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# iOS逆向：Framework动态库

- 最新版本: v1.1.0
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## 简介

介绍iOS逆向期间常涉及到的Framework动态库dylib相关内容。先对于Framework动态库概述；介绍常见Framework；介绍dyld\_shared\_cache即dyld的shared cache，常见文件是dyld\_shared\_cache\_arm64；接着介绍提取工具和相关的代码、工具和涉及的地方；提取工具主要有DyldExtractor、dyld\_decache、dyld\_cache\_extract、dsc\_extractor、dyld-cache-dump。尤其是可用和好用的DyldExtractor，支持提取单个库和全部的库；以及一些经验心得；其他工具有update\_dyld\_shared\_cache。

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- [crifan/ios\\_re\\_framework\\_dylib: iOS逆向：Framework动态库](#)

### 如何使用此HonKit源码去生成发布为电子书

详见：[crifan/honkit\\_template: demo how to use crifan honkit template and demo](#)

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- [iOS逆向：Framework动态库 crifan.github.io](#)

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## 鸣谢

感谢我的老婆陈雪的包容理解和悉心照料，才使得我 crifan 有更多精力去专注技术专研和整理归纳出这些电子书和技术教程，特此鸣谢。

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# Framework动态库概述

- Frameworks = 框架 = 库 = 动态库
  - 含义: 框架是一个 动态库 和该库的 资源 , 例如图像和本地化字符串
    - Frameworks are bundles that contain a linkable library (usually a dylib) and the associated resources and headers for development.
  - 框架的文件扩展名: .framework
  - 分类
    - 在iOS中有两种 框架 = 库
      - public = 公开的 : public frameworks =公开框架=公开库
        - 主要位置: /System/Library/Frameworks
        - 解释: 公共框架允许在App Store应用中使用
      - private = 私有的 : private frameworks =私有框架=私有库
        - 主要位置: /System/Library/PrivateFrameworks
        - 解释: 私有框架只用于苹果的应用程序, 并且在固件更改时更不稳定
          - 但许多有趣的功能都在私有框架中
          - 逆向和插件可以调用这类私有库中的API接口, 实现各种功能
    - 额外说明
      - 后续进化为
        - dyld\_shared\_cache

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# 常见Frameworks框架

常见Frameworks: (以 iOS 4.0 (8A293) 为例)

Frameworks	包名	(内部函数的) 前缀	
aaaaaaaaaa	aaaa	aaaaaa	aaaaaaaaaa
Accelerate.framework	com.apple.Accelerate	cblas, vDSP	Vector and processing, image proc
AddressBook.framework	com.apple.AddressBook	AB	Provides ac database
AddressBookUI.framework	com.apple.AddressBookUI		
AssetsLibrary.framework	com.yourcompany.AssetsLibrary	AL	Used to acc managed b
AudioToolbox.framework	com.apple.audio.toolbox.AudioToolbox	AU, Audio	Provides inf playback, st audio sessio
AudioUnit.framework	com.apple.audio.units.AudioUnit	AU, Audio	Interfaces fo and their us
AVFoundation.framework	com.apple.avfoundation	AV	Used for pla video
CFNetwork.framework	com.apple.CFNetwork	CF	Interfaces fo networking
CoreAudio.framework	com.apple.audio.CoreAudio	Audio	Declares co by other int
CoreData.framework	com.apple.CoreData	NS	Interfaces fo manipulatio
CoreFoundation.framework	com.apple.CoreFoundation	CF	Basic data i
CoreGraphics.framework		CG	APIs to inte allows 2D re
CoreLocation.framework	com.apple.corelocation	CL	Interfaces fo
CoreMedia.framework	com.apple.CoreMedia	CM	Low-level re and video
CoreMotion.framework	com.apple.coremotion	CM	Interfaces fo and gyrome
CorePDF.framework	com.apple.CorePDF		
CoreTelephony.framework	com.apple.coretelephony	CT	Allows acc information
CoreText.framework	com.apple.CoreText	CT	Text layout
			Low-level re

CoreVideo.framework	com.apple.CoreVideo	CV	and video - framework doesn't do
EventKit.framework	com.apple.eventkit	EK	Interfaces for data. This is Calendar.framework
EventKitUI.framework	com.apple.eventkitui		
ExternalAccessory.framework	com.apple.ExternalAccessory	EA	Interfaces for attached external dock or Bluetooth mentioned in
Foundation.framework	com.apple.Foundation	NS	Objective-C in CoreFoundation and functions Objective-C
GameKit.framework	com.apple.GameKit	GK	Manages Player and later, Game Center framework)
iAd.framework	com.apple.iAd	AD	
IOKit.framework			Low-level framework with the kernel advises not and will reject
ImageIO.framework	com.apple.ImageIO.framework	CG	Input and output CoreGraphics
MapKit.framework	com.apple.MapKit	MK	Classes for interfaces. It Mobile Map data; afterword data.
MediaPlayer.framework	com.apple.MediaPlayer	MP	Provides fast video. Also Music library
MessageUI.framework	com.apple.messageui	MF	Interfaces for view control application.
MobileCoreServices.framework	com.apple.MobileCoreServices	UT	Defines UTI
OpenAL.framework	com.apple.audio.OpenAL	AL	Interface for library
OpenGL ES.framework	com.apple.opengl	EAGL, GL	Interface for OpenGL ES
QuartzCore.framework	com.apple.QuartzCore	CA	Contains the Quartz
QuickLook.framework	com.apple.QuickLook	QL	interfaces for file formats
Security.framework	com.apple.Security	CSSM, Sec	Interfaces for security policies, and
StoreKit.framework	com.apple.StoreKit	SK	Interfaces for StoreKit

StoreKit.framework	com.apple.StoreKit	SK	transactions
System.framework			
SystemConfiguration.framework	com.apple.SystemConfiguration	SC	Interfaces for availability
UIKit.framework	com.apple.UIKit	UI	Classes for user interface

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## dyld\_shared\_cache

- dyld的shared cache = dyld (shared) cache
  - 概述：所有Framework库都被合并到共享缓存shared cache中了
  - 详解
    - 从ios 3.1之后，所有默认的（公共的public和私有的private）库都被合并到一个大的缓存文件中
      - 目的：提高性能
      - 效果：
        - 原始库对于非设备上的开发人员不再有用，因此它们被从系统中删除
          - -》直接去原始位置
            - public=公开的库
              - /System/Library/Frameworks
            - private=私有的库
              - /System/Library/PrivateFrameworks
          - 找对应的系统库文件，就会出找不到的现象
          - 框架文件夹仍然包含其他资源，例如本地化字符串
    - 位置
      - 典型位置：`/System/Library/Caches/com.apple.dyld/`
        - `/System/Library/Caches/com.apple.dyld/dyld_shared_cache_armX`
          - 其中：`x = 6 / 7 / 7s / 64`
            - 举例
              - `/System/Library/Caches/com.apple.dyld/dyld_shared_cache_arm64`
        - 其他的位置？
          - `/System/Library/dyld/dyld_shared_cache_arm64e`
      - 资料
        - [Dev:dyld\\_shared\\_cache - The Apple Wiki](#)

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## dyld\_shared\_cache\_arm64

dyld的shared cache的最典型文件名就是：arm64版本的：

- dyld\_shared\_cache\_arm64
  - 位置： /System/Library/Caches/com.apple.dyld/dyld\_shared\_cache\_arm64
  - 大小：约 2GB
  - 举例
    - iOS 14.3 的 iPhone8 中的 dyld\_shared\_cache\_arm64

```
iPhone8-143:~ root# ls -lh /System/Library/Caches/com.apple.com.apple.dyld/
com.apple.dyld/ com.apple.factorydata/ com.apple.kernelcaches/
iPhone8-143:~ root# ls -lh /System/Library/Caches/com.apple.dyld/dyld_shared_
_cache_arm64
-rwxr-xr-x 1 root admin 2.1G Dec  8  2020 /System/Library/Caches/com.apple.d
yld/dyld_shared_cache_arm64*
```

```
iPhone8-143:~ root# ls -lh /System/Library/Caches/com.apple.dyld/
total 2.1G
-rwxr-xr-x 1 root admin 2.1G Dec  8  2020 dyld_shared_cache_arm64*
```

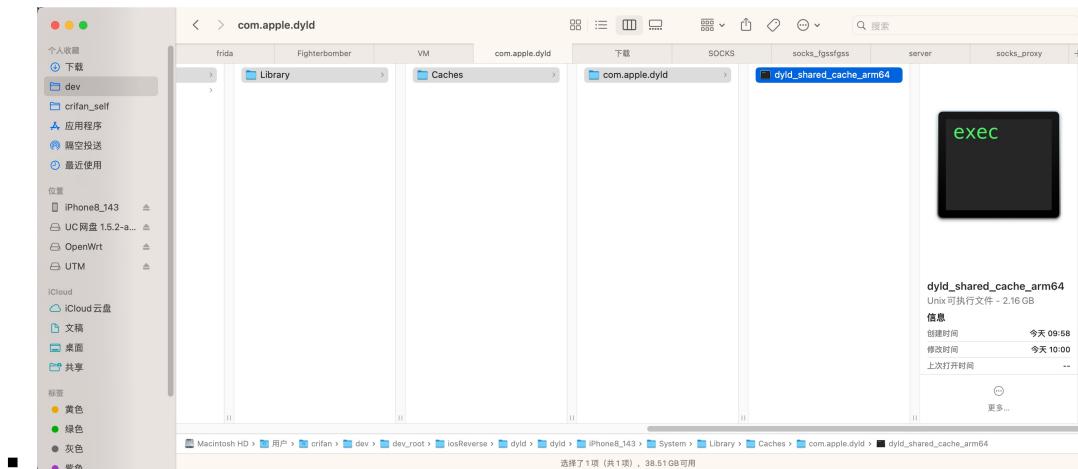
- 导出到Mac

```
→ ~ scp root@192.168.2.27:/System/Library/Caches/com.apple.dyld/dyld_shared_
_cache_arm64 /Users/crifan/dev/dev_root/iosReverse/dyld/dyld/iPhone8_143/Sys
tem/Library/Caches/com.apple.dyld
dyld_shared_cache_arm64
```

100% 2059MB

18.8MB/s 01:49

- 后的效果





# 提取工具

- 推荐工具
  - [DyldExtractor](#)
- 其他工具
  - [dyld\\_decache](#)
  - [dyld\\_cache\\_extract](#)
  - [dsc\\_extractor](#)
  - [dyld-cache-dump](#)

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# DyldExtractor

- DyldExtractor
  - 功能：从Dyld的Shared cache中提取出二进制（动态库）文件
    - Extract Binaries from Apple's Dyld Shared Cache
  - 安装

```
python3 -m pip install dyldextractor
```

- 或

```
pip install dyldextractor
```

- 安装后（的脚本工具）的位置
  - /usr/local/bin/dyldex
  - /usr/local/bin/dyldex\_all
- 用法举例
  - 导出单个库

```
dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
```

- 导出全部库

```
dyldex_all ./dyld_shared_cache_arm64
```

- 官网
  - PyPI
    - <https://pypi.org/project/dyldextractor/>
      - pip install dyldextractor
  - Github
    - <https://github.com/arandomdev/dyldextractor>
      - python3 -m pip install dyldextractor

## 导出单个库

### 举例： libdyld.dylib

- 用法举例

```
dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
```

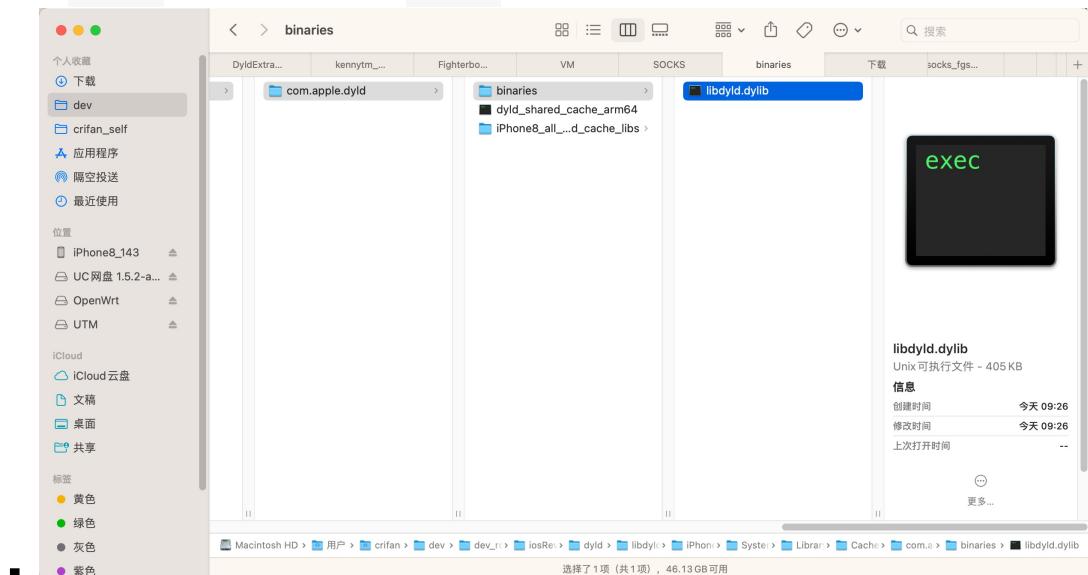
- 输出

```
→ com.apple.dyld dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
Extracting /usr/lib/system/libdyld.dylib
Extractor >> Done :: [/]
```

- 导出的文件：

- /usr/lib/system/libdyld.dylib

- 大小： 396KB = Mac中占用空间： 405KB



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# 导出全部库

## 用法

```
dyldex_all ./dyld_shared_cache_arm64
```

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## 过程

```
dyldex_all ./dyld_shared_cache_arm64
..leStore/de... ⬤ %1 ..kklis/ser... ⬤ %2 ..kklis/ser... ⬤ %3 ~ (-zsh) ⬤ %4 ..brechtsan... ⬤ %5 root@192.1... ⬤ %6 ~ (-zsh) ⬤ %7 dyldex_all (Py... ⬤ %8 ~ (-zsh) ⬤ %9 +
Processed: AppleMediaServices
Processed: CoreLocation
Processed: libswiftCore.dylib
Processed: CoreText
Processed: libswiftCoreGraphics.dylib
Processed: AppSupport
Processed: ContactsUI
Processed: Contacts
Processed: CloudKit
Processed: WidgetKit
Processed: CoreDuet
Processed: AudioSession
Processed: IMFoundation
Processed: IDS
Processed: ManagedConfiguration
Processed: Security
Processed: TextInputUI
Processed: libnetwork.dylib
Processed: ColorSync
Processed: CoreVideo
Processed: AVFCore
Processed: CoreHaptics
Processed: CoreData
Processed: libsystem_info.dylib
Processed: CoreMedia
Processed: libsystem_c.dylib
Processed: UserActivity
Processed: RunningBoardServices
Processed: UIFoundation
Processed: ContactsFoundation
Processed: AudioToolbox
Processed: CoreImage
Processed: ProactiveEventTracker
Processed: Lexicon
Processed: MediaPlayer
Processed: CoreDuetContext
Processed: DataMigration
Processed: PersonalizationPortrait
Processed: IOKit
Processed: ContextKit
Processed: SpringBoardServices
Processed: HealthKit
 3% (67 of 2095) |###
I Elapsed Time: 0:00:14 ETA: 0:07:26

crifan@crifanlideMacBook-Pro:~/dev/dev_root/iosReverse/dyld/libdyld_dylib/iPhone8_143/System/Library/Caches/com.apple.dyld
..leStore/de... ⬤ %1 ..kklis/ser... ⬤ %2 ..kklis/ser... ⬤ %3 ~ (-zsh) ⬤ %4 ..brechtsan... ⬤ %5 root@192.1... ⬤ %6 ~ (-zsh) ⬤ %7 ..om.apple.dylib... ⬤ %8 ~ (-zsh) ⬤ %9 +
Processed: Announce
Processed: H9ISP.mediacapture
Processed: HearingAppPlugin
Processed: SetupKit
Processed: ProximityControl
Processed: SpotlightLinguistics
Processed: RemindersToolbox
Processed: SiriSpeechSynthesis
Processed: MenstrualCyclesAppPlugin
Processed: SiriDailyBriefingInternal
Processed: URLCompression
Processed: AGXMetalA10
Processed: VCPMP4V.videodecoder
Processed: AVD.videodecoder
Processed: XGBoostFramework
Processed: PegasusKit
Processed: H9.videoencoder
Processed: H264H9.videoencoder
Processed: Highlights
Processed: libSMC.dylib
Processed: AGXMetalA11
Processed: libAHTRestore.dylib
Processed: MattingVI
Processed: GNR.videoprocessor
Processed: H10ISP.mediacapture
Processed: Hifire2.dylib
Processed: PegasusAPI
100% (2095 of 2095) ##### I Elapsed Time: 0:02:30 ETA: 00:00:00

----- Summary -----
----- PowerLogliteOperators -----
09:43:48:616 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/NearFieldAccessory.framework/NearFieldAccessory\x00'

----- AppleServiceToolkit -----
09:44:12:234 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'

----- GeneralSettingsUI -----
09:44:31:841 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'

-----
+
+ com.apple.dylib |
```

- 日志

```
→ com.apple.dyld dyldex_all ./dyld_shared_cache_arm64
Processed: libdyld.dylib
Processed: SystemConfiguration
Processed: libcucore.A.dylib
```

```
Processed: libCGInterfaces.dylib
Processed: WirelessDiagnostics
Processed: libdispatch.dylib
Processed: libAccessibility.dylib
Processed: Accounts
Processed: BackBoardServices
Processed: CoreTelephony
Processed: TextInput
Processed: libusrtcp.dylib
Processed: CoreServices
Processed: CoreFoundation
Processed: UIKitServices
Processed: libswiftFoundation.dylib
Processed: QuartzCore
Processed: CFNetwork
Processed: Foundation
Processed: ImageIO
Processed: ExtensionKit
Processed: ChronoServices
Processed: BaseBoard
Processed: CoreGraphics
Processed: Preferences
Processed: AppleMediaServices
Processed: CoreLocation
Processed: libswiftCore.dylib
Processed: CoreText
Processed: libswiftCoreGraphics.dylib
Processed: AppSupport
Processed: ContactsUI
Processed: Contacts
Processed: CloudKit
Processed: WidgetKit
Processed: CoreDuet
Processed: AudioSession
Processed: IMFoundation
Processed: IDS
Processed: ManagedConfiguration
Processed: Security
Processed: TextInputUI
Processed: libnetwork.dylib
Processed: ColorSync
Processed: CoreVideo
Processed: AVFCore
Processed: CoreHaptics
Processed: CoreData
Processed: libsystem_info.dylib
Processed: CoreMedia
Processed: libsystem_c.dylib
Processed: UserActivity
Processed: RunningBoardServices
Processed: UIFoundation
Processed: ContactsFoundation
Processed: AudioToolbox
Processed: CoreImage
Processed: ProactiveEventTracker
Processed: Lexicon
```

```
Processed: MediaPlayer
Processed: CoreDuetContext
Processed: DataMigration
Processed: PersonalizationPortrait
Processed: IOKit
Processed: ContextKit
Processed: SpringBoardServices
Processed: HealthKit
Processed: EventKit
Processed: Intents
Processed: FamilyCircle
Processed: CoreMotion
Processed: CoreSpotlight
Processed: CoreUtils
Processed: MediaToolbox
Processed: SafariSafeBrowsing
Processed: CoreUI
Processed: MediaRemote
Processed: CommonUtilities
Processed: libMobileGestalt.dylib
Processed: AssistantServices
Processed: SwiftUI
Processed: ChatKit
Processed: UserNotifications
Processed: IMSharedUtilities
Processed: CoreSuggestions
Processed: libsystem_malloc.dylib
Processed: AddressBookLegacy
Processed: IDSFoundation
Processed: FrontBoardServices
Processed: AuthKit
Processed: AppleAccount
Processed: VoiceShortcutClient
Processed: AVFAudio
Processed: NewsCore
Processed: PassKitCore
Processed: ShareSheet
Processed: AudioToolboxCore
Processed: PhotoFoundation
Processed: CoreParsec
Processed: Sharing
Processed: MobileBackup
Processed: MapKit
Processed: MSUDataAccessor
Processed: libsystem_networkextension.dylib
Processed: MobileAsset
Processed: StoreServices
Processed: AssetsLibraryServices
Processed: Trial
Processed: VideoToolbox
Processed: JavaScriptCore
Processed: UIKitCore
Processed: Photos
Processed: AXCoreUtilities
Processed: OnBoardingKit
Processed: NetworkExtension
```

```
Processed: VectorKit
Processed: AccessibilityUtilities
Processed: InternationalSupport
Processed: libswiftUIKit.dylib
Processed: CoreML
Processed: LanguageModeling
Processed: Montreal
Processed: CarKit
Processed: CallHistory
Processed: UIAccessibility
Processed: Notes
Processed: CalendarDatabase
Processed: ProactiveSuggestionClientModel
Processed: UniformTypeIdentifiers
Processed: Sleep
Processed: iTunesCloud
Processed: Combine
Processed: CloudDocs
Processed: LinkPresentation
Processed: EmailFoundation
Processed: FindMyDevice
Processed: MediaServices
Processed: WebBookmarks
Processed: BookLibrary
Processed: libobjc.A.dylib
Processed: libc++.1.dylib
Processed: libc++abi.dylib
Processed: GeoServices
Processed: LoggingSupport
Processed: SetupAssistant
Processed: OctagonTrust
Processed: Espresso
Processed: Message
Processed: PhotoLibraryServices
Processed: CoreAutoLayout
Processed: MobileKeyBag
Processed: libvDSP.dylib
Processed: SearchFoundation
Processed: MapsSync
Processed: BaseBoardUI
Processed: libAudioToolboxUtility.dylib
Processed: HomeKit
Processed: WeatherFoundation
Processed: BiomeStorage
Processed: libswiftDispatch.dylib
Processed: AppAnalytics
Processed: CoreNLP
Processed: FMCoreLite
Processed: DataDetectorsCore
Processed: CrashReporterSupport
Processed: PhotosUI
Processed: SPOwner
Processed: CoreRoutine
Processed: Symbolication
Processed: Network
Processed: MPSCore
```

```
Processed: AvatarUI
Processed: FileProvider
Processed: TipsCore
Processed: TelephonyUtilities
Processed: BatteryCenter
Processed: CalendarFoundation
Processed: AppSupportUI
Processed: BackgroundTasks
Processed: NLP
Processed: ProtocolBuffer
Processed: SpringBoardHome
Processed: FTServices
Processed: libboringssl.dylib
Processed: libFDR.dylib
Processed: AssertionServices
Processed: CloudServices
Processed: libsystem_trace.dylib
Processed: CoreServicesInternal
Processed: MapsSuggestions
Processed: MPSNeuralNetwork
Processed: SafariCore
Processed: Metal
Processed: AVKit
Processed: PhotosUICore
Processed: AppStoreDaemon
Processed: ContactsAutocompleteUI
Processed: MediaExperience
Processed: GraphicsServices
Processed: ReminderKit
Processed: VoiceServices
Processed: AXMediaUtilities
Processed: SAObjects
Processed: DeviceManagement
Processed: PowerLog
Processed: DuetActivityScheduler
Processed: SafariShared
Processed: MessageUI
Processed: TeaFoundation
Processed: DataAccess
Processed: Translation
Processed: AirTraffic
Processed: ApplePushService
Processed: ProactiveSupport
Processed: BoardServices
Processed: libswiftCloudKit.dylib
Processed: libncurses.5.4.dylib
Processed: OSAnalytics
Processed: DialogEngine
Processed: CoreBluetooth
Processed: VideoProcessing
Processed: TemplateKit
Processed: MobileInstallation
Processed: GameCenterUI
Processed: CoreMaterial
Processed: ReminderKitInternal
Processed: libTelephonyUtilDynamic.dylib
```

```
Processed: libsqlite3.dylib
Processed: Vision
Processed: NanoRegistry
Processed: TeaUI
Processed: Search
Processed: SpringBoardUIServices
Processed: JetEngine
Processed: AVFCapture
Processed: InAppMessages
Processed: DiagnosticExtensions
Processed: SpringBoardFoundation
Processed: Email
Processed: libsystem_notify.dylib
Processed: AccessibilityUIUtilities
Processed: NewsTransport
Processed: libcorecrypto.dylib
Processed: CoreKnowledge
Processed: UserManagement
Processed: CryptoTokenKit
Processed: libsystem_asl.dylib
Processed: BulletinBoard
Processed: VoiceMemos
Processed: AppSSO
Processed: SharedWebCredentials
Processed: PeopleSuggerter
Processed: CoreAnalytics
Processed: DataAccessExpress
Processed: CoreServicesStore
Processed: SymptomAnalytics
Processed: DACalDAV
Processed: NanoPreferencesSync
Processed: MobileTimer
Processed: HealthAlgorithms
Processed: iPod
Processed: MobileSpotlightIndex
Processed: HealthArticlesUI
Processed: IconServices
Processed: EventKitUI
Processed: SearchUI
Processed: QuickLook
Processed: SafariServices
Processed: CMCapture
Processed: HealthExperienceUI
Processed: vImage
Processed: NotesShared
Processed: ShazamKit
Processed: HealthRecordsUI
Processed: PromotedContentUI
Processed: TeaTemplate
Processed: AppPredictionClient
Processed: MapsSupport
Processed: NewsAds
Processed: NewsServicesInternal
Processed: Home
Processed: NewsSubscription
Processed: CompanionSync
```

```
Processed: IAP
Processed: libAXSafeCategoryBundle.dylib
Processed: RecapPerformanceTesting
Processed: ktrace
Processed: HealthPluginHost
Processed: TeaCharts
Processed: NewsArticles
Processed: IMCore
Processed: Celestial
Processed: SiriOntology
Processed: PassKitUI
Processed: HealthPlatformCore
Processed: HealthExperience
Processed: Pegasus
Processed: TelephonyUI
Processed: SiriUI
Processed: HealthUI
Processed: ClassKit
Processed: IOMobileFramebuffer
Processed: StoreKit
Processed: PowerlogCore
Processed: AppleMediaServicesUI
Processed: CoreIDV
Processed: WebKitLegacy
Processed: ScreenTimeCore
Processed: CallKit
Processed: AccountsDaemon
Processed: RTTUtilities
Processed: AXSpeechAssetServices
Processed: PrototypeTools
Processed: HomeUI
Processed: PersistentConnection
Processed: BiomeStreams
Processed: AXRuntime
Processed: SecurityFoundation
Processed: libswiftUniformTypeIdentifiers.dylib
Processed: iCloudQuotaDaemon
Processed: DiagnosticExtensionsDaemon
Processed: HealthVisualization
Processed: CloudPhotoLibrary
Processed: Silex
Processed: TextToSpeech
Processed: NewsFeed
Processed: AppSSOCore
Processed: libMobileGestaltExtensions.dylib
Processed: CoreFollowUp
Processed: CoreSpeech
Processed: SiriUICore
Processed: Rapport
Processed: NewsToday
Processed: MusicLibrary
Processed: IMDPersistence
Processed: VoiceDial
Processed: Categories
Processed: LocationSupport
Processed: SafariSharedUI
```

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Processed: CoreAccessories
Processed: iCalendar
Processed: CacheDelete
Processed: OSAServicesClient
Processed: BiomeFoundation
Processed: AdCore
Processed: CVNLP
Processed: C2
Processed: ProtectedCloudStorage
Processed: AdPlatformsCommon
Processed: DifferentialPrivacy
Processed: ConfigurationEngineModel
Processed: BiometricKit
Processed: CoreSymbolication
Processed: SiriInstrumentation
Processed: PencilKit
Processed: Proximity
Processed: RemindersUICore
Processed: GameCenterFoundation
Processed: NewsPersonalization
Processed: ProceduralWallpapers
Processed: SPFinder
Processed: HearingCore
Processed: MessageSupport
Processed: CloudKitCode
Processed: SplashBoard
Processed: IOSurface
Processed: SynapseSyncPlugin
Processed: DataDeliveryServices
Processed: MobileWiFi
Processed: NewsFoundation
Processed: SpeakerRecognition
Processed: WebCore
Processed: StocksCore
Processed: MPUFoundation
Processed: Sentry
Processed: DoNotDisturb
Processed: ChronoUIServices
Processed: ControlCenterUI
Processed: NearField
Processed: libsystem_symptoms.dylib
Processed: libGLImage.dylib
Processed: TeaSnappy
Processed: HealthHearingDaemon
Processed: TeaDB
Processed: SymptomEvaluator
Processed: MMCS
Processed: ContactsDonation
Processed: AirPlaySupport
Processed: IntentsCore
Processed: AccessoryAssistiveTouch
Processed: OOBBTPairing-iOS
Processed: iCloudQuota
Processed: FrontBoard
Processed: ImageCaptureCore
Processed: RenderBox
```

```
Processed: SafariFoundation
Processed: PromotedContent
Processed: PairedSync
Processed: SpotlightUIInternal
Processed: DACoreDAVGlue
Processed: WallpaperKit
Processed: AssistantUI
Processed: DACardDAV
Processed: ActivityAchievements
Processed: NewsAnalytics
Processed: LocaleSettings
Processed: MaterialKit
Processed: KeyboardArbiter
Processed: HMAssistant
Processed: UserNotificationsUIKit
Processed: PodcastsUI
Processed: CoreAUC
Processed: EmojiKit
Processed: VCPHEVC.videocodec
Processed: AssetExplorer
Processed: AudioCodecs
Processed: SettingsFoundation
Processed: Navigation
Processed: libAppletTranslationLibrary.dylib
Processed: PassKitUIFoundation
Processed: SiriActivation
Processed: DuetExpertCenter
Processed: LegalAndRegulatorySettingsPrivate
Processed: AccountsUI
Processed: FMIPCore
Processed: SIMToolkitUI
Processed: InstallCoordination
Processed: PowerlogAccounting
Processed: WebKit
Processed: ToneLibrary
Processed: TrialProto
Processed: SyncedDefaults
Processed: MediaSafetyNet
Processed: MediaPlaybackCore
Processed: EmbeddedAcousticRecognition
Processed: DASubCal
Processed: TimeSync
Processed: HealthMenstrualCycles
Processed: ExposureNotification
Processed: Media
Processed: iAd
Processed: HID
Processed: ProactiveInputPredictionsInternals
Processed: GEO
Processed: HealthProfile
Processed: AccessoryNowPlaying
Processed: iTunesStoreUI
Processed: CoreTime
Processed: CoreAudio
Processed: CoreCDPInternal
Processed: AccessibilityUIShared
```

```
Processed: Cornobble
Processed: CorrectionsProfilesSync
Processed: BatteryPackAnalytics
Processed: Communications-iOS
Processed: Contacts
Processed: RawCamera
Processed: DuetRecommendation
Processed: ContextKitExtraction
Processed: VideosUI
Processed: libswiftObjectiveC.dylib
Processed: libmorphun.dylib
Processed: AppleAccountUI
Processed: Weather
Processed: JasperDepth
Processed: TextRecognition
Processed: NewsUI2
Processed: QuickLookThumbnailingDaemon
Processed: SpringBoardUI
Processed: EmailCore
Processed: BiometricSupport
Processed: TextInputCore
Processed: KeychainCircle
Processed: BatteryCenterUI
Processed: FaceTime
Processed: MIME
Processed: StoreKitUI
Processed: MailServices
Processed: NeutrinoCore
Processed: libBasebandManager.dylib
Processed: AXAssetLoader
Processed: PhotosPlayer
Processed: SleepHealth
Processed: FamilyCircleUI
Processed: AccessoryHID
Processed: PromotedContentProxy
Processed: CoreDAV
Processed: SurfStatusSync
Processed: MobileIcons
Processed: CalDAV
Processed: DataDetectorsUI
Processed: CalendarUIKit
Processed: libIPTelephony.dylib
Processed: BookUtility
Processed: libCommCenterCommandDrivers.dylib
Processed: Transparency
Processed: SettingsCellularUI
Processed: ProofReader
Processed: SiriKitRuntime
Processed: ITMLKit
Processed: CoreSuggestionsInternals
Processed: HomeKitBackingStore
Processed: PersonalizationPortraitInternals
Processed: StocksUI
Processed: TextToSpeechBundleSupport
Processed: MallocStackLogging
Processed: USBHost
```

```
Processed: AttributeGraph
Processed: NewsUI
Processed: FMFUI
Processed: AppPredictionInternal
Processed: AccessibilitySharedSupport
Processed: BannerKit
Processed: MetadataUtilities
Processed: SilexVideo
Processed: iCloudQuotaUI
Processed: HealthDaemon
Processed: MailSupport
Processed: CoreLocationProtobuf
Processed: Navigation-iOS
Processed: WirelessProximity
Processed: Bom
Processed: AccessoryMediaLibrary
Processed: IOAccessoryManager
Processed: AVConference
Processed: PushKit
Processed: Haptics
Processed: IOAccessoryManager
Processed: CoreIDVShared
Processed: StudyLog
Processed: AGXCompilerCore
Processed: PhotosFormats
Processed: VisualLocalization
Processed: AppleBasebandManager
Processed: EmailDaemon
Processed: CryptoKit
Processed: Quagga
Processed: StocksAnalytics
Processed: NanoMusicSync
Processed: NanoMailKitServer
Processed: SpotlightDaemon
Processed: AirTrafficDevice
Processed: SleepHealthUI
Processed: PhotosGraph
Processed: SpotlightServices
Processed: NowPlaying-iOS
Processed: SpringBoard
Processed: ManagedConfigurationUI
Processed: CoverSheet
Processed: NaturalLanguage
Processed: AudioDataAnalysis
Processed: BrightnessControl
Processed: CDDataAccessExpress
Processed: HearingUtilities
Processed: VoiceShortcuts
Processed: IMAP
Processed: RunningBoard
Processed: Spotlight
Processed: PowerUI
Processed: MediaStream
Processed: ScreenTimeUI
Processed: MessageLegacy
Processed: ChronoCore
```

```
Processed: CameraUI
Processed: CalendarWidget
Processed: IDSHashPersistence
Processed: libAXSpeechManager.dylib
Processed: AccessoryBLEPairing
Processed: AccessoryCommunications
Processed: ChronoKit
Processed: MediaMiningKit
Processed: ARKitCore
Processed: PhotosUIApps
Processed: APTransport
Processed: AssistiveTouch-iOS
Processed: CalendarNotification
Processed: SiriInference
Processed: AirPlaySender
Processed: FMCore
Processed: JetUI
Processed: PromotedContentSupport
Processed: MediaConversionService
Processed: ActionPredictionHeuristicsInternal
Processed: libVibeSynthEngine.dylib
Processed: ParsecModel
Processed: CloudKitDaemon
Processed: AccessoryOOBTPairing
Processed: BackBoardHIDEEventFoundation
Processed: PodcastsFoundation
Processed: Platform-Bluetooth
Processed: AppleCVAPhoto
Processed: InternalSwiftProtobuf
Processed: BLEPairing-iOS
Processed: CoreFollowUpUI
Processed: libBBUpdaterDynamic.dylib
Processed: FMNetworking
Processed: SensorKit
Processed: Podcasts
Processed: WiFiAnalytics
Processed: libnfsshared.dylib
Processed: AppleIDAuthSupport
Processed: NanoTimeKitCompanion
Processed: HealthRecordServices
Processed: LocalAuthentication
Processed: IOAccelerator
Processed: AOSKit
Processed: CloudPhotoServices
Processed: PowerlogLiteOperators
----- PowerlogLiteOperators -----
09:43:48:616 [ WARNING ] stub_fixer.py:181 ↓ Unable to find dependency: b'./System/Library/PrivateFrameworks/NearFieldAccessory.framework/NearFieldAccessory\x00'
-----
Processed: libcoreroutine.dylib
Processed: Snappy
Processed: libBKDM1.dylib
Processed: TipsDaemon
Processed: CoreHandwriting
```

```
Processed: AppServerSupport
Processed: libsystem_kernel.dylib
Processed: HMFoundation
Processed: IOKit
Processed: libAudioDSP.dylib
Processed: libGPUCompilerImpl.dylib
Processed: WeatherAnalytics
Processed: libTelephonyIOKitDynamic.dylib
Processed: AccessibilityUIService
Processed: iTunesStore
Processed: PhotoAnalysis
Processed: TrialServer
Processed: EmojiFoundation
Processed: ExposureNotificationDaemon
Processed: FontServices
Processed: ResponseKit
Processed: AccessoryiAP2Shim
Processed: MobileMailUI
Processed: MediaAccessibility
Processed: SiriFindMy
Processed: iCloudNotification
Processed: ViceroyTrace
Processed: SetupAssistantSupport
Processed: CDDataAccess
Processed: MediaLibrary-iOS
Processed: VirtualGarage
Processed: NetAppsUtilities
Processed: WiFiPolicy
Processed: Social
Processed: libdscsym.dylib
Processed: NotesUI
Processed: Osprey
Processed: HangTracer
Processed: ProactiveInputPredictions
Processed: ConversationKit
Processed: PersonalAudio
Processed: libLLVM.dylib
Processed: AccessoryNavigation
Processed: ActivityAchievementsDaemon
Processed: libCommCenterBase.dylib
Processed: PlugInKit
Processed: MessageProtection
Processed: libvoiced_tts.dylib
Processed: System
Processed: libSystem.B.dylib
Processed: WiFiSharing
Processed: NPTKit
Processed: SPShared
Processed: PowerlogHelperdOperators
Processed: TrustedPeers
Processed: Reminders
Processed: DictionaryServices
Processed: MobileActivation
Processed: SampleAnalysis
Processed: MediaSetup
Processed: CloudDocsDaemon
```

```
Processed: CalendarDaemon
Processed: AvatarKit
Processed: libarchive.2.dylib
Processed: AdID
Processed: libBNNS.dylib
Processed: libtailspin.dylib
Processed: WiFiKit
Processed: CoreCDP
Processed: CoreCaptureControl
Processed: DiagnosticRequest
Processed: SharedUtils
Processed: libsysdiagnose.dylib
Processed: AutoBugCaptureCore
Processed: DiagnosticRequestService
Processed: AppStoreKit
Processed: WatchListKit
Processed: ClipServices
Processed: BarcodeSupport
Processed: AssistantTTSPPlugin
Processed: CoreCaptureDaemon
Processed: Calendar
Processed: FMIPSiriBackendPlugin
Processed: ContentKit
Processed: FMF
Processed: libArabicConverter.dylib
Processed: NowPlaying
Processed: libCyrillicConverter.dylib
Processed: ClientFlowService
Processed: libGreekConverter.dylib
Processed: libHebrewConverter.dylib
Processed: libLatin2Converter.dylib
Processed: SleepDaemon
Processed: libKoreanConverter.dylib
Processed: libJapaneseConverter.dylib
Processed: Phone
Processed: libLatin5Converter.dylib
Processed: Routine
Processed: libSimplifiedChineseConverter.dylib
Processed: libSymbolConverter.dylib
Processed: libLatinSuppConverter.dylib
Processed: libThaiConverter.dylib
Processed: libVietnameseConverter.dylib
Processed: libTraditionalChineseConverter.dylib
Processed: MessagesDataMigrator
Processed: FaceTimeMigrator
Processed: Accelerate
Processed: AVFoundation
Processed: DAAccount
Processed: libBLAS.dylib
Processed: libSparseBLAS.dylib
Processed: libQuadrature.dylib
Processed: libLinearAlgebra.dylib
Processed: libvMisc.dylib
Processed: libSparse.dylib
Processed: CoreMediaStream
Processed: vecLib
```

```
Processed: libLAPACK.dylib
Processed: HomeKitDaemon
Processed: AdSupport
Processed: AppTrackingTransparency
Processed: AppClip
Processed: Accessibility
Processed: ARKit
Processed: AutomaticAssessmentConfiguration
Processed: iAdCore
Processed: AssetsLibrary
Processed: AddressBookUI
Processed: libEmbeddedSystemAUs.dylib
Processed: AddressBook
Processed: AuthenticationServices
Processed: WorkflowKit
Processed: AACDependencies
Processed: libCommCenterAWDMetrics.dylib
Processed: libSystemDetermination.dylib
Processed: DeviceCheck
Processed: CarPlay
Processed: BusinessChat
Processed: CoreAudioKit
Processed: DeveloperToolsSupport
Processed: libCommCenterKCommandDrivers.dylib
Processed: CoreNFC
Processed: GSS
Processed: GameKit
Processed: CoreMIDI
Processed: SiriTTS
Processed: ExternalAccessory
Processed: libCommCenterMCommandDrivers.dylib
Processed: FileProviderUI
Processed: HealthKitUI
Processed: DaemonUtils
Processed: IdentityLookup
Processed: ClockKit
Processed: ModuleBase
Processed: IdentityLookupUI
Processed: MechanismBase
Processed: GLKit
Processed: libSTS-N.dylib
Processed: MetalPerformanceShaders
Processed: IntentsUI
Processed: MPSMatrix
Processed: MetalKit
Processed: MetricKit
Processed: MobileCoreServices
Processed: MPSNDArray
Processed: GameplayKit
Processed: Messages
Processed: MPSRayIntersector
Processed: MPSImage
Processed: NearbyInteraction
Processed: NewsstandKit
Processed: libCVMSPluginSupport.dylib
Processed: OpenAL
```

```
Processed: OSLog
Processed: OpenGL
Processed: GLEngine
Processed: GameController
Processed: libCoreFSCache.dylib
Processed: NotificationCenter
Processed: libGFXShared.dylib
Processed: libCoreVMClient.dylib
Processed: libGLVMPPlugin.dylib
Processed: MultipeerConnectivity
Processed: libGLProgrammability.dylib
Processed: ScreenTime
Processed: PassKit
Processed: QuickLookThumbnailing
Processed: Speech
Processed: ReplayKit
Processed: Twitter
Processed: UIKit
Processed: UserNotificationsUI
Processed: VisionKit
Processed: libblowLevelDetectors.dylib
Processed: WatchConnectivity
Processed: PDFKit
Processed: WatchKit
Processed: _AVKit_SwiftUI
Processed: VideoSubscriberAccount
Processed: MLCompute
Processed: _HomeKit_SwiftUI
Processed: SoundAnalysis
Processed: _MapKit_SwiftUI
Processed: _QuickLook_SwiftUI
Processed: _SpriteKit_SwiftUI
Processed: _SceneKit_SwiftUI
Processed: _StoreKit_SwiftUI
Processed: NanoBooksComplicationsCompanion
Processed: SpriteKit
Processed: MessagesComplication
Processed: NanoMenstrualCyclesComplication
Processed: NanoCompassComplications
Processed: AirPortSettings
Processed: WorldClockComplications
Processed: NanoSleepComplication
Processed: CarrierSettings
Processed: EDGESettings
Processed: ManagedConfigurationUI
Processed: ContactsSettings
Processed: SMS
Processed: MobilePhoneSettings
Processed: BluetoothSettings
Processed: KeyboardSettings
Processed: MobileCalSettings
Processed: MobileSlideShowSettings
Processed: ScheduleSettings
Processed: MobileSafariSettings
Processed: iMessage
Processed: WirelessModemSettings
```

```
Processed: AACCore
Processed: MobileStoreSettings
Processed: AFKUser
Processed: AGXCompilerConnection-S2A8
Processed: AGXGPURawCounter
Processed: VPNPreferences
Processed: ANEServices
Processed: AOPHaptics
Processed: AMPCoreUI
Processed: RealityKit
Processed: APFS
Processed: ASEProcessing
Processed: ACTFramework
Processed: ANECompiler
Processed: ASOctaneSupport
Processed: LegacyHandle
Processed: SimpleKeyExchange
Processed: snatmap
Processed: MetalPerformanceShadersGraph
Processed: AXAggregateStatisticsServices
Processed: GKSPerformance
Processed: AXContainerServices
Processed: ATFoundation
Processed: AXIDSservices
Processed: AXElementInteraction
Processed: AGXCompilerCore-S2A8
Processed: AXLocalizationCaptionService
Processed: AXSpeakFingerManager
Processed: ICE
Processed: AXFrontBoardUtils
Processed: AccessibilityFocusEngine
Processed: AXTapToSpeakTime
Processed: AccessibilityUI
Processed: AccessibilityPlatformTranslation
Processed: AccessibilityPhysicalInteraction
Processed: AccessibilityUIViewServices
Processed: AccessoryAudio
Processed: ActionPredictionHeuristics
Processed: AccessoryVoiceOver
Processed: AccountNotification
Processed: AccessoryComponentAuth
Processed: AXSpringBoardServerInstance
Processed: AdAnalytics
Processed: AdPlatforms
Processed: ActivityAchievementsUI
Processed: AdminLite
Processed: ABMHelper
Processed: AdPlatformsCommonUI
Processed: ActivitySharingUI
Processed: AggregateDictionary
Processed: AdPlatformsInternal
Processed: AggregateDictionaryHistory
Processed: ActivitySharing
Processed: SceneKit
Processed: AirPlayRoutePrediction
Processed: ActivityRingsUI
```

```
Processed: AlgosScoreFramework
Processed: AppAttestInternal
Processed: ActionKitUI
Processed: AppLaunchStats
Processed: AppConduit
Processed: AppNotificationsLoggingClient
Processed: AppPredictionUIFoundation
Processed: AppPreferenceClient
Processed: AppPredictionWidget
Processed: AppPredictionUIWidget
Processed: AppPredictionUI
Processed: AppSSOUI
Processed: AppStoreFoundation
Processed: AppSSOKerberos
Processed: AirPlaySync
Processed: AppStoreOverlays
Processed: AppleBasebandServices
Processed: AirPortAssistant
Processed: AppStoreUI
Processed: AppleCV3DModels
Processed: AppleCV3DMOVKit
Processed: AppleFSCCompression
Processed: AppleFirmwareUpdate
Processed: AppStoreComponents
Processed: AppleIDSSOAuthentication
Processed: AppleDepth
Processed: AirPlayReceiver
Processed: AppleJPEG
Processed: AppleLDAP
Processed: AppleNVMe
Processed: AppleSRP
Processed: AnnotationKit
Processed: ApplePDPHelper
Processed: AppleSauce
Processed: AppleNeuralEngine
Processed: AskPermission
Processed: AppC3D
Processed: AssetCacheServicesExtensions
Processed: AssetCacheServices
Processed: AppleServiceToolkit
----- AppleServiceToolkit -----
09:44:12:234 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'
-----
Processed: AudioAnalytics
Processed: AssistantCardServiceSupport
Processed: AttentionAwareness
Processed: AudioServerApplication
Processed: AudioTransportCommon
Processed: AssetViewer
Processed: AssistantSettingsSupport
Processed: AudioPasscode
Processed: AppleMediaServicesUIDynamic
Processed: BackgroundTaskAgent
```

```
Processed: BackBoardHIDEEventProcessors
Processed: AutomationSuggestions
Processed: BioKitAggD
Processed: AudioServerDriver
Processed: Fluid
Processed: BiomePubSub
Processed: MTLSpline
Processed: BehaviorMiner
Processed: BluetoothAudio
Processed: AutoLoop
Processed: BluetoothManager
Processed: BluetoothServices
Processed: BookCoverUtility
Processed: AuthKitUI
Processed: BluetoothServicesUI
Processed: BiometricKitUI
Processed: BrailleTranslation
Processed: BridgeReporting
Processed: BrookDataCollection
Processed: BridgeCommons
Processed: AppleCVA
Processed: BrookServices
Processed: ButtonResolver
Processed: BridgePreferences
Processed: BookDataStore
Processed: CARDNDUI
Processed: DACoreDAVGlue
Processed: CMCaptureCore
Processed: CPMLBestShim
Processed: CPAalytics
Processed: BusinessChatService
Processed: DADaemonSupport
Processed: CPMS
Processed: DACalDAV
Processed: CTCarrierSpace
Processed: CameraImagingFramework
Processed: CameraKit
Processed: CaptiveNetwork
Processed: CTCarrierSpaceUI
Processed: Calculate
Processed: CarPlayServices
Processed: BulletinDistributorCompanion
Processed: CameraEditKit
Processed: CardServices
Processed: CarPlayUIServices
Processed: ModelIO
Processed: Cards
Processed: CardKit
Processed: CarPlayUI
Processed: CellularPlanManager
Processed: Catalyst
Processed: CertUI
Processed: CellularBridgeUI
Processed: BlastDoor
Processed: ChunkingLibrary
Processed: CheckerBoardServices
```

```
Processed: CertInfo
Processed: ClassKitUI
Processed: ClockComplications
Processed: ActionKit
Processed: CloudKitCodeProtobuf
Processed: CombineCocoa
Processed: CarPlaySupport
Processed: CommonAuth
Processed: CommunicationsFilter
Processed: ClockKitUI
Processed: CloudMediaServicesInterfaceKit
Processed: ClipUIServices
Processed: ConstantClasses
Processed: CompanionCamera
Processed: CloudDocsUI
Processed: CompanionHealthDaemon
Processed: CompassUI
Processed: ContactsAssistantServices
Processed: ContactsDonationFeedback
Processed: ComplicationDisplay
Processed: ContinuousDialogManagerService
Processed: ControlCenterServices
Processed: ContactsAutocomplete
Processed: ClassroomKit
Processed: ControlCenterUIKit
Processed: CoreCDPUIInternal
Processed: CoreCapture
Processed: CoreDuetDataModel
Processed: CoreDuetDaemonProtocol
Processed: CoreCDPUI
Processed: CommunicationsSetupUI
Processed: CameraEffectsKit
Processed: CoreDuetDebugLogging
Processed: ContactsUICore
Processed: CoreDuetStatistics
Processed: CoreEmoji
Processed: CoreDuetSync
Processed: CoreOptimization
Processed: CoreNameParser
Processed: CoreChart
Processed: CorePhoneNumbers
Processed: CoreBrightness
Processed: CoreRecents
Processed: CoreIndoor
Processed: CorePrediction
Processed: CoreSDB
Processed: CoreSVG
Processed: CoreAppleCVA
Processed: CoreThread
Processed: CoreSuggestionsUI
Processed: CoreSuggestionsML
Processed: CorePDF
Processed: CoreUARP
Processed: CoreUtilsUI
Processed: CoreUtilsSwift
Processed: CoreRecognition
```

```
Processed: Coherence
Processed: CoreThemeDefinition
Processed: CryptoKitCBridging
Processed: CoreWiFi
Processed: DAAPKit
Processed: CourseKit
Processed: DAIMAPNotes
Processed: CryptoKitPrivate
Processed: DASDaemon
Processed: DALDAP
Processed: PhoneNumbers
Processed: DCIMServices
Processed: DAEASOAuthFramework
Processed: DataAccessUI
Processed: DeviceCheckInternal
Processed: DeviceToDeviceManager
Processed: DiagnosticLogCollection
Processed: DeviceOMatic
Processed: DeviceIdentity
Processed: DataDetectorsNaturalLanguage
Processed: DiskImages
Processed: DigitalAccess
Processed: DesktopServicesPriv
Processed: DiagnosticsSupport
Processed: DiskSpaceDiagnostics
Processed: DictionaryUI
Processed: DiagnosticsKit
Processed: DoNotDisturbKit
Processed: DiskImages2
Processed: DistributedEvaluation
Processed: DigitalTouchShared
Processed: DocumentManagerCore
Processed: DoNotDisturbServer
Processed: DragUI
Processed: DocumentManager
Processed: EAFirmwareUpdater
Processed: CoreNavigation
Processed: DocumentManagerUICore
Processed: EditScript
Processed: EmailAddressing
Processed: EAP8021X
Processed: EasyConfig
Processed: DrawingKit
Processed: EmbeddedDataReset
Processed: EmbeddedSensingProtocols
Processed: EmergencyAlerts
Processed: EnhancedLoggingState
Processed: Engram
Processed: CoreHAP
Processed: ExchangeSyncExpress
Processed: ExchangeSync
Processed: ExtensionFoundation
Processed: DocumentManagerExecutables
Processed: FMIPSiriActions
Processed: Eyedropper
Processed: FSEvents
```

```
Processed: ESDaemonSupport
Processed: FTClientServices
Processed: FMClient
Processed: DocumentCamera
Processed: FMF
Processed: FMCoreUI
Processed: FamilyNotification
Processed: FeatureFlags
Processed: FeatureFlagsSupport
Processed: FeedbackLogger
Processed: FaceCore
Processed: FilesActionsUI
Processed: FTAWD
Processed: FindMyDeviceUI
Processed: Fitness
Processed: FlightUtilitiesCore
Processed: libGSFont.dylib
Processed: FlightUtilities
Processed: FlowFrameKit
Processed: libGSFontCache.dylib
Processed: FoundationODR
Processed: libType1Scaler.dylib
Processed: FoundInAppsPlugins
Processed: libhvfv.dylib
Processed: FusionPluginKit
Processed: FusionPluginServices
Processed: DAEAS
Processed: FriendKit
Processed: libmetal_timestamp.dylib
Processed: libComposeFilters.dylib
Processed: Futhark
Processed: FMCore
Processed: libGPUCompiler.dylib
Processed: libGPUSupportMercury.dylib
Processed: libFontParser.dylib
Processed: FitnessUI
Processed: GPURawCounter
Processed: FileProviderDaemon
Processed: GenerationalStorage
Processed: H10ISPServices
Processed: GraphVisualizer
Processed: HIDAnalytics
Processed: HID
Processed: HSAAuthentication
Processed: HIDDisplay
Processed: HIDPreferences
Processed: GameCenterUICore
Processed: HardwareDiagnostics
Processed: HAENotifications
Processed: libGPUCompilerImplLazy.dylib
Processed: HealthHearing
Processed: HealthDiagnosticExtensionCore
Processed: GameKitServices
Processed: HealthMenstrualCyclesUI
Processed: HealthMenstrualCyclesDaemon
Processed: HealthArticlesGeneration
```

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Processed: HeartHealthDaemon
Processed: HeartHealth
Processed: HealthPlatform
Processed: HeroAppPredictionClient
Processed: HomeKitCore
Processed: HearingUI
Processed: Heimdal
Processed: HealthExposureNotificationUI
Processed: HomeRecommendationEngine
Processed: HelpKit
Processed: IAPAuthentication
Processed: IDSKVStore
Processed: IMCorePipeline
Processed: HeartRhythmUI
Processed: IMDMessageServices
Processed: HomeSharing
Processed: HealthToolbox
Processed: IMTranscoding
Processed: IMTransferServices
Processed: IMTransferAgent
Processed: IMAssistantCore
Processed: IMAVCore
Processed: IMSharedUI
Processed: IOCEC
Processed: IOImageLoader
Processed: libfaceCore.dylib
Processed: IOAccelMemoryInfo
Processed: IMTranscoderAgent
Processed: IOSurfaceAccelerator
Processed: IOKitten
Processed: IdleTimerHosting
Processed: IOGPU
Processed: IdleTimerServices
Processed: IOUSBHost
Processed: IncomingCallFilter
Processed: InAppMessagesCore
Processed: InternationalTextSearch
Processed: InputTranscoder
Processed: IntentsFoundation
Processed: InputContext
Processed: IntentsUICardKitProviderSupport
Processed: IntentsServices
Processed: Jet
Processed: IntlPreferences
Processed: LatentSemanticMapping
Processed: InertiaCam
Processed: LimitAdTracking
Processed: KeyboardServices
Processed: LinguisticData
Processed: LegacyGameKit
Processed: JITAppKit
Processed: KnowledgeMonitor
Processed: HomeAutomationInternal
Processed: HomeAI
Processed: LockoutUI
Processed: LiveFS
```

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Processed: LoginPerformanceKit
Processed: LiveFSFPHelper
Processed: LoginKit
Processed: AppleCV3D
Processed: LoginUILogViewer
Processed: Marco
Processed: libMTLCompilerHelper.dylib
Processed: MMCSServices
Processed: MailWebProcessSupport
Processed: MFAuthentication
Processed: MDM
Processed: LocalAuthenticationPrivateUI
Processed: MediaKit
Processed: MOVStreamIO
Processed: IMDaemonCore
Processed: MediaPlatform
Processed: MediaServicesBroker
Processed: MarkupUI
Processed: MediaLibraryCore
Processed: MTLCompiler
Processed: MediaControlSender
Processed: POP
Processed: MediaPlayerUI
Processed: MessageSecurity
Processed: MessagesBlastDoorSupport
Processed: MetricKitCore
Processed: MetricKitSource
Processed: MetricKitServices
Processed: MobileBluetooth
Processed: MobileAssetUpdater
Processed: MobileAccessoryUpdater
Processed: KnowledgeGraphKit
Processed: MobileDeviceLink
Processed: IMAP
Processed: MobileContainerManager
Processed: MobileObliteration
Processed: MeasureFoundation
Processed: MobileSoftwareUpdate
Processed: MobileLookup
Processed: MediaFoundation
Processed: MobileStorage
Processed: MobileStoreDemoKit
Processed: MetricsKit
Processed: MediaControls
Processed: MobileSync
Processed: NLFoundInAppsPlugin
Processed: MorphunAssetsUpdater
Processed: MobileSystemServices
Processed: NCLaunchStats
Processed: MultitouchSupport
Processed: MetalTools
Processed: NanoAppRegistry
Processed: NanoBackup
Processed: NLP Learner
Processed: MusicStoreUI
Processed: MobileTimerUI
```

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Processed: NanoComplicationSettings
Processed: NanoLeash
Processed: NanoPhotosCore
Processed: NanoMediaBridgeUI
Processed: NanoAudioControl
Processed: MusicCarDisplayUI
Processed: NanoSystemSettings
Processed: Netrb
Processed: NanoUniverse
Processed: NanoResourceGrabber
Processed: NanoMediaRemote
Processed: NetworkRelay
Processed: NetworkStatistics
Processed: NewDeviceOutreach
Processed: NetAppsUtilitiesUI
Processed: NanoWeatherComplicationsCompanion
Processed: NewsAnalyticsUpload
Processed: OSASubmissionClient
Processed: NeutrinoKit
Processed: OAuth
Processed: NewsDaemon
Processed: NewDeviceOutreachUI
Processed: NewsServices
Processed: PDS
Processed: OSASyncProxyClient
Processed: NetworkServiceProxy
Processed: OSAnalyticsPrivate
Processed: NewsFeedLayout
Processed: PDSAgent
Processed: CoreRE
Processed: PLSnapshot
Processed: PacketFilter
Processed: OTSVG
Processed: PairingProximity
Processed: PairedUnlock
Processed: PassKitServices
Processed: ParsecSubscriptionServiceSupport
Processed: PhoneNumbers
Processed: PerformanceTrace
Processed: PhoneNumberResolver
Processed: PersonaKit
Processed: Pasteboard
Processed: PBBridgeSupport
Processed: PhotoBoothEffects
Processed: PersonUI
Processed: Phoenix
Processed: PencilPairingUI
Processed: PointerUIServices
Processed: PhysicsKit
Processed: PowerlogControl
Processed: PlacesKit
Processed: PlatterKit
Processed: PhotosImagingFoundation
Processed: PhotoVision
Processed: PowerlogDatabaseReader
Processed: ProactiveCDNDownloader
```

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Processed: PhotoLibrary
Processed: PrintKit
Processed: PowerlogFullOperators
Processed: ProactiveExperiments
Processed: ProactiveExperimentsInternals
Processed: PodcastsKit
Processed: ProactiveContextClient
Processed: PrivateFederatedLearning
Processed: ProactiveSupportStubs
Processed: ProactiveWidgetTracker
Processed: PreferencesUI
Processed: ProgressUI
Processed: ProactiveMagicalMoments
Processed: NanoPassKit
Processed: PubSub
Processed: RTBuddyCrashlogDecoder
Processed: PrototypeToolsUI
Processed: PhotoImaging
Processed: QLCharts
Processed: RTCReporting
Processed: ProactiveML
Processed: QuickLookSupport
Processed: ProxCardKit
Processed: RelativeMotion
Processed: RapportUI
Processed: ProximityUI
Processed: ReminderMigration
Processed: ReminderKitUI
Processed: RemoteHID
Processed: Radio
Processed: RemoteCoreML
Processed: RTTUI
Processed: RemoteManagementProtocol
Processed: RemoteConfiguration
Processed: RemoteServiceDiscovery
Processed: RemoteManagementModel
Processed: RemoteStateDumpKit
Processed: RelevanceEngineUI
Processed: RemoteTextInput
Processed: RemoteXPC
Processed: RespiratoryHealth
Processed: RemoteManagement
Processed: RevealCore
Processed: RespiratoryHealthUI
Processed: RespiratoryHealthDaemon
Processed: SMBClientProvider
Processed: SAML
Processed: SEService
Processed: Memories
Processed: SDAPI
Processed: SMBClientEngine
Processed: RemoteMediaServices
Processed: SceneIntelligence
Processed: SMBSearch
Processed: ScoreBoard
Processed: SOS
```

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Processed: SchoolTimeSettingsUI
Processed: SchoolTime
Processed: ScreenReaderBrailleDriver
Processed: SIMSetupSupport
Processed: RemoteUI
Processed: SecureChannel
Processed: SearchSuggestions
Processed: ScreenReaderCore
Processed: ServiceManagement
Processed: ScreenReaderOutput
Processed: SearchAds
Processed: SearchUICardKitProviderSupport
Processed: ScreenshotServices
Processed: DataSourceKit
Processed: RelevanceEngine
Processed: SensorKitUI
Processed: SensingProtocols
Processed: SearchToShareCore
Processed: SettingsCellular
Processed: PrivacySettingsUI
Processed: SoundsAndHapticsSettings
Processed: DisplayAndBrightnessSettings
Processed: SettingsUIKitPrivate
Processed: GeneralSettingsUI
----- GeneralSettingsUI -----
09:44:31:841 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'./System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'
```

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Processed: SetupAssistantUI
Processed: SharingHUD
Processed: SharingXPCServices
Processed: WallpaperSettings
Processed: SeymourServerProtocol
Processed: ShazamInsights
Processed: ShortcutUIKit
Processed: ShazamKitUI
Processed: SidecarCore
Processed: ScreenTimeSettingsUI
Processed: SidecarUI
Processed: SignpostCollection
Processed: SignpostNotification
Processed: SignpostMetrics
Processed: SharingUI
Processed: SignpostSupport
Processed: SeymourClient
Processed: SeymourMedia
Processed: SilexWeb
Processed: SiriAudioInternal
Processed: SiriAppResolution
Processed: SiriClientFlow
Processed: SiriIntentEvents
Processed: SiriCore
Processed: SiriKitInvocation
Processed: SiriGeo
```

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Processed: SiriObservation
Processed: SiriDialogEngine
Processed: SiriPlaybackControlSupport
Processed: SiriTape
Processed: SiriTasks
Processed: SiriUIActivation
Processed: SiriUICardKitProviderSupport
Processed: OfficeImport
Processed: SiriSettingsIntents
Processed: SleepHealthDaemon
Processed: SiriAudioSupport
Processed: SlideshowKit
Processed: SoftLinking
Processed: SocialServices
Processed: SiriOntologyProtobuf
Processed: SoftwareUpdateBridge
Processed: SoftwareUpdateCoreConnect
Processed: OpusFoundation
Processed: SoftwareUpdateServicesUI
Processed: SoftwareUpdateCoreSupport
Processed: SoftwareUpdateServices
Processed: SoftwareUpdateCore
Processed: SoftwareUpdateSettings
Processed: SiriPlaybackControlIntents
Processed: SpeakThisServices
Processed: SoundAutoConfig
Processed: SpeakTypingServices
Processed: SoftwareUpdateSettingsUI
Processed: SoundBoardServices
Processed: SpeechRecognitionCore
Processed: SpotlightReceiver
Processed: SiriVideoIntents
Processed: SiriKitFlow
Processed: OpusKit
Processed: Stateful
Processed: SpotlightUI
Processed: StoreBookkeeperClient
Processed: SpeechRecognitionCommandServices
Processed: StoreBookkeeper
Processed: StorageSettings
Processed: StoreServicesCore
Processed: SymptomReporter
Processed: SymptomDiagnosticReporter
Processed: SuggestionsSpotlightMetrics
Processed: ManagedEvent
Processed: StreamingZip
Processed: SymptomPresentationLite
Processed: SymptomPresentationFeed
Processed: SymptomNetworkUsage
Processed: TCC
Processed: SystemStatusServer
Processed: SystemStatus
Processed: SpeechRecognitionCommandAndControl
Processed: TVRemoteKit
Processed: TVLatency
Processed: Stocks
```

```
Processed: SeymourCore
Processed: TVUIKit
Processed: TeaUIKit
Processed: TeaSettings
Processed: TSUtility
Processed: TelephonyXPCCClient
Processed: TelephonyXPCServer
Processed: TVRemoteUI
Processed: TelephonyRPC
Processed: Timeline
Processed: TVPlayback
Processed: SeymourServices
Processed: TextInputChinese
Processed: TelephonyPreferences
Processed: TestFlightCore
Processed: TVRemoteCore
Processed: TinCanShared
Processed: TipKit
Processed: TipsUI
Processed: UARPiCloud
Processed: TextureIO
Processed: TransparencyDetailsView
Processed: UITriggerVC
Processed: ToneKit
Processed: UVFSXPCService
Processed: URLFormatting
Processed: TouchRemote
Processed: liblivefiles.plugin.dummy.dylib
Processed: TrackingAvoidance
Processed: livefiles_exfat.dylib
Processed: livefiles_cs.dylib
Processed: livefiles_hfs.dylib
Processed: livefiles_msdos.dylib
Processed: livefiles_apfs.dylib
Processed: UserFS
Processed: UserNotificationsSettings
Processed: UserManagementUI
Processed: UserNotificationsKit
Processed: SeymourUI
Processed: UserNotificationsTranslation
Processed: UsageTracking
Processed: IMAP
Processed: VisualAlert
Processed: TVMLKit
Processed: VisualPairing
Processed: TouchML
Processed: VisualVoicemail
Processed: VideosUICore
Processed: VoicemailStore
Processed: VoiceShortcutsUICardKitProviderSupport
Processed: WatchdogClient
Processed: VoiceOverServices
Processed: WatchReplies
Processed: UserNotificationsServer
Processed: VideoSubscriberAccountUI
Processed: WeatherUI
```

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Processed: WeatherCharts
Processed: WPDaemon
Processed: WebApp
Processed: WebContentAnalysis
Processed: VoiceTriggerUI
Processed: WelcomeKit
Processed: WelcomeKitUI
Processed: WiFiCloudSyncEngine
Processed: VoiceTrigger
Processed: WiFiLogCapture
Processed: WiFiPeerToPeer
Processed: WebUI
Processed: WirelessCoexManager
Processed: WelcomeKitCore
Processed: WebInspector
Processed: WiFiVelocity
Processed: WiFiKitUI
Processed: XCTTargetBootstrap
Processed: Widgets
Processed: WorkflowUIServices
Processed: ZhuGeSupport
Processed: XavierCore
Processed: apfs_boot_mount
Processed: ZoomServices
Processed: WorkflowUICore
Processed: caulk
Processed: iAdDeveloper
Processed: iAdServices
Processed: XavierNews
Processed: iOSDiagnostics
Processed: iMessageApps
Processed: iOSScreenSharing
Processed: ProVideo
Processed: TQQuicklook
Processed: WorkflowUI
Processed: libANGLE-shared.dylib
Processed: TSReading
Processed: EquationKit
Processed: NumbersQuicklook
Processed: TSApplication
Processed: PagesQuicklook
Processed: WorkflowEditor
Processed: KeynoteQuicklook
Processed: TSStyles
Processed: USDKit
Processed: TSKit
Processed: iWorkXPC
Processed: kperf
Processed: kperfdata
Processed: libEDR
Processed: oncrpc
Processed: perfdata
Processed: vCard
Processed: NanoMapsNavigationCompanionDataSource
Processed: NanoMapsSampleDataSource
Processed: TSUtility
```

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Processed: RelevanceEngineHome
Processed: TSUtility
Processed: AppleHDQGasGauge
Processed: TSPersistence
Processed: H264H8.videodecoder
Processed: H264SW.videocodec
Processed: JPEGH1.videodecoder
Processed: TSDrawables
Processed: CaptiveNetworkSupport
Processed: VCH263.videodecoder
Processed: Slim.videodecoder
Processed: VCH263.videoencoder
Processed: JPEGH1.videoencoder
Processed: MP4VH8.videodecoder
Processed: BarcodeScanner.videoprocessor
Processed: GyroVideoStabilization.videoprocessor
Processed: PN548.dylib
Processed: PN548_API.dylib
Processed: CarrierBundleUtilities.dylib
Processed: HDR.videoprocessor
Processed: MetalFilter
Processed: PN548_HAL.dylib
Processed: TSPersistence
Processed: TSCalculationEngine
Processed: libARIServer.dylib
Processed: libATCommandStudioDynamic.dylib
Processed: VFX
Processed: libARI.dylib
Processed: libAWDProtobufBluetooth.dylib
Processed: libAWDProtobufFacetime.dylib
Processed: libAWDProtobufFacetimeIMessage.dylib
Processed: libAWDProtobufGCK.dylib
Processed: libAWDSupport.dylib
Processed: libAppleArchive.dylib
Processed: libAWDProtobufLocation.dylib
Processed: libAppPatch.dylib
Processed: libAppleSSEExt.dylib
Processed: libBBUpdaterDynamic_stubs.dylib
Processed: libAudioStatistics.dylib
Processed: TSText
Processed: libABMCommandDriversICE.dylib
Processed: libCRFSuite.dylib
Processed: libCTGreenTeaLogger.dylib
Processed: libDHCPSServer.A.dylib
Processed: libChineseTokenizer.dylib
Processed: libETLDIAGLoggingDynamic.dylib
Processed: libBasebandDiagnostic.dylib
Processed: libETLDLFDynamic.dylib
Processed: libETLDLOADCoreDumpDynamic.dylib
Processed: libETLDLOADDynamic.dylib
Processed: libETLEFSDumpDynamic.dylib
Processed: libwebrtc.dylib
Processed: libETLDMCDynamic.dylib
Processed: libAudioIssueDetector.dylib
Processed: libETLDynamic.dylib
Processed: libAppleEXR.dylib
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Processed: libETLSAHDynamic.dylib
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Processed: libFDRDecode.dylib
Processed: libABMCommandDriversEUR.dylib
Processed: libHDLCDynamic.dylib
Processed: libFos1_dynamic.dylib
Processed: TSCharts
Processed: libIOACIPC.dylib
Processed: libICEClient.dylib
Processed: libIOACIPCICEBB.dylib
Processed: libIOABP.dylib
Processed: libH5Dynamic.dylib
Processed: libMaxEnt.dylib
Processed: libMatch.1.dylib
Processed: libIORReport.dylib
Processed: libMobileCheckpoint.dylib
Processed: libIOAccessoryManager.dylib
Processed: libFusionComponentCheck.dylib
Processed: libPCITransport.dylib
Processed: libPPM.dylib
Processed: libKTLDynamic.dylib
Processed: libQMIParserDynamic.dylib
Processed: libParallelCompression.dylib
Processed: libMemoryResourceException.dylib
Processed: libPPMDaDataModel.dylib
Processed: libReverseProxyDevice.dylib
Processed: libSLAMDynamic.dylib
Processed: libTelephonyBasebandDynamic.dylib
Processed: libInFieldCollection.dylib
Processed: libThaiTokenizer.dylib
Processed: libTelephonyDebugDynamic.dylib
Processed: libSecRecord.dylib
Processed: libTelephonyUSBDynamic.dylib
Processed: libRoseBooter.dylib
Processed: libapple_nghttp2.dylib
Processed: libapp_launch_measurement.dylib
Processed: libWAPI.dylib
Processed: libafc.dylib
Processed: libWirelessAudioIPC.dylib
Processed: libUSBTransport.dylib
Processed: libbsm.0.dylib
Processed: libcharset.1.dylib
Processed: libbz2.1.0.dylib
Processed: libcmph.dylib
Processed: libcoretls.dylib
Processed: libcompression.dylib
Processed: libamsupport.dylib
Processed: libcoretls_cfhelpers.dylib
Processed: libcryptex_interface.dylib
Processed: libcryptex.dylib
Processed: libdns_services.dylib
Processed: libcupolicy.dylib
Processed: libcryptex_core.dylib
Processed: libedit.3.dylib
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Processed: libexslt.0.dylib
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Processed: libate.dylib
Processed: libheimdal-asn1.dylib
Processed: libiconv.2.dylib
Processed: libipsec.A.dylib
Processed: TSTables
Processed: libktrace.dylib
Processed: libimg4.dylib
Processed: libgermantok.dylib
Processed: libacmobileshim.dylib
Processed: libipconfig.dylib
Processed: libauthinstall.dylib
Processed: liblangid.dylib
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Processed: libmecab.dylib
Processed: libnfstreaming.dylib
Processed: libmis.dylib
Processed: libpcap.A.dylib
Processed: libpmsample.dylib
Processed: libpmenergy.dylib
Processed: libpartition2_dynamic.dylib
Processed: libBasebandManagerICE.dylib
Processed: libomadm.dylib
Processed: libprotobuf-lite.dylib
Processed: libperfcheck.dylib
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Processed: libsandbox.1.dylib
Processed: libprotobuf.dylib
Processed: libresolv.9.dylib
Processed: libquic.dylib
Processed: libolaf.dylib
Processed: libspindump.dylib
Processed: libutil.dylib
Processed: libtidy.A.dylib
Processed: libsystemstats.dylib
Processed: libz.1.dylib
Processed: libxslt.1.dylib
Processed: libxpc_datastores.dylib
Processed: libxml2.2.dylib
Processed: liblog_AppleLDAPTypes.dylib
Processed: libtzupdate.dylib
Processed: libThreadExternalCommissioner.dylib
Processed: liblog_coreacc.dylib
Processed: liblog_SystemConfiguration.dylib
Processed: liblog_IOHIDFamily.dylib
Processed: liblog_geo.dylib
Processed: liblog_network.dylib
Processed: liblog_mdnsresponder.dylib
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Processed: liblog_location.dylib
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Processed: libswiftCoreAudio.dylib
Processed: libswiftAssetsLibrary.dylib
Processed: libswiftARKit.dylib
Processed: libswiftContacts.dylib
Processed: libswiftCompression.dylib
Processed: libswiftCallKit.dylib
Processed: libswiftAVFoundation.dylib
Processed: libswiftCoreImage.dylib
Processed: libswiftAppleArchive.dylib
Processed: libswiftCoreData.dylib
Processed: libswiftCoreMIDI.dylib
Processed: libswiftCoreFoundation.dylib
Processed: libswiftCoreML.dylib
Processed: libswiftCoreLocation.dylib
Processed: libswiftDarwin.dylib
Processed: libswiftGLKit.dylib
Processed: libswiftCryptoTokenKit.dylib
Processed: libswiftCoreNFC.dylib
Processed: libswiftHealthKit.dylib
Processed: libswiftAccelerate.dylib
Processed: libswiftHomeKit.dylib
Processed: libswiftGameplayKit.dylib
Processed: libswiftIntents.dylib
Processed: libswiftCoreMedia.dylib
Processed: libswiftMetal.dylib
Processed: libswiftMLCompute.dylib
Processed: libswiftMetalKit.dylib
Processed: libswiftMetricKit.dylib
Processed: libswiftMediaPlayer.dylib
Processed: libswiftMapKit.dylib
Processed: libswiftModelIO.dylib
Processed: libswiftNaturalLanguage.dylib
Processed: libswiftNearbyInteraction.dylib
Processed: libswiftPhotos.dylib
Processed: libswiftPencilKit.dylib
Processed: libswiftPhotosUI.dylib
Processed: libswiftQuartzCore.dylib
Processed: libswiftSceneKit.dylib
Processed: libswiftSpeech.dylib
Processed: libswiftSystem.dylib
Processed: libswiftSwiftOnoneSupport.dylib
Processed: libswiftSpriteKit.dylib
Processed: libcommonCrypto.dylib
Processed: libcache.dylib
Processed: libcompiler_rt.dylib
Processed: libswiftSystem_Foundation.dylib
Processed: liblaunch.dylib
Processed: libcopyfile.dylib
Processed: libswiftWatchKit.dylib
Processed: libswiftVision.dylib
Processed: libswiftNetwork.dylib
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Processed: libcorecrypto_trace.dylib
Processed: libremovefile.dylib
Processed: libmacho.dylib
Processed: libcorecrypto_noasm.dylib
Processed: libsystem_blocks.dylib
Processed: libsystem_collections.dylib
Processed: libsystem_coreservices.dylib
Processed: libswiftos.dylib
Processed: libswiftsimd.dylib
Processed: libsystem_featureflags.dylib
Processed: libsystem_configuration.dylib
Processed: libsystem_containermanager.dylib
Processed: libsystem_m.dylib
Processed: libsystem_darwin.dylib
Processed: libsystem_dnssd.dylib
Processed: libswiftWebKit.dylib
Processed: libsystem_product_info_filter.dylib
Processed: libsystem_platform.dylib
Processed: libunwind.dylib
Processed: libsystem_pthread.dylib
Processed: libsystem_sandbox.dylib
Processed: libAppleTCONUpdater.dylib
Processed: libSavageRestoreInfo_iOS.dylib
Processed: AccountsUI
Processed: libxpc.dylib
Processed: AXActionSheetUIServer
Processed: libSavageUpdater_iOS.dylib
Processed: AddressBookUIFramework
Processed: libRoseUpdater.dylib
Processed: AssetExplorer
Processed: CameraKit
Processed: CameraEditKitFramework
Processed: DDActionsService
Processed: AccessibilitySettingsLoader
Processed: libSEUpdater.dylib
Processed: LinkPresentation
Processed: HearingAidUIServer
Processed: PassKitFramework
Processed: MediaPlayerFramework
Processed: libmecabra.dylib
Processed: MediaPlayerUIFramework
Processed: PhotoLibraryServices
Processed: Memories
Processed: CameraUI
Processed: PhotosEditUI
Processed: PhotoLibraryFramework
Processed: MessageUIFramework
Processed: PhotosFramework
Processed: StoreKitFramework
Processed: QuickLook
Processed: SocialFramework
Processed: RemoteUIFramework
Processed: PhotosUICore
Processed: QuickSpeak
Processed: iTunesStoreFramework
Processed: WebProcessLoader
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Processed: WebKit
Processed: WebProcess
Processed: PhotosUIFramework
Processed: DefaultAccessPlugin
Processed: CloudKitAccessPlugin
Processed: StoreKitUI
Processed: WebCore
Processed: YelpAccessPlugin
Processed: AppleIDSSOAuthenticationPlugin
Processed: WebKitLegacy
Processed: CloudKitAuthenticationPlugin
Processed: DAAccountAuthenticator
Processed: AppleIDAAuthentication
Processed: KerberosAuthenticationPlugin
Processed: GoogleAuthenticationPlugin
Processed: MessageAccountAuthenticationPlugin
Processed: YahooAuthenticationPlugin
Processed: AADataclassEnableNotificationPlugin
Processed: ESAccountAuthenticator
Processed: ACDatabaseBackupNotificationPlugin
Processed: ADAccountsNotificationPlugin
Processed: AAIDMSAccountNotificationPlugin
Processed: AAAccountNotificationPlugin
Processed: AKAccountNotificationPlugin
Processed: AMSAccountSyncNotificationPlugin
Processed: ASDAccountNotificationPlugin
Processed: BTCloudPairingAccountNotificationPlugin
Processed: AppleIDSSONotificationPlugin
Processed: AMSAccountNotificationPlugin
Processed: CloudBookmarksAccountsNotifier
Processed: CDPAccountNotificationPlugin_IOS
Processed: ClassKitAccountNotificationPlugin
Processed: CloudKitNotificationPlugin
Processed: CoreRoutineAccountNotificationPlugin
Processed: DMDAccountNotificationPlugin
Processed: DAACountNotifier
Processed: CoreRecentsAccountNotificationPlugin
Processed: libAWDSupportFramework.dylib
Processed: CoreLocationAccountNotificationPlugin
Processed: CoreIDVAccountNotificationPlugin
Processed: FindMyDeviceAccountNotificationPlugin
Processed: FMFLocatorAccountNotificationPlugin
Processed: ESAccountNotifier
Processed: GameCenterAccountNotificationPlugin
Processed: HomeKitAccountNotificationPlugin
Processed: HealthKitAccountNotificationPlugin
Processed: DonationAccountWatcher
Processed: MapsAccountChangeNotification
Processed: IDSAccountNotificationPlugin
Processed: MobileSyncAccountNotificationPlugin
Processed: KeychainSyncAccountNotification
Processed: INDAccountNotificationPlugin
Processed: IMAccountNotificationPlugin
Processed: MessageAccountNotificationPlugin
Processed: NewsNotificationPlugin
Processed: PCSAccountNotificationPlugin
```

```
Processed: RPAccountNotificationPlugin
Processed: SharingAccountNotificationPlugin
Processed: SearchPartyAccountNotificationPlugin
Processed: RemindersAccountNotificationPlugin
Processed: PassbookAccountNotificationPlugin
Processed: NotesAccountNotificationPlugin
Processed: ShortcutsCloudKitAccountNotificationPlugin
Processed: SecureBackupNotification
Processed: SiriCloudKitAccountsNotifier
Processed: PhotosAccountNotificationPlugin
Processed: com.apple.askpermission.AccountNotificationPlugin
Processed: WebBookmarksNotificationPlugin
Processed: SocialAccountNotificationPlugin
Processed: CalculatorModule
Processed: AlarmModule
Processed: AppearanceModule
Processed: AccessibilityGuidedAccessControlCenterModule
Processed: CameraModule
Processed: AccessibilityShortcutsModule
Processed: AccessibilityTextSizeModule
Processed: AccessibilitySoundDetectionControlCenterModule
Processed: CarModeModule
Processed: AirPlayMirroringModule
Processed: FeedbackAssistantModule
Processed: DoNotDisturbModule
Processed: MagnifierModule
Processed: DisplayModule
Processed: LowPowerModule
Processed: UIKit
Processed: FlashlightModule
Processed: ConnectivityModule
Processed: MediaControlsAudioModule
Processed: HearingAidsModule
Processed: HomeControlCenterCompactModule
Processed: MuteModule
Processed: QRCodeModule
Processed: OrientationLockModule
Processed: StopwatchModule
Processed: PerformanceTraceModule
Processed: MediaControlsModule
Processed: VoiceMemosModule
Processed: QuickNoteModule
Processed: AppleHDQGasGaugeHID
Processed: WalletModule
Processed: SpokenNotificationsModule
Processed: HomeControlCenterModule
Processed: TVRemoteModule
Processed: TimerModule
Processed: AppleSPULib
Processed: IOUSBDeviceLib
Processed: AttentionAwarenessFilter
Processed: AppleSPUAccCompassPlugin
Processed: IOHIDLib
Processed: AppleMetalGLRenderer
Processed: IOHIDEEventProcessorFilter
Processed: IOHIDPointerScrollFilter
```

```
Processed: IOHIDT8027USBSessionFilter
Processed: IOHIDEEventSystemStatistics
Processed: IOHIDKeyboardFilter
Processed: AppleSPUHIDStatistics
Processed: MultitouchHID
Processed: Categories
Processed: OrganDonation
Processed: ResearchApp
Processed: AppRecommendations
Processed: HealthRecords
Processed: ActivityAchievementsPlugin
Processed: RespiratoryHealthAppPlugin
Processed: HighlightAlerts
Processed: CompanionHealthPlugin
Processed: Profiles
Processed: HealthAppPlugin
Processed: HeartRateDaemonPlugin
Processed: SleepHealthDaemonPlugin
Processed: RespiratoryHealthDaemonPlugin
Processed: MenstrualCyclesDaemonPlugin
Processed: TextInput_bo
Processed: TextInput_chr
Processed: Heart
Processed: TextInput_ca
Processed: Safety
Processed: TextInput_cs
Processed: TextInput_fr
Processed: TextInput_en
Processed: TextInput_es
Processed: Snippets
Processed: TextInput_emoji
Processed: TextInput_el
Processed: TextInput_de
Processed: ActivitySharingPlugin
Processed: TextInput_he
Processed: TextInput_haw
Processed: TextInput_mr
Processed: TextInput_intl
Processed: TextInput_my
Processed: TextInput_ko
Processed: TextInput_hi
Processed: HealthRecordsPlugin
Processed: TextInput_pa
Processed: TextInput_sk
Processed: TextInput_pt
Processed: TextInput_tr
Processed: TextInput_th
Processed: TextInput_si
Processed: TextInput_ja
Processed: TextInput_ug
Processed: TextInput_ta
Processed: AdServices
Processed: TextInput_vi
Processed: TextInput_yue
Processed: SleepHealthAppPlugin
Processed: AXSpeechImplementation
```

```

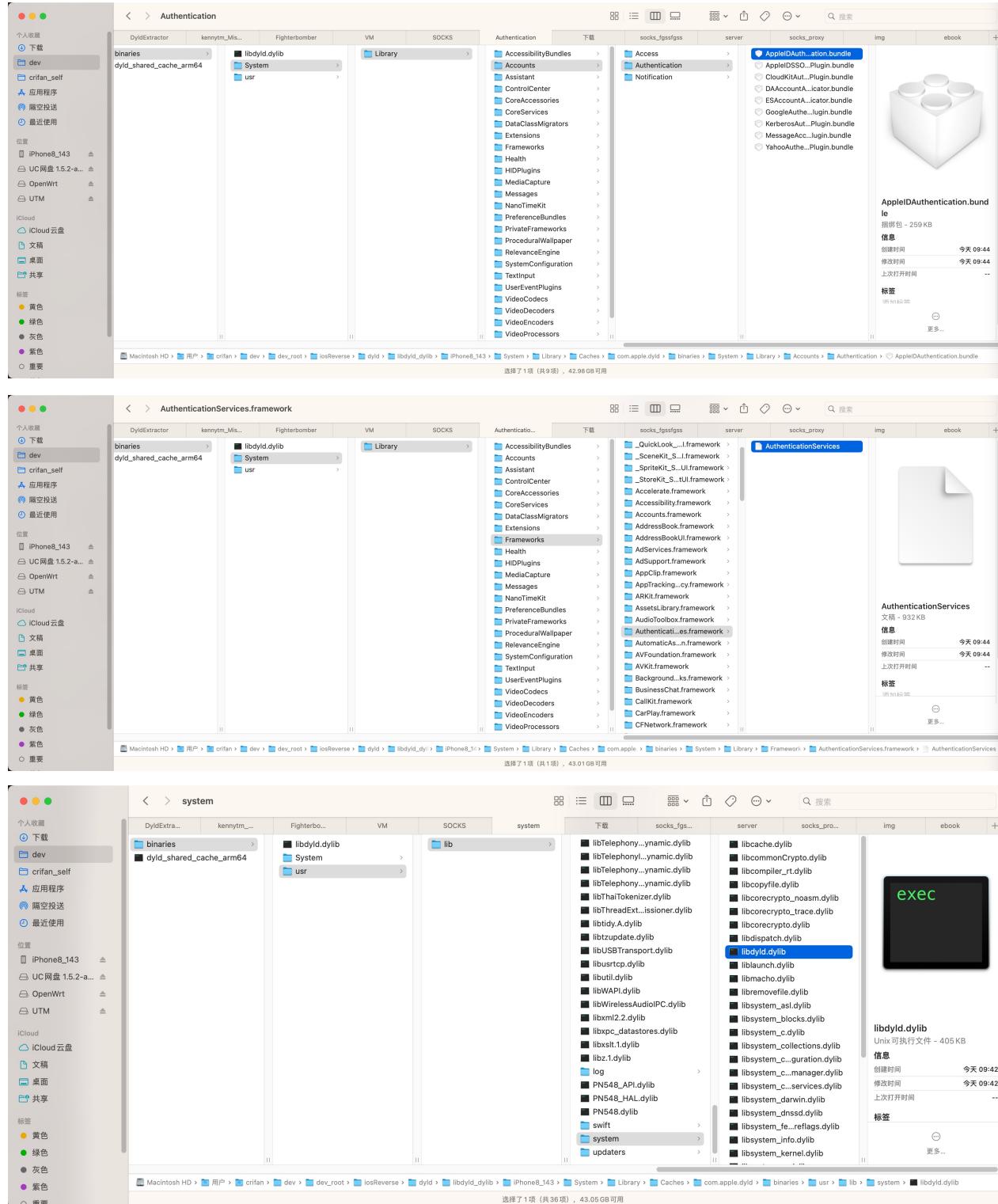
Processed: AnnounceSiriExtensions
Processed: TextInput_zh
Processed: AppleHIDTransportSupport
Processed: _AuthenticationServices_SwiftUI
Processed: H9ISPServices
Processed: CoreGPSTest
Processed: AppleCV3DHA
Processed: NewsAppKit
Processed: MorphunSwift
Processed: HDRProcessing
Processed: ODML
Processed: Announce
Processed: H9ISP.mediacapture
Processed: HearingAppPlugin
Processed: SetupKit
Processed: ProximityControl
Processed: SpotlightLinguistics
Processed: RemindersToolbox
Processed: SiriSpeechSynthesis
Processed: MenstrualCyclesAppPlugin
Processed: SiriDailyBriefingInternal
Processed: URLCompression
Processed: AGXMetalA10
Processed: VCPMP4V.videodecoder
Processed: AVD.videodecoder
Processed: XGBoostFramework
Processed: PegasusKit
Processed: H9.videoencoder
Processed: H264H9.videoencoder
Processed: Highlights
Processed: libSMC.dylib
Processed: AGXMetalA11
Processed: libAHTRestore.dylib
Processed: MattingV1
Processed: GNR.videoprocessor
Processed: H10ISP.mediacapture
Processed: libfire2.dylib
Processed: PegasusAPI
100% (2095 of 2095) #####| Elapsed Time: 0:02:30 ETA:
00:00:00

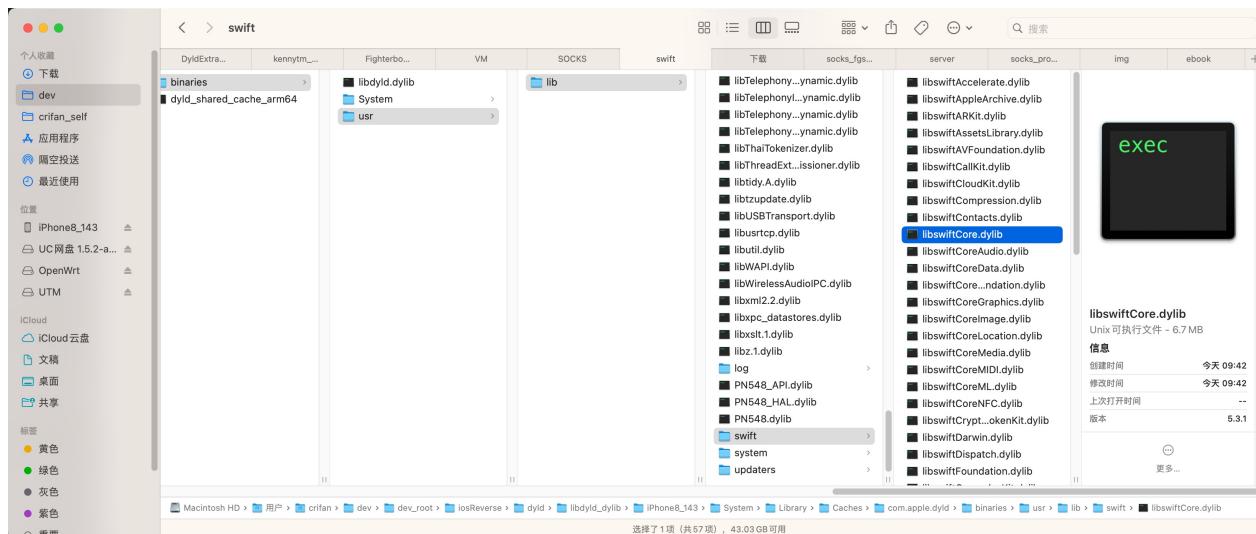
----- Summary -----
----- PowerlogLiteOperators -----
09:43:48:616 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/NearFieldAccessory.framework/NearFieldAccessory\x00'
-----
----- AppleServiceToolkit -----
09:44:12:234 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'
-----
----- GeneralSettingsUI -----
09:44:31:841 [ WARNING ] stub_fixer.py:181 : Unable to find dependency: b'/System/Library/PrivateFrameworks/CoreRepairKit.framework/CoreRepairKit\x00'
-----
```

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2024-10-23 10:25:17

# 导出结果

导出的全部的效果：





## 输出文件的目录tree

```
→ binaries tree
+
└── System
    └── Library
        ├── AccessibilityBundles
        │   ├── AXActionSheetUIServer.axuiservice
        │   └── AXActionSheetUIServer
        ├── AXSpeechImplementation.bundle
        │   └── AXSpeechImplementation
        ├── AccessibilitySettingsLoader.bundle
        │   └── AccessibilitySettingsLoader
        ├── AccountsUI.axbundle
        │   └── AccountsUI
        ├── AddressBookUIFramework.axbundle
        │   └── AddressBookUIFramework
        ├── AssetExplorer.axbundle
        │   └── AssetExplorer
        ├── CameraEditKitFramework.axbundle
        │   └── CameraEditKitFramework
        ├── CameraKit.axbundle
        │   └── CameraKit
        ├── CameraUI.axbundle
        │   └── CameraUI
        ├── DDACTIONSERVICE.axbundle
        │   └── DDACTIONSERVICE
        ├── HearingAidUIServer.axuiservice
        │   └── HearingAidUIServer
        ├── LinkPresentation.axbundle
        │   └── LinkPresentation
        ├── MediaPlayerFramework.axbundle
        │   └── MediaPlayerFramework
        ├── MediaPlayerUIFramework.axbundle
        │   └── MediaPlayerUIFramework
        ├── Memories.axbundle
        │   └── Memories
        └── MessageUIFramework.axbundle
```

```
    └ MessageUIFramework
    └ PassKitFramework.axbundle
        └ PassKitFramework
    └ PhotoLibraryFramework.axbundle
        └ PhotoLibraryFramework
    └ PhotoLibraryServices.axbundle
        └ PhotoLibraryServices
    └ PhotosEditUI.axbundle
        └ PhotosEditUI
    └ PhotosFramework.axbundle
        └ PhotosFramework
    └ PhotosUICore.axbundle
        └ PhotosUICore
    └ PhotosUIFramework.axbundle
        └ PhotosUIFramework
    └ QuickLook.axbundle
        └ QuickLook
    └ QuickSpeak.bundle
        └ QuickSpeak
    └ RemoteUIFramework.axbundle
        └ RemoteUIFramework
    └ SocialFramework.axbundle
        └ SocialFramework
    └ StoreKitFramework.axbundle
        └ StoreKitFramework
    └ StoreKitUI.axbundle
        └ StoreKitUI
    └ UIKit.axbundle
        └ UIKit
    └ WebCore.axbundle
        └ WebCore
    └ WebKit.axbundle
        └ WebKit
    └ WebKitLegacy.axbundle
        └ WebKitLegacy
    └ WebProcess.axbundle
        └ WebProcess
    └ WebProcessLoader.axbundle
        └ WebProcessLoader
    └ iTunesStoreFramework.axbundle
        └ iTunesStoreFramework

    └ Accounts
        └ Access
            └ CloudKitAccessPlugin.bundle
                └ CloudKitAccessPlugin
            └ DefaultAccessPlugin.bundle
                └ DefaultAccessPlugin
            └ YelpAccessPlugin.bundle
                └ YelpAccessPlugin
        └ Authentication
            └ AppleIDAuthentication.bundle
                └ AppleIDAuthentication
            └ AppleIDSSOAuthenticationPlugin.bundle
                └ AppleIDSSOAuthenticationPlugin
            └ CloudKitAuthenticationPlugin.bundle
                └ CloudKitAuthenticationPlugin
```

```
    └── DAAccountAuthenticator.bundle
        └── DAAccountAuthenticator
    └── ESAccountAuthenticator.bundle
        └── ESAccountAuthenticator
    └── GoogleAuthenticationPlugin.bundle
        └── GoogleAuthenticationPlugin
    └── KerberosAuthenticationPlugin.bundle
        └── KerberosAuthenticationPlugin
    └── MessageAccountAuthenticationPlugin.bundle
        └── MessageAccountAuthenticationPlugin
    └── YahooAuthenticationPlugin.bundle
        └── YahooAuthenticationPlugin
└── Notification
    ├── AAAccountNotificationPlugin.bundle
        └── AAAccountNotificationPlugin
    ├── AADataclassEnableNotificationPlugin.bundle
        └── AADataclassEnableNotificationPlugin
    ├── AAIDMSAccountNotificationPlugin.bundle
        └── AAIDMSAccountNotificationPlugin
    ├── ACDatabaseBackupNotificationPlugin.bundle
        └── ACDatabaseBackupNotificationPlugin
    ├── ADAccountsNotificationPlugin.bundle
        └── ADAccountsNotificationPlugin
    ├── AKAccountNotificationPlugin.bundle
        └── AKAccountNotificationPlugin
    ├── AMSAccountNotificationPlugin.bundle
        └── AMSAccountNotificationPlugin
    ├── AMSAccountSyncNotificationPlugin.bundle
        └── AMSAccountSyncNotificationPlugin
    ├── ASDAccountNotificationPlugin.bundle
        └── ASDAccountNotificationPlugin
    ├── AppleIDSSONotificationPlugin.bundle
        └── AppleIDSSONotificationPlugin
    ├── BTCloudPairingAccountNotificationPlugin.bundle
        └── BTCloudPairingAccountNotificationPlugin
    ├── CDPAccountNotificationPlugin_IOS.bundle
        └── CDPAccountNotificationPlugin_IOS
    ├── ClassKitAccountNotificationPlugin.bundle
        └── ClassKitAccountNotificationPlugin
    ├── CloudBookmarksAccountsNotifier.bundle
        └── CloudBookmarksAccountsNotifier
    ├── CloudKitNotificationPlugin.bundle
        └── CloudKitNotificationPlugin
    ├── CoreIDVAccountNotificationPlugin.bundle
        └── CoreIDVAccountNotificationPlugin
    ├── CoreLocationAccountNotificationPlugin.bundle
        └── CoreLocationAccountNotificationPlugin
    ├── CoreRecentsAccountNotificationPlugin.bundle
        └── CoreRecentsAccountNotificationPlugin
    ├── CoreRoutineAccountNotificationPlugin.bundle
        └── CoreRoutineAccountNotificationPlugin
    ├── DAAccountNotifier.bundle
        └── DAAccountNotifier
    ├── DMDAccountNotificationPlugin.bundle
        └── DMDAccountNotificationPlugin
    └── DonationAccountWatcher.bundle
```

```
|   └── DonationAccountWatcher  
|   └── ESAccountNotifier.bundle  
|       └── ESAccountNotifier  
|   └── FMFLocatorAccountNotificationPlugin.bundle  
|       └── FMFLocatorAccountNotificationPlugin  
|   └── FindMyDeviceAccountNotificationPlugin.bundle  
|       └── FindMyDeviceAccountNotificationPlugin  
|   └── GameCenterAccountNotificationPlugin.bundle  
|       └── GameCenterAccountNotificationPlugin  
|   └── HealthKitAccountNotificationPlugin.bundle  
|       └── HealthKitAccountNotificationPlugin  
|   └── HomeKitAccountNotificationPlugin.bundle  
|       └── HomeKitAccountNotificationPlugin  
|   └── IDSAccountNotificationPlugin.bundle  
|       └── IDSAccountNotificationPlugin  
|   └── IMAccountNotificationPlugin.bundle  
|       └── IMAccountNotificationPlugin  
|   └── INDAccountNotificationPlugin.bundle  
|       └── INDAccountNotificationPlugin  
|   └── KeychainSyncAccountNotification.bundle  
|       └── KeychainSyncAccountNotification  
|   └── MapsAccountChangeNotification.bundle  
|       └── MapsAccountChangeNotification  
|   └── MessageAccountNotificationPlugin.bundle  
|       └── MessageAccountNotificationPlugin  
|   └── MobileSyncAccountNotificationPlugin.bundle  
|       └── MobileSyncAccountNotificationPlugin  
|   └── NewsNotificationPlugin.bundle  
|       └── NewsNotificationPlugin  
|   └── NotesAccountNotificationPlugin.bundle  
|       └── NotesAccountNotificationPlugin  
|   └── PCSAccountNotificationPlugin.bundle  
|       └── PCSAccountNotificationPlugin  
|   └── PassbookAccountNotificationPlugin.bundle  
|       └── PassbookAccountNotificationPlugin  
|   └── PhotosAccountNotificationPlugin.bundle  
|       └── PhotosAccountNotificationPlugin  
|   └── RPAccountNotificationPlugin.bundle  
|       └── RPAccountNotificationPlugin  
|   └── RemindersAccountNotificationPlugin.bundle  
|       └── RemindersAccountNotificationPlugin  
|   └── SearchPartyAccountNotificationPlugin.bundle  
|       └── SearchPartyAccountNotificationPlugin  
|   └── SecureBackupNotification.bundle  
|       └── SecureBackupNotification  
|   └── SharingAccountNotificationPlugin.bundle  
|       └── SharingAccountNotificationPlugin  
|   └── ShortcutsCloudKitAccountNotificationPlugin.bundle  
|       └── ShortcutsCloudKitAccountNotificationPlugin  
|   └── SiriCloudKitAccountsNotifier.bundle  
|       └── SiriCloudKitAccountsNotifier  
|   └── SocialAccountNotificationPlugin.bundle  
|       └── SocialAccountNotificationPlugin  
|   └── WebBookmarksNotificationPlugin.bundle  
|       └── WebBookmarksNotificationPlugin  
└── com.apple.askpermission.AccountNotificationPlugin.bundle
```

```
    └── com.apple.askpermission.AccountNotificationPlugin
    └── Assistant
        └── Plugins
            ├── AssistantTTSPPlugin.assistantBundle
            │   └── AssistantTTSPPlugin
            ├── Calendar.assistantBundle
            │   └── Calendar
            ├── ClientFlowService.assistantBundle
            │   └── ClientFlowService
            ├── Contacts.assistantBundle
            │   └── Contacts
            ├── CorrectionsProfilesSync.assistantBundle
            │   └── CorrectionsProfilesSync
            ├── FMF.assistantBundle
            │   └── FMF
            ├── FMIPSSiriBackendPlugin.assistantBundle
            │   └── FMIPSSiriBackendPlugin
            ├── GEO.assistantBundle
            │   └── GEO
            ├── HMAssistant.assistantBundle
            │   └── HMAssistant
            ├── LocaleSettings.assistantBundle
            │   └── LocaleSettings
            ├── Media.assistantBundle
            │   └── Media
            ├── NowPlaying.assistantBundle
            │   └── NowPlaying
            ├── Phone.assistantBundle
            │   └── Phone
            ├── Podcasts.assistantBundle
            │   └── Podcasts
            ├── Reminders.assistantBundle
            │   └── Reminders
            ├── Routine.assistantBundle
            │   └── Routine
            ├── SurfStatusSync.assistantBundle
            │   └── SurfStatusSync
            └── SynapseSyncPlugin.assistantBundle
                └── SynapseSyncPlugin
    └── ControlCenter
        └── Bundles
            ├── AccessibilityGuidedAccessControlCenterModule.bundle
            │   └── AccessibilityGuidedAccessControlCenterModule
            ├── AccessibilityShortcutsModule.bundle
            │   └── AccessibilityShortcutsModule
            ├── AccessibilitySoundDetectionControlCenterModule.bundle
            │   └── AccessibilitySoundDetectionControlCenterModule
            ├── AccessibilityTextSizeModule.bundle
            │   └── AccessibilityTextSizeModule
            ├── AirPlayMirroringModule.bundle
            │   └── AirPlayMirroringModule
            ├── AlarmModule.bundle
            │   └── AlarmModule
            ├── AppearanceModule.bundle
            │   └── AppearanceModule
            └── CalculatorModule.bundle
```

```
    └── CalculatorModule
    └── CameraModule.bundle
        └── CameraModule
    └── CarModeModule.bundle
        └── CarModeModule
    └── ConnectivityModule.bundle
        └── ConnectivityModule
    └── DisplayModule.bundle
        └── DisplayModule
    └── DoNotDisturbModule.bundle
        └── DoNotDisturbModule
    └── FeedbackAssistantModule.bundle
        └── FeedbackAssistantModule
    └── FlashlightModule.bundle
        └── FlashlightModule
    └── HearingAidsModule.bundle
        └── HearingAidsModule
    └── HomeControlCenterCompactModule.bundle
        └── HomeControlCenterCompactModule
    └── HomeControlCenterModule.bundle
        └── HomeControlCenterModule
    └── LowPowerModule.bundle
        └── LowPowerModule
    └── MagnifierModule.bundle
        └── MagnifierModule
    └── MediaControlsAudioModule.bundle
        └── MediaControlsAudioModule
    └── MediaControlsModule.bundle
        └── MediaControlsModule
    └── MuteModule.bundle
        └── MuteModule
    └── OrientationLockModule.bundle
        └── OrientationLockModule
    └── PerformanceTraceModule.bundle
        └── PerformanceTraceModule
    └── QRCodeModule.bundle
        └── QRCodeModule
    └── QuickNoteModule.bundle
        └── QuickNoteModule
    └── SpokenNotificationsModule.bundle
        └── SpokenNotificationsModule
    └── StopwatchModule.bundle
        └── StopwatchModule
    └── TVRemoteModule.bundle
        └── TVRemoteModule
    └── TimerModule.bundle
        └── TimerModule
    └── VoiceMemosModule.bundle
        └── VoiceMemosModule
    └── WalletModule.bundle
        └── WalletModule
└── CoreAccessories
    └── PlugIns
        └── Features
            └── AssistiveTouch-iOS.feature
                └── AssistiveTouch-iOS
```

```
└── BLEPairing-iOS.feature
    └── BLEPairing-iOS
└── Communications-iOS.feature
    └── Communications-iOS
└── HID.feature
    └── HID
└── MediaLibrary-iOS.feature
    └── MediaLibrary-iOS
└── Navigation-iOS.feature
    └── Navigation-iOS
└── NowPlaying-iOS.feature
    └── NowPlaying-iOS
└── OOBBTPairing-iOS.feature
    └── OOBBTPairing-iOS
└── Platform
    ├── BatteryPackAnalytics.platform
    │   └── BatteryPackAnalytics
    ├── IOKit.platform
    │   └── IOKit
    ├── Platform-Bluetooth.platform
    │   └── Platform-Bluetooth
    ├── System.platform
    │   └── System
    └── WiFiSharing.platform
        └── WiFiSharing
└── Transports
    ├── IOAccessoryManager.transport
    │   └── IOAccessoryManager
    └── USBHost.transport
        └── USBHost

```

— CoreServices

```
└── Encodings
    ├── libArabicConverter.dylib
    ├── libCyrillicConverter.dylib
    ├── libGreekConverter.dylib
    ├── libHebrewConverter.dylib
    ├── libJapaneseConverter.dylib
    ├── libKoreanConverter.dylib
    ├── libLatin2Converter.dylib
    ├── libLatin5Converter.dylib
    ├── libLatinSuppConverter.dylib
    ├── libSimplifiedChineseConverter.dylib
    ├── libSymbolConverter.dylib
    ├── libThaiConverter.dylib
    ├── libTraditionalChineseConverter.dylib
    └── libVietnameseConverter.dylib
└── RawCamera.bundle
    └── RawCamera

```

— DataClassMigrators

```
└── DAAccount.migrator
    └── DAAccount
└── FaceTimeMigrator.migrator
    └── FaceTimeMigrator
└── MessagesDataMigrator.migrator
    └── MessagesDataMigrator

```

— Extensions

```
    └── AGXMetalA10.bundle
        └── AGXMetalA10
    └── AGXMetalA11.bundle
        └── AGXMetalA11
    └── AppleHDQGasGaugeControl.kext
        └── PlugIns
            └── AppleHDQGasGaugeHID.plugin
                └── AppleHDQGasGaugeHID
    └── AppleMetalGLRenderer.bundle
        └── AppleMetalGLRenderer
    └── AppleMultitouchSPI.kext
        └── PlugIns
            └── MultitouchHID.plugin
                └── MultitouchHID
    └── AppleSPU.kext
        └── PlugIns
            └── AppleSPULib.plugin
                └── AppleSPULib
    └── IOHIDFamily.kext
        └── PlugIns
            └── IOHIDLlib.plugin
                └── IOHIDLlib
    └── IOUSBDeviceFamily.kext
        └── PlugIns
            └── IOUSBDeviceLib.plugin
                └── IOUSBDeviceLib
    └── Frameworks
        └── ARKit.framework
            └── ARKit
        └── AVFoundation.framework
            └── AVFoundation
                └── Frameworks
                    └── AVFAudio.framework
                        └── AVFAudio
        └── AVKit.framework
            └── AVKit
        └── Accelerate.framework
            └── Accelerate
                └── Frameworks
                    └── vImage.framework
                        └── Libraries
                            └── libCGIInterfaces.dylib
                        └── vImage
                    └── vecLib.framework
                        └── libBLAS.dylib
                        └── libBNNS.dylib
                        └── libLAPACK.dylib
                        └── libLinearAlgebra.dylib
                        └── libQuadrature.dylib
                        └── libSparse.dylib
                        └── libSparseBLAS.dylib
                        └── libvDSP.dylib
                        └── libvMisc.dylib
                        └── vecLib
        └── Accessibility.framework
            └── Accessibility
```

```
    └── Accounts.framework
        └── Accounts
    └── AdServices.framework
        └── AdServices
    └── AdSupport.framework
        └── AdSupport
    └── AddressBook.framework
        └── AddressBook
    └── AddressBookUI.framework
        └── AddressBookUI
    └── AppClip.framework
        └── AppClip
    └── AppTrackingTransparency.framework
        └── AppTrackingTransparency
    └── AssetsLibrary.framework
        └── AssetsLibrary
    └── AudioToolbox.framework
        ├── AudioCodecs
        ├── AudioToolbox
        ├── libAudioDSP.dylib
        ├── libEmbeddedSystemAUs.dylib
        └── libVibeSynthEngine.dylib
    └── AuthenticationServices.framework
        └── AuthenticationServices
    └── AutomaticAssessmentConfiguration.framework
        ├── AutomaticAssessmentConfiguration
        └── Frameworks
            └── AACDependencies.framework
                └── AACDependencies
    └── BackgroundTasks.framework
        └── BackgroundTasks
    └── BusinessChat.framework
        └── BusinessChat
    └── CFNetwork.framework
        └── CFNetwork
    └── CallKit.framework
        └── CallKit
    └── CarPlay.framework
        └── CarPlay
    └── ClassKit.framework
        └── ClassKit
    └── ClockKit.framework
        └── ClockKit
    └── CloudKit.framework
        └── CloudKit
    └── Combine.framework
        └── Combine
    └── Contacts.framework
        └── Contacts
    └── ContactsUI.framework
        └── ContactsUI
    └── CoreAudio.framework
        └── CoreAudio
    └── CoreAudioKit.framework
        └── CoreAudioKit
    └── CoreBluetooth.framework
```

```
    └── CoreBluetooth
    └── CoreData.framework
        └── CoreData
    └── CoreFoundation.framework
        └── CoreFoundation
    └── CoreGraphics.framework
        └── CoreGraphics
    └── CoreHaptics.framework
        └── CoreHaptics
    └── CoreImage.framework
        └── CoreImage
    └── CoreLocation.framework
        └── CoreLocation
    └── CoreMIDI.framework
        └── CoreMIDI
    └── CoreML.framework
        └── CoreML
    └── CoreMedia.framework
        └── CoreMedia
    └── CoreMotion.framework
        └── CoreMotion
    └── CoreNFC.framework
        └── CoreNFC
    └── CoreServices.framework
        └── CoreServices
    └── CoreSpotlight.framework
        └── CoreSpotlight
    └── CoreTelephony.framework
        └── CoreTelephony
            └── Support
                ├── libCommCenterAWDMetrics.dylib
                ├── libCommCenterBase.dylib
                ├── libCommCenterCommandDrivers.dylib
                ├── libCommCenterKCommandDrivers.dylib
                ├── libCommCenterMCommandDrivers.dylib
                └── libSystemDetermination.dylib
    └── CoreText.framework
        └── CoreText
    └── CoreVideo.framework
        └── CoreVideo
    └── CryptoKit.framework
        └── CryptoKit
    └── CryptoTokenKit.framework
        └── CryptoTokenKit
    └── DeveloperToolsSupport.framework
        └── DeveloperToolsSupport
    └── DeviceCheck.framework
        └── DeviceCheck
    └── EventKit.framework
        └── EventKit
    └── EventKitUI.framework
        └── EventKitUI
    └── ExposureNotification.framework
        └── ExposureNotification
    └── ExternalAccessory.framework
        └── ExternalAccessory
```

```
|   └── FileProvider.framework
|       └── FileProvider
|   └── FileProviderUI.framework
|       └── FileProviderUI
|   └── Foundation.framework
|       └── Foundation
|   └── GLKit.framework
|       └── GLKit
|   └── GSS.framework
|       └── GSS
|   └── GameController.framework
|       └── GameController
|   └── GameKit.framework
|       └── GameKit
|   └── GameplayKit.framework
|       └── GameplayKit
|   └── HealthKit.framework
|       └── HealthKit
|   └── HealthKitUI.framework
|       └── HealthKitUI
|   └── HomeKit.framework
|       └── HomeKit
|   └── IOKit.framework
|       └── Versions
|           └── A
|               └── IOKit
|   └── IOSurface.framework
|       └── IOSurface
|   └── IdentityLookup.framework
|       └── IdentityLookup
|   └── IdentityLookupUI.framework
|       └── IdentityLookupUI
|   └── ImageCaptureCore.framework
|       └── ImageCaptureCore
|   └── ImageIO.framework
|       └── ImageIO
|   └── Intents.framework
|       └── Intents
|   └── IntentsUI.framework
|       └── IntentsUI
|   └── JavaScriptCore.framework
|       └── JavaScriptCore
|   └── LinkPresentation.framework
|       └── LinkPresentation
|   └── LocalAuthentication.framework
|       └── LocalAuthentication
|           └── Support
|               ├── DaemonUtils.framework
|               |   └── DaemonUtils
|               ├── MechanismBase.framework
|               |   └── MechanismBase
|               ├── ModuleBase.framework
|               |   └── ModuleBase
|               └── SharedUtils.framework
|                   └── SharedUtils
|   └── MLCompute.framework
```

```
    └── MLCompute
└── MapKit.framework
    └── MapKit
└── MediaAccessibility.framework
    └── MediaAccessibility
└── MediaPlayer.framework
    └── MediaPlayer
└── MediaSetup.framework
    └── MediaSetup
└── MediaToolbox.framework
    ├── MediaToolbox
    └── Support
        └── libSTS-N.dylib
└── MessageUI.framework
    └── MessageUI
└── Messages.framework
    └── Messages
└── Metal.framework
    └── Metal
└── MetalKit.framework
    └── MetalKit
└── MetalPerformanceShaders.framework
    ├── Frameworks
    │   ├── MPSCore.framework
    │   │   └── MPSCore
    │   ├── MPSImage.framework
    │   │   └── MPSImage
    │   ├── MPSMatrix.framework
    │   │   └── MPSMatrix
    │   ├── MPSNDArray.framework
    │   │   └── MPSNDArray
    │   ├── MPSNeuralNetwork.framework
    │   │   └── MPSNeuralNetwork
    │   └── MPSRayIntersector.framework
    │       └── MPSRayIntersector
    └── MetalPerformanceShaders
└── MetalPerformanceShadersGraph.framework
    └── MetalPerformanceShadersGraph
└── MetricKit.framework
    └── MetricKit
└── MobileCoreServices.framework
    └── MobileCoreServices
└── ModelIO.framework
    └── ModelIO
└── MultipeerConnectivity.framework
    └── MultipeerConnectivity
└── NaturalLanguage.framework
    └── NaturalLanguage
└── NearbyInteraction.framework
    └── NearbyInteraction
└── Network.framework
    └── Network
└── NetworkExtension.framework
    └── NetworkExtension
└── NewsstandKit.framework
    └── NewsstandKit
```

```
|   └── NotificationCenter.framework
|       └── NotificationCenter
|   └── OSLog.framework
|       └── OSLog
|   └── OpenAL.framework
|       └── OpenAL
|   └── OpenGL.framework
|       └── GLEngine.bundle
|           └── GLEngine
|       └── OpenGL
|   └── libCVMSPluginSupport.dylib
|   └── libCoreFSCache.dylib
|   └── libCoreVMClient.dylib
|   └── libGFXShared.dylib
|   └── libGLImage.dylib
|   └── libGLProgrammability.dylib
|   └── libGLVMPPlugin.dylib
|   └── PDFKit.framework
|       └── PDFKit
|   └── PassKit.framework
|       └── PassKit
|   └── PencilKit.framework
|       └── PencilKit
|   └── Photos.framework
|       └── Photos
|   └── PhotosUI.framework
|       └── PhotosUI
|   └── PushKit.framework
|       └── PushKit
|   └── QuartzCore.framework
|       └── QuartzCore
|   └── QuickLook.framework
|       └── QuickLook
|   └── QuickLookThumbnailing.framework
|       └── QuickLookThumbnailing
|   └── RealityKit.framework
|       └── RealityKit
|   └── ReplayKit.framework
|       └── ReplayKit
|   └── SafariServices.framework
|       └── SafariServices
|   └── SceneKit.framework
|       └── SceneKit
|   └── ScreenTime.framework
|       └── ScreenTime
|   └── Security.framework
|       └── Security
|   └── SensorKit.framework
|       └── SensorKit
|   └── Social.framework
|       └── Social
|   └── SoundAnalysis.framework
|       └── SoundAnalysis
|   └── Speech.framework
|       └── Speech
|   └── SpriteKit.framework
```

```
    └── SpriteKit
    └── StoreKit.framework
        └── StoreKit
    └── SwiftUI.framework
        └── SwiftUI
    └── SystemConfiguration.framework
        └── SystemConfiguration
    └── Twitter.framework
        └── Twitter
    └── UIKit.framework
        └── UIKit
    └── UniformTypeIdentifiers.framework
        └── UniformTypeIdentifiers
    └── UserNotifications.framework
        └── UserNotifications
    └── UserNotificationsUI.framework
        └── UserNotificationsUI
    └── VideoSubscriberAccount.framework
        └── VideoSubscriberAccount
    └── VideoToolbox.framework
        └── VideoToolbox
    └── Vision.framework
        └── Vision
            └── libfaceCore.dylib
            └── liblowLevelDetectors.dylib
    └── VisionKit.framework
        └── VisionKit
    └── WatchConnectivity.framework
        └── WatchConnectivity
    └── WatchKit.framework
        └── WatchKit
    └── WebKit.framework
        └── WebKit
    └── WidgetKit.framework
        └── WidgetKit
    └── _AVKit_SwiftUI.framework
        └── _AVKit_SwiftUI
    └── _AuthenticationServices_SwiftUI.framework
        └── _AuthenticationServices_SwiftUI
    └── _HomeKit_SwiftUI.framework
        └── _HomeKit_SwiftUI
    └── _MapKit_SwiftUI.framework
        └── _MapKit_SwiftUI
    └── _QuickLook_SwiftUI.framework
        └── _QuickLook_SwiftUI
    └── _SceneKit_SwiftUI.framework
        └── _SceneKit_SwiftUI
    └── _SpriteKit_SwiftUI.framework
        └── _SpriteKit_SwiftUI
    └── _StoreKit_SwiftUI.framework
        └── _StoreKit_SwiftUI
    └── iAd.framework
        └── iAd
    └── HIDPlugins
        └── AppleSPUAccCompassPlugin.plugin
            └── AppleSPUAccCompassPlugin
```

```
    └── AppleSPUHIDStatistics.plugin
        └── AppleSPUHIDStatistics
    └── AttentionAwarenessFilter.plugin
        └── AttentionAwarenessFilter
    └── IOHIDEEventProcessorFilter.plugin
        └── IOHIDEEventProcessorFilter
    └── IOHIDEEventSystemStatistics.plugin
        └── IOHIDEEventSystemStatistics
    └── IOHIDKeyboardFilter.plugin
        └── IOHIDKeyboardFilter
    └── IOHIDPointerScrollFilter.plugin
        └── IOHIDPointerScrollFilter
    └── IOHIDT8027USBSessionFilter.plugin
        └── IOHIDT8027USBSessionFilter
└── Health
    └── FeedItemPlugins
        ├── AppRecommendations.healthplugin
            └── AppRecommendations
        ├── Categories.healthplugin
            └── Categories
        ├── HealthRecords.healthplugin
            └── HealthRecords
        ├── HearingAppPlugin.healthplugin
            └── HearingAppPlugin
        ├── Heart.healthplugin
            └── Heart
        ├── HighlightAlerts.healthplugin
            └── HighlightAlerts
        ├── Highlights.healthplugin
            └── Highlights
        ├── MenstrualCyclesAppPlugin.healthplugin
            └── MenstrualCyclesAppPlugin
        ├── OrganDonation.healthplugin
            └── OrganDonation
        ├── Profiles.healthplugin
            └── Profiles
        ├── ResearchApp.healthplugin
            └── ResearchApp
        ├── RespiratoryHealthAppPlugin.healthplugin
            └── RespiratoryHealthAppPlugin
        ├── Safety.healthplugin
            └── Safety
        ├── SleepHealthAppPlugin.healthplugin
            └── SleepHealthAppPlugin
        └── Snippets.healthplugin
            └── Snippets
└── Plugins
    ├── ActivityAchievementsPlugin.bundle
        └── ActivityAchievementsPlugin
    ├── ActivitySharingPlugin.bundle
        └── ActivitySharingPlugin
    ├── CompanionHealthPlugin.bundle
        └── CompanionHealthPlugin
    ├── HealthAppPlugin.bundle
        └── HealthAppPlugin
    └── HealthRecordsPlugin.bundle
```

```
    └── HealthRecordsPlugin
        └── HeartRateDaemonPlugin.bundle
            └── HeartRateDaemonPlugin
        └── MenstrualCyclesDaemonPlugin.bundle
            └── MenstrualCyclesDaemonPlugin
        └── RespiratoryHealthDaemonPlugin.bundle
            └── RespiratoryHealthDaemonPlugin
        └── SleepHealthDaemonPlugin.bundle
            └── SleepHealthDaemonPlugin
    └── MediaCapture
        └── H10ISP.mediacapture
        └── H9ISP.mediacapture
    └── Messages
        └── PlugIns
            └── FaceTime.imservice
                └── FaceTime
            └── SMS.imservice
                └── SMS
            └── iMessage.imservice
                └── iMessage
    └── NanoTimeKit
        └── ComplicationBundles
            └── MessagesComplication.bundle
                └── MessagesComplication
            └── NanoBooksComplicationsCompanion.bundle
                └── NanoBooksComplicationsCompanion
            └── NanoCompassComplications.bundle
                └── NanoCompassComplications
            └── NanoMenstrualCyclesComplication.bundle
                └── NanoMenstrualCyclesComplication
            └── NanoSleepComplication.bundle
                └── NanoSleepComplication
            └── WorldClockComplications.bundle
                └── WorldClockComplications
    └── PreferenceBundles
        └── AirPortSettings.bundle
            └── AirPortSettings
        └── BluetoothSettings.bundle
            └── BluetoothSettings
        └── CarrierSettings.bundle
            └── CarrierSettings
        └── ContactsSettings.bundle
            └── ContactsSettings
        └── EDGESettings.bundle
            └── EDGESettings
        └── KeyboardSettings.bundle
            └── KeyboardSettings
        └── ManagedConfigurationUI.bundle
            └── ManagedConfigurationUI
        └── MobileCalSettings.bundle
            └── MobileCalSettings
        └── MobilePhoneSettings.bundle
            └── MobilePhoneSettings
        └── MobileSafariSettings.bundle
            └── MobileSafariSettings
        └── MobileSlideShowSettings.bundle
```

```
    └── MobileSlideShowSettings
    └── MobileStoreSettings.bundle
        └── MobileStoreSettings
    └── ScheduleSettings.bundle
        └── ScheduleSettings
    └── VPNPreferences.bundle
        └── VPNPreferences
    └── WirelessModemSettings.bundle
        └── WirelessModemSettings
└── PrivateFrameworks
    ├── AACCore.framework
    |   └── AACCore
    ├── ABMHelper.framework
    |   └── ABMHelper
    ├── ACTFramework.framework
    |   └── ACTFramework
    ├── AFKUser.framework
    |   └── AFKUser
    ├── AGXCompilerConnection-S2A8.framework
    |   └── AGXCompilerConnection-S2A8
    ├── AGXCompilerCore-S2A8.framework
    |   └── AGXCompilerCore-S2A8
    ├── AGXCompilerCore.framework
    |   └── AGXCompilerCore
    ├── AGXGPURawCounter.framework
    |   └── AGXGPURawCounter
    ├── AMPCoreUI.framework
    |   └── AMPCoreUI
    ├── ANECompiler.framework
    |   └── ANECompiler
    ├── ANEServices.framework
    |   └── ANEServices
    ├── AOPHaptics.framework
    |   └── AOPHaptics
    ├── AOSKit.framework
    |   └── AOSKit
    ├── APFS.framework
    |   └── APFS
    ├── APTTransport.framework
    |   └── APTTransport
    ├── ARKitCore.framework
    |   └── ARKitCore
    ├── ASEProcessing.framework
    |   └── ASEProcessing
    ├── ASOctaneSupport.framework
    |   └── ASOctaneSupport
    ├── ATFoundation.framework
    |   └── ATFoundation
    └── AVConference.framework
        ├── AVConference
        └── Frameworks
            ├── GKSPerformance.framework
            |   └── GKSPerformance
            ├── ICE.framework
            |   └── ICE
            └── LegacyHandle.framework
```

```
    └── LegacyHandle
    └── SimpleKeyExchange.framework
        └── SimpleKeyExchange
    └── ViceroyTrace.framework
        └── ViceroyTrace
    └── snatmap.framework
        └── snatmap
└── AVFCapture.framework
    └── AVFCapture
└── AVFCore.framework
    └── AVFCore
└── AXAggregateStatisticsServices.framework
    └── AXAggregateStatisticsServices
└── AXAssetLoader.framework
    └── AXAssetLoader
└── AXContainerServices.framework
    └── AXContainerServices
└── AXCoreUtilities.framework
    └── AXCoreUtilities
└── AXElementInteraction.framework
    └── AXElementInteraction
└── AXFrontBoardUtils.framework
    └── AXFrontBoardUtils
└── AXIDSServices.framework
    └── AXIDSServices
└── AXLocalizationCaptionService.framework
    └── AXLocalizationCaptionService
└── AXMediaUtilities.framework
    └── AXMediaUtilities
└── AXRuntime.framework
    └── AXRuntime
└── AXSpeakFingerManager.framework
    └── AXSpeakFingerManager
└── AXSpeechAssetServices.framework
    └── AXSpeechAssetServices
└── AXSpringBoardServerInstance.framework
    └── AXSpringBoardServerInstance
└── AXTapToSpeakTime.framework
    └── AXTapToSpeakTime
└── AccessibilityFocusEngine.framework
    └── AccessibilityFocusEngine
└── AccessibilityPhysicalInteraction.framework
    └── AccessibilityPhysicalInteraction
└── AccessibilityPlatformTranslation.framework
    └── AccessibilityPlatformTranslation
└── AccessibilitySharedSupport.framework
    └── AccessibilitySharedSupport
└── AccessibilityUI.framework
    └── AccessibilityUI
└── AccessibilityUIService.framework
    └── AccessibilityUIService
└── AccessibilityUIShared.framework
    └── AccessibilityUIShared
└── AccessibilityUIUtilities.framework
    └── AccessibilityUIUtilities
└── AccessibilityUIViewServices.framework
```

```
    └─ AccessibilityUIViewServices
    └─ AccessibilityUtilities.framework
        └─ AccessibilityUtilities
    └─ AccessoryAssistiveTouch.framework
        └─ AccessoryAssistiveTouch
    └─ AccessoryAudio.framework
        └─ AccessoryAudio
    └─ AccessoryBLEPairing.framework
        └─ AccessoryBLEPairing
    └─ AccessoryCommunications.framework
        └─ AccessoryCommunications
    └─ AccessoryComponentAuth.framework
        └─ AccessoryComponentAuth
    └─ AccessoryHID.framework
        └─ AccessoryHID
    └─ AccessoryMediaLibrary.framework
        └─ AccessoryMediaLibrary
    └─ AccessoryNavigation.framework
        └─ AccessoryNavigation
    └─ AccessoryNowPlaying.framework
        └─ AccessoryNowPlaying
    └─ AccessoryOOBBTPairing.framework
        └─ AccessoryOOBBTPairing
    └─ AccessoryVoiceOver.framework
        └─ AccessoryVoiceOver
    └─ AccessoryiAP2Shim.framework
        └─ AccessoryiAP2Shim
    └─ AccountNotification.framework
        └─ AccountNotification
    └─ AccountsDaemon.framework
        └─ AccountsDaemon
    └─ AccountsUI.framework
        └─ AccountsUI
    └─ ActionKit.framework
        └─ ActionKit
    └─ ActionKitUI.framework
        └─ ActionKitUI
    └─ ActionPredictionHeuristics.framework
        └─ ActionPredictionHeuristics
    └─ ActionPredictionHeuristicsInternal.framework
        └─ ActionPredictionHeuristicsInternal
    └─ ActivityAchievements.framework
        └─ ActivityAchievements
    └─ ActivityAchievementsDaemon.framework
        └─ ActivityAchievementsDaemon
    └─ ActivityAchievementsUI.framework
        └─ ActivityAchievementsUI
    └─ ActivityRingsUI.framework
        └─ ActivityRingsUI
    └─ ActivitySharing.framework
        └─ ActivitySharing
    └─ ActivitySharingUI.framework
        └─ ActivitySharingUI
    └─ AdAnalytics.framework
        └─ AdAnalytics
    └─ AdCore.framework
```

```
    └── AdCore
    └── AdID.framework
        └── AdID
    └── AdPlatforms.framework
        └── AdPlatforms
    └── AdPlatformsCommon.framework
        └── AdPlatformsCommon
    └── AdPlatformsCommonUI.framework
        └── AdPlatformsCommonUI
    └── AdPlatformsInternal.framework
        └── AdPlatformsInternal
    └── AddressBookLegacy.framework
        └── AddressBookLegacy
    └── AdminLite.framework
        └── AdminLite
    └── AggregateDictionary.framework
        └── AggregateDictionary
    └── AggregateDictionaryHistory.framework
        └── AggregateDictionaryHistory
    └── AirPlayReceiver.framework
        └── AirPlayReceiver
    └── AirPlayRoutePrediction.framework
        └── AirPlayRoutePrediction
    └── AirPlaySender.framework
        └── AirPlaySender
    └── AirPlaySupport.framework
        └── AirPlaySupport
    └── AirPlaySync.framework
        └── AirPlaySync
    └── AirPortAssistant.framework
        └── AirPortAssistant
    └── AirTraffic.framework
        └── AirTraffic
    └── AirTrafficDevice.framework
        └── AirTrafficDevice
    └── AlgosScoreFramework.framework
        └── AlgosScoreFramework
    └── AnnotationKit.framework
        └── AnnotationKit
    └── Announce.framework
        └── Announce
    └── AnnounceSiriExtensions.framework
        └── AnnounceSiriExtensions
    └── AppAnalytics.framework
        └── AppAnalytics
    └── AppAttestInternal.framework
        └── AppAttestInternal
    └── AppC3D.framework
        └── AppC3D
    └── AppConduit.framework
        └── AppConduit
    └── AppLaunchStats.framework
        └── AppLaunchStats
    └── AppNotificationsLoggingClient.framework
        └── AppNotificationsLoggingClient
    └── AppPredictionClient.framework
```

```
    └── AppPredictionClient
    └── AppPredictionInternal.framework
        └── AppPredictionInternal
    └── AppPredictionUI.framework
        └── AppPredictionUI
    └── AppPredictionUIFoundation.framework
        └── AppPredictionUIFoundation
    └── AppPredictionUIWidget.framework
        └── AppPredictionUIWidget
    └── AppPredictionWidget.framework
        └── AppPredictionWidget
    └── AppPreferenceClient.framework
        └── AppPreferenceClient
    └── AppSSO.framework
        └── AppSSO
    └── AppSSOCore.framework
        └── AppSSOCore
    └── AppSSOKerberos.framework
        └── AppSSOKerberos
    └── AppSSOUI.framework
        └── AppSSOUI
    └── AppServerSupport.framework
        └── AppServerSupport
    └── AppStoreComponents.framework
        └── AppStoreComponents
    └── AppStoreDaemon.framework
        └── AppStoreDaemon
    └── AppStoreFoundation.framework
        └── AppStoreFoundation
    └── AppStoreKit.framework
        └── AppStoreKit
    └── AppStoreOverlays.framework
        └── AppStoreOverlays
    └── AppStoreUI.framework
        └── AppStoreUI
    └── AppSupport.framework
        └── AppSupport
    └── AppSupportUI.framework
        └── AppSupportUI
    └── AppleAccount.framework
        └── AppleAccount
    └── AppleAccountUI.framework
        └── AppleAccountUI
    └── AppleBasebandManager.framework
        └── AppleBasebandManager
    └── AppleBasebandServices.framework
        └── AppleBasebandServices
    └── AppleCV3D.framework
        └── AppleCV3D
    └── AppleCV3DHA.framework
        └── AppleCV3DHA
    └── AppleCV3DMOVKit.framework
        └── AppleCV3DMOVKit
    └── AppleCV3DModels.framework
        └── AppleCV3DModels
    └── AppleCVA.framework
```

```
    └── AppleCVA
    └── AppleCVAPhoto.framework
        └── AppleCVAPhoto
    └── AppleDepth.framework
        └── AppleDepth
    └── AppleFSCompression.framework
        └── AppleFSCompression
    └── AppleFirmwareUpdate.framework
        └── AppleFirmwareUpdate
    └── AppleHIDTransportSupport.framework
        └── AppleHIDTransportSupport
    └── AppleIDAAuthSupport.framework
        └── AppleIDAAuthSupport
    └── AppleIDSSOAuthentication.framework
        └── AppleIDSSOAuthentication
    └── AppleJPEG.framework
        └── AppleJPEG
    └── AppleLDAP.framework
        └── AppleLDAP
    └── AppleMediaServices.framework
        └── AppleMediaServices
    └── AppleMediaServicesUI.framework
        └── AppleMediaServicesUI
    └── AppleMediaServicesUIDynamic.framework
        └── AppleMediaServicesUIDynamic
    └── AppleNVMe.framework
        └── AppleNVMe
    └── AppleNeuralEngine.framework
        └── AppleNeuralEngine
    └── ApplePDPHelper.framework
        └── ApplePDPHelper
    └── ApplePushService.framework
        └── ApplePushService
    └── AppleSRP.framework
        └── AppleSRP
    └── AppleSauce.framework
        └── AppleSauce
    └── AppleServiceToolkit.framework
        └── AppleServiceToolkit
    └── AskPermission.framework
        └── AskPermission
    └── AssertionServices.framework
        └── AssertionServices
    └── AssetCacheServices.framework
        └── AssetCacheServices
    └── AssetCacheServicesExtensions.framework
        └── AssetCacheServicesExtensions
    └── AssetExplorer.framework
        └── AssetExplorer
    └── AssetViewer.framework
        └── AssetViewer
    └── AssetsLibraryServices.framework
        └── AssetsLibraryServices
    └── AssistantCardServiceSupport.framework
        └── AssistantCardServiceSupport
    └── AssistantServices.framework
```

```
    └─ AssistantServices
    └─ AssistantSettingsSupport.framework
        └─ AssistantSettingsSupport
    └─ AssistantUI.framework
        └─ AssistantUI
    └─ AttentionAwareness.framework
        └─ AttentionAwareness
    └─ AttributeGraph.framework
        └─ AttributeGraph
    └─ AudioAnalytics.framework
        └─ AudioAnalytics
    └─ AudioDataAnalysis.framework
        └─ AudioDataAnalysis
    └─ AudioPasscode.framework
        └─ AudioPasscode
    └─ AudioServerApplication.framework
        └─ AudioServerApplication
    └─ AudioServerDriver.framework
        └─ AudioServerDriver
    └─ AudioSession.framework
        └─ AudioSession
    └─ AudioToolboxCore.framework
        └─ AudioToolboxCore
    └─ AudioTransportCommon.framework
        └─ AudioTransportCommon
    └─ AuthKit.framework
        └─ AuthKit
    └─ AuthKitUI.framework
        └─ AuthKitUI
    └─ AutoBugCaptureCore.framework
        └─ AutoBugCaptureCore
    └─ AutoLoop.framework
        └─ AutoLoop
    └─ AutomationSuggestions.framework
        └─ AutomationSuggestions
    └─ AvatarKit.framework
        └─ AvatarKit
    └─ AvatarUI.framework
        └─ AvatarUI
    └─ BackBoardHIDEEventFoundation.framework
        └─ BackBoardHIDEEventFoundation
    └─ BackBoardHIDEEventProcessors.framework
        └─ BackBoardHIDEEventProcessors
    └─ BackBoardServices.framework
        └─ BackBoardServices
    └─ BackgroundTaskAgent.framework
        └─ BackgroundTaskAgent
    └─ BannerKit.framework
        └─ BannerKit
    └─ BarcodeSupport.framework
        └─ BarcodeSupport
    └─ BaseBoard.framework
        └─ BaseBoard
    └─ BaseBoardUI.framework
        └─ BaseBoardUI
    └─ BatteryCenter.framework
```

```
    └── BatteryCenter
    └── BatteryCenterUI.framework
        └── BatteryCenterUI
    └── BehaviorMiner.framework
        └── BehaviorMiner
    └── BioKitAggD.framework
        └── BioKitAggD
    └── BiomeFoundation.framework
        └── BiomeFoundation
    └── BiomePubSub.framework
        └── BiomePubSub
    └── BiomeStorage.framework
        └── BiomeStorage
    └── BiomeStreams.framework
        └── BiomeStreams
    └── BiometricKit.framework
        └── BiometricKit
    └── BiometricKitUI.framework
        └── BiometricKitUI
    └── Frameworks
        ├── Fluid.framework
        │   └── Fluid
        └── MTLSpline.framework
            └── MTLSpline
    └── BiometricSupport.framework
        └── BiometricSupport
    └── BlastDoor.framework
        └── BlastDoor
    └── BluetoothAudio.framework
        └── BluetoothAudio
    └── BluetoothManager.framework
        └── BluetoothManager
    └── BluetoothServices.framework
        └── BluetoothServices
    └── BluetoothServicesUI.framework
        └── BluetoothServicesUI
    └── BoardServices.framework
        └── BoardServices
    └── Bom.framework
        └── Bom
    └── BookCoverUtility.framework
        └── BookCoverUtility
    └── BookDataStore.framework
        └── BookDataStore
    └── BookLibrary.framework
        └── BookLibrary
    └── BookUtility.framework
        └── BookUtility
    └── BrailleTranslation.framework
        └── BrailleTranslation
    └── BridgeCommons.framework
        └── BridgeCommons
    └── BridgePreferences.framework
        └── BridgePreferences
    └── BridgeReporting.framework
        └── BridgeReporting
```

```
    └── BrightnessControl.framework
        └── BrightnessControl
    └── BrookDataCollection.framework
        └── BrookDataCollection
    └── BrookServices.framework
        └── BrookServices
    └── BulletinBoard.framework
        └── BulletinBoard
    └── BulletinDistributorCompanion.framework
        └── BulletinDistributorCompanion
    └── BusinessChatService.framework
        └── BusinessChatService
    └── ButtonResolver.framework
        └── ButtonResolver
    └── C2.framework
        └── C2
    └── CARDNDUI.framework
        └── CARDNDUI
    └── CDDataAccess.framework
        └── CDDataAccess
        └── Frameworks
            ├── DADaemonSupport.framework
            │   └── DADaemonSupport
            ├── DACalDAV.framework
            │   └── DACalDAV
            ├── DACoreDAVGleue.framework
            │   └── DACoreDAVGleue
            └── DADaemonSupport.framework
                └── DADaemonSupport
    └── CDDataAccessExpress.framework
        └── CDDataAccessExpress
    └── CMCCapture.framework
        └── CMCCapture
    └── CMCCaptureCore.framework
        └── CMCCaptureCore
    └── CPAalytics.framework
        └── CPAalytics
    └── CPMLBestShim.framework
        └── CPMLBestShim
    └── CPMS.framework
        └── CPMS
    └── CTCarrierSpace.framework
        └── CTCarrierSpace
    └── CTCarrierSpaceUI.framework
        └── CTCarrierSpaceUI
    └── CVNLP.framework
        └── CVNLP
    └── CacheDelete.framework
        └── CacheDelete
    └── CalDAV.framework
        └── CalDAV
    └── Calculate.framework
        └── Calculate
    └── CalendarDaemon.framework
        └── CalendarDaemon
    └── CalendarDatabase.framework
        └── CalendarDatabase
    └── CalendarFoundation.framework
```

```
    └── CalendarFoundation
    └── CalendarNotification.framework
        └── CalendarNotification
    └── CalendarUIKit.framework
        └── CalendarUIKit
    └── CalendarWidget.framework
        └── CalendarWidget
    └── CallHistory.framework
        └── CallHistory
    └── CameraEditKit.framework
        └── CameraEditKit
    └── CameraEffectsKit.framework
        └── CameraEffectsKit
    └── CameraImagingFramework.framework
        └── CameraImagingFramework
    └── CameraKit.framework
        └── CameraKit
    └── CameraUI.framework
        └── CameraUI
    └── CaptiveNetwork.framework
        └── CaptiveNetwork
    └── CarKit.framework
        └── CarKit
    └── CarPlayServices.framework
        └── CarPlayServices
    └── CarPlaySupport.framework
        └── CarPlaySupport
    └── CarPlayUI.framework
        └── CarPlayUI
    └── CarPlayUIServices.framework
        └── CarPlayUIServices
    └── CardKit.framework
        └── CardKit
    └── CardServices.framework
        └── CardServices
    └── Cards.framework
        └── Cards
    └── Catalyst.framework
        └── Catalyst
    └── Categories.framework
        └── Categories
    └── Celestial.framework
        └── Celestial
    └── CellularBridgeUI.framework
        └── CellularBridgeUI
    └── CellularPlanManager.framework
        └── CellularPlanManager
    └── CertInfo.framework
        └── CertInfo
    └── CertUI.framework
        └── CertUI
    └── ChatKit.framework
        └── ChatKit
    └── CheckerBoardServices.framework
        └── CheckerBoardServices
    └── ChronoCore.framework
```

```
    └── ChronoCore
    └── ChronoKit.framework
        └── ChronoKit
    └── ChronoServices.framework
        └── ChronoServices
    └── ChronoUIServices.framework
        └── ChronoUIServices
    └── ChunkingLibrary.framework
        └── ChunkingLibrary
    └── ClassKitUI.framework
        └── ClassKitUI
    └── ClassroomKit.framework
        └── ClassroomKit
    └── ClipServices.framework
        └── ClipServices
    └── ClipUIServices.framework
        └── ClipUIServices
    └── ClockComplications.framework
        └── ClockComplications
    └── ClockKitUI.framework
        └── ClockKitUI
    └── CloudDocs.framework
        └── CloudDocs
    └── CloudDocsDaemon.framework
        └── CloudDocsDaemon
    └── CloudDocsUI.framework
        └── CloudDocsUI
    └── CloudKitCode.framework
        └── CloudKitCode
    └── CloudKitCodeProtobuf.framework
        └── CloudKitCodeProtobuf
    └── CloudKitDaemon.framework
        └── CloudKitDaemon
    └── CloudMediaServicesInterfaceKit.framework
        └── CloudMediaServicesInterfaceKit
    └── CloudPhotoLibrary.framework
        └── CloudPhotoLibrary
    └── CloudPhotoServices.framework
        └── CloudPhotoServices
    └── CloudServices.framework
        └── CloudServices
    └── Coherence.framework
        └── Coherence
    └── ColorSync.framework
        └── ColorSync
    └── CombineCocoa.framework
        └── CombineCocoa
    └── CommonAuth.framework
        └── CommonAuth
    └── CommonUtilities.framework
        └── CommonUtilities
    └── CommunicationsFilter.framework
        └── CommunicationsFilter
    └── CommunicationsSetupUI.framework
        └── CommunicationsSetupUI
    └── CompanionCamera.framework
```

```
    └── CompanionCamera
    └── CompanionHealthDaemon.framework
        └── CompanionHealthDaemon
    └── CompanionSync.framework
        └── CompanionSync
    └── CompassUI.framework
        └── CompassUI
    └── ComplicationDisplay.framework
        └── ComplicationDisplay
    └── ConfigurationEngineModel.framework
        └── ConfigurationEngineModel
    └── ConstantClasses.framework
        └── ConstantClasses
    └── ContactsAssistantServices.framework
        └── ContactsAssistantServices
    └── ContactsAutocomplete.framework
        └── ContactsAutocomplete
    └── ContactsAutocompleteUI.framework
        └── ContactsAutocompleteUI
    └── ContactsDonation.framework
        └── ContactsDonation
    └── ContactsDonationFeedback.framework
        └── ContactsDonationFeedback
    └── ContactsFoundation.framework
        └── ContactsFoundation
    └── ContactsUICore.framework
        └── ContactsUICore
    └── ContentKit.framework
        └── ContentKit
    └── ContextKit.framework
        └── ContextKit
    └── ContextKitExtraction.framework
        └── ContextKitExtraction
    └── ContinuousDialogManagerService.framework
        └── ContinuousDialogManagerService
    └── ControlCenterServices.framework
        └── ControlCenterServices
    └── ControlCenterUI.framework
        └── ControlCenterUI
    └── ControlCenterUIKit.framework
        └── ControlCenterUIKit
    └── ConversationKit.framework
        └── ConversationKit
    └── CoreAUC.framework
        └── CoreAUC
    └── CoreAccessories.framework
        └── CoreAccessories
    └── CoreAnalytics.framework
        └── CoreAnalytics
    └── CoreAppleCVA.framework
        └── CoreAppleCVA
    └── CoreAutoLayout.framework
        └── CoreAutoLayout
    └── CoreBrightness.framework
        └── CoreBrightness
    └── CoreCDP.framework
```

```
    └── CoreCDP
        ├── CoreCDPInternal.framework
        │   └── CoreCDPInternal
        ├── CoreCDPUI.framework
        │   └── CoreCDPUI
        ├── CoreCDPUIInternal.framework
        │   └── CoreCDPUIInternal
        ├── CoreCapture.framework
        │   └── CoreCapture
        ├── CoreCaptureControl.framework
        │   └── CoreCaptureControl
        ├── CoreCaptureDaemon.framework
        │   └── CoreCaptureDaemon
        ├── CoreChart.framework
        │   └── CoreChart
        ├── CoreDAV.framework
        │   └── CoreDAV
        ├── CoreDuet.framework
        │   └── CoreDuet
        ├── CoreDuetContext.framework
        │   └── CoreDuetContext
        ├── CoreDuetDaemonProtocol.framework
        │   └── CoreDuetDaemonProtocol
        ├── CoreDuetDataModel.framework
        │   └── CoreDuetDataModel
        ├── CoreDuetDebugLogging.framework
        │   └── CoreDuetDebugLogging
        ├── CoreDuetStatistics.framework
        │   └── CoreDuetStatistics
        ├── CoreDuetSync.framework
        │   └── CoreDuetSync
        ├── CoreEmoji.framework
        │   └── CoreEmoji
        ├── CoreFollowUp.framework
        │   └── CoreFollowUp
        ├── CoreFollowUpUI.framework
        │   └── CoreFollowUpUI
        ├── CoreGPSTest.framework
        │   └── CoreGPSTest
        ├── CoreHAP.framework
        │   └── CoreHAP
        ├── CoreHandwriting.framework
        │   └── CoreHandwriting
        ├── CoreIDV.framework
        │   └── CoreIDV
        ├── CoreIDVShared.framework
        │   └── CoreIDVShared
        ├── CoreIndoor.framework
        │   └── CoreIndoor
        ├── CoreKnowledge.framework
        │   └── CoreKnowledge
        ├── CoreLocationProtobuf.framework
        │   └── CoreLocationProtobuf
        ├── CoreMaterial.framework
        │   └── CoreMaterial
        └── CoreMediaStream.framework
```

```
    └── CoreMediaStream
    └── CoreNLP.framework
        └── CoreNLP
    └── CoreNameParser.framework
        └── CoreNameParser
    └── CoreNavigation.framework
        └── CoreNavigation
    └── CoreOptimization.framework
        └── CoreOptimization
    └── CorePDF.framework
        └── CorePDF
    └── CoreParsec.framework
        └── CoreParsec
    └── CorePhoneNumbers.framework
        └── CorePhoneNumbers
    └── CorePrediction.framework
        └── CorePrediction
    └── CoreRE.framework
        └── CoreRE
    └── CoreRecents.framework
        └── CoreRecents
    └── CoreRecognition.framework
        └── CoreRecognition
    └── CoreRoutine.framework
        └── CoreRoutine
    └── CoreSDB.framework
        └── CoreSDB
    └── CoreSVG.framework
        └── CoreSVG
    └── CoreServicesInternal.framework
        └── CoreServicesInternal
    └── CoreServicesStore.framework
        └── CoreServicesStore
    └── CoreSpeech.framework
        └── CoreSpeech
    └── CoreSuggestions.framework
        └── CoreSuggestions
    └── CoreSuggestionsInternals.framework
        └── CoreSuggestionsInternals
    └── CoreSuggestionsML.framework
        └── CoreSuggestionsML
    └── CoreSuggestionsUI.framework
        └── CoreSuggestionsUI
    └── CoreSymbolication.framework
        └── CoreSymbolication
    └── CoreThemeDefinition.framework
        └── CoreThemeDefinition
    └── CoreThread.framework
        └── CoreThread
    └── CoreTime.framework
        └── CoreTime
    └── CoreUARP.framework
        └── CoreUARP
    └── CoreUI.framework
        └── CoreUI
    └── CoreUtils.framework
```

```
    └── CoreUtils
    └── CoreUtilsSwift.framework
        └── CoreUtilsSwift
    └── CoreUtilsUI.framework
        └── CoreUtilsUI
    └── CoreWiFi.framework
        └── CoreWiFi
    └── Cornobble.framework
        └── Cornobble
    └── CourseKit.framework
        └── CourseKit
    └── CoverSheet.framework
        └── CoverSheet
    └── CrashReporterSupport.framework
        └── CrashReporterSupport
    └── CryptoKitCBrigding.framework
        └── CryptoKitCBrigding
    └── CryptoKitPrivate.framework
        └── CryptoKitPrivate
    └── DAAPKit.framework
        └── DAAPKit
    └── DAEASOAuthFramework.framework
        └── DAEASOAuthFramework
    └── DASDaemon.framework
        └── DASDaemon
    └── DCIMServices.framework
        └── DCIMServices
    └── DataAccess.framework
        └── DataAccess
            └── Frameworks
                ├── DACalDAV.framework
                │   └── DACalDAV
                ├── DACardDAV.framework
                │   └── DACardDAV
                ├── DACoreDAVGlu.e.framework
                │   └── DACoreDAVGlu
                ├── DAIMAPNotes.framework
                │   └── DAIMAPNotes
                ├── DALDAP.framework
                │   └── DALDAP
                └── DASubCal.framework
                    └── DASubCal
        └── DataAccessExpress.framework
            └── DataAccessExpress
    └── DataAccessUI.framework
        └── DataAccessUI
    └── DataDeliveryServices.framework
        └── DataDeliveryServices
    └── DataDetectorsCore.framework
        └── DataDetectorsCore
            └── PlugIns
                └── PhoneNumbers.plugin
                    └── PhoneNumbers
    └── DataDetectorsNaturalLanguage.framework
        └── DataDetectorsNaturalLanguage
    └── DataDetectorsUI.framework
```

```
    └── DataDetectorsUI
    └── DataMigration.framework
        └── DataMigration
    └── DesktopServicesPriv.framework
        └── DesktopServicesPriv
    └── DeviceCheckInternal.framework
        └── DeviceCheckInternal
    └── DeviceIdentity.framework
        └── DeviceIdentity
    └── DeviceManagement.framework
        └── DeviceManagement
    └── DeviceOMatic.framework
        └── DeviceOMatic
    └── DeviceToDeviceManager.framework
        └── DeviceToDeviceManager
    └── DiagnosticExtensions.framework
        └── DiagnosticExtensions
    └── DiagnosticExtensionsDaemon.framework
        └── DiagnosticExtensionsDaemon
    └── DiagnosticLogCollection.framework
        └── DiagnosticLogCollection
    └── DiagnosticRequest.framework
        └── DiagnosticRequest
    └── DiagnosticRequestService.framework
        └── DiagnosticRequestService
    └── DiagnosticsKit.framework
        └── DiagnosticsKit
    └── DiagnosticsSupport.framework
        └── DiagnosticsSupport
    └── DialogEngine.framework
        └── DialogEngine
    └── DictionaryServices.framework
        └── DictionaryServices
    └── DictionaryUI.framework
        └── DictionaryUI
    └── DifferentialPrivacy.framework
        └── DifferentialPrivacy
    └── DigitalAccess.framework
        └── DigitalAccess
    └── DigitalTouchShared.framework
        └── DigitalTouchShared
    └── DiskImages.framework
        └── DiskImages
    └── DiskImages2.framework
        └── DiskImages2
    └── DiskSpaceDiagnostics.framework
        └── DiskSpaceDiagnostics
    └── DistributedEvaluation.framework
        └── DistributedEvaluation
    └── DoNotDisturb.framework
        └── DoNotDisturb
    └── DoNotDisturbKit.framework
        └── DoNotDisturbKit
    └── DoNotDisturbServer.framework
        └── DoNotDisturbServer
    └── DocumentCamera.framework
```

```
    └── DocumentCamera
    └── DocumentManager.framework
        └── DocumentManager
    └── DocumentManagerCore.framework
        └── DocumentManagerCore
    └── DocumentManagerExecutables.framework
        └── DocumentManagerExecutables
    └── DocumentManagerUICore.framework
        └── DocumentManagerUICore
    └── DragUI.framework
        └── DragUI
    └── DrawingKit.framework
        └── DrawingKit
    └── DuetActivityScheduler.framework
        └── DuetActivityScheduler
    └── DuetExpertCenter.framework
        └── DuetExpertCenter
    └── DuetRecommendation.framework
        └── DuetRecommendation
    └── EAFirmwareUpdater.framework
        └── EAFirmwareUpdater
    └── EAP8021X.framework
        └── EAP8021X
    └── EasyConfig.framework
        └── EasyConfig
    └── EditScript.framework
        └── EditScript
    └── Email.framework
        └── Email
    └── EmailAddressing.framework
        └── EmailAddressing
    └── EmailCore.framework
        └── EmailCore
    └── EmailDaemon.framework
        └── EmailDaemon
    └── EmailFoundation.framework
        └── EmailFoundation
    └── EmbeddedAcousticRecognition.framework
        └── EmbeddedAcousticRecognition
    └── EmbeddedDataReset.framework
        └── EmbeddedDataReset
    └── EmbeddedSensingProtocols.framework
        └── EmbeddedSensingProtocols
    └── EmergencyAlerts.framework
        └── EmergencyAlerts
    └── EmojiFoundation.framework
        └── EmojiFoundation
    └── EmojiKit.framework
        └── EmojiKit
    └── Engram.framework
        └── Engram
    └── EnhancedLoggingState.framework
        └── EnhancedLoggingState
    └── Espresso.framework
        └── Espresso
    └── ExchangeSync.framework
```

```
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    └── Frameworks
        └── DAEAS.framework
            └── DAEAS
                └── ESDaemonSupport.framework
                    └── ESDaemonSupport
    └── ExchangeSyncExpress.framework
        └── ExchangeSyncExpress
    └── ExposureNotificationDaemon.framework
        └── ExposureNotificationDaemon
    └── ExtensionFoundation.framework
        └── ExtensionFoundation
    └── ExtensionKit.framework
        └── ExtensionKit
    └── Eyedropper.framework
        └── Eyedropper
    └── FMClient.framework
        └── FMClient
    └── FMCore.framework
        └── FMCore
    └── FMCoreLite.framework
        └── FMCoreLite
    └── FMCoreUI.framework
        └── FMCoreUI
    └── FMF.framework
        └── FMF
    └── FMFCore.framework
        └── FMFCore
    └── FMFUI.framework
        └── FMFUI
    └── FMIPCore.framework
        └── FMIPCore
    └── FMIPSiriActions.framework
        └── FMIPSiriActions
    └── FMNetworking.framework
        └── FMNetworking
    └── FSEvents.framework
        └── FSEvents
    └── FTAWD.framework
        └── FTAWD
    └── FTCClientServices.framework
        └── FTCClientServices
    └── FTServices.framework
        └── FTServices
    └── FaceCore.framework
        └── FaceCore
    └── FamilyCircle.framework
        └── FamilyCircle
    └── FamilyCircleUI.framework
        └── FamilyCircleUI
    └── FamilyNotification.framework
        └── FamilyNotification
    └── FeatureFlags.framework
        └── FeatureFlags
    └── FeatureFlagsSupport.framework
        └── FeatureFlagsSupport
```

```
|   └── FeedbackLogger.framework
|       └── FeedbackLogger
|   └── FileProviderDaemon.framework
|       └── FileProviderDaemon
|   └── FilesActionsUI.framework
|       └── FilesActionsUI
|   └── FindMyDevice.framework
|       └── FindMyDevice
|   └── FindMyDeviceUI.framework
|       └── FindMyDeviceUI
|   └── Fitness.framework
|       └── Fitness
|   └── FitnessUI.framework
|       └── FitnessUI
|   └── FlightUtilities.framework
|       └── FlightUtilities
|   └── FlightUtilitiesCore.framework
|       └── FlightUtilitiesCore
|   └── FlowFrameKit.framework
|       └── FlowFrameKit
|   └── FontServices.framework
|       └── FontServices
|           ├── libFontParser.dylib
|           ├── libGSFont.dylib
|           ├── libGSFontCache.dylib
|           └── libType1Scaler.dylib
|           └── libhvfv.dylib
|   └── FoundInAppsPlugins.framework
|       └── FoundInAppsPlugins
|   └── FoundationODR.framework
|       └── FoundationODR
|   └── FriendKit.framework
|       └── FriendKit
|   └── FrontBoard.framework
|       └── FrontBoard
|   └── FrontBoardServices.framework
|       └── FrontBoardServices
|   └── FusionPluginKit.framework
|       └── FusionPluginKit
|   └── FusionPluginServices.framework
|       └── FusionPluginServices
|   └── Futhark.framework
|       └── Futhark
|   └── GPUCompiler.framework
|       └── Libraries
|           ├── libComposeFilters.dylib
|           ├── libGPUCompiler.dylib
|           ├── libGPUCompilerImpl.dylib
|           ├── libGPUCompilerImplLazy.dylib
|           └── libmetal_timestamp.dylib
|   └── GPURawCounter.framework
|       └── GPURawCounter
|   └── GPUSupport.framework
|       └── libGPUSupportMercury.dylib
|   └── GameCenterFoundation.framework
|       └── GameCenterFoundation
```

```
|   └── GameCenterUI.framework
|       └── GameCenterUI
|   └── GameCenterUICore.framework
|       └── GameCenterUICore
|   └── GameKitServices.framework
|       └── GameKitServices
|   └── GenerationalStorage.framework
|       └── GenerationalStorage
|   └── GeoServices.framework
|       └── GeoServices
|   └── GraphVisualizer.framework
|       └── GraphVisualizer
|   └── GraphicsServices.framework
|       └── GraphicsServices
|   └── H10ISPServices.framework
|       └── H10ISPServices
|   └── H9ISPServices.framework
|       └── H9ISPServices
|   └── HAENotifications.framework
|       └── HAENotifications
|   └── HDRProcessing.framework
|       └── HDRProcessing
|   └── HID.framework
|       └── HID
|   └── HIDAnalytics.framework
|       └── HIDAnalytics
|   └── HIDDisplay.framework
|       └── HIDDisplay
|   └── HIDPreferences.framework
|       └── HIDPreferences
|   └── HMFoundation.framework
|       └── HMFoundation
|   └── HSAAuthentication.framework
|       └── HSAAuthentication
|   └── HangTracer.framework
|       └── HangTracer
|   └── Haptics.framework
|       └── Haptics
|   └── HardwareDiagnostics.framework
|       └── HardwareDiagnostics
|   └── HealthAlgorithms.framework
|       └── HealthAlgorithms
|   └── HealthArticlesGeneration.framework
|       └── HealthArticlesGeneration
|   └── HealthArticlesUI.framework
|       └── HealthArticlesUI
|   └── HealthDaemon.framework
|       └── HealthDaemon
|   └── HealthDiagnosticExtensionCore.framework
|       └── HealthDiagnosticExtensionCore
|   └── HealthExperience.framework
|       └── HealthExperience
|   └── HealthExperienceUI.framework
|       └── HealthExperienceUI
|   └── HealthExposureNotificationUI.framework
|       └── HealthExposureNotificationUI
```

```
|   └── HealthHearing.framework
|       └── HealthHearing
|   └── HealthHearingDaemon.framework
|       └── HealthHearingDaemon
|   └── HealthMenstrualCycles.framework
|       └── HealthMenstrualCycles
|   └── HealthMenstrualCyclesDaemon.framework
|       └── HealthMenstrualCyclesDaemon
|   └── HealthMenstrualCyclesUI.framework
|       └── HealthMenstrualCyclesUI
|   └── HealthPlatform.framework
|       └── HealthPlatform
|   └── HealthPlatformCore.framework
|       └── HealthPlatformCore
|   └── HealthPluginHost.framework
|       └── HealthPluginHost
|   └── HealthProfile.framework
|       └── HealthProfile
|   └── HealthRecordServices.framework
|       └── HealthRecordServices
|   └── HealthRecordsUI.framework
|       └── HealthRecordsUI
|   └── HealthToolbox.framework
|       └── HealthToolbox
|   └── HealthUI.framework
|       └── HealthUI
|   └── HealthVisualization.framework
|       └── HealthVisualization
|   └── HearingCore.framework
|       └── HearingCore
|   └── HearingUI.framework
|       └── HearingUI
|   └── HearingUtilities.framework
|       └── HearingUtilities
|   └── HeartHealth.framework
|       └── HeartHealth
|   └── HeartHealthDaemon.framework
|       └── HeartHealthDaemon
|   └── HeartRhythmUI.framework
|       └── HeartRhythmUI
|   └── Heimdal.framework
|       └── Heimdal
|   └── HelpKit.framework
|       └── HelpKit
|   └── HeroAppPredictionClient.framework
|       └── HeroAppPredictionClient
|   └── Home.framework
|       └── Home
|   └── HomeAI.framework
|       └── HomeAI
|   └── HomeAutomationInternal.framework
|       └── HomeAutomationInternal
|   └── HomeKitBackingStore.framework
|       └── HomeKitBackingStore
|   └── HomeKitCore.framework
|       └── HomeKitCore
```

```
|   └── HomeKitDaemon.framework
|       └── HomeKitDaemon
|   └── HomeRecommendationEngine.framework
|       └── HomeRecommendationEngine
|   └── HomeSharing.framework
|       └── HomeSharing
|   └── HomeUI.framework
|       └── HomeUI
|   └── IAP.framework
|       └── IAP
|   └── IAPAAuthentication.framework
|       └── IAPAAuthentication
|   └── IDS.framework
|       └── IDS
|   └── IDSFoundation.framework
|       └── IDSFoundation
|   └── IDSHashPersistence.framework
|       └── IDSHashPersistence
|   └── IDSKVStore.framework
|       └── IDSKVStore
|   └── IMAVCore.framework
|       └── IMAVCore
|   └── IMAssistantCore.framework
|       └── IMAssistantCore
|   └── IMCore.framework
|       └── IMCore
|   └── IMCorePipeline.framework
|       └── IMCorePipeline
|   └── IMDMessageServices.framework
|       └── IMDMessageServices
|   └── IMDPersistence.framework
|       └── IMDPersistence
|   └── IMDaemonCore.framework
|       └── IMDaemonCore
|   └── IMFoundation.framework
|       └── IMFoundation
|   └── IMSharedUI.framework
|       └── IMSharedUI
|   └── IMSharedUtilities.framework
|       └── IMSharedUtilities
|   └── IMTranscoderAgent.framework
|       └── IMTranscoderAgent
|   └── IMTranscoding.framework
|       └── IMTranscoding
|   └── IMTransferAgent.framework
|       └── IMTransferAgent
|   └── IMTransferServices.framework
|       └── IMTransferServices
|   └── IOAccelMemoryInfo.framework
|       └── IOAccelMemoryInfo
|   └── IOAccelerator.framework
|       └── IOAccelerator
|   └── IOAccessoryManager.framework
|       └── IOAccessoryManager
|   └── IOCEC.framework
|       └── IOCEC
```

```
    └── IOGPU.framework
        └── IOGPU
    └── IOImageLoader.framework
        └── IOImageLoader
    └── IOKitten.framework
        └── IOKitten
    └── IOMobileFramebuffer.framework
        └── IOMobileFramebuffer
    └── IOSurfaceAccelerator.framework
        └── IOSurfaceAccelerator
    └── IOUSBHost.framework
        └── IOUSBHost
    └── IPTelephony.framework
        └── Support
            └── libIPTelephony.dylib
    └── ITMLKit.framework
        └── ITMLKit
    └── IconServices.framework
        └── IconServices
    └── IdleTimerHosting.framework
        └── IdleTimerHosting
    └── IdleTimerServices.framework
        └── IdleTimerServices
    └── InAppMessages.framework
        └── InAppMessages
    └── InAppMessagesCore.framework
        └── InAppMessagesCore
    └── IncomingCallFilter.framework
        └── IncomingCallFilter
    └── InertiaCam.framework
        └── InertiaCam
    └── InputContext.framework
        └── InputContext
    └── InputTranscoder.framework
        └── InputTranscoder
    └── InstallCoordination.framework
        └── InstallCoordination
    └── IntentsCore.framework
        └── IntentsCore
    └── IntentsFoundation.framework
        └── IntentsFoundation
    └── IntentsServices.framework
        └── IntentsServices
    └── IntentsUICardKitProviderSupport.framework
        └── IntentsUICardKitProviderSupport
    └── InternalSwiftProtobuf.framework
        └── InternalSwiftProtobuf
    └── InternationalSupport.framework
        └── InternationalSupport
    └── InternationalTextSearch.framework
        └── InternationalTextSearch
    └── IntlPreferences.framework
        └── IntlPreferences
    └── JITAppKit.framework
        └── JITAppKit
    └── JasperDepth.framework
```

```
    └── JasperDepth
    └── Jet.framework
        └── Jet
    └── JetEngine.framework
        └── JetEngine
    └── JetUI.framework
        └── JetUI
    └── KeyboardArbiter.framework
        └── KeyboardArbiter
    └── KeyboardServices.framework
        └── KeyboardServices
    └── KeychainCircle.framework
        └── KeychainCircle
    └── KnowledgeGraphKit.framework
        └── KnowledgeGraphKit
    └── KnowledgeMonitor.framework
        └── KnowledgeMonitor
    └── LanguageModeling.framework
        └── LanguageModeling
    └── LatentSemanticMapping.framework
        └── LatentSemanticMapping
    └── LegacyGameKit.framework
        └── LegacyGameKit
    └── Lexicon.framework
        └── Lexicon
    └── LimitAdTracking.framework
        └── LimitAdTracking
    └── LinguisticData.framework
        └── LinguisticData
    └── LiveFS.framework
        └── LiveFS
    └── LiveFSFPHelper.framework
        └── LiveFSFPHelper
    └── LocalAuthenticationPrivateUI.framework
        └── LocalAuthenticationPrivateUI
    └── LocationSupport.framework
        └── LocationSupport
    └── LockoutUI.framework
        └── LockoutUI
    └── LoggingSupport.framework
        └── LoggingSupport
    └── LoginKit.framework
        └── LoginKit
    └── LoginPerformanceKit.framework
        └── LoginPerformanceKit
    └── LoginUILogViewer.framework
        └── LoginUILogViewer
    └── MDM.framework
        └── MDM
    └── MFAAuthentication.framework
        └── MFAAuthentication
    └── MIME.framework
        └── MIME
    └── MMCS.framework
        └── MMCS
    └── MMCSServices.framework
```

```
    └── MMCSServices
    └── MOVStreamIO.framework
        └── MOVStreamIO
    └── MPUFoundation.framework
        └── MPUFoundation
    └── MSUDataAccessor.framework
        └── MSUDataAccessor
    └── MTLCompiler.framework
        └── MTLCompiler
            └── libMTLCompilerHelper.dylib
    └── MailServices.framework
        └── MailServices
    └── MailSupport.framework
        └── MailSupport
    └── MailWebProcessSupport.framework
        └── MailWebProcessSupport
    └── MallocStackLogging.framework
        └── MallocStackLogging
    └── ManagedConfiguration.framework
        └── ManagedConfiguration
    └── ManagedConfigurationUI.framework
        └── ManagedConfigurationUI
    └── MapsSuggestions.framework
        └── MapsSuggestions
    └── MapsSupport.framework
        └── MapsSupport
    └── MapsSync.framework
        └── MapsSync
    └── Marco.framework
        └── Marco
    └── MarkupUI.framework
        └── MarkupUI
    └── MaterialKit.framework
        └── MaterialKit
    └── MeasureFoundation.framework
        └── MeasureFoundation
    └── MediaControlSender.framework
        └── MediaControlSender
    └── MediaControls.framework
        └── MediaControls
    └── MediaConversionService.framework
        └── MediaConversionService
    └── MediaExperience.framework
        └── MediaExperience
    └── MediaFoundation.framework
        └── MediaFoundation
    └── MediaKit.framework
        └── MediaKit
    └── MediaLibraryCore.framework
        └── MediaLibraryCore
    └── MediaMiningKit.framework
        └── MediaMiningKit
    └── MediaPlatform.framework
        └── MediaPlatform
    └── MediaPlaybackCore.framework
        └── MediaPlaybackCore
```

```
    └── MediaPlayerUI.framework
        └── MediaPlayerUI
    └── MediaRemote.framework
        └── MediaRemote
    └── MediaSafetyNet.framework
        └── MediaSafetyNet
    └── MediaServices.framework
        └── MediaServices
    └── MediaServicesBroker.framework
        └── MediaServicesBroker
    └── MediaStream.framework
        └── MediaStream
    └── Memories.framework
        └── Memories
    └── Message.framework
        └── MailServices
            └── IMAP.framework
                └── IMAP
            └── POP.framework
                └── POP
        └── Message
    └── MessageLegacy.framework
        └── MailServices
            └── IMAP.framework
                └── IMAP
        └── MessageLegacy
    └── MessageProtection.framework
        └── MessageProtection
    └── MessageSecurity.framework
        └── MessageSecurity
    └── MessageSupport.framework
        └── MessageSupport
    └── MessagesBlastDoorSupport.framework
        └── MessagesBlastDoorSupport
    └── MetadataUtilities.framework
        └── MetadataUtilities
    └── MetalTools.framework
        └── MetalTools
    └── MetricKitCore.framework
        └── MetricKitCore
    └── MetricKitServices.framework
        └── MetricKitServices
    └── MetricKitSource.framework
        └── MetricKitSource
    └── MetricsKit.framework
        └── MetricsKit
    └── MobileAccessoryUpdater.framework
        └── MobileAccessoryUpdater
    └── MobileActivation.framework
        └── MobileActivation
    └── MobileAsset.framework
        └── MobileAsset
    └── MobileAssetUpdater.framework
        └── MobileAssetUpdater
    └── MobileBackup.framework
        └── MobileBackup
```

```
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        └── MobileBluetooth
    └── MobileContainerManager.framework
        └── MobileContainerManager
    └── MobileDeviceLink.framework
        └── MobileDeviceLink
    └── MobileIcons.framework
        └── MobileIcons
    └── MobileInstallation.framework
        └── MobileInstallation
    └── MobileKeyBag.framework
        └── MobileKeyBag
    └── MobileLookup.framework
        └── MobileLookup
    └── MobileMailUI.framework
        └── MobileMailUI
    └── MobileObliteration.framework
        └── MobileObliteration
    └── MobileSoftwareUpdate.framework
        └── MobileSoftwareUpdate
    └── MobileSpotlightIndex.framework
        └── MobileSpotlightIndex
    └── MobileStorage.framework
        └── MobileStorage
    └── MobileStoreDemoKit.framework
        └── MobileStoreDemoKit
    └── MobileSync.framework
        └── MobileSync
    └── MobileSystemServices.framework
        └── MobileSystemServices
    └── MobileTimer.framework
        └── MobileTimer
    └── MobileTimerUI.framework
        └── MobileTimerUI
    └── MobileWiFi.framework
        └── MobileWiFi
    └── Montreal.framework
        └── Montreal
    └── MorphunAssetsUpdater.framework
        └── MorphunAssetsUpdater
    └── MorphunSwift.framework
        └── MorphunSwift
    └── MultitouchSupport.framework
        └── MultitouchSupport
    └── MusicCarDisplayUI.framework
        └── MusicCarDisplayUI
    └── MusicLibrary.framework
        └── MusicLibrary
    └── MusicStoreUI.framework
        └── MusicStoreUI
    └── NCLaunchStats.framework
        └── NCLaunchStats
    └── NLFoundInAppsPlugin.framework
        └── NLFoundInAppsPlugin
    └── NLP.framework
        └── NLP
```

```
└── NLPLearnert.framework
    └── NLPLearnert
└── NPKit.framework
    └── NPKit
└── NanoAppRegistry.framework
    └── NanoAppRegistry
└── NanoAudioControl.framework
    └── NanoAudioControl
└── NanoBackup.framework
    └── NanoBackup
└── NanoComplicationSettings.framework
    └── NanoComplicationSettings
└── NanoLeash.framework
    └── NanoLeash
└── NanoMailKitServer.framework
    └── NanoMailKitServer
└── NanoMediaBridgeUI.framework
    └── NanoMediaBridgeUI
└── NanoMediaRemote.framework
    └── NanoMediaRemote
└── NanoMusicSync.framework
    └── NanoMusicSync
└── NanoPassKit.framework
    └── NanoPassKit
└── NanoPhotosCore.framework
    └── NanoPhotosCore
└── NanoPreferencesSync.framework
    └── NanoPreferencesSync
└── NanoRegistry.framework
    └── NanoRegistry
└── NanoResourceGrabber.framework
    └── NanoResourceGrabber
└── NanoSystemSettings.framework
    └── NanoSystemSettings
└── NanoTimeKitCompanion.framework
    └── NanoTimeKitCompanion
└── NanoUniverse.framework
    └── NanoUniverse
└── NanoWeatherComplicationsCompanion.framework
    └── NanoWeatherComplicationsCompanion
└── Navigation.framework
    └── Navigation
└── NearField.framework
    └── NearField
└── NetAppsUtilities.framework
    └── NetAppsUtilities
└── NetAppsUtilitiesUI.framework
    └── NetAppsUtilitiesUI
└── Netrb.framework
    └── Netrb
└── NetworkRelay.framework
    └── NetworkRelay
└── NetworkServiceProxy.framework
    └── NetworkServiceProxy
└── NetworkStatistics.framework
    └── NetworkStatistics
```

```
    └── NeutrinoCore.framework
        └── NeutrinoCore
    └── NeutrinoKit.framework
        └── NeutrinoKit
    └── NewDeviceOutreach.framework
        └── NewDeviceOutreach
    └── NewDeviceOutreachUI.framework
        └── NewDeviceOutreachUI
    └── NewsAds.framework
        └── NewsAds
    └── NewsAnalytics.framework
        └── NewsAnalytics
    └── NewsAnalyticsUpload.framework
        └── NewsAnalyticsUpload
    └── NewsAppKit.framework
        └── NewsAppKit
    └── NewsArticles.framework
        └── NewsArticles
    └── NewsCore.framework
        └── NewsCore
    └── NewsDaemon.framework
        └── NewsDaemon
    └── NewsFeed.framework
        └── NewsFeed
    └── NewsFeedLayout.framework
        └── NewsFeedLayout
    └── NewsFoundation.framework
        └── NewsFoundation
    └── NewsPersonalization.framework
        └── NewsPersonalization
    └── NewsServices.framework
        └── NewsServices
    └── NewsServicesInternal.framework
        └── NewsServicesInternal
    └── NewsSubscription.framework
        └── NewsSubscription
    └── NewsToday.framework
        └── NewsToday
    └── NewsTransport.framework
        └── NewsTransport
    └── NewsUI.framework
        └── NewsUI
    └── NewsUI2.framework
        └── NewsUI2
    └── Notes.framework
        └── Notes
    └── NotesShared.framework
        └── NotesShared
    └── NotesUI.framework
        └── NotesUI
    └── OAuth.framework
        └── OAuth
    └── ODML.framework
        └── ODML
    └── OSAServicesClient.framework
        └── OSAServicesClient
```

```
└── OSASubmissionClient.framework
    └── OSASubmissionClient
└── OSASyncProxyClient.framework
    └── OSASyncProxyClient
└── OSAnalytics.framework
    └── OSAnalytics
└── OSAnalyticsPrivate.framework
    └── OSAnalyticsPrivate
└── OTSVG.framework
    └── OTSVG
└── OctagonTrust.framework
    └── OctagonTrust
└── OfficeImport.framework
    └── OfficeImport
└── OnBoardingKit.framework
    └── OnBoardingKit
└── Osprey.framework
    └── Osprey
└── PBBridgeSupport.framework
    └── PBBridgeSupport
└── PDS.framework
    └── PDS
└── PDSAgenT.framework
    └── PDSAgenT
└── PLSnapshot.framework
    └── PLSnapshot
└── PacketFilter.framework
    └── PacketFilter
└── PairedSync.framework
    └── PairedSync
└── PairedUnlock.framework
    └── PairedUnlock
└── PairingProximity.framework
    └── PairingProximity
└── ParsecModel.framework
    └── ParsecModel
└── ParsecSubscriptionServiceSupport.framework
    └── ParsecSubscriptionServiceSupport
└── PassKitCore.framework
    └── PassKitCore
└── PassKitServices.framework
    └── PassKitServices
└── PassKitUI.framework
    └── PassKitUI
└── PassKitUIFoundation.framework
    └── PassKitUIFoundation
└── Pasteboard.framework
    └── Pasteboard
└── Pegasus.framework
    └── Pegasus
└── PegasusAPI.framework
    └── PegasusAPI
└── PegasusKit.framework
    └── PegasusKit
└── PencilPairingUI.framework
    └── PencilPairingUI
```

```
    └── PeopleSuggester.framework
        └── PeopleSuggester
    └── PerformanceTrace.framework
        └── PerformanceTrace
    └── PersistentConnection.framework
        └── PersistentConnection
    └── PersonaKit.framework
        └── PersonaKit
    └── PersonaUI.framework
        └── PersonaUI
    └── PersonalAudio.framework
        └── PersonalAudio
    └── PersonalizationPortrait.framework
        └── PersonalizationPortrait
    └── PersonalizationPortraitInternals.framework
        └── PersonalizationPortraitInternals
    └── Phoenix.framework
        └── Phoenix
    └── PhoneNumberResolver.framework
        └── PhoneNumberResolver
    └── PhoneNumbers.framework
        └── PhoneNumbers
    └── PhotoAnalysis.framework
        └── PhotoAnalysis
    └── PhotoBoothEffects.framework
        └── PhotoBoothEffects
    └── PhotoFoundation.framework
        └── PhotoFoundation
    └── PhotoImaging.framework
        └── PhotoImaging
    └── PhotoLibrary.framework
        └── Photolibrary
    └── PhotoLibraryServices.framework
        └── PhotoLibraryServices
    └── PhotoVision.framework
        └── PhotoVision
    └── PhotosFormats.framework
        └── PhotosFormats
    └── PhotosGraph.framework
        └── PhotosGraph
    └── PhotosImagingFoundation.framework
        └── PhotosImagingFoundation
    └── PhotosPlayer.framework
        └── PhotosPlayer
    └── PhotosUIApps.framework
        └── PhotosUIApps
    └── PhotosUICore.framework
        └── PhotosUICore
    └── PhysicsKit.framework
        └── PhysicsKit
    └── PlacesKit.framework
        └── PlacesKit
    └── PlatterKit.framework
        └── PlatterKit
    └── PlugInKit.framework
        └── PlugInKit
```

```
└── PodcastsFoundation.framework
    └── PodcastsFoundation
└── PodcastsKit.framework
    └── PodcastsKit
└── PodcastsUI.framework
    └── PodcastsUI
└── PointerUIServices.framework
    └── PointerUIServices
└── PowerLog.framework
    └── PowerLog
└── PowerUI.framework
    └── PowerUI
└── PowerlogAccounting.framework
    └── PowerlogAccounting
└── PowerlogControl.framework
    └── PowerlogControl
└── PowerlogCore.framework
    └── PowerlogCore
└── PowerlogDatabaseReader.framework
    └── PowerlogDatabaseReader
└── PowerlogFullOperators.framework
    └── PowerlogFullOperators
└── PowerlogHelperdOperators.framework
    └── PowerlogHelperdOperators
└── PowerlogLiteOperators.framework
    └── PowerlogLiteOperators
└── Preferences.framework
    └── Preferences
└── PreferencesUI.framework
    └── PreferencesUI
└── PrintKit.framework
    └── PrintKit
└── PrivateFederatedLearning.framework
    └── PrivateFederatedLearning
└── ProVideo.framework
    └── ProVideo
└── ProactiveCDNDownloader.framework
    └── ProactiveCDNDownloader
└── ProactiveContextClient.framework
    └── ProactiveContextClient
└── ProactiveEventTracker.framework
    └── ProactiveEventTracker
└── ProactiveExperiments.framework
    └── ProactiveExperiments
└── ProactiveExperimentsInternals.framework
    └── ProactiveExperimentsInternals
└── ProactiveInputPredictions.framework
    └── ProactiveInputPredictions
└── ProactiveInputPredictionsInternals.framework
    └── ProactiveInputPredictionsInternals
└── ProactiveML.framework
    └── ProactiveML
└── ProactiveMagicalMoments.framework
    └── ProactiveMagicalMoments
└── ProactiveSuggestionClientModel.framework
    └── ProactiveSuggestionClientModel
```

```
    └── ProactiveSupport.framework
        └── ProactiveSupport
    └── ProactiveSupportStubs.framework
        └── ProactiveSupportStubs
    └── ProactiveWidgetTracker.framework
        └── ProactiveWidgetTracker
    └── ProgressUI.framework
        └── ProgressUI
    └── PromotedContent.framework
        └── PromotedContent
    └── PromotedContentProxy.framework
        └── PromotedContentProxy
    └── PromotedContentSupport.framework
        └── PromotedContentSupport
    └── PromotedContentUI.framework
        └── PromotedContentUI
    └── ProofReader.framework
        └── ProofReader
    └── ProtectedCloudStorage.framework
        └── ProtectedCloudStorage
    └── ProtocolBuffer.framework
        └── ProtocolBuffer
    └── PrototypeTools.framework
        └── PrototypeTools
    └── PrototypeToolsUI.framework
        └── PrototypeToolsUI
    └── ProxCardKit.framework
        └── ProxCardKit
    └── Proximity.framework
        └── Proximity
    └── ProximityControl.framework
        └── ProximityControl
    └── ProximityUI.framework
        └── ProximityUI
    └── PubSub.framework
        └── PubSub
    └── QLCharts.framework
        └── QLCharts
    └── Quagga.framework
        └── Quagga
    └── QuickLookSupport.framework
        └── QuickLookSupport
    └── QuickLookThumbnailingDaemon.framework
        └── QuickLookThumbnailingDaemon
    └── RTBuddyCrashlogDecoder.framework
        └── RTBuddyCrashlogDecoder
    └── RTCReporting.framework
        └── RTCReporting
    └── RTTUI.framework
        └── RTTUI
    └── RTTUtilities.framework
        └── RTTUtilities
    └── Radio.framework
        └── Radio
    └── Rapport.framework
        └── Rapport
```

```
|   └── RapportUI.framework
|       └── RapportUI
|   └── RecapPerformanceTesting.framework
|       └── RecapPerformanceTesting
|   └── RelativeMotion.framework
|       └── RelativeMotion
|   └── RelevanceEngine.framework
|       └── RelevanceEngine
|   └── RelevanceEngineUI.framework
|       └── RelevanceEngineUI
|   └── ReminderKit.framework
|       └── ReminderKit
|   └── ReminderKitInternal.framework
|       └── ReminderKitInternal
|   └── ReminderKitUI.framework
|       └── ReminderKitUI
|   └── ReminderMigration.framework
|       └── ReminderMigration
|   └── RemindersToolbox.framework
|       └── RemindersToolbox
|   └── RemindersUICore.framework
|       └── RemindersUICore
|   └── RemoteConfiguration.framework
|       └── RemoteConfiguration
|   └── RemoteCoreML.framework
|       └── RemoteCoreML
|   └── RemoteHID.framework
|       └── RemoteHID
|   └── RemoteManagement.framework
|       ├── Frameworks
|       |   ├── RemoteManagementModel.framework
|       |       └── RemoteManagementModel
|       |   └── RemoteManagementProtocol.framework
|       |       └── RemoteManagementProtocol
|       └── RemoteManagement
|   └── RemoteMediaServices.framework
|       └── RemoteMediaServices
|   └── RemoteServiceDiscovery.framework
|       └── RemoteServiceDiscovery
|   └── RemoteStateDumpKit.framework
|       └── RemoteStateDumpKit
|   └── RemoteTextInput.framework
|       └── RemoteTextInput
|   └── RemoteUI.framework
|       └── RemoteUI
|   └── RemoteXPC.framework
|       └── RemoteXPC
|   └── RenderBox.framework
|       └── RenderBox
|   └── RespiratoryHealth.framework
|       └── RespiratoryHealth
|   └── RespiratoryHealthDaemon.framework
|       └── RespiratoryHealthDaemon
|   └── RespiratoryHealthUI.framework
|       └── RespiratoryHealthUI
|   └── ResponseKit.framework
```

```
    └── ResponseKit
    └── RevealCore.framework
        └── RevealCore
    └── RunningBoard.framework
        └── RunningBoard
    └── RunningBoardServices.framework
        └── RunningBoardServices
    └── SAML.framework
        └── SAML
    └── SAObjects.framework
        └── SAObjects
    └── SDAPI.framework
        └── SDAPI
    └── SEService.framework
        └── SEService
    └── SIMSetupSupport.framework
        └── SIMSetupSupport
    └── SIMToolkitUI.framework
        └── SIMToolkitUI
    └── SMBClientEngine.framework
        └── SMBClientEngine
    └── SMBClientProvider.framework
        └── SMBClientProvider
    └── SMBSearch.framework
        └── SMBSearch
    └── SOS.framework
        └── SOS
    └── SPFinder.framework
        └── SPFinder
    └── SPOwner.framework
        └── SPOwner
    └── SPShared.framework
        └── SPShared
    └── SafariCore.framework
        └── SafariCore
    └── SafariFoundation.framework
        └── SafariFoundation
    └── SafariSafeBrowsing.framework
        └── SafariSafeBrowsing
    └── SafariShared.framework
        └── SafariShared
    └── SafariSharedUI.framework
        └── SafariSharedUI
    └── SampleAnalysis.framework
        └── SampleAnalysis
    └── SceneIntelligence.framework
        └── SceneIntelligence
    └── SchoolTime.framework
        └── SchoolTime
    └── SchoolTimeSettingsUI.framework
        └── SchoolTimeSettingsUI
    └── ScoreBoard.framework
        └── ScoreBoard
    └── ScreenReaderBrailleDriver.framework
        └── ScreenReaderBrailleDriver
    └── ScreenReaderCore.framework
```

```
    └── ScreenReaderCore
    └── ScreenReaderOutput.framework
        └── ScreenReaderOutput
    └── ScreenTimeCore.framework
        └── ScreenTimeCore
    └── ScreenTimeSettingsUI.framework
        └── ScreenTimeSettingsUI
    └── ScreenTimeUI.framework
        └── ScreenTimeUI
    └── ScreenshotServices.framework
        └── ScreenshotServices
    └── Search.framework
        └── Search
    └── SearchAds.framework
        └── SearchAds
    └── SearchFoundation.framework
        └── SearchFoundation
    └── SearchSuggestions.framework
        └── SearchSuggestions
    └── SearchToShareCore.framework
        └── SearchToShareCore
    └── SearchUI.framework
        └── SearchUI
    └── SearchUICardKitProviderSupport.framework
        └── SearchUICardKitProviderSupport
    └── SecureChannel.framework
        └── SecureChannel
    └── SecurityFoundation.framework
        └── SecurityFoundation
    └── SensingProtocols.framework
        └── SensingProtocols
    └── SensorKitUI.framework
        └── SensorKitUI
    └── Sentry.framework
        └── Sentry
    └── ServiceManagement.framework
        └── ServiceManagement
    └── Settings
        └── DataSourceKit.framework
            └── DataSourceKit
        └── DisplayAndBrightnessSettings.framework
            └── DisplayAndBrightnessSettings
        └── GeneralSettingsUI.framework
            └── GeneralSettingsUI
        └── LegalAndRegulatorySettingsPrivate.framework
            └── LegalAndRegulatorySettingsPrivate
        └── PrivacySettingsUI.framework
            └── PrivacySettingsUI
        └── SettingsUIKitPrivate.framework
            └── SettingsUIKitPrivate
        └── SoundsAndHapticsSettings.framework
            └── SoundsAndHapticsSettings
        └── WallpaperSettings.framework
            └── WallpaperSettings
    └── SettingsCellular.framework
        └── SettingsCellular
```

```
    └── SettingsCellularUI.framework
        └── SettingsCellularUI
    └── SettingsFoundation.framework
        └── SettingsFoundation
    └── SetupAssistant.framework
        └── SetupAssistant
    └── SetupAssistantSupport.framework
        └── SetupAssistantSupport
    └── SetupAssistantUI.framework
        └── SetupAssistantUI
    └── SetupKit.framework
        └── SetupKit
    └── SeymourClient.framework
        └── SeymourClient
    └── SeymourCore.framework
        └── SeymourCore
    └── SeymourMedia.framework
        └── SeymourMedia
    └── SeymourServerProtocol.framework
        └── SeymourServerProtocol
    └── SeymourServices.framework
        └── SeymourServices
    └── SeymourUI.framework
        └── SeymourUI
    └── ShareSheet.framework
        └── ShareSheet
    └── SharedWebCredentials.framework
        └── SharedWebCredentials
    └── Sharing.framework
        └── Sharing
    └── SharingHUD.framework
        └── SharingHUD
    └── SharingUI.framework
        └── SharingUI
    └── SharingXPCServices.framework
        └── SharingXPCServices
    └── ShazamInsights.framework
        └── ShazamInsights
    └── ShazamKit.framework
        └── ShazamKit
    └── ShazamKitUI.framework
        └── ShazamKitUI
    └── ShortcutUIKit.framework
        └── ShortcutUIKit
    └── SidecarCore.framework
        └── SidecarCore
    └── SidecarUI.framework
        └── SidecarUI
    └── SignpostCollection.framework
        └── SignpostCollection
    └── SignpostMetrics.framework
        └── SignpostMetrics
    └── SignpostNotification.framework
        └── SignpostNotification
    └── SignpostSupport.framework
        └── SignpostSupport
```

```
|   └── Silex.framework
|       └── Silex
|   └── SilexVideo.framework
|       └── SilexVideo
|   └── SilexWeb.framework
|       └── SilexWeb
|   └── SiriActivation.framework
|       └── SiriActivation
|   └── SiriAppResolution.framework
|       └── SiriAppResolution
|   └── SiriAudioInternal.framework
|       └── SiriAudioInternal
|   └── SiriAudioSupport.framework
|       └── SiriAudioSupport
|   └── SiriClientFlow.framework
|       └── SiriClientFlow
|   └── SiriCore.framework
|       └── SiriCore
|   └── SiriDailyBriefingInternal.framework
|       └── SiriDailyBriefingInternal
|   └── SiriDialogEngine.framework
|       └── SiriDialogEngine
|   └── SiriFindMy.framework
|       └── SiriFindMy
|   └── SiriGeo.framework
|       └── SiriGeo
|   └── SiriInference.framework
|       └── SiriInference
|   └── SiriInstrumentation.framework
|       └── SiriInstrumentation
|   └── SiriIntentEvents.framework
|       └── SiriIntentEvents
|   └── SiriKitFlow.framework
|       └── SiriKitFlow
|   └── SiriKitInvocation.framework
|       └── SiriKitInvocation
|   └── SiriKitRuntime.framework
|       └── SiriKitRuntime
|   └── SiriObservation.framework
|       └── SiriObservation
|   └── SiriOntology.framework
|       └── SiriOntology
|   └── SiriOntologyProtobuf.framework
|       └── SiriOntologyProtobuf
|   └── SiriPlaybackControlIntents.framework
|       └── SiriPlaybackControlIntents
|   └── SiriPlaybackControlSupport.framework
|       └── SiriPlaybackControlSupport
|   └── SiriSettingsIntents.framework
|       └── SiriSettingsIntents
|   └── SiriSpeechSynthesis.framework
|       └── SiriSpeechSynthesis
|   └── SiriTTS.framework
|       └── SiriTTS
|   └── SiriTape.framework
|       └── SiriTape
```

```
|   └── SiriTasks.framework
|       └── SiriTasks
|   └── SiriUI.framework
|       └── SiriUI
|   └── SiriUIActivation.framework
|       └── SiriUIActivation
|   └── SiriUICardKitProviderSupport.framework
|       └── SiriUICardKitProviderSupport
|   └── SiriUICore.framework
|       └── SiriUICore
|   └── SiriVideoIntents.framework
|       └── SiriVideoIntents
|   └── Sleep.framework
|       └── Sleep
|   └── SleepDaemon.framework
|       └── SleepDaemon
|   └── SleepHealth.framework
|       └── SleepHealth
|   └── SleepHealthDaemon.framework
|       └── SleepHealthDaemon
|   └── SleepHealthUI.framework
|       └── SleepHealthUI
|   └── SlideshowKit.framework
|       └── Frameworks
|           └── OpusFoundation.framework
|               └── OpusFoundation
|           └── OpusKit.framework
|               └── OpusKit
|       └── SlideshowKit
|   └── SocialServices.framework
|       └── SocialServices
|   └── SoftLinking.framework
|       └── SoftLinking
|   └── SoftwareUpdateBridge.framework
|       └── SoftwareUpdateBridge
|   └── SoftwareUpdateCore.framework
|       └── SoftwareUpdateCore
|   └── SoftwareUpdateCoreConnect.framework
|       └── SoftwareUpdateCoreConnect
|   └── SoftwareUpdateCoreSupport.framework
|       └── SoftwareUpdateCoreSupport
|   └── SoftwareUpdateServices.framework
|       └── SoftwareUpdateServices
|   └── SoftwareUpdateServicesUI.framework
|       └── SoftwareUpdateServicesUI
|   └── SoftwareUpdateSettings.framework
|       └── SoftwareUpdateSettings
|   └── SoftwareUpdateSettingsUI.framework
|       └── SoftwareUpdateSettingsUI
|   └── SoundAutoConfig.framework
|       └── SoundAutoConfig
|   └── SoundBoardServices.framework
|       └── SoundBoardServices
|   └── SpeakThisServices.framework
|       └── SpeakThisServices
|   └── SpeakTypingServices.framework
```

```
    └── SpeakTypingServices
    └── SpeakerRecognition.framework
        └── SpeakerRecognition
    └── SpeechRecognitionCommandAndControl.framework
        └── SpeechRecognitionCommandAndControl
    └── SpeechRecognitionCommandServices.framework
        └── SpeechRecognitionCommandServices
    └── SpeechRecognitionCore.framework
        └── SpeechRecognitionCore
    └── SplashBoard.framework
        └── SplashBoard
    └── Spotlight.framework
        └── Spotlight
    └── SpotlightDaemon.framework
        └── SpotlightDaemon
    └── SpotlightLinguistics.framework
        └── SpotlightLinguistics
    └── SpotlightReceiver.framework
        └── SpotlightReceiver
    └── SpotlightServices.framework
        └── SpotlightServices
    └── SpotlightUI.framework
        └── SpotlightUI
    └── SpotlightUIInternal.framework
        └── SpotlightUIInternal
    └── SpringBoard.framework
        └── SpringBoard
    └── SpringBoardFoundation.framework
        └── SpringBoardFoundation
    └── SpringBoardHome.framework
        └── SpringBoardHome
    └── SpringBoardServices.framework
        └── SpringBoardServices
    └── SpringBoardUI.framework
        └── SpringBoardUI
    └── SpringBoardUIServices.framework
        └── SpringBoardUIServices
    └── Stateful.framework
        └── Stateful
    └── Stocks
        └── Snappy.framework
            └── Snappy
        └── StocksAnalytics.framework
            └── StocksAnalytics
        └── StocksCore.framework
            └── StocksCore
        └── StocksUI.framework
            └── StocksUI
    └── Stocks.framework
        └── Stocks
    └── StorageSettings.framework
        └── StorageSettings
    └── StoreBookkeeper.framework
        └── StoreBookkeeper
    └── StoreBookkeeperClient.framework
        └── StoreBookkeeperClient
```

```
|   └── StoreKitUI.framework
|       └── StoreKitUI
|   └── StoreServices.framework
|       └── StoreServices
|   └── StoreServicesCore.framework
|       └── StoreServicesCore
|   └── StreamingZip.framework
|       └── StreamingZip
|   └── StudyLog.framework
|       └── StudyLog
|   └── SuggestionsSpotlightMetrics.framework
|       └── SuggestionsSpotlightMetrics
|   └── Symbolication.framework
|       └── Symbolication
|   └── SymptomDiagnosticReporter.framework
|       └── SymptomDiagnosticReporter
|   └── SymptomReporter.framework
|       └── SymptomReporter
|   └── Symptoms.framework
|       └── Frameworks
|           ├── ManagedEvent.framework
|           |   └── ManagedEvent
|           ├── SymptomAnalytics.framework
|           |   └── SymptomAnalytics
|           ├── SymptomEvaluator.framework
|           |   └── SymptomEvaluator
|           ├── SymptomNetworkUsage.framework
|           |   └── SymptomNetworkUsage
|           ├── SymptomPresentationFeed.framework
|           |   └── SymptomPresentationFeed
|           └── SymptomPresentationLite.framework
|               └── SymptomPresentationLite
|   └── SyncedDefaults.framework
|       └── SyncedDefaults
|   └── SystemStatus.framework
|       └── SystemStatus
|   └── SystemStatusServer.framework
|       └── SystemStatusServer
|   └── TCC.framework
|       └── TCC
|   └── TSReading.framework
|       └── TSReading
|   └── TSUtility.framework
|       └── TSUtility
|   └── TVLatency.framework
|       └── TVLatency
|   └── TVMLKit.framework
|       └── TVMLKit
|   └── TVPlayback.framework
|       └── TVPlayback
|   └── TVRemoteCore.framework
|       └── TVRemoteCore
|   └── TVRemoteKit.framework
|       └── TVRemoteKit
|   └── TVRemoteUI.framework
|       └── TVRemoteUI
```

```
    └── TVUIKit.framework
        └── TVUIKit
    └── TeaCharts.framework
        └── TeaCharts
    └── TeaDB.framework
        └── TeaDB
    └── TeaFoundation.framework
        └── TeaFoundation
    └── TeaSettings.framework
        └── TeaSettings
    └── TeaSnappy.framework
        └── TeaSnappy
    └── TeaTemplate.framework
        └── TeaTemplate
    └── TeaUI.framework
        └── TeaUI
    └── TeaUIKit.framework
        └── TeaUIKit
    └── TelephonyPreferences.framework
        └── TelephonyPreferences
    └── TelephonyRPC.framework
        └── TelephonyRPC
    └── TelephonyUI.framework
        └── TelephonyUI
    └── TelephonyUtilities.framework
        └── TelephonyUtilities
    └── TelephonyXPCCClient.framework
        └── TelephonyXPCCClient
    └── TelephonyXPCServer.framework
        └── TelephonyXPCServer
    └── TemplateKit.framework
        └── TemplateKit
    └── TestFlightCore.framework
        └── TestFlightCore
    └── TextInput.framework
        └── TextInput
    └── TextInputChinese.framework
        └── TextInputChinese
    └── TextInputCore.framework
        └── TextInputCore
    └── TextInputUI.framework
        └── TextInputUI
    └── TextRecognition.framework
        └── TextRecognition
    └── TextToSpeech.framework
        └── Frameworks
            └── TextToSpeechBundleSupport.framework
                └── TextToSpeechBundleSupport
        └── TextToSpeech
    └── TextureIO.framework
        └── TextureIO
    └── TimeSync.framework
        └── TimeSync
    └── Timeline.framework
        └── Timeline
    └── TinCanShared.framework
```

```
    └── TinCanShared
    └── TipKit.framework
        └── TipKit
    └── TipsCore.framework
        └── TipsCore
    └── TipsDaemon.framework
        └── TipsDaemon
    └── TipsUI.framework
        └── TipsUI
    └── ToneKit.framework
        └── ToneKit
    └── ToneLibrary.framework
        └── ToneLibrary
    └── TouchML.framework
        └── TouchML
    └── TouchRemote.framework
        └── TouchRemote
    └── TrackingAvoidance.framework
        └── TrackingAvoidance
    └── Translation.framework
        └── Translation
    └── Transparency.framework
        └── Transparency
    └── TransparencyDetailsView.framework
        └── TransparencyDetailsView
    └── Trial.framework
        └── Trial
    └── TrialProto.framework
        └── TrialProto
    └── TrialServer.framework
        └── TrialServer
    └── TrustedPeers.framework
        └── TrustedPeers
    └── UARPiCloud.framework
        └── UARPiCloud
    └── UIAccessibility.framework
        └── UIAccessibility
    └── UIFoundation.framework
        └── UIFoundation
    └── UIKitCore.framework
        └── UIKitCore
    └── UIKitServices.framework
        └── UIKitServices
    └── UITriggerVC.framework
        └── UITriggerVC
    └── URLCompression.framework
        └── URLCompression
    └── URLFormatting.framework
        └── URLFormatting
    └── USDKit.framework
        └── USDKit
    └── UVFSXPCService.framework
        └── UVFSXPCService
    └── UsageTracking.framework
        └── UsageTracking
    └── UserActivity.framework
```

```
    └── UserActivity
└── UserFS.framework
    ├── Plugins
    │   ├── liblivefiles.plugin.dummy.dylib
    │   ├── livefiles_apfs.dylib
    │   ├── livefiles_cs.dylib
    │   ├── livefiles_exfat.dylib
    │   ├── livefiles_hfs.dylib
    │   └── livefiles_msdos.dylib
    └── UserFS
└── UserManagement.framework
    └── UserManagement
└── UserManagementUI.framework
    └── UserManagementUI
└── UserNotificationsKit.framework
    └── UserNotificationsKit
└── UserNotificationsServer.framework
    └── UserNotificationsServer
└── UserNotificationsSettings.framework
    └── UserNotificationsSettings
└── UserNotificationsTranslation.framework
    └── UserNotificationsTranslation
└── UserNotificationsUIKit.framework
    └── UserNotificationsUIKit
└── VFX.framework
    └── VFX
└── VectorKit.framework
    └── VectorKit
└── VideoProcessing.framework
    └── VideoProcessing
└── VideoSubscriberAccountUI.framework
    └── VideoSubscriberAccountUI
└── VideosUI.framework
    └── VideosUI
└── VideosUICore.framework
    └── VideosUICore
└── VirtualGarage.framework
    └── VirtualGarage
└── VisualAlert.framework
    └── VisualAlert
└── VisualLocalization.framework
    └── VisualLocalization
└── VisualPairing.framework
    └── VisualPairing
└── VisualVoicemail.framework
    ├── IMAP.vvservice
    │   └── IMAP
    └── VisualVoicemail
└── VoiceMemos.framework
    └── VoiceMemos
└── VoiceOverServices.framework
    └── VoiceOverServices
└── VoiceServices.framework
    ├── Support
    │   └── libvoiced_tts.dylib
    └── VoiceServices
```

```
|   └── VoiceShortcutClient.framework
|       └── VoiceShortcutClient
|   └── VoiceShortcuts.framework
|       └── VoiceShortcuts
|   └── VoiceShortcutsUICardKitProviderSupport.framework
|       └── VoiceShortcutsUICardKitProviderSupport
|   └── VoiceTrigger.framework
|       └── VoiceTrigger
|   └── VoiceTriggerUI.framework
|       └── VoiceTriggerUI
|   └── VoicemailStore.framework
|       └── VoicemailStore
|   └── WPDaemon.framework
|       └── WPDaemon
|   └── WallpaperKit.framework
|       └── WallpaperKit
|   └── WatchListKit.framework
|       └── WatchListKit
|   └── WatchReplies.framework
|       └── WatchReplies
|   └── WatchdogClient.framework
|       └── WatchdogClient
|   └── Weather.framework
|       └── Weather
|   └── WeatherAnalytics.framework
|       └── WeatherAnalytics
|   └── WeatherCharts.framework
|       └── WeatherCharts
|   └── WeatherFoundation.framework
|       └── WeatherFoundation
|   └── WeatherUI.framework
|       └── WeatherUI
|   └── WebApp.framework
|       └── WebApp
|   └── WebBookmarks.framework
|       └── WebBookmarks
|   └── WebContentAnalysis.framework
|       └── WebContentAnalysis
|   └── WebCore.framework
|       ├── Frameworks
|       |   ├── libANGLE-shared.dylib
|       |   └── libwebrtc.dylib
|       └── WebCore
|   └── WebInspector.framework
|       └── WebInspector
|   └── WebKitLegacy.framework
|       └── WebKitLegacy
|   └── WebUI.framework
|       └── WebUI
|   └── WelcomeKit.framework
|       └── WelcomeKit
|   └── WelcomeKitCore.framework
|       └── WelcomeKitCore
|   └── WelcomeKitUI.framework
|       └── WelcomeKitUI
|   └── WiFiAnalytics.framework
```

```
    └── WiFiAnalytics
    └── WiFiCloudSyncEngine.framework
        └── WiFiCloudSyncEngine
    └── WiFiKit.framework
        └── WiFiKit
    └── WiFiKitUI.framework
        └── WiFiKitUI
    └── WiFiLogCapture.framework
        └── WiFiLogCapture
    └── WiFiPeerToPeer.framework
        └── WiFiPeerToPeer
    └── WiFiPolicy.framework
        └── WiFiPolicy
    └── WiFiVelocity.framework
        └── WiFiVelocity
    └── Widgets.framework
        └── Widgets
    └── WirelessCoexManager.framework
        └── WirelessCoexManager
    └── WirelessDiagnostics.framework
        └── WirelessDiagnostics
    └── WirelessProximity.framework
        └── WirelessProximity
    └── WorkflowEditor.framework
        └── WorkflowEditor
    └── WorkflowKit.framework
        └── WorkflowKit
    └── WorkflowUI.framework
        └── WorkflowUI
    └── WorkflowUICore.framework
        └── WorkflowUICore
    └── WorkflowUIServices.framework
        └── WorkflowUIServices
    └── XCTTargetBootstrap.framework
        └── XCTTargetBootstrap
    └── XGBoostFramework.framework
        └── XGBoostFramework
    └── XavierCore.framework
        └── XavierCore
    └── XavierNews.framework
        └── XavierNews
    └── ZhuGeSupport.framework
        └── ZhuGeSupport
    └── ZoomServices.framework
        └── ZoomServices
    └── apfs_boot_mount.framework
        └── apfs_boot_mount
    └── caulk.framework
        └── caulk
    └── iAdCore.framework
        └── iAdCore
    └── iAdDeveloper.framework
        └── iAdDeveloper
    └── iAdServices.framework
        └── iAdServices
    └── iCalendar.framework
```

```
    └── iCalendar
    └── iCloudNotification.framework
        └── iCloudNotification
    └── iCloudQuota.framework
        └── iCloudQuota
    └── iCloudQuotaDaemon.framework
        └── iCloudQuotaDaemon
    └── iCloudQuotaUI.framework
        └── iCloudQuotaUI
    └── iMessageApps.framework
        └── iMessageApps
    └── iOSDiagnostics.framework
        └── iOSDiagnostics
    └── IOSScreenSharing.framework
        └── IOSScreenSharing
    └── iTunesCloud.framework
        └── iTunesCloud
    └── iTunesStore.framework
        └── iTunesStore
    └── iTunesStoreUI.framework
        └── iTunesStoreUI
    └── iWorkImport.framework
        └── Frameworks
            ├── EquationKit.framework
            │   └── EquationKit
            ├── KeynoteQuicklook.framework
            │   └── KeynoteQuicklook
            ├── NumbersQuicklook.framework
            │   └── NumbersQuicklook
            ├── PagesQuicklook.framework
            │   └── PagesQuicklook
            ├── TQQuicklook.framework
            │   └── TQQuicklook
            ├── TSApplication.framework
            │   └── TSApplication
            ├── TSCalculationEngine.framework
            │   └── TSCalculationEngine
            ├── TSCharts.framework
            │   └── TSCharts
            ├── TSDrawables.framework
            │   └── TSDrawables
            ├── TSKit.framework
            │   └── TSKit
            ├── TSPersistence.framework
            │   └── TSPersistence
            ├── TSStyles.framework
            │   └── TSStyles
            ├── TSTables.framework
            │   └── TSTables
            ├── TSText.framework
            │   └── TSText
            └── TSUtility.framework
                └── TSUtility
    └── iWorkXPC.framework
        └── XPCServices
            └── iWorkFileFormat.xpc
```

```
    └── Frameworks
        ├── TSPersistence.framework
        │   └── TSPersistence
        └── TSUtility.framework
            └── TSUtility

        └── iWorkXPC
    └── kperf.framework
        └── kperf
    └── kperfdashboard.framework
        └── kperfdashboard
    └── ktrace.framework
        └── ktrace
    └── libEDR.framework
        └── libEDR
    └── oncrpc.framework
        └── oncrpc
    └── perfdata.framework
        └── perfdata
    └── vCard.framework
        └── vCard

    └── ProceduralWallpaper
        └── ProceduralWallpapers.bundle
            └── ProceduralWallpapers

    └── RelevanceEngine
        └── NanoDataSources
            ├── NanoMapsNavigationCompanionDataSource.bundle
            │   └── NanoMapsNavigationCompanionDataSource
            ├── NanoMapsSampleDataSource.bundle
            │   └── NanoMapsSampleDataSource
            └── RelevanceEngineHome.bundle
                └── RelevanceEngineHome

    └── SystemConfiguration
        └── CaptiveNetworkSupport.bundle
            └── CaptiveNetworkSupport

    └── TextInput
        ├── TextInput_bo.bundle
        │   └── TextInput_bo
        ├── TextInput_ca.bundle
        │   └── TextInput_ca
        ├── TextInput_chr.bundle
        │   └── TextInput_chr
        ├── TextInput_cs.bundle
        │   └── TextInput_cs
        ├── TextInput_de.bundle
        │   └── TextInput_de
        ├── TextInput_el.bundle
        │   └── TextInput_el
        ├── TextInput_emoji.bundle
        │   └── TextInput_emoji
        ├── TextInput_en.bundle
        │   └── TextInput_en
        ├── TextInput_es.bundle
        │   └── TextInput_es
        ├── TextInput_fr.bundle
        │   └── TextInput_fr
        └── TextInput_haw.bundle
```

```
    └── TextInput_haw
    ├── TextInput_he.bundle
    │   └── TextInput_he
    ├── TextInput_hi.bundle
    │   └── TextInput_hi
    ├── TextInput_intl.bundle
    │   └── TextInput_intl
    ├── TextInput_ja.bundle
    │   └── TextInput_ja
    ├── TextInput_ko.bundle
    │   └── TextInput_ko
    ├── TextInput_mr.bundle
    │   └── TextInput_mr
    ├── TextInput_my.bundle
    │   └── TextInput_my
    ├── TextInput_pa.bundle
    │   └── TextInput_pa
    ├── TextInput_pt.bundle
    │   └── TextInput_pt
    ├── TextInput_si.bundle
    │   └── TextInput_si
    ├── TextInput_sk.bundle
    │   └── TextInput_sk
    ├── TextInput_ta.bundle
    │   └── TextInput_ta
    ├── TextInput_th.bundle
    │   └── TextInput_th
    ├── TextInput_tr.bundle
    │   └── TextInput_tr
    ├── TextInput_ug.bundle
    │   └── TextInput_ug
    ├── TextInput_vi.bundle
    │   └── TextInput_vi
    ├── TextInput_yue.bundle
    │   └── TextInput_yue
    └── TextInput_zh.bundle
        └── TextInput_zh
    └── UserEventPlugins
        └── AppleHDQGasGauge.plugin
            └── AppleHDQGasGauge
    └── VideoCodecs
        ├── H264SW.videoencoder
        └── VCPHEVC.videoencoder
    └── VideoDecoders
        ├── AVD.videodecoder
        ├── H264H8.videodecoder
        ├── JPEGH1.videodecoder
        ├── MP4VH8.videodecoder
        ├── Slim.videodecoder
        └── VCH263.videodecoder
    └── VideoEncoders
        ├── H264H9.videoencoder
        ├── H9.videoencoder
        ├── JPEGH1.videoencoder
        └── VCH263.videoencoder
```

```
|   └── VideoProcessors
|       ├── BarcodeScanner.videoprocessor
|       ├── GNR.videoprocessor
|       ├── GyroVideoStabilization.videoprocessor
|       ├── HDR.videoprocessor
|       ├── MattingV1.bundle
|       |   └── MattingV1
|       └── MetalFilter.bundle
|           └── MetalFilter
|
|   └── VoiceServices
|       └── PlugIns
|           ├── VoiceDial.vsplugin
|           |   └── VoiceDial
|           └── iPod.vsplugin
|               └── iPod
|
└── libdyld.dylib
usr
└── lib
    ├── CarrierBundleUtilities.dylib
    ├── PN548.dylib
    ├── PN548_API.dylib
    ├── PN548_HAL.dylib
    ├── libABMCommandDriversEUR.dylib
    ├── libABMCommandDriversICE.dylib
    ├── libAHTRestore.dylib
    ├── libARI.dylib
    ├── libARIServer.dylib
    ├── libATCommandStudioDynamic.dylib
    ├── libAWDProtobufBluetooth.dylib
    ├── libAWDProtobufFacetime.dylib
    ├── libAWDProtobufFacetimeiMessage.dylib
    ├── libAWDProtobufGCK.dylib
    ├── libAWDProtobufLocation.dylib
    ├── libAWDSupport.dylib
    ├── libAWDSupportFramework.dylib
    ├── libAXSafeCategoryBundle.dylib
    ├── libAXSpeechManager.dylib
    ├── libAccessibility.dylib
    ├── libAppPatch.dylib
    ├── libAppleArchive.dylib
    ├── libAppleEXR.dylib
    ├── libAppleSSEExt.dylib
    ├── libAppletTranslationLibrary.dylib
    ├── libAudioIssueDetector.dylib
    ├── libAudioStatistics.dylib
    ├── libAudioToolboxUtility.dylib
    ├── libBBUpdaterDynamic.dylib
    ├── libBBUpdaterDynamic_stubs.dylib
    ├── libBKDM1.dylib
    ├── libBasebandDiagnostic.dylib
    ├── libBasebandManager.dylib
    ├── libBasebandManagerICE.dylib
    ├── libCRFSuite.dylib
    ├── libCTGreenTeaLogger.dylib
    ├── libChineseTokenizer.dylib
    └── libDHCPServer.A.dylib
```

```
|   └── libETLDIAGLoggingDynamic.dylib  
|   └── libETLDFDynamic.dylib  
|   └── libETLDLOADCoreDumpDynamic.dylib  
|   └── libETLDLOADDynamic.dylib  
|   └── libETLDMCDynamic.dylib  
|   └── libETLDynamic.dylib  
|   └── libETLEFSDumpDynamic.dylib  
|   └── libETLSAHDynamic.dylib  
|   └── libFDR.dylib  
|   └── libFDRDecode.dylib  
|   └── libFaultOrdering.dylib  
|   └── libFos1_dynamic.dylib  
|   └── libFusionComponentCheck.dylib  
|   └── libH5Dynamic.dylib  
|   └── libHDLCDynamic.dylib  
|   └── libICEClient.dylib  
|   └── libIOABP.dylib  
|   └── libIOACIPC.dylib  
|   └── libIOACIPCICEBB.dylib  
|   └── libIOAccessoryManager.dylib  
|   └── libIORReport.dylib  
|   └── libInFieldCollection.dylib  
|   └── libKTLDynamic.dylib  
|   └── libLLVM.dylib  
|   └── libMatch.1.dylib  
|   └── libMaxEnt.dylib  
|   └── libMemoryResourceException.dylib  
|   └── libMobileCheckpoint.dylib  
|   └── libMobileGestalt.dylib  
|   └── libMobileGestaltExtensions.dylib  
|   └── libPCITransport.dylib  
|   └── libPPM.dylib  
|   └── libPPMDaDataModel.dylib  
|   └── libParallelCompression.dylib  
|   └── libQMIParserDynamic.dylib  
|   └── libReverseProxyDevice.dylib  
|   └── libRoseBooter.dylib  
|   └── libSLAMDYNAMIC.dylib  
|   └── libSMC.dylib  
|   └── libSecRecord.dylib  
|   └── libSystem.B.dylib  
|   └── libTelephonyBasebandDynamic.dylib  
|   └── libTelephonyDebugDynamic.dylib  
|   └── libTelephonyIOKitDynamic.dylib  
|   └── libTelephonyUSBDynamic.dylib  
|   └── libTelephonyUtilDynamic.dylib  
|   └── libThaiTokenizer.dylib  
|   └── libThreadExternalCommissioner.dylib  
|   └── libUSBTransport.dylib  
|   └── libWAPI.dylib  
|   └── libWirelessAudioIPC.dylib  
|   └── libacmobileshim.dylib  
|   └── libafc.dylib  
|   └── libamsupport.dylib  
|   └── libapp_launch_measurement.dylib  
|   └── libapple_nghttp2.dylib
```

```
└── libarchive.2.dylib
└── libate.dylib
└── libauthinstall.dylib
└── libboringssl.dylib
└── libbsm.0.dylib
└── libbz2.1.0.dylib
└── libc++.1.dylib
└── libc++abi.dylib
└── libcharset.1.dylib
└── libcmph.dylib
└── libcompression.dylib
└── libcoreroutine.dylib
└── libcoretls.dylib
└── libcoretls_cfhelpers.dylib
└── libcryptex.dylib
└── libcryptex_core.dylib
└── libcryptex_interface.dylib
└── libcupolicy.dylib
└── libdns_services.dylib
└── libdscsym.dylib
└── libedit.3.dylib
└── libenergytrace.dylib
└── libexpat.1.dylib
└── libexslt.0.dylib
└── libffi.dylib
└── libfire2.dylib
└── libform.5.4.dylib
└── libgermantok.dylib
└── libheimdal-asn1.dylib
└── libiconv.2.dylib
└── libicucore.A.dylib
└── libimg4.dylib
└── libipconfig.dylib
└── libipsec.A.dylib
└── libktrace.dylib
└── liblangid.dylib
└── liblockdown.dylib
└── liblzma.5.dylib
└── libmarisa.dylib
└── libmav_ipc_router_dynamic.dylib
└── libmecab.dylib
└── libmecabra.dylib
└── libmis.dylib
└── libmorphun.dylib
└── libncurses.5.4.dylib
└── libnetwork.dylib
└── libnetworkextension.dylib
└── libnfrestore.dylib
└── libnfsshared.dylib
└── libnfsstorage.dylib
└── libobjc.A.dylib
└── libolaf.dylib
└── libomadm.dylib
└── libpartition2_dynamic.dylib
└── libpcap.A.dylib
└── libperfcheck.dylib
```

```
    └── libpmenergy.dylib
    └── libpmsample.dylib
    └── libprequelite.dylib
    └── libprotobuf-lite.dylib
    └── libprotobuf.dylib
    └── libquic.dylib
    └── libresolv.9.dylib
    └── libsandbox.1.dylib
    └── libsp.dylib
    └── libspindump.dylib
    └── libsqlite3.dylib
    └── libsysdiagnose.dylib
    └── libsystemstats.dylib
    └── libtailspin.dylib
    └── libtidy.A.dylib
    └── libtzupdate.dylib
    └── libusrtcp.dylib
    └── libutil.dylib
    └── libxml2.2.dylib
    └── libxpc_datastores.dylib
    └── libxslt.1.dylib
    └── libz.1.dylib
    └── log
        ├── liblog_AppleLDAPTypes.dylib
        ├── liblog_IOHIDFamily.dylib
        ├── liblog_SystemConfiguration.dylib
        ├── liblog_coreacc.dylib
        ├── liblog_geo.dylib
        ├── liblog_location.dylib
        ├── liblog_mdns.dylib
        ├── liblog_mdnsresponder.dylib
        ├── liblog_network.dylib
        ├── liblog_signpost.description.dylib
        ├── liblog_signpost.dylib
        └── liblog_signpost.telemetry.dylib
    └── swift
        ├── libswiftARKit.dylib
        ├── libswiftAVFoundation.dylib
        ├── libswiftAccelerate.dylib
        ├── libswiftAppleArchive.dylib
        ├── libswiftAssetsLibrary.dylib
        ├── libswiftCallKit.dylib
        ├── libswiftCloudKit.dylib
        ├── libswiftCompression.dylib
        ├── libswiftContacts.dylib
        ├── libswiftCore.dylib
        ├── libswiftCoreAudio.dylib
        ├── libswiftCoreData.dylib
        ├── libswiftCoreFoundation.dylib
        ├── libswiftCoreGraphics.dylib
        ├── libswiftCoreImage.dylib
        ├── libswiftCoreLocation.dylib
        ├── libswiftCoreMIDI.dylib
        ├── libswiftCoreML.dylib
        ├── libswiftCoreMedia.dylib
        └── libswiftCoreNFC.dylib
```

```
|   └── libswiftCryptoTokenKit.dylib  
|   └── libswiftDarwin.dylib  
|   └── libswiftDispatch.dylib  
|   └── libswiftFoundation.dylib  
|   └── libswiftGLKit.dylib  
|   └── libswiftGameplayKit.dylib  
|   └── libswiftHealthKit.dylib  
|   └── libswiftHomeKit.dylib  
|   └── libswiftIntents.dylib  
|   └── libswiftMLCompute.dylib  
|   └── libswiftMapKit.dylib  
|   └── libswiftMediaPlayer.dylib  
|   └── libswiftMetal.dylib  
|   └── libswiftMetalKit.dylib  
|   └── libswiftMetricKit.dylib  
|   └── libswiftModelIO.dylib  
|   └── libswiftNaturalLanguage.dylib  
|   └── libswiftNearbyInteraction.dylib  
|   └── libswiftNetwork.dylib  
|   └── libswiftObjectiveC.dylib  
|   └── libswiftPencilKit.dylib  
|   └── libswiftPhotos.dylib  
|   └── libswiftPhotosUI.dylib  
|   └── libswiftQuartzCore.dylib  
|   └── libswiftSceneKit.dylib  
|   └── libswiftSpeech.dylib  
|   └── libswiftSpriteKit.dylib  
|   └── libswiftSwiftOnoneSupport.dylib  
|   └── libswiftSystem.dylib  
|   └── libswiftSystem_Foundation.dylib  
|   └── libswiftUIKit.dylib  
|   └── libswiftUniformTypeIdentifiers.dylib  
|   └── libswiftVision.dylib  
|   └── libswiftWatchKit.dylib  
|   └── libswiftWebKit.dylib  
|   └── libswiftos.dylib  
|   └── libswiftsimd.dylib  
  
└── system  
    └── libcache.dylib  
    └── libcommonCrypto.dylib  
    └── libcompiler_rt.dylib  
    └── libcopyfile.dylib  
    └── libcorecrypto.dylib  
    └── libcorecrypto_noasm.dylib  
    └── libcorecrypto_trace.dylib  
    └── libdispatch.dylib  
    └── libdyld.dylib  
    └── liblaunch.dylib  
    └── libmacho.dylib  
    └── libremovefile.dylib  
    └── libsystem_asl.dylib  
    └── libsystem_blocks.dylib  
    └── libsystem_c.dylib  
    └── libsystem_collections.dylib  
    └── libsystem_configuration.dylib  
    └── libsystem_containermanager.dylib
```

```
|   └── libsystem_coreservices.dylib  
|   └── libsystem_darwin.dylib  
|   └── libsystem_dnssd.dylib  
|   └── libsystem_featureflags.dylib  
|   └── libsystem_info.dylib  
|   └── libsystem_kernel.dylib  
|   └── libsystem_m.dylib  
|   └── libsystem_malloc.dylib  
|   └── libsystem_networkextension.dylib  
|   └── libsystem_notify.dylib  
|   └── libsystem_platform.dylib  
|   └── libsystem_product_info_filter.dylib  
|   └── libsystem_pthread.dylib  
|   └── libsystem_sandbox.dylib  
|   └── libsystem_symptoms.dylib  
|   └── libsystem_trace.dylib  
|   └── libunwind.dylib  
|   └── libxpc.dylib  
└── updaters  
    └── libAppleTCONUpdater.dylib  
    └── libRoseUpdater.dylib  
    └── libSEUpdater.dylib  
    └── libSavageRestoreInfo_iOS.dylib  
    └── libSavageUpdater_iOS.dylib
```

1827 directories, 2096 files

## DyldExtractor相关心得

**OSSError dlopen mach-o file, but is an incompatible architecture (have 'x86\_64', need 'arm64')**

此处：

```
dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
```

报错：

```
→ com.apple.dyld dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
Traceback (most recent call last):
  File "/usr/local/bin/dyldex", line 27, in <module>
    from DyldExtractor.converter import (
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/DyldExtractor/converter/objc_fixer.py", line 3, in <module>
    import capstone as cp
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/__init__.py", line 312, in <module>
    _cs = _load_lib(_path)
          ^^^^^^^^^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/__init__.py", line 285, in _load_lib
    return ctypes.cdll.LoadLibrary(lib_file)
          ^^^^^^^^^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/ctypes/__init__.py", line 454, in LoadLibrary
    return self._dlltype(name)
          ^^^^^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/ctypes/__init__.py", line 376, in __init__
    self._handle = _dlopen(self._name, mode)
          ^^^^^^^^^^^^^^
OSSError: dlopen(/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib, 0x0006): tried: '/usr/local/opt/unicorn/lib/libcapstone.dylib' (no such file), '/libcapstone.dylib' (no such file), '/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib' (mach-o file, but is an incompatible architecture (have 'x86_64', need 'arm64')), '/System/Volumes/Preboot/Cryptexes/OS/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib' (no such file), '/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib' (mach-o file, but is an incompatible architecture (have 'x86_64', need 'arm64'))
```

```

Preparing metadata (pyproject.toml) ... done
Collecting python-utils>=3.8.1 (from progressbar2->dyldextractor)
  Using cached python_utils-3.9.0-py2.py3-none-any.whl.metadata (9.8 kB)
Requirement already satisfied: typing-extensions<3.10.0.2 in /Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages (from python-utils>=3.8.1->progressbar2->dyldextractor) (4.8.0)
Using cached dyldextractor-2.2.2-py3-none-any.whl (70 kB)
Using cached progressbar2-4.5.0-py3-none-any.whl (57 kB)
Using cached python_utils-3.9.0-py2.py3-none-any.whl (32 kB)
Building wheels for collected packages: capstone
  Building wheel for capstone (pyproject.toml) ... done
    Created wheel for capstone: filename=capstone-4.0.2-py3-none-macosx_10_9_universal2.whl size=1676443 sha256=358e30b060bfac353a5531bbd437e544c0460bd5d37b5b0f6852ee46e1eebf9
    Stored in directory: /Users/crifan/Library/Caches/pip/wheels/39/9c/13/c2f64f6a9f03e1d18d4e7a6d06a1c745cd059c50589f41e9
Successfully built capstone
Installing collected packages: python-utils, capstone, progressbar2, dyldextractor
  Attempting uninstall: capstone
    Found existing installation: capstone 5.0.3
    Uninstalling capstone-5.0.3:
      Successfully uninstalled capstone-5.0.3
Successfully installed capstone-4.0.2 dyldextractor-2.2.2 progressbar2-4.5.0 python-utils-3.9.0
+ com.apple.dyld dyldex -e libdyld.dylib .dyld_shared_cache_arm64
Traceback (most recent call last):
  File "/usr/local/bin/dyldex", line 27, in <module>
    from DyldExtractor.converter import (
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/DyldExtractor/converter/objc_fixer.py", line 3, in <module>
    import capstone as cp
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/__init__.py", line 312, in <module>
    _cs = _load_lib(_path)
           ^^^^^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/__init__.py", line 285, in _load_lib
    return ctypes.CDLL._LoadLibrary(_lib_file)
           ^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/ctypes/__init__.py", line 454, in LoadLibrary
    return self._dlopen(name)
           ^^^^^^^^^^
  File "/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/ctypes/__init__.py", line 376, in __init__
    self._handle = _dlopen(self._name, mode)
           ^^^^^^
OSSError: dlopen(/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib, 0x0006): tried: '/usr/local/opt/unicorn/lib//Libcapstone.dylib' (No such file), '/Libcapstone.dylib' (no such file), '/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib' (mach-o file, but is an incompatible architecture (have 'x86_64', need 'arm64')), '/System/Volumes/Preboot/Cryptexes/OS/Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib' (mach-o file, but is an incompatible architecture (have 'x86_64', need 'arm64'))
```

原因：

此处所依赖的 capstone 的 lib：

但是架构不匹配：

- /Library/Frameworks/Python.framework/Versions/3.11/lib/python3.11/site-packages/capstone/lib/libcapstone.dylib
  - 实际是： x86\_64
  - 希望是： arm64

解决办法：

想办法，重新安装个 arm64 的 capstone，对应 lib 就是 arm64 的了

具体步骤：

(1) 卸载之前的

```
python3.11 -m pip uninstall capstone
```

(2) 重新安装新的 arm64 的

```
arch -arm64 python3.11 -m pip install capstone
```

即可。

## ModuleNotFoundError No module named distutils

运行：

```
dyldex -e libdyld.dylib ./dyld_shared_cache_arm64
```

报错：

```
File "/usr/local/bin/dyldex", line 25, in <module>
  from DyldExtractor.converter import (
... 5 lines ...
)
File "/usr/local/lib/python3.13/site-packages/DyldExtractor/converter/objc_fixer.py",
line 3, in <module>
  import capstone as cp
File "/usr/local/lib/python3.13/site-packages/capstone/__init__.py", line 266, in mo
dule>
  import distutils.sysconfig
ModuleNotFoundError: No module named 'distutils'
```

原因：

此次所用的Python是，最新版：Python 3.13

而 Python 3.12 之后，就移除了库：distutils，从而导致此处找不到库

解决办法：

有2种思路：

- 改脚本（/usr/local/bin/dyldex）代码
- 换旧版本Python

此处用第二种：换旧版本Python

此处另外已安装了旧版本 Python 3.11

继续去：

重新给此处已有的Python3.11安装库：

```
python3.11 -m pip install dyldextractor
```

然后告诉脚本用此特定的版本 Python 3.11

需要改动脚本：

- /usr/local/bin/dyldex

```
#!/usr/local/bin/python3.11

# old: !/usr/local/opt/python@3.13/bin/python3.13

import progressbar
...
```

2024-10-23 09:52:42

# dyld\_decache

## dyld\_decache 插件

- dyld\_decache 插件
  - 评价：暂未用过
    - 此处无需自己手动编译
  - 下载
    - <https://www.ios-repo-updates.com/repository/jonas-gessner-s-repo/package/de.j-gessner.dylib-decache/>
  - 思路
    - 去安装到越狱iPhone中，然后导出（arm版的）工具（dyld\_decache）到Mac（此处正好是arm64的：Mac M2 Max）中，应该也可以在Mac中直接使用

## dyld\_decache 源码

- dyld\_decache 源码
  - 评价：需要自己编译，很麻烦
    - 已完成部分过程，详见
      - 【未解决】Mac中自己编译kennytm的dyld\_decache
 

```
g++ -o dyld_decache -O3 -Wall -Wextra -std=c++98 /usr/local/lib/libboost_filesystem-mt.a /usr/local/lib/libboost_system-mt.a dyld_decache.cpp DataFile.cpp
```
      - 【已解决】Mac中编译dyld\_decache报错： clang error no such file or directory /usr/local/lib/libboost\_system-mt.a
 

```
g++ -o dyld_decache -O3 -Wall -Wextra -std=c++98 -lboost_system-mt -lboost_thread-mt dyld_decache.cpp DataFile.cpp
```
      - 【已解决】Mac中编译dyld\_decache报错： dyld\_decache.cpp fatal error boost/filesystem.hpp file not found
 

```
brew install boost
```
      - 【已解决】Mac中编译dyld\_decache报错： error\_category.hpp error unknown type name constexpr
 

```
g++ -o dyld_decache -O3 -Wall -Wextra -std=c++11 -lboost_system-mt -lboost_thread-mt
```
      - 【已解决】Mac中编译dyld\_decache报错： Id warning ignoring file libboost\_system-mt.dylib found architecture x86\_64 required architecture arm64
 

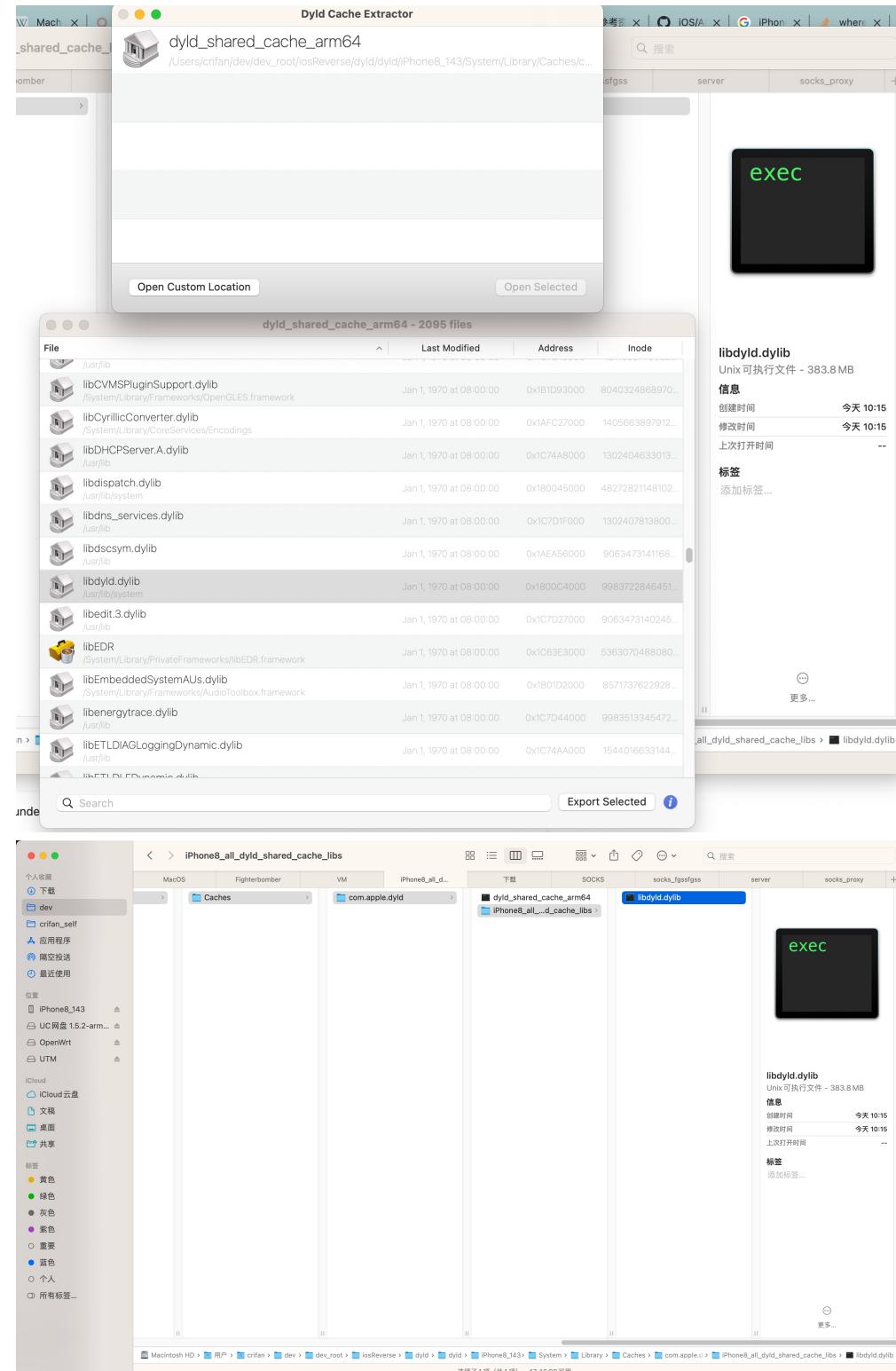
```
g++ -o dyld_decache -O3 -Wall -Wextra -std=c++11 -L/opt/homebrew/Cellar/boost/1.86.0_1/lib -lboost_system-mt -lboost_thread-mt
```

- 代码
  - [https://github.com/kennytm/Miscellaneous/blob/master/dyld\\_decache.cpp](https://github.com/kennytm/Miscellaneous/blob/master/dyld_decache.cpp)
- 相关
  - <https://github.com/iosre/iOSAppReverseEngineering/blob/master/iOSAppReverseEngineering.pdf>

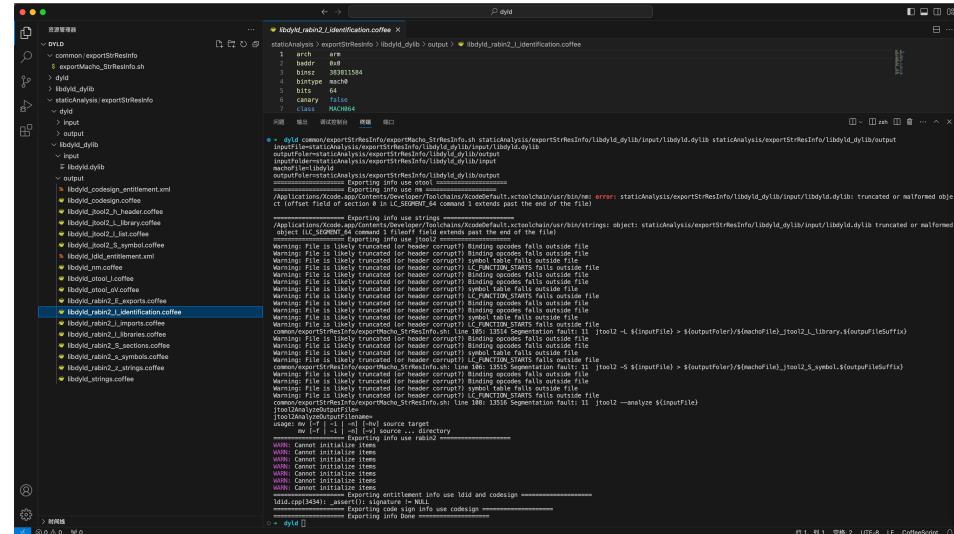
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# dyld\_cache\_extract

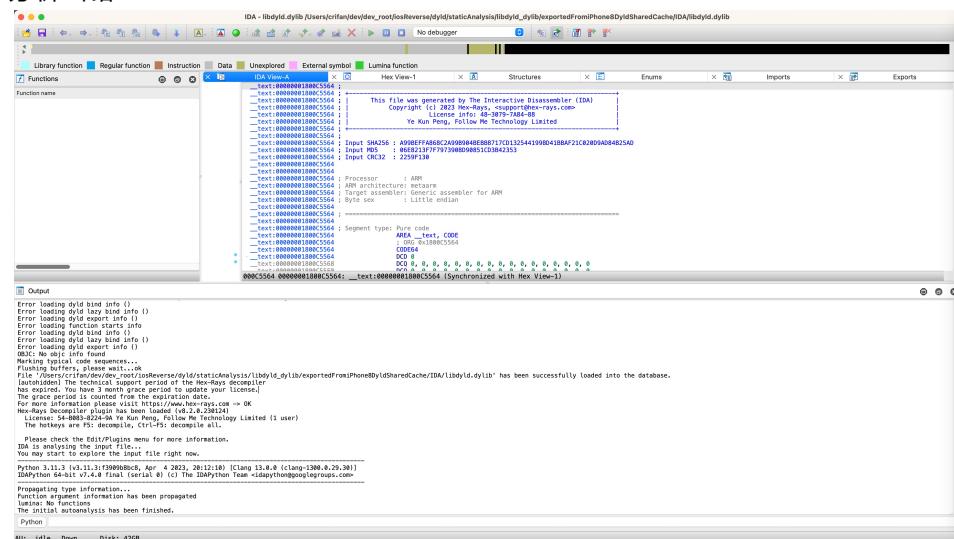
- dyld\_cache\_extract
  - 评价：界面不错，但导出库有问题，无法正常使用
    - 导出单个库 libdyld.dylib 的大小异常：应该是 300KB +，但是却是异常大的 300MB +
    - 原因：内部应该是别人提到的，没有去除掉公共的header等部分而导致体积异常大
    - 效果：



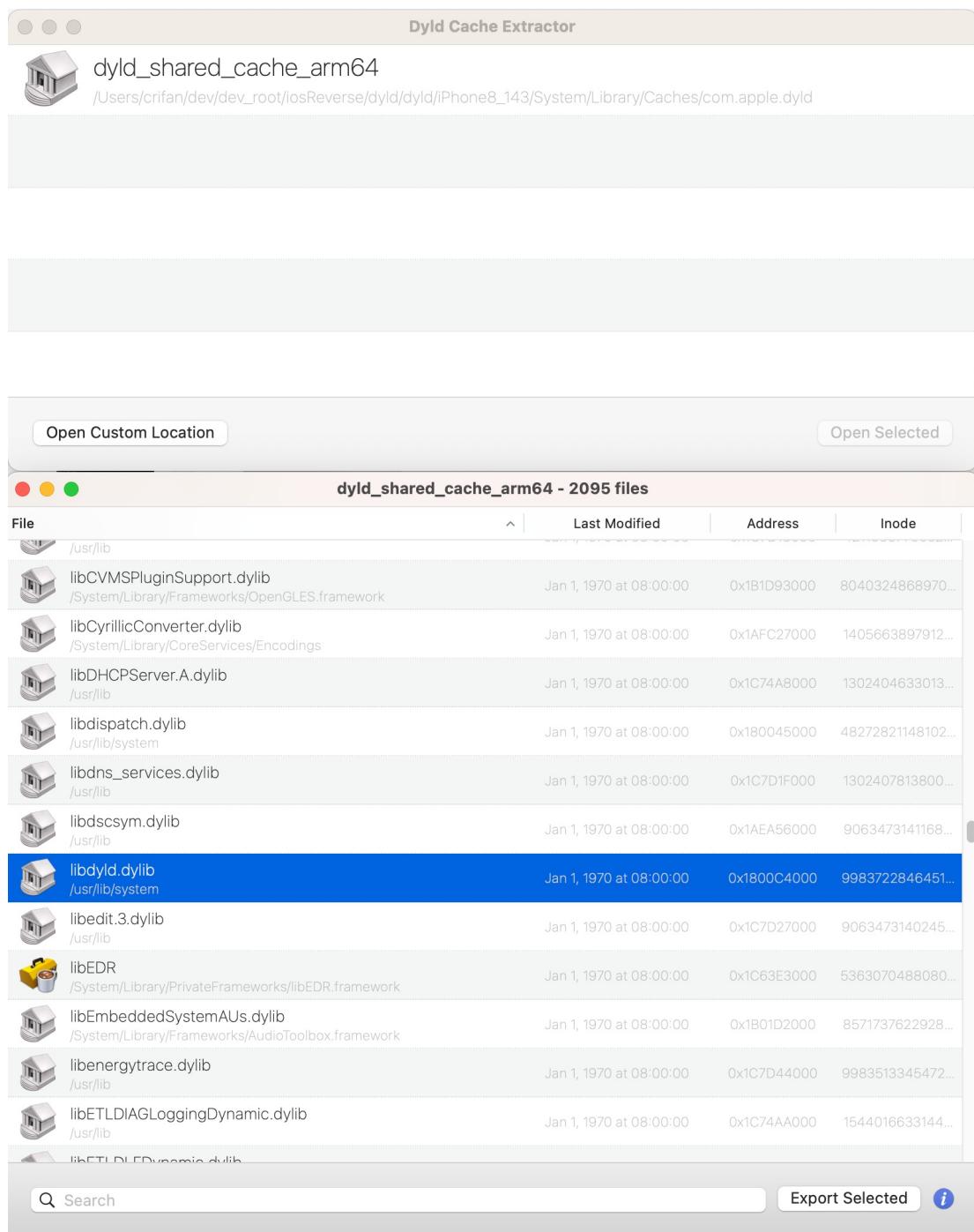
- 从而后续用工具分析和导出资源会报错
  - 导出静态资源出错



## ■ IDA分析出错



- 作用：可视化的工具，把dyld\_shared\_cache载入即可解析出来
  - Github
    - [https://github.com/macmade/dyld\\_cache\\_extract](https://github.com/macmade/dyld_cache_extract)
  - 界面



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## dsc\_extractor

- dsc\_extractor
  - 评价: 暂未用过
  - 介绍
    - is Apple's own open-source tool for extracting libraries and frameworks from dyld\_shared\_cache. When extracting data, the utility saves the locations and original names of all extracted objects.
  - 开源代码
    - 旧
      - [dsc\\_extractor.cpp \(apple.com\)](#)
    - 新
      - <https://opensource.apple.com/releases/>
      - -> <https://github.com/apple-oss-distributions/dyld/releases/>
      - [dyld-1231.3](#)
        - <https://github.com/apple-oss-distributions/dyld/archive/refs/tags/dyld-1231.3.zip>
        - [dyld-dyld-1231.3/other-tools/dsc\\_extractor.cpp](#)
    - 最新
      - [dyld/launch-cache/dsc\\_extractor.cpp at master · opensource-apple/dyld](#)
  - 资料
    - [iOS Shared Cache Extraction](#)

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## dyld-cache-dump

- dyld-cache-dump
  - 评价: 暂未用过
  - 代码
    - <https://github.com/macmade/dyld-cache-dump>
      - A macOS command-line tool to dump the contents of dyld shared cache files

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## 相关

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## 相关代码

### 相关源码

- 源码
  - [github.com](https://github.com)
    - <https://github.comopensource-apple/dyld/tree/master/launch-cache>
      - [https://github.comopensource-apple/dyld/blob/master/launch-cache/dyld\\_shared\\_cache\\_util.cpp](https://github.comopensource-apple/dyld/blob/master/launch-cache/dyld_shared_cache_util.cpp)
      - [https://github.comopensource-apple/dyld/blob/master/launch-cache/dsc\\_extractor.cpp](https://github.comopensource-apple/dyld/blob/master/launch-cache/dsc_extractor.cpp)
      - [https://github.comopensource-apple/dyld/blob/master/launch-cache/dsc\\_iterator.cpp](https://github.comopensource-apple/dyld/blob/master/launch-cache/dsc_iterator.cpp)
    - [opensource.apple.com](https://opensource.apple.com)
      - 旧: 已打不开
        - <https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache>
          - [https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dyld\\_shared\\_cache\\_util.cpp.auto.html](https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dyld_shared_cache_util.cpp.auto.html)
          - [https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dsc\\_extractor.cpp.auto.html](https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dsc_extractor.cpp.auto.html)
          - [https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dsc\\_iterator.cpp.auto.html](https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dsc_iterator.cpp.auto.html)
          - <https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/dyldinfo.cpp.auto.html>
          - <https://opensource.apple.com/source/dyld/dyld-852.2/dyld3/shared-cache/DyldSharedCache.cpp.auto.html>
        - 新
          - <https://opensource.apple.com/releases/>
      - -> <https://github.com/apple-oss-distributions/dyld/releases/>
        - 最新版本: [dyld-1231.3](https://github.com/apple-oss-distributions/dyld/archive/refs/tags/dyld-1231.3.zip)
          - <https://github.com/apple-oss-distributions/dyld/archive/refs/tags/dyld-1231.3.zip>
            - 里面有各个工具的代码
              - [dyld-dyld-1231.3/](#)
                - [other-tools/chroot\\_util.cpp](#)
                - [other-tools/dsc\\_extractor.cpp](#)
                - [other-tools/dsc\\_iterator.cpp](#)
                - [other-tools/dyld\\_closure\\_util.cpp](#)
                - [other-tools/dyld\\_info.cpp](#)
                - [other-tools/dyld\\_inspect.cpp](#)
                - [other-tools/dyld\\_nm.cpp](#)
                - [other-tools/dyld\\_shared\\_cache\\_util.cpp](#)
                - [other-tools/dyld\\_symbols\\_cache.cpp](#)
                - [other-tools/dyld\\_usage.cpp](#)

### 相关函数

## dyld\_priv.h

[dyld\\_priv.h](#)

```
// Returns if any OS dylib has overridden its copy in the shared cache
//
// Exists in iPhoneOS 3.1 and later
// Exists in Mac OS X 10.10 and later
extern bool dyld_shared_cache_some_image_overridden(void);

// Returns path used by dyld for standard dyld shared cache file for the current arch.
//
// Exists in Mac OS X 10.11 and later
extern const char* dyld_shared_cache_file_path(void);

struct dyld_shared_cache_dylib_text_info {
    uint64_t           version;          // current version 2
    // following fields all exist in version 1
    uint64_t           loadAddressUnslid;
    uint64_t           textSegmentSize;
    uuid_t             dylibUuid;
    const char*        path;              // pointer invalid at end of iterations
    // following fields all exist in version 2
    uint64_t           textSegmentOffset; // offset from start of cache
};
typedef struct dyld_shared_cache_dylib_text_info dyld_shared_cache_dylib_text_info;

#ifndef __BLOCKS__
// Given the UUID of a dyld shared cache file, this function will attempt to locate the
// cache
// file and if found iterate all images, returning info about each one. Returns 0 on s
uccess.
//
// Exists in Mac OS X 10.11 and later
//       iOS 9.0 and later
extern int dyld_shared_cache_iterate_text(const uuid_t cacheUuid, void (^callback)(const
dyld_shared_cache_dylib_text_info* info));

// Given the UUID of a dyld shared cache file, and a NULL terminated array of extra dir
ecitory paths to search,
// this function will scan the standard and extra directories looking for a cache file
that matches the UUID
// and if found iterate all images, returning info about each one. Returns 0 on succes
s.
//
// Exists in Mac OS X 10.12 and later
//       iOS 10.0 and later
extern int dyld_shared_cache_find_iterate_text(const uuid_t cacheUuid, const char* extr
aSearchDirs[], void (^callback)(const dyld_shared_cache_dylib_text_info* info));
#endif /* __BLOCKS */

// Gets the UUID of the dyld shared cache in the current process.
// Returns false if there is no dyld shared cache in use by the processes.
//
```

```
// Exists in Mac OS X 10.12 and later
// Exists in iOS 10.0 and later
extern bool _dyld_get_shared_cache_uuid(uuid_t uuid);

// Returns the start address of the dyld cache in the process and sets length to the size of the cache.
// Returns NULL if the process is not using a dyld shared cache
//
// Exists in Mac OS X 10.13 and later
// Exists in iOS 11.0 and later
extern const void* _dyld_get_shared_cache_range(size_t* length);

// Returns if the currently active dyld shared cache is optimized.
// Note: macOS does not use optimized caches and will always return false.
//
// Exists in Mac OS X 10.15 and later
// Exists in iOS 13.0 and later
extern bool _dyld_shared_cache_optimized(void);

// Returns if the currently active dyld shared cache was built locally.
//
// Exists in Mac OS X 10.15 and later
// Exists in iOS 13.0 and later
extern bool _dyld_shared_cache_is_locally_built(void);

// This is similar to _dyld_shared_cache_contains_path(), except that it returns the canonical
// shared cache path for the given path.
//
// Exists in macOS 10.16 and later
// Exists in iOS 14.0 and later
extern const char* _dyld_shared_cache_real_path(const char* path);
```

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## 工具

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# update\_dyld\_shared\_cache

## man page

**update\_dyld\_shared\_cache(1)**

**BSD General Commands Manual**

### NAME

**update\_dyld\_shared\_cache -- Updates dyld's shared cache**

### SYNOPSIS

```
update_dyld_shared_cache [-root directory] [-overlay directory] [-arch arch] [-force]
[-debug] [-sort_by_name] [-universal_boot] [-verify]
[-dylib_list file] [-iPhone] [-cache_dir dir]
```

### DESCRIPTION

**update\_dyld\_shared\_cache** ensures that dyld's shared cache is up-to-date. This tool is normally only run by Apple's Installer and Software

Update, as they are the only official ways for OS dylibs to be updated. But if for some reason you used another mechanism to alter an OS dylib, you should manually run **update\_dyld\_shared\_cache**.

Note that the new cache does not take effect until the OS is rebooted.

If a safe-boot is done (booting with shift key held down) the cache is deleted.

The dyld shared cache is mapped by dyld into a process at launch time. Later, when loading any mach-o image, dyld will first check if it is in the share cache, and if it is will use that pre-bound version instead of opening, mapping, and binding the original file. This results in significant performance improvements to launch time.

**update\_dyld\_shared\_cache** scans the directory /var/db/dyld/shared\_region\_roots for text files containing paths to mach-o executables. The full dependencies of all dylibs required by those executables is used to determine which libraries are commonly used and should be placed in the shared cache. If one of the text files contains a path to a dylib, that dylib and its dependents will be forced into the cache.

**update\_dyld\_shared\_cache** builds a separate cache file for each architecture. The cache files and a readable text map of the cached are generated to /var/db/dyld.

You must be root to run this tool.

The options are as follows:

**-root directory**

This option specifies the root of an OS installation for which dyld's shared c

ache should be updated. This is used by the Installer to update the dyld shared cache **in** a partition other than the one you into **which** you are currently booted. The cache files are created **in** the var/db/dyld directory of the specified directory. Note: **if** you are manually doing this, be sure to run the update\_dyld\_shared\_cache tool that is **in** the partition being updated. This assures the cache **format** created will match that expected when booting off that partition.

#### **-overlay** directory

This option specifies the root of a sparse directory tree. When building the dyld shared cache, any corresponding mach-o files **in** the sparse directory will override those **in** the boot partition. This is used by Software Update to build a dyld shared cache **for** the update that is about to be installed. The cache files are created **in** the var/db/dyld directory of the specified directory.

**-arch** arch By default update\_dyld\_shared\_cache generates cache files **for** all architecture that the current machine can execute. You can override this behavior by specifying one or **more** -arch options and list exactly **which** architectures should have their shared caches updated.

**-force** This option will cause update\_dyld\_shared\_cache to regenerate the shared cache files even **if** they appear to be already up-to-date.

**-debug** This option prints out additional information about the work being done.

#### **-sort\_by\_name**

By default update\_dyld\_shared\_cache assigns a random start address to each mach-o image **in** the cache. This option causes the start addresses to be chosen **in** path order, thus subsequent runs will produce the same address layout **which** can **help** reproduce some bugs.

#### **-universal\_boot**

This option can only be used running on a machine with an Intel processor. It builds caches that can be used when booting on both **32-bit** and **64-bit** machines.

#### **-dylib\_list** file

Instead of scanning /var/db/dyld/shared\_region\_roots/, this option provides a **file** that contains a list of the dylibs to use when building the shared cache file.

**-verify** Will regenerate a shared cache in-memory that matches the randomization of the existing shared cache file. Then instead of writing the cache file, it compares the in-memory cache **file** to the on disk version and reports any differences.

**-iPhone** indicates that cache is not **for** the current Mac OS X, but **for** rather **f** or an iPhone

**-cache\_dir directory**

This option specifies the directory **in which** to create the cache file(s). If not specified, the cache file(s) are created **in** the standard location (e.g. `var/db/dyld/`) of the root partition.

**FILES**

`/var/db/dyld/shared_region_roots` directory of text files with paths to mach-o images used to determine what should be **in** shared cache.

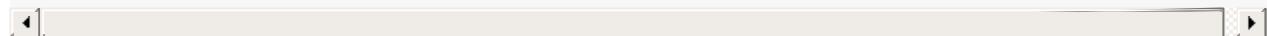
**SEE ALSO**

[dyld\(1\)](#)

Darwin  
arwin

Oct 10, 2008

D



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## 涉及的地方

### /System/Library/Caches/com.apple.dyld/dyld\_shared\_cache\_arMX

#### iPhone7

```
iPhone7:~ root# ls -lh /System/Library/Caches/com.apple.dyld
total 1.7G
-rwxr-xr-x 1 root admin 1.7G Apr  3 2020 dyld_shared_cache_arm64*
```

#### iPhone8

```
iPhone8-150:~ root# ls -lh /System/Library
total 0
...
drwxr-xr-x 40 root wheel 1.3K Sep 16 2021 CacheDelete/
drwxr-xr-x  6 root wheel 192 Sep 16 2021 Caches/
...
```

->

```
iPhone8-150:~ root# ls -lh /System/Library/Caches
total 0
lrwxr-xr-x 1 root wheel 45 Sep 16 2021 apticket.der -> ../../../../../../usr/standalone/firmware/apticket.der
drwxr-xr-x  9 root wheel 288 Sep 16 2021 com.apple.dyld/
drwxr-xr-x 21 root wheel 672 Nov 11 2014 com.apple.factorydata/
drwxr-xr-x  2 root wheel 64 Sep 16 2021 com.apple.kernelcaches/
```

->

```
iPhone8-150:~ root# ls -lh /System/Library/Caches/com.apple.dyld
total 2.5G
-rwxr-xr-x 1 root admin 521M Sep 16 2021 dyld_shared_cache_arm64*
-rwxr-xr-x 1 root admin 513M Sep 16 2021 dyld_shared_cache_arm64.1*
-rwxr-xr-x 1 root admin 508M Sep 16 2021 dyld_shared_cache_arm64.2*
-rwxr-xr-x 1 root admin 83M Sep 16 2021 dyld_shared_cache_arm64.3*
-rwxr-xr-x 1 root admin 238M Sep 16 2021 dyld_shared_cache_arm64.4*
-rwxr-xr-x 1 root admin 199M Sep 16 2021 dyld_shared_cache_arm64.5*
-rwxr-xr-x 1 root admin 456M Sep 16 2021 dyld_shared_cache_arm64.symbols*
```

### /System/Library/dyld/dyld\_shared\_cache\_arm64e

[How to Reverse Engineer an Undocumented macOS API to Use It in a Swift Project | Apriorit](#)

## Step 1: Obtaining a method signature

The OSSystemExtensionClient API is part of the SystemExtensions framework. The framework is packaged as a dynamically linked shared library, which is part of the dynamically linked shared library cache available at /System/Library/dyld/dyld\_shared\_cache\_arm64e.

## objc-runtime-new.mm

[objc-runtime-new.mm \(apple.com\)](#)

```
objc_class::demangledName(bool realize)

...
// FIXME lldb's calls to class_getName() can also get here when
// interrogating the dyld shared cache. (rdar://27258517)
// FIXME runtimeLock.assertLocked();
// FIXME assert(realize);
```

## Mask.dylib

→ [DynamicLibraries rabin2 -i Mask.dylib > MaskDylib\\_rabin2\\_i\\_imports.txt](#)

->

[MaskDylib\\_rabin2\\_i\\_imports.coffee](#)

50 0x0000e508 NONE FUNC	dyld_shared_cache_file_path
-------------------------	-----------------------------

## IDA

[DYLD Shared Cache Utils | Hex-Rays Docs](#)

[IDA: IDA 7.2 - The Mac Rundown \(hex-rays.com\)](#)

This is another annoyance of dyldcache analysis

## Cutter



其中有: dyldcache

## jtool2

```
→ jtool2 jtool2 --help
...
  -h          Dump Mach-O (or DYLD Shared Cache) header
...
  -e          extract fat slice, Mach-O segment/section, dyld shared cache dylib or
(NEW) kernelcache kext
...
dyldinfo Compatible Options:
  --bind        print addresses dyld will set based on symbolic lookups
  --lazy_bind   print addresses dyld will lazily set on first use
  --opcodes     print opcodes used to generate the rebase and binding information
  --function_starts  print table of function start addresses
...
  --tbd         Create a .tbd file (for *OS private frameworks only - you'll need the
dyld shared cache for this)
```

## 附录

下面列出相关参考资料。

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## 参考资料

- 【记录】iOS14.3的iPhone8中导出dyld相关文件并分析
- 【已解决】从iPhone8导出的dyld\_shared\_cache\_arm64导出各个系统的dylib库文件
- 【记录】给macmade/dyld\_cache\_extract导出的libdyld.dylib：静态分析
- 【记录】给macmade/dyld\_cache\_extract导出的libdyld.dylib静态分析：用IDA分析
- 【记录】静态分析DyldExtractor导出的libdyld.dylib
- 【已解决】用DyldExtractor提取导出dyld\_shared\_cache\_arm的全部动态库
- 【已解决】从dyld\_shared\_cache\_arm64中提取解析出dylib：用DyldExtractor
- 【已解决】Mac中Python找不到库distutils： OSError dlopen libcapstone.dylib mach-o file but is an incompatible architecture have x86\_64 need arm64
- 【规避解决】Mac中Python找不到库distutils：ModuleNotFoundError No module named distutils
- 【未解决】Mac中自己编译kennytm的dyld\_decache
- 【已解决】Mac中编译dyld\_decache报错：ld warning ignoring file libboost\_system-mt.dylib found architecture x86\_64 required architecture arm64
- 【已解决】Mac中编译dyld\_decache报错：dyld\_decache.cpp fatal error boost/filesystem.hpp file not found
- 【已解决】Mac中编译dyld\_decache报错：clang error no such file or directory /usr/local/lib/libboost\_system-mt.a
- 【已解决】Mac中编译dyld\_decache报错：error\_category.hpp error unknown type name constexpr
- 【记录】从dyld\_shared\_cache\_arm64中提取解析出dylib：用kennytm的dyld\_decache
- 【记录】从dyld\_shared\_cache\_arm64中提取解析出dylib：用macmade/dyld\_cache\_extract
- 
- [Dev:dyld\\_shared\\_cache - The Apple Wiki](#)
- [Filesystem:/System/Library/Frameworks - The Apple Wiki](#)
- [Filesystem:/System/Library/PrivateFrameworks - The Apple Wiki](#)
- [/System/Library/Frameworks - The iPhone Wiki](#)
- [/System/Library/PrivateFrameworks - The iPhone Wiki](#)
- 

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