Configuración de la asignación LDAP de AnyConnect en Firepower Threat Defense (FTD)

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Introducción

Este documento proporciona un ejemplo de configuración de la asignación del protocolo ligero de acceso a directorios (LDAP) para usuarios de AnyConnect en Firepower Threat Defense (FTD) mediante una política FlexConfig de Firepower Management Center (FMC). Esta configuración se utiliza para permitir que usuarios específicos que pertenecen a un grupo de Active Directory (AD) establezcan una conexión de red privada virtual (VPN). Los usuarios de diferentes grupos AD no definidos en el mapa no podrán conectarse con el mismo perfil.

Prerequisites

Requirements

Cisco recomienda que conozca estos temas:

- Configuración de rango AD en FMC
- Windows Active Directory
- Configuración de AnyConnect (SSLVPN) en FMC
- Conocimiento básico de los objetos FlexConfig en FMC

Componentes Utilizados

- FirePower Manager Center (FMC) versión 6.2.3 y 6.5.0
- FirePower Threat Defense (FTD) versión 6.2.3 y 6.5.0
- Windows Server con Active Directory

Configurar

Configuración en el FTD

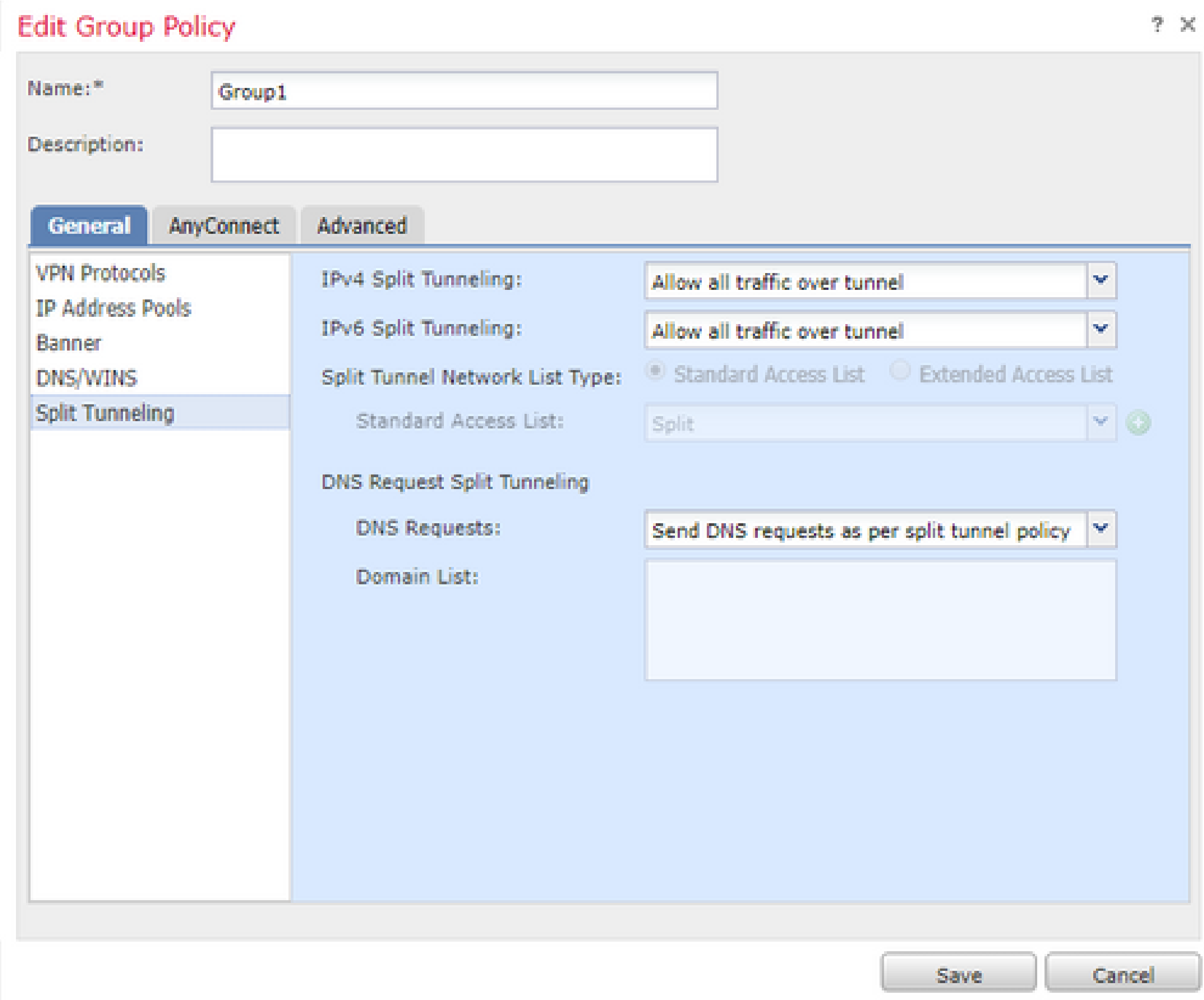
En este ejemplo, los usuarios que pertenecen al Grupo AD1 utilizan una configuración de túnel completo y los usuarios que pertenecen al Grupo AD2 tienen acceso limitado a hosts específicos. Los demás usuarios que no pertenecen a estos grupos no pueden ser autenticados.

Paso 1. Configure AnyConnect mediante la autenticación LDAP e implemente los cambios. Se puede encontrar un ejemplo en esta guía.

Paso 2. Vaya a Devices > Remote Access > Edit AnyConnect Policy > Advanced > Group Policies .

Paso 3. Cree 3 políticas de grupo diferentes:

- Group1 con la configuración de Tunelización Dividida configurada para **Permitir todo el tráfico sobre el túnel.**



Edit Group Policy

Name:* Group1

Description:

IPv4 Split Tunneling: Allow all traffic over tunnel

IPv6 Split Tunneling: Allow all traffic over tunnel

Split Tunnel Network List Type: ● Standard Access List ○ Extended Access List

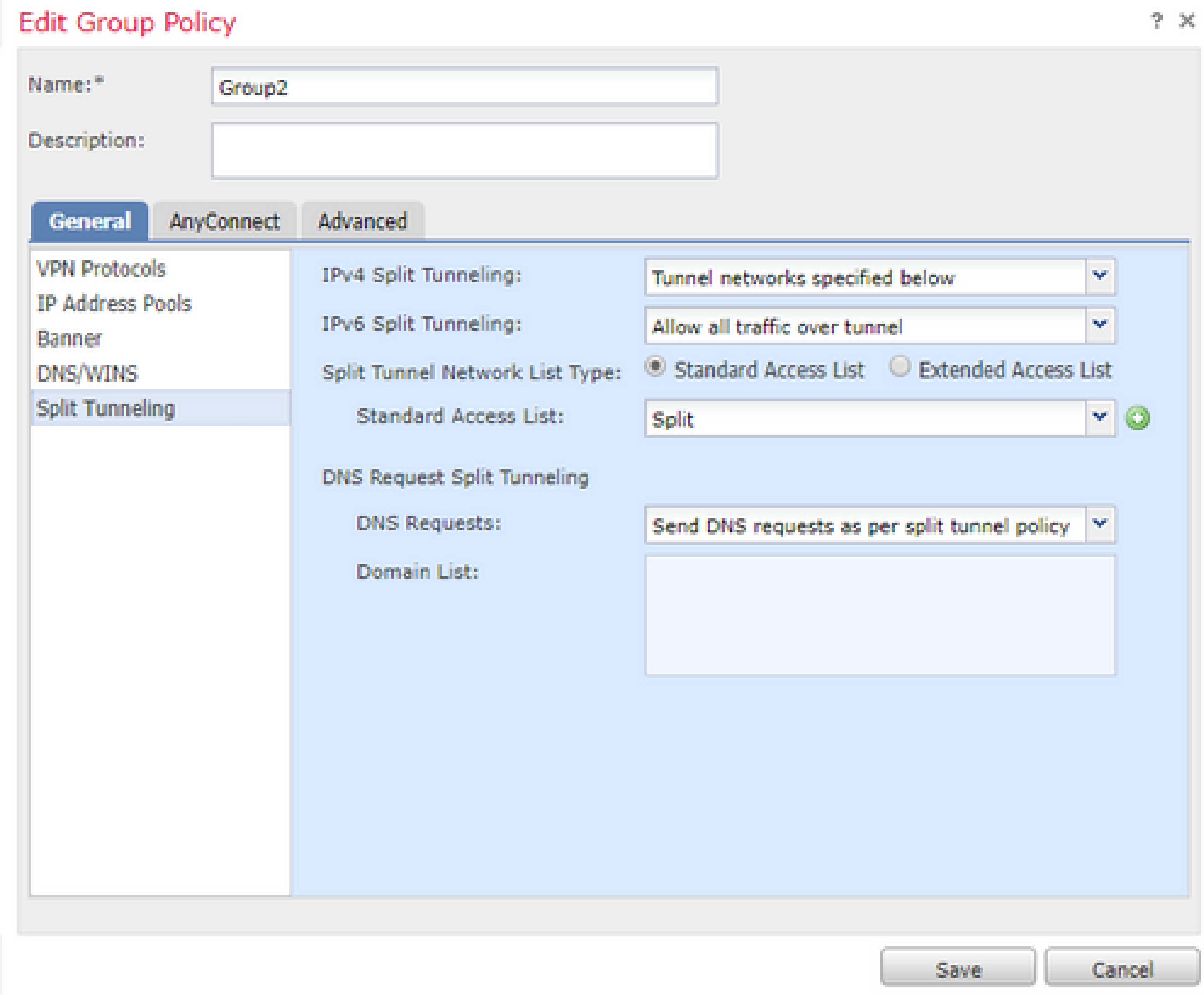
Standard Access List: Split

DNS Request Split Tunneling

DNS Requests: Send DNS requests as per split tunnel policy

Domain List:

- Grupo 2 con la configuración de Tunelización Dividida establecida en **Dividir**.



Edit Group Policy

Name:* Group2

Description:

IPv4 Split Tunneling: Tunnel networks specified below

IPv6 Split Tunneling: Allow all traffic over tunnel

Split Tunnel Network List Type: ● Standard Access List ○ Extended Access List

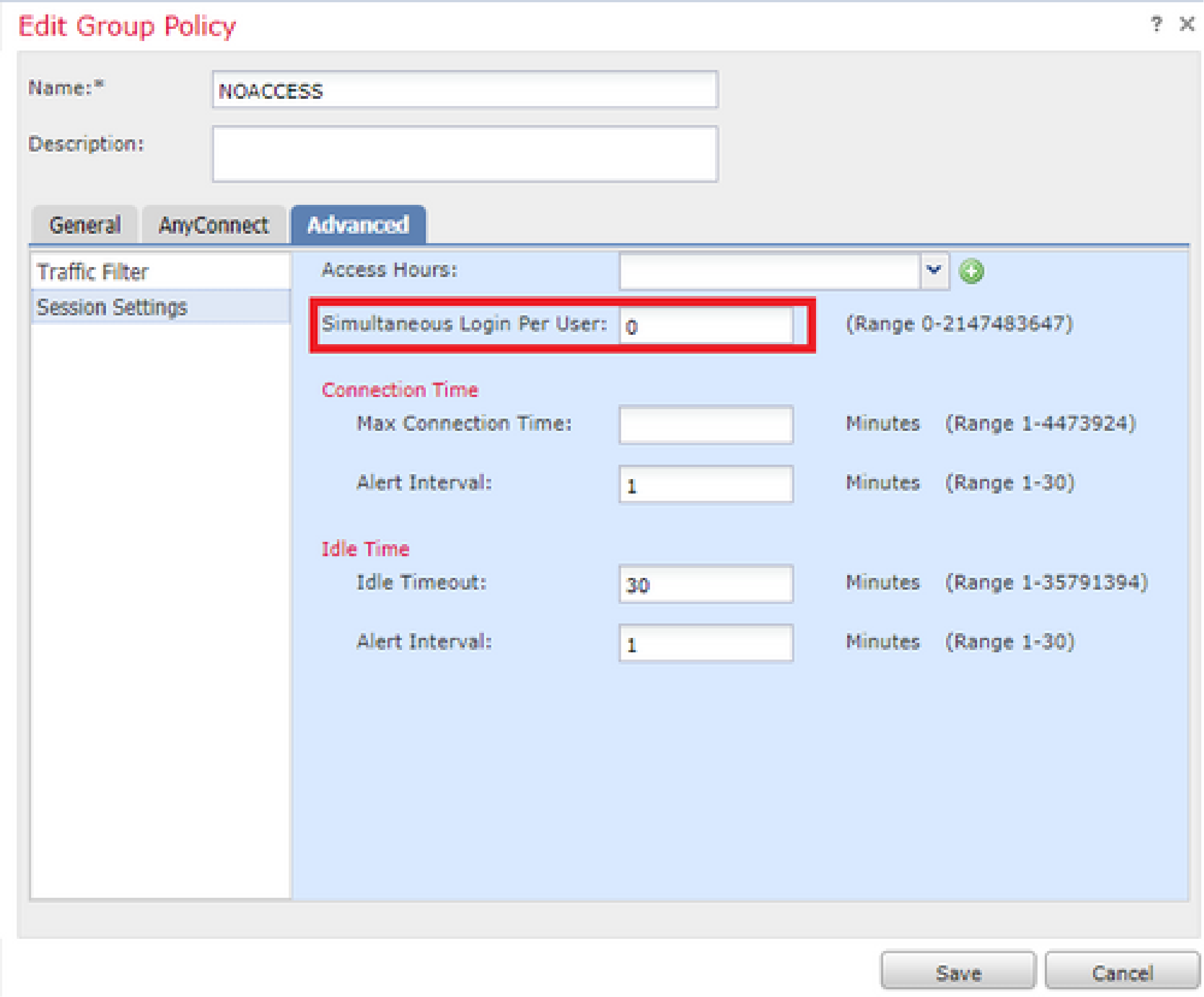
Standard Access List: Split

DNS Request Split Tunneling

DNS Requests: Send DNS requests as per split tunnel policy

Domain List:

- grupo NOACCESS para usuarios que no pertenecen a ninguno de los grupos anteriores. El campo **Inicio de sesión simultáneo por usuario** debe establecerse en 0.



Name:* NOACCESS

Description:

Access Hours:

Simultaneous Login Per User: 0 (Range 0-2147483647)

Connection Time

Max Connection Time: Minutes (Range 1-4473924)

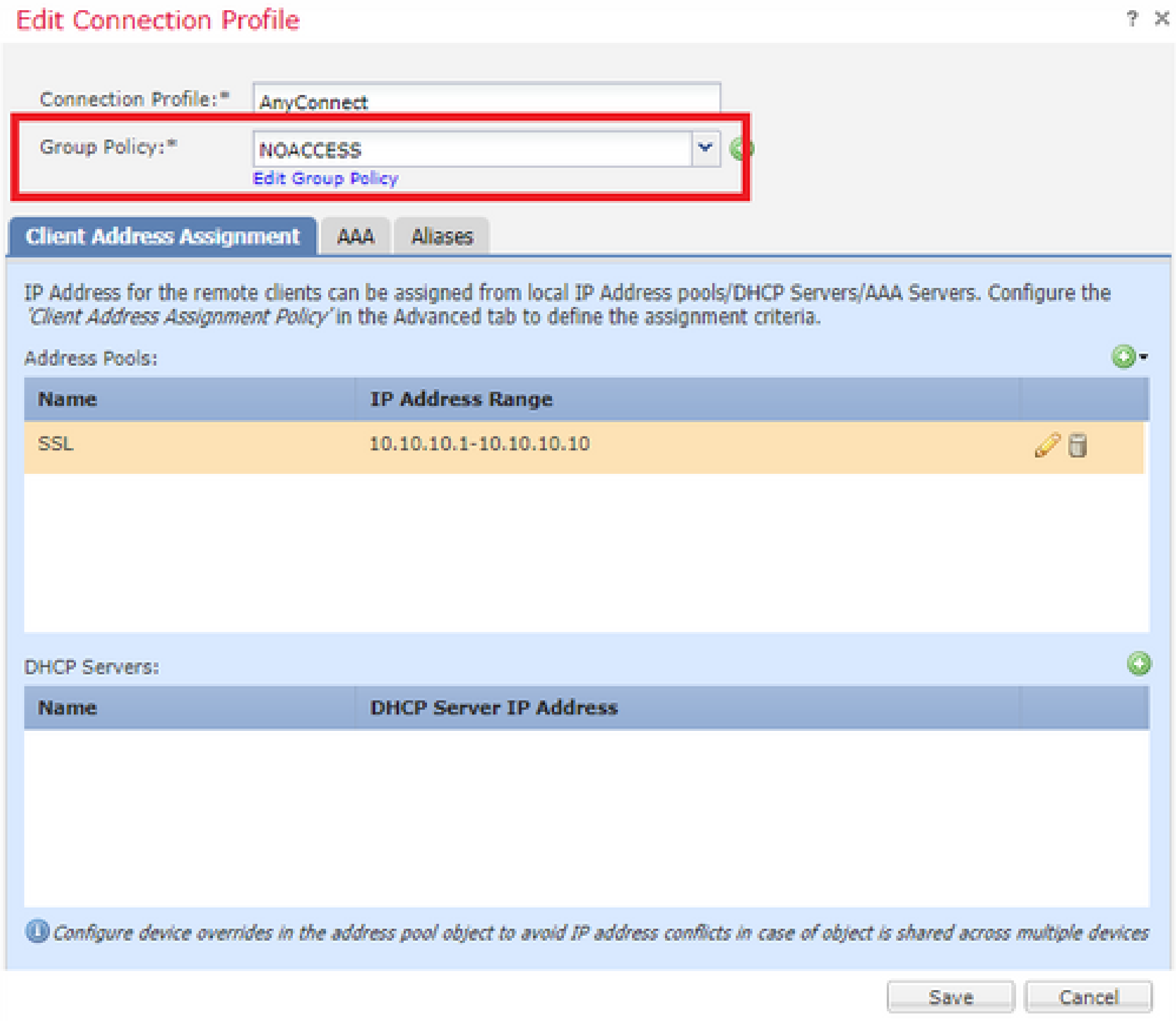
Alert Interval: 1 Minutes (Range 1-30)

Idle Time

Idle Timeout: 30 Minutes (Range 1-35791394)

Alert Interval: 1 Minutes (Range 1-30)

Paso 4. Asigne la política de grupo de NOACCESS al perfil de conexión.



Edit Connection Profile

Connection Profile:* AnyConnect

Group Policy:* NOACCESS

IP Address for the remote clients can be assigned from local IP Address pools/DHCP Servers/AAA Servers. Configure the *'Client Address Assignment Policy'* in the Advanced tab to define the assignment criteria.

Address Pools:

Name	IP Address Range
SSL	10.10.10.1-10.10.10.10

DHCP Servers:

Name	DHCP Server IP Address

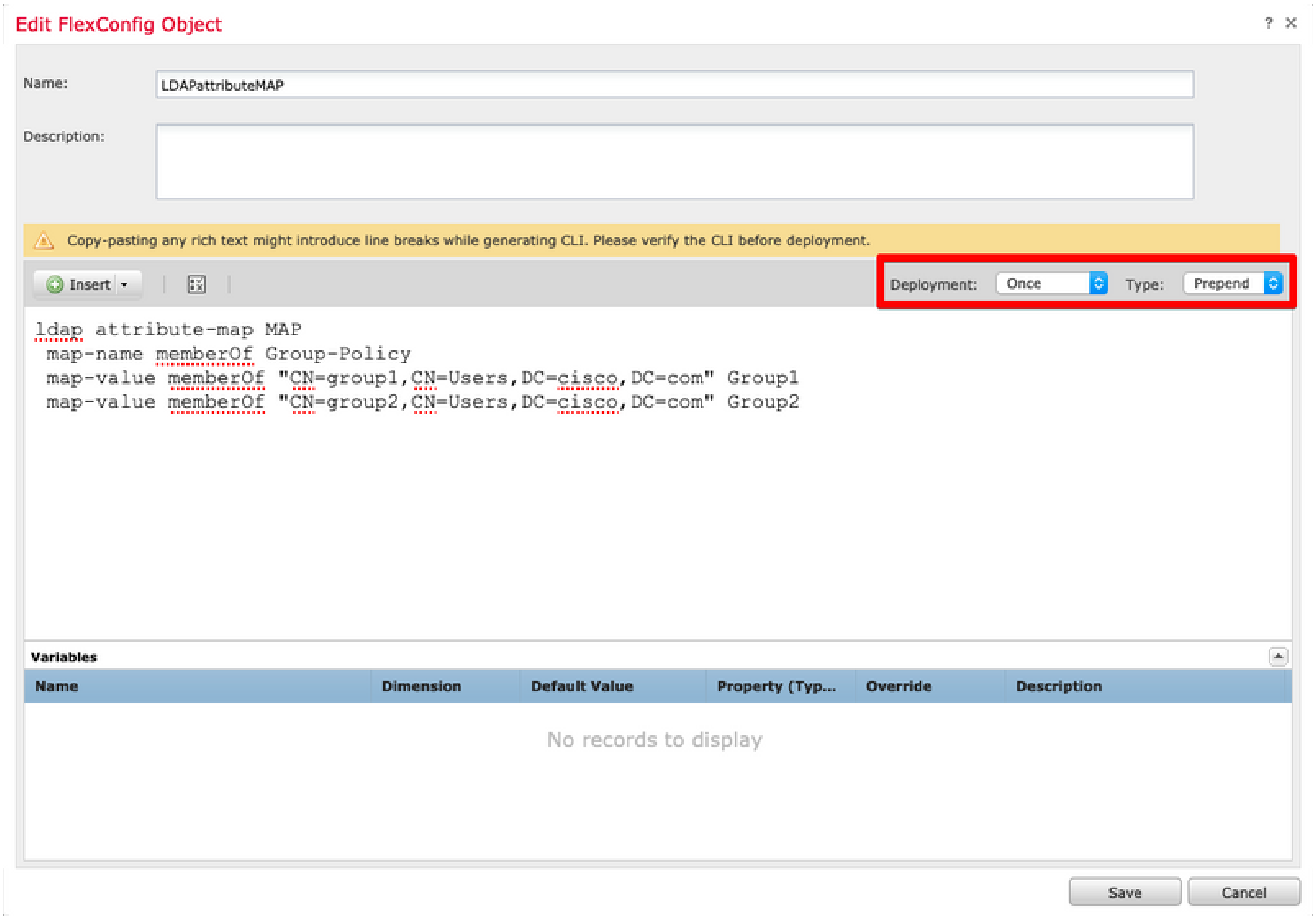
Configure device overrides in the address pool object to avoid IP address conflicts in case of object is shared across multiple devices

Paso 5. Vaya a Object > Object Management t> FlexConfig > FlexConfig Object > Add FlexConfig Object.

Paso 6. Agregue el miembro necesario de los valores necesarios para la configuración del mapa de atributos LDAP. Para obtener el DN de grupo del servidor, puede utilizar el comando "dsquery samid -group <group-name>".

La implementación debe establecerse como *Once* y Type como *Prepend*.

Consejo: Los nombres y valores de atributos distinguen entre mayúsculas y minúsculas. Si el mapping no ocurre correctamente, asegúrese de que se haya utilizado la ortografía y la capitalización correctas en el mapa de atributos LDAP para los nombres y valores de atributos de Cisco y LDAP.



Name: LDAPattributeMAP

Description:

Copy-pasting any rich text might introduce line breaks while generating CLI. Please verify the CLI before deployment.

Deployment: Once Type: Prepend

```
ldap attribute-map MAP
 map-name memberOf Group-Policy
 map-value memberOf "CN=group1,CN=Users,DC=cisco,DC=com" Group1
 map-value memberOf "CN=group2,CN=Users,DC=cisco,DC=com" Group2
```

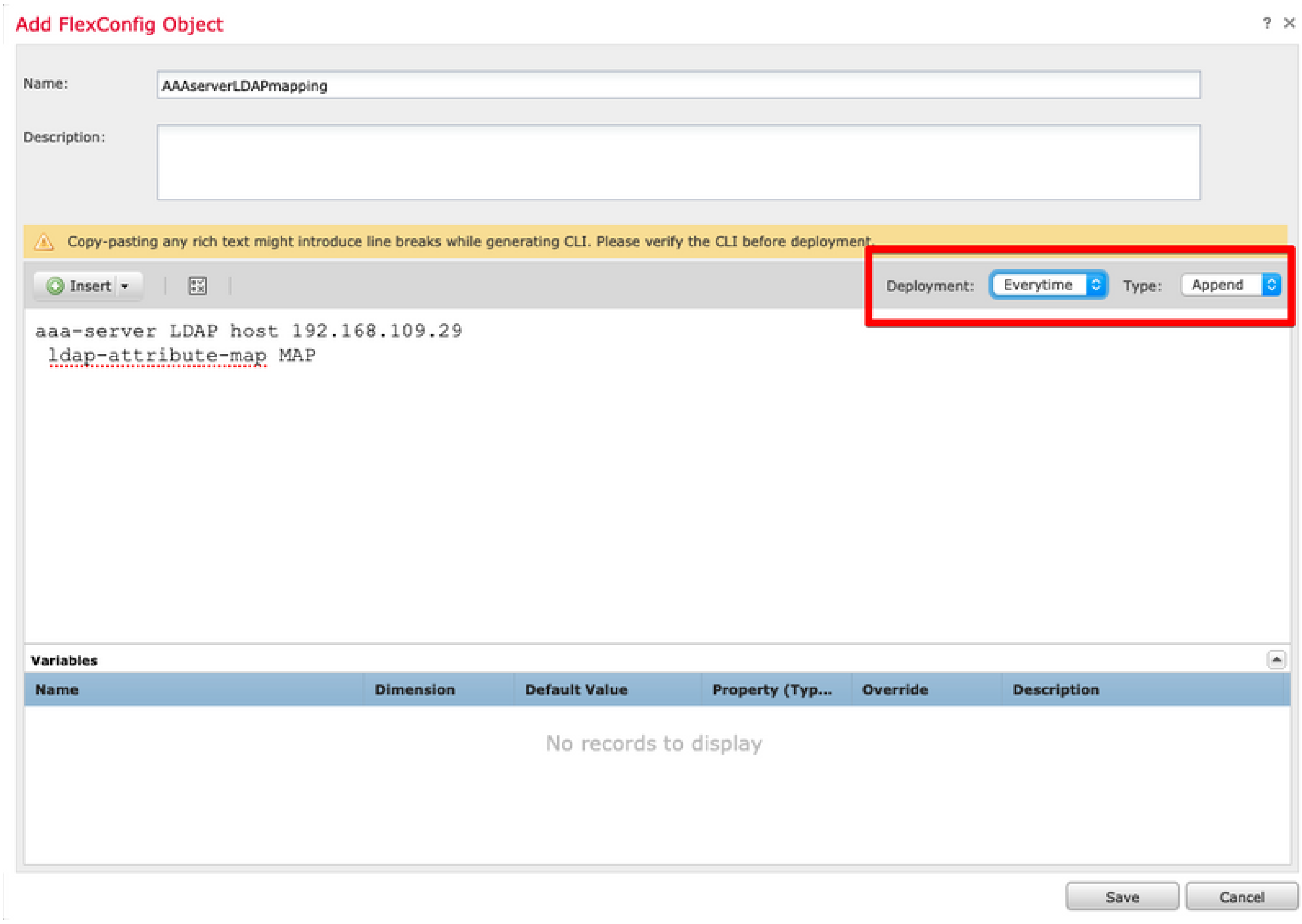
Variables

Name	Dimension	Default Value	Property (Typ...	Override	Description

No records to display

Paso 7. Crear otro FlexConfig (objeto) denominado AAAserverLDAPmapping. Este objeto asocia el mapa de atributos a la configuración aaa-server.

Los valores de implementación deben establecerse como *Everytime* y Type como *Append*.



Name: AAAserverLDAPmapping

Description:

Copy-pasting any rich text might introduce line breaks while generating CLI. Please verify the CLI before deployment.

Deployment: Everytime Type: Append

```
aaa-server LDAP host 192.168.109.29
 ldap-attribute-map MAP
```

Variables

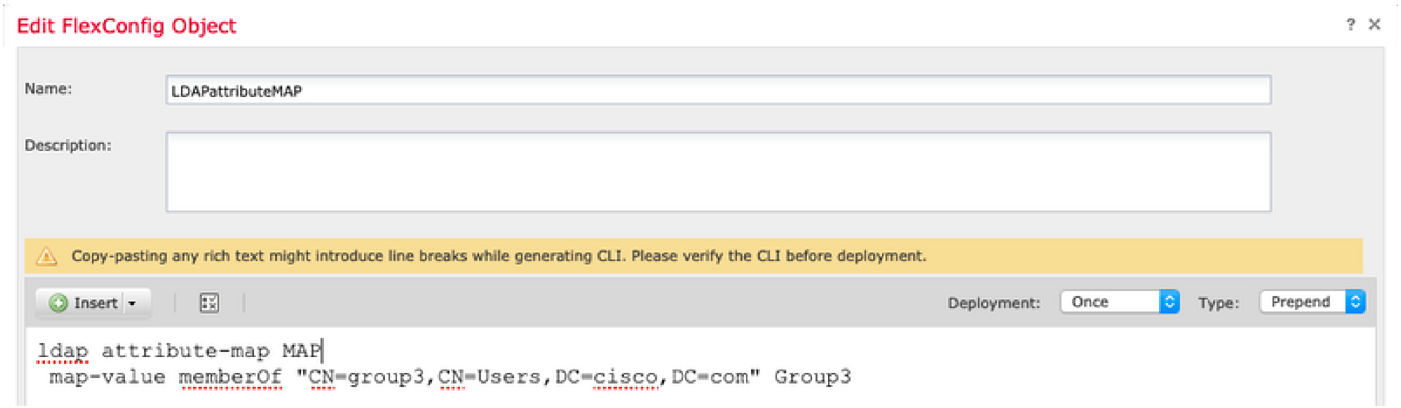
Name	Dimension	Default Value	Property (Typ...	Override	Description

No records to display

Paso 8. Vaya a Devices > FlexConfig > Edit Current FlexConfig. Asegúrese de que el orden de los objetos FlexConfig en la política FlexConfig sea primero el objeto FlexConfig del mapa de atributos LDAP seguido del objeto AAA-server.

Paso 9. Implemente la configuración en el dispositivo para enviar esta configuración al dispositivo administrado.

Para agregar una entrada adicional en el mapa LDAP, modifique el objeto FlexConfig LDAPAtributoMAP existente para incluir SOLAMENTE el nuevo valor de mapa.



Name: LDAPattributeMAP

Description:

Copy-pasting any rich text might introduce line breaks while generating CLI. Please verify the CLI before deployment.

Deployment: Once Type: Prepend

```
ldap attribute-map MAP
 map-value memberOf "CN=group3,CN=Users,DC=cisco,DC=com" Group3
```

Verificación

Conéctese al FTD CLISH y ejecute estos comandos para asegurarse de que los usuarios de los grupos definidos puedan conectarse.

```
> show vpn-sessiondb anyconnect

Session Type: AnyConnect

Username     : cisco1                 Index        : 25
Assigned IP  : 10.10.10.1             Public IP    : 192.168.109.80
Protocol     : AnyConnect-Parent SSL-Tunnel DTLS-Tunnel
License      : AnyConnect Premium
Encryption   : AnyConnect-Parent: (1)none  SSL-Tunnel: (1)AES-GCM-256  DTLS-Tunnel: (1)AES256
Hashing      : AnyConnect-Parent: (1)none  SSL-Tunnel: (1)SHA384  DTLS-Tunnel: (1)SHA1
Bytes Tx     : 15820                  Bytes Rx     : 160
Group Policy : Group1                 Tunnel Group : AnyConnect
Login Time   : 16:02:45 UTC Tue Oct 9 2018
Duration     : 0h:00m:38s
Inactivity   : 0h:00m:00s
VLAN Mapping : N/A                    VLAN         : none
Audt Sess ID : 000000000000190005bbcd125
Security Grp : none                   Tunnel Zone  : 0


> show vpn-sessiondb anyconnect

Session Type: AnyConnect

Username     : cisco2                 Index        : 26
Assigned IP  : 11.11.11.1             Public IP    : 192.168.109.80
Protocol     : AnyConnect-Parent SSL-Tunnel DTLS-Tunnel
License      : AnyConnect Premium
Encryption   : AnyConnect-Parent: (1)none  SSL-Tunnel: (1)AES-GCM-256  DTLS-Tunnel: (1)AES256
Hashing      : AnyConnect-Parent: (1)none  SSL-Tunnel: (1)SHA384  DTLS-Tunnel: (1)SHA1
Bytes Tx     : 15820                  Bytes Rx     : 442
Group Policy : Group2                 Tunnel Group : AnyConnect
Login Time   : 16:04:12 UTC Tue Oct 9 2018
Duration     : 0h:00m:14s
Inactivity   : 0h:00m:00s
VLAN Mapping : N/A                    VLAN         : none
Audt Sess ID : 0000000000001a0005bbcd17c
Security Grp : none                   Tunnel Zone  : 0
```

Troubleshoot

Depuraciones:

Para verificar la transacción LDAP, puede utilizar estos comandos debug.

```
> system support diagnostic-cli
debug ldap 250
debug aaa common 250
```

Estos son ejemplos de resultados exitosos para cada comando debug.

```
firepower# debug ldap 250
debug ldap  enabled at level 250
firepower#
[49] Session Start
[49] New request Session, context 0x00002aaad332f100, reqType = Authentication
[49] Fiber started
[49] Creating LDAP context with uri=ldap://192.168.109.29:389
```

```
[49] Connect to LDAP server: ldap://192.168.109.29:389, status = Successful
[49] supportedLDAPVersion: value = 3
[49] supportedLDAPVersion: value = 2
[49] LDAP server 192.168.109.29 is Active directory
[49] Binding as AdminFTD
[49] Performing Simple authentication for AdminFTD to 192.168.109.29
[49] LDAP Search:
        Base DN = [DC=cisco,DC=com]
        Filter  = [samaccountname=cisco1]
        Scope   = [SUBTREE]
[49] User DN = [CN=cisco1,CN=Users,DC=cisco,DC=com]
[49] Talking to Active Directory server 192.168.109.29
[49] Reading password policy for cisco1, dn:CN=cisco1,CN=Users,DC=cisco,DC=com
[49] Read bad password count 1
[49] Binding as cisco1
[49] Performing Simple authentication for cisco1 to 192.168.109.29
[49] Processing LDAP response for user cisco1
[49] Message (cisco1):
[49] Authentication successful for cisco1 to 192.168.109.29
[49] Retrieved User Attributes:
[49]    objectClass: value = top
[49]    objectClass: value = person
[49]    objectClass: value = organizationalPerson
[49]    objectClass: value = user
[49]    cn: value = cisco1
[49]    givenName: value = cisco1
[49]    distinguishedName: value = CN=cisco1,CN=Users,DC=cisco,DC=com
[49]    instanceType: value = 4
[49]    whenCreated: value = 20181009153032.0Z
[49]    whenChanged: value = 20181009154032.0Z
[49]    displayName: value = cisco1
[49]    uSNCreated: value = 856333
[49]    memberOf: value = CN=group1,CN=Users,DC=cisco,DC=com
[49]            mapped to Group-Policy: value = Group1
[49]            mapped to LDAP-Class: value = Group1
[49]    uSNChanged: value = 856372
[49]    name: value = cisco1
[49]    objectGUID: value = .K.'..3N....Q...
[49]    userAccountControl: value = 66048
[49]    badPwdCount: value = 1
[49]    codePage: value = 0
[49]    countryCode: value = 0
[49]    badPasswordTime: value = 131835752510299209
[49]    lastLogoff: value = 0
[49]    lastLogon: value = 131835733331105504
[49]    pwdLastSet: value = 131835726324409149
[49]    primaryGroupID: value = 513
[49]    objectSid: value = ............E1.E.G..9..@s...
[49]    adminCount: value = 1
[49]    accountExpires: value = 9223372036854775807
[49]    logonCount: value = 0
[49]    sAMAccountName: value = cisco1
[49]    sAMAccountType: value = 805306368
[49]    userPrincipalName: value = cisco1@cisco.com
[49]    objectCategory: value = CN=Person,CN=Schema,CN=Configuration,DC=cisco,DC=com
[49]    dSCorePropagationData: value = 20181009153316.0Z
[49]    dSCorePropagationData: value = 16010101000000.0Z
[49]    lastLogonTimestamp: value = 131835732321783732
[49] Fiber exit Tx=551 bytes Rx=2628 bytes, status=1
[49] Session End

firepower# debug aaa common 250
debug aaa common enabled at level 250
```

```
firepower# AAA API: In aaa_open
AAA session opened: handle = 31
AAA API: In aaa_process_async
aaa_process_async: sending AAA_MSG_PROCESS
AAA task: aaa_process_msg(0x00002b4ad7423b20) received message type 0
[31] AAA FSM: In AAA_StartAAATransaction
[31] AAA FSM: In AAA_InitTransaction

Initiating authentication to primary server (Svr Grp: LDAP-29)
------------------------------------------------
[31] AAA FSM: In AAA_BindServer
[31] AAA_BindServer: Using server: 192.168.109.29
[31] AAA FSM: In AAA_SendMsg
User: cisco1
Resp:
callback_aaa_task: status = 1, msg =
[31] AAA FSM: In aaa_backend_callback
aaa_backend_callback: Handle = 31, pAcb = 0x00002aaad352bc80
AAA task: aaa_process_msg(0x00002b4ad7423b20) received message type 1
[31] AAA FSM: In AAA_ProcSvrResp

Back End response:
------------------
Authentication Status: 1 (ACCEPT)

[31] AAA FSM: In AAA_NextFunction
AAA_NextFunction: i_fsm_state = IFSM_PRIM_AUTHENTICATE, auth_status = ACCEPT
AAA_NextFunction: authen svr = LDAP-29, author svr = <none>, user pol = Group1, tunn pol =
NOACCESS
AAA_NextFunction: New i_fsm_state = IFSM_USER_GRP_POLICY,
[31] AAA FSM: In AAA_InitTransaction
aaai_policy_name_to_server_id(Group1)
Got server ID 0 for group policy DB

Initiating user group policy lookup (Svr Grp: GROUP_POLICY_DB)
------------------------------------------------
[31] AAA FSM: In AAA_BindServer
[31] AAA_BindServer: Using server: <Internal Server>
[31] AAA FSM: In AAA_SendMsg
User: Group1
Resp:
grp_policy_ioctl(0x00002b4ad31fd460, 114698, 0x00002b4ad7423430)
grp_policy_ioctl: Looking up Group1
callback_aaa_task: status = 1, msg =
[31] AAA FSM: In aaa_backend_callback
aaa_backend_callback: Handle = 31, pAcb = 0x00002aaad352bc80
AAA task: aaa_process_msg(0x00002b4ad7423b20) received message type 1
[31] AAA FSM: In AAA_ProcSvrResp

Back End response:
------------------
User Group Policy Status: 1 (ACCEPT)

[31] AAA FSM: In AAA_NextFunction
AAA_NextFunction: i_fsm_state = IFSM_USER_GRP_POLICY, auth_status = ACCEPT
AAA_NextFunction: New i_fsm_state = IFSM_TUNN_GRP_POLICY,
[31] AAA FSM: In AAA_InitTransaction
aaai_policy_name_to_server_id(NOACCESS)
Got server ID 0 for group policy DB

Initiating tunnel group policy lookup (Svr Grp: GROUP_POLICY_DB)
------------------------------------------------
[31] AAA FSM: In AAA_BindServer
[31] AAA_BindServer: Using server: <Internal Server>
```

```
[31] AAA FSM: In AAA_SendMsg
User: NOACCESS
Resp:
grp_policy_ioctl(0x00002b4ad31fd460, 114698, 0x00002b4ad7423430)
grp_policy_ioctl: Looking up NOACCESS
callback_aaa_task: status = 1, msg =
[31] AAA FSM: In aaa_backend_callback
aaa_backend_callback: Handle = 31, pAcb = 0x00002aaad352bc80
AAA task: aaa_process_msg(0x00002b4ad7423b20) received message type 1
[31] AAA FSM: In AAA_ProcSvrResp

Back End response:
------------------
Tunnel Group Policy Status: 1 (ACCEPT)

[31] AAA FSM: In AAA_NextFunction
AAA_NextFunction: i_fsm_state = IFSM_TUNN_GRP_POLICY, auth_status = ACCEPT
dACL processing skipped: no ATTR_FILTER_ID found
AAA_NextFunction: New i_fsm_state = IFSM_DONE,
[31] AAA FSM: In AAA_ProcessFinal
Checking simultaneous login restriction (max allowance=3) for user cisco1
Class attribute created from LDAP-Class attribute
[31] AAA FSM: In AAA_Callback
user attributes:
  1     User-Name(1)      6    "cisco1"
  2     User-Password(2)     13    (hidden)
  3     Group-Policy(4121)      6    "Group1"
  4     AAA-AVP-Table(4243)    1639    "g[06][00][00]$[00][00][00]x[01][00][00][8F][01][00][00]"
  5     DAP class attribute required(20510)      4    1
  6     LDAP-Class(20520)      7    "Group1[00]"

User Access-Lists:
user_acl[0] = NULL
user_acl[1] = NULL
user policy attributes:                            <--- Group-Policy Configuration (Group1)
  1     Filter-Id(11)      8    ""
  2     Session-Timeout(27)      4    0
  3     Idle-Timeout(28)      4    30
  4     Simultaneous-Logins(4098)      4    3
  5     Primary-DNS(4101)      4    IP: 0.0.0.0
  6     Secondary-DNS(4102)      4    IP: 0.0.0.0
  7     Primary-WINS(4103)      4    IP: 0.0.0.0
  8     Secondary-WINS(4104)      4    IP: 0.0.0.0
  9     Tunnelling-Protocol(4107)      4    96
 10     Banner(4111)      0    0x00002aaad49daa38   ** Unresolved Attribute **
 11     Split-Tunnel-Inclusion-List(4123)      8    ""
 12     Default-Domain-Name(4124)      0    0x00002aaad49daa41   ** Unresolved Attribute **
 13     Secondary-Domain-Name-List(4125)      0    0x00002aaad49daa42   ** Unresolved Attribute 
**
 14     Split-Tunneling-Policy(4151)      4    0
 15     Group-giaddr(4157)      4    IP: 0.0.0.0
 16     WebVPN SVC Keepalive interval(4203)      4    20
 17     WebVPN SVC Client DPD period(4204)      4    30
 18     WebVPN SVC Gateway DPD period(4205)      4    30
 19     WebVPN SVC Rekey period(4206)      4    0
 20     WebVPN SVC Rekey method(4207)      4    0
 21     WebVPN SVC Compression(4208)      4    0
 22     WebVPN SVC Firewall Rule(4211)     17    "public#,private#,"
 23     WebVPN SVC DTLS Compression(4213)      4    0
 24     WebVPN SVC DTLS enable(4219)      4    1
 25     WebVPN SVC MTU(4221)      4    1406
 26     CVC-Modules(4223)      4    "dart"
 27     CVC-Profile(4224)     11    "FTD03#user,"
 28     CVC-Ask(4227)      4    2
 29     CVC-Ask-Timeout(4228)      4    0
 30     VLAN ID(4236)      4    0
 31     WebVPN Idle timeout alert interval(4244)      4    1
 32     WebVPN Session timeout alert interval(4245)      4    1
 33     List of address pools to assign addresses from(4313)      3    "SSL"
 34     SVC ignore DF bit(4326)      4    0
 35     Configure the behaviour of DNS queries by the client when Split tunneling is
enabled(4328)      4    0
 36     Primary-IPv6-DNS(4329)     16    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  37
Secondary-IPv6-DNS(4330)     16    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  38
Client Bypass Protocol(4331)      4    0
 39     IPv6-Split-Tunneling-Policy(4332)      4    0

User Policy Access-Lists:
user_acl[0] = NULL
user_acl[1] = NULL
tunnel policy attributes:                                     <--- Default Group-Policy
attributes (NOACCESS)
  1     Filter-Id(11)      8    ""
  2     Session-Timeout(27)      4    0
  3     Idle-Timeout(28)      4    30
  4     Simultaneous-Logins(4098)      4    0
  5     Primary-DNS(4101)      4    IP: 0.0.0.0
  6     Secondary-DNS(4102)      4    IP: 0.0.0.0
  7     Primary-WINS(4103)      4    IP: 0.0.0.0
  8     Secondary-WINS(4104)      4    IP: 0.0.0.0
  9     Tunnelling-Protocol(4107)      4    96
 10     Banner(4111)      0    0x00002aaad2580328   ** Unresolved Attribute **
 11     Group-Policy(4121)      8    "NOACCESS"
 12     Split-Tunnel-Inclusion-List(4123)      8    ""
 13     Default-Domain-Name(4124)      0    0x00002aaad2580331   ** Unresolved Attribute **
 14     Secondary-Domain-Name-List(4125)      0    0x00002aaad2580332   ** Unresolved Attribute
**
 15     Split-Tunneling-Policy(4151)      4    0
 16     Group-giaddr(4157)      4    IP: 0.0.0.0
 17     WebVPN SVC Keepalive interval(4203)      4    20
 18     WebVPN SVC Client DPD period(4204)      4    30
 19     WebVPN SVC Gateway DPD period(4205)      4    30
 20     WebVPN SVC Rekey period(4206)      4    0
 21     WebVPN SVC Rekey method(4207)      4    0
 22     WebVPN SVC Compression(4208)      4    0
 23     WebVPN SVC Firewall Rule(4211)     17    "public#,private#,"
 24     WebVPN SVC DTLS Compression(4213)      4    0
 25     WebVPN SVC DTLS enable(4219)      4    1
 26     WebVPN SVC MTU(4221)      4    1406
 27     CVC-Modules(4223)      4    "dart"
 28     CVC-Profile(4224)     11    "FTD03#user,"
 29     CVC-Ask(4227)      4    2
 30     CVC-Ask-Timeout(4228)      4    0
 31     VLAN ID(4236)      4    0
 32     WebVPN Idle timeout alert interval(4244)      4    1
 33     WebVPN Session timeout alert interval(4245)      4    1
 34     SVC ignore DF bit(4326)      4    0
 35     Configure the behaviour of DNS queries by the client when Split tunneling is
enabled(4328)      4    0
 36     Primary-IPv6-DNS(4329)     16    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  37
Secondary-IPv6-DNS(4330)     16    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00  38
Client Bypass Protocol(4331)      4    0
 39     IPv6-Split-Tunneling-Policy(4332)      4    0

Tunnel Policy Access-Lists:
user_acl[0] = NULL
user_acl[1] = NULL
```

```
Auth Status = ACCEPT
aaai_internal_cb: handle is 31, pAcb is 0x00002aaad352bc80, pAcb->tq.tqh_first is
0x0000000000000000
AAA API: In aaa_close
Checking simultaneous login restriction (max allowance=3) for user cisco1
AAA task: aaa_process_msg(0x00002b4ad7423b20) received message type 2
In aaai_close_session (31)
AAA API: In aaa_send_acct_start
```