

ASA: Exemplo e Troubleshooting da configuração de Frame Relay DHCPv6

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Introdução

O documento descreve como configurar uma ferramenta de segurança adaptável de Cisco (ASA) como um agente de transmissão DHCPv6 e igualmente cobre algum Troubleshooting básico. Na versão de código 9.0 ASA e mais atrasado, os apoios ASA

Pré-requisitos

Requisitos

A Cisco recomenda que você tenha conhecimento destes tópicos:

- Conceitos básicos do IPv6
- IPv6 que endereça o mecanismo
- Fluxo de pacote de informação DHCPv6
- Conceitos da transmissão de DHCP

Componentes Utilizados

A informação neste documento é baseada na versão 9.1.2 ASA 5500.

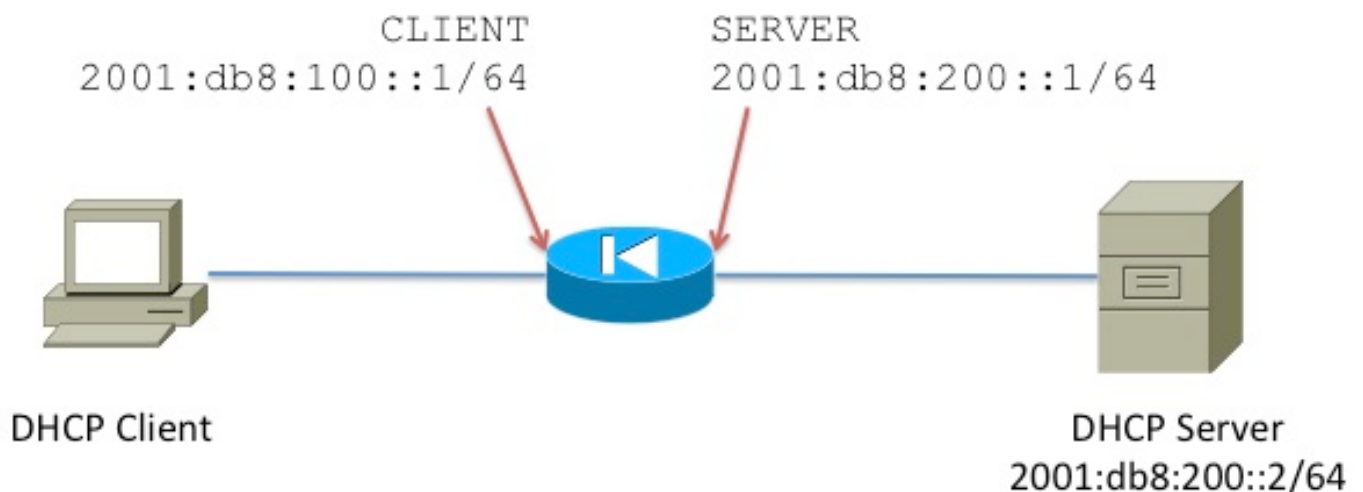
As informações neste documento foram criadas a partir de dispositivos em um ambiente de laboratório específico. Todos os dispositivos utilizados neste documento foram iniciados com uma configuração (padrão) inicial. Se a sua rede estiver ativa, certifique-se de que entende o impacto potencial de qualquer comando.

Stateful contra DHCPv6 apátrida

Se você compreende o método diferente da alocação de endereço no IPv6, ajuda-o a compreender como os recursos de relay DHCPv6 trabalham no ASA. Refre à [atribuição de endereço dinâmico no IPv6 usando SLAAC e DHCP](#) para uma introdução à configuração automática de endereço apátrida (SLAAC) e ao DHCPv6.

Diagrama de Rede

Esta configuração de exemplo descreve como configurar o ASA como um agente de transmissão DHCPv6. Nesta configuração, o **CLIENTE** é a relação onde o cliente do IPv6 é conectado. O **SERVER** é a relação através de que o server DHCPv6 **2001:db8:200::2/64** é alcançável.



DHCPv6 contra os tipos de mensagem DHCPv4

DHCPv6 Message Type	DHCPv4 Message Type
Solicit (1)	DHCPDISCOVER
Advertise (2)	DHCPOFFER
Request (3), Renew (5), Rebind (6)	DHCPREQUEST
Reply (7)	DHCPACK / DHCPNAK
Release (8)	DHCPRELEASE
Information-Request (11)	DHCPINFORM
Decline (9)	DHCPDECLINE
Confirm (4)	none
Reconfigure (10)	DHCPFORCERENEW
Relay-Forw (12), Relay-Reply (13)	none

Relé DHCPv6 apátrida

Configuração

Está aqui a configuração básica para a configuração de Frame Relay DHCPv6 apátrida no ASA:

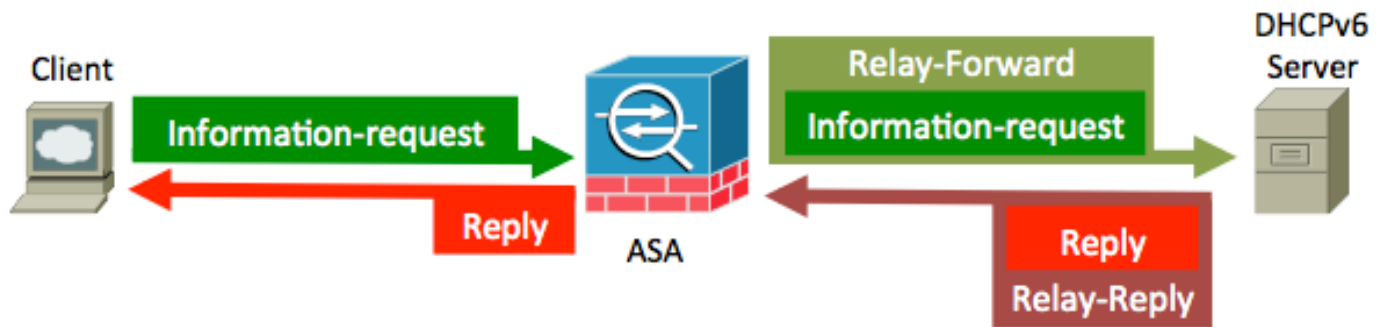
```
interface GigabitEthernet0/1
 nameif CLIENT
 security-level 100
 ipv6 address 2001:db8:100::1/64
 ipv6 enable
 ipv6 nd other-config-flag
!
interface GigabitEthernet0/0
 nameif SERVER
 security-level 0
 ipv6 address 2001:db8:200:1/64
 ipv6 enable
!
ipv6 dhcprelay server 2001:db8:200:2 inside
ipv6 dhcprelay enable outside
```

Fluxo de pacote

Com DHCPv6 apátrida, está aqui o fluxo de pacote de informação do cliente:



O ASA intercepta estes pacotes e envolve-os no formato da transmissão de DHCP:



Verificar

Debugs

Se você permite **debugar o IPv6 dhcprelay** e **debugar o DHCP do IPv6**, a seguir a saída relevante imprime à tela. Esta saída é tomada de uma encenação de trabalho:

```
IPv6 DHCP: Received INFORMATION-REQUEST from fe80::c671:feff:fe93:b51a on CLIENT
```

```
IPv6 DHCP: detailed packet contents
src fe80::c671:feff:fe93:b51a (CLIENT)
dst ff02::1:2
type INFORMATION-REQUEST(11), xid 1588088
option ELAPSED-TIME(8), len 2
  elapsed-time 0
option CLIENTID(1), len 10
  00030001c471fe93b516
option ORO(6), len 6
  DNS-SERVERS, DOMAIN-LIST, UNKNOWN
```

```
IPv6 DHCP_RELAY: Relaying INFORMATION-REQUEST from fe80::c671:feff:fe93:b51a on CLIENT
IPv6 DHCP_RELAY: Creating relay binding for fe80::c671:feff:fe93:b51a at interface CLIENT
IPv6 DHCP_RELAY:   to 2001:db8:200::2 via 2001:db8:200::2 using SERVER
IPv6 DHCP: Sending RELAY-FORWARD to 2001:db8:200::2 on SERVER
```

```
IPv6 DHCP: detailed packet contents
src 2001:db8:200::1
dst 2001:db8:200::2 (SERVER)
type RELAY-FORWARD(12), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 34
  type INFORMATION-REQUEST(11), xid 1588088
  option ELAPSED-TIME(8), len 2
    elapsed-time 0
  option CLIENTID(1), len 10
```

```
00030001c471fe93b516
option ORO(6), len 6
  DNS-SERVERS,DOMAIN-LIST,UNKNOWN
option INTERFACE-ID(18), len 4
0x00000015
IPv6 DHCP: Received RELAY-REPLY from 2001:db8:200::2 on SERVER
```

IPv6 DHCP: detailed packet contents

```
src 2001:db8:200::2 (SERVER)
dst 2001:db8:200::1
type RELAY-REPLY(13), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 67
type REPLY(7), xid 1588088
option SERVERID(2), len 10
  00030001002414a33c94
option CLIENTID(1), len 10
  00030001c471fe93b516
option DNS-SERVERS(23), len 16
  2001:db8:1000::1
option DOMAIN-LIST(24), len 11
  cisco.com
option INTERFACE-ID(18), len 4
0x00000015
```

IPv6 DHCP_RELAY: Relaying RELAY-REPLY from 2001:db8:200::2 on SERVER

IPv6 DHCP_RELAY: relayed msg: REPLY

IPv6 DHCP_RELAY: to fe80::c671:feff:fe93:b51a

IPv6 DHCP: Sending REPLY to fe80::c671:feff:fe93:b51a on CLIENT

IPv6 DHCP: detailed packet contents

```
src fe80::219:7ff:fe24:2e44
dst fe80::c671:feff:fe93:b51a (CLIENT)
type REPLY(7), xid 1588088
option SERVERID(2), len 10
  00030001002414a33c94
option CLIENTID(1), len 10
  00030001c471fe93b516
option DNS-SERVERS(23), len 16
  2001:db8:1000::1
option DOMAIN-LIST(24), len 11
  cisco.com
```

No pacote de requisição INFORMATION-REQUEST, o cliente pede somente o DNS-server e o domínio, que é esperado desde que o cliente é configurado para DHCPv6 apátrida.

Instantâneos de Wireshark

Requisição de cliente de DHCP

No.	Time	Source	Destination	Protocol	Length	Identification	Info
1	0.000000	fe80::c671:feff:fe93:b51a	ff02::1:2	DHCPv6	100		Information-request XID: 0xfc3adf CID: 00030001c471fe93b516
2	0.005584	fe80::219:7ff:fe24:2e44	fe80::c671:feff:fe93:b51a	DHCPv6	133		Reply XID: 0xfc3adf CID: 00030001c471fe93b516

Payload length: 42
Next header: UDP (17)
Hop limit: 255

Source: fe80::c671:feff:fe93:b51a (fe80::c671:feff:fe93:b51a) → Src. Address field set to link-local IPv6 address assigned to the sending interface.
[Source SA MAC: c4:71:fe:93:b5:1a (c4:71:fe:93:b5:1a)]
Destination: ff02::1:2 (ff02::1:2) → Dst. Address set to link-local scope all-routers Multicast address (FF02::2).
[Source GeoIP: Unknown]
[Destination GeoIP: Unknown]

User Datagram Protocol, [Src Port: dhcpv6-client (546), Dst Port: dhcpv6-server (547)] UDP ports used for DHCPv6.

DHCPv6

Message type: Information-request (11)
Transaction ID: 0xfc3adf

Elapsed time
Option: Elapsed time (8)
Length: 2
Value: 0000
Elapsed-time: 0 ms

Client Identifier
Option: Client Identifier (1)
Length: 10
Value: 00030001c471fe93b516
DUID: 00030001c471fe93b516
DUID Type: link-layer address (3)
Hardware type: Ethernet (1)
Link-layer address: c4:71:fe:93:b5:16

Option Request
Option: Option Request (6)
Length: 6
Value: 001700180020

Requested option code: DNS recursive name server (23)
Requested option code: Domain Search List (24)
Requested option code: Lifetime (32) → Requested options.

Requisição DHCP retransmitida pelo ASA

No.	Time	Source	Destination	Protocol	Length	Identification	Info
1	0.000000	2001:db8:200::1	2001:db8:200::2	DHCPv6	146		Relay-Forward L: 2001:db8:100::1 Information-request XID: 0xfc3adf CID: 00030001c471fe93b516
2	0.004836	2001:db8:200::2	2001:db8:200::1	DHCPv6	179		Relay-reply L: 2001:db8:100::1 Reply XID: 0xfc3adf CID: 00030001c471fe93b516

User Datagram Protocol, [Src Port: dhcpv6-server (547), Dst Port: dhcpv6-server (547)] Ports used for DHCPv6 Relay

DHCPv6

Message type: Relay-forward (12)
Hopcount: 0
Link address: 2001:db8:100::1 (2001:db8:100::1)
Peer address: fe80::c671:feff:fe93:b51a (fe80::c671:feff:fe93:b51a)

Relay Message
Option: Relay Message (9)
Length: 34
Value: 0bf3adf008000200000001000a00030001c471fe93b516...

DHCPv6

Message type: Information-request (11)
Transaction ID: 0xfc3adf

Elapsed time
Option: Elapsed time (8)
Length: 2
Value: 0000
Elapsed-time: 0 ms

Client Identifier
Option: Client Identifier (1)
Length: 10
Value: 00030001c471fe93b516
DUID: 00030001c471fe93b516
DUID Type: link-layer address (3)
Hardware type: Ethernet (1)
Link-layer address: c4:71:fe:93:b5:16

Option Request
Option: Option Request (6)
Length: 6
Value: 001700180020
Requested option code: DNS recursive name server (23)
Requested option code: Domain Search List (24)

Resposta DHCP do server

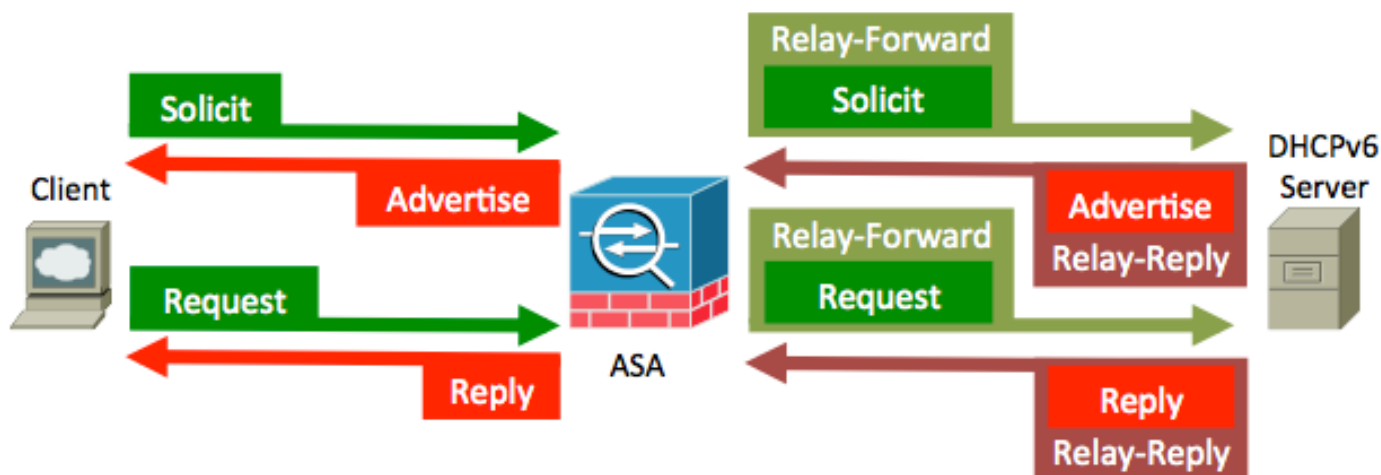

```
!
ipv6 dhcprelay server 2001:db8:200:2 inside
ipv6 dhcprelay enable outside
```

Fluxo de pacote

Com stateful DHCPv6, está aqui o fluxo de pacote de informação do cliente:



O ASA intercepta estes pacotes e envolve-os no formato da transmissão de DHCP:



Verificar

Debugs

```
IPv6 DHCP: Received SOLICIT from fe80::c671:feff:fe93:b51a on CLIENT
```

```
IPv6 DHCP: detailed packet contents
src fe80::c671:feff:fe93:b51a (CLIENT)
dst ff02::1:2
type SOLICIT(1), xid 2490681
option ELAPSED-TIME(8), len 2
elapsed-time 0
option CLIENTID(1), len 10
00030001c471fe93b516
option ORO(6), len 4
DNS-SERVERS, DOMAIN-LIST
option IA-NA(3), len 12
IAID 0x00040001, T1 0, T2 0
```

```
IPv6 DHCP_RELAY: Relaying SOLICIT from fe80::c671:feff:fe93:b51a on CLIENT
```

```
IPv6 DHCP_RELAY: Creating relay binding for fe80::c671:feff:fe93:b51a at interface CLIENT
```


IPv6 DHCP_RELAY: to 2001:db8:200::2 via 2001:db8:200::2 using SERVER
IPv6 DHCP: Sending RELAY-FORWARD to 2001:db8:200::2 on SERVER

IPv6 DHCP: detailed packet contents

```
src 2001:db8:200::1
dst 2001:db8:200::2 (SERVER)
type RELAY-FORWARD(12), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 48
type SOLICIT(1), xid 2490681
option ELAPSED-TIME(8), len 2
  elapsed-time 0
option CLIENTID(1), len 10
  00030001c471fe93b516
option ORO(6), len 4
  DNS-SERVERS,DOMAIN-LIST
option IA-NA(3), len 12
  IAID 0x00040001, T1 0, T2 0
option INTERFACE-ID(18), len 4
  0x00000015
```

IPv6 DHCP: Received RELAY-REPLY from 2001:db8:200::2 on SERVER

IPv6 DHCP: detailed packet contents

```
src 2001:db8:200::2 (SERVER)
dst 2001:db8:200::1
type RELAY-REPLY(13), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 111
type ADVERTISE(2), xid 2490681
option SERVERID(2), len 10
  00030001002414a33c94
option CLIENTID(1), len 10
  00030001c471fe93b516
option IA-NA(3), len 40
  IAID 0x00040001, T1 43200, T2 69120
option IAADDR(5), len 24
  IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
  preferred INFINITY, valid INFINITY
option DNS-SERVERS(23), len 16
  2001:db8:1000::1
option DOMAIN-LIST(24), len 11
  cisco.com
option INTERFACE-ID(18), len 4
  0x00000015
```

IPv6 DHCP_RELAY: Relaying RELAY-REPLY from 2001:db8:200::2 on SERVER

IPv6 DHCP_RELAY: relayed msg: ADVERTISE

IPv6 DHCP_RELAY: to fe80::c671:feff:fe93:b51a

IPv6 DHCP: Sending ADVERTISE to fe80::c671:feff:fe93:b51a on CLIENT

IPv6 DHCP: detailed packet contents

```
src fe80::219:7ff:fe24:2e44
dst fe80::c671:feff:fe93:b51a (CLIENT)
type ADVERTISE(2), xid 2490681
option SERVERID(2), len 10
  00030001002414a33c94
option CLIENTID(1), len 10
  00030001c471fe93b516
option IA-NA(3), len 40
  IAID 0x00040001, T1 43200, T2 69120
option IAADDR(5), len 24
  IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
  preferred INFINITY, valid INFINITY
```

```
option DNS-SERVERS(23), len 16
2001:db8:1000::1
option DOMAIN-LIST(24), len 11
cisco.com
```

IPv6 DHCP: Received REQUEST from fe80::c671:feff:fe93:b51a on CLIENT

IPv6 DHCP: detailed packet contents

```
src fe80::c671:feff:fe93:b51a (CLIENT)
dst ff02::1:2
type REQUEST(3), xid 2492842
option ELAPSED-TIME(8), len 2
elapsed-time 0
option CLIENTID(1), len 10
00030001c471fe93b516
option ORO(6), len 4
DNS-SERVERS,DOMAIN-LIST
option SERVERID(2), len 10
00030001002414a33c94
option IA-NA(3), len 40
IAID 0x00040001, T1 0, T2 0
option IAADDR(5), len 24
IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
preferred INFINITY, valid INFINITY
```

IPv6 DHCP_RELAY: Relaying REQUEST from fe80::c671:feff:fe93:b51a on CLIENT

IPv6 DHCP_RELAY: to 2001:db8:200::2 via 2001:db8:200::2 using SERVER

IPv6 DHCP: Sending RELAY-FORWARD to 2001:db8:200::2 on SERVER

IPv6 DHCP: detailed packet contents

```
src 2001:db8:200::1
dst 2001:db8:200::2 (SERVER)
type RELAY-FORWARD(12), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 90
type REQUEST(3), xid 2492842
option ELAPSED-TIME(8), len 2
elapsed-time 0
option CLIENTID(1), len 10
00030001c471fe93b516
option ORO(6), len 4
DNS-SERVERS,DOMAIN-LIST
option SERVERID(2), len 10
00030001002414a33c94
option IA-NA(3), len 40
IAID 0x00040001, T1 0, T2 0
option IAADDR(5), len 24
IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
preferred INFINITY, valid INFINITY
option INTERFACE-ID(18), len 4
0x00000015
```

IPv6 DHCP: Received RELAY-REPLY from 2001:db8:200::2 on SERVER

IPv6 DHCP: detailed packet contents

```
src 2001:db8:200::2 (SERVER)
dst 2001:db8:200::1
type RELAY-REPLY(13), hop 0
link 2001:db8:100::1
peer fe80::c671:feff:fe93:b51a
option RELAY-MSG(9), len 111
type REPLY(7), xid 2492842
option SERVERID(2), len 10
00030001002414a33c94
option CLIENTID(1), len 10
00030001c471fe93b516
```

```

option IA-NA(3), len 40
  IAID 0x00040001, T1 43200, T2 69120
option IAADDR(5), len 24
  IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
  preferred INFINITY, valid INFINITY
option DNS-SERVERS(23), len 16
  2001:db8:1000::1
option DOMAIN-LIST(24), len 11
  cisco.com
option INTERFACE-ID(18), len 4
  0x00000015

```

```

IPv6 DHCP_RELAY: Relaying RELAY-REPLY from 2001:db8:200::2 on SERVER
IPv6 DHCP_RELAY:   relayed msg: REPLY
IPv6 DHCP_RELAY:   to fe80::c671:feff:fe93:b51a
IPv6 DHCP: Sending REPLY to fe80::c671:feff:fe93:b51a on CLIENT

```

```

IPv6 DHCP: detailed packet contents
src fe80::219:7ff:fe24:2e44
dst fe80::c671:feff:fe93:b51a (CLIENT)
type REPLY(7), xid 2492842
option SERVERID(2), len 10
00030001002414a33c94
option CLIENTID(1), len 10
00030001c471fe93b516
option IA-NA(3), len 40
IAID 0x00040001, T1 43200, T2 69120
option IAADDR(5), len 24
  IPv6 address 2001:db8:300:0:48ae:5f5d:8290:e926
  preferred INFINITY, valid INFINITY
option DNS-SERVERS(23), len 16
2001:db8:1000::1
option DOMAIN-LIST(24), len 11
cisco.com

```

Instantâneos de Wireshark

SOLICITE (1)

Um cliente DHCPv6 envia uma mensagem da solicitação a fim encontrar os server DHCPv6.

The image shows a Wireshark packet capture of a DHCPv6 SOLICIT message. The packet list pane shows three packets: a Solicit (114 bytes), an Advertise (177 bytes), and a Reply (177 bytes). The packet details pane is expanded to show the structure of the SOLICIT message:

- Message type: solicit (1)** - DHCPv6 client sends a solicit message. Transaction ID: 0x260139
- Elapsed time**
 - Option: Elapsed time (8), Length: 2, Value: 0000, Elapsed-time: 0 ms
- Client Identifier**
 - Option: Client Identifier (1), Length: 10, Value: 00030001c471fe93b516
 - DUID: 00030001c471fe93b516 (DUID Type: link-layer address (3))
 - Hardware type: Ethernet (1), Link-layer address: c4:71:fe:93:b5:16
- Option Request**
 - Option: Option Request (6), Length: 4, Value: 00170018
 - Requested option code: DNS recursive name server (23)
 - Requested option code: Domain search List (24)
- Identity Association for Non-temporary Address**
 - Option: Identity Association for Non-temporary Address (3), Length: 12, Value: 00040001000000000000000000
 - IAID: 00040001, T1: 0, T2: 0

Annotations in the image highlight key fields: the Transaction ID, the DUID, and the Identity Association for Non-temporary Address. A note states: "Each DHCP client and server has a DUID. DHCP servers use DUIDs to identify clients for the selection of configuration parameters and in the association of IAs with clients." Another note states: "The client is responsible for creating IAs and requesting that a server assign IPv6 address to IA." A third note at the top indicates "Ports used between clients and Relay Agent (ASA)." for the source and destination ports.

O ASA retransmite a mensagem da solicitação.

```
Source          Destination      Protocol Length Identification  Info
2001:db8:200::1 2001:db8:200::2 DHCPv6 160 Relay-Forw L: 2001:db8:100::1 Solicit XID: 0x260139 CID: 00030001c471fe93b
2001:db8:200::2 2001:db8:200::1 DHCPv6 223 Relay-reply L: 2001:db8:100::1 Advertise XID: 0x260139 CID: 00030001c471fe93b
2001:db8:200::1 2001:db8:200::2 DHCPv6 202 Relay-Forw L: 2001:db8:100::1 Request XID: 0x2609aa CID: 00030001c471fe93b
2001:db8:200::2 2001:db8:200::1 DHCPv6 223 Relay-reply L: 2001:db8:100::1 Reply XID: 0x2609aa CID: 00030001c471fe93b5

Frame 1: 160 bytes on wire (1280 bits), 160 bytes captured (1280 bits)
Ethernet II, Src: Cisco_24:2e:44 (00:19:07:24:2e:44), Dst: Cisco_a3:3c:98 (00:24:14:a3:3c:98)
802.1Q Virtual LAN, PRI: 0, CFI: 0, ID: 901
Internet Protocol Version 6, Src: 2001:db8:200::1 (2001:db8:200::1), Dst: 2001:db8:200::2 (2001:db8:200::2)
User Datagram Protocol, Src Port: dhcpv6-server (547), Dst Port: dhcpv6-server (547)
DHCPv6
  Message type: Relay-forw (12)
    Hopcount: 0
    Link address: 2001:db8:100::1 (2001:db8:100::1)
    Peer address: fe80::c671:feff:fe93:b51a (fe80::c671:feff:fe93:b51a)
  Relay Message
    Option: Relay Message (9)
      Length: 48
      Value: 012601390008000200000001000a00030001c471fe93b516...
  DHCPv6
    Message type: solicit (1)
    Transaction ID: 0x260139
    Elapsed time
    Client Identifier
    Option Request
    Identity Association for Non-temporary Address
Interface-ID
```

ANUNCIE (2)

Um server envia uma mensagem do anúncio a fim indicar que está disponível para o serviço DHCP, em resposta a uma mensagem da solicitação recebida de um cliente.

```
Source          Destination      Protocol Length Identification  Info
2001:db8:200::1 2001:db8:200::2 DHCPv6 160 Relay-forw L: 2001:db8:100::1 Solicit XID: 0x260139 CID: 00030001c471fe93b
2001:db8:200::2 2001:db8:200::1 DHCPv6 223 Relay-reply L: 2001:db8:100::1 Advertise XID: 0x260139 CID: 00030001c471fe93b
2001:db8:200::1 2001:db8:200::2 DHCPv6 202 Relay-Forw L: 2001:db8:100::1 Request XID: 0x2609aa CID: 00030001c471fe93b
2001:db8:200::2 2001:db8:200::1 DHCPv6 223 Relay-reply L: 2001:db8:100::1 Reply XID: 0x2609aa CID: 00030001c471fe93b5

Frame 2: 223 bytes on wire (1784 bits), 223 bytes captured (1784 bits)
Ethernet II, Src: Cisco_a3:3c:98 (00:24:14:a3:3c:98), Dst: Cisco_24:2e:44 (00:19:07:24:2e:44)
802.1Q Virtual LAN, PRI: 6, CFI: 0, ID: 901
Internet Protocol Version 6, Src: 2001:db8:200::2 (2001:db8:200::2), Dst: 2001:db8:200::1 (2001:db8:200::1)
User Datagram Protocol, Src Port: dhcpv6-server (547), Dst Port: dhcpv6-server (547)
DHCPv6
  Message type: Relay-reply (13)
    Hopcount: 0
    Link address: 2001:db8:100::1 (2001:db8:100::1)
    Peer address: fe80::c671:feff:fe93:b51a (fe80::c671:feff:fe93:b51a)
  Relay Message
    Option: Relay Message (9)
      Length: 111
      Value: 022601390002000a00030001002414a33c940001000a0003...
  DHCPv6
    Message type: Advertise (2)
      Transaction ID: 0x260139
      Server Identifier
      Client Identifier
      Identity Association for Non-temporary Address
      DNS recursive name server
      Domain Search List
Interface-ID
```

```
Message type: Advertise (2)
Transaction ID: 0x260139
Server Identifier
Option: Server Identifier (2)
Length: 10
Value: 00030001002414a33c94
DUID: 00030001002414a33c94
DUID Type: Link-layer address (3)
Hardware type: Ethernet (1)
Link-layer address: 00:24:14:a3:3c:94
Client Identifier
Identity Association for Non-temporary Address
Option: Identity Association for Non-temporary Address (3)
Length: 40
Value: 000400010000a8c000010e000005001820010db803000000...
IAID: 00040001
T1: 43200
T2: 69120
IA Address
Option: IA Address (5)
Length: 24
Value: 20010db80300000048ae5f5d8290e926fffffffd8290e926
IPv6 address: 2001:db8:300:0:48ae:5f5d:8290:e926 (2001:db8:300:0:48ae:5f5d:8290:e926)
Preferred lifetime: infinity
Preferred lifetime: infinity
DNS recursive name server
Option: DNS recursive name server (23)
Length: 16
Value: 2001:db8:1:00000000000000000000000000000000
DNS server address: 2001:db8:1000::1 (2001:db8:1000::1)
Domain Search List
Option: Domain Search List (24)
Length: 11
Value: 05636973636f03636fd00
DNS Domain Search List
Domain: cisco.com
Interface-ID
```

PEDIDO (3)

Um cliente envia um mensagem request a fim pedir os parâmetros de configuração, que incluem endereços IP de Um ou Mais Servidores Cisco ICM NT ou prefixos delegados, de um server

específico.

Client request for IPv6 Address, DNS Server, Domain name.

RESPOSTA (7)

Um server envia uma mensagem da resposta que contenha endereços e parâmetros de configuração atribuídos em resposta a uma solicitação, pedido, renova, ou reencaderna a mensagem recebida de um cliente. Um server envia uma mensagem da resposta que contenha parâmetros de configuração em resposta a uma mensagem do Informação-pedido. Um server envia uma mensagem da resposta em resposta a uma mensagem da confirmação que confirme ou nega que os endereços atribuídos ao cliente sejam apropriados ao link a que o cliente é conectado. Um server envia uma mensagem da resposta a fim reconhecer o recibo de uma liberação ou diminuir a mensagem.

2001:db8:2000::2

Troubleshooting

Confirme a Conectividade com o server DHCPv6.

```
ciscoasa# show ipv6 neighbor
```

IPv6 Address

Age Link-layer Addr State Interface

2001:db8:200::2

0 0024.14a3.3c98 REACH SERVER

Confirme que você recebe pacotes do cliente quando pedir um endereço do IPv6. O pacote enviado pelo cliente dependerá dos ajustes da atribuição de endereço (isto é, stateful contra apátrida).

Quando o cliente começa o processo DHCPv6, envia um roteador solicita a mensagem a fim descobrir a presença de Roteadores do IPv6 no link. Envia uma mensagem da solicitação do Multicast Router a fim alertar o Roteadores do IPv6 responder. No cabeçalho de Ethernet do mensagem de Solicitação de roteador, indicador destes campos:

- O campo de endereço de origem é o MAC address do host que pede o endereço do IPv6.
- O campo de endereço de destino é ajustado a 33-33-00-00-00-02.

No encabeçamento do IPv6 do mensagem de Solicitação de roteador, indicador destes campos.

- O campo de endereço de origem é ajustado a um endereço do IPv6 do link local atribuído à relação de emissão ou ao IPv6 endereço não especificado (::).
- O campo de endereço de destino é ajustado ao endereço de multicast do todo-Roteadores do espaço do link local (FF02::2).
- O campo do limite do salto é ajustado a 255.

Na resposta, o Roteadores do IPv6 envia mensagens que espontâneas do anúncio de roteador a mensagem do anúncio de roteador contém a informação exigida por anfitriões a fim determinar os prefixos do link, a unidade de transmissão máxima do link (MTU), e o específico distribui.

```
ciscoasa(config)# show capture capin detail
```

```
fe80::c671:feff:fe93:b51a.546 > ff02::1:2.547: [udp sum ok] udp 42
[hlim 255] (len 100)---->Request from client

fe80::219:7ff:fe24:2e44.547 > fe80::c671:feff:fe93:b51a.546: [udp sum ok]
udp 75 [class 0xe0] (len 133, hlim 255)
```

```
ciscoasa(config)# show capture capout detail
```

2 packets captured

```
1: 12:06:52.700799      2001:db8:200:1.547 > 2001:db8:200:2.547:  udp 88
[class 0xe0]---->ASA forwards request to DHCPv6 router

2: 12:06:53.289047      2001:db8:200:2.547 > 2001:db8:200:1.547:  udp 121
[class 0xe0]----> Reply from DHCPV6 server.
```

Saídas da transmissão de DHCP

```
ciscoasa# show ipv6 dhcprelay binding
```

1 in use, 1 most used

```
Client: fe80::c671:feff:fe93:b51a (CLIENT)
```

```
DUID: 00030001c471fe93b516, Timeout in 56 seconds
```

Nota: O emperramento é suprimido pelo ASA após um período curto. Isto é visto dentro **debuga o IPv6 dhcprelay**.

```
ciscoasa# show ipv6 dhcprelay binding
```

1 in use, 1 most used

Client: fe80::c671:feff:fe93:b51a (CLIENT)

DUID: 00030001c471fe93b516, Timeout in 56 seconds
ciscoasa# **show ipv6 dhcprelay statistics**

Relay Messages:

SOLICIT	2
ADVERTISE	2
REQUEST	2
CONFIRM	0
RENEW	0
REBIND	0
REPLY	9
RELEASE	1
DECLINE	0
RECONFIGURE	0
INFORMATION-REQUEST	6
RELAY-FORWARD	11
RELAY-REPLY	11

Relay Errors:

Malformed message:	0
Block allocation/duplication failure:	0
Hop count limit exceeded:	0
Forward binding creation failure:	0
Reply binding lookup failure:	0
No output route:	0
Conflict relay server route:	0
Failed to add server input rule:	0
Unit or context is not active:	0

Total Relay Bindings Created: 8

Libere endereços

Os clientes podem liberar seu endereço atribuído DHCPv6 depois que são feitos usando o para a rede. A próxima seção mostra o resultado do debug associado com a liberação do endereço no stateful DHCPv6.

Debugs

ciscoasa# **show ipv6 dhcprelay statistics**

Relay Messages:

SOLICIT	2
ADVERTISE	2
REQUEST	2
CONFIRM	0
RENEW	0
REBIND	0
REPLY	9
RELEASE	1
DECLINE	0
RECONFIGURE	0
INFORMATION-REQUEST	6
RELAY-FORWARD	11
RELAY-REPLY	11

Relay Errors:

Malformed message:	0
Block allocation/duplication failure:	0
Hop count limit exceeded:	0

Forward binding creation failure:	0
Reply binding lookup failure:	0
No output route:	0
Conflict relay server route:	0
Failed to add server input rule:	0
Unit or context is not active:	0
Total Relay Bindings Created:	8

Informações Relacionadas

[Compreendendo várias opções de DHCP](#)

[Exemplo de configuração da transmissão de DHCP ASA](#)

[Configurar o ASA para passar o tráfego do IPv6](#)

[Capturas de pacote de informação ASA com CLI e exemplo da configuração ASDM](#)