

WAAS - NFS AO故障排除

章节：排除NFS AO故障

本文介绍如何排除NFS AO故障。

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NFS加速器故障排除

NFS加速器可优化NFSv3流量。其他NFS版本未由NFS AO优化。

您可以使用**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。NFS加速器操作需要企业许可证。

接下来，使用**show accelerator nfs**命令验证特定于NFS AO的状态，如图1所示。您希望看到NFS 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1.检验NFS加速器状态

```

WAE674# sh accelerator nfs

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

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

```

使用 `show running-config` 命令验证 NFS 流量策略是否已正确配置。您希望看到文件系统应用程序分类器 NFS 操作的加速 `nfs`，并且希望看到为 NFS 分类器列出的适当匹配条件，如下所示：

```

WAE674# sh run | include NFS
name File-System classifier NFS action optimize full accelerate nfs <-----

WAE674# sh run | begin NFS
...skipping
classifier NFS
match dst port eq 2049 <-----
exit

```

使用 `show statistics connection optimized nfs` 命令检查 WAAS 设备是否正在建立优化的 NFS 连接。验证 NFS 连接的 `Accel` 列中是否显示“N”，这表示已使用 NFS AO。

```

WAE674# sh stat conn opt nfs
D:DRE,L:LZ,T:TCP Optimization,
C:CIFS,E:EPM,G:GENERIC,H:HTTP,M:MAPI,N:NFS,S:SSL,V:VIDEO,

ConnID  Local IP:Port      Remote IP:Port      PeerID              Accelerator
582     10.56.94.101:33606  10.56.94.80:2049   0:1a:64:d3:2f:b8   NTDL               <-----Look
for "N"

```

使用 `show statistics accelerator nfs` 命令验证以下内容：

- NFS 流量是 NFSv3。查看 Total RPC Calls per NFS Version (每 NFS 版本的 RPC 调用总数) 字段。该字段的输出是一个包含 5 个值的数组，您希望看到大部分 NFSv3 流量，该流量在第 4 个计数器中报告。其他阵列位置的高数字表示其他 NFS 版本。
- NFS 流量未加密。查看 Total RPC Calls per Authentication Flavor 字段。该字段的输出是一个包含 4 个值的数组，您希望看到大多数未加密的流量，这对应于前 3 个计数器。最后一个计数器中的高数字表示加密的 NFS 流量。另请选中 Total RPC Calls with Unknown Authentication Flavor 字段，在该字段中，您希望看到 0 或小数，因为这些连接未优化。
- NFS 连接是异步的。验证 Percentage of Requests Served Locally (本地服务的请求百分比) 字段是否非零。

WAE# **sh statistics accelerator nfs**

```
NFS:
  Global Statistics
  -----
  Time Accelerator was started:                Fri Oct 23
16:40:06 2009
  Time Statistics were Last Reset/Cleared:      Fri Oct 23
16:40:06 2009
  Total Handled Connections:                   170
  Total Optimized Connections:                 170
  Total Connections Handed-off with Compression Policies Unchanged: 0
  Total Dropped Connections:                   0
  Current Active Connections:                  0
  Current Pending Connections:                 0
  Maximum Active Connections:                  13
  Total RPC Calls per Authentication Flavor:   65
298544    0    0                                <----Should see 0
or few in last field
  Total RPC Calls with Unknown Authentication Flavor: 0 <----Should see 0
or few
  Total RPC Calls per NFS Version:             0
0    0    298609    0                            <----Should see 0
or few in first two and last fields
  Total RPC Calls with Unknown NFS Version:    0 <----Should see 0
or few
  Total Requests:                              298609
  Total Local Replies:                          191713
  Percentage of Requests Served Locally:        64 <----Should be
nonzero
  Percentage of Requests Served Remotely:       36
  Average Time to Generate Local READ Reply (ms): 15
  Average Time to Generate Local WRITE Reply (ms): 0
  Average Time to Generate Local GETATTR Reply (ms): 0
  Average Time to Generate Local Reply (ms):    0
  Average Time to Receive Remote Reply (ms):    10
  Meta-Data Cache Access Count:                 206017
  Meta-Data Cache Hit Count:                    191673
  Remaining Number Of Entries in Meta-Data Cache: 128926
  Meta-Data Cache Hit Ratio:                    93
```

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

```
WAE674# show stat conn opt nfs detail
Connection Id:          1916
  Peer Id:              00:14:5e:84:24:5f
  Connection Type:      EXTERNAL CLIENT
  Start Time:           Thu Jun 25 07:09:09 2009
  Source IP Address:    10.10.10.20
  Source Port Number:   928
  Destination IP Address: 10.10.100.102
  Destination Port Number: 2049
  Application Name:     File-System                <-----Should see File-
System
  Classifier Name:      NFS                        <-----Should see NFS
  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:    NFS                               <-----Should see NFS
configured
Derived:       NFS
Applied:       NFS                               <-----Should see NFS
applied
Hist:         None

Original      Optimized
-----
Bytes Read:   5120      4639
Bytes Written: 28136     1407
. . .

NFS : 1916

Time Statistics were Last Reset/Cleared:           Thu Jun 25
07:09:09 2009
Total Bytes Read:                                  5120
28136
Total Bytes Written:                               28136
5120
Bit Flags for I/O state:                           19
Histogram of Buffers Read From Local Endpoint:     31
1          0          0          0
Total NFS Requests:                                32
Total Replies Served Locally:                       4
Percentage of Requests Served Locally:              12
Percentage of Requests Served Remotely:             88
Average Time to Generate Local READ Reply (ms):     0
Average Time to Generate Local WRITE Reply (ms):    0
Average Time to Generate Local GETATTR Reply (ms):  0
Average Time to Generate Local Reply (ms):          0
Average Time to Receive Remote Reply (ms):         103
Total RPC Procedure Calls:                           0
9          0          10          7          0          4          1          0
0          0          0          0          0          0          0          0
1          0          0          0          0
. . .

Total Unknown RPC Procedure Calls:                  0
Total Write RPCs Using Stable-how Enumerated Values: 0
0          1
Total WRITE RPCs with Invalid Stable-how Value:     0
Bytes Buffered for READ Purpose:                    0
Start Time of Session:                              Thu Jun 25
07:09:09 2009

Meta-Data Cache Access Count:                       9
Meta-Data Cache Hit Count:                          4
Remaining Number Of Entries in Meta-Data Cache:     1000
Meta-Data Cache Hit Ratio:                           44
Current number of entries in Meta-Data Cache:        0
. . .

```

NFS AO日志记录

以下日志文件可用于排除NFS 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/nfsao-errorlog.current (和nfsao-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
```

可以使用type-tail命令查看事务日志文件的结尾。

要设置并启用NFS 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
```

NFS AO调试的选项如下：

```
WAE674# debug accelerator nfs ?
all                enable all accelerator debugs
async-write        enable async write optimization debugs
attributes-cache   enable attributes-cache optimization debugs
nfs-v3             enable NFSv3 layer debugs
read-ahead         enable read ahead optimization debugs
rpc                enable RPC layer debugs
shell              enable shell (infra) debugs
utils              enable utils debugs
```

您可以为NFS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 nfs all
WAE674# type-tail errorlog/nfsao-errorlog.current follow
```