WAAS - MAPI AO故障排除

章節：排除MAPI AO故障

本文描述如何對MAPI AO進行故障排除。

目錄

MAPI加速器

MAPI加速器可最佳化Microsoft Outlook Exchange電子郵件流量。Exchange使用EMSMDB協定,該協定在MS-RPC上分層,該協定使用TCP或HTTP(不受支援)作為低級傳輸。

MAPI AO支援Microsoft Outlook 2000到2007客戶端快取和非快取模式流量。MAPI AO不會加速使用消息身份驗證(簽名)或加密的安全連線。來自較舊客戶端的此類連線和連線被傳遞給通用AO以進行TFO最佳化。此外,不支援Outlook Web Access(OWA)和Exchange-Exchange連線。

附註:預設情況下,Microsoft Outlook 2007已啟用加密。您必須禁用加密才能從MAPI應用程式加速器獲益。在Outlook中,選擇「**工具**」>「**電子郵件帳戶**」,選擇「**檢視或更改現有電子郵件帳戶**」,然後按一下「**下一步**」。選擇Exchange帳戶,然後按一下**更改**。按一下**More Settings**,然後按一下**Security**頁籤。取消選中**Encrypt data between Microsoft Office Outlook and Microsoft Exchange Server**覈取方塊,如圖1所示。

或者,也可以使用組策略為Exchange Server的所有使用者禁用加密。

圖1.在Outlook 2007中禁用加密
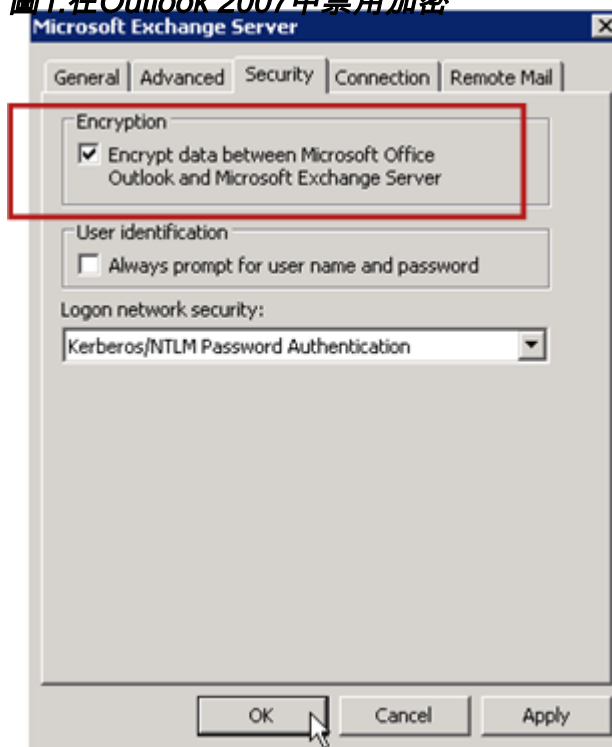
在以下情況下,MAPI AO不處理連線:

- 加密連線(傳遞給通用AO)
- 不受支援的客戶端(傳遞給通用AO)
- 無法恢復的解析錯誤。客戶端與伺服器服務之間的所有TCP連線都斷開連線。當客戶端重新連

線時，所有連線都將切換到通用AO。

- 當WAE過載時，客戶端會嘗試在連線上建立新的關聯組。
- 當WAE過載且MAPI保留連線資源不可用時，客戶端會建立連線。

Outlook客戶端和伺服器通過一組稱為關聯組的TCP連線在一個會話中互動。在關聯組內，對象訪問可以跨越任何連線，並且根據需要動態建立和釋放連線。一個客戶端可以同時開啟多個關聯組，這些關聯組可以連線到不同的伺服器或相同的伺服器。（公用資料夾部署在郵件儲存區的不同伺服器上。）

關聯組中的所有MAPI連線都必須通過分支機構和資料中心中的同一對WAE。如果關聯組內的某些連線沒有通過這些WAE上的MAPI AO，則MAPI AO不會看到在這些連線上執行的事務，並且這些連線據說會「逃避」關聯組。因此，不應將MAPI AO部署到構成高可用性組的串列群集內聯WAE上。

從其WAE關聯組轉出的MAPI連線的症狀是Outlook錯誤症狀，例如重複郵件或Outlook停止響應。

在TFO過載情況下，現有關聯組的新連線會通過並逃避MAPI AO，因此MAPI AO會提前預留多個連線資源以最小化過載情況的影響。有關保留MAPI連線及其對裝置過載影響的詳細資訊，請參閱故障排除過載條件一文中的MAPI應用程式加速器保留連線對過載的影響部分。

使用show accelerator和show license命令檢驗常規AO配置和狀態，如應用程式加速故障排除一文中所述。MAPI加速器操作需要企業許可證，必須啟用EPM應用程式加速器。

接下來，使用show accelerator mapi命令驗證MAPI AO的特定狀態，如圖2所示。您想要看到MAPI AO已啟用、正在運行或已註冊，並且顯示連線限制。如果Config State為Enabled，但Operational State為Shutdown，則表示存在許可問題。

圖2.檢驗MAPI加速器狀態

使用show statistics accelerator epm命令驗證EPM AO是否正常工作。檢查啟動客戶端時，已處理的連線總數、已成功分析的請求總數和已成功分析的響應總數計數器是否增加。

使用show running-config命令驗證MAPI和EPM流量策略是否正確配置。您想要檢視**加速mapi**的電子郵件和消息應用程式操作，並且想要檢視MS-EndPortMapper分類器和定義的流量策略，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命令驗證是否存在動態匹配規則，如下所示：

- 查詢具有使用者ID的規則：EPM和對映名稱：uuida4f1db00-ca47-1067-b31f-00dd010662da。
- 流欄位指示到Exchange服務的活動連線總數。
- 對於每個MAPI客戶端，您應該看到具有使用者ID的單獨條目：MAPI。

使用show statistics connection optimized mapi命令檢查WAAS裝置是否正在建立最佳化的MAPI連線。驗證MAPI連線的「Accel」列中是否出現「M」，這表示已使用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"
```

附註：在4.1.5版中，輸出中增加了Current Reserved Flows計數器。此計數器指的是WAE上當前未使用但留作未來MAPI連線的保留MAPI連線資源數。有關保留MAPI連線及其對裝置過載影響的詳細資訊，請參閱故障排除過載條件一文中的MAPI應用程式加速器保留連線對過載的影響部分。

如果您觀察到Accel列中帶有「TGDL」的連線，這些連線被下推到通用AO並僅使用傳輸最佳化進行最佳化。如果這些是您預期由MAPI AO處理的連線，則可能是因為它們是加密的MAPI連線。要檢查已請求的加密MAPI連線數，請使用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
```

您可以在系統日誌中搜尋如下消息，找到請求加密MAPI連線的客戶端的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
```

可以使用show statistics connection optimized mapi detail命令檢視MAPI連線統計資訊，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
. . .
```

以下輸出顯示了本地和遠端響應計數和平均響應時間：

```
 . . .
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         <---------
-
. . .
```

加密的MAPI加速

摘要

從WAAS 5.0.1開始，MAPI加速器現在可以加速加密的MAPI流量。預設情況下，此功能將在5.0.3版中啟用。但是，為了成功加速加密的MAPI流量，WAAS和Microsoft AD環境中都有許多要求。本指南將幫助您驗證eMAPI功能並對其進行故障排除。

功能資訊

eMAPI將預設在5.0.3中啟用，並且需要以下內容來成功加速加密流量。

1)必須在所有核心WAE上初始化並開啟CMS安全儲存

2)WAE必須能夠解析Exchange伺服器和Kerberos KDC（Active Directory控制器）的FQDN

3)WAE的時鐘必須與KDC同步

4)必須在從Outlook到Exchange的路徑中的所有WAE上啟用SSL協調器、WAN安全和eMAPI

5)路徑中的WAE必須具有正確的策略對映配置

6)核心WAE必須配置一個或多個加密服務域標識（使用者或電腦帳戶）

7)如果使用電腦帳戶，則此WAE必須加入到AD域。

8)然後，對於「電腦」或「使用者帳戶」使用情形，需要為Active Directory中的對象指定特定許可權。「Replicating Directory Changes」和「Replicating Directory Changes All」必須都設定為允許。

建議的方法是通過通用安全組（例如，將許可權分配給該組，然後將加密服務中指定的WAAS裝置和/或使用者名稱新增到該組）。 有關廣告配置和WAAS CM GUI的螢幕截圖，請參見所附指南。

故障排除方法

第1步 — 驗證加密服務身份配置和金鑰檢索成功

當diagnostics命令（下面的步驟2）驗證加密服務的存在時，它不會驗證金鑰檢索是否成功。因此，我們無法通過只運行診斷命令就知道是否為Active Directory中的對象（電腦或使用者帳戶）提供了正確的許可權。

摘要說明配置和驗證加密服務將成功檢索金鑰

使用者帳戶：

1.建立AD使用者

2.建立AD組並將「Replicating Directory Changes」和「Replicating Directory Changes All」設定為ALLOW

3.將使用者新增到建立的組

4.在加密服務中定義使用者帳戶域標識

5.運行get key diagnostic cli

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

請注意，應使用伺服器上配置的實際/實際Exchange伺服器名稱，而不是可能解析為多個Exchange伺服器的NLB/VIP型別FQDN。

6.如果金鑰檢索成功 — 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

正在進行金鑰檢索。

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的金鑰位於記憶體金鑰快取中

電腦帳戶

1.將核心WAE裝置加入AD域

2.建立AD組並將「複製目錄更改」和「複製目錄更改全部」設定為ALLOW

3.將電腦帳戶新增到建立的組

4.配置加密服務以使用電腦帳戶

5.有時讓組策略應用到連線的機器，或強制從AD.gpupdate /force應用組策略。

6.運行get key diagnostic cli

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

請注意，應使用伺服器上配置的實際/實際Exchange伺服器名稱，而不是可能解析為多個Exchange伺服器的NLB/VIP型別FQDN。

7.如果金鑰檢索成功 — 完成

有關加密服務和AD配置的更多詳細資訊和螢幕截圖，請參閱所附指南。

第2步 — 在5.0.3中，引入了一個新的診斷命令來檢查一些必需的設定。

加速器mapi驗證加密設定

1.CLI執行各種有效性檢查。其輸出是加速作為邊緣或核心的加密MAPI流量的能力總結。

2.檢查各元件的狀態/配置屬性，確保加密服務正常運行。

3.當發現配置問題時，它將輸出缺少的內容以及CLI或修復它的操作。

4、將總結總結歸納為邊緣裝置和核心裝置。既可以是邊緣裝置，也可以是核心裝置，該裝置應該對邊緣裝置和核心裝置都運行EMAPI。

以下是配置錯誤的WAE的輸出示例：

```
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
```

以下是正確配置的核心WAE的輸出：

```
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
=========================================
        Device has proper configuration to accelerate encrypted traffic
```

步驟3 — 手動驗證上述診斷命令未檢查的WAE設定。

1)上面的命令檢查是否存在已配置的NTP，但實際上不會驗證WAE和KDC之間的時間是否同步。在Core和KDC之間保持時間同步對於金鑰檢索成功是非常重要的。

如果手動檢查顯示它們不同步，則將ntpdate命令(**ntpdate <KDC ip>)作為強制WAE時鐘同步的簡單方法。** 然後將WAE指向企業NTP伺服器。

2)驗證**dnslookup**是否在Exchange伺服器的FQDN和KDC的FQDN的所有WAE上成功

3)驗證路徑中的所有WAE上是否正確配置了類對映和策略對映。

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

Class-map type waas match-any MAPI

Match tcp destination epm mapi(0 flow-matches)

pdi-7541-dc#show policy-map type waas Policy-map type waas

WAAS-GLOBAL(6084690計)

MAPI類（0個流匹配）
最佳化完全加速mapi應用程式電子郵件和消息傳送

4)驗證所有WAE「show cms secure store」上的CMS安全儲存是否已開啟和初始化

資料分析

除了分析diagnostic命令和手動show命令的輸出外，您還需要檢視sysreport。

具體來說，您需要複查mapiao-errorlog、sr-errorlog（僅限核心WAE）和wsao-errorlog檔案。

每個日誌中都會有提示，具體取決於會導致連線下降到通用AO的原因。

此處作為參考的是顯示各種工作元件的輸出示例

此輸出來自sr-errorlog並顯示機器帳戶加密服務標識的驗證

附註：這僅確認核心WAE已加入域，且電腦帳戶存在。

```
07/03/2012 19:12:07.278(Local)(6249 1.5) NTCE (278902) Adding Identity MacchineAcctWAAS to map
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]
```

此輸出再次來自核心sr-errorlog，並顯示從KDC成功檢索金鑰。

```
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-exchange1.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 DRSBIND Response [AppApiDrsBind.cpp:222]

10/23/2012 15:46:55.680(Local)(3780 0.1) NTCE (680030) DRSBind 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-exchange1.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-exchange1.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-exchange1.pdidc.cisco.com entry from Pending key request map [SRKeyMgr.cpp:303]

此輸出來自邊緣WAE上的mapiao-errorlog檔案，以成功建立eMAPI連線

'''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]

以下是相同TCP連線的mapiao-errorlog對應的核心WAE輸出

'''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) SrlibCache Cache eviction starting: static void srlib::CSrlibCache:: OnAoShellDispatchCacheCleanup(vo id*, aosh_work*) [SrlibCache.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) [SrlibCache. 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
.com0nxrPblND [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]'''
```

常見問題

以下是導致eMAPI連線切換到通用AO(TG)的一些常見原因。

問題1:核心WAE上配置的加密服務標識在AD中沒有正確的許可權。

核心WAE上sr-errolog的輸出

```
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 [SrlibServerTransport.cpp:136]

09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147730) KrbKeyResponse, sent to client session object [SrlibServer.cpp:203]

09/25/2012 18:47:54.147(Local)(9063 0.0) NTCE (147733) SendNextCmd isDuringSend 0, WriteQueue size 1 isDuringClose 0 [SrlibServerTransport.cpp:308]

09/25/2012 18:47:54.147(Local)(9063 0.1) NTCE (147740) Send Key response to the Client

決議1:請參考配置指南，並驗證AD中的對象具有正確的許可權。「Replicating Directory Changes」和「Replicating Directory Changes All」必須都設定為允許。

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

問題2:核心WAE與其嘗試從中檢索金鑰的KDC之間存在時間偏差

核心WAE上sr-errolog的輸出

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]
```

決議2:在所有WAE（尤其是核心）上使用ntpdate將時鐘與KDC同步。然後指向企業NTP伺服器（最好與KDC相同）。

問題3:您為加密服務定義的域與Exchange伺服器所在的域不匹配。

核心WAE上sr-errolog的輸出

```
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]
```

決議3:如果您的核心WAE服務不同域中的多個Exchange伺服器，則必須為Exchange伺服器所在的每個域配置加密服務標識。

注意，目前不支援子域包括。因此，如果您有myexchange.sub-domain.domain.com，則加密服務標識必須位於sub-domain.domain.com中；它不能位於父域中。

問題4:如果WANecure失敗，您的連線可以丟棄到TG

eMAPI連線可以切換到通用AO，因為WAN安全外掛失敗。WAN安全外掛失敗，因為證書驗證失敗。對等體證書驗證將失敗，因為正在使用預設的自簽名對等體證書，或者該證書已合法地失敗了OCSP檢查。

核心WAE設定

```
crypto pki global-settings

  ocsp url http://pdidc.cisco.com/ocsp
revocation-check ocsp-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
```

這將產生以下mapiao-errorlog和wsao-errorlog條目：

此處的提示是第一條突出顯示的「已連續四次斷開連線」行

客戶端WAE上的Mapiao-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]
```

客戶端WAE上的WSAO錯誤日誌：

```
'''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]
```
決議4:從兩個WAE中刪除對等證書驗證配置，並在核心WAE上重新啟動加密服務。

```
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
```
問題5:如果Outlook客戶端使用NTLM，則連線將被向下推到通用AO。

您將在客戶端WAE的mapiao-errorlog中看到以下內容：

```
'''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號決議：客戶必須在Exchange環境中啟用/要求Kerberos身份驗證。不支援NTLM（自5.1起）

請注意，使用CAS時，有一個名為NTLM的Microsoft技術摘要。

Kerberos不起作用的場景特定於Exchange 2010，在以下場景中：

組織/域中的多個Exchange客戶端訪問伺服器(CAS)。
這些CAS伺服器使用任何方法（使用Microsoft的內建客戶端陣列功能或第三方負載均衡器）群集在一起。

在上面的場景中，Kerberos不起作用 — 客戶端預設情況下將回退到NTLM。我認為這是因為客戶端必須通過CAS伺服器身份驗證才能訪問郵箱伺服器，就像他們在以前的Exchange版本中做的那樣。

在Exchange 2010 RTM中，沒有針對此的修補程式！上述場景中的Kerberos在Exchange 2010-SP1之前永遠不會發揮作用。

在SP1中，可以在這些環境中啟用Kerberos，但這是一個手動過程。請參閱以下文章：
http://technet.microsoft.com/en-us/library/ff808313.aspx

MAPI AO日誌記錄

- 以下日誌檔案可用於排除MAPI AO故障：
- 事務日誌檔案：/local1/logs/tfo/working.log(和/local1/logs/tfo/tfo_log_*.txt)

調試日誌檔案：/local1/errorlog/mapiao-errorlog.current（和mapiao-errorlog.*）

為了更輕鬆地進行調試，您應該首先設定ACL以限制資料包只訪問一台主機。

```
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
```

要啟用事務日誌記錄，請使用transaction-logs配置命令，如下所示：

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

可以使用type-tail命令檢視事務日誌檔案的結尾，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
```

要設定和啟用MAPI AO的調試日誌記錄，請使用以下命令。
附註：調試日誌記錄是CPU密集型，可以生成大量輸出。在生產環境中慎重而謹慎地使用它。
您可以按如下方式啟用磁碟的詳細日誌記錄：

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

您可以在ACL中啟用連線的調試日誌記錄，如下所示：

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

MAPI AO調試的選項如下：

```
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
```

您可以為MAPI連線啟用調試日誌記錄，然後按如下方式顯示調試錯誤日誌的結束：

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