RADIUS 권한 부여를 통해 AnyConnect 사용자에게 고정 IP 주소 할당 구성

목차

소개

이 문서에서는 RADIUS Attribute 8 Framed-IP-Address를 통해 항상 특정 Cisco AnyConnect Secure Mobility Client 사용자의 FTD(Firepower Threat Defense)에 동일한 IP 주소를 전달하도록 ISE(Identity Services Engine) 서버를 사용하여 RADIUS 권한 부여를 구성하는 방법에 대해 설명합니다.

사전 요구 사항

요구 사항

다음 주제에 대한 지식을 보유하고 있으면 유용합니다.

- FTD
- FMC(Firepower Management Center)
- ISE
- Cisco AnyConnect Secure Mobility Client
- RADIUS 프로토콜

사용되는 구성 요소

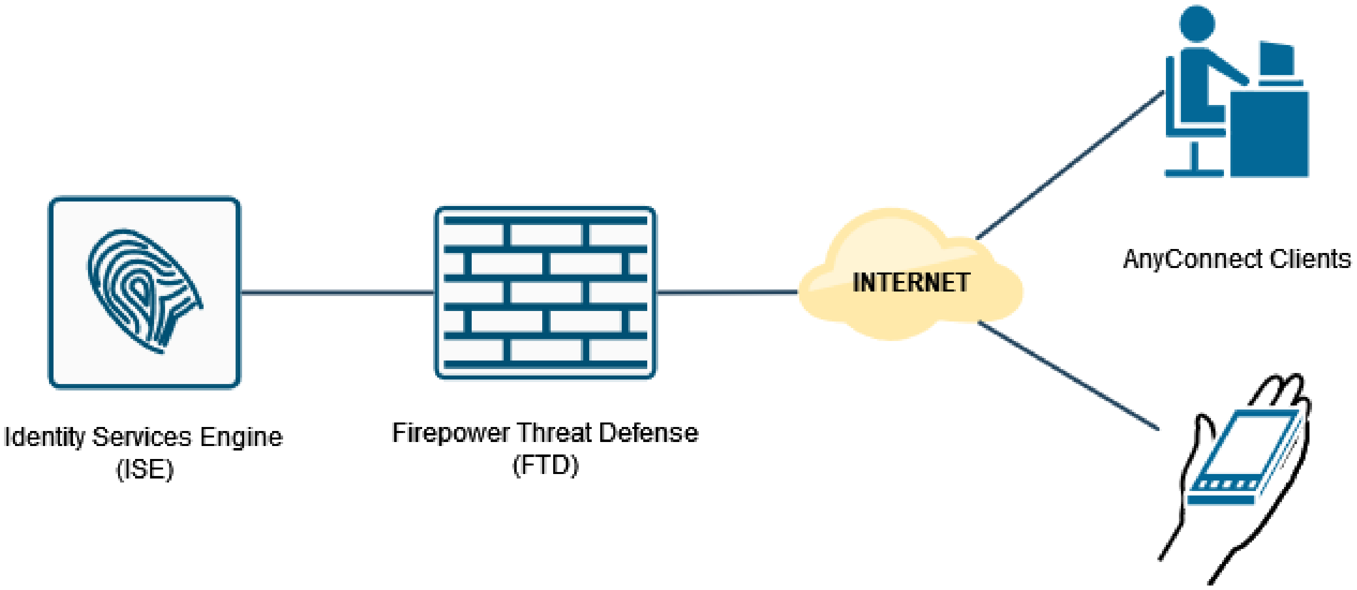
이 문서의 정보는 다음 소프트웨어 버전을 기반으로 합니다.

- FMCv - 7.0.0(빌드 94)
- FTDv - 7.0.0(빌드 94)
- ISE - 2.7.0.356
- AnyConnect - 4.10.02086
- Windows 10 Pro

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다. 이 문서에 사용된 모든 디바이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다. 네트워크가 작동 중인 경우 모든 명령의 잠재적인 영향을 이해해야 합니다.

구성

네트워크 다이어그램



FMC를 통해 AAA/RADIUS 인증을 사용하여 원격 액세스 VPN 구성

단계별 절차는 이 문서와 다음 비디오를 참조하십시오.

- FTD의 AnyConnect 원격 액세스 VPN 컨피그레이션
- FMC에서 관리하는 FTD의 초기 AnyConnect 컨피그레이션

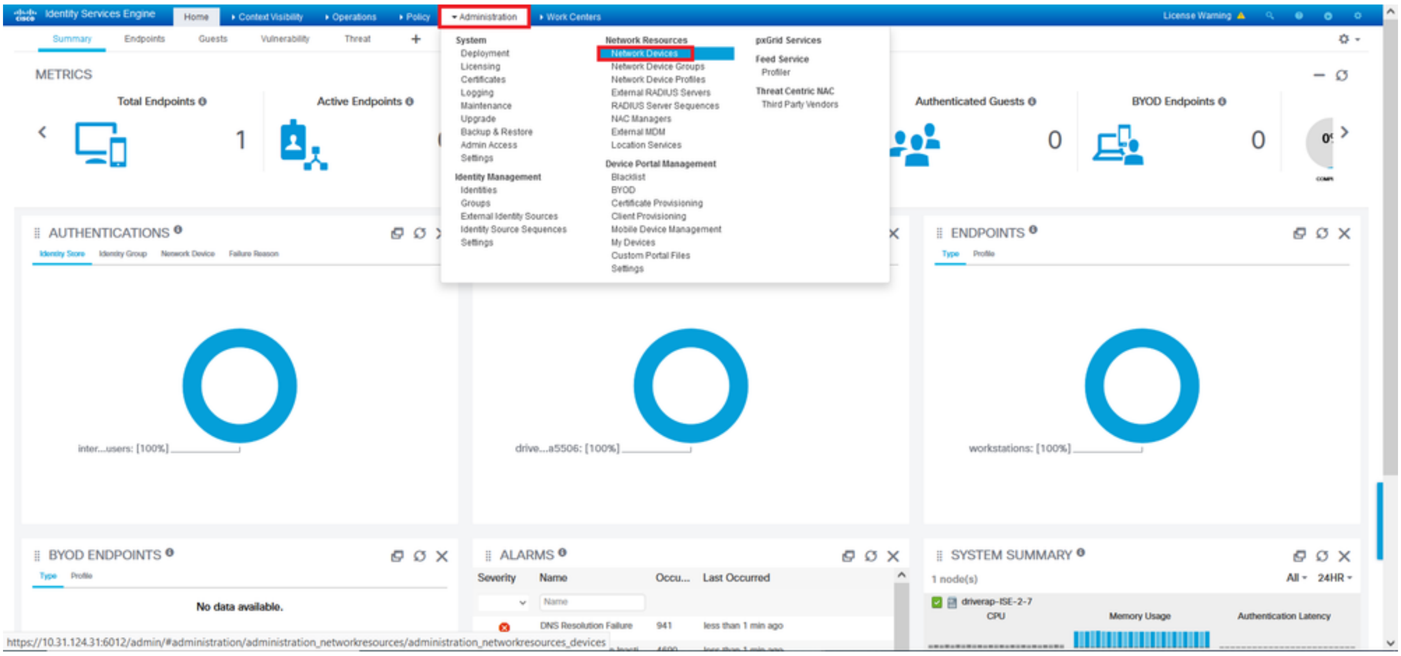
FTD CLI의 원격 액세스 VPN 컨피그레이션:

```
ip local pool AC_Pool 10.0.50.1-10.0.50.100 mask 255.255.255.0

interface GigabitEthernet0/0
nameif Outside_Int
security-level 0
ip address 192.168.0.100 255.255.255.0

aaa-server ISE_Server protocol radius
aaa-server ISE_Server host 172.16.0.8
key *****
authentication-port 1812
accounting-port 1813

crypto ca trustpoint RAVPN_Self-Signed_Cert
enrollment self
fqdn none
subject-name CN=192.168.0.100
keypair <Default-RSA-Key>
crl configure
```

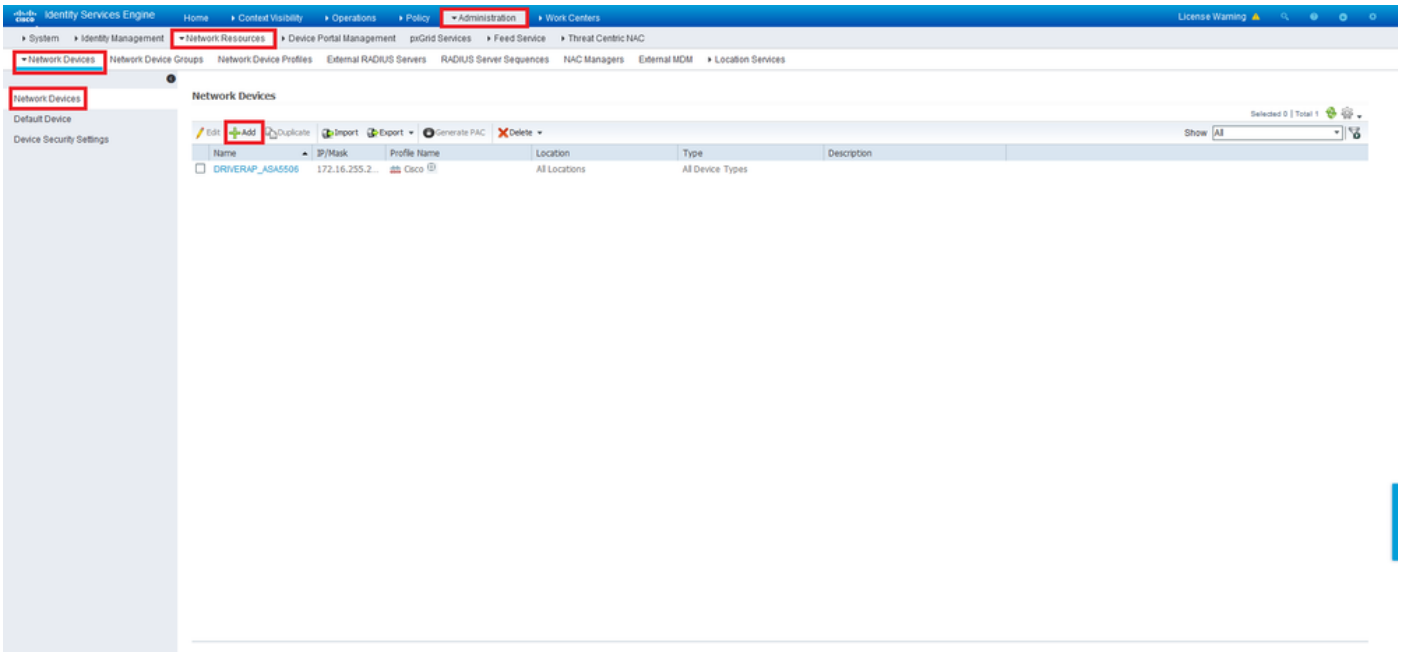
```
ssl trust-point RAVPN_Self-Signed_Cert

webvpn
enable Outside_Int
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:/csm/anyconnect-win-4.10.02086-webdeploy-k9.pkg 1 regex "Windows"
anyconnect enable
tunnel-group-list enable
cache
no disable
error-recovery disable

group-policy DfltGrpPolicy attributes
vpn-tunnel-protocol ikev2 ssl-client
user-authentication-idle-timeout none
webvpn
anyconnect keep-installer none
anyconnect modules value none
anyconnect ask none default anyconnect
http-comp none
activex-relay disable
file-entry disable
file-browsing disable
url-entry disable
deny-message none

tunnel-group RA_VPN type remote-access
tunnel-group RA_VPN general-attributes
address-pool AC_Pool
authentication-server-group ISE_Server
tunnel-group RA_VPN webvpn-attributes
group-alias RA_VPN enable
```

ISE(RADIUS 서버)에서 권한 부여 정책 구성

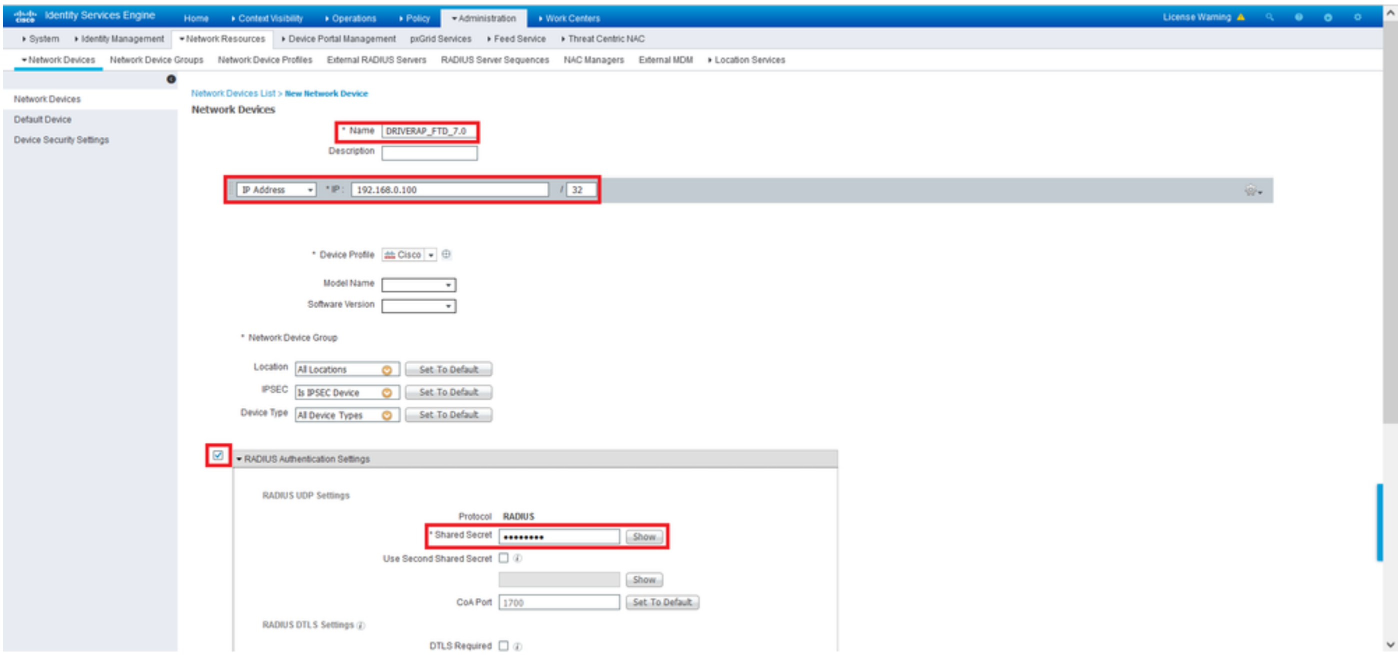
1단계. ISE 서버에 로그인하고 Administration(관리) **> Network Resources(네트워크 리소스) > Network Devices(네트워크 디바이스)로 이동합니다**.



2단계. Network Devices(네트워크 디바이스) 섹션에서 Add(**추가)**를 클릭하여 ISE가 FTD에서 RADIUS 액세스 요청을 처리할 수 있도록 합니다.



네트워크 디바이스 **Name** 및 **IP Address** 필드를 입력한 다음 RADIUS **Authentication Settings** 상자를 선택합니다. 공유 **암호**는 FMC의 RADIUS 서버 객체가 생성될 때 사용된 값과 같아야 합니다.



* Name DRIVERAP_FTD_7.0

Description

IP Address * IP : 192.168.0.100 / 32

* Device Profile Cisco

Model Name

Software Version

* Network Device Group

Location All Locations Set To Default

IPSEC Is IPSEC Device Set To Default

Device Type All Device Types Set To Default

☑ RADIUS Authentication Settings

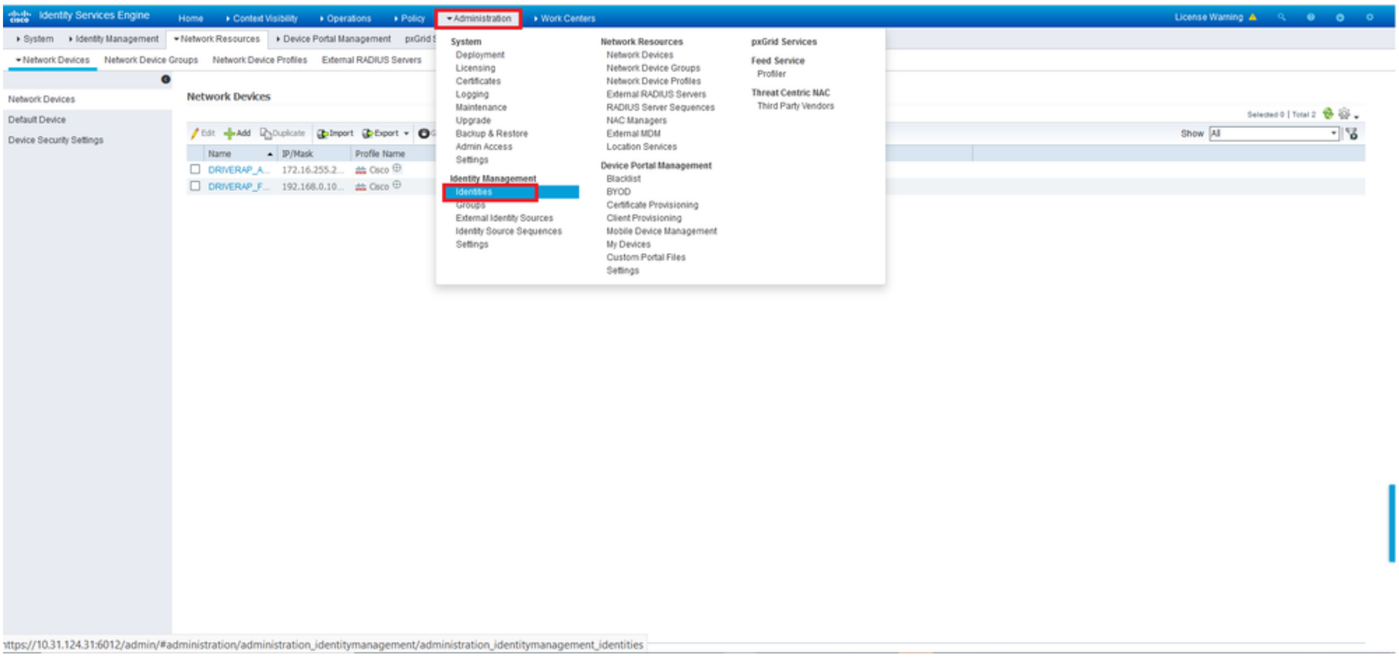
Protocol RADIUS

* Shared Secret •••••••• Show

CoA Port 1700 Set To Default

이 페이지 끝에 있는 단추를 사용하여 저장합니다.

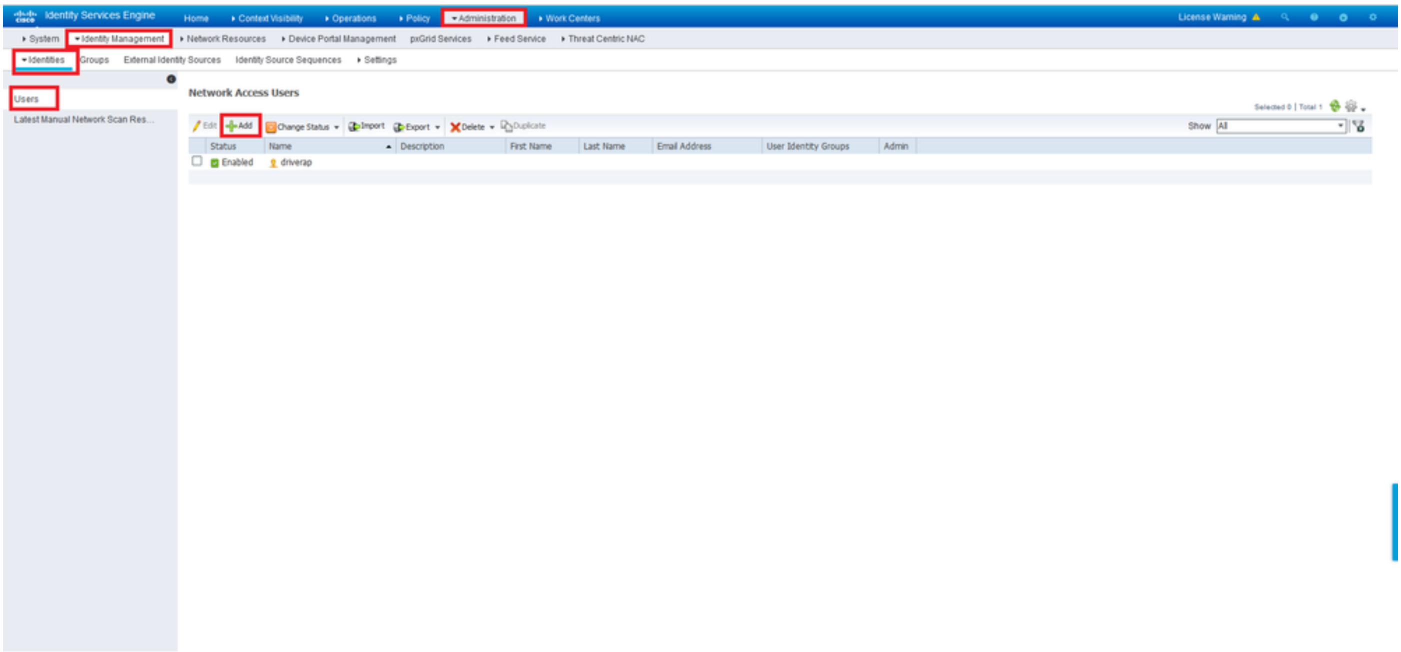
3단계. Administration(관리) **> Identity Management(ID 관리) > Identities(ID)로 이동합니다**.



Name	IP/Mask	Profile Name
DRIVERAP_A...	172.16.255.2...	Cisco
DRIVERAP_F...	192.168.0.10...	Cisco

ttps://10.31.124.31:6012/admin/#administration/administration_identitymanagement/administration_identitymanagement_identities

4단계. Network Access Users(네트워크 액세스 사용자) 섹션에서 **Add(추가)**를 클릭하여 ISE의 로컬 데이터베이스에서 *user1*을 생성합니다.



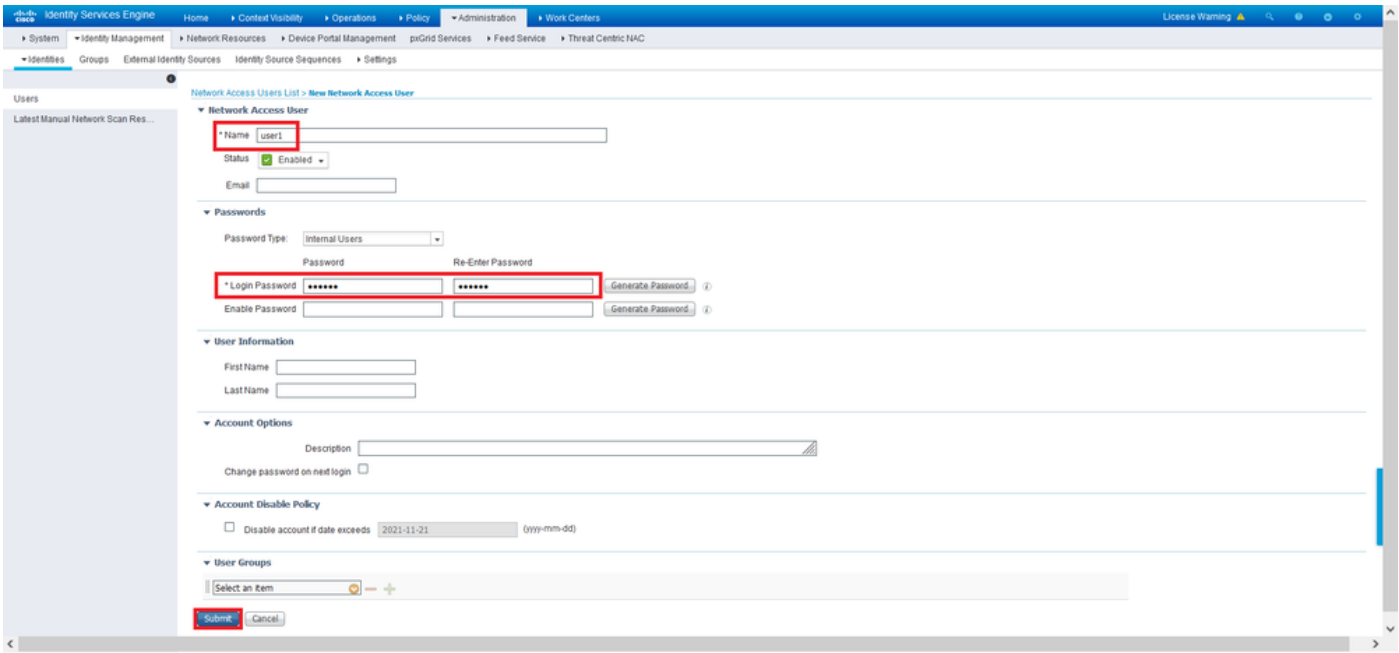
Network Access Users

Selected 0 | Total 1

Show: All

Status	Name	Description	First Name	Last Name	Email Address	User Identity Groups	Admin
□ Enabled	driverap						

Name 및 **Login Password** 필드에 사용자 이름과 비밀번호를 입력하고 Submit(제출)을 **클릭합니다**.



Network Access Users List > New Network Access User

▾ Network Access User

- * Name: user1
- Status: Enabled
- Email:

▾ Passwords

- Password Type: Internal Users
- * Login Password — Password: •••••• Re-Enter Password: ••••••
- Enable Password:

▾ User Information

- First Name:
- Last Name:

▾ Account Options

- Description:
- Change password on next login □

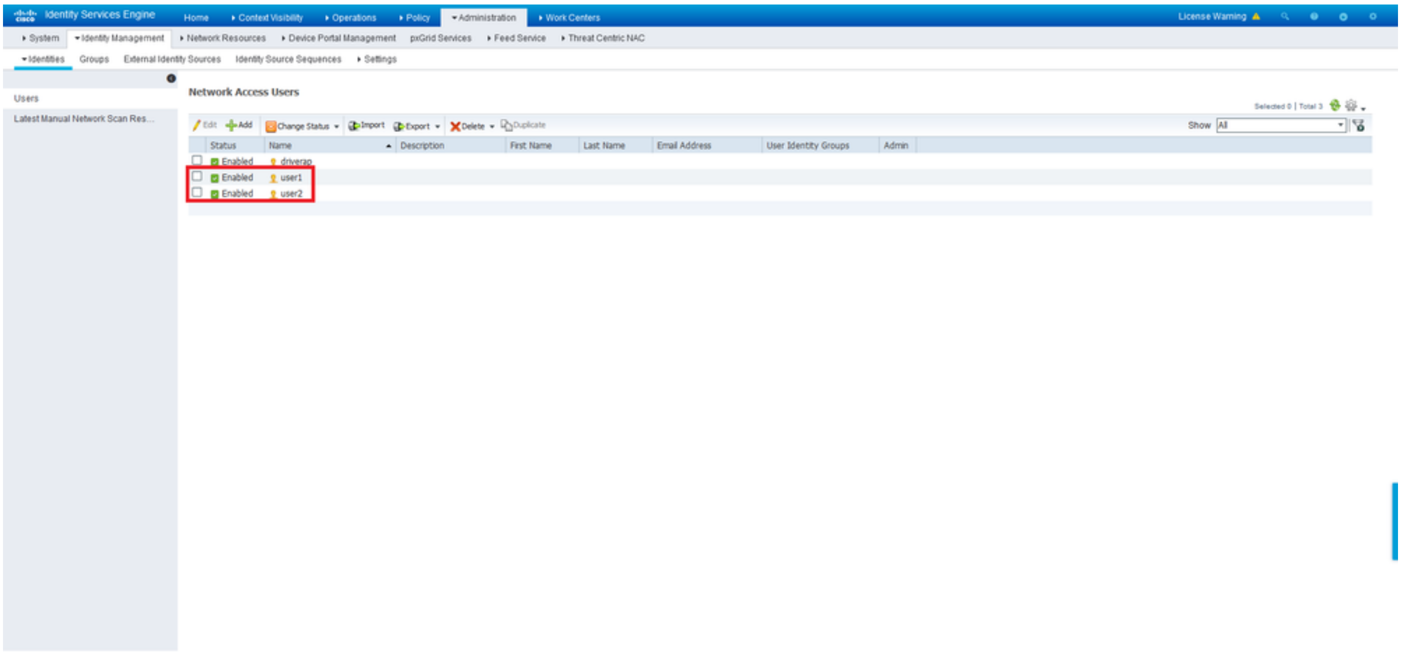
▾ Account Disable Policy

- □ Disable account if date exceeds 2021-11-21 (yyyy-mm-dd)

▾ User Groups

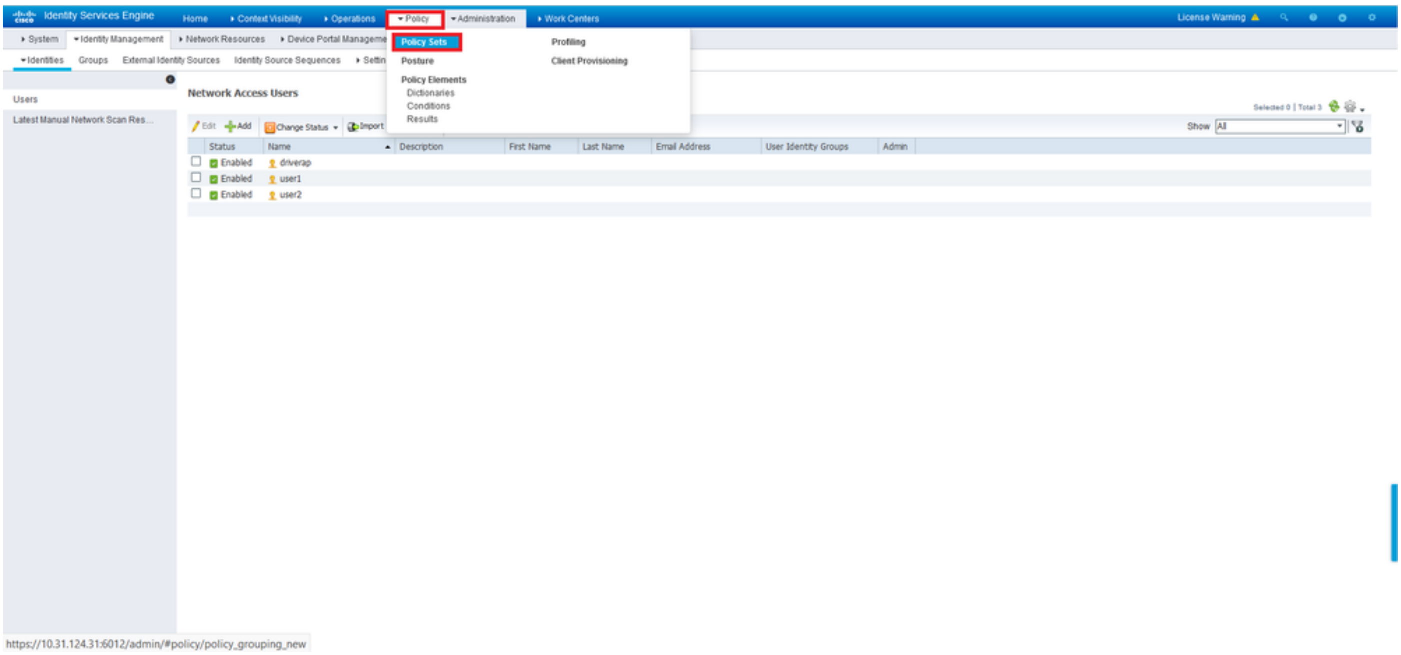
- Select an item

5단계. *user2*를 생성하려면 이전 단계를 반복합니다.



	Status	Name	Description	First Name	Last Name	Email Address	User Identity Groups	Admin
□	Enabled	driverap						
□	Enabled	user1						
□	Enabled	user2						

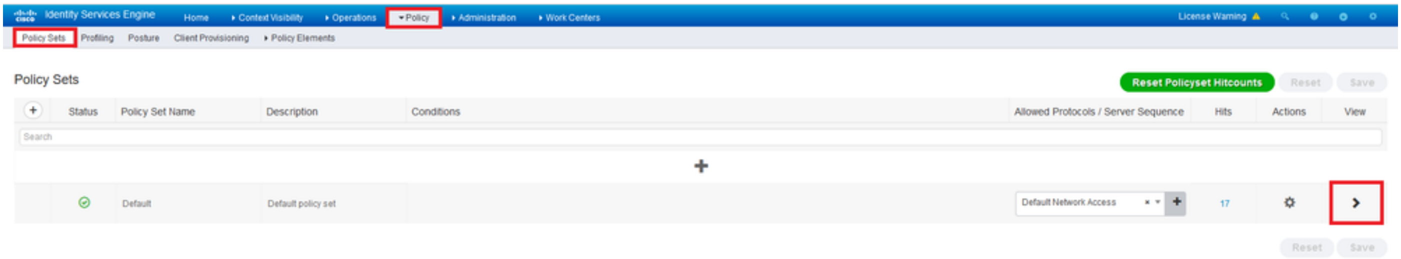
6단계. Policy(정책) **> Policy Sets(정책 세트)로 이동합니다**.



	Status	Name	Description	First Name	Last Name	Email Address	User Identity Groups	Admin
□	Enabled	driverap						
□	Enabled	user1						
□	Enabled	user2						

https://10.31.124.31:6012/admin/#policy/policy_grouping_new

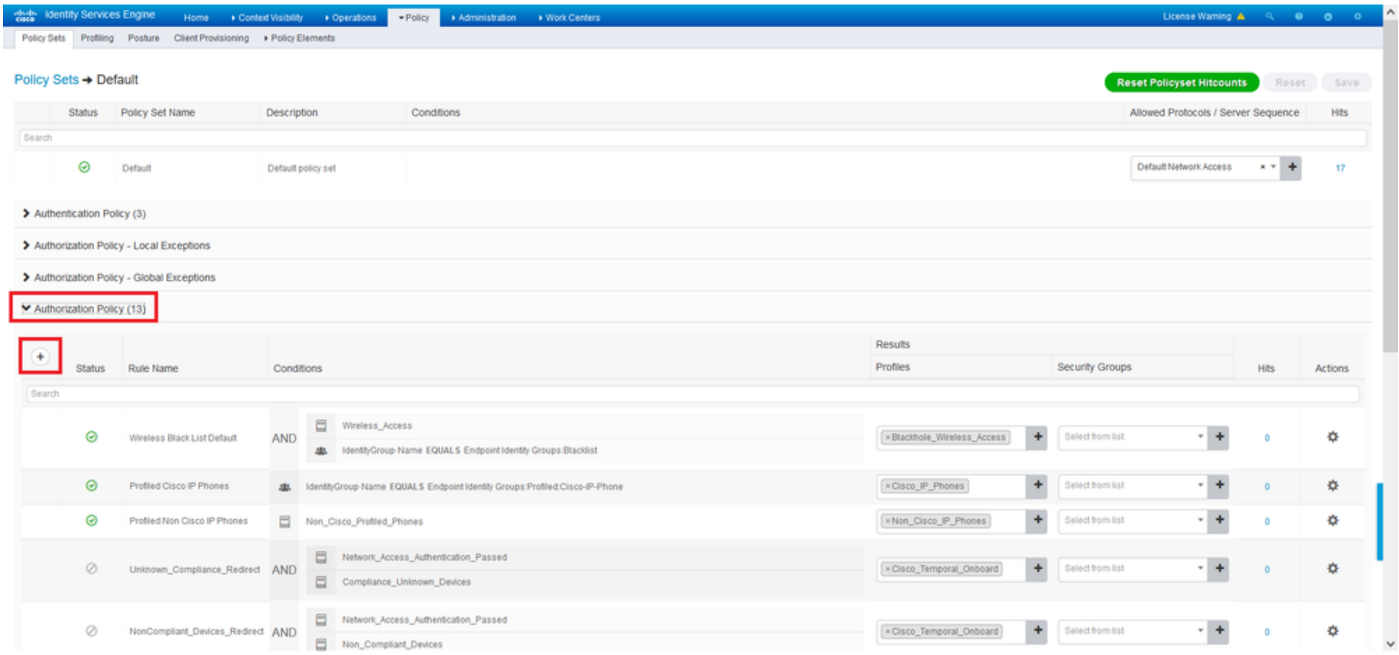
7단계. 화면 오른쪽에서 화살표>를 클릭합니다.



Policy Sets

Status	Policy Set Name	Description	Conditions	Allowed Protocols / Server Sequence	Hits	Actions	View
✓	Default	Default policy set		Default Network Access	17	⚙	>

8단계. 권한 부여 정책 옆의/ 화살표>를 클릭하여 확장합니다. 이제 새 규칙을 추가하려면 + 기호를 클릭합니다.



Policy Sets → Default

Status	Policy Set Name	Description	Conditions	Allowed Protocols / Server Sequence	Hits
✓	Default	Default policy set		Default Network Access	17

> Authentication Policy (3)

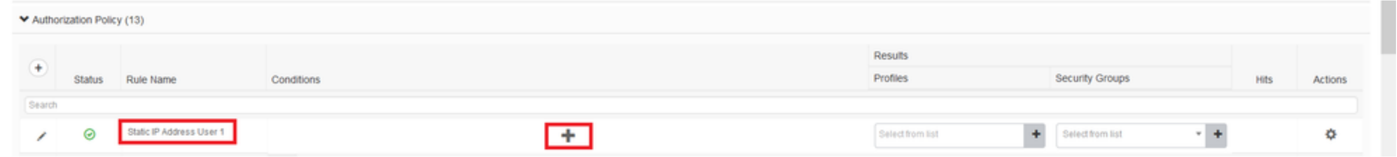
> Authorization Policy - Local Exceptions

> Authorization Policy - Global Exceptions

Authorization Policy (13)

Status	Rule Name	Conditions	Results Profiles	Results Security Groups	Hits	Actions
✓	Wireless Black List Default	AND Wireless_Access IdentityGroup·Name EQUALS Endpoint Identity Groups:Blacklist	Blackhole_Wireless_Access	Select from list	0	⚙
✓	Profiled Cisco IP Phones	IdentityGroup·Name EQUALS Endpoint Identity Groups:Profiled:Cisco-IP-Phone	Cisco_IP_Phones	Select from list	0	⚙
✓	Profiled Non Cisco IP Phones	Non_Cisco_Profiled_Phones	Non_Cisco_IP_Phones	Select from list	0	⚙
⊘	Unknown_Compliance_Redirect	AND Network_Access_Authentication_Passed Compliance_Unknown_Devices	Cisco_Temporal_Onboard	Select from list	0	⚙
⊘	NonCompliant_Devices_Redirect	AND Network_Access_Authentication_Passed Non_Compliant_Devices	Cisco_Temporal_Onboard	Select from list	0	⚙

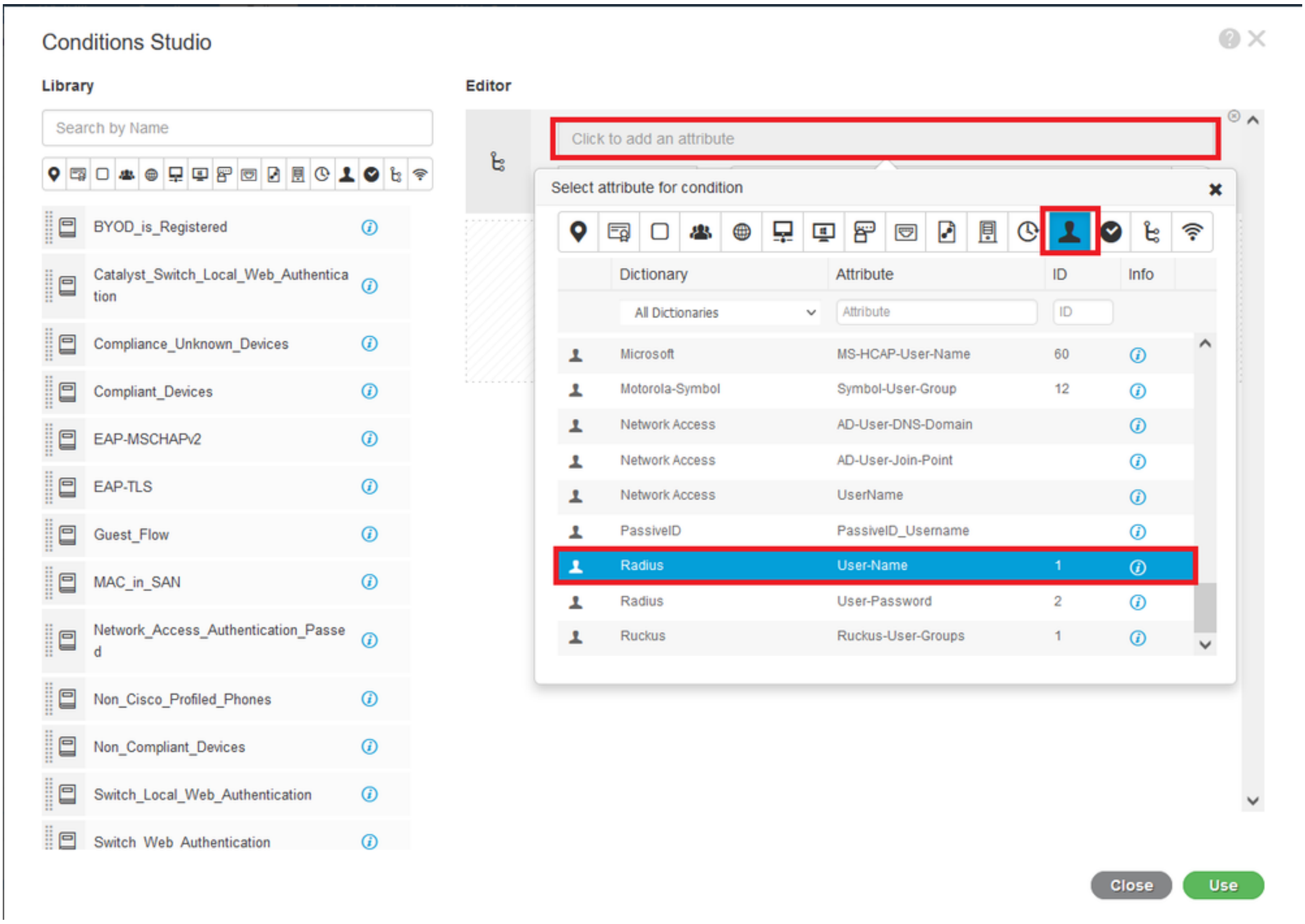
규칙에 이름을 입력하고 Conditions(조건) 열 아래에서 + 기호를 선택합니다.



Authorization Policy (13)

Status	Rule Name	Conditions	Results Profiles	Results Security Groups	Hits	Actions
✓	Static IP Address User 1	+	Select from list	Select from list		⚙

속성 편집기 텍스트 상자를 클릭하고 **제목** 아이콘을 클릭합니다. RADIUS *User-Name* 특성을 찾을 때까지 아래로 스크롤하여 선택합니다.



Conditions Studio

Library

Search by Name

- BYOD_is_Registered
- Catalyst_Switch_Local_Web_Authentication
- Compliance_Unknown_Devices
- Compliant_Devices
- EAP-MSCHAPv2
- EAP-TLS
- Guest_Flow
- MAC_in_SAN
- Network_Access_Authentication_Passed
- Non_Cisco_Profiled_Phones
- Non_Compliant_Devices
- Switch_Local_Web_Authentication
- Switch_Web_Authentication

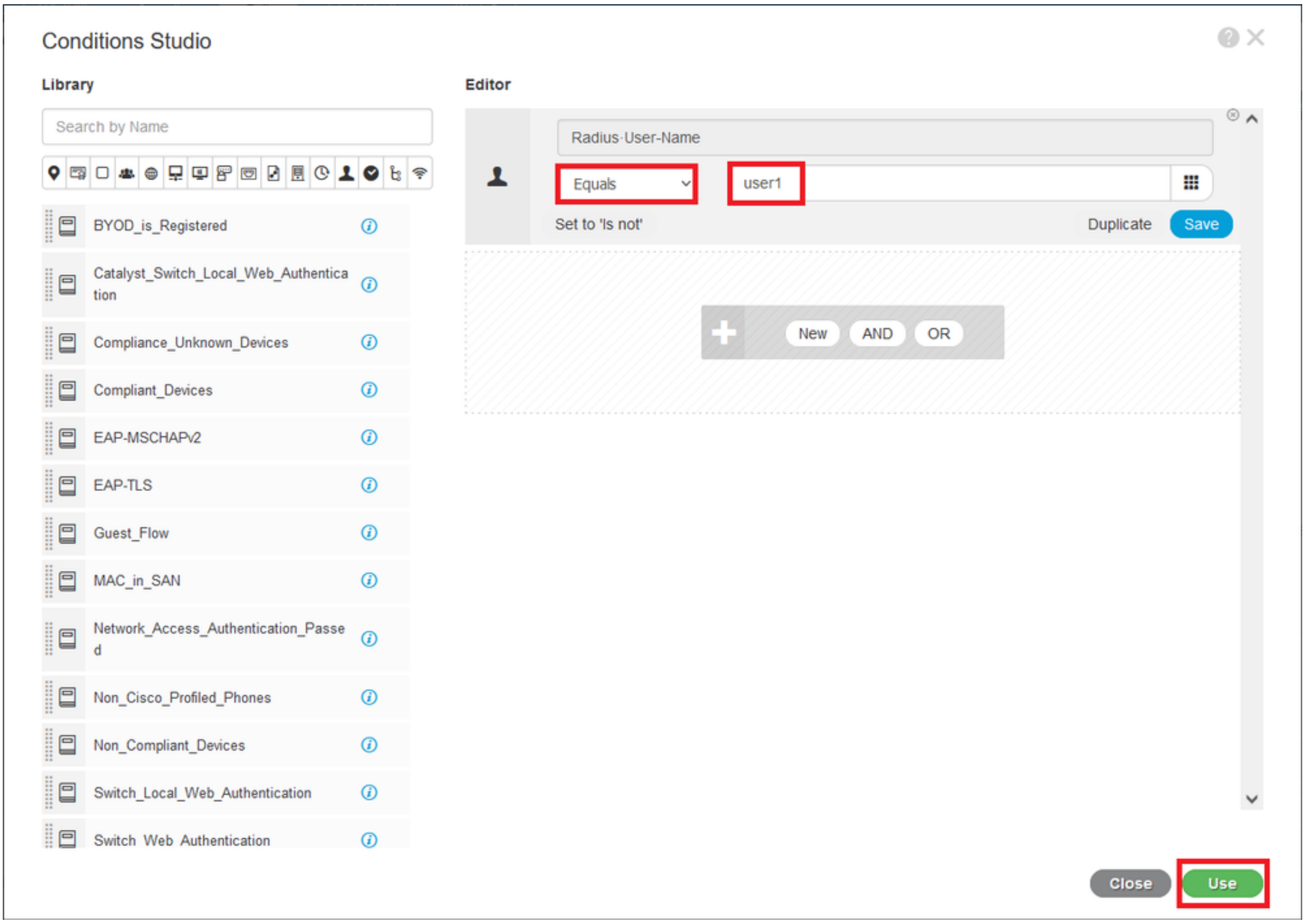
Editor

Click to add an attribute

Select attribute for condition

Dictionary	Attribute	ID	Info
All Dictionaries	Attribute	ID	
Microsoft	MS-HCAP-User-Name	60	ⓘ
Motorola-Symbol	Symbol-User-Group	12	ⓘ
Network Access	AD-User-DNS-Domain		ⓘ
Network Access	AD-User-Join-Point		ⓘ
Network Access	UserName		ⓘ
PassiveID	PassiveID_Username		ⓘ
Radius	User-Name	1	ⓘ
Radius	User-Password	2	ⓘ
Ruckus	Ruckus-User-Groups	1	ⓘ

Equals를 연산자로 유지하고 *user1*을 연산자 옆에 입력합니다. Use in을 클릭하여 특성을 저장합니다.



Conditions Studio

Library

Search by Name

- BYOD_is_Registered
- Catalyst_Switch_Local_Web_Authentication
- Compliance_Unknown_Devices
- Compliant_Devices
- EAP-MSCHAPv2
- EAP-TLS
- Guest_Flow
- MAC_in_SAN
- Network_Access_Authentication_Passed
- Non_Cisco_Profiled_Phones
- Non_Compliant_Devices
- Switch_Local_Web_Authentication
- Switch_Web_Authentication

Editor

Radius·User-Name

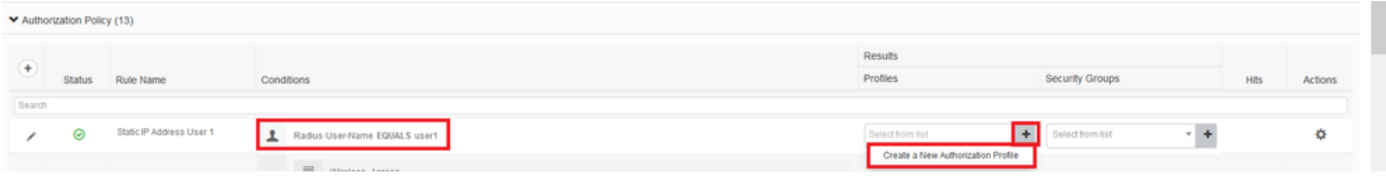
Equals

user1

Set to 'Is not'

이 규칙에 대한 조건이 설정되었습니다.

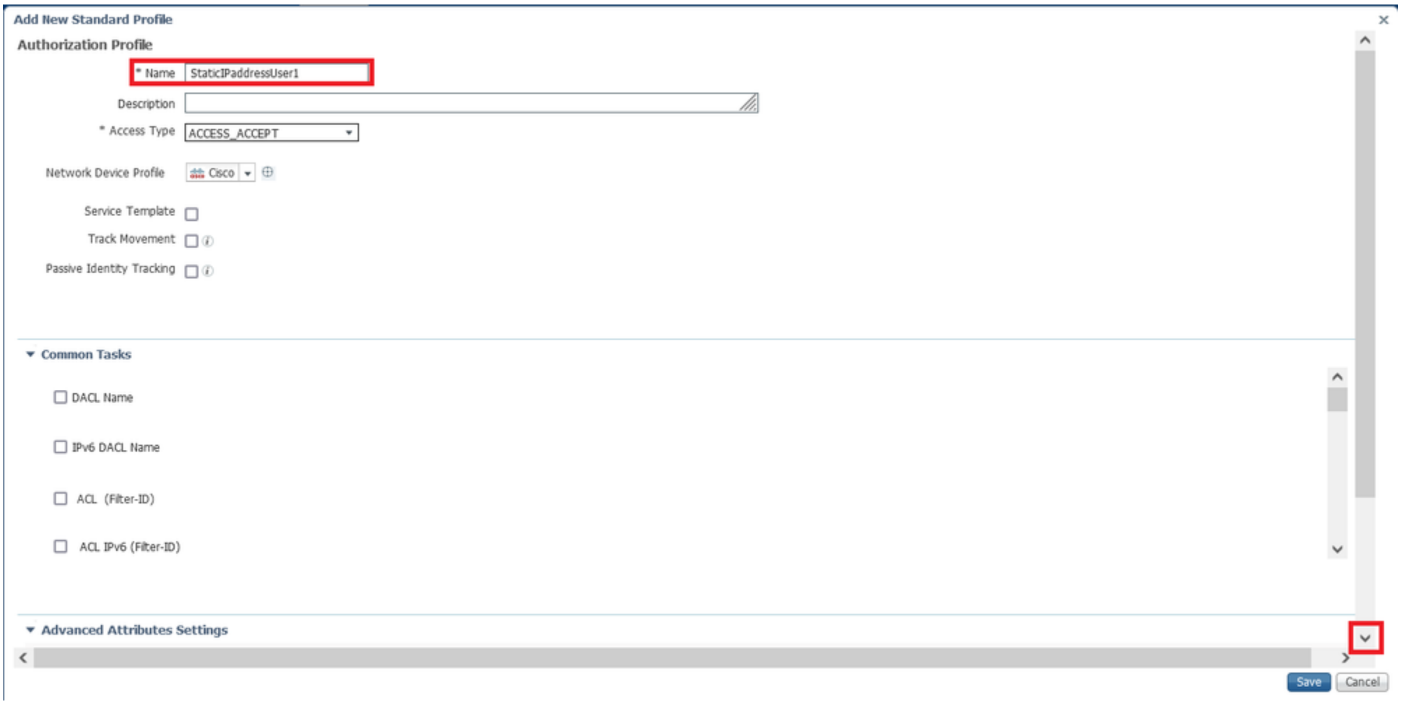
9단계. **Results/Profiles**(결과/프로파일) 열에서 + 기호를 클릭하고 Create a **New Authorization Profile(새 권한 부여 프로파일 생성)을 선택합니다**.



Authorization Policy (13)

Status	Rule Name	Conditions	Results Profiles	Results Security Groups	Hits	Actions
✓	Static IP Address User 1	Radius·User-Name EQUALS user1	Select from list +	Select from list +		⚙

이름을 지정하고 ACCESS_*ACCEPT*를 **액세스 유형**으로 **유지합니다**. 아래로 스크롤하여 Advance **Attributes Settings** 섹션**으로** 이동합니다.



Add New Standard Profile

Authorization Profile

* Name StaticIPaddressUser1

Description

* Access Type ACCESS_ACCEPT

Network Device Profile Cisco

Service Template □

Track Movement □

Passive Identity Tracking □

▾ Common Tasks

□ DACL Name

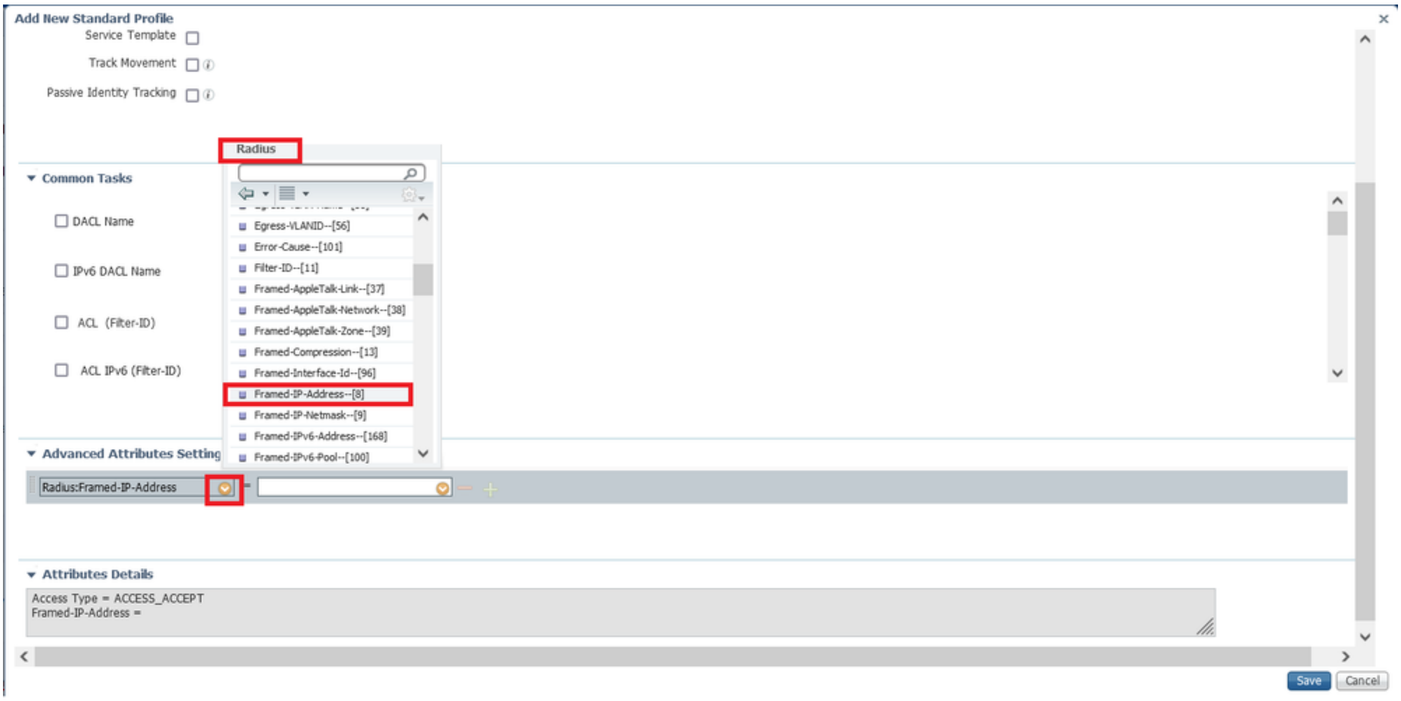
□ IPv6 DACL Name

□ ACL (Filter-ID)

□ ACL IPv6 (Filter-ID)

▾ Advanced Attributes Settings

주황색 화살표를 클릭하고 **Radius > Framed-IP-Address—[8]를** 선택합니다.



Add New Standard Profile

Service Template □

Track Movement □

Passive Identity Tracking □

▾ Common Tasks

□ DACL Name

□ IPv6 DACL Name

□ ACL (Filter-ID)

□ ACL IPv6 (Filter-ID)

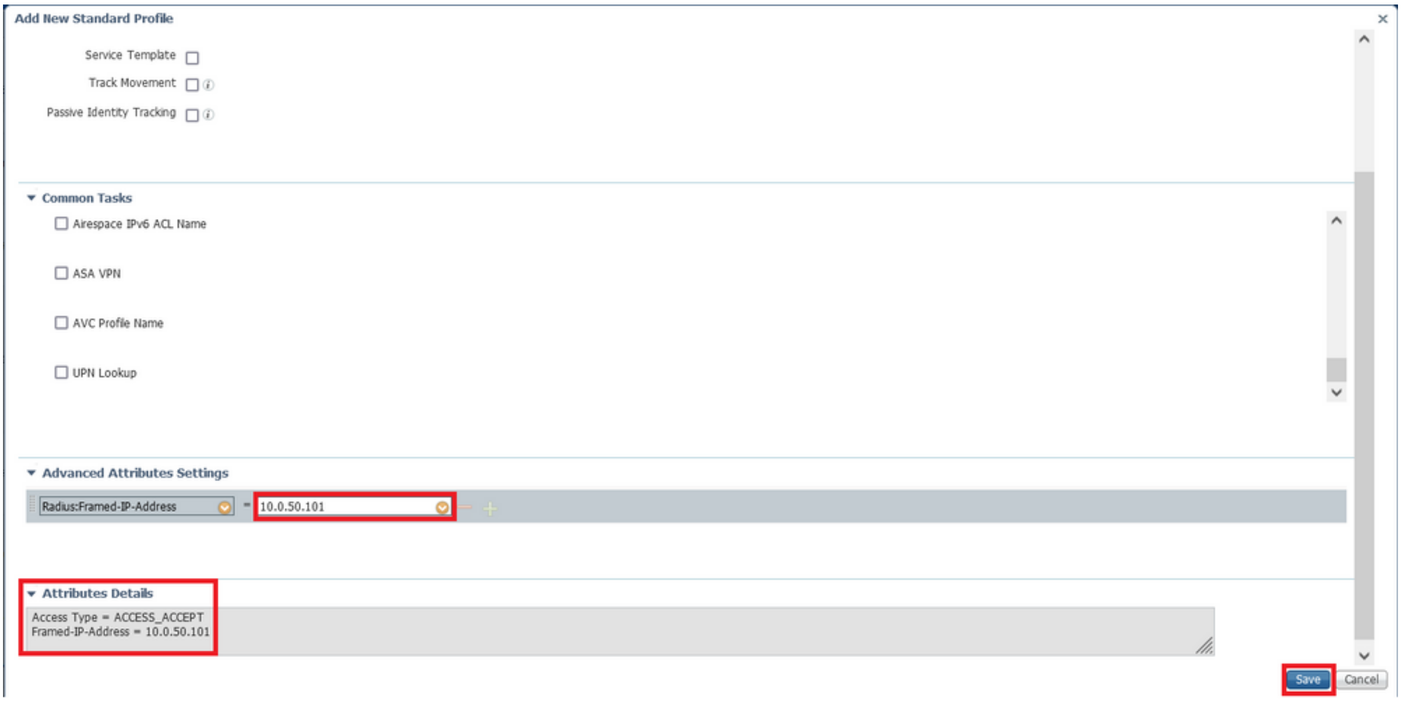
▾ Advanced Attributes Setting

Radius:Framed-IP-Address =

▾ Attributes Details

Access Type = ACCESS_ACCEPT
Framed-IP-Address =

이 사용자에게 항상 정적으로 할당할 IP 주소를 입력하고 Save(저장)를 **클릭합니다**.



Add New Standard Profile

Service Template □

Track Movement □

Passive Identity Tracking □

▼ Common Tasks

□ Airespace IPv6 ACL Name

□ ASA VPN

□ AVC Profile Name

□ UPN Lookup

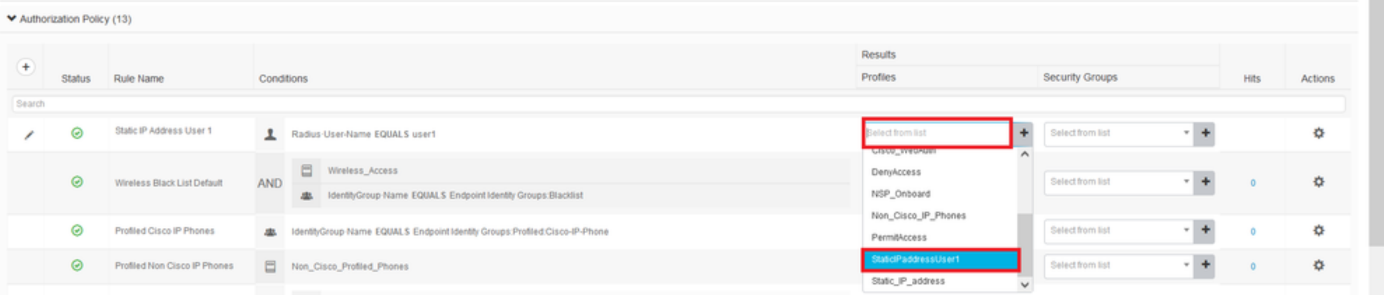
▼ Advanced Attributes Settings

Radius:Framed-IP-Address = 10.0.50.101

▼ Attributes Details

```
Access Type = ACCESS_ACCEPT
Framed-IP-Address = 10.0.50.101
```

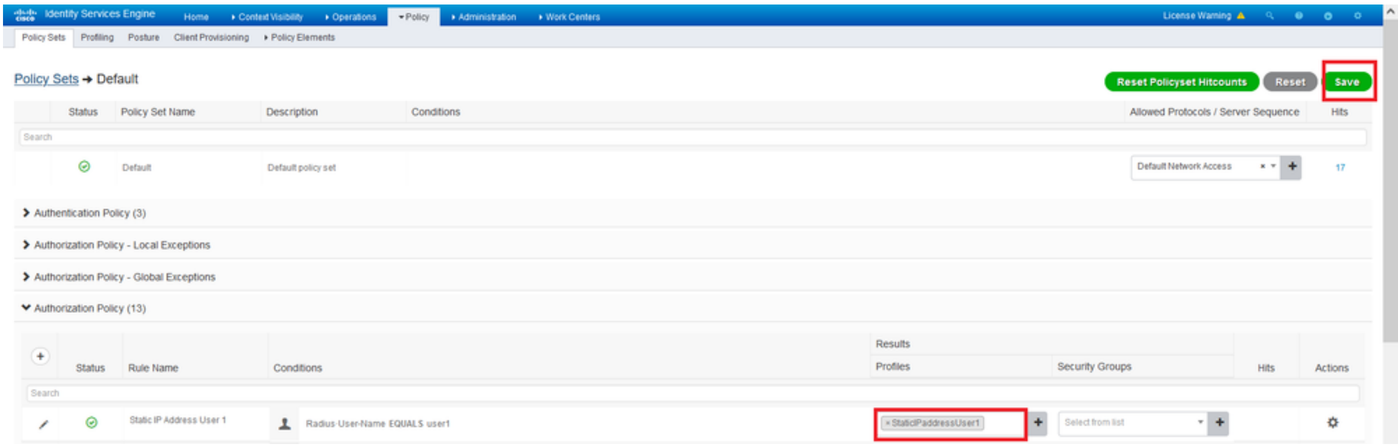
10단계. 이제 새로 생성된 권한 부여 프로파일을 선택합니다.



▼ Authorization Policy (13)

Status	Rule Name	Conditions	Results: Profiles	Results: Security Groups	Hits	Actions
✓	Static IP Address User 1	Radius·User-Name EQUALS user1	Select from list	Select from list		⚙
✓	Wireless Black List Default	AND Wireless_Access IdentityGroup·Name EQUALS Endpoint Identity Groups:Blacklist		Select from list	0	⚙
✓	Profiled Cisco IP Phones	IdentityGroup·Name EQUALS Endpoint Identity Groups:Profiled:Cisco-IP-Phone		Select from list	0	⚙
✓	Profiled Non Cisco IP Phones	Non_Cisco_Profiled_Phones		Select from list	0	⚙

이제 권한 부여 규칙이 모두 설정되었습니다. 저장을 **클릭합니다**.



Policy Sets → Default

Status	Policy Set Name	Description	Conditions	Allowed Protocols / Server Sequence	Hits
✓	Default	Default policy set		Default Network Access	17

> Authentication Policy (3)

> Authorization Policy - Local Exceptions

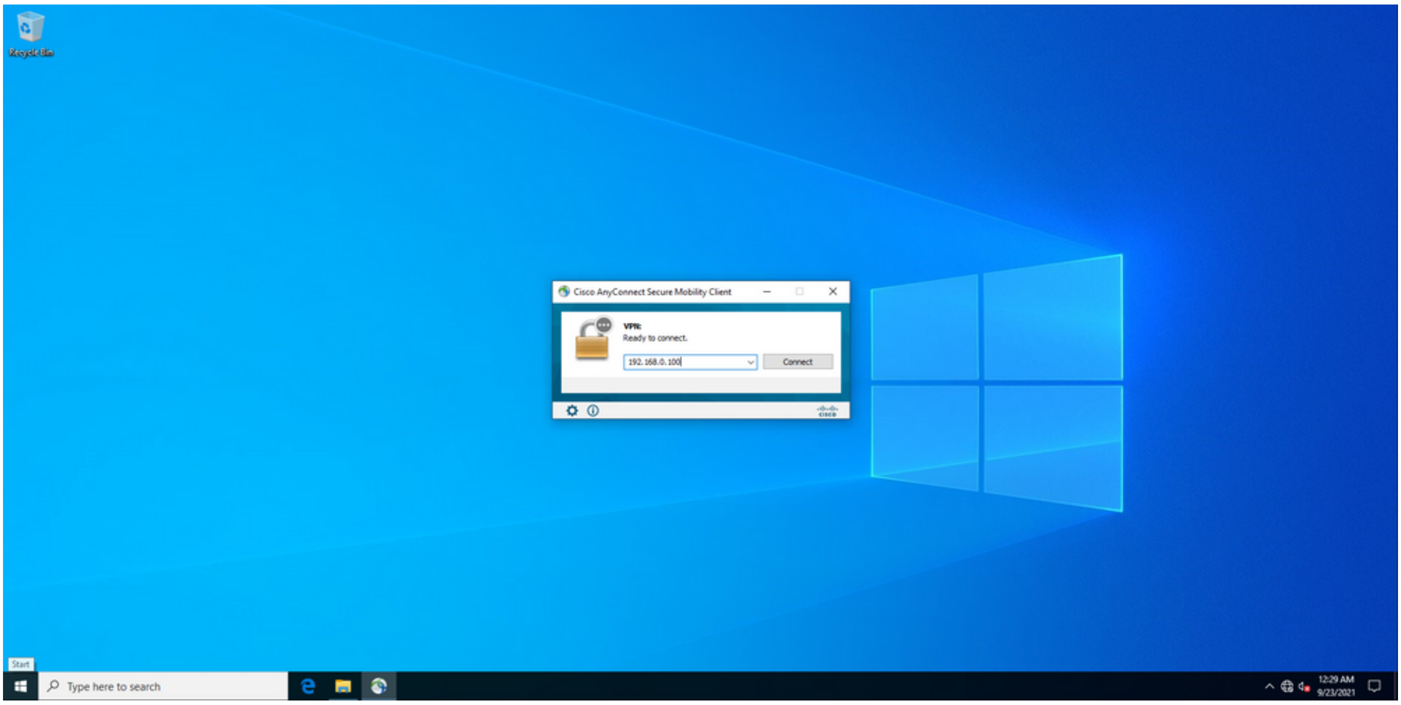
> Authorization Policy - Global Exceptions

▼ Authorization Policy (13)

Status	Rule Name	Conditions	Results: Profiles	Results: Security Groups	Hits	Actions
✓	Static IP Address User 1	Radius·User-Name EQUALS user1	StaticIPaddressUser1	Select from list		⚙

다음을 확인합니다.

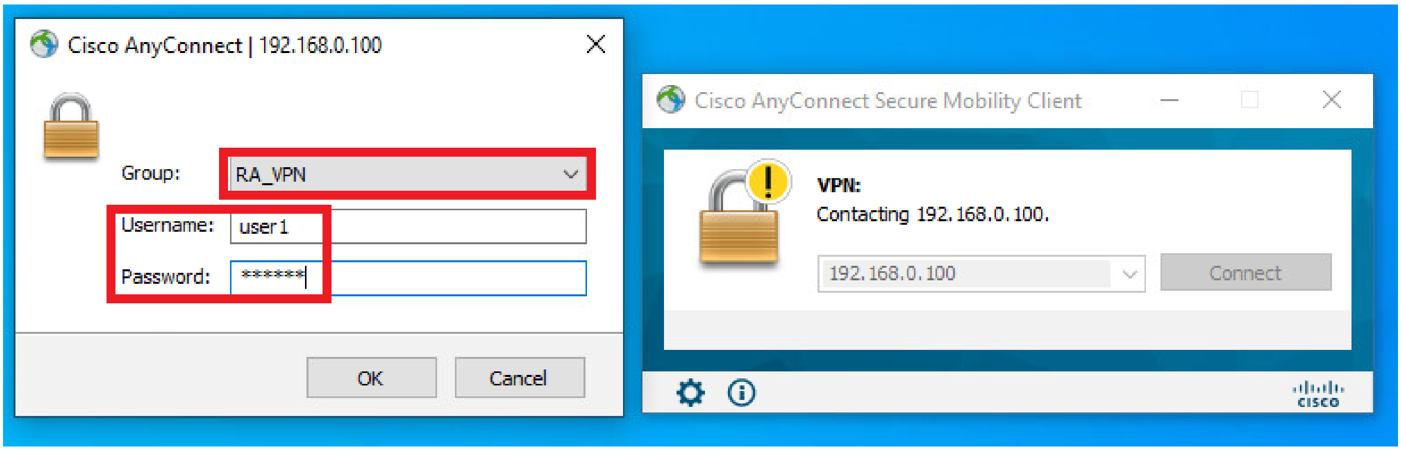
1단계. Cisco AnyConnect Secure Mobility 클라이언트가 설치된 클라이언트 시스템으로 이동합니다. FTD 헤드엔드에 연결하고(여기에 Windows 시스템이 사용됨) *user1* 자격 증명을 입력합니다.



Cisco AnyConnect Secure Mobility Client

VPN:
Ready to connect.

192.168.0.100
Connect


Cisco AnyConnect | 192.168.0.100

Group: RA_VPN

Username: user1

Password: ******

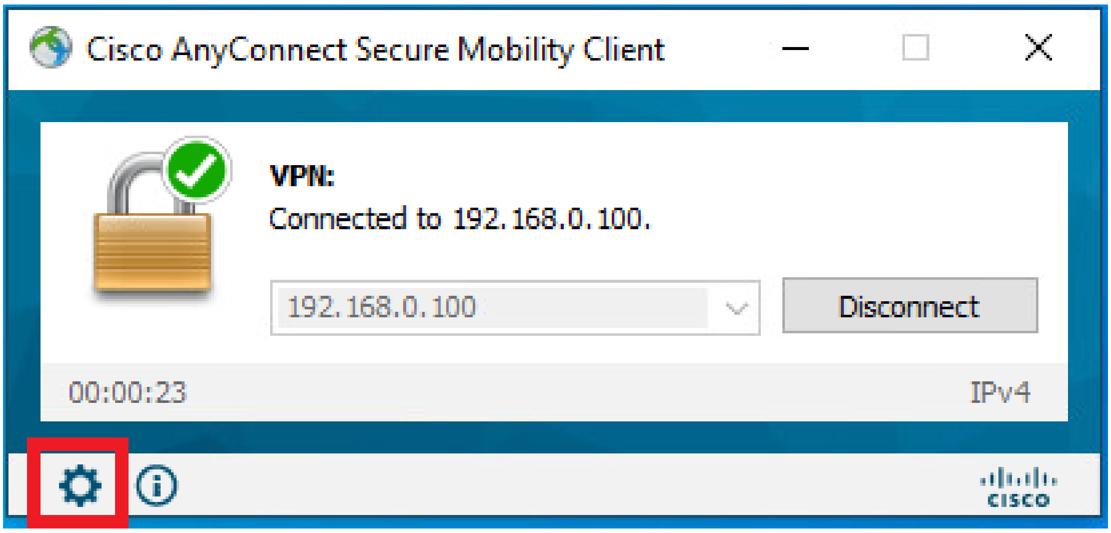
OK
Cancel

Cisco AnyConnect Secure Mobility Client

VPN:
Contacting 192.168.0.100.

192.168.0.100
Connect

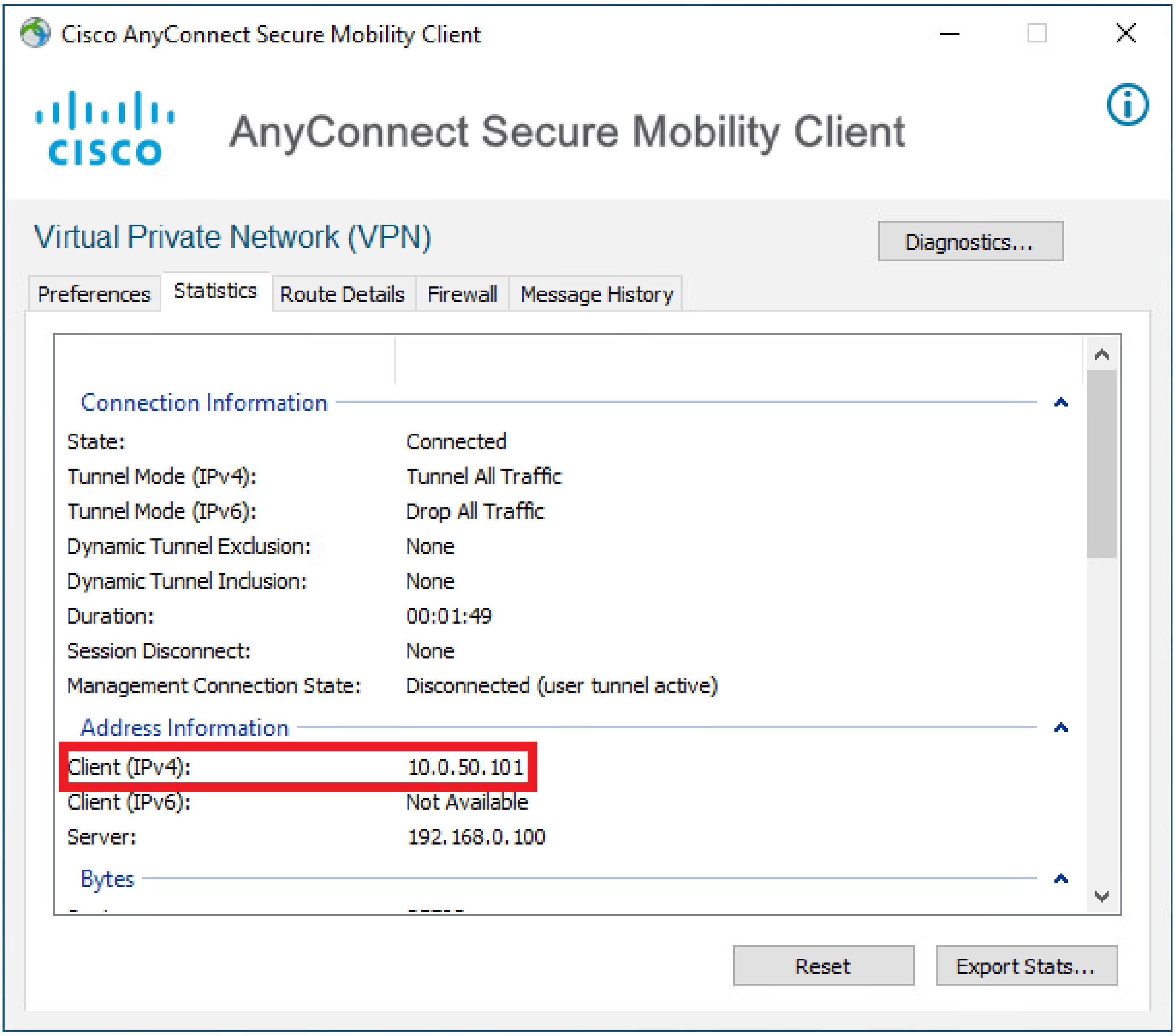
기어 아이콘(왼쪽 아래 모서리)을 클릭하고 **통계** 탭으로 이동합니다. 할당된 IP 주소가 실제로 이 사용자에 대해 ISE 권한 부여 정책에 구성된 주소임을 **[주소 정보]** 섹션에서 확인합니다.


Cisco AnyConnect Secure Mobility Client

VPN:
Connected to 192.168.0.100.

192.168.0.100
Disconnect

00:00:23 IPv4



State: Connected
Tunnel Mode (IPv4): Tunnel All Traffic
Tunnel Mode (IPv6): Drop All Traffic
Dynamic Tunnel Exclusion: None
Dynamic Tunnel Inclusion: None
Duration: 00:01:49
Session Disconnect: None
Management Connection State: Disconnected (user tunnel active)
Client (IPv4): 10.0.50.101
Client (IPv6): Not Available
Server: 192.168.0.100

FTD의 **debug radius all** 명령 출력은 다음과 같습니다.

```
firepower# SVC message: t/s=5/16: The user has requested to disconnect the connection.
webvpn_svc_np_tear_down: no ACL
webvpn_svc_np_tear_down: no IPv6 ACL
np_svc_destroy_session(0x9000)
radius mkreq: 0x13
alloc_rip 0x0000145d043b6460
new request 0x13 --> 3 (0x0000145d043b6460)
got user 'user1'
got password
add_req 0x0000145d043b6460 session 0x13 id 3
RADIUS_REQUEST
radius.c: rad_mkpkt
rad_mkpkt: ip:source-ip=192.168.0.101

RADIUS packet decode (authentication request)


RADIUS packet decode (response)

--------------------------------------
Raw packet data (length = 136).....
```

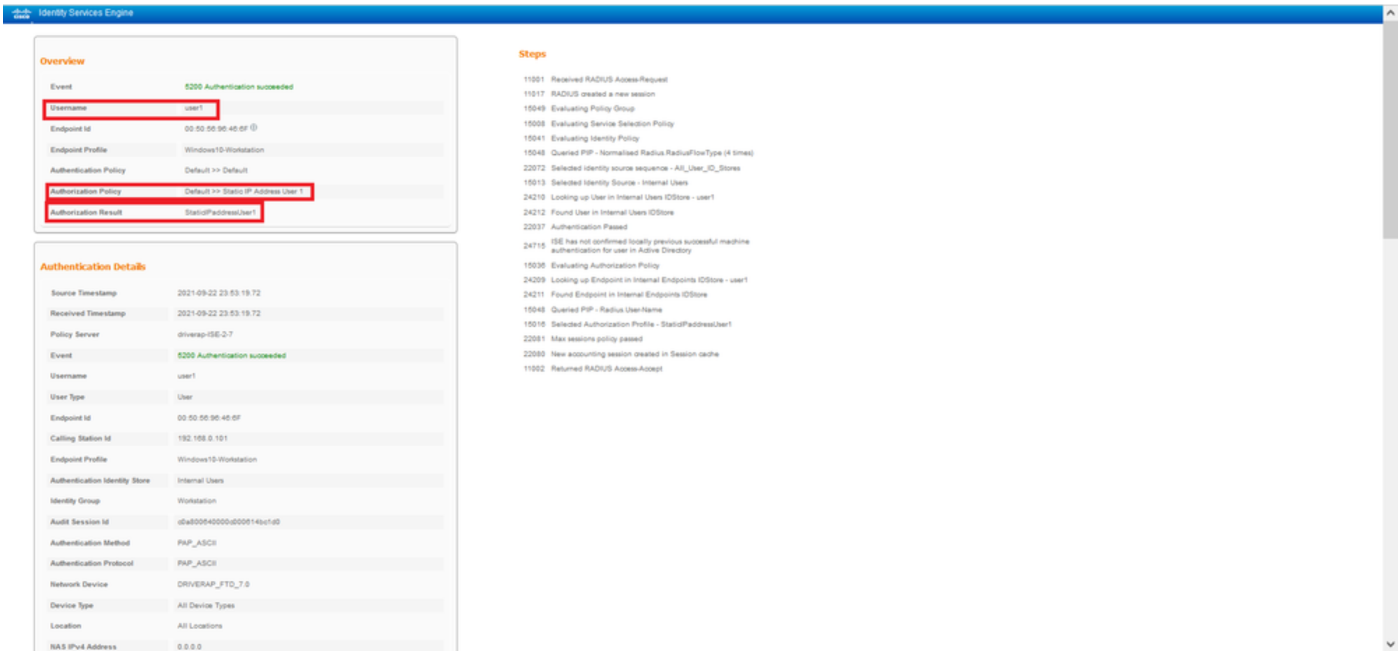
```
02 03 00 88 0c af 1c 41 4b c4 a6 58 de f3 92 31 | .......AK..X...1
7d aa 38 1e 01 07 75 73 65 72 31 08 06 0a 00 32 | }.8...user1....2
65 19 3d 43 41 43 53 3a 63 30 61 38 30 30 36 34 | e.=CACS:c0a80064
30 30 30 30 61 30 30 30 36 31 34 62 63 30 32 64 | 0000a000614bc02d
3a 64 72 69 76 65 72 61 70 2d 49 53 45 2d 32 2d | :driverap-ISE-2-
37 2f 34 31 37 34 39 34 39 37 38 2f 32 31 1a 2a | 7/417494978/21.*
00 00 00 09 01 24 70 72 6f 66 69 6c 65 2d 6e 61 | .....$profile-na
6d 65 3d 57 69 6e 64 6f 77 73 31 30 2d 57 6f 72 | me=Windows10-Wor
6b 73 74 61 74 69 6f 6e | kstation

Parsed packet data.....
Radius: Code = 2 (0x02)
Radius: Identifier = 3 (0x03)
Radius: Length = 136 (0x0088)
Radius: Vector: 0CAF1C414BC4A658DEF392317DAA381E
Radius: Type = 1 (0x01) User-Name
Radius: Length = 7 (0x07)
Radius: Value (String) =
75 73 65 72 31 | user1
Radius: Type = 8 (0x08) Framed-IP-Address
Radius: Length = 6 (0x06)
Radius: Value (IP Address) = 10.0.50.101 (0x0A003265)
Radius: Type = 25 (0x19) Class
Radius: Length = 61 (0x3D)
Radius: Value (String) =
43 41 43 53 3a 63 30 61 38 30 30 36 34 30 30 30 | CACS:c0a80064000
30 61 30 30 30 36 31 34 62 63 30 32 64 3a 64 72 | 0a000614bc02d:dr
69 76 65 72 61 70 2d 49 53 45 2d 32 2d 37 2f 34 | iverap-ISE-2-7/4
31 37 34 39 34 39 37 38 2f 32 31 | 17494978/21
Radius: Type = 26 (0x1A) Vendor-Specific
Radius: Length = 42 (0x2A)
Radius: Vendor ID = 9 (0x00000009)
Radius: Type = 1 (0x01) Cisco-AV-pair
Radius: Length = 36 (0x24)
Radius: Value (String) =
70 72 6f 66 69 6c 65 2d 6e 61 6d 65 3d 57 69 6e | profile-name=Win
64 6f 77 73 31 30 2d 57 6f 72 6b 73 74 61 74 69 | dows10-Workstati
6f 6e | on
rad_procpkt: ACCEPT
Got AV-Pair with value profile-name=Windows10-Workstation
RADIUS_ACCESS_ACCEPT: normal termination
RADIUS_DELETE
remove_req 0x0000145d043b6460 session 0x13 id 3
free_rip 0x0000145d043b6460
radius: send queue empty
```

FTD 로그는 다음과 같습니다.

```
firepower#
<omitted output>
Sep 22 2021 23:52:40: %FTD-6-725002: Device completed SSL handshake with client
Outside_Int:192.168.0.101/60405 to 192.168.0.100/443 for TLSv1.2 session
Sep 22 2021 23:52:48: %FTD-7-609001: Built local-host Outside_Int:172.16.0.8
Sep 22 2021 23:52:48: %FTD-6-113004: AAA user authentication Successful : server = 172.16.0.8 :
user = user1
Sep 22 2021 23:52:48: %FTD-6-113009: AAA retrieved default group policy (DfltGrpPolicy) for user
= user1
Sep 22 2021 23:52:48: %FTD-6-113008: AAA transaction status ACCEPT : user = user1
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.radius["1"]["1"] = user1
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.radius["8"]["1"] = 167785061
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
```

```
aaa.radius["25"]["1"] = CACS:c0a800640000c000614bc1d0:driverap-ISE-2-7/417494978/23
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.grouppolicy = DfltGrpPolicy
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.ipaddress = 10.0.50.101
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.username = user1
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.username1 = user1
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.username2 =
Sep 22 2021 23:52:48: %FTD-7-734003: DAP: User user1, Addr 192.168.0.101: Session Attribute
aaa.cisco.tunnelgroup = RA_VPN
Sep 22 2021 23:52:48: %FTD-6-734001: DAP: User user1, Addr 192.168.0.101, Connection AnyConnect:
The following DAP records were selected for this connection: DfltAccessPolicy
Sep 22 2021 23:52:48: %FTD-6-113039: Group <DfltGrpPolicy> User <user1> IP <192.168.0.101>
AnyConnect parent session started.
<omitted output>
Sep 22 2021 23:53:17: %FTD-6-725002: Device completed SSL handshake with client
Outside_Int:192.168.0.101/60412 to 192.168.0.100/443 for TLSv1.2 session
Sep 22 2021 23:53:17: %FTD-7-737035: IPAA: Session=0x0000c000, 'IPv4 address request' message
queued
Sep 22 2021 23:53:17: %FTD-7-737035: IPAA: Session=0x0000c000, 'IPv6 address request' message
queued
Sep 22 2021 23:53:17: %FTD-7-737001: IPAA: Session=0x0000c000, Received message 'IPv4 address
request'
Sep 22 2021 23:53:17: %FTD-6-737010: IPAA: Session=0x0000c000, AAA assigned address 10.0.50.101,
succeeded
Sep 22 2021 23:53:17: %FTD-7-737001: IPAA: Session=0x0000c000, Received message 'IPv6 address
request'
Sep 22 2021 23:53:17: %FTD-5-737034: IPAA: Session=0x0000c000, IPv6 address: no IPv6 address
available from local pools
Sep 22 2021 23:53:17: %FTD-5-737034: IPAA: Session=0x0000c000, IPv6 address: callback failed
during IPv6 request
Sep 22 2021 23:53:17: %FTD-4-722041: TunnelGroup <RA_VPN> GroupPolicy <DfltGrpPolicy> User
<user1> IP <192.168.0.101> No IPv6 address available for SVC connection
Sep 22 2021 23:53:17: %FTD-7-609001: Built local-host Outside_Int:10.0.50.101
Sep 22 2021 23:53:17: %FTD-5-722033: Group <DfltGrpPolicy> User <user1> IP <192.168.0.101> First
TCP SVC connection established for SVC session.
Sep 22 2021 23:53:17: %FTD-6-722022: Group <DfltGrpPolicy> User <user1> IP <192.168.0.101> TCP
SVC connection established without compression
Sep 22 2021 23:53:17: %FTD-7-746012: user-identity: Add IP-User mapping 10.0.50.101 -
LOCAL\user1 Succeeded - VPN user
Sep 22 2021 23:53:17: %FTD-6-722055: Group <DfltGrpPolicy> User <user1> IP <192.168.0.101>
Client Type: Cisco AnyConnect VPN Agent for Windows 4.10.02086
Sep 22 2021 23:53:17: %FTD-4-722051: Group
```

ISE의 RADIUS Live 로그에는 다음이 표시됩니다.



Overview

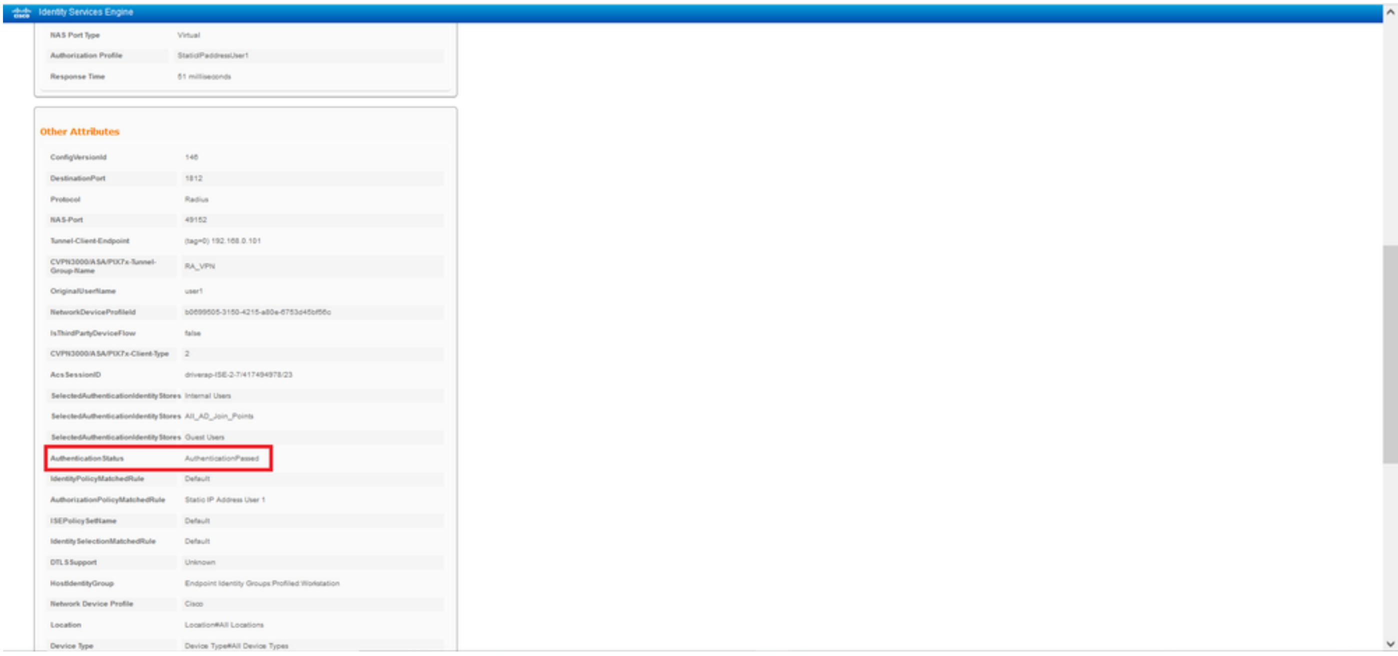
Event	5200 Authentication succeeded
Username	user1
Endpoint Id	00:50:56:96:46:6F
Endpoint Profile	Windows10-Workstation
Authentication Policy	Default >> Default
Authorization Policy	Default >> Static IP Address User 1
Authorization Result	StaticIPaddressUser1

Authentication Details

Source Timestamp	2021-09-22 23:53:19.72
Received Timestamp	2021-09-22 23:53:19.72
Policy Server	driverap-ISE-2-7
Event	5200 Authentication succeeded
Username	user1
User Type	User
Endpoint Id	00:50:56:96:46:6F
Calling Station Id	192.168.0.101
Endpoint Profile	Windows10-Workstation
Authentication Identity Store	Internal Users
Identity Group	Workstation
Audit Session Id	c0a800640000c000614bc1d0
Authentication Method	PAP_ASCII
Authentication Protocol	PAP_ASCII
Network Device	DRIVERAP_FTD_7.0
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	0.0.0.0

Steps

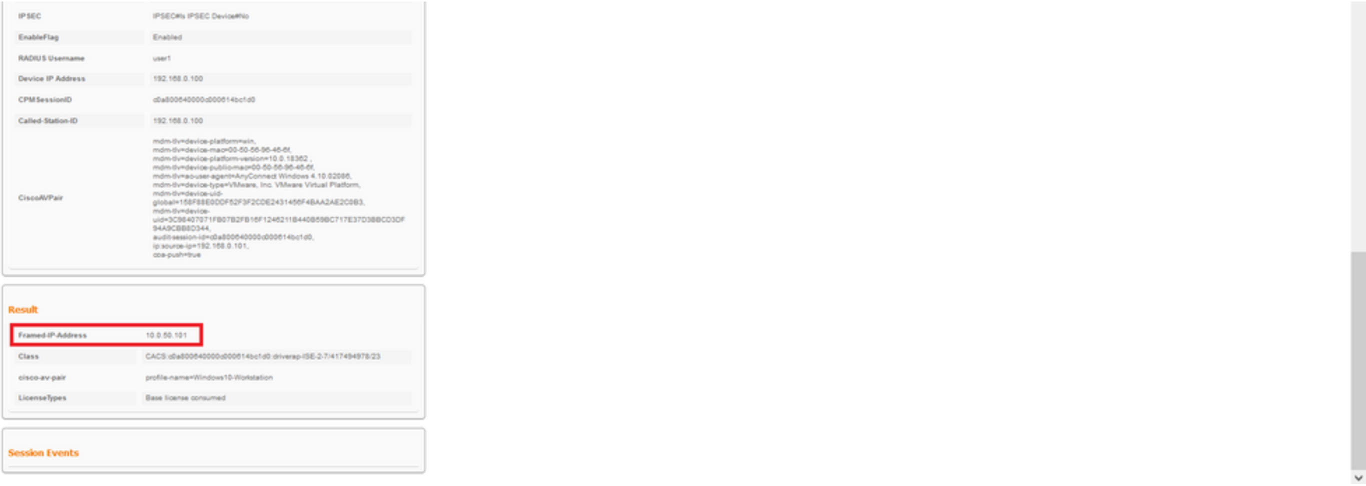
11001	Received RADIUS Access-Request
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Policy
15041	Evaluating Identity Policy
15048	Queried PIP - Normalised Radius.RadiusFlowType (4 times)
22072	Selected identity source sequence - All_User_ID_Stores
15013	Selected Identity Source - Internal Users
24210	Looking up User in Internal Users IDStore - user1
24212	Found User in Internal Users IDStore
22037	Authentication Passed
24715	ISE has not confirmed locally previous successful machine authentication for user in Active Directory
15036	Evaluating Authorization Policy
24209	Looking up Endpoint in Internal Endpoints IDStore - user1
24211	Found Endpoint in Internal Endpoints IDStore
15048	Queried PIP - Radius.User-Name
15016	Selected Authorization Profile - StaticIPaddressUser1
22081	Max sessions policy passed
22080	New accounting session created in Session cache
11002	Returned RADIUS Access-Accept



NAS Port Type	Virtual
Authorization Profile	StaticIPaddressUser1
Response Time	51 milliseconds

Other Attributes

ConfigVersionId	146
DestinationPort	1812
Protocol	Radius
NAS-Port	49152
Tunnel-Client-Endpoint	(tag=0) 192.168.0.101
CVPN3000/ASA/PIX7x-Tunnel-Group-Name	RA_VPN
OriginalUserName	user1
NetworkDeviceProfileId	b0699505-3150-4215-a80e-6753d45bf56c
IsThirdPartyDeviceFlow	false
CVPN3000/ASA/PIX7x-Client-Type	2
AcsSessionID	driverap-ISE-2-7/417494978/23
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	Guest Users
AuthenticationStatus	AuthenticationPassed
IdentityPolicyMatchedRule	Default
AuthorizationPolicyMatchedRule	Static IP Address User 1
ISEPolicySetName	Default
IdentitySelectionMatchedRule	Default
DTLSSupport	Unknown
HostIdentityGroup	Endpoint Identity Groups:Profiled:Workstation
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types



IPSEC	IPSEC#Is IPSEC Device#No
EnableFlag	Enabled
RADIUS Username	user1
Device IP Address	192.168.0.100
CPMSessionID	c0a800640000c000614bc1d0
Called-Station-ID	192.168.0.100

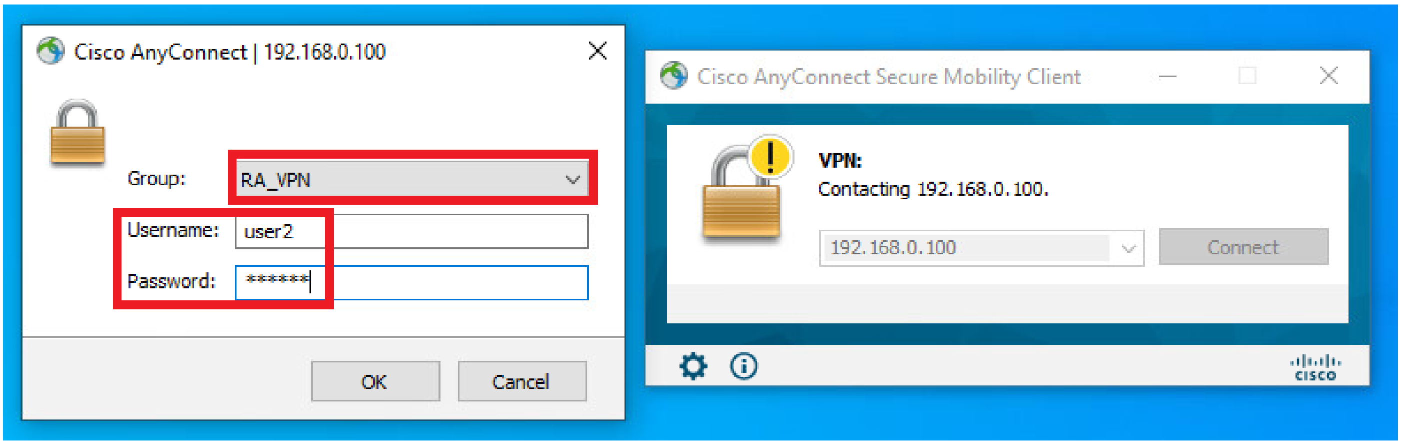
CiscoAVPair	mdm-tlv=device-platform=win,
	mdm-tlv=device-mac=00-50-56-96-46-6f,
	mdm-tlv=device-platform-version=10.0.18362 ,
	mdm-tlv=device-public-mac=00-50-56-96-46-6f,
	mdm-tlv=ac-user-agent=AnyConnect Windows 4.10.02086,
	mdm-tlv=device-type=VMware, Inc. VMware Virtual Platform,
	mdm-tlv=device-uid-global=158F88E0DDF52F3F2CDE2431456F4BAA2AE2C0B3,
	mdm-tlv=device-uid=3C98407071FB07B2FB16F1246211B440B59BC717E37D3BBCD3DF94A9CBB8D344,
	audit-session-id=c0a800640000c000614bc1d0,
	ip:source-ip=192.168.0.101,
	coa-push=true

Result

Framed-IP-Address	10.0.50.101
Class	CACS:c0a800640000c000614bc1d0:driverap-ISE-2-7/417494978/23
cisco-av-pair	profile-name=Windows10-Workstation
LicenseTypes	Base license consumed

Session Events

2단계. FTD 헤드엔드에 연결하고(여기에 Windows 시스템이 사용됨) *사용자2* 자격 증명을 입력합니다.



Cisco AnyConnect | 192.168.0.100

Group: RA_VPN

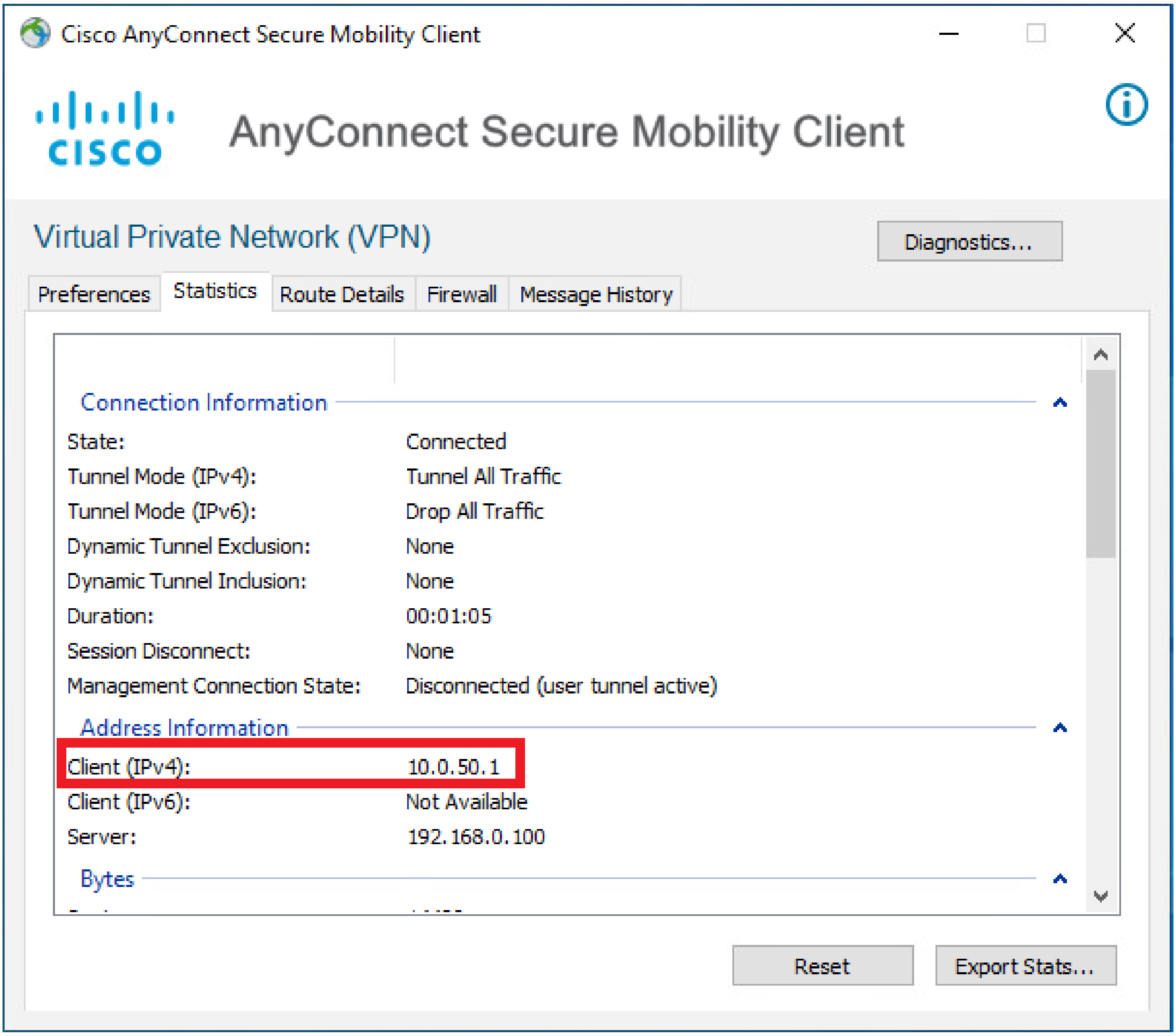
Username: user2

Password: ******

Cisco AnyConnect Secure Mobility Client

VPN:
Contacting 192.168.0.100.

Address **Information** 섹션에는 할당된 IP 주소가 실제로 FMC를 통해 구성된 IPv4 로컬 풀에서 사용 가능한 첫 번째 IP 주소임을 보여 줍니다.



Cisco AnyConnect Secure Mobility Client

AnyConnect Secure Mobility Client

Virtual Private Network (VPN)

Connection Information

State: Connected

Tunnel Mode (IPv4): Tunnel All Traffic

Tunnel Mode (IPv6): Drop All Traffic

Dynamic Tunnel Exclusion: None

Dynamic Tunnel Inclusion: None

Duration: 00:01:05

Session Disconnect: None

Management Connection State: Disconnected (user tunnel active)

Address Information

Client (IPv4): 10.0.50.1

Client (IPv6): Not Available

Server: 192.168.0.100

Bytes

FTD의 **debug radius all** 명령 출력은 다음과 같습니다.

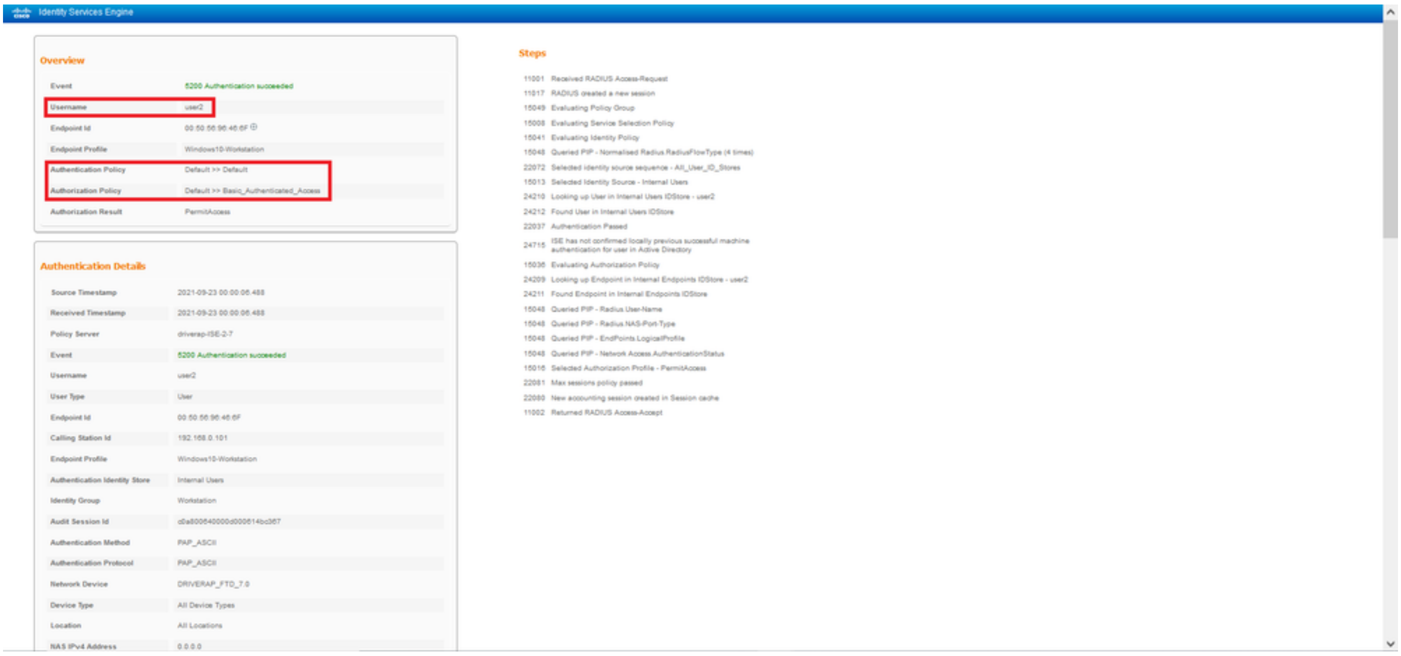
```
firepower# SVC message: t/s=5/16: The user has requested to disconnect the connection.
webvpn_svc_np_tear_down: no ACL
webvpn_svc_np_tear_down: no IPv6 ACL
```

```
np_svc_destroy_session(0xA000)
radius mkreq: 0x15
alloc_rip 0x0000145d043b6460
new request 0x15 --> 4 (0x0000145d043b6460)
got user 'user2'
got password
add_req 0x0000145d043b6460 session 0x15 id 4
RADIUS_REQUEST
radius.c: rad_mkpkt
rad_mkpkt: ip:source-ip=192.168.0.101

RADIUS packet decode (authentication request)


RADIUS packet decode (response)

--------------------------------------
Raw packet data (length = 130).....
02 04 00 82 a6 67 35 9e 10 36 93 18 1f 1b 85 37 | .....g5..6.....7
b6 c3 18 4f 01 07 75 73 65 72 32 19 3d 43 41 43 | ...O..user2.=CAC
53 3a 63 30 61 38 30 30 36 34 30 30 30 30 62 30 | S:c0a800640000b0
30 30 36 31 34 62 63 30 61 33 3a 64 72 69 76 65 | 00614bc0a3:drive
72 61 70 2d 49 53 45 2d 32 2d 37 2f 34 31 37 34 | rap-ISE-2-7/4174
39 34 39 37 38 2f 32 32 1a 2a 00 00 00 09 01 24 | 94978/22.*.....$
70 72 6f 66 69 6c 65 2d 6e 61 6d 65 3d 57 69 6e | profile-name=Win
64 6f 77 73 31 30 2d 57 6f 72 6b 73 74 61 74 69 | dows10-Workstati
6f 6e | on

Parsed packet data.....
Radius: Code = 2 (0x02)
Radius: Identifier = 4 (0x04)
Radius: Length = 130 (0x0082)
Radius: Vector: A667359E103693181F1B8537B6C3184F
Radius: Type = 1 (0x01) User-Name
Radius: Length = 7 (0x07)
Radius: Value (String) =
75 73 65 72 32 | user2
Radius: Type = 25 (0x19) Class
Radius: Length = 61 (0x3D)
Radius: Value (String) =
43 41 43 53 3a 63 30 61 38 30 30 36 34 30 30 30 | CACS:c0a80064000
30 62 30 30 30 36 31 34 62 63 30 61 33 3a 64 72 | 0b000614bc0a3:dr
69 76 65 72 61 70 2d 49 53 45 2d 32 2d 37 2f 34 | iverap-ISE-2-7/4
31 37 34 39 34 39 37 38 2f 32 32 | 17494978/22
Radius: Type = 26 (0x1A) Vendor-Specific
Radius: Length = 42 (0x2A)
Radius: Vendor ID = 9 (0x00000009)
Radius: Type = 1 (0x01) Cisco-AV-pair
Radius: Length = 36 (0x24)
Radius: Value (String) =
70 72 6f 66 69 6c 65 2d 6e 61 6d 65 3d 57 69 6e | profile-name=Win
64 6f 77 73 31 30 2d 57 6f 72 6b 73 74 61 74 69 | dows10-Workstati
6f 6e | on
rad_procpkt: ACCEPT
Got AV-Pair with value profile-name=Windows10-Workstation
RADIUS_ACCESS_ACCEPT: normal termination
RADIUS_DELETE
remove_req 0x0000145d043b6460 session 0x15 id 4
free_rip 0x0000145d043b6460
radius: send queue empty
```

FTD 로그는 다음과 같습니다.

```
<omitted output>
Sep 22 2021 23:59:26: %FTD-6-725002: Device completed SSL handshake with client
Outside_Int:192.168.0.101/60459 to 192.168.0.100/443 for TLSv1.2 session
Sep 22 2021 23:59:35: %FTD-7-609001: Built local-host Outside_Int:172.16.0.8
Sep 22 2021 23:59:35: %FTD-6-113004: AAA user authentication Successful : server = 172.16.0.8 :
user = user2
Sep 22 2021 23:59:35: %FTD-6-113009: AAA retrieved default group policy (DfltGrpPolicy) for user
= user2
Sep 22 2021 23:59:35: %FTD-6-113008: AAA transaction status ACCEPT : user = user2
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.radius["1"]["1"] = user2
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.radius["25"]["1"] = CACS:c0a800640000d000614bc367:driverap-ISE-2-7/417494978/24
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.cisco.grouppolicy = DfltGrpPolicy
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.cisco.username = user2
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.cisco.username1 = user2
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.cisco.username2 =
Sep 22 2021 23:59:35: %FTD-7-734003: DAP: User user2, Addr 192.168.0.101: Session Attribute
aaa.cisco.tunnelgroup = RA_VPN
Sep 22 2021 23:59:35: %FTD-6-734001: DAP: User user2, Addr 192.168.0.101, Connection AnyConnect:
The following DAP records were selected for this connection: DfltAccessPolicy
Sep 22 2021 23:59:35: %FTD-6-113039: Group <DfltGrpPolicy> User <user2> IP <192.168.0.101>
AnyConnect parent session started.
<omitted output>
Sep 22 2021 23:59:52: %FTD-6-725002: Device completed SSL handshake with client
Outside_Int:192.168.0.101/60470 to 192.168.0.100/443 for TLSv1.2 session
Sep 22 2021 23:59:52: %FTD-7-737035: IPAA: Session=0x0000d000, 'IPv4 address request' message
queued
Sep 22 2021 23:59:52: %FTD-7-737035: IPAA: Session=0x0000d000, 'IPv6 address request' message
queued
Sep 22 2021 23:59:52: %FTD-7-737001: IPAA: Session=0x0000d000, Received message 'IPv4 address
request'
Sep 22 2021 23:59:52: %FTD-5-737003: IPAA: Session=0x0000d000, DHCP configured, no viable
servers found for tunnel-group 'RA_VPN'
Sep 22 2021 23:59:52: %FTD-7-737400: POOLIP: Pool=AC_Pool, Allocated 10.0.50.1 from pool
Sep 22 2021 23:59:52: %FTD-7-737200: VPNFIP: Pool=AC_Pool, Allocated 10.0.50.1 from pool
Sep 22 2021 23:59:52: %FTD-6-737026: IPAA: Session=0x0000d000, Client assigned 10.0.50.1 from
local pool AC_Pool
Sep 22 2021 23:59:52: %FTD-6-737006: IPAA: Session=0x0000d000, Local pool request succeeded for
tunnel-group 'RA_VPN'
Sep 22 2021 23:59:52: %FTD-7-737001: IPAA: Session=0x0000d000, Received message 'IPv6 address
request'
Sep 22 2021 23:59:52: %FTD-5-737034: IPAA: Session=0x0000d000, IPv6 address: no IPv6 address
available from local pools
Sep 22 2021 23:59:52: %FTD-5-737034: IPAA: Session=0x0000d000, IPv6 address: callback failed
during IPv6 request
Sep 22 2021 23:59:52: %FTD-4-722041: TunnelGroup <RA_VPN> GroupPolicy <DfltGrpPolicy> User
<user2> IP <192.168.0.101> No IPv6 address available for SVC connection
Sep 22 2021 23:59:52: %FTD-7-609001: Built local-host Outside_Int:10.0.50.1
Sep 22 2021 23:59:52: %FTD-5-722033: Group <DfltGrpPolicy> User <user2> IP <192.168.0.101> First
TCP SVC connection established for SVC session.
Sep 22 2021 23:59:52: %FTD-6-722022: Group <DfltGrpPolicy> User <user2> IP <192.168.0.101> TCP
SVC connection established without compression
Sep 22 2021 23:59:52: %FTD-7-746012: user-identity: Add IP-User mapping 10.0.50.1 - LOCAL\user2
Succeeded - VPN user
Sep 22 2021 23:59:52: %FTD-6-722055: Group <DfltGrpPolicy> User <user2> IP <192.168.0.101>
Client Type: Cisco AnyConnect VPN Agent for Windows 4.10.02086
Sep 22 2021 23:59:52: %FTD-4-722051: Group
```

ISE의 RADIUS Live 로그에는 다음이 표시됩니다.



Overview

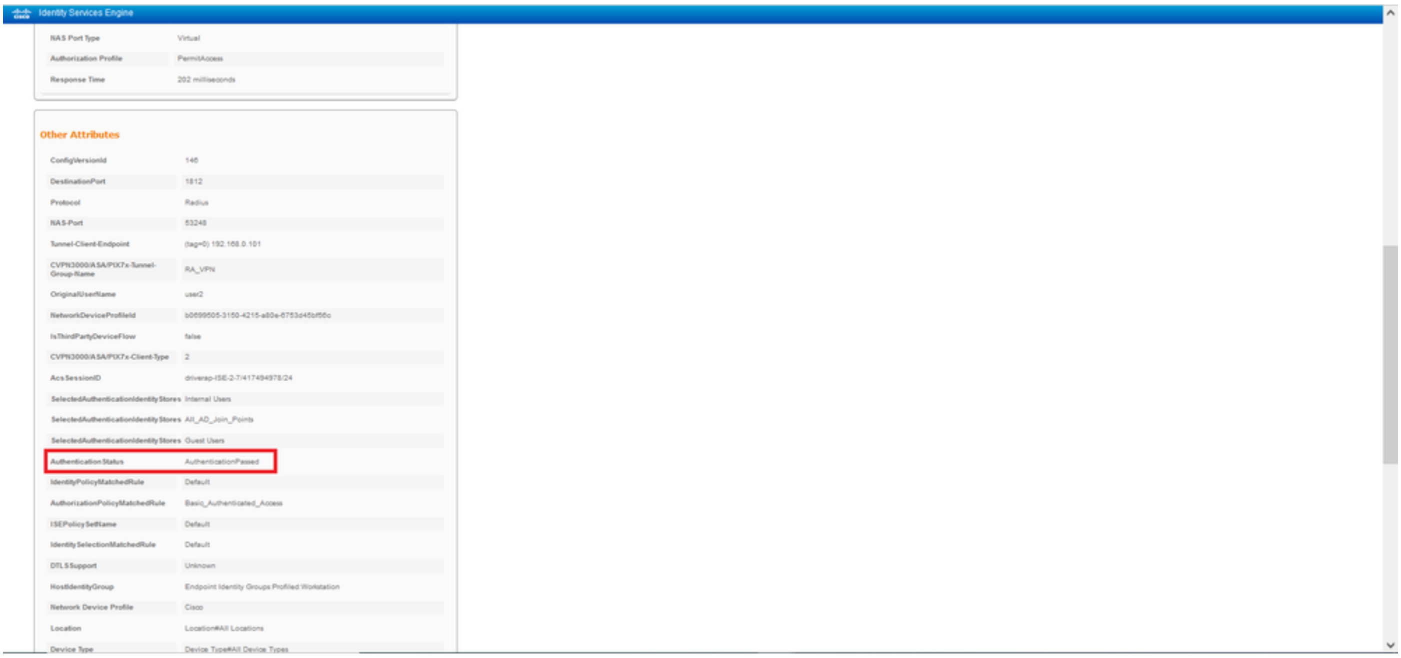
Event	5200 Authentication succeeded
Username	user2
Endpoint Id	00:50:56:96:46:6F
Endpoint Profile	Windows10-Workstation
Authentication Policy	Default >> Default
Authorization Policy	Default >> Basic_Authenticated_Access
Authorization Result	PermitAccess

Authentication Details

Source Timestamp	2021-09-23 00:00:06.488
Received Timestamp	2021-09-23 00:00:06.488
Policy Server	driverap-ISE-2-7
Event	5200 Authentication succeeded
Username	user2
User Type	User
Endpoint Id	00:50:56:96:46:6F
Calling Station Id	192.168.0.101
Endpoint Profile	Windows10-Workstation
Authentication Identity Store	Internal Users
Identity Group	Workstation
Audit Session Id	c0a800640000d000614bc367
Authentication Method	PAP_ASCII
Authentication Protocol	PAP_ASCII
Network Device	DRIVERAP_FTD_7.0
Device Type	All Device Types
Location	All Locations
NAS IPv4 Address	0.0.0.0

Steps

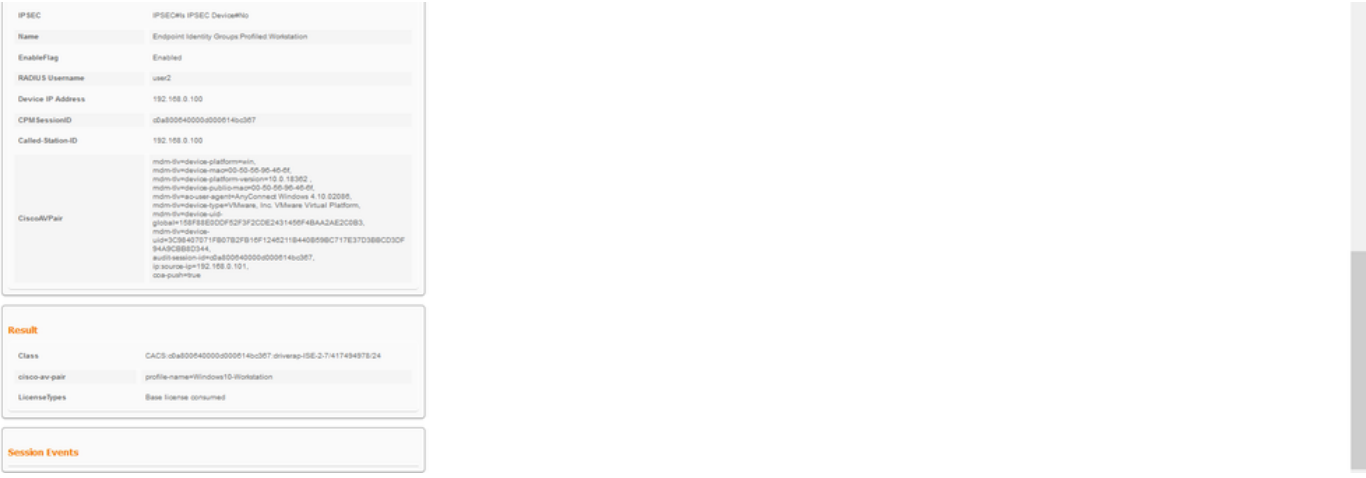
11001	Received RADIUS Access-Request
11017	RADIUS created a new session
15049	Evaluating Policy Group
15008	Evaluating Service Selection Policy
15041	Evaluating Identity Policy
15048	Queried PIP - Normalised Radius.RadiusFlowType (4 times)
22072	Selected identity source sequence - All_User_ID_Stores
15013	Selected Identity Source - Internal Users
24210	Looking up User in Internal Users IDStore - user2
24212	Found User in Internal Users IDStore
22037	Authentication Passed
24715	ISE has not confirmed locally previous successful machine authentication for user in Active Directory
15036	Evaluating Authorization Policy
24209	Looking up Endpoint in Internal Endpoints IDStore - user2
24211	Found Endpoint in Internal Endpoints IDStore
15048	Queried PIP - Radius.User-Name
15048	Queried PIP - Radius.NAS-Port-Type
15048	Queried PIP - EndPoints.LogicalProfile
15048	Queried PIP - Network Access.AuthenticationStatus
15016	Selected Authorization Profile - PermitAccess
22081	Max sessions policy passed
22080	New accounting session created in Session cache
11002	Returned RADIUS Access-Accept



NAS Port Type	Virtual
Authorization Profile	PermitAccess
Response Time	202 milliseconds

Other Attributes

ConfigVersionId	146
DestinationPort	1812
Protocol	Radius
NAS-Port	53248
Tunnel-Client-Endpoint	(tag=0) 192.168.0.101
CVPN3000/ASA/PIX7x-Tunnel-Group-Name	RA_VPN
OriginalUserName	user2
NetworkDeviceProfileId	b0699505-3150-4215-a80e-6753d45bf56c
IsThirdPartyDeviceFlow	false
CVPN3000/ASA/PIX7x-Client-Type	2
AcsSessionID	driverap-ISE-2-7/417494978/24
SelectedAuthenticationIdentityStores	Internal Users
SelectedAuthenticationIdentityStores	All_AD_Join_Points
SelectedAuthenticationIdentityStores	Guest Users
AuthenticationStatus	AuthenticationPassed
IdentityPolicyMatchedRule	Default
AuthorizationPolicyMatchedRule	Basic_Authenticated_Access
ISEPolicySetName	Default
IdentitySelectionMatchedRule	Default
DTLSSupport	Unknown
HostIdentityGroup	Endpoint Identity Groups:Profiled:Workstation
Network Device Profile	Cisco
Location	Location#All Locations
Device Type	Device Type#All Device Types



IPSEC	IPSEC#Is IPSEC Device#No
Name	Endpoint Identity Groups:Profiled:Workstation
EnableFlag	Enabled
RADIUS Username	user2
Device IP Address	192.168.0.100
CPMSessionID	c0a800640000d000614bc367
Called-Station-ID	192.168.0.100

CiscoAVPair	mdm-tlv=device-platform=win,
	mdm-tlv=device-mac=00-50-56-96-46-6f,
	mdm-tlv=device-platform-version=10.0.18362 ,
	mdm-tlv=device-public-mac=00-50-56-96-46-6f,
	mdm-tlv=ac-user-agent=AnyConnect Windows 4.10.02086,
	mdm-tlv=device-type=VMware, Inc. VMware Virtual Platform,
	mdm-tlv=device-uid-
	global=158F88E0DDF52F3F2CDE2431456F4BAA2AE2C0B3,
	mdm-tlv=device-
	uid=3C98407071FB07B2FB16F1246211B440B598C717E37D3B8CD3DF
	94A9CBB8D344,
	audit-session-id=c0a800640000d000614bc367,
	ip:source-ip=192.168.0.101,
	coa-push=true

Result

Class	CACS:c0a800640000d000614bc367:driverap-ISE-2-7/417494978/24
cisco-av-pair	profile-name=Windows10-Workstation
LicenseTypes	Base license consumed

Session Events

참고: AnyConnect 클라이언트 간의 중복 IP 주소 충돌을 방지하려면 FTD IP 로컬 풀 및 ISE 권한 부여 정책 모두에서 IP 주소 할당에 서로 다른 IP 주소 범위를 사용해야 합니다. 이 컨피그레이션 예에서 FTD는 10.0.50.1~10.0.50.100의 IPv4 로컬 풀로 구성되었으며 ISE 서버는 10.0.50.101의 고정 IP 주소를 할당합니다.

문제 해결

이 섹션에서는 컨피그레이션 문제를 해결하는 데 사용할 수 있는 정보를 제공합니다.

FTD에서:

- **디버그 radius 모두**

ISE에서:

- RADIUS 라이브 로그