



# Tech Info Library

## SNA•ps Connections With AIR 3.0 and X.25 Tunneling (5/93)

Article Created: 21 May 1993

\* RESTRICTED: Apple Internal and Support Providers Only \*  
Not For General Public Release

TOPIC -----

I want to connect two AppleTalk networks through X.25, using MacX25 and the Apple Internet Router (AIR) 3.0 with the X.25 Wide Area Extension. There is a SNA•ps gateway (Token Ring attachment to an AS/400) on one of the networks.

What happens to the X.25 traffic when there is a SNA•ps 5250 client who allocates a session for a long time, say seven hours like a normal terminal, without logging on to the computer?

Does a SNA•ps gateway generate a lot of traffic on the tunnel to keep the session open?

DISCUSSION -----

To summarize, here is the information collected from the experiments we performed:

- With the SNA•ps 5250 client expect 20 AppleTalk packets per minute with an average size of 65 bytes.
- With the SNA•ps 3270 client expect 4 ADSP packets per minute each 64 bytes long.
- In the SNA•ps ADMIN test with Resources Window open and the actual number of bytes sent will vary depending on the complexity of the displayed data. Resources window was displaying a gateway with 2 lines, 2 partners, 9 3270 LUs, and a single APPC parallel session device with 18 sessions bound. For this example, there were 1,460 packets sent each minute. Packets ranged in size from 64 to 221 bytes.
- In the SNA•ps ADMIN test with Resources Window closed and the Status Window open, the actual number of bytes sent will vary depending on the complexity of the displayed data. The Status window was showing three gateways. There were 244 packets sent each minute. Packets ranged in

size from 64 to 221 bytes.

We set up the following environment to test the flow of AppleTalk traffic from SNA•ps 5250 client applications:

- SNA•ps GW 1.1.1 with APPC LU 6.2 connection to AS/400 Token Ring adapter
- SNA•ps 5250 GC 1.0 GM
- EtherPeek 1.5.1

SNA•ps 5250 was running as a client only in a Quadra 950, and the SNA•ps APPC gateway was in a separate Macintosh IIX in another zone. Both computers were connected to the network via Ethernet.

We connected the SNA•ps 5250 emulation to the AS/400 and had the Sign-on screen shown on the emulation window. The SNA•ps 5250 GC Client starts AppleTalk ADSP traffic every 15.3 seconds and there is a very repeatable beat to the traffic. There is an "ADSP like" keep alive every 60 to 61 seconds, which allows the client to be reassured that the gateway is still attached and active. There is also an APPC verb transaction, every 15.3 seconds from the SNA•ps 5250 application sent to the AS/400, asking if it has any screen update to send.

SNA•ps 5250 test

-----  
Here is the traffic flow for a typical 60 to 61 second time period:

SNA•ps 5250 Client	SNA•ps gateway
-----	-----
Sends a 68 byte packet	
	Sends a 64 byte packet
	Sends a 73 byte packet
Sends a 64 byte packet	
Sends a 66 byte packet	
	Sends a 64 byte packet
	Sends a 73 byte packet
Sends a 64 byte packet	
15.3 SECONDS PASS	
Sends a 68 byte packet	
	Sends a 64 byte packet
	Sends a 73 byte packet
Sends a 64 byte packet	
15.3 SECONDS PASS	
Sends a 68 byte packet	
	Sends a 64 byte packet
	Sends a 73 byte packet
Sends a 64 byte packet	
15.3 SECONDS PASS	

Sends a 68 byte packet

Sends a 64 byte packet

Sends a 73 byte packet

Sends a 64 byte packet

15.3 SECONDS PASS

Sends a 68 byte packet

Sends a 64 byte packet

Sends a 73 byte packet

Sends a 64 byte packet

Sends a 66 byte packet

Sends a 64 byte packet

Sends a 73 byte packet

Sends a 64 byte packet

15.3 SECONDS PASS

And so on.....

In an average 60 seconds of idling, the SNA•ps 5250 client will send 20 AppleTalk packets with an average size of 65 bytes.

SNA•ps 3270 test

-----  
To continue, we did the same test for SNA•ps 3270 GC 1.1.1 to a Token Ring based 3270 gateway (version 1.1.1). We only saw ADSP keep alives at the rate of one exchange per every 30.4 seconds.

So here is the traffic flow for a typical 120 to 121 second time period:

SNA•ps 3270 GC 1.1.1

SNA•ps 3270 GW 1.1.1

-----  
Sends a 64 byte packet

-----  
Sends a 64 byte packet

30.4 SECONDS PASS

Sends a 64 byte packet

Sends a 64 byte packet

30.4 SECONDS PASS

Sends a 64 byte packet

Sends a 64 byte packet

30.4 SECONDS PASS

Sends a 64 byte packet

Sends a 64 byte packet

30.4 SECONDS PASS

And so on.....

Notice the "heartbeat" of this ADSP keep alive is different than the SNA•ps 5250 GC. They happen less often and the ping-pong, that is, client side starts, then the gateway side starts, then client side and so on.

With SNA•ps 3270 expect 4 ADSP packets per minute each 64 bytes long.

SNA•ps ADMIN test with Resources Window open

-----  
We also tested SNA•ps Admin through the same Ethernet environment. We ran SNA•ps Admin on the Quadra 950 in one zone and monitored only a single SNA•ps gateway in another zone. The traffic was measured with one full resources window of a gateway open and displayed.

With the full resources window open the following a "typical heartbeat" was observed. This is very difficult to document because of the complexity of traffic and the amount of traffic, so we can only put together the general idea of the basic "heartbeat".

For each gateway listed in the Admin Status Window there is 6 packets required to request, transmit the gateway names and acknowledge their receipt. This happens until all gateways displayed are updated. In our example, we were displaying 3 gateways, so we got three repeats of the 6 packets. This update occurs every 5-6 seconds.

There is also a repeat of 4 NBP packets to update the computer name and zone that computer is in where the gateways are running. In our example, the 3 gateways were running in the same computer. This update seems to occur every 3-4 seconds.

Next comes the update of all the information in the open Resources window. To update the Line and Partner entries takes 8 packets each. To update each 3270 resource, each local LU, each TP, each remote LU, each Mode and each bound session, takes 4 packets. In our example, with 2 Local LU to Remote LU pairs and two modes with many prebound sessions, we had near 300 packets to fully update the status of all resources. This update occurs every 20 seconds.

You can see in this situation it would not be desirable to leave the resources window open over an X.25 link. The per minute traffic can vary depending on the number of gateways and their complexity.

In our test case there were 1,460 packets sent each minute. Packets ranged in size from 64 to 221 bytes.

SNA•ps ADMIN test with Resources Window closed, Status Window open

-----  
If the full resources window is closed and only the gateway status window is left open, the traffic is reduced to just the NBP packets and the gateway names updates. So for completeness this is:

For each gateway listed in the Admin Status Window there are 6 packets required to request, transmit the gateway names and acknowledge their receipt. This happens until all gateways displayed are updated. In our example, We were displaying 3 gateways, so we got three repeats of the 6 packets. This update occurs every 5-6 seconds.

There is also a repeat of 4 NBP packets to update the computer name and zone that computer is in where the gateways are running. In our example, the 3 gateways were running in the same computer. This update seems to occur every 3-4 seconds.

In our test case there were 244 packets sent each minute. Packets ranged in size from 64 to 221 bytes.

Copyright 1993, Apple Computer, Inc.

Keywords: <None>

=====

This information is from the Apple Technical Information Library.

19960215 11:05:19.00

Tech Info Library Article Number: 12182