

ASA : Exemple et dépannage de configuration du relais DHCPv6

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Introduction

Le document décrit comment configurer une appliance de sécurité adaptable Cisco (ASA) comme un agent du relais DHCPv6 et couvre également du dépannage de base. Dans l'ASA codez la version 9.0 et ultérieures, les supports ASA

Conditions préalables

Conditions requises

Cisco vous recommande de prendre connaissance des rubriques suivantes :

- Concepts de base d'IPv6
- IPv6 adressant le mécanisme
- Écoulement du paquet DHCPv6
- Concepts de relais DHCP

Composants utilisés

Les informations dans ce document sont basées sur la version 9.1.2 ASA 5500.

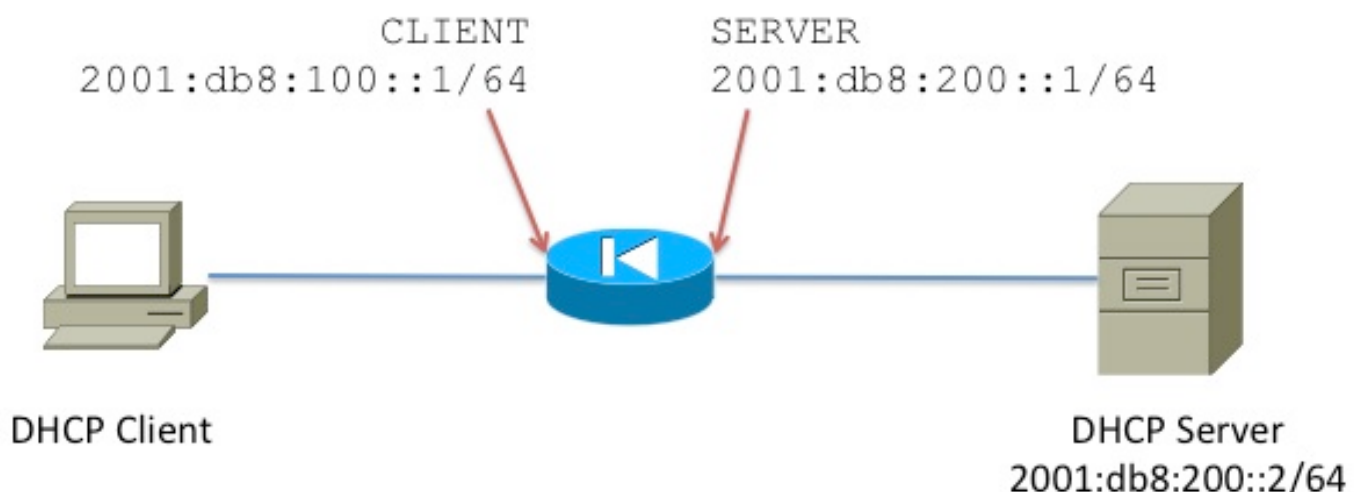
Les informations contenues dans ce document ont été créées à partir des périphériques d'un environnement de laboratoire spécifique. Tous les périphériques utilisés dans ce document ont démarré avec une configuration effacée (par défaut). Si votre réseau est opérationnel, assurez-vous que vous comprenez l'effet potentiel de toute commande.

Avec état contre DHCPv6 sans état

Si vous comprenez la différence méthode de l'allocation d'adresse dans l'IPv6, il vous aide à comprendre comment la caractéristique du relais DHCPv6 travaille à l'ASA. Refre à l'[affectation d'adresses dynamique dans l'IPv6 utilisant SLAAC et DHCP](#) pour une introduction à l'autoconfiguration sans état d'adresse (SLAAC) et au DHCPv6.

Diagramme du réseau

Cette configuration d'échantillon décrit comment configurer l'ASA comme un agent du relais DHCPv6. Dans cette configuration, le **CLIENT** est l'interface où le client d'IPv6 est connecté. Le **SERVEUR** est l'interface par laquelle le serveur DHCPv6 **2001:db8:200::2/64** est accessible.



DHCPv6 contre les types de message 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

Relais DHCPv6 sans état

Configuration

Voici la configuration de base pour la configuration sans état du relais DHCPv6 sur l'ASA :

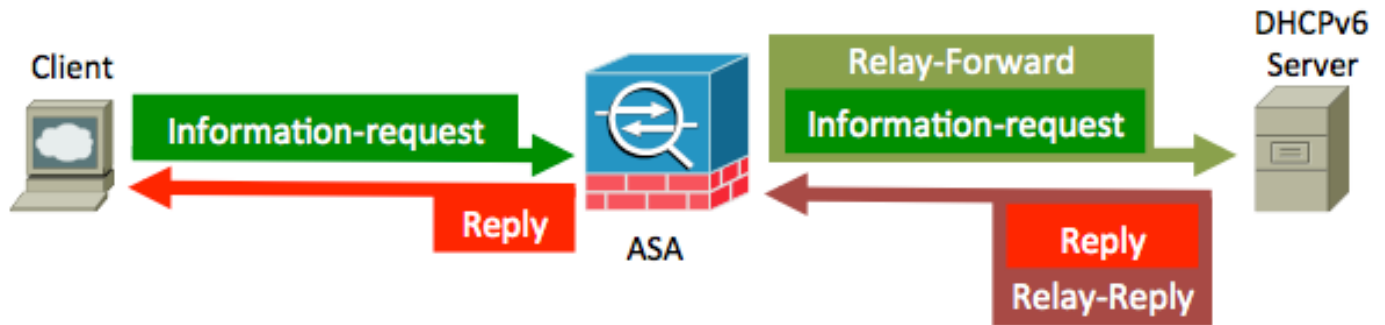
```
interface GigabitEthernet0/1
 nameif CLIENT
 security-level 100
 ipv6 address 2001:db8:100::1/64
 ipv6 enable
 ipv6 nd other-config-flag
!
interface GigabitEthernet0/0
 nameif SERVER
 security-level 0
 ipv6 address 2001:db8:200:1/64
 ipv6 enable
!
ipv6 dhcprelay server 2001:db8:200:2 inside
ipv6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

[Flux des paquets](#)

Avec DHCPv6 sans état, voici l'écoulement de paquet du client :



L'ASA intercepte ces paquets et les enveloppe dans le format de relais DHCP :



Vérifiez

Debugs

Si vous activez **mettez au point l'IPv6 les copies dhcrelay** et le **debug ipv6 dhcp**, alors appropriés de sortie à l'écran. Cette sortie est prise d'un scénario fonctionnant :

```
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
```

Dans le paquet de demandes INFORMATION-REQUEST, le client demande seulement le **dns-server** et le **domaine**, qui est prévu puisque le client est configuré pour DHCPv6 sans état.

Instantanés de Wireshark

Demande de DHCP Client

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.

Requête DHCP transmise par relais par 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: 00030001
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)

Réponse DHCP de serveur

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

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: 67

Value: 07fc3adf0002000a00030001002414a33c940001000a0003...

DHCPv6

Message type: Reply (7)

Transaction ID: 0xfc3adf

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

DNS recursive name server

Option: DNS recursive name server (23)

Length: 16

Value: 20010db8100000000000000000000001

DNS server address: 2001:db8:1000::1 (2001:db8:1000::1) **DNS Server Provided by DHCPv6 Server**

Domain Search List

Option: Domain Search List (24)

Length: 11

Value: 05636973636f03636f6d00

DNS Domain Search List

Domain: cisco.com **Domain name**

Réponse expédiée au client

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	0.00584	fe80::219:7ff:fe24:2e44	fe80::c671:feff:fe93:b51a	DHCPv6	133		Reply XID: 0xfc3adf CID: 00030001c471fe93b516

Internet Protocol Version 6, Src: fe80::219:7ff:fe24:2e44 (fe80::219:7ff:fe24:2e44), Dst: fe80::c671:feff:fe93:b51a (fe80::c671:feff:fe93:b51a)

User Datagram Protocol, Src Port: dhcpv6-server (547), Dst Port: dhcpv6-client (546) **Ports used to reply clients**

DHCPv6

Message type: Reply (7)

Transaction ID: 0xfc3adf

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

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

DNS recursive name server

Option: DNS recursive name server (23)

Length: 16

Value: 20010db8100000000000000000000001

DNS server address: 2001:db8:1000::1 (2001:db8:1000::1) **Information forwarded to client**

Domain Search List

Option: Domain Search List (24)

Length: 11

Value: 05636973636f03636f6d00

DNS Domain Search List

Domain: cisco.com

Avec état DHCPv6

Configuration

Voici la configuration de base pour la configuration de relais de l'avec état DHCPv6 sur l'ASA :

```

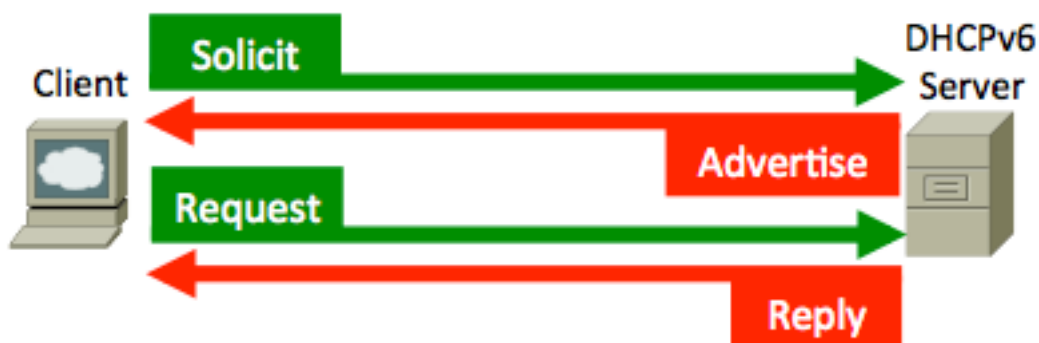
interface GigabitEthernet0/1
 nameif CLIENT
 security-level 100
 ipv6 address 2001:db8:100::1/64
 ipv6 enable
!
interface GigabitEthernet0/0
 nameif SERVER
 security-level 0
 ipv6 address 2001:db8:200:1/64
 ipv6 enable
!

```

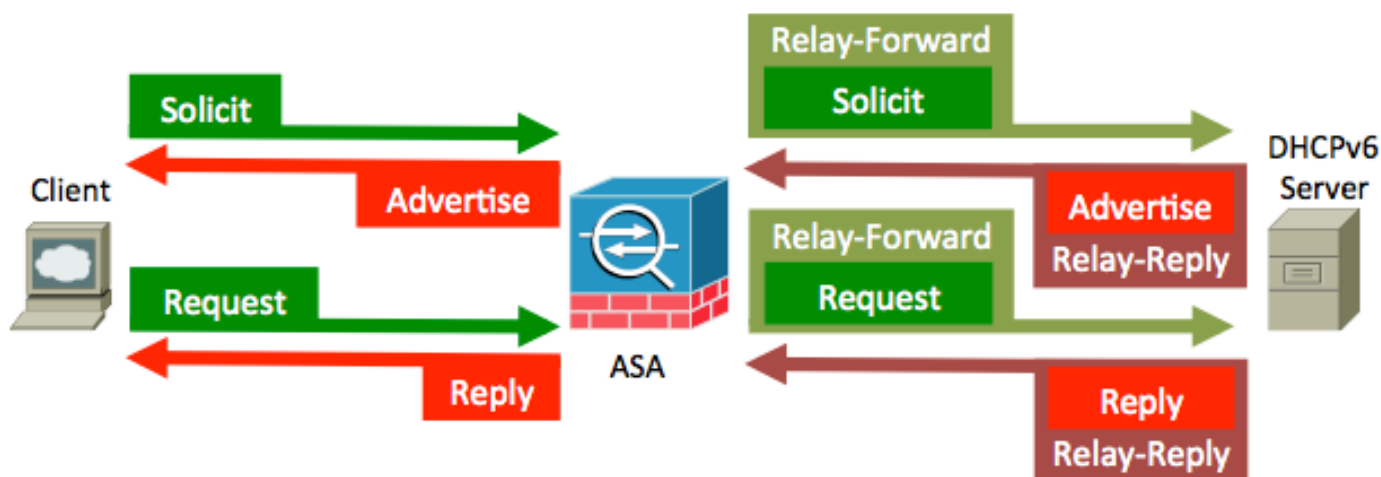
```
ipv6 dhcprelay server 2001:db8:200:2 inside
ipv6 dhcprelay enable outside
```

Flux des paquets

Avec l'avec état DHCPv6, voici l'écoulement de paquet du client :



L'ASA intercepte ces paquets et les enveloppe dans le format de relais DHCP :



Vérifiez

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

```

Instantanés de Wireshark

SOLLICITEZ (1)

Un client DHCPv6 envoie un message de sollicitation afin de localiser les serveurs DHCPv6.

The image shows a Wireshark packet capture of a DHCPv6 SOLICIT message. The packet list pane shows three packets: a SOLICIT (1) from fe80::c671:feff:fe93:b51a to ff02::1:2, an ADVERTISE (2) from fe80::219:7ff:fe24:2e44 to fe80::c671:feff:fe93:b51a, and a REPLY (3) from fe80::219:7ff:fe24:2e44 to fe80::c671:feff:fe93:b51a. The packet details pane for the SOLICIT message shows the following fields:

- Message type: SOLICIT (1) - DHCPv6 client sends a solicit message.
- Transaction ID: 0x260139
- Elapsed time: 0 ms
- Client Identifier: 00030001c471fe93b516
- DUID: 00030001c471fe93b516 - 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.
- DUID Type: link-layer address (3)
- Hardware type: Ethernet (1)
- Link-layer address: c4:71:fe:93:b5:16
- Option Request: 00170018
- Requested option code: DNS recursive name server (23)
- Requested option code: Domain search List (24)
- Identity Association for Non-temporary Address: 000400010000000000000000 - The client is responsible for creating IAs and requesting that a server assign IPv6 address to IA.
- IAID: 00040001
- T1: 0
- T2: 0

L'ASA transmet par relais le message de sollicitation.

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) **Ports used between ASA and DHCPv6 server.**

DHCPv6

Message type: Relay-forw (12) **ASA relay's Solicit message**

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

ANNONCEZ (2)

Un serveur envoie un message de la publicité afin d'indiquer qu'il est disponible pour le service DHCP, en réponse à un message de sollicitation reçu d'un client.

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) **Server sends an Advertise message to indicate that it is available for DHCPv6 service.**

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
 - Server DUID**
 - 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: 20010db80300000048ae5f5d8290e926ffffffffffffffff
 - Offered IP Address**
 - 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:db8:1000:0:0:0:0:0
 - DNS Server IP Address**
 - DNS server address: 2001:db8:1000::1 (2001:db8:1000::1)
- Domain Search List
 - Option: Domain Search List (24)
 - Length: 11
 - Value: 05636973636f03636fd00
 - Domain Name Provided**
 - DNS Domain Search List
 - Domain: cisco.com

Interface-Id

DEMANDE (3)

Un client envoie un message de demande afin de demander les paramètres de configuration, qui incluent des adresses IP ou des préfixes délégués, d'un serveur spécifique.

Confirmez que vous recevez des paquets du client quand il demande un ipv6 adresse. Le paquet envoyé par le client dépendra des configurations d'affectation d'adresses (c'est-à-dire, avec état contre sans état).

Quand le client commence le processus DHCPv6, il envoie un message sollicitant le message afin de découvrir la présence des Routeurs d'IPv6 sur le lien. Il envoie un message de sollicitation de routeur multidiffusion afin d'inciter les Routeurs d'IPv6 à répondre. Dans l'en-tête Ethernet du message de sollicitation de routeur, affichage de ces champs :

- La zone adresse d'adresse source est l'adresse MAC de l'hôte qui demande l'ipv6 adresse.
- Le champ d'adresse de destination est placé à 33-33-00-00-00-02.

Dans l'en-tête d'IPv6 du message de sollicitation de routeur, affichage de ces champs.

- La zone adresse d'adresse source est placée à un ipv6 adresse de lien-gens du pays assigné à l'interface de envoi ou à l'IPv6 adresse non spécifiée (: :).
- Le champ d'adresse de destination est placé à l'adresse de multidiffusion de tout-Routeurs de portée de lien-gens du pays (FF02::2).
- Le champ de limite de saut est placé à 255.

Dans la réponse, les Routeurs d'IPv6 envoient les messages non sollicités de publicité de routeur que le message de publicité de routeur contient les informations requises par des hôtes afin de les préfixes déterminer lien, le Maximum Transmission Unit de lien (MTU), et la particularité conduit.

```
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.
```

Sorties de relais 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
```

Remarque: L'attache est supprimée par l'ASA après une brève période. Ceci est vu dedans mettent au point l'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

```

Libérez les adresses

Les clients peuvent libérer leur adresse attribuée DHCPv6 après qu'ils soient faits utilisant elle pour le réseau. La section suivante affiche la sortie de débogage associée avec la release d'adresse dans l'avec état 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

[Informations connexes](#)

[Compréhension diverses des options DHCP](#)

[Exemple de configuration de relais DHCP ASA](#)

[Configurez l'ASA pour passer le trafic d'IPv6](#)

[Captures de paquet ASA avec l'exemple de configuration CLI et ASDM](#)