 interface命令提供以下輸出：

show ipv6 int fa0/0

```
FastEthernet0/0 is up, line protocol is up
  IPv6 is enabled, link-local address
         is FE80::C002:FFF:FEB4:0
  No Virtual link-local address(es):
  Global unicast address(es):
    2001:DB8:1200:1::1, subnet is
         2001:DB8:1200:1::/64 [CAL/PRE]
      valid lifetime 1535 preferred lifetime 335
!--- Output omitted.
```

show ipv6 int fa0/1

```
FastEthernet0/1 is up, line protocol is up
  IPv6 is enabled, link-local address
         is FE80::C002:FFF:FEB4:1
  No Virtual link-local address(es):
  Global unicast address(es):
    2001:DB8:1200::1, subnet is
         2001:DB8:1200::/64 [CAL/PRE]
      valid lifetime 1712 preferred lifetime 512
!--- Output omitted.
```

show ipv6 general-prefix 命令會通過字首委派驗證從DHCP伺服器收到的任何字首（一般字首）。

show ipv6 general-prefix

```
IPv6 Prefix prefix-from-provider, acquired via DHCP PD
  2001:DB8:1200::/48 Valid lifetime 1656, preferred lifetime 456
!--- 2001:DB8:1200::/48 is the general prefix received from server. FastEthernet0/1 (Address command)
FastEthernet0/0 (Address command)
```

在本地LAN客戶端上

客戶端路由器Client 1和Client 2的FastEthernet介面Fa0/0上的show ipv6 interface命令提供以下輸出：

show ipv6 int fa0/0
客戶端1

```
FastEthernet0/0 is up, line protocol is up
  IPv6 is enabled, link-local address
         is FE80::C000:FFF:FEB4:0
```

客戶端2

```
FastEthernet0/0 is up, line protocol is up
  IPv6 is enabled, link-local address
         is FE80::C001:FFF:FEB4:0
```

```
No Virtual link-local address(es):
Global unicast address(es):
2001:DB8:1200:1:C000:FFF:FEB4:0, subnet is
        2001:DB8:1200:1::/64 [EUI/CAL/PRE]
valid lifetime 1709 preferred lifetime 509
```

```
No Virtual link-local address(es):
Global unicast address(es):
2001:DB8:1200:0:C001:FFF:FEB4:0, subnet
        is 2001:DB8:1200::/64 [EUI/CAL/PRE]
valid lifetime 1770 preferred lifetime 570
```

疑難排解

目前尚無適用於此組態的具體疑難排解資訊。

相關資訊

- IPv6技術支援
- 在Cisco IOS中配置DHCPv6
- 技術支援與文件 - Cisco Systems