在FXOS中配置LDAPS

目录

简介

本文档介绍如何使用安全防火墙机箱管理器(FCM)和CLI在FXOS上配置安全LDAP (LDAPS)。

先决条件

要求

Cisco 建议您了解以下主题：

- 安全防火墙可扩展操作系统(FXOS)
- 安全防火墙机箱管理器(FCM)
- 轻量级目录访问协议(LDAP)概念

使用的组件

本文档中的信息基于：

- 安全防火墙9300设备版本2.12(0.8)

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

配置

建议测试普通LDAP在安全防火墙设备上是否正常工作。

配置普通LDAP

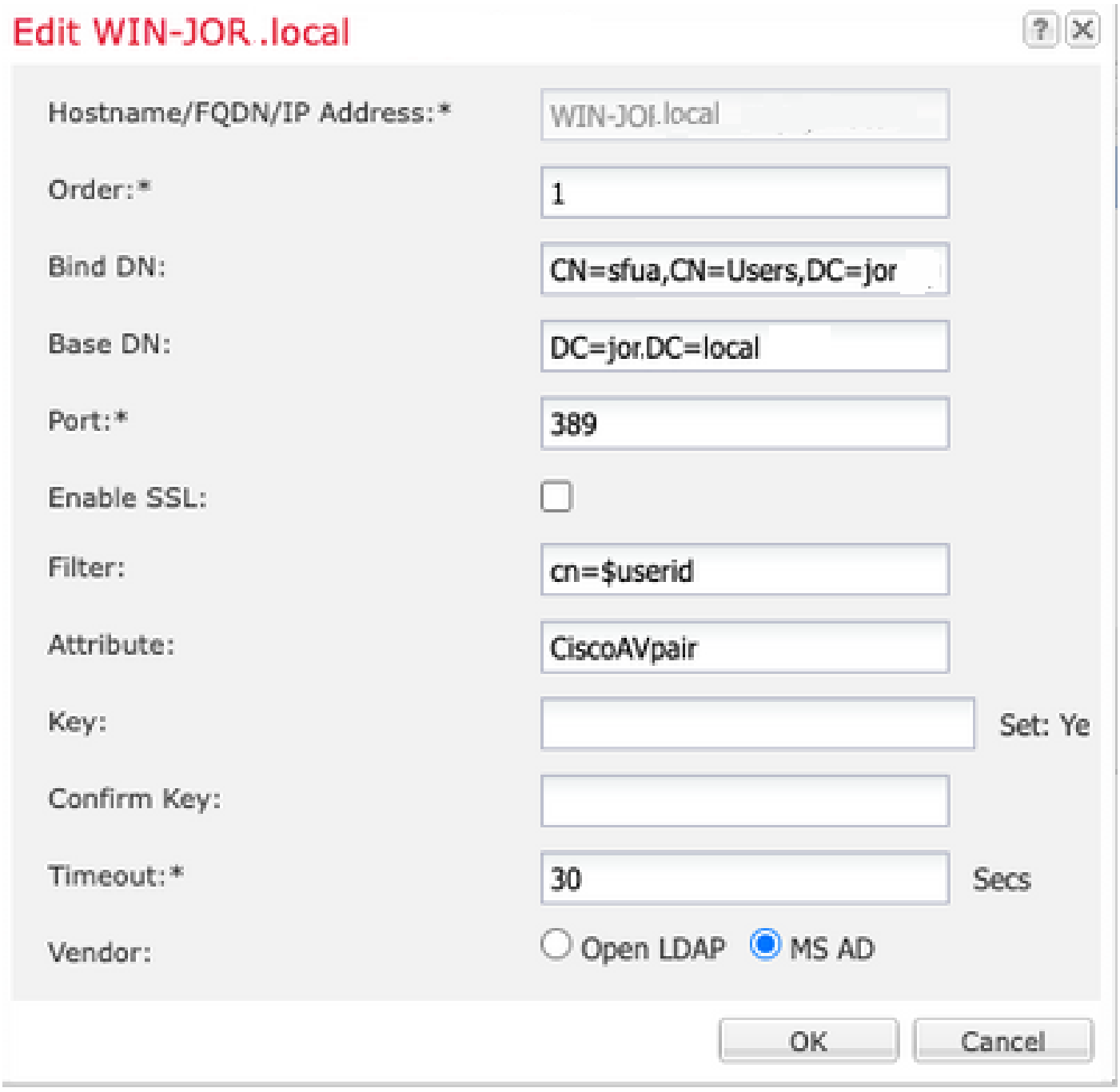
1. 登录FCM。

2. 导航到平台设置> AAA > LDAP

3. 单击LDAP Providers > Add

4. 配置LDAP提供程序并输入Microsoft Active Directory (MS AD)的绑定DN、基础DN、属性和密钥信息。

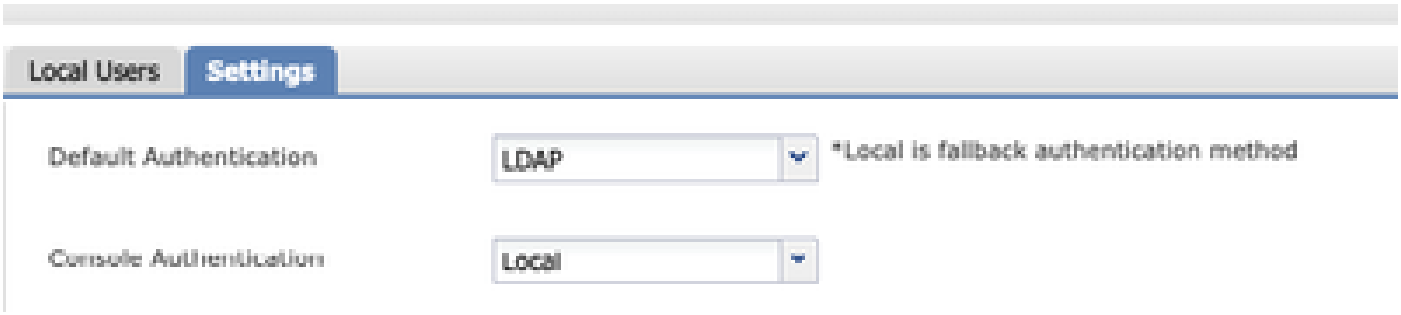
5. 使用LDAP服务器的FQDN，因为SSL连接需要此功能。



LDAP配置

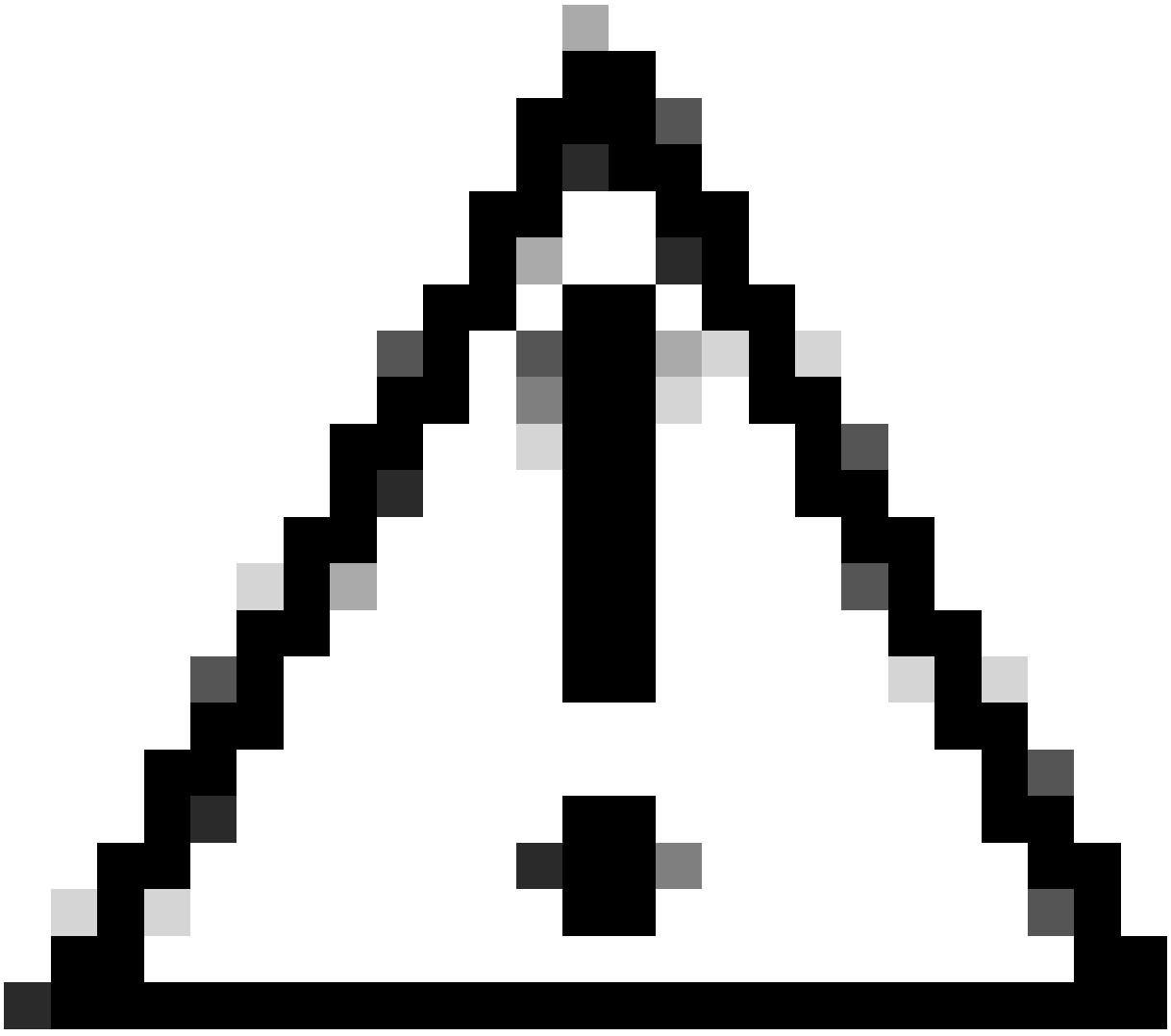
6. 导航到系统>用户管理>设置。

7. 将“默认”或“控制台”身份验证设置为LDAP。



身份验证方法选择

8. 尝试从SSH登录到机箱以测试使用LDAP用户的身份验证。



注意：测试LDAP身份验证时请小心。如果配置中存在错误，此更改可能会使您锁定。使用

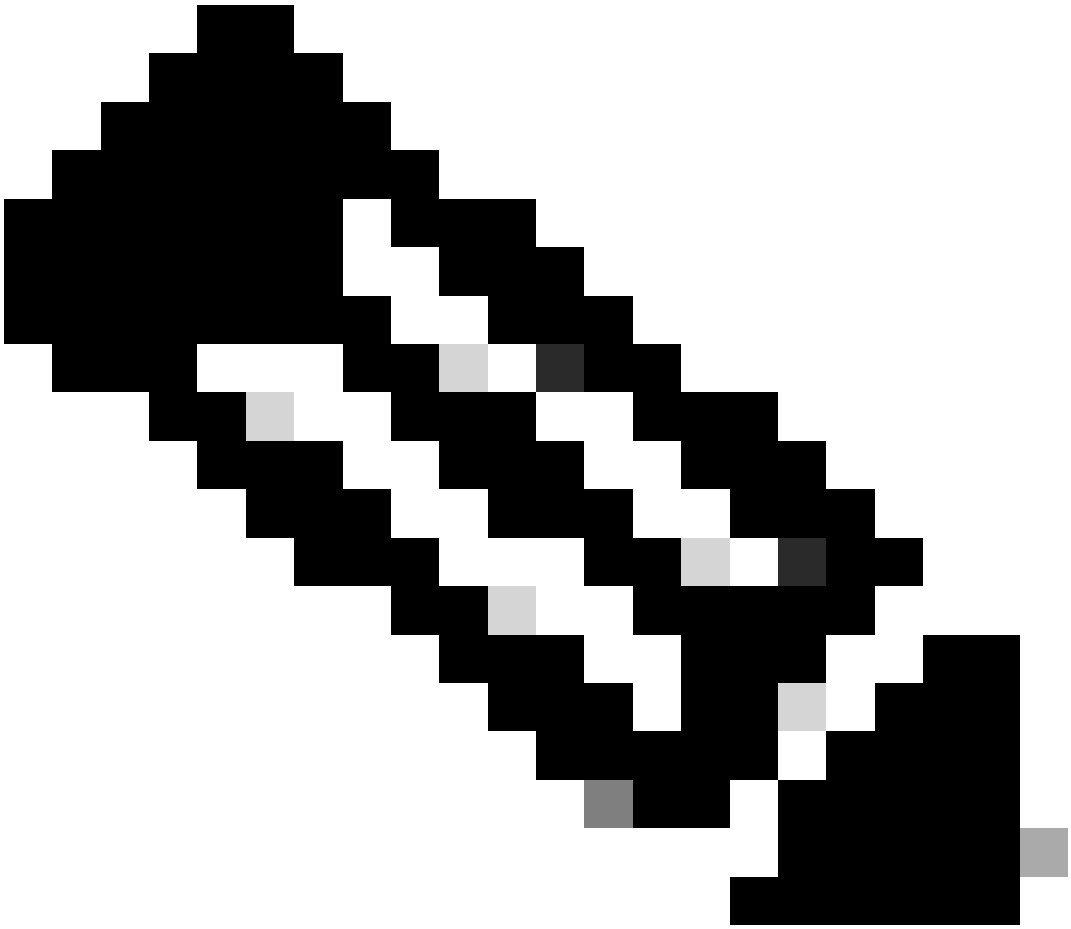
重复会话进行测试或使用本地身份验证从控制台访问进行测试，以便执行回滚或故障排除。

配置LDAPS

9. 测试成功的LDAP连接后，再次导航到平台设置> AAA > LDAP。

10. 编辑LDAP提供程序并启用SSL。

端口选择GUI



注意：端口389需要用于加密。端口636不起作用。报告增强功能思科漏洞ID CSCwc93347，以便为LDAPS添加自定义端口

11. LDAP服务器的根CA证书必须导入机箱。如果有中间证书，请一起导入链。

从FXOS CLI创建信任点以执行此操作。

```
<#root>

FPR9300-01#

scope security

FPR9300-01 /security #

create trustpoint LDAPS

>^CFPR9300-01 /security/trustpoint* #

set certchain

Enter lines one at a time. Enter ENDOFBUF to finish. Press ^C to abort.
Trustpoint Certificate Chain:

>-----BEGIN CERTIFICATE-----

>

MIIDmTCCAoGgAwIBAgIQYPxqSJxdYLJCpz+rOqfXpjANBgkqhkiG9w0BAQsFADBT

>MRUwEwYKCZImiZPyLGQBGRYFbG9jYWwxFzAVBgoJkiaJk/IsZAEZFgdqb3JnZWp1

>MSEwHwYDVQQDExhqb3JnZWp1LVdJTi1KT1JHRUpVLUNBLTEwHhcNMjEwMzIzMDc0

>MDAwWhcNMjYwMzIzMDc0OTU5WjBTMRUwEwYKCZImiZPyLGQBGRYFbG9jYWwxFzAV

>BgoJkiaJk/IsZAEZFgdqb3JnZWp1MSEwHwYDVQQDExhqb3JnZWp1LVdJTi1KT1JH

>RUpVLUNBLTEwggEiMA0GCSqGSIb3DQEBAQUAA4IBDwAwggEKAoIBAQDmBTWU6Leu

>bPxvc+EhC7fxjowEjjL0EXlMo3x7Pe3EW6Gng2iOMB1UpBNgSObbct83P6y6EmQi

>0RCCnEFfzy4stYPz/7499wALwMLSGNQWr10rjVB64ihfugbx95iDBcwuv6XK67h/
```

```
>T1caN4GZiLtYZjURGs5mLNB2f8hLp9QR2WoZqfAvrfvFB4I5RJjx0FYKIXW1dmPT

>AAPa/Qi+1Qv1exfzvXHXx1GMDCHle2yItFgl6o7OujT0AE3oplA/qQD+mTAJmdcR

>QLUDiUptqqYKgcbrH4Hu4PMje3INLd1vw1ThAwMFn+oXjRTM0KbEQ0/JEM6xRFMv

>LqmzDwxA8IoRAgMBAAGjaTBnMBMGCSsGAQQBgjcUAgQGHgQAQwBBMA4GA1UdDwEB

>/wQEAwIBhjAPBgNVHRMBAf8EBTADAQH/MB0GA1UdDgQWBBQoweZEEke7BIOd94R5

>YxjvJHdzSjAQBgkrBgEEAYI3FQEEAwIBADANBgkqhkiG9w0BAQsFAAOCAQEAyGli

>n77K0OiqSljTeg+ClVLRX8VJwr7Pp5p4Mu0mRhZckmIKSUtYDla3ToVix5k4dXSU

>7MaVWDkW/1NvReaqCfis5mgfrpzoPUkqKGiz7Zhd57gA4tBU/XbP/CXpTuAR3Isa

>NKz7yy+6tisf+8vfLtRN8c3IclS6ncyrdAdJ2iJY74jJm1eUPs3muaqApPPwoRF2

>GdALD/Y+Pq36cSjK+jGP1+2rD6cW16thBp9plOOTL+qpq4DL+W6uctWeRMgGxcWn

>GsKhHysno9dZ+DnnOlx0tP+S1B9fmxF7ycCmmn328dZVEG7JXjHc8KoqwwWe+fwu

>GXLRM+rKaAICH52EEw==

>-----END CERTIFICATE-----

>ENDOFBUF

FPR9300-01 /security/trustpoint* #
commit-buffer
```

12. 输入在LDAP提供程序上配置的LDAP服务器配置。记下LDAP服务器的名称。

13. 将revoke-policy设置为relaxed。

<#root>

```
FPR9300-01 /security #
```

scope ldap

```
FPR9300-01 /security/ldap #
```

show server

```
LDAP server:
Hostname, FQDN or IP address DN to search and read Port SSL Key CRL Password
---------------------------- ---------------------- ----- ---- ----- ---- --------
WIN-JOR.jor.local CN=sfua,CN=Users,DC=jor,DC=local
389 Yes Strict ****


FPR9300-01 /security/ldap #
```

scope server WIN-JOR.jor.local

```
FPR9300-01 /security/ldap/server #
```

set revoke-policy relaxed

```
FPR9300-01 /security/ldap/server* #
```

commit-buffer

```
FPR9300-01 /security/ldap/server #
```

show

```
LDAP server:
Hostname, FQDN or IP address DN to search and read Port SSL Key CRL Password
---------------------------- ---------------------- ----- ---- ----- ---- --------
WIN-JOR.jor.local CN=sfua,CN=Users,DC=jor,DC=local
389 Yes Relaxed ****
```

14. 使用commit-buffer保存更改。

故障排除

DNS解析

检查FQDN是否解析为正确的IP。名称解析可能存在问题：

<#root>

```
FPR9300-01#
```

connect fxos

```
FPR9300-01(fxos)#
```

ethanalyzer local interface mgmt capture-filter "udp port 53" limit-captured-frames 100

```
Capturing on 'eth0'


1 2024-02-01 11:36:43.822089169 10.4.23.202 → 10.88.243.91 DNS 85 Standard query 0x1b86 AAAA WIN-JOR.jor.loca


2 2024-02-01 11:36:43.857989995 10.88.243.91 → 10.4.23.202 DNS 160 Standard query response 0x1b86 No such nam
```

成功的DNS名称解析如下所示：

<#root>

```
FPR9300-01(fxos)#
```

ethanalyzer local interface mgmt capture-filter "udp port 53" limit-captured-frames 100

```
Capturing on 'eth0'
1 2022-09-06 00:49:00.059899379 10.88.146.73 → 10.88.243.91 DNS 85 Standard query 0xc512 AAAA WIN-JOR.jor.loc
2 2022-09-06 00:49:00.061349442 10.88.243.91 → 10.88.146.73 DNS 113 Standard query response 0xc512 AAAA WIN-J
3 2022-09-06 00:49:00.061515561 10.88.146.73 → 10.88.243.91 DNS 85 Standard query 0xc513 A WIN-JOR.jor.local
4 2022-09-06 00:49:00.061727264 10.88.243.91 → 10.88.146.73 DNS 101 Standard query response 0xc513 A WIN-JOR.
```

TCP和SSL握手

要验证LDAPS连接，请在端口389上设置捕获。

如果看到警告（如Unknown CA），则表示LDAP服务器的根CA证书不匹配。验证证书是否确实是服务器的根CA。

<#root>

```
7 2024-02-01 12:10:37.260940300 10.4.23.202 → 10.4.23.128 TLSv1 345 Client Hello
8 2024-02-01 12:10:37.264016628 10.4.23.128 → 10.4.23.202 TCP 1514 [TCP segment of a reassembled PDU]
9 2024-02-01 12:10:37.264115319 10.4.23.128 → 10.4.23.202 TLSv1.2 617 Server Hello, Certificate, Server Key E
10 2024-02-01 12:10:37.264131122 10.4.23.202 → 10.4.23.128 TCP 66 40638 → 389 [ACK] Seq=311 Ack=2046 Win=3532
11 2024-02-01 12:10:37.264430791 10.4.23.202 → 10.4.23.128 TLSv1.2 73 Alert (Level: Fatal,
```

Description: Unknown CA

```
)
12 2024-02-01 12:10:37.264548228 10.4.23.202 → 10.4.23.128 TLSv1.2 73 Ignored Unknown Record
```

成功的连接如下所示：

<#root>

```
FPR9300-01(fxos)#
ethanalyzer local interface mgmt capture-filter "tcp port 389" limit-captured-frames 100

Capturing on 'eth0'
1 2024-02-01 12:12:49.131155860 10.4.23.202 → 10.4.23.128 TCP 74 42396 → 389 [SYN] Seq=0 Win=29200 Len=0 MSS=
2 2024-02-01 12:12:49.131403319 10.4.23.128 → 10.4.23.202 TCP 74 389 → 42396 [SYN, ACK] Seq=0 Ack=1 Win=8192
3 2024-02-01 12:12:49.131431506 10.4.23.202 → 10.4.23.128 TCP 66 42396 → 389 [ACK] Seq=1 Ack=1 Win=29696 Len=
4 2024-02-01 12:12:49.131455795 10.4.23.202 → 10.4.23.128 LDAP 97 extendedReq(1) LDAP_START_TLS_OID
5 2024-02-01 12:12:49.131914129 10.4.23.128 → 10.4.23.202 LDAP 112 extendedResp(1) LDAP_START_TLS_OID
6 2024-02-01 12:12:49.131931868 10.4.23.202 → 10.4.23.128 TCP 66 42396 → 389 [ACK] Seq=32 Ack=47 Win=29696 Le
7 2024-02-01 12:12:49.133238650 10.4.23.202 → 10.4.23.128 TLSv1 345 Client Hello
8 2024-02-01 12:12:49.135557845 10.4.23.128 → 10.4.23.202 TLSv1.2 2065 Server Hello, Certificate, Server Key
9 2024-02-01 12:12:49.135595847 10.4.23.202 → 10.4.23.128 TCP 66 42396 → 389 [ACK] Seq=311 Ack=2046 Win=33280
10 2024-02-01 12:12:49.150071315 10.4.23.202 → 10.4.23.128 TLSv1.2 171 Certificate, Client Key Exchange, Chan
11 2024-02-01 12:12:49.150995765 10.4.23.128 → 10.4.23.202 TLSv1.2 117 Change Cipher Spec, Encrypted Handshak
12 2024-02-01 12:12:49.151218671 10.4.23.202 → 10.4.23.128 TLSv1.2 153 Application Data
13 2024-02-01 12:12:49.152638865 10.4.23.128 → 10.4.23.202 TLSv1.2 117 Application Data
14 2024-02-01 12:12:49.152782132 10.4.23.202 → 10.4.23.128 TLSv1.2 165 Application Data
15 2024-02-01 12:12:49.153310263 10.4.23.128 → 10.4.23.202 TLSv1.2 430 Application Data
16 2024-02-01 12:12:49.153463478 10.4.23.202 → 10.4.23.128 TLSv1.2 153 Application Data
17 2024-02-01 12:12:49.154673694 10.4.23.128 → 10.4.23.202 TLSv1.2 117 Application Data
18 2024-02-01 12:12:49.155219271 10.4.23.202 → 10.4.23.128 TLSv1.2 102 Application Data
19 2024-02-01 12:12:49.155254255 10.4.23.202 → 10.4.23.128 TLSv1.2 97 Encrypted Alert
20 2024-02-01 12:12:49.155273807 10.4.23.202 → 10.4.23.128 TCP 66 42396 → 389 [FIN, ACK] Seq=756 Ack=2563 Win
21 2024-02-01 12:12:49.155483352 10.4.23.128 → 10.4.23.202 TCP 60 389 → 42396 [RST, ACK] Seq=2563 Ack=725 Win
```

调试

您可以启用LDAP调试以了解更多信息，以便进行更深入的故障排除。

成功的SSL连接如下所示，未发现任何重大错误：

<#root>

```
FPR9300-01(fxos)#
debug ldap all

2024 Feb 1 11:51:16.243245 ldap: 0x00000101/111 -> 0x00000101/0 id0x2F06F sz370 [REQ] op4093 rr0x2F06F
2024 Feb 1 11:51:16.243275 ldap: mts_ldap_aaa_request_handler: session id 0, list handle is NULL
2024 Feb 1 11:51:16.243289 ldap: mts_ldap_aaa_request_handler: user :sfua:, user_len 4, user_data_len 8
2024 Feb 1 11:51:16.243298 ldap: ldap_authenticate: user sfua with server group ldap
2024 Feb 1 11:51:16.243337 ldap: ldap_authenticate:3150 the value of login_type is 0
2024 Feb 1 11:51:16.243394 ldap: ldap_global_config: entering ...
2024 Feb 1 11:51:16.243637 ldap: ldap_read_group_config:
2024 Feb 1 11:51:16.243831 ldap: ldap_server_config: GET_REQ: server index: 1 addr:
2024 Feb 1 11:51:16.244059 ldap: ldap_client_auth_init: attr_memberof not configured for server
2024 Feb 1 11:51:16.244268 ldap: ldap_client_auth_init: (user sfua) - ldap_init success for host WIN-JO
2024 Feb 1 11:51:16.244487 ldap: ldap_client_lib_init_ssl: set ldap options cipher_suite ALL:!DHE-PSK-A
SHA:!EDH-DSS-DES-CBC3-SHA:!DES-CBC3-SHA:!ADH:!3DES:!EXPORT40:!EXPORT56:!LOW:!RC4:!MD5:!IDEA:+HIGH:+MEDI
RSA-AES256-SHA:!ECDHE-ECDSA-AES256-SHA:!
2024 Feb 1 11:51:16.246568 ldap: ldap_do_TLS: - ldap_tls initiated
2024 Feb 1 11:51:16.246598 ldap: ldap_client_auth_init:(user sfua) - awaiting for response, isssl: 1
2024 Feb 1 11:51:16.247104 ldap: ldap_socket_ready_callback: entering...
```

```
2024 Feb 1 11:51:16.247116 ldap: ldap_process_result: entering... for user sfua
2024 Feb 1 11:51:16.247124 ldap: ldap_process_result: ldap_result sess->state: LDAP_SESS_TLS_SENT
2024 Feb 1 11:51:16.247146 ldap: ldap_process_result: (user sfua) - tls extended resp.
2024 Feb 1 11:51:16.247153 ldap: ldap_do_process_tls_resp: entering for user sfua
2024 Feb 1 11:51:16.247169 ldap: ldap_do_process_tls_resp: (user sfua) - ldap start TLS sent successful
2024 Feb 1 11:51:16.249856 ldap: ldap_app_cb: - ldap_app_ctx 0x100ad224 ldap session 0x1217a53c ssl 0x1
2024 Feb 1 12:19:20.512383 ldap: ldap_app_cb: - Check the configured hostname WIN-JORGEJU.jorgeju.local
2024 Feb 1 12:19:20.512418 ldap: ldap_app_cb: Non CC mode - hostname WIN-JORGEJU.jorgeju.local.
2024 Feb 1 12:19:20.520346 ldap: ldap_crls_http_and_local_cb: - get CRL from CRLDP
2024 Feb 1 12:19:20.520626 ldap: ldap_crls_http_and_local_cb: - crls 0x121787dc
2024 Feb 1 12:19:20.520900 ldap: ldap_load_crl_crldp: - get CRL from CRLDP
2024 Feb 1 12:19:20.521135 ldap: ldap_load_crl_crldp: - crls 0x121787dc
2024 Feb 1 12:19:20.521364 ldap: ldap_get_dp_url: - get URI from CRLDP
2024 Feb 1 12:19:20.521592 ldap: ldap_load_crl_http: - entering...
```

当服务器的根CA证书不匹配时，您可能会在ldap_check_cert_chain_cb进程中看到证书错误：

```
2024 Feb 1 12:07:08.624416 ldap: ldap_app_cb: - Check the configured hostname WIN-JOR.jor.local with pe
2024 Feb 1 12:07:08.624453 ldap: ldap_app_cb: Non CC mode - hostname WIN-JOR.jor.local.
2024 Feb 1 12:08:31.274583 ldap: ldap_check_cert_chain_cb: - Enter
2024 Feb 1 12:08:31.274607 ldap: ldap_check_cert_chain_cb: - called ok flag is 0
2024 Feb 1 12:08:31.274620 ldap: ldap_check_cert_chain_cb: - ldap session 0x1217a53c, crlstrict 0.
2024 Feb 1 12:08:31.274632 ldap: ldap_check_cert_chain_cb: - get ctx error is 20
2024 Feb 1 12:08:31.274664 ldap: ldap_check_cert_chain_cb: - cert X509_V_ERR_UNABLE_TO_GET_ISSUER_CERT_
2024 Feb 1 12:08:31.274688 ldap: ldap_check_cert_chain_cb: - End ok 0
2024 Feb 1 12:08:31.274833 ldap: ldap_do_process_tls_resp: (user sfua) - TLS START failed
```

从锁定状态恢复

如果由于任何原因从机箱管理器GUI被锁定且LDAPS不起作用，则即使您拥有CLI访问权限，仍可以恢复。

这可以通过将默认身份验证或控制台身份验证的身份验证方法改回本地来完成。

```
<#root>

FPR9300-01#

scope security


FPR9300-01 /security #

scope default-auth


FPR9300-01 /security/default-auth #

show
```

```
Default authentication:
Admin Realm                    Admin Authentication server group Use of 2nd factor
------------------------------ --------------------------------- -----------------
Ldap                                                             No

FPR9300-01 /security/default-auth #
```

set realm local

```
FPR9300-01 /security/default-auth* #
```

commit-buffer

```
FPR9300-01 /security/default-auth #
```

show

```
Default authentication:
Admin Realm                    Admin Authentication server group Use of 2nd factor
------------------------------ --------------------------------- -----------------
Local                                                            No
```

在这些更改后，尝试再次登录FCM。

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