CSCE 351
Operating System Kernels

Intel Architecture

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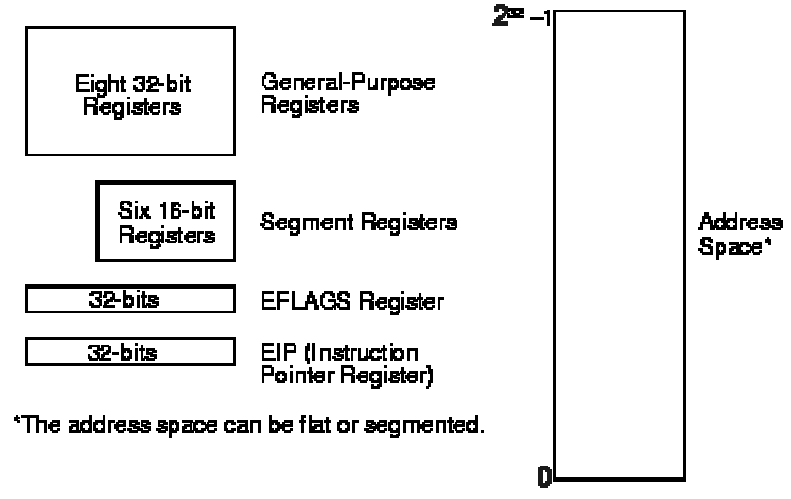
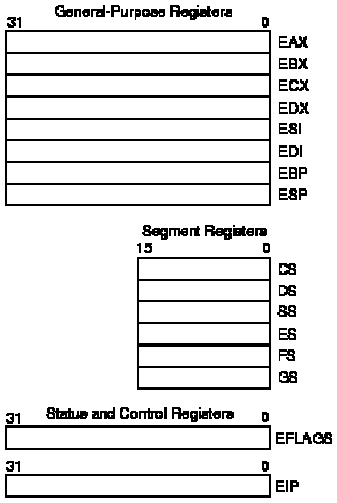
Basic Execution Environment



Application Programming Registers

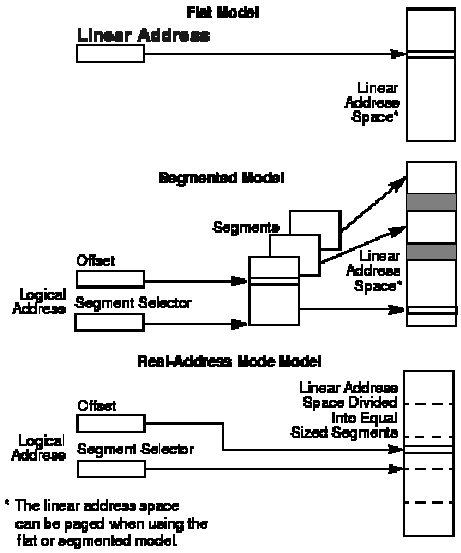


Alternate General-Purpose Register Names

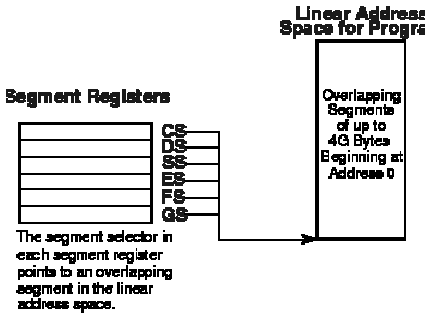
General-Purpose Registers

31 16	15 8	7 0	16-bit	32-bit
	AH	AL	AX	EAX
	BH	BL	BX	EBX
	CH	CL	CX	ECX
	DH	DL	DX	EDX
	BP			EBP
	SI			ESI
	DI			EDI
	SP			ESP

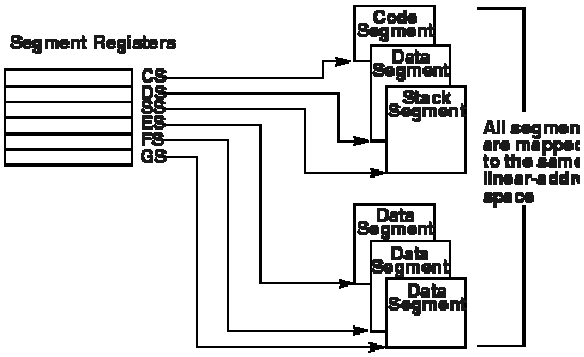
Three Memory Management Models



Flat Memory Model



Segmented Memory Model



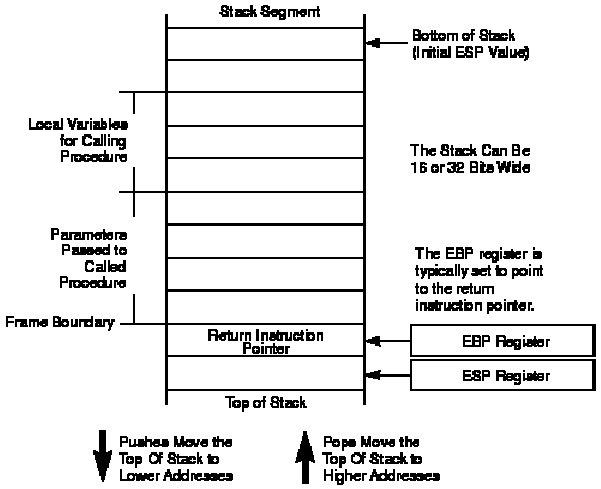
EFLAGS Register

X ID Flag (ID)
X Virtual Interrupt Pending (VIP)
X Virtual Interrupt Flag (VIF)
X Alignment Check (AC)
X Virtual-8086 Mode (VM)
X Resume Flag (RF)
X Nested Task (NT)
X I/O Privilege Level (IOPL)
X Overflow Flag (OF)
X Direction Flag (DF)
X Interrupt Enable Flag (IF)
X Trap Flag (TF)
S Sign Flag (SF)
S Zero Flag (ZF)
S Auxiliary Carry Flag (AF)
S Parity Flag (PF)
S Carry Flag (CF)

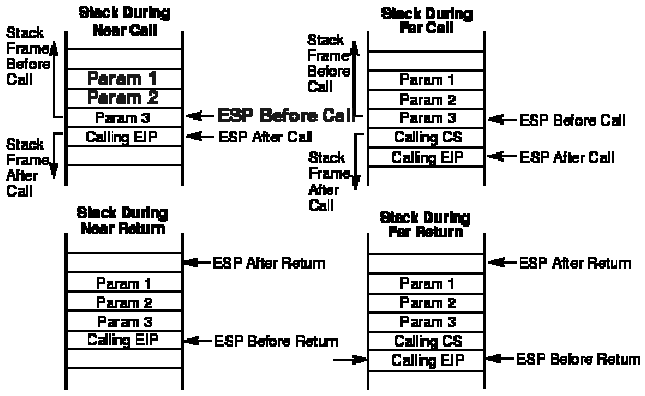
S Indicates a Status Flag
C Indicates a Control Flag
X Indicates a System Flag

Reserved bit positions. DO NOT USE.
Always set to values previously read.

Stack Structure

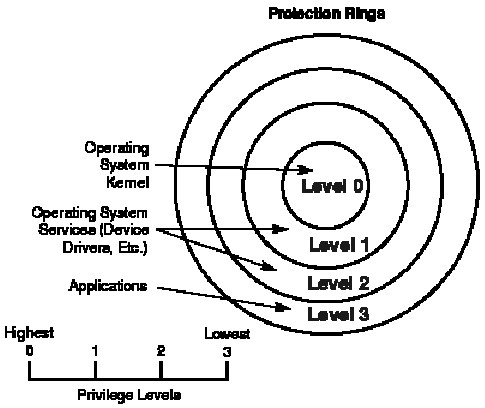


Stack on Near and Far Calls

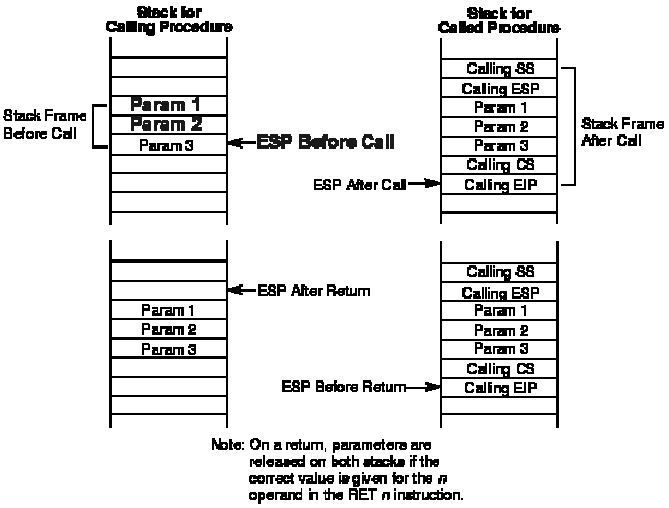


Note: On a near or far return, parameters are released from the stack if the correct value is given for the *n* operand in the RET *n* instruction.

Protection Rings



Stack Switch on a Call to Different Privilege Level



Stack Usage on Interrupt Handling