

Documentation Développeurs Apple Computer France 1987

Document développeur numéro 3

Preserving stack when changing modes

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Taille : 2 page(s) environ

Domaine : 816

VERSION :
DATE : 24.01.86

**Preserving the Stack Pointer when
changing 65816 modes**

January 24, 1986
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When running the 65816 in native mode, it is possible to locate the stack anywhere within bank \$00. If the stack is located anywhere in memory other than page 1, and the processor mode is switched to emulation mode, the upper half of the stack pointer will be lost (set to \$01). When the processor mode is switched back to native mode, the upper half of the stack pointer will remain set to page \$01. To avoid losing the native mode stack pointer when switching to emulation mode, the stack pointer must temporarily be saved. Then the stack pointer is set to the emulation mode stack in page \$01, and the native mode stack pointer is pushed onto the emulation mode stack prior to switching the processor to emulation mode. Switching the stack back to the native mode stack is done by pulling the native mode stack pointer off the emulation mode stack, and tranfering the 16 bit value to the stack pointer. This must occur after the processor has already been set back to native mode with 'm' and 'x' set to 16 bits. Note that the main/aux stack page switches cannot be used in native mode. Thus, when switching to emulation mode the main stack is used.

An example of switching to emulation mode is shown below:

```

EMULSTACK EQU $010100 ; EMULATION STACK POINTER IS SAVED HERE !
TOEMUL REP #$30 ; 16 BIT 'm' AND 'x'
TSC ; TEMPORARY SAVE OF NATIVE STACK POINTER
TAX
SEP #$20 ; 8 BIT 'm'
XBA ; GET STACK POINTER PAGE
DEC A ; IS STACK ALREADY IN PAGE 1?
BEQ ALREADYPG1 ; IF NOT, DON'T SAVE IT
LDA #$01 ; SET STACK PAGE TO $01
XBA
LDA EMULSTACK ; GET EMULATION STACK POINTER
TCS ; SET EMULATION STACK POINTER
ALREADYPG1 PHX ; SAVE NATIVE MODE STACK POINTER
SEC ; OFF TO EMULATION LAND !
XCE

```

An example of switching back to native mode is shown below:

```

CLC ; SET NATIVE MODE
XCE ; BUT IT'S STILL IN 8 BIT LAND!
REP #$30 ; SO LET'S GO TO 16 BIT LAND!
PLX ; GET NATIVE STACK POINTER OFF EMULATION STACK
TXS ; AND SET THE NATIVE MODE STACK POINTER

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