

将ISE 3.3与JAMF集成为MDM服务器

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简介

本文档介绍使用JAMF PRO实例10.48.X实施身份服务引擎v3.3的必要步骤。

先决条件

要求

思科建议了解以下主题：

- 身份服务引擎 (ISE)
- JAMF作为MDM解决方案

使用的组件

本文档中的信息基于以下软件和版本：

- 思科身份服务引擎(ISE)v3.3
- JAMF PRO 10.48.1-t1689600654

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

背景信息

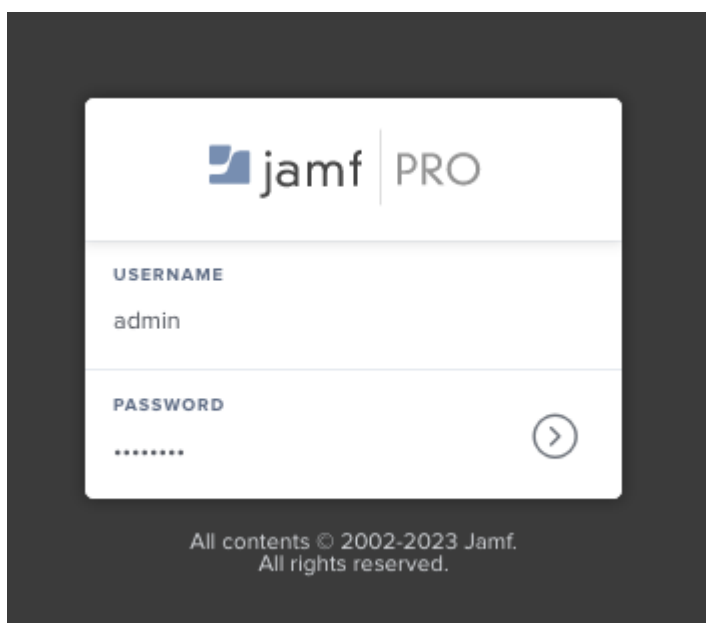
思科ISE支持JAMF作为MDM服务器，用于管理Windows计算机。当这些计算机（由JAMF管理）连接并经过身份验证时，ISE从JAMF服务器检索合规性信息，以检索这些设备安全状态的进一步信息。

根据ISE中配置的标准和条件，它使用信息来实施安全访问安全，从而允许/拒绝这些计算机。因此，此实施有助于识别可能被攻击者利用的潜在漏洞和安全弱点。

配置

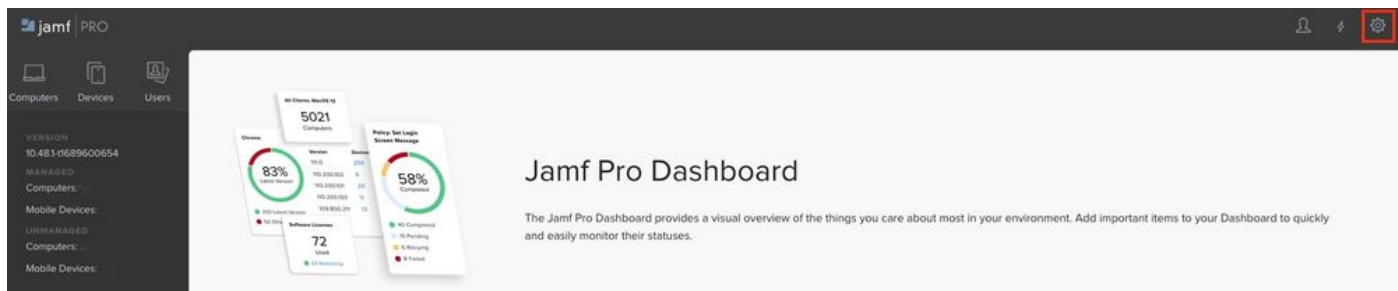
为MDM连接准备JAMF PRO

步骤1.使用具有管理员权限的帐户登录您的JAMF云，网址为：https://YOUR_ACCOUNT.jamfcloud.com/index.html。



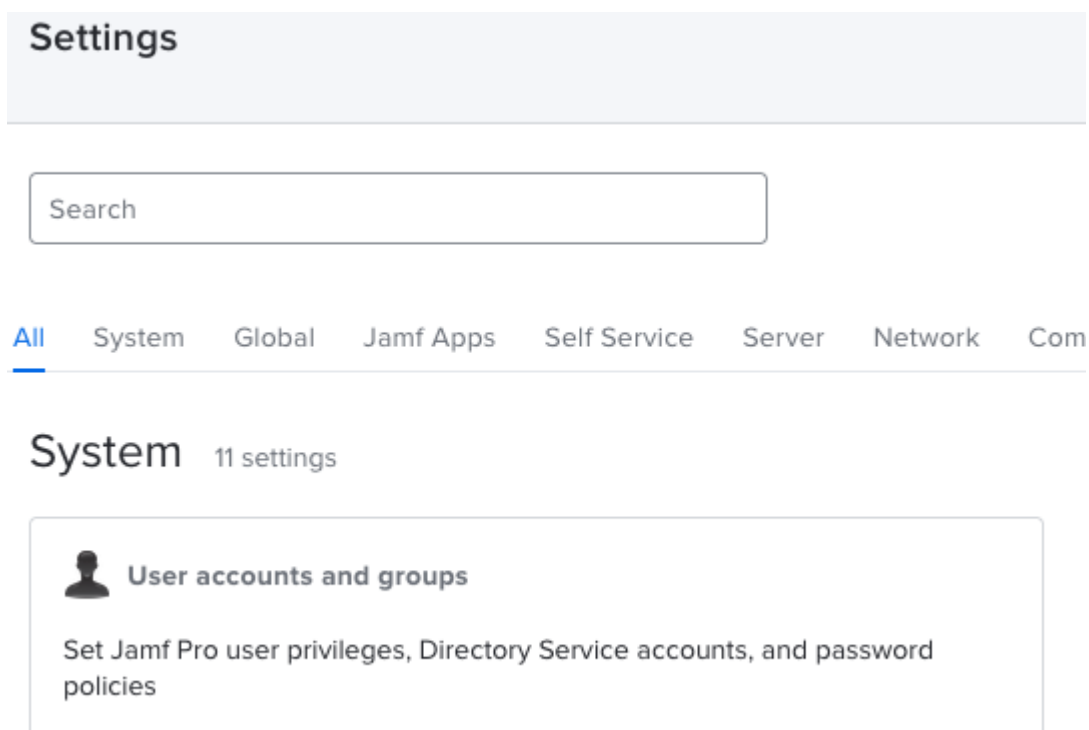
JAMF PRO登录页

步骤2从主菜单中，选择齿轮图标。



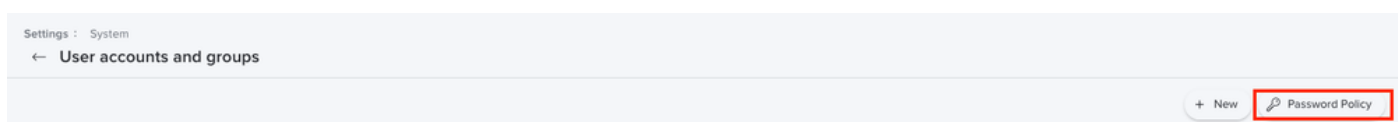
JAMF PRO控制面板

步骤3在主菜单上，选择System > Useraccounts and groups。



JAMF PRO系统设置

步骤4.选择选项Password Policy。



JAMF PRO用户帐户和组

第5步。在此部分，确认除了承载令牌身份验证外，您还有选项Allow Basic Authentication。



注意：从JAMF PRO v10.35开始，API的基本身份验证默认未启用。因此，您必须启用这些功能以确保MDM集成正常工作。

有关详细信息，请参阅[传统API身份验证更改](#)。

步骤6。启用最后一个功能后，请转至步骤3中描述的Menu Settings，然后查找Network IntegrationMenu，然后选择它。

The screenshot shows the 'Settings' application interface. At the top, there is a search bar containing the text 'network integration' and a 'Clear' button to its right. Below the search bar, there is a horizontal menu with several categories: 'All', 'System', 'Global', 'Jamf Apps', 'Self Service', 'Server', and 'Network'. The 'Network' category is currently selected. Below the menu, the text 'Network 1 result found for "network integration"' is displayed. A single result is shown in a card format, featuring a globe icon, the title 'Network integration', and the description 'Integrate with a network access management service'.

JAMF PRO网络集成

第7步继续选择+ New为ISE 3.3添加新实例。

The screenshot shows the 'Settings : Network' page, specifically the 'Network integration' section. At the top left, there is a back arrow and the text 'Network integration'. In the top right corner, there is a '+ New' button, which is highlighted with a red rectangular box. Below this, there is a table with a header row containing the word 'NAME'. The table body is currently empty, with the text 'No Network integration' displayed below it.

JAMF PRO网络集成设置

第8步。在Network Access Management Service下的下拉菜单中，保留标记为Cisco ISE的选项。

- 接下来，在菜单Display Name中提供一个名称，如本示例所示。
- 对于ISE的初始设置和连接，可以保留这些标准配置。
- 继续执行Save配置。

Network Access Management Service Network access management service to use for the network integration

Cisco ISE

Display Name Display name for the network integration
isev33

Advanced Computer Search For Compliance Verification Select the saved search for Cisco ISE to use to verify computers compliant to organizational standards
None

Computer Compliance Verification Failure Message Optional message to display to the user via Cisco ISE when the computer is not compliant

Computer Compliance Remediation Message Optional message to display to the user via Cisco ISE about how to become compliant

Advanced Mobile Device Search For Compliance Verification Select the saved search for Cisco ISE to use to verify mobile devices compliant to organizational standards
None

Mobile Device Compliance Verification Failure Message Optional message to display to the user via Cisco ISE when the mobile device is not compliant

Mobile Device Compliance Remediation Message Optional message to display to the user via Cisco ISE about how to become compliant

Remote Lock And Wipe Passcode Assignment Method For Computers Method to use to assign the passcode when locking or wiping computers via Cisco ISE
Create Random Passcode

Cancel Save

配置示例与ISE的网络集成

步骤9.该集成会生成以下格式的网络集成

URL:https://YOUR_ACCOUNT.jamfcloud.com/networkIntegrationEndpoint/ID. 保存此URL，因为您必须以后使用它来连接ISE。

为MDM连接准备ISE

步骤1.选择菜单>管理>网络资源>外部MDM，然后单击Add。

Identity Services Engine Administration / Network Resources

Deployment **Licensing** Certificates Logging Maintenance Upgrade Health Checks Backup & Restore Admin Access Settings

MDM / UEM Integrations

Unified Endpoint Management (UEM) and Mobile Device Management (MDM) integrations enable you to secure, monitor, and manage the endpoints on your network. Integrate UEM and MDM platforms with Cisco ISE to allow Cisco ISE to query the integrations for endpoint attributes. You can then use these attributes to create and apply necessary access control policies. Also, you can configure [General MDM Settings](#).

Add Duplicate Edit Delete Change Timeout Filter Download

<input type="checkbox"/>	MDM / UEM Integration Name	Status	Service Provider	Hostname / IP Adresse...	Description	Timeout (msec)
No data found.						

ISE MDM集成菜单

步骤2.在MDM/UEM集成名称段内命名安装。

- 在主机名/IP地址部分，从之前步骤中生成的URL中选择YOUR_ACCOUNT.jamfcloud.com。
- 在Port中，为JAMF PRO实例的HTTPS连接选择443。
- 在实例名称部分中，继续输入值，其中所创建的URL中缺少部分(在本例中

: /networkIntegrationEndpoint/ID) 。

- 输入具有对JAMF PRO实例完全访问权限的用户名以及相应的密码。
- 将MDM服务器的Status更改为Enabled。

Identity Services Engine Administration / Network Resources

Network Devices Network Device Groups Network Device Profiles External RADIUS Servers RADIUS Server Sequences NAC Managers External MDM

MDM / UEM Integrations > New

New Server

Cisco ISE supports mobile device management and Microsoft configuration management servers. Click [here](#) to view the list of MDM servers supported by Cisco ISE.

MDM / UEM Integration Name*
JAMF_PRO

Description

Server Type
Mobile Device Manager

Authentication Type
Basic

Hostname / IP Address*
YOUR_ACCOUNT.jamfcloud.com

Port*
443 (max length: 5)

Instance Name
/networkIntegrationEndpoint/ID

Username*
admin

Password*
.....

Polling Interval*
240

MDM/UEM Device Compliance Timeout*
30000
1 to 30000 (milliseconds)

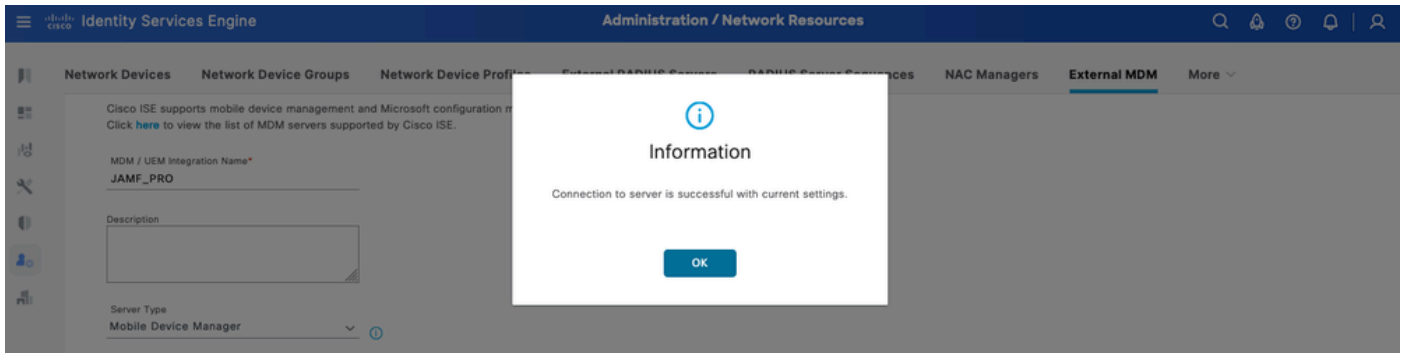
When re-authenticating an endpoint into the network Cisco ISE refers to cached MDM attributes of the endpoint. If the age of the cached MDM attributes is greater than the interval configured, Cisco ISE sends a fresh query to the MDM server for the endpoint's attributes. If there is a change in compliance status, Cisco ISE issues a Change of Authorization.

Compliance Cache Expiration Time*
1
1 to 10080 (minutes)

Status
Enabled

ISE MDM JAMF PRO配置示例

步骤3向下滚动并继续执行测试连接。如果连接成功，则显示此图像。如果您没有收到相同的输出，请参阅本文档中的故障排除部分。



成功连接到MDM JAMF帐户





步骤4在之前的选项中选择OK。在页面底部，找到Device Identifier，其中ISE关联终端会话。

- 根据您的场景，您可以选择设备的MAC地址或证书的属性。
- 自定义此部分后，保存配置。

 This MDM or UEM server supports Cisco ISE API Version 3.

Device Identifier

Configure Cisco ISE to identify endpoints through variables other than MAC addresses. This allows accurate identification of endpoints even the MAC address presented Cisco ISE is not necessarily the MAC address of the physical network interface card (for example, when MAC address randomisation is enabled). Check the check boxes next to the device identifiers to be used. Drag and drop the device identifiers to define the sequence of verification. If the first device identifier on the list is not available for an endpoint, then Cisco ISE checks for the second identifier on the list, and so on.

Device Identifier 	Enabled
 1. Legacy MAC Address	<input checked="" type="checkbox"/>
 2. Cert - SAN URI, GUID	<input type="checkbox"/>
 3. Cert - CN, GUID	<input type="checkbox"/>

Cancel

Save

MDM服务器的其他配置

验证与JAMF PRO实例集成的初始连接。

数据包捕获:如果连接成功，您可以查看从ISE PAN服务器发送到JAMF PRO实例的HTTPS流量：

Protocol	Length	Info
TCP	74	47386 → 3128 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM TSval=211264130 TSecr=0 WS=128
TCP	74	3128 → 47386 [SYN, ACK] Seq=0 Ack=1 Win=65160 Len=0 MSS=1460 SACK_PERM TSval=503104063 TSecr=211264130 WS=128
TCP	66	47386 → 3128 [ACK] Seq=1 Ack=1 Win=29312 Len=0 TSval=211264131 TSecr=503104063
HTTP	183	CONNECT → 443 HTTP/1.1
TCP	66	3128 → 47386 [ACK] Seq=1 Ack=118 Win=65152 Len=0 TSval=503104064 TSecr=211264131
HTTP	105	HTTP/1.1 200 Connection established
TCP	66	47386 → 3128 [ACK] Seq=118 Ack=40 Win=29312 Len=0 TSval=211264384 TSecr=503104317
TLSv1..	387	Client Hello
TCP	66	3128 → 47386 [ACK] Seq=40 Ack=439 Win=64896 Len=0 TSval=503104318 TSecr=211264385
TLSv1..	166	Server Hello
TCP	1254	3128 → 47386 [PSH, ACK] Seq=140 Ack=439 Win=64896 Len=1188 TSval=503104457 TSecr=211264385 [TCP segment of a reassembled PDU]
TCP	66	47386 → 3128 [ACK] Seq=439 Ack=1328 Win=32128 Len=0 TSval=211264524 TSecr=503104457
TCP	1254	3128 → 47386 [PSH, ACK] Seq=1328 Ack=439 Win=64896 Len=1188 TSval=503104457 TSecr=211264385 [TCP segment of a reassembled PDU]
TLSv1..	2641	Certificate
TCP	66	47386 → 3128 [ACK] Seq=439 Ack=5091 Win=40192 Len=0 TSval=211264525 TSecr=503104457
TLSv1..	413	Server Key Exchange, Server Hello Done
TLSv1..	141	Client Key Exchange
TCP	66	3128 → 47386 [ACK] Seq=5438 Ack=514 Win=64896 Len=0 TSval=503104459 TSecr=211264526
TLSv1..	72	Change Cipher Spec
TLSv1..	111	Encrypted Handshake Message
TCP	66	3128 → 47386 [ACK] Seq=5438 Ack=520 Win=64896 Len=0 TSval=503104462 TSecr=211264529
TCP	66	3128 → 47386 [ACK] Seq=5438 Ack=565 Win=64896 Len=0 TSval=503104463 TSecr=211264529
TLSv1..	117	Change Cipher Spec, Encrypted Handshake Message
TLSv1..	360	Application Data
TCP	66	3128 → 47386 [ACK] Seq=5489 Ack=859 Win=64640 Len=0 TSval=503104601 TSecr=211264668
TLSv1..	1617	Application Data, Application Data
TCP	66	47386 → 3128 [ACK] Seq=859 Ack=7040 Win=46208 Len=0 TSval=211264922 TSecr=503104855

数据包捕获与JAMF实例连接的示例

登录ISE:ISE相应地处理和分析数据，如ise-psc.log所示：

```

DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.api.MdmServerInfoApi -:::- inside the method : callMdmServerInfo
TRACE [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- Inside MDMVerifyServer.verifyServer
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- apiVersionSb : 3, mdmApiVersion : 3
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query Success
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query Parameters
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- 1. Connecting to the MDM server
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: start HTTP request
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: start HTTP request
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- ===mdmFlowInfo===null,====serverInfo====
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- QueryType is heartbeatQuery
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- using httpClient for http query
INFO [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- GET: MDM Server URL: https://YOUR_ACCOUNT.jamfcloud.com/enroll
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- Proxy Config in request = [PROXY_HOST, PROXY_PORT]
.
.
INFO [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- MDM Server Response Code: 200
TRACE [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::-
Response data received from the MDM server : <?xml version="1.0" encoding="UTF-8"?><ise_api><name>mdminfo</name></ise_api>
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: end HTTP request
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: end HTTP request
TRACE [admin-http-pool16][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- isMdmSettingsIdNotNull flag is true
DEBUG [admin-http-pool16][[]] cisco.cpm.mdm.api.MdmServerInfoApi -:::- returning from the method : callMdmServerInfo
apiPath: /ID/ciscoise/v3
redirectUrl: https://YOUR_ACCOUNT.jamfcloud.com/enroll
queryMaxSize: 1000
apiVersion: 3
vendor: JAMF Software
productName: JSS
productVersion: 10.48.1-t1689600654
COMMA: ,

```

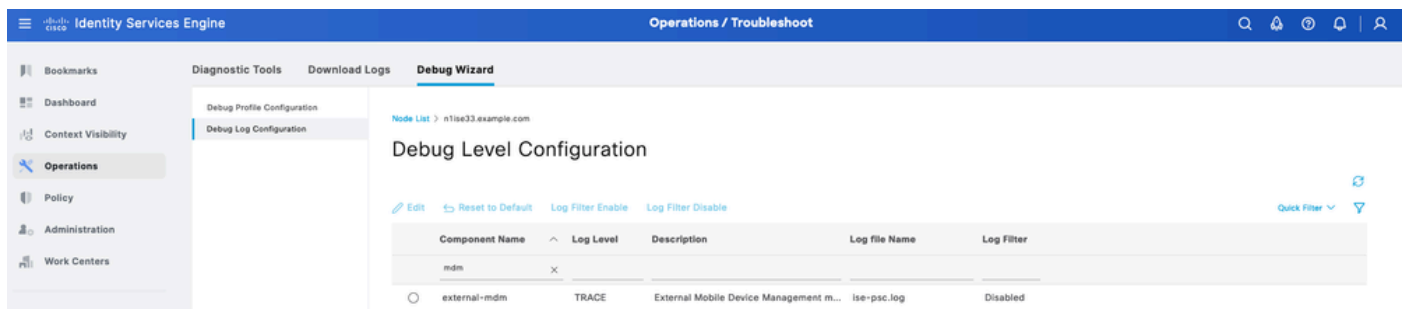
```
errorMsg: null
errorOccurred: false
}
```

排除MDM服务器不可达故障

此集成的基础包括ISE定期对JAMF-PRO实例执行的查询。执行故障排除的参考点（在此实例中）是主管理节点(PAN)。PAN节点是连接方法配置为到达MDM服务器的地方。此相同的方法会在实施的所有节点中复制。

后续步骤可用于排除连通性故障。

步骤1.在PAN节点上启用TRACE级别的组件external-mdm。

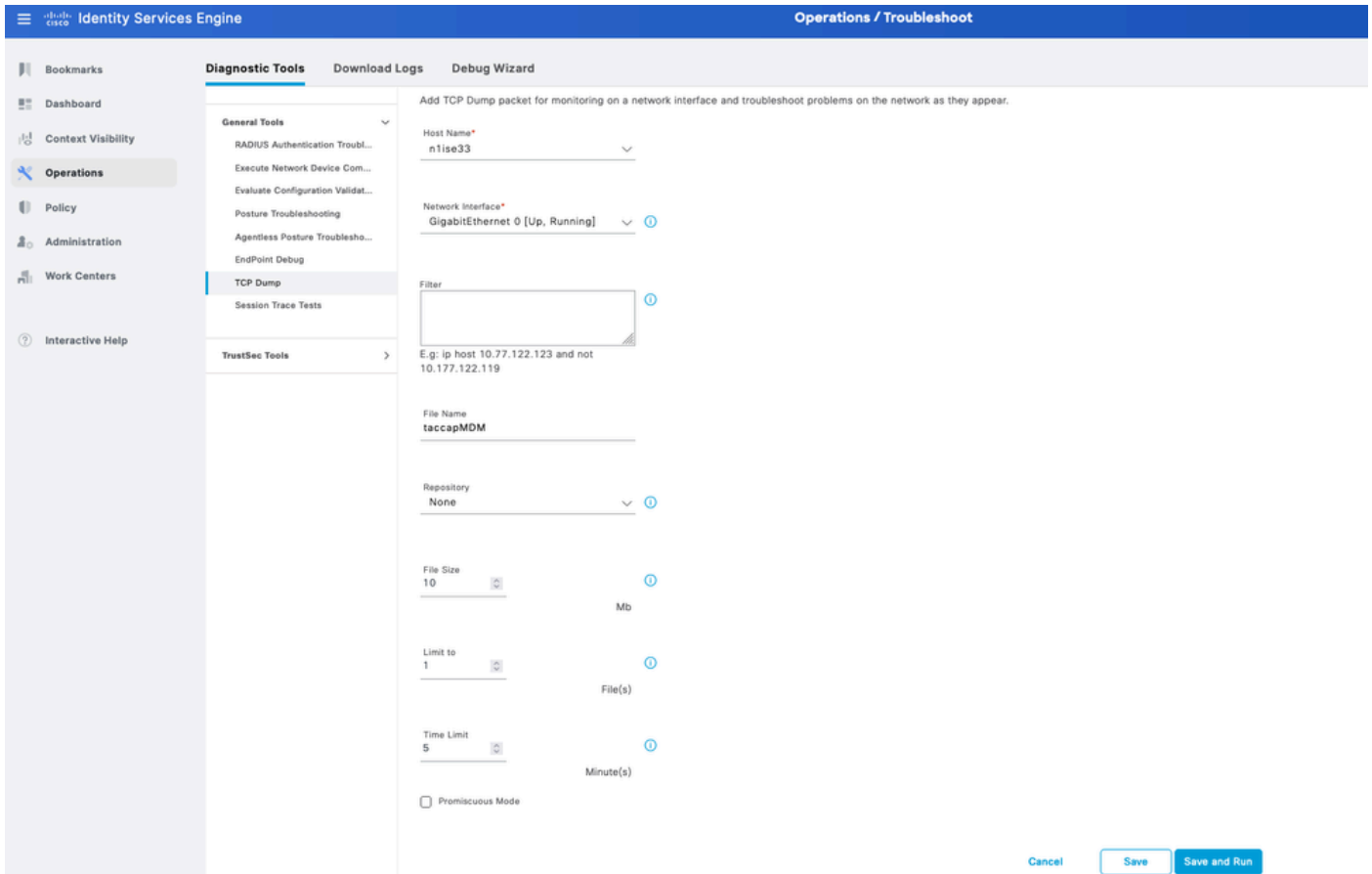


The screenshot shows the Cisco Identity Services Engine (ISE) Operations / Troubleshoot interface. The 'Debug Wizard' tab is active, and the 'Debug Level Configuration' page is displayed. The page shows a table with the following columns: Component Name, Log Level, Description, Log file Name, and Log Filter. The 'external-mdm' component is listed with a Log Level of 'TRACE' and a Log Filter of 'Disabled'.

Component Name	Log Level	Description	Log file Name	Log Filter
external-mdm	TRACE	External Mobile Device Management m...	ise-psc.log	Disabled

TRACE级别中的外部MDM组件进行故障排除

步骤2.从PAN节点设置捕获并保存配置。



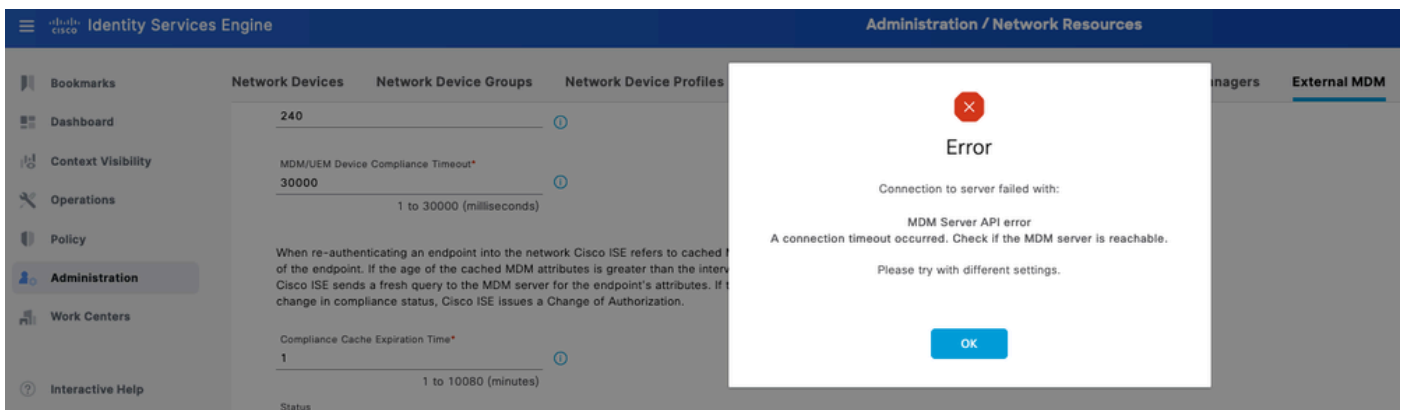
收集MDM连接信息的数据包捕获示例

步骤3.浏览外部MDM菜单。从步骤2运行捕获，然后选择按钮测试连接。等待错误出现。

步骤4.从步骤2停止捕获。查看对应的ise-psc.log日志以分析行为。

方案1.连接超时

在这种情况下，当您在ISE中测试与JAMF的连接时收到此错误时：



MDM错误连接超时

与外部MDM相关的日志显示以下信息：

```
TRACE [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- Inside MDMVerifyServer.verify
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- API version retrieved from MDM
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- apiVersionSb : 3, mdmApiVersion: 3
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query Succeeded
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query Succeeded
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- 1. Connecting to the MDM server
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: start HTTP request
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: start HTTP request
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- ===mdmFlowInfo===null,=====serverInfo=====
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- QueryType is heartbeatQuery
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- using httpClient for http query
INFO [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- GET: MDM Server URL: https://YOUR_ACCOUNT.jamfcloud.com
INFO [Timer-12][[]] cisco.mnt.common.utility.AlarmMessageDiskQueue -:::- Inside dequeue
INFO [Timer-12][[]] cisco.mnt.common.utility.AlarmMessageDiskQueue -:::- root exists
INFO [Timer-12][[]] cisco.mnt.common.utility.AlarmMessageDiskQueue -:::- alarm.1692086243915 deleted
INFO [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmServersCache -:::- MDM server - Status : Active, MDM server - Status : Active
ERROR [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- Error message while connecting to MDM server
Connection Failed to the MDM server host - YOUR_ACCOUNT.jamfcloud.com, and port - 443 : Connection timed out
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: end HTTP request
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: end HTTP request
ERROR [admin-http-pool26][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- Exception occurred while connecting to MDM server
ERROR [admin-http-pool26][[]] cisco.cpm.mdm.api.MdmClient -:::- A connection timeout occurred. Check the MDM server URL
DEBUG [admin-http-pool26][[]] cisco.cpm.mdm.api.MdmServerInfoApi -:::- returning from the method : callMdmServerInfo
    apiPath: null
    redirectUrl: null
    queryMaxSize: null
    apiVersion: null
    vendor: null
    productName: null
    productVersion: null
    COMMA: ,
    errorMsg: null
    errorOccurred: true
}
```

在数据包捕获中，查看以下信息：

DNS流量 — 如果您在集成的设置部分输入主机名，则ISE会对JAMF相关实例执行查询。如果您没有看到主机名的解析结果，请尝试使用IP地址。此选项可用于配置，而不是主机名。

Source	Destination	Protocol	Length	Info
10.88.240.21	10.88.240.59	DNS	85	Standard query 0x5a75 A
10.88.240.21	10.88.240.59	DNS	85	Standard query 0x9f69 A
10.88.240.59	10.88.240.21	DNS	206	Standard query response
10.88.240.59	10.88.240.21	DNS	158	Standard query response

MDM流中的DNS流量

MDM连接端口中的重新传输 — 如果直接查询IP地址（在DNS查询或MDM设置中提供），则可能会看到重复的SYN数据包。这表示没有到JAMF实例的直接路由，也没有外部设备干扰443端口上的通

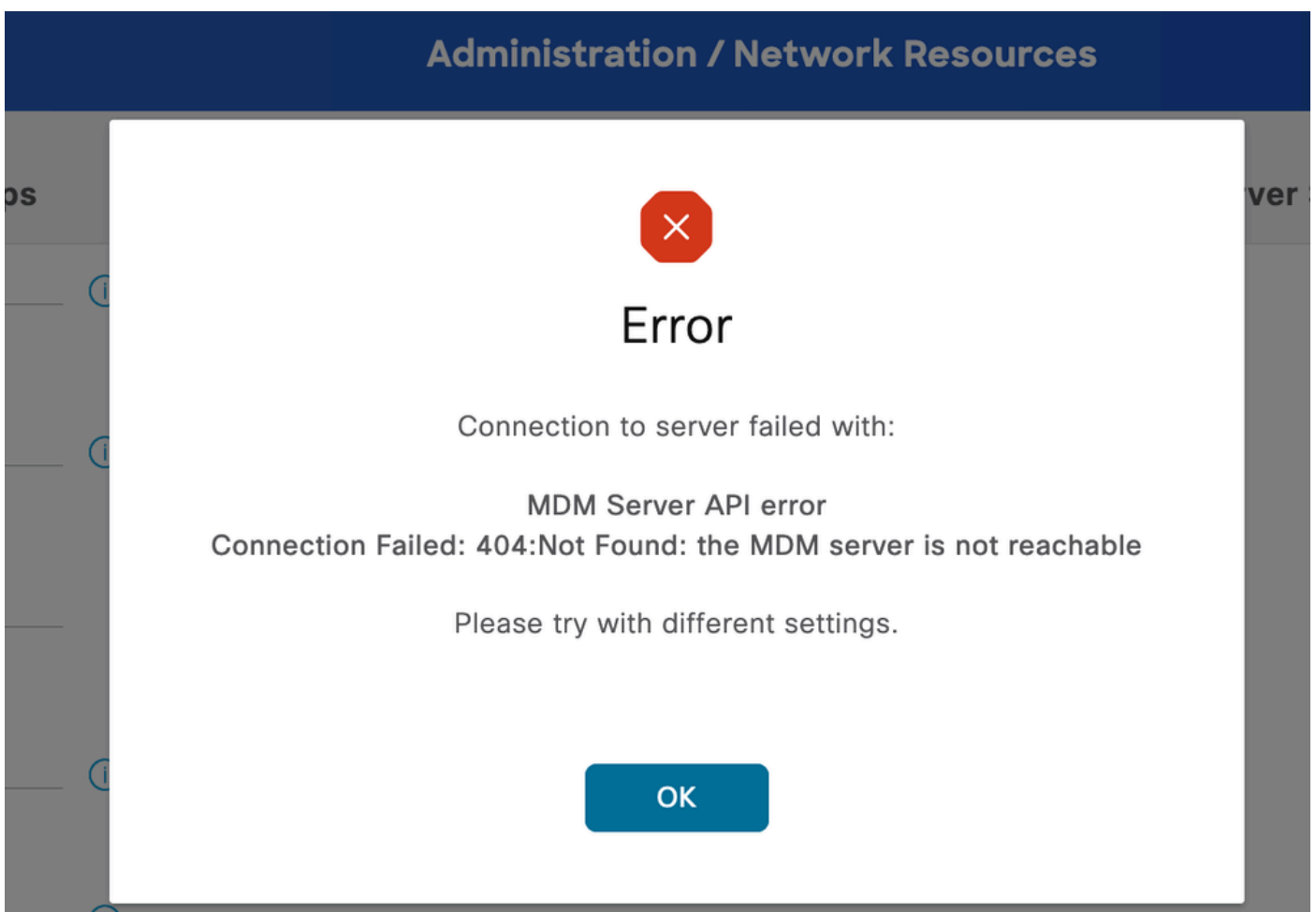
信。

Source	Protocol	Length	Info
10.88.240.21	TCP	74	22432 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM TSval=272773814 TSecr=0 WS=128
10.88.240.21	TCP	74	[TCP Retransmission] 22432 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM TSval=272774846 TSecr=0 WS=128
10.88.240.21	TCP	74	[TCP Retransmission] 22432 → 443 [SYN] Seq=0 Win=29200 Len=0 MSS=1460 SACK_PERM TSval=272776894 TSecr=0 WS=128

连接到MDM超时示例

场景2.连接失败：404

此事件表示您已连接到在设置MDM服务器时配置的JAMF帐户。但是，您指明要连接的实例不存在或包含错误，因为找不到该实例。



MDM error 404示例

系统将显示与此事件对应的日志：

```
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.api.MdmServerInfoApi -:::- inside the method : callMdmServerInfo
TRACE [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- Inside MDMVerifyServer.verify
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- API version retrieved from MDM Rest API
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- apiVersionSb : 3, mdmApiVersion : 3
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query S
```

```

DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- MDM Rest API Server Query P
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- 1. Connecting to the MDM se
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: start HTTP r
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: start
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- ===mdmFlowInfo===null,=====serve
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- QueryType is heartbeatQuery
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- using httpClient for http query
INFO [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- GET: MDM Server URL: https://YOU
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- Proxy Config in request = [,PRO
INFO [admin-http-pool37][[]] cpm.admin.infra.spring.ISEAdminControllerUtils -::admin::- mapping path
INFO [admin-http-pool37][[]] cpm.admin.infra.spring.ISEAdminControllerUtils -::admin::- mapping path
INFO [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmServersCache -:::- MDM server - Status : Active, r
ERROR [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- Error message while connecting t
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDom: end HTTP req
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmRESTClient -:::- sendGETRequestDomNonComp: end H
ERROR [admin-http-pool32][[]] cisco.cpm.mdm.apiimpl.MDMVerifyServer -:::- Exception occurred while co
ERROR [admin-http-pool32][[]] cisco.cpm.mdm.api.MdmClient -:::- Connection Failed: 404:: the MDM serv
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.api.MdmServerInfoApi -:::- returning from the method :ca
  apiPath: null
  redirectUrl: null
  queryMaxSize: null
  apiVersion: null
  vendor: null
  productName: null
  productVersion: null
  COMMA: ,
  errorMsg: null
  errorOccurred: true
}
DEBUG [admin-http-pool32][[]] cisco.cpm.mdm.util.MdmServersCache -:::- mdm Guid: GUID is found in cac

```

此时的数据包捕获提供一个HTTPS连接，其中包含正在JAMF站点和ISE服务器之间传输的应用数据。

Source	Protocol	Length	Info
10.88.240.21	HTTP	183	CONNECT :443 HTTP/1.1
10.31.104.78	HTTP	105	HTTP/1.1 200 Connection established
10.88.240.21	TLsv1.2	419	Client Hello
10.31.104.78	TLsv1.2	213	Server Hello, Change Cipher Spec, Encrypted Handshake Message
10.88.240.21	TLsv1.2	72	Change Cipher Spec
10.88.240.21	TLsv1.2	111	Encrypted Handshake Message
10.88.240.21	TLsv1.2	349	Application Data
10.31.104.78	TLsv1.2	1024	Application Data

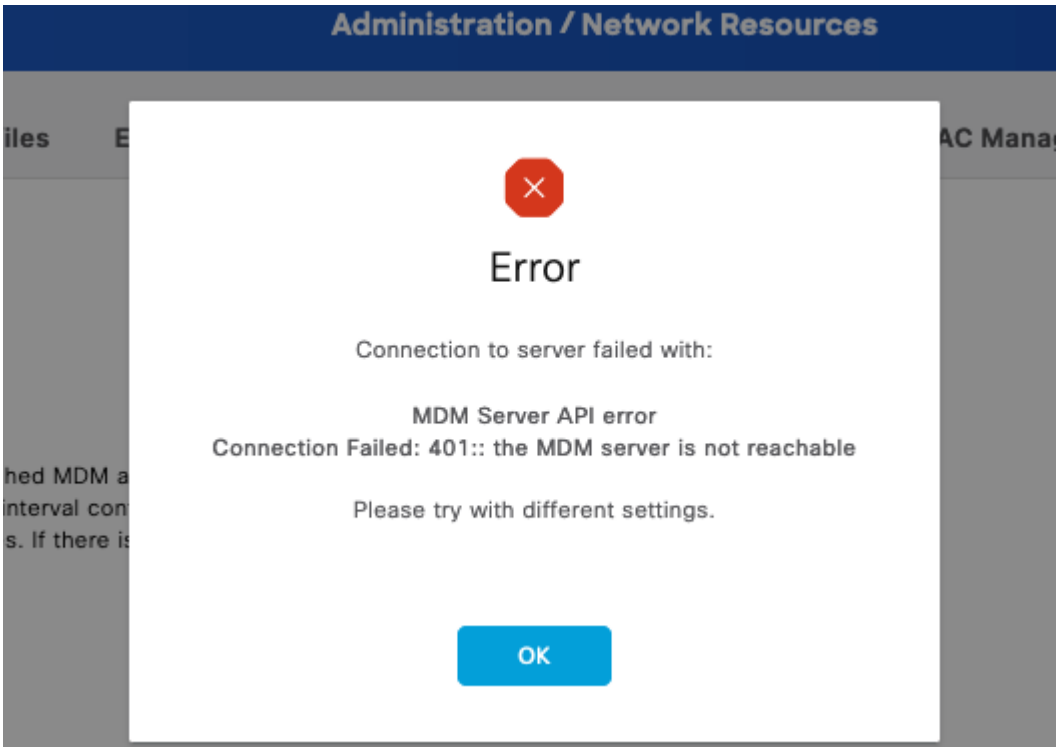
错误404 MDM涉及的数据包

场景3.连接失败：401

连接中的此错误表示您在MDM设置中部署要集成的用户出现问题。

验证用户：

- 存在于JAMF帐户中。
- 具有完成与ISE集成的相应权限。
- 可用于执行API身份验证（如本指南前面所述）。



MDM连接错误代码401

ISE上的日志指示此行为：

```

INFO [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- GET: MDM Server URL: https://YOUR
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- Proxy Config in request = [,PROX
ERROR [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- Error message while connecting to
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDom: end HTTP requ
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDomNonComp: end HT
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.apiimp].MDMVerifyServer -:----- retry connecting using api v
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.apiimp].MDMVerifyServer -:----- MDM Rest API Server Query St
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.apiimp].MDMVerifyServer -:----- MDM Rest API Server Query PA
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.apiimp].MDMVerifyServer -:----- 2. On Error : re-connecting
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDom: start HTTP re
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDomNonComp: start
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- ===mdmFlowInfo===null,=====server
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- QueryType is heartbeatQuery
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- using httpClient for http query -
INFO [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- GET: MDM Server URL: https://YOUR
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- Proxy Config in request = [,PROX
ERROR [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- Error message while connecting to
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDom: end HTTP requ
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.util.MdmRESTClient -:----- sendGETRequestDomNonComp: end HT
DEBUG [admin-http-pool8][[]] cisco.cpm.mdm.apiimp].MDMVerifyServer -:----- retry connecting using api v

```

数据包捕获显示了类似行为，如下图所示：

Source	Protocol	Length	Info
10.88.240.21	HTTP	183	CONNECT :443 HTTP/1.1
10.31.104.78	HTTP	105	HTTP/1.1 200 Connection established
10.88.240.21	TLSv1.2	419	Client Hello
10.31.104.78	TLSv1.2	213	Server Hello, Change Cipher Spec, Encrypted Handshake Message
10.88.240.21	TLSv1.2	72	Change Cipher Spec
10.88.240.21	TLSv1.2	111	Encrypted Handshake Message
10.88.240.21	TLSv1.2	349	Application Data
10.31.104.78	TLSv1.2	1071	Application Data
10.88.240.21	TLSv1.2	349	Application Data
10.31.104.78	TLSv1.2	1071	Application Data

错误中涉及的MDM数据包401

相关信息

- [JAMF与ISE 2.X集成，作为MDM](#)
- [在ISE上排除故障并启用调试](#)
- [如何在ISE 3.x版本上启用调试。](#)

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