System 6 Chooser: Device, Name, Zone, Memory Limits

Article Created: 7 October 1989
Article Last Reviewed: 28 July 1992
Article Last Updated: 28 July 1992

TOPIC ---

This article discusses device, zone, and name limits as displayed and controlled through the System 6 Chooser DA window (which would correspond to version 3.x of the Chooser itself).

DISCUSSION -----------------------------------

The following information pertains to Chooser versions 3.x:

The Chooser DA window consists of five separate sections:

1) The device type list.
2) The AppleTalk zone list (visible only if there are multiple zones).
3) The user name box.
4) The AppleTalk active/inactive controls.
5) The available devices name list.

1) The Chooser is able to display a maximum of 16 items in the Chooser device type list. This is the limit that is imposed by the Chooser itself, not by something interfering with the operation of the Chooser.

2) The Chooser allocates memory for the zone list dynamically, up to 32K. Each entry in the zone list uses 1 byte of memory for each character in the zone name, plus 1 byte. The Chooser uses this extra byte as a length byte. For example, the 7-character zone name "My Zone" uses 8 bytes of memory: 7 bytes for the characters and 1 byte for the length byte. The maximum length of a zone name is 32 characters. A 32-character zone name uses 33 bytes of memory.

   Based on this information, if every zone had a 32-character name, it would be possible to have a maximum of 992 zones listed in the Chooser (32K / 33 = 992.97, remove the remainder). The maximum number of zones that can be displayed in the Chooser is wholly dependent on the length of the zone names being used.

3) The user name can be a maximum of 31 characters.

4) This one is self-explanatory; it controls whether or not AppleTalk is active.

5) Determining the maximum number of visible Chooser device names:

System 5.x and 6.x Choosers allocate a 512-byte buffer for the Chooser's list of available AppleTalk network device names. Each name in the buffer is embedded in an AppleTalk Name Binding Protocol (NBP) packet received by the Chooser from the selected device type. The NBP packet is called a "lookup reply", and is sent in answer to the Chooser's lookup broadcast for the selected device. An example is the selection of the device type LaserWriter driver, and the displayed LaserWriter object names.

When the 512-byte buffer is filled, this sometimes causes various names in the Chooser selection window to appear and disappear. When selecting the LaserWriter driver in this situation, a LaserWriter disappears and another appears approximately once each 1.5 seconds. This happens whenever there are more names than the buffer can hold. Because the lookups are usually sent in a series, whenever a device does not fit on the display list, the first reply received from a previous lookup is removed and replaced with the name of the device that did not fit. This process continues for each following lookup broadcasted by the Chooser. While the display list is also limited to 32 names, this is never reached when displaying devices like LaserWriters, because even with 1 character per name, the buffer is filled when 22 LaserWriters are displayed.

If you encounter the constantly appearing and disappearing LaserWriter situation, you can either break the network up into zones containing smaller numbers of the particular device, or reduce the length of some or all of the device names.

The buffer space used by each returned AppleTalk device is the length of the NBP reply packet returned by the device to the Chooser's lookup.

NBP LaserWriter Lookup Reply Packet Definition

Function and Tuple Count:	1 byte
NBP ID:	1 byte
Network Number:	2 bytes
Node ID:	1 byte
Socket Number:	1 byte
Enumerator:	1 byte
Object Field Length:	1 byte
Object:	length of name
Type Field Length:	1 byte
Type:	11 bytes for type "LaserWriter"
Zone Field Length:	1 byte
Zone:	1 byte for zone "*" the NBP reply default

TOTAL 22 bytes + length of the LaserWriter name

A calculation for determining the maximum number of visible LaserWriters in a zone:

Number of visible LaserWriters = trunc(512/(22+(sum of name lengths / Number of LaserWriters))

If the LaserWriter names are all the same length, the calculation is simplified to trunc(512/(22+length)). The mean calculation (sum of name lengths / Number of LaserWriters) is not necessary in this case.

(NOTE: Trunc indicates that decimal values should be ignored. That is, a result of 12.8 indicates 12 LaserWriters.)

The calculation can be used for any other type of AppleTalk device, if the type length and the mean of the device names are known.

In Chooser 3.3.1 selecting the Apple LaserWriter driver displays:

Mean Name Length	Max Number of Visible LaserWriters
30	9
25	10
20	12
15	13
10	16
5	18

For information on the System 7 Chooser limits, search on System 7 Chooser.

Keywords: <None>

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