

5. Where to Go From Here

Programming Tools and Resources

Other Development Applications

OPENSTEP Developer for Mach includes applications other than Project Builder and Interface Builder. Except where noted, these applications are installed in **/NextDeveloper/Apps**.

Name	Description
TableHeadRule.eps ↪ FileMerge	Visually compares the contents of two files or two directories. You can use FileMerge, for example, to determine the differences between versions of the same source code file or between two project directories. You can also use it to merge changes.
TableRule.eps ↪ MallocDebug	Measures the dynamic-memory usage of applications, finds memory leaks, analyzes all allocated memory in an application, and measures the memory allocated since a given time.
168749_TableRule.eps ↪ IconBuilder	A simple graphics program for creating application and document icons.
279863_TableRule.eps ↪ Yap	A utility for editing and previewing PostScript code.
388699_TableRule.eps ↪ Sampler	Analyzes performance problems with your application by sampling the call stack of your program over a period. (In /NextDeveloper/Demos)
486640_TableRule.eps ↪	

Other Installed Frameworks

A framework contains a dynamic shared library, related header files, and resources (including nib files, images, sounds, documentation, and localized strings) used by the library. All frameworks are installed in **/NextLibrary/Frameworks**. OPENSTEP Developer for Mach provides these other frameworks in addition to the Application Kit and the Foundation frameworks:

Name	Description
592102_TableHeadRule.eps ↵	
System	Operating-system and low-level Objective-C runtime APIs
690297_TableRule.eps ↵	
SoundKit	Sound recording, playback, and editing capabilities.
783890_TableRule.eps ↵	
InterfaceBuilder	Creation of custom static (compiled) palletes for use in Interface Builder
878954_TableRule.eps ↵	
NEXTIME	Real-time video imaging
974221_TableRule.eps ↵	
NIAccess	NetInfo's access layer
69501_TableRule.eps ↵	
NIInterface	NetInfo's interface layer
165194_TableRule.eps ↵	

Useful Command-Line Tools

NeXT has created or modified several tools for compilation, debugging, performance analysis, and so on. The following table lists some of the more useful of these tools. You can get further information using the man pages system.

Name	Description	Location
269600_TableHeadRule.eps ↵		
cc	Compiles C, Objective-C, C++, and Objective-C++ source codefiles.	/bin
372511_TableRule.eps ↵		
gdb	Source-level symbolic debugger for C, extended by NeXT to support Objective-C, C++, Mach,	/bin

Windows NT, and (by late 1996) Windows 95.

479241_TableRule.eps ↵		
gnumake	Utility for making programming projects.	/bin
573672_TableRule.eps ↵		
as	Assembler; translates assembly code into object code.	/bin
669023_TableRule.eps ↵		
defaults	Reads, writes, searches, and deletes user defaults. The defaults system records user preferences that persist when the application isn't running. When users specify defaults in an application's Preferences panel, NSUserDefaults methods are used to write the defaults.	/usr/bin
776053_TableRule.eps ↵		
pwrap	Creates C functions that "wrap" PostScript code and send it to the Window Server for interpretation.	/usr/bin
873842_TableRule.eps ↵		
nibTool	Reads the contents of an Interface Builder nib file. Prints classes, the hierarchy, objects, connections, and localizable strings.	/usr/bin
970281_TableRule.eps ↵		
libtool	Creates static or dynamic libraries from specified object files for one or multiple architectures.	/bin
64617_TableRule.eps ↵		
otool	Displays specified parts of object files or libraries.	/bin
159831_TableRule.eps ↵		
nm	Displays the symbol table, in whole or in part, of the specified object file or files.	/bin
255292_TableRule.eps ↵		
oh	Records allocation and deallocation events.	/usr/bin
351610_TableRule.eps ↵		
AnalyzeAllocation	Analyzes program memory allocation.	/usr/bin
446246_TableRule.eps ↵		
fixPrecomps	Creates a precompiled header file for each of the major frameworks.	/usr/bin
543029_TableRule.eps ↵		
strip	Removes or modifies the symbol table attached to	/bin

	assembled and linked output.	
636889_TableRule.eps ↵		
lipo	Creates, lists, and manipulates multi-architecture object files	/bin
733268_TableRule.eps ↵		

Converting NEXTSTEP Code to OpenStep

You can take advantage of an automated conversion process to convert NEXTSTEP® Release 3.x code to OPENSTEP Release 4.0. By completing this process you'll make your application an OpenStep application (that is, an application conforming to the OpenStep specification). An OpenStep application should run on any OpenStep system.

The TOPS scripts you run to perform the conversion process, along with 3.3 header files and intermediate frameworks, are located at `/NextDeveloper/OpenStepConversion`. The *OpenStep Conversion Guide* provides instructions on using the scripts as well as summaries of API changes and conversion tips.

Other Programming Resources

You can find programming resources—such as fonts, sounds, and palettes—in various subdirectories of `/NextLibrary`.

Name	Comments
857574_TableHeadRule.eps ↵	
SystemResources	Character-set information and location of headers for automatic precompilation (fixPrecomps)
954243_TableRule.eps ↵	
Colors	Bundles containing the default set of color binaries for the Colors panel
87484_TableRule.eps ↵	
Fonts	Default set of system fonts, including AFM, bitmap, and outline versions
182169_TableRule.eps ↵	
PS2Resources	PostScript files containing calibrated color space and color rendering, printing halftones, and gray-shading patterns
277721_TableRule.eps ↵	

Rulebooks Glyph generators for various string encodings

372755_TableRule.eps ↵

Sounds Default sound files (^a.snd^o) such as Cricket, Ping, and Rooster

468285_TableRule.eps ↵