ASA IKEv2 RA VPN com clientes VPN Windows 7 ou Android e configuração de autenticação de certificado

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Introduction

Este documento descreve como configurar o Cisco Adaptive Security Appliance (ASA) versão 9.7.1 e posterior para permitir que os clientes VPN nativos (Virtual Private Network) do Windows 7 e Android estabeleçam uma conexão VPN RA (Remote Access) com o uso do Internet Key Exchange Protocol (IKEv2) e de Certificados como o método de autenticação.

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Prerequisites

Requirements

A Cisco recomenda que você tenha conhecimento destes tópicos:

- autoridade de certificado (CA)
- Public Key Infrastructure (PKI)
- VPN RA com IKEv2 no ASA
- cliente VPN incorporado do Windows 7
- Cliente VPN nativo Android

Componentes Utilizados

As informações neste documento são baseadas nestas versões de software:

- CISCO1921/K9 - 15.5(3)M4a como servidor de CA do IOS
- ASA5506X - 9.7(1) como headend de VPN
- Windows 7 como máquina cliente
- Galaxy J5 - Android 6.0.1 como cliente móvel

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. Se a rede estiver ativa, certifique-se de que você entenda o impacto potencial de qualquer comando.

Configurar

Overview

Estas são as etapas para configurar os clientes VPN nativos do Windows 7 e Android para se conectar a um headend do ASA:

Configurar autoridade de certificado

A CA permite incorporar a EKU (Extended Key Usage, uso de chave estendida) necessária no certificado. Para o headend do ASA, o certificado Server Auth EKU é necessário, enquanto o certificado do cliente precisa do Client Auth EKU.

Uma variedade de servidores CA podem ser usados, como:

- servidor Cisco IOS CA
- servidor de CA OpenSSL
- Microsoft CA server
- 3rd ACs de terceiros

O IOS CA Server é usado para este exemplo de configuração.

Esta seção descreve a configuração básica para fazer com que um CISCO1921/K9 com a versão 15.5(3)M4a funcione como um Servidor CA.

Etapa 1. Verifique se o dispositivo e a versão suportam o comando eku.

```
IOS-CA# show run | section crypto pki
crypto pki server <CA_Server>
  issuer-name <cn=calo_root,ou=TAC,o=cisco>
  grant auto
  eku server-auth client-auth
```

Etapa 2. Ative o Servidor HTTP no Roteador.

```
IOS-CA(config)#ip http server
```

Etapa 3. Gere um par de chaves RSA exportável.

```
IOS-CA(config)# crypto key generate rsa modulus 2048 label <HeadEnd> exportable
The name for the keys will be: HeadEnd
% The key modulus size is 2048 bits
% Generating 2048 bit RSA keys, keys will be exportable...
[OK] (elapsed time was 5 seconds)
```

Etapa 4. Configure um ponto de confiança.

```
IOS-CA(config)# crypto pki trustpoint <HeadEnd>
IOS-CA(ca-trustpoint)#enrollment url http://10.201.180.230:80
IOS-CA(ca-trustpoint)#subject-name <cn=HeadEnd.david.com>
IOS-CA(ca-trustpoint)#revocation-check none
IOS-CA(ca-trustpoint)#rsakeypair <HeadEnd>
```

> Note: O endereço IP do comando de inscrição é um dos endereços IP configurados pelo Roteador para uma interface alcançável.

Etapa 5. Autentique o ponto confiável (Obtenha o certificado CA).

```
IOS-CA(config)#crypto pki authenticate <HeadEnd>
Certificate has the following attributes:
       Fingerprint MD5: DA4502F4 CEFB4F08 AAA3179B 70019185
      Fingerprint SHA1: A887F6DB 0656C7E2 857749F3 EA3D7176 8920F52F
% Do you accept this certificate? [yes/no]: yes
Trustpoint CA certificate accepted.
```

Etapa 6. Inscreva o ponto confiável (Obtenha o certificado de identidade).

```
IOS-CA(config)#crypto pki enroll <HeadEnd>
%
% Start certificate enrollment ..
% Create a challenge password. You will need to verbally provide this
   password to the CA Administrator in order to revoke your certificate.
   For security reasons your password will not be saved in the configuration.
   Please make a note of it.
Password: cisco123
Re-enter password: cisco123
% The subject name in the certificate will include: cn=HeadEnd.david.com
% The subject name in the certificate will include: Connected_2_INET-B
% Include the router serial number in the subject name? [yes/no]: no
% Include an IP address in the subject name? [no]: no
Request certificate from CA? [yes/no]: yes
% Certificate request sent to Certificate Authority
% The 'show crypto pki certificate verbose HeadEnd' command will show the fingerprint.
*Jul 17 15:21:11.343: CRYPTO_PKI:  Certificate Request Fingerprint MD5: 0017C310 9F6084E8
63053228 B449794F
*Jul 17 15:21:11.343: CRYPTO_PKI:  Certificate Request Fingerprint SHA1: CFE22C7A B2855C4D
B4B2412B 57FC7106 1C5E7791
*Jul 17 15:21:15.675: %PKI-6-CERTRET: Certificate received from Certificate Authority
```

Passo 7. Verifique os certificados.

```
IOS-CA#show crypto pki certificates verbose <HeadEnd>
Certificate
  Status: Available
  Version: 3
  Certificate Serial Number (hex): 05
  Certificate Usage: General Purpose
```

```
  Issuer:
    cn=calo_root
  Subject:
    Name: Connected_2_INET-B
    hostname=Connected_2_INET-B
    cn=HeadEnd.david.com
  Validity Date:
    start date: 16:56:14 UTC Jul 16 2017
    end   date: 16:56:14 UTC Jul 16 2018
  Subject Key Info:
    Public Key Algorithm: rsaEncryption
    RSA Public Key: (2048 bit)
  Signature Algorithm: SHA1 with RSA Encryption
  Fingerprint MD5: 0017C310 9F6084E8 63053228 B449794F
  Fingerprint SHA1: CFE22C7A B2855C4D B4B2412B 57FC7106 1C5E7791
  X509v3 extensions:
    X509v3 Key Usage: A0000000
      Digital Signature
      Key Encipherment
    X509v3 Subject Key ID: E9B3A080 779A76E7 8BE44F38 C3E4DEDF 18E75009
    X509v3 Authority Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
   Authority Info Access:
    Extended Key Usage:
        Client Auth
        Server Auth
  Associated Trustpoints: HeadEnd
  Key Label: HeadEnd

CA Certificate
  Status: Available
  Version: 3
  Certificate Serial Number (hex): 01
  Certificate Usage: Signature
  Issuer:
    cn=calo_root
  Subject:
    cn=calo_root
  Validity Date:
    start date: 13:24:35 UTC Jul 13 2017
    end   date: 13:24:35 UTC Jul 12 2020
  Subject Key Info:
    Public Key Algorithm: rsaEncryption
    RSA Public Key: (1024 bit)
  Signature Algorithm: MD5 with RSA Encryption
  Fingerprint MD5: DA4502F4 CEFB4F08 AAA3179B 70019185
  Fingerprint SHA1: A887F6DB 0656C7E2 857749F3 EA3D7176 8920F52F
  X509v3 extensions:
    X509v3 Key Usage: 86000000
      Digital Signature
      Key Cert Sign
      CRL Signature
    X509v3 Subject Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
    X509v3 Basic Constraints:
        CA: TRUE
    X509v3 Authority Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
    Authority Info Access:
  Associated Trustpoints: test HeadEnd CA_Server
```

Etapa 8. Exporte o ponto confiável HeadEnd para o terminal no formato PKCS12 para obter o certificado de identidade. O certificado CA e a chave privada são adicionados em um único arquivo.

```
IOS-CA(config)#crypto pki export
```

<cisco123>
Exported pkcs12 follows:
MIIL3wIBAzCCC5kGCSqGSIb3DQEHAaCCC4oEgguGMIILgjCCC34GCSqGSIb3DQEH
BqCCC28wggtrAgEAMIILZAYJKoZIhvcNAQcBMBsGCiqGSIb3DQEMAQMwDQQIocGz
Fa6tZyACAQGAggs4qNTJi7l/f0IvQr8n1c/SCeaSYRLBvcY9yPgJ2K2/Nmu9+KNB
3dAoYkCrGwDdfpobJE0XqBpIE1uBOtAeF7zdFJt/Pgpie4fcqpCVIbDXG8Ansmhj
v0j6W9Z/IJHe7JrENatbi4nhTnCDP79Z65QSkzrb9DenkCGjoQsWP9zLHTiCDNzV
ajMlWFuCFb0wSW/6L73BLTjS7rwtE74gYMU5NJwtOVsJM2LdwuQ+iOnpsnp6q9fu
niUFEutPe8imOCRApe0tpPqhDp74hKziKT8JEsQ8HMO/lX1y/LIXdLISnz1nkoN3
vxD4AMGRFYACPH8PiGcVSx+vD+wmNaHp1vAOrq4pS7ZQ37ko4mFudnftdOUzaPIz
EzTrOwlRE6il/gF8vb14EfeR09vumJBsajF12hrFGugIJTZnElp5go+oHEEAo4Y+
Yhoj/MIOyhZzo3/ujhjKqtsAJXybYF9YqVkTee9u4Xjkcsg5AmbaqeUUfd7Q8CC2
bi39S1maoWbTYiNcHFs/bWKWJsgZwPzfWtmPch/8MNvXn46AJAwIwRQjHruuFE9F
bhv7SRhYSRQZPf7j1PTmJuMkKA3AzjdbmmJuLidbX3yKbTt4PxPMusbv+ojc6Nam
RCsRf7+gnNZLWs3eU1n84rryZg5Pjw3MRTu2yXDvr799gvx7NIZH5yUZyVl1T70b
eC4KbflcmpM6mJ2UVnaoP2N5u892m41BWuk9rt5isl2f/Z/ZuSbkFaxzU0456zSg
VbYsR+51XfQEH5xu88E5EUPWZ86YdUSlbD8ky6WOn0M1O4K6rNDLkgwXcxw3CaZ8
zhao+dE3qoEYWaKPgCQzPqW0BW3y7WSIELug2uSEsXQjIQcF+42CX6RA3yCmy2T8
C+osKlSSao0nzjrlpTWnPiFss9KRFgJDZhV2ItisiALNw9PqruddcmYtw44LXvdc
+OfnyRvuLS6LE/AMmGk0GaVetAXPezD+5pVZW13UMT/ZdzUjLiXjV9GzF6V8i8qN
Ua0MbDEa8T5Le4dCigaA+t1QxQOPGb+w0ZAQzWN4gZpSEk3ejRixOt14SU5ivj/O
lGXNn8Fvebk42CHohjXG9fq/IfbsVWSkxn2OZ/fhXkZztv4ic1VgprgJURjCtcBw
9Qp/ONda+9aDHiSBrKeHC/urgX6rgWXv9+hpRKIRfj3b8WE+N1sivuQEjlWxbD7h
9fpwxXb+/i7HisjzSkOWUNw4lyulfYSiOv86FPWK0H9Vjbg0G0di1rvGZ8uJHQCC
77RLFXp4jrvCgeo4oWKQbphgPAng7rT794vMwq0rYOb4D3HlHCUvU3JJmScDJQy2
zQxbG2q8Htm44COOuJEUBzx1ImayH2XvDck6VmLTGn8XH5Vq7LOlCeUcVDM8aQfy
HJSPk/VmfQ0lXwPIaxxYlr+jOpcorFkH+OH04hz07grAsGyLRoFICTEvHAzVnF0X
2A1j/z/BFAPG86ssAtInRZVeYUS72NwPEtpKmlHZnl+2iWno5iwTZgtjv7oREZKE
RE6m7O8RiPSD2RjjamCmmmnH5dK5wxF7YlIeK/+ZVrfwLecEPRl+eVw0isM/JN/a
WmkZkCcVMx/ec1P8jp8LzCx17HgVNYbg9lsiffD4xo0G/k0QLUlpliAt7LA2BeGs
yl55wtYUcOBH0/Es39yWnm2Ea//IK6BLw98PvU90vkXWwiD3ajFmcHmssDeU/tZR
4KKNuNor7Le9ycXZFM9ofKZ6AIJ9A1AYvOyhGO88voq8MMGXEe/q+DIjaVE1htYu
k0ELmYAD/XOkEvp3SqOkLQZiCzZ20iMWUTWXlXfgrfLEH0utwHTyr3J2vQk5CD37
ZAfsF6zxEvtU2t41J0e9OjWJw9WtWnnS0gzLeXWtW3H0YAIw3QodKNzbaY4eLP4y
BEdsLmWbM4eza0m9BoZOmMUSkhvFrEz5Q5X5r9vCuAi1rYDqyIjhgdme56tVV0Vg
ZauhbNX59PQQzwOdIZJVVL5tgjf0h7XCm9OBsqd12lHurCCmHy7kM5pqf0MMlhH7
oM/DhXdTU+1sEabt/9c2qs1ihJLS1Zaw2q1AaS5h00+xL8Lxwh2/1/R7Q8FferhR
QZDpix+CmtakRu7uPOMa0zsyOko3P9mf74AWDrThAwMA6G238TC6XI1vrXhvEX1l
BVplQq0Wh/p7ZorSjD5l+z7TkXmJNp7iIxAqp0yobC6vOBwQP7/QAs88q9JNSAte
ErdCXoizvs8YmZMoEap948oplYFaIP+xCnCr8l3v7znwfZwTMQPoPvqEFqUmWYgt
xkJ0qaE645ihTnLgk4eglsBLslwPR1RJU+t6kGGAUmxqhPFxb3/1xNRPVzOGn12w
S9yw+XLC6kS4PmKoxkxax4nnCx7s3e7B5e0qmYtgRTJ0GuW7Uf+T3royTOuYm0d+
ik6bmxcnO0qdcHtt2HTbI+kYpken3YrFOh9Jnm9ZKT63gQSqQWL800ZVd4dAZceg
FciNKs9r26fyy+L3rGCh+U9TLf6mNuWu8RstjjIGPHEPKZ9gnMgMJmikP2ghgOAd
XVhs6ashXx33bZ9dIuhRx6uTNMrppsXyg6SxUyeGDYhpxsPt7uRwBswOpi6iDMZn
ISSzQjrkxoNwwOfn87O5fTCLhHlTZa8HS5HMK3KE7LiZv9pa1z6KTo4z+LCQSLDy
FoRJhSaEsCYJsLDS5nYBoR8hE/eMvQDX1f+RZBrJDcftxx7FQ+8RtvHSJRcJK9N/
Ph/pL62NBlSbvCfn1AbisKrbbgCVLOSj/doufPvpMT2UDL0TY8UnQiyWMH1MF3tZ
jJy6Si2glLwA9hu/c1NsREbA0gxMTjAREb5BjAUmlc3fuv2DWpwnkwyZNyHdm9B9
TPRoByGPvSZXa8MwY/8DUEwUQEsfDJi5jlAD4I6VFFUB72ZS7wn/mVR02fPkfOMp
3yhnGgX29OaDDiDlKw1Xwj1NybOhpZ6unDo5J3stMxlbv5TYL2Tl6egZS0SjsLmn
cj5zkyUU22/93E5vfKD1CMiXx9/e4j2rRh3QCIXqaCjC9acTJ8a/k9/bp8Nz5Cir
pnaCbuQsvna92nxVUqcmLlSbVIvGqlH9qm4DurhcLh59j20tX6K8AMJ90+azaYbX
AJV/MCElhJg6wcN8QnCHMhiuK9+zpsUK2FQgfbcgaaNe3xGaXuoOIGQmlbAGtEkp
kuauRzQ8/pwszaZuPh/5rE77z8zMut3+OE5CslB9npzNi0b0itaaRl13bBBml1xn
r6SBUw7AWapZwRx6pihvptLJaqU1IzaV5SWk0zTABR7BmR84L0+/8v/bedcPSioG
ecside21F6CcWO5ywABBxDYQXM1P9qkC/2bkPkEJ0jBI5P5L1+Yqb8hTlone/InR
B8ktEd8+QW8o60h0seONXumTqBfAuNBkprOA3ssXLeEGB0IpeC5oGW+VSziyS9id
zYq8WaehpAIf3pqwn8gsi0B/wd57T0KK91+v0Ei4z+yIdu8Kh9GTiqGvgNAeakgr
ECDiXoKAwltYAn7cLKNpZaojSs2Jt+60oBA5crT04Mtgpjb9Pd/DLqWQDJTyoRVv

```
cJRb68aOyZvVBU0yoLbox84QKLHIsA92pplS7VFrAWP65wrhs4XOf4YSFlM89Sn4
GD/yEsGVJzwGrxgCNnOZkLIKsFbIOjp2lMps5jVKoFfpPJCie3F2FB3ecS+xRpHo
5u2KOTmH0rFQ6Vu+JYCo/qWh0ERtL/8gczP7C9ehiaZfemw2bq9xrUo+6y3H9Q+Z
LADwMlAkI+kzbng3R+fj4AYBvf8GTJdpBs8s/t7mZXHiXCtH6qxTMRWJx5Xuxs9F
I8Ii8TA9MCEwCQYFKw4DAhoFAAQUjO/On/REYODupznP9SwYnFX92BYEFESx1MSa
ho3Cv1cZYM0TzZEzlsKdAgIEAA==
---End - This line not part of the pkcs12---

CRYPTO_PKI: Exported PKCS12 file successfully.
*Jul 17 15:46:49.706: %PKI-6-PKCS12EXPORT_SUCCESS: PKCS #12 Successfully Exported.
```

Etapa 9. Crie um ponto de confiança vazio no ASA.

```
ASA(config)# crypto ca trustpoint <HeadEnd>
DRIVERAP(config-ca-trustpoint)# exit
```

Etapa 10. Importar o arquivo PKCS12.

```
ASA(config)#crypto ca import <HeadEnd> pkcs12 <cisco123>
Enter the base 64 encoded pkcs12.
End with the word "quit" on a line by itself:
MIIL3wIBAzCCC5kGCSqGSIb3DQEHAaCCC4oEgguGMIILgjCCC34GCSqGSIb3DQEH
BqCCC28wggtrAgEAMIILZAYJKoZIhvcNAQcBMBsGCiqGSIb3DQEMAQMwDQQIocGz
Fa6tZyACAQGAggs4qNTJi7l/f0IvQr8n1c/SCeaSYRLBvcY9yPgJ2K2/Nmu9+KNB
3dAoYkCrGwDdfpobJE0XqBpIE1uBOtAeF7zdFJt/Pgpie4fcqpCVIbDXG8Ansmhj
v0j6W9Z/IJHe7JrENatbi4nhTnCDP79Z65QSkzrb9DenkCGjoQsWP9zLHTiCDNzV
ajMlWFuCFb0wSW/6L73BLTjS7rwtE74gYMU5NJwtOVsJM2LdwuQ+iOnpsnp6q9fu
niUFEutPe8imOCRApe0tpPqhDp74hKziKT8JEsQ8HMO/lX1y/LIXdLISnz1nkoN3
vxD4AMGRFYACPH8PiGcVSx+vD+wmNaHp1vAOrq4pS7ZQ37ko4mFudnftdOUzaPIz
EzTrOwlRE6il/gF8vb14EfeR09vumJBsajF12hrFGugIJTZnElp5go+oHEEAo4Y+
Yhoj/MIOyhZzo3/ujhjKqtsAJXybYF9YqVkTee9u4Xjkcsg5AmbaqeUUfd7Q8CC2
bi39S1maoWbTYiNcHFs/bWKWJsgZwPzfWtmPch/8MNvXn46AJAwIwRQjHruuFE9F
bhv7SRhYSRQZPf7j1PTmJuMkKA3AzjdbmmJuLidbX3yKbTt4PxPMusbv+ojc6Nam
RCsRf7+gnNZLWs3eU1n84rryZg5Pjw3MRTu2yXDvr799gvx7NIZH5yUZyVl1T70b
eC4KbflcmpM6mJ2UVnaoP2N5u892m41BWuk9rt5isl2f/Z/ZuSbkFaxzU0456zSg
VbYsR+51XfQEH5xu88E5EUPWZ86YdUSlbD8ky6WOn0M1O4K6rNDLkgwXcxw3CaZ8
zhao+dE3qoEYWaKPgCQzPqW0BW3y7WSIELug2uSEsXQjIQcF+42CX6RA3yCmy2T8
C+osKlSSao0nzjrlpTWnPiFss9KRFgJDZhV2ItisiALNw9PqruddcmYtw44LXvdc
+OfnyRvuLS6LE/AMmGk0GaVetAXPezD+5pVZW13UMT/ZdzUjLiXjV9GzF6V8i8qN
Ua0MbDEa8T5Le4dCigaA+t1QxQOPGb+w0ZAQzWN4gZpSEk3ejRixOt14SU5ivj/O
lGXNn8Fvebk42CHohjXG9fq/IfbsVWSkxn2OZ/fhXkZztv4ic1VgprgJURjCtcBw
9Qp/ONda+9aDHiSBrKeHC/urgX6rgWXv9+hpRKIRfj3b8WE+N1sivuQEjlWxbD7h
9fpwxXb+/i7HisjzSkOWUNw4lyulfYSiOv86FPWK0H9Vjbg0G0di1rvGZ8uJHQCC
77RLFXp4jrvCgeo4oWKQbphgPAng7rT794vMwq0rYOb4D3HlHCUvU3JJmScDJQy2
zQxbG2q8Htm44COOuJEUBzx1ImayH2XvDck6VmLTGn8XH5Vq7LOlCeUcVDM8aQfy
HJSPk/VmfQ0lXwPIaxxYlr+jOpcorFkH+OH04hz07grAsGyLRoFICTEvHAzVnF0X
2A1j/z/BFAPG86ssAtInRZVeYUS72NwPEtpKmlHZnl+2iWno5iwTZgtjv7oREZKE
RE6m7O8RiPSD2RjjamCmmmnH5dK5wxF7YlIeK/+ZVrfwLecEPRl+eVw0isM/JN/a
WmkZkCcVMx/ec1P8jp8LzCx17HgVNYbg9lsiffD4xo0G/k0QLUlpliAt7LA2BeGs
yl55wtYUcOBH0/Es39yWnm2Ea//IK6BLw98PvU90vkXWwiD3ajFmcHmssDeU/tZR
4KKNuNor7Le9ycXZFM9ofKZ6AIJ9A1AYvOyhGO88voq8MMGXEe/q+DIjaVE1htYu
k0ELmYAD/XOkEvp3SqOkLQZiCzZ20iMWUTWXlXfgrfLEH0utwHTyr3J2vQk5CD37
ZAfsF6zxEvtU2t41J0e9OjWJw9WtWnnS0gzLeXWtW3H0YAIw3QodKNzbaY4eLP4y
BEdsLmWbM4eza0m9BoZOmMUSkhvFrEz5Q5X5r9vCuAi1rYDqyIjhgdme56tVV0Vg
ZauhbNX59PQQzwOdIZJVVL5tgjf0h7XCm9OBsqd12lHurCCmHy7kM5pqf0MMlhH7
oM/DhXdTU+1sEabt/9c2qs1ihJLS1Zaw2q1AaS5h00+xL8Lxwh2/1/R7Q8FferhR
QZDpix+CmtakRu7uPOMa0zsyOko3P9mf74AWDrThAwMA6G238TC6XI1vrXhvEX1l
BVplQq0Wh/p7ZorSjD5l+z7TkXmJNp7iIxAqp0yobC6vOBwQP7/QAs88q9JNSAte
ErdCXoizvs8YmZMoEap948oplYFaIP+xCnCr8l3v7znwfZwTMQPoPvqEFqUmWYgt
xkJ0qaE645ihTnLgk4eglsBLslwPR1RJU+t6kGGAUmxqhPFxb3/1xNRPVzOGn12w
S9yw+XLC6kS4PmKoxkxax4nnCx7s3e7B5e0qmYtgRTJ0GuW7Uf+T3royTOuYm0d+
ik6bmxcnO0qdcHtt2HTbI+kYpken3YrFOh9Jnm9ZKT63gQSqQWL800ZVd4dAZceg
```

```
FciNKs9r26fyy+L3rGCh+U9TLf6mNuWu8RstjjIGPHEPKZ9gnMgMJmikP2ghgOAd
XVhs6ashXx33bZ9dIuhRx6uTNMrppsXyg6SxUyeGDYhpxsPt7uRwBswOpi6iDMZn
ISSzQjrkxoNwwOfn87O5fTCLhHlTZa8HS5HMK3KE7LiZv9pa1z6KTo4z+LCQSLDy
FoRJhSaEsCYJsLDS5nYBoR8hE/eMvQDX1f+RZBrJDcftxx7FQ+8RtvHSJRcJK9N/
Ph/pL62NBlSbvCfn1AbisKrbbgCVLOSj/doufPvpMT2UDL0TY8UnQiyWMH1MF3tZ
jJy6Si2glLwA9hu/c1NsREbA0gxMTjAREb5BjAUmlc3fuv2DWpwnkwyZNyHdm9B9
TPRoByGPvSZXa8MwY/8DUEwUQEsfDJi5jlAD4I6VFFUB72ZS7wn/mVR02fPkfOMp
3yhnGgX29OaDDiDlKw1Xwj1NybOhpZ6unDo5J3stMxlbv5TYL2Tl6egZS0SjsLmn
cj5zkyUU22/93E5vfKD1CMiXx9/e4j2rRh3QCIXqaCjC9acTJ8a/k9/bp8Nz5Cir
pnaCbuQsvna92nxVUqcmLlSbVIvGqlH9qm4DurhcLh59j20tX6K8AMJ90+azaYbX
AJV/MCElhJg6wcN8QnCHMhiuK9+zpsUK2FQgfbcgaaNe3xGaXuoOIGQmlbAGtEkp
kuauRzQ8/pwszaZuPh/5rE77z8zMut3+OE5CslB9npzNi0b0itaaRl13bBBml1xn
r6SBUw7AWapZwRx6pihvptLJaqU1IzaV5SWk0zTABR7BmR84L0+/8v/bedcPSioG
ecside21F6CcWO5ywABBxDYQXM1P9qkC/2bkPkEJ0jBI5P5L1+Yqb8hTlone/InR
B8ktEd8+QW8o60h0seONXumTqBfAuNBkprOA3ssXLeEGB0IpeC5oGW+VSziyS9id
zYq8WaehpAIf3pqwn8gsi0B/wd57T0KK91+v0Ei4z+yIdu8Kh9GTiqGvgNAeakgr
ECDiXoKAwltYAn7cLKNpZaojSs2Jt+60oBA5crT04Mtgpjb9Pd/DLqWQDJTyoRVv
cJRb68aOyZvVBU0yoLbox84QKLHIsA92pplS7VFrAWP65wrhs4XOf4YSFlM89Sn4
GD/yEsGVJzwGrxgCNnOZkLIKsFbIOjp2lMps5jVKoFfpPJCie3F2FB3ecS+xRpHo
5u2KOTmH0rFQ6Vu+JYCo/qWh0ERtL/8gczP7C9ehiaZfemw2bq9xrUo+6y3H9Q+Z
LADwMlAkI+kzbng3R+fj4AYBvf8GTJdpBs8s/t7mZXHiXCtH6qxTMRWJx5Xuxs9F
I8Ii8TA9MCEwCQYFKw4DAhoFAAQUjO/On/REYODupznP9SwYnFX92BYEFESx1MSa
ho3Cv1cZYM0TzZEzlsKdAgIEAA==
quit
INFO: Import PKCS12 operation completed successfully
```

Etapa 11. Verifique as informações do certificado.

```
ASA(config)#show crypto ca certificates <HeadEnd>
CA Certificate
  Status: Available
  Certificate Serial Number: 01
  Certificate Usage: Signature
  Public Key Type: RSA (1024 bits)
  Signature Algorithm: MD5 with RSA Encryption
  Issuer Name:
    cn=calo_root
  Subject Name:
    cn=calo_root
  Validity Date:
    start date: 13:24:35 UTC Jul 13 2017
    end   date: 13:24:35 UTC Jul 12 2020
  Storage: config
  Associated Trustpoints: test HeadEnd
Certificate
  Status: Available
  Certificate Serial Number: 05
  Certificate Usage: General Purpose
  Public Key Type: RSA (2048 bits)
  Signature Algorithm: SHA1 with RSA Encryption
  Issuer Name:
    cn=calo_root
  Subject Name:
    hostname=Connected_2_INET-B
    cn=HeadEnd.david.com
  Validity Date:
    start date: 16:56:14 UTC Jul 16 2017
    end   date: 16:56:14 UTC Jul 16 2018
  Storage: config
  Associated Trustpoints: HeadEnd
```

Gerar um certificado de cliente

Etapa 1. Gere um par de chaves RSA exportável.

```
IOS-CA(config)# crypto key generate rsa modulus 2048 label <Win7_PC> exportable
The name for the keys will be: Win7_PC
% The key modulus size is 2048 bits
% Generating 2048 bit RSA keys, keys will be exportable...
[OK] (elapsed time was 5 seconds
```

Etapa 2. Configure um ponto de confiança.

```
IOS-CA(config)# crypto pki trustpoint <Win7_PC>
IOS-CA(ca-trustpoint)#enrollment url http://10.201.180.230:80
IOS-CA(ca-trustpoint)#subject-name <cn=Win7_PC.david.com>
IOS-CA(ca-trustpoint)#revocation-check none
IOS-CA(ca-trustpoint)#rsakeypair <Win7_PC>
```

Etapa 3. Autentique o ponto confiável configurado (Obtenha o certificado CA).

```
IOS-CA(config)#crypto pki authenticate <Win7_PC>
Certificate has the following attributes:
       Fingerprint MD5: DA4502F4 CEFB4F08 AAA3179B 70019185
      Fingerprint SHA1: A887F6DB 0656C7E2 857749F3 EA3D7176 8920F52F
% Do you accept this certificate? [yes/no]: yes
Trustpoint CA certificate accepted.
```

Etapa 4. Inscreva o ponto confiável autenticado (Obter o certificado de identidade).

```
IOS-CA(config)#crypto pki enroll <Win7_PC>
%
% Start certificate enrollment ..
% Create a challenge password. You will need to verbally provide this
   password to the CA Administrator in order to revoke your certificate.
   For security reasons your password will not be saved in the configuration.
   Please make a note of it.
Password: cisco123
Re-enter password: cisco123
% The subject name in the certificate will include: cn=Win7_PC.david.com
% The subject name in the certificate will include: Connected_2_INET-B
% Include the router serial number in the subject name? [yes/no]: no
% Include an IP address in the subject name? [no]: no
Request certificate from CA? [yes/no]: yes
% Certificate request sent to Certificate Authority
% The 'show crypto pki certificate verbose Win7_PC' command will show the fingerprint.
*Jul 17 15:21:11.343: CRYPTO_PKI:  Certificate Request Fingerprint MD5: 9153E537 11C16FAE
B03F7A38 775DBB92
*Jul 17 15:21:11.343: CRYPTO_PKI:  Certificate Request Fingerprint SHA1: 3BC4AC98 91067707
BB6BBBFB ABD97796 F7FB3DD1
*Jul 17 15:21:15.675: %PKI-6-CERTRET: Certificate received from Certificate Authority
```

Etapa 5. Verifique as informações dos certificados.

```
IOS-CA#show crypto pki certificates verbose <Win7_PC>
Certificate
  Status: Available
  Version: 3
  Certificate Serial Number (hex): 03
  Certificate Usage: General Purpose
  Issuer:
    cn=calo_root
```

```
  Subject:
    Name: Connected_2_INET-B
    hostname=Connected_2_INET-B
    cn=Win7_PC.david.com
  Validity Date:
    start date: 13:29:51 UTC Jul 13 2017
    end   date: 13:29:51 UTC Jul 13 2018
  Subject Key Info:
    Public Key Algorithm: rsaEncryption
    RSA Public Key: (2048 bit)
  Signature Algorithm: SHA1 with RSA Encryption
  Fingerprint MD5: 9153E537 11C16FAE B03F7A38 775DBB92
  Fingerprint SHA1: 3BC4AC98 91067707 BB6BBBFB ABD97796 F7FB3DD1
  X509v3 extensions:
    X509v3 Key Usage: A0000000
      Digital Signature
      Key Encipherment
    X509v3 Subject Key ID: F37266AE 61F64BD9 3E9FA80C 77455F21 5BEB870D
    X509v3 Authority Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
    Authority Info Access:
    Extended Key Usage:
        Client Auth
        Server Auth
  Associated Trustpoints: Win7_PC
  Key Label: Win7_PC
CA Certificate
  Status: Available
  Version: 3
  Certificate Serial Number (hex): 01
  Certificate Usage: Signature
  Issuer:
    cn=calo_root
  Subject:
    cn=calo_root
  Validity Date:
    start date: 13:24:35 UTC Jul 13 2017
    end   date: 13:24:35 UTC Jul 12 2020
  Subject Key Info:
    Public Key Algorithm: rsaEncryption
    RSA Public Key: (1024 bit)
  Signature Algorithm: MD5 with RSA Encryption
  Fingerprint MD5: DA4502F4 CEFB4F08 AAA3179B 70019185
  Fingerprint SHA1: A887F6DB 0656C7E2 857749F3 EA3D7176 8920F52F
  X509v3 extensions:
    X509v3 Key Usage: 86000000
      Digital Signature
      Key Cert Sign
      CRL Signature
    X509v3 Subject Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
    X509v3 Basic Constraints:
        CA: TRUE
    X509v3 Authority Key ID: B5EEEEB9 31B9A06C CBD9893C 0E318810 5CA657E6
    Authority Info Access:
  Associated Trustpoints: test HeadEnd Win7_PC CA_Server
```

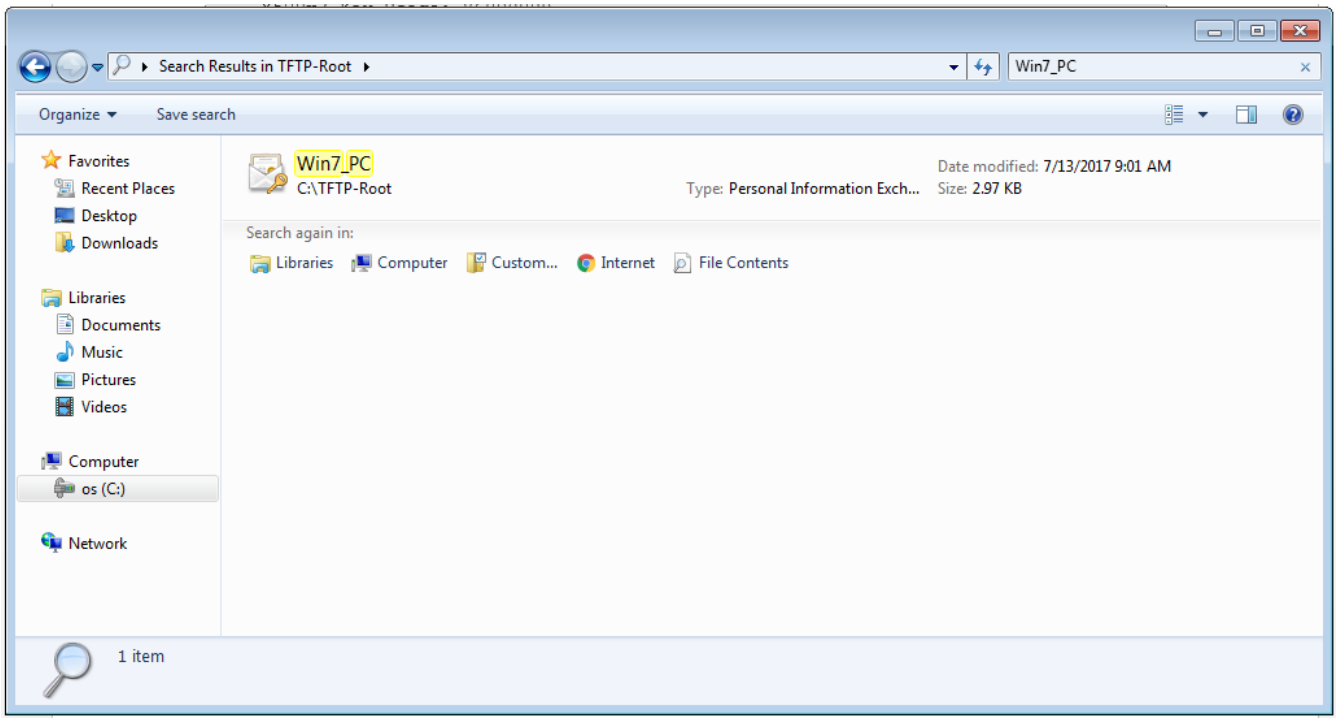
Instalar o certificado de identidade na máquina cliente Windows 7

Etapa 1. Exporte o ponto confiável Win7_PC nomeado para um servidor FTP/TFTP (instalado na sua máquina Windows 7) no formato PKCS12 (.p12) para obter o certificado de identidade, o certificado CA e a chave privada em um único arquivo.

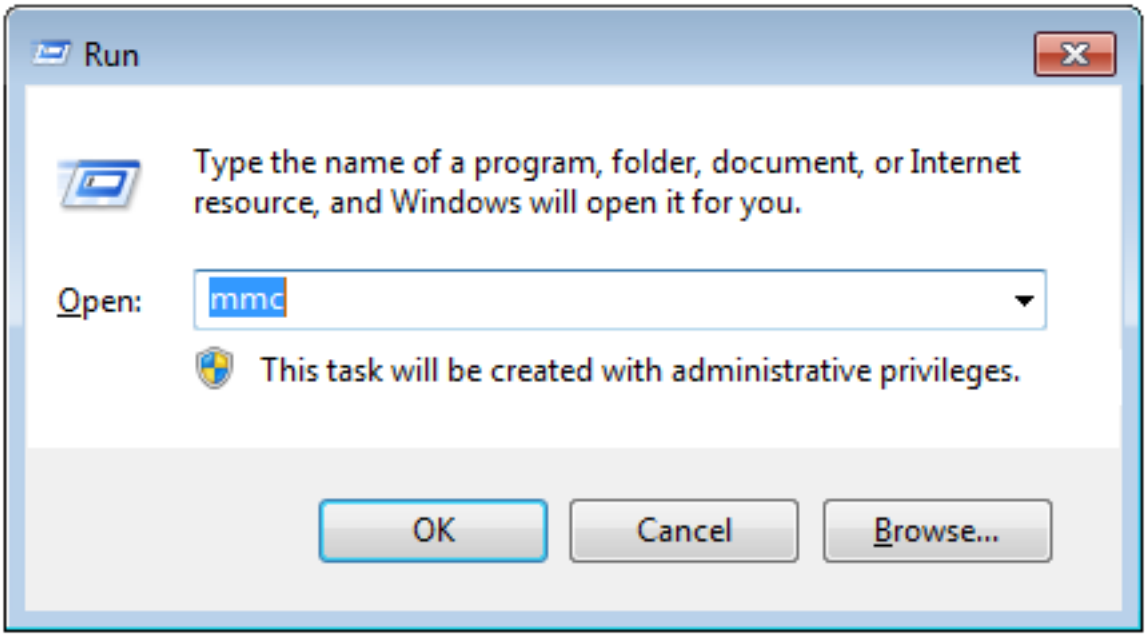
```
IOS-CA(config)#crypto pki export <Win7_PC> pkcs12 <tftp://10.152.206.175/ Win7_PC.p12> password
```

```
<cisco123>
Address or name of remote host [10.152.206.175]?
Destination filename [Win7_PC.p12]?
!Writing pkcs12 file to tftp://10.152.206.175/Win7_PC.p12
!
CRYPTO_PKI: Exported PKCS12 file successfully.
*Jul 17 16:29:20.310: %PKI-6-PKCS12EXPORT_SUCCESS: PKCS #12 Successfully Exported.
```

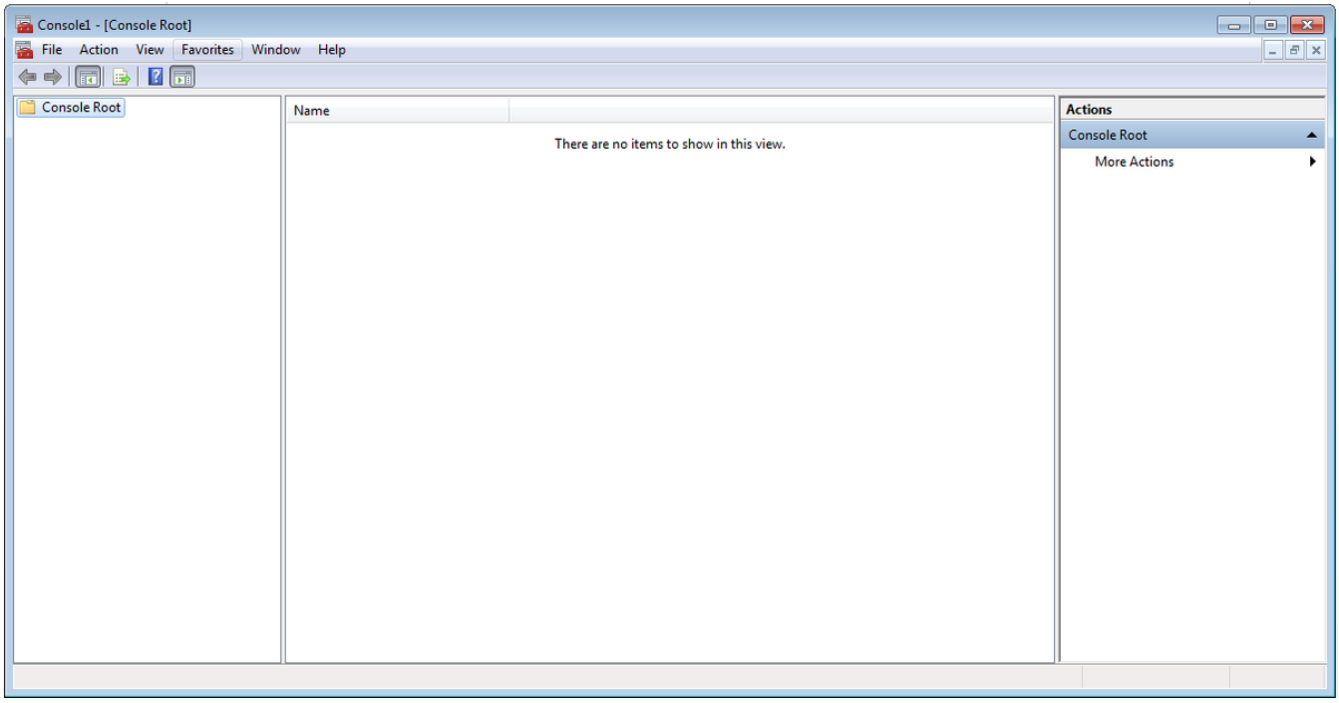
Éassim que o arquivo exportado fica em uma máquina cliente.



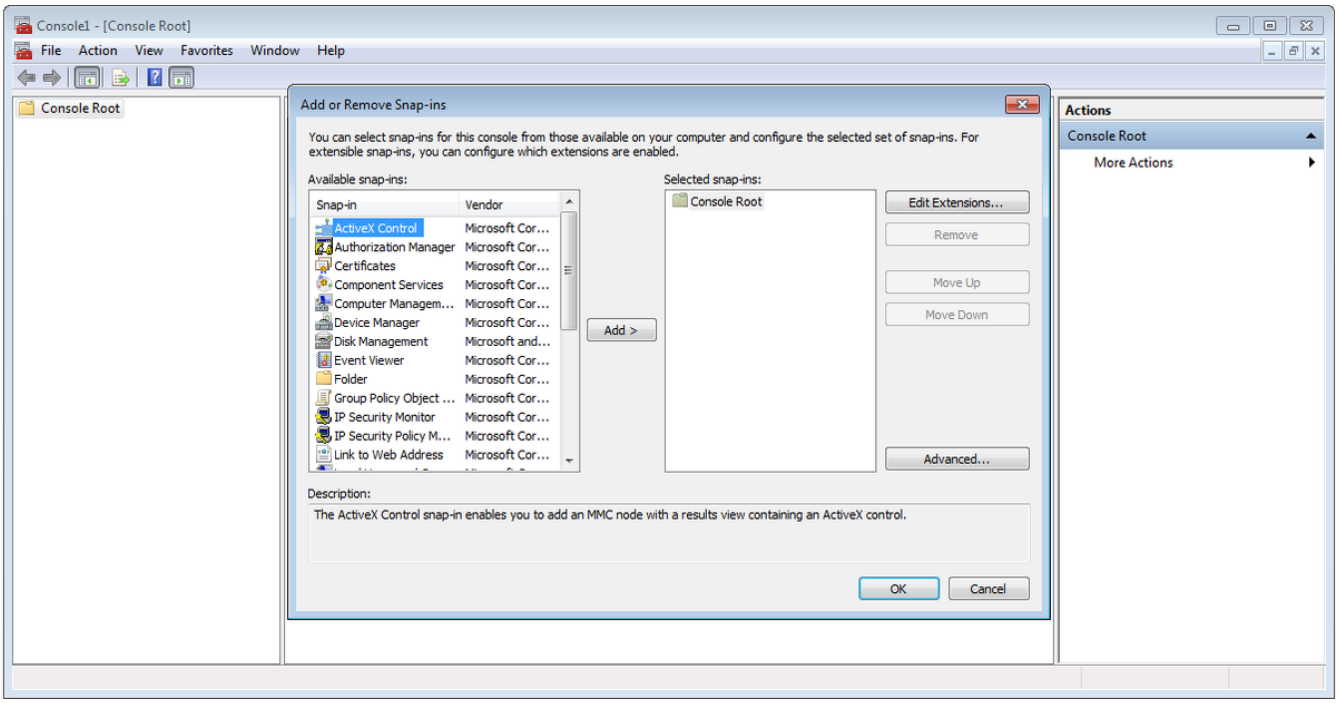
Etapa 2. Pressione **Ctrl + R** e digite **mmc** para abrir o Microsoft Management Console (MMC).



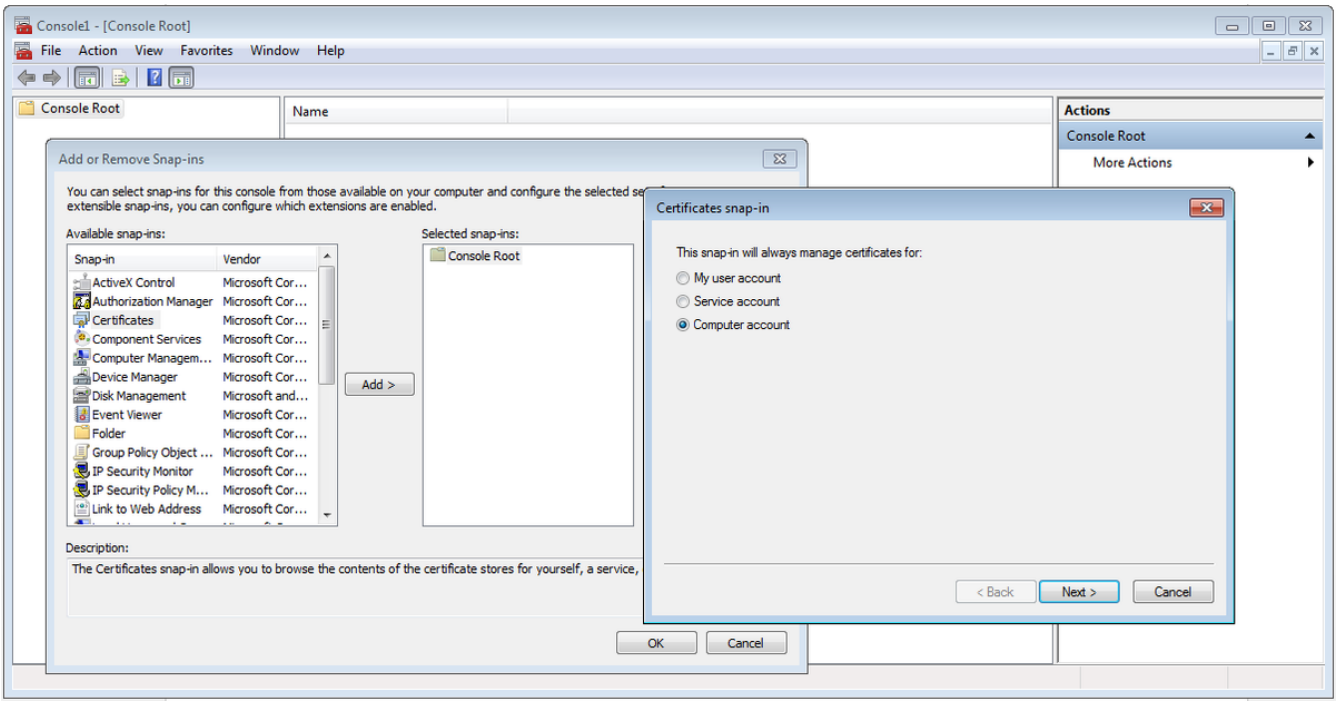
Etapa 3. Selecione **OK**.



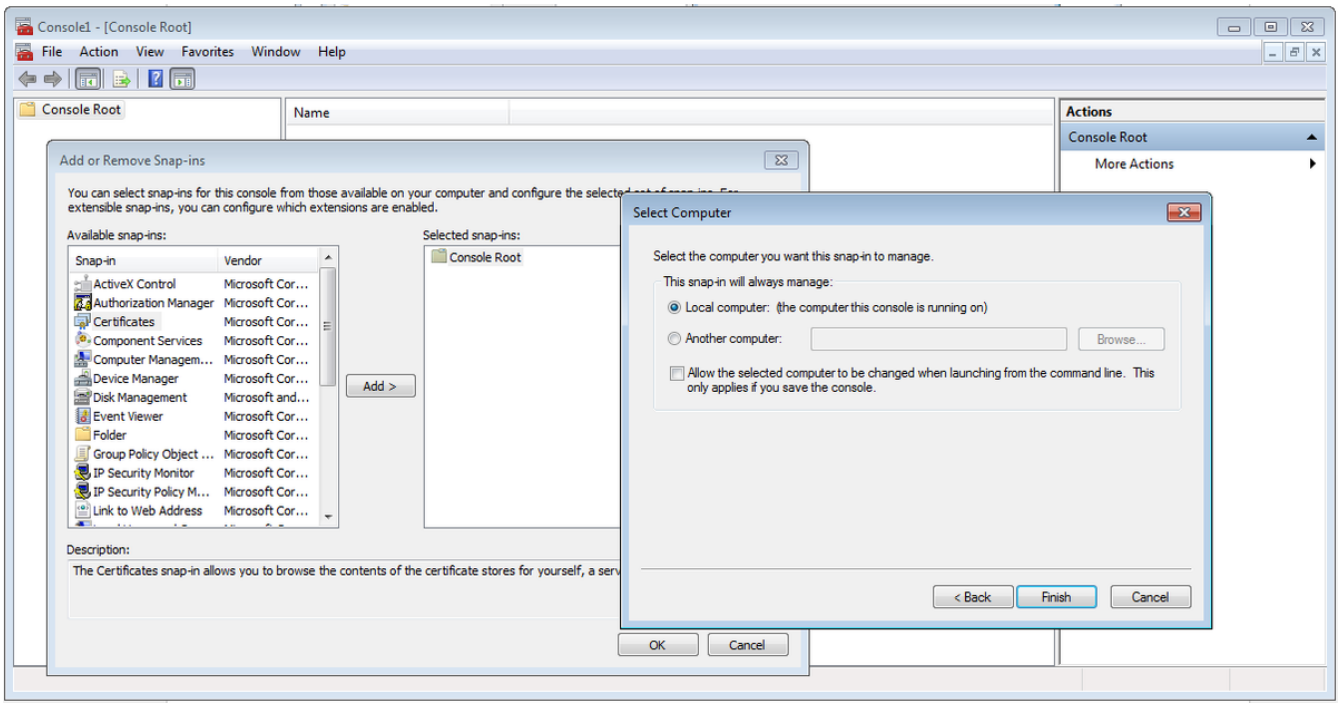
Etapa 4. Navegue até **Arquivo > Adicionar/remover snap-in**.



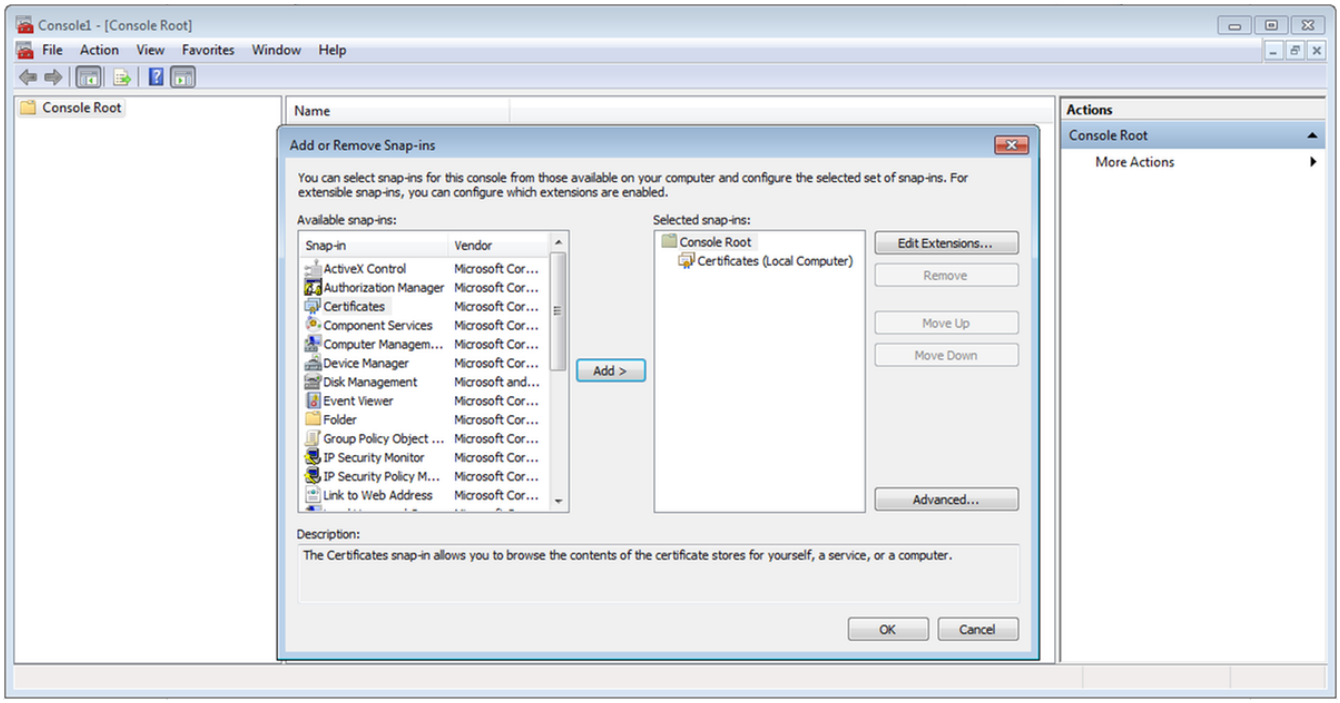
Etapa 5. Selecione **Certificados > Adicionar > Conta do Computador**.



Etapa 6. Selecione **Avançar**,

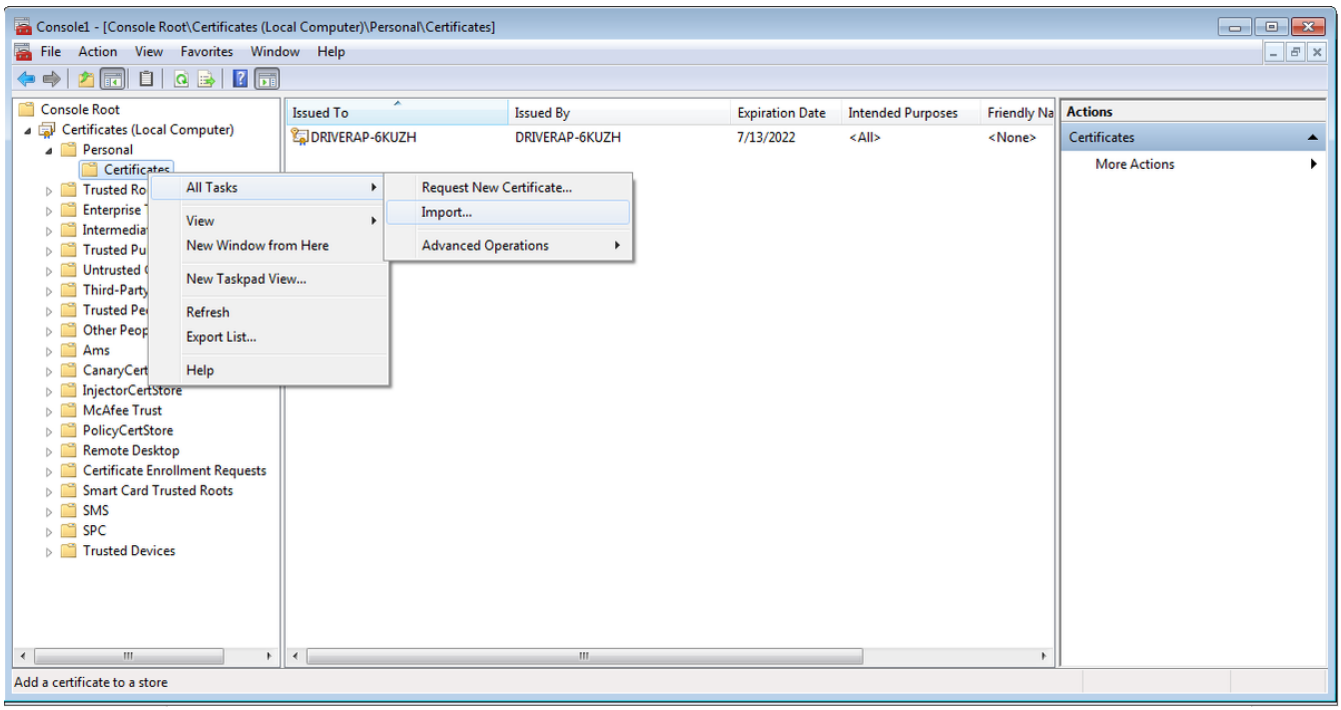


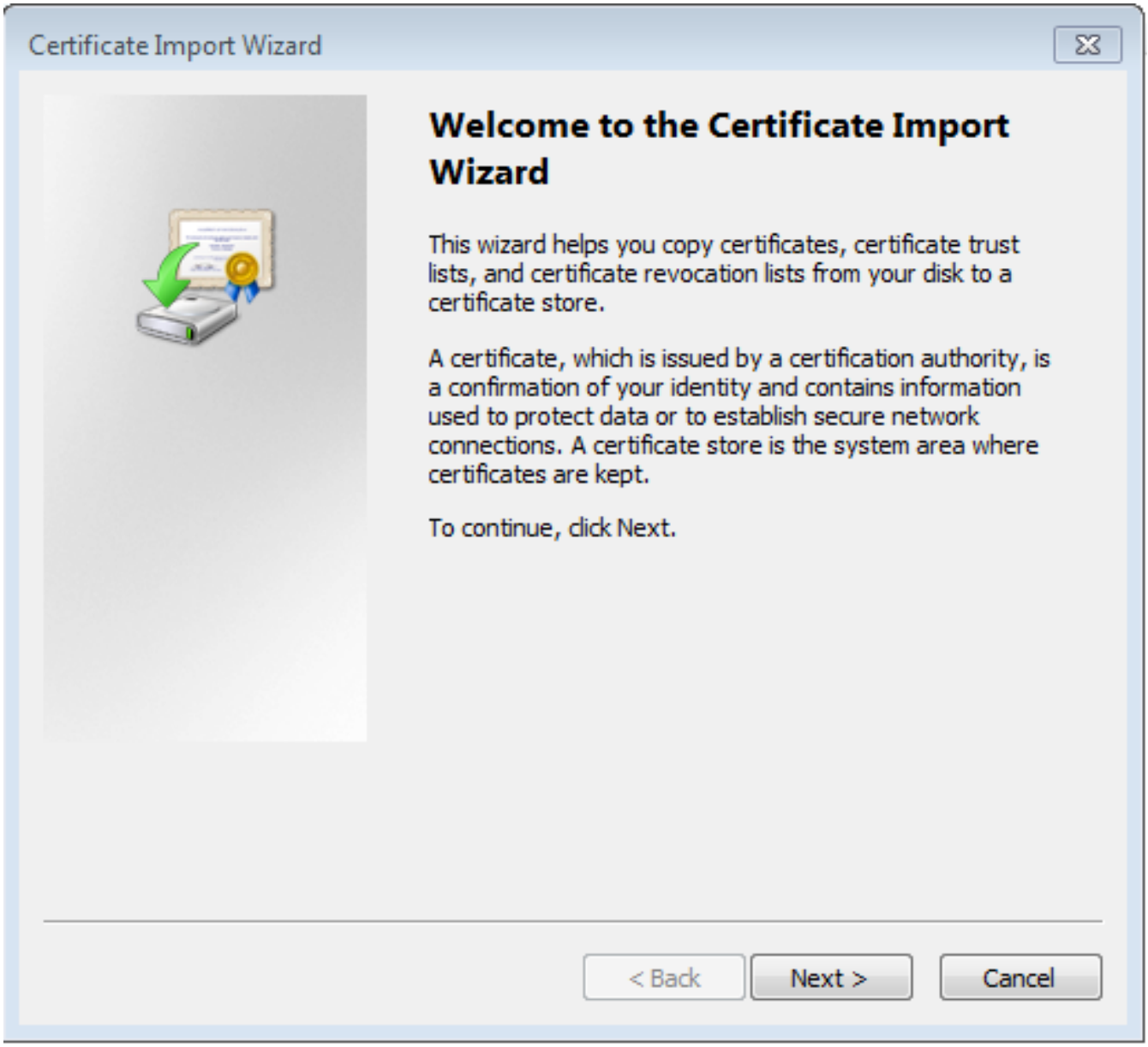
Passo 7. **Termine**.



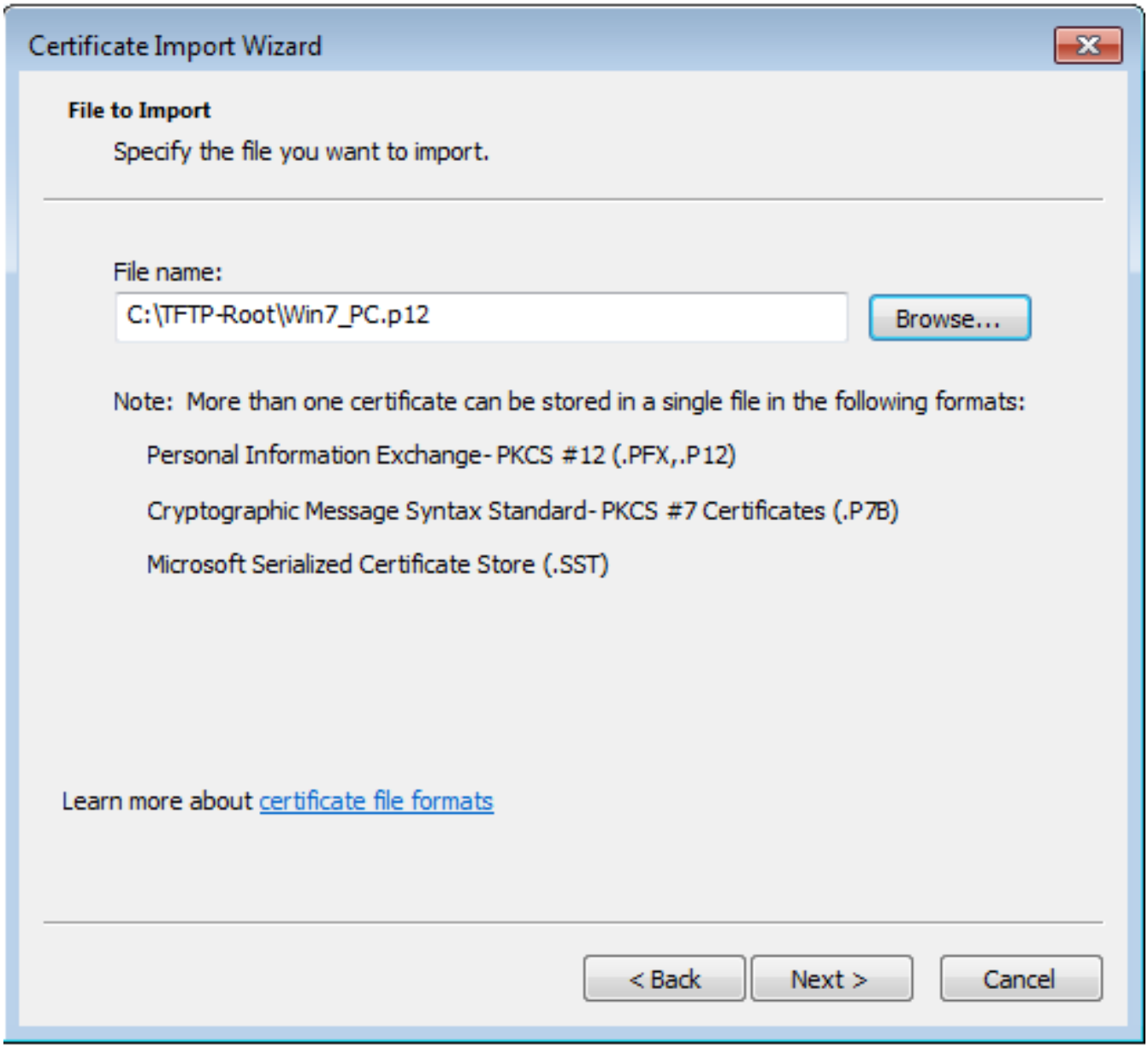
Etapa 8. Selecione **OK**.

Etapa 9. Vá para **Certificados (Computador Local)>Pessoal>Certificados**, clique com o botão direito do mouse na pasta e navegue para **Todas as Tarefas>Importar**:

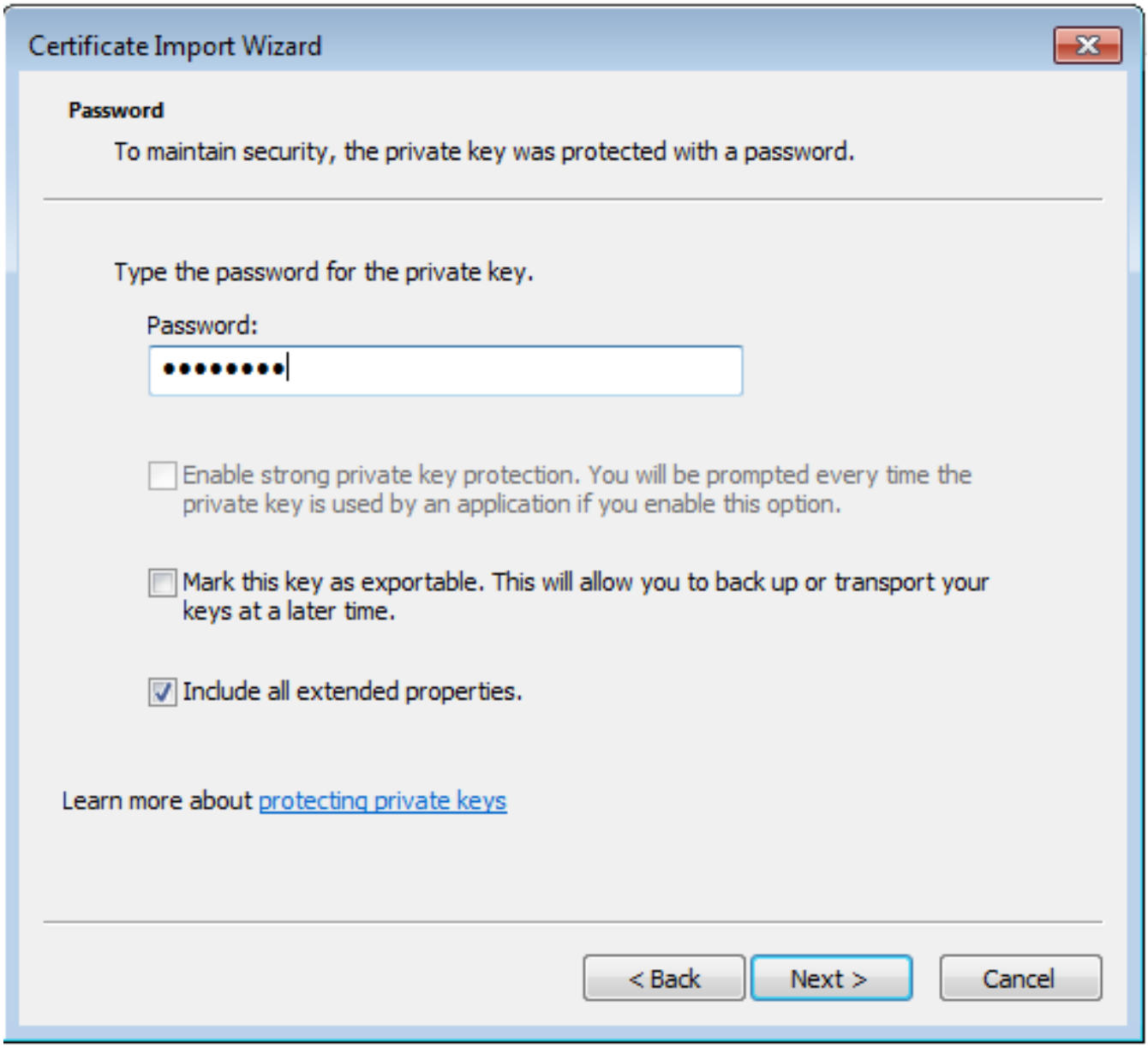




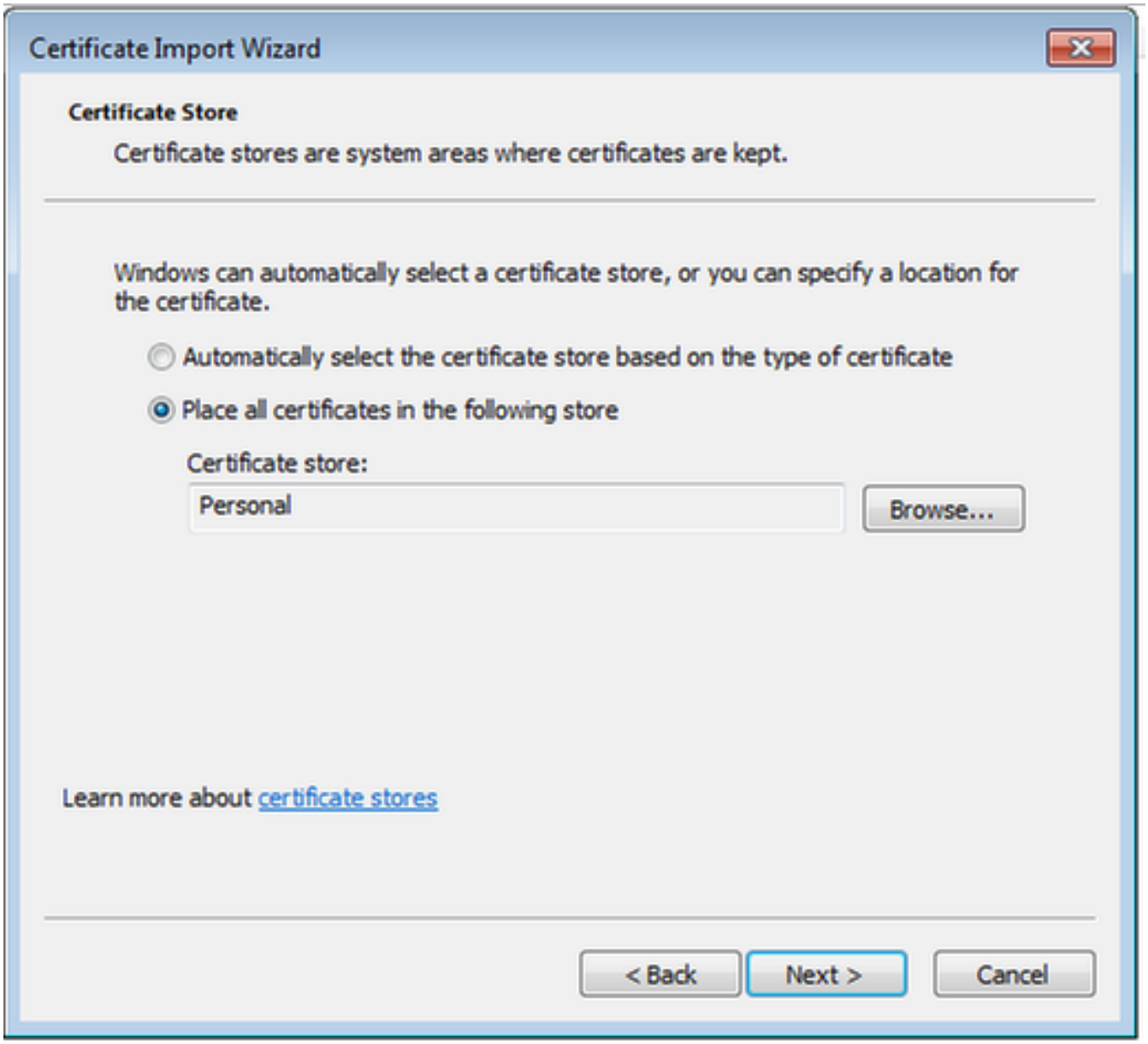
Etapa 10. Clique em Next. Indique o caminho onde o arquivo PKCS12 está armazenado.



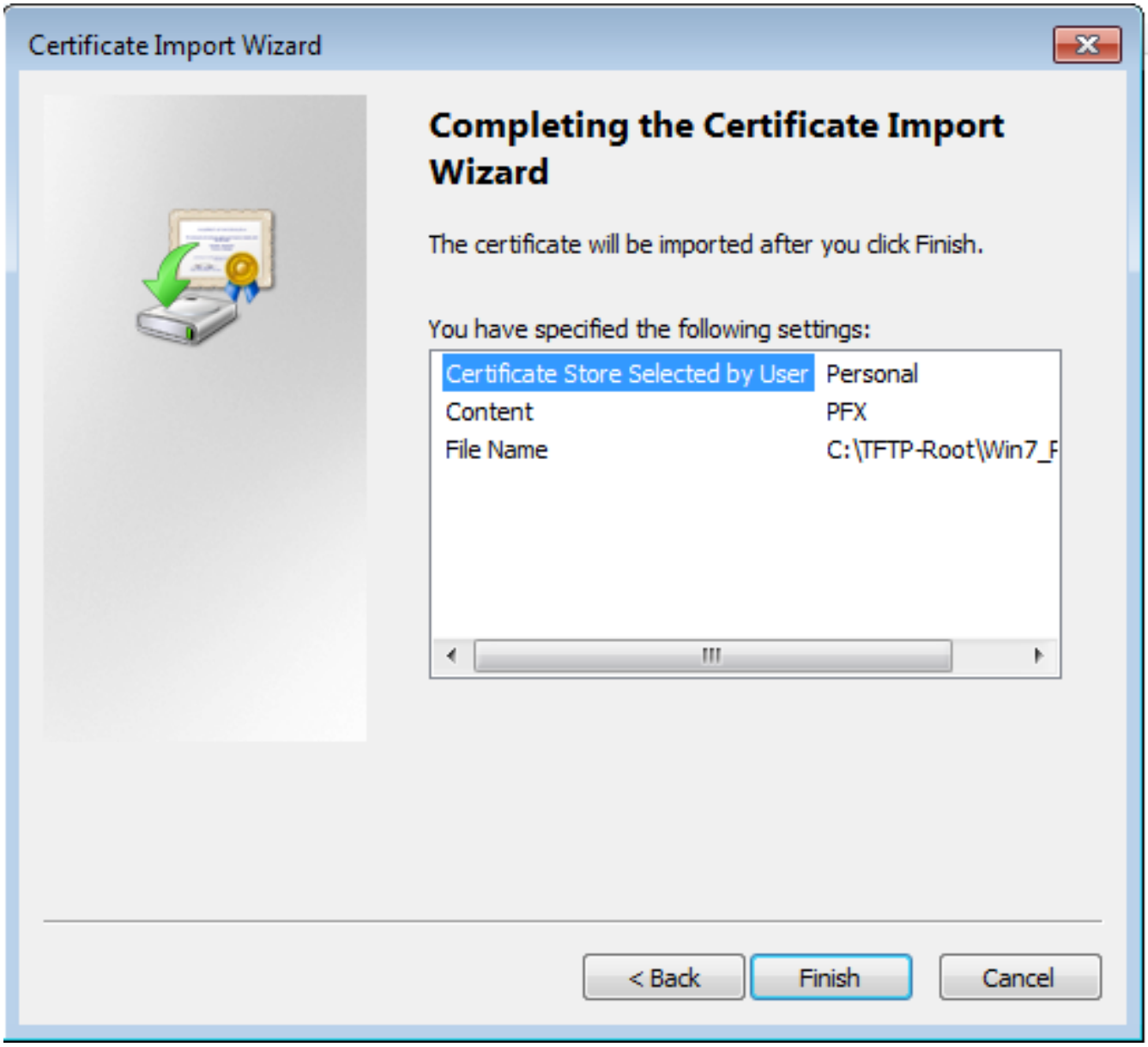
Etapa 11. Selecione **Next** novamente e digite a senha inserida no comando *crypto pki export <Win7_PC> pkcs12 <tftp://10.152.206.175/ Win7_PC.p12> password <cisco123>*



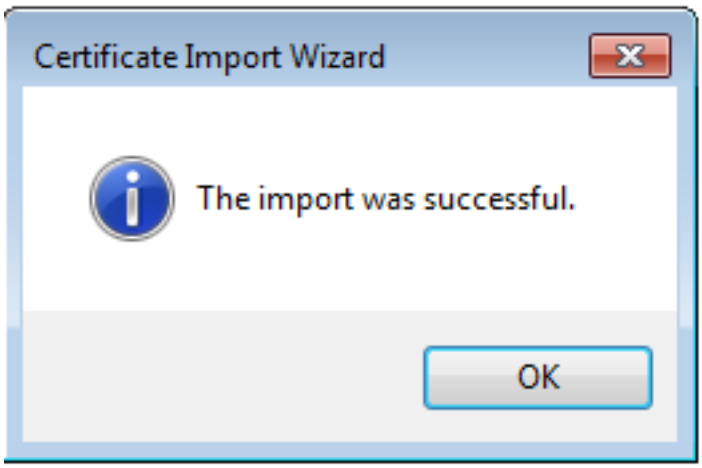
Etapa 12. Selecione **Avançar**.



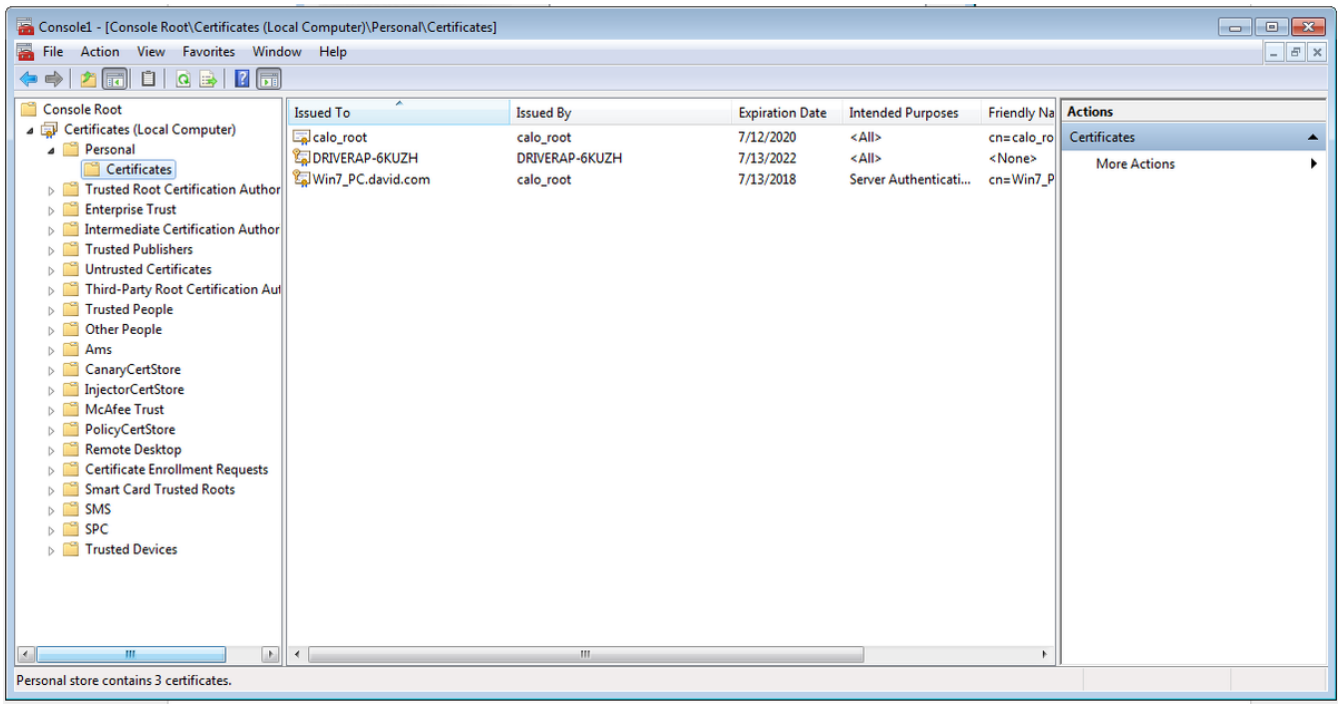
Etapa 13. Selecione **Avançar** mais uma vez.



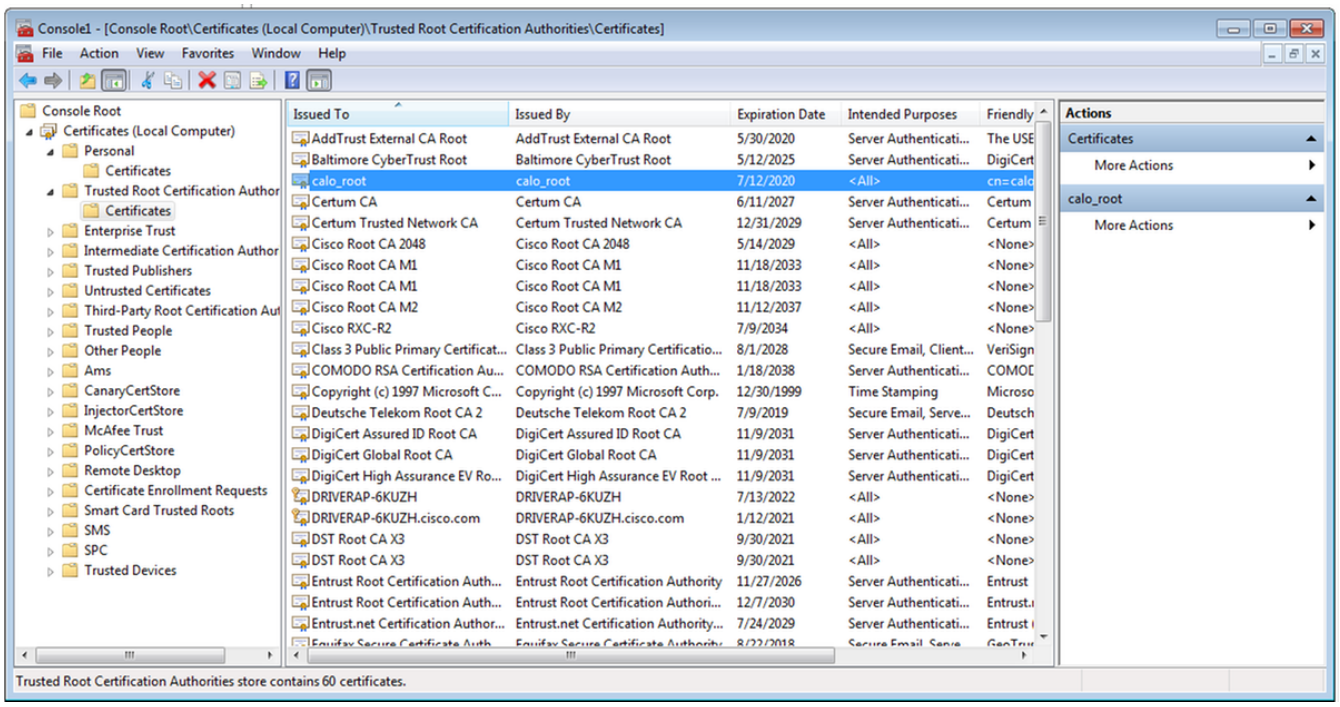
Etapa 14. Selecione **Concluir**.

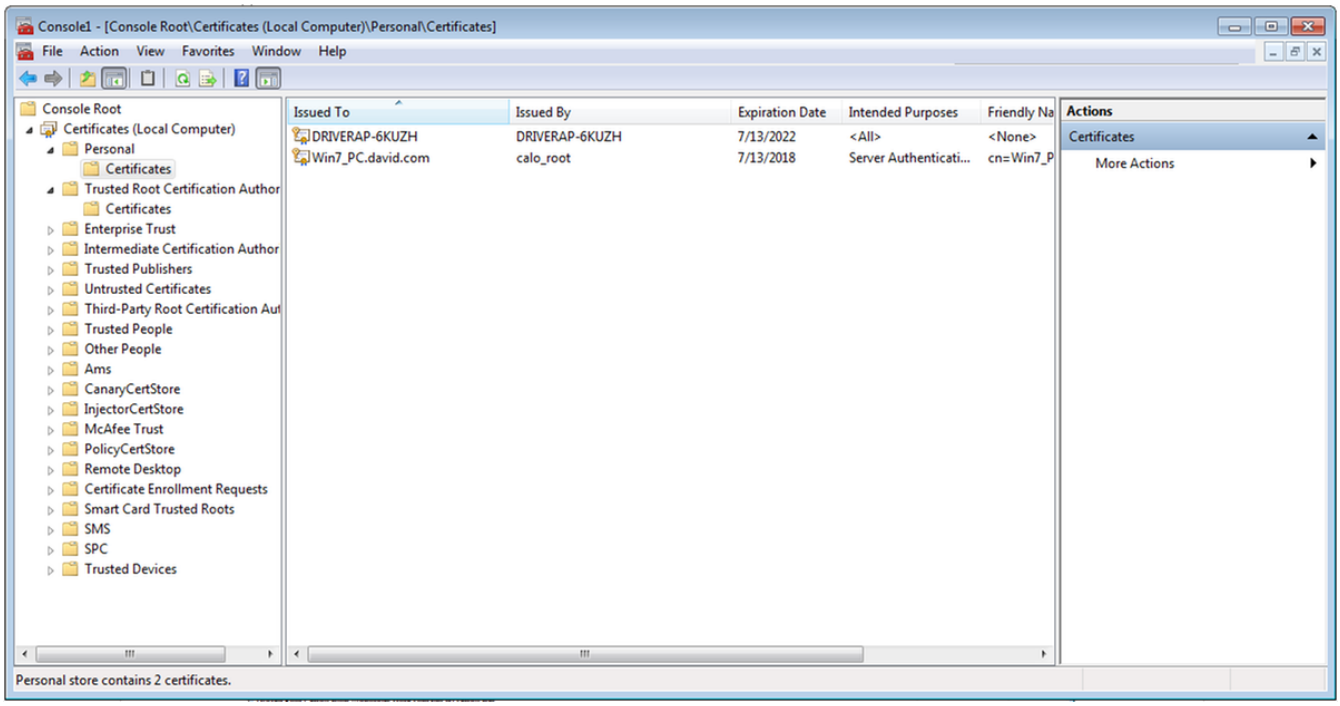


Etapa 15. Selecione **OK**. Agora você verá os certificados instalados (o certificado CA e o certificado de identidade).



Etapa 16. Arraste e solte o Certificado CA de **Certificados (Computador Local)>Pessoal>Certificados** para **Certificados (Computador Local)>Autoridade de Certificação de Raiz Confiável>Certificados.**



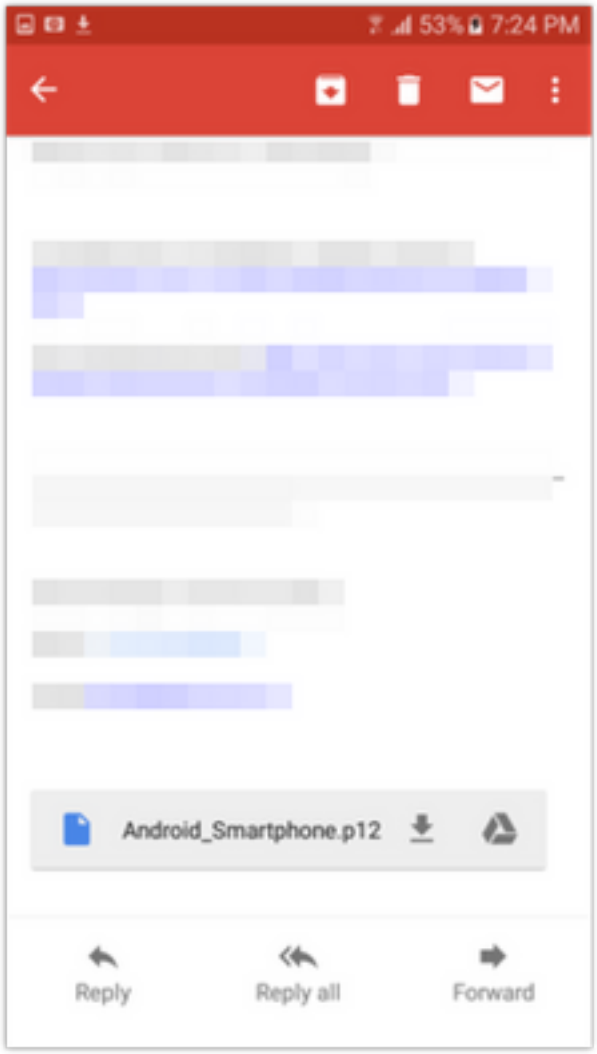


Como instalar o certificado de identidade no seu dispositivo móvel Android

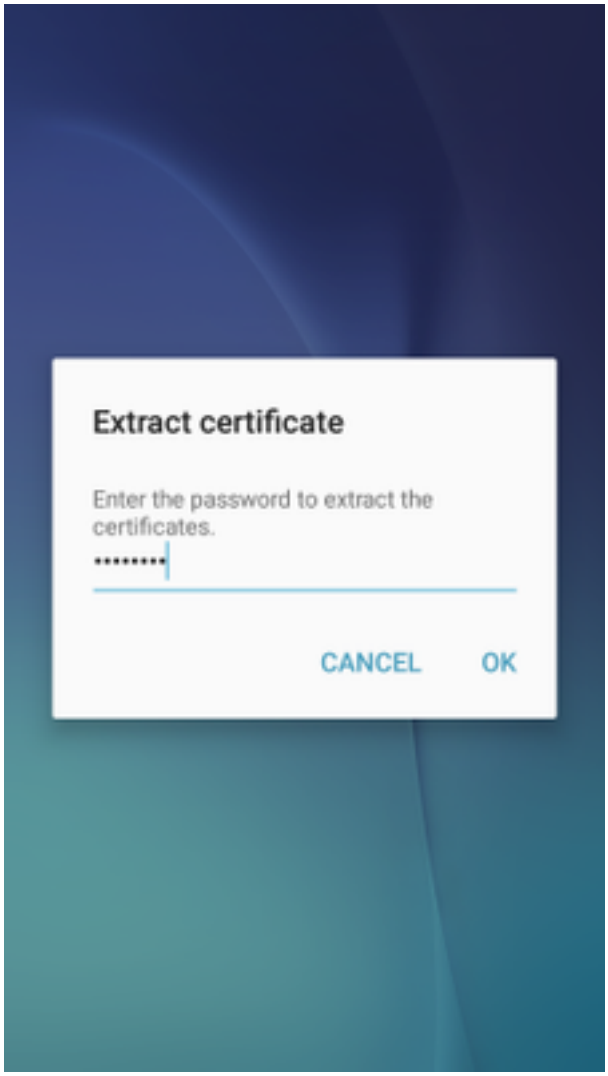
Note: O Android suporta arquivos de armazenamento de chaves PKCS#12 com extensão .pfx ou .p12.

Note: O Android suporta apenas certificados SSL X.509 codificados por DER.

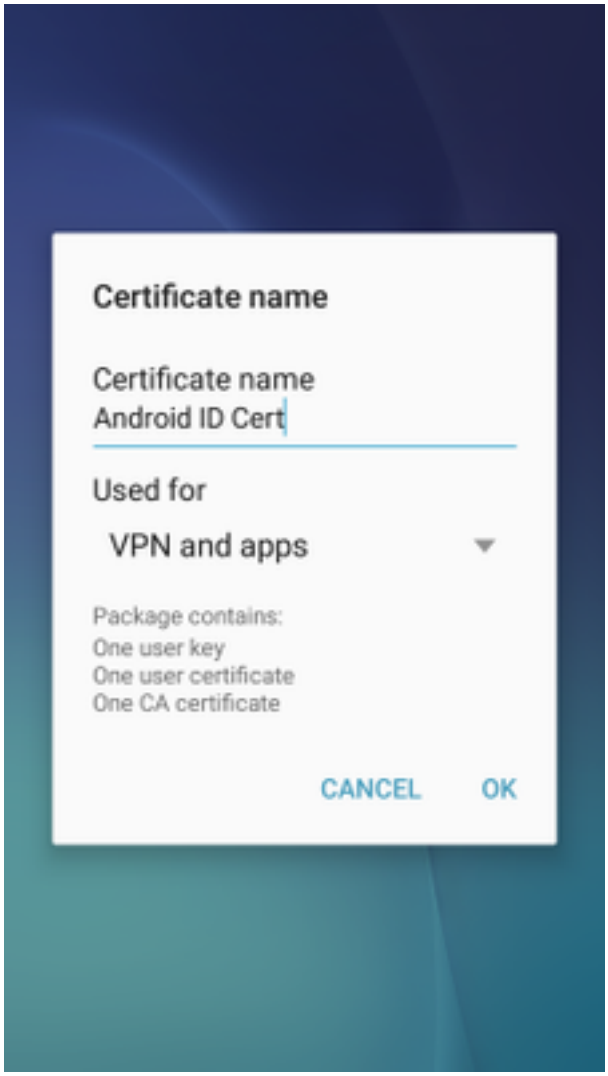
Etapa 1. Após a exportação do certificado do cliente do IOS CA Server no formato PKCS12 (.p12), envie o arquivo para o dispositivo Android por e-mail. Quando estiver lá, toque no nome do arquivo para iniciar a instalação automática. (**Não baixar o arquivo**)



Etapa 2. Digite a senha usada para exportar o certificado, neste exemplo, a senha é **cisco123**.

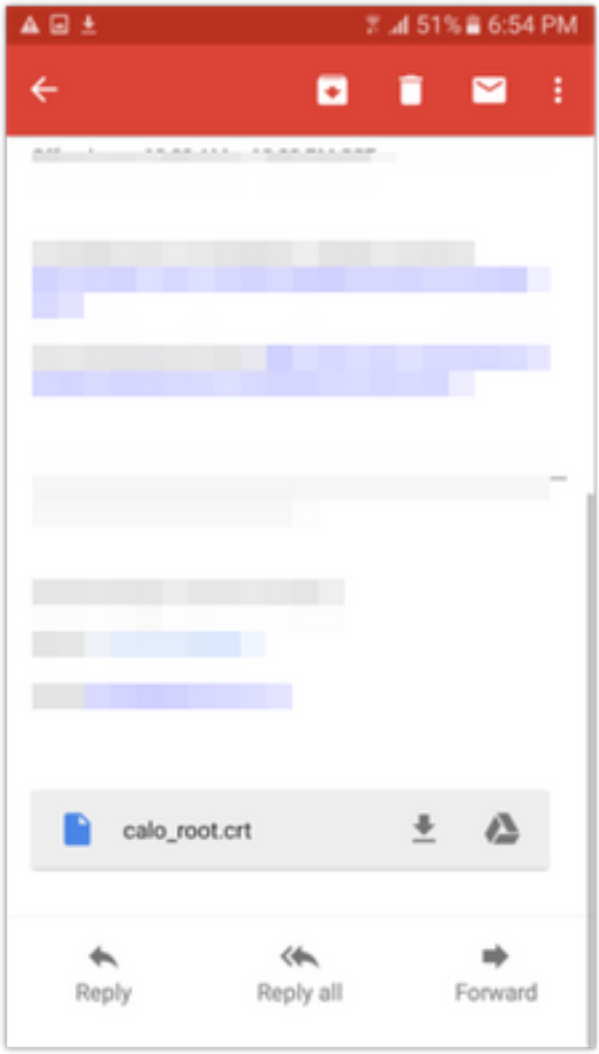


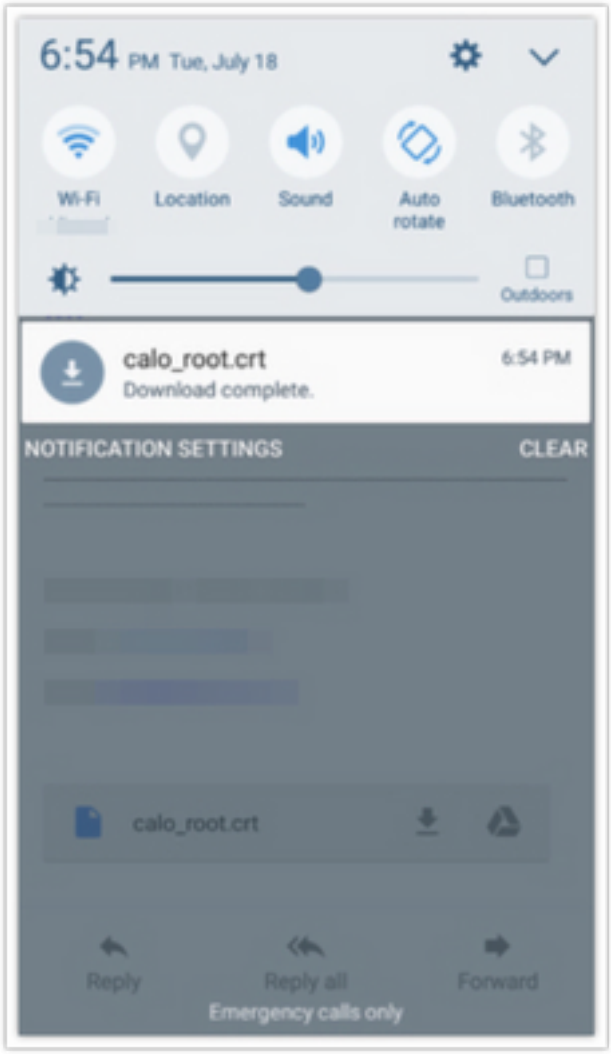
Etapa 3. Selecione **OK** e insira um **nome de certificado**. Pode ser qualquer palavra, neste exemplo o nome é **Android ID Cert** .



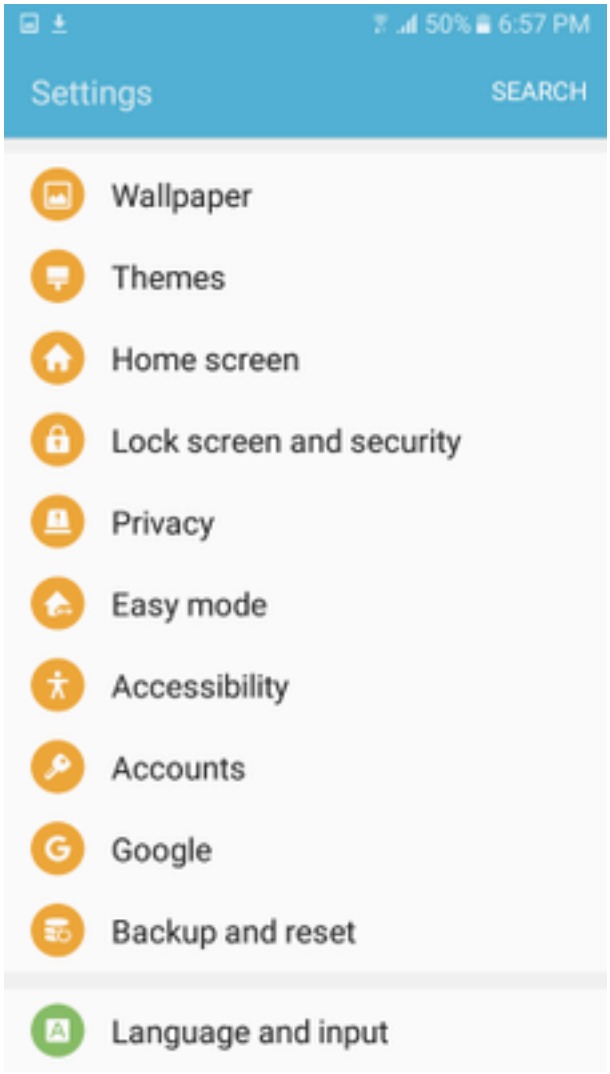
Etapa 4. Selecione **OK** e a mensagem "Android ID Cert installed" (Certificado de ID do Android instalado) será exibida.

Etapa 5. Para instalar o certificado CA, extraia-o do IOS CA Server no formato base64 e salve-o com a extensão .crt. Envie o arquivo para seu dispositivo android por e-mail. Desta vez, você precisa fazer o download do arquivo ao tocar na seta ao lado do nome do arquivo.


51% 6:54 PM
calo_root.crt
Reply
Reply all
Forward

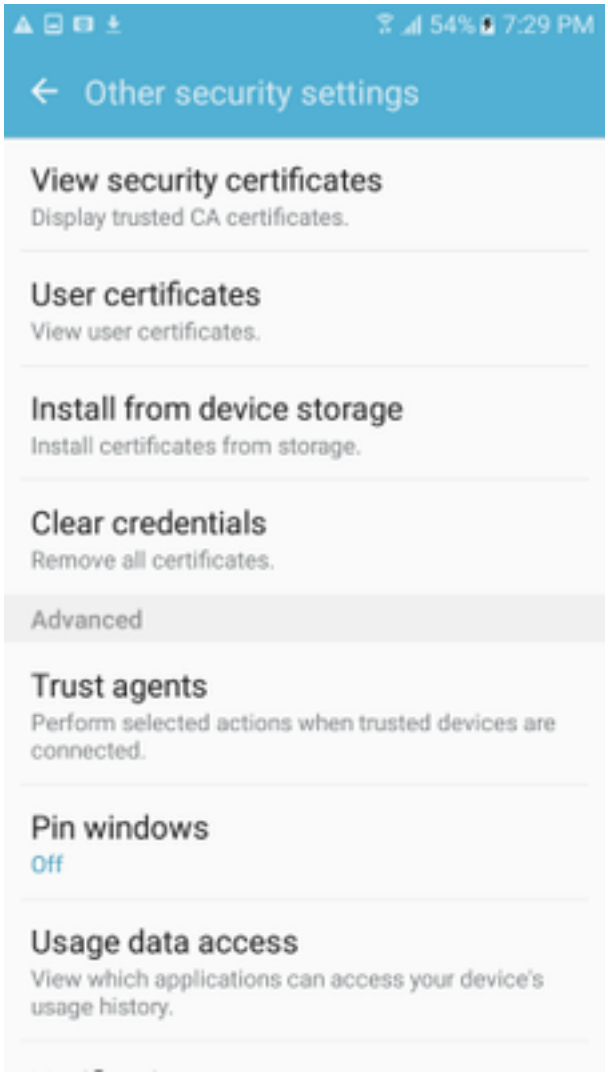


Etapa 6. Navegue até **Configurações** e **Bloquear tela e segurança.**

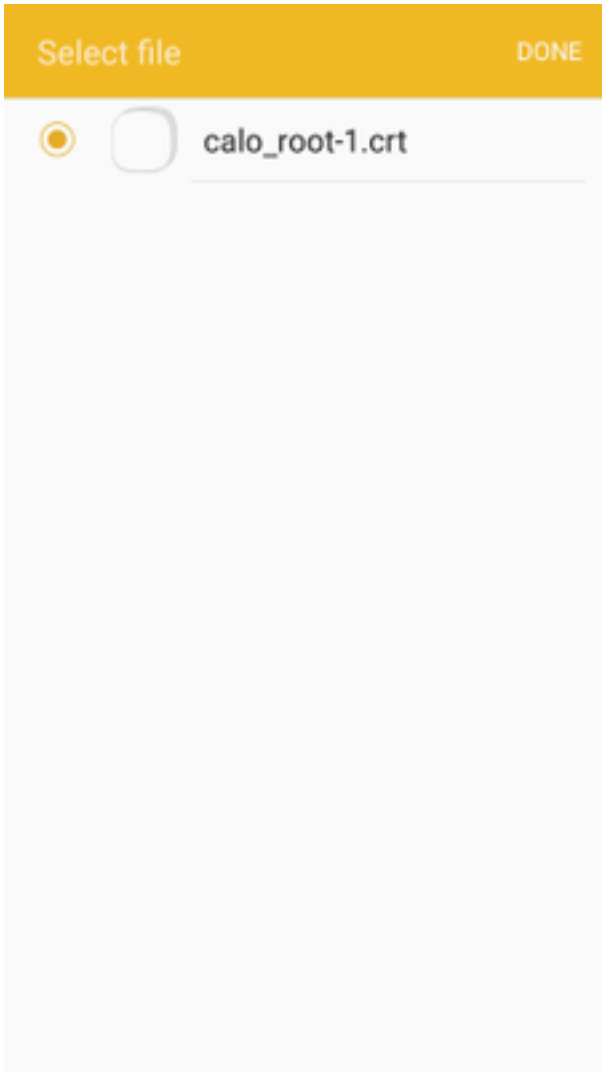


Passo 7. Selecione **Outras configurações de segurança.**

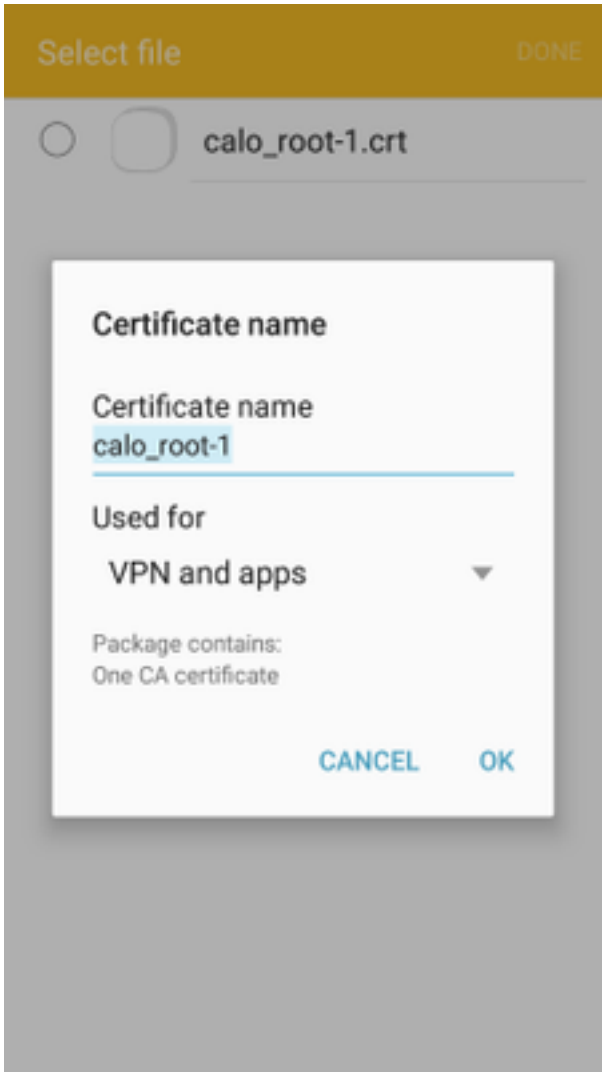
Etapa 8. Navegue até **Instalar a partir do armazenamento do dispositivo.**



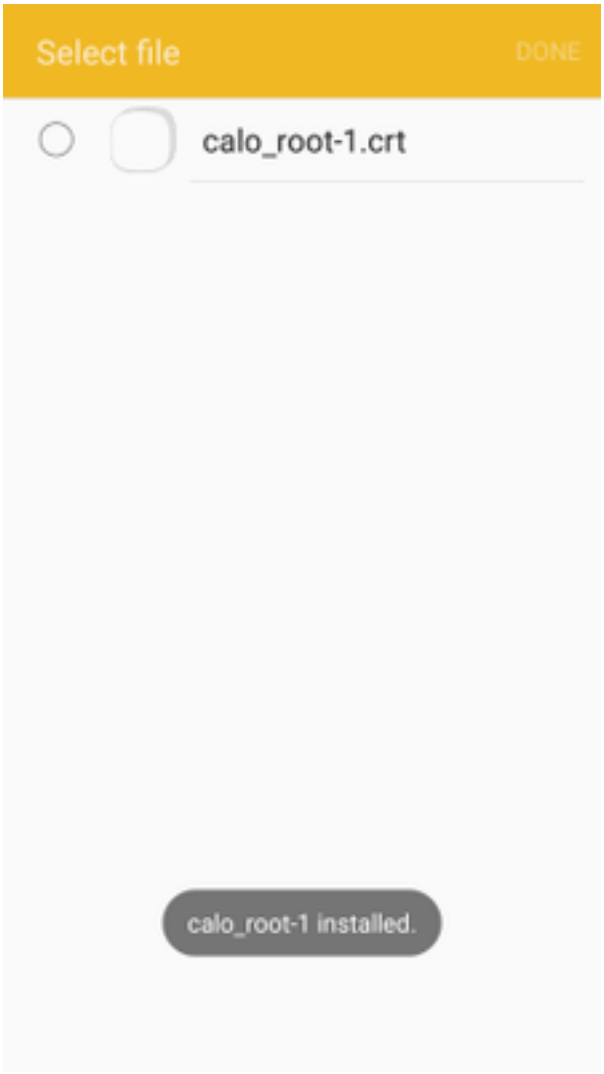
Etapa 9. Selecione o arquivo .crt e toque em **Concluído.**



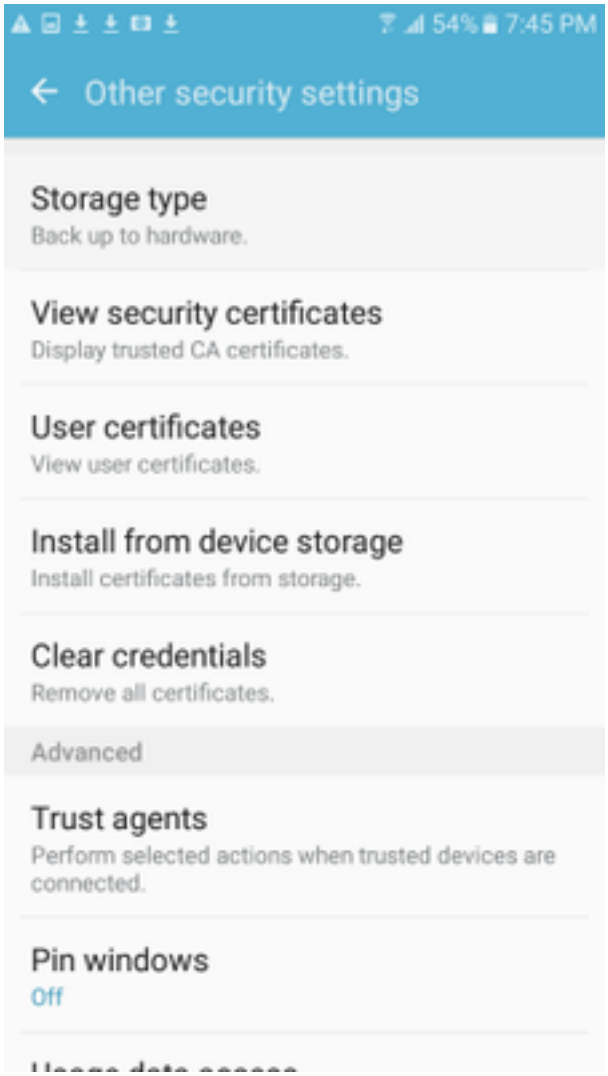
Etapa 10. Introduza um **nome de certificado**. Pode ser qualquer palavra, neste exemplo, o nome é **calo_root-1**.



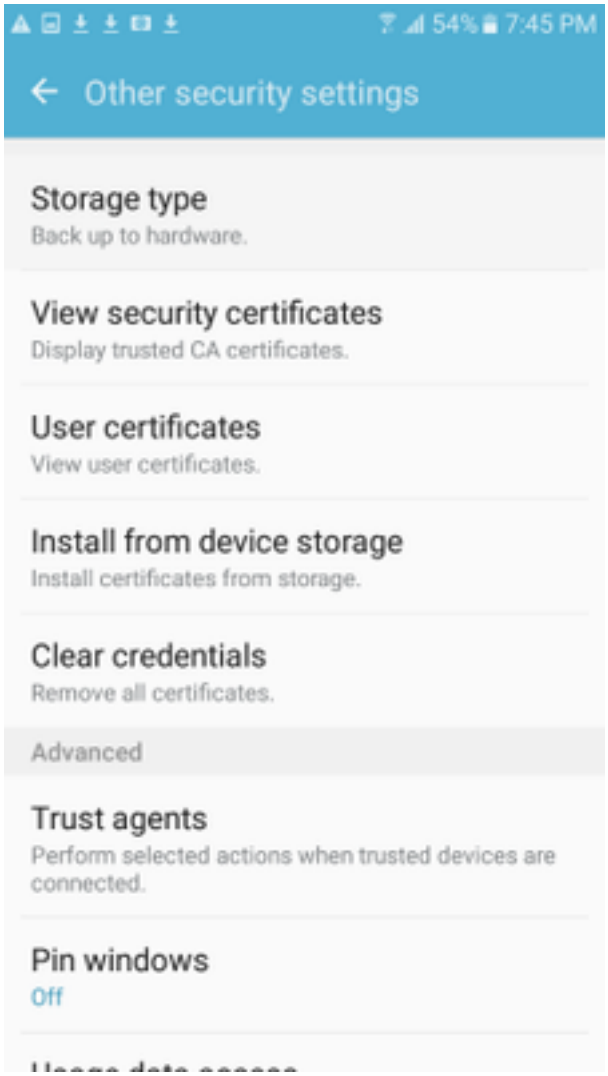
Etapa 10. Selecione **OK** e você verá a mensagem "calo_root-1 installed".



Etapa 11. Para verificar se o certificado de identidade está instalado, navegue até a **guia Configurações/Tela de bloqueio e Segurança/Outros > Configurações de segurança/Certificados de usuário/Sistema.**


54% 7:45 PM
Other security settings
Storage type
Back up to hardware.
View security certificates
Display trusted CA certificates.
User certificates
View user certificates.
Install from device storage
Install certificates from storage.
Clear credentials
Remove all certificates.
Advanced
Trust agents
Perform selected actions when trusted devices are connected.
Pin windows
Off

Etapa 12. Para verificar se o certificado CA está instalado, navegue até a **tela Configurações/Bloqueio e segurança/Outras configurações de segurança/Exibir certificados de segurança/guia Usuário.**


54% 7:45 PM
Other security settings
Storage type
Back up to hardware.
View security certificates
Display trusted CA certificates.
User certificates
View user certificates.
Install from device storage
Install certificates from storage.
Clear credentials
Remove all certificates.
Advanced
Trust agents
Perform selected actions when trusted devices are connected.
Pin windows
Off

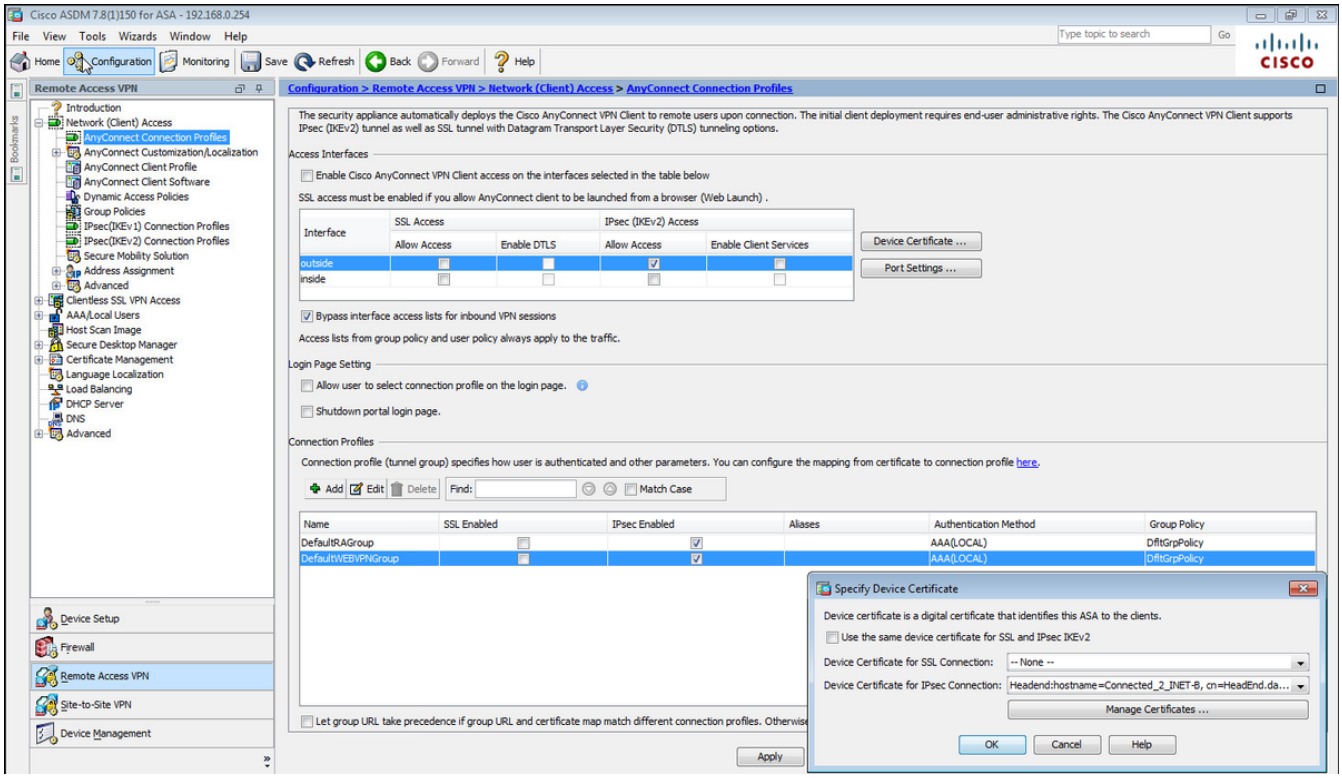
Configurar o headend do ASA para VPN RA com IKEv2

Etapa 1. No ASDM, navegue para **Configuration>Remote Access VPN > Network (client) Access> Anyconnect Profiles**. Marque a caixa **Acesso IPSec (IKEv2), Permitir Acesso** na interface voltada para os clientes VPN (a opção **Habilitar Serviços de Cliente** não é necessária).

Etapa 2. Selecione **Device Certificate** e remova a marca de seleção de **Use the same device certificate for SSL and IPSec IKEv2**.

Etapa 3. Selecione o certificado Headend para a conexão IPSec e selecione — None — para a conexão SSL.

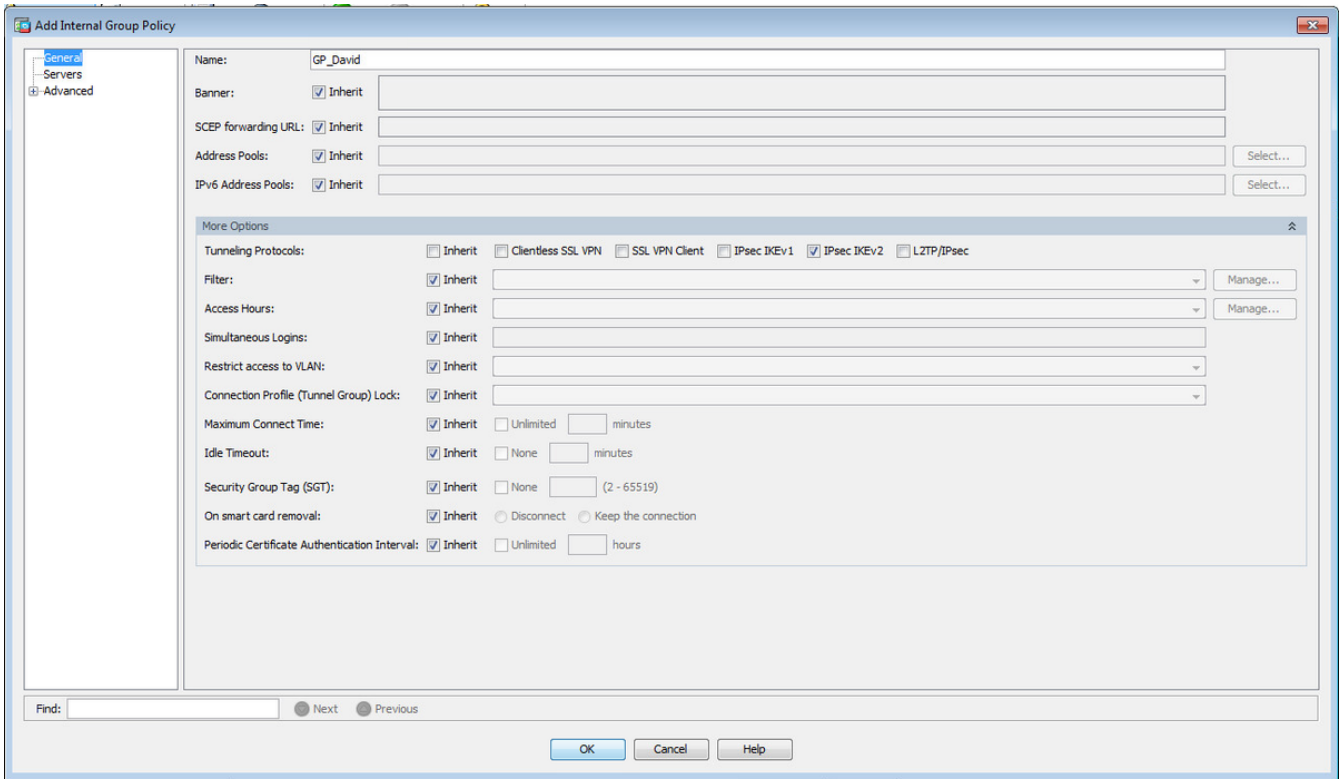
Essa opção coloca em prática a configuração crypto ikev2, crypto ipsec, crypto dynamic-map e crypto map.



Esta é a aparência da configuração na CLI (Command Line Interface, interface de linha de comando).

```
crypto ikev2 policy 1
 encryption aes-256
 integrity sha
 group 5
 prf sha
 lifetime seconds 86400
crypto ikev2 enable outside

crypto ikev2 remote-access trustpoint HeadEnd
crypto ipsec ikev2 ipsec-proposal AES256
 protocol esp encryption aes-256
 protocol esp integrity sha-1 md5

crypto dynamic-map Anyconnect 65535 set ikev2 ipsec-proposal AES256
crypto map outside_map 65535 ipsec-isakmp dynamic Anyconnect
crypto map outside_map interface outside
```

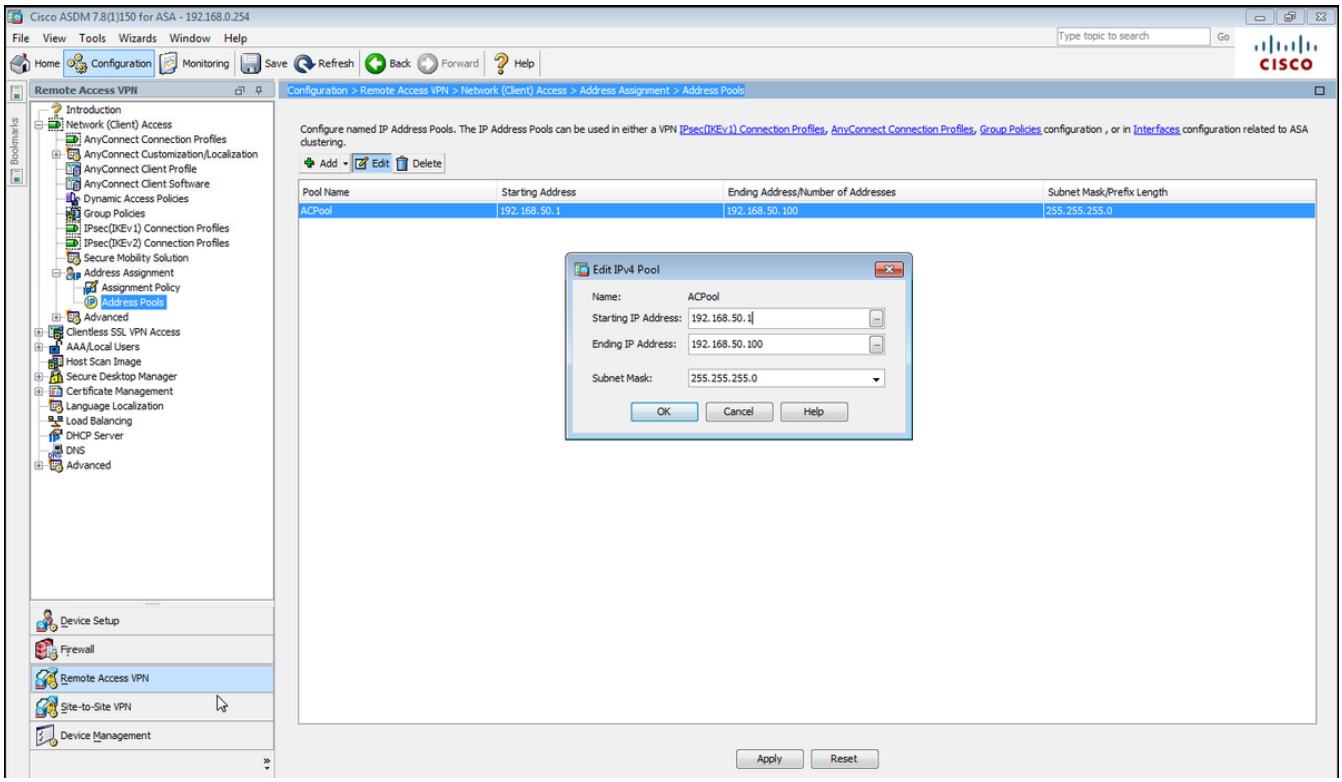
Etapa 4. Navegue até **Configuration > Remote Access VPN > Network (Client) Access > Group Policies** para criar uma política de grupo



Na CLI.

```
group-policy GP_David internal
group-policy GP_David attributes
 vpn-tunnel-protocol ikev2
```

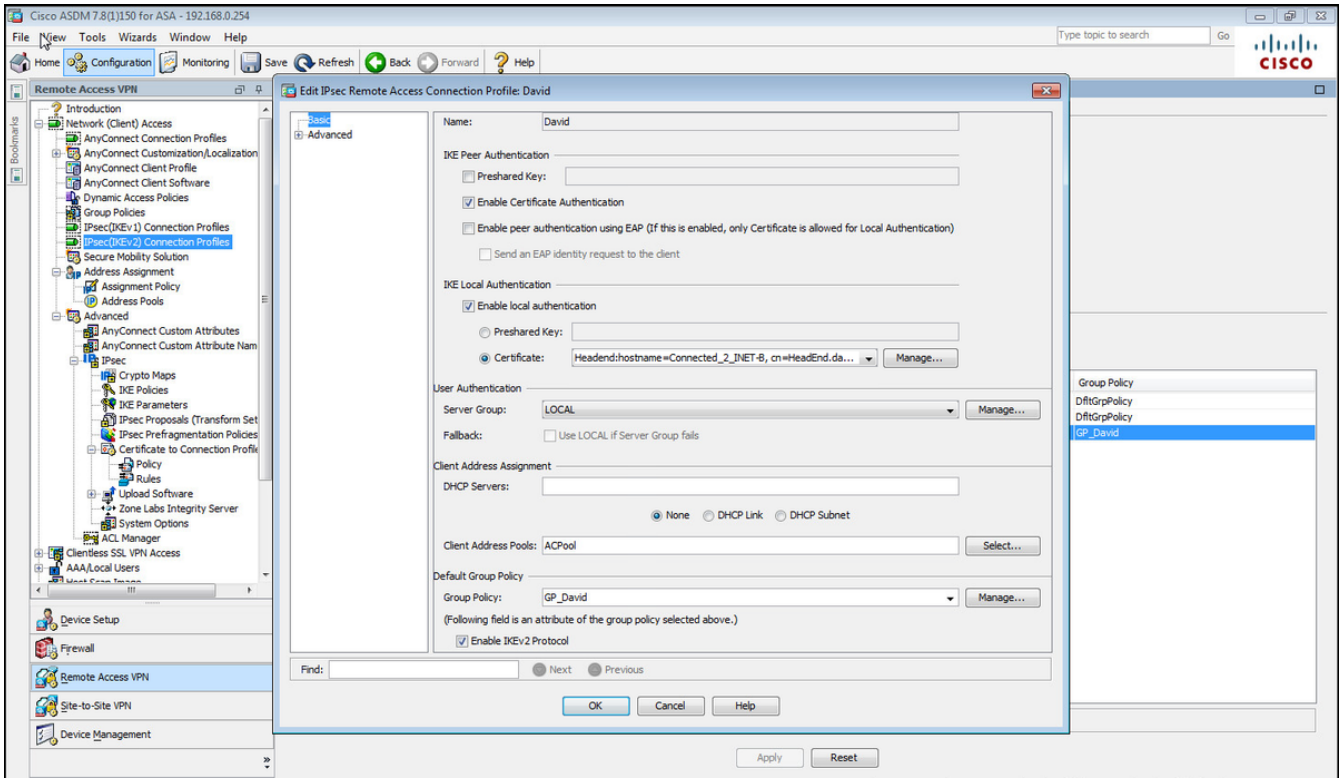
Etapa 5. Navegue até **Configuration > Remote Access VPN > Network (Client) Access > Address Pools** e selecione **Add** para criar um pool IPv4.



Na CLI.

```
ip local pool ACPool 192.168.50.1-192.168.50.100 mask 255.255.255.0
```

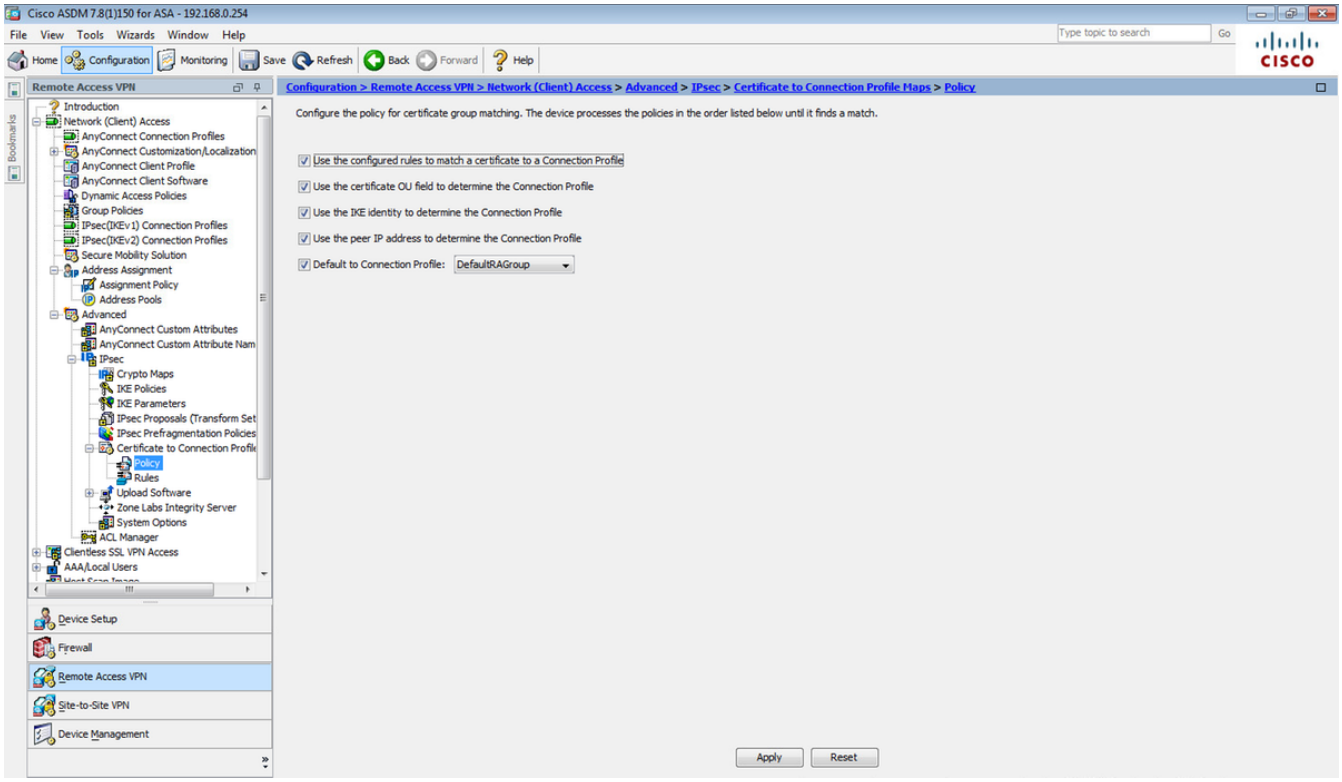
Etapa 6. Navegue até **Configuration > Remote Access VPN > Network (Client) Access > IPSec(IKEv2) Connection Profiles (Configuração > VPN de acesso remoto > Acesso de rede (cliente) > IPSec(IKEv2) Connection Profiles** e selecione **Add** para criar um novo grupo de túneis.



Na CLI.

```
tunnel-group David type remote-access
tunnel-group David general-attributes
 address-pool ACPool
 default-group-policy GP_David
 authentication-server-group LOCAL
tunnel-group David webvpn-attributes
 authentication certificate
tunnel-group David ipsec-attributes
 ikev2 remote-authentication certificate
 ikev2 local-authentication certificate HeadEnd
```

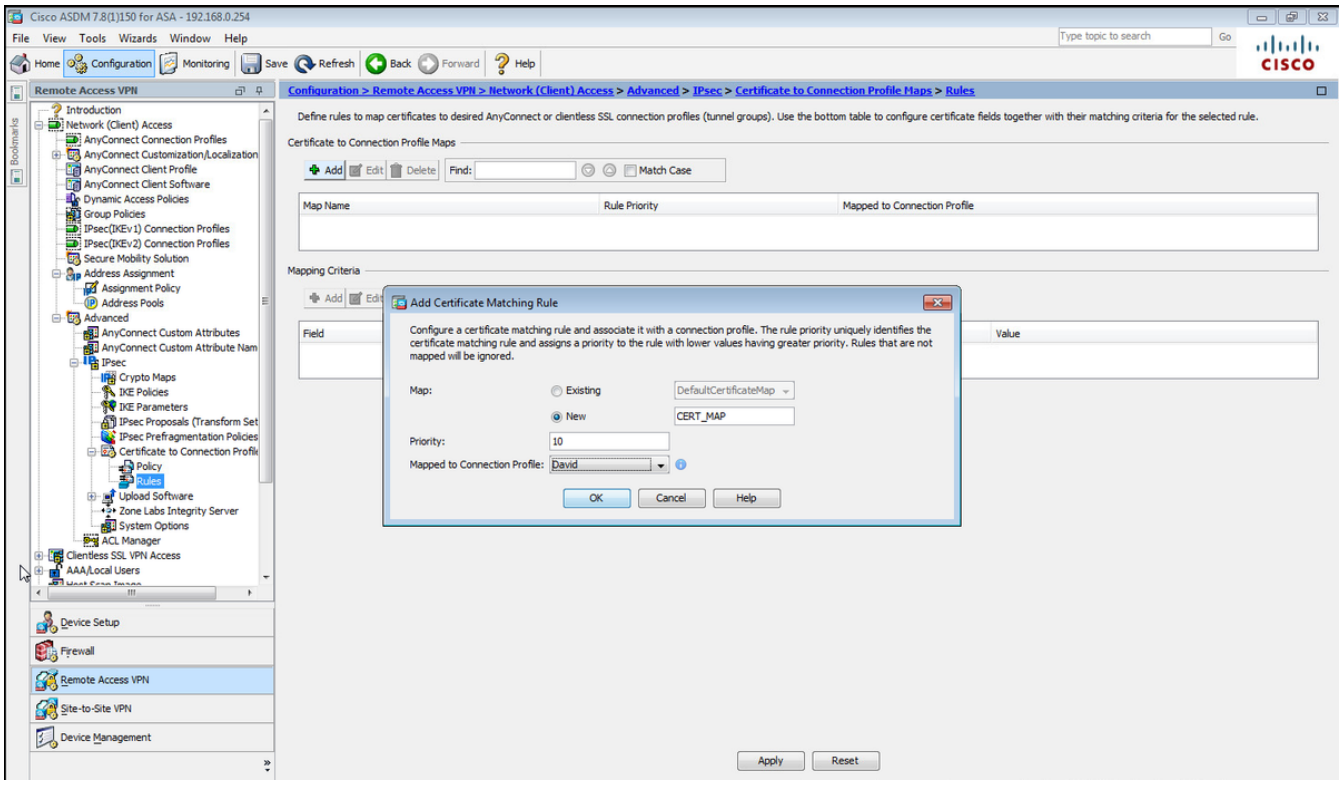
Passo 7. Navegue até **Configuration > Remote Access VPN > Network (Client) Access > Advanced > IPsec > Certificate to Connection Profile maps > Policy** e marque a caixa **Used the configured rules to matth a certificate to a Connection Profile**.



Na CLI.

```
tunnel-group-map enable rules
```

Etapa 8. Navegue até **Configuration > Remote Access VPN > Network (Client) Access > Advanced > IPsec > Certificate to Connection Profile maps > Rules** e crie um novo Certificate Map. Selecione **Adicionar** e associe-o ao grupo de túneis. Neste exemplo, o grupo do túnel é chamado **David**.



Na CLI.

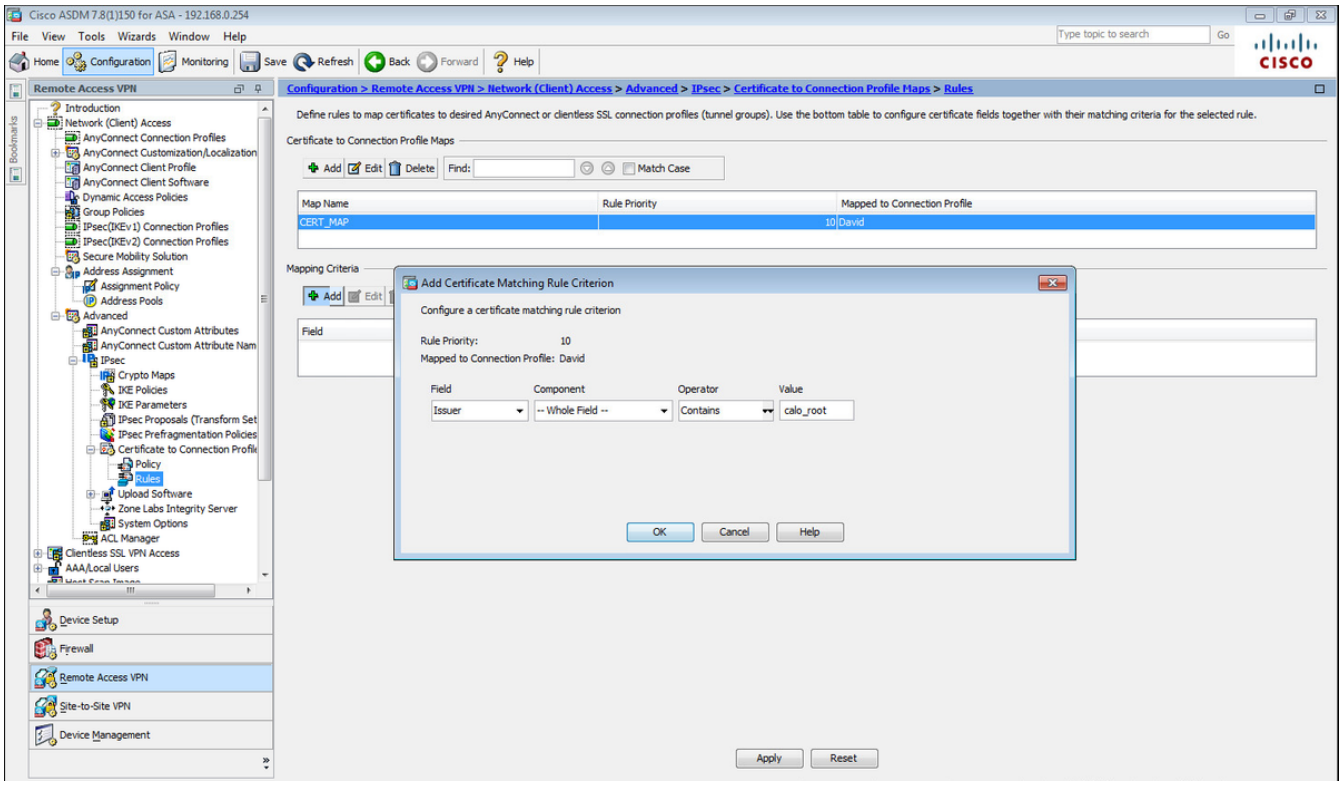
```
tunnel-group-map CERT_MAP 10 David
```

Etapa 9. Selecione **Adicionar** na seção **Critérios de Mapeamento** e insira esses valores.

Campo: Emissor

Operador: Contém

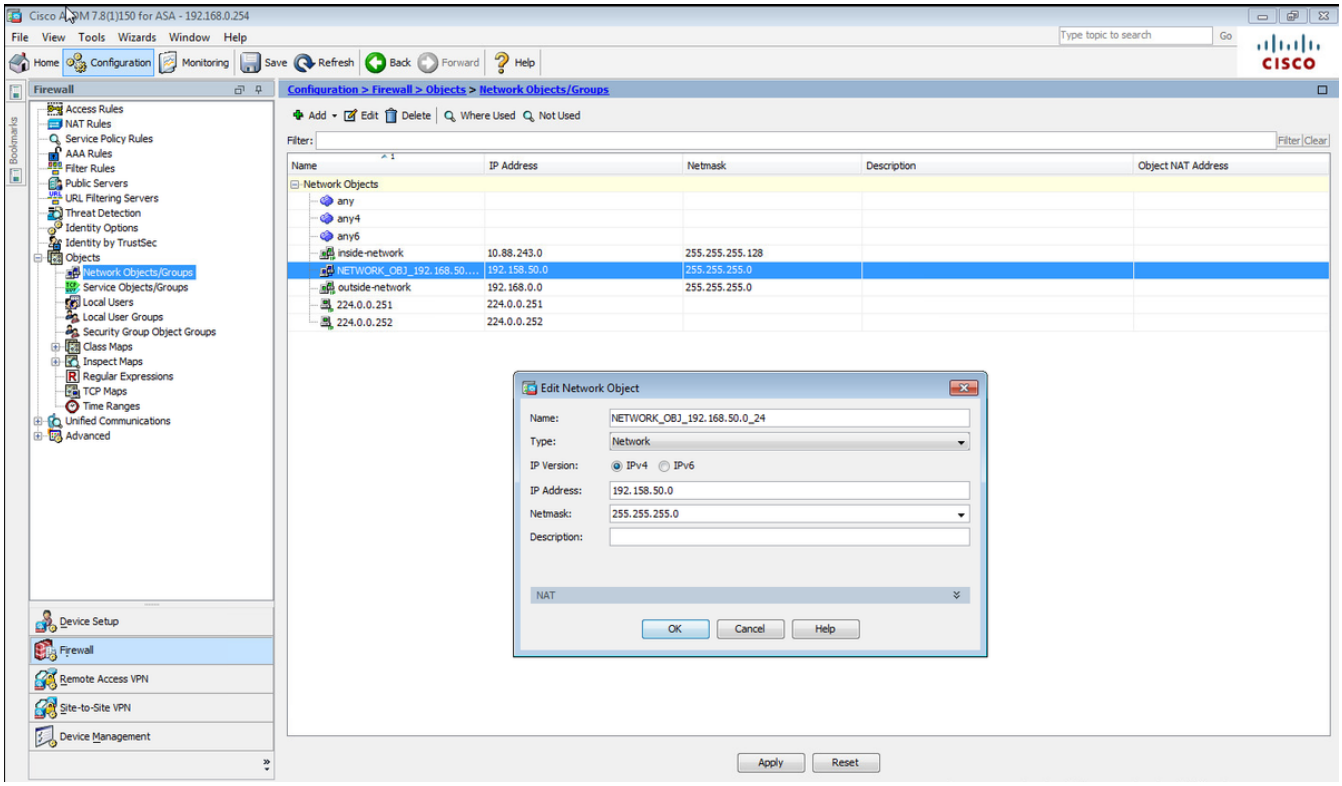
Valor: calo_root



Na CLI.

```
crypto ca certificate map CERT_MAP 10
 issuer-name co calo_root
```

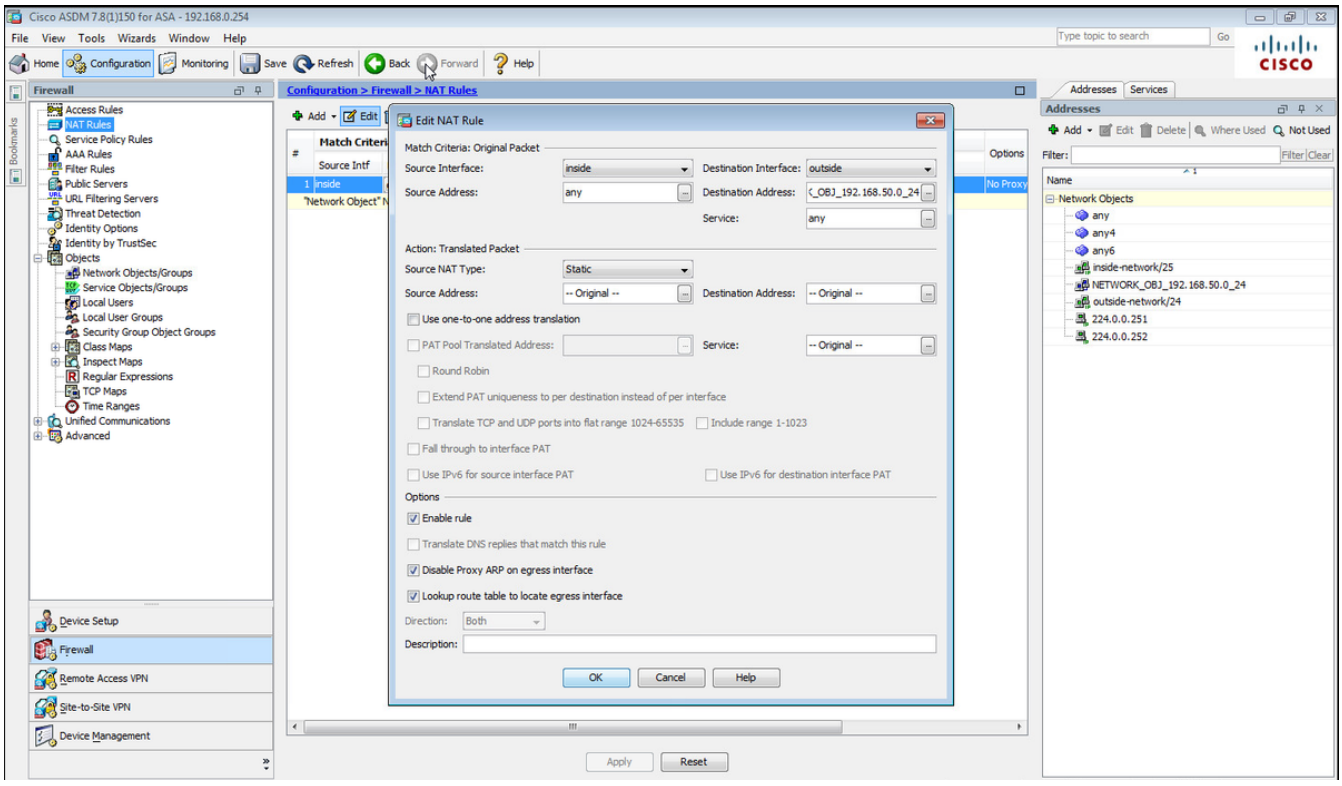
Etapa 10. Crie um objeto com a rede do pool de IP a ser usado para adicionar uma regra de isenção de NAT (Network Address Translation) em **Configuration > Firewall > Objects > Network Objects/Groups> Add**.



Na CLI.

```
object network NETWORK_OBJ_192.168.50.0_24
 subnet 192.168.50.0 255.255.255.0
```

Etapa 11. Navegue até **Configuration > Firewall > NAT Rules** e selecione **Add** para criar a regra de isenção de NAT para o tráfego de VPN RA.



Na CLI.

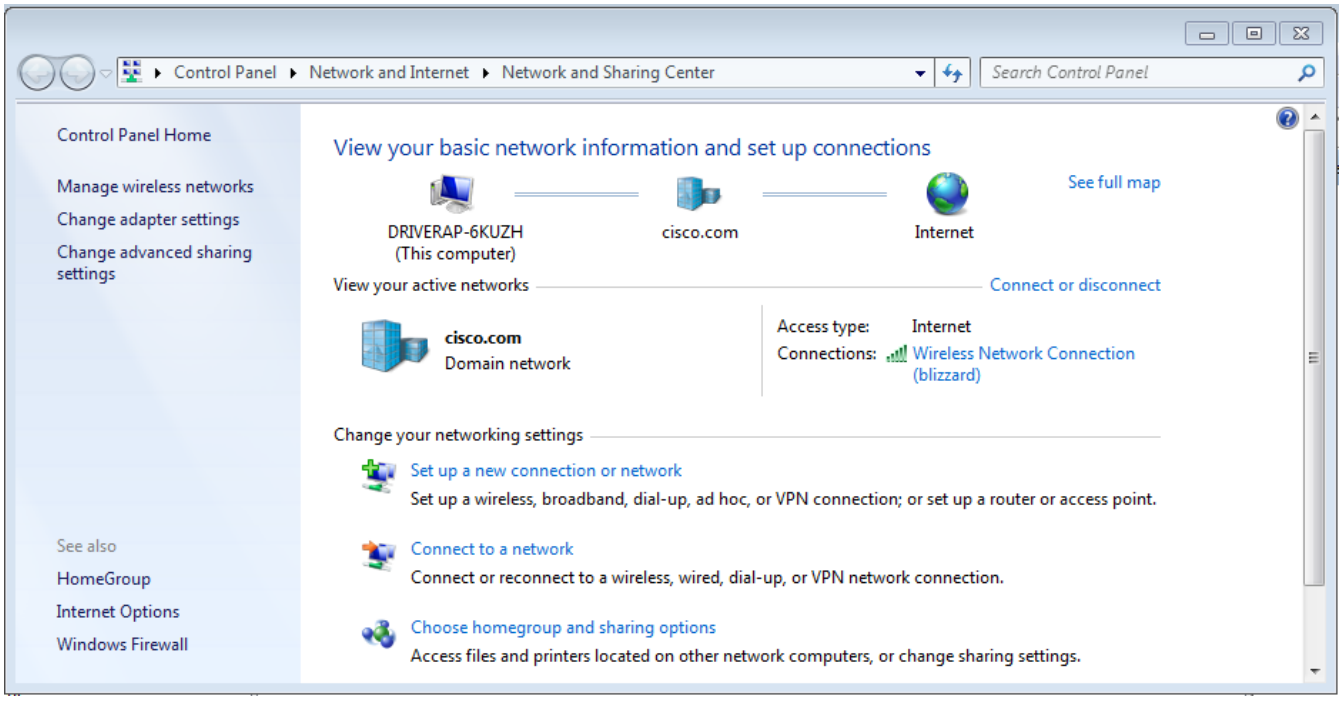
```
nat (inside,outside) source static any any destination static NETWORK_OBJ_192.168.50.0_24
NETWORK_OBJ_192.168.50.0_24 no-proxy-arp route-lookup
```

Esta é a configuração completa do ASA usada para este exemplo.

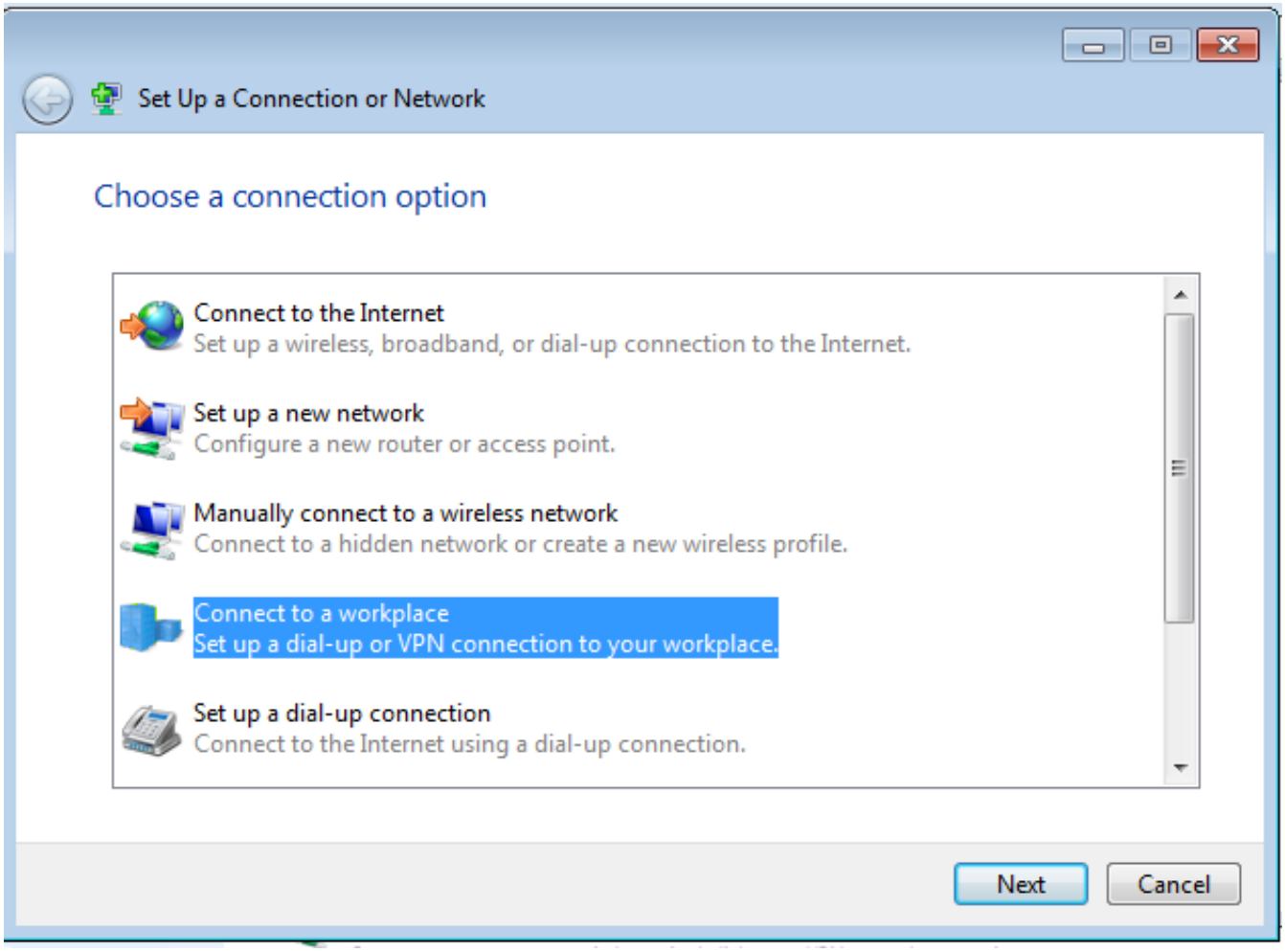
```
interface GigabitEthernet1/1
 nameif outside
 security-level 0
 ip address 10.88.243.108 255.255.255.128

object network NETWORK_OBJ_192.168.50.0_24
 subnet 192.168.50.0 255.255.255.0
nat (inside,outside) source static any any destination static NETWORK_OBJ_192.168.50.0_24
NETWORK_OBJ_192.168.50.0_24
ip local pool ACPool 192.168.50.1-192.168.50.100 mask 255.255.255.0
crypto ikev2 policy 1
 encryption aes-256
 integrity sha
 group 5
 prf sha
 lifetime seconds 86400
crypto ikev2 enable outside

crypto ikev2 remote-access trustpoint HeadEnd

group-policy GP_David internal
group-policy GP_David attributes
 vpn-tunnel-protocol ikev2

tunnel-group David type remote-access
tunnel-group David general-attributes
 address-pool ACPool
 default-group-policy GP_David
 authentication-server-group LOCAL
tunnel-group David webvpn-attributes
 authentication certificate
tunnel-group David ipsec-attributes
 ikev2 remote-authentication certificate
 ikev2 local-authentication certificate HeadEnd

tunnel-group-map enable rules
crypto ca certificate map CERT_MAP 10
 issuer-name co calo_root
tunnel-group-map CERT_MAP 10 David

crypto ipsec ikev2 ipsec-proposal AES256
 protocol esp encryption aes-256
 protocol esp integrity sha-1 md5

crypto dynamic-map Anyconnect 65535 set ikev2 ipsec-proposal AES256
crypto map outside_map 65535 ipsec-isakmp dynamic Anyconnect
crypto map outside_map interface outside
```

Configurar o cliente incorporado do Windows 7

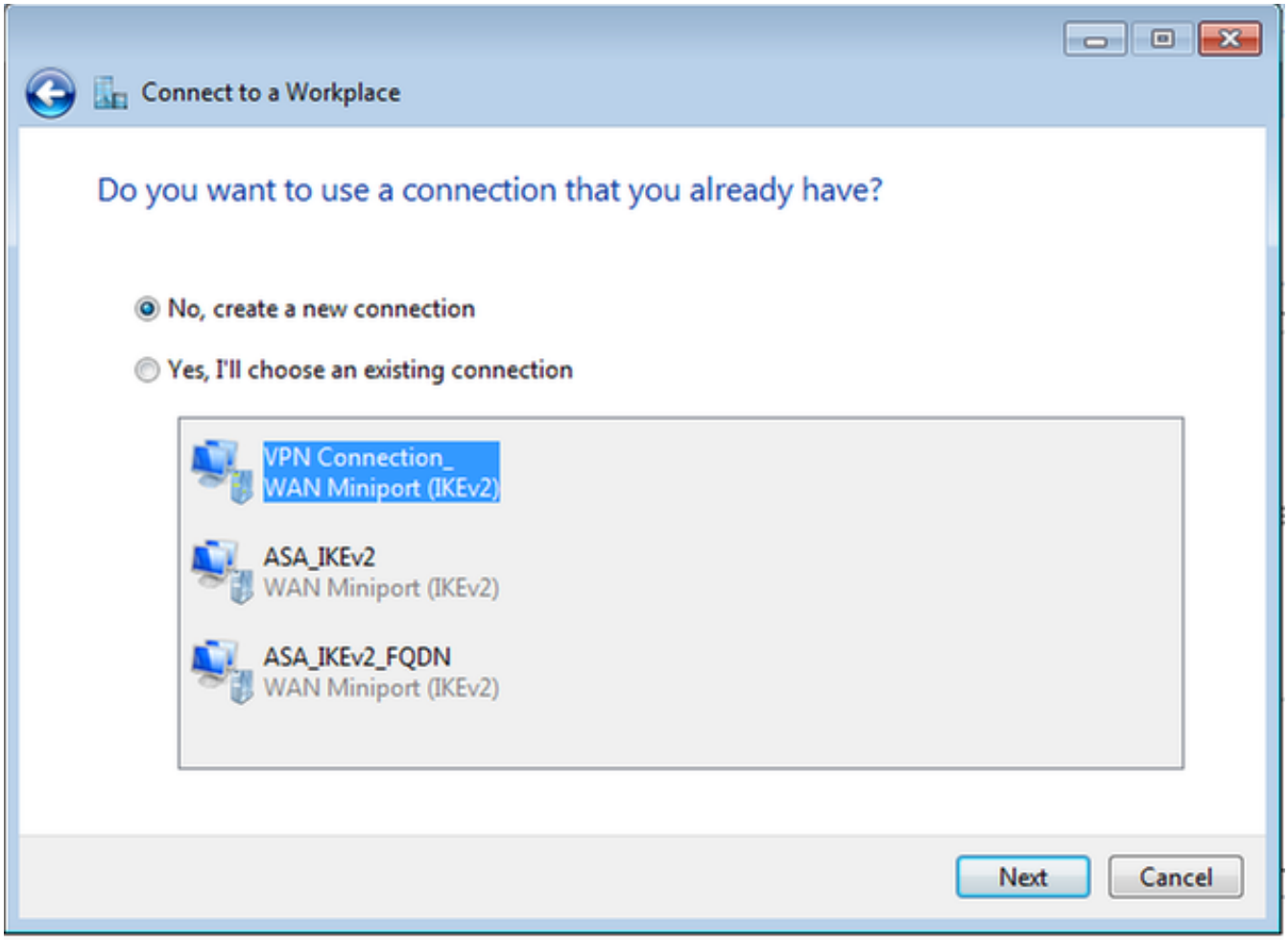
Etapa 1. Navegue até **Painel de Controle > Rede e Internet > Central de Rede e Compartilhamento**.



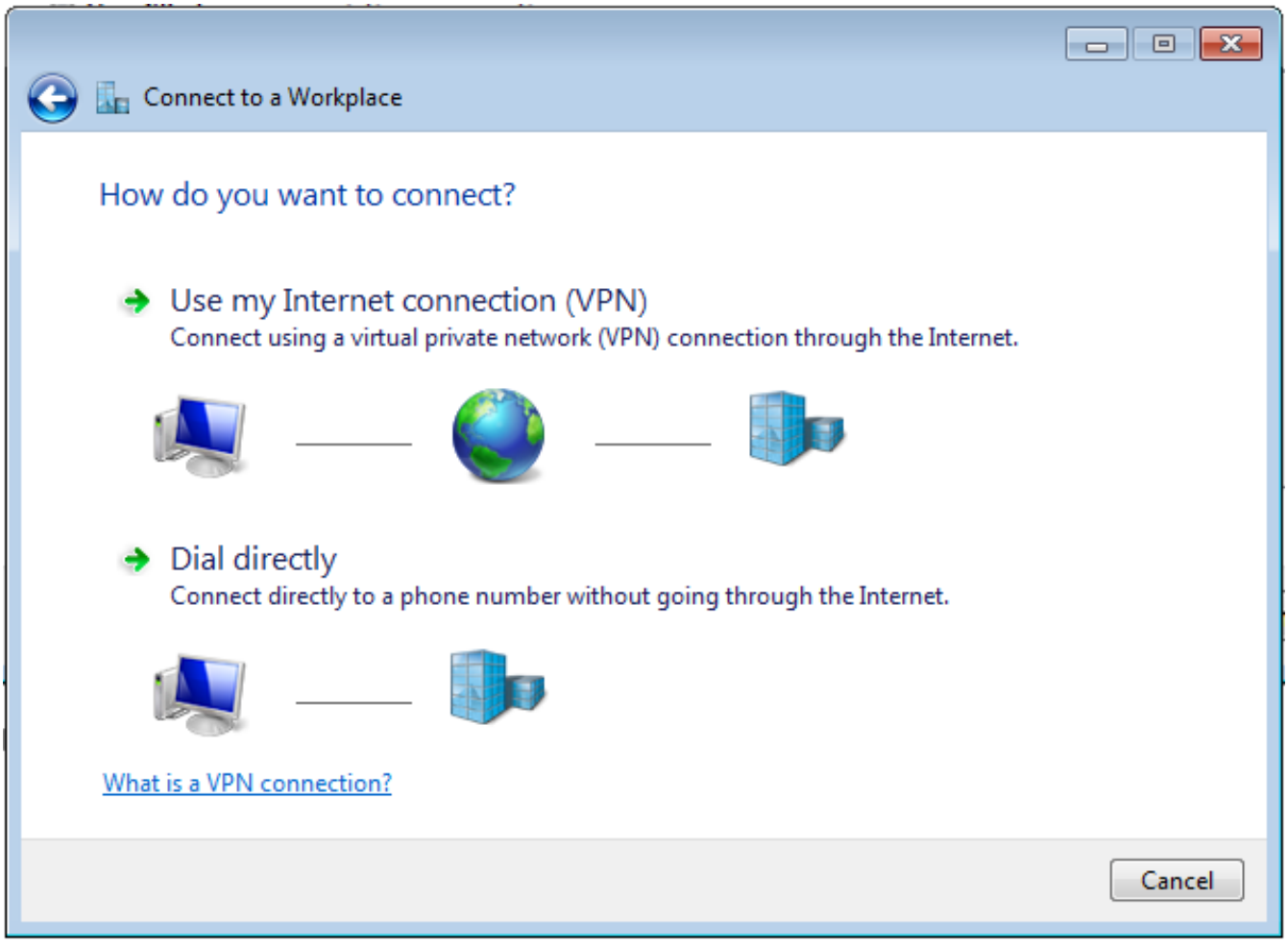
Etapa 2. Selecione **Configurar uma nova conexão ou rede**.



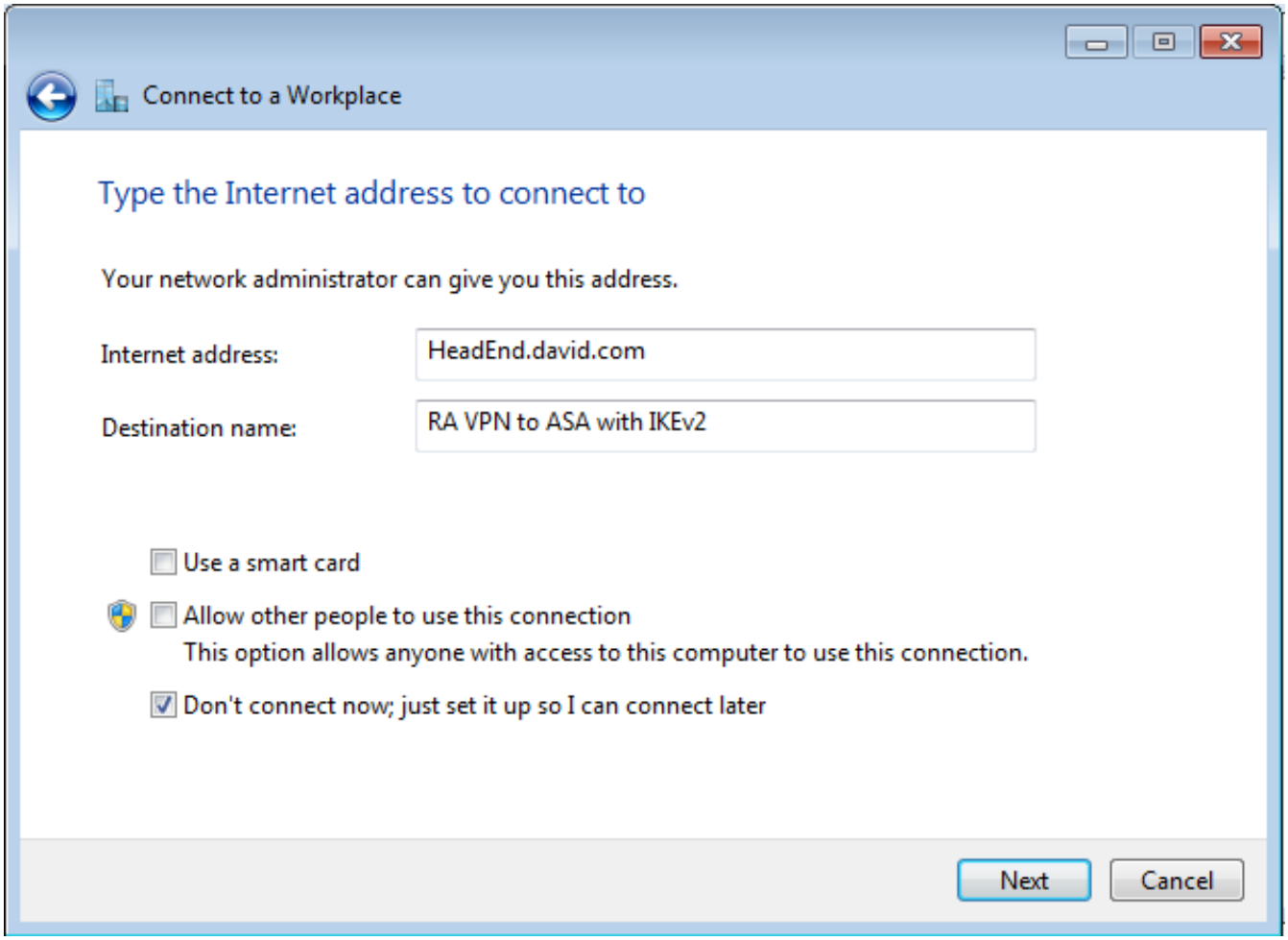
Etapa 3. Selecione **Conectar-se a um local de trabalho** e **Avançar**.



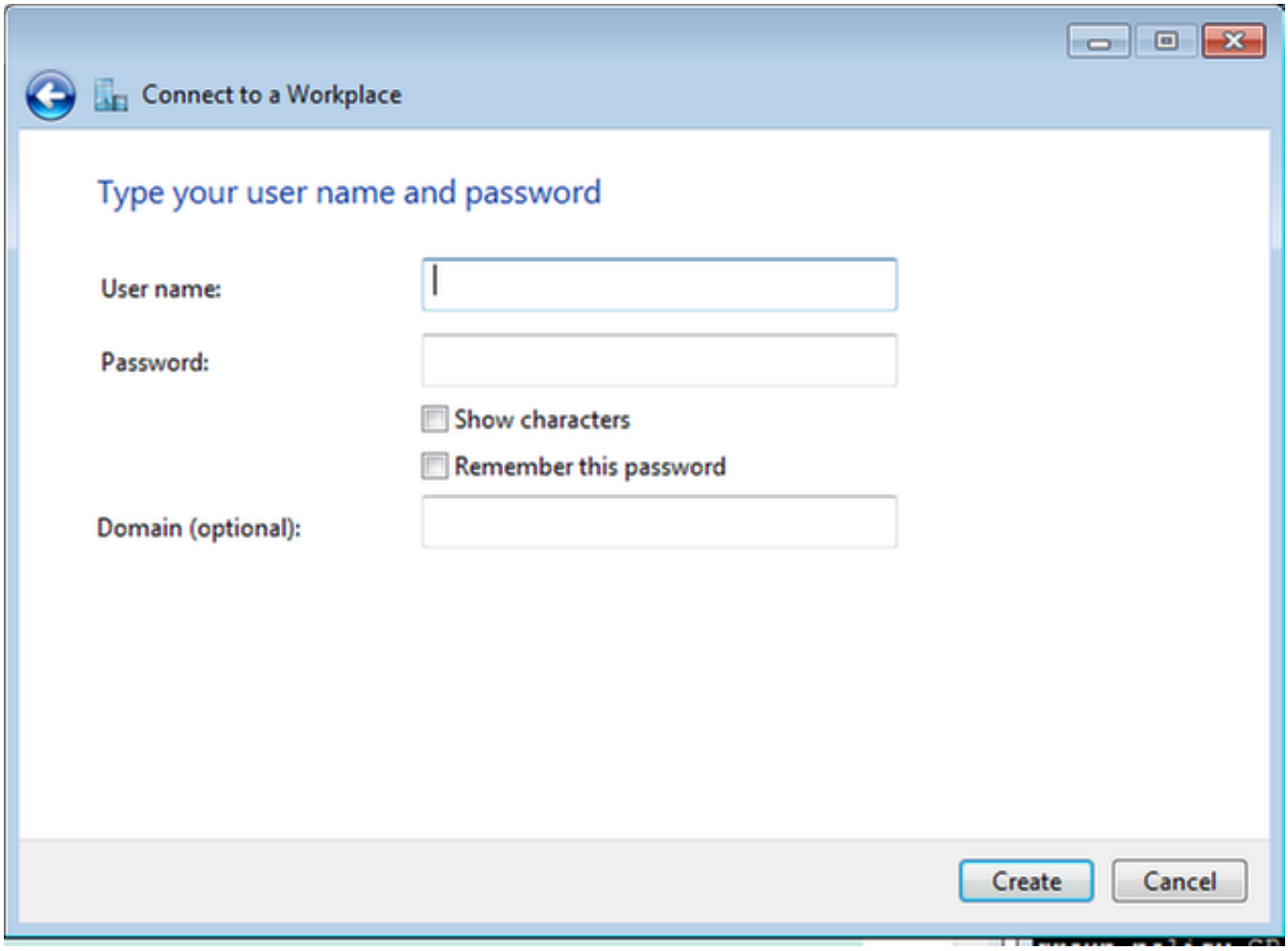
Etapa 4. Selecione **Não, crie uma nova conexão** e **Avançar**.



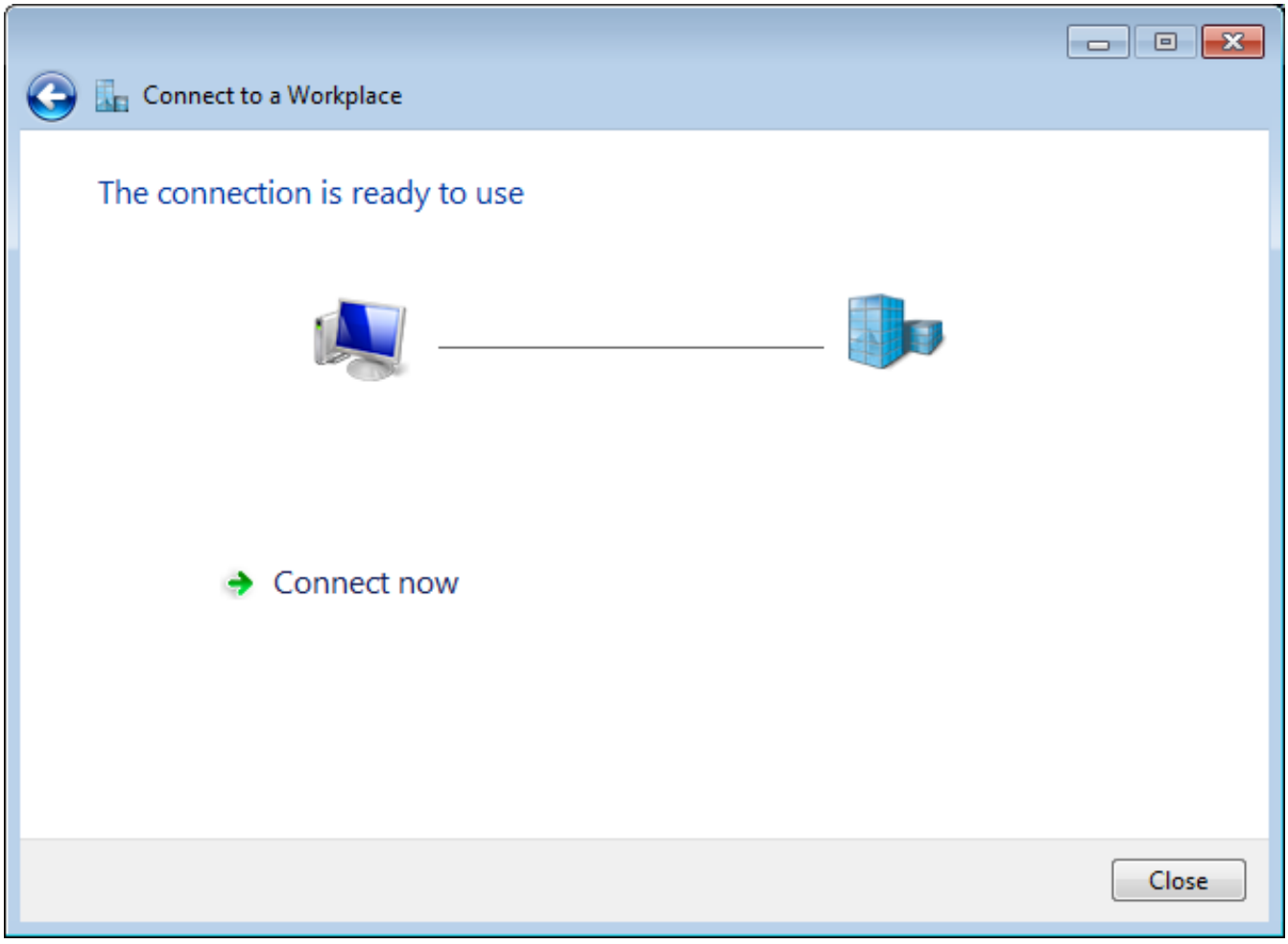
Etapa 5. Selecione **Usar minha conexão com a Internet (VPN)** e adicione a string do Nome Comum do Certificado HeadEnd (CN) no campo **endereço da Internet**. No campo **Nome do destino**, digite o nome da conexão. Pode ser qualquer cadeia. Certifique-se de verificar a opção **Não ligar agora; basta configurá-lo para que eu possa conectar mais tarde**.



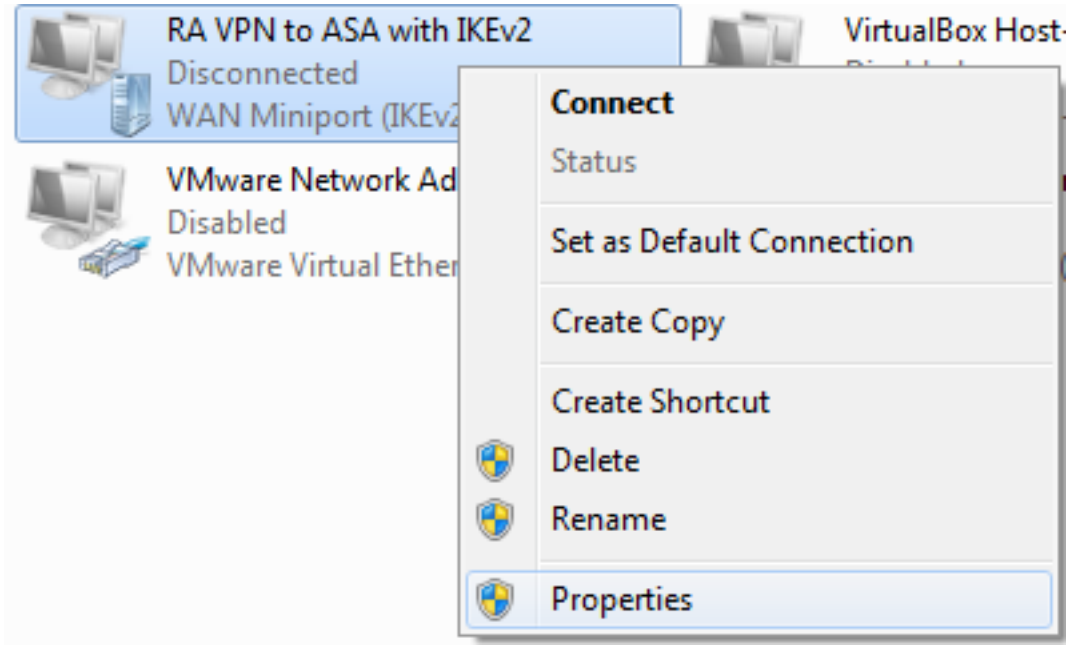
Etapa 6. Selecione **Avançar**.



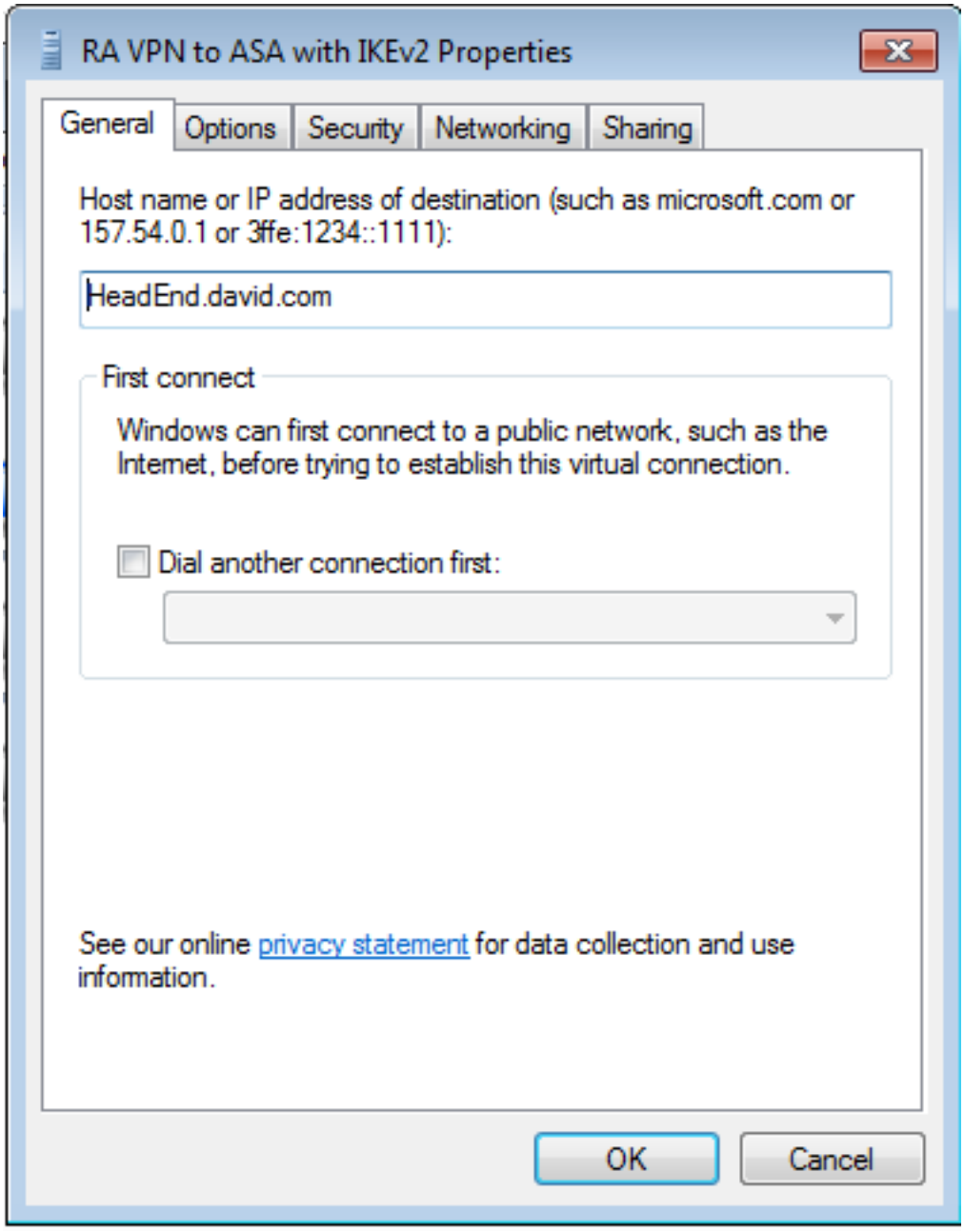
Passo 7. Selecione **Criar**.



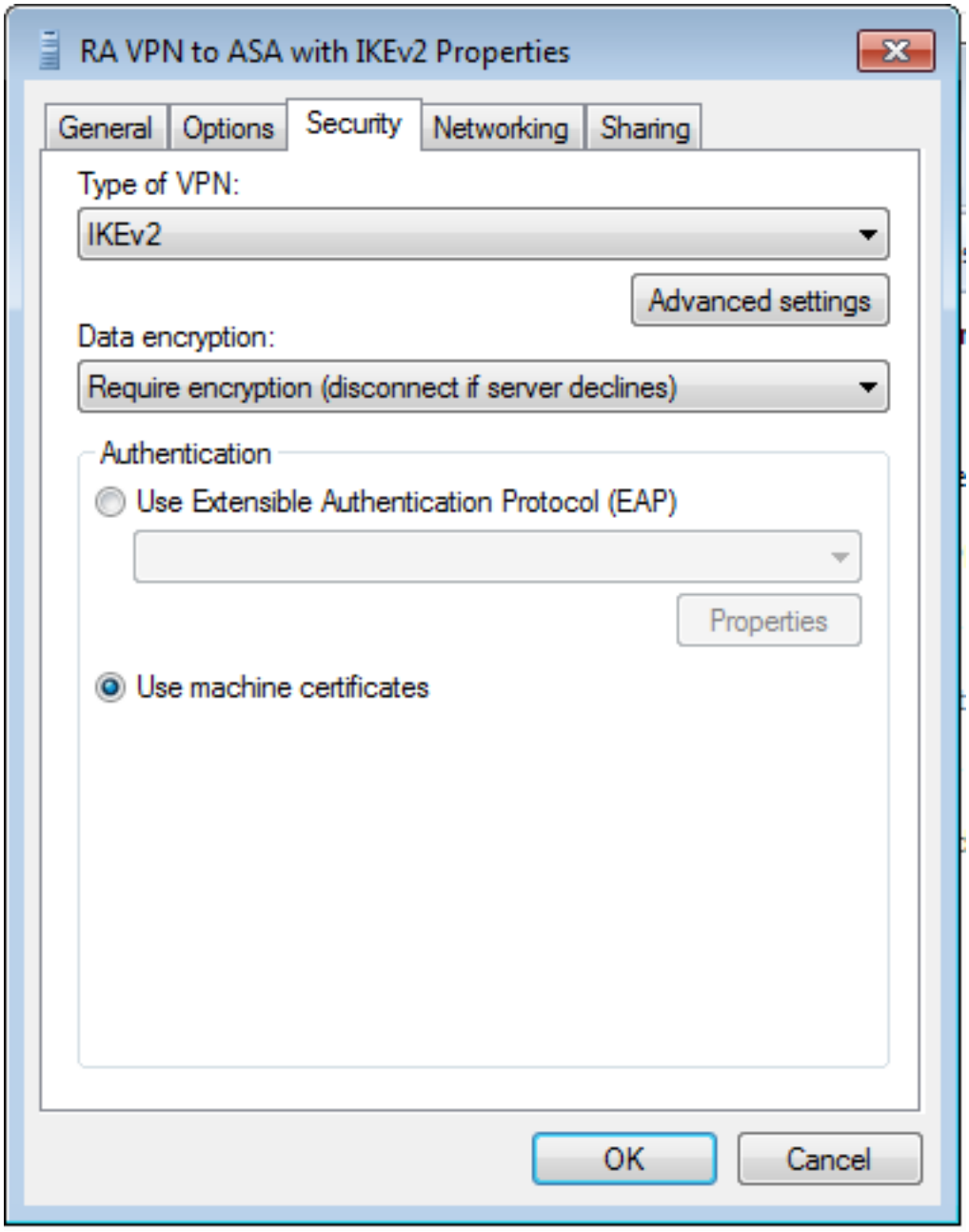
Etapa 8. Selecione **Fechar** e navegue até **Painel de controle > Rede e Internet > Conexões de rede**. Selecione a conexão de rede criada e clique com o botão direito do mouse nela. Selecione Properties.



Etapa 9. Na guia **Geral**, você pode verificar se o nome de host apropriado para o headend está correto. Seu computador resolverá esse nome para o endereço IP do ASA usado para conectar usuários de RA VPN.



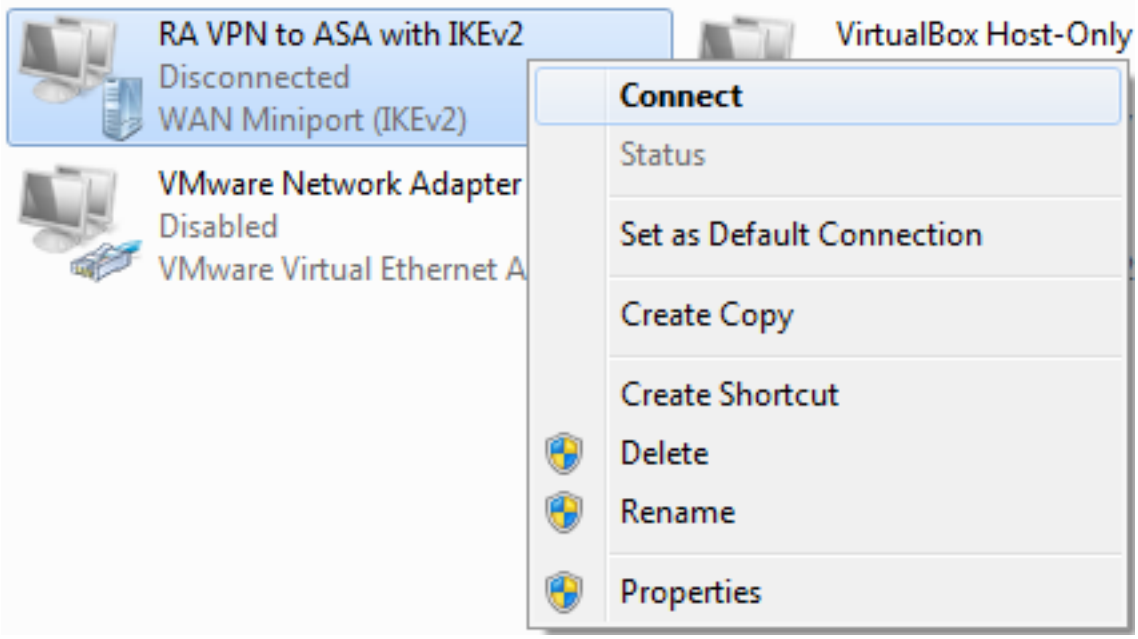
Etapa 10. Navegue até a guia **Segurança** e selecione **IKEv2** como o **Tipo de VPN**. Na seção **Autenticação,** selecione **Usar certificados da máquina**.



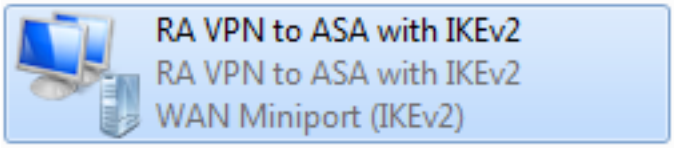
Etapa 11. Selecione **OK** e navegue até **C:\Windows\System32\drivers\etc**. Abra o arquivo **hosts** usando um editor de texto. Configure uma entrada para resolver o FQDN (Nome de domínio totalmente qualificado) configurado na Conexão de rede para o endereço IP do headend do ASA (neste exemplo, a interface externa).

```
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host
10.88.243.108 HeadEnd.david.com
```

Etapa 12. Volte para **Painel de Controle > Rede e Internet > Conexões de Rede**. Selecione a conexão de rede criada. Clique com o botão direito do mouse nele e selecione **Conectar.**



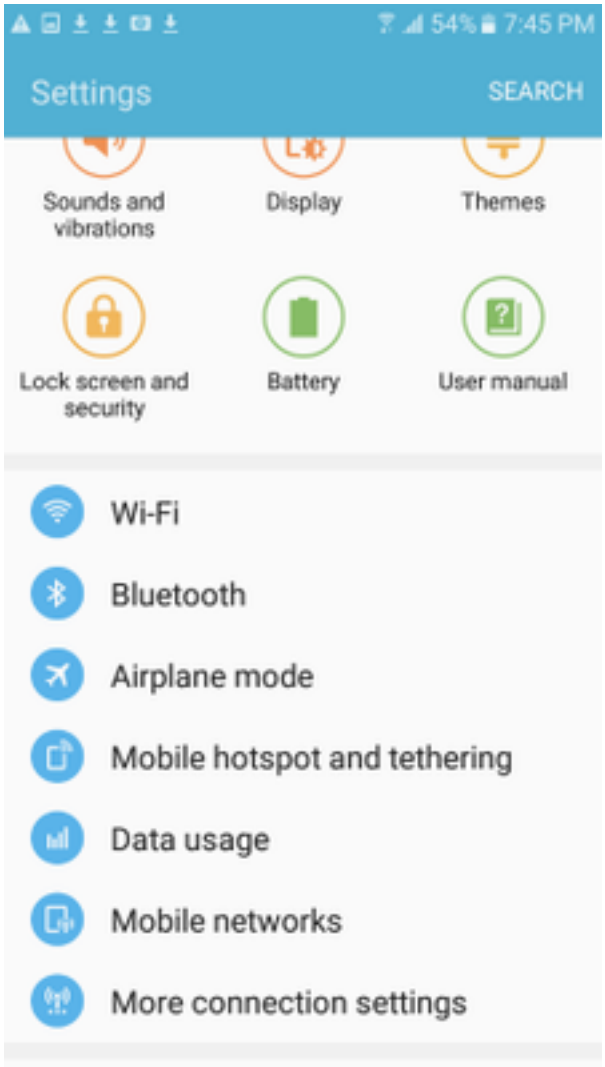
Etapa 13. O status da conexão de rede passa de Desconectado para Conectado e, em seguida, para Conectado. Finalmente, o nome que você especificou para a conexão de rede é mostrado.



O computador está conectado ao headend da VPN neste ponto.

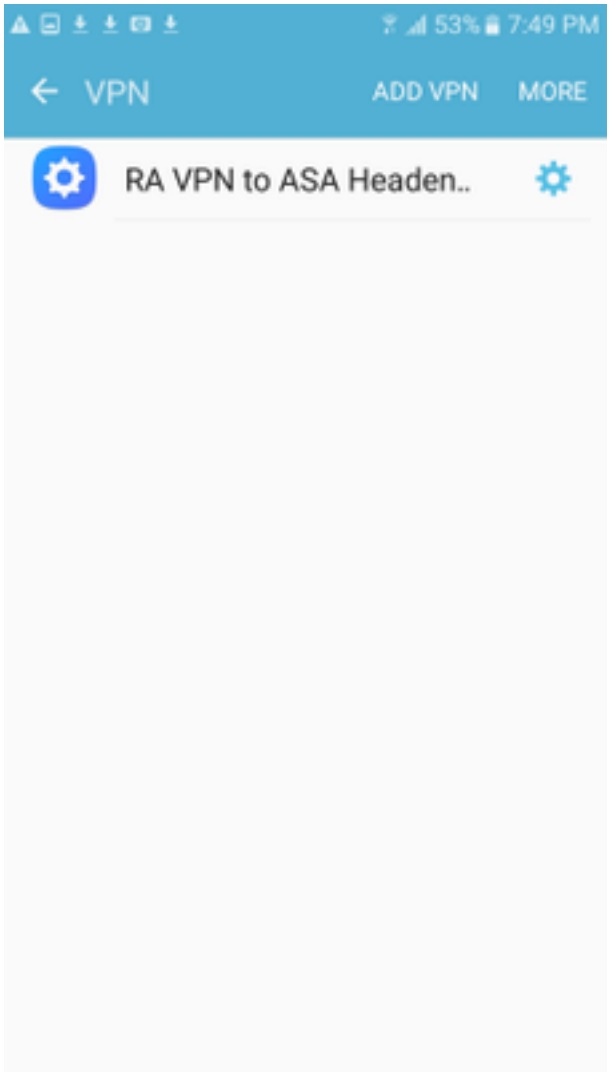
Configurar o cliente de VPN nativo do Android

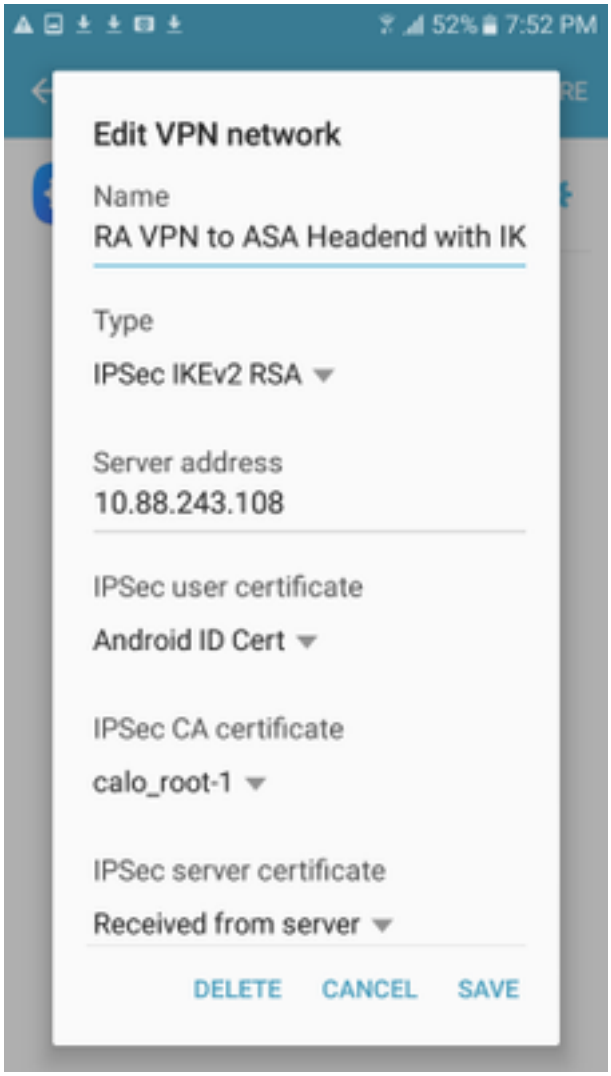
Etapa 1. Navegue até **Configurações>Mais configurações de conexão**



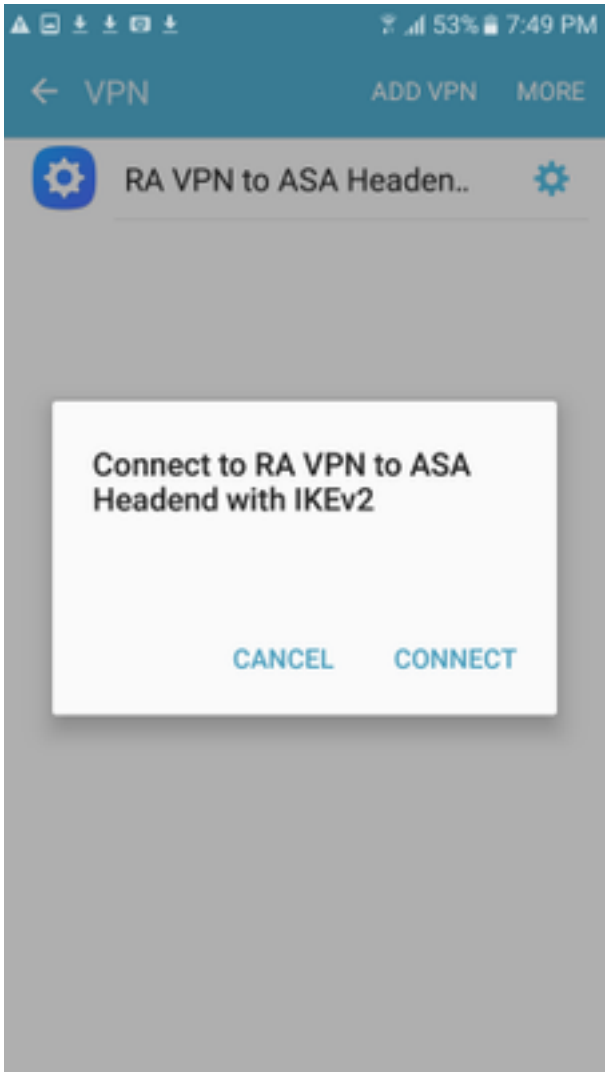
Etapa 2. Selecionar **VPN**

Etapa 3. Selecione **Adicionar VPN**. Se a conexão já estiver criada como neste exemplo, toque no ícone do mecanismo para editá-la. Especifique IPSec IKEv2 RSA no campo **Tipo**. O **endereço do servidor** é o endereço IP da interface ASA habilitada para IKEv2. Para o **certificado de usuário IPSec** e o **certificado de CA IPSec**, selecione os certificados instalados tocando nos menus suspensos. Deixe o **certificado do servidor IPSec** com a opção padrão, Received from server (Recebido do servidor).

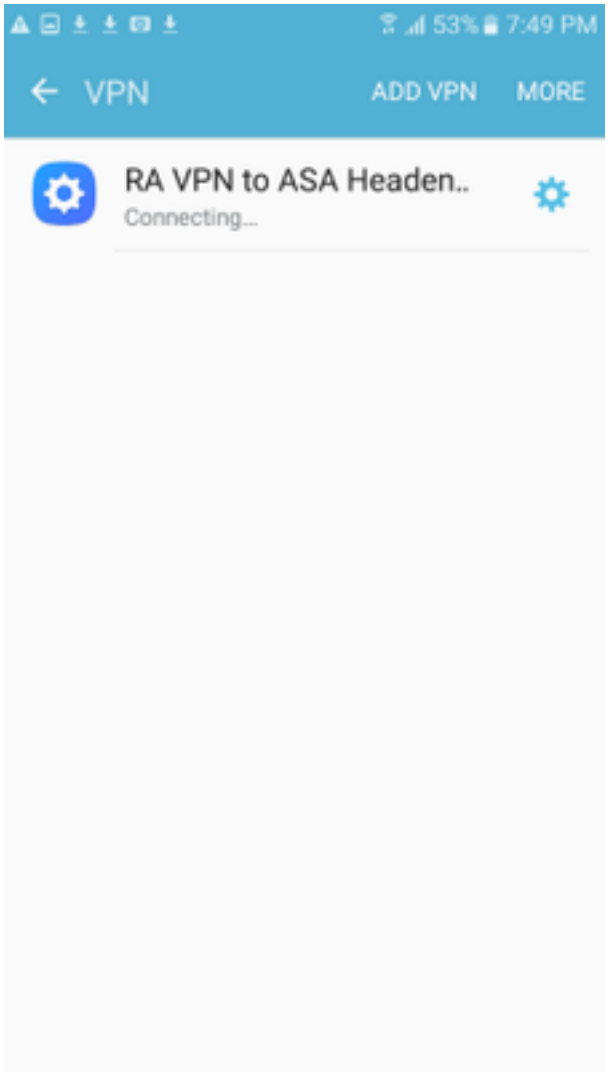

53% 7:49 PM
VPN
ADD VPN
MORE
RA VPN to ASA Headen..

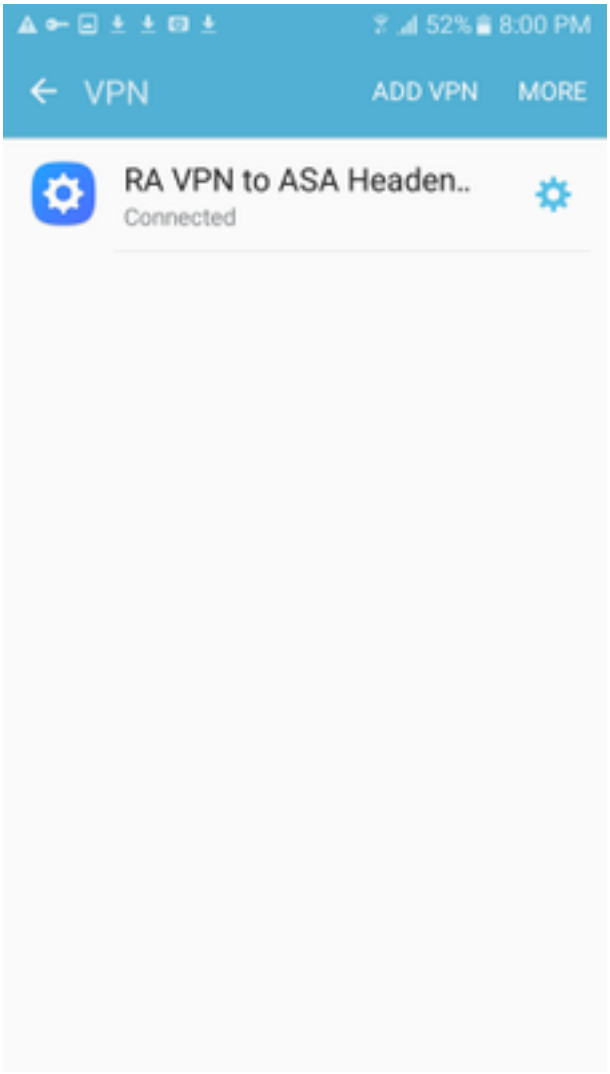


Etapa 4. Selecione **Save** (Salvar) e toque no nome da nova conexão VPN.

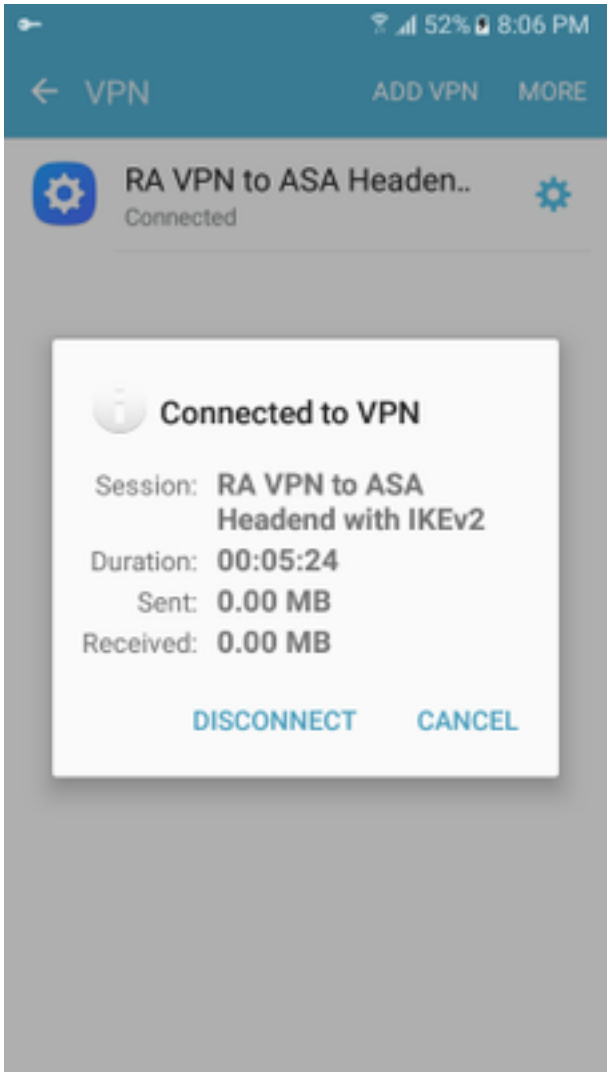


Etapa 5. Selecione **Conectar.**


53% 7:49 PM
VPN
ADD VPN
MORE
RA VPN to ASA Headen..
Connecting...



Etapa 6. Digite a conexão VPN mais uma vez para verificar o status. Agora, ele é exibido como **Connected (Conectado)**.



Verificar

Comandos de verificação no Headend do ASA:

```
ASA#show vpn-sessiondb detail ra-ikev2-ipsec
Session Type: Generic Remote-Access IKEv2 IPsec Detailed
Username     : Win7_PC.david.com      Index        : 24
Assigned IP  : 192.168.50.1           Public IP    : 10.152.206.175
Protocol     : IKEv2 IPsec
License      : AnyConnect Premium
Encryption   : IKEv2: (1)AES256  IPsec: (1)AES256
Hashing      : IKEv2: (1)SHA1  IPsec: (1)SHA1
Bytes Tx     : 0                      Bytes Rx     : 16770
Pkts Tx      : 0                      Pkts Rx      : 241
Pkts Tx Drop : 0                      Pkts Rx Drop : 0
Group Policy : GP_David               Tunnel Group : David
Login Time   : 08:00:01 UTC Tue Jul 18 2017
Duration     : 0h:00m:21s
Inactivity   : 0h:00m:00s
VLAN Mapping : N/A                    VLAN         : none
Audt Sess ID : 0a0a0a0100018000596dc001
Security Grp : none
IKEv2 Tunnels: 1
IPsec Tunnels: 1
IKEv2:
  Tunnel ID    : 24.1
```

```
  UDP Src Port : 4500                  UDP Dst Port : 4500
  Rem Auth Mode: rsaCertificate
  Loc Auth Mode: rsaCertificate
  Encryption   : AES256                Hashing      : SHA1
  Rekey Int (T): 86400 Seconds         Rekey Left(T): 86379 Seconds
  PRF          : SHA1                  D/H Group    : 2
  Filter Name  :
IPsec:
  Tunnel ID    : 24.2
  Local Addr   : 0.0.0.0/0.0.0.0/0/0
  Remote Addr  : 192.168.50.1/255.255.255.255/0/0
  Encryption   : AES256                Hashing      : SHA1
  Encapsulation: Tunnel
  Rekey Int (T): 28800 Seconds         Rekey Left(T): 28778 Seconds
  Idle Time Out: 30 Minutes            Idle TO Left : 30 Minutes
  Conn Time Out: 518729 Minutes        Conn TO Left : 518728 Minutes
  Bytes Tx     : 0                     Bytes Rx     : 16947
  Pkts Tx      : 0                     Pkts Rx      : 244

ASA# show crypto ikev2 sa
IKEv2 SAs:
Session-id:24, Status:UP-ACTIVE, IKE count:1, CHILD count:1
Tunnel-id                Local                Remote     Status         Role
2119549341    10.88.243.108/4500   10.152.206.175/4500      READY    RESPONDER      Encr: AES-
CBC, keysize: 256, Hash: SHA96, DH Grp:2, Auth sign: RSA, Auth verify: RSA
      Life/Active Time: 86400/28 sec
Child sa: local selector  0.0.0.0/0 - 255.255.255.255/65535
          remote selector 192.168.50.1/0 - 192.168.50.1/65535
          ESP spi in/out: 0xbfff64d7/0x76131476
ASA# show crypto ipsec sa
interface: outside
    Crypto map tag: Anyconnect, seq num: 65535, local addr: 10.88.243.108
      local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port): (192.168.50.1/255.255.255.255/0/0)
      current_peer: 10.152.206.175, username: Win7_PC.david.com
      dynamic allocated peer ip: 192.168.50.1
      dynamic allocated peer ip(ipv6): 0.0.0.0

      #pkts encaps: 0, #pkts encrypt: 0, #pkts digest: 0
      #pkts decaps: 339, #pkts decrypt: 339, #pkts verify: 339
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 0, #pkts comp failed: 0, #pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0, #fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs needing reassembly: 0
      #TFC rcvd: 0, #TFC sent: 0
      #Valid ICMP Errors rcvd: 0, #Invalid ICMP Errors rcvd: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.88.243.108/4500, remote crypto endpt.: 10.152.206.175/4500
      path mtu 1496, ipsec overhead 58(44), media mtu 1500
      PMTU time remaining (sec): 0, DF policy: copy-df
      ICMP error validation: disabled, TFC packets: disabled
      current outbound spi: 76131476
      current inbound spi : BFFF64D7
    inbound esp sas:
      spi: 0xBFFF64D7 (3221185751)
         transform: esp-aes-256 esp-sha-hmac no compression
         in use settings ={RA, Tunnel, IKEv2, }
         slot: 0, conn_id: 98304, crypto-map: Anyconnect
         sa timing: remaining key lifetime (sec): 28767
         IV size: 16 bytes
         replay detection support: Y
         Anti replay bitmap:
          0xFFFFFFFF 0xFFFFFFFF
```

```
    outbound esp sas:
      spi: 0x76131476 (1980961910)
         transform: esp-aes-256 esp-sha-hmac no compression
         in use settings ={RA, Tunnel, IKEv2, }
         slot: 0, conn_id: 98304, crypto-map: Anyconnect
         sa timing: remaining key lifetime (sec): 28767
         IV size: 16 bytes
         replay detection support: Y
         Anti replay bitmap:
          0x00000000 0x00000001
ASA#show vpn-sessiondb license-summary
----------------------------------------------------------------------------
VPN Licenses and Configured Limits Summary
----------------------------------------------------------------------------
                                   Status : Capacity : Installed :  Limit
                                  ----------------------------------------
AnyConnect Premium               :  ENABLED :       50 :        50 :   NONE
AnyConnect Essentials            : DISABLED :       50 :         0 :   NONE
Other VPN (Available by Default) :  ENABLED :       10 :        10 :   NONE
Shared License Server            : DISABLED
Shared License Participant       : DISABLED
AnyConnect for Mobile            :  ENABLED(Requires Premium or Essentials)
Advanced Endpoint Assessment     :  ENABLED(Requires Premium)
AnyConnect for Cisco VPN Phone   :  ENABLED
VPN-3DES-AES                     :  ENABLED
VPN-DES                          :  ENABLED
----------------------------------------------------------------------------

----------------------------------------------------------------------------
VPN Licenses Usage Summary
----------------------------------------------------------------------------
                         Local : Shared :   All  :   Peak :  Eff.  :
                        In Use : In Use : In Use : In Use :  Limit : Usage
                       ---------------------------------------------------
AnyConnect Premium     :      1 :      0 :      1 :      1 :     50 :    2%
  AnyConnect Client    :                :      0 :      1          :    0%
    AnyConnect Mobile  :                :      0 :      0          :    0%
  Clientless VPN       :                :      0 :      0          :    0%
  Generic IKEv2 Client :                :      1 :      1          :    2%
Other VPN              :                :      0 :      0 :     10 :    0%
  Cisco VPN Client     :                :      0 :      0          :    0%
  L2TP Clients
  Site-to-Site VPN     :                :      0 :      0          :    0%
----------------------------------------------------------------------------
ASA# show vpn-sessiondb
----------------------------------------------------------------------------
VPN Session Summary
----------------------------------------------------------------------------
                             Active : Cumulative : Peak Concur : Inactive
                            ----------------------------------------------
AnyConnect Client            :      0 :         11 :           1 :        0
  SSL/TLS/DTLS               :      0 :          1 :           1 :        0
  IKEv2 IPsec                :      0 :         10 :           1 :        0
Generic IKEv2 Remote Access  :      1 :         14 :           1
----------------------------------------------------------------------------
Total Active and Inactive    :      1             Total Cumulative :     25
Device Total VPN Capacity    :     50
Device Load                  :     2%
----------------------------------------------------------------------------

----------------------------------------------------------------------------
Tunnels Summary
----------------------------------------------------------------------------
                             Active : Cumulative : Peak Concurrent
```

```
                                  ------------------------------------------
IKEv2                             :      1 :         25 :               1
IPsec                             :      1 :         14 :               1
IPsecOverNatT                     :      0 :         11 :               1
AnyConnect-Parent                 :      0 :         11 :               1
SSL-Tunnel                        :      0 :          1 :               1
DTLS-Tunnel                       :      0 :          1 :               1
------------------------------------------------------------------------
Totals                            :      2 :         63
```

Troubleshoot

Esta seção fornece as informações que você pode usar para solucionar problemas de sua configuração.

> **Note**: Consulte Informações Importantes sobre Comandos de Depuração antes de usar comandos debug.

> **Cuidado**: no ASA, você pode definir vários níveis de depuração; por padrão, o nível 1 é usado. Se você alterar o nível de depuração, a verbosidade das depurações aumentará. Faça isso com cuidado, especialmente em ambientes de produção.

- **Debug crypto ikev2 protocol 15**
- **Debug crypto ikev2 platform 15**
- **Debug crypto ca 255**