

通过FDM为FTD上的安全客户端配置AAA和证书身份验证

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简介

本文档介绍在由FDM管理的FTD上使用AAA和证书身份验证配置SSL上的Cisco安全客户端的步骤。

先决条件

要求

Cisco 建议您了解以下主题：

- Cisco Firepower设备管理器(FDM)虚拟
- 防火墙威胁防御(FTD)虚拟
- VPN身份验证流程

使用的组件

- 思科Firepower设备管理器虚拟7.2.8
- 思科防火墙威胁防御虚拟7.2.8

- 思科安全客户端5.1.4.74

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

Firepower设备管理器(FDM)是一个基于Web的简化管理界面，用于管理Cisco Firepower威胁防御(FTD)设备。通过Firepower设备管理器，网络管理员无需使用更复杂的Firepower管理中心(FMC)即可配置和管理其FTD设备。FDM为基本操作（如设置网络接口、安全区域、访问控制策略和VPN）以及监控设备性能和安全事件提供了直观的用户界面。它适用于需要简化管理的中小型部署。

本文档介绍如何将预填充的用户名与FDM管理的FTD上的Cisco安全客户端集成。

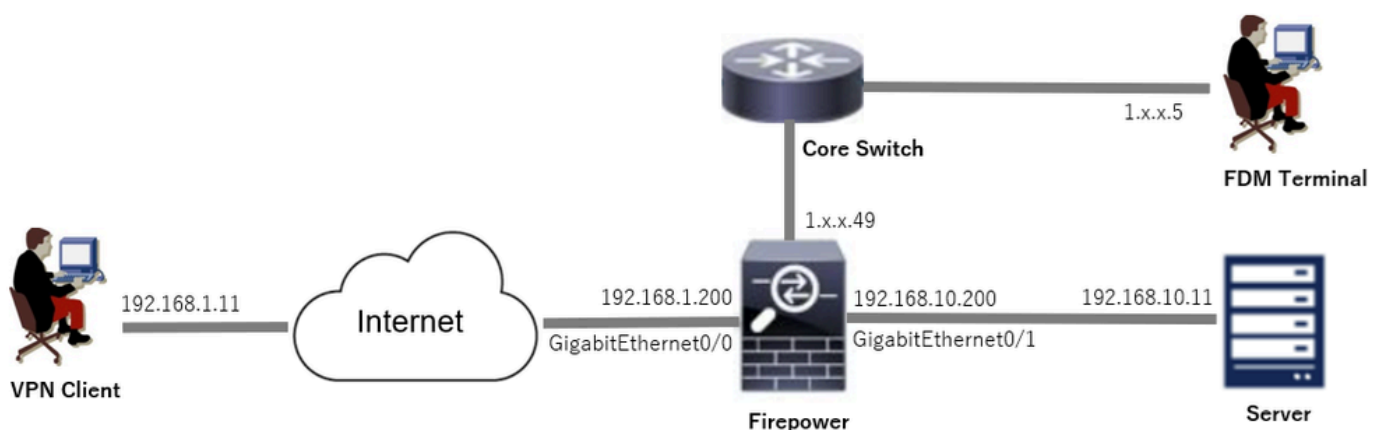
如果您使用FMC管理FTD，请参阅[通过FMC在FTD上配置安全客户端的AAA和证书身份验证指南](#)。

这是证书链，带有文档中使用的每个证书的公用名称。

- CA：ftd-ra-ca-common-name
- 客户端证书：sslVPNClientCN
- 服务器证书：192.168.1.200

网络图

下图显示本文档示例中使用的拓扑。



网络图

配置

FDM中的配置

步骤1:配置FTD接口

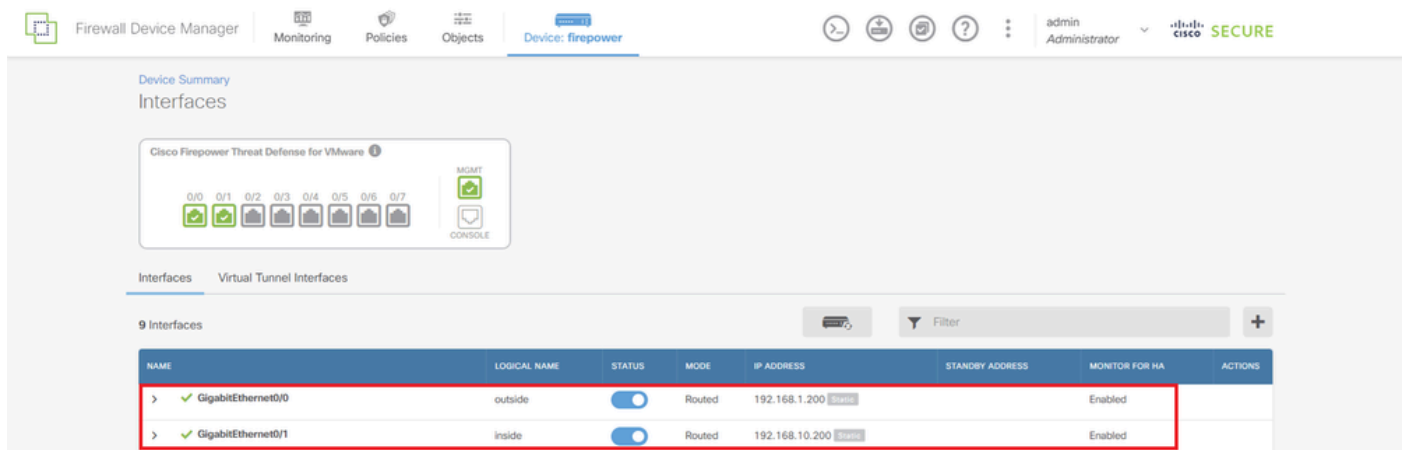
导航到设备(Device) >接口(Interfaces) >查看所有接口(View All Interfaces) , 在接口(Interfaces)选项卡中配置FTD的内部和外部接口。

对于GigabitEthernet0/0 ,

- 名称 : outside
- IP地址 : 192.168.1.200/24

对于GigabitEthernet0/1 ,

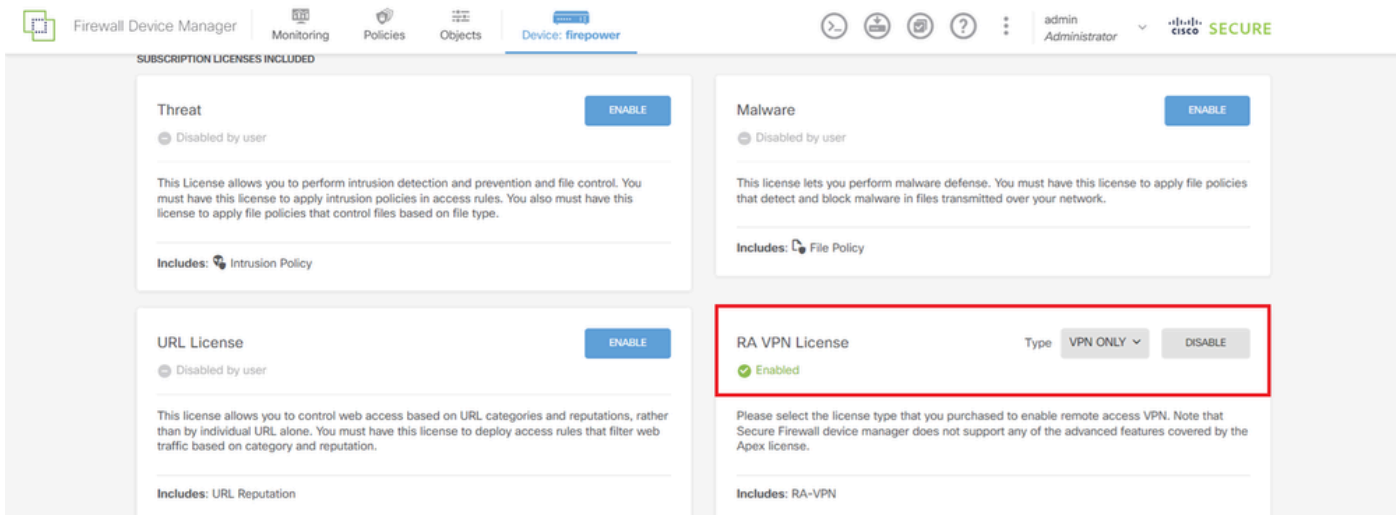
- 名称 : inside
- IP地址 : 192.168.10.200/24



FTD接口

第二步 : 确认思科安全客户端许可证

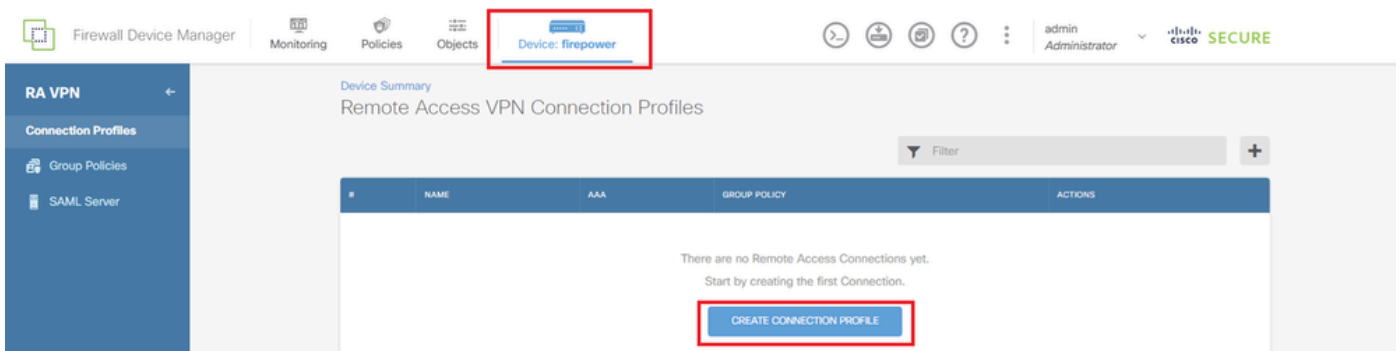
导航到设备>智能许可证>查看配置 , 在RA VPN许可证中确认Cisco安全客户端许可证项目。



安全客户端许可证

第三步：添加远程访问VPN连接配置文件

导航到Device > Remote Access VPN > View Configuration，单击CREATE CONNECTION PROFILE按钮。



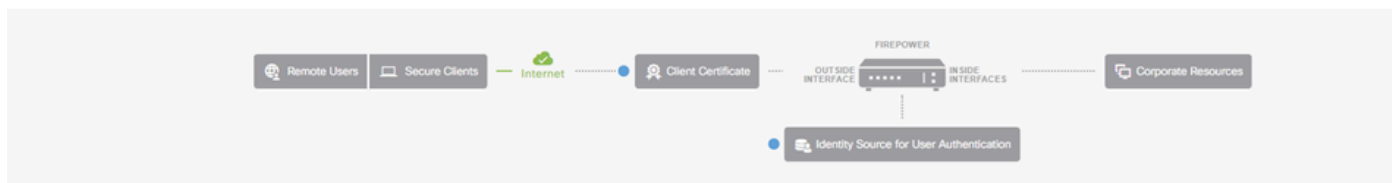
添加远程访问VPN连接配置文件

输入连接配置文件的必要信息，然后单击IPv4地址池项目中的Create new Network按钮。

- 连接配置文件名称：ftdvpn-aaa-cert-auth
- 身份验证类型：AAA和客户端证书
- 用户身份验证的主要身份源：LocalIdentitySource
- Client Certificate Advanced Settings：在用户登录窗口时从证书中预填用户名

Remote Access VPN

- 1 Connection and Client Configuration
- 2 Remote User Experience
- 3 Global Settings
- 4 Summary



Connection and Client Configuration

Specify how to authenticate remote users and the secure clients they can use to connect to the inside network.

Connection Profile Name
This name is configured as a connection alias, it can be used to connect to the VPN gateway

Group Alias (one per line, up to 5)

Group URL (one per line, up to 5)

Primary Identity Source

Authentication Type

Primary Identity Source for User Authentication

AAA Advanced Settings

Username from Certificate

Map Specific Field

Primary Field Secondary Field

Use entire DN (distinguished name) as username

Client Certificate Advanced Settings

Prefill username from certificate on user login window

Hide username in login window

Client Address Pool Assignment

IPv4 Address Pool
Endpoints are provided an address from this pool

IPv6 Address Pool
Endpoints are provided an address from this pool

Filter

- IPv4-Private-10.0.0.0-8 Network
- IPv4-Private-172.16.0.0-12 Network
- IPv4-Private-192.168.0.0-16 Network
- any-ipv4 Network

VPN连接配置文件的详细信息

第四步：为连接配置文件添加地址池

输入必要信息以添加新的IPv4地址池。为连接配置文件选择新添加的IPv4地址池，然后单击Next按钮。

- 名称：ftdvpn-aaa-cert-pool
- 类型：范围
- IP范围：172.16.1.40-172.16.1.50

Add Network Object



Name

ftdvpn-aaa-cert-pool

Description

Type

Network

Range

IP Range

172.16.1.40-172.16.1.50

e.g. 192.168.2.1-192.168.2.24 or 2001:068:0:CD30::10-2001:068:0:CD30::100

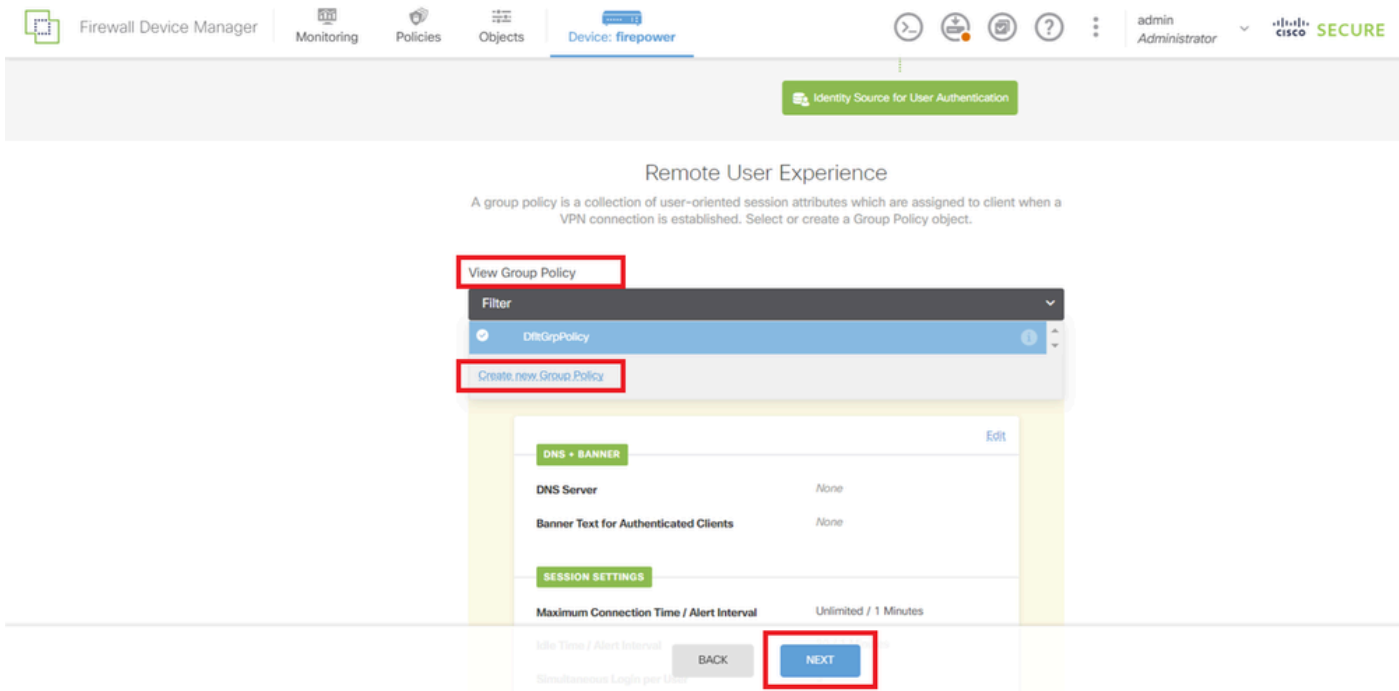
CANCEL

OK

IPv4地址池的详细信息

第五步：添加连接配置文件的组策略

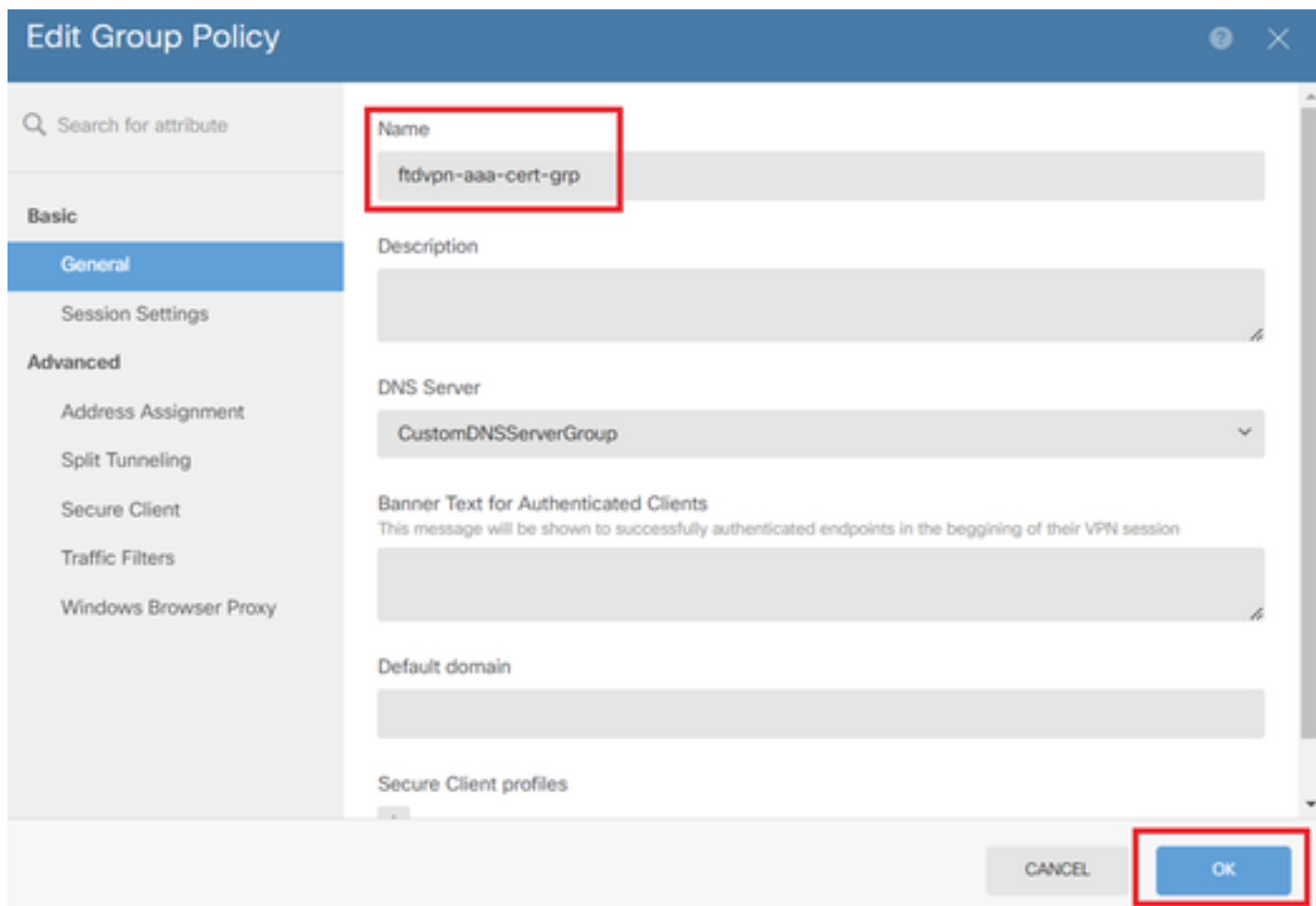
在查看组策略项中点击创建新组策略。



添加组策略

输入必要信息以添加新组策略，然后单击OK按钮。为连接配置文件选择新添加的组策略。

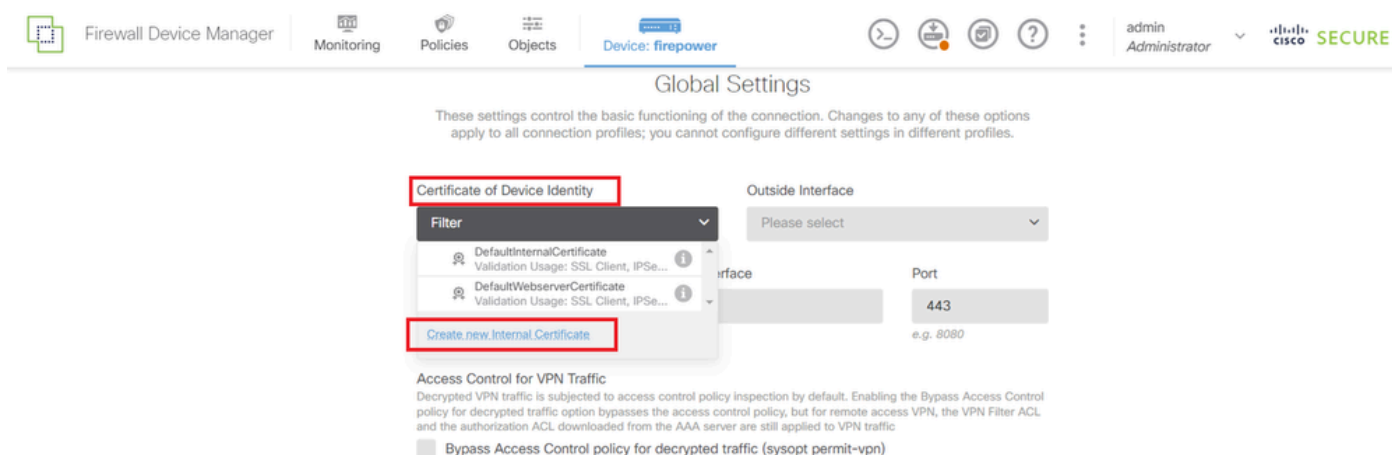
- 名称：ftdvpn-aaa-cert-grp



组策略详细信息

第六步：为连接配置文件配置设备身份证书和外部接口

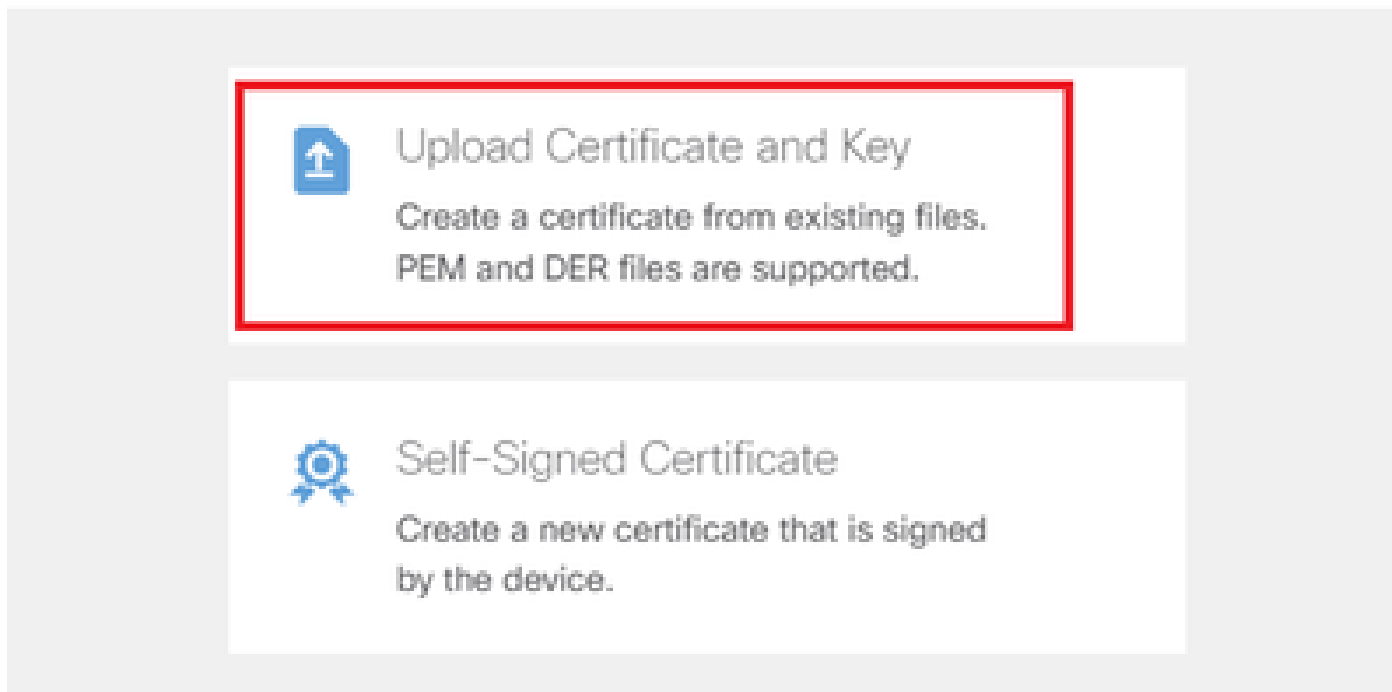
点击设备身份证书项目中的创建新内部证书。



添加内部证书

单击Upload Certificate and Key。

Choose the type of internal certificate you want to create



上传证书和密钥

输入FTD证书的必要信息，从本地计算机导入证书和证书密钥，然后单击OK按钮。

- 名称：ftdvpn-cert
- 特殊服务的验证使用情况：SSL服务器

Add Internal Certificate



Name

ftdvpn-cert

Certificate

Paste certificate, or choose a file (DER, PEM, CRT, CER)

ftdCert.crt

Upload Certificate

```
-----BEGIN CERTIFICATE-----
MIIDfDCCAeSgAwIBAgIIIkE99YS2cmwDQYJKoZIhvcNAQELBQAwbTEMAkGA1UE
BhMCS1AxOjAMBgNVBAgTBVRva31vMQ4wDAYDVQQHEwVUub2t5bzEOMAwGA1UE
CjMxY30uOjEAMQwIBAgTBVRva31vMQ4wDAYDVQQHEwVUub2t5bzEOMAwGA1UE
CjMxY30uOjEAMQwIBAgTBVRva31vMQ4wDAYDVQQHEwVUub2t5bzEOMAwGA1UE
```

Certificate Key

Paste certificate key, or choose a file (KEY, PEM)

ftdCertKey.pem

Upload Certificate Key

```
-----BEGIN RSA PRIVATE KEY-----
MIIEogIBAAKCAQEAxdn5eTUngo5+GUG2Ng2FjI/+xHRkRr-f6o20ccGdzLYK1tzW8
98wPu1YP0T/qwCffKXuMQ9DEVGHIjLRX9nvXdBNoaKUbZVzc03qW3AjEB7p0h0t0
w40b1W47e7u21t1e7d73e7CobY6F8e7UuH46u73FwTUC0uM7Yk+7734u8eYEeC
```

Validation Usage for Special Services

SSL Server

CANCEL

OK

内部证书的详细信息

为VPN连接选择Certificate of Device Identity和Outside Interface。

- 设备身份证书：ftdvpn-cert
- 外部接口：外部(GigabitEthernet0/0)

Global Settings

These settings control the basic functioning of the connection. Changes to any of these options apply to all connection profiles; you cannot configure different settings in different profiles.

Certificate of Device Identity

ftdvpn-cert (Validation Usage: SSL Ser...)

Outside Interface

outside (GigabitEthernet0/0)

Fully-qualified Domain Name for the Outside Interface

e.g. rvpn.example.com

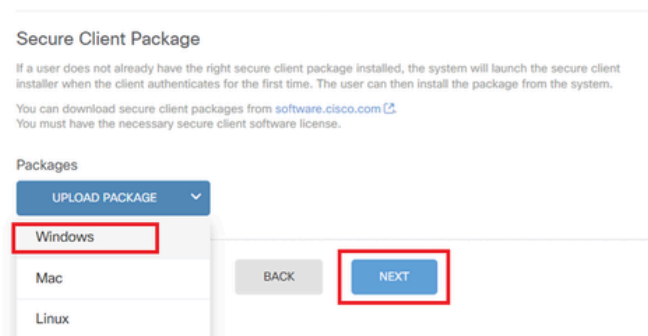
Port

443
e.g. 8080

全局设置的详细信息

步骤 7.为连接配置文件配置安全客户端映像

在程序包项目中选择Windows



上传安全客户端映像包

从本地计算机上传安全客户端映像文件，然后单击NextButton。

注意：本文档中禁用了NAT免除功能。默认情况下，已解密流量的绕行访问控制策略 (sysopt permit-vpn)选项处于禁用状态，这意味着已解密的VPN流量将接受访问控制策略检查。

Firewall Device Manager | Monitoring | Policies | Objects | Device: firepower | admin Administrator | CISCO SECURE

Access Control for VPN Traffic
Decrypted VPN traffic is subjected to access control policy inspection by default. Enabling the Bypass Access Control policy for decrypted traffic option bypasses the access control policy, but for remote access VPN, the VPN Filter ACL and the authorization ACL downloaded from the AAA server are still applied to VPN traffic.
 Bypass Access Control policy for decrypted traffic (sysopt permit-vpn)

NAT Exempt

Secure Client Package
If a user does not already have the right secure client package installed, the system will launch the secure client installer when the client authenticates for the first time. The user can then install the package from the system.
You can download secure client packages from software.cisco.com.
You must have the necessary secure client software license.

Packages
UPLOAD PACKAGE ▾
Windows: cisco-secure-client-win-5.1.4.74-webdeploy-k9.pkg

BACK NEXT

选择Secure Client Image Package

步骤 8 确认连接配置文件的摘要

确认输入的VPN连接信息，然后单击FINISHbutton。

Summary

Review the summary of the Remote Access VPN configuration.

Ftdvpn-Aaa-Cert-Auth

STEP 1: CONNECTION AND CLIENT CONFIGURATION

Primary Identity Source

Authentication Type: AAA and Client Certificate

Primary Identity Source: LocalIdentitySource

AAA Advanced Settings

Username from Certificate: Map Specific Field

Primary Field: CN (Common Name)

Secondary Field: OU (Organisational Unit)

Client Certificate Advanced Settings

Secondary Identity Source

Secondary Identity Source for User Authentication: -

Fallback Local Identity Source: -

Advanced

Authorization Server

Accounting Server

Client Address Pool Assignment

IPv4 Address Pool: ftdvpn-aaa-cert-pool

IPv6 Address Pool: -

DHCP Servers: -

STEP 2: GROUP POLICY

Group Policy Name: ftdvpn-aaa-cert-grp

Banner + DNS Server

DNS Server: CustomDNSServerGroup

Banner text for authenticated clients: -

Session Settings

Maximum Connection Time / Alert Interval: Unlimited / 1 minutes

Idle Timeout / Alert Interval: 30 / 1 minutes

Simultaneous Login per User: 3

Split Tunneling

IPv4 Split Tunneling: Allow all traffic over tunnel

IPv6 Split Tunneling: Allow all traffic over tunnel

Secure Client

Secure Client Profiles: -

STEP 3: GLOBAL SETTINGS

Certificate of Device Identity: ftdvpn-cert

Outside Interface: GigabitEthernet0/0 (outside)

Fully-qualified Domain Name for the Outside Interface: -

Port: 443

Access Control for VPN Traffic: No

NAT Exempt

NAT Exempt: No

Inside Interfaces: GigabitEthernet0/0 (outside)

Inside Networks: -

Secure Client Package

Packages: Windows: cisco-secure-client-win-5.1.4.74-webdeploy-k9.pkg

Instructions

Instructions for this device are available in the following document:

BACK FINISH

```
interface GigabitEthernet0/0
speed auto
nameif outside
cts manual
propagate sgt preserve-untag
policy static sgt disabled trusted
security-level 0
ip address 192.168.1.200 255.255.255.0
!
interface GigabitEthernet0/1
speed auto
nameif inside
cts manual
propagate sgt preserve-untag
policy static sgt disabled trusted
security-level 0
ip address 192.168.10.200 255.255.255.0

// Defines a pool of addresses
ip local pool ftdvpn-aaa-cert-pool 172.16.1.40-172.16.1.50

// Defines a local user
username sslVPNClientCN password ***** pbkdf2

// Defines Trustpoint for Server Certificate
crypto ca trustpoint ftdvpn-cert
enrollment terminal
keypair ftdvpn-cert
validation-usage ssl-server
crl configure

// Server Certificate
crypto ca certificate chain ftdvpn-cert
certificate 22413df584b6726c
3082037c 30820264 a0030201 02020822 413df584 b6726c30 0d06092a 864886f7
.....
quit

// Defines Trustpoint for CA
crypto ca trustpoint ftdvpn-ca-cert
enrollment terminal
validation-usage ssl-client ssl-server
crl configure

// CA
crypto ca certificate chain ftdvpn-ca-cert
certificate ca 5242a02e0db6f7fd
3082036c 30820254 a0030201 02020852 42a02e0d b6f7fd30 0d06092a 864886f7
.....
quit

// Configures the FTD to allow Cisco Secure Client connections and the valid Cisco Secure Client images
webvpn
enable outside
http-headers
hsts-server
enable
max-age 31536000
include-sub-domains
no preload
hsts-client
```

```
enable
x-content-type-options
x-xss-protection
content-security-policy
anyconnect image disk0:/anyconnpkgs/cisco-secure-client-win-5.1.4.74-webdeploy-k9.pkg 2
anyconnect enable
tunnel-group-list enable
cache
disable
error-recovery disable
```

```
// Configures the group-policy to allow SSL connections
```

```
group-policy ftdvpn-aaa-cert-grp internal
group-policy ftdvpn-aaa-cert-grp attributes
dns-server value 64.x.x.245 64.x.x.184
dhcp-network-scope none
vpn-simultaneous-logins 3
vpn-idle-timeout 30
vpn-idle-timeout alert-interval 1
vpn-session-timeout none
vpn-session-timeout alert-interval 1
vpn-filter none
vpn-tunnel-protocol ssl-client
split-tunnel-policy tunnelall
ipv6-split-tunnel-policy tunnelall
split-dns none
split-tunnel-all-dns disable
client-bypass-protocol disable
msie-proxy method no-modify
vlan none
address-pools none
ipv6-address-pools none
webvpn
anyconnect ssl dtls none
anyconnect mtu 1406
anyconnect ssl keepalive none
anyconnect ssl rekey time none
anyconnect ssl rekey method none
anyconnect dpd-interval client none
anyconnect dpd-interval gateway none
anyconnect ssl compression none
anyconnect dtls compression none
anyconnect modules none
anyconnect profiles none
anyconnect ssl df-bit-ignore disable
always-on-vpn profile-setting
```

```
// Configures the tunnel-group to use the aaa & certificate authentication
```

```
tunnel-group ftdvpn-aaa-cert-auth type remote-access
tunnel-group ftdvpn-aaa-cert-auth general-attributes
address-pool ftdvpn-aaa-cert-pool
default-group-policy ftdvpn-aaa-cert-grp
// These settings are displayed in the 'show run all' command output. Start
authentication-server-group LOCAL
secondary-authentication-server-group none
no accounting-server-group
default-group-policy ftdvpn-aaa-cert-grp
username-from-certificate CN OU
secondary-username-from-certificate CN OU
authentication-attr-from-server primary
authenticated-session-username primary
username-from-certificate-choice second-certificate
```

```
secondary-username-from-certificate-choice second-certificate
// These settings are displayed in the 'show run all' command output. End
tunnel-group ftdvpn-aaa-cert-auth webvpn-attributes
authentication aaa certificate
pre-fill-username client
group-alias ftdvpn-aaa-cert-auth enable
```

在VPN客户端中确认

步骤1:确认客户端证书

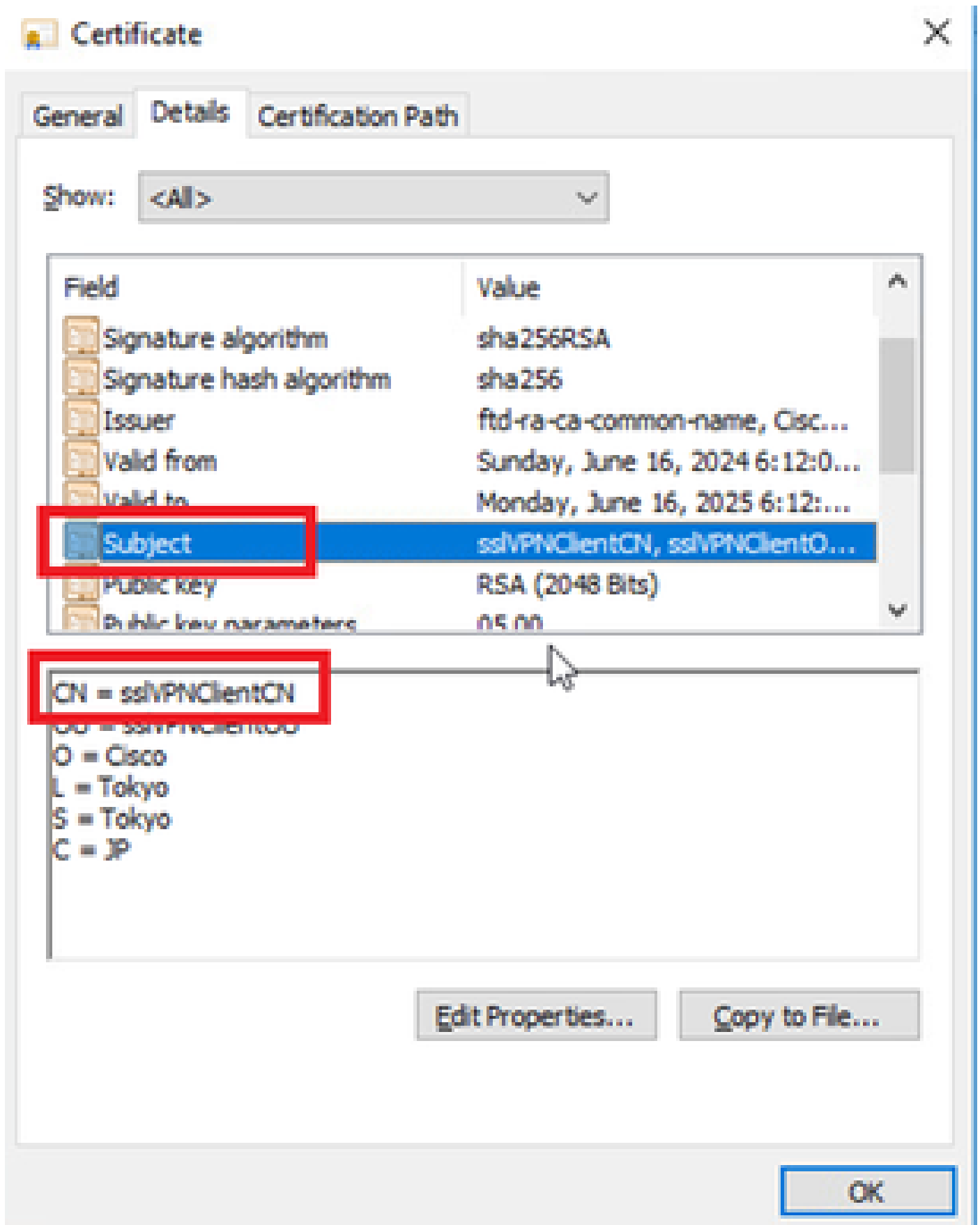
导航到证书-当前用户>个人>证书，检查用于身份验证的客户端证书。



确认客户端证书

双击客户端证书，导航到Details，检查Subject的详细信息。

- 主题：CN = ssIVPNClientCN

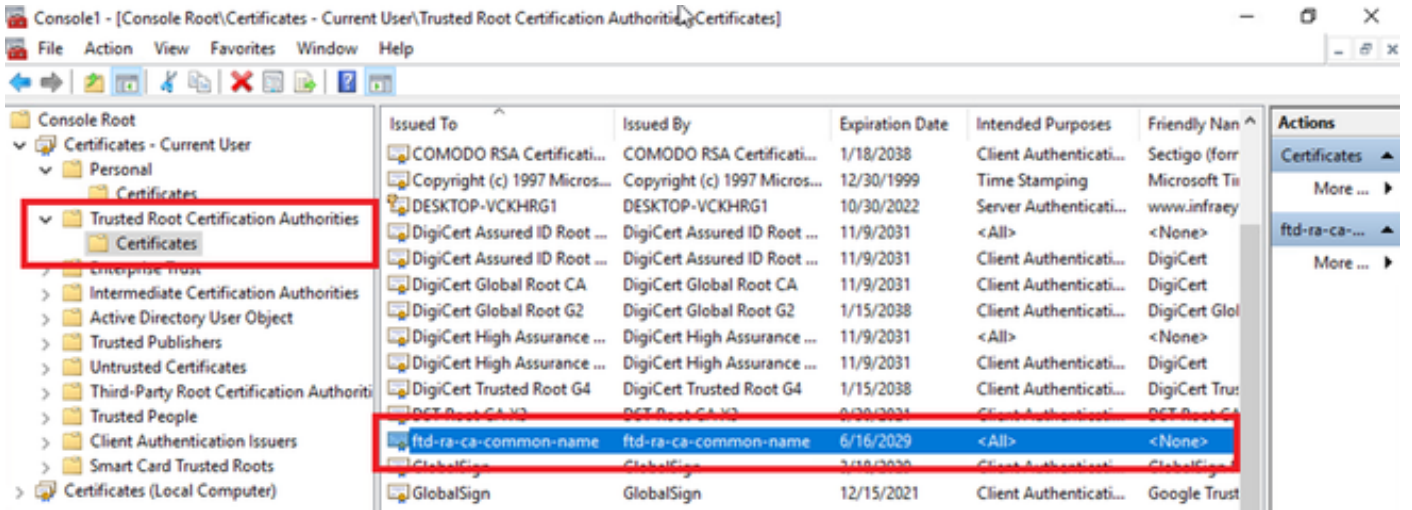


客户端证书的详细信息

第二步：确认CA

导航到证书-当前用户>受信任的根证书颁发机构>证书，检查用于身份验证的CA。

- 颁发者 : ftd-ra-ca-common-name



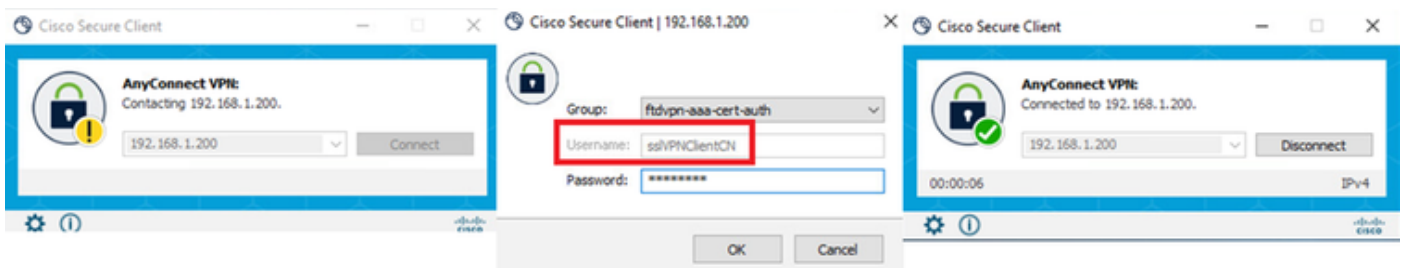
确认CA

验证

步骤1:启动VPN连接

在终端上，启动Cisco安全客户端连接。用户名从客户端证书提取，您需要输入密码进行VPN身份验证。

注意：用户名提取自本文档中客户端证书的公用名(CN)字段。



启动VPN连接

第二步：在FTD CLI中确认VPN会话

在FTD (Lina) CLI中运行show vpn-sessiondb detail anyconnect命令以确认VPN会话。

```
firepower# show vpn-sessiondb detail anyconnect
```

Session Type: AnyConnect Detailed

Username : sslVPNClientCN Index : 4
Assigned IP : 172.16.1.40 Public IP : 192.168.1.11
Protocol : AnyConnect-Parent SSL-Tunnel
License : AnyConnect Premium
Encryption : AnyConnect-Parent: (1)none SSL-Tunnel: (1)AES-GCM-256
Hashing : AnyConnect-Parent: (1)none SSL-Tunnel: (1)SHA384
Bytes Tx : 29072 Bytes Rx : 44412
Pkts Tx : 10 Pkts Rx : 442
Pkts Tx Drop : 0 Pkts Rx Drop : 0
Group Policy : ftdvpn-aaa-cert-grp Tunnel Group : ftdvpn-aaa-cert-auth
Login Time : 11:47:42 UTC Sat Jun 29 2024
Duration : 1h:09m:30s
Inactivity : 0h:00m:00s
VLAN Mapping : N/A VLAN : none
Audt Sess ID : 000000000004000667ff45e
Security Grp : none Tunnel Zone : 0

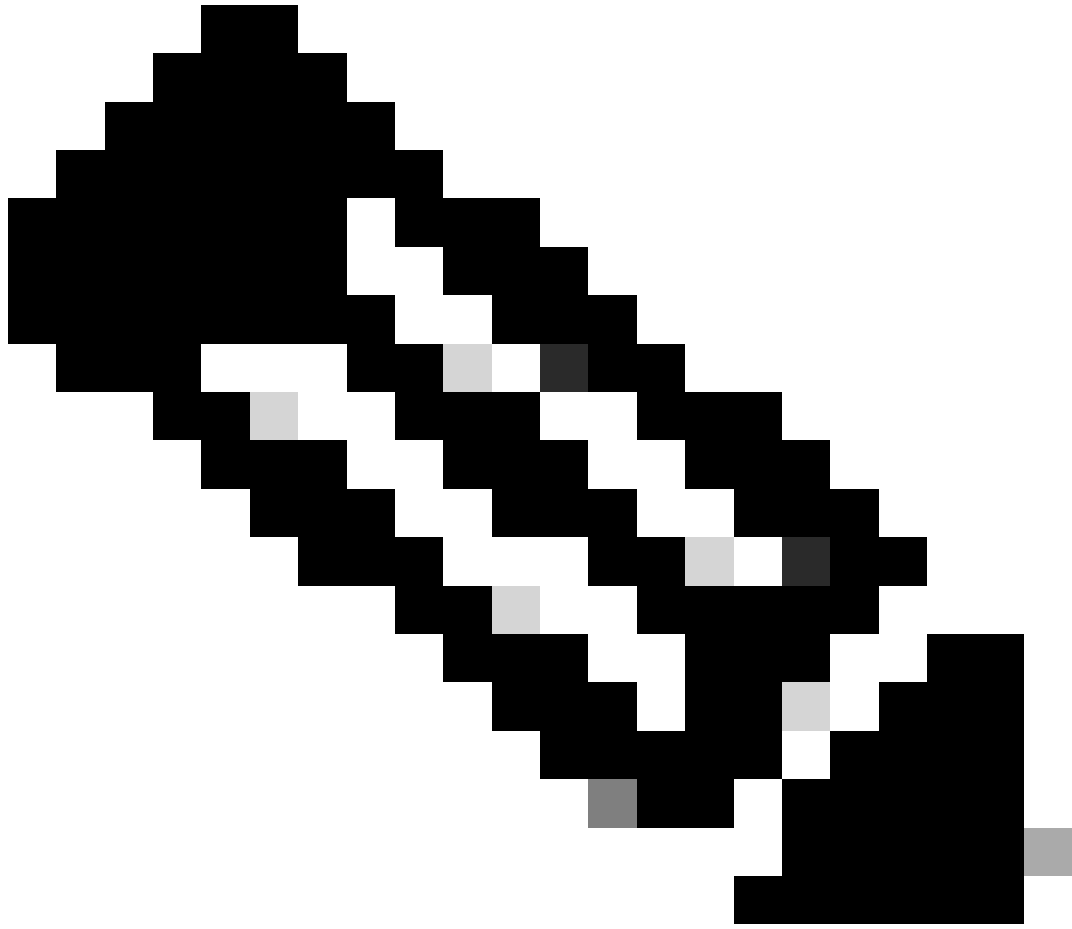
AnyConnect-Parent Tunnels: 1
SSL-Tunnel Tunnels: 1

AnyConnect-Parent:
Tunnel ID : 4.1
Public IP : 192.168.1.11
Encryption : none Hashing : none
TCP Src Port : 49779 TCP Dst Port : 443
Auth Mode : Certificate and userPassword
Idle Time Out: 30 Minutes Idle TO Left : 7 Minutes
Client OS : win
Client OS Ver: 10.0.17763
Client Type : AnyConnect
Client Ver : Cisco AnyConnect VPN Agent for Windows 5.1.4.74
Bytes Tx : 14356 Bytes Rx : 0
Pkts Tx : 2 Pkts Rx : 0
Pkts Tx Drop : 0 Pkts Rx Drop : 0

SSL-Tunnel:
Tunnel ID : 4.3
Assigned IP : 172.16.1.40 Public IP : 192.168.1.11
Encryption : AES-GCM-256 Hashing : SHA384
Ciphersuite : ECDHE-RSA-AES256-GCM-SHA384
Encapsulation: TLSv1.2 TCP Src Port : 49788
TCP Dst Port : 443 Auth Mode : Certificate and userPassword
Idle Time Out: 30 Minutes Idle TO Left : 27 Minutes
Client OS : Windows
Client Type : SSL VPN Client
Client Ver : Cisco AnyConnect VPN Agent for Windows 5.1.4.74
Bytes Tx : 7178 Bytes Rx : 10358
Pkts Tx : 1 Pkts Rx : 118
Pkts Tx Drop : 0 Pkts Rx Drop : 0

第三步：确认与服务器的通信

从VPN客户端向服务器发出ping命令，确认VPN客户端与服务器的通信成功。



注意：由于在第7步中禁用了用于已解密流量的绕行访问控制策略(sysopt permit-vpn)选项，因此需要创建允许您的IPv4地址池访问服务器的访问控制规则。

```
C:\Users\cisco>ping 192.168.10.11
```

```
Pinging 192.168.10.11 with 32 bytes of data:  
Reply from 192.168.10.11: bytes=32 time=1ms TTL=128  
Reply from 192.168.10.11: bytes=32 time=1ms TTL=128  
Reply from 192.168.10.11: bytes=32 time=1ms TTL=128  
Reply from 192.168.10.11: bytes=32 time=1ms TTL=128  
  
Ping statistics for 192.168.10.11:  
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
    Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

Ping成功

capture in interface inside real-time在FTD (Lina) CLI中运行命令以确认数据包捕获。

```
firepower# capture in interface inside real-time
```

Warning: using this option with a slow console connection may result in an excessive amount of non-displayed packets due to performance limitations.

Use ctrl-c to terminate real-time capture

```
1: 12:03:26.626691 172.16.1.40 > 192.168.10.11 icmp: echo request  
2: 12:03:26.627134 192.168.10.11 > 172.16.1.40 icmp: echo reply  
3: 12:03:27.634641 172.16.1.40 > 192.168.10.11 icmp: echo request  
4: 12:03:27.635144 192.168.10.11 > 172.16.1.40 icmp: echo reply  
5: 12:03:28.650189 172.16.1.40 > 192.168.10.11 icmp: echo request  
6: 12:03:28.650601 192.168.10.11 > 172.16.1.40 icmp: echo reply  
7: 12:03:29.665813 172.16.1.40 > 192.168.10.11 icmp: echo request  
8: 12:03:29.666332 192.168.10.11 > 172.16.1.40 icmp: echo reply
```

故障排除

您可以在Lina引擎的调试syslog和Windows计算机上的DART文件中找到有关VPN身份验证的信息。

这是Lina引擎中的调试日志示例。

```
// Certificate Authentication
```

```
Jun 29 2024 11:29:37: %FTD-7-717029: Identified client certificate within certificate chain. serial number: 6EC79930B231EDAF, subject name: CN=sslV
```

```
Jun 29 2024 11:29:37: %FTD-6-717028: Certificate chain was successfully validated with warning, revocation status was not checked.
```

```
Jun 29 2024 11:29:37: %FTD-6-717022: Certificate was successfully validated. serial number: 6EC79930B231EDAF, subject name: CN=sslVPNClientCN
```

```
// Extract username from the CN (Common Name) field
```

Jun 29 2024 11:29:53: %FTD-7-113028: Extraction of username from VPN client certificate has been requested. [Request 3]

Jun 29 2024 11:29:53: %FTD-7-113028: Extraction of username from VPN client certificate has completed. [Request 3]

// AAA Authentication

Jun 29 2024 11:29:53: %FTD-6-113012: AAA user authentication Successful : local database : user = sslVPNClientCN

Jun 29 2024 11:29:53: %FTD-6-113009: AAA retrieved default group policy (ftdvpn-aaa-cert-grp) for user = sslVPNClientCN

Jun 29 2024 11:29:53: %FTD-6-113008: AAA transaction status ACCEPT : user = sslVPNClientCN

这些调试可以从FTD的诊断CLI运行，CLI提供可用于对配置进行故障排除的信息。

- debug crypto ca 14
- debug webvpn anyconnect 255
- debug crypto ike-common 255

相关信息

[为Firepower 2100配置FDM机上管理服务](#)

[在FDM管理的FTD上配置远程访问VPN](#)

[配置并验证Firepower设备管理器中的系统日志](#)

关于此翻译

思科采用人工翻译与机器翻译相结合的方式将此文档翻译成不同语言，希望全球的用户都能通过各自的语言得到支持性的内容。

请注意：即使是最好的机器翻译，其准确度也不及专业翻译人员的水平。

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