

This article describes how to troubleshoot the CIFS AO.

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CIFS AO Troubleshooting

The CIFS accelerator transparently optimizes CIFS traffic on ports 139 and 445.

You can verify the general AO configuration and status with the **show accelerator** and **show license** commands, as shown in Figure 1. The Enterprise license is required for CIFS accelerator operation.

Figure 1. Verifying Accelerator Status

Accelerator	Licensed	Config State	Operational State
cifs	Yes	Enabled	Running
epm	Yes	Enabled	Running
http	Yes	Enabled	Running
mapi	Yes	Enabled	Running
nfs	Yes	Enabled	Running
ssl	Yes	Enabled	Running
video	No	Enabled	Shutdown
wafs-core	Yes	Disabled	Shutdown
wafs-edge	Yes	Disabled	Shutdown

WAE#sh license

License Name	Status	Activation Date	Activated By

Transparent and legacy services are mutually exclusive

Next, verify the status that is specific to the CIFS AO by using the **show accelerator cifs** command, as shown in Figure 2. You want to see that the CIFS 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 2. Verifying CIFS Accelerator Status

Accelerator	Licensed	Config State	Operational State
cifs	Yes	Enabled	Running

CIFS:

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

AO admin and operational state

**- Registered state indicates AO is healthy
- Displays connection limit**

Use the **show running-config** command to verify that the CIFS traffic policy is properly configured. You want to see **accelerate cifs** for the WAFS application action and you want to see appropriate match conditions listed for the CIFS classifier, as follows:

```
WAE674# sh run | include CIFS

classifier CIFS
name WAFS classifier CIFS action optimize full accelerate cifs
WAE674# sh run | begin CIFS

...skipping
classifier CIFS
```

```

match dst port eq 139
match dst port eq 445
exit

```

Use the **show statistics connection optimized cifs** command to check that the WAAS device is establishing optimized CIFS connections. Verify that "TCDL" appears in the Accel column for a connection. A "C" indicates that the CIFS AO was used.

```
WAE674# sh stat conn opt cifs
```

```

Current Active Optimized Flows:          3
  Current Active Optimized TCP Plus Flows: 3
  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:      0
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	
1074	10.10.10.10:2704	10.10.100.100:445	00:14:5e:84:24:5f	TCDL	<-----Look for

If you see "TDL" in the Accel column, the connection was optimized by transport optimizations only and was not inspected by the CIFS AO. This situation can happen if the CIFS AO is disabled, the Enterprise license is not configured, or if the maximum connection limit is reached.

If you see a "G" instead of a "C" in the Accel column, then the connection was pushed down from the CIFS AO to the generic AO and was optimized with transport optimizations only. This situation can happen if the connection requires SMB2 or a digital signature and an error message is logged for it.

In version 4.1.3, the syslog has the following error message for digitally signed connections:

```
2009 Apr 25 13:42:08 wae java: %WAAS-CIFS-AO-4-131230: (146708) Connection to test1.example.com will
generic optimization only, since test1.example.com requires digital signing.
```

In version 4.1.5 and later, check the CIFS internal error logs to see the reason why the connection was pushed down to the generic AO. In the `cifs_err.log`, look for this message for SMB2 connections:

```
2009-06-29 10:15:04,996 WARN (actona.cifs.netbios.IPacketerHandlerOrigCifs:139) Thread-2 - Recei
from host 10.56.64.205. Pushing down the connection.
```

In the `cifs_err.log`, look for this message for digitally signed connections:

```
2009-10-29 05:37:54,541 WARN (actona.rxFow.cifs.requests.NegotiateRequest:359) lightRxFlowPool-4
Connection to 10.56.78.167 will be handled by generic optimization only, since 10.56.78.167 requi
```

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

Figure 3. Connection Statistics Report



You can view the CIFS connection statistics by using the **show statistics connection optimized cifs detail** command as follows:

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

```

Connection Id:          1801
Peer Id:                00:14:5e:84:24:5f
Connection Type:       EXTERNAL CLIENT
Start Time:            Thu Jun 25 06:15:58 2009
Source IP Address:     10.10.10.10
Source Port Number:    3707
Destination IP Address: 10.10.100.100
Destination Port Number: 139
Application Name:      WAFS
Classifier Name:        CIFS
Map Name:               basic
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:         CIFS
    Derived:            CIFS
    Applied:            CIFS
    Hist:               None
    
```

<-----Should see WAFS

<-----Should see CIFS

<-----Should see CIFS confi

<-----Should see CIFS appli

```

Original      Optimized
-----
Bytes Read:   189314      10352510
Bytes Written: 91649704      28512
    
```

. . .

```

Connection details:
Chunks: encoded 3, decoded 49922, anchor(forced) 0(1)
Total number of processed messges: 1820
  num_used_block per msg: 0.140659
Ack: msg 1609, size 7066 B
Encode bypass due to:
  last partial chunk: chunks: 1, size: 142 B
  skipped frame header: messages: 138, size: 27202 B
Nacks: total 0
R-tx: total 0
Encode LZ latency: 0.060 ms per msg
Decode LZ latency: 0.071 ms per msg
Aggregation encode: Retransmissions: 0
  level 0: chunks: 3 hits: 0 miss: 3
    
```

<-----Packets lost betwe

```

level 1: chunks:      0 hits:      0 miss:      0
level 2: chunks:      0 hits:      0 miss:      0
level 3: chunks:      0 hits:      0 miss:      0
Aggregation decode: Collisions: 0
level 0: chunks: 174093 hits: 128716 miss: 0
level 1: chunks: 0 hits: 0 miss: 0
level 2: chunks: 0 hits: 0 miss: 0
level 3: chunks: 0 hits: 0 miss: 0
Aggregation stack memory usage: Sender: 452 B Receiver: 9119 B
Noise filter: Chunks: 0, Bytes: 0 B
. . .

```

If the Retransmissions counter increases, it means that packets are getting lost in the middle, between the two peer WAEs. This situation will result in lower throughput. You should investigate possible causes for packet loss in the network between the two peer WAEs.

You can view the CIFS request statistics by using the **show statistics cifs requests** command as follows:

Figure 4. Inspecting CIFS Request Statistics

```

WAE-612# show statistics cifs requests
Statistics gathering period: minutes: 33 seconds: 9 ms: 3
Total: 453
Remote: 214
ALL_COMMANDS total:453 remote:214 async:21 avg local:2.164ms avg remote:123.877ms
CLOSE_FILE total:31 remote:3 async:14 avg local:1.443ms avg remote:90.772ms
CONNECT total:15 remote:3 async:0 avg local:11.055ms avg remote:209.193ms
Cancel total:3 remote:3 async:0 avg local:0.0ms avg remote:95.094ms
DCERPC total:93 remote:93 async:0 avg local:0.0ms avg remote:95.671ms
DCERPC_SRVSVC total:25 remote:20 async:0 avg local:0.743ms avg remote:89.509ms
DCERPC_WKSSRV total:15 remote:11 async:0 avg local:1.134ms avg remote:90.786ms
ECHO total:2 remote:0 async:0 avg local:1.448ms avg remote:0.0ms
FIND_CLOSE2 total:1 remote:0 async:0 avg local:0.595ms avg remote:0.0ms
IOCTL total:3 remote:3 async:0 avg local:0.0ms avg remote:94.818ms
LOGOFF_ANDX total:3 remote:0 async:3 avg local:1.396ms avg remote:0.0ms
NB_SESSION_REQ total:6 remote:0 async:0 avg local:1.455ms avg remote:0.0ms
NEGOTIATE total:3 remote:3 async:0 avg local:0.0ms avg remote:99.003ms
NT_CREATE_ANDX total:137 remote:29 async:0 avg local:0.549ms avg remote:130.642ms
< .. >
WAE-612#

```

Annotations in the image:

- Local versus remote requests**: Points to the 'Total: 453' and 'Remote: 214' lines.
- Response time for all cmds**: Points to the 'ALL_COMMANDS' line.
- Breakdown per CIFS cmd**: Points to the list of commands and their statistics.

CIFS AO Logging

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

- Transaction log files: /local1/logs/tfo/working.log (and /local1/logs/tfo/tfo_log_*.txt)
- CIFS internal log file: /local1/errorlog/cifs/cifs_err.log
- Debug log files: /local1/errorlog/cifsao-errorlog.current (and cifsao-errorlog.*)

For easier debugging, you should 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
:EXTERNAL CLIENT :00.14.5e.84.24.5f :basic :WAFS :CIFS :F : (DRE,LZ,TFO) (DRE,LZ,TFO) (DRE,LZ,TFO)
(DRE,LZ,TFO) :<None> : (CIFS) (CIFS) (CIFS) :<None> :<None> :0 :180
Wed Jul 15 15:48:45 2009 :1725 :10.10.10.10 :2289 :10.10.100.100 :139 :OT :START :EXTERNAL CLIENT
:CIFS :F : (DRE,LZ,TFO) (DRE,LZ,TFO) (DRE,LZ,TFO) (DRE,LZ,TFO) (DRE,LZ,TFO) :<None> : (CIFS) (CIFS)
Wed Jul 15 15:48:55 2009 :1725 :10.10.10.10 :2289 :10.10.100.100 :139 :OT :END : EXTERNAL CLIENT :
```

To set up and enable debug logging of the CIFS 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:

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

The options for CIFS AO debugging are as follows:

```
WAE674# debug accelerator cifs ?
  all          enable all CIFS accelerator debugs
  shell       enable CIFS shell debugs
```

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

```
WAE674# debug accelerator cifs all
WAE674# type-tail errorlog/cifsao-errorlog.current follow
```

Windows Print Accelerator Troubleshooting

The Windows print accelerator optimizes print traffic between clients and a Windows print server.

Troubleshooting the Windows print accelerator is similar to troubleshooting the CIFS AO. You can verify the general AO configuration and status with the **show accelerator** and **show license** commands, as shown in Figure 1. The CIFS accelerator must be enabled and the Enterprise license is required. Next, verify the status specific to the CIFS AO by using the **show accelerator cifs** command.

Use the **show statistics windows-print requests** command and verify that the "Documents spooled" and "Pages spooled" counters are incrementing, as follows:

```
WAE# sh stat windows-print requests
Statistics gathering period:  hours: 6 minutes: 4 seconds: 2 ms: 484
Documents spooled: 29
Pages spooled: 3168
```

<-----Should be incr
<-----Should be incr

Cisco_WAAS_Troubleshooting_Guide_for_Release_4.1.3_and_Later_--_Troubleshooting_the_CIFS_AO

Total commands: 61050

Remote commands: 849

ALL_COMMANDS total: 61050 remote: 849 async: 58719 avg local: 1.813ms avg remote: 177.466ms

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