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Worldwide Network: Missing Servers Problem (8/93)

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TOPIC ---

I have questions regarding the performance of a worldwide Liaison network.
Servers are dropping off the network, and it seems to be a result of the
network configuration.

I need to know what happens when I do a read of a file on an AppleShare
server in a remote location over a slow link. In brief, I have a program in
Toronto, London, Madrid, Zurich, Frankfurt, and Paris that reads a file
from an AppleShare server in New York.

Sometimes the link (Liaison over an asynchronous line into the Tymnet
packet Switched network) "breaks" and other times, we seem to "lose" the
server. When we try to reconnect to the server, the branch locations
sometimes do not "see" the server in the Chooser window for a long enough
period to select the server physically. We cannot, therefore, restart the
application. Their observation has been 15 seconds of availability. This
does not always happen, but it happens too often to not lodge a complaint.

The application checks on and reports all sorts of errors on a read, and it
does know when it cannot open a file, because a server is unavailable. I
am doing PBHOpenDeny opens and PBRead calls. We have asked the Tymnet
network people to look into this, and they have asked the following
questions:

1) When you open the Chooser window and select a zone, how do the lists of
   servers appear?

   How long does it take to get the list up?

   Why do some servers come into and disappear from the list?

   Why do some servers never appear in the Chooser window? Is this because

the servers' response time is very slow, and, therefore, the response is
ignored until the next request is broadcast? If so, how long is this
window? (What is the maximum round-trip delay from the branch Macintosh
to the AppleShare server and back?)

2) On a read, when a read request is sent to the remote AppleShare file
   server (from branch to New York) what is the timeout period before the
   packet is determined to be lost, and is thus retransmitted?

3) On a normal AppleShare read, if a data packet times out, how many
   retries are made before AppleShare decides that the link to the server
   is dead? Or, how long does AppleShare continue trying before it gives
   up?

4) If I do a read, should I always get back a response, or is it possible
   that if the Macintosh has lost the file server, AppleShare will be
   unable to respond, and that the reading application will appear to hang?
   This seems to happen sometimes, from what the branch people say.
   Sometimes, if we lose the link to New York, the whole Macintosh hangs
   and must be restarted.

DISCUSSION --

What version of Liaison are you using? Versions before 3.0 are no longer
supported. Farallon purchased the product from InfoSphere and is offering
support only for version 3.0 and later (3.0.5 is compatible with System 7.1),
which fixed several bugs and added support for AppleTalk phase 2.

One problem in versions before 3.0 was the inability of Liaison to display
zone lists when the zone list transverses more than one ZIP packet (around
40 zones depending on the size of the name). We would also suggest a call
to Farallon to discuss the current problems the account is experiencing
with the product. We cannot control how third-parties choose to implement
routers and other such products based around AppleTalk. This can cause
problems if the product was implemented in a way that the protocols were
never designed to accommodate.

Because the AppleTalk protocols were never designed to work over slow
asynchronous links or over wide-area networks, there are several issues
that need to be addressed before AppleTalk can become a valid protocol for
use in these types of environments.

Here are direct answers to your questions:

1) This is how it really works in a nutshell:

   The Chooser sends out a Name Binding Protocol (NBP) packet looking for
   all devices of type XXXXXX, for example, type LaserWriter. It sets up a
   buffer of 512 bytes for the responses. The responses look like:

   device name length   1 byte
   device name   variable bytes   e.g. MyLaser-Hands off
   type name length   1 byte

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type name                  variable bytes      e.g. LaserWriter
zone field length          1 byte
zone name field            variable bytes      probably *
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The Chooser gets a packet back for each device, i.e., each LaserWriter.
When the 512-byte buffer is full of these packets, it stops looking for
device names to display. This means that some LaserWriters might not be
displayed immediately. If you leave the Chooser window open, however,
the Chooser will continue to send out NBP lookups every 1.47 seconds.
Different LaserWriters could respond more quickly each time. In this
case, you may see the Chooser show and hide various devices.

You can see from this that the number of devices Chooser can show
depends on how long the type name is (like "LaserWriter") and how long
the device names are. The number 18 is an average number, based on the
device type being about 13 or 14 characters long and the device name
being about 10 or 11 characters long. In System 7.0, the buffer size
the Chooser will use will be increased to 1024. This means, on average,
the Chooser can display about 36 devices.

2) This depends on the direction of the transfer. Workstation to Server
   copy takes 6 seconds and server to Workstation copy about 2 seconds.

3) Retries are set to infinite. The session timer for the connection is
   set to 2 minutes. This is really what dictates how long the reads are
   attempted before the transaction is aborted. The session timer is
   restarted each time a tickle packet is received by either the
   workstation or the server. Tickle packets are sent out every 60 seconds
   by both the server and the workstation to allow a way of detecting if
   the other end of the connection has gone down.

4) No, you aren't guaranteed a response, but the session timer should
   expire after 2 minutes and pop up a dialog telling you that the server
   has unexpectedly quit.

Article Change History:
25 August 1993 - Revised to add Farallon support for Liaison versions
later than 3.0.

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