Configure FMC and FTD with LDAP for External Authentication

Contents

Introduction

This document describes how to enable Microsoft Lightweight Directory Access Protocol (LDAP) External Authentication with Cisco FMC and FTD.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco Firepower Threat Defense (FTD)
- Cisco Firepower Management Center (FMC)
- Microsoft LDAP

Components Used

The information in this document is based on these software and hardware versions:

- FTD 6.5.0-123
- FMC 6.5.0-115
- Microsoft Server 2012

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. If your network is live, ensure that you understand the potential impact of any command.

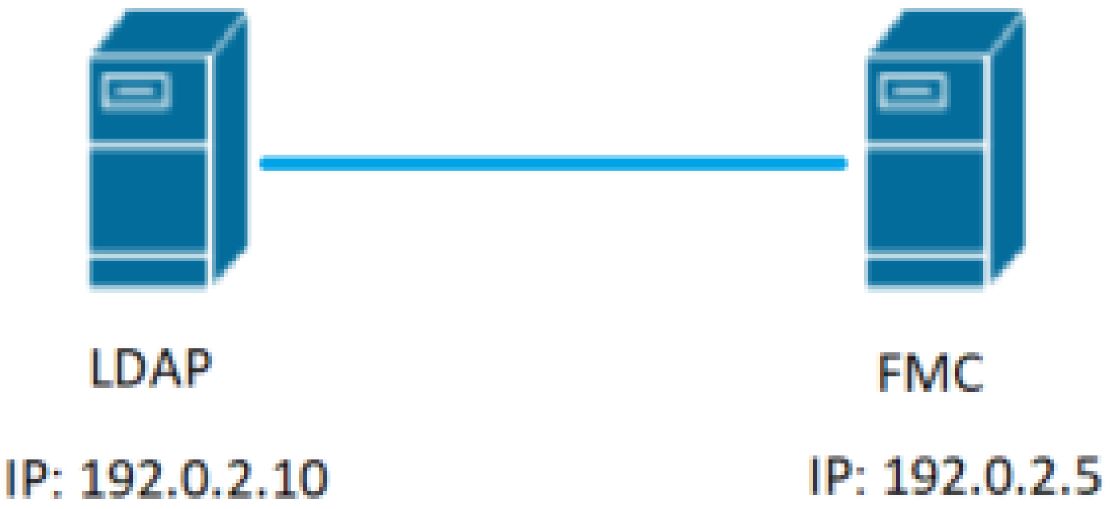
Background Information

The FMC and managed devices include a default admin account for management access. You can add custom user accounts on the FMC and on managed devices, either as internal users or, if supported for your model, as external users on an LDAP or RADIUS server. External user authentication is supported for FMC and FTD.

• Internal user - The FMC/FTD device checks a local database for user authentication.

• External user - If the user is not present in the local database, the system information from an external LDAP or RADIUS authentication server populates its user database.

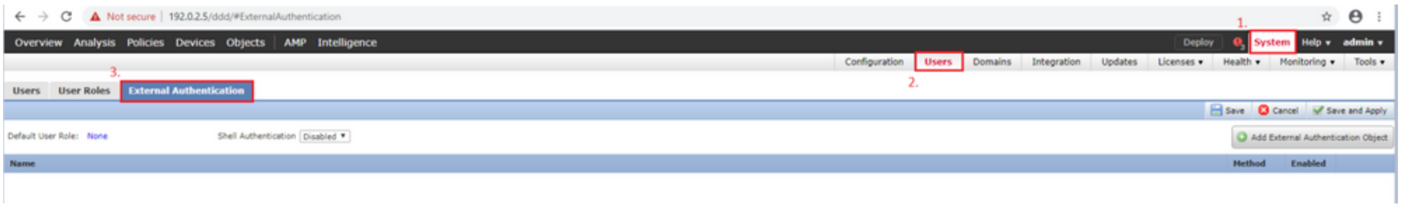
Network Diagram



Configure

Basic LDAP Configuration in FMC GUI

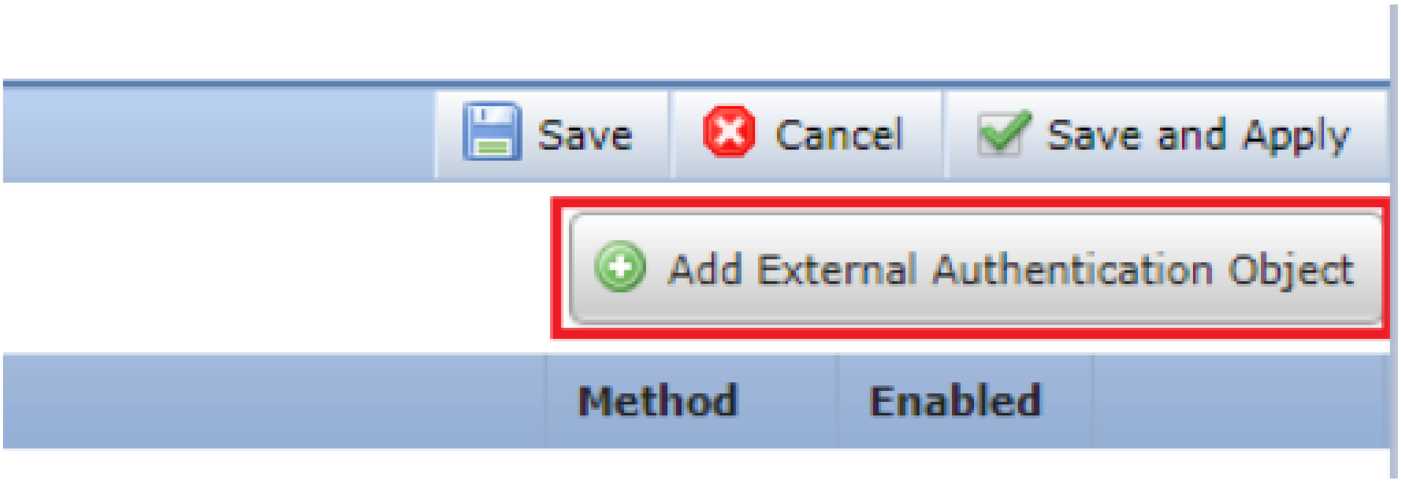
Step 1. Navigate to System > Users > External Authentication:



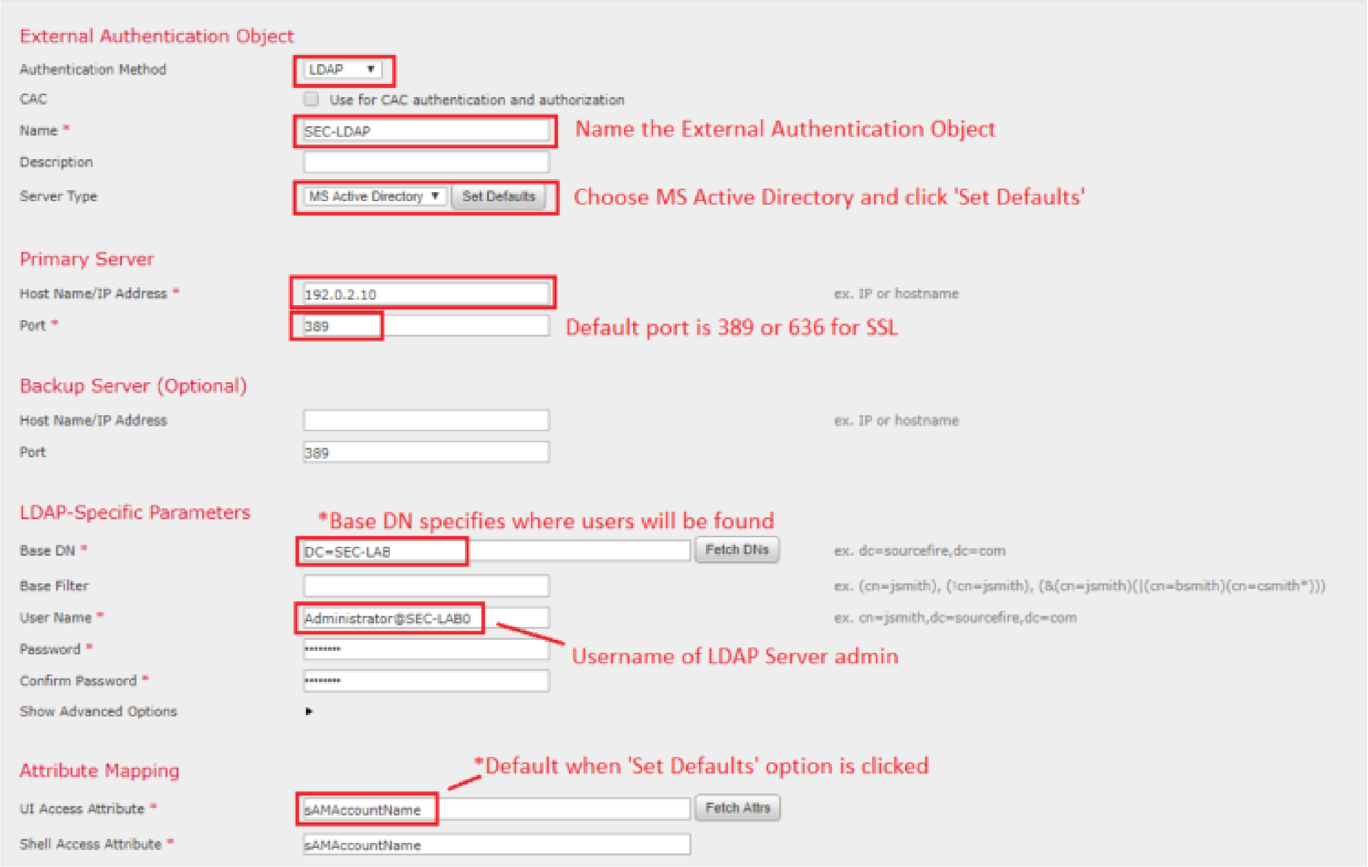
Default User Role: None

Shell Authentication Disabled ▾

Step 2. Choose Add External Authentication Object:



Step 3. Complete the required fields:



External Authentication Object

Authentication Method LDAP ▾

CAC □ Use for CAC authentication and authorization

Name * SEC-LDAP — Name the External Authentication Object

Description

Server Type MS Active Directory ▾ Set Defaults — Choose MS Active Directory and click 'Set Defaults'

Primary Server

Host Name/IP Address * 192.0.2.10 — ex. IP or hostname

Port * 389 — Default port is 389 or 636 for SSL

Backup Server (Optional)

Host Name/IP Address — ex. IP or hostname

Port 389

LDAP-Specific Parameters

*Base DN specifies where users will be found

Base DN * DC=SEC-LAB Fetch DNs — ex. dc=sourcefire,dc=com

Base Filter — ex. (cn=jsmith), (!cn=jsmith), (&(cn=jsmith)(|(cn=bsmith)(cn=csmith*)))

User Name * Administrator@SEC-LAB0 — ex. cn=jsmith,dc=sourcefire,dc=com

Username of LDAP Server admin

Password * ••••••••

Confirm Password * ••••••••

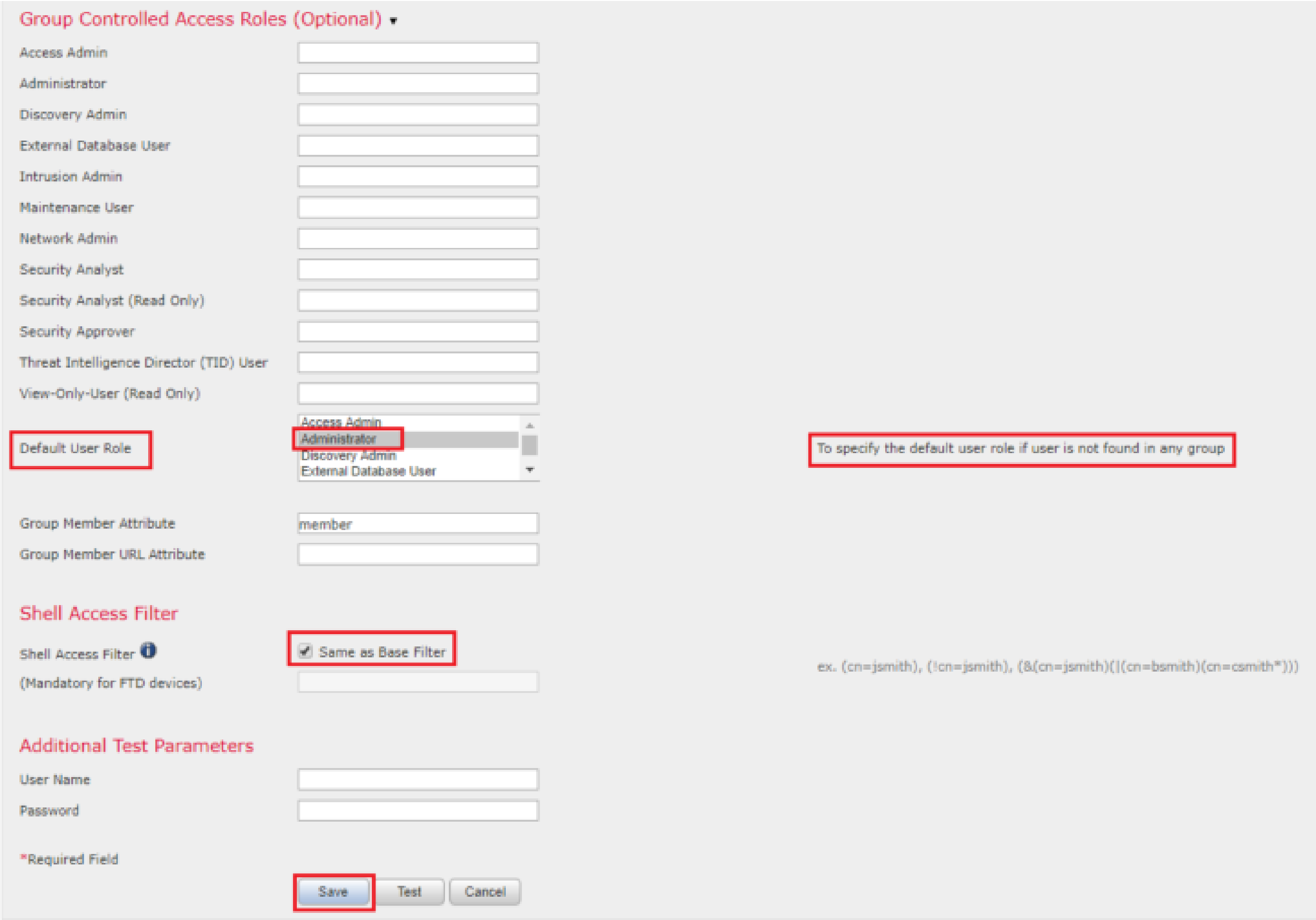
Show Advanced Options ▸

Attribute Mapping

*Default when 'Set Defaults' option is clicked

UI Access Attribute * sAMAccountName Fetch Attrs

Shell Access Attribute * sAMAccountName



Group Controlled Access Roles (Optional) ▾

Access Admin

Administrator

Discovery Admin

External Database User

Intrusion Admin

Maintenance User

Network Admin

Security Analyst

Security Analyst (Read Only)

Security Approver

Threat Intelligence Director (TID) User

View-Only-User (Read Only)

Default User Role: Access Admin / Administrator / Discovery Admin / External Database User (Administrator selected)

To specify the default user role if user is not found in any group

Group Member Attribute: member

Group Member URL Attribute

Shell Access Filter

Shell Access Filter: ☑ Same as Base Filter

(Mandatory for FTD devices)

ex. (cn=jsmith), (!cn=jsmith), (&(cn=jsmith)(|(cn=bsmith)(cn=csmith*)))

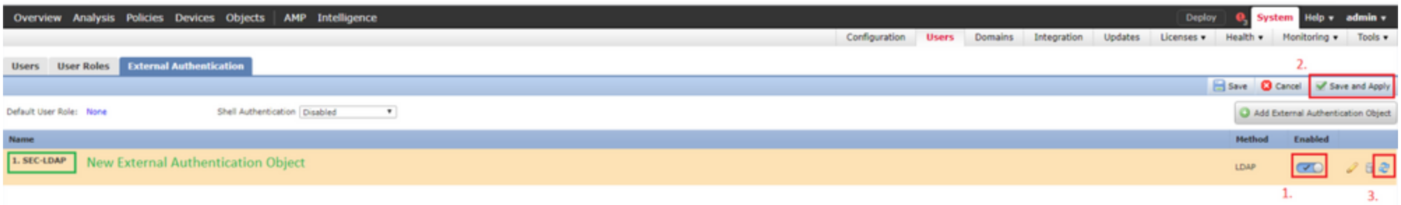
Additional Test Parameters

User Name

Password

*Required Field

Step 4. Enable the External AuthenticationObject and **Save**:



Default User Role: None

Shell Authentication: Disabled

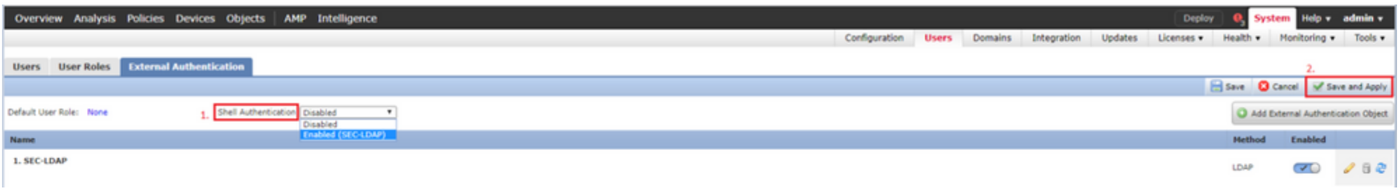
Name	Method	Enabled
1. SEC-LDAP New External Authentication Object	LDAP	✓

Shell Access for External Users

The FMC supports two different internal admin users: one for the web interface, and another with CLI access. This means there is a clear distinction between who can access the GUI and who can also access CLI. At the time of installation, the password for the default admin user is synchronized in order to be the same on both GUI and CLI, however, they are tracked by different internal mechanisms, and can eventually be different.

LDAP External users must also be granted shell access.

Step 1. Navigate to System > Users > External Authentication and click Shell Authentication drop-down box as seen in the image and **save**:



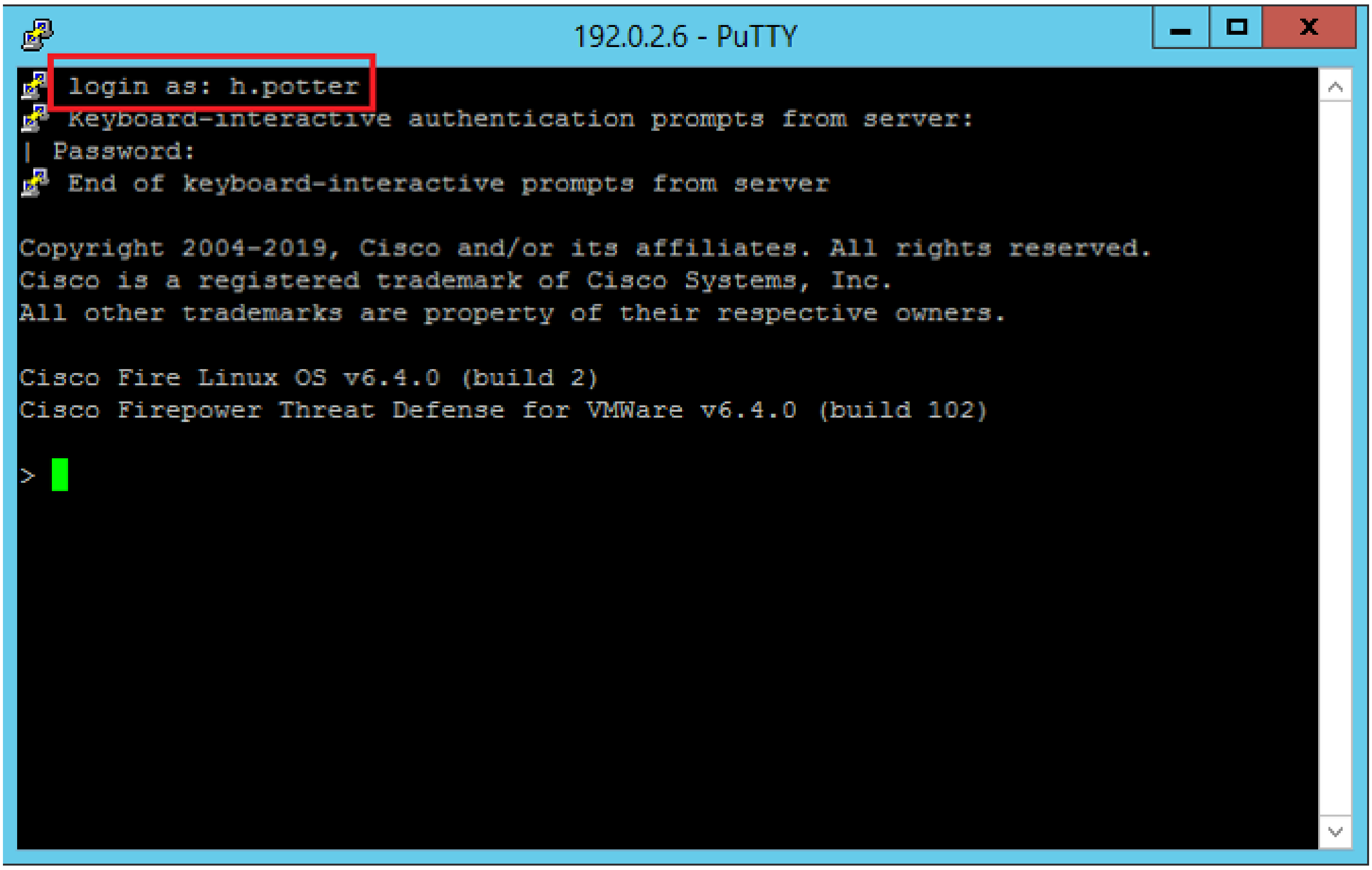
Default User Role: None

Shell Authentication: Disabled (options: Disabled, Enabled (SEC-LDAP))

Name	Method	Enabled
1. SEC-LDAP	LDAP	✓

Step 2. Deploy changes in FMC.

Once shell access for external users is configured, log in via SSH is enabled as seen in the image:



```
login as: h.potter
Keyboard-interactive authentication prompts from server:
| Password:
End of keyboard-interactive prompts from server

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Cisco Fire Linux OS v6.4.0 (build 2)
Cisco Firepower Threat Defense for VMWare v6.4.0 (build 102)

>
```
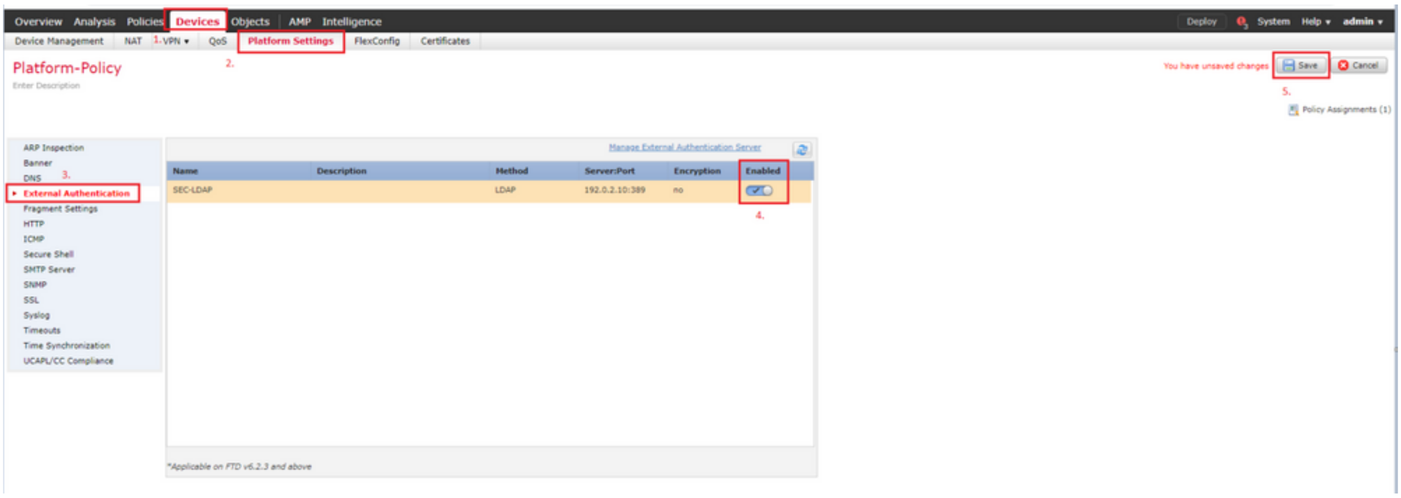

External Authentication to FTD

External authentication can be enabled on FTD.

Step 1. Navigate to Devices > Platform Settings > External Authentication. Click Enabled and **save**:



Platform-Policy

Enter Description

You have unsaved changes

Name	Description	Method	Server:Port	Encryption	Enabled
SEC-LDAP		LDAP	192.0.2.10:389	no	✓

*Applicable on FTD v6.2.3 and above

User Roles

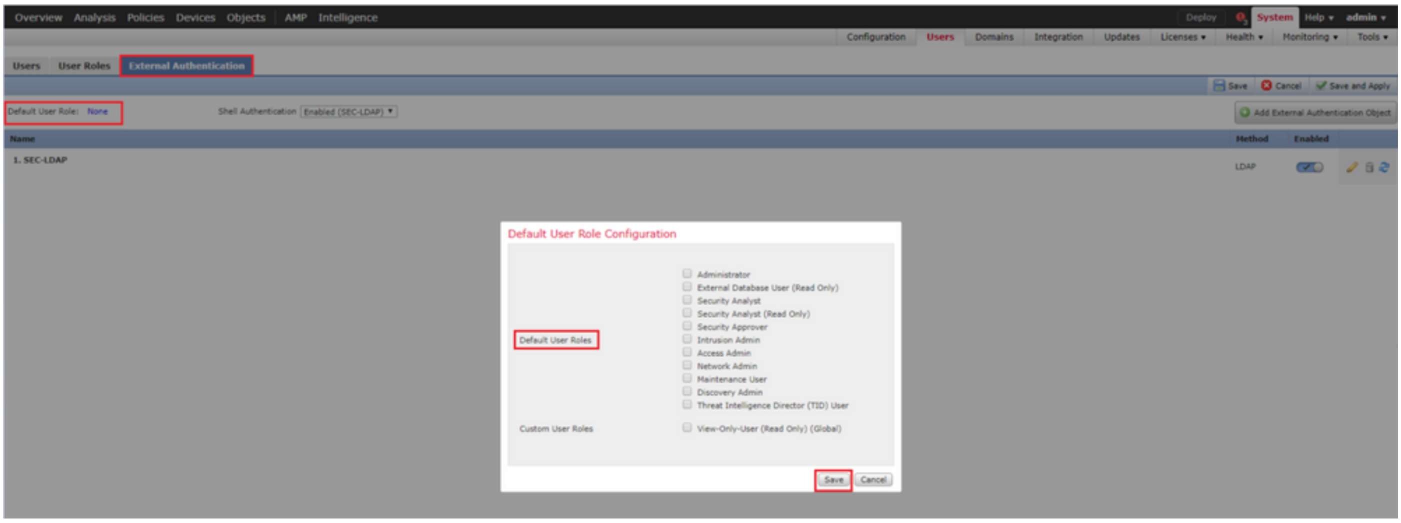
User privileges are based on the assigned user role. You can also create custom user roles with access privileges tailored to the needs of your organization or you can use predefined roles such as Security Analyst and Discovery Admin.

There are two types of user roles:

1. Web Interface User Roles
2. CLI User Roles

For a full list of predefined roles and more information, refer to: User Roles.

In order to configure a default user role for all External Authentication Objects, navigate to System > Users > External Authentication > Default User Role. Choose the default user role you like to assign and click Save.



Default User Role: None

Shell Authentication: Enabled (SEC-LDAP) ▾

Name	Method	Enabled
1. SEC-LDAP	LDAP	✓

Default User Role Configuration

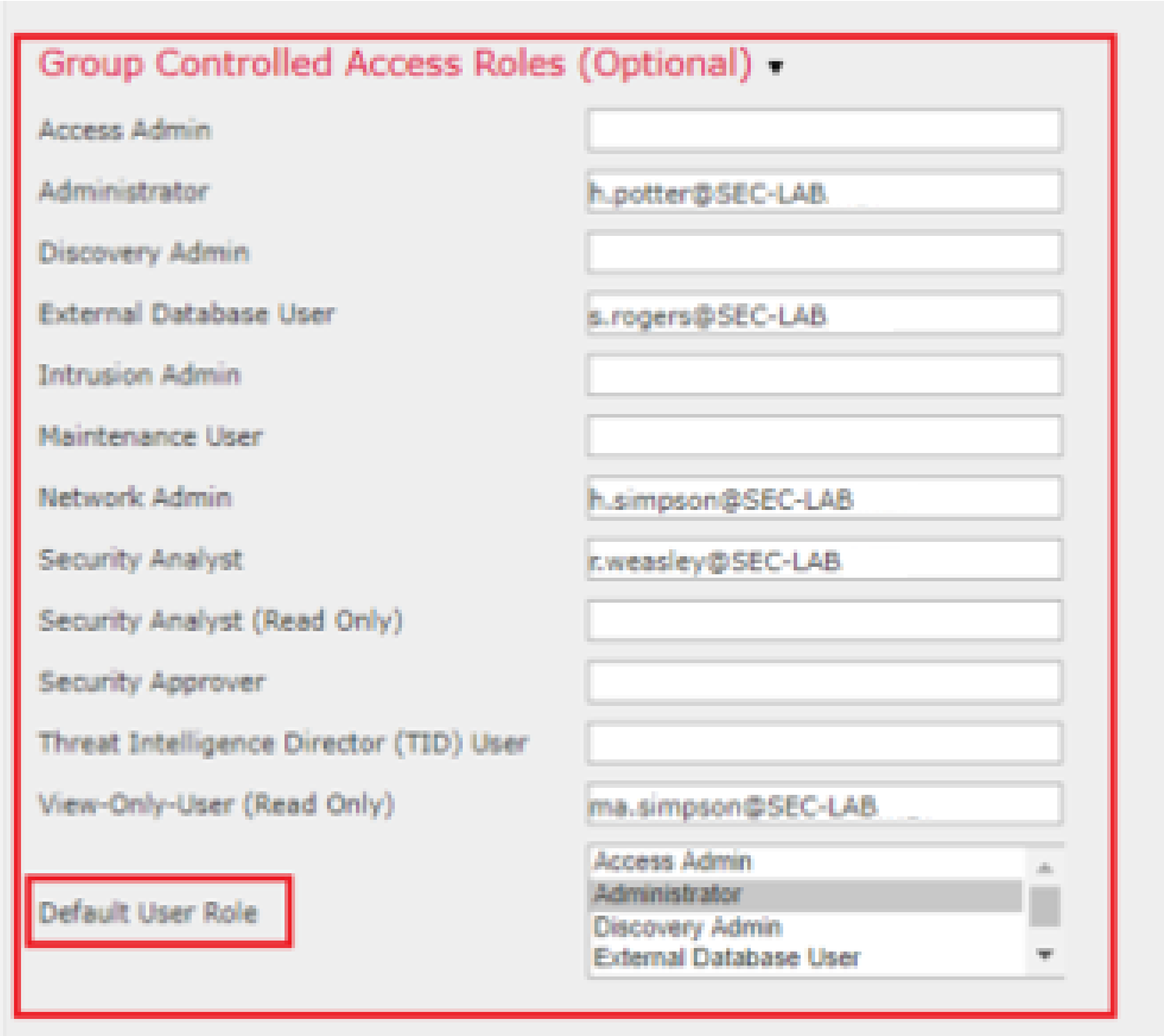
Default User Roles

- □ Administrator
- □ External Database User (Read Only)
- □ Security Analyst
- □ Security Analyst (Read Only)
- □ Security Approver
- □ Intrusion Admin
- □ Access Admin
- □ Network Admin
- □ Maintenance User
- □ Discovery Admin
- □ Threat Intelligence Director (TID) User

Custom User Roles

- □ View-Only-User (Read Only) (Global)

In order to choose a default user role or assign specific roles to specific users in a particular object group, you can choose the object and navigate to Group Controlled Access Roles as seen in the image:



Group Controlled Access Roles (Optional) ▾

Access Admin	
Administrator	h.potter@SEC-LAB
Discovery Admin	
External Database User	s.rogers@SEC-LAB
Intrusion Admin	
Maintenance User	
Network Admin	h.simpson@SEC-LAB
Security Analyst	r.weasley@SEC-LAB
Security Analyst (Read Only)	
Security Approver	
Threat Intelligence Director (TID) User	
View-Only-User (Read Only)	ma.simpson@SEC-LAB
Default User Role	Access Admin Administrator Discovery Admin External Database User

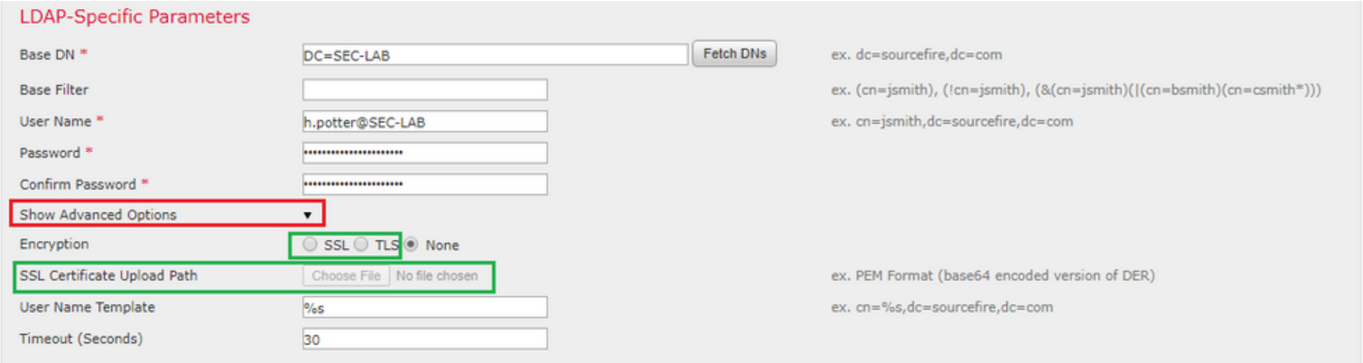
SSL or TLS

DNS must be configured in the FMC. This is because the Subject value of the Certificate must match the Authentication Object Primary Server Hostname. Once Secure LDAP is configured, packet captures no longer show clear text bind requests.

SSL changes the default port to 636, and TLS keeps it as 389.

Note: TLS encryption requires a certificate on all platforms. For SSL, the FTD also requires a certificate. For other platforms, SSL does not require a certificate. However, it is recommended that you always upload a certificate for SSL in order to prevent man-in-the-middle attacks.

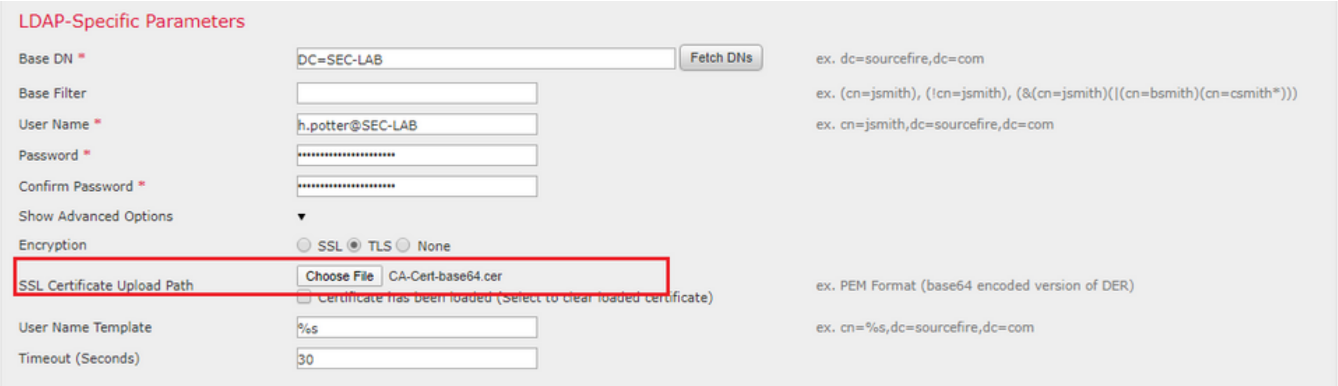
Step 1. Navigate to Devices > Platform Settings > External Authentication > External Authentication Object and enter the **Advanced Options SSL/TLS** information:



LDAP-Specific Parameters

Base DN *	DC=SEC-LAB Fetch DNs	ex. dc=sourcefire,dc=com
Base Filter		ex. (cn=jsmith), (!cn=jsmith), (&(cn=jsmith)(|(cn=bsmith)(cn=csmith*)))
User Name *	h.potter@SEC-LAB	ex. cn=jsmith,dc=sourcefire,dc=com
Password *	••••••••••••••••••••	
Confirm Password *	••••••••••••••••••••	
Show Advanced Options	▼	
Encryption	○ SSL ○ TLS ● None	
SSL Certificate Upload Path	Choose File No file chosen	ex. PEM Format (base64 encoded version of DER)
User Name Template	%s	ex. cn=%s,dc=sourcefire,dc=com
Timeout (Seconds)	30	

Step 2. Upload the **certificate of the CA** who signed the certificate of the server. The certificate must be in PEM format.



LDAP-Specific Parameters

Base DN *	DC=SEC-LAB Fetch DNs	ex. dc=sourcefire,dc=com
Base Filter		ex. (cn=jsmith), (!cn=jsmith), (&(cn=jsmith)(|(cn=bsmith)(cn=csmith*)))
User Name *	h.potter@SEC-LAB	ex. cn=jsmith,dc=sourcefire,dc=com
Password *	••••••••••••••••••••••	
Confirm Password *	••••••••••••••••••••••	
Show Advanced Options	▼	
Encryption	○ SSL ● TLS ○ None	
SSL Certificate Upload Path	Choose File CA-Cert-base64.cer □ Certificate has been loaded (Select to clear loaded certificate)	ex. PEM Format (base64 encoded version of DER)
User Name Template	%s	ex. cn=%s,dc=sourcefire,dc=com
Timeout (Seconds)	30	

Step 3. **Save** the configuration.

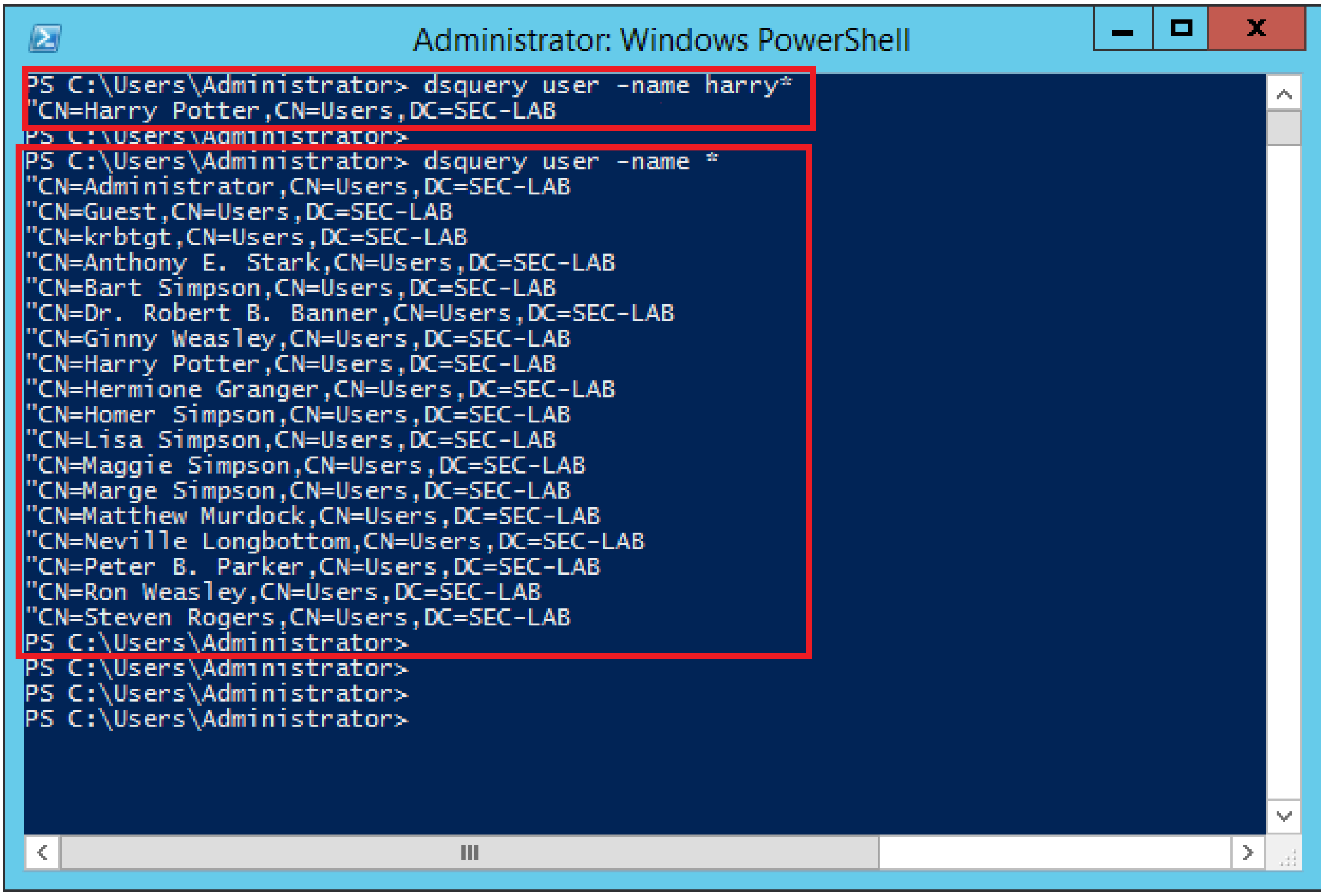
Verify

Test Search Base

Open a Windows command prompt or PowerShell where LDAP is configured and type the command: dsquery user -name <known username>.

For example:

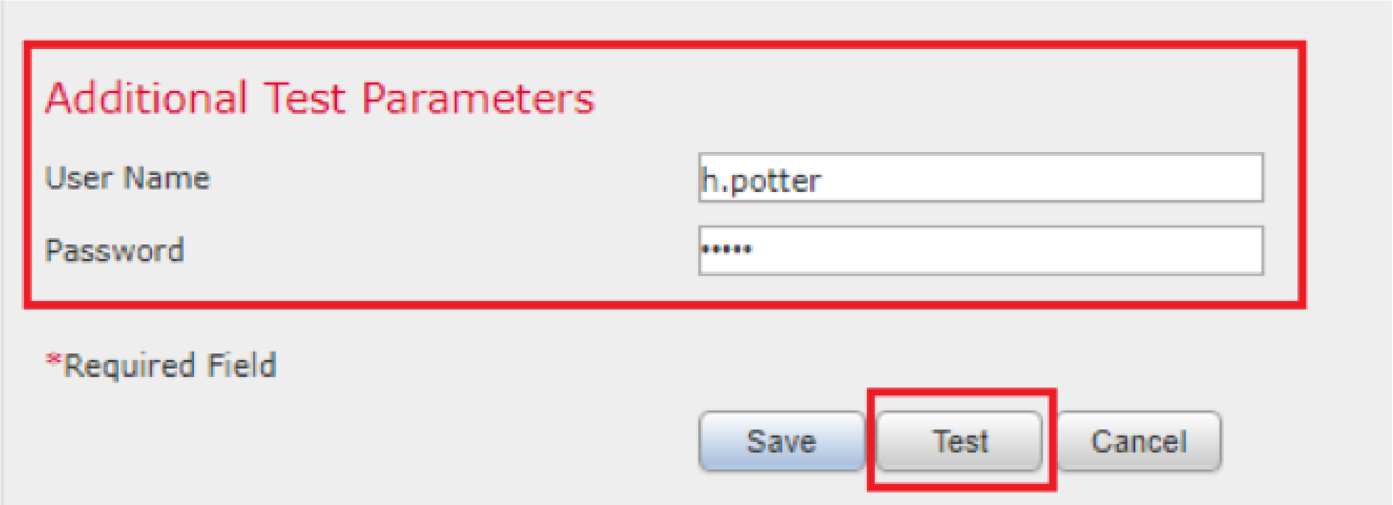
```
PS C:\Users\Administrator> dsquery user -name harry*
PS C:\Users\Administrator> dsquery user -name *
```



```
PS C:\Users\Administrator> dsquery user -name harry*
"CN=Harry Potter,CN=Users,DC=SEC-LAB
PS C:\Users\Administrator>
PS C:\Users\Administrator> dsquery user -name *
"CN=Administrator,CN=Users,DC=SEC-LAB
"CN=Guest,CN=Users,DC=SEC-LAB
"CN=krbtgt,CN=Users,DC=SEC-LAB
"CN=Anthony E. Stark,CN=Users,DC=SEC-LAB
"CN=Bart Simpson,CN=Users,DC=SEC-LAB
"CN=Dr. Robert B. Banner,CN=Users,DC=SEC-LAB
"CN=Ginny Weasley,CN=Users,DC=SEC-LAB
"CN=Harry Potter,CN=Users,DC=SEC-LAB
"CN=Hermione Granger,CN=Users,DC=SEC-LAB
"CN=Homer Simpson,CN=Users,DC=SEC-LAB
"CN=Lisa Simpson,CN=Users,DC=SEC-LAB
"CN=Maggie Simpson,CN=Users,DC=SEC-LAB
"CN=Marge Simpson,CN=Users,DC=SEC-LAB
"CN=Matthew Murdock,CN=Users,DC=SEC-LAB
"CN=Neville Longbottom,CN=Users,DC=SEC-LAB
"CN=Peter B. Parker,CN=Users,DC=SEC-LAB
"CN=Ron Weasley,CN=Users,DC=SEC-LAB
"CN=Steven Rogers,CN=Users,DC=SEC-LAB
PS C:\Users\Administrator>
PS C:\Users\Administrator>
PS C:\Users\Administrator>
PS C:\Users\Administrator>
```

Test LDAP Integration

Navigate to System > Users > External Authentication > External Authentication Object. At the bottom of the page, there is an Additional Test Parameters section as seen in the image:



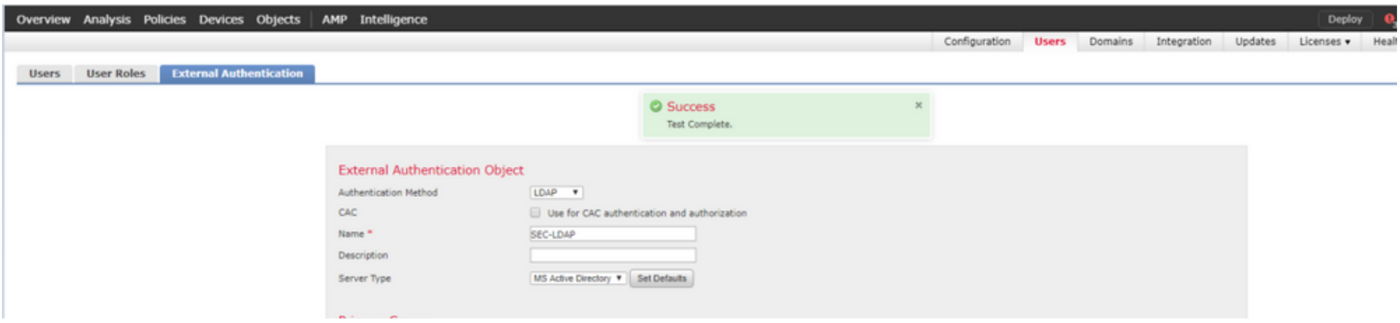
Additional Test Parameters

User Name: h.potter

Password: •••••

*Required Field

Choose **Test** in order to see the results.



Success
Test Complete.

External Authentication Object

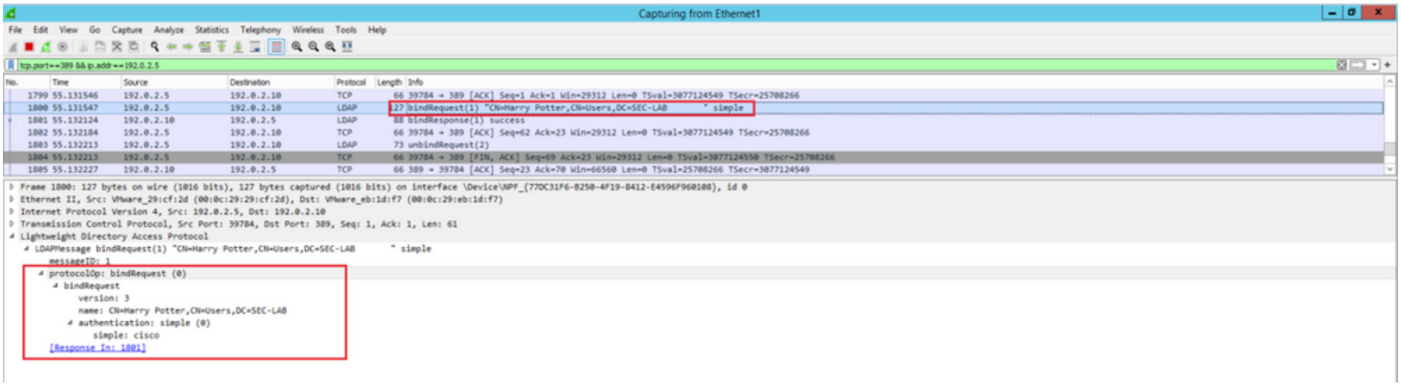
Authentication Method: LDAP

CAC: □ Use for CAC authentication and authorization

Name *: SEC-LDAP

Description:

Server Type: MS Active Directory



```
tcp.port==389 && ip.addr==192.0.2.5

No.   Time       Source      Destination  Protocol Length Info
 1799 55.131546  192.0.2.5   192.0.2.10   TCP      66 39784 → 389 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=3077124549 TSecr=25708266
 1800 55.131547  192.0.2.5   192.0.2.10   LDAP     127 bindRequest(1) "CN=Harry Potter,CN=Users,DC=SEC-LAB          " simple
 1801 55.132124  192.0.2.10  192.0.2.5    LDAP     88 bindResponse(1) success
 1802 55.132184  192.0.2.5   192.0.2.10   TCP      66 39784 → 389 [ACK] Seq=62 Ack=23 Win=29312 Len=0 TSval=3077124549 TSecr=25708266
 1803 55.132213  192.0.2.5   192.0.2.10   LDAP     73 unbindRequest(2)
 1804 55.132213  192.0.2.5   192.0.2.10   TCP      66 39784 → 389 [FIN, ACK] Seq=69 Ack=23 Win=29312 Len=0 TSval=3077124550 TSecr=25708266
 1805 55.132227  192.0.2.10  192.0.2.5    TCP      66 389 → 39784 [ACK] Seq=23 Ack=70 Win=66560 Len=0 TSval=25708266 TSecr=3077124549

▷ Frame 1800: 127 bytes on wire (1016 bits), 127 bytes captured (1016 bits) on interface \Device\NPF_{77DC31F6-8250-4F19-8412-E4596F960108}, id 0
▷ Ethernet II, Src: VMware_29:cf:2d (00:0c:29:29:cf:2d), Dst: VMware_eb:1d:f7 (00:0c:29:eb:1d:f7)
▷ Internet Protocol Version 4, Src: 192.0.2.5, Dst: 192.0.2.10
▷ Transmission Control Protocol, Src Port: 39784, Dst Port: 389, Seq: 1, Ack: 1, Len: 61
◢ Lightweight Directory Access Protocol
  ◢ LDAPMessage bindRequest(1) "CN=Harry Potter,CN=Users,DC=SEC-LAB          " simple
      messageID: 1
    ◢ protocolOp: bindRequest (0)
      ◢ bindRequest
          version: 3
          name: CN=Harry Potter,CN=Users,DC=SEC-LAB
        ◢ authentication: simple (0)
            simple: cisco
      [Response In: 1801]
```

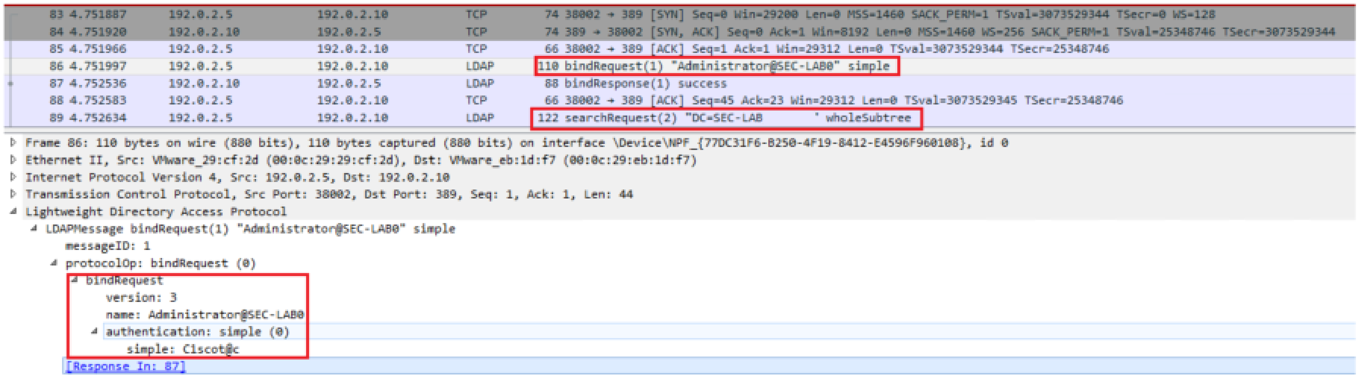
Troubleshoot

How Do FMC/FTD and LDAP Interact to Download Users

In order for FMC to be able to pull users from a Microsoft LDAP server, the FMC must first send a bind request on port 389 or 636 (SSL) with the LDAP administrator credentials. Once the LDAP server is able to authenticate FMC, it responds with a success message. Finally, FMC is able to make a request with the search Request message as described in the diagram:

<< --- FMC sends: bindRequest(1) "Administrator@SEC-LAB0" simple LDAP must respond with: bindResponse(1) success --- >> << --- FMC sends: searchRequest(2) "DC=SEC-LAB,DC=NET" wholeSubtree

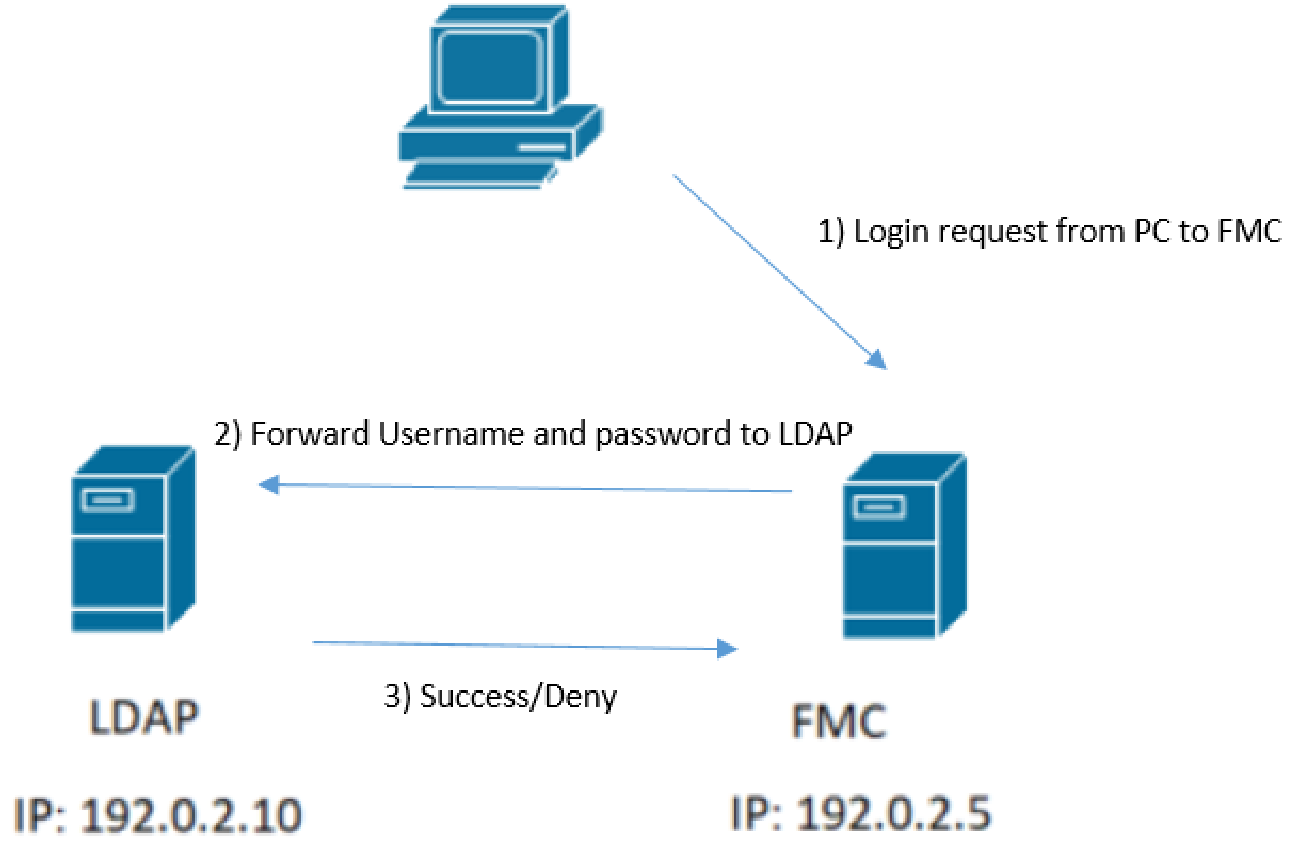
Notice that the authentication sends passwords in the clear by default:

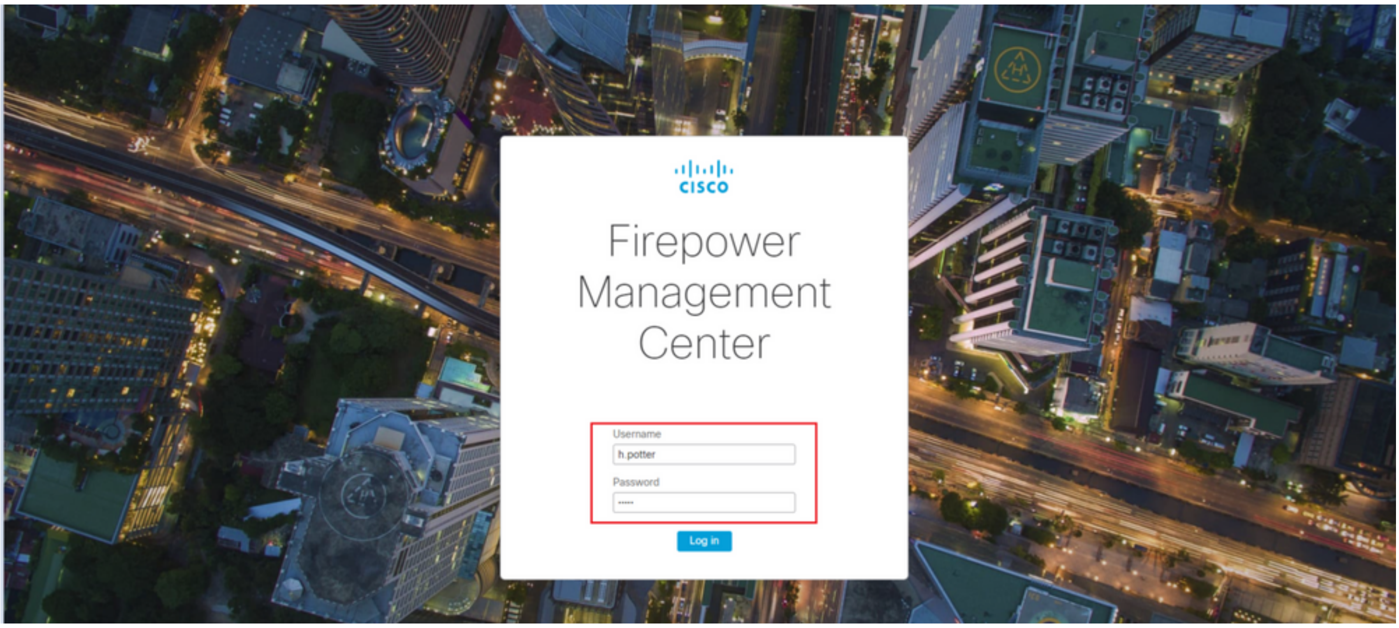


```
 83 4.751887  192.0.2.5   192.0.2.10  TCP   74 38002 → 389 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM=1 TSval=3073529344 TSecr=0 WS=128
 84 4.751920  192.0.2.10  192.0.2.5   TCP   74 389 → 38002 [SYN, ACK] Seq=0 Ack=1 Win=8192 Len=0 MSS=1460 WS=256 SACK_PERM=1 TSval=25348746 TSecr=3073529344
 85 4.751966  192.0.2.5   192.0.2.10  TCP   66 38002 → 389 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=3073529344 TSecr=25348746
 86 4.751997  192.0.2.5   192.0.2.10  LDAP  110 bindRequest(1) "Administrator@SEC-LAB0" simple
 87 4.752536  192.0.2.10  192.0.2.5   LDAP  88 bindResponse(1) success
 88 4.752583  192.0.2.5   192.0.2.10  TCP   66 38002 → 389 [ACK] Seq=45 Ack=23 Win=29312 Len=0 TSval=3073529345 TSecr=25348746
 89 4.752634  192.0.2.5   192.0.2.10  LDAP  122 searchRequest(2) "DC=SEC-LAB          " wholeSubtree

▷ Frame 86: 110 bytes on wire (880 bits), 110 bytes captured (880 bits) on interface \Device\NPF_{77DC31F6-8250-4F19-8412-E4596F960108}, id 0
▷ Ethernet II, Src: VMware_29:cf:2d (00:0c:29:29:cf:2d), Dst: VMware_eb:1d:f7 (00:0c:29:eb:1d:f7)
▷ Internet Protocol Version 4, Src: 192.0.2.5, Dst: 192.0.2.10
▷ Transmission Control Protocol, Src Port: 38002, Dst Port: 389, Seq: 1, Ack: 1, Len: 44
◢ Lightweight Directory Access Protocol
  ◢ LDAPMessage bindRequest(1) "Administrator@SEC-LAB0" simple
      messageID: 1
    ◢ protocolOp: bindRequest (0)
      ◢ bindRequest
          version: 3
          name: Administrator@SEC-LAB0
        ◢ authentication: simple (0)
            simple: Ciscot@c
      [Response In: 87]
```

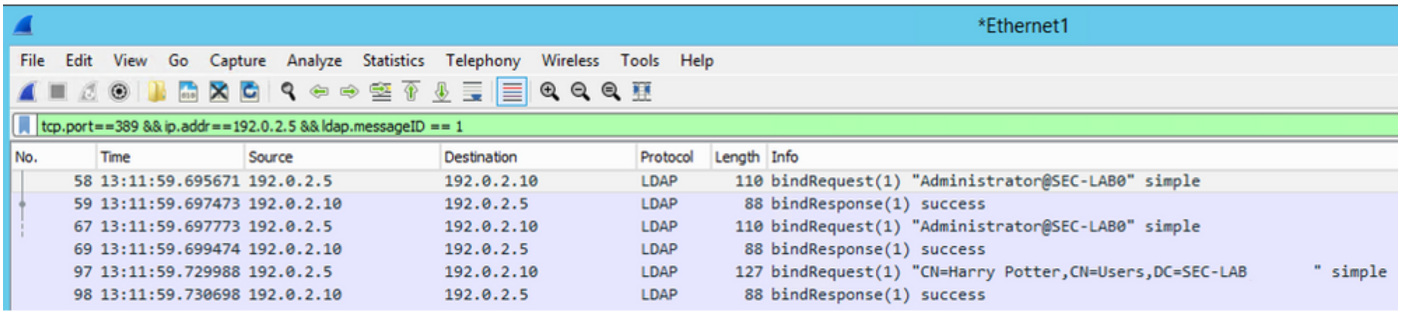
How Do FMC/FTD and LDAP Interact to Authenticate a User Log In Request

In order for a user to be able to log in to FMC or FTD while LDAP authentication is enabled, the initial log in request is sent to Firepower, however, the username and password are forwarded to LDAP for a success/deny response. This means that FMC and FTD do not keep password information locally in the database and instead await confirmation from LDAP on how to proceed.


1) Login request from PC to FMC
2) Forward Username and password to LDAP
3) Success/Deny
LDAP
FMC
IP: 192.0.2.10
IP: 192.0.2.5

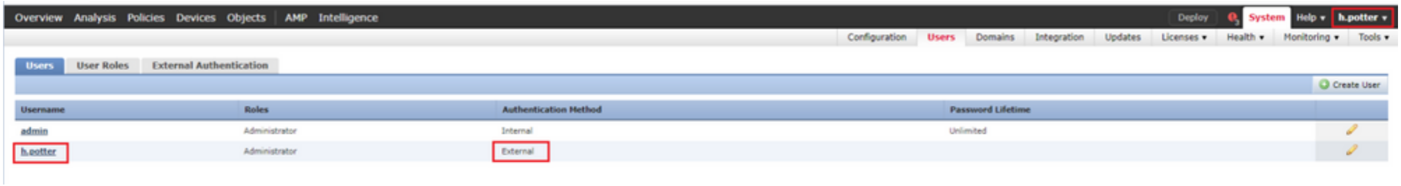


Username
h.potter
Password
••••••


*Ethernet1
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

```
tcp.port==389 && ip.addr==192.0.2.5 && ldap.messageID == 1

No.     Time            Source        Destination    Protocol  Length Info
     58 13:11:59.695671 192.0.2.5     192.0.2.10     LDAP         110 bindRequest(1) "Administrator@SEC-LAB0" simple
     59 13:11:59.697473 192.0.2.10    192.0.2.5      LDAP          88 bindResponse(1) success
     67 13:11:59.697773 192.0.2.5     192.0.2.10     LDAP         110 bindRequest(1) "Administrator@SEC-LAB0" simple
     69 13:11:59.699474 192.0.2.10    192.0.2.5      LDAP          88 bindResponse(1) success
     97 13:11:59.729988 192.0.2.5     192.0.2.10     LDAP         127 bindRequest(1) "CN=Harry Potter,CN=Users,DC=SEC-LAB       " simple
     98 13:11:59.730698 192.0.2.10    192.0.2.5      LDAP          88 bindResponse(1) success
```

If the username and password are accepted, an entry is added in the web GUI as seen in the image:



Username	Roles	Authentication Method	Password Lifetime
admin	Administrator	Internal	Unlimited
h.potter	Administrator	External	

Run the command **show user in FMC CLISH** in order to verify user information: > show user <username>

The command displays detailed configuration information for the specified user(s). These values are displayed:

Log in — the log in name

UID — the numeric user ID
Auth (Local or Remote) — how the user is authenticated
Access (Basic or Config) — the privilege level of the user
Enabled (Enabled or Disabled) — whether the user is active
Reset (Yes or No) — whether the user must change the password at the next log in
Exp (Never or a number) — the number of days until the password of the user must be changed
Warn (N/A or a number) — the number of days a user is given in order to change their password before it expires
Str (Yes or No) — whether the password of the user must meet the criteria to check the strength
Lock (Yes or No) — whether the account of the user has been locked due to too manylog in failures
Max (N/A or a number) — the maximum number of failed log ins before the account of the user is locked

SSL or TLS does not Work as Expected

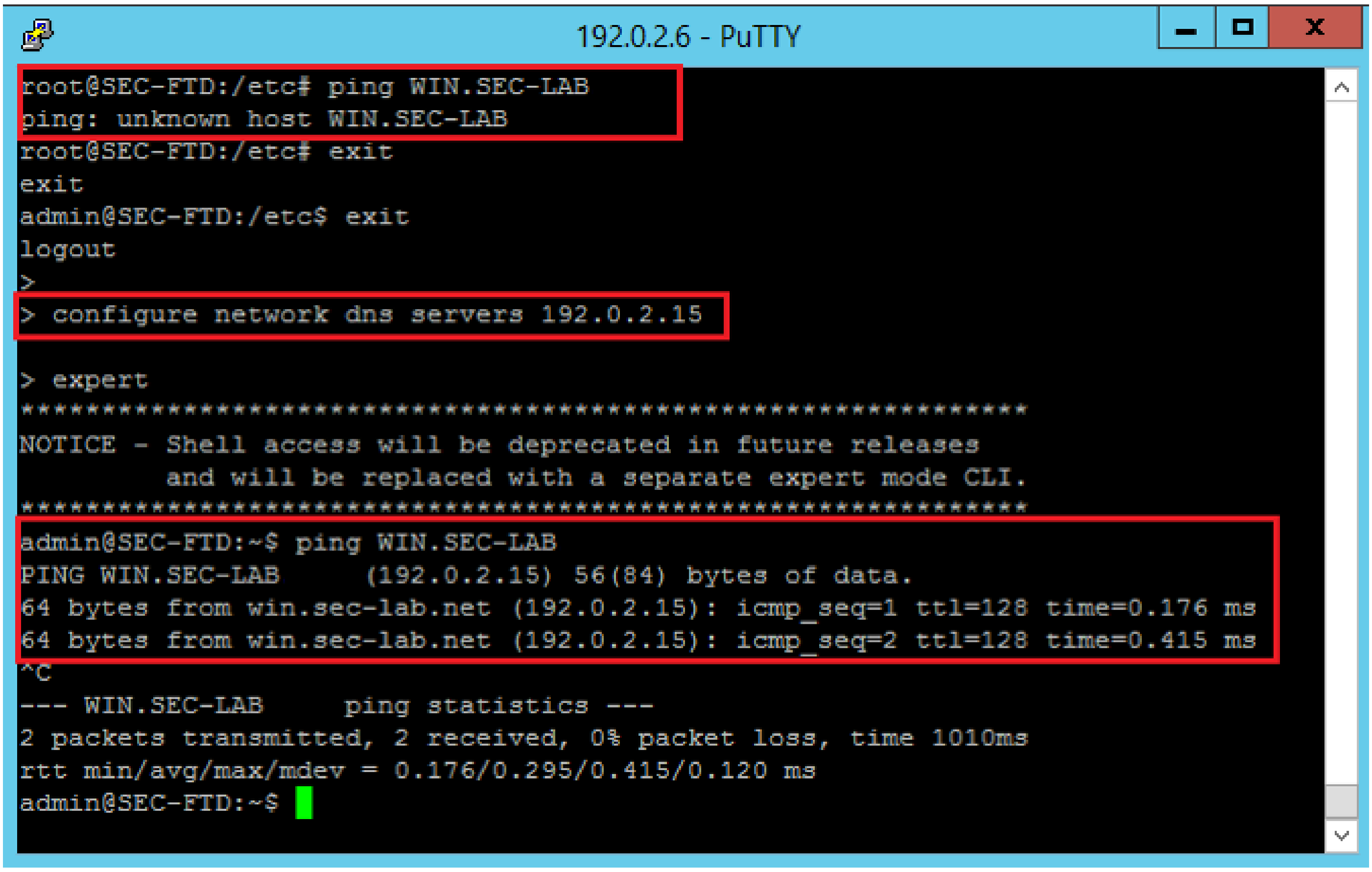
If you do not enable DNS on the FTDs, you can see errors in the pigtail log that suggest that LDAP is unreachable:

```
root@SEC-FMC:/$ sudo cd /var/common
root@SEC-FMC:/var/common$ sudo pigtail
```

```
MSGS: 03-05 14:35:31 SEC-FTD sshd[10174]: pam_unix(sshd:auth): authentication failure; logname= uid=0 e
MSGS: 03-05 14:35:31 SEC-FTD sshd[10174]: pam_ldap: ldap_starttls_s: Can't contact LDAP server
MSGS: 03-05 14:35:33 SEC-FTD sshd[10138]: error: PAM: Authentication failure for h.potter from 192.0.2.1
MSGS: 03-05 14:35:33 SEC-FTD sshd[10138]: Failed keyboard-interactive/pam for h.potter from 192.0.2.15 p
MSGS: 03-05 14:35:33 SEC-FTD sshd[10138]: error: maximum authentication attempts exceeded for h.potter f
MSGS: 03-05 14:35:33 SEC-FTD sshd[10138]: Disconnecting authenticating user h.potter 192.0.2.15 port 61
```

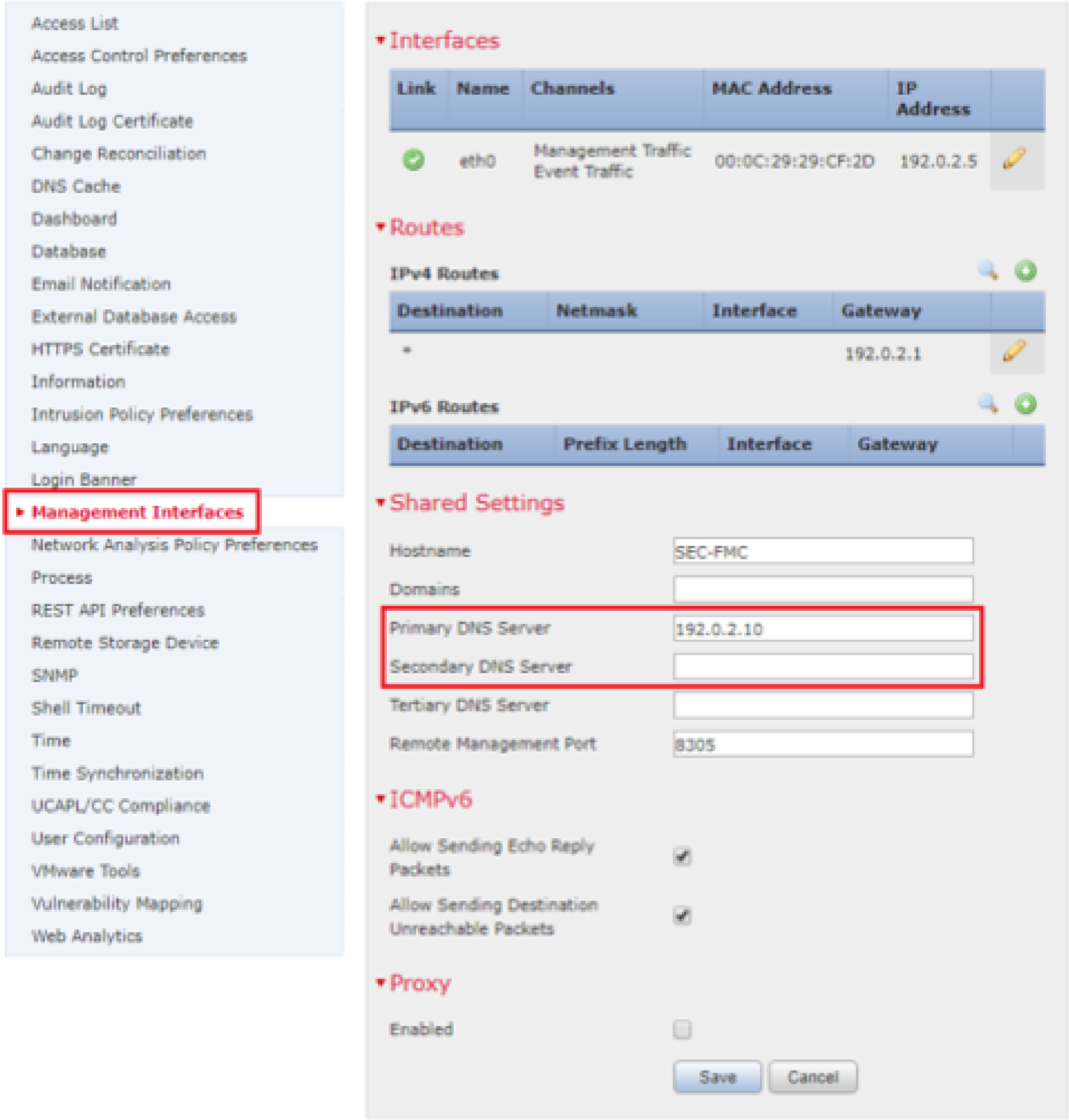
Ensure that Firepower is able to resolve the LDAP Servers Fully Qualified Domain Name (FQDN). If not, add the correct DNS as seen in the image.

FTD: Access the FTD CLISH and run the command: > configure network dns servers <IP Address>.



```
root@SEC-FTD:/etc# ping WIN.SEC-LAB
ping: unknown host WIN.SEC-LAB
root@SEC-FTD:/etc# exit
exit
admin@SEC-FTD:/etc$ exit
logout
>
> configure network dns servers 192.0.2.15

> expert
**************************************************************
NOTICE - Shell access will be deprecated in future releases
         and will be replaced with a separate expert mode CLI.
**************************************************************
admin@SEC-FTD:~$ ping WIN.SEC-LAB
PING WIN.SEC-LAB     (192.0.2.15) 56(84) bytes of data.
64 bytes from win.sec-lab.net (192.0.2.15): icmp_seq=1 ttl=128 time=0.176 ms
64 bytes from win.sec-lab.net (192.0.2.15): icmp_seq=2 ttl=128 time=0.415 ms
^C
--- WIN.SEC-LAB     ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1010ms
rtt min/avg/max/mdev = 0.176/0.295/0.415/0.120 ms
admin@SEC-FTD:~$
```

FMC: Choose System > Configuration, and then choose **Management Interfaces** as seen in the image:



▾ Interfaces

Link	Name	Channels	MAC Address	IP Address	
●	eth0	Management Traffic Event Traffic	00:0C:29:29:CF:2D	192.0.2.5	✎

▾ Routes

IPv4 Routes

Destination	Netmask	Interface	Gateway	
*			192.0.2.1	✎

IPv6 Routes

Destination	Prefix Length	Interface	Gateway

▾ Shared Settings

Hostname	SEC-FMC
Domains	
Primary DNS Server	192.0.2.10
Secondary DNS Server	
Tertiary DNS Server	
Remote Management Port	8305

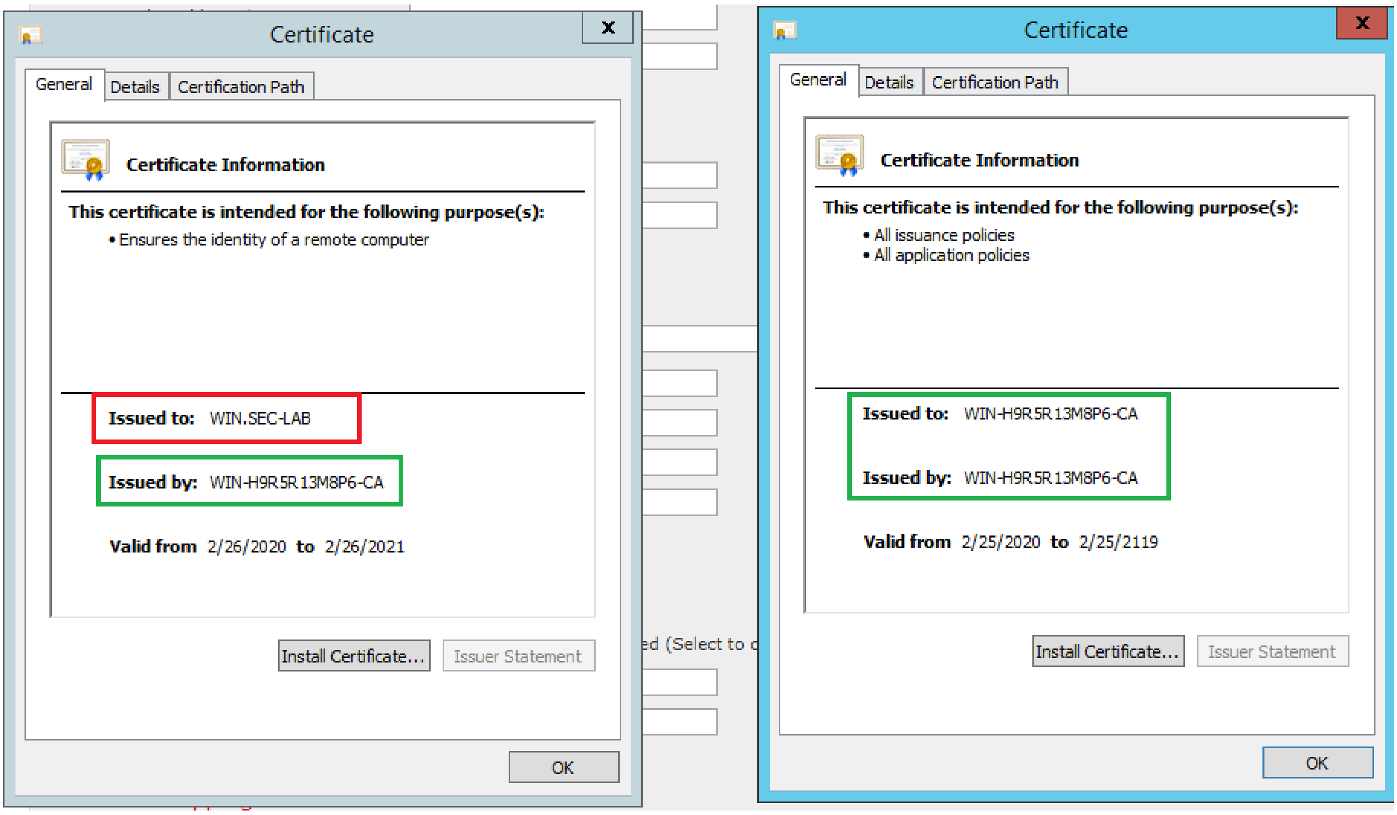
▾ ICMPv6

Allow Sending Echo Reply Packets	☑
Allow Sending Destination Unreachable Packets	☑

▾ Proxy

Enabled	□

Ensure the certificate uploaded to FMC is the certificate of the CA who signed the server certificate of the LDAP, as illustrated in the image:



Certificate

General | Details | Certification Path

Certificate Information

This certificate is intended for the following purpose(s):

- Ensures the identity of a remote computer

Issued to: WIN.SEC-LAB

Issued by: WIN-H9R5R13M8P6-CA

Valid from 2/26/2020 **to** 2/26/2021

Certificate

General | Details | Certification Path

Certificate Information

This certificate is intended for the following purpose(s):

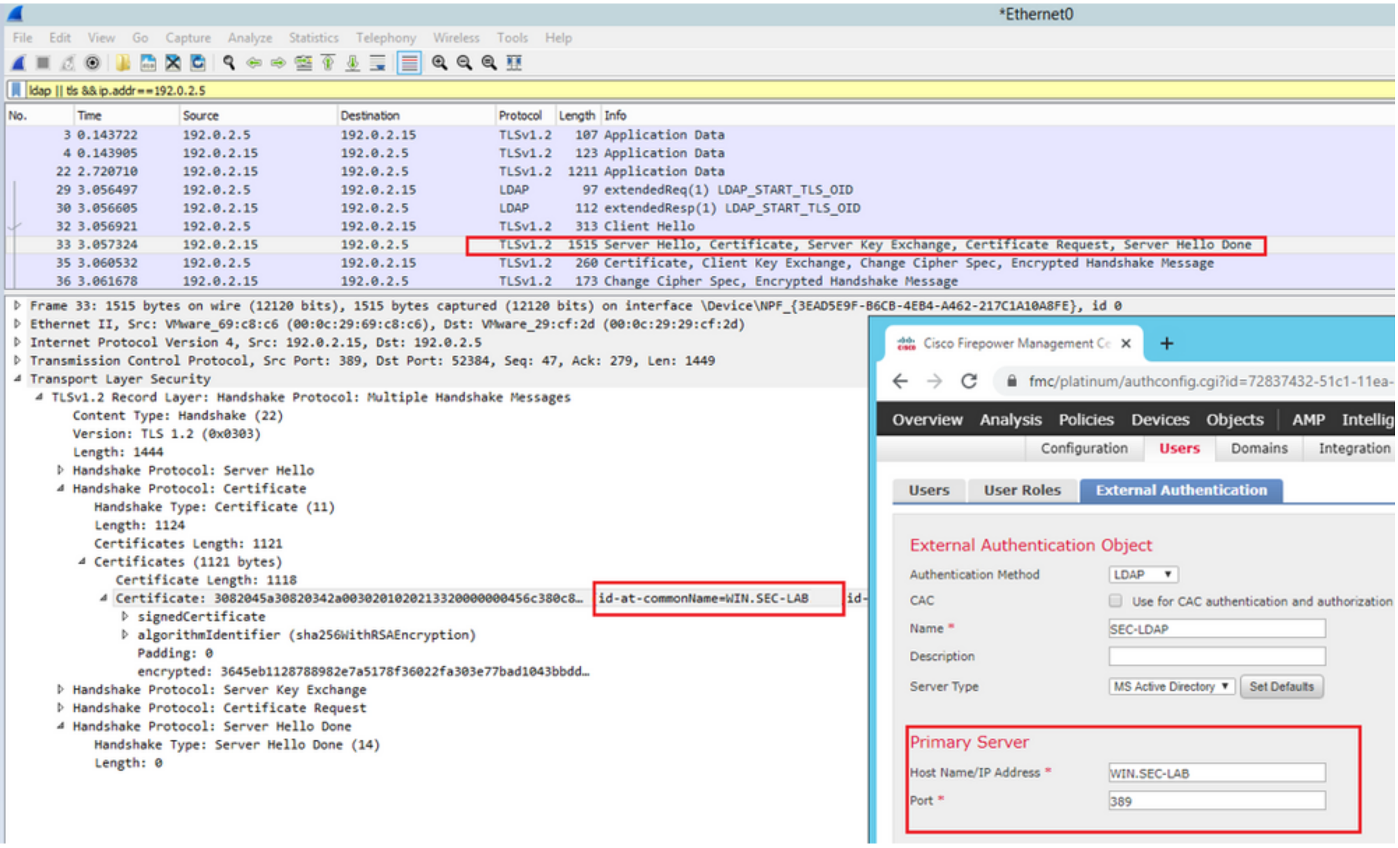
- All issuance policies
- All application policies

Issued to: WIN-H9R5R13M8P6-CA

Issued by: WIN-H9R5R13M8P6-CA

Valid from 2/25/2020 **to** 2/25/2119

Use packet captures in order to confirm LDAP server sends the correct information:



*Ethernet0
File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

```
ldap || tls && ip.addr==192.0.2.5
```

```
No.   Time       Source       Destination  Protocol Length Info
    3 0.143722   192.0.2.5    192.0.2.15   TLSv1.2   107 Application Data
    4 0.143905   192.0.2.15   192.0.2.5    TLSv1.2   123 Application Data
   22 2.720710   192.0.2.15   192.0.2.5    TLSv1.2  1211 Application Data
   29 3.056497   192.0.2.5    192.0.2.15   LDAP       97 extendedReq(1) LDAP_START_TLS_OID
   30 3.056605   192.0.2.15   192.0.2.5    LDAP      112 extendedResp(1) LDAP_START_TLS_OID
   32 3.056921   192.0.2.5    192.0.2.15   TLSv1.2   313 Client Hello
   33 3.057324   192.0.2.15   192.0.2.5    TLSv1.2  1515 Server Hello, Certificate, Server Key Exchange, Certificate Request, Server Hello Done
   35 3.060532   192.0.2.5    192.0.2.15   TLSv1.2   260 Certificate, Client Key Exchange, Change Cipher Spec, Encrypted Handshake Message
   36 3.061678   192.0.2.15   192.0.2.5    TLSv1.2   173 Change Cipher Spec, Encrypted Handshake Message
```

```
▷ Frame 33: 1515 bytes on wire (12120 bits), 1515 bytes captured (12120 bits) on interface \Device\NPF_{3EAD5E9F-B6CB-4EB4-A462-217C1A10A8FE}, id 0
▷ Ethernet II, Src: VMware_69:c8:c6 (00:0c:29:69:c8:c6), Dst: VMware_29:cf:2d (00:0c:29:29:cf:2d)
▷ Internet Protocol Version 4, Src: 192.0.2.15, Dst: 192.0.2.5
▷ Transmission Control Protocol, Src Port: 389, Dst Port: 52384, Seq: 47, Ack: 279, Len: 1449
◢ Transport Layer Security
  ◢ TLSv1.2 Record Layer: Handshake Protocol: Multiple Handshake Messages
      Content Type: Handshake (22)
      Version: TLS 1.2 (0x0303)
      Length: 1444
    ▷ Handshake Protocol: Server Hello
    ◢ Handshake Protocol: Certificate
        Handshake Type: Certificate (11)
        Length: 1124
        Certificates Length: 1121
      ◢ Certificates (1121 bytes)
          Certificate Length: 1118
        ◢ Certificate: 3082045a30820342a003020102021332000000456c380c8… id-at-commonName=WIN.SEC-LAB id-
          ▷ signedCertificate
          ▷ algorithmIdentifier (sha256WithRSAEncryption)
            Padding: 0
            encrypted: 3645eb1128788982e7a5178f36022fa303e77bad1043bbdd…
    ▷ Handshake Protocol: Server Key Exchange
    ▷ Handshake Protocol: Certificate Request
    ◢ Handshake Protocol: Server Hello Done
        Handshake Type: Server Hello Done (14)
        Length: 0
```

Cisco Firepower Management Ce
fmc/platinum/authconfig.cgi?id=72837432-51c1-11ea-
Overview Analysis Policies Devices Objects AMP Intellig
Configuration Users Domains Integration
Users User Roles External Authentication

External Authentication Object

Authentication Method: LDAP

CAC: □ Use for CAC authentication and authorization

Name *: SEC-LDAP

Description:

Server Type: MS Active Directory

Primary Server

Host Name/IP Address *: WIN.SEC-LAB

Port *: 389

Related Information

- User Accounts for Management Access
- Cisco Firepower Management Center Lightweight Directory Access Protocol Authentication Bypass

Vulnerability

- Configuration of LDAP Authentication Object on FireSIGHT System
- Technical Support & Documentation - Cisco Systems