

WAAS - MAPI AO故障排除

章节：排除MAPI AO故障

本文介绍如何排除MAPI AO故障。

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MAPI加速器

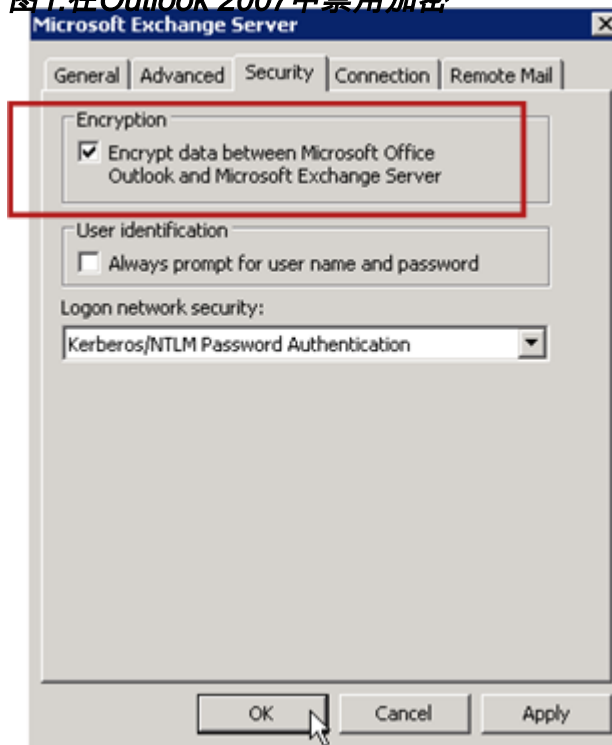
MAPI加速器可优化Microsoft Outlook Exchange电子邮件流量。Exchange使用EMSMDDB协议，该协议分层在MS-RPC上，而MSMDDB协议又使用TCP或HTTP（不支持）作为低级传输。

MAPI AO支持Microsoft Outlook 2000至2007客户端，用于缓存和非缓存模式流量。使用消息身份验证（签名）或加密的安全连接不会被MAPI AO加速。从较旧客户端的此类连接和连接被转移到通用AO以进行TFO优化。此外，不支持Outlook Web Access(OWA)和Exchange-Exchange连接。

注意：默认情况下，Microsoft Outlook 2007已启用加密。必须禁用加密才能从MAPI应用加速器中获益。在Outlook中，选择“工具”>“电子邮件帐户”，选择“查看”或“更改现有电子邮件帐户”，然后单击“下一步”。选择Exchange帐户，然后单击Change。单击“More Settings(更多设置)”，然后单击“Security(安全)”选项卡。取消选中“在Microsoft Office Outlook和Microsoft Exchange Server之间加密数据”复选框，如图1所示。

或者，您也可以使用组策略禁用Exchange Server的所有用户[加密](#)。

图1. 在Outlook 2007中禁用加密



在以下情况下，MAPI AO不处理连接：

- 加密连接（转给通用AO）
- 不支持的客户端（转给通用AO）
- 无法恢复的分析错误。客户端和服务端之间的所有TCP连接都已断开。当客户端重新连接

时，所有连接都会被切断到通用AO。

- 当WAE过载时，客户端尝试在连接上建立新的关联组。
- 当WAE过载且MAPI保留的连接资源不可用时，客户端会建立连接。

Outlook客户端和服务端在会话中通过称为关联组的一组TCP连接进行交互。在关联组中，对象访问可以跨任何连接，并且根据需要动态创建和释放连接。客户端可以同时打开多个关联组到不同服务器或同一服务器。（公用文件夹部署在邮件存储的不同服务器上。）

关联组内的所有MAPI连接必须在分支机构和数据中心内通过相同的WAE对。如果关联组中的某些连接没有在这些WAE上通过MAPI AO，MAPI AO将看不到在这些连接上执行的事务，并且连接被说为“逃避”关联组。因此，不应在构成高可用性组的串行群集内联WAE上部署MAPI AO。

MAPI连接的故障症状是Outlook错误症状，如重复消息或Outlook停止响应。

在TFO过载条件下，现有关联组的新连接将通过并逃离MAPI AO，因此MAPI AO会提前保留大量连接资源，以尽量减小过载条件的影响。有关保留的MAPI连接及其对设备过载的影响的详细信息，请参阅排除过载条件文章中的“[MAPI应用加速器保留连接对过载的影响](#)”一节。

使用show accelerator和show license命令验证常规AO配置和状态，如“[排除应用加速故障](#)”[文章中所](#)述。MAPI加速器操作需要企业许可证，并且必须启用EPM应用程序加速器。

接下来，使用图2所示的show accelerator mapi命令验证MAPI AO的特定状态。您希望看到MAPI AO已启用、运行和注册，并且显示连接限制。如果配置状态为启用，但操作状态为关闭，则表示许可问题。

图2. 验证MAPI加速器状态

```
WAE674# sh accelerator mapi

Accelerator      Licensed      Config State  Operational State
-----
mapi             Yes          Enabled       Running

MAPI:
Accelerator Config Item      Mode      Value
-----
Read optimization           User      enabled
Write optimization          User      enabled

Policy Engine Config Item      Value
-----
State                          Registered
Default Action                  Use Policy
Connection Limit                 6000
Effective Limit                   5990
Kealive timeout                   5.0 seconds
```

Annotations:

- AO admin and operational state (points to Enabled and Running)
- Enabled Optimizations (points to Read and Write optimization)
- Registered state indicates AO is healthy
- Displays connection limit (points to State: Registered and Connection Limit: 6000)

使用show statistics accelerator epm命令验证EPM AO是否正常工作。检查客户端启动时Total Handled Connections、Total Requests Successfully Analysed和Total Responses Successfully计数器是否增加。

使用show running-config命令验证MAPI和EPM流量策略是否已正确配置。您希望看到Email-and-Messaging应用程序操作的accelerate mapi，并且希望看到定义的MS-EndPortMapper分类器和流量策略，如下所示：

```

WAE674# sh run | include mapi
map adaptor EPM mapi
name Email-and-Messaging All action optimize full accelerate mapi

WAE674# sh run | begin MS-EndPointMapper
...skipping
classifier MS-EndPointMapper
match dst port eq 135
exit

WAE674# sh run | include MS-EndPointMapper
classifier MS-EndPortMapper
name Other classifier MS-EndPortMapper action optimize DRE no compression none accelerate
MS-port-mapper

```

使用show policy-engine application dynamic命令验证是否存在动态匹配规则，如下所示：

- 查找具有用户ID的规则：EPM和映射名称：uuida4f1db00-ca47-1067-b31f-00dd010662da。
- “流”字段指示与Exchange服务的活动连接总数。
- 对于每个MAPI客户端，您应看到一个单独的条目，其用户ID为：MAPI。

使用show statistics connection optimized mapi命令检查WAAS设备是否正在建立优化的MAPI连接。验证MAPI连接的Accel列中是否显示“M”，该列表示已使用MAPI AO，如下所示：

```

WAE674# show stat conn opt mapi

Current Active Optimized Flows:                2
Current Active Optimized TCP Plus Flows:      1
Current Active Optimized TCP Only Flows:      1
Current Active Optimized TCP Preposition Flows: 0
Current Active Auto-Discovery Flows:          0
Current Reserved Flows:                       12          <----- Added in 4.1.5
Current Active Pass-Through Flows:            0
Historical Flows:                             161

```

D:DRE,L:LZ,T:TCP Optimization RR:Total Reduction Ratio
A:AOIM,C:CIFS,E:EPM,G:GENERIC,H:HTTP,M:MAPI,N:NFS,S:SSL,V:VIDEO

```

ConnID  Source IP:Port          Dest IP:Port          PeerID                Accel RR
342     10.56.94.101:4506       10.10.100.100:1456   0:1a:64:d3:2f:b8     TMDL  61.0%  <-----Look for
"M"

```

注意：在版本4.1.5中，当前保留流计数器已添加到输出中。此计数器指WAE上当前未使用但留作将来MAPI连接的保留MAPI连接资源数。有关保留的MAPI连接及其对设备过载的影响的详细信息，请参阅排除过载条件文章中的[“MAPI应用加速器保留连接对过载的影响”](#)一节。

如果您在Accel列中观察到与“TGDL”的连接，则这些连接会向下推送到通用AO，并仅通过传输优化进行优化。如果这些是您希望由MAPI AO处理的连接，则可能是因为它们加密的MAPI连接。要检查已请求的已加密MAPI连接数，请使用show statistics accelerator mapi命令，如下所示：

```

wae# sh stat accel mapi

```

```

MAPI:
Global Statistics
-----

```

```

Time Accelerator was started: Thu Nov 5 19:45:19 2009
Time Statistics were Last Reset/Cleared: Thu Nov 5 19:45:19 2009
Total Handled Connections: 8615
Total Optimized Connections: 8614
Total Connections Handed-off with Compression Policies Unchanged: 0
Total Dropped Connections: 1
Current Active Connections: 20
Current Pending Connections: 0
Maximum Active Connections: 512
Number of Synch Get Buffer Requests: 1052
Minimum Synch Get Buffer Size (bytes): 31680
Maximum Synch Get Buffer Size (bytes): 31680
Average Synch Get Buffer Size (bytes): 31680
Number of Read Stream Requests: 3844
Minimum Read Stream Buffer Size (bytes): 19
Maximum Read Stream Buffer Size (bytes): 31744
Average Read Stream Buffer Size (bytes): 14556
Minimum Accumulated Read Ahead Data Size (bytes): 0
Maximum Accumulated Read Ahead Data Size (bytes): 1172480
Average Accumulated Read Ahead Data Size (bytes): 594385
Local Response Count: 20827
Average Local Response Time (usec): 250895
Remote Response Count: 70486
Average Remote Response Time (usec): 277036
Current 2000 Accelerated Sessions: 0
Current 2003 Accelerated Sessions: 1
Current 2007 Accelerated Sessions: 0
Secured Connections: 1 <-----
Encrypted connections
Lower than 2000 Sessions: 0
Higher than 2007 Sessions: 0

```

通过搜索以下消息，可以在系统日志中查找请求加密MAPI连接的客户端的IP地址：

```

2009 Jan 5 13:11:54 WAE512 mapi_ao: %WAAS-MAPIAO-3-132104: (929480) Encrypted connection. Client
ip: 10.36.14.82

```

您可以使用show statistics connection optimized mapi detail命令查看MAPI连接统计信息，如下所示：

```

WAE674# show stat conn opt mapi detail
Connection Id: 1830
Peer Id: 00:14:5e:84:24:5f
Connection Type: EXTERNAL CLIENT
Start Time: Thu Jun 25 06:32:27 2009
Source IP Address: 10.10.10.10
Source Port Number: 3774
Destination IP Address: 10.10.100.101
Destination Port Number: 1146
Application Name: Email-and-Messaging <-----Should see
Email-and-Messaging
Classifier Name: **Map Default**
Map Name: uuida4f1db00-ca47-1067-b31f-00dd010662da <-----Should see this
UUID
Directed Mode: FALSE
Preposition Flow: FALSE
Policy Details:
Configured: TCP_OPTIMIZE + DRE + LZ

```

```

    Derived:      TCP_OPTIMIZE + DRE + LZ
      Peer:      TCP_OPTIMIZE + DRE + LZ
Negotiated:      TCP_OPTIMIZE + DRE + LZ
    Applied:      TCP_OPTIMIZE + DRE + LZ
Accelerator Details:
    Configured:   MAPI                               <-----Should see MAPI
configured
      Derived:   MAPI
      Applied:   MAPI                               <-----Should see MAPI
applied
      Hist:     None

```

	Original	Optimized
	-----	-----
Bytes Read:	4612	1973
Bytes Written:	4086	2096
. . .		

本地和远程响应计数和平均响应时间如下输出所示：

```

. . .
MAPI : 1830

Time Statistics were Last Reset/Cleared:           Thu Jun 25
06:32:27 2009
Total Bytes Read:                                  46123985
Total Bytes Written:                               40864046
Number of Synch Get Buffer Requests:                0
Minimum Synch Get Buffer Size (bytes):               0
Maximum Synch Get Buffer Size (bytes):               0
Average Synch Get Buffer Size (bytes):               0
Number of Read Stream Requests:                    0
Minimum Read Stream Buffer Size (bytes):             0
Maximum Read Stream Buffer Size (bytes):             0
Average Read Stream Buffer Size (bytes):             0
Minimum Accumulated Read Ahead Data Size (bytes):  0
Maximum Accumulated Read Ahead Data Size (bytes):  0
Average Accumulated Read Ahead Data Size (bytes):  0
Local Response Count:                              0          <-----
-
Average Local Response Time (usec):                 0          <-----
-
Remote Response Count:                              19         <-----
-
Average Remote Response Time (usec):                89005       <-----
. . .

```

加密MAPI加速

摘要

自WAAS 5.0.1起，MAPI加速器现在可以加速加密的MAPI流量。在5.0.3版本中，此功能将默认启用。但是，为了成功加速加密的MAPI流量，WAAS和Microsoft AD环境中都有许多要求。本指南将帮助您验证eMAPI功能并排除故障。

功能信息

eMAPI将默认在5.0.3中启用，并且需要以下条件才能成功加速加密流量。

- 1)CMS安全存储必须在所有核心WAE上初始化和打开
- 2)WAE必须能够解析Exchange服务器和Kerberos KDC (Active Directory控制器) 的FQDN
- 3)WAE时钟必须与KDC同步
- 4)必须在从Outlook到Exchange的路径中的所有WAE上启用SSL加速器、WAN安全和eMAPI
- 5)路径中的WAE必须具有正确的策略映射配置
- 6)核心WAE必须配置一个或多个加密服务域标识 (用户或机器帐户)
- 7)如果使用计算机帐户，则此WAE必须加入AD域。
- 8)然后，使用计算机或用户帐户使用案例，需要为Active Directory中的这些对象授予特定权限。必须将“复制目录更改”和“复制目录更改全部”都设置为允许。

建议通过通用安全组执行此操作 (例如，将权限分配给组，然后将加密服务中指定的WAAS设备和/或用户名添加到该组)。有关AD配置和WAAS CM GUI的屏幕截图，请参阅随附的指南。

故障排除方法

第1步 — 检验加密服务身份配置和密钥检索成功

当诊断命令 (下面的步骤2) 验证加密服务是否存在时，它不验证密钥检索是否成功。因此，我们不知道是否在Active Directory (计算机或用户帐户) 中为对象授予了适当的权限，只需运行该诊断命令即可。

对配置和验证加密服务是否成功检索密钥需要执行的操作的摘要

用户帐户：

- 1.创建AD用户
- 2.创建AD组，并将“复制目录更改”和“复制目录更改全部”设置为ALLOW
- 3.将用户添加到创建的组
- 4.在加密服务中定义用户帐户域标识
- 5.运行get key diagnostic cli

```
windows-domain diagnostics encryption-service get-key <exchange server FQDN> <domain name>
```

请注意，您应使用在服务器上配置的实际/实际Exchange服务器名称，而不应使用可能解析为多个Exchange服务器的NLB/VIP类型FQDN。

- 6.如果密钥检索工作完成

成功示例：

```
pdi-7541-dc#windows-domain diagnostics encryption-service get-key pdidc-exchange1.pdidc.cisco.com pdidc.cisco.com
```

SPN pdidc-exchange1.pdidc.cisco.com , 域名 : pdidc.cisco.com

正在检索密钥。

```
pdi-7541-dc#windows-domain diagnostics encryption-service get-key pdidc-exchange1.pdidc.cisco.com pdidc.cisco.com
```

SPN pdidc-exchange1.pdidc.cisco.com , 域名 : pdidc.cisco.com

pdidc-exchange1.pdidc.cisco.com的密钥驻留在内存密钥缓存中

计算机帐户

- 1.将核心WAE设备加入AD域
- 2.创建AD组，并将“复制目录更改”和“复制目录更改全部”设置为ALLOW
- 3.将计算机帐户添加到已创建的组
- 4.配置加密服务以使用计算机帐户
- 5.给予某个时间，使组策略应用于加入的计算机，或强制应用AD. gpupdate /force中的组策略。
- 6.运行get key diagnostic cli

```
windows-domain diagnostics encryption-service get-key <exchange server FQDN> <domain name>
```

请注意，您应使用在服务器上配置的实际/实际Exchange服务器名称，而不应使用可能解析为多个Exchange服务器的NLB/VIP类型FQDN。

- 7.如果密钥检索工作完成

有关加密服务和AD配置的更多详细信息和屏幕截图，请参阅随附的指南。

第2步 — 在5.0.3中引入了新的诊断命令来检查某些所需设置。

加速器MAPI验证加密设置

- 1.CLI执行各种有效性检查。其输出总结了将加密MAPI流量作为边缘或核心加速的能力。
- 2.检查各组件的状态/配置属性，使加密服务正常工作。
- 3.当发现配置问题时，系统将输出缺失的内容以及CLI或修复问题的操作。
- 4.将摘要作为边缘设备和核心设备。既可以是边缘又可以是核心的设备，应该为边缘和核心都运行EMAPI。

以下是错误配置WAE的输出示例：

Core#accelerator mapi verify encryption-settings

[EDGE:]

Verifying Mapi Accelerator State

```

-----
Status: FAILED
Accelerator      Config State      Operational State
-----
mapi             Disabled          Shutdown
>>Mapi Accelerator should be Enabled
>>Mapi Accelerator should be in Running state

```

Verifying SSL Accelerator State

```

-----
Status: FAILED
>>Accelerator   Config State      Operational State
-----
ssl             Disabled          Shutdown
>>SSL Accelerator should be Enabled
>>SSL Accelerator should be in Running state

```

Verifying Wan-secure State

```

-----
Status: FAILED
>>Accelerator   Config State      Operational State
-----
wan-secure      Disabled          Shutdown
>>Wan-secure should be Enabled
>>Wan-secure should be in Running state

```

Verifying Mapi Wan-secure mode Setting

```

-----
Status: FAILED
Accelerator Config Item      Mode      Value
-----
WanSecure Mode              User      Not Applicable
>>Mapi wan-secure setting should be auto/always

```

Verifying NTP State

```

-----
Status: FAILED
>>NTP status should be enabled and configured

```

Summary [EDGE]:

```

=====
Device has to be properly configured for one or more components

```

[CORE:]

Verifying encryption-service State

```

-----
Status: FAILED
Service          Config State      Operational State
-----
Encryption-service Disabled          Shutdown
>>Encryption Service should be Enabled

```

>>Encryption Service status should be in 'Running' state

Verifying Encryption-service Identity Settings

Status: FAILED

>>No active Encryption-service Identity is configured.

>>Please configure an active Windows Domain Encryption Service Identity.

Summary [CORE]: Applicable only on CORE WAEs

=====

Device has to be properly configured for one or more components

以下是正确配置的核心WAE的输出：

Core#acc mapi verify encryption-settings [EDGE:]

Verifying Mapi Accelerator State

Status: OK

Verifying SSL Accelerator State

Status: OK

Verifying Wan-secure State

Status: OK

Verifying Mapi encryption Settings

Status: OK

Verifying Mapi Wan-secure mode Setting

Status: OK

Verifying NTP State

Status: OK

Summary [EDGE]:

=====

Device has proper configuration to accelerate encrypted traffic

[CORE:]

Verifying encryption-service State

Status: OK

Verifying Encryption-service Identity Settings

Status: OK

Summary [CORE]: Applicable only on CORE WAEs

=====

第3步 — 手动验证上述诊断命令未检查的WAE设置。

1)在检查是否配置了NTP时，上述命令实际上并不验证WAE和KDC之间的时间是否同步。在核心和KDC之间同步的时间对于密钥检索成功非常重要。

如果手动检查显示它们不同步，强制WAE时钟同步的简单方法是ntpdate命令(ntpdate <KDC ip>)。然后将WAE指向企业NTP服务器。

2)验证dnslookup在Exchange服务器FQDN和KDC的FQDN的所有WAE上是否成功

3)检验路径中所有WAE上的类映射和策略映射是否配置正确。

```
pdi-7541-dc#sh class-map type waas MAPI
```

类映射类型waas match-any MAPI

匹配tcp目标epm mapi (0个流匹配)

```
pdi-7541-dc#show policy-map type waas策略映射类型waas
```

WAAS-GLOBAL(共6084690个)

类MAPI (0个流匹配)

优化完全加速mapi应用电子邮件和消息

4)验证CMS安全存储是否在所有WAE上打开并初始化“show cms secure store”

数据分析

除了分析诊断命令和手动show命令的输出外，您可能需要查看sysreport。

具体而言，您将要查看mapiao-errorlog、sr-errorlog (仅核心WAE) 和wsao-errorlog文件。

每个日志中都会出现提示，具体取决于场景，这将引导您找到连接丢弃到通用AO的原因。

此处的示例输出可作为参考，显示各种工作组件

此输出来自sr-errorlog，显示计算机帐户加密服务身份的验证

注意：这仅确认Core WAE已加入域且计算机帐户存在。

```
active list in SRMain [SRMain.cpp:215]
07/03/2012 19:12:07.279(Local)(6249 1.5) NTCE (279018) Adding identity(MacchineAcctWAAS) to Map
[SRDiIdMgr.cpp:562]
07/03/2012 19:12:07.279(Local)(6249 1.5) NTCE (279282) Activate Id: MacchineAcctWAAS
[SRMain.cpp:260]
07/03/2012 19:12:07.279(Local)(6249 1.5) NTCE (279306) Identity MacchineAcctWAAS found in the
Map [SRDiIdMgr.cpp:702]
07/03/2012 19:12:07.279(Local)(6249 1.5) NTCE (279321) Authentication for ID: MacchineAcctWAAS
[SRDiIdMgr.cpp:398]
07/03/2012 19:12:07.330(Local)(6249 1.5) NTCE (330581) Authentication success, tkt validity
starttime 1341342727 endtime 1341378727 [SRDiIdMgr.cpp:456]
07/03/2012 19:12:07.330(Local)(6249 1.5) NTCE (330599)
ID_TAG :MacchineAcctWAAS
Name : pdi-7541-dc
Domain : PDIDC.CISCO.COM
Realm : PDIDC.CISCO.COM
CLI_GUID :
SITE_GUID :
CONF_GUID :
Status:ENABLED
Black_Listed:NO
AUTH_STATUS: SUCCESS
ACCT_TYPE:Machine [SRIdentityObject.cpp:85]
07/03/2012 19:12:07.331(Local)(6249 1.5) NTCE (331685) DN Info found for domain PDIDC.CISCO.COM
[SRIdentityObject.cpp:168]
07/03/2012 19:12:07.347(Local)(6249 1.5) NTCE (347680) Import cred successfull for pn: pdi-7541-
dc@PDIDC.CISCO.COM [AdsGssCli.cpp:111]
```

此输出再次来自Core sr-errorlog，显示从KDC成功检索密钥。

```
10/23/2012 15:46:55.673(Local)(3780 1.2) NTCE (673766) Key Not Found in cache, initiating
retrieval for spn:exchangeMDB/pdidc-exchange1.pdidc.cisco.com [SRServer.cpp:297]
10/23/2012 15:46:55.673(Local)(3780 1.2) NTCE (673811) Queued InitiateKeyRetrieval task
[SRServer.cpp:264]10/23/2012 15:46:55.673(Local)(3780 1.2) NTCE (673819)
Key retrieval is in Progress [SRServer.cpp:322]
10/23/2012 15:46:55.673(Local)(3780 0.0) NTCE (673818) Initiating key retrieval
[SRServer.cpp:271]
10/23/2012 15:46:55.673(Local)(3780 1.2) NTCE (673827) initiating key retrieval in progress
[SRDataServer.cpp:441]
10/23/2012 15:46:55.673(Local)(3780 1.2) NTCE (673834) Sending ack for result 2, item name
/cfg/gl/sr/sr_get_key/pdidc-exchange1.pdidc.cisco.com@pdidc.cisco.com
[SRDataServer.cpp:444]
10/23/2012 15:46:55.673(Local)(3780 0.0) NTCE (673922) Match found for DN: pdidc.cisco.com is
ID:MacchineAcctWAAS [SRDiIdMgr.cpp:163]
10/23/2012 15:46:55.673(Local)(3780 0.0) NTCE (673937) Identity MacchineAcctWAAS found in the
Map [SRDiIdMgr.cpp:702]
10/23/2012 15:46:55.673(Local)(3780 0.0) NTCE (673950) DN Info found for domain pdidc.cisco.com
[SRIdentityObject.cpp:168]
10/23/2012 15:46:55.674(Local)(3780 0.0) NTCE (674011) DRS_SPN: E3514235-4B06-11D1-AB04-
00C04FC2DCD2/e4c83c51-0b59-4647-b45d-780dd2dc3344/PDIDC.CISCO.COM for
```

```
PDI-7541-DC@PDIDC.CISCO.COM [GssCli.cpp:51]
10/23/2012 15:46:55.674(Local)(3780 0.0) NTCE (674020) CREATED srkr obj(0x50aa00) for spn
(exchangeMDB/pdidc-exchangel.pdidc.cisco.com) [SRKeyMgr.cpp:134]
10/23/2012 15:46:55.674(Local)(3780 1.3) NTCE (674421) Import cred successfull for pn: PDI-7541-
DC@PDIDC.CISCO.COM [GssCli.cpp:135]
10/23/2012 15:46:55.676(Local)(3780 1.3) NTCE (676280) session(0x50aa00) Complete TGT stage of
GSS Successful, Initiating AppApi [SRKeyRetriever.cpp:408]
10/23/2012 15:46:55.676(Local)(3780 0.1) NTCE (676415) SRKR: Success in posting connect to
service <ip:0e:6e:03:a3><port:135> [IoOperation.cpp:222]
10/23/2012 15:46:55.676(Local)(3780 0.0) NTCE (676607) Connected to server.
[IoOperation.cpp:389]
10/23/2012 15:46:55.677(Local)(3780 0.0) NTCE (677736) SRKR: Success in posting connect to
service <ip:0e:6e:03:a3><port:1025> [IoOperation.cpp:222]
10/23/2012 15:46:55.678(Local)(3780 0.1) NTCE (678001) Connected to server.
[IoOperation.cpp:389]
10/23/2012 15:46:55.679(Local)(3780 0.1) NTCE (679500) Cleaning up credential cache for PDI-
7541-DC@PDIDC.CISCO.COM [GssCli.cpp:212]
10/23/2012 15:46:55.680(Local)(3780 0.1) NTCE (680011) Parsing DRSEBIND Response
[AppApiDrsBind.cpp:222]
10/23/2012 15:46:55.680(Local)(3780 0.1) NTCE (680030) DRSEBind Success, Status:00000000
[AppApiDrsBind.cpp:359]
10/23/2012 15:46:55.685(Local)(3780 0.1) NTCE (685502) session(0x50aa00) Successful in Key
Retrieval from AD for SPN:exchangeMDB/pdidc-exchangel.pdidc.cisco.com
[SRKeyRetriever.cpp:269]
10/23/2012 15:46:55.685(Local)(3780 0.1) NTCE (685583) Send Key response to the Client for spn:
exchangeMDB/pdidc-exchangel.pdidc.cisco.com, # of req's : 1
[SRKeyMgr.cpp:296]
10/23/2012 15:46:55.685(Local)(3780 0.1) NTCE (685594) Deleting spn: exchangeMDB/pdidc-
exchangel.pdidc.cisco.com entry from Pending key request map [SRKeyMgr.cpp:303]
```

此输出来自边缘WAE上的mapian-errorlog文件，以便成功进行eMAPI连接

```
'''10/23/2012 17:56:23.080(Local)(8311 0.1) NTCE (80175) (fl=2433) Edge TCP connection initiated
(-1409268656), Conn: [14.110.3.117:58352 <=> 14.110.3.99:27744],
Flavor: 0 [EdgeTcpConnectionDceRpcLayer.cpp:43]
10/23/2012 17:56:23.080(Local)(8311 0.1) NTCE (80199) Edge TCP connection initiated (-
1409268656), Conn: [14.110.3.117:58352 <=> 14.110.3.99:27744], Flavor: 0
[EdgeTcpConnectionDceRpcLayer.cpp:48]
10/23/2012 17:56:23.108(Local)(8311 0.0) NTCE (108825) (fl=2433) Bind Request from client with
AGID 0x0, callId 2, to dest-ip 14.110.3.99, AuthLevel: PRIVACY
AuthType: SPNEGO AuthCtxId: 0 WsPlumb:1
[EdgeTcpConnectionDceRpcLayer.cpp:1277]'''
10/23/2012 17:56:23.109(Local)(8311 0.0) NTCE (109935) CheckAndDoAoshReplumbing perform
replumbing wsPlumbState 1 [Session.cpp:315]
10/23/2012 17:56:23.109(Local)(8311 0.0) NTCE (109949) (fl=2433) AOSH Replumbing was performed
returned Status 0 [Session.cpp:337]
10/23/2012 17:56:23.109(Local)(8311 0.0) NTCE (109956) CheckAndPlumb WanSecure(14) ret:= [1,0]
WsPlumb:4 fd[client,server]:=[25,26] [AsyncOperationsQueue.cpp:180]
10/23/2012 17:56:23.312(Local)(8311 0.1) NTCE (312687) (fl=2433) Connection multiplexing enabled
```

```

by server on the connection. [EdgeTcpConnectionDceRpcLayer.cpp:499]
10/23/2012 17:56:23.312(Local)(8311 0.1) NTCE (312700) (fl=2433) Header signing enabled by
server on the connection. [EdgeTcpConnectionDceRpcLayer.cpp:510]
10/23/2012 17:56:23.312(Local)(8311 0.1) NTCE (312719) (fl=2433) OnNewConnection - Client IP
14.110.3.117 (0xe6e0375), Serv IP 14.110.3.99 (0xe6e0363), nDstPort=27744,
nAssociationGroup=0x11de4,conn_fd=26,
bWasConnectionFromReservedPool=0, bIsNewMapiSession=1 [ConnectionReservationManager.cpp:255]
'''10/23/2012 17:56:23.366(Local)(8311 0.1) NTCE (366789) (fl=2433) Received security context
from core with auth context id: 0 [EdgeTcpConnectionDceRpcLayer.cpp:2912]
10/23/2012 17:56:23.367(Local)(8311 0.1) NTCE (367157) (fl=2433) Security Layer moved to ESTB
state [FlowSecurityLayer.cpp:311]'''
10/23/2012 17:56:23.368(Local)(8311 0.1) NTCE (368029) (fl=2433) Informational:: Send APC set to
WS: asking for Cipher 2 [EdgeTcpConnectionDceRpcLayer.cpp:809]
10/23/2012 17:56:23.368(Local)(8311 0.1) NTCE (368041) (fl=2433) Sec-Params [CtxId, AL, AT, ACT,
DCT, [Hs, ConnMplx, SecMplx]]:= [0, 6, 9, 18, 18 [1,1,0]]
[FlowIOBuffers.cpp:477]
10/23/2012 17:56:23.369(Local)(8311 0.0) NTCE (369128) (fl=2433)
CEdgeTcpConnectionEmsMdbLayer::ConnectRequestCommon (CallId 2): client version is
ProductMajor:14,
Product Minor:0, Build Major:6117,
Build Minor:5001 Client ip 14.110.3.117 Client port 58352 Dest ip 14.110.3.99 Dest port 27744
[EdgeTcpConnectionEmsMdbLayer.cpp:1522]
10/23/2012 17:56:23.868(Local)(8311 0.1) ERRO (868390) (fl=2433) ContextHandle.IsNull()
[EdgeTcpConnectionEmsMdbLayer.cpp:1612]
10/23/2012 17:56:23.890(Local)(8311 0.0) NTCE (890891) (fl=2433)
CEdgeTcpConnectionEmsMdbLayer::ConnectRequestCommon (CallId 3): client version is
ProductMajor:14,
Product Minor:0, Build Major:6117,
Build Minor:5001 Client ip 14.110.3.117 Client port 58352 Dest ip 14.110.3.99 Dest port 27744
[EdgeTcpConnectionEmsMdbLayer.cpp:1522]

```

这是同一TCP连接的mapiao-errorlog的相应核心WAE输出

```

'''10/23/2012 17:56:54.092(Local)(6408 0.0) NTCE (92814) (fl=21) Core TCP connection initiated
(11892640), Conn: [14.110.3.117:58352 <=> 14.110.3.99:27744], F
lavor: 0 [CoreTcpConnectionDceRpcLayer.cpp:99]
10/23/2012 17:56:54.092(Local)(6408 0.0) NTCE (92832) Core TCP connection initiated (11892640),
Conn: [14.110.3.117:58352 <=> 14.110.3.99:27744], Flavor: 0
[CoreTcpConnectionDceRpcLayer.cpp:104]'''
10/23/2012 17:56:54.175(Local)(6408 0.0) NTCE (175035) SrplibCache Cache eviction starting:
static void srplib::CSrplibCache:: OnAoShellDispatchCacheCleanup(vo
id*, aosh_work*) [SrplibCache.cpp:453]
10/23/2012 17:56:54.175(Local)(6408 0.0) NTCE (175068) last_cleanup_time (1344411860),
evict_in_progress(1) handled_req_cnt (1) cache_size (0) [SrplibCache.
cpp:464]
10/23/2012 17:56:54.175(Local)(6408 0.0) NTCE (175121) SendNextCmd isDuringSend 0, WriteQueue sz

```

```

1, isDuringclose 0 [SrlibClientTransport.cpp:163]
10/23/2012 17:56:54.175(Local)(6408 0.0) NTCE (175132) SendNextCmd: Sending request:
exchangeMDB/PDIDC-EXCHANGE1.pdidc.cisco.com:23[v:=11], WriteQueue sz 0
[bClose 0] [SrlibClientTransport.cpp:168]
10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185576) OnReadComplete len 4 status 0
isDuringRead 1, isDuringHeaderRead 1, isDuringclose 0 [SrlibTransport.
cpp:127]
10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185587) Parse header, msg body len 152
[SrlibTransport.cpp:111]
10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185592) ReadNextMsg isDuringRead 0,
isDuringHeaderRead 1, isDuringclose 0 [SrlibTransport.cpp:88]
10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185623) OnReadComplete len 148 status 0
isDuringRead 1, isDuringHeaderRead 0, isDuringclose 0 [SrlibTranspor
t.cpp:127]
'''10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185688) Insert new KrbKey: exchangeMDB/PDIDC-
EXCHANGE1.pdidc.cisco.com::23[v:=11]:[{e,f,l}:= {0, 0x1, 16}] [S
rlibCache.cpp:735]
'''10/23/2012 17:56:54.185(Local)(6408 0.1) NTCE (185747) ReadNextMsg isDuringRead 0,
isDuringHeaderRead 0, isDuringclose 0 [SrlibTransport.cpp:88]
'''10/23/2012 17:56:54.261(Local)(6408 0.1) NTCE (261575) (fl=21) Successfully created memory
keytab with name: MEMORY:exchangeMDB@PDIDC-EXCHANGE1.pdidc.cisco
.comOnxrPblND [GssServer.cpp:468]
10/23/2012 17:56:54.261(Local)(6408 0.1) NTCE (261613) (fl=21) Successfully added entry in
memory keytab. [GssServer.cpp:92]
10/23/2012 17:56:54.261(Local)(6408 0.1) NTCE (261858) (fl=21) Successfully acquired
credentials. [GssServer.cpp:135]'''

```

常见问题

以下是导致eMAPI连接切换到通用AO(TG)的一些常见原因。

问题 1：在核心WAE上配置的加密服务标识在AD中没有正确的权限。

核心WAE上sr-errolog的输出

```

09/25/2012 18:47:54.147(Local)(9063 0.1) ERRO (147570) session(0x517fa0) Failed to Retrieve Key
from AD for SPN:exchangeMDB/outlook.sicredi.net.br error:16 [SRKeyRetriever.cpp:267]
'''09/25/2012 18:47:54.147(Local)(9063 0.1) ERRO (147592) Key retrieval failed with Status 16
[SRKeyMgr.cpp:157]
''''''09/25/2012 18:47:54.147(Local)(9063 0.1) ERRO (147623) Identity "WAASMacAct" has been
blacklisted [SRDiIdMgr.cpp:258]
''''''09/25/2012 18:47:54.147(Local)(9063 0.1) ERRO (147631) Key retrieval failed due to
permission issue [SRKeyMgr.cpp:167]

```

```
''09/25/2012 18:47:54.147(Local)(9063 0.1) ERRO (147636) Identity: WAASMacAct will be black
listed. [SRKeyMgr.cpp:168]
09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147657) Calling KrbKeyResponse key handler in
srlib [SRServer.cpp:189]
09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147722) Queued send reponse buffer to client task
[SrplibServerTransport.cpp:136]
09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147730) KrbKeyResponse, sent to client session
object [SrplibServer.cpp:203]
09/25/2012 18:47:54.147(Local)(9063 0.0) NTCE (147733) SendNextCmd isDuringSend 0, WriteQueue
size 1 isDuringClose 0 [SrplibServerTransport.cpp:308]
09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147740) Send Key response to the Client
```

决议1:请查阅配置指南并验证AD中的对象是否具有正确的权限。必须将“复制目录更改”和“复制目录更改全部”都设置为允许。

http://www.cisco.com/en/US/docs/app_ntwk_services/waas/waas/v511/configuration/guide/policy.html#wp1256547

问题 2 : 核心WAE与它尝试从中检索密钥的KDC之间存在时间偏差

核心WAE上sr-errolog的输出

```
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507836) Initiating key retrieval
[SRServer.cpp:271]
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507878) Match found for DN: pdidc.cisco.com is
ID:MacchineAcctWAAS [SRDiIdMgr.cpp:163]
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507888) Identity MacchineAcctWAAS found in the
Map [SRDiIdMgr.cpp:702]
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507901) DN Info found for domain pdidc.cisco.com
[SRIdentityObject.cpp:168]
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507923) DRS_SPN: E3514235-4B06-11D1-AB04-
00C04FC2DCD2/e4c83c51-0b59-4647-b45d-780dd2dc3344/PDIDC.CISCO.COM for
PDI-7541-DC@PDIDC.CISCO.COM [GssCli.cpp:51]
10/23/2012 01:31:33.507(Local)(1832 0.1) NTCE (507933) CREATED srkr obj(0x2aaaac0008c0) for spn
(exchangeMDB/pdidc-exchange1.pdidc.cisco.com) [SRKeyMgr.cpp:134]
10/23/2012 01:31:33.508(Local)(1832 1.6) NTCE (508252) Import cred successfull for pn: PDI-7541-
DC@PDIDC.CISCO.COM [GssCli.cpp:135]
10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511151) CreateSecurityContext:
gss_init_sec_context failed [majorStatus = 851968 (0xd0000)] [GssCli.cpp:176]
''10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511170) GSS_MAJOR ERROR:851968 msg_cnt:0,
Miscellaneous failure (see text)CD2 [GssCli.cpp:25]
10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511177) GSS_MINOR ERROR:2529624064 msg_cnt:0,
Clock skew too great [GssCli.cpp:29]
10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511182) gsskrb5_get_subkey failed: 851968,22,
[GssCli.cpp:198]
10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511188) session(0x2aaaac0008c0) Error: Invalid
security ctx state, IsContinue is false with out token exchange
[SRKeyRetriever.cpp:386]
10/23/2012 01:31:33.511(Local)(1832 1.6) ERRO (511193) session(0x2aaaac0008c0) Failed to
Retrieve Key from AD for SPN:exchangeMDB/pdidc-exchange1.pdidc.cisco.com error:1
```



```
[SRKeyRetriever.cpp:267]'''
10/23/2012 01:31:33.511(Local)(1832 0.0) ERRO (511213) Key retrieval failed with Status 1
[SRKeyMgr.cpp:157]
```

决议2:在所有WAE (尤其是核心)上使用ntpdate将时钟与KDC同步。然后指向企业NTP服务器(与KDC可能相同)。

问题 3 : 您为加密服务定义的域与Exchange服务器所在的域不匹配。

核心WAE上sr-errolog的输出

```
10/23/2012 18:41:21.918(Local)(3780 1.5) NTCE (918788) Key retrieval is in Progress
[SRServer.cpp:322]
10/23/2012 18:41:21.918(Local)(3780 1.5) NTCE (918793) initiating key retrieval in progress
[SRDataServer.cpp:441]
10/23/2012 18:41:21.918(Local)(3780 0.0) NTCE (918790) Initiating key retrieval
[SRServer.cpp:271]
10/23/2012 18:41:21.918(Local)(3780 1.5) NTCE (918798) Sending ack for result 2, item name
/cfg/gl/sr/sr_get_key/pdidc-exchange.cisco.com@cisco.com [SRDataServer.cpp:444]
10/23/2012 18:41:21.918(Local)(3780 0.0) ERRO (918813) Failed to find Identity match for domain
cisco.com [SRDiIdMgr.cpp:157]
10/23/2012 18:41:21.918(Local)(3780 0.0) NTCE (918821) Failed to find identity match for domain
[SRKeyMgr.cpp:120]
10/23/2012 18:41:21.918(Local)(3780 0.0) NTCE (918832) Send Key response to the Client for spn:
exchangeMDB/pdidc-exchange.cisco.com, # of req's: 1 [SRKeyMgr.cpp:296]
```

决议3:如果您的核心WAE为不同域中的多个Exchange服务器提供服务,则必须为Exchange服务器所在的每个域配置加密服务标识。

请注意,目前不支持子域包括。因此,如果您有myexchange.sub-domain.domain.com,则加密服务标识必须位于sub-domain.domain.com中;它不能在父域中。

问题 4 : 如果WAN安全失败,您的连接可能会丢弃到TG

eMAPI连接可以移交给通用AO,因为WAN安全插拔失败。WAN Secure plumb失败,因为证书验证失败。对等证书验证将失败,因为正在使用默认自签名对等证书或证书已合法失败的OCSP检查。

核心WAE设置

```
crypto pki global-settings

  oosp url http://pdidc.cisco.com/oosp
  revocation-check oosp-cert-url
exit
```

```
!
crypto ssl services host-service peering

    peer-cert-verify
exit
```

```
!
WAN Secure:
```

Accelerator Config Item	Mode	Value
-----	----	-----
SSL AO	User	enabled
Secure store	User	enabled
Peer SSL version	User	default
Peer cipher list	User	default
Peer cert	User	default
Peer cert verify	User	enabled

这将导致以下mapian-errorlog和wsao-errorlog条目：

此处的提示是突出显示的第一行“连续断开超过四次”

客户端WAE上的Mapian-errorlog:

```
''10/08/2012 20:02:15.025(Local)(24333 0.0) NTCE (25621) (fl=267542) Client 10.16.1.201
disconnected more than four consecutive times - push down to generic ao.
[EdgeTcpConnectionDceRpcLayer.cpp:1443]
''10/08/2012 20:02:15.025(Local)(24333 0.0) NTCE (25634) (fl=267542) CEdgeIOBuffers::
StartHandOverProcessSingleConnection: SECURED_STATE_NOT_ESTABLISHED
[EdgeIOBuffers.cpp:826]
10/08/2012 20:02:15.025(Local)(24333 0.0) NTCE (25644) (fl=267542)
CEdgeIOBuffers::CheckSendHandOverRequestToCoreAndBlockLan - Blocking LAN for read operations
after last
fragment of call id 0, current call id is 2 [EdgeIOBuffers.cpp:324]
10/08/2012 20:02:15.048(Local)(24333 0.1) NTCE (48753) (fl=267542) Connection multiplexing
enabled by server on the connection. [EdgeTcpConnectionDceRpcLayer.cpp:499]
10/08/2012 20:02:15.048(Local)(24333 0.1) NTCE (48771) (fl=267542) Header signing enabled by
server on the connection. [EdgeTcpConnectionDceRpcLayer.cpp:510]
10/08/2012 20:02:15.048(Local)(24333 0.1) NTCE (48779) (fl=267542) CEdgeIOBuffers::
StartHandOverProcessSingleConnection: GENERAL_UNCLASSIFIED [EdgeIOBuffers.cpp:826]
```

客户端WAE上的Wsao-errorlog:

```
''10/08/2012 20:04:34.430(Local)(5939 4.0) ERRO (430001) certificate verification failed 'self
signed certificate' [open_ssl.cpp:1213]
''10/08/2012 20:04:34.430(Local)(5939 4.0) ERRO (430047) ssl_read failed: 'SSL_ERROR_SSL'
[open_ssl.cpp:1217]
10/08/2012 20:04:34.430(Local)(5939 4.0) ERRO (430055) openssl errors: error:14090086: SSL
```

```
routines: SSL3_GET_SERVER_CERTIFICATE:certificate verify failed:s3_clnt.c:1244:  
[open_ssl.cpp:1220]
```

第4号决议：从两个WAE中删除对等证书验证配置，并重新启动核心WAE上的加密服务。

```
pdi-7541-dc(config)#crypto ssl services host-service peering
```

```
pdi-7541-dc(config-ssl-peering)#no peer-cert-verify
```

```
pdi-7541-dc(config)#no windows-domain encryption-service enable
```

```
pdi-7541-dc(config)#windows-domain encryption-service enable
```

问题 5：如果Outlook客户端使用NTLM，连接将向下推送到通用AO。

您将在客户端WAE的mapian-errorlog中看到以下内容：

```
'''waas-edge#find-patter match ntlm mapiao-errorlog.current  
...  
09/21/2012 20:30:32.154(Local)(8930 0.1) NTCE (154827) (fl=83271) Bind Request from client with  
AGID 0x0, callId 1, to dest-ip 172.21. 12.96, AuthLevel:  
PRIVACY '''AuthType:NTLM '''AuthCtxId: 153817840 WsPlumb: 2  
[EdgeTcpConnectionDceRpcLayer.cpp:1277]  
09/21/2012 20:30:32.154(Local)(8930 0.1) NTCE (154861) (fl=83271) '''Unsupported''' '''Auth  
Type :NTLM''' [EdgeTcpConnectionDceRpcLayer.cpp:1401] 09/21/2012 20:30:40.157(Local)  
(8930 0.0) NTCE (157628) (fl=83283) Bind Request from client with AGID 0x0, callId 2, to dest-ip  
172.21. 12.96, AuthLevel: PRIVACY AuthType:NTLM AuthCtxId: 153817840  
WsPlumb: 2 [EdgeTcpConnectionDceRpcLayer.cpp:1277]
```

第5号决议：客户必须在其Exchange环境中启用/要求Kerberos身份验证。不支持NTLM (自5.1起)

请注意，当使用CAS时，Microsoft技术简报会呼吁回退到NTLM。

Kerberos不起作用的场景是特定于Exchange 2010的，并且处于以下场景：

组织/域中的多个Exchange客户端访问服务器(CAS)。

这些CAS服务器使用任何方法群集在一起 — 使用Microsoft的内置客户端阵列功能或第三方负载均衡器。

在上述场景中，Kerberos不起作用 — 默认情况下，客户端将回退到NTLM。我认为这是因为客户端必须对CAS服务器进行身份验证，而对邮箱服务器进行身份验证，这与之前的Exchange版本中的做法相同。

在Exchange 2010 RTM中，没有修复此问题！上述场景中的Kerberos在Exchange 2010-SP1之前将无法运行。

在SP1中，可以在这些环境中启用Kerberos，但这是一个手动过程。请参阅此处的文章：

<http://technet.microsoft.com/en-us/library/ff808313.aspx>

MAPI AO 日志记录

- 以下日志文件可用于排除MAPI AO问题：
- 事务日志文件：/local1/logs/tfo/working.log (和/local1/logs/tfo/tfo_log_*.txt)

调试日志文件：/local1/errorlog/mapiao-errorlog.current (和mapiao-errorlog.*)

为便于调试，您应首先设置ACL，将数据包限制到一台主机。

```
WAE674(config)# ip access-list extended 150 permit tcp host 10.10.10.10 any
WAE674(config)# ip access-list extended 150 permit tcp any host 10.10.10.10
```

要启用事务记录，请按如下方式使用transaction-logs配置命令：

```
wae(config)# transaction-logs flow enable
wae(config)# transaction-logs flow access-list 150
```

可使用type-tail命令查看事务日志文件的结尾，如下所示：

```
wae# type-tail tfo_log_10.10.11.230_20090715_130000.txt
Wed Jul 15 19:12:35 2009 :2289 :10.10.10.10 :3740 :10.10.100.101 :1146 :OT :END :EXTERNAL
CLIENT :(MAPI) :822 :634 :556 :706
Wed Jul 15 19:12:35
2009 :2289 :10.10.10.10 :3740 :10.10.100.101 :1146 :SODRE :END :730 :605 :556 :706 :0
Wed Jul 15 19:12:35 2009 :2290 :10.10.10.10 :3738 :10.10.100.101 :1146 :OT :END :EXTERNAL
CLIENT :(MAPI) :4758 :15914 :6436 :2006
Wed Jul 15 19:12:35
2009 :2290 :10.10.10.10 :3738 :10.10.100.101 :1146 :SODRE :END :4550 :15854 :6436 :2006 :0
Wed Jul 15 19:12:35 2009 :2284 :10.10.10.10 :3739 :10.10.100.101 :1146 :OT :END :EXTERNAL
CLIENT :(MAPI) :1334 :12826 :8981 :1031
```

要设置和启用MAPI AO的调试日志记录，请使用以下命令。

NOTE:调试日志记录占用大量CPU资源，并且可以生成大量输出。在生产环境中谨慎、谨慎地使用它。

您可以按如下方式启用详细的日志记录到磁盘：

```
WAE674(config)# logging disk enable
WAE674(config)# logging disk priority detail
```

您可以为ACL中的连接启用调试日志记录，如下所示：

```
WAE674# debug connection access-list 150
```

MAPI AO调试的选项如下：

```
WAE674# debug accelerator mapi ?
all enable all MAPI accelerator debugs
Common-flow enable MAPI Common flow debugs
DCERPC-layer enable MAPI DCERPC-layer flow debugs
EMSMDB-layer enable MAPI EMSMDB-layer flow debugs
IO enable MAPI IO debugs
ROP-layer enable MAPI ROP-layer debugs
ROP-parser enable MAPI ROP-parser debugs
RPC-parser enable MAPI RPC-parser debugs
shell enable MAPI shell debugs
Transport enable MAPI transport debugs
Utilities enable MAPI utilities debugs
```

您可以为MAPI连接启用调试日志记录，然后显示调试错误日志的结尾，如下所示：

```
WAE674# debug accelerator mapi Common-flow
WAE674# type-tail errorlog/mapiao-errorlog.current follow
```