

This article describes how to troubleshoot the EPM AO.

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## EPM Accelerator Troubleshooting

The End Point Mapper (EPM) accelerator optimizes MS-RPC protocols that do not use predefined TCP ports. Clients contact the EPM service on the server (TCP port 135) to negotiate a dynamic port that is based on the application UUID. The EPM AO listens to the client communication and creates a dynamic policy entry to match the negotiated port. EPM is required to apply MAPI specific optimizations or to provide accounting on any MS-RPC protocol.

You can verify the general AO configuration and status with the **show accelerator** and **show license** commands, as described in the [Troubleshooting Application Acceleration](#) article. The Enterprise license is required for EPM accelerator operation.

Next, verify the status that is specific to the EPM AO by using the **show accelerator epm** command, as shown in Figure 1. You want to see that the EPM AO is Enabled, Running, and Registered, and that the

connection limit is displayed. If the Config State is Enabled but the Operational State is Shutdown, it indicates a licensing problem.

**Figure 1. Verifying the EPM Accelerator Status**

```

WAE674# sh accelerator epm

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

EPM:
Policy Engine Config Item
-----
State
Default Action
Connection Limit
Effective Limit
Keepalive timeout

Value
-----
Registered
Use Policy
6000
6000
5.0 seconds
  
```

Use the **show running-config** command to verify that the EPM traffic policy is properly configured. You want to see **adaptor EPM** for the applications or UUIDs that are configured to use the EPM AO, as follows:

```

WAE674# sh run | begin EPM
...skipping
map adaptor EPM 1544f5e0-613c-11d1-93df-00c04fd7bd09
  name Email-and-Messaging All action pass-through
exit
map adaptor EPM ms-sql-rpc
  name SQL All action optimize full
exit
map adaptor EPM mapi
  name Email-and-Messaging All action optimize full accelerate mapi
exit
map adaptor EPM ms-ad-replication
  name Replication All action optimize full
exit
map adaptor EPM ms-frs
  name Replication All action optimize full
exit
map adaptor EPM f5cc5a18-4264-101a-8c59-08002b2f8426
  name Email-and-Messaging All action pass-through
  
```

Use the **show policy-engine application dynamic** command to verify the dynamic policy engine match conditions as follows:

```

WAE674# sh policy-engine application dynamic
Dynamic Match Freelist Information:
  Allocated: 32768  In Use: 3  Max In Use: 4  Allocations: 380
Dynamic Match Type/Count Information:
  None                0
  Clean-Up            0
  Host->Host          0
  Host->Local         0
  Local->Host         0
  Local->Any          0
  
```

```

Any->Host          3
Any->Local          0
Any->Any            0
Individual Dynamic Match Information:
Number:      1    Type: Any->Host (6)  User Id: EPM (3)      <-----
Src: ANY:ANY  Dst: 10.10.100.101:1146  <-----
Map Name: uuida4f1db00-ca47-1067-b31f-00dd010662da <-----
Flags: TIME_LMT REPLACE FLOW_CNT <-----
Seconds: 1200 Remaining: - NA - DM Index: 32765 <-----
Hits: 54 Flows: 39 Cookie: 0x00000000 <-----
Number:      2    Type: Any->Host (6)  User Id: EPM (3)
Src: ANY:ANY  Dst: 10.10.100.101:1040
Map Name: uuid1544f5e0-613c-11d1-93df-00c04fd7bd09
Flags: TIME_LMT REPLACE FLOW_CNT
Seconds: 1200 Remaining: 1163 DM Index: 32766
Hits: 1 Flows: 0 Cookie: 0x00000000
    
```

Use the **show statistics connection optimized epm** command to check that the WAAS device is establishing optimized EPM connections. Verify that "TE" or "TDLE" appears in the Accel column for EPM connections, which indicates that the EPM AO was used, as follows:

```
WAE674# sh stat conn opt epm
```

```

Current Active Optimized Flows:          18
  Current Active Optimized TCP Plus Flows: 17
  Current Active Optimized TCP Only Flows: 0
  Current Active Optimized TCP Preposition Flows: 1
Current Active Auto-Discovery Flows:     0
Current Active Pass-Through Flows:      28
Historical Flows:                        100
    
```

```

D:DRE,L:LZ,T:TCP Optimization,
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	
2048	10.10.10.10:3007	10.10.100.101:135	00:14:5e:84:24:5f	TE	<-----Look for
2049	10.10.10.10:3009	10.10.100.101:135	00:14:5e:84:24:5f	TE	

You can check connection statistics for closed connections by using the **show statistics connection closed epm** command.

To view similar information from the Central Manager, choose the WAE device, then choose **Monitor > Optimization > Connections Statistics**.

You can view the EPM connection specific statistics by using the **show statistics connection optimized epm detail** command as follows:

```
WAE674# sh stat connection optimized epm detail
```

```

Connection Id:          1885
Peer Id:                00:14:5e:84:24:5f
Connection Type:        EXTERNAL CLIENT
Start Time:             Wed Jul 15 09:50:45 2009
Source IP Address:      10.10.10.10
Source Port Number:     2465
Destination IP Address: 10.10.100.101
Destination Port Number: 135
Application Name:       Other
Classifier Name:        MS-EndPointMapper <-----Should see MS
Map Name:               basic
    
```

```

Directed Mode:          FALSE
Preposition Flow:      FALSE
Policy Details:
  Configured:          TCP_OPTIMIZE
  Derived:             TCP_OPTIMIZE
  Peer:               TCP_OPTIMIZE
  Negotiated:         TCP_OPTIMIZE
  Applied:            TCP_OPTIMIZE
Accelerator Details:
  Configured:         EPM
  Derived:           EPM
  Applied:          EPM
  Hist:             None

```

```

<-----Should see EF
<-----Should see EF

```

	Original	Optimized
	-----	-----
Bytes Read:	5220	5076
Bytes Written:	5076	5220
. . .		

## EPM AO Logging

The following log files are available for troubleshooting EPM AO issues:

- Transaction log files: /local1/logs/tfo/working.log (and /local1/logs/tfo/tfo\_log\_\*.txt)
- Debug log files: /local1/errorlog/epmao-errorlog.current (and epmao-errorlog.\*)

For easier debugging, first set up an ACL to restrict packets to one host.

```

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

```

To enable transaction logging, use the **transaction-logs** configuration command as follows:

```

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

```

You can view the end of a transaction log file by using the **type-tail** command as follows:

```

wae# type-tail tfo_log_10.10.11.230_20090715_130000.txt
Wed Jul 15 16:53:22 2009 :1799 :10.10.10.10 :2369 :10.10.100.101 :1025 :OT :START :EXTERNAL CLIENT :
:uuide3514235-4b06-11d1-ab04-00c04fc2dcd2 :Replication :**Map Default** :F : (DRE,LZ,TFO) (DRE,LZ,
(DRE,LZ,TFO) :<None> : (None) (None) (None) :<None> :<None> :0 :169
Wed Jul 15 16:53:51 2009 :1798 :10.10.10.10 :2368 :10.10.100.101 :135 :OT :END :EXTERNAL CLIENT :
Wed Jul 15 16:53:51 2009 :1799 :10.10.10.10 :2369 :10.10.100.101 :1025 :OT :END:EXTERNAL CLIENT :
Wed Jul 15 16:53:51 2009 :1799 :10.10.10.10 :2369 :10.10.100.101 :1025 :SODRE :END :596 :220 :347

```

To set up and enable debug logging of the EPM AO, use the following commands.

**NOTE:** Debug logging is CPU intensive and can generate a large amount of output. Use it judiciously and sparingly in a production environment.

You can enable detailed logging to the disk as follows:

```

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

```

You can enable debug logging for connections in the ACL as follows:

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

The options for EPM AO debugging are as follows:

```
WAE674# debug accelerator epm ?  
  all          enable all EPM accelerator debugs  
  shell       enable EPM shell debugs
```

You can enable debug logging for EPM connections and then display the end of the debug error log as follows:

```
WAE674# debug accelerator epm connection  
WAE674# type-tail errorlog/epmao-errorlog.current follow
```