



**1990 Worldwide
Developers Conference**



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Designing for Apple OS Independence

Software Independence

Independent Operating Systems

- System 6.0.X
- System 7.0

- A/UX

Issues

- 32-bit cleanliness
 - StripAddress
- Accessing low memory and data structures
- Accessing hardware
- Privileged instructions
- Trap patching
- Gestalt

32-Bit Cleanliness

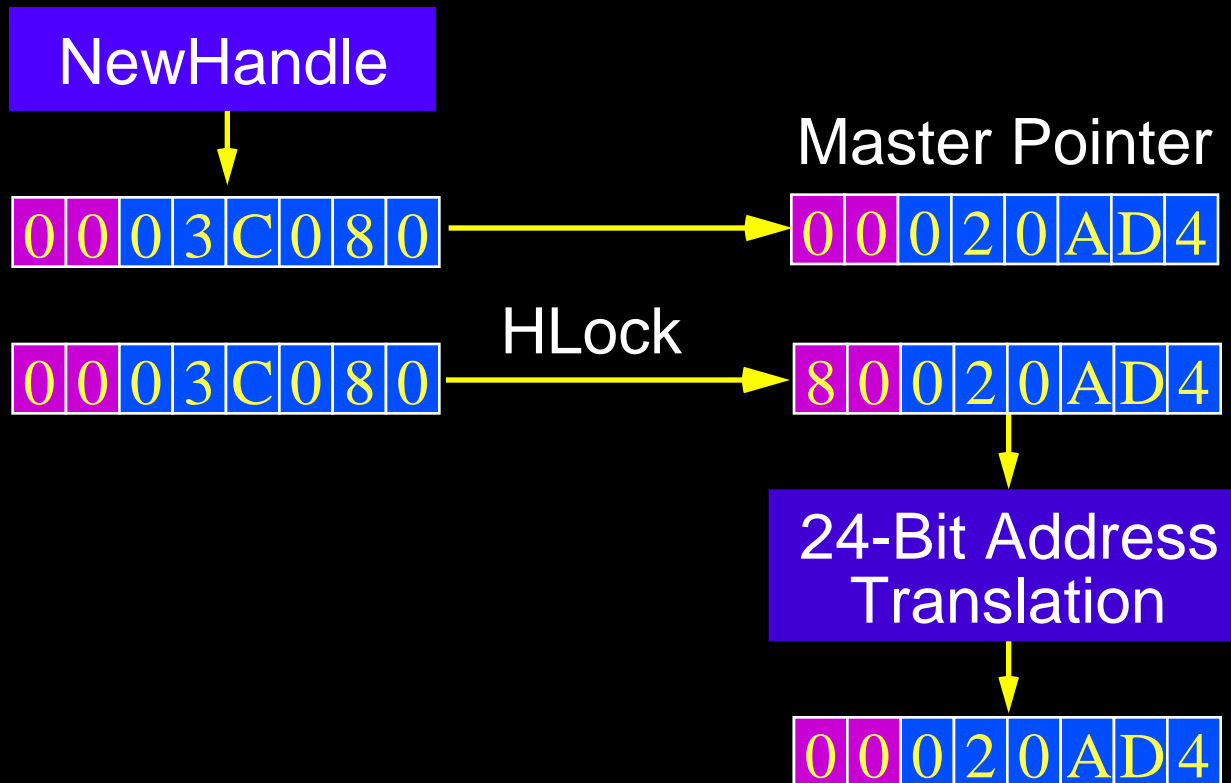
- Use Memory Manager Traps
 - HLock, HPurge...
- Use GetWVariant and GetCVariant

StripAddress

- Makes an address “clean”
- Usually unnecessary
- Don't overuse it

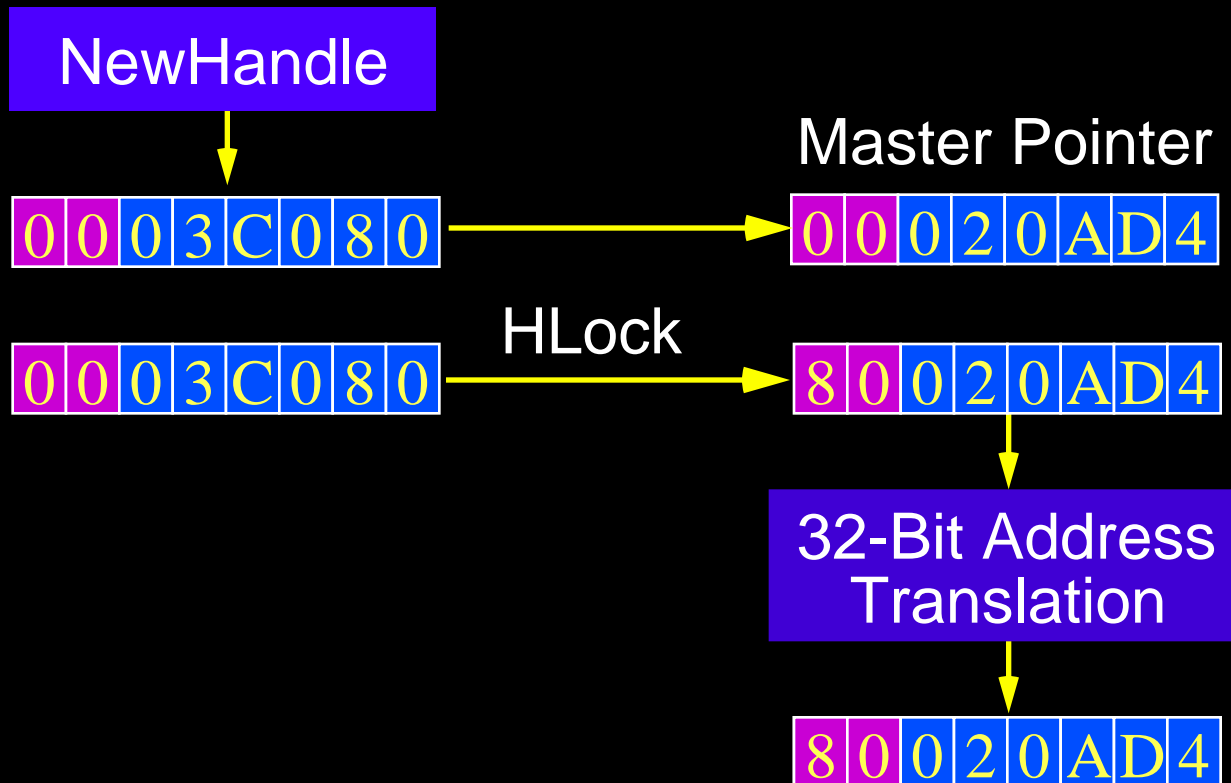
24-Bit Memory Manager

24-Bit MMUMode



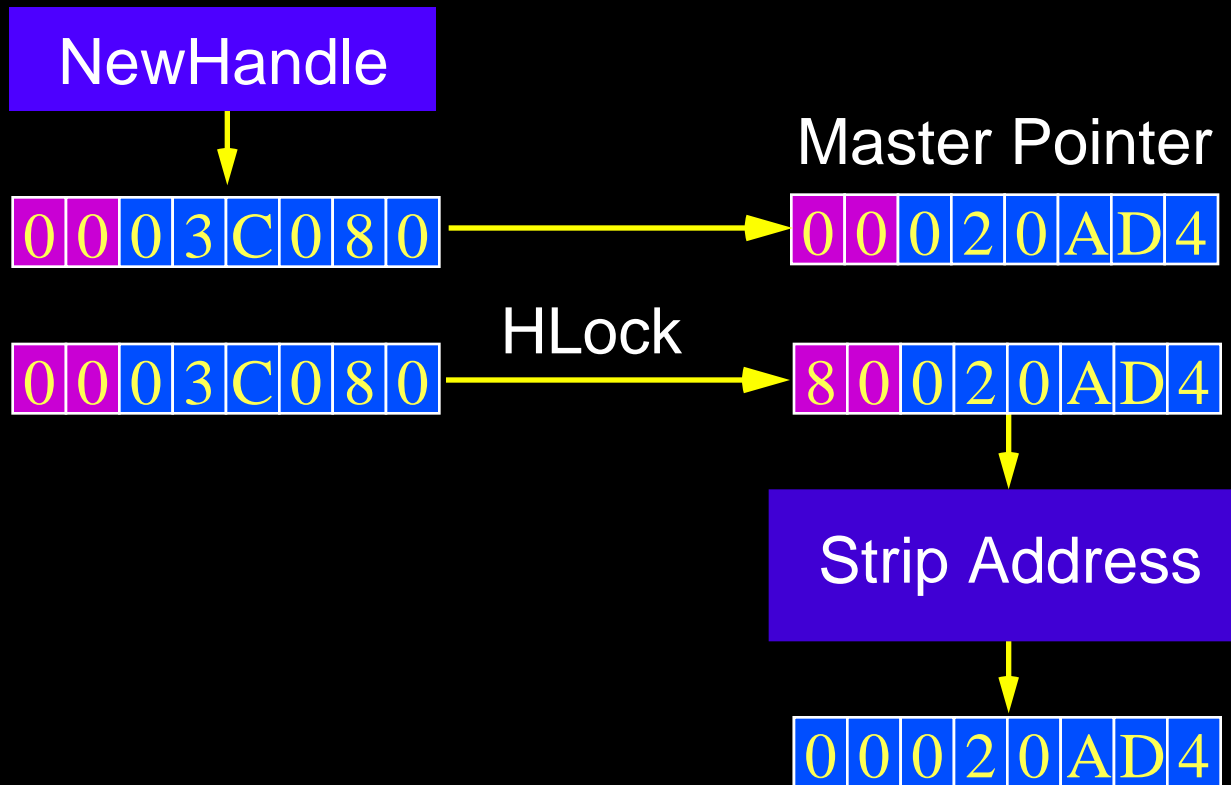
24-Bit Memory Manager

32-Bit MMUMode



24-Bit Memory Manager

StripAddress/32-Bit MMUMode



24-Bit Memory Manager

StripAddress/32-Bit Address

GetPixBaseAddr

0 1 0 3 9 0 3 0

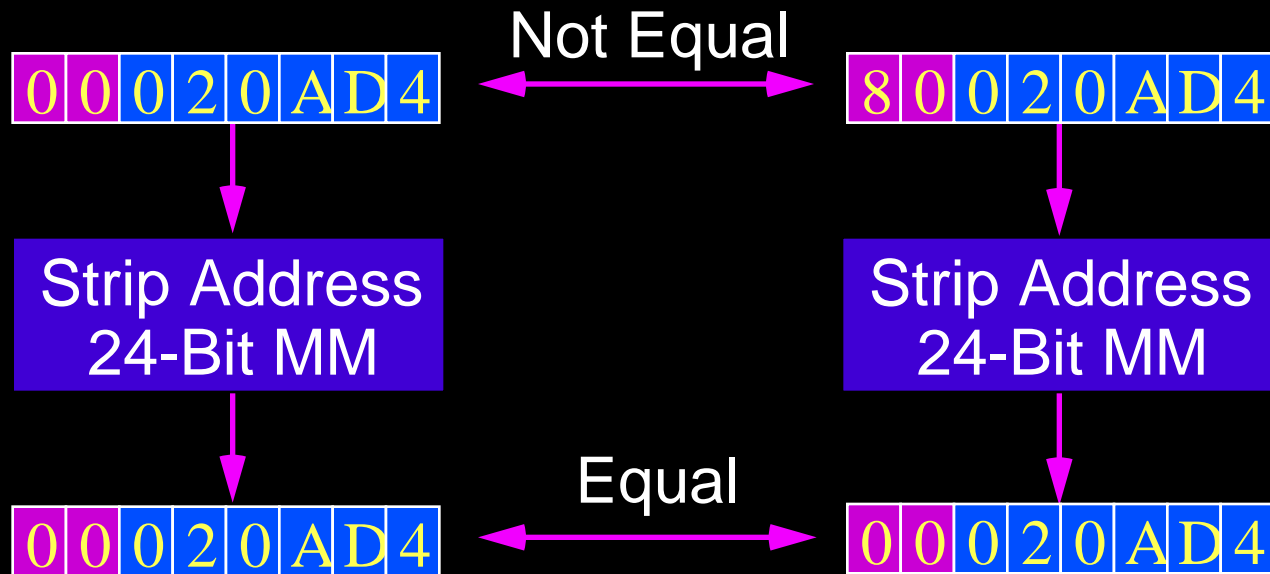
Strip Address
24-Bit MM

0 0 0 3 9 0 3 0

Deep yogurt!

StripAddress

Comparing Master Pointers



Accessing Low Memory

- Never use undocumented low memory globals
- If possible, use traps or glue to access low memory
- Better to read than write low memory

Manipulating Data Structures

- Avoid manipulating data structures directly
 - Structures may change
 - System doesn't know what you're up to
- Use traps whenever possible

Accessing Hardware Directly

- Don't assume you own the machine
- Custom device drivers under A/UX

Privileged Instructions

- Don't assume supervisor mode
- Avoid privileged instructions
 - MOVE SR,<ea> ; Priv.
 - MOVE CCR,<ea> ; Non-priv.

Trap Patching

- Very hard to do right
- Don't tail patch
- Application patches preferred

Gestalt

- Use Gestalt to determine features
- Use Gestalt instead of SysEnviron
- Smart Gestalt glue
- Use NewGestalt to show functionality

Gestalt Traps

Function Gestalt (selector: OSType;
VAR response: LongInt): OSErr;

Function NewGestalt (selector:
OSType; selectorFunction: ProcPtr):
OSErr;

Function ReplaceGestalt (selector:
OSType; selectorFunction: ProcPtr;
VAR OldGestaltFunction: ProcPtr):
OSErr;

A Typical Gestalt Selector

```
CONST gestaltOSAttr      = 'os';
gestaltSysZoneGrowable   = 0;
gestaltLaunchCanReturn   = 1;
gestaltLaunchFullFileSpec = 2;
gestaltLaunchControl     = 3;
gestaltTempMemSupport    = 4;
gestaltRealTempMemory    = 5;
gestaltTempMemTracked    = 6;
gestaltIPCSupport        = 7;
gestaltSysDebuggerSupport = 8;
```

Gestalt Features

- Machine type
- System version
- Processor type
- FPU type
- QuickDraw version
- Keyboard type
- AppleTalk version

More Gestalt Features

- A/UX Version
- Font Manager
- Memory Information
- Notification Manager
- Power Manager
- Resource Manager
- Script Manager and TextEdit

And Even More Gestalt Features

- Alias Manager
- AppleEvents
- Database Access Manager
- Edition Manager
- Help Manager
- PPC Toolbox
- Virtual Memory



The power to be your best