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ABS Tech Note: SNA•ps03 MCP Memory Installation (12/94)

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TOPIC ---

This technical note discusses installation of memory onto Apple Serial and Apple
Token Ring 4/16 MCP NuBus cards.

DISCUSSION --

Introduction

The Apple MCP (Macintosh Coprocessor Platform) cards are smart busmaster cards
that contain an on-board 68000 processor and 512 KB of RAM (minimum
configuration) soldered onto the card, with 4 sockets available for expansion
memory. This document details adding memory, using those expansion sockets, to
the Apple Serial NB and Apple Token Ring 4/16 NB cards; there is no reason to
add memory to an Apple Coax/Twinax NB card, since the DFT terminal it emulates
only allows 5 sessions; the original Apple TokenTalk NB card (4 megabit speed
only) has 512 KB soldered RAM and no expansion slots.

The Memory Expansion Kit

The Apple Macintosh Coprocessor Platform Memory Expansion Kit (M0145LL/A)
provides 4 memory chips for those 4 sockets that allows you to add another 512
KB RAM to the board, for a total of 1 MB. This is large enough for most uses of
the SNA•ps Gateway. It is possible to purchase a higher density memory chip
from third party memory vendors that will create a total of 2.5 MB; this amount
of memory is desirable for 64-session gateways with large I-frame sizes. All
four chips must be of the same density, so the possible memory configurations
are 0.5 MB (no expansion), 1 MB (using Apple's expansion kit), and 2.5 MB (using
higher density third party chips).

The memory chips themselves are quite fragile and should be handled carefully.
Use a grounding strap, and check that the pins are straight. Try to get the
orientation correct on the first try so that they won't have to be handled more

than necessary. Insert by pushing down with a straight, steady motion. If a pin
bends on insertion, try using a small screwdriver to push it into the socket,
rather than pull the chip out and try again. To remove the chip, use a gentle
rocking motion with a steady upward pull. Tools designed for inserting or
pulling these chips have not been found.

Some chips are missing a pin. This is normal.

Orientation

Pin one is marked with a recessed dot on the lower part of the chip (lower left
corner of the side with writing); this is also the end with the beveled corner.
On the Apple Serial NB card, there is a corresponding dot on the circuit board.
By holding the card with the NuBus connector facing you, the side of the memory
chip with writing will be facing you. On the Apple Token Ring 4/16 NB card,
there is a marking on the circuit board that represents the beveled edge; the
resulting orientation will cause the blank side of the memory chip to be facing
you.

The Apple Token Ring 4/16 NB card has 2 diagnostic lights. After power-up
diagnostics, the green light should be on and the red LED should be off. If the
red light stays on, there is a problem, and it is possible that the memory was
not installed correctly.

Memory Specifications

When buying memory chips, the following specifications must be met:

• Type: Dynamic RAM
• Size: 256K x 4, or 1MB x 4 (depending on amount of memory desired)
• Configuration: 4 bits wide
• Package: ZIP
• Speed: 120 nS or faster (for example, 100 nS or 80 nS)

To expand memory to 1 MB:

• (4) 256K x 4 bit DRAM chips, 120 nS or faster, ZIP package
• Mitsubishi part number M5M44C256L-12
• Hitachi part number HM514256ZP-12
• Apple part number M0145LL/A, "Macintosh Coprocessor Platform Memory
  Expansion Kit"

To expand memory to 2.5 MB:

• (4) 1M x 4 bit DRAM chips, 120 nS or faster, ZIP package
• Toshiba part number TC514400Z-10
• Motorola part number MCM54400AZ80
• TI part TMS44400-12SD

NOTE: The Toshiba TC514400AZ-80 is 1M x 4 bit (4Mbit) ZIP module. You need 4 of
these 4Mbit ZIP modules to get 2MB or RAM added to the Token Ring 4/16 NB Card
to get a total 2.5MB of RAM. The TC514400AZ-60 and TC514400AZ-70 will work as
well. The "-80", "-70", and "-60" indicate the speed in nanoseconds of the ZIP

module. As long as the TC514400AZ module is 120ns or faster it will work correctly.

Article Change History:
14 Dec 1994 - Corrected abbreviations and clarified for accuracy.

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