Tech Info Library

AppleTalk Zone Information Protocol Query (6/93)

```
Revised:        6/17/93
Security:       Everyone
```

AppleTalk Zone Information Protocol Query (6/93)

===

Article Created: 8 June 1993

TOPIC ---

I have an AppleTalk protocol question and need help. Here are the
requested sniffer traces. There are two vendors in consideration here.
One vendor makes an AppleTalk network management package which runs on my
Sun workstation. The other vendor is Wellfleet (WF) which makes our
backbone routers.

The Network Management Vendor (NMV) creates a Zone Information Protocol
(ZIP) query with the count indicated and expects the FIRST packet received
from the AppleTalk router to contain a network count reflecting the TOTAL
number of replies. In other words, if the WF router intends to reply with
50 networks then packet number '2' below should have a network count of 50,
not one.

• Note that the term 'network' refers to an AppleTalk network described by
  an AppleTalk network number and delimited by AppleTalk routers. An
  extended network may have multiple zones.

The Wellfleet router says the network count in packet two indicates the
number of networks contained in that packet only.

The net effect is the NMV only see's one ZIP reply per ZIP query because
the WF put's a count of 'one' in the first packet.

I need from Apple an answer to the question: Given the ZIP query in packet
(frame) number 1, what should the network counts in each of the subsequent
reply packets be? What should these packets contain? I'm mostly concerned
with extended networks.

A summary sniffer trace is as follows. Please note that the line length is
longer than 80 chars and may not show up clearly on your screen.

```
SUMMARY   Delta T      Destination    Source        Summary

M    1                 Wllflt822696 Sun   0BF80F  ZIP C Query Network Count=50
     2    0.0224  Sun    0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                    Count=1
     3    0.0005  Sun    0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                    Count=1
     4    0.0004  Sun    0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                    Count=1
     5    0.0003  Sun    0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                    Count=1
```

The detailed packet (frame) contents are as follows:

- - - - - - - - - - - - - - - - - Frame 1 -

```
SUMMARY   Delta T      Destination    Source        Summary
M    1                 Wllflt822696 Sun   0BF80F  ZIP C Query Network Count=50

ZIP:----- ZIP header -----
ZIP:
ZIP:  ZIP command   = 1 (Query)
ZIP:  Network count = 50
ZIP:
ZIP:  --- Networks being queried: ---
ZIP:  #1: Net = 0
ZIP:  #2: Net = 380
ZIP:  #3: Net = 379
ZIP:  #4: Net = 378
ZIP:  #5: Net = 377
ZIP:  #6: Net = 376
ZIP:  #7: Net = 375
ZIP:  #8: Net = 374
ZIP:  #9: Net = 372
ZIP:  #10: Net = 371
ZIP:  #11: Net = 367
ZIP:  #12: Net = 366
ZIP:  #13: Net = 365
ZIP:  #14: Net = 364
ZIP:  #15: Net = 363
ZIP:  #16: Net = 362
ZIP:  #17: Net = 361
ZIP:  #18: Net = 360
ZIP:  #19: Net = 359
ZIP:  #20: Net = 357
ZIP:  #21: Net = 356
ZIP:  #22: Net = 352
ZIP:  #23: Net = 351
ZIP:  #24: Net = 350
ZIP:  #25: Net = 349
ZIP:  #26: Net = 348
```

```
ZIP:  #27: Net = 347
ZIP:  #28: Net = 346
ZIP:  #29: Net = 340
ZIP:  #30: Net = 339
ZIP:  #31: Net = 338
ZIP:  #32: Net = 337
ZIP:  #33: Net = 336
ZIP:  #34: Net = 335
ZIP:  #35: Net = 334
ZIP:  #36: Net = 333
ZIP:  #37: Net = 332
ZIP:  #38: Net = 331
ZIP:  #39: Net = 330
ZIP:  #40: Net = 326
ZIP:  #41: Net = 325
ZIP:  #42: Net = 324
ZIP:  #43: Net = 323
ZIP:  #44: Net = 322
ZIP:  #45: Net = 320
ZIP:  #46: Net = 319
ZIP:  #47: Net = 318
ZIP:  #48: Net = 316
ZIP:  #49: Net = 315
ZIP:  #50: Net = 314
ZIP:
ZIP:
ZIP:[Normal end of "ZIP header".]
ZIP:
```

- - - - - - - - - - - - - - - - Frame 2 - - - - - - - - - - - - - - - - - -

```
SUMMARY   Delta T     Destination   Source        Summary
    2    0.0224  Sun   0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                       Count=1


ZIP:----- ZIP header -----
ZIP:
ZIP:  ZIP command   = 8 (Extended Reply)
ZIP:  Network count = 1
ZIP:
ZIP:  --- Network-zone list ---
ZIP:  #1: Net = 372, Zone = (zone name)
ZIP:
ZIP:[Normal end of "ZIP header".]
ZIP:
```

- - - - - - - - - - - - - - - - Frame 3 - - - - - - - - - - - - - - - - - -

```
SUMMARY   Delta T     Destination   Source        Summary
    3    0.0005  Sun   0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                       Count=1


ZIP:----- ZIP header -----
```

```
ZIP:
ZIP:  ZIP command   = 8 (Extended Reply)
ZIP:  Network count = 1
ZIP:
ZIP:  --- Network-zone list ---
ZIP:  #1: Net = 366, Zone = (zone name)
ZIP:
ZIP:[Normal end of "ZIP header".]
ZIP:
```

- - - - - - - - - - - - - - - - - Frame 4 -

```
SUMMARY  Delta T     Destination   Source       Summary
     4    0.0004  Sun   0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                   Count=1
```

```
ZIP:----- ZIP header -----
ZIP:
ZIP:  ZIP command   = 8 (Extended Reply)
ZIP:  Network count = 1
ZIP:
ZIP:  --- Network-zone list ---
ZIP:  #1: Net = 364, Zone = (zone name)
ZIP:
ZIP:[Normal end of "ZIP header".]
ZIP:
```

- - - - - - - - - - - - - - - - - Frame 5 -

```
SUMMARY  Delta T     Destination   Source       Summary
     5    0.0003  Sun   0BF80F Wllflt822696  ZIP R Extended Reply Network
                                                   Count=1
```

```
ZIP:----- ZIP header -----
ZIP:
ZIP:  ZIP command   = 8 (Extended Reply)
ZIP:  Network count = 1
ZIP:
ZIP:  --- Network-zone list ---
ZIP:  #1: Net = 356, Zone = (zone name)
ZIP:
ZIP:[Normal end of "ZIP header".]
ZIP:
```


DISCUSSION ---

This behavior from the Wellfleet routers is perfectly correct and
acceptable. I understand why there may be some confusion concerning this
so I'll attempt to clarify this for you.

There are two types of ZIP query reply packets, extended and non-extended.
I'll summarize the differences below.

Non-extended ZIP reply:
  Rules:
- ZIP function type = 2
- Multiple networks can be included in a single response packet, provided that an entry is completely contained within the packet.
- The network count field is equal to the number of network/zone pairs included in the packet.
- Extended and non-extended network mapping can be mixed in a single reply packet.
- The network number field for extended networks is set to the first network number in the range. For example network 1000-2000 would be resolved using network number 1000 for all zone name mapping.

Extended ZIP reply:
  Rules:
- ZIP function type = 6
- Limited to a single network/zone mapping per packet.
- The response to the query may not fit in one packet and hence is allowed to transverse multiple packets.
- The network number field has a new meaning. It now represents the total number of zones being returned for the given network. This number will be the same in each packet returned for the network being queried.
- A router can return an extended reply even if the response will fit in a single packet. In this case the response is limited to a single network per packet.

This last rule in the "extended ZIP rules" is the rule the Wellfleet is using in its response to the query from the network management station. Given this information I think you can now easily work through the vendor of the network management application to resolve this problem.

Copyright 1993, Apple Computer, Inc.

Tech Info Library Article Number:12270