

Welcome

To Advance through Presentation
Use Page Up and Page Down Keys



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Icons in Mac OS 8 and Mac OS X

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Pixel Juggler

*The eyes are
the windows
of the soul.*



*The icons are
the windows of
an application's soul.*



Overview

- IconServices basics
- Icons in the Finder
- Using icons in your application
- Icon design tips and tricks



Where Is Icon Services?

#include <Icons.h>

- IconServicesLib stub library
- Available in Mac OS 8.5 and Carbon
- Some routines not available on 8.5



Icon Services

Find

Cache

Display



Asking for an IconRef







SurfDraw



GetIconRefFromFile()

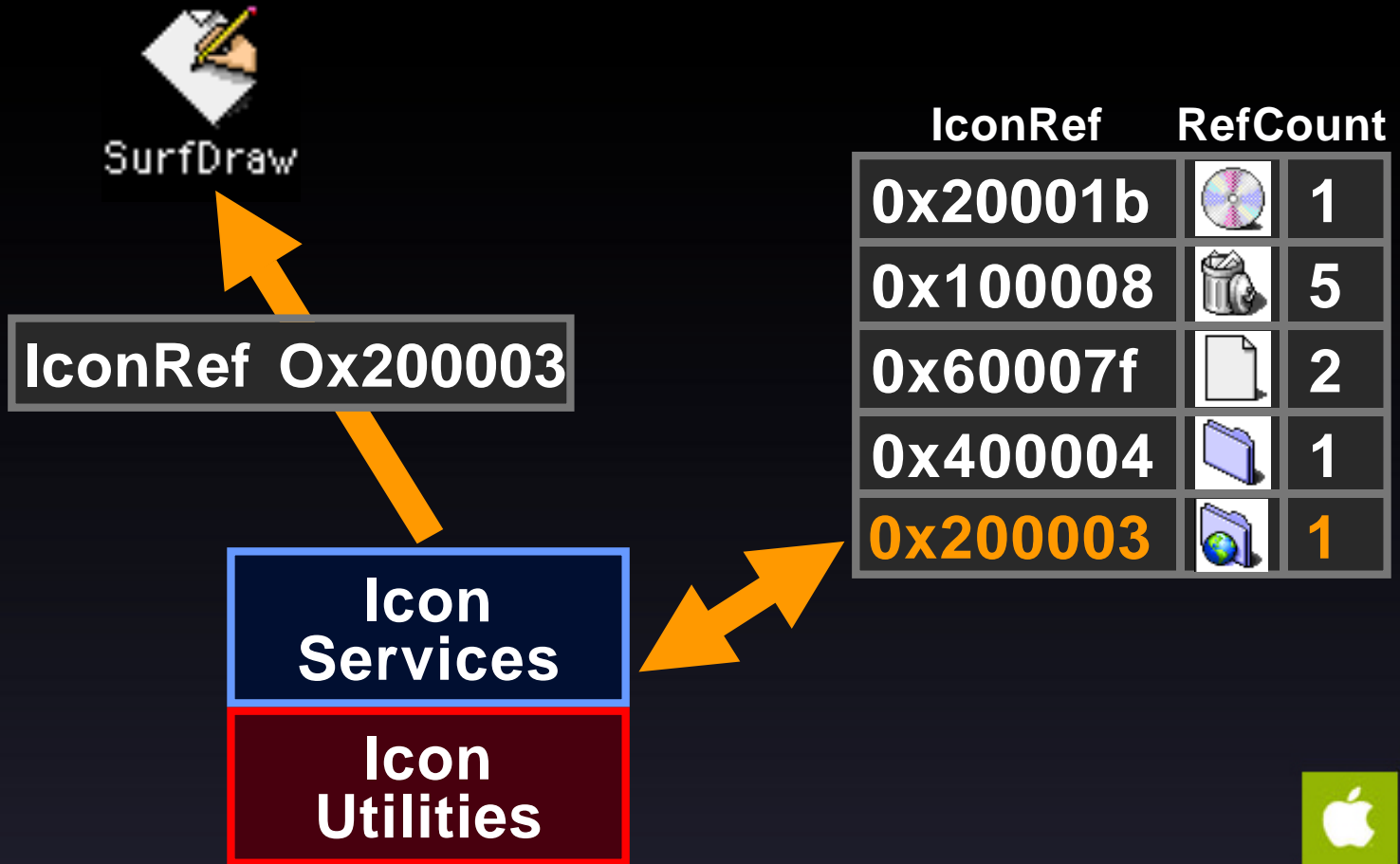
**Icon
Services**

**Icon
Utilities**

IconRef	RefCount
0x20001b	 1
0x100008	 5
0x60007f	 2
0x400004	 1



IconRef Returned



Using an IconRef



SurfDraw



PlotIconRef (0x200003)

**Icon
Services**

**Icon
Utilities**


IconRef RefCount

0x20001b  **1**

0x100008  **5**

0x60007f  **2**

0x400004  **1**






0x200003  **1**

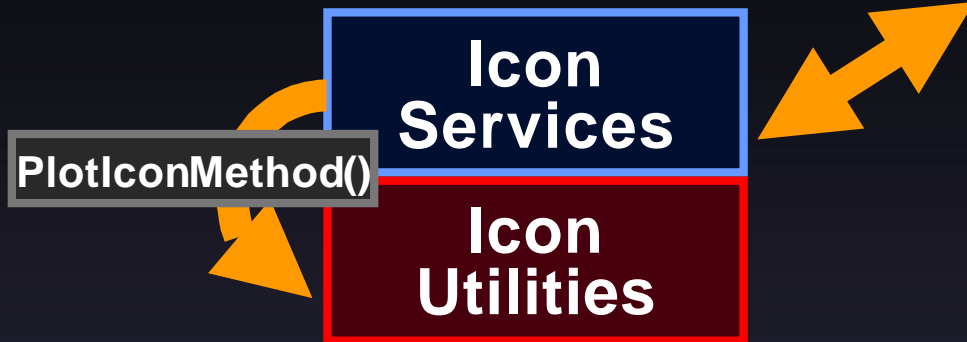


Icon Data Lookup



SurfDraw

IconRef	RefCount
0x20001b	 1
0x100008	 5
0x60007f	 2
0x400004	 1
0x200003	 1



Reference Counting



SurfDraw

ReleaseIconRef (0x200003)

Icon Services

Icon Utilities

IconRef

RefCount

0x20001b



1

0x100008



5

0x60007f



2

0x400004



1

0x200003



1



Reference Counting



SurfDraw

ReleaseIconRef (0x200003)

Icon
Services

Icon
Utilities

IconRef

RefCount

0x20001b



1

0x100008



5

0x60007f



2

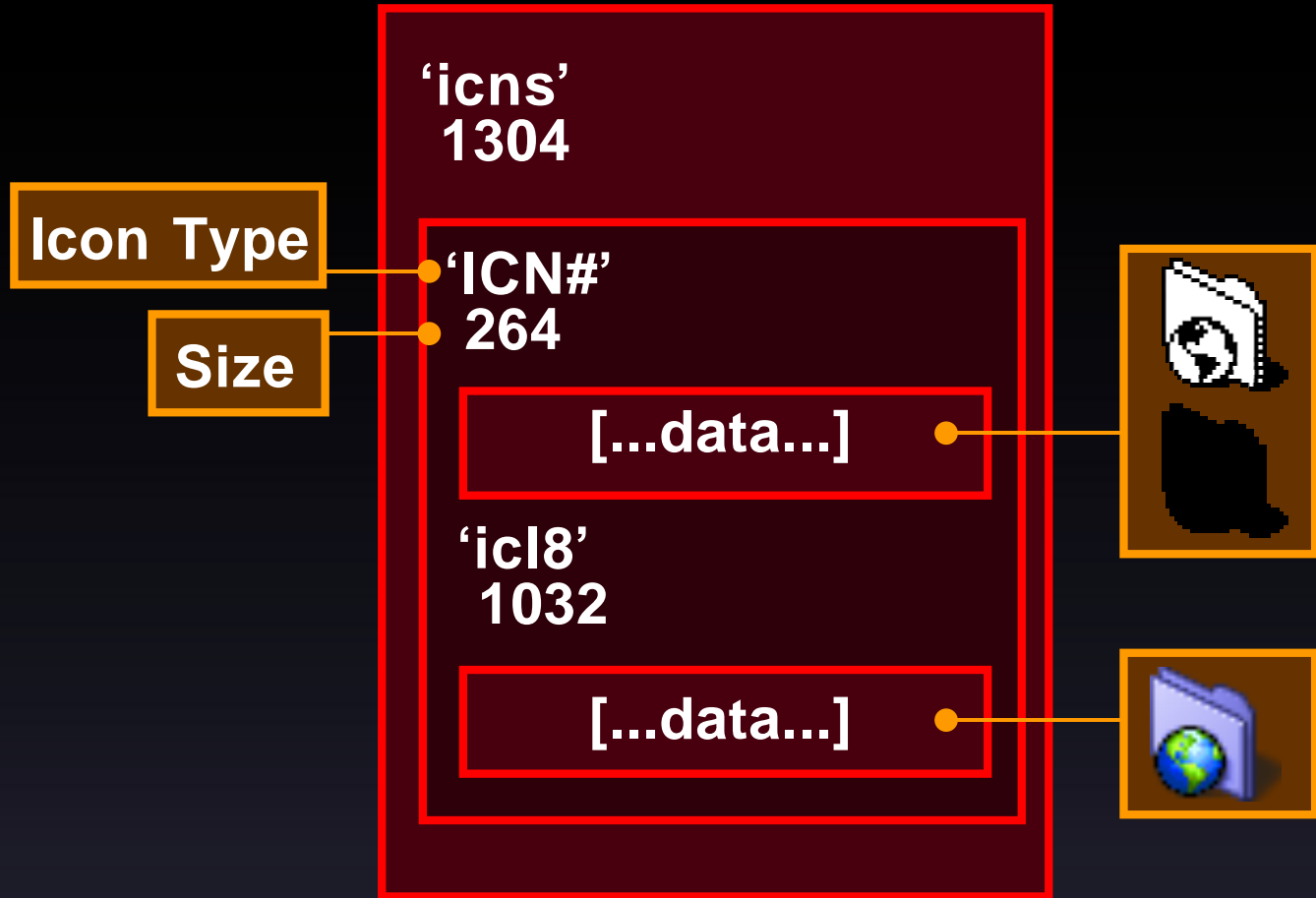
0x400004



1



Icon Family



Icon File

.icns extension

- Streamed '**icns**' resource
- Utility functions:

ReadIconFile()

WriteIconFile()



Icons in Mac OS 8

- Desktop Database:
up to 8-bit, 1-bit mask, up to 32x32,
no 'icns' support
- Registered icons override Desktop
Database:

OSErr RegisterIconRefFromResource
(OSType creator,
OSType iconType,
const FSSpec * resourceFile,
SInt16 resourceID,
IconRef * theIconRef);



Icon Registration

- Preferred:

RegisterIconRefFromResource(...)

RegisterIconRefFromIconFile(...)

- Possible:

RegisterIconRefFromIconFamily(...)

- When done:

UnregisterIconRef(...)



Icons in Carbon Apps

- Icon file (.icns) in the app package folder
- Still need classic 8-bit bundle icons for Mac OS 8



Creating Icons/Previews

```
if (NavCreatePreview != NULL)
{
    err = NavCreatePreview(
        &fileDesc, // AEDesc
        0,         // data type
        NULL,     // preview data
        0         // preview size
    );
}
```



Creating Icons/Previews

```
if (NavCreatePreview != NULL)
{
    PictHandle pic = MyGetCustomPreview();
    err = NavCreatePreview(
        &fileDesc, // AEDesc
        'PICT',    // data type
        (Handle)pic, // preview data
        GetHandleSize((Handle)pic));
    KillPicture(pic);
}
```



Modifying Icon Families

- Routines

```
GetIconFamilyData();
```

```
SetIconFamilyData(  
    iconFamilyHandle,  
    'icl8',  
    dataHandle);
```

- 32-bit data can be compressed



Icon from a Picture

```
PictHandle pic;
```

```
...
```

```
IconFamilyHandle icon =  
    (IconFamilyHandle)NewHandle(0);
```

```
SetIconFamilyData( icon,  
                   'PICT',  
                   (Handle)pic);
```



Named Icons

```
IconRef icon;
OSErr err = GetIconRef(
    kOnSystemDisk,           // vRefNum
    kSystemIconsCreator,    // 'macs'
    kAppleLogoIcon,
    &icon);

if (err == noErr)
{
    PlotIconRef(&aRect, kAlignNone, kTransformNone,
    kIconServicesNormalUsageFlag, icon);

    ReleaseIconRef(icon);
}
```



Files and Folders

```
GetIconRefFromFile(file, &iconRef);
```

```
// For even better performance
```

```
GetIconRef(vRefNum, creator, type);
```

```
GetIconRefFromFolder(...);
```



Bevel Button

```
ControlButtonContentInfo cb;  
cb.contentType = kControlContentIconRef;  
cb.iconRef = iconRef;
```

```
ControlHandle ctrl  
OSStatus status = CreateBevelButtonControl(  
    window, &bounds, "\p",
```

```
    kControlBevelButtonNormalBevel,  
    kControlBevelButtonPushbutton,  
    &cb,  
    0, 0,  
    &ctrl);
```



Circa 1984: Icons!



Circa 1991: Color Icons



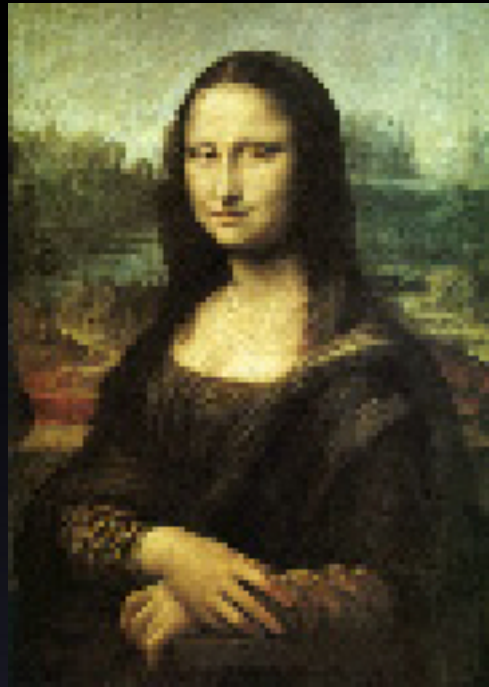
Last Year: 8-bit Icons



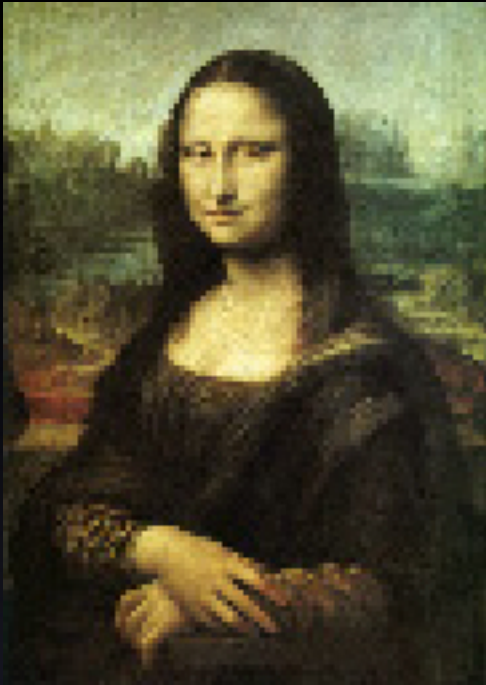
Last Year: 32-bit Icons



Today: Thumbnail Icons



Today: Thumbnail Icons



- 128x128 icon
- Scaled as needed
- Consider providing only thumbnail icons



Icon Variants

- Tile
- Rollover
- Drop
- Open
- Drop/Open



Tile



Normal



Tile



Icon Variants

```
void PlotWithVariant(Rect* bounds, IconRef baseIcon, OSType
    variant)
{
    IconTransformType transform = kTransformNone;
    IconRef icon;
    if (variant == 0 || GetIconRefVariant == NULL)
    {
        icon = baseIcon;
        AcquireIconRef(icon);
    } else {
        icon = GetIconRefVariant(baseIcon, variant, &transform);
    }

    PlotIconRef(bounds, kAlignNone, transform,
        kIconServicesNormalUsageFlag, icon);
    ReleaseIconRef(icon);
}
```



Transparency



8-bit alpha channel:
transparency



Colors



34 colors,
1-bit mask



8-bit alpha channel:
anti-aliasing,
soft shadows



32-bit image:
soft gradients



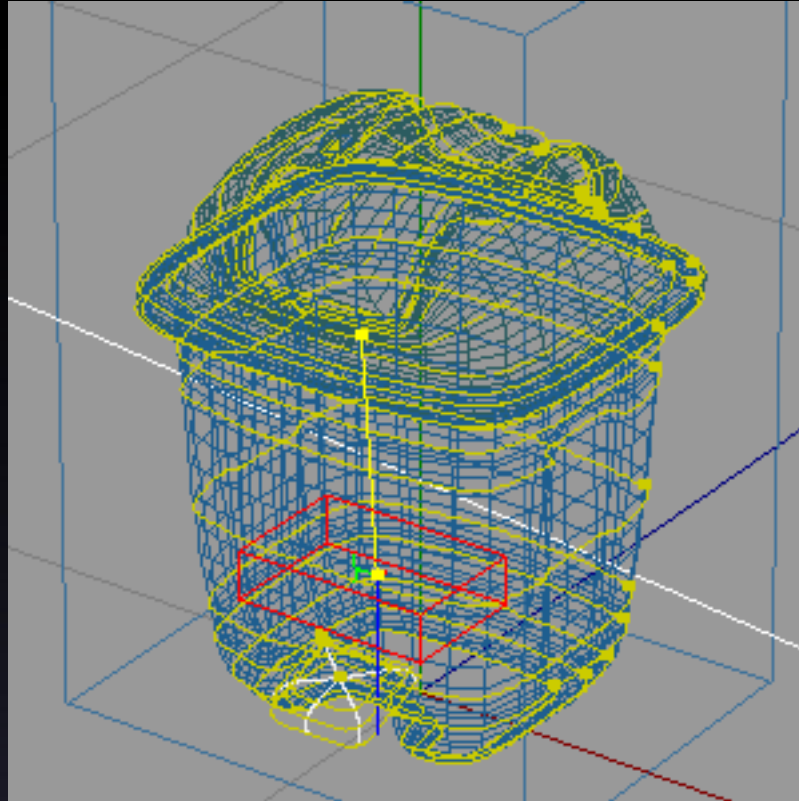
Photorealism



128x128,
32-bit image,
8-bit alpha channel



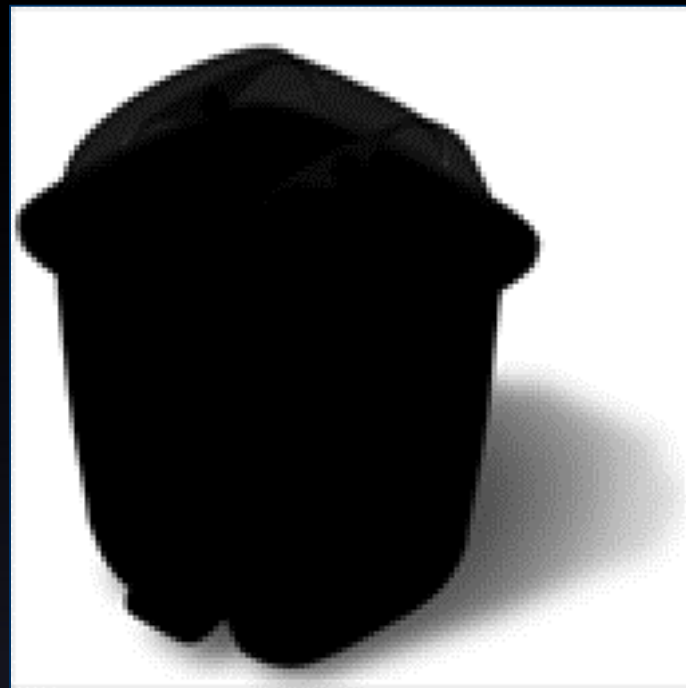
3D Model



Rendered



32-bit image



8-bit alpha channel



Beware of Pixel Dust

- 1-bit mask: hit testing and erasing
- All non-transparent pixels should have their 1-bit mask set



Icon Tools

- Clip2icns by Mihai Parparita
<http://www.mscape.com>
- IconBuilder by The Iconfactory
<http://www.iconfactory.com>
- Icon Machine by David Catmull
<http://www.dathorc.com>
- Resorcerer by Mathemaesthetics
<http://www.mathemaesthetics.com>



Feed
starving
artists!



What Can You Do Now?

- Use Icon Services on Mac OS 8.5 and later
- Create custom icons with your documents
- Find a starving artist





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Q&A



Think different.TM



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