/dev/world/2010

Your App Universe Down Under

28-29 September
Rydges Melbourne

AppleScriptObjC: Good News for Objective-C Coders, too

Shane Stanley
Myriad Communications Pty Ltd

<sstanley@myriad-com.com.au>

AUC

/dev/world/2010
Rydges Melbourne

Inter Application Communications

- Getting information from other applications

Inter Application Communications

- Getting information from other applications
- Allows treating other applications as “super frameworks”

Inter Application Communications

- Getting information from other applications
- Allows treating other applications as “super frameworks”
- Built on Apple events

Inter Application Communications

- Getting information from other applications
- Allows treating other applications as “super frameworks”
- Built on Apple events
- AppleScript and Apple events were designed around each other

Apple Events from Objective-C

- NSAppleEventDescriptor & AESendMessage() (10.0)

Apple Events from Objective-C

- NSAppleEventDescriptor & AESendMessage() (10.0)
- NSAppleScript (10.2)

Apple Events from Objective-C

- NSAppleEventDescriptor & AESendMessage() (10.0)
- NSAppleScript (10.2)
- Scripting Bridge (10.5)

Apple Events from Objective-C

- NSAppleEventDescriptor & AESendMessage() (10.0)
- NSAppleScript (10.2)
- Scripting Bridge (10.5)
- objc-appscript (third-party)

Apple Events from Objective-C

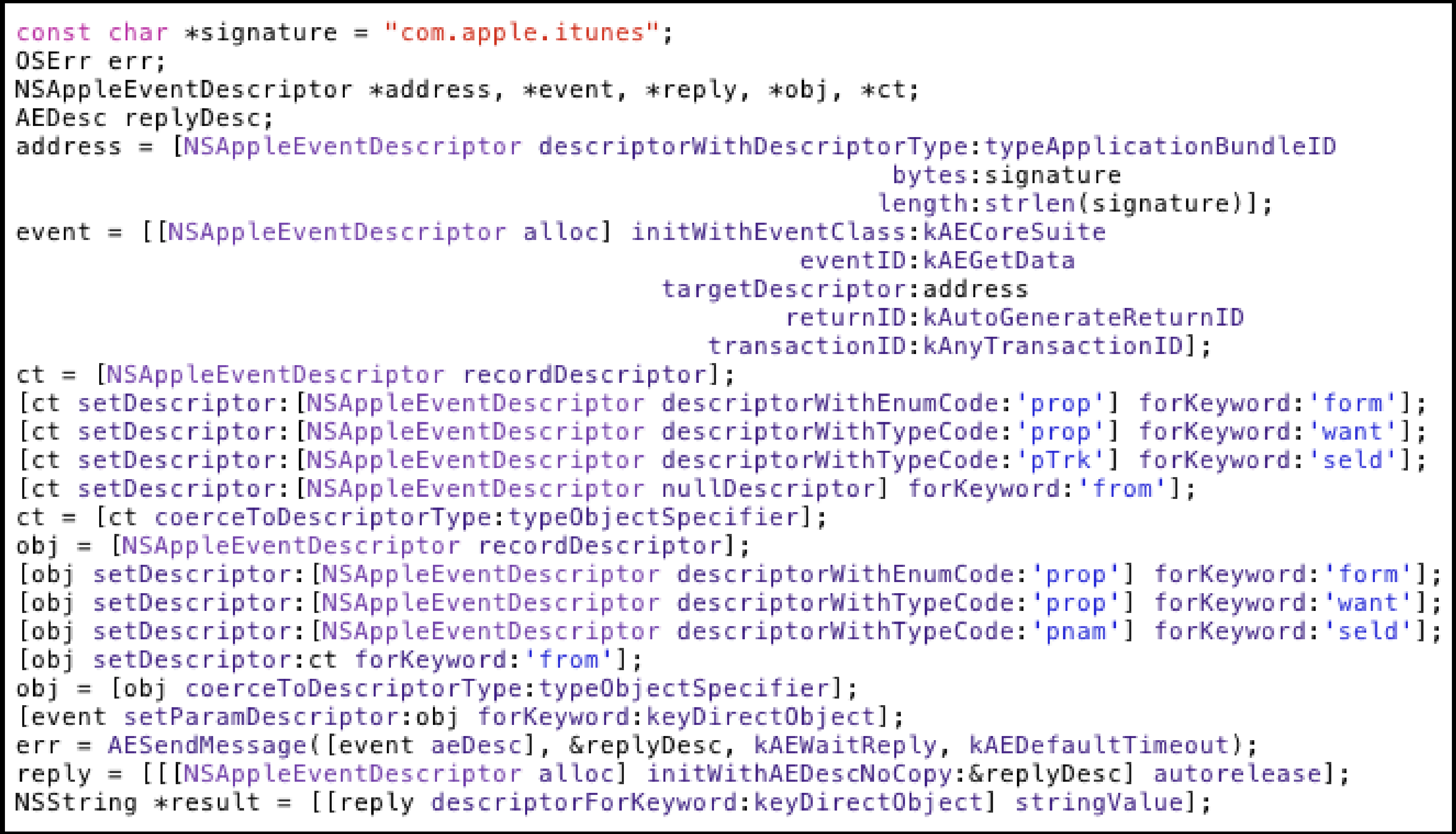
- NSAppleEventDescriptor & AESendMessage() (10.0)
- NSAppleScript (10.2)
- Scripting Bridge (10.5)
- objc-appscript (third-party)
- AppleScriptObjC (10.6)

AESendMessage()

- Fast and efficient

AESendMessage()

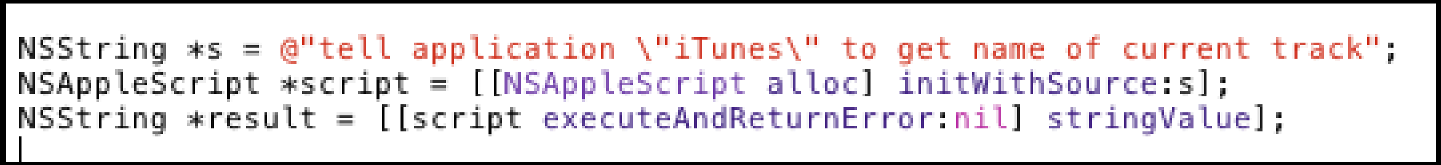
- Fast and efficient, but complicated



```
const char *signature = "com.apple.itunes";
OSErr err;
NSAppleEventDescriptor *address, *event, *reply, *obj, *ct;
AEDesc replyDesc;
address = [NSAppleEventDescriptor descriptorWithDescriptorType:typeApplicationBundleID
                                                         bytes:signature
                                                        length:strlen(signature)];
event = [[NSAppleEventDescriptor alloc] initWithEventClass:kAECoreSuite
                                                   eventID:kAEGetData
                                          targetDescriptor:address
                                                  returnID:kAutoGenerateReturnID
                                             transactionID:kAnyTransactionID];
ct = [NSAppleEventDescriptor recordDescriptor];
[ct setDescriptor:[NSAppleEventDescriptor descriptorWithEnumCode:'prop'] forKeyword:'form'];
[ct setDescriptor:[NSAppleEventDescriptor descriptorWithTypeCode:'prop'] forKeyword:'want'];
[ct setDescriptor:[NSAppleEventDescriptor descriptorWithTypeCode:'pTrk'] forKeyword:'seld'];
[ct setDescriptor:[NSAppleEventDescriptor nullDescriptor] forKeyword:'from'];
ct = [ct coerceToDescriptorType:typeObjectSpecifier];
obj = [NSAppleEventDescriptor recordDescriptor];
[obj setDescriptor:[NSAppleEventDescriptor descriptorWithEnumCode:'prop'] forKeyword:'form'];
[obj setDescriptor:[NSAppleEventDescriptor descriptorWithTypeCode:'prop'] forKeyword:'want'];
[obj setDescriptor:[NSAppleEventDescriptor descriptorWithTypeCode:'pnam'] forKeyword:'seld'];
[obj setDescriptor:ct forKeyword:'from'];
obj = [obj coerceToDescriptorType:typeObjectSpecifier];
[event setParamDescriptor:obj forKeyword:keyDirectObject];
err = AESendMessage([event aeDesc], &replyDesc, kAEWaitReply, kAEDefaultTimeout);
reply = [[[NSAppleEventDescriptor alloc] initWithAEDescNoCopy:&replyDesc] autorelease];
NSString *result = [[reply descriptorForKeyword:keyDirectObject] stringValue];
```

NSAppleScript

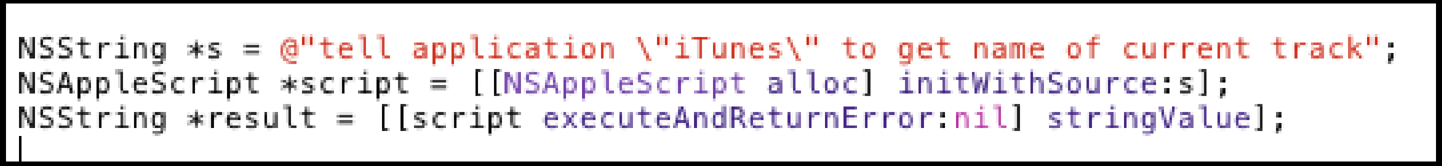
- Simple, but slow and limited



```
NSString *s = @"tell application \"iTunes\" to get name of current track";
NSAppleScript *script = [[NSAppleScript alloc] initWithSource:s];
NSString *result = [[script executeAndReturnError:nil] stringValue];
```

NSAppleScript

- Simple, but slow and limited



```
NSString *s = @"tell application \"iTunes\" to get name of current track";
NSAppleScript *script = [[NSAppleScript alloc] initWithSource:s];
NSString *result = [[script executeAndReturnError:nil] stringValue];
```

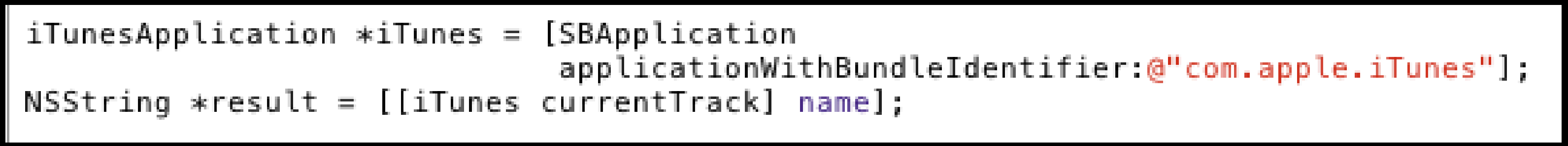
- Simple use is much slower
- Doesn’t integrate well with Objective-C
- Doesn’t scale well

Scripting Bridge

- Fast, efficient, simple

Scripting Bridge

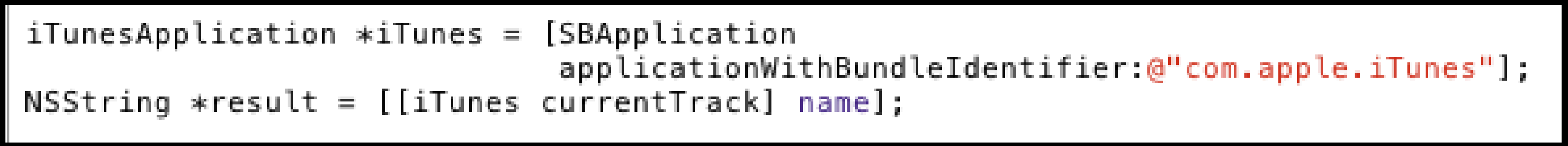
- Fast, efficient, simple
- Generate header file and add to project
- Link to framework
- Write code



```
iTunesApplication *iTunes = [SBApplication
                             applicationWithBundleIdentifier:@"com.apple.iTunes"];
NSString *result = [[iTunes currentTrack] name];
```

Scripting Bridge

- Fast, efficient, simple
- Generate header file and add to project
- Link to framework
- Write code



```
iTunesApplication *iTunes = [SBApplication
                             applicationWithBundleIdentifier:@"com.apple.iTunes"];
NSString *result = [[iTunes currentTrack] name];
```

- Lots of shortcomings
- Incompatible with many applications

objc-appscript

- Third-party framework
- Work-in-progress
- Need to generate objc-appscript dictionary documentation and glue code

AppleScriptObjC

- Bridges AppleScript and Cocoa

AppleScriptObjC

- Bridges AppleScript and Cocoa
- Script objects become Cocoa classes

AppleScriptObjC

- Bridges AppleScript and Cocoa
- Script objects become Cocoa classes
- Scripts call methods as handlers

AppleScriptObjC

- Bridges AppleScript and Cocoa
- Script objects become Cocoa classes
- Scripts call methods as handlers
- Classes call handlers as methods

AppleScriptObjC

- Bridges AppleScript and Cocoa
- Script objects become Cocoa classes
- Scripts call methods as handlers
- Classes call handlers as methods
- Fast, easy to use

AppleScriptObjC

- Bridges AppleScript and Cocoa
- Script objects become Cocoa classes
- Scripts call methods as handlers
- Classes call handlers as methods
- Fast, easy to use
- Lets languages play to their strengths

Implementing AppleScriptObjC

- Runs in 10.6 only

Implementing AppleScriptObjC

- Runs in 10.6 only
- Link to framework

AUC

Implementing AppleScriptObjC

- Runs in 10.6 only
- Link to framework
- Insert in main.c:

```
#import <AppleScriptObjC/AppleScriptObjC.h>

[[NSBundle mainBundle] loadAppleScriptObjectiveCScripts];
```

Implementing AppleScriptObjC

- Add AS class, instantiate in .xib

Implementing AppleScriptObjC

- Add AS class, instantiate in .xib
- Use @class declaration, call handlers as methods (colons > underscores)

Implementing AppleScriptObjC

- Add AS class, instantiate in .xib
- Use @class declaration, call handlers as methods (colons > underscores)
- Use protocol to suppress compiler warnings

AppleScriptObjC in Action

AttachAScript.app (Apple sample code)
and
FrankenApp.app

AUC