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逆向调试利器：Frida

- 最新版本： v3.4.2
- 更新时间： 20231024

简介

介绍支持Android、iOS等多个平台的通用逆向工具：Frida。先是Frida概览，包括Frida的代码和架构，以及相关文档和案例和资料。再介绍如何在PC端和移动端即iOS和安卓端的安装和升级Frida。然后是如何使用Frida，先介绍Frida的典型使用逻辑，然后再去介绍frida命令行工具，其中包括通用的逻辑，比如调试目标的方式，以及写js脚本；然后是典型的使用方式，以及此处iOS逆向涉及到的ObjC的内容，包括ObjC的参数和变量类型；接着是数据类型，包括NativePointer。接着是高级的Stalker。接着介绍frida-trace，以及frida-tools工具集合，包括frida-ps、frida-ls、frida-ls-devices等；接着介绍其他相关的内容，包括frida-server等。接着给出Frida的实际使用案例，包括网上别人的实例案例，包括官网的Cdeshare，以及frida和frida-trace。frida中包括iOS的ObjC的各种例子。包括Object对象的methods和ownMethods，以及用Interceptor去hook函数的，单个类的单个函数、单个类的所有函数、所有类的所有函数等。以及ApiResolver的案例以及Stalker的案例，尤其是__lldb_unnamed_symbol2575\$\$akd的完整代码；接着是frida-trace的实际例子，包括ObjC的akd中Apple账号验证过程、Preferences中Apple账号登录全过程的详细内容。接着整理一些Frida开发期间的经验和心得，包括hook函数方面的，包括frida和frida-trace，frida中的Interceptor、Stalker、常用iOS函数等。其他还有工具类的函数、js以及其中的console.log，和自己编译frida-server，和其他常见问题和报错。接着整理基于Frida的工具。以及Frida的一些常见用途，包括反调试、辅助反混淆、绕过参数加密、逆向各种app等。最后贴出参考资料。

源码+浏览+下载

本书的各种源码、在线浏览地址、多种格式文件下载如下：

HonKit源码

- [crifan/reverse_debug_frida: 逆向调试利器：Frida](#)

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](#)

在线浏览

- [逆向调试利器：Frida book.crifan.org](#)
- [逆向调试利器：Frida crifan.github.io](#)

离线下载阅读

- [逆向调试利器：Frida PDF](#)
- [逆向调试利器：Frida ePUB](#)
- [逆向调试利器：Frida Mobi](#)

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各种技术类教程，仅作为学习和研究使用。请勿用于任何非法用途。如有非法用途，均与本人无关。

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。

其他

作者的其他电子书

本人 `crifan` 还写了其他 150+ 本电子书教程，感兴趣可移步至：

[crifan/crifan_ebook_readme: Crifan的电子书的使用说明](#)

关于作者

关于作者更多介绍，详见：

[关于CrifanLi李茂 – 在路上](#)

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Frida概览

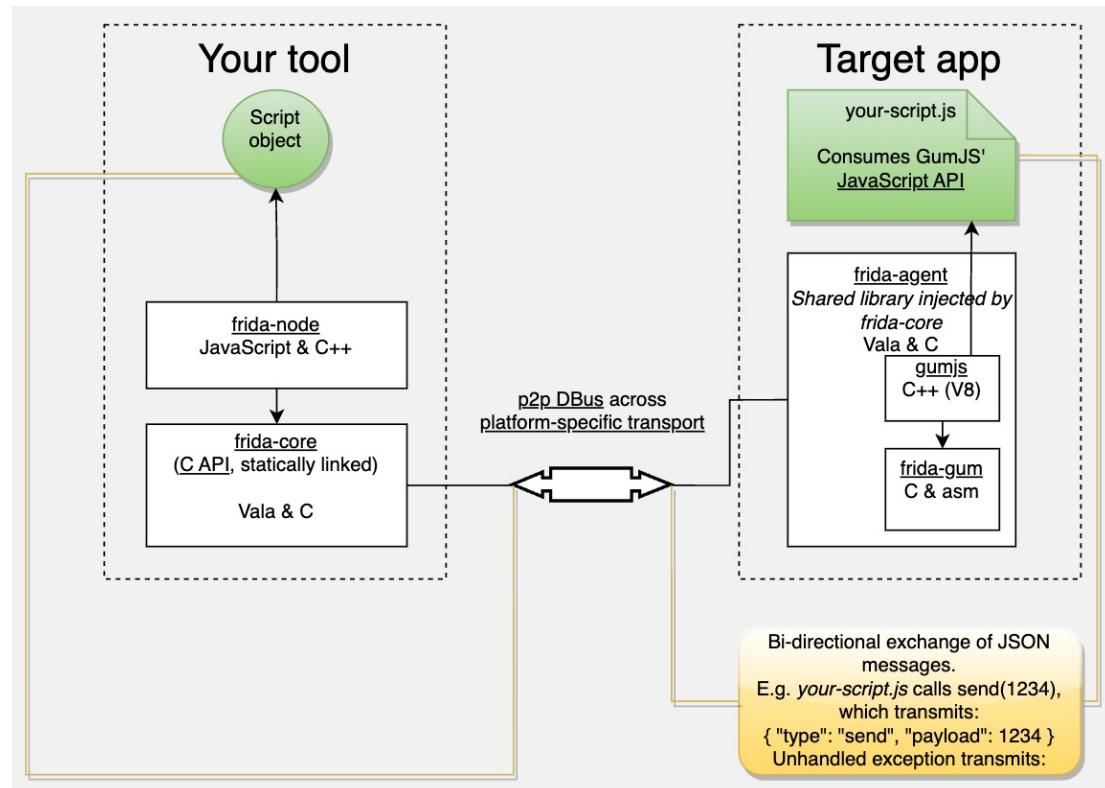
- Frida
 - 概述
 - 一款基于 `python` + `javascript` 的 `hook`框架
 - `Android`、`ios` 的 `app`逆向等领域中，最常用的工具之一
 - A world-class Dynamic instrumentation toolkit for developers, reverse-engineers, and security researchers
 - Inject JavaScript to observe and reprogram running programs on Windows, macOS, GNU/Linux, iOS, watchOS, tvOS, Android, FreeBSD, and QNX
 - 主要用法：iOS逆向期间，用 `frida+js`脚本 和 `frida-trace`、`Frida` 的 `Stalker` 等工具，去动态调试代码逻辑
 - 核心原理
 - 主要使用动态二进制插桩(DBI)技术
 - 将外部代码注入到现有的正在运行的二进制文件中，从而让它执行额外操作
 - 支持哪些额外操作
 - 访问进程内存
 - 在应用程序运行时覆盖函数
 - 从导入的类调用函数
 - 在堆上查找对象实例并使用
 - Hook、跟踪和拦截函数等
 - 注：调试器也能完成相应工作，不过非常麻烦，比如各种反调试
 - 功能和特点
 - Scriptable
 - Inject your own scripts into black box processes. Hook any function, spy on crypto APIs or trace private application code, no source code needed. Edit, hit save, and instantly see the results. All without compilation steps or program restarts.
 - Portable
 - 支持多种运行平台/系统：`Android` / `ios` / `Linux` / `Win` / `macos` 等
 - Works on Windows, macOS, GNU/Linux, iOS, Android, and QNX. Install the Node.js bindings from npm, grab a Python package from PyPI, or use Frida through its Swift bindings, .NET bindings, Qt/Qml bindings, or C API.
 - Free
 - Frida is and will always be free software (free as in freedom). We want to empower the next generation of developer tools, and help other free software developers achieve interoperability through reverse engineering.
 - Battle-tested
 - We are proud that NowSecure is using Frida to do fast, deep analysis of mobile apps at scale. Frida has a comprehensive test-suite and has gone through years of rigorous testing across a broad range of use-cases.
- 主页
 - 官网
 - <https://frida.re/>
 - 文档

- <https://frida.re/docs/home/>
- Github
 - <https://github.com/frida/frida>
- 作者: oleavr = Ole André Vadla Ravnås
 - Github
 - <https://github.com/oleavr>
 - 所属公司
 - NowSecure
 - <https://www.nowsecure.com/>

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代码和架构

- Frida的架构
 - 总体架构
 - client=客户端
 - frida的各种工具
 - frida: frida主体工具本身，用的最多。
 - frida-tools: (Win/Mac等) PC端常用到的，除了frida之外的，frida-trace、frida-ps、frida-ls等命令行工具
 - frida-trace: 按顺序和带缩进的打印所有函数调用堆栈，极大地方便调试内部逻辑
 - server=服务端
 - frida-server
 - 原理图=架构图



- 其中可见很多关键的点=frida中的子项
 - frida-code
 - frida-node
 - frida-agent
 - frida-gum
 - GumJS
- 对应着源码中的各个子项目：详见下面内容。

Frida源码

- Frida源码

- 总入口: <https://github.com/frida/frida>
 - core : [frida-core](#)
 - Frida core library intended for static linking into bindings
 - gum : [frida-gum](#)
 - Cross-platform instrumentation and introspection library written in C
 - This library is consumed by frida-core through its `JavaScript` bindings, `GumJS`.
 - tools : [frida-tools](#)
 - Frida CLI tools
 - bindings
 - python -> [frida-python](#)
 - Node.js -> [frida-node](#)
 - Swift -> [frida-swift](#)
 - .NET -> [frida-clr](#)
 - GO -> [frida-go](#)
 - Rust -> [frida-rust](#)
 - QT/qml -> [frida-qml](#)
 - 其他
 - Frida支持多个移动端的互操作，所以有分别的内部的互操作相关的内容
 - iOS端的: [frida-objc-bridge](#)
 - Objective-C runtime interop from Frida
 - Android端的: [frida-java-bridge](#)
 - Java runtime interop from Frida
 - [Capstone](#)
 - 记得是：Frida内部用到了Capstone，但是有些额外的内容要微调，所以单独fork了Capstone源码，自己同步更新了

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文档和资料

- 官网文档入口: [Frida Docs](#)
 - 入门指南=Getting Started
 - 快速入手: [Quick-start guide](#)
 - 安装: [Installation](#)
 - 操作模式: [Modes of Operation](#)
 - Gadget: [Gadget](#)
 - 内部原理: [Hacking](#)
 - Stalker: [Stalker](#)
 - 演讲文档资料: [Presentations](#)
 - 教程=Tutorials
 - 通用
 - 函数: [Functions](#)
 - 消息: [Messages](#)
 - 移动端
 - [iOS](#)
 - [Android](#)
 - 案例=Examples
 - PC端
 - [Windows](#)
 - [macOS](#)
 - [Linux](#)
 - 移动端
 - [iOS](#)
 - [Android](#)
 - 其他
 - [JavaScript](#)
 - 工具=Tools
 - [frida 命令行工具: Frida CLI](#)
 - [frida-ps](#)
 - [frida-trace](#)
 - [frida-discover](#)
 - [frida-ls-devices](#)
 - [frida-kill](#)
 - [gum-graft](#)
 - API文档=API Reference
 - [JavaScript API](#)
 - [C API](#)
 - [Swift API](#)
 - [Go API](#)
 - 其他细节=Miscellaneous
 - [最佳实践: Best Practices](#)
 - [排错: Troubleshooting](#)

- 自己编译Frida=参与Frida开发: [Building](#)
- 占用系统空间: [Footprint](#)
- 起源和发展=Meta
 - [GSoC Ideas 2015](#)
 - [GSoD Ideas 2023](#)
 - [History](#)
- 其他
 - 教程
 - [Frida basics - Frida HandBook \(learnfrida.info\)](#)
 - [Frida HandBook](#)

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安装和升级

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安装Frida

在能使用Frida之前，先要去安装Frida：

- PC端

- Mac

- 安装 `frida` => 使得有frida命令行工具可用

```
pip3 install frida
```

- 安装后查看版本

```
pip show frida
```

- 安装 `frida-tools` => 使得有frida-trace、frida-ps、frida-ls等命令行工具可用

```
pip3 install frida-tools
```

- 安装后查看版本

```
pip show frida-tools
```

- 额外说明

- 如果前面没有先单独安装 `frida`，则安装 `frida-tools` 时会自动安装所依赖的 `frida`

- 【可选】

- 安装Frida的 `gadget` => 使得后续使用frida-ios-dump时而不报错 need Gadget to attach on jailed iOS

- 下载gadget库文件

- 从[Frida的Github的release](https://github.com/frida/frida/releases)页面中，下载对应版本的 `frida-gadget` 的 `dylib`

- 举例

- <https://github.com/frida/frida/releases/download/16.0.8/frida-gadget-16.0.8-ios-universal.dylib.gz>

- 解压得到： `frida-gadget-16.0.8-ios-universal.dylib`

- 拷贝到对应位置： `~/.cache/frida/gadget-ios.dylib`

- 举例

```
cp frida-gadget-16.0.8-ios-universal.dylib /Users/crifan/.cache/frida/gadget-ios.dylib
```

- 安装： Frida的Node.js bindings -> 用得到，才需要安装， 默认不用安装

```
npm install frida
```

- 移动端

- (越狱) iPhone

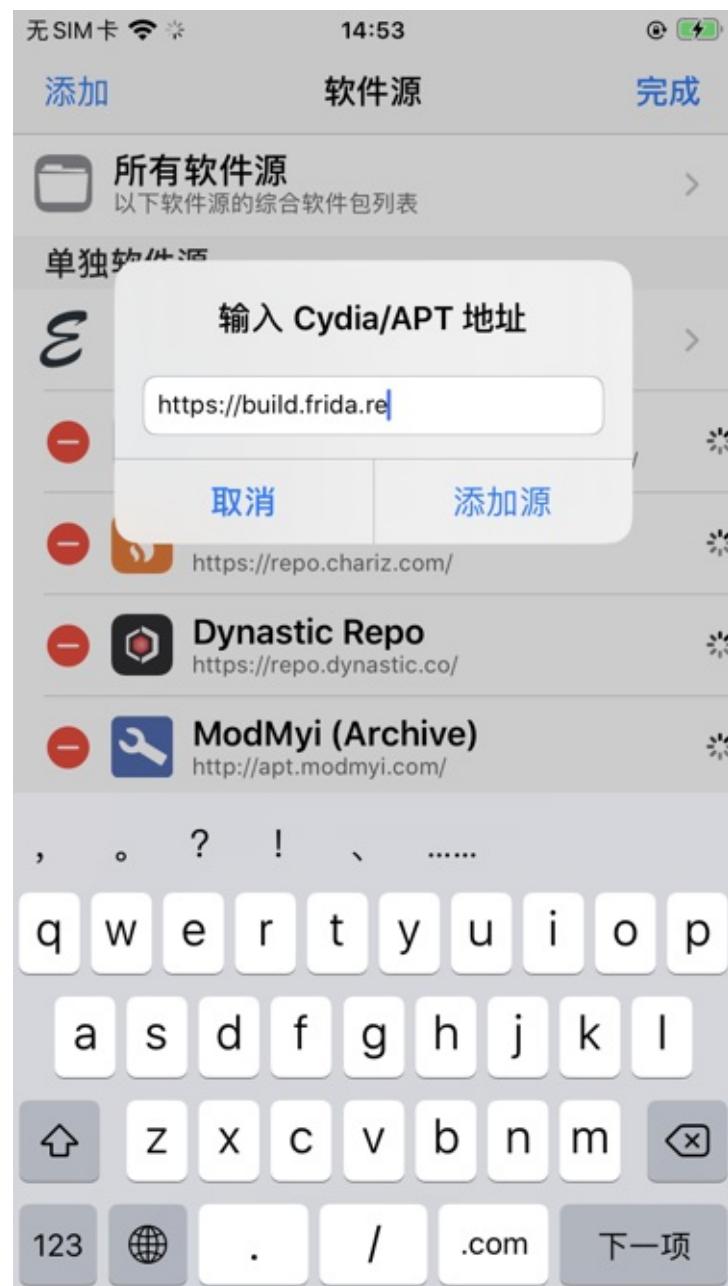
- 安装步骤

- 用 Sileo / Cydia , 添加软件源: <https://build.frida.re> , 搜索并安装 frida , 即可

- Sileo



- Cydia



■ Frida安装后

- 确保iPhone端 frida-server 已经正常运行

```
iPhone8-150:~ root# ps -A | grep frida
2150 ??      0:00.02 /usr/sbin/frida-server
2194 ttys000  0:00.00 grep frida
```

- 插件详情页

- Sileo



 **Frida**
Frida Developers 更改

[详情](#) [更新日志](#)

Observe and reprogram running programs.

软件源

 [Frida](#) >

已安装的软件包

版本	16.0.8
显示软件包内容	>

re.frida.server (16.0.8)

 精选  新闻  软件源  软件包  搜索

■ Cydia



- 已安装的文件

- 列表

- /Library/LaunchDaemons/re.frida.server.plist
 - /usr/lib/frida/frida-agent.dylib
 - /usr/sbin/frida-server

- 图:

- Sileo

16:06



< 返回

已安装的文件

▼ /

▼ Library/

▼ LaunchDaemons/

re.frida.server.plist

▼ usr/

▼ lib/

▼ frida/

frida-agent.dylib

▼ sbin/

frida-server



精选



新闻



软件源



软件包



搜索

■ Cydia



- 已root的安卓
 - 安装步骤
 - 概述
 - 安装 Magisk 插件: MagiskFrida
 - 详解
 - [初始化Frida开发环境 · Android逆向：动态调试 \(crifan.org\)](#)

常见问题

- XinaA15
 - 截至 XinaA15 v1.1.8 + Sileo Nightly v2.4 + Frida v16.0.11 : 在rootless越狱的 XinaA15 中, 无法通过 Sileo Nightly 正常安装和使用 Frida
 - 只要一使用frida工具（比如 frida-ps -u 等）就会导致iPhone重启
 - 且安装和卸载都会出现一些异常报错
 - 安装Frida

- /var/jb/var/ib/Library/LaunchDaemons/re.frida.server.plist service is disabled
- 且此处 Sileo Nightly v2.4 中看到的最新版 Frida v16.0.13，竟然还会出现无法安装：404错误



- 卸载Frida

- ```
/var/jb/var/jb/Library/LaunchDaemons/re.frida.server.plist: Could not
find specified service
```

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## 升级Frida

### 什么时候才要升级Frida版本？

当遇到如下场景时，（可能）需要升级Frida：

- 当（两端的）Frida版本不匹配时
  - (iPhone等) 移动端中的Frida版本
    - 查看现有版本

```
frida-server --version
```

- (Mac等) PC端的Frida的版本
  - 查看现有版本

```
frida --version
```

- Frida有新版可用，想要升级到最新版
  - 举例
    - Sileo 中提示Frida有新版本 16.0.11

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导出 软件包 愿望清单

搜索软件包

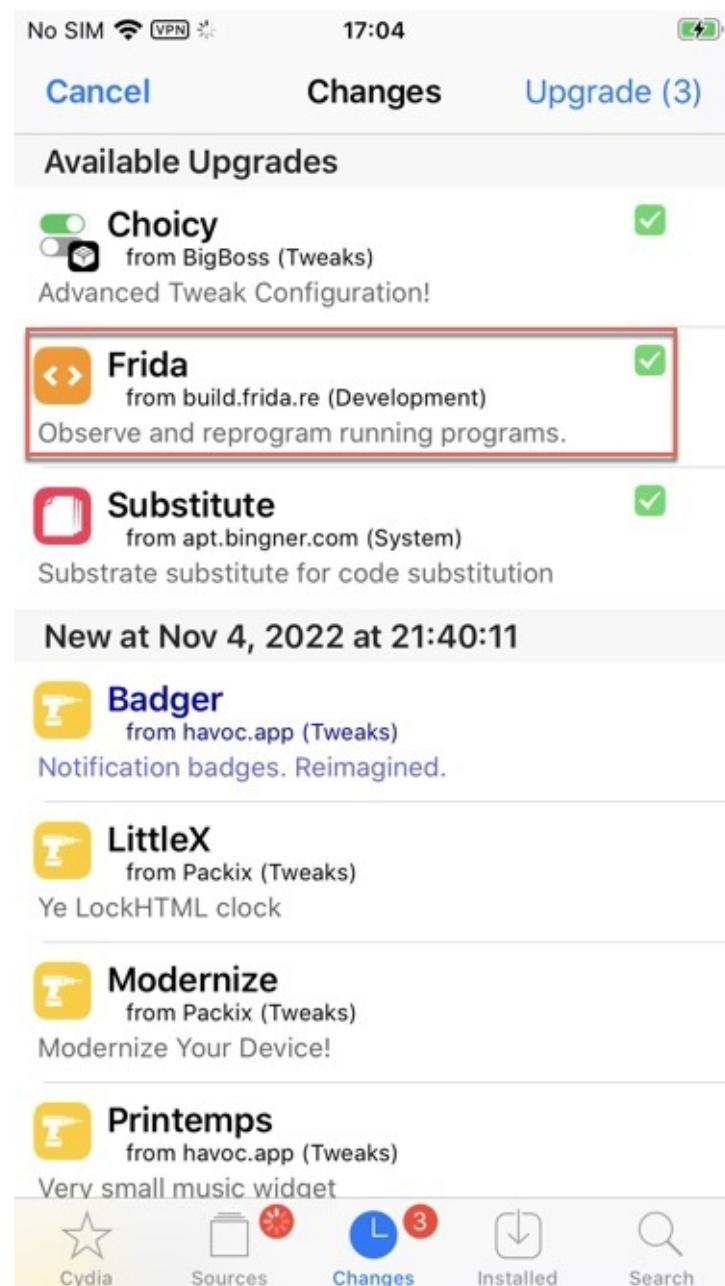
## 更新

全部更新

-  **Frida**  
Frida Developers • 16.0.11  
Observe and reprogram running programs.
-  **libapt-pkg6.0**  
Procursus Team • 2.5.6  
commandline package manager
-  **libncursesw6**  
Procursus Team • 6.4  
shared libraries for terminal handling (wide chara...)
-  **gzip**  
Procursus Team • 1.12  
GNU compression utilities
-  **dpkg**  
Procursus Team • 1.21.20  
package maintainance tools from Debian
-  **ncurses-term**  
Procursus Team • 6.4  
This package contains terminfo data files to sup...

精选 新闻 软件源 软件包 搜索

■ Cydia 中提示有新版本Frida



## 如何升级Frida版本？

和[安装Frida](#)类似，也是分2部分：

- PC端
  - Mac
    - 用pip升级Frida

```
pip install --upgrade frida
```

- 如果需要，也去同时升级 frida-tools

```
pip install --upgrade frida-tools
```

- 移动端

- iPhone
  - 用 ( Cydia / Sileo 等) 包管理器, 升级 Frida 到最新版

## 如何安装指定版本的Frida?

TODO: 找之前如何指定frida版本, 当用pip安装时

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# 使用Frida

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## Frida典型使用逻辑

- 先搞懂大的概念
  - 从逻辑概念角度分
    - 核心工具: `frida` 命令行
    - 辅助工具: `frida-tools`
      - 包括 `frida-trace`、`frida-ps`、`frida-ls` 等工具
  - 从使用角度分
    - 最常用: `frida` 命令行
      - 分析调试逻辑的主力工具
    - 经常用: `frida-trace`
      - 分析函数调用堆栈关系
    - 偶尔用: `frida-tools` (包括 `frida-ps`、`frida-ls` 等)
      - 其他辅助用途, 比如查看进程PID等
- 去hook调试iPhone中的app或二进制 = Frida典型使用逻辑
  - 准备工作
    - 先要搞懂当前连接了哪些iPhone设备: `frida-ls-deviecs`
    - 再去搞懂要去hook的目标 (app或二进制) : `frida-ps` (或ssh连接的iPhone中的ps)
    - 辅助: 查看iPhone中有哪些相关文件: `frida-ls`
  - 真正去hook调试
    - 前期用=经常用: `frida-trace ->` 调试 (app页面操作过程中都) 调用了哪些ObjC的 (类和) 函数
    - 后期用=最常用: `frida ->` 写js去调试具体的ObjC的函数
      - 具体干什么
        - 查看
          - 传入的参数的类型和值
          - 函数调用堆栈
        - 微调=改动
          - (临时) 修改传入参数的值-> 研究程序逻辑变化
          - (临时) 修改返回值-> 研究程序逻辑变化
      - 常用到的内部功能
        - 主要是: `Interceptor` (的 `Interceptor.attach`) -> 去拦截=触发=hook对应的类的函数
        - 偶尔用: `ApiResolver` -> (模糊) 搜索有哪些类, 类有哪些函数等
        - 高级用法: `Stalker` -> 研究 (被混淆的) 代码实际的执行过程和逻辑等

## 用Frida辅助iOS逆向的思路

- iOS逆向开发心得=思路: 利用frida, 打印函数调用 -> 找到url、找到全部被调函数

对于iOS逆向的话, 有空试试 frida的hook。

就像之前别的某一个iOS技术人员沟通的方法: **Hook所有方法调用**

比如 估计是 hook `objc_msgSend` 这类函数?

都打印出来 就知道调用了哪些类的哪些函数了，甚至可以加上额外的统计调用次数之类的。

以及也可以把后面的几个参数的值，只要是字符串的也都打印出来。

另外去hook url调用HTTP的。

估计也是能轻易的搞清楚当前调用过哪些网络请求以及相关的什么参数。

估计就能找出来 `NSURLRequest` 之类的相关调用和url和其他参数。

总之有空还是去多试试frida的hook。

### 【后记1】

其实就是 所有类 的 所有方法

之前试过，效果还行。

不过要排除掉输出太多的，否则容易卡死崩溃。

### 【后记2】

有机会去试试：

- frida去hook：
  - `objc_msgSend`函数
    - 看看有多少objc的函数调用
    - 不过突然想到，貌似就是： `frida-trace` 加上 `-m *[* *]` 的意思？

### 【后记3】

Hook所有方法调用

看来应该是：

- 用Frida去hook：所有类的所有方法？
- 或者是：frida-trace去hook所有类的所有方法
- 又或者是：只hook `objc_msgSend`方法？这样也能打印出所有ObjC函数的调用

有空去试试

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## frida

- frida
  - 是什么：命令行工具
    - frida 是 Frida 整个系统中，最基础，用的最多的，命令行工具
    - 官网称之为：frida-CLI
  - 文档
    - [frida-cli](#)

## 安装frida

- Mac中用Python安装frida

```
pip3 install frida
```

## help语法帮助

```
→ frida-trace frida --help
usage: frida [options] target

positional arguments:
 args extra arguments and/or target

options:
 -h, --help show this help message and exit
 -D ID, --device ID connect to device with the given ID
 -U, --usb connect to USB device
 -R, --remote connect to remote frida-server
 -H HOST, --host HOST connect to remote frida-server on HOST
 --certificate CERTIFICATE
 speak TLS with HOST, expecting CERTIFICATE
 --origin ORIGIN connect to remote server with "Origin" header set to ORIGIN
 --token TOKEN authenticate with HOST using TOKEN
 --keepalive-interval INTERVAL
 set keepalive interval in seconds, or 0 to disable (defaults to
 -1 to auto-select based on transport)
 --p2p establish a peer-to-peer connection with target
 --stun-server ADDRESS
 set STUN server ADDRESS to use with --p2p
 --relay address,username,password,turn-{udp,tcp,tls}
 add relay to use with --p2p
 -f TARGET, --file TARGET
 spawn FILE
 -F, --attach-frontmost
 attach to frontmost application
 -n NAME, --attach-name NAME
 attach to NAME
 -N IDENTIFIER, --attach-identifier IDENTIFIER
 attach to IDENTIFIER
```

```

-p PID, --attach-pid PID
 attach to PID
-W PATTERN, --await PATTERN
 await spawn matching PATTERN
--stdio {inherit,pipe}
 stdio behavior when spawning (defaults to "inherit")
--aux option set aux option when spawning, such as "uid (int)42" (supported
types are: string, bool, int)
--realm {native,emulated}
 realm to attach in
--runtime {qjs,v8} script runtime to use
--debug enable the Node.js compatible script debugger
--squench-crash if enabled, will not dump crash report to console
-O FILE, --options-file FILE
 text file containing additional command line options
--version show program's version number and exit
-l SCRIPT, --load SCRIPT
 load SCRIPT
-P PARAMETERS_JSON, --parameters PARAMETERS_JSON
 parameters as JSON, same as Gadget
-C USER_CMODULE, --cmodule USER_CMODULE
 load CMODULE
--toolchain {any,internal,external}
 CModule toolchain to use when compiling from source code
-c CODESHARE_URI, --codeshare CODESHARE_URI
 load CODESHARE_URI
-e CODE, --eval CODE evaluate CODE
-q quiet mode (no prompt) and quit after -l and -e
-t TIMEOUT, --timeout TIMEOUT
 seconds to wait before terminating in quiet mode
--pause leave main thread paused after spawning program
-o LOGFILE, --output LOGFILE
 output to log file
--eternalize eternalize the script before exit
--exit-on-error exit with code 1 after encountering any exception in the SCRIPT
--kill-on-exit kill the spawned program when Frida exits
--auto-perform wrap entered code with Java.perform
--auto-reload Enable auto reload of provided scripts and c module (on by defa
ult, will be required in the future)
--no-auto-reload Disable auto reload of provided scripts and c module

```

## Frida调试目标的方式

### 背景知识

#### iOS的进程的类型

iOS的进程有2类：

- `app` = `Bundle` = 软件包
  - 举例
    - (iOS系统自带的) 设置`app`=包名是: `com.apple.Preferences`
- `Executable` = 可执行文件 = 二进制文件
  - 举例
    - (`AppleMediaServices.framework` 的) `amsaccounts`

#### frida和frida-trace是调试目标的方式的逻辑是一样的

```
frida --help
```

和：

```
frida-trace --help
```

都可以看到对应help语法：

```
-f TARGET, --file TARGET
 spawn FILE
-F, --attach-frontmost
 attach to frontmost application
-n NAME, --attach-name NAME
 attach to NAME
-N IDENTIFIER, --attach-identifier IDENTIFIER
 attach to IDENTIFIER
-p PID, --attach-pid PID
 attach to PID
-W PATTERN, --await PATTERN
 await spawn matching PATTERN
```

### frida / frida-trace 调试目标的方式

- frida / frida-trace 的调试目标方式 概述
  - 支持2种模式： Spawn 和 Attach
    - **Spawn模式**: 只有一种写法
      - `-f TARGET`
      - TARGET是 `app`包名 或 `Executable`二进制文件名

- **Attach模式**: 有多种写法=针对app或Executable有不同写法
  - 同时支持**app或Executable**的: `-p PID`
    - PID是app或Executable的进程ID
  - 针对**Executable**的: `-n NAME`
    - NAME是Executable的二进制文件名, 比如 `amsaccountsds`
  - 针对**app**的: `-N IDENTIFIER`
    - IDENTIFIER是app的包名, 比如 `com.apple.Preferences`
  - 特殊的: 针对当前手机中正在运行的 `frontmost` 最前台的: `-F`
    - 由于是, 当前最前台的正在运行的= 那只能是带页面显示的app, 且也无需再加额外参数指定app

## 详解

`frida / frida-trace` 的调试目标方式的详细解释:

- **Spawn模式**: 孵化出新进程
  - 典型使用场景: app/Executable还没运行, 想要从app/Executable刚开始启动就去hook调试
  - 语法
    - `-f TARGET , --file TARGET`
      - `spawn FILE`
  - 举例
 

```
frida -U -f com.apple.Preferences
```
  - 说明
    - `TARGET` : 是 APP包名 或 Executable二进制文件名?
    - `spawn`方式启动后, 会立刻暂停运行
      - 需要继续运行, 需要手动输入: `%resume`
      - 如果不想要每次`spawn`启动后暂停, 则可以加上参数: `--no-pause`
        - 注: 旧版本才有`--no-pause`, 新版本已不支持`--no-pause`
- **Attach模式**: 挂载到一个已经正在运行的进程
  - 典型使用场景: app/Executable已经在运行了, 想要hook调试相关逻辑
  - 常见写法
    - 针对于app的
      - `frida -N com.app.identifier`
        - 语法
          - `-N IDENTIFIER, --attach-identifier IDENTIFIER`
            - `attach to IDENTIFIER`
        - 举例
 

```
frida -U -N com.apple.Preferences
```
      - 说明
        - 如何查看到app的包名
          - Mac中用 `frida-ps`

```
frida-ps -Uai
```

- `frida -F`
  - 语法
    - `-F, --attach-frontmost`
      - attach to frontmost application
  - 举例
    - 当前iPhone中正在显示设置app的界面

```
frida -U -F
```

- 说明
  - F=Frontmost=Focused
  - 在操作之前，确保要调试的app，处在前台=正在运行=当前界面
- 针对于Executable的
  - `frida -n executableFilename`
    - 语法
      - `-n NAME, --attach-name NAME`
        - attach to NAME
    - 举例
      - `frida -U -n msaccounts`

- 针对于 app 或 Executable 的
  - `frida -p PID`
    - 语法
      - `-p PID, --attach-pid PID`
        - attach to PID
    - 举例
      - 12886是msaccounts的PID

```
frida -U -p 12886
```

- 19641是com.apple.Preferences的进程ID
  - `frida -U -p 19641`

- 说明
  - 如何获取PID
    - iPhone中通过ssh运行ps

```
ps -A | grep yourAppOrExecutableName
```

- Mac中用frida-ps

```
frida-ps -U
```

```
frida-ps -Ua
```

## 注意事项

- 如果调试方式对应参数使用有误，是无法正常调试的
  - 举例
    - 对于app，用 `-n` (而不是 `-N`)，会报错
      - 对于app：系统内置的应用：`Preferences` (包名 `com.apple.Preferences`)
        - 虽然也有对应的二进制文件：`/Applications/Preferences.app/Preferences`
        - 但是是无法通过Executable的Attach参数去启动的
        - 即，下面写法是无效的，会报错的：

```
→ ~ frida-trace -U -n Preferences
Failed to spawn: unable to find process with name 'Preferences'
```

- 如果用 `-N` 出现异常情况，则可考虑换用 `-F`

- 举例
  - Frida调试设置app
    - 用 `-N` 包名 或 `-F` 不加包名

```
frida-trace -U -N com.apple.Preferences -O Preferences_accountLogin_hook.txt
```

```
frida-trace -U -F -O Preferences_accountLogin_hook.txt
```

- -> 就会导致：设置app异常 -» 点击登录iPhone，会出现弹框：接入互联网以登录iPhone，好像是：此时设置app无法联网了
- 而换用 `-F` 包名 去调试

```
frida-trace -U -F com.apple.Preferences -O Preferences_accountLogin_hook.txt
```

- -> 就一切正常，设置app工作正常，点击登录iPhone，可以出现Apple ID登录页

## 写js脚本

frida 的利用方式，从使用角度来说，主要分2类：

- `frida-trace`: 无需js脚本，直接去hook对应的函数
- `frida ... -l xxx.js` : 最常见的用法，通过 `js` 脚本实现自己的功能
  - 即，写 `js` 脚本，再用 `frida` 去加载调用

## js脚本文件的类型 + 利用js脚本的方式

- 最早的，大家用的最多的，最常见的： `.js` 文件 = JavaScript 文件
  - 对应用法

```
frida ... -l xxx.js
```

- 举例

```
frida -U -p 8229 -l hookAccountLogin_singleClassSingleMethod.js
```

- 最新的，官网推荐的： `.ts` 文件 = TypeScript 文件
  - 对应用法

```
frida ... -l xxx.ts
```

## js脚本的来源

- 可以自己写
  - 比如 [iOS的ObjC](#) 中的各种例子
- 也可以，借用别人已有的
  - 比如 [Frida Codeshare](#)

## js脚本中的内容

主要取决于你的具体使用方法

根据使用场景分，主要有3种：

- `Interceptor` =拦截器
  - 作用：去实现hook函数，打印参数等调试操作
  - 效果：每次匹配到（对应函数），都会触发执行js代码
  - 举例：[Interceptor=hook函数](#)
- `ApiResolver` =解析器
  - 效果：只运行一次
    - 只有第一次（解析时）匹配到，才会执行，后续代码运行期间，不再去（匹配）执行
  - 作用

- 如果有些情况需要批量 Hook，比如对某一个类的所有方法进行 Hook，或者对某个模块的特定名称的函数进行 Hook，可能我们并不知道准确的名称是什么，只知道大概的关键字，这种情况怎么 Hook 呢？这时就得使用 API查找器（ApiResolver）先把感兴趣函数给找出来，得到地址之后就能 Hook 了
  - 举例：[ApiResolver](#)
- **Stalker** = 跟踪器
  - 效果：跟踪代码的实际运行的过程
    - 期间可以打印和查看对应的值，便于实现调试真正代码运行的逻辑
    - 详见：[Frida的Stalker](#)
  - 举例：[Stalker](#)

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## Frida的典型使用方式

在搞懂了[调试目标方式](#)和[写js脚本](#)后，再来介绍

- Frida的典型使用方式
  - 用哪个命令?
    - 主要是用: `frida`
      - 大都是都是 `frida` 然后加上 `-l xxx.js` 加上js脚本，实现自己特定的调试的目的
    - 偶尔使用: `frida-trace`
      - 偶尔直接用 `frida-trace`，加上要hook的类或函数，去追踪代码执行过程中，调用到哪些函数
  - 常见写法 = 怎么用?
    - 命令行中使用
      - `frida xxx`
      - `frida-trace xxx`
    - (其中 `xxx` 中) 常用参数有
      - 要调试的设备用: `-U`
        - `-U` : 调试的是USB连接的移动端的设备 (比如iPhone)
      - 要调试的目标app/二进制: `-p PID` / `-n executableName` / `-N com.app.identifier` / `-F` / `-f com.app.identifier`
        - 有多种写法，选择合适的一个即可
          - app或二进制均支持
            - 通过PID指定进程: `-p PID`
            - 仅支持二进制
              - 通过 `-n` 指定二进制可执行文件名: `-n executableName`
            - 仅支持app
              - 通过 `-N` 指定app的包名: `-N com.app.identifier`
              - 通过 `-F` 指定当前最顶层正在运行的app: `-F`
                - 有时候可以额外给 `-F` 再加上app的包名，效果更好: `-F com.app.identifier`
        - -» 所以常见写法举例
          - `frida`
          - 无需js: 直接动态交互式的调试
 

```
frida -U -f com.apple.Preferences
```
      - 需要js: 实现特定调试目的
        - 自己写js
          - 使用 `-p` 指定进程PID
 

```
frida -U -F -p 18533 -l ./hookAccountLogin_Interceptor.js
```
        - `-U` : 调试的设备是 (当前Mac用) USB连接的iPhone
          - `-F -p 18533` : 调试的app是

- -F : 表示是当前最前端显示的app
- -p 18533 : (额外) 加上PID, 指定app的进程ID
- -l ./hookAccountLogin\_Interceptor.js : 所要具体调试的内容, 放在js中
- 使用 -n 指定二进制文件名=进程名=ProcessName

```
frida -U -n akd -l ./fridaStalker_akdSymbol2575.js
```

- -n akd : 要调试的目标是, 进程名=二进制名是 akd 的进程
- 注: akd = AuthKit 的daemon进程
- 借助别人的js

```
frida --codeshare lichao890427/ios-utils -F com.apple.Preferences
```

#### ■ frida-trace

- 用frida-trace追踪Preferences设置中Apple账号登录过程调用了哪些函数

```
frida-trace -U -F com.apple.Preferences -m "*[AA* *]" -m "*[AK* *]" -m "*[AS* *]" -m "*[NSXPC* *]" -M "-[ASDBundle copyWithZone:]" -M "-[ASDInstallationEvent copyWithZone:]" -M "-[NSXPCEncoder _encodeArrayOfObjects:forKey:]" -M "-[NSXPCEncoder _encodeUnkeyedObject:]" -M "-[NSXPCEncoder _replaceObject:]" -M "-[NSXPCEncoder _checkObject:]" -M "-[NSXPCEncoder _encodeObject:]" -M "-[NSXPCCollection replaceItemAtIndex:object:]"
```

#### ■ 说明

- -U -F com.apple.Preferences : 调试目标设备和目标app是和frida写法一致
- 但是后续要trace的函数写法, 是frida-trace所特有的语法:
  - -m xxx : include=包含要调试的Objc的类
  - -M xxx : exclude=排除掉Objc的类, 不调试

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# Frida中iOS的ObjC

Frida 支持hook调试 iOS 的 ObjC 的类和函数。

- Frida的ObjC
  - 官网文档
    - [Frida API - ObjC](#)
      - `ObjC.available`
      - `ObjC.api`
      - `ObjC.classes`
        - `ObjC.Object`
      - `ObjC.protocols`
        - `ObjC.Protocol`
      - `ObjC.mainQueue`
      - `ObjC.schedule(queue, work)`
      - `new ObjC.Object(handle[, protocol])`
      - `new ObjC.Protocol(handle)`
      - `new ObjC.Block(target[, options])`
      - `ObjC.implement(method, fn)`
      - `ObjC.registerProxy(properties)`
      - `ObjC.registerClass(properties)`
      - `ObjC.registerProtocol(properties)`
      - `ObjC.bind(obj, data)`
      - `ObjC.unbind(obj)`
      - `ObjC.getBoundData(obj)`
      - `ObjC.enumerateLoadedClasses([options, ]callbacks)`
      - `ObjC.enumerateLoadedClassesSync([options])`
      - `ObjC.choose(specifier, callbacks)`
      - `ObjC.chooseSync(specifier)`
      - `ObjC.selector(name)`
      - `ObjC.selectorAsString(sel)`

- 常用工具类
  - [iOS Utils](#)

下面继续介绍，关于Frida中ObjC的基本逻辑：

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## Frida中ObjC的参数

- 当触发到 Interceptor.attach 的 onEnter 函数后
  - 举例：相关的典型的代码

```
function hook_specific_method_of_class(className, funcName)
{
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {
 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 ...
 }
 });
 }
 }
}
```

- 传入Frida中 ios 的 objc 的参数 == ObjC的底层函数 objc\_msgSend 的参数
  - 注：objc\_msgSend 函数的定义

```
id objc_msgSend(id self, SEL _cmd, ...)
```

- 此时默认参数名叫做 args 的参数 == 是一个参数的数组列表，每个元素的类型是 NativePointer
- 此时对应 (Frida中 ios 的 objc ) 的参数逻辑是：
  - 第一个参数 = args[0] == objc\_msgSend 的 self (类型是 id )
  - 第二个参数 = args[1] == objc\_msgSend 的 \_cmd (类型是 SEL )
  - 后续才是：真正的函数的参数
    - 函数的真正的第1个参数 = args[2]
    - 函数的真正的第2个参数 = args[3]
    - ...

## Frida中获取ObjC的参数

### 第一个参数 args[0]

- 获取第一个参数 args[0]

```
// args[0] is self = id
const argSelf = args[0];
console.log("argSelf: ", argSelf);
```

- 典型log输出

```
argSelf: 0x105744c00
```

### 第二个参数 args[1]

获取第二个参数 args[1]：

```
// args[1] is selector
const argSel = args[1];
console.log("argSel: ", argSel);
```

- 典型log输出

```
argSel: 0x105744c00
```

## ObjC函数的真正参数

- 获取 函数的真正的第1个参数 = args[2]

```
// args[2] holds the first function argument
const args2 = args[2];
console.log("args2: ", args2);
```

- 典型log输出

```
args2: 0x105743850
```

- 获取 函数的其他更多参数 (如果有的话)

```
const args3 = args[3];
console.log("args3: ", args3);

const args4 = args[4];
console.log("args4: ", args4);
```

## 计算ObjC的函数的真正参数的个数 + 打印全部参数

TODO: 把这部分代码, 整理成 独立的工具类函数, 转移到: [工具类函数](#)

根据ObjC的基础知识, 目前得知: 可以通过 SEL = selector 字符串中的 : = 冒号 的个数, 判断后续真正有几个参数

所以, 可以用如下代码, 循环的、批量的、挨个、打印所有参数:

```
/** Function that count occurrences of a substring in a string;
 * @param {String} string The string
 * @param {String} subString The sub string to search for
 * @param {Boolean} [allowOverlapping] Optional. (Default:false)
 *
 * @author Vitim.us https://gist.github.com/victornpb/7736865
 * @see Unit Test https://jsfiddle.net/Victornpb/5axuh96u/
 * @see https://stackoverflow.com/a/7924240/938822
 */
```

```

function occurrences(string, subString, allowOverlapping) {
 // console.log("string=" + string + ",subString=" + subString + ", allowOverlapping=" + allowOverlapping)
 string += "";
 subString += "";
 if (subString.length <= 0) return (string.length + 1);

 var n = 0,
 pos = 0,
 step = allowOverlapping ? 1 : subString.length;

 while (true) {
 pos = string.indexOf(subString, pos);
 // console.log("pos=" + pos)
 if (pos >= 0) {
 ++n;
 pos += step;
 } else break;
 }

 return n;
}

// ...

function hook_specific_method_of_class(className, funcName)
{
 var iosObjCallStr = toiosObjcCall(className, funcName)
 // var hook = ObjC.classes[className][funcName];
 // var hook = eval('ObjC.classes.' + className + '[' + funcName + ']');
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {
 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("===== [*] Detected call to: " + iosObjCallStr);
 }
 });

 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);
 const argCount = occurrences(argSelStr, ":");

 // console.log("funcName=", funcName);
 // const argCount = occurrences(funcName, ":");
 // console.log("argCount: ", argCount);

 for (let curArgIdx = 0; curArgIdx < argCount; curArgIdx++) {
 const curArg = args[curArgIdx + 2];

 // const usePtr = false;
 const usePtr = true;
 if (usePtr) {
 // console.log("usePtr=", usePtr);
 const curArgPtr = ptr(curArg);
 }
 }
 }
 }
}

```

```

 console.log("----- [" + curArgIdx + "] curArgPtr=" + curArgPtr);
 if (curArgPtr.isNull()) {
 const curArgPtrObj = new ObjC.Object(curArgPtr);
 console.log("curArgPtrObj: ", curArgPtrObj);
 console.log("curArgPtrObj className: ", curArgPtrObj.$className);
 }
 } else {
 console.log("----- [" + curArgIdx + "] curArg=" + curArg);
 if (curArg && (curArg != 0x0)) {
 // console.log("curArg className: ", curArg.$className);
 const curArgObj = new ObjC.Object(curArg);
 console.log("curArgObj: ", curArgObj);
 console.log("curArgObj className: ", curArgObj.$className);
 }
 }
}

...

```

某次的输出日志的效果：

```

----- [*] Detected call to: +[NSURLRequest requestWithURL:cachePolicy:timeoutInte
rval:]
funcName= + requestWithURL:cachePolicy:timeoutInterval:
argSelStr: requestWithURL:cachePolicy:timeoutInterval:
argCount: 3
----- [0] curArgPtr 0x2831f2530
curArgPtrObj: https://setup.icloud.com/setup/signin/v2/login
curArgPtrObj className: NSURL
----- [1] curArgPtr 0x0
----- [2] curArgPtr 0x0

```

- 注意：
  - 当Frida调试期间，输出log日志太多，或者打印参数太多时，经常会导致app或进程崩溃而无法继续调试
    - 所以当遇到Frida调试导致的崩溃问题时，可以适当的减少log日志的输出，以缓解崩溃问题

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## Frida中ObjC的变量类型

### 通用逻辑

- 获取ObjC的某个类
  - 写法: `ObjC.classes.someClassName == ObjC.classes[someClassName]`
  - 举例

```
ObjC.classes.NSMutableData.data()
ObjC.classes.NSString.stringWithString_("Crifan Li")
```

### ObjC 的 Object

此处的第一个参数和后续的真正的函数的（第一个以及后续的其他）参数，往往是个（iOS中ObjC的）`Class` 或 `Instance`，在 Frida 中对应的叫做：

- ObjC 的 Object

### ObjC的Object的常见的操作

- 转换为ObjC的类

```
const argSelf = args[0]
const argSelfObj = new ObjC.Object(argSelf)

const args2 = args[2]
const args2Obj = new ObjC.Object(args2)
// const args2Obj = new ObjC.Object(ptr(args2))
```

以及紧接着的：

- 打印类的信息

```
console.log("argSelfObj: ", argSelfObj)
console.log("args2Obj: ", args2Obj)
```

- 典型log输出

```
argSelfObj: <NSXPCConnection: 0x105744c00> connection from pid 46847 on mach $
ervice named com.apple.ak.auth.xpc

args2Obj: <AKAppleIDAuthenticationService: 0x102d3e4d0>
```

- 以及，把 Object 转换成String字符串，再去打印

```
const args20bjStr = args20bj.toString();
console.log("args20bjStr: ", args20bjStr);
```

- 典型log输出

```
args20bjStr: AKAppleIDAuthenticationService: 0x102d3e4d0
```

- 注：此处从调试输出类的信息的角度来说，往往 `Object` 转换成 `String` 后再输出的字符串，和上述直接打印 `Object` 的效果是一样的

## ObjC 的 Object 的特殊属性

对于Frida中的ObjC的Object，有很多内置的特殊的属性：

- `$kind`
- `$super`
- `$superClass`
- `$class`
- `$className`
- `$moduleName`
- `$protocols`
- `$methods`
- `$ownMethods`
- `$ivars`

所以，一些常见操作是：

### `$className`

- 查看（当前 `Object` 对象的）类名 = 类的名字

```
const argSelfClassName = argSelfObj.$className;
console.log("argSelfClassName: ", argSelfClassName);

const args20bjClassName = args20bj.$className;
console.log("args20bjClassName: ", args20bjClassName);
```

- 典型log输出

```
argSelfClassName: NSXPConnection
args20bjClassName: AKAppleIDAuthenticationService
```

### `$kind`

- 查看（当前 `Object` 对象的）类型

```
const argSelfKind = argSelfObj.$kind;
console.log("argSelfKind:", argSelfKind);
```

- 典型log输出

```
argSelfKind: instance
```

## \$methods 和 \$ownMethods

- 注意
  - 此处的 \$methods 、 \$ownMethods 中的 method
    - method 的英文单词本意是： 方法 = 函数
    - 但实际上此处： method = 类的 property + 类的 method
      - 注：
        - property = 属性
        - method = 方法 = 函数
  - 举例： \$methods和\$ownMethods

## objc 的 Object 的自己类的属性

而对于本身 objc 的类的属性，也是支持访问的：

- 访问 objc 的自己类的属性的方式：把属性当做函数访问 -》 加上括号 ()
  - 语法： iosObjcObj.propertyName()
  - 举例
    - 获取NSXPConnection的服务名
      - 对于Objc的Object对象：
 

```
argSelfObj: <NSXPConnection: 0x105744c00> connection from pid 46847 on
mach service named com.apple.ak.auth.xpc
```
      - 去获取其serviceName属性的代码：
 

```
const connnServiceNameNSStr = argSelfObj.serviceName();
console.log("connnServiceNameNSStr: ", connnServiceNameNSStr);
```
      - 输出log
 

```
connnServiceNameNSStr: com.apple.ak.auth.xpc
```
    - 获取NSString的UTF8String
      - 代码：
 

```
const connnServiceNameJsStr = connnServiceNameNSStr.UTF8String();
console.log("connnServiceNameJsStr: ", connnServiceNameJsStr);
```
      - 输出log
 

```
connnServiceNameJsStr: com.apple.ak.auth.xpc
```

## objc 的 Object 的自己类的函数

Frida中，是可以调用Objc中类的函数的。

### 举例： +[NSString stringWithFormat:]

Objc 中 NSString 的原始函数：

```
+[NSString stringWithFormat:@"Hello World"]
```

根据规则：

- 把 冒号 = : 变成 下划线 = \_
- 给函数加上括号 ()
- 把参数放到括号 () 中

而变成：

```
const { NSString } = ObjC.classes;
NSString.stringWithString_("Hello World");
```

- 或另外一种写法：

```
ObjC.classes.NSString.stringWithString_("Hello World");
```

### 举例： -[NSString cStringUsingEncoding:]

- ObjC的函数： -[NSString cStringUsingEncoding:]
  - -> Frida中的调用：

```
const NSUTF8StringEncoding = 4;
const curNsStr = curNsStr.cStringUsingEncoding_(NSUTF8StringEncoding);
```

## ObjC 的 selector

Objc 中，有个稍微特殊一点的变量，叫做 SEL = selector

也就是前面获取到的，第二个参数，类型是 SEL

- SEL 的常见操作之一就是：转换成字符串，再去打印

```
const argSel = args[1];
const argSelStr = ObjC.selectorAsString(argSel);
console.log("argSelStr: ", argSelStr);
```

- 典型log输出

```
argSelStr: setExportedObject:
```

## ObjC 的 Protocol

## objc 的 Block

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# 数据类型

Frida中典型的数据类型有：

- `Int64`
  - <https://frida.re/docs/javascript-api/#int64>
- `UInt64`
  - <https://frida.re/docs/javascript-api/#uint64>
- `NativePointer`
- `ArrayBuffer`
  - <https://frida.re/docs/javascript-api/#arraybuffer>
- 其他相关
  - `Function`函数
    - `NativeFunction`
      - <https://frida.re/docs/javascript-api/#nativefunction>
    - `SystemFunction`
      - <https://frida.re/docs/javascript-api/#systemfunction>
  - `Callback`回调
    - `NativeCallback`
      - <https://frida.re/docs/javascript-api/#nativecallback>

## 常见缩写

和数据类型有关的，常见缩写有：

- `int64(v) == new Int64(v)`
- `uint64(v) == new UInt64(v)`
- `ptr(s) == new NativePointer(s)`
- `NULL == ptr("0")`

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## NativePointer

- NativePointer
  - 是什么: Frida中一个最基本的变量类型
  - 常简称: ptr
  - 官网文档
    - [NativePointer - JavaScript API](#)

## NativePointer的函数=支持的操作

- NativePointer 的函数=支持的操作
  - new NativePointer(s) : 传入字符串, 生成 NativePointer
    - 大家常用=其简写为: ptr(s)
  - isNull() : 判断是否为空
  - add(rhs) , sub(rhs) , and(rhs) , or(rhs) , xor(rhs)
  - shr(n) , shl(n)
  - not()
  - sign([key, data])
  - strip([key])
  - blend(smallInteger)
  - equals(rhs)
  - compare(rhs)
  - toInt32()
  - toString([radix = 16])
  - toMatchPattern()
  - readPointer()
  - writePointer(ptr)
  - reads8() , readU8() , reads16() , readU16() , reads32() , readU32() ,
   
readShort() , readUShort() , readInt() , readUInt() , readFloat() , readDouble()
  - writeS8(value) , writeU8(value) , writeS16(value) , writeU16(value) ,
   
writeS32(value) , writeU32(value) , writeShort(value) , writeUShort(value) ,
   
writeInt(value) , writeUInt(value) , writeFloat(value) , writeDouble(value)
  - readS64() , readU64() , readLong() , readULong()
  - writeS64(value) , writeU64(value) , writeLong(value) , writeULong(value)
  - readByteArray(length)
  - writeByteArray(bytes)
  - readCString([size = -1]) , readUtf8String([size = -1]) , readUtf16String([length = -1]) , readAnsiString([size = -1])
  - writeUtf8String(str) , writeUtf16String(str) , writeAnsiString(str)

## NativePointer的典型用法

## 一些常见的写法

```
myOffsetPtr = myBaseAddr.add(ptr('0x76E'))
console.log(hexdump(ptr(0x7cbe43acd0)))
Memory.protect(ptr('0x1234'), 4096, 'rw-');
ptr('0x7fff870135c9')
```

## onEnter中的args

frida中最常涉及到 NativePointer 的地方就是： Interceptor.attach 的 onEnter 中的 args ，就是一个 NativePointer 的数组 = an array of NativePointer objects

[单个类的单个函数的代码举例](#)中的：

```
const curMethod = ObjC.classes.NSXPCConnection["- setExportedObject:"];
Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 const arg0 = args[0]
 const arg1 = args[1]
 const arg2 = args[2]
 console.log("args: Objc self id=" + arg0 + ", SEL=" + arg1 + ", objcRealArg1=" + arg2);
 }
});
```

中的 args ，就是NativePointer的数组，所以： arg0 、 arg1 、 arg2 ，都是 NativePointer = ptr 类型

而典型的后续的操作就是，去转换成对应的类型，去处理

比如：

- ObjC中，把传入的参数，转换成真正的ObjC的类

```
const argSelf = args[0];
const argSelfObj = new ObjC.Object(argSelf);
```

## 用add计算函数地址

[Stalker实例代码](#) 中的

```
var funcRelativeStartAddr = 0xa0460;
var functionSize = 0x24C8; // 9416 == 0x24C8
var funcRelativeEndAddr = funcRelativeStartAddr + functionSize;
const moduleName = "akd";
const moduleBaseAddress = Module.findBaseAddress(moduleName);
const funcRealStartAddr = moduleBaseAddress.add(funcRelativeStartAddr);
```

```
const funcRealEndAddr = funcRealStartAddr.add(functionSize);
```

中就是用到了 `Module.findBaseAddress` 的返回值，类型就是 `NativePointer`，然后：

- `const funcRealStartAddr = moduleBaseAddress.add(funcRelativeStartAddr);`
  - 通过 `add` 加上起始地址，计算出函数真正的起始地址
- `const funcRealEndAddr = funcRealStartAddr.add(functionSize);`
  - 通过 `add` 加上函数大小，计算出真正的结束地址

输出的相关log：

```
funcRelativeStartAddr=656480, functionSize=9416, funcRelativeEndAddr=665896
moduleName:akd, moduleBaseAddress=0x10015c000
funcRealStartAddr=0x1001fc460, funcRealEndAddr=0x1001fe928
```

注意：

- 如果是 `NativePointer` 类型的变量，直接相加 + 普通的数值，则结果，不是数值上的相加，而是：  
数值的字符串拼接
  - 对比
    - 上述代码

```
const funcRealEndAddr = funcRealStartAddr.add(functionSize);
```

- 结果：`funcRealEndAddr=0x1001fe928`
  - $= 0x1001fc460 + 0x24C8$

- 如果改为

```
const funcRealEndAddr = funcRealStartAddr + functionSize;
```

- 则结果是：`funcRealEndAddr=0x1001fc4609416`
  - 地址的字符串 `0x1001fc460` 拼接上 `9416` (=16进制的 `0x24C8` 的10进制值)

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# Frida的Stalker

- Frida 的 Stalker
  - 别称: frida-stalker
    - 有人翻译成: 潜行者
  - 作用: 汇编指令级别的hook
  - 用途: 追踪真实代码指令的执行过程
  - 官网文档
    - [Stalker介绍](#)
  - API接口
    - 接口形式
      - 普通用户常直接调用: JS的API
        - [Stalker - JavaScript API | Frida](#)
      - 内部接口: Gum接口
        - TypeScript type definitions
          - [DefinitelyTyped/index.d.ts](#)
    - 接口内容
      - 最核心接口
        - `Stalker.follow([threadId, options])`
      - 其他
        - `Stalker.exclude(range)`
        - `Stalker.unfollow([threadId])`
        - `Stalker.parse(events[, options])`
        - `Stalker.flush()`
        - `Stalker.garbageCollect()`
        - `Stalker.invalidate(address)`
        - `Stalker.invalidate(threadId, address)`
        - `Stalker.addCallProbe(address, callback[, data])`
        - `Stalker.removeCallProbe`
        - `Stalker.trustThreshold`
        - `Stalker.queueCapacity`
        - `Stalker.queueDrainInterval`
  - 用法
    - 概述
      - 核心逻辑
        - 在frida命令上, 和普通frida一样, 都是调用js
 

```
frida -U -n akd -l ./fridaStalker_akdSymbol2575.js
```
    - js内部逻辑
      - 最初要初始化: 计算出当前要hook的函数所属的模块和地址
      - 在普通的 `Interceptor.attach` 的 `onEnter` 中, 加上 `Stalker.follow`
        - 在 `transform` 中, 计算是否是原始函数的代码
          - 如果是, 再去: 实现特定的调试的目的

- 打印真实执行的指令的信息 `instruction.toString()`
- 打印当时的变量的值 `context`
- 等等
- 详解
  - 举例
    - [Stalker示例代码](#)

## 何时需要用到Frida的Stalker

如下场景：

- 你想要搞懂该函数内部的执行的逻辑，想要查看哪个函数，甚至是哪个代码块codeblock，被执行了
- 还比如你想要搞懂，当传入不同参数时，函数内部代码执行的流程路径，是否有何不同。

就可以去用：

- `Stalker.follow()`

## Frida的Stalker中transform的逻辑

Frida的Stalker中transform的逻辑：

除了官网文档：

<https://frida.re/docs/stalker/>

介绍了内部具体实现机制和过程之外：

对于，想要搞懂如何利用transform去调试代码来说：

需要明白的逻辑是：

此处代码：

```
Interceptor.attach(funcRealStartAddr, {
 onEnter: function(args) {
 ...
 var curTid = Process.getCurrentThreadId();
 console.log("curTid=", curTid);
 Stalker.follow(curTid, {
 events: {
 call: true, // CALL instructions: yes please
 ret: false, // RET instructions
 exec: false, // all instructions: not recommended as it's
 block: false, // block executed: coarse execution trace
 compile: false // block compiled: useful for coverage
 },
 // transform: (iterator: StalkerArm64Iterator) => {
 transform: function (iterator) {
 ...
 }
 })
 }
})
```

触发到的 `transform` 的 `iterator` 来说：

- 每次触发=每个iterator: 都 (对应着) 单个block= (basic) 代码块
- 此处代码块有2种
  - 非原始函数代码 == isAppCode=false
    - 对应着应该是Stalker内部实现原理说的, copy拷贝出的代码
    - 其中会额外加上很多逻辑, 用于实现Stalker的功能和逻辑
    - 估计就是这里说的这些内容
      - [原创] [sktrace: 基于 Frida Stalker 的 trace 工具-Android安全-看雪-安全社区|安全招聘|kanxue.com](#)
      - 每当执行到一个基本块, Stalker 都会做以下几件事:
        1. 对于方法调用, 保存 lr 等必要信息
        2. 重定位位置相关指令, 例如: ADR Xd, label
        3. 建立此块的索引, 如果此块在达到可信阈值后, 内容未曾变化, 下次将不再重新编译 (为了加快速度)
        4. 根据 transform 函数, 编译生成一个新的基本块 GumExecBlock , 保存到 GumSlab 。 void transform(GumStalkerIterator iterator, GumStalkerOutput output, gpointer user\_data) 可以控制读取, 改动, 写入指令。
        5. transform 过程中还可通过 void gum\_stalker\_iterator\_put\_callout (GumStalkerIterator self, GumStalkerCallout callout, gpointer data, GDestroyNotify data\_destroy) 来设置一个当此位置被执行到时的 callout。通过此 void callout(GumCpuContext cpu\_context, gpointer user\_data) 获取 cpu 信息。
        6. 执行一个基本快 GumExecBlock, 开始下一个基本快
      - 所以无需操作具体内部过程, 直接忽略即可
  - 原始函数代码 == isAppCode=true
    - 是实际运行的代码, 才是我们所要关注的代码
      - 才会真正的去处理: 比如判断是否是对应的 (某个偏移量的) 代码, 然后去打印查看调试寄存器的值等等

此处去通过计算是否是 原始函数代码isAppCode 决定是否处理

具体详见示例代码: [\\_\\_lldb\\_unnamed\\_symbol2575\\$\\$akd](#)

## Stalker.follow 中的 events 的属性含义

- Stalker.follow 中的 events 的属性含义
  - 概述
    - Stalker.follow中的events中某个属性是true, 含义是: 当出现对应指令, 则触发对应event事件
  - 详解
    - 属性
      - 对应的属性的含义是
        - call: call指令
          - Intel的: call指令
          - ARM的: BL类的指令
            - 普通的=arm64的: BL、BLR等
            - arm64e的, 带PAC的: BLRAA、BLRAAZ、BLRAB、BLRABZ等

- ret: ret指令
- exec: 所有指令
- block: (单个) block的(所有)指令
- compile: 特殊, (单个) block被编译时, 仅用于测试代码覆盖率?
- 除去特殊的compile参数, 其他几个参数, 按照范围大小去划分, 更容易理解:
  - exec: 所有代码的级别
    - block: 单个代码块的级别
    - 某些特殊指令的级别
      - call: 单独的call指令
      - ret: 单独的ret指令
  - event事件
    - 会触发onReceive(events)函数
      - 其中可以events是二进制(的blob), 需要去用Stalker.parse()解析后才能看懂
- -» events和onReceive的作用
  - 暂时不完全懂, 只是知道, 可以设置参数, 决定call、ret等指令的触发时去打印, 其他用途暂时不清楚

## Stalker.follow() 内部实现原理

当用户调用 `Stalker.follow()` 时, 内部调用:

- 要么是: `gum_stalker_follow_me()` : 去跟踪当前的线程thread
  - 函数原型
 

```
GUM_API void gum_stalker_follow_me (GumStalker * self, GumStalkerTransformer * transformer, GumEventSink * sink);
```
  - 底层 JS 引擎: 是 QuickJS 或 v8
- 要么是: `gum_stalker_follow(thread_id)` : 去跟踪当前process进程中的其他某个线程thread

## gum\_stalker\_follow\_me 的内部原理

```
#ifdef __APPLE__

.globl _gum_stalker_follow_me

_gum_stalker_follow_me:
#else
.globl gum_stalker_follow_me

.type gum_stalker_follow_me, %function

gum_stalker_follow_me:
#endif
stp x29, x30, [sp, -16]

mov x29, sp

mov x3, x30
```

```
#ifdef __APPLE__

bl __gum_stalker_do_follow_me

#else
bl _gum_stalker_do_follow_me

#endif
ldp x29, x30, [sp], 16

br x0

```

-»

- 内部原理
  - LR=Link Register=X30=链接寄存器
    - AArch64架构中，根据LR去决定从哪里开始跟踪
    - 当遇到BR, BLR等跳转指令时，会去设置LR
      - LR被设置为，当前函数返回后，继续运行的地址
    - 由于只有一个LR，如果被调用函数调用了其他函数，此时LR的值就会被保存起来，比如保存到Stack栈上，后续当RET指令执行之前，会重新把LR从Stack栈中加载到寄存器中，最终返回到调用者
  - FP=Frame Pointer=X29=帧指针
    - FP始终指向Stack top栈的顶部，表示当前函数被调用时的栈的位置
    - 所以就可以通过固定的偏移量去访问到，所有通过Stack栈传入的参数和基于栈的局部变量
    - 且每个函数都有自己的FP，所以需要调用新函数时，保存之前的FP，返回之前函数时，恢复FP。
    - 在刚进入新函数后，备份FP后，就可以去设置：mov x29, sp，把SP给X29=FP了。

保持了原先传入 `x0-x2` 的3个参数，额外加上 `x3 = x30 = LR`，所以再去调用函数，就对应上参数了：

```
gpointer_gum_stalker_do_follow_me (GumStalker * self, GumStalkerTransformer * transformer, GumEventSink * sink, gpointer ret_addr)
```

## gum\_stalker\_follow 的内部原理

和 `gum_stalker_follow_me()` 类似，但有额外参数：`thread_id`

```
void
gum_stalker_follow (GumStalker * self,
 GumThreadId thread_id,
 GumStalkerTransformer * transformer,
 GumEventSink * sink)
{
 if (thread_id == gum_process_get_current_thread_id ())
 {
 gum_stalker_follow_me (self, transformer, sink);
 }
 else
 {
```

```

 GumInfectContext ctx;

 ctx.stalker = self;
 ctx.transformer = transformer;
 ctx.sink = sink;

 gum_process_modify_thread (thread_id, gum_stalker_infect, &ctx);
}
}

```

其中： `gum_process_modify_thread()`， 不属于 `stalker`， 但属于 `Gum`

回调callback会去修改： `GumCpuContext`

## GumCpuContext

`GumCpuContext`的定义：

```

typedef GumArm64CpuContext GumCpuContext;

struct __GumArm64CpuContext
{
 quint64 pc;
 quint64 sp;

 quint64 x[29];
 quint64 fp;
 quint64 lr;
 quint8 q[128];
};

```

相关：

```

static void
gum_stalker_infect (GumThreadId thread_id,
 GumCpuContext * cpu_context,
 gpointer user_data)

```

- `gum_process_modify_thread()` 内部实现
  - Linux/Android: ptrace
    - GDB也用的这个：挂载到进程上，读写寄存器

Stalker每次只处理一个代码块block

内部机制：

新申请一块内存，写入给原始代码中加了调试代码后的代码

加的指令，用于生成事件、提供其他Stalker所支持的功能。

以及根据情况去relocate重定位指令代码。

比如对于下面代码，要重定位：

- ADR Address of label at a PC-relative offset.
- `ADR Rd, label`
- `Rd` Is the 64-bit name of the general-purpose destination register, in the range 0 to 31.
- `label` Is the program label whose address is to be calculated. It is an offset from the address of this instruction, in the range ±1MB.

底层通过Gum的Relocator

[frida-gum/gumarm64relocator.c at main · frida/frida-gum · GitHub](#)

现在，回想一下我们说过潜行者一次工作一个块。那么我们如何检测下一个块呢？我们还记得每个块也以分支指令结尾，如果我们修改这个分支以分支回 Stalker 引擎，但确保我们存储分支打算结束的目的地，我们可以检测下一个块并在那里重定向执行。这个相同的简单过程可以一个接一个地继续。

Stalker=潜行者

现在，这个过程可能有点慢，因此我们可以应用一些优化。首先，如果我们多次执行相同的代码块（例如循环，或者可能只是一个多次调用的函数），我们不必重新检测它。我们可以重新执行相同的检测代码。出于这个原因，我们保留了一个哈希表，其中包含我们之前遇到的所有块以及我们放置块的检测副本的位置。

其次，当遇到呼叫指令时，在发出检测的呼叫后，我们随后会发出一个着陆板，我们可以返回该着陆板而无需重新进入 Stalker。Stalker 使用记录真实返回地址 (`real_address`) 和此着陆垫 (`code_address`) 的 `GumExecFrame` 结构构建了一个侧堆栈。当一个函数返回时，我们发出代码，该代码将根据 `real_address` 检查侧堆栈中的返回地址，如果匹配，它可以简单地返回到 `code_address`，而无需重新进入运行时。这个着陆板最初将包含进入 Stalker 引擎以检测下一个块的代码，但稍后可以将其反向修补以直接分支到该块。这意味着可以处理整个返回序列，而无需输入和离开 Stalker。

如果返回地址与存储的 `GumExecFrame real_address` 不匹配，或者我们在侧堆栈中的空间不足，我们只需从头开始重新构建一个新的。我们需要在应用程序代码执行时保留 `LR` 的值，以便应用程序不能使用它来检测 Stalker 的存在（反调试），或者如果它将其用于除简单返回之外的任何其他目的（例如，在代码部分中引用内联数据）。此外，我们希望 Stalker 能够随时取消关注，所以我们不想不得不返回我们的堆栈来更正我们在此过程中修改的 `LR` 值。

最后，虽然我们总是用对 Stalker 的调用来替换分支以检测下一个块，但根据 `Stalker.trustThreshold` 的配置，我们可能会对此类检测代码进行反向修补，以将调用替换为下一个检测块的直接分支。确定性分支（例如，目的地是固定的，分支不是有条件的）很简单，我们可以将分支替换为下一个块。但是我们也可以处理条件分支，如果我们检测两个代码块（一个是分支，一个是不是）。然后，我们可以将原始条件分支替换为一个条件分支，该条件分支将控制流定向到获取分支时遇到的块的检测版本，然后是另一个检测块的无条件分支。我们还可以部分处理目标不是静态的分支。假设我们的分支是这样的：

`BR X0` 这种指令在调用函数指针或类方法时很常见。虽然 `X0` 的值可以更改，但通常它实际上总是相同的。在这种情况下，我们可以将最终的分支指令替换为代码，该代码将 `X0` 的值与我们的已知函数进行比较，如果它将分支与代码的检测副本的地址匹配。然后，如果不匹配，则可以将无条件分支返回到 Stalker 引擎。因此，如果函数指针 `say` 的值发生了变化，那么代码仍然有效，无论我们最终到达哪里，我们都将重新输入 Stalker 和乐器。但是，如果如我们预期的那样它保持不变，那么我们可以完全绕过 Stalker 引擎并直接进入仪器化功能。



## frida-trace

- frida-trace
  - 官网文档
    - [frida-trace](#)
  - 官网代码
    - [frida-tools/frida\\_tools/tracer.py](#)
  - 核心参数解释
    - 调试目标方式
      - frida-trace 去hook调试的目标的写法，是和 frida 是一样的
        - 详见：[frida调试目标方式](#)
    - 通用逻辑
      - `-m`、`-M` 等参数，支持通配符
        - `*`：表示任意个数的字符 =所有的（类或方法名）
        - 举例
 

```
-m "-[NSURL *]" // 匹配NSURL类的所有实例方法
-m "+[NSURL *]" // 匹配NSURL类的所有类方法
-m "**[NSURL *]" // 匹配NSURL类的所有方法
-m "**[*URL *]" // 匹配以URL结尾类的所有方法
-m "**[URL* *]" // 匹配以URL开头类的所有方法
-m "**[*URL* *]" // 匹配包含URL的类的所有方法
-m "**[*URL* *login*]" // 匹配包含URL的类的带login的所有方法
```
      - 注意
        - 不支持：`?`
          - 如果用了 `?`，则会报错： Error: invalid query; format is: -
 

```
[NS*Number foo:bar:], +[Foo foo*] or *[Bar baz]
```
      - 参数
        - `-m`
          - 语法：`-m OBJC_METHOD, --include-objc-method OBJC_METHOD`
            - include OBJC\_METHOD
          - 含义：（要去hook的）包含的ObjC的（类和）方法
        - `-M`
          - 语法：`-M OBJC_METHOD, --exclude-objc-method OBJC_METHOD`
            - exclude OBJC\_METHOD
          - 含义：（不要hook的）排除掉的ObjC的（类和）方法
        - `-O`
          - 语法：`-O FILE, --options-file FILE`
            - text file containing additional command line options
          - 含义：用Option文件，包含额外的命令行参数
            - 典型用法是，觉得 `-m`、`-M` 等要去hook和要去排除掉的类和方法，太多了，就转去放到Option文件中
      - 举例
        - 概述

- hook调试 Preferences : -m 、 -M 等参数直接放到命令行中

- hook单个的类: AAUISignInViewController

```
frida-trace -U -F com.apple.Preferences -m "*[AAUISignInViewController *]"
```

- (用 \* 匹配) 去hook多个类, 且排除特定 (实际上会输出很多次但对调试逻辑没帮助) 的函数

```
frida-trace -U -F com.apple.Preferences -m "*[AA* *]" -M "-[ASDBundle copyWithZone:]" -M "-[* copyWithZone:]" -M "-[AAUILabel *]"
```

- 通用参数含义说明

- -U -F com.apple.Preferences : 调试目标设备和目标app是和frida写法一致
  - -U : 调试设备是 (Mac中通过) USB连接的iPhone
  - -F com.apple.Preferences : 调试的app是当前iPhone中, 最前端所显示的app = 设置app = 包名是 com.apple.Preferences
- 但是后续要trace的函数写法, 是frida-trace所特有的语法
  - -m xxx : include=包含要调试的Objc的类
  - -M xxx : exclude=排除掉Objc的类, 不调试

- hook调试 akd : 觉得 -m 、 -M 等参数太多, 则放到 -o 的Option文件中

```
frida-trace -U -n akd -O akdObjcMethods.txt
```

- Option文件 akdObjcMethods.txt

```
-m "*[AA* *]"
-m "*[AK* *]"
-m "*[AS* *]"
-m "*[NSXPC* *]"
-M "-[NSXPC*coder *]"
-M "-[NSXPConnection replacementObjectForEncoder:object:]"
```

- 一些用法

```
frida-trace -U -i "CCCryptorCreate*" Twitter
frida-trace --decorate -i "recv*" -i "send*" Safari
frida-trace -m "-[NSView drawRect:]" Safari
frida-trace -U -f com.toyopagroup.picaboo -I "libcommonCrypto*"
frida-trace -U -f com.google.android.youtube --runtime=v8 -j '*!*certificate*/isu'
frida-trace -U -i "Java_*" com.samsung.faceservice
frida-trace -p 1372 -i "msvcrt.dll!*mem*"
frida-trace -p 1372 -i "*open*" -x "msvcrt.dll!*open*"
frida-trace -p 1372 -a "libjpeg.so!0x4793c"
```

- 详见

- [frida-trace的iOS的ObjC的举例](#)

## help语法帮助

```

→ ~ frida-trace --help
usage: frida-trace [options] target

positional arguments:
 args extra arguments and/or target

options:
 -h, --help show this help message and exit
 -D ID, --device ID connect to device with the given ID
 -U, --usb connect to USB device
 -R, --remote connect to remote frida-server
 -H HOST, --host HOST connect to remote frida-server on HOST
 --certificate CERTIFICATE
 speak TLS with HOST, expecting CERTIFICATE
 --origin ORIGIN connect to remote server with "Origin" header set to ORIGIN
 --token TOKEN authenticate with HOST using TOKEN
 --keepalive-interval INTERVAL
 set keepalive interval in seconds, or 0 to disable (defaults to
 -1 to auto-select based on transport)
 --p2p establish a peer-to-peer connection with target
 --stun-server ADDRESS
 set STUN server ADDRESS to use with --p2p
 --relay address,username,password,turn-{udp,tcp,tls}
 add relay to use with --p2p
 -f TARGET, --file TARGET
 spawn FILE
 -F, --attach-frontmost
 attach to frontmost application
 -n NAME, --attach-name NAME
 attach to NAME
 -N IDENTIFIER, --attach-identifier IDENTIFIER
 attach to IDENTIFIER
 -p PID, --attach-pid PID
 attach to PID
 -W PATTERN, --await PATTERN
 await spawn matching PATTERN
 --stdio {inherit,pipe}
 stdio behavior when spawning (defaults to "inherit")
 --aux option set aux option when spawning, such as "uid(int)42" (supported
types are: string, bool, int)
 --realm {native,emulated}
 realm to attach in
 --runtime {qjs,v8} script runtime to use
 --debug enable the Node.js compatible script debugger
 --squench-crash if enabled, will not dump crash report to console
 -O FILE, --options-file FILE
 text file containing additional command line options
 --version show program's version number and exit
 -I MODULE, --include-module MODULE
 include MODULE
 -X MODULE, --exclude-module MODULE
 exclude MODULE
 -i FUNCTION, --include FUNCTION
 include [MODULE!]FUNCTION
 -x FUNCTION, --exclude FUNCTION

```

```
 exclude [MODULE!]FUNCTION
-a MODULE!OFFSET, --add MODULE!OFFSET
 add MODULE!OFFSET
-T INCLUDE_IMPORTS, --include-imports INCLUDE_IMPORTS
 include program's imports
-t MODULE, --include-module-imports MODULE
 include MODULE imports
-m_OBJC_METHOD, --include-objc-method_OBJC_METHOD
 include_OBJC_METHOD
-M_OBJC_METHOD, --exclude-objc-method_OBJC_METHOD
 exclude_OBJC_METHOD
-j JAVA_METHOD, --include-java-method JAVA_METHOD
 include JAVA_METHOD
-J JAVA_METHOD, --exclude-java-method JAVA_METHOD
 exclude JAVA_METHOD
-s DEBUG_SYMBOL, --include-debug-symbol DEBUG_SYMBOL
 include_DEBUG_SYMBOL
-q, --quiet do not format output messages
-d, --decorate add module name to generated onEnter log statement
-S PATH, --init-session PATH
 path to JavaScript file used to initialize the session
-P PARAMETERS_JSON, --parameters PARAMETERS_JSON
 parameters as JSON, exposed as a global named 'parameters'
-o OUTPUT, --output OUTPUT
 dump messages to file
```

## frida-tools

`frida-tool` 是Frida的一套工具的集合，包括：

- 相对常用的
  - `frida-trace`
  - `frida-ps`
  - `frida-ls`
- 不太常用的
  - `frida-apk`
  - `frida-compile`
  - `frida-create`
  - `frida-discover`
  - `frida-join`
  - `frida-ls-devices`
  - `frida-kill`
  - `frida-pull`
  - `frida-push`
  - `frida-rm`

对应源码是：[frida-tools](#)

## 安装frida-tools

Mac 中用 Python 的 pip3 去安装：

```
pip3 install frida-tools
```

## 其他工具

- [gum-graft](#)

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2023-06-23 23:20:40

## frida-ps

- `frida-ps`
  - 是 [frida-tools](#) 中一个常用的工具
  - 作用：显示系统进程列表
    - 类似于 `ps`
    - 支持显示当前（Mac等）PC 端的进程和（iPhone 等）移动端中的进程
  - 官网文档
    - [frida-ps](#)

## 用法

- 显示当前 PC 端进程：不加参数

```
frida-ps
```

- 显示 USB 连接的（iPhone 等）移动端的（默认显示）所有进程，进程：`-U`

```
frida-ps -U
```

- 显示 USB 连接的（iPhone 等）移动端的正在运行的应用程序的进程：`-Ua` = USB + only (running) applications

```
frida-ps -Ua
```

- 显示 USB 连接的（iPhone 等）移动端的应用程序的已安装的全部（正在运行和没有运行）的应用程序的进程：`-Uai` = USB + only (running) applications + (not running but) installed

```
frida-ps -Uai
```

另外：

- 可以加 `grep` 去搜索特定 app
  - 举例

```
→ frida-ps -Ua | grep -i preferences
46847 设置
com.apple.Preferences
```

## 举例

### frida-ps

```
→ ~ frida-ps
PID Name

```

```

1205 weatherd
639 wifianalyticsd
612 wifip2pd
913 wifivelocityd
11153 wine64-preloader
...
11120 wineserver
633 writeconfig
17438 xpcroleaccountd
...
94172 zsh

```

**frida-ps -U**

```

crifan@licrifandeMacBook-Pro: ~/dev/dev_tool/reverse_security/iOS/palera1n$ frida-ps -U
PID Name

262 App Store
328 Filza
260 GTA Car Tracker
261 Safari浏览器
291 Shadowrocket
350 Sileo
265 TrollStore
316 palera1n
234 微信
315 截屏
312 搜索
264 播客
263 设置
100 ACCHWComponentAuthService
339 ASPCarryLog
230 AppPredictionIntentsHelperService
252 AppSSODaemon
81 AppleCredentialManagerDaemon
140 BlueTool
219 CAResultingService
335 CMFSyncAgent
276 CacheDeleteAppContainerCaches
285 CacheDeleteExtension
307 CategoriesService

```

```

237 CategoriesService
214 CategoriesService
187 CategoriesService
119 CloudKeychainProxy
91 CommCenter
185 CommCenterMobileHelper
188 ContextService
322 EnforcementService
...

```

**frida-ps -Ua**

```

→ ~ frida-ps -Ua
 PID Name Identifier
5 -----
27692 Sileo org.coolstar.SileoStore
23650 微信 com.tencent.xin
11941 日历 com.apple.mobilecal
19641 设置 com.apple.Preferences

```

**frida-ps -Uai**

```

→ ~ frida-ps -Uai
 PID Name Identifier
5 -----
27692 Sileo org.coolstar.SileoStore
23650 微信 com.tencent.xin
11941 日历 com.apple.mobilecal
19641 设置 com.apple.Preferences
- App Store com.apple.AppStore
- Apple Store com.apple.store.Jolly
- CocoaTop ru.domo.cocoatop64
- FaceTime通话 com.apple.facetime
- Filza com.tigisoftware.Filza
- GTA Car Tracker com.icraze.gtatracker
- Safari浏览器 com.apple.mobilesafari
- Shadowrocket com.liguangming.Shadowrocket
- ShowSystemInfo com.crifan.ShowSystemInfo
- Substitute com.ex.substitute.settings
- TrollStore com.opa334.TrollStore
- Watch com.apple.Bridge
- iTunes Store com.apple.MobileStore
- palera1n com.llsc12.palera1nLoader
- 信息 com.apple.MobileSMS
- 健康 com.apple.Health
- 反馈 com.apple.appleseed.FeedbackAssistant
- 图书 com.apple.iBooks
- 地图 com.appleMaps
- 备忘录 com.apple.mobilenotes
- 天气 com.apple.weather

```

|         |                             |
|---------|-----------------------------|
| - 家庭    | com.apple.Home              |
| - 快捷指令  | com.apple.shortcuts         |
| - 指南针   | com.apple.compass           |
| - 提示    | com.apple.tips              |
| - 提醒事项  | com.apple.reminders         |
| - 播客    | com.apple.podcasts          |
| - 放大器   | com.apple.Magnifier         |
| - 文件    | com.apple.DocumentsApp      |
| - 时钟    | com.apple.mobletimer        |
| - 查找    | com.apple.findmy            |
| - 测距仪   | com.apple.measure           |
| - 照片    | com.apple.mobileslideshow   |
| - 爱思全能版 | com.ownbook.notes           |
| - 电话    | com.apple.mobilephone       |
| - 相机    | com.apple.camera            |
| - 翻译    | com.apple.Translate         |
| - 股市    | com.apple.stocks            |
| - 视频    | com.apple.tv                |
| - 计算器   | com.apple.calculator        |
| - 语音备忘录 | com.apple.VoiceMemos        |
| - 通讯录   | com.apple.MobileAddressBook |
| - 邮件    | com.apple.mobilemail        |
| - 钱包    | com.apple.Passbook          |
| - 音乐    | com.apple.Music             |

## 语法help

```
→ ~ frida-ps --help
usage: frida-ps [options]

options:
 -h, --help show this help message and exit
 -D ID, --device ID connect to device with the given ID
 -U, --usb connect to USB device
 -R, --remote connect to remote frida-server
 -H HOST, --host HOST connect to remote frida-server on HOST
 --certificate CERTIFICATE
 speak TLS with HOST, expecting CERTIFICATE
 --origin ORIGIN connect to remote server with "Origin" header set to ORIGIN
 --token TOKEN authenticate with HOST using TOKEN
 --keepalive-interval INTERVAL
 set keepalive interval in seconds, or 0 to disable (defaults to
-1 to auto-
 select based on transport)
 --p2p establish a peer-to-peer connection with target
 --stun-server ADDRESS
 set STUN server ADDRESS to use with --p2p
 --relay address,username,password,turn-{udp,tcp,tls}
 add relay to use with --p2p
 -O FILE, --options-file FILE
 text file containing additional command line options
 --version show program's version number and exit
```

```
-a, --applications list only applications
-i, --installed include all installed applications
-j, --json output results as JSON
```

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## frida-ls

- `frida-ls`
  - 是 `frida-tools` 中一个工具
  - 作用：显示系统中的文件列表
    - 类似于 `ls`
    - 支持：当前（Mac等）PC 端的文件和（iPhone 等）移动端中的文件

## 用法

- 显示当前 PC 端的文件：不加参数

```
frida-ls
```

- 显示 USB 连接的（iPhone 等）移动端中的所有文件：`-U == USB`

```
frida-ls -U
```

## 举例

### frida-ls

```
→ ~ frida-ls
drwxr-xr-x 20 root wheel 640 Thu Feb 9 09:39:53 2023 .
drwxr-xr-x 20 root wheel 640 Thu Feb 9 09:39:53 2023 ..
lrwxr-xr-x 1 root admin 36 Thu Feb 9 09:39:53 2023 .VolumeIcon.icns -> System/Volumes/.VolumeIcon.icns
----- 1 root admin 0 Thu Feb 9 09:39:53 2023 .file
drwxr-xr-x 2 root wheel 64 Thu Feb 9 09:39:53 2023 .vol
drwxrwxr-x 45 root admin 1440 Wed Jun 14 14:45:54 2023 Applications
drwxr-xr-x 66 root wheel 2112 Fri May 12 19:14:14 2023 Library
drwxr-xr-x 10 root wheel 320 Thu Feb 9 09:39:53 2023 System
drwxr-xr-x 5 root admin 160 Sat Mar 18 14:26:26 2023 Users
drwxr-xr-x 3 root wheel 96 Mon Jun 5 02:34:08 2023 Volumes
drwxr-xr-x 39 root wheel 1248 Thu Feb 9 09:39:53 2023 bin
drwxrwxr-x 2 root admin 64 Mon Oct 24 06:20:41 2022 cores
dr-xr-xr-x 4 root wheel 5127 Sat Mar 18 14:26:04 2023 dev
lrwxr-xr-x 1 root wheel 11 Thu Feb 9 09:39:53 2023 etc -> private/etc
lrwxr-xr-x 1 root wheel 25 Sat Mar 18 14:27:10 2023 home -> /System/Volumes/Data/home
drwxr-xr-x 7 root wheel 224 Mon May 29 03:57:47 2023 opt
drwxr-xr-x 6 root wheel 192 Sat Mar 18 14:27:03 2023 private
drwxr-xr-x 64 root wheel 2048 Thu Feb 9 09:39:53 2023 sbin
lrwxr-xr-x 1 root wheel 11 Thu Feb 9 09:39:53 2023 tmp -> private/tmp
drwxr-xr-x 11 root wheel 352 Thu Feb 9 09:39:53 2023 usr
lrwxr-xr-x 1 root wheel 11 Thu Feb 9 09:39:53 2023 var -> private/var
```

### frida-ls -U

- 注：Mac中用USB连接的是，iOS 15.0的 iPhone8，已用 palera1n 实现 rootful 越狱

```
→ ~ frida-ls -U
drwxr-xr-x 26 root wheel 832 Fri May 5 07:03:51 2023 .
drwxr-xr-x 26 root wheel 832 Fri May 5 07:03:51 2023 ..
-rw-r--r-- 1 mobile staff 6148 Mon Feb 6 03:41:36 2023 .DS_Store
drwx----- 2 root wheel 64 Thu Sep 16 05:39:21 2021 .ba
----- 1 root admin 0 Thu Sep 16 05:39:21 2021 .file
drwx----- 2 root wheel 64 Fri May 5 06:58:46 2023 .fsevents
drwx----- 2 root wheel 64 Thu Sep 16 05:39:21 2021 .mb
-rw-r--r-- 1 mobile staff 0 Sun Nov 20 01:58:22 2022 .palecursus_strapped
-rw-r--r-- 1 root staff 0 Fri May 5 07:03:50 2023 .procursus_strapped
drwxrwxr-x 121 root admin 3872 Wed Jun 14 13:34:36 2023 Applications
drwxr-xr-x 7 root wheel 306 Thu Sep 16 05:39:46 2021 Developer
drwxrwxr-x 26 root admin 832 Thu May 18 15:05:28 2023 Library
drwxr-xr-x 5 root wheel 160 Thu Sep 16 05:39:21 2021 System
lrwxr-xr-x 1 root wheel 12 Fri May 5 07:03:50 2023 User -> //var/mobile
drwxr-xr-x 39 root wheel 1248 Fri May 5 07:40:50 2023 bin
drwxr-xr-x 2 root wheel 64 Fri May 5 07:03:50 2023 boot
drwxrwxr-x 4 root admin 440 Wed Jun 14 06:35:22 2023 cores
dr-xr-xr-x 4 root wheel 1492 Wed Jun 14 06:35:21 2023 dev
lrwxr-xr-x 1 root wheel 11 Thu Sep 16 05:39:21 2021 etc -> private/etc
drwxr-xr-x 2 root wheel 64 Fri May 5 07:03:50 2023 lib
drwxr-xr-x 2 root wheel 64 Fri May 5 07:03:50 2023 mnt
drwxr-xr-x 7 root wheel 224 Thu Sep 16 05:39:21 2021 private
drwxr-xr-x 24 root wheel 768 Fri May 5 07:39:45 2023 sbin
lrwxr-xr-x 1 root wheel 15 Thu Sep 16 05:39:21 2021 tmp -> private/var/tmp
drwxr-xr-x 10 root wheel 320 Fri May 5 07:03:49 2023 usr
lrwxr-xr-x 1 root admin 11 Thu Sep 16 05:39:21 2021 var -> private/var
```

## 语法help

```
→ ~ frida-ls --help
usage: frida-ls [options] [FILE]...

positional arguments:
 files files to list information about

options:
 -h, --help show this help message and exit
 -D ID, --device ID connect to device with the given ID
 -U, --usb connect to USB device
 -R, --remote connect to remote frida-server
 -H HOST, --host HOST connect to remote frida-server on HOST
 --certificate CERTIFICATE
 speak TLS with HOST, expecting CERTIFICATE
 --origin ORIGIN connect to remote server with "Origin" header set to ORIGIN
 --token TOKEN authenticate with HOST using TOKEN
 --keepalive-interval INTERVAL
 set keepalive interval in seconds, or 0 to disable (defaults to
-1 to auto-
 --p2p select based on transport)
 establish a peer-to-peer connection with target
```

```
--stun-server ADDRESS
 set STUN server ADDRESS to use with --p2p
--relay address,username,password,turn-{udp,tcp,tls}
 add relay to use with --p2p
-O FILE, --options-file FILE
 text file containing additional command line options
--version
 show program's version number and exit
```

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## frida-ls-devices

- 官网文档: [frida-ls-devices](#)

### 举例

```
→ frida-ls-devices
Id Type Name OS

local local crifanlideMacBook-Pro.local macOS 13
.2.1
abdc0dd961c3cb96f5c4afe109de4eb48b88433a usb iPhone8_150 iPhone 0
S 15.0
socket remote Local Socket
```

### 语法help

```
→ frida-ls-devices --help
usage: frida-ls-devices [options]

options:
-h, --help show this help message and exit
-O FILE, --options-file FILE
 text file containing additional command line options
--version show program's version number and exit
```

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## 其他相关

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## frida-server

越狱手机 iPhone 安装 Frida 后，就可以通过 Frida 插件的 已安装文件：

16:06



&lt; 返回

## 已安装的文件

▼ /

▼ Library/

▼ LaunchDaemons/

re.frida.server.plist

▼ usr/

▼ lib/

▼ frida/

frida-agent.dylib

▼ sbin/

frida-server



精选



新闻



软件源



软件包



搜索

看到安装了2个核心文件：

- /usr/lib/frida/frida-agent.dylib
- /usr/sbin/frida-server

- 其中 frida-server 就是 Frida 的server端

## frida-server 语法help

```
iPhone11-151:~ root# frida-server --help
Usage:
 frida [OPTION?]

Help Options:
 -h, --help Show help options

Application Options:
 --version Output version information and exit
 -l, --listen ADDRESS Listen on ADDRESS
 --certificate CERTIFICATE Enable TLS using CERTIFICATE
 --origin ORIGIN Only accept requests with ?origin? header matching ORIGIN (by default any origin will be accepted)
 --token=TOKEN Require authentication using TOKEN
 --asset-root ROOT Serve static files inside ROOT (by default no files are served)
 -d, --directory DIRECTORY Store binaries in DIRECTORY
 -D, --daemonize Detach and become a daemon
 --policy-softener system internal Select policy softener
 -P, --disable-preload Disable preload optimization
 -C, --ignore-crashes Disable native crash reporter integration
 -v, --verbose Be verbose
```

# Frida用法举例

TODO:

- 加新章节：手把手教入门Frida
- 

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# 网上别人的案例

- 网上的别人的Frida的使用案例
  - 官网、官网
    - (Frida作者) oleavr写的，实例代码
      - [oleavr/frida-agent-example: Example Frida agent written in TypeScript](#)
    - frida-presentations
  - Frida在iOS平台进行OC函数hook的常用方法 | 8Biiit's Blog
  - [personal\\_script/Frida\\_script at master · lich4/personal\\_script · GitHub](#)
    - ios\_utils
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/ios\\_utils.js](https://github.com/lich4/personal_script/blob/master/Frida_script/ios_utils.js)
    - antijailbreak
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/antijailbreak.js](https://github.com/lich4/personal_script/blob/master/Frida_script/antijailbreak.js)
    - getdeviceinfo
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/getdeviceinfo.js](https://github.com/lich4/personal_script/blob/master/Frida_script/getdeviceinfo.js)
    - ios\_dump
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/ios\\_dump.js](https://github.com/lich4/personal_script/blob/master/Frida_script/ios_dump.js)
    - recvfrom
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/recvfrom.js](https://github.com/lich4/personal_script/blob/master/Frida_script/recvfrom.js)
    - sendto
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/sendto.js](https://github.com/lich4/personal_script/blob/master/Frida_script/sendto.js)
    - android\_hook\_detect
      - [https://github.com/lich4/personal\\_script/blob/master/Frida\\_script/android\\_hook\\_detect.js](https://github.com/lich4/personal_script/blob/master/Frida_script/android_hook_detect.js)
  - frida-ios-hook/frida-scripts
    - ssl pinning
      - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/bypass-ssl-ios13.js>
    - class + method
      - find
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/find-all-classes-methods.js>
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/find-all-classes.js>
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/find-app-classes-methods.js>
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/find-app-classes.js>
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/find-specific-method.js>
      - hook
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-all-methods-of-all-classes-app-only.js>
        - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-all-methods-of-specific-class.js>

- <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-specific-method-of-class.js>
- dump=show
  - <https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/show-all-methods-of-specific-class.js>
- Oxdea/frida-scripts
  - [https://github.com/Oxdeaf/frida-scripts/blob/master/raptor\\_frida\\_android\\_enum.js](https://github.com/Oxdeaf/frida-scripts/blob/master/raptor_frida_android_enum.js)
  - [https://github.com/Oxdeaf/frida-scripts/blob/master/raptor\\_frida\\_android\\_trace.js](https://github.com/Oxdeaf/frida-scripts/blob/master/raptor_frida_android_trace.js)
- 用frida实现各种功能
  - misc/frida-read-process-memory.py at master · poxyran/misc · GitHub
    - counts the number of basic blocks
      - misc/count\_func\_bb.py
    - enumerate-imports
      - misc/frida-enumerate-imports.py
    - enumerate-modules
      - misc/frida-enumerate-modules.py
    - heap-trace
      - misc/frida-heap-trace.py
    - memory-scan
      - misc/frida-memory-scan.py
    - read-process-memory
      - misc/frida-read-process-memory.py
    - write-process-memory
      - misc/frida-write-process-memory.py
    - frida-stalker-example
      - misc/frida-stalker-example.py
- frida-snippets/README.md at master · idoeldor/frida-snippets · GitHub
  - Native
    - Load C/C++ module
    - One time watchpoint
    - Socket activity
    - Intercept open
    - Execute shell command
    - List modules
    - Log SQLite query
    - Log method arguments
    - Intercept entire module
    - Dump memory segments
    - Memory scan
    - Stalker
    - Cpp Demangler
    - Early hook
  - Android
    - Binder transactions
    - Get system property
    - Reveal manually registered native symbols

- Enumerate loaded classes
- Class description
- Turn WiFi off
- Set proxy
- Get IMEI
- Hook io InputStream
- Android make Toast
- Await for specific module to load
- Webview URLs
- Print all runtime strings & stacktrace
- String comparison
- Hook JNI by address
- Hook constructor
- Hook Java reflection
- Trace class
- Hooking Unity3d
- Get Android ID
- Change location
- Bypass FLAG\_SECURE
- Shared Preferences update
- Hook all method overloads
- Register broadcast receiver
- Increase step count
- File system access hook \$ frida --codeshare FrenchYeti/android-file-system-access-hook -f com.example.app --no-pause
- How to remove/disable java hooks ? Assign null to the implementation property.
- iOS
  - OS Log
  - iOS alert box
  - File access
  - Observe class
  - Find application UUID
  - Extract cookies
  - Describe class members
  - Class hierarchy
  - Hook refelaction
  - Device properties
  - Take screenshot
  - Log SSH commands
- Windows
- Sublime snippets
- Vim snippets
- JEB



## Frida Codeshare

由于Frida功能太强大，使得用的人很多，出现了很多用法和案例。官网专门做了个代码分享平台，列出了不同人的不用用法供大家参考，叫做：

- [Frida CodeShare](#)
  - 概述：The Frida CodeShare project is comprised of developers from around the world working together with one goal - push Frida to its limits in new and innovative ways.
  - 列表页面
    - [Frida CodeShare BROWSE CODE](#)

下面列出一些，相对常用的案例：

- iOS工具类
  - [Project: iOS Utils](#)
- 绕过证书校验
  - [Project: iOS SSL Bypass](#)

## 如何利用Frida codeshare的代码

除了拷贝代码放到自己 `js` 文件中之外，还可以直接引用：

直接调用分享的代码：

```
frida --codeshare <frida_codeshare_url_without_url_prefix> -f <YOUR_BINARY>
```

- 举例
  - ios-utils
    - 对应URL是：<https://codeshare.frida.re/@lichao890427/ios-utils/>
  - dump-ios
    - `frida --codeshare lichao890427/dump-ios -f YOUR_BINARY`

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## frida

此处介绍使用 `frida` 命令去调试的实际案例，供参考。

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## iOS的ObjC

此处贴出用 frida 去调试各种 ios 的 objc 的类和函数的实际案例，供参考。

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# ObjC的Object

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# \$methods和\$ownMethods

## NSXPConnection

对于 ObjC 的 NSXPConnection 的实例对象:

```
argSelfObj: NSXPConnection: 0x154d09250 connection from pid 46847 on mach service named com.apple.ak.auth.xpc
```

## NSXPConnection 的 \$methods

代码:

```
const connMethods = argSelfObj.$methods;
console.log("connMethods=", connMethods);
```

输出:

```
connMethods= + geo_createGEODaemonToMapsPushDaemonConnection, + geo_withMapsPushDaemon:errorHandler:, + beginTransaction, + endTransaction, + _handoffCurrentReplyToQueue:block:, + currentConnection, + fromPBCodable:, + CKSQLiteClassName, + CA_automaticallyNotifiesObservers:, + CA_setterForProperty:, + CA_getterForProperty:, + CA_encodesPropertyConditionally:type:, + CA_CAMLPropertyForKey:, + version, + load, + implementsSelector:, + instancesImplementSelector:, + setVersion:, + accessInstanceVariablesDirectly, + automaticallyNotifiesOb serversForKey:, + _createMutableOrderedSetValueGetterWithContainerClassID:key:, + cancelP reviousPerformRequestsWithTarget:selector:object:, + _createMutableArrayValueGetterWithC ontainerClassID:key:, + setKeys:triggerChangeNotificationsForDependentKey:, + _createMut ableSetValueGetterWithContainerClassID:key:, + _createOtherValueGetterWithContainerClassI D:key:, + _createOtherValueSetterWithContainerClassID:key:, + _createValuePrimitiveGetter WithContainerClassID:key:, + _createValuePrimitiveSetterWithContainerClassID:key:, + repl acementObjectForPortCoder:, + cancelPreviousPerformRequestsWithTarget:, + _createValueGet terWithContainerClassID:key:, + _createValueSetterWithContainerClassID:key:, + _shouldAddObservationForwardersForKey:, + _keysForValuesAffectingValueForKey:, + classForKeyedUnarc hiver, + keyPathsForValuesAffectingValueForKey:, + classFallbacksForKeyedArchiver, + SFSQL iteClassName, + _copyDescription, + doesNotRecognizeSelector:, + __allocWithZone_OA:, + instanceMethodSignatureForSelector:, + methodSignatureForSelector:, + init, + description, + d ealloc, + supportsBSXPCSecureCoding, + bs_isPlistableType, + bs_dataFromObject:, + bs_secur eObjectFromData:ofClass:, + bs_secureObjectFromData:ofClasses:, + bs_objectFromData:, + bs _decodedFromData:, + bs_secureDataFromObject:, + bs_secureDecodedFromData:, + bs_secureDec odedFromData:withAdditionalClasses:, + supportsRBSXPCSecureCoding, + new, + self, + allocWithZone:, + superclass, + initialize, + performSelector:withObject:, + performSelector:withObject:withObject:, + performSelector:, + zone, + autorelease, + isSubclassOfClass:, + _isDeallocating, + isMemberOfClass:, + allowsWeakReference, + alloc, + isEqual:, + isKindOfClass:, + retainWeakReference, + retain, + retainCount, + instancesRespondToSelector:, + hash, + mutableCopyWithZone:, + forwardingTargetForSelector:, + resolveInstanceMethod:, + mutableCopy , + methodForSelector:, + instanceMethodForSelector:, + release, + respondsToSelector:, + isAncestorOfObject:, + _tryRetain, + debugDescription, + conformsToProtocol:, + class, + resol veClassMethod:, + copy, + copyWithZone:, + forwardInvocation:, + isProxy, + isFault, + topBPC ovable, + _intents_compareValue:relation:, + _intents_readableSubtitleWithLocalizer:meta data:, + descriptionAtIndent:, + _intents_enumerateObjectsOfClass:withBlock:, + _intents_isV
```

```

alidKey:, + _setterForProperty:, + _intents_indexingRepresentation, + _intents_readableTit
leWithLocalizer:metadata:, + _intents_readableTitleForLanguage:withMetadata:, + _intents_
readableSubtitleForLanguage:withMetadata:, + _intents_displayImageWithLocalizer:, + _inte
nts_localizedCopyWithLocalizer:, + _intents_readableTitleForLanguage:, + _intents_readabl
eTitleWithLocalizer:, + _intents_readableSubtitleWithLocalizer:, + _intents_readableSubti
tleForLanguage:, + _intents_displayImageForLanguage:, + _intents_setterForPropertywithNam
e:, + _intents_localizedCopyForLanguage:, + _intents_readableDescriptionForLanguage:, + _i
ntents_readableDescriptionForLanguage:withMetadata:, + _intents_readableDescriptionwithL
ocalizer:, + _intents_readableDescriptionWithLocalizer:metadata:, + ifSetValueIfNonNil:f
orKey:, + ifSetValueIfYES:ForKey:, + stringValueSafe:, + utf8ValueSafe:, + boolValueSafe,
+ boolValueSafe:, + int64ValueSafe:, + int64ValueSafe:, + doubleValueSafe:, + doubleValueSafe:
+, + stringValueSafe:, + utf8ValueSafe:, + CKDescriptionPropertiesWithPublic:private:shouldEx
pand:, + CKDescription, + CKUnredactedDescription, + CKRedactedDescription, + CKDescription
Redact:avoidShortDescription:, + CKObjectDescriptionRedact:avoidShortDescription:, + CKOb
jectDescriptionRedact:, + ck_bindInStatementAtIndex:, + CKAssignToContainerWithID:, + CKS
ingleLineDescription, + _CKDescriptionWithExpansion:, + CKExpandedDescription, + CKPropert
iesDescriptionStringFromProperties:, + CKHashedDescription, + CKPropertiesDescription, + C
A_validateValue:ForKey:, + CA_copyRenderValue, + CAMLTypeForKey:, + encodeWithCAMLWriter:
+, + CA_distanceToValue:, + CA_interpolateValues:::interpolator:, + CA_interpolateValue:byFr
action:, + CAMLType, + CA_copyNumericValue:, + CA_archivingValueForKey:, + CA_copyRenderVal
ueWithColorspace:, + CA_addValue:multipliedBy:, + CA_roundToIntegerFromValue:, + CAMLTypeS
upportedForKey:, + CA_prepareRenderValue, + carpf_registerObserverForKeyPath:options:hand
ler:, + _allowsDirectEncoding, + awakeAfterUsingCoder:, + classForCoder, + replacementObjec
tForCoder:, + removeObserverForKeyPath:, + removeObservation:, + _isKVOA, + _changeValueFo
rKeys:count:maybeOldValuesDict:maybeNewValuesDict:usingBlock:, + setObservationInfo:, + w
illChangeValueForKey:, + _didChangeValuesForKeys:, + _willChangeValuesForKeys:, + valueFor
UndefinedKey:, + addObserver:ForKeyPath:options:context:, + setValue:ForKey:, + performSel
ectorOnMainThread:withObject:waitUntilDone:modes:, + performSelector:onThread:withObject
:waitUntilDone:modes:, + dictionaryWithValuesForKeys:, + didChangeValueForKey:withSetMutat
ion:usingObjects:, + valueForKeyPath:, + performSelector:onThread:withObject:waitUntilDo
ne:, + classForKeyedArchiver, + _notifyObserversOfChangeFromValuesForKeys:toValuesForKeys
:, + _observerStorageOfSize:, + willChangeValueForKey:withSetMutation:usingObjects:, + per
formSelectorOnMainThread:withObject:waitUntilDone:, + didChangeValueForKey:, + setNilValu
eForKey:, + _pendingChangeNotificationsArrayForKey:create:, + removeObservation:forObserv
ableKeyPath:, + performSelector:withObject:afterDelay:inModes:, + classForPortCoder, + per
formSelectorInBackground:withObject:, + finishObserving, + _addObserver:forProperty:optio
ns:context:, + observationInfo, + willChange:valuesAtIndexes:ForKey:, + classForArchiver,
+ _notifyObserversForKeyPath:change:, + _changeValueForKey:key:key:usingBlock:, + addObser
verBlock:, + _observerStorage, + setObservation:forObservingKeyPath:, + mutableOrderedSetV
alueForKeyPath:, + addObserver:forObservableKeyPath:, + performSelector:object:afterDelay
:, + setValuesForKeysWithDictionary:, + performSelector:withObject:afterDelay:, + didChang
e:valuesAtIndexes:ForKey:, + _destroyObserverList, + addChainedObservers:, + valueForKey:
+, + validateValue:ForKeyPath:error:, + mutableArrayValueForKeyPath:, + _receiveBox:, + recei
veObservedError:, + mutableSetValueForKeyPath:, + _isToManyChangeInformation, + replacemen
tObjectForKeyedArchiver:, + _overrideUseFastBlockObservers, + addObservationTransformer:
+, + addObserver:, + mutableSetValueForKey:, + _changeValueForKey:usingBlock:, + mutableArray
ValueForKey:, + _didEndKeyValueObserving, + _implicitObservationInfo, + replacementObjectF
orArchiver:, + _removeObserver:forProperty:, + validateValue:ForKey:error:, + autoContentA
ccessingProxy, + observeValueForKeyPath:ofObject:change:context:, + _willBeginKeyValueObs
erving, + mutableOrderedSetValueForKey:, + removeObserverForKeyPath:context:, + setValue:
ForKeyPath:, + receiveObservedValue:, + setValue:forUndefinedKey:, + isNSSet__, + isNSStrin
g__, + isNSDate__, + isNSNumber__, + isNSData__, + isNSObject__, + isArray__, + isNSValue__
, + isNSTimeZone__, + isNSOrderedSet__, + isNSDictionary__, + _cfTypeID, + isNSCFConstantStr
ing__, + _release_OA, + _retain_OA, + _tryRetain_OA, + _dealloc_zombie, + _autorelease
_OA, + bs_secureEncoded, + bs_encoded, + NSRepresentation, + RBSIsXPCObject, + pep_onMainThr
ead, + pep_onThread:, + pep_onThread:immediateForMatchingThread:, + pep_onOperationQueue:p

```

```

riority:+ pep_onMainThreadIfNecessary,+ pep_afterDelay:+ pep_onOperationQueue:+ pep_
getInvocation:+ isNull,+ performSelector:withObject:afterDelay:ignoreMenuTracking:+ __
_im_afterDelay:+ __im_afterDelay:modes:+ __im_onThread:+ __im_onMainThread,+ __im_on
Thread:immediateForMatchingThread:+ __im_onMainThreadIfNecessary,+ __im_onDetachedThre
ad,+ __im_getInvocation:+ un_safeBoolValue,+ finalize,- cuValueForEntitlementNoCache:,-
uniquify,- hasEntitlement:,- shouldHandleInvalidation,- setShouldHandleInvalidation:,-
_EX_transaction,- _EX_setTransaction:,- _EX_extensionProcess,- _EX_setExtensionProces
s:,- addBarrierBlock:,- serviceName,- initWithMachServiceName:options:,- _sendInvocatio
n:orArguments:count:methodSignature:selector:withProxy:,- setUserInfo:,- setOptions:,-
effectiveGroupIdentifier,- setExportedObject:,- remoteObjectProxy,- userInfo,- interrup
tionHandler,- start,- remoteObjectProxyWithTimeout:errorHandler:,- _setQueue:,- _decode
AndInvokeReplyBlockWithEvent:sequence:replyInfo:,- _setUUID:,- initWithMachServiceName:-
invalidate,- exportedObject,- initWithServiceName:options:,- exportedInterface,- act
ivate,- _xpcConnection,- init,- invalidationHandler,- _queue,- setRemoteObjectInterface
:,- _unboostingRemoteObjectProxy,- setExportedInterface:,- initWithEndpoint:,- synchron
ousRemoteObjectProxyWithErrorHandler:,- _sendSelector:withProxy:arg1:arg2:arg3:arg4:,-
_decodeAndInvokeMessageWithEvent:flags:,- _sendSelector:withProxy:arg1:arg2:arg3:,- _in
itWithRemoteService:name:options:mode:,- delegate,- set_additionalInvalidationHandler:,-
_initWithRemoteService:name:options:,- resume,- _setLanguages:,- _decodeProgressMessa
geWithData:flags:,- remoteObjectProxyWithUserInfo:errorHandler:,- valueForEntitlement:,-
_pauseProgress:,- initWithServiceName:,- auditSessionIdentifier,- setInterruptionHand
ler:,- setInvalidationHandler:,- _cancelProgress:,- _resumeProgress:,- _killConnection:,-
_sendSelector:withProxy:arg1:arg2:,- _errorDescription,- suspend,- stop,- replace
tObjectForEncoder:object:,- _sendDesistForProxy:,- remoteObjectProxyWithErrorHandler:,-
_initWithRemoteConnection:name:,- effectiveUserIdentifer,- _additionalInvalidationHan
dler,- _sendSelector:withProxy:arg1:,- _remoteObjectInterfaceClass,- _sendSelector:with
Proxy:,- _setBootstrapObject:forKey:,- scheduleSendBarrierBlock:,- _initWithCustomTrans
port:,- auditToken,- _setTargetUserIdentifer:,- remoteObjectInterface,- setDelegate:,-
description,- initWithListenerEndpoint:,- dealloc,- processIdentifier,- endpoint,- toP
BCodable,- _intents_COMPAREValue:relation:,- _intents_readableSubtitleWithLocalizer:met
adata:,- descriptionAtIndent:,- _intents_enumerateObjectsOfClass:withBlock:,- _intents_
isValidKey:,- _setterForProperty:,- _intents_indexingRepresentation,- _intents_readable
TitleWithLocalizer:metadata:,- _intents_readableTitleForLanguage:withMetadata:,- _inten
ts_readableSubtitleForLanguage:withMetadata:,- _intents_displayImageWithLocalizer:,- _i
ntents_localizedCopyWithLocalizer:,- _intents_readableTitleForLanguage:,- _intents_read
ableTitleWithLocalizer:,- _intents_readableSubtitleWithLocalizer:,- _intents_readableSu
btitleForLanguage:,- _intents_displayImageForLanguage:,- _intents_setterForPropertyWith
Name:,- _intents_localizedCopyForLanguage:,- _intents_readableDescriptionForLanguage:,-
_intents_readableDescriptionForLanguage:withMetadata:,- _intents_readableDescriptionWi
thLocalizer:,- _intents_readableDescriptionWithLocalizer:metadata:,- ifSetValueIfNonNi
l:ForKey:,- ifSetValueIfYES:ForKey:,- stringValueSafe:,- utf8ValueSafe:,- boolValueSaf
e,- boolValueSafe:,- int64ValueSafe,- int64ValueSafe:,- doubleValueSafe,- doubleValueSa
fe,- stringValueSafe,- utf8ValueSafe,- CKDescriptionPropertiesWithPublic:private:shou
dExpand:,- CKDescription,- CKUnredactedDescription,- CKRedactedDescription,- CKDescript
ionRedact:avoidShortDescription:,- CKObjectDescriptionRedact:avoidShortDescription:,- C
KObjectDescriptionRedact:,- ck_bindInStatementAtIndex:,- CKAssignToContainerWithID:,-
CKSingleLineDescription,- _CKDescriptionWithExpansion:,- CKExpandedDescription,- CKProp
ertiesDescriptionStringFromProperties:,- CKHashedDescription,- CKPropertiesDescription,
- CA_validateValue:ForKey:,- CA_copyRenderValue,- CAMLTypeForKey:,- encodeWithCAMLWrit
er:,- CA_distanceToValue:,- CA_interpolateValues:::interpolator:,- CA_interpolateValue:b
yFraction:,- CAMLType,- CA_copyNumericValue:,- CA_archivingValueForKey:,- CA_copyRender
ValueWithColorspace:,- CA_addValue:multipliedBy:,- CA_roundToIntegerFromValue:,- CAMLTy
peSupportedForKey:,- CA_prepareRenderValue,- carpf_registerObserverForKeyPath:options:h
andler:,- _allowsDirectEncoding,- awakeAfterUsingCoder:,- classForCoder,- implementsSel
ector:,- replacementObjectForCoder:,- removeObserverForKeyPath:,- removeObservation:,-
_isKVOA,- _changeValueForKeys:count:maybeOldValuesDict:maybeNewValuesDict:usingBlock:,

```

```

- setObservationInfo:, - willChangeValueForKey:, - _didChangeValuesForKeys:, - _willChange
ValuesForKeys:, - valueForKey:, - addObserver:forKeyPath:options:context:, - setValue
ForKey:, - performSelectorOnMainThread:withObject:waitUntilDone:modes:, - performSel
ector:onThread:withObject:waitUntilDone:modes:, - dictionaryWithValuesForKeys:, - didChan
geValueForKey:withSetMutation:usingObjects:, - valueForKeyPath:, - performSelector:onThre
ad:withObject:waitUntilDone:, - classForKeyedArchiver, - _notifyObserversOfChangeFromValu
esForKeys:toValuesForKeys:, - _observerStorageOfSize:, - willChangeValueForKey:withSetMut
ation:usingObjects:, - performSelectorOnMainThread:withObject:waitUntilDone:, - didChange
ValueForKey:, - setNilValueForKey:, - replacementObjectForPortCoder:, - _pendingChangeNoti
ficationsArrayForKey:create:, - removeObservation:forObservableKeyPath:, - performSelecto
r:withObject:afterDelay:inModes:, - classForPortCoder, - performSelectorInBackground:with
Object:, - finishObserving, - _addObserver:forProperty:options:context:, - observationInfo
, - willChange:valuesAtIndexes:forKey:, - classForArchiver, - _notifyObserversForKeyPath:c
hange:, - _changeValueForKey:key:key:usingBlock:, - addObserverBlock:, - _observerStorage,
- setObservation:forObservingKeyPath:, - mutableOrderedSetValueForKeyPath:, - addObserver
:forObservableKeyPath:, - performSelector:object:afterDelay:, - setValuesForKeysWithDicti
onary:, - performSelector:withObject:afterDelay:, - didChange:valuesAtIndexes:forKey:, - _d
estroyObserverList, - addChainedObservers:, - valueForKey:, - validateValue:forKeyPath:er
ror:, - mutableArrayValueForKeyPath:, - _receiveBox:, - receiveObservedError:, - mutableSet
ValueForKeyPath:, - _isToManyChangeInformation, - replacementObjectForKeyedArchiver:, - _o
verrideUseFastBlockObservers, - addObservationTransformer:, - addObserver:, - mutableSetValue
ForKey:, - _changeValueForKey:usingBlock:, - mutableArrayValueForKey:, - _didEndKeyValue
Observing, - _implicitObservationInfo, - replacementObjectForArchiver:, - _removeObserver
:forProperty:, - validateValue:forKey:error:, - autoContentAccessingProxy, - observeValueF
orKeyPath:ofObject:change:context:, - _willBeginKeyValueObserving, - mutableOrderedSetValue
ForKey:, - removeObserver:forKeyPath:context:, - setValue:forKeyPath:, - receiveObserved
Value:, - setValue:forUndefinedKey:, - isNSSet__, - isNSString__, - isNSDate__, - isNSNumber
__, - isNSData__, - isNSObject__, - isNSArray__, - isNSValue__, - isNSTimeZone__, - isNSOrder
edSet__, - isNSDictionary__, - _cfTypeID, - isNSCFConstantString__, - _release_OA, - _retai
n_OA, - _copyDescription, - __tryRetain_OA, - doesNotRecognizeSelector:, - _dealloc_zomb
ie, - __autorelease_OA, - methodSignatureForSelector:, - bs_secureEncoded, - bs_encoded, - s
upportsRBSXPCSecureCoding, - bs_isPlistableType, - NSRepresentation, - RBSIsXPCObject, - sup
portsRBSXPCSecureCoding, - pep_onMainThread, - pep_onThread:, - pep_onThread:immediateForM
atchingThread:, - pep_onOperationQueue:priority:, - pep_onMainThreadIfNecessary, - pep_aft
erDelay:, - pep_onOperationQueue:, - pep_getInvocation:, - isNull, - performSelector:withOb
ject:afterDelay:ignoreMenuTracking:, - __im_afterDelay:, - __im_afterDelay:modes:, - __im_
onThread:, - __im_onMainThread, - __im_onThread:immediateForMatchingThread:, - __im_onMain
ThreadIfNecessary, - __im_onDetachedThread, - __im_getInvocation:, - un_safeBoolValue, - se
lf, - superclass, - performSelector:withObject:, - performSelector:withObject:withObject:, -
performSelector:, - zone, - autorelease, - finalize, - _isDeallocating, - isMemberOfClass:,
- allowsWeakReference, - isEqual:, - isKindOfClass:, - retainWeakReference, - retain, - ret
ainCount, - hash, - forwardingTargetForSelector:, - mutableCopy, - methodForSelector:, - rel
ease, - respondsToSelector:, - _tryRetain, - debugDescription, - conformsToProtocol:, - clas
s, - copy, - forwardInvocation:, - isProxy, - isFault

```

格式化后：

```

+ geo_createGEODaemonToMapsPushDaemonConnection
+ geo_withMapsPushDaemon:errorHandler:
+ beginTransaction
+ endTransaction
+ _handoffCurrentReplyToQueue:block:
+ currentConnection
+ fromPBCodable:
...

```

```

...
- respondsToSelector:
- _tryRetain
- debugDescription
- conformsToProtocol:
- class
- copy
- forwardInvocation:
- isProxy
- isFault

```

## AKAppleIDAuthenticationService 的 \$ownMethods

代码:

```

const connOwnMethods = argSelfObj.$ownMethods;
console.log("connOwnMethods=", connOwnMethods);

```

输出:

```

connOwnMethods= + geo_createGEODaemonToMapsPushDaemonConnection,+ geo_withMapsPushDaemon:errorHandler:,+ beginTransaction,+ endTransaction,+ _handoffCurrentReplyToQueue:block:,+ currentConnection,- cuValueForEntitlementNoCache:,- uniquify,- hasEntitlement:,- shouldHandleInvalidation,- setShouldHandleInvalidation:,- _EX_transaction,- _EX_setTransaction:,- _EX_extensionProcess,- _EX_setExtensionProcess:,- addBarrierBlock:,- serviceName,- initWithMachServiceName:options:,- _sendInvocation:orArguments:count:methodSignature:selector:withProxy:,- setUserInfo:,- setOptions:,- effectiveGroupIdentifier,- setExportedObject:,- remoteObjectProxy,- userInfo,- interruptionHandler,- start,- remoteObjectProxyWithTimeout:errorHandler:,- _setQueue:,- _decodeAndInvokeReplyBlockWithEvent:sequence:replyInfo:,- _setUUID:,- initWithMachServiceName:,- invalidate,- exportedObject,- initWithServiceName:options:,- exportedInterface,- activate,- _xpcConnection,- init,- invalidationHandler,- _queue,- setRemoteObjectInterface:,- _unboostingRemoteObjectProxy,- setExportedInterface:,- initWithEndpoint:,- synchronousRemoteObjectProxyWithErrorHandler:,- _sendSelector:withProxy:arg1:arg2:arg3:arg4:,- _decodeAndInvokeMessageWithEvent:flags:,- _sendSelector:withProxy:arg1:arg2:arg3:,- _initWithRemoteService:name:options:mode:,- delegate,- set_additionalInvalidationHandler:,- _initWithRemoteService:name:options:,- resume,- _setLanguages:,- _decodeProgressMessageWithData:flags:,- remoteObjectProxyWithUserInfo:errorHandler:,- valueForEntitlement:,- _pauseProgress:,- initWithServiceName:,- auditSessionIdentifier,- setInterruptionHandler:,- setInvalidationHandler:,- _cancelProgress:,- _resumeProgress:,- _killConnection:,- _sendSelector:withProxy:arg1:arg2:,- _errorDescription,- suspend,- stop,- replacementObjectForEncoder:object:,- _sendDesistForProxy:,- remoteObjectProxyWithErrorHandler:,- _initWithRemoteConnection:name:,- effectiveUserIdentity,- _additionalInvalidationHandler,- _sendSelector:withProxy:arg1:,- _remoteObjectInterfaceClass,- _sendSelector:withProxy:,- _setBootstrapObject:forKey:,- scheduleSendBarrierBlock:,- _initWithCustomTransport:,- auditToken,- _setTargetUserIdentifier:,- remoteObjectInterface,- setDelegate:,- description,- initWithListenerEndpoint:,- dealloc,- processIdentifier,- endpoint

```

格式化后:

```
+ geo_createGEODaemonToMapsPushDaemonConnection
```

```
+ geo_withMapsPushDaemon:errorHandler:
+ beginTransaction
+ endTransaction
+ _handoffCurrentReplyToQueue:block:
+ currentConnection
- cuValueForEntitlementNoCache:
- uniquify
- hasEntitlement:
- shouldHandleInvalidation
- setShouldHandleInvalidation:
- _EX_transaction
- _EX_setTransaction:
- _EX_extensionProcess
- _EX_setExtensionProcess:
- addBarrierBlock:
- serviceName
- initWithMachServiceName:options:
- _sendInvocation:orArguments:count:methodSignature:selector:withProxy:
- setUserInfo:
- setOptions:
- effectiveGroupIdentifier
- setExportedObject:
- remoteObjectProxy
- userInfo
- interruptionHandler
- start
- remoteObjectProxyWithTimeout:errorHandler:
- _setQueue:
- _decodeAndInvokeReplyBlockWithEvent:sequence:replyInfo:
- _setUUID:
- initWithMachServiceName:
- invalidate
- exportedObject
- initWithServiceName:options:
- exportedInterface
- activate
- _xpcConnection
- init
- invalidationHandler
- _queue
- setRemoteObjectInterface:
- _unboostingRemoteObjectProxy
- setExportedInterface:
- initWithEndpoint:
- synchronousRemoteObjectProxyWithErrorHandler:
- _sendSelector:withProxy:arg1:arg2:arg3:arg4:
- _decodeAndInvokeMessageWithEvent:flags:
- _sendSelector:withProxy:arg1:arg2:arg3:
- _initWithRemoteService:name:options:mode:
- delegate
- set_additionalInvalidationHandler:
- _initWithRemoteService:name:options:
- resume
- _setLanguages:
- _decodeProgressMessageWithData:flags:
- remoteObjectProxyWithUserInfo:errorHandler:
```

```

- valueForEntitlement:
- _pauseProgress:
- initWithServiceName:
- auditSessionIdentifier
- setInterruptionHandler:
- setInvalidationHandler:
- _cancelProgress:
- _resumeProgress:
- _killConnection:
- _sendSelector:withProxy:arg1:arg2:
- _errorDescription
- suspend
- stop
- replacementObjectForEncoder:object:
- _sendDesistForProxy:
- remoteObjectProxyWithErrorHandler:
- _initWithRemoteConnection:name:
- effectiveUserIdentifier
- _additionalInvalidationHandler
- _sendSelector:withProxy:arg1:
- _remoteObjectInterfaceClass
- _sendSelector:withProxy:
- _setBootstrapObject:forKey:
- scheduleSendBarrierBlock:
- _initWithCustomTransport:
- auditToken
- _setTargetUserIdentifier:
- remoteObjectInterface
- setDelegate:
- description
- initWithListenerEndpoint:
- dealloc
- processIdentifier
- endpoint

```

其中：

- NSXPCCConnection
  - 没有之前Xcode调试所看到的属性
    - processName
    - processBundleIdentifier
  - 不过有我们所重点关注的其他的属性
    - exportedInterface
    - exportedObject
    - remoteObjectInterface
    - remoteObjectProxy
    - auditSessionIdentifier
    - effectiveUserIdentifier
    - effectiveGroupIdentifier
    - userInfo

-》实现了我们通过 \$methods 和 \$ownMethods 去调试 NSXPCCConnection 类的属性值，找到我们所关注的属性值

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## Interceptor=hook函数

此处去介绍如何用Frida的Interceptor去hook拦截iOS的ObjC的函数的实际案例。

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## 单个类的单个函数

Frida去hook调试ObjC函数： - [NSXPConnection setExportedObject:]

- 背景

调试iPhone中的，设置 app中点击Apple账号登录的过程，内部会触发akd进程中的 iOS 的 ObjC 函数：

```
- [NSXPConnection setExportedObject:]
```

此处去写frida的js脚本，去调试hook，打印参数值

涉及到的操作iPhone中的app的页面有：





取消

下一步

# Apple ID

使用 Apple ID 登录以使用 iCloud 和其他  
Apple 服务。

**Apple ID** 电子邮件或电话

[没有或忘记 Apple ID?](#)



Apple ID 是您用于访问所有 Apple 服务的帐  
户。iCloud 使用无线数据。



您的 Apple ID 信息用于登录时启用 Apple 服务，其中包括 iCloud 云备  
份，该服务可自动备份设备上的数据，以便需要时进行替换或恢复。  
您的设备序列号可能被用于检查服务的使用资格。 [了解数据的管理方  
式...](#)



Apple ID 是您用于访问所有 Apple 服务的帐户。iCloud 使用无线数据。



您的 Apple ID 信息用于登录时启用 Apple 服务，其中包括 iCloud 云备份，该服务可自动备份设备上的数据，以便需要时进行替换或恢复。您的设备序列号可能被用于检查服务的使用资格。[了解数据的管理方式...](#)

## 最基础的，hook类的函数，只是打印参数值

- 适用场景：确定要hook的类和函数是：能找到的=是存在的 -> 代码才能正确hook，否则会报错找不到
  - 写法：直接把 `类名` 和 `函数名` 放到 `objc.classes` 的后面
  - 代码

```
const curMethod = ObjC.classes.NSXPCConnection["- setExportedObject:"];
// console.log("curMethod: ", curMethod);
// const iOSObjCallStr = "-[NSXPCConnection setExportedObject:]";

Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 // console.log("===== " + iOSObjCallStr + " =====");
 console.log("argSelf=" + args[0] + ", argSel=" + args[1] + ", realArg
1=" + args[2]);
 }
});
```

```

 }
});

```

- 适用场景：要hook的类和函数，不确定是否存在，所以加上判断
  - 写法：传入类名和函数名，先去查找在不在，找到后，才hook
  - 代码

```

// https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-specific-method-of-class.js
function hook_specific_method_of_class(className, funcName)
{
 // console.log("className=" + className + ", funcName=" + funcName)
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {
 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("argSelf=" + args[0] + ", argSel=" + args[1] + ", realArg1=" + args[2]);
 }
 });
 }else{
 console.log("Can't find method", funcName);
 }
 }else{
 console.log("Can't find class: ", className);
 }
}

//Your class name and function name here
hook_specific_method_of_class("NSXPConnection", "- setExportedObject:")

```

典型输出log：

```

→ scripts frida -U -n akd -l hook_NSXPConnection_setExportedObject.js

Frida 16.0.19 - A world class dynamic instrumentation toolkit
Commands:
help -> Displays the help system
object? -> Display information about 'object'
exit quit -> Exit

More info at https://frida.re/docs/home/

Connected to iPhone (id abdc0dd961c3cb96f5c4afe109de4eb48b88433a)

[iPhone: akd]-> ? resume

=====
===== - [NSXPConnection setExportedObject] =====

```

```

argSelf 0x102725ce0, argSel 0x19b362b44, realArg1 0x102926640
===== - [NSXPConnection setExportedObject] =====
argSelf 0x102928300, argSel 0x19b362b44, realArg1 0x1029211b0
===== - [NSXPConnection setExportedObject] =====
argSelf 0x102725ce0, argSel 0x19b362b44, realArg1 0x0
===== - [NSXPConnection setExportedObject] =====
argSelf 0x102a21570, argSel 0x19b362b44, realArg1 0x0

```

## 简单优化：加上额外的参数的转换和打印相关值

再去加上额外的，参数类型转换

- 把常见参数转换成ObjC的Object
- 把ObjC的SEL转换成String
- 等等

对应代码是：

```

function hook_specific_method_of_class(className, funcName)
{
 var iOSObjCallStr = "className=" + className + ", funcName=" + funcName
 console.log("iOSObjCallStr=", iOSObjCallStr)
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {

 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("===== " + iOSObjCallStr + " =====")
 //

 // args[0] is self = id
 const argSelf = args[0];
 console.log("argSelf: ", argSelf);
 const argSelfObj = new ObjC.Object(argSelf);
 console.log("argSelfObj: ", argSelfObj);
 const argSelfClassName = argSelfObj.$className;
 console.log("argSelfClassName: ", argSelfClassName);

 // args[1] is selector
 const argSel = args[1];
 console.log("argSel: ", argSel);
 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);

 // args[2] holds the first function argument
 const args2 = args[2];
 console.log("args2: ", args2);
 if (args2 != 0x0) {
 const args2Obj = new ObjC.Object(args2);
 // const args2Obj = new ObjC.Object(ptr(args2));
 console.log("args2Obj: ", args2Obj);
 const args2ObjClassName = args2Obj.$className;
 console.log("args2ObjClassName: ", args2ObjClassName);

```

```

 const args2ObjStr = args2Obj.toString();
 console.log("args2ObjStr: ", args2ObjStr);
 }
}
);
} else{
 console.log("Can't find method", funcName);
}
} else{
 console.log("Can't find class: ", className);
}
}

//Your class name and function name here
hook_specific_method_of_class("NSXPConnection", "- setExportedObject:")

```

## 优化日志：把Frida类名和函数名转换为ObjC的类名和函数名

可以继续去加上：

- `toiOSObjcCall`
  - 作用举例
    - 输入： `["NSXPConnection", "- setExportedObject:]`
    - 输出： `"-[NSXPConnection setExportedObject:]"`
- 目的：实现优化日志打印
  - 输出的ObjC的类和函数名 -》 方便调试和查看具体调用了哪个ObjC的类和函数

代码：

```

// convert from frida function call to ObjC function call
// "NSURL", "- initWithString:" => "[NSURL initWithString:]"
function toiOSObjcCall(class_name, method_name){
 const instanceCallStart = "-[" + class_name + " ";
 const classCallStart = "+[" + class_name + " ";
 var objcFuncCall = method_name.replace("-", instanceCallStart);
 objcFuncCall = objcFuncCall.replace("+", classCallStart);
 objcFuncCall = objcFuncCall + "]";
 // console.log(class_name + " -> " + method_name + " => " + objcFuncCall);
 return objcFuncCall;
}

function hook_specific_method_of_class(className, funcName)
{
 var iOSObjCallStr = toiOSObjcCall(className, funcName)
 console.log("iOSObjCallStr=", iOSObjCallStr)
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {
 Interceptor.attach(curMethod implementation, {

```

```

onEnter: function(args) {
 console.log("=====" + 10SObjCallStr + " =====")
;

 // args[0] is self = id
 const argSelf = args[0];
 console.log("argSelf: ", argSelf);
 const argSelfObj = new ObjC.Object(argSelf);
 console.log("argSelfObj: ", argSelfObj);
 const argSelfClassName = argSelfObj.$className;
 console.log("argSelfClassName: ", argSelfClassName);

 // args[1] is selector
 const argSel = args[1];
 console.log("argSel: ", argSel);
 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);

 // args[2] holds the first function argument
 const args2 = args[2];
 console.log("args2: ", args2);
 if (args2 != 0x0) {
 const args2Obj = new ObjC.Object(args2);
 // const args2Obj = new ObjC.Object(ptr(args2));
 console.log("args2Obj: ", args2Obj);
 const args2ObjClassName = args2Obj.$className;
 console.log("args2ObjClassName: ", args2ObjClassName);
 const args2ObjStr = args2Obj.toString();
 console.log("args2ObjStr: ", args2ObjStr);
 }
}
);
} else{
 console.log("Can't find method", funcName);
}
} else{
 console.log("Can't find class: ", className);
}

//Your class name and function name here
hook_specific_method_of_class("NSXPCConnection", "- setExportedObject:")

```

## 优化参数：打印函数全部的真正参数

如之前 [ObjC的参数](#) 中的 计算ObjC的函数的真正参数的个数 + 打印全部参数 的实例代码，加到此处，略作调整变成：

```

* Util Functions

/** Function that count occurrences of a substring in a string;
 * @param {String} string
 * @param {String} substr
 * @return {Number} number of occurrences
 */

```

```

* @param {String} subString The sub string to search for
* @param {Boolean} [allowOverlapping] Optional. (Default:false)
*
* @author Vitim.us https://gist.github.com/victornpb/7736865
* @see Unit Test https://jsfiddle.net/Victornpb/5axuh96u/
* @see https://stackoverflow.com/a/7924240/938822
* @example occurrences("- setExportedObject:", ":") => 1
*/
function occurrences(string, subString, allowOverlapping) {
 // console.log("string=" + string + ",subString=" + subString + ", allowOverlapping=" + allowOverlapping)
 string += "\n";
 subString += "\n";
 if (subString.length <= 0) return (string.length + 1);

 var n = 0,
 pos = 0,
 step = allowOverlapping ? 1 : subString.length;

 while (true) {
 pos = string.indexOf(subString, pos);
 // console.log("pos=" + pos)
 if (pos >= 0) {
 n++;
 pos += step;
 } else break;
 }

 return n;
}

// convert from frida function call to ObjC function call
// "NSURL", "- initWithString:" => "[NSURL initWithString:]"
function toiOSObjccall(class_name, method_name){
 const instanceCallStart = "-[" + class_name + " ";
 const classCallStart = "+[" + class_name + " ";
 var objcFuncCall = method_name.replace("- ", instanceCallStart);
 objcFuncCall = objcFuncCall.replace("+", classCallStart);
 objcFuncCall = objcFuncCall + "]";
 // console.log(class_name + " -> " + method_name + " => " + objcFuncCall);
 return objcFuncCall;
}

/*
* Frida Hook
*/
// https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-specific-method-of-class.js
function hook_specific_method_of_class(className, funcName)
{
 var iOSObjCallStr = toiOSObjccall(className, funcName)
 console.log("iOSObjCallStr=", iOSObjCallStr)
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];

```

```

if (typeof(curMethod) !== 'undefined') {

 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("======" + iOSObjCallStr + " =====")
 }

 // args[0] is self = id
 const argSelf = args[0];
 console.log("argSelf: ", argSelf);
 const argSelfObj = new ObjC.Object(argSelf);
 console.log("argSelfObj: ", argSelfObj);
 const argSelfClassName = argSelfObj.$className;
 console.log("argSelfClassName: ", argSelfClassName);

 // args[1] is selector
 const argSel = args[1];
 console.log("argSel: ", argSel);
 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);

 const argCount = occurrences(argSelStr, ":");
 console.log("argCount: ", argCount);

 // console.log("funcName=", funcName);
 // const argCount = occurrences(funcName, ":");
 // console.log("argCount: ", argCount);

 for (let curArgIdx = 0; curArgIdx < argCount; curArgIdx++) {
 const curArg = args[curArgIdx + 2];

 // const usePtr = false;
 const usePtr = true;
 if (usePtr) {
 // console.log("usePtr=", usePtr);
 const curArgPtr = ptr(curArg);
 console.log("----- [" + curArgIdx + "] curArgPtr=" + curArgPtr);
 if (!curArgPtr.isNull()) {
 const curArgPtrObj = new ObjC.Object(curArgPtr);
 console.log("curArgPtrObj: ", curArgPtrObj);
 console.log("curArgPtrObj className: ", curArgPtrObj.$className);
 console.log("curArgPtrObj kind: ", curArgPtrObj.$kind);
 }
 } else {
 console.log("----- [" + curArgIdx + "] curArg=" + curArg);
 if (curArg && (curArg != 0x0)) {
 // console.log("curArg className: ", curArg.$className);
 const curArgObj = new ObjC.Object(curArg);
 console.log("curArgObj: ", curArgObj);
 console.log("curArgObj className: ", curArgObj.$className);
 console.log("curArgObj kind: ", curArgObj.$kind);
 }
 }
 }
 }
}

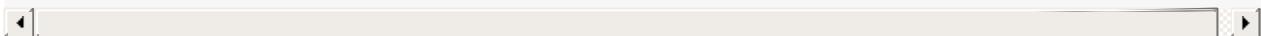
```

```

 });
} else{
 console.log("Can't find method", funcName);
}
} else{
 console.log("Can't find class: ", className);
}
}

//Your class name and function name here
hook_specific_method_of_class("NSXPConnection", "- setExportedObject:")

```



典型log输出：

```

===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x1057047a0
argSelfObj: <NSXPConnection: 0x1057047a0> connection from pid 46847 on mach service named com.apple.ak.auth.xpc
argSelfClassName: NSXPConnection
argSel: 0x19b362b44
argSelStr: setExportedObject:
funcName= - setExportedObject:
argCount: 1
----- [0] curArgPtr 0x105743aa0
curArgPtrObj: <AKAppleIDAuthenticationService: 0x105743aa0>
curArgPtrObj className: AKAppleIDAuthenticationService
curArgPtrObj kind: instance
===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x1057047a0
argSelfObj: <NSXPConnection: 0x1057047a0> connection from pid 46847 on mach service named com.apple.ak.auth.xpc
argSelfClassName: NSXPConnection
argSel: 0x19b362b44
argSelStr: setExportedObject:
argCount: 1
----- [0] curArgPtr 0x0

```

- 关于argCount的计算

另外，计算 argCount 的代码，如果从：

```

const argCount = occurrences(argSelStr, ":");
console.log("argCount: ", argCount);

// console.log("funcName=", funcName);
// const argCount = occurrences(funcName, ":");
// console.log("argCount: ", argCount);

```

换成：

```

// const argCount = occurrences(argSelStr, ":");
// console.log("argCount: ", argCount);

```

```

 console.log("funcName=", funcName);
 const argCount = occurrences(funcName, ":");
 console.log("argCount: ", argCount);

```

则对应部分输出从：

```

argSelStr: setExportedObject:
argCount: 1

```

变成：

```

argSelStr: setExportedObject:
funcName= - setExportedObject:
argCount: 1

```

## 优化逻辑：加上参数值的判断和过滤

如果此处需要有类似于，过滤参数的值，判断参数的值，并且过滤只输出对应值，则可以去：

- 把ObjC的NSString转换成js的String
- 然后再去用 === 去对比判断字符串

完整代码：

```

/*
 * Util Functions
 */

// convert from frida function call to ObjC function call
// "NSURL", "- initWithString:" => "[NSURL initWithString:]"
function toiOSObjCCall(class_name, method_name){
 const instanceCallStart = "-[" + class_name + " ";
 const classCallStart = "+[" + class_name + " ";
 var objcFuncCall = method_name.replace("-", instanceCallStart);
 objcFuncCall = objcFuncCall.replace("+", classCallStart);
 objcFuncCall = objcFuncCall + "]";
 // console.log(class_name + " -> " + method_name + " => " + objcFuncCall);
 return objcFuncCall;
}

/*
 * Frida Hook
 */

// https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/ho
ok-specific-method-of-class.js
function hook_specific_method_of_class(className, funcName)
{
 var iOSObjCallStr = toiOSObjCCall(className, funcName)
 console.log("iOSObjCallStr=", iOSObjCallStr)
 var curClass = ObjC.classes[className];

```

```

if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {

 Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("======" + iOSObjCallStr + " =====");
 }

 // args[0] is self = id
 const argSelf = args[0];
 console.log("argSelf: ", argSelf);
 const argSelfObj = new ObjC.Object(argSelf);
 console.log("argSelfObj: ", argSelfObj);
 const argSelfClassName = argSelfObj.$className;
 console.log("argSelfClassName: ", argSelfClassName);

 const connnServiceNameNSStr = argSelfObj.serviceName();
 const connnServiceNameJsStr = connnServiceNameNSStr.UTF8String()

 // args[1] is selector
 const argSel = args[1];
 console.log("argSel: ", argSel);
 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);

 if (connnServiceNameJsStr === "com.apple.ak.auth.xpc") {
 console.log("connnServiceNameNSStr: ", connnServiceNameNSStr);
 console.log("connnServiceNameJsStr: ", connnServiceNameJsStr);

 // args[2] holds the first function argument
 const args2 = args[2];
 console.log("args2: ", args2);
 if (args2 !== 0x0) {
 const args2Obj = new ObjC.Object(args2);
 // const args2Obj = new ObjC.Object(ptr(args2));
 console.log("args2Obj: ", args2Obj);
 const args2ObjClassName = args2Obj.$className;
 console.log("args2ObjClassName: ", args2ObjClassName);
 const args2ObjStr = args2Obj.toString();
 console.log("args2ObjStr: ", args2ObjStr);
 }
 }
 });
 } else{
 console.log("Can't find method", funcName);
 }
} else{
 console.log("Can't find class: ", className);
}
}

//Your class name and function name here

```

```
hook_specific_method_of_class("NSXPConnection", "- setExportedObject:")
```

典型log输出：

```
===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x1057047a0
argSelfObj: NSXPConnection: 0x1057047a0 connection from pid 46847 on mach service named com.apple.ak.auth.xpc
argSelfClassName: NSXPConnection
argSel: 0x19b362b44
argSelStr: setExportedObject:
argCount: 1
connnServiceNameNSStr: com.apple.ak.auth.xpc
connnServiceNameJsStr: com.apple.ak.auth.xpc
args2: 0x105743aa0
args2Obj: AKAppleIDAuthenticationService: 0x105743aa0
args2ObjClassName: AKAppleIDAuthenticationService
args2ObjStr: AKAppleIDAuthenticationService: 0x105743aa0
===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x1057047a0
argSelfObj: NSXPConnection: 0x1057047a0 connection from pid 46847 on mach service named com.apple.ak.auth.xpc
argSelfClassName: NSXPConnection
argSel: 0x19b362b44
argSelStr: setExportedObject:
argCount: 1
connnServiceNameNSStr: com.apple.ak.auth.xpc
connnServiceNameJsStr: com.apple.ak.auth.xpc
args2: 0x0
```

即：

只打印 serviceName 是 com.apple.ak.auth.xpc 的 NSXPConnection，过滤掉其他的，比如之前会打印的：

```
===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x102d35b60
argSelfObj: NSXPConnection: 0x102d35b60 connection from pid 46847 on mach service named com.apple.ak.anisette.xpc
connnServiceName: com.apple.ak.anisette.xpc
argSelfClassName: NSXPConnection
args2: 0x0

===== - [NSXPConnection setExportedObject:] =====
argSelf: 0x102d34e00
argSelfObj: NSXPConnection: 0x102d34e00 connection from pid 31901 on mach service named com.apple.ak.authorizationservices.xpc
connnServiceName: com.apple.ak.authorizationservices.xpc
argSelfClassName: NSXPConnection
args2: 0x102d513c0
args2Obj: AKAuthorizationDaemonService: 0x102d513c0
args2ObjClassName: AKAuthorizationDaemonService
args2ObjStr: AKAuthorizationDaemonService: 0x102d513c0
```

```

=====
- [NSXPConnection setExportedObject:]
argSelf: 0x102d35a30
argSelfObj: ACTrackedXPConnection: 0x102d35a30 connection to service with pid 104 named com.apple.accounts.accountmanager
connnServiceName: com.apple.accounts.accountmanager
argSelfClassName: ACTrackedXPConnection
args2: 0x0

```

等内容。

## 最终代码

```

/*
 * Util Functions
 */

/** Function that count occurrences of a substring in a string;
 * @param {String} string The string
 * @param {String} subString The sub string to search for
 * @param {Boolean} [allowOverlapping] Optional. (Default:false)
 *
 * @author Vitim.us https://gist.github.com/victornpb/7736865
 * @see Unit Test https://jsfiddle.net/Victornpb/5axuh96u/
 * @see https://stackoverflow.com/a/7924240/938822
 * @example occurrences("- setExportedObject:", ":") => 1
 */
function occurrences(string, subString, allowOverlapping) {
 // console.log("string=" + string + ",subString=" + subString + ", allowOverlapping=" + allowOverlapping)
 string += "";
 subString += "";
 if (subString.length <= 0) return (string.length + 1);

 var n = 0,
 pos = 0,
 step = allowOverlapping ? 1 : subString.length;

 while (true) {
 pos = string.indexOf(subString, pos);
 // console.log("pos=" + pos)
 if (pos >= 0) {
 ++n;
 pos += step;
 } else break;
 }

 return n;
}

// convert from frida function call to ObjC function call
// "NSURL", "- initWithString:" => "[NSURL initWithString:]"
function toiOSObjcCall(class_name, method_name){
 const instanceCallStart = "-[" + class_name + " ";

```

```

const classCallStart = "+[" + class_name + " ";
var objcFuncCall = method_name.replace("- ", instanceCallStart);
objcFuncCall = objcFuncCall.replace("+", classCallStart);
objcFuncCall = objcFuncCall + "]";
// console.log(class_name + " -> " + method_name + " => " + objcFuncCall);
return objcFuncCall;
}

// convert from ObjC function call to frida function call
// "-[NSURL initWithString:]" => ["NSURL", "- initWithString:"]
function toFridaObjcCall(fridaObjcCallStr){
 // console.log("fridaObjcCallStr=" + fridaObjcCallStr)
 const funcCallP = /^([-+])\[(\w+)\s+([\w:]+)\]$/;
 // console.log("funcCallP=" + funcCallP)
 const funcCallMatch = fridaObjcCallStr.match(funcCallP)
 // console.log("funcCallMatch=" + funcCallMatch)
 const objcFuncTypeChar = funcCallMatch[1]
 const objcClassName = funcCallMatch[2]
 const objcFuncName = funcCallMatch[3]
 const fridaFuncCallList = [objcClassName, objcFuncTypeChar + " " + objcFuncName]
 // console.log("fridaFuncCallList=" + fridaFuncCallList)
 return fridaFuncCallList
}

// NSString instance -> js string
function nsStrToJsStr(curNsStr){
 // method 1
 return curNsStr.UTF8String()
 // // method 2:
 // const NSUTF8StringEncoding = 4;
 // https://developer.apple.com/documentation/foundation/nsstring/1408489-cstringusingencoding?language=objc
 // return curNsStr.cStringUsingEncoding_(NSUTF8StringEncoding)
}

/*****************
* Frida Hook
*****************/
// Note: Another write type for for sure can found class and method
// const curMethod = ObjC.classes.NSXPCConnection["- setExportedObject:"];
// console.log("curMethod: ", curMethod);
// const iOSObjCallStr = "-[NSXPCConnection setExportedObject:]";

// https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/ho
ok-specific-method-of-class.js
function hook_specific_method_of_class(className, funcName)
{
 // var iOSObjCallStr = "className=" + className + ", funcName=" + funcName
 var iOSObjCallStr = toiOSObjcCall(className, funcName)
 console.log("iOSObjCallStr=", iOSObjCallStr)
 var curClass = ObjC.classes[className];
 if (typeof(curClass) !== 'undefined') {
 var curMethod = curClass[funcName];
 if (typeof(curMethod) !== 'undefined') {

```

```

Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 console.log("=====" + iosObjCallStr + " =====")
 }

 // console.log("argSelf=" + args[0] + ", argSel=" + args[1] + ", realArg1=" + args[2]);

 // args[0] is self = id
 const argSelf = args[0];
 // console.log("argSelf: ", argSelf);
 const argSelfObj = new ObjC.Object(argSelf);
 console.log("argSelfObj: ", argSelfObj);
 const argSelfClassName = argSelfObj.$className;
 // console.log("argSelfClassName: ", argSelfClassName);

 const connnServiceNameNSStr = argSelfObj.serviceName();
 // const connnServiceNameJsStr = connnServiceNameNSStr.UTF8String()
 const connnServiceNameJsStr = nsStrToJsStr(connnServiceNameNSStr)

 // // args[1] is selector
 // const argSel = args[1];
 // console.log("argSel: ", argSel);
 // const argSelStr = ObjC.selectorAsString(argSel);
 // console.log("argSelStr: ", argSelStr);

 // const argCount = occurrences(argSelStr, ":");

 // const argCount = occurrences(funcName, ":");

 // console.log("funcName=", funcName);
 // const argCount = occurrences(funcName, ":");

 if (connnServiceNameJsStr === "com.apple.ak.auth.xpc") {
 // console.log("connnServiceNameNSStr: ", connnServiceNameNSStr);
 console.log("connnServiceNameJsStr: ", connnServiceNameJsStr);

 // args[2] holds the first function argument
 const args2 = args[2];
 console.log("args2: ", args2);
 if (args2 != 0x0) {
 const args2Obj = new ObjC.Object(args2);
 // const args2Obj = new ObjC.Object(ptr(args2));
 console.log("args2Obj: ", args2Obj);
 const args2ObjClassName = args2Obj.$className;
 console.log("args2ObjClassName: ", args2ObjClassName);
 const args2ObjStr = args2Obj.toString();
 console.log("args2ObjStr: ", args2ObjStr);
 }
 }

 // // debug: output all function real parameters
 // for (let curArgIdx = 0; curArgIdx < argCount; curArgIdx++) {
 // const curArg = args[curArgIdx + 2];

 // // const usePtr = false;
}

```

```

// const usePtr = true;
// if (usePtr) {
// // console.log("usePtr=", usePtr);
// const curArgPtr = ptr(curArg);
// console.log("----- [" + curArgIdx + "] curArgPtr=" + curArgPtr);
// if (!curArgPtr.isNull()) {
// const curArgPtrObj = new ObjC.Object(curArgPtr);
// console.log("curArgPtrObj: ", curArgPtrObj);
// console.log("curArgPtrObj className: ", curArgPtrObj.$className);
// console.log("curArgPtrObj kind: ", curArgPtrObj.$kind);
// }
// } else {
// console.log("----- [" + curArgIdx + "] curArg=" + curArg);
// if (curArg && (curArg != 0x0)) {
// // console.log("curArg className: ", curArg.$className);
// const curArgObj = new ObjC.Object(curArg);
// console.log("curArgObj: ", curArgObj);
// console.log("curArgObj className: ", curArgObj.$className);
// console.log("curArgObj kind: ", curArgObj.$kind);
// }
// }
// }

});
}else{
 console.log("Can't find method", funcName);
}
}else{
 console.log("Can't find class: ", className);
}
}

//Your class name and function name here
hook_specific_method_of_class("NSXPConnection", "- setExportedObject:")

```



输出log：

```

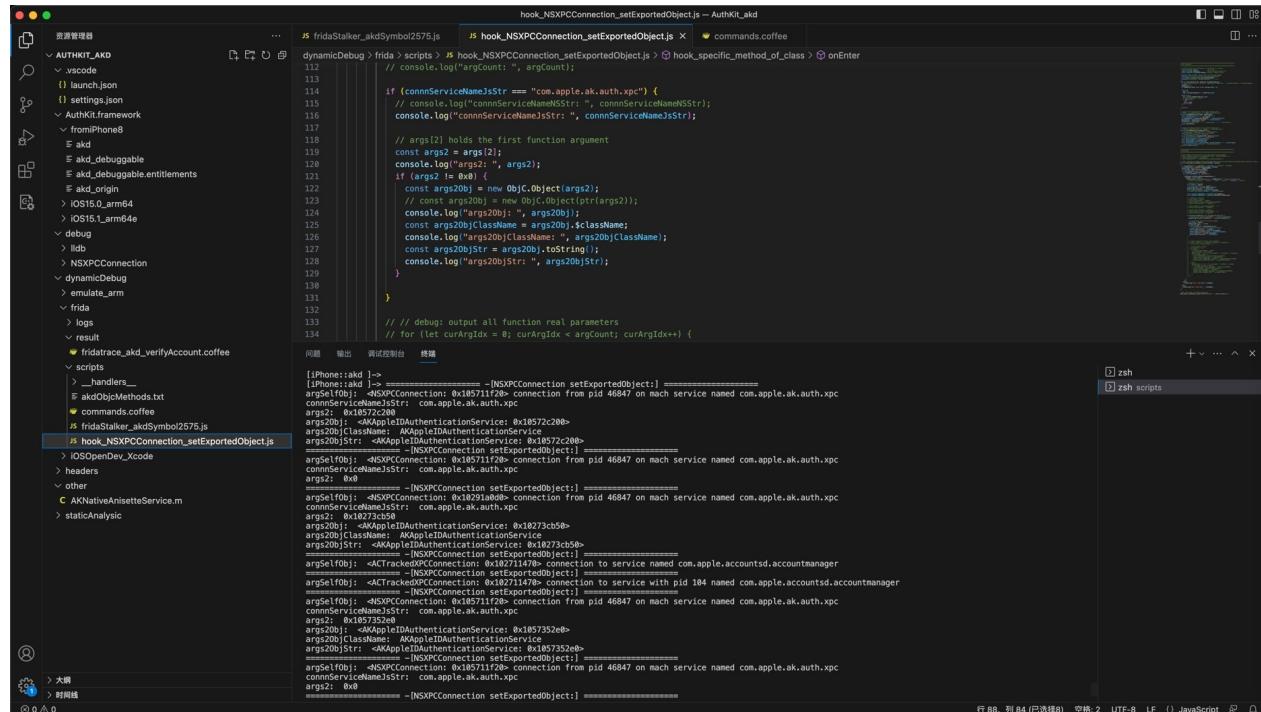
===== - [NSXPConnection setExportedObject:] =====
argSelfObj: NSXPConnection: 0x105711f20 connection from pid 46847 on mach service named com.apple.ak.auth.xpc
connnServiceNameJsStr: com.apple.ak.auth.xpc
args2: 0x10572c200
args2Obj: AKAppleIDAuthenticationService: 0x10572c200
args2ObjClassName: AKAppleIDAuthenticationService
args2ObjStr: AKAppleIDAuthenticationService: 0x10572c200
===== - [NSXPConnection setExportedObject:] =====
argSelfObj: NSXPConnection: 0x105711f20 connection from pid 46847 on mach service named com.apple.ak.auth.xpc
connnServiceNameJsStr: com.apple.ak.auth.xpc
args2: 0x0
===== - [NSXPConnection setExportedObject:] =====
argSelfObj: NSXPConnection: 0x10291a0d0 connection from pid 46847 on mach service named com.apple.ak.auth.xpc

```

```

connnServiceNameJsStr: com.apple.ak.auth.xpc
args2: 0x10273cb50
args20bj: AKAppleIDAuthenticationService: 0x10273cb50
args20bjClassName: AKAppleIDAuthenticationService
args20bjStr: AKAppleIDAuthenticationService: 0x10273cb50
 - [NSXPConnection setExportedObject:]
argSelfObj: ACTrackedXPConnection: 0x102711470 connection to service named com.apple.accounts.accountmanager
 - [NSXPConnection setExportedObject:]
argSelfObj: ACTrackedXPConnection: 0x102711470 connection to service with pid 104 named com.apple.accounts.accountmanager

```



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2023-06-23 23:04:15

## 单个类的所有函数

### hook类 AAUISignInViewController 的所有函数

#### Frida命令

```
frida -U -F p 18533 -l ./hookAccountLogin_Interceptor.js
```

#### js文件 hookAccountLogin\_Interceptor.js 内容

```
// https://raw.githubusercontent.com/noobpk/frida-ios-hook/master/frida-ios-hook/frida-
scripts/hook-all-methods-of-specific-class.js
function hook_class_method(class_name, method_name)
{
 var hook = ObjC.classes[class_name][method_name];
 Interceptor.attach(hook.implementation, {
 onEnter: function(args) {
 console.log("[*] Detected call to: " + class_name + " -> " + method_name);
 }
 });
}

function run_hook_all_methods_of_specific_class(className_arg)
{
 console.log("[*] Started: Hook all methods of a specific class");
 console.log("[+] Class Name: " + className_arg);
 //Your class name here
 var className = className_arg;
 //var methods = ObjC.classes[className].$methods;
 var methods = ObjC.classes[className].$ownMethods;
 for (var i = 0; i < methods.length; i++)
 {
 console.log(" " + methods[i]);
 // console.log("\t[*] Hooking into implementation");
 //eval('var className2 = "' + className + '"; var funcName2 = "' + methods[i] + '"; var
 hook = eval('ObjC.classes.' + className2 + '[' + funcName2 + ']'); Interceptor.attach(
 hook.implementation, { onEnter: function(args) { console.log("[*] Detected call to
 : " + className2 + " -> " + funcName2); }});');
 var className2 = className;
 var funcName2 = methods[i];
 hook_class_method(className2, funcName2);
 // console.log("\t[*] Hooking successful");
 }
 console.log("[*] Completed: Hook all methods of a specific class");
}

function hook_all_methods_of_specific_class(className_arg)
{
 setImmediate(run_hook_all_methods_of_specific_class, [className_arg])
}
```

```
//Your class name goes here
hook_all_methods_of_specific_class("AAUISignInViewController")
```

## 输出

最开始输出：

```
x crifan licrifandeMacBook Pro" ~/dev/dev_root/iosReverse/AppleStore/Preferences_app/dynamicDebug frida -U -F -l ./hookAccountLogin_Interceptor.js -p 18533

 / | Frida 16.0.10 - A world class dynamic instrumentation toolkit
 / \ |
 > | Commands:
 / \ / | help -> Displays the help system
 . . . | object? -> Display information about 'object'
 . . . | exit quit -> Exit
 . . .
 . . . More info at https://frida.re/docs/home/
. . .
. . . Connected to iPhone (id abdc0dd961c3cb96f5c4afe109de4eb48b88433a)
Attaching...
[+] Started: Hook all methods of a specific class
[+] Class Name: AAUISignInViewController
+ phoneNumberSupportedWithCompletion
- textField shouldChangeCharactersInRange replacementString
- tableView viewForHeaderInSection
- textFieldShouldReturn
- _keyboardWillHide
- titleLabel
- _keyboardWillShow
- loadView
- setUsername
- sizeCategoryDidChange
- _hasValidCredentials
- username
- tableView numberOfRowsInSection
- viewDidLoad
- _tableView
- delegate
- authenticationContext
- _setEnabled
- _tableFooterView
- viewWillAppear
- tableView willDisplayCell forIndexPath
- remoteUIController shouldLoadRequest redirectResponse
- cxx_destruct
- numberOfRowsInTableView
- viewDidDisappear
- traitCollectionDidChange
- initWithCoder
- tableView heightForRowAtIndexPath
- tableView viewForFooterInSection
- tableView cellForRowAtIndexPath
```

```
setDelegate
_tableHeaderView
tableView shouldDrawTopSeparatorForSection
messageLabel
initWithNibName bundle
dealloc
_cancelBarButton Item
viewDidLayoutSubviews
_cancelPasswordDelegateIfNecessary
context needsPasswordWithCompletion
_passwordCell
_textFieldDidChange
_nextBarButton Item
_updateConstraintsForTraitCollection
_beginObservingTextFieldDidChangeNotifications
_beginObservingKeyboardWillShowNotifications
_beginObservingSizeCategoryNotification
_usernameCell
_updateContentInsetWithHeight
_endObservingSizeCategoryNotification
_endObservingTextFieldDidChangeNotifications
_endObservingKeyboardWillShowNotifications
_akServiceType
_shouldAnticipatePiggybacking
_accountsHeaderView
_cancelButtonSelected
_nextButtonSelected
constrainView toFillHeaderFooterView
allowsAccountCreation
ActionButtonSelected
showServiceIcons
_stringForFooter
privacyLinkIdentifiers
_showOnlyPassword
_isGreenTeaCapable
_setUsernameCellWaiting
_delegate_signInViewControllerDidCancel
_attemptAuthentication
_prewarmSignInFlowIfApplicable
_presentForgotAppleIDPane
_presentCreateAppleIDPane
_attemptAuthenticationWithContext
_isPasswordFieldVisible
_isRunningInSettings
_repairCloudAccountWithAuthenticationResults
_delegate_signInViewControllerDidCompleteWithAuthenticationResults
_authorizationValueForAuthenticationResults
_passwordFieldIndexPath
_setPasswordFieldHidden
_setAkServiceType
_setShouldAnticipatePiggybacking
setAllowsAccountCreation
 setShowServiceIcons
canEditUsername
setCanEditUsername
setPrivacyLinkIdentifiers
```

```

- showingPasswordCell
- setShowingPasswordCell
[*] Completed: Hook all methods of a specific class
[iPhone: PID: 18533]->

```

后续操作app页面，触发：

```

[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials

```

继续操作app页面：输入账号，点击下一步按钮，输出：

```

[*] Detected call to: AAUISignInViewController -> _attemptAuthentication
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> authenticationContext
[*] Detected call to: AAUISignInViewController -> _akServiceType
[*] Detected call to: AAUISignInViewController -> _shouldAnticipatePiggybacking
[*] Detected call to: AAUISignInViewController -> _isRunningInSettings
[*] Detected call to: AAUISignInViewController -> _attemptAuthenticationWithContext
[*] Detected call to: AAUISignInViewController -> _setEnabled
[*] Detected call to: AAUISignInViewController -> textField shouldChangeCharactersInRange replacementString:

```

```

[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _textFieldDidChange
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> _keyboardWillShow
[*] Detected call to: AAUISignInViewController -> _updateContentInsetWithHeight
[*] Detected call to: AAUISignInViewController -> _keyboardWillHide
[*] Detected call to: AAUISignInViewController -> _updateContentInsetWithHeight
[*] Detected call to: AAUISignInViewController -> _setUsernameCellWaiting
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _prewarmSignInFlowIfApplicable
[*] Detected call to: AAUISignInViewController -> showServiceIcons
[*] Detected call to: AAUISignInViewController -> context.needsPasswordWithCompletion

[*] Detected call to: AAUISignInViewController -> setPasswordFieldHidden
[*] Detected call to: AAUISignInViewController -> _isPasswordFieldVisible
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> _passwordFieldIndexPath
[*] Detected call to: AAUISignInViewController -> numberOfRowsInSectionTableview
[*] Detected call to: AAUISignInViewController -> numberOfRowsInSectionTableview
[*] Detected call to: AAUISignInViewController -> tableView numberOfRowsInSectionSection
[*] Detected call to: AAUISignInViewController -> _showOnlyPassword
[*] Detected call to: AAUISignInViewController -> tableView heightForRowAtIndexPath
[*] Detected call to: AAUISignInViewController -> tableView heightForRowAtIndexPath
[*] Detected call to: AAUISignInViewController -> tableView cellForRowAtIndexpath
[*] Detected call to: AAUISignInViewController -> _passwordFieldIndexPath
[*] Detected call to: AAUISignInViewController -> _passwordCell
[*] Detected call to: AAUISignInViewController -> tableView shouldDrawTopSeparatorFor

Section:
[*] Detected call to: AAUISignInViewController -> tableView heightForRowAtIndexPath
[*] Detected call to: AAUISignInViewController -> tableView willDisplayCellForRowAtIndexpath
[*] Detected call to: AAUISignInViewController -> tableView shouldDrawTopSeparatorFor

Section:
[*] Detected call to: AAUISignInViewController -> tableView shouldDrawTopSeparatorFor
[*] Detected call to: AAUISignInViewController -> _setEnabled
[*] Detected call to: AAUISignInViewController -> _isValidCredentials
[*] Detected call to: AAUISignInViewController -> _setUsernameCellWaiting
[*] Detected call to: AAUISignInViewController -> tableView shouldDrawTopSeparatorFor

Section:
[*] Detected call to: AAUISignInViewController -> tableView shouldDrawTopSeparatorFor
[*] Detected call to: AAUISignInViewController -> _keyboardWillShow
[*] Detected call to: AAUISignInViewController -> _updateContentInsetWithHeight
[*] Detected call to: AAUISignInViewController -> _keyboardWillShow
[*] Detected call to: AAUISignInViewController -> _updateContentInsetWithHeight

```

# 所有类的所有函数

- 注意：下面代码，没有真正生效，实现我们希望的，hook所有的类的所有方法
  - 只是记录目前的效果，供参考。

## frida命令

```
frida -U -N com.apple.Preferences -l hookAccountLogin_Interceptor_allClassAllMethod.js
```

## js脚本文 件 hookAccountLogin\_Interceptor\_allClassAllMethod.js 内容

```
// https://github.com/noobpk/frida-ios-hook/blob/master/frida-ios-hook/frida-scripts/hook-all-methods-of-all-classes-app-only.js

function get_timestamp()
{
 var today = new Date();
 var timestamp = today.getFullYear() + '-' + (today.getMonth()+1) + '-' + today.getDate() + ' ' + today.getHours() + ":" + today.getMinutes() + ":" + today.getSeconds() + ";" + today.getMilliseconds();
 return timestamp;
}

function hook_class_method(class_name, method_name)
{
 var hook = ObjC.classes[class_name][method_name];
 Interceptor.attach(hook.implementation, {
 onEnter: function(args) {
 console.log("[*] [" + get_timestamp() + "] Detected call to: " + class_name + " -> " + method_name);
 }
 });
}

function run_hook_all_methods_of_classes_app_only(verbose)
{
 console.log(" [*] Started: Hook all methods of all app only classes");
 var free = new NativeFunction(Module.findExportByName(null, 'free'), 'void', ['pointer']);
 var copyClassNamesForImage = new NativeFunction(Module.findExportByName(null, 'objc_copyClassNamesForImage'), 'pointer', ['pointer', 'pointer']);
 var p = Memory.alloc(Process.pageSize);
 Memory.writeInt(p, 0);
 var path = ObjC.classes.NSBundle mainBundle().executablePath().UTF8String();
 var pPath = Memory.allocUtf8String(path);
 var pClasses = copyClassNamesForImage(pPath, p);
 var count = Memory.readUInt(p)
```

```

var classesArray = new Array(count)
for (var i = 0; i < count; i++)
{
 var pClassName = Memory.readPointer(pClasses.add(i * Process.pointerSize))
 classesArray[i] = Memory.readUtf8String(pClassName)
 var className = classesArray[i]
 if (ObjC.classes.hasOwnProperty(className))
 {
 //console.log("[+] Class: " + className);
 //var methods = ObjC.classes[className].$methods;
 var methods = ObjC.classes[className].$ownMethods;
 for (var j = 0; j < methods.length; j++)
 {
 try
 {
 var className2 = className;
 var funcName2 = methods[j];
 //console.log("[-] Method: " + methods[j]);
 hook_class_method(className2, funcName2);
 if (verbose)
 console.log("[*] [" + get_timestamp() + "] Hooking successful: "
+ className2 + " -> " + funcName2);
 }
 catch(err)
 {
 console.log("[*] [" + get_timestamp() + "] Hooking Error: " + err.message);
 }
 }
 }
}
free(pClasses)
console.log("[*] Completed: Hook all methods of all app only classes");
}

function hook_all_methods_of_classes_app_only()
{
 setImmediate(run_hook_all_methods_of_classes_app_only,[false])
}

function hook_all_methods_of_classes_app_only(verbose)
{
 setImmediate(run_hook_all_methods_of_classes_app_only,[true])
}

hook_all_methods_of_classes_app_only()
//hook_all_methods_of_classes_app_only("verbose") //for verbose output

```

## 输出

```

→ scripts frida -U -N com.apple.Preferences -l hookAccountLogin_Interceptor_allClassAllMethod.js

```

```

 / _ | Frida 16.0.19 - A world-class dynamic instrumentation toolkit
 | (|
 > -
 /_/_ | Commands:
 + + + + help -> Displays the help system
 + + + + object? -> Display information about 'object'
 + + + + exit/quit -> Exit

 + + + + More info at https://frida.re/docs/home/
 + + + +
 + + + + Connected to iPhone (id abdc0dd961c3cb96f5c4afe109de4eb48b88433a)
[*] Started: Hook all methods of all app only classes
[*] [2023-6-23 15:28:28:851] Hooking successful: PreferencesAppController -> - rootController
[*] [2023-6-23 15:28:28:852] Hooking successful: PreferencesAppController -> - appWindow
[*] [2023-6-23 15:28:28:853] Hooking successful: PreferencesAppController -> - profileConnectionDidReceiveProfileListChangedNotification:userInfo:
[*] [2023-6-23 15:28:28:854] Hooking successful: PreferencesAppController -> - profileConnectionDidReceiveRestrictionChangedNotification:userInfo:
[*] [2023-6-23 15:28:28:855] Hooking successful: PreferencesAppController -> - profileConnectionDidReceiveEffectiveSettingsChangedNotification:userInfo:
[*] [2023-6-23 15:28:28:856] Hooking successful: PreferencesAppController -> - profileConnectionDidReceivePasscodeChangedNotification:userInfo:
[*] [2023-6-23 15:28:28:858] Hooking successful: PreferencesAppController -> - clearControllersForSuspendedState
[*] [2023-6-23 15:28:28:858] Hooking successful: PreferencesAppController -> - popToRootOfSettingsSelectGeneral:
[*] [2023-6-23 15:28:28:859] Hooking successful: PreferencesAppController -> - popToRootOfSettingsSelectGeneral:performWithoutDeferringTransitions:
[*] [2023-6-23 15:28:28:860] Hooking successful: PreferencesAppController -> - runTest:options:
[*] [2023-6-23 15:28:28:862] Hooking successful: PreferencesAppController -> - runLoadingTest:withOptions:
[*] [2023-6-23 15:28:28:863] Hooking successful: PreferencesAppController -> - runScrollTest:withOptions:
[*] [2023-6-23 15:28:28:864] Hooking successful: PreferencesAppController -> - runScrollTest:withDelay:withOptions:
[*] [2023-6-23 15:28:28:866] Hooking successful: PreferencesAppController -> - performRecapScrollTest:withOptions:scrollView:
[*] [2023-6-23 15:28:28:867] Hooking successful: PreferencesAppController -> - updateSoftwareUpdateBadgeOnSpecifier:
[*] [2023-6-23 15:28:28:868] Hooking successful: PreferencesAppController -> - _registerForAccessoryNotifications
[*] [2023-6-23 15:28:28:869] Hooking successful: PreferencesAppController -> - application:didFinishLaunchingWithOptions:
[*] [2023-6-23 15:28:28:871] Hooking successful: PreferencesAppController -> - processStateRestorationURL
[*] [2023-6-23 15:28:28:871] Hooking successful: PreferencesAppController -> - application:configurationForConnectingSceneSession:options:
[*] [2023-6-23 15:28:28:873] Hooking successful: PreferencesAppController -> - receivedApplicationWillConnectWindowScene:
[*] [2023-6-23 15:28:28:874] Hooking successful: PreferencesAppController -> - quickActionShortcutItems
[*] [2023-6-23 15:28:28:875] Hooking successful: PreferencesAppController -> - receivedApplicationWillTerminateNotification:
[*] [2023-6-23 15:28:28:884] Hooking successful: PreferencesAppController -> - received

```

```
ApplicationDidEnterBackground:
[*] [2023-6-23 15:28:28:886] Hooking successful: PreferencesAppController -> - received
ApplicationWillEnterForegroundNotification:
[*] [2023-6-23 15:28:28:887] Hooking successful: PreferencesAppController -> - received
ApplicationDidBecomeActive:
[*] [2023-6-23 15:28:28:888] Hooking successful: PreferencesAppController -> - received
ApplicationWillResignActiveNotification:
[*] [2023-6-23 15:28:28:890] Hooking successful: PreferencesAppController -> - received
ApplicationContinueUserActivity:
[*] [2023-6-23 15:28:28:890] Hooking successful: PreferencesAppController -> - received
ApplicationResumeNotification:
[*] [2023-6-23 15:28:28:892] Hooking successful: PreferencesAppController -> - received
ApplicationOpenURLNotification:
[*] [2023-6-23 15:28:28:893] Hooking successful: PreferencesAppController -> - processU
RL:
[*] [2023-6-23 15:28:28:894] Hooking successful: PreferencesAppController -> - processU
RL:animated:fromSearch:
[*] [2023-6-23 15:28:28:895] Hooking successful: PreferencesAppController -> - processU
RL:animated:fromSearch:withCompletion:
[*] [2023-6-23 15:28:28:896] Hooking successful: PreferencesAppController -> - _ratio
nalyzeAccountSettingsURLDictionary:
[*] [2023-6-23 15:28:28:898] Hooking successful: PreferencesAppController -> - handleAu
thKitURLIfNeededFromResourceDictionary:overViewController:
[*] [2023-6-23 15:28:28:898] Hooking successful: PreferencesAppController -> - processA
ppPrefsURL:
[*] [2023-6-23 15:28:28:899] Hooking successful: PreferencesAppController -> - processS
hortcutsAppPrefsURL:
[*] [2023-6-23 15:28:28:900] Hooking successful: PreferencesAppController -> - processP
rebuddyURL:
[*] [2023-6-23 15:28:28:901] Hooking successful: PreferencesAppController -> - processT
VProviderPrefsURL:
[*] [2023-6-23 15:28:28:902] Hooking successful: PreferencesAppController -> - processO
tpauthURL:
[*] [2023-6-23 15:28:28:903] Hooking successful: PreferencesAppController -> - generate
URL
[*] [2023-6-23 15:28:28:904] Hooking successful: PreferencesAppController -> - _clearSa
vedPositionURL
[*] [2023-6-23 15:28:28:905] Hooking successful: PreferencesAppController -> - oneTimeJ
umpURL
[*] [2023-6-23 15:28:28:907] Hooking successful: PreferencesAppController -> - addBusyC
ontrollersFromRootController:
[*] [2023-6-23 15:28:28:908] Hooking successful: PreferencesAppController -> - endAndIn
validateBackgroundTask
[*] [2023-6-23 15:28:28:909] Hooking successful: PreferencesAppController -> - controll
erFinished:
[*] [2023-6-23 15:28:28:910] Hooking successful: PreferencesAppController -> - _handleB
usyControllers
[*] [2023-6-23 15:28:28:911] Hooking successful: PreferencesAppController -> - _suspend
Controllers
[*] [2023-6-23 15:28:28:912] Hooking successful: PreferencesAppController -> - _handleE
xternalApplicationChange
[*] [2023-6-23 15:28:28:913] Hooking successful: PreferencesAppController -> - _handleI
conChangeForBundleID:
[*] [2023-6-23 15:28:28:914] Hooking successful: PreferencesAppController -> - systemDi
dwake:
[*] [2023-6-23 15:28:28:915] Hooking successful: PreferencesAppController -> - signific
```

```

antTimeChange
[*] [2023-6-23 15:28:28:916] Hooking successful: PreferencesAppController -> - resetLoc
ale
[*] [2023-6-23 15:28:28:917] Hooking successful: PreferencesAppController -> - defaultI
mageSnapshotExpiration
[*] [2023-6-23 15:28:28:918] Hooking successful: PreferencesAppController -> - dealloc
[*] [2023-6-23 15:28:28:919] Hooking successful: PreferencesAppController -> - _registe
rForPowerNotifications
[*] [2023-6-23 15:28:28:920] Hooking successful: PreferencesAppController -> - _deregis
terForPowerNotifications
[*] [2023-6-23 15:28:28:921] Hooking successful: PreferencesAppController -> - _accesso
ryDidConnect:
[*] [2023-6-23 15:28:28:922] Hooking successful: PreferencesAppController -> - accessor
yDidDisconnect:
[*] [2023-6-23 15:28:28:923] Hooking successful: PreferencesAppController -> - splitVie
wController:separateSecondaryViewControllerFromPrimaryViewController:
[*] [2023-6-23 15:28:28:924] Hooking successful: PreferencesAppController -> - splitVie
wController:collapseSecondaryViewController:ontoPrimaryViewController:
[*] [2023-6-23 15:28:28:925] Hooking successful: PreferencesAppController -> - splitVie
wControllerDidPopToRootController:
[*] [2023-6-23 15:28:28:926] Hooking successful: PreferencesAppController -> - carrierB
undleChange:
[*] [2023-6-23 15:28:28:927] Hooking successful: PreferencesAppController -> - rootDoma
inConnect
[*] [2023-6-23 15:28:28:929] Hooking successful: PreferencesAppController -> - setRootD
omainConnect:
[*] [2023-6-23 15:28:28:930] Hooking successful: PreferencesAppController -> - busyCont
rollers
[*] [2023-6-23 15:28:28:931] Hooking successful: PreferencesAppController -> - setBusyC
ontrollers:
[*] [2023-6-23 15:28:28:931] Hooking successful: PreferencesAppController -> - client
[*] [2023-6-23 15:28:28:932] Hooking successful: PreferencesAppController -> - setClien
t:
[*] [2023-6-23 15:28:28:933] Hooking successful: PreferencesAppController -> - urlManag
er
[*] [2023-6-23 15:28:28:934] Hooking successful: PreferencesAppController -> - setUrlMa
nager:
[*] [2023-6-23 15:28:28:935] Hooking successful: PreferencesAppController -> - windowSc
eneClass
[*] [2023-6-23 15:28:28:936] Hooking successful: PreferencesAppController -> - setWindo
wSceneClass:
[*] [2023-6-23 15:28:28:937] Hooking successful: PreferencesAppController -> - scene
[*] [2023-6-23 15:28:28:938] Hooking successful: PreferencesAppController -> - setScene
:
[*] [2023-6-23 15:28:28:939] Hooking successful: PreferencesAppController -> - accountE
numerator
[*] [2023-6-23 15:28:28:940] Hooking successful: PreferencesAppController -> - setAccou
ntEnumerator:
[*] [2023-6-23 15:28:28:941] Hooking successful: PreferencesAppController -> - _uuidReg
ex
[*] [2023-6-23 15:28:28:942] Hooking successful: PreferencesAppController -> - set_uuid
Regex:
[*] [2023-6-23 15:28:28:943] Hooking successful: PreferencesAppController -> - .cxx_des
truct
[*] [2023-6-23 15:28:28:945] Hooking successful: PreferenceSceneDelegate -> - scene:wil
lConnectToSession:options:

```

```
[*] [2023-6-23 15:28:28:946] Hooking successful: PreferenceSceneDelegate -> - scene:openURLContexts:
[*] [2023-6-23 15:28:28:947] Hooking successful: PreferenceSceneDelegate -> - scene:continueUserActivity:
[*] [2023-6-23 15:28:28:948] Hooking successful: PreferenceSceneDelegate -> - windowScene:performActionForShortcutItem:completionHandler:
[*] Completed: Hook all methods of all app only classes
[iPhone::com.apple.Preferences]->
```

后续操作Preferences的页面，但是却没有更多的输出。

暂时就这样，有空再深究。

crifan.org, 使用[署名4.0国际\(CC BY 4.0\)协议](#)发布 all right reserved, powered by Gitbook最后更新：  
2023-06-23 15:31:48

# ApiResolver

## 查找类 AAUISignInViewController 中的所有函数

- Frida命令

```
frida -U -p 18031 -l ./hookAccountLogin.js
```

- js文件 hookAccountLogin.js 的内容

```
var resolver = new ApiResolver('objc');
resolver.enumerateMatches('*[AAUISignInViewController *]', {
 onMatch: function(match) {
 console.log(match['name'] + ":" + match['address']);
 },
 onComplete: function() {}
});
```

- 输出

```
root@192.168.2.13 (ssh) 361 4.1 kB↓ 4.1 kB↑ 3/14, 16:10 .icDebug/frida (-zsh)
Failed to spawn: unable to find process with name 'Preferences'
x crifan@licrifandeMacBook-Pro ~/dev/dev_root/iosReverse/AppleStore/Preferences_app/dynamicDebug/frida frida -U -l ./hookAccountLogin.js -n Preferences

| () | Frida 16.0.10 - A world-class dynamic instrumentation toolkit
| () | Commands:
| () | help -> Displays the help system
| () | object? -> Display information about 'object'
| () | exit/quit -> Exit
| () | More info at https://frida.re/docs/home/
| () | Connected to iPhone (id=abcd0dd961c3cb96f5c4afe109de4eb48b88433a)
| () | Failed to spawn: unable to find process with name 'Preferences'
x crifan@licrifandeMacBook-Pro ~/dev/dev_root/iosReverse/AppleStore/Preferences_app/dynamicDebug/frida frida -U -l ./hookAccountLogin.js -p 18031

| () | Frida 16.0.10 - A world-class dynamic instrumentation toolkit
| () | Commands:
| () | help -> Displays the help system
| () | object? -> Display information about 'object'
| () | exit/quit -> Exit
| () | More info at https://frida.re/docs/home/
| () | Connected to iPhone (id=abcd0dd961c3cb96f5c4afe109de4eb48b88433a)
Attaching...
+[AAUISignInViewController phoneNumberSupportedWithCompletion:]::0x1b30c82f4
-[AAUISignInViewController textField:shouldChangeCharactersInRange:replacementString:]::0x1b30ce4bc
-[AAUISignInViewController tableView:viewForHeaderInSection:]::0x1b30ce40c
-[AAUISignInViewController textFieldShouldReturn:]::0x1b30ce47c
-[AAUISignInViewController _keyboardWillHide:]::0x1b30cd40
-[AAUISignInViewController _titleLabel:]::0x1b30c954c
-[AAUISignInViewController _keyboardWillShow:]::0x1b30cd7e8
-[AAUISignInViewController loadView:]::0x1b30c872c
-[AAUISignInViewController setUsername:]::0x1b30ce81c
-[AAUISignInViewController sizeCategoryDidChange:]::0x1b30cddd64
-[AAUISignInViewController _hasValidCredentials:]::0x1b30cb5ec
-[AAUISignInViewController setUsername:]::0x1b30ce80c
-[AAUISignInViewController tableView:numberOfRowsInSection:]::0x1b30ce170
-[AAUISignInViewController viewDidLoad:]::0x1b30c878c
-[AAUISignInViewController _tableView:]::0x1b30c9470
-[AAUISignInViewController delegate:]::0x1b30ce798
-[AAUISignInViewController authenticationContext:]::0x1b30c92c4
-[AAUISignInViewController _setEnabled:]::0x1b30cb7f8
-[AAUISignInViewController _tableFooterView:]::0x1b30ca44
-[AAUISignInViewController viewWillAppear:]::0x1b30cbf7c
-[AAUISignInViewController tableView:willDisplayCell:forRowAtIndexPath:]::0x1b30ce3a8
-[AAUISignInViewController remoteUIControllers:shouldLoadRequest:redirectResponse:]::0x1b30ce000
-[AAUISignInViewController _cxx_destruct]::0x1b30c8884
-[AAUISignInViewController numberOfRowsInSection:]::0x1b30ce168
-[AAUISignInViewController viewDidDisappear:]::0x1b30ce0168
-[AAUISignInViewController traitCollectionDidChange:]::0x1b30ce5cc
-[AAUISignInViewController initWithCoder:]::0x1b30cb8dc
-[AAUISignInViewController tableView:heightForRowAtIndexPath:]::0x1b30ce324
-[AAUISignInViewController tableView:viewForFooterInSection:]::0x1b30ce440
-[AAUISignInViewController tableView:cellForRowAtIndexPath:]::0x1b30ce1b0
```

x crifan@licrifandeMacBook-Pro ~/dev/dev\_root/iosReverse/AppleStore/Preferences\_app/dynamicDebug/frida frida -U -l ./hookAccountLogin.js -p 18031

```

/ _ | Frida 16.0.10 - A world-class dynamic instrumentation toolkit
|_ |
>_ |
/_ | Commands:
 help -> Displays the help system
 object? -> Display information about 'object'
 exit/quit -> Exit

+_ + + + More info at https://frida.re/docs/home/

+_ + + + Connected to iPhone (id abdc0dd961c3cb96f5c4afe109de4eb48b88433a)
Attaching...
+ [AAUISignInViewController phoneNumberSupportedWithCompletion:] : 0x1b30c82f4
- [AAUISignInViewController textField:shouldChangeCharactersInRange:replacementString:] : 0x1b30ce4bc
- [AAUISignInViewController tableView:viewForHeaderInSection:] : 0x1b30ce40c
- [AAUISignInViewController textFieldShouldReturn:] : 0x1b30ce47c
- [AAUISignInViewController _keyboardWillHide:] : 0x1b30cda40
- [AAUISignInViewController titleLabel] : 0x1b30c954c
- [AAUISignInViewController _keyboardWillShow:] : 0x1b30cd7e8
- [AAUISignInViewController loadView] : 0x1b30c872c
- [AAUISignInViewController setUsername:] : 0x1b30ce81c
- [AAUISignInViewController sizeCategoryDidChange:] : 0x1b30cddd64
- [AAUISignInViewController _hasValidCredentials] : 0x1b30cb5ec
- [AAUISignInViewController setUsername] : 0x1b30ce80c
- [AAUISignInViewController tableView:numberOfRowsInSection:] : 0x1b30ce170
- [AAUISignInViewController viewDidLoad] : 0x1b30c878c
- [AAUISignInViewController _tableView] : 0x1b30c9a70
- [AAUISignInViewController delegate] : 0x1b30ce798
- [AAUISignInViewController authenticationContext] : 0x1b30c92c4
- [AAUISignInViewController _setEnabled:] : 0x1b30cb7f8
- [AAUISignInViewController _tableFooterView] : 0x1b30ca644
- [AAUISignInViewController viewWillAppear:] : 0x1b30c8f7c
- [AAUISignInViewController tableView:willDisplayCell:forRowAtIndexPath:] : 0x1b30ce3a8
- [AAUISignInViewController remoteUIController:shouldLoadRequest:redirectResponse:] : 0x1b30ce000
- [AAUISignInViewController .cxx_destruct] : 0x1b30ce884
- [AAUISignInViewController numberOfSectionsInTableView:] : 0x1b30ce168
- [AAUISignInViewController viewDidDisappear:] : 0x1b30c91e8
- [AAUISignInViewController traitCollectionDidChange:] : 0x1b30ce5cc
- [AAUISignInViewController initWithCoder:] : 0x1b30c86dc
- [AAUISignInViewController tableView:heightForRowAtIndexPath:] : 0x1b30ce324
- [AAUISignInViewController tableView:viewForFooterInSection:] : 0x1b30ce440
- [AAUISignInViewController tableView:cellForRowAtIndexPath:] : 0x1b30ce1b0
- [AAUISignInViewController setDelegate:] : 0x1b30ce7b8
- [AAUISignInViewController _tableHeaderView] : 0x1b30c9708
- [AAUISignInViewController tableView:shouldDrawTopSeparatorForSection:] : 0x1b30ce474
- [AAUISignInViewController messageLabel] : 0x1b30c95a0
- [AAUISignInViewController initWithNibName:bundle:] : 0x1b30c8498
- [AAUISignInViewController dealloc] : 0x1b30c9258
- [AAUISignInViewController _cancelBarButton Item] : 0x1b30c95f4
- [AAUISignInViewController viewDidLayoutSubviews] : 0x1b30c9144
- [AAUISignInViewController _cancelPasswordDelegateIfNecessary] : 0x1b30ccecc
- [AAUISignInViewController context:needsPasswordWithCompletion:] : 0x1b30cdfa0
- [AAUISignInViewController _passwordCell] : 0x1b30ca1c0
- [AAUISignInViewController _textFieldDidChange:] : 0x1b30cd4d4

```

```

- [AAUISignInViewController _nextBarButtonButtonItem]:0x1b30c9638
- [AAUISignInViewController _updateConstraintsForTraitCollection]:0x1b30ce6c0
- [AAUISignInViewController _beginObservingTextFieldDidChangeNotifications]:0x1b30cd40c
- [AAUISignInViewController _beginObservingKeyboardWillShowNotifications]:0x1b30cd5f0
- [AAUISignInViewController _beginObservingSizeCategoryNotification]:0x1b30cdc9c
- [AAUISignInViewController _usernameCell]:0x1b30c9c00
- [AAUISignInViewController _updateContentInsetWithHeight]:0x1b30cdb74
- [AAUISignInViewController _endObservingSizeCategoryNotification]:0x1b30cdd04
- [AAUISignInViewController _endObservingTextFieldDidChangeNotifications]:0x1b30cd474
- [AAUISignInViewController _endObservingKeyboardWillShowNotifications]:0x1b30cd6f8
- [AAUISignInViewController _akServiceType]:0x1b30ce758
- [AAUISignInViewController _shouldAnticipatePiggybacking]:0x1b30ce778
- [AAUISignInViewController _accountsHeaderView]:0x1b30c97b0
- [AAUISignInViewController _cancelButtonSelected]:0x1b30cb96c
- [AAUISignInViewController _nextButtonSelected]:0x1b30cb978
- [AAUISignInViewController constrainView:toFillHeaderFooterView]:0x1b30cb1d0
- [AAUISignInViewController allowsAccountCreation]:0x1b30ce7cc
- [AAUISignInViewController _actionButtonSelected]:0x1b30cb9ac
- [AAUISignInViewController showServiceIcons]:0x1b30ce7ec
- [AAUISignInViewController _stringForFooter]:0x1b30cb6c4
- [AAUISignInViewController privacyLinkIdentifiers]:0x1b30ce848
- [AAUISignInViewController _showOnlyPassword]:0x1b30cccac
- [AAUISignInViewController _isGreenTeaCapable]:0x1b30cb6b8
- [AAUISignInViewController _setUsernameCellWaiting]:0x1b30cd31c
- [AAUISignInViewController _delegate_signInViewControllerDidCancel]:0x1b30cdf10
- [AAUISignInViewController _attemptAuthentication]:0x1b30cc070
- [AAUISignInViewController _prewarmSignInFlowIfApplicable]:0x1b30cc018
- [AAUISignInViewController _presentForgotAppleIDPane]:0x1b30cbf48
- [AAUISignInViewController _presentCreateAppleIDPane]:0x1b30cbe78
- [AAUISignInViewController _attemptAuthenticationWithContext]:0x1b30cc364
- [AAUISignInViewController _isPasswordFieldVisible]:0x1b30cb670
- [AAUISignInViewController _isRunningInSettings]:0x1b30cb774
- [AAUISignInViewController _repairCloudAccountWithAuthenticationResults]:0x1b30cc89c
- [AAUISignInViewController _delegate_signInViewControllerDidCompleteWithAuthenticationResults]:0x1b30cde68
- [AAUISignInViewController _authorizationValueForAuthenticationResults]:0x1b30ccd30
- [AAUISignInViewController _passwordFieldIndexPath]:0x1b30cd3f0
- [AAUISignInViewController _setPasswordFieldHidden]:0x1b30ccf68
- [AAUISignInViewController _setAkServiceType]:0x1b30ce768
- [AAUISignInViewController _setShouldAnticipatePiggybacking]:0x1b30ce788
- [AAUISignInViewController setAllowsAccountCreation]:0x1b30ce7dc
- [AAUISignInViewController setShowServiceIcons]:0x1b30ce7fc
- [AAUISignInViewController canEditUsername]:0x1b30ce828
- [AAUISignInViewController setCanEditUsername]:0x1b30ce838
- [AAUISignInViewController setPrivacyLinkIdentifiers]:0x1b30ce858
- [AAUISignInViewController showingPasswordCell]:0x1b30ce864
- [AAUISignInViewController setShowingPasswordCell]:0x1b30ce874
[iPhone::PID::18031]-

```

# Stalker

## 别处某示例

参考自：【iOS逆向】某营业厅算法分析\_小陈\_InfoQ写作社区

ts = TypeScript 代码：

```

var addr = 0x0000000029FD08 // loginWithPhoneNbr函数的起始地址
var mainModule = Process.enumerateModules()[0];
console.log(JSON.stringify(mainModule));
var mainName: string = mainModule.name;
var baseAddr = Module.findBaseAddress(mainName)!;
Interceptor.attach(baseAddr.add(addr), {
 onEnter: function(args) {
 console.log(addr.toString(16), "= loginWithPhoneNbr onEnter =");
 var tid = Process.getCurrentThreadId();
 Stalker.follow(tid, {
 events: {
 call: true, // CALL instructions: yes please
 ret: false, // RET instructions
 exec: false, // all instructions: not recommended as it's
 block: false, // block executed: coarse execution trace
 compile: false // block compiled: useful for coverage
 },
 transform: (iterator: StalkerArm64Iterator) => {
 let instruction = iterator.next();
 const startAddress = instruction.address;
 var isAppCode = startAddress.compare(baseAddr.add(addr)) >= 0 && startAddress.compare(baseAddr.add(addr).add(10000)) === -1;
 do {
 if (isAppCode) {
 if (instruction.mnemonic === "bl") {
 iterator.putCallout((ctx) => {
 var arm64Context = ctx as Arm64CpuContext;
 console.log("bl x0 = " + new Objc.Object(arm64Context.x0));
 console.log("bl x1 = " + arm64Context.x1.readCString());
 });
 }
 }
 iterator.keep();
 } while ((instruction = iterator.next()) !== null);
 }
 });
 },
 onLeave: function(retval) {
 console.log("retval:", new Objc.Object(retval));
 console.log(addr.toString(16), "= loginWithPhoneNbr onLeave =");
 }
});

```

## frida-stalker-example

别处的例子：

[misc/frida-stalker-example.py at master · poxyran/misc · GitHub](#)

```
import sys
import frida

def on_message(message, data):
 print "[%s] -> %s" % (message, data)

def main(target_process):
 session = frida.attach(target_process)
 script = session.create_script("""
function StalkerExample()
{
 var threadIds = [];

 Process.enumerateThreads({
 onMatch: function (thread)
 {
 threadIds.push(thread.id);
 console.log("Thread ID: " + thread.id.toString());
 },
 onComplete: function ()
 {
 threadIds.forEach(function (threadId)
 {
 Stalker.follow(threadId,
 {
 events: {call: true},
 onReceive: function (events)
 {
 console.log("onReceive called.");
 },
 onCallSummary: function (summary)
 {
 console.log("onCallSummary called.");
 }
 });
 });
 }
 });
}

StalkerExample();
""")

 script.on('message', on_message)
 script.load()
 raw_input('[!] Press <Enter> at any time to detach from instrumented program.\n\n')
 session.detach()
```

```
if __name__ == '__main__':
 if len(sys.argv) < 2:
 print 'Usage: %s <process name or PID>' % __file__
 sys.exit(1)

try:
 target_process = int(sys.argv[1])
except ValueError:
 target_process = sys.argv[1]

main(target_process)
```

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2023-06-25 23:10:55

## \_\_lldb\_unnamed\_symbol2575\$\$akd

用 Frida 的 Stalker 调试 arm64 的 akd 函数 \_\_lldb\_unnamed\_symbol2575\$\$akd :

### Frida命令

```
frida -U -n akd -l ./fridaStalker_akdSymbol2575.js
```

### js文件 fridaStalker\_akdSymbol2575.js 的内容

```
console.log("===== Frida Stalker hook for arm64 __lldb_unnamed_symbol2575$$akd =====");

// arm64 akd: __lldb_unnamed_symbol2575$$akd
// var funcRelativeStartAddr = 0x1000a0460;
var funcRelativeStartAddr = 0xa0460;
var functionSize = 0x24C8; // 9416 == 0x24C8
var funcRelativeEndAddr = funcRelativeStartAddr + functionSize;
console.log("funcRelativeStartAddr=" + funcRelativeStartAddr + ", functionSize=" + functionSize + ", funcRelativeEndAddr=" + funcRelativeEndAddr);
const moduleName = "akd";
const moduleBaseAddress = Module.findBaseAddress(moduleName);
console.log("moduleName=" + moduleName + ", moduleBaseAddress=" + moduleBaseAddress);
// console.log("moduleName=%s, moduleBaseAddress=%p", moduleName, moduleBaseAddress);
const funcRealStartAddr = moduleBaseAddress.add(funcRelativeStartAddr);
// var funcRealEndAddr = funcRealStartAddr + functionSize;
const funcRealEndAddr = funcRealStartAddr.add(functionSize);
console.log("funcRealStartAddr=" + funcRealStartAddr + ", funcRealEndAddr=" + funcRealEndAddr);
var curTid = null;
Interceptor.attach(funcRealStartAddr, {
 onEnter: function(args) {
 var arg0 = args[0]
 var arg1 = args[1]
 var arg2 = args[2]
 var arg3 = args[3]
 console.log("----- arg0=" + arg0 + ", arg1=" + arg1 + ", arg2=" + arg2 + ", arg3=" + arg3);
 var curTid = Process.getCurrentThreadId();
 console.log("curTid=", curTid);
 Stalker.follow(curTid, {
 events: {
 call: false, // CALL instructions: yes please
 ret: true, // RET instructions
 exec: false, // all instructions: not recommended as it's
 block: false, // block executed: coarse execution trace
 compile: false // block compiled: useful for coverage
 },
 // onReceive: Called with `events` containing a binary blob comprised of one or more GumEvent structs. See `gumevent.h` for details about the format. Use `Stalker.parse()` to examine the data.
 })
 }
})
```

```

onReceive(events) {
 var parsedEvents = Stalker.parse(events)
 // var parsedEventsStr = JSON.stringify(parsedEventsStr)
 // console.log("">>> into onReceive: parsedEvents=" + parsedEvents + ", "
parsedEventsStr=" + parsedEventsStr);
 console.log("">>> into onReceive: parsedEvents=" + parsedEvents);
}

// transform: (iterator: StalkerArm64Iterator) => {
transform: function (iterator) {
 // console.log("iterator=" + iterator);
 var instruction = iterator.next();
 const startAddress = instruction.address;
 // console.log("++ into iterator: startAddress=" + startAddress);
 // const isAppCode = startAddress.compare(funcRealStartAddr) >= 0 && st
artAddress.compare(funcRealEndAddr) === -1;
 // const isAppCode = (startAddress.compare(funcRealStartAddr) >= 0) &&
(startAddress.compare(funcRealEndAddr) < 0);
 const gt_realStartAddr = startAddress.compare(funcRealStartAddr) >= 0
 const lt_realEndAddr = startAddress.compare(funcRealEndAddr) < 0
 var isAppCode = gt_realStartAddr && lt_realEndAddr
 console.log("++ into iterator: startAddress=" + startAddress + ", isAp
pCode=" + isAppCode);

 // // for debug
 // isAppCode = true

 // console.log("isAppCode=" + isAppCode + ", gt_realStartAddr=" + gt_re
alStartAddr + ", lt_realEndAddr=" + lt_realEndAddr);
 do {
 if (isAppCode) {
 // is orignal function code = which we focus on

 // console.log("instruction: address=" + instruction.address
 // + ",next=" + instruction.next()
 // + ",size=" + instruction.size
 // + ",mnemonic=" + instruction.mnemonic
 // + ",opStr=" + instruction.opStr
 // + ",operands=" + JSON.stringify(instruction.operands)
 // + ",regsAccessed=" + JSON.stringify(instruction.regsAcce
ssed)
 // + ",regsRead=" + JSON.stringify(instruction.regsRead)
 // + ",regsWritten=" + JSON.stringify(instruction.regsWritt
en)
 // + ",groups=" + JSON.stringify(instruction.groups)
 // + ",toString()=" + instruction.toString()
 // + ",toJSON()=" + instruction.toJSON()
 //);

 var curRealAddr = instruction.address;
 // const isAppCode = curRealAddr.compare(funcRealStartAddr) >=
0 && curRealAddr.compare(funcRealEndAddr) === -1;
 // console.log(curRealAddr + ": isAppCode=" + isAppCode);
 var curOffsetHexPtr = curRealAddr.sub(funcRealStartAddr)
 var curOffsetInt = curOffsetHexPtr.toInt32()
 }
 }
}

```

```

 // var instructionStr = instruction.mnemonic + " " + instruction
n.opStr
 var instructionStr = instruction.toString()
 // console.log("\t" + curRealAddr + ": " + instructionStr);
 // console.log("\t" + curRealAddr + " <+" + curOffsetHexPtr + "
>: " + instructionStr);
 console.log("\t" + curRealAddr + " <+" + curOffsetInt + ">: " +
instructionStr);
 if (curOffsetInt == 8516) {
 console.log("curOffsetInt=" + curOffsetInt);
 // iterator.putCallout(needDebug);
 iterator.putCallout((context) => {
 var contextStr = JSON.stringify(context)
 console.log("contextStr=" + contextStr);
 var x9Value1 = context.x9
 var x9Value2 = context["x9"]
 console.log("x9Value1=" + x9Value1 + ", x9Value2=" + x9
Value2)
 });
 }
 }
 iterator.keep();
} while ((instruction = iterator.next()) != null);
}
});

// function needDebug(context) {
// console.log("into needDebug");
// // console.log("into needDebug: context=" + context);
// // var contextStr = JSON.stringify(context, null, 2)
// // console.log("context=" + contextStr);
// // var x9Value1 = context.x9
// // var x9Value2 = context["x9"]
// // console.log("x9Value1=" + x9Value1 + ", x9Value2=" + x9Value2)
// // }
},
onLeave: function(retval) {
 console.log("retval=", new ObjC.Object(retval))
 if (curTid != null) {
 Stalker.unfollow(curTid);
 console.log("Stalker.unfollow curTid=", curTid)
 }
}
});

```

## 输出

最开始输出环境初始化信息：

```

===== Frida Stalker hook for arm64 __lldb_unnamed_symbol2575 :akd =====
funcRelativeStartAddr=656480, funcSize=9416, funcRelativeEndAddr=665896
moduleName akd, moduleBaseAddress 0x1040e4000
funcRealStartAddr=0x104184460, funcRealEndAddr=0x104186928

```

```
[iPhone: akd]-> ----- arg0 0xfffffffffffffff, arg1 0x16bf46838, arg2 0x16bf46838, arg3
=0xfffffffffffffff
curTid = 9739
```



(如果开启调试：

```
// for debug
isAppCode = true
```

则会输出)

(最初是) 一些非原始函数代码：

```
+++ into iterator: startAddress 0x106d0bcd8, isAppCode false
0x106d0bcd8 <- 45643896: b 0x106d0bce8
+++ into iterator: startAddress 0x106d0bce8, isAppCode false
0x106d0bce8 <- 45643912: str wZR, [x19, #0x90]
0x106d0bcec <- 45643916: ldr x0, [x19, #0xa0]
0x106d0bcf0 <- 45643920: str xZR, [x19, #0xa0]
0x106d0bcf4 <- 45643924: cbz x0, 0x106d0bcfc
+++ into iterator: startAddress 0x106d0bcf8, isAppCode false
0x106d0bcf8 <- 45643928: b1 0x106c0fef8
+++ into iterator: startAddress 0x106d0bcfc, isAppCode false
0x106d0bcfc <- 45643932: ldr x0, [x19, #0x98]
0x106d0bd00 <- 45643936: str xZR, [x19, #0x98]
0x106d0bd04 <- 45643940: cbz x0, 0x106d0bd14
+++ into iterator: startAddress 0x106d0bd08, isAppCode false
0x106d0bd08 <- 45643944: ldp x29, x30, [sp, #0x10]
0x106d0bd0c <- 45643948: ldp x20, x19, [sp], #0x20
0x106d0bd10 <- 45643952: b 0x106c0fef8
+++ into iterator: startAddress 0x106c0fef8, isAppCode false
0x106c0fef8 <- 44612248: stp x24, x23, [sp, #-0x40]
0x106c0fefc <- 44612252: stp x22, x21, [sp, #0x10]
0x106c0ff00 <- 44612256: stp x20, x19, [sp, #0x20]
0x106c0ff04 <- 44612260: stp x29, x30, [sp, #0x30]
0x106c0ff08 <- 44612264: add x29, sp, #0x30
0x106c0ff0c <- 44612268: mov x19, x0
0x106c0ff10 <- 44612272: add x23, x0, #8
0x106c0ff14 <- 44612276: add x20, x0, #0x10
0x106c0ff18 <- 44612280: adrp x22, 0x107d28000
0x106c0ff1c <- 44612284: adrp x21, 0x107d28000
0x106c0ff20 <- 44612288: add x21, x21, #0x790
0x106c0ff24 <- 44612292: ldar w24, [x23]
0x106c0ff28 <- 44612296: cmp w24, #2
0x106c0ff2c <- 44612300: b.lt 0x106c0ff50
+++ into iterator: startAddress 0x106c0ff30, isAppCode false
0x106c0ff30 <- 44612304: b1 0x106c12110
+++ into iterator: startAddress 0x106c0ff34, isAppCode false
0x106c0ff34 <- 44612308: sub w8, w24, #1
0x106c0ff38 <- 44612312: ldaxr w9, [x23]
0x106c0ff3c <- 44612316: cmp w9, w24
0x106c0ff40 <- 44612320: b.ne 0x106c0ff7c
0x106c0ff44 <- 44612324: stlxr w9, w8, [x23]
```

```

0x106c0ff48 < 44612328 > cbnz w9, #0x106c0ff38
+++ into iterator: startAddress 0x106c0ff4c, isAppCode false
0x106c0ff4c < 44612332 > b #0x106c0ff84
+++ into iterator: startAddress 0x106c0ff84, isAppCode false
0x106c0ff84 < 44612388 > cmp w24, #2
0x106c0ff88 < 44612392 > b.ne #0x106c10028
+++ into iterator: startAddress 0x106c0ff8c, isAppCode false
0x106c0ff8c < 44612396 > tbz w0, #0, #0x106c10028
+++ into iterator: startAddress 0x106c10028, isAppCode false
0x106c10028 < 44612552 > ldp x29, x30, [sp, #0x30]
0x106c1002c < 44612556 > ldp x20, x19, [sp, #0x20]
0x106c10030 < 44612560 > ldp x22, x21, [sp, #0x10]
0x106c10034 < 44612564 > ldp x24, x23, [sp], #0x40
0x106c10038 < 44612568 > ret
+++ into iterator: startAddress 0x106d0a104, isAppCode false
0x106d0a104 < 45636772 > ldur x8, [x29, #-0x48]
0x106d0a108 < 45636776 > adrp x9, #0x107c28000
0x106d0a10c < 45636780 > ldr x9, [x9, #0x28]
0x106d0a110 < 45636784 > ldr x9, [x9]
0x106d0a114 < 45636788 > cmp x9, x8
0x106d0a118 < 45636792 > b.ne #0x106d0a138
+++ into iterator: startAddress 0x106d0a11c, isAppCode false
0x106d0a11c < 45636796 > ldp x29, x30, [sp, #0x100]
0x106d0a120 < 45636800 > ldp x20, x19, [sp, #0xf0]
0x106d0a124 < 45636804 > ldp x22, x21, [sp, #0xe0]
0x106d0a128 < 45636808 > ldp x24, x23, [sp, #0xd0]
0x106d0a12c < 45636812 > ldp x28, x27, [sp, #0xc0]
0x106d0a130 < 45636816 > add sp, sp, #0x110
0x106d0a134 < 45636820 > ret
+++ into iterator: startAddress 0x106cb825c, isAppCode false
0x106cb825c < 45301244 > add w22, w22, #1
0x106cb8260 < 45301248 > b #0x106cb820c
+++ into iterator: startAddress 0x106cb820c, isAppCode false
0x106cb820c < 45301164 > ldr w8, [x25, #8]
0x106cb8210 < 45301168 > cmp w22, w8
0x106cb8214 < 45301172 > b.eq #0x106cb8264
+++ into iterator: startAddress 0x106cb8264, isAppCode false
0x106cb8264 < 45301252 > ldr w25, [x26, #0x10]
0x106cb8268 < 45301256 > tbnz w19, #0, #0x106cb8274
+++ into iterator: startAddress 0x106cb8274, isAppCode false
0x106cb8274 < 45301268 > ldr x21, [sp, #8]
0x106cb8278 < 45301272 > mov x0, x25
0x106cb827c < 45301276 > b1 #0x106cc899c
+++ into iterator: startAddress 0x106cb8280, isAppCode false
0x106cb8280 < 45301280 > adrp x8, #0x107d2a000
0x106cb8284 < 45301284 > ldr x0, [x8, #0x780]
0x106cb8288 < 45301288 > b1 #0x106cb8b94
+++ into iterator: startAddress 0x106cb828c, isAppCode false
0x106cb828c < 45301292 > cbz w19, #0x106cb829c
+++ into iterator: startAddress 0x106cb8290, isAppCode false
0x106cb8290 < 45301296 > ldr x8, [x20, #0x70]
0x106cb8294 < 45301300 > ldr x9, [sp, #0x10]
0x106cb8298 < 45301304 > str x8, [x9]
0x106cb829c < 45301308 > ldr x8, [x27]
0x106cb82a0 < 45301312 > cbz x8, #0x106cb82dc
+++ into iterator: startAddress 0x106cb82dc, isAppCode false

```

```

0x106cb82dc < 45301372: add x27, x20, #0x68
0x106cb82e0 < 45301376: ldr x8, [x27]
0x106cb82e4 < 45301380: str x8, [x21]
0x106cb82e8 < 45301384: tbnz w19, #0, #0x106cb82fc
+++ into iterator: startAddress 0x106cb82fc, isAppCode false
0x106cb82fc < 45301404: ldp x29, x30, [sp, #0x90]
0x106cb8300 < 45301408: ldp x20, x19, [sp, #0x80]
0x106cb8304 < 45301412: ldp x22, x21, [sp, #0x70]
0x106cb8308 < 45301416: ldp x24, x23, [sp, #0x60]
0x106cb830c < 45301420: ldp x26, x25, [sp, #0x50]
0x106cb8310 < 45301424: ldp x28, x27, [sp, #0x40]
0x106cb8314 < 45301428: add sp, sp, #0xa0
0x106cb8318 < 45301432: ret
+++ into iterator: startAddress 0x1044fc0b0, isAppCode false
0x1044fc0b0 < 3636304: add sp, sp, #0x10
0x1044fc0b4 < 3636308: ldp x1, x0, [sp], #0x10
0x1044fc0b8 < 3636312: msr nzcv, x1
0x1044fc0bc < 3636316: ldp x1, x2, [sp], #0x10
0x1044fc0c0 < 3636320: ldp x3, x4, [sp], #0x10
0x1044fc0c4 < 3636324: ldp x5, x6, [sp], #0x10
0x1044fc0c8 < 3636328: ldp x7, x8, [sp], #0x10
0x1044fc0cc < 3636332: ldp x9, x10, [sp], #0x10
0x1044fc0d0 < 3636336: ldp x11, x12, [sp], #0x10
0x1044fc0d4 < 3636340: ldp x13, x14, [sp], #0x10
0x1044fc0d8 < 3636344: ldp x15, x16, [sp], #0x10
0x1044fc0dc < 3636348: ldp x17, x18, [sp], #0x10
0x1044fc0e0 < 3636352: ldp x19, x20, [sp], #0x10
0x1044fc0e4 < 3636356: ldp x21, x22, [sp], #0x10
0x1044fc0e8 < 3636360: ldp x23, x24, [sp], #0x10
0x1044fc0ec < 3636364: ldp x25, x26, [sp], #0x10
0x1044fc0f0 < 3636368: ldp x27, x28, [sp], #0x10
0x1044fc0f4 < 3636372: ldp x29, x30, [sp], #0x10
0x1044fc0f8 < 3636376: ldp q0, q1, [sp], #0x20
0x1044fc0fc < 3636380: ldp q2, q3, [sp], #0x20
0x1044fc100 < 3636384: ldp q4, q5, [sp], #0x20
0x1044fc104 < 3636388: ldp q6, q7, [sp], #0x20
0x1044fc108 < 3636392: ldp q8, q9, [sp], #0x20
0x1044fc10c < 3636396: ldp q10, q11, [sp], #0x20
0x1044fc110 < 3636400: ldp q12, q13, [sp], #0x20
0x1044fc114 < 3636404: ldp q14, q15, [sp], #0x20
0x1044fc118 < 3636408: ldp q16, q17, [sp], #0x20
0x1044fc11c < 3636412: ldp q18, q19, [sp], #0x20
0x1044fc120 < 3636416: ldp q20, q21, [sp], #0x20
0x1044fc124 < 3636420: ldp q22, q23, [sp], #0x20
0x1044fc128 < 3636424: ldp q24, q25, [sp], #0x20
0x1044fc12c < 3636428: ldp q26, q27, [sp], #0x20
0x1044fc130 < 3636432: ldp q28, q29, [sp], #0x20
0x1044fc134 < 3636436: ldp q30, q31, [sp], #0x20
0x1044fc138 < 3636440: ldp x16, x17, [sp], #0x10
0x1044fc13c < 3636444: ret x16
+++ into iterator: startAddress 0x108040030, isAppCode false
0x108040030 < 65780688: sub sp, sp, #0xf0
0x108040034 < 65780692: stp x28, x27, [sp, #0x90]
0x108040038 < 65780696: stp x26, x25, [sp, #0xa0]
0x10804003c < 65780700: stp x24, x23, [sp, #0xb0]
0x108040040 < 65780704: ldr x16, #0x108040048

```

```
0x108040044 < 65780708 : br x16
```

之后才是：原始函数代码

```
+++ into iterator: startAddress 0x104184470, isAppCode true
0x104184470 < 16: stp x22, x21, [sp, #0xc0]
0x104184474 < 20: stp x20, x19, [sp, #0xd0]
0x104184478 < 24: stp x29, x30, [sp, #0xe0]
0x10418447c < 28: add x29, sp, #0xe0
0x104184480 < 32: nop
0x104184484 < 36: ldr x8, #0x1041d87d8
0x104184488 < 40: ldr x8, [x8]
0x10418448c < 44: stur x8, [x29, #-0x58]
0x104184490 < 48: mov w26, #0x5a87
0x104184494 < 52: movk w26, #0x6c24, lsl #16
0x104184498 < 56: add x8, x0, #6
0x10418449c < 60: cmp x8, #5
0x1041844a0 < 64: ccmn x0, #8, #4, hs
0x1041844a4 < 68: mov w8, #1
0x1041844a8 < 72: csel w8, wzr, w8, eq
0x1041844ac < 76: mov w11, #0xa5a2
0x1041844b0 < 80: movk w11, #0x93db, lsl #16
0x1041844b4 < 84: cmp x1, #0
0x1041844b8 < 88: cset w9, eq
0x1041844bc < 92: orr w8, w9, w8
0x1041844c0 < 96: add w9, w26, w8
0x1041844c4 < 100: add w9, w9, w11
0x1041844c8 < 104: sub w9, w9, #0x21
0x1041844cc < 108: adr x25, #0x1041a6cb0
0x1041844d0 < 112: nop
0x1041844d4 < 116: ldrsw x9, [x25, w9, sxtw #2]
0x1041844d8 < 120: nop
0x1041844dc < 124: ldr x10, #0x1041dd158
0x1041844e0 < 128: add x9, x9, x10
0x1041844e4 < 132: mov w22, #0xafc9
0x1041844e8 < 136: br x9
+++ into iterator: startAddress 0x1041844ec, isAppCode true
0x1041844ec < 140: mov x23, x1
0x1041844f0 < 144: mov x28, x0
0x1041844f4 < 148: eor w8, w8, #1
0x1041844f8 < 152: sub w9, w11, #0x29
0x1041844fc < 156: madd w22, w8, w9, w26
0x104184500 < 160: mov x20, #0xa930
0x104184504 < 164: movk x20, #0xea59, lsl #16
0x104184508 < 168: movk x20, #0x9bdd, lsl #32
0x10418450c < 172: movk x20, #0xd570, lsl #48
0x104184510 < 176: add w8, w22, #0xb
0x104184514 < 180: adr x24, #0x1041ddfe0
0x104184518 < 184: nop
0x10418451c < 188: ldr x8, [x24, w8, sxtw #3]
0x104184520 < 192: sub x8, x8, #2
0x104184524 < 196: mov w0, #0x18
0x104184528 < 200: str x8, [sp, #0x60]
0x10418452c < 204: blr x8
```

其中触发了 `onReceive`，对应输出的log是：

```

+++ into iterator: startAddress=0x194d31f44, isAppCode=false
+++ into iterator: startAddress=0x102e327ec, isAppCode=true
 0x102e327ec +9100 : mov w8, #0x6beb
 0x102e327f0 +9104 : movk w8, #0x3920, lsl #16
 0x102e327f4 +9108 : add w24, w21, w23
 0x102e327f8 +9112 : str xzr, [x20]
 0x102e327fc +9116 : str w8, [x20, #8]
 0x102e32800 +9120 : mov w8, #0xf28c
 0x102e32804 +9124 : movk w8, #0x3820, lsl #16
 0x102e32808 +9128 : str w8, [x20, #0xc]
 0x102e3280c +9132 : mov x8, #0x77e8
 0x102e32810 +9136 : movk x8, #0xcf06, lsl #16
 0x102e32814 +9140 : movk x8, #0xde0b, lsl #32
 0x102e32818 +9144 : movk x8, #0x20cd, lsl #48
 0x102e3281c +9148 : add x0, x19, x8
 0x102e32820 +9152 : blr x27

+++ into iterator: startAddress=0x194d30564, isAppCode=false
>>> into onReceive: parsedEvents=ret,0x1084e0038,0x1085da104,0,ret,0x1085da134,0x108588
25c,-1,ret,0x108588318,0x1036540b0,-2,ret,0x10365413c,0x10984000c,-3,ret,0x1ddc2abc0,0x
194d2e05c,0,ret,0x194d2fbdc,0x194d2dc74,1,ret,0x194d311c4,0x194d2d830,1,ret,0x194d2d898
,0x194d2e0a0,0,ret,0x1ddc2ac00,0x194d2e374,0,ret,0x194d2e3a8,0x194d31214,-1,ret,0x194d3
12e8,0x194d30478,-2,ret,0x194d304a4,0x102e30530,-3,ret,0x1ddc2abc0,0x194d2cd44,0,ret,0x
194d31894,0x194d2f0a0,1,ret,0x194d31b3c,0x194d2f0c0,1,ret,0x194d2f1ac,0x194d2cd88,0,ret
,0x1ddc2ac00,0x194d2d280,0,ret,0x194d2d2b4,0x194d3123c,-1,ret,0x194d312e8,0x194d30478,-
2,ret,0x194d304a4,0x102e305ac,-3,ret,0x1bd80959c,0x102e244e0,-2,ret,0x1ddc36aec,0x183f7
94d8,0,ret,0x183f77ab0,0x183f7958c,0,ret,0x1bd808ca8,0x1bd809c04,1,ret,0x1bd809c40,0x18
3f795a0,0,ret,0x183f7970c,0x183f795e4,0,ret,0x183f7963c,0x183f7aa34,-1,ret,0x183f7aa98,
0x102e24508,-2,ret,0x1bd808b70,0x1bd809194,-1,ret,0x1bd809240,0x102e24528,-2,ret,0x102e
24630,0x102e315c4,-3,ret,0x1ddc2abc0,0x194d2e05c,0,ret,0x194d311c4,0x194d2d830,1,ret,0x
194d2d898,0x194d2e0a0,0,ret,0x1ddc2ac00,0x194d2e374,0,ret,0x194d2e3a8,0x194d31214,-1,re
t,0x194d312e8,0x194d30478,-2,ret,0x194d304a4,0x102e316b8,-3,ret,0x1ddc2abc0,0x194d2cd44
,0,ret,0x194d31894,0x194d2ef0e4,1,ret,0x194d2f1ac,0x194d2cd88,0,ret,0x1ddc2ac00,0x194d2d
280,0,ret,0x194d2d2b4,0x194d3123c,-1,ret,0x194d312e8,0x194d30478,-2,ret,0x194d304a4,0x1
02e31744,-3,ret,0x1bd808aa4,0x1bd809b78,-2,ret,0x1bd809bb0,0x102e32168,-3,ret,0x194d305
c4,0x194d30a34,-1,ret,0x194d33380,0x194d30a50,-1,ret,0x194d30a1c,0x194d2c188,-2,ret,0x1
ddc2abc0,0x194d31c80,-2,ret,0x194d2c06c,0x194d31dec,-2,ret,0x194d31894,0x194d31e00,-2,r
et,0x194d31b3c,0x194d31eec,-2,ret,0x194d30e90,0x194d31f34,-2,ret,0x1ddc2ac00,0x102e327e
c,-3
+++ into iterator: startAddress=0x194d30584, isAppCode=false
+++ into iterator: startAddress=0x194d30588, isAppCode=false

```

再往后，就是：非原始函数代码，原始函数代码交替输出

而我们此处只关心 原始函数代码，去调试输出即可。

比如最后此刻所调试的 +8516 行的代码

```

+++ into iterator: startAddress=0x1041865a0, isAppCode=true
 0x1041865a0 <- 8512 >: mov w8, #0
 0x1041865a4 <- 8516 >: str x9, [x10]
curOffsetInt=8516
 0x1041865a8 <- 8520 >: b #0x104186740
contextStr={"pc": "0x1041865a4", "sp": "0x16bf46740", "nzcv": 1610612736, "x0": "0x0", "x1": "0x

```

```

104ba0000", "x2": "0xc", "x3": "0x29", "x4": "0x470b", "x5": "0x0", "x6": "0x0", "x7": "0xec0", "x8": "0x0", "x9": "0x3050500", "x10": "0x16bf46838", "x11": "0x6c245a87", "x12": "0x6c245a3d", "x13": "0x1041864dc", "x14": "0x45", "x15": "0x0", "x16": "0xd5709bdf0d7a48f0", "x17": "0x123209fc0", "x18": "0x0", "x19": "0xdf3221f55389ecc8", "x20": "0x1233064b0", "x21": "0x93dba5a2", "x22": "0x0", "x23": "0x39207beb", "x24": "0x6c245a87", "x25": "0x1041a6cb0", "x26": "0x6c245a87", "x27": "0x194d2c100", "x28": "0xfffffffffffffe", "fp": "0x16bf46820", "lr": "0x104186168", "q0": "0", "q1": "0", "q2": "0", "q3": "0", "q4": "0", "q5": "0", "q6": "0", "q7": "0", "q8": "0", "q9": "0", "q10": "0", "q11": "0", "q12": "0", "q13": "0", "q14": "0", "q15": "0", "q16": "0", "q17": "0", "q18": "0", "q19": "0", "q20": "0", "q21": "0", "q22": "0", "q23": "0", "q24": "0", "q25": "0", "q26": "0", "q27": "0", "q28": "0", "q29": "0", "q30": "0", "q31": "0", "d0": 0.5585262685374610e-308, "d1": 0.0000169759663317e-308, "d2": 7.9499288951273454e-275, "d3": 0, "d4": 0, "d5": 0, "d6": 0, "d7": 0, "d8": 0, "d9": 0, "d10": 0, "d11": 0, "d12": 0, "d13": 0, "d14": 0, "d15": 0, "d16": 1.0855813867524649e+251, "d17": 0.000002084565455e-308, "d18": 3.0554698911305689e-152, "d19": 0.000001322084152e-308, "d20": 3.7696966457559071e-175, "d21": 1.000489495531618e+128, "d22": 9.5944260775693913e+225, "d23": -6.8154492514793903e-236, "d24": -2.1930923744387854e+50, "d25": -3.1153191556287330e+141, "d26": -1.0031492505499153e+302, "d27": 3.1584786060327890e-284, "d28": 1.7036104465458726e+239, "d29": -1.1538744009003510e-197, "d30": 2.4944484440662111e-259, "d31": 0, "s0": 1.1035169354619356e-39, "s1": 1.1210387714598533e-44, "s2": 3.8204714345426298e-37, "s3": 0, "s4": 0, "s5": 0, "s6": 0, "s7": 0, "s8": 0, "s9": 0, "s10": 0, "s11": 0, "s12": 0, "s13": 0, "s14": 0, "s15": 0, "s16": 1.5548730664783592e-21, "s17": -1.3084408235578860e+36, "s18": 8.6088756618229034e-23, "s19": -5.408784745233076e-20, "s20": 4.2151578028428229e+37, "s21": 18362722504671230, "s22": 3.372155249992253e+28, "s23": -7.6784630118876258e-30, "s24": -3715189.5, "s25": 2.6426119211413095e+23, "s26": -3.5724724140742379e-23, "s27": 1.6239861190373424e-18, "s28": -205533200, "s29": -0.008124308660626411, "s30": -5.6424941355004989e-36, "s31": 0}
x9Value1 0x3050500, x9Value2 0x3050500

```

输出了我们所希望的值：

- x9 = 0x3050500

即可实现特定的调试目的。

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## frida-trace

此处介绍 frida-trace 的实际使用案例，供参考。

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## iOS的ObjC

此处介绍用 `frida-trace` 去调试 iOS 的 ObjC 的类和函数的实际案例，供参考。

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## akd中Apple账号验证过程

此处去记录 frida-trace 追踪 akd 中Apple账号验证过程：

- 设备：
  - iOS 15.0 的 iPhone8
    - palera1n 的rootful普通越狱

去追踪调试：

- 设置Preferences中，点击登录Apple账号
  - 输入账号，点击下一步

的Apple账号验证过程中，函数调用的过程的结果

## frida-trace命令

```
frida-trace -U -n akd -O akdObjcMethods.txt
```

### Option文件 akdObjcMethods.txt 内容

```
-m "*[AA* *]"
-m "*[AK* *]"
-m "*[AS* *]"
-m "*[NSXPC* *]"
-M "-[NSXPC*coder *]"
-M "-[NSXPConnection replacementObjectForEncoder:object:]"
```

## 输出

## 截图

完整的截图如下：



```
83889 ms /*-[NSURLConnection delegate] */
83889 ms | |-[AKDaemonConnectionManager listener:0x126907508 shouldAcceptNewConnection:0x126a10468]
83889 ms | | |-[AKClient initWithConnection:0x126a10460]
83889 ms | |-[AKDaemonConnectionManager shouldAllowClient:0x126a0c800 logging:0x16b3a5998]
83889 ms | | |-[AKClient _boolValueForEntitlement:0x10503a2b0]
83889 ms | | | |-INSXPConnection valueForEntitlement:0x10503a2b0
83889 ms | | | |-INSXPConnection auditToken:0x10503a2b0
83889 ms /* TID 0x2767 */
83889 ms | | |-[AKAppleIDAuthenticationService_performInteractiveAuthWithContext:0x126a0bf00 completion:0x16b31a4d0]
83889 ms | |-[AKAppleIDAuthenticationService_refreshMultiMetadataWithContext:0x126a0bf00 completion:0x16b31a3b8]
83889 ms | | |-[AKAppleIDAuthenticationService_refreshMultiAccountAndUpdateContext:0x126a0bf00 completion:0x16b31a4ac8]
83889 ms | | | |-[AKAppleIDAuthenticationServiceContext _shouldUpdateAccountAndUpdateContext]
83889 ms | | | | |-AKAccountManager_updateAccount:0x10503a2b0
83889 ms | | | | |-AKAccountManager_updateUsername:0x10503a2b0
83889 ms | | | | |-AKAppleIDAuthenticationContext alDSID
83889 ms | | | | |-AKAppleIDAuthenticationContext DSID
83889 ms | | | |-AKAppleIDAuthenticationContext altDSID
83889 ms | | |-AKAppleIDAuthenticationContext altSID
83889 ms | | | |-AKAppleIDAuthenticationContext needsNewAppleID
83889 ms | | | | |-AKAppleIDAuthenticationContext needsNewChildAccount
83889 ms | | | | |-AKAppleIDAuthenticationContext needsCredentialRecovery
83889 ms | | | | |-AKAppleIDAuthenticationContext needsOldPasswordChange
83889 ms | | | | |-AKAppleIDAuthenticationContext username
83889 ms | | | | |-AKAppleIDAuthenticationContext username
83889 ms | | | | |-AKAppleIDAuthenticationContext authenticationType
83889 ms | | | | |-AKAppleIDAuthenticationContext needsOldPassword:0x0
83889 ms | | | | |-AKAppleIDAuthenticationContext altSID
83889 ms | | | | |-AKAppleIDAuthenticationContext DSID
83889 ms | | | | |-AKAppleIDAuthenticationContext username
83889 ms | | | | +-[AKAccountManager sharedInstance]
83889 ms | | | | | |-AKAccountManager _sharedAccountWithSharedFrameworkAvailable
83889 ms | | | | | |-AKAccountManager authKit1sAccountWithAppleID:0x126a053b0
83889 ms | | | | | |-AKAccountManager authKit1sAccountType
83889 ms | | | | | |-INSXPConnection initWithMachineServiceName:0x10effff108 options:0x0
83889 ms | | | | | |-UDCTracedPQConnection init
83889 ms | | | | | | |-NSXConnection init
83891 ms /* TID 0x2ee7 */
83891 ms | | |-[AKClient description]
83891 ms | | |-[AKClient name]
83891 ms | | |-INSXPConnection processIdentifier]
83891 ms | | |-INSXPConnection processIdentifier]
83892 ms /* TID 0x2767 */
83892 ms | | |-INSXPConnection setRemoteObjectInterface:0x125e0f350
83892 ms /* TID 0x2ee7 */
83892 ms | | |-AKAnissetteProvdingService initWithClient:0x126a0c890
83892 ms | | | |-AKABossInSigner sharedSigner]
83892 ms /* TID 0x2767 */
83892 ms | | |-INSXPInterface init
83892 ms | | | |-INSXPInterface init
83892 ms | | |-AKATestationSigner sharedSigner]
83892 ms | | |-INSXPConnection setExportedObject:0x126a212f0
83892 ms /* TID 0x2767 */
83892 ms | | |-INSXPInterface setProtocol:0x1f9747d58
83892 ms | | +-[AKAnissetteProvdingDaemonInterface xPCInterface]
83892 ms | | |-INSXPConnection setExportedInterface:0x125d16460
83892 ms /* TID 0x2767 */
83892 ms | | |-INSXPConnection setExportedInterface:0x126b10170
83892 ms | | |-INSXPConnection setExportedObject:0x126b159f0
83892 ms /* TID 0x2ee7 */
83892 ms | | +-[AKAnissetteProvdingClientInterface xPCInterface]
83892 ms | | |-INSXPConnection setRemoteObjectInterface:0x125d16a50
83892 ms | | |-INSXPConnection resume]
83892 ms /* TID 0x2767 */
83892 ms | | |-INSXPConnection setInterruptHandler:0x16b31a2b0
83892 ms | | |-INSXPConnection setInvalidationHandler:0x105031200
83892 ms | | |-INSXPConnection resume]
83893 ms /* TID 0x2ee7 */
83893 ms | | |-INSXPConnection _decodeAndInvokeMessageWithEvent:0x126212120 [flags:0x1]
83893 ms | | |-INSXPConnection _init
83893 ms | | |-INSXPConnection _selectorIsAllowed:0x19d37a17a isReply:0x0 methodSignature:0x16b3a60d0 allowedClasses:0x16b3a60d0
83893 ms | | |-INSXPCodec dealoc]
83893 ms | | |-INSXPConnection _methodSignatureForRepByBlockSelector:0x19d37a17a
83893 ms | | |-AKAnissetteProvdingService fetchAnissetteObjectAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b3a62a0
83893 ms | | |-AKClient hasInternalPrivateEntitlementAccess]
83893 ms /* TID 0x2767 */
83893 ms | | |-INSXPConnection hasInternalPrivateEntitlementAccess]
83894 ms /* TID 0x2767 */
83894 ms | | |-INSXPConnection synchronousRemoteObjectProxyWithErrorHandler:0x16b31a410
83894 ms | | | |-INSXPConnection _remoteObjectInterfaceClass]
83894 ms | | | |-INSXPInterface _customSublass]
83894 ms /* TID 0x2ee7 */
83894 ms | | |-AKClient hasInternalAccess]
83894 ms | | |-AKClient haswnerAccess]
83894 ms | | |-AKClient _boolValueForEntitlement:0x10503a290]
83894 ms /* TID 0x2767 */
83894 ms | | |-INSXPInterface _methodSignatureForRemoteSelector:0x19cef453
83894 ms | | |-INSXPConnection _sendInvocation:0x16b31a3c0 orArguments:0x0 count:0x0 methodSignature:0x9d85aaef9fffdaff selector:0x19cef453 withProxy:0x126b17cd0
83894 ms /* TID 0x2ee7 */
83894 ms | | |-INSXPInterface _interfaceForArgument:0x0 selector:0x19cef453 reply:0x0]
83894 ms | | |-INSXPConnection valueForEntitlement:0x10503a290]
83894 ms /* TID 0x2767 */
83894 ms | | |-INSXPConnection auditToken]
83895 ms /* TID 0x2ee7 */
83895 ms | | |-INSXPCodec init]
83895 ms | | |-INSXPCodec dealoc]
83895 ms /* TID 0x2767 */
83895 ms | | +-[AKClient _boolValueForEntitlement:0x10503a270]
83897 ms /* TID 0x2ee7 */
83897 ms | | |-INSXPConnection valueForEntitlement:0x10503a270]
83897 ms | | |-INSXPConnection connection auditToken]
83897 ms | | |-AKAnissetteProvdingService _nativeEntitlementServicePrvissionIfNecessary:0x1 device:0x0 completion:0x16b3a62a0
83897 ms | | |-AKAnissetteProvdingService helperServiceForDevice:0x0]
83897 ms | | |-AKAnissetteProvdingService _nativeEntitlementService]
83897 ms | | |-ANNativeAnissetteService initWithClient:0x126a0c990]
83897 ms | | +-[ANNativeAnissetteService fetchAnissetteDataAndProvisionIfNecessary:0x1 withCompletion:0x16b3a62a0]
83897 ms | | |-AKURBag bagForAltSID:0x0
83897 ms | | |-AKURBag sharedBag]
83897 ms | | |-AKURBag lastKnownIDMSEnvironment]
83897 ms | | |-AKConfiguration lastKnownIDMSEnvironment]
83897 ms | | |-AKConfiguration lastKnownIDSEnvironment]
83897 ms | | |-AKConfiguration configurationValueForKey:0x1ea6f0118]
83898 ms | | +-[ANNativeAnissetteService activeAnissetteSIDWithTheEnvironment:0x16b3a668a]
83898 ms | | |-ANNativeAnissetteService _unsafe_anissetteDataWithTMHoutingInfoForSID:0xfffffffffffffe withError:0x16b3a668a]
83898 ms /* TID 0x2767 */
83898 ms | | |-AKProxy getDMRoutingInfoForSID:0x16b3a668a
83898 ms /* TID 0x2ee7 */
83898 ms | | |-INSXPConnection _decodeAndInvokeReplayBlockWithEvent:0x126a21230 sequence:0x1 replyInfo:0x126b05970
83898 ms | | | |-INSXPCodec init]
83898 ms | | | |-INSXPCodec dealoc]
83898 ms | | | |-INSXPCodec selector:0x19cef453 isReply:0x1 methodSignature:0x16b319260 allowedClasses:0x16b319268
83898 ms | | |-AKAccountManager _shouldUpdateAuthForAccount:0x126a02e20
83898 ms | | |-AKAppleIDAuthenticationService _refreshMultiModeForContext:0x126a0bf00 completion:0x16b31a498
83898 ms | | |-AKAppleIDAuthenticationService _refreshMultiModeForContext:0x126a0bf00 completion:0x16b31a498
83898 ms | | |-AKAppleIDAuthenticationService _refreshMultiModeForContext:0x126a0bf00 completion:0x16b31a498
83898 ms | | |-AKClient hasInternalPrivateAccess]
83898 ms | | |-AKClient hasInternalEntitlementAccess]
83898 ms | | |-AKClient hasInternalAccess]
83898 ms | | |-AKClient haswnerAccess]
83898 ms | | |-AKClient _boolValueForEntitlement:0x10503a290]
83898 ms | | |-INSXPConnection auditToken]
83898 ms | | |-INSXPConnection valueForEntitlement:0x10503a270]
83898 ms /* TID 0x2ee7 */
83898 ms | | |-INSXPConnection _decodeAndInvokeReplayBlockWithEvent:0x126a21230 sequence:0x1 replyInfo:0x16b3a68a]
83898 ms /* TID 0x2767 */
83898 ms | | +-[AKSesInfoController sharedController]
```











```

root@192.168.2.13 (ssh) - (-zsh) 13 kB↑ ④ 4/13, 10:02
frida-trace (python) X3 + 10 GB 9g 26 kB↓ ⑤ 4/13, 10:02

84873 ms | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19d20bd88 reply:0x0]
84873 ms | | -[NSXPCCoder init]
84873 ms /* TID 0x2767 */
84873 ms | | -[AKAnisetteProvisioningController dealloc]
84874 ms | | | -[NSXPConnection invalidate]
84874 ms /* TID 0xa0a0 */
84874 ms | | -[AKAppleIDAuthenticationContext encodeWithCoder:0x12701d000]
84874 ms /* TID 0x2767 */
84874 ms | | -[AKAnisetteProvisioningController .cxx_destruct]
84874 ms -[NSXPConnection invalidateHandler]
84874 ms -[NSXPConnection _additionalValidationHandler]
84874 ms | | -[NSXPConnection setValidationHandler:0x0]
84874 ms | | | + TID 0x9e31
84874 ms | | -[NSXPConnection validationHandler]
84874 ms /* TID 0x2ee3 */
84875 ms | | -[NSXPConnection setInterruptionHandler:0x0]
84875 ms | | | + TID 0x9e31
84875 ms | | -[NSXPConnection _additionalValidationHandler]
84875 ms /* TID 0xa0a0 */
84875 ms | | | -[NSXPCCoder dealloc]
84875 ms | | -[NSXPConnection setValidationHandler:0x0]
84876 ms -[NSXPConnection setInterruptionHandler:0x0]
84876 ms | | -[NSXPConnection setExportedObject:0x0]
84876 ms /* TID 0x2767 */
84876 ms -[IMServiceControllerImpl .cxx_destruct]
84876 ms | | -[IMServiceRequestProviderImpl .cxx_destruct]
84876 ms | | | + TID 0x9e31
84876 ms | | -[NSXPConnection dealloc]
84876 ms /* TID 0x2ee3 */
84877 ms | | -[NSXPConnection setExportedObject:0x0]
84877 ms | | | + TID 0x9e31
84877 ms | | -[IMServiceRequestProviderImpl .cxx_destruct]
84877 ms | | | | -[IMNativeAnisetteService .cxx_destruct]
84877 ms | | | | -[AKClient .cxx_destruct]
84877 ms | | -[NSXPConnection dealloc]
84877 ms | | | + TID 0x9e31
84877 ms | | -[NSXPConnection validationHandler]
84895 ms -[NSXPConnection _additionalValidationHandler]
84895 ms | | -[NSXPConnection setValidationHandler:0x0]
84895 ms | | -[NSXPConnection setInterruptionHandler:0x0]
84895 ms | | | + TID 0x9e31
84895 ms | | -[AKAnisetteProvisioningService .cxx_destruct]
84895 ms | | | + TID 0x9e31
84895 ms | | -[IMNativeAnisetteService .cxx_destruct]
84895 ms | | | + TID 0x9e31
84895 ms | | -[AKClient .cxx_destruct]
84895 ms | | | + TID 0x9e31
84895 ms | | -[NSXPConnection dealloc]
114739 ms | | | + TID 0x9e31
114740 ms | | -[NSXPConnection invalidate]
114740 ms /* TID 0x2ee3 */
114740 ms | | -[NSXPConnection invalidateHandler]
114740 ms | | | + TID 0x9e31
114740 ms | | -[IMServiceRequestProviderImpl .cxx_destruct]
114740 ms | | | + TID 0x9e31
114740 ms | | -[AKTrackedNSXPCConnection dealloc]
114740 ms | | | + TID 0x9e31
114740 ms /* TID 0x103 */
284946 ms -[AKAppleIDPushHelperService connection:0x12690fc28 didChangeConnectedStatus:0x0]
2053160 ms -[AKAppleIDPushHelperService connection:0x12690fc28 didChangeConnectedStatus:0x1]

```

## log日志

```

...
-[NSXPCStore dealloc]: Loaded handler at "/Users/crifan/dev/dev_root/iosReverse/AppleStore/AuthKit_akd/dynamicDebug/frida/scripts/__handlers__/NSXPCStore/dealloc.js"
-[NSXPCStore setIdentifier:]: Loaded handler at "/Users/crifan/dev/dev_root/iosReverse/AppleStore/AuthKit_akd/dynamicDebug/frida/scripts/__handlers__/NSXPCStore/setIdentifier_.js"
Started tracing 6145 functions. Press Ctrl+C to stop.

```

```

/* TID 0x2ee3 */
44503 ms -[NSXPCListener serviceName]
44503 ms -[NSXPConnection init]
44503 ms -[NSXPCListener delegate]
44503 ms -[NSXPCListener delegate]
44503 ms -[AKDaemonConnectionManager listener:0x126906200 shouldAcceptNewConnection:0x126b0da50]
44503 ms | -[AKClient initWithConnection:0x126b0da50]
44503 ms | -[AKDaemonConnectionManager shouldAllowClient:0x126b05640 logging:0x16b31a598]
44503 ms | | -[AKClient hasWriteAccess]
44503 ms | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
44503 ms | | | | -[NSXPConnection valueForEntitlement:0x10503a2b0]
44503 ms | | | | -[NSXPConnection auditToken]
44505 ms | | -[AKClient description]
44505 ms | | | -[AKClient name]
44505 ms | | | | -[NSXPConnection processIdentifier]
44505 ms | | | | -[NSXPConnection processIdentifier]
44505 ms | -[AKAppleIDAuthenticationService initWithClient:0x126b05640]
44505 ms | | -[AKAppleIDAuthenticationService initWithProxy:0x126b16890]
44505 ms | | | -[AKAppleIDAuthenticationService init]
44505 ms | | | | +[AKAccountManager sharedInstance]

```

```

44505 ms | | | | | +[AKAccountManager isAccountsFrameworkAvailable]
44505 ms | | | | | +[AKAuthenticationUILiaison sharedInstance]
44505 ms | | | | | +[AKAuthenticationTrafficController sharedInstance]
44505 ms | | | | | -[AKAuthenticationUILiaison surrogateManager]
44505 ms | | | | | -[AKAuthenticationTrafficController setSurrogateManager:
0x125d15810]
44506 ms | | | | | -[NSXPCCConnection setExportedObject:0x126b0fa00]
44506 ms | | | | | +[AKAppleIDAuthenticationDaemonInterface XPCInterface]
44506 ms | | | | | -[NSXPCCConnection setExportedInterface:0x1268141a0]
44506 ms | | | | | +[AKAppleIDAuthenticationClientInterface XPCInterface]
44506 ms | | | | | -[NSXPCCConnection setRemoteObjectInterface:0x1269121f0]
44506 ms | | | | | -[NSXPCCConnection resume]
44506 ms | | | | | -[NSXPCCConnection _decodeAndInvokeMessageWithEvent:0x126b0fa40 flags:0x21]
44506 ms | | | | | | -[NSXPCCoder init]
44506 ms | | | | | | -[NSXPCInterface _selectorIsAllowed:0x19dd2ca94 isReply:0x0 methodSignature:0x16b31a0f0 allowedClasses:0x16b31a0f8]
44506 ms | | | | | | -[NSXPCCoder dealloc]
44506 ms | | | | | | -[NSXPCInterface _methodSignatureForReplyBlockOfSelector:0x19dd2ca94]
44506 ms | | | | | | -[AKAppleIDAuthenticationService fetchURLBagFromCache:0x0 altDSID:0x0 completion:0x16b31a2c0]
44506 ms | | | | | | | +[AKURLBagService sharedBagService]
44506 ms | | | | | | | -[AKURLBagService urlBagFromCache:0x0 altDSID:0x0 error:0x16b31a0f8]
44506 ms | | | | | | | -[AKURLBagService _cachedURLBagForAltDSID:0x0]
44506 ms | | | | | | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19dd2ca94 reply:0x1]
44506 ms | | | | | | | | -[NSXPCCoder init]
44507 ms | | | | | | | | -[NSXPCCoder dealloc]
44508 ms | | | | | | | | -[NSXPCCConnection invalidationHandler]
44508 ms | | | | | | | | -[NSXPCCConnection _additionalInvalidationHandler]
44508 ms | | | | | | | | -[NSXPCCConnection setInvalidationHandler:0x0]
44508 ms | | | | | | | | -[NSXPCCConnection setInterruptionHandler:0x0]
44508 ms | | | | | | | | -[NSXPCCConnection setExportedObject:0x0]
44508 ms | | | | | | | | | -[AKAppleIDAuthenticationService .cxx_destruct]
44508 ms | | | | | | | | | -[AKClient .cxx_destruct]
44508 ms | | | | | | | | -[NSXPCCConnection dealloc]
/* TID 0x2ee7 */
83869 ms | | | | | | | | -[NSXPCListener serviceName]
83870 ms | | | | | | | | -[NSXPCCConnection init]
83870 ms | | | | | | | | -[NSXPCListener delegate]
83870 ms | | | | | | | | -[NSXPCListener delegate]
83870 ms | | | | | | | | -[AKDaemonConnectionManager listener:0x126906200 shouldAcceptNewConnection:0x126947dd0]
83871 ms | | | | | | | | | -[AKClient initWithConnection:0x126947dd0]
83871 ms | | | | | | | | | -[AKDaemonConnectionManager shouldAllowClient:0x1269481d0 logging:0x16b3a6598]
83871 ms | | | | | | | | | | -[AKClient hasWriteAccess]
83871 ms | | | | | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
83871 ms | | | | | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a2b0]
83871 ms | | | | | | | | | | | | | -[NSXPCCConnection auditToken]
83874 ms | | | | | | | | | | | | -[AKClient description]
83874 ms | | | | | | | | | | | | | -[AKClient name]
83874 ms | | | | | | | | | | | | | | -[NSXPCCConnection processIdentifier]
83874 ms | | | | | | | | | | | | | | -[NSXPCCConnection processIdentifier]
83874 ms | | | | | | | | | | | | | | -[AKAppleIDAuthenticationService initWithClient:0x1269481d0]
83874 ms | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationService initWithProxy:0x125d87ea0]

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83875 ms | | | -[AKAppleIDAuthenticationService init]
83875 ms | | | | +[AKAccountManager sharedInstance]
83875 ms | | | | | +[AKAccountManager isAccountsFrameworkAvailable]
83875 ms | | | | | +[AKAuthenticationUILiaison sharedInstance]
83875 ms | | | | | +[AKAuthenticationTrafficController sharedInstance]
83875 ms | | | | | | -[AKAuthenticationUILiaison surrogateManager]
83875 ms | | | | | | -[AKAuthenticationTrafficController setSurrogateManager:
0x125d15810]
83876 ms | | -[NSXPConnection setExportedObject:0x125d88d50]
83876 ms | | +[AKAppleIDAuthenticationDaemonInterface XPCInterface]
83876 ms | | -[NSXPConnection setExportedInterface:0x1268141a0]
83876 ms | | +[AKAppleIDAuthenticationClientInterface XPCInterface]
83876 ms | | -[NSXPConnection setRemoteObjectInterface:0x1269121f0]
83877 ms | | | -[NSXPConnection resume]
83877 ms | | -[NSXPConnection _decodeAndInvokeMessageWithEvent:0x125d7e8f0 flags:0x21]
83878 ms | | | -[NSXPCCoder init]
83878 ms | | | -[NSXPCInterface _selectorIsAllowed:0x19d1122fb isReply:0x0 methodSignature:0x16b3a5780 allowedClasses:0x16b3a5788]
83878 ms | | | +[AKAppleIDAuthenticationContext supportsSecureCoding]
83878 ms | | | -[AKAppleIDAuthenticationContext initWithCoder:0x128808e00]
83879 ms | | | -[NSXPCCoder dealloc]
83879 ms | | | -[NSXPCInterface _methodSignatureForReplyBlockOfSelector:0x19d1122fb]
83879 ms | | | -[AKAppleIDAuthenticationService authenticateWithContext:0x126a0bf00 completion:0x16b3a5950]
83879 ms | | | | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83879 ms | | | | -[AKAppleIDAuthenticationContext serviceType]
83879 ms | | | | -[AKClient isPermittedForInteractiveAuthOnLimitedContext]
83879 ms | | | | | -[AKClient _permittedProcessNamesForInteractiveAuthOnLimitedContext]
83879 ms | | | | -[AKClient name]
83880 ms | | | | -[AKAppleIDAuthenticationContext isContextEligibleForSilentAuthCoe
rcion]
83880 ms | | | | | -[AKAppleIDAuthenticationContext _proxiedAppName]
83880 ms | | | | | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83880 ms | | | | | -[AKAppleIDAuthenticationContext username]
83880 ms | | | | | -[AKAppleIDAuthenticationContext _password]
83881 ms | | | | | -[AKAuthenticationTrafficController beginAuthenticationWithContext:
0x126a0bf00 client:0x1269481d0 clearanceHandler:0x16b3a57a8]
/* TID 0x2767 */
83882 ms | | -[AKClient bundleID]
83882 ms | | | -[NSXPConnection processIdentifier]
83883 ms | | | -[NSXPConnection processIdentifier]
83883 ms | | -[AKAuthenticationTrafficController _addCachedPasswordInContext:0x126a0bf00]
83883 ms | | | -[AKAppleIDAuthenticationContext serviceType]
83883 ms | | | -[AKAppleIDAuthenticationContext isContextEligibleForSilentAuth]
83883 ms | | | | -[AKAppleIDAuthenticationContext authenticationType]
83883 ms | | | | -[AKAppleIDAuthenticationContext shouldPromptForPasswordOnly]
83884 ms | | | | -[AKAppleIDAuthenticationContext isEphemeral]
83884 ms | | | | | -[AKAppleIDAuthenticationContext isUsernameEditable]
83884 ms | | -[AKClient bundleID]
83884 ms | | -[AKTrafficClearanceRequest setClearanceHandler:0x126a19640]
83884 ms | | -[AKTrafficClearanceRequest setContext:0x126a0bf00]
83884 ms | | -[AKTrafficClearanceRequest setClientBundleID:0x1f7d89e60]
83884 ms | | -[AKAuthenticationTrafficController _shouldClearRequest:0x126a0be60 withCli
ent:0x1269481d0]
83884 ms | | | -[AKTrafficClearanceRequest context]

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83884 ms | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83884 ms | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83884 ms | -[AKAuthenticationTrafficController surrogateManager]
83884 ms | -[AKAuthenticationSurrogateManager isSurrogateAuthInProgressForClient:0
x1269481d0]
83884 ms | | -[AKAuthenticationSurrogateManager _fetchSurrogateForClient:0x1269
481d0]
83885 ms | | | -[AKAuthenticationSurrogateManager inProgressSurrogates]
83885 ms | -[AKAppleIDAuthenticationContext authenticationType]
83885 ms | -[AKAuthenticationTrafficController _hasActiveAppAuths]
83885 ms | | -[AKAuthenticationTrafficController _hasValuesInMap:0x126816150]
83885 ms | -[AKAuthenticationTrafficController _hasActiveDaemonAuths]
83885 ms | | -[AKAuthenticationTrafficController _hasValuesInMap:0x126816170]
83885 ms -[AKAuthenticationTrafficController _tq_invokeTrafficRequest:0x126a0be60]
83885 ms | -[AKTrafficClearenceRequest clientBundleID]
83885 ms | -[AKTrafficClearenceRequest context]
83885 ms | -[AKTrafficClearenceRequest context]
83885 ms | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83886 ms -[AKTrafficClearenceRequest clearanceHandler]
83886 ms -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
83886 ms -[AKAppleIDAuthenticationService _authenticateWithContext:0x126a0bf00 comple
tion:0x16b31ad40]
83886 ms | -[AKAppleIDAuthenticationContext needsRepair]
83886 ms | -[AKAppleIDAuthenticationContext needsCredentialRecovery]
83886 ms | -[AKAppleIDAuthenticationContext needsNewAppleID]
83886 ms | -[AKAppleIDAuthenticationContext needsNewChildAccount]
83886 ms | -[AKAppleIDAuthenticationContext needsPasswordChange]
83886 ms | -[AKAppleIDAuthenticationContext needsSecurityUpgradeUI]
83886 ms | -[AKAppleIDAuthenticationService _performAuthenticationWithContext:0x12
6a0bf00 completion:0x16b31ad40]
83886 ms | | -[AKAppleIDAuthenticationService _isInteractiveAuthRequiredForCont
ext:0x126a0bf00]
83886 ms | | | -[AKAppleIDAuthenticationContext authenticationType]
83887 ms | | | -[AKAppleIDAuthenticationService _attemptBiometricOrPasscodeAuthWi
thContext:0x126a0bf00 completion:0x16b31ad40]
83887 ms | | | -[AKAppleIDAuthenticationContext isContextEligibleForBiometri
cOrPasscodeAuth]
83887 ms | | | | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay
]
83887 ms | | | | -[AKAppleIDAuthenticationContext _isVerifyCredentialReas
onEligibleForBiometricOrPasscodeAuth]
83887 ms | | | | -[AKAppleIDAuthenticationContext verifyCredentialRe
ason]
83887 ms | | | | +[AKConfiguration sharedConfiguration]
83887 ms | | | | -[AKConfiguration shouldAllowExperimentalMode]
83887 ms | | | | | -[AKConfiguration configurationValueForKey:0x1ea6ef
fb8]
83887 ms | | | | -[AKAppleIDAuthenticationService _attemptInteractiveAuthWithC
ontext:0x126a0bf00 completion:0x16b31ad40]
83887 ms | | | | -[AKAppleIDAuthenticationContext username]
83887 ms | | | | -[AKAppleIDAuthenticationContext _password]
83887 ms | | | | -[AKAppleIDAuthenticationContext _shouldSkipInitialReach
abilityCheck]
/* TID 0x2ee7 */
83889 ms -[NSXPCLListener serviceName]
83889 ms -[NSXPCCConnection init]

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83889 ms -[NSXPCListener delegate]
83889 ms -[NSXPCListener delegate]
83889 ms -[AKDaemonConnectionManager listener:0x126907500 shouldAcceptNewConnection:0
x126a10460]
83889 ms | -[AKClient initWithConnection:0x126a10460]
83889 ms | -[AKDaemonConnectionManager shouldAllowClient:0x126a0c890 logging:0x16b
3a6598]
83889 ms | | -[AKClient hasWriteAccess]
83889 ms | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
83889 ms | | | | -[NSXPCCConnection valueForEntitlement:0x10503a2b0]
83889 ms | | | | | -[NSXPCCConnection auditToken]
/* TID 0x2767 */
83889 ms | | | | | | -[AKAppleIDAuthenticationService _performInteractiveAuth
WithContext:0x126a0bf00 completion:0x16b31ad40]
83890 ms | | | | | | | -[AKAppleIDAuthenticationService refreshAuthMetadat
aWithContext:0x126a0bf00 completion:0x16b31ab38]
83890 ms | | | | | | | | -[AKAppleIDAuthenticationService _refreshLocal
AccountAndUpdateContext:0x126a0bf00 completion:0x16b31aac8]
83890 ms | | | | | | | | | -[AKAppleIDAuthenticationContext _shouldR
efreshAccountAndUpdateContext]
83890 ms | | | | | | | | | | -[AKAppleIDAuthenticationService _updateA
ltDSIDAndUsername:0x126a0bf00]
83890 ms | | | | | | | | | | | -[AKAppleIDAuthenticationContext alt
DSID]
83890 ms | | | | | | | | | | | -[AKAppleIDAuthenticationContext DS
I]
83890 ms | | | | | | | | | | | | -[AKAppleIDAuthenticationContext altDSID]
83890 ms | | | | | | | | | | | | -[AKAppleIDAuthenticationService _refresh
AuthModeIfNecessaryForContext:0x126a0bf00 completion:0x16b31a998]
83890 ms | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext nee
dsNewAppleID]
83890 ms | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext nee
dsNewChildAccount]
83890 ms | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext nee
dsCredentialRecovery]
83890 ms | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext nee
dsPasswordChange]
83890 ms | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext use
rname]
83890 ms | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext use
rname]
83890 ms | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext aut
henticationType]
83891 ms | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext aut
hKitAccount:0x0]
83891 ms | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContex
t altDSID]
83891 ms | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContex
t DSID]
83891 ms | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContex
t username]
83891 ms | | | | | | | | | | | | | | | | | | | | | +[AKAccountManager sharedInstan
ce]
83891 ms | | | | | | | | | | | | | | | | | | | | | | +[AKAccountManager isAccou
ntsFrameworkAvailable]
83891 ms | | | | | | | | | | | | | | | | | | | | | | | -[AKAccountManager authKitAccou

```

```
ntWithAppleID:0x126a053b0]
83891 ms | | | | | | | | | | | | -[AKAccountManager authKit
AccountType]
83891 ms | | | | | | | | | | | | -[NSXPCCConnection initWith
MachServiceName:0x1e8ff16b8 options:0x0]
83891 ms | | | | | | | | | | | | -[ACTrackedXPCCConnect
ion init]
83891 ms | | | | | | | | | | | | -[NSXPCCConnectio
n init]
 /* TID 0x2ee7 */
83891 ms | | | -[AKClient description]
83891 ms | | | | -[AKClient name]
83891 ms | | | | | -[NSXPCCConnection processIdentifier]
83892 ms | | | | | -[NSXPCCConnection processIdentifier]
 /* TID 0x2767 */
83892 ms | | | | | | | | | | | | -[NSXPCCConnection setRemot
eObjectInterface:0x125e0f350]
83892 ms | | | | | | | | | | | | +[NSXPCInterface interface
WithProtocol:0x1f9747d58]
 /* TID 0x2ee7 */
83892 ms | | | -[AKAnisetteProvisioningService initWithClient:0x126a0c890]
83892 ms | | | | +[AKAbsintheSigner sharedSigner]
 /* TID 0x2767 */
83892 ms | | | | | | | | | | | | -[NSXPCInterface init
]
 /* TID 0x2ee7 */
83892 ms | | | | +[AKAttestationSigner sharedSigner]
83892 ms | | | -[NSXPCCConnection setExportedObject:0x126a212f0]
 /* TID 0x2767 */
83892 ms | | | | | | | | | | | | -[NSXPCInterface setP
rotocol:0x1f9747d58]
 /* TID 0x2ee7 */
83892 ms | | | +[AKAnisetteProvisioningDaemonInterface XPCInterface]
83892 ms | | | -[NSXPCCConnection setExportedInterface:0x125d16640]
 /* TID 0x2767 */
83892 ms | | | | | | | | | | | | -[NSXPCCConnection setExp
ortedInterface:0x126b10170]
83892 ms | | | | | | | | | | | | -[NSXPCCConnection setExp
ortedObject:0x126b159f0]
 /* TID 0x2ee7 */
83892 ms | | | +[AKAnisetteProvisioningClientInterface XPCInterface]
83892 ms | | | -[NSXPCCConnection setRemoteObjectInterface:0x125d16a50]
83892 ms | | | -[NSXPCCConnection resume]
 /* TID 0x2767 */
83892 ms | | | | | | | | | | | | -[NSXPCCConnection setInter
ruptionHandler:0x16b31a2d8]
83892 ms | | | | | | | | | | | | -[NSXPCCConnection setInval
idationHandler:0x16b31a2b0]
83892 ms | | | | | | | | | | | | -[NSXPCCConnection resume]
 /* TID 0x2ee7 */
83893 ms -[NSXPCCConnection _decodeAndInvokeMessageWithEvent:0x126a21320 flags:0x21]
83893 ms | | -[NSXPCCoder init]
83893 ms | | -[NSXPCInterface _selectorIsAllowed:0x19d37a17a isReply:0x0 methodSigna
ture:0x16b3a60d0 allowedClasses:0x16b3a60d8]
83893 ms | | -[NSXPCCoder dealloc]
83893 ms | | -[NSXPCInterface _methodSignatureForReplyBlockOfSelector:0x19d37a17a]
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83893 ms | -[AKAnisetteProvisioningService fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b3a62a0]
83893 ms | | -[AKClient hasInternalPrivateAccess]
83894 ms | | | -[AKClient hasInternalPrivateEntitlementAccess]
/* TID 0x2767 */
83894 ms | | | | | | | | | -[NSXPCCConnection synchronousRemoteObjectProxyWithErrorHandler:0x16b31a410]
83894 ms | | | | | | | | | -[NSXPCCConnection _remoteObjectInterfaceClass]
83894 ms | | | | | | | | | | -[NSXPCInterface _customSubclass]
/* TID 0x2ee7 */
83894 ms | | | | -[AKClient hasInternalAccess]
83894 ms | | | | -[AKClient hasOwnerAccess]
83894 ms | | | | | -[AKClient _boolValueForEntitlement:0x10503a290]
/* TID 0x2767 */
83894 ms | | | | | | | | | | -[NSXPCInterface _methodSignatureForRemoteSelector:0x19cef453]
83894 ms | | | | | | | | | | -[NSXPCCConnection _sendInvocation:0x16b31a130 orArguments:0x0 count:0x0 methodSignature:0x9d85aa9dd9ffdaaff selectOr:0x19cef453 withProxy:0x126b17cd0]
83894 ms | | | | | | | | | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19cef453 reply:0x0]
/* TID 0x2ee7 */
83894 ms | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a290]
83894 ms | | | | | | -[NSXPCCConnection auditToken]
/* TID 0x2767 */
83894 ms | | | | | | | | | | | -[NSXPCCoder init]
83895 ms | | | | | | | | | | | -[NSXPCCoder dealloc]
83895 ms | | | | | | | | | | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOfSelector:0x19cef453]
/* TID 0x2ee7 */
83897 ms | | | | | -[AKClient _boolValueForEntitlement:0x10503a270]
83897 ms | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a270]
83897 ms | | | | | -[NSXPCCConnection auditToken]
83897 ms | | | -[AKAnisetteProvisioningService _fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b3a62a0]
83897 ms | | | | -[AKAnisetteProvisioningService _helperServiceForDevice:0x0]
83897 ms | | | | -[AKAnisetteProvisioningService _nativeAnisetteService]
83897 ms | | | | -[AKNativeAnisetteService initWithClient:0x126a0c890]
83897 ms | | | | -[AKNativeAnisetteService fetchAnisetteDataAndProvisionIfNecessary:0x1 withCompletion:0x16b3a62a0]
83897 ms | | | | +[AKNativeAnisetteService lastKnownActiveAnisetteDSID]
83897 ms | | | | +[AKURLBag bagForAltDSID:0x0]
83897 ms | | | | +[AKURLBag sharedBag]
83897 ms | | | -[AKURLBag lastKnownIDMSEnvironment]
83897 ms | | | | +[AKConfiguration sharedConfiguration]
83897 ms | | | | -[AKConfiguration lastKnownIDMSEnvironment]
83897 ms | | | | | -[AKConfiguration configurationValueForKey:0x1ea6f0118]
83898 ms | | | | +[AKNativeAnisetteService activeAnisetteDSIDWithEnvironment:0x0]
83898 ms | | | -[AKNativeAnisetteService _unsafe_anisetteDataWithRoutingInfoForDSID:0xffffffffffff withError:0x16b3a68a8]

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| | | | -[NSXPConnection synchronousRemoteObjectProxyWithErrorHandler:0x16b
31a428]
83905 ms | | | | -[NSXPConnection _remoteObjectInterfaceClass]
83905 ms | | | | -[NSXPCInterface _customSubclass]
83905 ms | | | | -[NSXPConnection _sendSelector:0x19e667b96 withProxy:0x126a23430 ar
g1:0x1ea6ece38 arg2:0x16b31a3f8]
83906 ms | | | | -[NSXPCInterface _methodSignatureForRemoteSelector:0x19e667b96]
83906 ms | | | | -[NSXPConnection _sendInvocation:0x0 orArguments:0x16b31a368 c
ount:0x2 methodSignature:0x9d85aa9dd9ff885f selector:0x19e667b96 withProxy:0x126a23430]
83906 ms | | | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19
e667b96 reply:0x0]
83906 ms | | | | -[NSXPCCoder init]
83906 ms | | | | -[NSXPCCoder dealloc]
83906 ms | | | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOfSelecto
r:0x19e667b96]
83907 ms | | | | -[NSXPConnection _decodeAndInvokeReplyBlockWithEvent:0x12
6a237f0 sequence:0x9 replyInfo:0x126a234e0]
83907 ms | | | | -[NSXPCCoder init]
83907 ms | | | | -[NSXPCInterface _selectorIsAllowed:0x19e667b96 isRep
ly:0x1 methodSignature:0x16b3196b0 allowedClasses:0x16b3196b8]
83907 ms | | | | -[NSXPCCoder dealloc]
83907 ms | | +[AKFollowUpServerPayloadFormatter pendingAuthKitFollowUpPayload:0x1f7b37
500]
83907 ms | | -[AKAppleIDServerResourceLoadDelegate setFollowupItems:0x126a23710]
83907 ms | | -[AKAppleIDAuthenticationContext proxiedDeviceAnisetteData]
83907 ms | | -[AKAppleIDServerResourceLoadDelegate setProxiedDeviceAnisetteData:0x0]
83907 ms | | -[AKAppleIDAuthenticationContext proxiedDevice]
83907 ms | | -[AKAppleIDServerResourceLoadDelegate setProxiedDevice:0x0]
83907 ms | | -[AKClient name]
83907 ms | | -[AKAppleIDServerResourceLoadDelegate setClientAppName:0x1f7d8ab20]
83907 ms | | -[AKAppleIDAuthenticationContext authKitAccount:0x16b31a598]
83907 ms | | -[AKAppleIDAuthenticationContext altDSID]
83907 ms | | -[AKAppleIDAuthenticationContext altDSID]

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| | | -[AKAppleIDAuthenticationContext DSID]
83907 ms | | | -[AKAppleIDAuthenticationContext username]
83907 ms | | | +[AKAccountManager sharedInstance]
83907 ms | | | +[AKAccountManager isAccountsFrameworkAvailable]
83907 ms | | | -[AKAccountManager authKitAccountWithAppleID:0x126a053b0]
83907 ms | | | -[AKAccountManager authKitAccountType]
/* TID 0x2ee7 */
83907 ms | | +[AKADIPProxy dispose:0x126b0e120]
83907 ms | | +[AKADIPProxy dispose:0x126b077e0]
/* TID 0x2767 */
83907 ms | | -[NSXPConnection synchronousRemoteObjectProxyWithErrorHandler:0x16b
31a080]
83907 ms | | -[NSXPConnection _remoteObjectInterfaceClass]
83907 ms | | -[NSXPCInterface _customSubclass]
/* TID 0x2ee7 */
83907 ms | | -[AKAnisetteData setMachineID:0x126b05830]
83907 ms | | -[AKAnisetteData setOneTimePassword:0x126b0e0e0]
83908 ms | | -[AKAnisetteData setRoutingInfo:0x3050500]
83908 ms -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19d37a17a reply:0x1]
83908 ms -[NSXPCCoder init]
/* TID 0x2767 */
83908 ms | | -[NSXPCInterface _methodSignatureForRemoteSelector:0x19cef453]
/* TID 0x2ee7 */
83908 ms -[AKAnisetteData encodeWithCoder:0x12900f600]
/* TID 0x2767 */
83908 ms | | -[NSXPConnection _sendInvocation:0x16b319da0 orArguments:0x0 count:
0x0 methodSignature:0x9d85aaafdd9ffdaff selector:0x19cef453 withProxy:0x126a23790]
83908 ms | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19cef4
53 reply:0x0]
83908 ms | | -[NSXPCCoder init]
/* TID 0x2ee7 */
83908 ms -[NSXPCCoder dealloc]
83908 ms -[AKAnisetteData .cxx_destruct]
/* TID 0x2767 */
83908 ms | | -[NSXPCCoder dealloc]
83908 ms | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOfSelector:0x1
9cef453]
83908 ms | | -[NSXPConnection _decodeAndInvokeReplyBlockWithEvent:0x126a23e
10 sequence:0x2 replyInfo:0x126a23950]
83908 ms | | -[NSXPCCoder init]

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| | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19cef453 reply:0
x0]
83927 ms | | | -[NSXPCCoder init]
83927 ms | | | -[NSXPCCoder dealloc]
83927 ms | | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOfSelector:0x19cef453]
83927 ms | | | -[NSXPCCConnection _decodeAndInvokeReplyBlockWithEvent:0x126b16e70 sequenc
e:0x4 replyInfo:0x126a23c40]
83927 ms | | | -[NSXPCCoder init]
83927 ms | | | -[NSXPCInterface _selectorIsAllowed:0x19cef453 isReply:0x1 methodSi
gnature:0x16b318f90 allowedClasses:0x16b318f98]
83927 ms | | | -[NSXPCCoder dealloc]
83927 ms | | | +[AKAccountManager sharedInstance]
83927 ms | | | +[AKAccountManager isAccountsFrameworkAvailable]
83927 ms | | | -[AKAccountManager servicesUsingAccount:0x126b0aa10]
83928 ms | | | -[AKServiceContr
ollerImpl _executeRequest:0x126b07210 completion:0x16b31a748]
83928 ms | | | -[AKURLRequ
estProviderImpl shouldCacheResource]
83928 ms | | | +[AKURLSess
ion sharedURLSession]
83928 ms | | | -[AKURLSess
ion beginAuthenticationDataTaskWithRequest:0x126b07210 completionHandler:0x16b31a6e0]
83928 ms | | | -[AKUR
LSession beginDataTaskWithRequest:0x126b07210 completionHandler:0x16b31a650]
83928 ms -[AKTrafficClearanceRequest .cxx_destruct]
83928 ms -[AKAppleIDServerResourceLoadDelegate .cxx_destruct]
/* TID 0x4a03 */
83928 ms -[AKURLSession _URLSession]
83931 ms -[AKAppleIDSession copyWithZone:0x0]
83931 ms | -[AKAppleIDSession initWithIdentifier:0x1ea6ed738]
83931 ms -[AKURLDataTask setRequest:0x126b07210]
83931 ms -[AKURLDataTask setRetryCount:0x0]
83931 ms -[AKURLDataTask setCompletionHandler:0x126b0e360]
83932 ms -[AKURLDataTask setUnderlyingTask:0x126a23790]
83934 ms -[AKAppleIDSession URLSession:0x125e16f80 task:0x126a23790 getAppleIDRequest
OrHeadersForResponse:0x0 completionHandler:0x16b4be680]
83934 ms | -[AKAppleIDSession _generateAppleIDHeadersForSessionTask:0x126a23790 wi
thCompletion:0x16b4be5c8]
83934 ms | | -[AKAppleIDSession _nativeAnisetteController]
83934 ms | | -[AKAnisetteProvisioningController init]
83934 ms | | -[AKAnisetteProvisioningController anisetteDataForURLRequest:0x126
a18120 completion:0x16b4be488]
83934 ms | | -[AKAnisetteProvisioningController fetchAnisetteDataAndProv
isionIfNecessary:0x1 withCompletion:0x16b4be488]
83934 ms | | -[AKAnisetteProvisioningController _anisetteServiceConne
ction]

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83934 ms | | | | | -[NSXPCCConnection initWithMachServiceName:0x1ea6f09
b8 options:0x0]
83934 ms | | | | | | -[NSXPCCConnection init]
83934 ms | | | | | +[AKAnisetteProvisioningDaemonInterface XPCInterface
e]
83934 ms | | | | | -[NSXPCCConnection setRemoteObjectInterface:0x125d16
640]
83934 ms | | | | | -[NSXPCCConnection setExportedObject:0x126a243f0]
83934 ms | | | | | +[AKAnisetteProvisioningClientInterface XPCInterface
e]
83934 ms | | | | | -[NSXPCCConnection setExportedInterface:0x125d16a50]
83934 ms | | | | | -[NSXPCCConnection setInterruptionHandler:0x16b4be1f
0]
83934 ms | | | | | -[NSXPCCConnection setInvalidationHandler:0x16b4be1c
8]
83934 ms | | | | | | -[NSXPCCConnection resume]
83934 ms | | | | | -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x16
b4be2a8]
83935 ms | | | | | | -[NSXPCCConnection _remoteObjectInterfaceClass]
83935 ms | | | | | | | -[NSXPCInterface _customSubclass]
83935 ms | | | | | | -[NSXPCInterface _methodSignatureForRemoteSelector:0x19d
37a17a]
83935 ms | | | | | | -[NSXPCCConnection _sendInvocation:0x16b4bdff0 orArgument
s:0x0 count:0x0 methodSignature:0x9d85aaafdd9ff48ff selector:0x19d37a17a withProxy:0x126
b17cd0]
83935 ms | | | | | | | -[NSXPCInterface _interfaceForArgument:0x1 ofSelect
or:0x19d37a17a reply:0x0]
83935 ms | | | | | | | -[NSXPCCoder init]
83935 ms | | | | | | | -[NSXPCCoder dealloc]
83935 ms | | | | | | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOf
Selector:0x19d37a17a]
/* TID 0x2767 */
83935 ms | | | | | | -[NSXPCListener serviceName]
83935 ms | | | | | | -[NSXPCCConnection init]
83935 ms | | | | | | -[NSXPCListener delegate]
83935 ms | | | | | | -[NSXPCListener delegate]
83935 ms | | | | | | -[AKDaemonConnectionManager listener:0x126907500 shouldAcceptNewConnection:0
x126a24be0]
83935 ms | | | | | | | -[AKClient initWithConnection:0x126a24be0]
83935 ms | | | | | | | -[AKDaemonConnectionManager shouldAllowClient:0x126a254e0 logging:0x16b
31a598]
83935 ms | | | | | | | | -[AKClient hasWriteAccess]
83935 ms | | | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
83935 ms | | | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a2b0]
83935 ms | | | | | | | | | | | -[NSXPCCConnection auditToken]
83935 ms | | | | | | | | | | | | -[AKClient hasInternalAccess]
83935 ms | | | | | | | | | | | | | -[AKClient hasOwnerAccess]
83935 ms | | | | | | | | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a290]
83936 ms | | | | | | | | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a290]
83936 ms | | | | | | | | | | | | | | | | -[NSXPCCConnection auditToken]
83936 ms | | | | | | | | | | | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a270]
83936 ms | | | | | | | | | | | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a270]
83936 ms | | | | | | | | | | | | | | | | | | | -[NSXPCCConnection auditToken]
83936 ms | | | | | | | | | | | | | | | | | | | | -[AKClient description]
83936 ms | | | | | | | | | | | | | | | | | | | | | -[AKClient name]
83936 ms | | | | | | | | | | | | | | | | | | | | | | -[NSXPCCConnection processIdentifier]

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83936 ms | | | -[NSXPConnection processIdentifier]
83936 ms | | | -[AKAnisetteProvisioningService initWithClient:0x126a254e0]
83936 ms | | | +[AKAbsintheSigner sharedSigner]
83936 ms | | | +[AKAttestationSigner sharedSigner]
83936 ms | | -[NSXPConnection setExportedObject:0x126a255f0]
83936 ms | | +[AKAnisetteProvisioningDaemonInterface XPCInterface]
83936 ms | | -[NSXPConnection setExportedInterface:0x125d16640]
83936 ms | | +[AKAnisetteProvisioningClientInterface XPCInterface]
83936 ms | | -[NSXPConnection setRemoteObjectInterface:0x125d16a50]
83936 ms | | -[NSXPConnection resume]
83936 ms | -[NSXPConnection _decodeAndInvokeMessageWithEvent:0x126a257f0 flags:0x21]
83936 ms | | -[NSXPCCoder init]
83936 ms | | -[NSXPCInterface _selectorIsAllowed:0x19d37a17a isReply:0x0 methodSignature:0x16b31a0d0 allowedClasses:0x16b31a0d8]
83936 ms | | -[NSXPCCoder dealloc]
83936 ms | | -[NSXPCInterface _methodSignatureForReplyBlockOfSelector:0x19d37a17a]
83936 ms | | -[AKAnisetteProvisioningService fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b31a2a0]
83936 ms | | | -[AKClient hasInternalPrivateAccess]
83936 ms | | | -[AKClient hasInternalPrivateEntitlementAccess]
83936 ms | | | | -[AKClient hasInternalAccess]
83936 ms | | | | -[AKClient hasOwnerAccess]
83936 ms | | | | | -[AKClient _boolValueForEntitlement:0x10503a290]
83936 ms | | | | | -[NSXPConnection valueForEntitlement:0x10503a290]
83936 ms | | | | | | -[NSXPConnection auditToken]
83936 ms | | | | | | -[AKClient _boolValueForEntitlement:0x10503a270]
83936 ms | | | | | | -[NSXPConnection valueForEntitlement:0x10503a270]
83936 ms | | | | | | -[NSXPConnection auditToken]
83936 ms | | | -[AKAnisetteProvisioningService _fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b31a2a0]
83936 ms | | | | -[AKAnisetteProvisioningService _helperServiceForDevice:0x0]
83936 ms | | | | -[AKAnisetteProvisioningService _nativeAnisetteService]
83936 ms | | | | | -[AKNativeAnisetteService initWithClient:0x126a254e0]
83936 ms | | | | | -[AKNativeAnisetteService fetchAnisetteDataAndProvisionIfNecessary:0x1 withCompletion:0x16b31a2a0]
83936 ms +[AKNativeAnisetteService lastKnownActiveAnisetteDSID]
83936 ms | +[AKURLBag bagForAltDSID:0x0]
83936 ms | | +[AKURLBag sharedBag]
83936 ms | -[AKURLBag lastKnownIDMSEnvironment]
83936 ms | | +[AKConfiguration sharedConfiguration]
83936 ms | | -[AKConfiguration lastKnownIDMSEnvironment]
83936 ms | | | -[AKConfiguration configurationValueForKey:0x1ea6f0118]
83936 ms | | +[AKNativeAnisetteService activeAnisetteDSIDWithEnvironment:0x0]
83936 ms -[AKNativeAnisetteService _unsafe_anisetteDataWithRoutingInfoForDSID:0xffffffffffffffffffff withError:0x16b31a8a8]
83936 ms | | +[AKADIPProxy getIDMSRoutingInfo:0x16b31a838 forDSID:0xffffffffffffffffffff]
83937 ms | | -[AKNativeAnisetteService _unsafe_anisetteDataForDSID:0xffffffffffffffffffff e withError:0x16b31a8a8]
83937 ms | | | +[AKADIPProxy requestOTPForDSID:0xffffffffffffffffffff outMID:0x16b31a7e8 outMIDSize:0x16b31a7dc outOTP:0x16b31a7e0 outOTPSize:0x16b31a7d8]
83937 ms | | | +[AKADIPProxy dispose:0x126a26580]
83937 ms | | | +[AKADIPProxy dispose:0x126a24a80]

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83937 ms | | -[AKAnisetteData setMachineID:0x126a25670]
83937 ms | | -[AKAnisetteData setOneTimePassword:0x126a256d0]
83937 ms | | -[AKAnisetteData setRoutingInfo:0x3050500]
83937 ms -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19d37a17a reply:0x1]
83937 ms -[NSXPCCoder init]
83937 ms -[AKAnisetteData encodeWithCoder:0x128811000]
83937 ms -[NSXPCCoder dealloc]
83937 ms -[AKAnisetteData .cxx_destruct]
83937 ms -[NSXPConnection _decodeAndInvokeReplyBlockWithEvent:0x126a25620 sequence:0
x1 replyInfo:0x126b05fd0]
83937 ms | -[NSXPCCoder init]
83937 ms | -[NSXPCInterface _selectorIsAllowed:0x19d37a17a isReply:0x1 methodSigna
ture:0x16b31a3f0 allowedClasses:0x16b31a3f8]
83937 ms | +[AKAnisetteData supportsSecureCoding]
83937 ms | -[AKAnisetteData initWithCoder:0x12880d000]
83937 ms | -[AKAppleIDSession _genericAppleIDHeadersDictionaryForRequest:0x126a181
20]
83938 ms | | +[AKDevice currentDevice]
83938 ms | | -[AKDevice locale]
83938 ms | -[AKAnisetteData machineID]
83938 ms | -[AKAnisetteData oneTimePassword]
83938 ms | -[AKAnisetteData routingInfo]
83938 ms | +[AKDevice currentDevice]
83938 ms | -[AKDevice localUserUUID]
83938 ms | +[AKConfiguration sharedConfiguration]
83938 ms | -[AKConfiguration shouldAllowTestApplication]
83938 ms | | -[AKConfiguration configurationValueForKey:0x1ea6efff8]
83938 ms | -[AKAppleIDSession _pairedDeviceAnisetteController]
83938 ms -[AKAnisetteData .cxx_destruct]
83938 ms -[NSXPCCoder dealloc]
84336 ms -[NSXPConnection invalidationHandler]
84337 ms -[NSXPConnection _additionalInvalidationHandler]
84337 ms -[NSXPConnection setInvalidationHandler:0x0]
84337 ms -[NSXPConnection setInterruptionHandler:0x0]
84337 ms -[NSXPConnection setExportedObject:0x0]
84337 ms | -[AKAnisetteProvisioningService .cxx_destruct]
84337 ms | | -[AKNativeAnisetteService .cxx_destruct]
84338 ms | | -[AKClient .cxx_destruct]
84338 ms -[NSXPConnection dealloc]
84342 ms -[NSXPCListener serviceName]
84342 ms -[NSXPConnection init]
84342 ms -[NSXPCListener delegate]
84342 ms -[NSXPCListener delegate]
84343 ms -[AKDaemonConnectionManager listener:0x126907500 shouldAcceptNewConnection:0
x125e33170]
84343 ms | -[AKClient initWithConnection:0x125e33170]
84343 ms | -[AKDaemonConnectionManager shouldAllowClient:0x125e2b900 logging:0x16b
31a598]
84343 ms | | -[AKClient hasWriteAccess]
84343 ms | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
84343 ms | | | -[NSXPConnection valueForEntitlement:0x10503a2b0]
84343 ms | | | | -[NSXPConnection auditToken]
84347 ms | | -[AKClient description]
84347 ms | | | -[AKClient name]
84347 ms | | | | -[NSXPConnection processIdentifier]
84347 ms | | | | -[NSXPConnection processIdentifier]

```

```

84347 ms | - [AKAnisetteProvisioningService initWithClient:0x125e2b900]
84347 ms | | +[AKAbsintheSigner sharedSigner]
84347 ms | | +[AKAttestationSigner sharedSigner]
84348 ms | - [NSXPConnection setExportedObject:0x126889ce0]
84348 ms | +[AKAnisetteProvisioningDaemonInterface XPCInterface]
84348 ms | - [NSXPConnection setExportedInterface:0x125d16640]
84348 ms | +[AKAnisetteProvisioningClientInterface XPCInterface]
84348 ms | - [NSXPConnection setRemoteObjectInterface:0x125d16a50]
84348 ms | - [NSXPConnection resume]
84349 ms - [NSXPConnection _decodeAndInvokeMessageWithEvent:0x12688b5c0 flags:0x21]
84349 ms | - [NSXPCCoder init]
84349 ms | - [NSXPCInterface _selectorIsAllowed:0x19d37a17a isReply:0x0 methodSignature:0x16b31a0d0 allowedClasses:0x16b31a0d8]
84349 ms | - [NSXPCCoder dealloc]
84349 ms | - [NSXPCInterface _methodSignatureForReplyBlockOfSelector:0x19d37a17a]
84349 ms | - [AKAnisetteProvisioningService fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b31a2a0]
84349 ms | | - [AKClient hasInternalPrivateAccess]
84349 ms | | - [AKClient hasInternalPrivateEntitlementAccess]
84349 ms | | | - [AKClient hasInternalAccess]
84349 ms | | | - [AKClient hasOwnerAccess]
84349 ms | | | | - [AKClient _boolValueForEntitlement:0x10503a290]
84349 ms | | | | - [NSXPConnection valueForEntitlement:0x10503a290]
84349 ms | | | | | - [NSXPConnection auditToken]
84352 ms | | | | | - [AKClient _boolValueForEntitlement:0x10503a270]
84352 ms | | | | | - [NSXPConnection valueForEntitlement:0x10503a270]
84352 ms | | | | | - [NSXPConnection auditToken]
84353 ms | | - [AKAnisetteProvisioningService _fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b31a2a0]
84353 ms | | | - [AKAnisetteProvisioningService _helperServiceForDevice:0x0]
84353 ms | | | - [AKAnisetteProvisioningService _nativeAnisetteService]
84353 ms | | | - [AKNativeAnisetteService initWithClient:0x125e2b900]
84353 ms | | | - [AKNativeAnisetteService fetchAnisetteDataAndProvisionIfNecessary:0x1 withCompletion:0x16b31a2a0]
84353 ms +[AKNativeAnisetteService lastKnownActiveAnisetteDSID]
84353 ms | +[AKURLBag bagForAltDSID:0x0]
84353 ms | | +[AKURLBag sharedBag]
84353 ms | - [AKURLBag lastKnownIDMSEnvironment]
84353 ms | | +[AKConfiguration sharedConfiguration]
84353 ms | | - [AKConfiguration lastKnownIDMSEnvironment]
84353 ms | | | - [AKConfiguration configurationValueForKey:0x1ea6f0118]
84353 ms | | +[AKNativeAnisetteService activeAnisetteDSIDWithEnvironment:0x0]
84353 ms - [AKNativeAnisetteService _unsafe_anisetteDataWithRoutingInfoForDSID:0xffffffffffff withError:0x16b31a8a8]
84353 ms | +[AKADIPProxy getIDMSRoutingInfo:0x16b31a838 forDSID:0xffffffffffff withError:0x16b31a8a8]
84355 ms | - [AKNativeAnisetteService _unsafe_anisetteDataForDSID:0xffffffffffff withError:0x16b31a8a8]
84355 ms | | +[AKADIPProxy requestOTPForDSID:0xffffffffffff withMid:0x16b31a7e8 outMidSize:0x16b31a7dc outOTP:0x16b31a7e0 outOTPSize:0x16b31a7d8]
84355 ms | | +[AKADIPProxy dispose:0x125e325e0]
84355 ms | | +[AKADIPProxy dispose:0x125e2b940]
84355 ms | | - [AKAnisetteData setMachineID:0x125e2bf20]

```

```

84355 ms | | -[AKAnisetteData setOneTimePassword:0x125e2c070]
84355 ms | | -[AKAnisetteData setRoutingInfo:0x3050500]
84355 ms -[NSXPConnection _interfaceForArgument:0x0 ofSelector:0x19d37a17a reply:0x1]
84355 ms -[NSXPCCoder init]
84355 ms -[AKAnisetteData encodeWithCoder:0x127819800]
84355 ms -[NSXPCCoder dealloc]
84355 ms -[AKAnisetteData .cxx_destruct]
84390 ms -[AKURLSession URLSession:0x125e16f80 didReceiveChallenge:0x12694ab10 completionHandler:0x16b31a698]
84390 ms | +[AKCertificatePinning isValidCertificateTrust:0x126949850 forHostname:0x12694a840]
84687 ms -[NSXPConnection invalidationHandler]
84687 ms -[NSXPConnection _additionalInvalidationHandler]
84688 ms -[NSXPConnection setInvalidationHandler:0x0]
84688 ms -[NSXPConnection setInterruptionHandler:0x0]
84688 ms -[NSXPConnection setExportedObject:0x0]
84688 ms | -[AKAnisetteProvisioningService .cxx_destruct]
84688 ms | | -[AKNativeAnisetteService .cxx_destruct]
84689 ms | | -[AKClient .cxx_destruct]
/* TID 0x9e33 */
84689 ms -[NSXPCListener serviceName]
84689 ms -[NSXPConnection init]
84689 ms -[NSXPCListener delegate]
84689 ms -[NSXPCListener delegate]
84689 ms -[AKDaemonConnectionManager listener:0x126907500 shouldAcceptNewConnection:0x126a04b30]
84689 ms | -[AKClient initWithConnection:0x126a04b30]
84689 ms | -[AKDaemonConnectionManager shouldAllowClient:0x126a10290 logging:0x16b432598]
84689 ms | | -[AKClient hasWriteAccess]
84689 ms | | | -[AKClient _boolValueForEntitlement:0x10503a2b0]
84689 ms | | | | -[NSXPConnection valueForEntitlement:0x10503a2b0]
84689 ms | | | | -[NSXPConnection auditToken]
84690 ms | | -[AKClient description]
84690 ms | | | -[AKClient name]
84690 ms | | | | -[NSXPConnection processIdentifier]
84690 ms | | | | -[NSXPConnection processIdentifier]
84690 ms | | -[AKAnisetteProvisioningService initWithClient:0x126a10290]
84690 ms | | +[AKAbsintheSigner sharedSigner]
84690 ms | | +[AKAttestationSigner sharedSigner]
84690 ms | -[NSXPConnection setExportedObject:0x126a05f60]
84690 ms | +[AKAnisetteProvisioningDaemonInterface XPCInterface]
84690 ms | -[NSXPConnection setExportedInterface:0x125d16640]
84690 ms | +[AKAnisetteProvisioningClientInterface XPCInterface]
84690 ms | -[NSXPConnection setRemoteObjectInterface:0x125d16a50]
84690 ms | -[NSXPConnection resume]
84691 ms -[NSXPConnection _decodeAndInvokeMessageWithEvent:0x126a0c780 flags:0x21]
84691 ms | -[NSXPCCoder init]
84691 ms | -[NSXPConnection _selectorIsAllowed:0x19d37a17a isReply:0x0 methodSignature:0x16b4320d0 allowedClasses:0x16b4320d8]
84691 ms | -[NSXPCCoder dealloc]
84691 ms | -[NSXPConnection _methodSignatureForReplyBlockOfSelector:0x19d37a17a]
84691 ms | -[AKAnisetteProvisioningService fetchAnisetteDataAndProvisionIfNecessary:0x1 device:0x0 completion:0x16b4322a0]
84691 ms | | -[AKClient hasInternalPrivateAccess]
84691 ms | | | -[AKClient hasInternalPrivateEntitlementAccess]

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84691 ms | | | | | -[AKClient hasInternalAccess]
84691 ms | | | | | | -[AKClient hasOwnerAccess]
84691 ms | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a29
0]
84691 ms | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x1
0503a290]
84691 ms | | | | | | | | | -[NSXPCCConnection auditToken]
/* TID 0x2767 */
84691 ms -[NSXPCCConnection dealloc]
/* TID 0x9e33 */
84692 ms | | | | | | | -[AKClient _boolValueForEntitlement:0x10503a270]
84692 ms | | | | | | | | -[NSXPCCConnection valueForEntitlement:0x10503a
270]
84692 ms | | | | | | | | | -[NSXPCCConnection auditToken]
84692 ms | | | | | -[AKAnisetteProvisioningService _fetchAnisetteDataAndProvisionIfNe
cessary:0x1 device:0x0 completion:0x16b4322a0]
84692 ms | | | | | | -[AKAnisetteProvisioningService _helperServiceForDevice:0x0]
84692 ms | | | | | | | -[AKAnisetteProvisioningService _nativeAnisetteService]
84692 ms | | | | | | | | -[AKNativeAnisetteService initWithClient:0x126a1029
0]
84692 ms | | | | | | | | | -[AKNativeAnisetteService fetchAnisetteDataAndProvisionIfNece
ssary:0x1 withCompletion:0x16b4322a0]
84692 ms +[AKNativeAnisetteService lastKnownActiveAnisetteDSID]
84692 ms | +[AKURLBag bagForAltDSID:0x0]
84692 ms | | +[AKURLBag sharedBag]
84692 ms | -[AKURLBag lastKnownIDMSEnvironment]
84692 ms | | +[AKConfiguration sharedConfiguration]
84692 ms | | | -[AKConfiguration lastKnownIDMSEnvironment]
84692 ms | | | | -[AKConfiguration configurationValueForKey:0x1ea6f0118]
84692 ms | | +[AKNativeAnisetteService activeAnisetteDSIDWithEnvironment:0x0]
84692 ms -[AKNativeAnisetteService _unsafe_anisetteDataWithRoutingInfoForDSID:0xffffffff
ffffffffffff withError:0x16b4328a8]
84692 ms | +[AKADIPProxy getIDMSRoutingInfo:0x16b432838 forDSID:0xffffffffffff
fffffe]
84693 ms | -[AKNativeAnisetteService _unsafe_anisetteDataForDSID:0xffffffffffff
fffffe withError:0x16b4328a8]
84693 ms | | +[AKADIPProxy requestOTPForDSID:0xfffffffffffffe outMID:0x16b4327
e8 outMIDSize:0x16b4327dc outOTP:0x16b4327e0 outOTPSIZE:0x16b4327d8]
84693 ms | | | +[AKADIPProxy dispose:0x126a29160]
84693 ms | | | +[AKADIPProxy dispose:0x126a2aa70]
84693 ms | | | -[AKAnisetteData setMachineID:0x126a0c7d0]
84693 ms | | | -[AKAnisetteData setOneTimePassword:0x126a0c830]
84693 ms | | | -[AKAnisetteData setRoutingInfo:0x3050500]
84693 ms -[NSXPCTInterface _interfaceForArgument:0x0 ofSelector:0x19d37a17a reply:0x1]
84693 ms -[NSXPCCoder init]
84693 ms -[AKAnisetteData encodeWithCoder:0x128811000]
84693 ms -[NSXPCCoder dealloc]
84693 ms -[AKAnisetteData .cxx_destruct]
84866 ms -[AKURLSession URLSession:0x125e16f80 dataTask:0x126a23790 didReceiveData:0x
125d86ce0]
84866 ms | -[AKURLDataTask receivedData]
84867 ms | | -[AKURLDataTask setReceivedData:0x125d87560]
/* TID 0x2767 */
84868 ms -[AKURLSession URLSession:0x125e16f80 task:0x126a23790 didCompleteWithError:
0x0]
84868 ms | -[AKURLSession _unsafe_completeTask:0x126b043e0 withError:0x0]
84868 ms | | -[AKURLDataTask underlyingTask]

```

```

84868 ms | | | -[AKURLDataTask _completeWithError:0x0]
84868 ms | | | | -[AKURLDataTask setCanceledOrCompleted:0x1]
84868 ms | | | | -[AKURLDataTask receivedData]
84869 ms -[AKURLDataTask description]
84869 ms -[AKGrandSlamRequestProvider validateResponseData:0x125d87560 error:0x16b31a
de8]
84869 ms | -[AKURLRequestProviderImpl validateResponseData:0x125d87560 error:0x16b
31ade8]
84869 ms | | -[AKURLRequestProviderImpl _validateDataExists:0x125d87560]
84869 ms | | -[AKURLRequestProviderImpl _validateResponseBodyFormat]
84869 ms | | | -[AKGrandSlamRequestProvider expectedResponseType]
84870 ms | | | -[AKURLRequestProviderImpl _validateErrorCode:0x9b85aafdd9ffd30d w
ithKey:0x1ea6eeb58]
84870 ms -[AKAppleIDAuthenticationContext username]
84870 ms -[AKAppleIDAuthenticationService _correlateContext:0x126a0bf00 withAuthMode:
0x1]
84870 ms | -[AKAppleIDAuthenticationContext setAuthenticationMode:0x1]
84870 ms | -[AKAppleIDAuthenticationContext authenticationType]
84870 ms -[AKAppleIDAuthenticationContext username]
84870 ms -[AKAppleIDAuthenticationContext authenticationType]
84870 ms -[AKAuthenticationUILiaison presentBasicLoginUIForContext:0x126a0bf00 client
:0x1269481d0 completion:0x16b31ab40]
84871 ms | +[AKCAAuthPromptReporter reportPromptByClient:0x1269481d0 withContext:0
x126a0bf00]
84871 ms | | -[AKAppleIDAuthenticationContext isFirstTimeLogin]
84871 ms | +[AKAutoBugCapture shouldCapturePromptBugForContext:0x126a0bf00]
84871 ms | | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
84871 ms | -[AKAuthenticationUILiaison _performBlockWithClient:0x1269481d0 context
:0x126a0bf00 requireFullUICapability:0x0 allowRedirectToSettings:0x1 block:0x16b31aac0]
84871 ms | | -[AKAppleIDAuthenticationContext _capabilityForUIDisplay]
84871 ms | | -[AKAppleIDAuthenticationContext _performUIOutOfProcess]
84872 ms | | -[AKAppleIDAuthenticationContext _performUIOutOfProcess]
84872 ms -[AKURLDataTask .cxx_destruct]
84872 ms | -[AKAppleIDSesson .cxx_destruct]
/* TID 0x4a03 */
84872 ms -[AKClient proxyWithErrorHandler:0x16b4beda0]
84872 ms | -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x16b4beda0]
84872 ms | | -[NSXPCCConnection _remoteObjectInterfaceClass]
84872 ms | | | -[NSXPCInterface _customSubclass]
84873 ms -[NSXPCCConnection _sendSelector:0x19d20bd88 withProxy:0x12688ae80 arg1:0x126
a0bf00 arg2:0x16b4bed70]
84873 ms | -[NSXPCInterface _methodSignatureForRemoteSelector:0x19d20bd88]
84873 ms | -[NSXPCCConnection _sendInvocation:0x0 orArguments:0x16b4bece8 count:0x2
methodSignature:0x9d85aafdd9ff885f selector:0x19d20bd88 withProxy:0x12688ae80]
84873 ms | | -[NSXPCInterface _interfaceForArgument:0x0 ofSelector:0x19d20bd88
reply:0x0]
84873 ms | | | -[NSXPCCoder init]
/* TID 0x2767 */
84873 ms | | | -[AKAnisetteProvisioningController dealloc]
84874 ms | | | | -[NSXPCCConnection invalidate]
/* TID 0x4a03 */
84874 ms | | | -[AKAppleIDAuthenticationContext encodeWithCoder:0x12701d000]
/* TID 0x2767 */
84874 ms | | | | -[AKAnisetteProvisioningController .cxx_destruct]
/* TID 0x2ee7 */
84874 ms -[NSXPCCConnection invalidationHandler]

```

```

84874 ms -[NSXPCCConnection _additionalInvalidationHandler]
84874 ms -[NSXPCCConnection setInvalidationHandler:0x0]
/* TID 0x9e33 */
84874 ms -[NSXPCCConnection invalidationHandler]
/* TID 0x2ee7 */
84875 ms -[NSXPCCConnection setInterruptionHandler:0x0]
/* TID 0x9e33 */
84875 ms -[NSXPCCConnection _additionalInvalidationHandler]
/* TID 0x4a03 */
84875 ms | | -[NSXPCCoder dealloc]
/* TID 0x9e33 */
84875 ms -[NSXPCCConnection setInvalidationHandler:0x0]
84876 ms -[NSXPCCConnection setInterruptionHandler:0x0]
84876 ms -[NSXPCCConnection setExportedObject:0x0]
/* TID 0x4a03 */
84876 ms | | -[NSXPCInterface _hasProxiesInReplyBlockArgumentsOfSelector:0x19d2
0bd88]
/* TID 0x2767 */
84876 ms -[AKServiceControllerImpl .cxx_destruct]
84876 ms | -[AKURLRequestProviderImpl .cxx_destruct]
/* TID 0x9e33 */
84876 ms -[NSXPCCConnection dealloc]
/* TID 0x2ee7 */
84877 ms -[NSXPCCConnection setExportedObject:0x0]
84877 ms | -[AKAnisetteProvisioningService .cxx_destruct]
84877 ms | | -[AKNativeAnisetteService .cxx_destruct]
84877 ms | | -[AKClient .cxx_destruct]
84877 ms -[NSXPCCConnection dealloc]
/* TID 0x4a03 */
84959 ms -[NSXPCCConnection invalidationHandler]
84959 ms -[NSXPCCConnection _additionalInvalidationHandler]
84959 ms -[NSXPCCConnection setInvalidationHandler:0x0]
84959 ms -[NSXPCCConnection setInterruptionHandler:0x0]
84959 ms -[NSXPCCConnection setExportedObject:0x0]
84959 ms | -[AKAnisetteProvisioningService .cxx_destruct]
84959 ms | | -[AKNativeAnisetteService .cxx_destruct]
84959 ms | | -[AKClient .cxx_destruct]
84959 ms -[NSXPCCConnection dealloc]
114739 ms -[NSXPCCConnection invalidate]
/* TID 0x9e33 */
114740 ms -[NSXPCCConnection invalidationHandler]
114740 ms -[NSXPCCConnection _additionalInvalidationHandler]
114740 ms -[NSXPCCConnection setInvalidationHandler:0x0]
114740 ms -[NSXPCCConnection setInterruptionHandler:0x0]
114740 ms -[NSXPCCConnection setExportedObject:0x0]
114740 ms -[NSXPCInterface dealloc]
114740 ms -[ACTrackedXPCCConnection dealloc]
114740 ms | -[NSXPCCConnection dealloc]

```

## Preferences中Apple账号登录全过程

用 frida-trace 追踪 Preferences 中

用 frida-trace 去追踪， Preferences =包名 com.apple.Preferences 中的：

- Apple账号登录的完整过程
  - 第一步：输入账号，点击下一步=账号验证过程
  - 第二步：输入密码，点击下一步=账号登录过程

中的函数调用：

### frida命令

```
frida-trace -U -F com.apple.Preferences -O Preferences_accountLogin_hook.txt
```

- Option文件 Preferences\_accountLogin\_hook.txt 的内容

```
-m "*[AA* *]"
-m "*[AK* *]"
-m "*[AMS* *]"
-m "*[AS* *]"
-m "*[AC* *]"
-m "*[NSError *]"
-M "-[* classForCoder]"
-M "-[* classForKeyedArchiver]"
-M "-[AAUISignInViewController numberOfSectionsInTableView:]"
-M "-[AAUISignInViewController tableView:]"
-M "-[NSPath* *]"
-M "-[* copyWithZone:]"
-M "-[*NSCFString *]"
-M "-[*NSCFError *]"
-M "-[* *ayoutSubviews]"
-M "-[* intrinsicContentSize]"
-M "-[* viewForLastBaselineLayout]"
-M "-[* contentLayoutGuide]"
-M "-[* _updateStyleIfNeeded]"
-M "-[* _updateStackViewSpacing]"
-M "-[* _updateLabelFonts]"
-M "-[AAUILabel *]"
-M "-[AAUIBuddyView *]"
-M "-[AAUIHeaderView *]"
-M "-[* .cxx_destruct]"
-M "-[* dealloc]"
-M "-[* supportsSecureCoding]"
-M "-[* initWithCoder:]"
-M "-[ACAccountStore _clearAccountCaches]"
```

### 输出

```

...
-[NSURLSession encodeWithCoder:]: Loaded handler at "/Users/crifan/dev/dev_root/iosRevers
e/AppleStore/Preferences_app/dynamicDebug/frida/frida-trace/_handlers__/_NSURLSession/enc
odeWithCoder_.js"
Started tracing 23636 functions. Press Ctrl+C to stop.
 /* TID 0x103 */
15708 ms -[AAUISignInController initWithNibName:0x0 bundle:0x0]
15709 ms | -[AAUISignInController _commonInit]
15709 ms | | -[AAUISignInController setCanEditUsername:0x1]
15716 ms -[AAUISignInController viewDidLoad]
15716 ms | -[AAUISignInController _signInViewController]
15716 ms | | +[AAPersonaUtility verifyAndFixPersonaIfNeeded:0x28073b880 desired
Context:0x281024ae0]
15716 ms | | | -[AAUISignInViewController initWithNibName:0x0 bundle:0x0]
15716 ms | | | -[AAUISignInController serviceType]
15716 ms | | | -[AAUISignInViewController _setAkServiceType:0x0]
15716 ms | | | -[AAUISignInViewController setUsername:0x0]
15716 ms | | | -[AAUISignInController privacyLinkIdentifiers]
15716 ms | | | -[AAUISignInViewController setPrivacyLinkIdentifiers:0x281024fa0]
15716 ms | | | -[AAUISignInController serviceType]
15716 ms | | | -[AAUISignInController _allowsAccountCreationForService:0x0]
15716 ms | | | -[AAUISignInViewController setAllowsAccountCreation:0x1]
15716 ms | | | -[AAUISignInViewController setDelegate:0x103812200]
15717 ms | | | -[AAUISignInController serviceType]
15717 ms | | | -[AAUISignInController _showsServiceIconsForService:0x0]
15717 ms | | | -[AAUISignInViewController setShowServiceIcons:0x1]
15717 ms | | | -[AAUISignInViewController messageLabel]
15717 ms | | | | -[AAUISignInViewController _accountsHeaderView]
15717 ms | | | | | -[AAUISignInViewController authenticationContext]
15717 ms | | | | | | -[AKAppleIDAuthenticationContext init]
15717 ms | | | | | | | -[AKAppleIDAuthenticationContext _initWithiden
tifier:0x281321340]
15717 ms | | | | | | | -[AKAppleIDAuthenticationContext description]
15717 ms | | | | | | | -[AKAppleIDAuthenticationContext setAuthenticationT
ype:0x2]
15717 ms | | | | | | | -[AKAppleIDAuthenticationContext setFirstTimeLogin:
0x1]
15717 ms | | | | | | | -[AKAppleIDAuthenticationInAppContext setPresenting
ViewController:0x10400ce10]
15717 ms | | | | | | | | -[AAUISignInViewController _akServiceType]
15717 ms | | | | | | | | -[AKAppleIDAuthenticationContext setServiceType:0x0
]
15717 ms | | | | | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecu
rityUpgrade:0x0]
15717 ms | | | | | | | | -[AKAppleIDAuthenticationContext setShouldUpdatePer
sistentServiceTokens:0x1]
15717 ms | | | | | | | | -[AAUISignInViewController _shouldAnticipatePiggyba
cking]
15717 ms | | | | | | | | | +[AAUIHeaderView requiresConstraintBasedLayout]
15718 ms | | | | | | | | | | -[AKAppleIDAuthenticationContext title]
15719 ms | | | | | | | | | | -[AKAppleIDAuthenticationContext reason]
15719 ms | | | | | | | | | | -[AAUISignInController serviceType]
15719 ms | | | | | | | | | | -[AAUISignInController _messageStringForService:0x0]
15719 ms | | | | | | | | | | -[AAUISignInController _isAuthenticatingPrimary:0x1ecb2df10]
15719 ms | | | | | | | | | | | -[AAUISignInViewController serviceType]
15719 ms | | | | | | | | | | | -[AAUISignInViewController _serviceOwnersManager]

```

```

15719 ms | | | | -[ACAccountStore init]
15719 ms | | | | -[ACAccountStore initWithRemoteEndpoint:0x0 effectiveBundleID:0x0]
15719 ms | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
15719 ms | | | | | -[ACTimedExpirer init]
15719 ms | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
15719 ms | | | | | -[ACTimedExpirer init]
15719 ms | | | | +[ACNotificationRebroadcaster sharedRebroadcaster]
15720 ms | | | | +[AACloudServiceOwner supportedServices]
15720 ms | | | | | +[AACloudServiceOwner _serviceTypeForPlatform]
15720 ms | | | | -[AACloudServiceOwner initWithAccountStore:0x2839291f0]
15720 ms | | | | -[AACloudServiceOwner accountForService:0x1ecb2df10]
15720 ms | | | | | +[AACloudServiceOwner _serviceTypeForPlatform]
15720 ms | | | | -[ACAccountStore aa_primaryAppleAccount]
15720 ms | | | | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x2810252f0 preloadedProperties:0x0 error:0x0]
15720 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
15720 ms | | | | | | | -[ACAccountStore connectionDelegate]
15720 ms | | | | | | | -[ACRemoteAccountStoreSession initWithListenerEndpoint:0x0 delegate:0x0]
15720 ms | | | | | | | | -[ACAccountStoreClientSideListener initWithDelegate:0x0]
15720 ms | | | | | | | | | -[ACAccountStore effectiveBundleID]
15720 ms | | | | | | | | | -[ACRemoteAccountStoreSession setEffectiveBundleID:0x0]
15720 ms | | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fd69750]
15720 ms | | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
15720 ms | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fd69730]
15720 ms | | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
15720 ms | | | | | | | | | | | -[ACTrackedXPCCConnection init]
15720 ms | | | | | | | | | | | +[ACRemoteAccountStoreInterface XPCIinterface]
15721 ms | | | | | | | | | | | | -[ACRemoteAccountStoreSession _lockdown_configureRemoteAccountStoreWithConnection:0x28233c1e0]
15729 ms | | | | | | | | | | | | -[AAUISignInViewController _setShouldAnticipatePiggybacking:0x1]
15729 ms | | | | | | | | | | | | -[AAUISignInViewController _setAkServiceType:0x1]
15740 ms | | | | | | | | | | | | | -[AAUISignInViewController loadView]
15740 ms | | | | | | | | | | | | | | +[AAUIBuddyView requiresConstraintBasedLayout]
15741 ms | | | | | | | | | | | | | | -[AAUISignInViewController viewDidLoad]
15741 ms | | | | | | | | | | | | | | | -[AAUISignInViewController authenticationContext]
15741 ms | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext init]
15741 ms | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext _initWithIdentifier:0x281644c40]
15741 ms | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext description]
15741 ms | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext setAuthenticationType:0x2]
15741 ms | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext setFirstTimeLogin:0x1]
15741 ms | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationInAppContext setPresentingViewController:0x10400ce10]
15741 ms | | | | | | | | | | | | | | | | | | | | | | -[AAUISignInViewController _akServiceType]
15741 ms | | | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext setServiceType:0x1]
15741 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrade:0x0]

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15741 ms | | -[AKAppleIDAuthenticationContext setShouldUpdatePersistentServiceTokens:0x1]
15741 ms | | -[AAUISignInViewController _shouldAnticipatePiggybacking]
15741 ms | | -[AKAppleIDAuthenticationContext setAnticipateEscrowAttempt:0x1]
15741 ms | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrade:0x1]
]
15741 ms | | -[AKAppleIDAuthenticationContext setSupportsPiggybacking:0x1]
15741 ms | -[AKAppleIDAuthenticationContext proxiedDevice]
15741 ms | -[AAUISignInViewController _cancelBarButtonItem]
15742 ms | -[AAUISignInViewController _nextBarButtonItem]
15742 ms | -[AAUISignInViewController _tableView]
15743 ms | -[AAUISignInViewController _updateConstraintsForTraitCollection:0x282b1aa00]
15744 ms -[AAUISignInViewController viewWillAppear:0x1]
15744 ms | -[AAUISignInViewController _beginObservingTextFieldDidChangeNotifications]
15744 ms | -[AAUISignInViewController _beginObservingKeyboardWillShowNotifications]
]
15744 ms | -[AAUISignInViewController _beginObservingSizeCategoryNotification]
15744 ms | -[AAUISignInViewController _setEnabled:0x1]
15744 ms | | -[AAUISignInViewController _hasValidCredentials]
15744 ms | | -[AAUISignInViewController _setUsernameCellWaiting:0x0]
15744 ms | +[AAUISignInViewController phoneNumberSupportedWithCompletion:0x16fd67ed8]
/* TID 0x1503 */
15744 ms +[AKURLBag sharedBag]
15744 ms -[AKURLBag isPhoneNumberSupportedConfig]
15744 ms | -[AKURLBag configurationAtKey:0x1e8b198f8]
15744 ms | | -[AKURLBag configurationAtKey:0x1e8b198f8 fromCache:0x0]
15744 ms | | | -[AKURLBag _configurationsFromCache:0x0 withError:0x0]
15744 ms | | | | -[AKURLBag _urlBagFromCache:0x0 withError:0x0]
15744 ms | | | | | -[AKURLBag bagProvider]
15744 ms | | | | | | -[AKAppleIDAuthenticationController init]
15744 ms | | | | | | | -[AKAppleIDAuthenticationController initWithIdentifier:0x0 daemonXPCEEndpoint:0x0]
15744 ms | | | | | | | | -[AKAppleIDAuthenticationContextManager initWithAuthenticationController:0x280781f40]
15744 ms | | | | | | | | | -[AKURLBag altDSID]
15744 ms | | | | | | | | | -[AKAppleIDAuthenticationController _urlBagFromCache:0x0 altDSID:0x0 withError:0x0]
15744 ms | | | | | | | | | | -[AKAppleIDAuthenticationController _authenticationServiceConnection]
15744 ms | | | | | | | | | | | +[AKAppleIDAuthenticationDaemonInterface XPCInterface]
15744 ms | | | | | | | | | | | +[AKAppleIDAuthenticationClientInterface XPCInterface]
/* TID 0x103 */
15752 ms -[AAUISignInViewController traitCollectionDidChange:0x282b29ce0]
15752 ms -[AAUISignInViewController _updateContentInsetWithHeight:0x282b69260]
15752 ms -[AAUISignInViewController _showOnlyPassword]
15752 ms -[AAUISignInViewController _usernameCell]
15756 ms -[AAUISignInViewController _tableHeaderView]
15756 ms | -[AAUISignInViewController _accountsHeaderView]
15757 ms | | -[AAUISignInViewController authenticationContext]
15757 ms | | | -[AKAppleIDAuthenticationContext init]
15757 ms | | | | -[AKAppleIDAuthenticationContext _initWithIdentifier:0x2

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816436c0]
15757 ms | | | | -[AKAppleIDAuthenticationContext description]
15757 ms | | | | -[AKAppleIDAuthenticationContext setAuthenticationType:0x2]
15757 ms | | | | -[AKAppleIDAuthenticationContext setFirstTimeLogin:0x1]
15757 ms | | | | -[AKAppleIDAuthenticationInAppContext setPresentingViewContro
ller:0x10400ce10]
15757 ms | | | | -[AAUISignInViewController _akServiceType]
15757 ms | | | | -[AKAppleIDAuthenticationContext setServiceType:0x1]
15757 ms | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrad
e:0x0]
15757 ms | | | | -[AKAppleIDAuthenticationContext setShouldUpdatePersistentSer
viceTokens:0x1]
15757 ms | | | | -[AAUISignInViewController _shouldAnticipatePiggybacking]
15757 ms | | | | -[AKAppleIDAuthenticationContext setAnticipateEscrowAttempt:0
x1]
15757 ms | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrad
e:0x1]
15757 ms | | | | -[AKAppleIDAuthenticationContext setSupportsPiggybacking:0x1]
15757 ms | -[AAUISignInViewController constrainView:0x10400d440 toFillHeaderFooter
View:0x1006a4610]
15760 ms |-[AAUISignInViewController _tableFooterView]
15760 ms | +[AAUIBuddyView requiresConstraintBasedLayout]
15760 ms | -[AAUISignInViewController allowsAccountCreation]
15760 ms | -[AAUIServiceIconView initWithFrame:0x0]
15760 ms | | +[AAUIServiceIconView iconNames]
15761 ms | -[AAUISignInViewController showServiceIcons]
15761 ms | -[AAUITextView initWithFrame:0x0]
15763 ms | | -[AAUITextView _commonInit]
15763 ms | -[AAUISignInViewController _stringForFooter]
15763 ms | | -[AAUISignInViewController _isGreenTeaCapable]
15765 ms | -[AAUISignInViewController privacyLinkIdentifiers]
15765 ms | -[AAUISignInViewController privacyLinkIdentifiers]
15765 ms | -[AAUISignInViewController privacyLinkIdentifiers]
15772 ms | -[AAUISignInViewController constrainView:0x100688290 toFillHeaderFooter
View:0x1006e63b0]
15779 ms |-[AAUIServiceIconView didMoveToWindow]
15800 ms |-[AAUISignInViewController _usernameCell]
16302 ms |-[AAUISignInController viewDidAppear:0x1]
/* TID 0x1507 */
60710 ms |-[ACTimedExpirer _cancelTimer]
60710 ms | | -[ACTimedExpirer _unsafeCancelTimer]
60710 ms |-[ACAccountStoreClientSideListener connectionWasInvalidated]
/* TID 0x103 */
91748 ms |+[NSError errorWithDomain:0x1f61f0160 code:0x2 userInfo:0x0]
91748 ms | | -[NSError initWithDomain:0x1f61f0160 code:0x2 userInfo:0x0]
91748 ms |+[NSError errorWithDomain:0x1f61f01c0 code:0x104 userInfo:0x28164c600]
91748 ms | | -[NSError initWithDomain:0x1f61f01c0 code:0x104 userInfo:0x28164c600]
91789 ms |+[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
91789 ms | | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
91839 ms |-[AAUISignInViewController _keyboardWillShow:0x2816aab40]
91839 ms | | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
91840 ms |-[AAUISignInViewController _keyboardWillShow:0x2816aab40]
91841 ms | | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
93554 ms |-[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRan
ge:0x0 replacementString:0x0]
93554 ms | | -[AAUISignInViewController _isPasswordFieldVisible]

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93554 ms | | -[AAUISignInViewController _showOnlyPassword]
93563 ms -[AAUISignInViewController _textFieldDidChange:0x281694e40]
93563 ms | | -[AAUISignInViewController _isValidCredentials]
93897 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x1 replacementString:0x0]
93897 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
93897 ms | | | -[AAUISignInViewController _showOnlyPassword]
93907 ms -[AAUISignInViewController _textFieldDidChange:0x281658920]
93908 ms | | -[AAUISignInViewController _isValidCredentials]
94231 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x3 replacementString:0x0]
94231 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
94231 ms | | | -[AAUISignInViewController _showOnlyPassword]
94240 ms -[AAUISignInViewController _textFieldDidChange:0x281658de0]
94240 ms | | -[AAUISignInViewController _isValidCredentials]
94496 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x5 replacementString:0x0]
94497 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
94497 ms | | | -[AAUISignInViewController _showOnlyPassword]
94505 ms -[AAUISignInViewController _textFieldDidChange:0x281658d20]
94505 ms | | -[AAUISignInViewController _isValidCredentials]
94767 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x6 replacementString:0x0]
94767 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
94767 ms | | | -[AAUISignInViewController _showOnlyPassword]
94778 ms -[AAUISignInViewController _textFieldDidChange:0x281261de0]
94778 ms | | -[AAUISignInViewController _isValidCredentials]
94827 ms -[AAUISignInViewController _textFieldDidChange:0x2816b05e0]
94827 ms | | -[AAUISignInViewController _isValidCredentials]
95134 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x0 replacementString:0x5]
95134 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
95134 ms | | | -[AAUISignInViewController _showOnlyPassword]
95137 ms -[AAUISignInViewController _textFieldDidChange:0x2816a2ca0]
95137 ms | | -[AAUISignInViewController _isValidCredentials]
95140 ms -[AAUISignInViewController _textFieldDidChange:0x2816a2e00]
95140 ms | | -[AAUISignInViewController _isValidCredentials]
95164 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x5 replacementString:0x0]
95165 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
95165 ms | | | -[AAUISignInViewController _showOnlyPassword]
95169 ms -[AAUISignInViewController _textFieldDidChange:0x28164ece0]
95169 ms | | -[AAUISignInViewController _isValidCredentials]
95482 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x6 replacementString:0x0]
95482 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
95482 ms | | | -[AAUISignInViewController _showOnlyPassword]
95492 ms -[AAUISignInViewController _textFieldDidChange:0x281659b60]
95493 ms | | -[AAUISignInViewController _isValidCredentials]
95863 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x7 replacementString:0x0]
95863 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
95863 ms | | | -[AAUISignInViewController _showOnlyPassword]
95876 ms -[AAUISignInViewController _textFieldDidChange:0x281262a40]
95876 ms | | -[AAUISignInViewController _isValidCredentials]
96164 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:

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ge:0x9 replacementString:0x0]
96164 ms | -[AAUISignInViewController _isPasswordFieldVisible]
96164 ms | | -[AAUISignInViewController _showOnlyPassword]
96173 ms -[AAUISignInViewController _textFieldDidChange:0x2816b9480]
96174 ms | -[AAUISignInViewController _hasValidCredentials]
96462 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xa replacementString:0x0]
96462 ms | -[AAUISignInViewController _isPasswordFieldVisible]
96462 ms | | -[AAUISignInViewController _showOnlyPassword]
96470 ms -[AAUISignInViewController _textFieldDidChange:0x28125c800]
96470 ms | -[AAUISignInViewController _hasValidCredentials]
96812 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xc replacementString:0x0]
96813 ms | -[AAUISignInViewController _isPasswordFieldVisible]
96813 ms | | -[AAUISignInViewController _showOnlyPassword]
96826 ms -[AAUISignInViewController _textFieldDidChange:0x28165ba80]
96826 ms | -[AAUISignInViewController _hasValidCredentials]
97081 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xd replacementString:0x0]
97081 ms | -[AAUISignInViewController _isPasswordFieldVisible]
97081 ms | | -[AAUISignInViewController _showOnlyPassword]
97091 ms -[AAUISignInViewController _textFieldDidChange:0x2816bc6c0]
97091 ms | -[AAUISignInViewController _hasValidCredentials]
97352 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x6 replacementString:0x8]
97353 ms | -[AAUISignInViewController _isPasswordFieldVisible]
97353 ms | | -[AAUISignInViewController _showOnlyPassword]
97355 ms -[AAUISignInViewController _textFieldDidChange:0x2816bd940]
97355 ms | -[AAUISignInViewController _hasValidCredentials]
97358 ms -[AAUISignInViewController _textFieldDidChange:0x2816beb40]
97358 ms | -[AAUISignInViewController _hasValidCredentials]
97385 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xc replacementString:0x0]
97385 ms | -[AAUISignInViewController _isPasswordFieldVisible]
97385 ms | | -[AAUISignInViewController _showOnlyPassword]
97393 ms -[AAUISignInViewController _textFieldDidChange:0x281644580]
97393 ms | -[AAUISignInViewController _hasValidCredentials]
97610 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xd replacementString:0x0]
97611 ms | -[AAUISignInViewController _isPasswordFieldVisible]
97611 ms | | -[AAUISignInViewController _showOnlyPassword]
97619 ms -[AAUISignInViewController _textFieldDidChange:0x2816b2d60]
97619 ms | -[AAUISignInViewController _hasValidCredentials]
97860 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xe replacementString:0x0]
97861 ms | -[AAUISignInViewController _isPasswordFieldVisible]
97861 ms | | -[AAUISignInViewController _showOnlyPassword]
97868 ms -[AAUISignInViewController _textFieldDidChange:0x2816bb220]
97869 ms | -[AAUISignInViewController _hasValidCredentials]
98077 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0xf replacementString:0x0]
98077 ms | -[AAUISignInViewController _isPasswordFieldVisible]
98077 ms | | -[AAUISignInViewController _showOnlyPassword]
98086 ms -[AAUISignInViewController _textFieldDidChange:0x2816b2dc0]
98086 ms | -[AAUISignInViewController _hasValidCredentials]
98632 ms -[AAUISignInViewController textField:0x1020abe00 shouldChangeCharactersInRange:0x10 replacementString:0x0]

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ge:0xd replacementString:0x4]
98632 ms | -[AAUISignInViewController _isPasswordFieldVisible]
98632 ms | | -[AAUISignInViewController _showOnlyPassword]
98635 ms -[AAUISignInViewController _textFieldDidChange:0x2816b1f40]
98635 ms | -[AAUISignInViewController _hasValidCredentials]
98638 ms -[AAUISignInViewController _textFieldDidChange:0x28164bf60]
98638 ms | -[AAUISignInViewController _hasValidCredentials]
99358 ms -[AAUISignInViewController _nextButtonSelected:0x10067b1a0]
99358 ms | -[AAUISignInViewController _attemptAuthentication]
99359 ms | | -[AAUISignInViewController _isPasswordFieldVisible]
99359 ms | | | -[AAUISignInViewController _showOnlyPassword]
99359 ms | | -[AAUISignInViewController authenticationContext]
99359 ms | | | -[AKAppleIDAuthenticationContext init]
99359 ms | | | | -[AKAppleIDAuthenticationContext initWithIdentifier:0x2
81647760]
99359 ms | | | | -[AKAppleIDAuthenticationContext description]
99359 ms | | | | -[AKAppleIDAuthenticationContext setAuthenticationType:0x2]
99359 ms | | | | -[AKAppleIDAuthenticationContext setFirstTimeLogin:0x1]
99360 ms | | | | -[AKAppleIDAuthenticationInAppContext setPresentingViewContro
ller:0x10400ce10]
99360 ms | | | | -[AAUISignInViewController _akServiceType]
99360 ms | | | | -[AKAppleIDAuthenticationContext setServiceType:0x1]
99360 ms | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrad
e:0x0]
99360 ms | | | | -[AKAppleIDAuthenticationContext setShouldUpdatePersistentSer
viceTokens:0x1]
99360 ms | | | | -[AAUISignInViewController _shouldAnticipatePiggybacking]
99360 ms | | | | -[AKAppleIDAuthenticationContext setAnticipateEscrowAttempt:0
x1]
99360 ms | | | | -[AKAppleIDAuthenticationContext setShouldOfferSecurityUpgrad
e:0x1]
99360 ms | | | | -[AKAppleIDAuthenticationContext setSupportsPiggybacking:0x1]
99360 ms | | | | -[AKAppleIDAuthenticationContext setNeedsCredentialRecovery:0x0]
99360 ms | | | | -[AKAppleIDAuthenticationContext setNeedsNewAppleID:0x0]
99361 ms | | | | -[AKAppleIDAuthenticationContext setUsername:0x281ce7930]
99361 ms | | | | -[AKAppleIDAuthenticationContext setPassword:0x0]
99361 ms | | | | -[AKAppleIDAuthenticationInAppContext setPasswordDelegate:0x10400
ce10]
99361 ms | | | | -[AAUISignInViewController _isRunningInSettings]
99361 ms | | | | -[AKAppleIDAuthenticationContext setAppProvidedContext:0x1e8b17118
]
99361 ms | | | | -[AAUISignInViewController _attemptAuthenticationWithContext:0x104
10b850]
99361 ms | | | | | -[AAUISignInViewController _setEnabled:0x0]
99390 ms | | | | | -[AAUISignInViewController _keyboardWillShow:0x28125d800
]
99390 ms | | | | | -[AAUISignInViewController _updateContentInsetWithH
eight:0x1f095f050]
99392 ms | | | | | -[AAUISignInViewController _keyboardWillHide:0x28125d800
]
99392 ms | | | | | -[AAUISignInViewController _updateContentInsetWithH
eight:0x1f095f050]
99393 ms | | | | | | -[AAUISignInViewController _setUsernameCellWaiting:0x1]
99394 ms | | | | | | -[AAUISignInViewController _showOnlyPassword]
99396 ms | | | | | -[AAUISignInController willAuthenticateWithContext:0x10410b85
0]

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99396 ms | | | +[AAPersonaUtility verifyAndFixPersonaIfNeeded:0x2807395c0 de
siredContext:0x281025010]
99396 ms | | | -[AKAppleIDAuthenticationController init]
99396 ms | | | | -[AKAppleIDAuthenticationController initWithIdentifier:0
x0 daemonXPCEndpoint:0x0]
99396 ms | | | | | -[AKAppleIDAuthenticationContextManager initWithAut
henticationController:0x280739600]
99396 ms | | | | | -[AKAppleIDAuthenticationController authenticateWithContext:0
x10410b850 completion:0x16fd69010]
99397 ms | | | | | | -[AKAppleIDAuthenticationContext authenticationType]
99397 ms | | | | | | -[AKAppleIDAuthenticationContext _proxiedAppBundleID]
99397 ms | | | | | | -[AKAppleIDAuthenticationContextManager registerContext:
0x10410b850]
99397 ms | | | | | | | -[AKAppleIDAuthenticationContext _identifier]
99397 ms | | | | | | | -[AKAppleIDAuthenticationContext debugDescription]
99397 ms | | | | | | | | -[AKAppleIDAuthenticationContext _shouldSkipInitial
ReachabilityCheck]
/* TID 0xc533 */
99397 ms | | | | | | | | -[AKAppleIDAuthenticationContext _identifier]
/* TID 0x103 */
99397 ms | | | | | | | | | -[AKAppleIDAuthenticationController _authenticationSer
viceConnection]
99397 ms | | | | | | | | | | +[AKAppleIDAuthenticationDaemonInterface XPCInterfa
ce]
99397 ms | | | | | | | | | | +[AKAppleIDAuthenticationClientInterface XPCInterfa
ce]
99397 ms | | | | | | | | | | | -[AKAppleIDAuthenticationContext _sanitizedCopy]
99398 ms | | | | | | | | | | | -[AKAppleIDAuthenticationContext init]
99398 ms | | | | | | | | | | | | -[AKAppleIDAuthenticationContext _initWithiden
tifier:0x28164e340]
99398 ms | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext description]
99398 ms | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext _capabilityForUIDi
splay]
99398 ms | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext _shouldSkipInitial
ReachabilityCheck]
99398 ms | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext isContextEligibleForSil
entAuth]
99398 ms | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext authenticationType
]
99398 ms | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext shouldPromptForPas
swordOnly]
99398 ms | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext isEphemeral]
99398 ms | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext isUsernameEditable
]
99398 ms | | | | | | | | | | | | | | | | | | | | -[AKAppleIDAuthenticationContext encodeWithCoder:0x11383
a600]
99399 ms | | | | | | | | | | | | | | | | | | | +[AAPersonaUtility personaConsistencyCheck:0x2807395c0]
99399 ms | | | | | | | | | | | | | | | | | | | | -[AAUISignInViewController _prewarmSignInFlowIfApplicable]
99399 ms | | | | | | | | | | | | | | | | | | | | | -[AAUISignInViewController showServiceIcons]
99399 ms | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController init]
99399 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore init]
99399 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore initWithRemoteEndpoint:0x0 effectiveBun
dleID:0x0]
99399 ms | | | | | | | | | | | | | | | | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
99399 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer init]
99399 ms | | | | | | | | | | | | | | | | | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]

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99399 ms | | | | | | | -[ACTimedExpirer init]
99399 ms | | | | | | +[ACNotificationRebroadcaster sharedRebroadcaster]
99400 ms | | | -[AASignInFlowController prewarmOperationsWithCompletion:0x0]
99400 ms | | | | +[AARemoteServer sharedServer]
99400 ms | | | | | -[AARemoteServer init]
99400 ms | | | | | | +[AAURLSession sharedSession]
99400 ms | | | | | | | -[AAURLSession _initRequiringSigning:0x0]
99402 ms | | | | | | | | -[AAURLSessionContext initRequiringSignin
g:0x0]
99402 ms | | | | | | | | | -[AKAppleIDSession initWithIdentifie
r:0x28164e980]
99402 ms | | | | | | | | | | -[AAURLSessionContext _initRequiring
Signing:0x0 appleIDSession:0x2807e81c0]
99405 ms | | | | | | | | | | | -[AKAppleIDSession initWithIdentifier:0x2
81cc6fa0]
99405 ms | | | | | | | | | | | | -[AAURLSessionContext _initRequiringSigni
ng:0x0 appleIDSession:0x280767d40]
99405 ms | | | | | | | | | | | | | -[AKAppleIDSession initWithIdentifier:0x2
81cc6fa0]
99405 ms | | | | | | | | | | | | | | -[AAURLSessionContext _initRequiringSigni
ng:0x0 appleIDSession:0x280762940]
99406 ms | | | | | | | | | | | | | | | -[AAURLSessionContext relevantHTTPStatusC
odes]
99406 ms | | | | | | | | | | | | | | | | -[AKAppleIDSession relevantHTTPStatu
sCodes]
99406 ms | | | | | | | | | | | | | | | | | +[AAURLSessionContext _relevantHTTPS
tatusCodes]
99406 ms | | | | | | | | | | | | | | | | | | +[AAURLSession sharedSigningSession]
99406 ms | | | | | | | | | | | | | | | | | | | -[AAURLSession _initRequiringSigning:0x1]
99406 ms | | | | | | | | | | | | | | | | | | | | -[AAURLSessionContext initRequiringSignin
g:0x1]
99406 ms | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDSession initWithIdentifie
r:0x28164ed40]
99406 ms | | | | | | | | | | | | | | | | | | | | | | -[AAURLSessionContext _initRequiring
Signing:0x1 appleIDSession:0x2807e81c0]
99406 ms | | | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDSession initWithIdentifier:0x2
81cc6e50]
99406 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AAURLSessionContext _initRequiringSigni
ng:0x1 appleIDSession:0x2807e8580]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDSession initWithIdentifier:0x2
81cc6e50]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[AAURLSessionContext _initRequiringSigni
ng:0x1 appleIDSession:0x2807e8fc0]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[AAURLSessionContext relevantHTTPStatusC
odes]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AKAppleIDSession relevantHTTPStatu
sCodes]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | +[AAURLSessionContext _relevantHTTPS
tatusCodes]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AARemoteServer configurationWithCompletion:0x16fd690b8]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AARemoteServer _configurationAndResponseWithCompletion
:0x16fd69058]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AARemoteServer _configurationCacheInvalidateingIfN
ecessary]
99407 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AARemoteServer _configurationLock_configurat
ionCacheInvalidateingIfNecessary]

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 /* TID 0xc533 */
99407 ms - [AARemoteServer _configurationCacheInvalidatingIfNecessary]
99407 ms | - [AARemoteServer _configurationLock_configurationCacheInvalidatingIfNec
essary]
99407 ms - [AARemoteServer _fetchConfigurationAndResponseWithCompletion:0x16fe7e890]
/* TID 0x103 */
99408 ms - [ACTimedExpirer _cancelTimer]
99408 ms | - [ACTimedExpirer _unsafeCancelTimer]
99408 ms - [ACTimedExpirer _cancelTimer]
99408 ms | - [ACTimedExpirer _unsafeCancelTimer]
/* TID 0xf107 */
99423 ms +[AKAppleIDAuthenticationContext supportsSecureCoding]
99423 ms - [AKAppleIDAuthenticationContextManager presentBasicLoginUIForContext:0x1203
2b360 completion:0x2820ba370]
99423 ms | - [AKAppleIDAuthenticationContextManager _clientSideContextForServerCont
ext:0x12032b360]
99423 ms | | - [AKAppleIDAuthenticationContext _identifier]
99423 ms | | - [AKAppleIDAuthenticationContext _identifier]
99423 ms | | - [AKAppleIDAuthenticationContext _updateWithValuesFromContext:0x12
032b360]
99423 ms | - [AKAppleIDAuthenticationInAppContext presentBasicLoginUIWithCompletion
:0x2820ba370]
/* TID 0x103 */
99423 ms - [AKAppleIDAuthenticationContext username]
99423 ms - [AKAppleIDAuthenticationInAppContext _passwordDelegate]
99424 ms - [AKAppleIDAuthenticationContext username]
99424 ms - [AKAppleIDAuthenticationInAppContext _passwordDelegate]
99424 ms - [AAUISignInViewController context:0x10410b850 needsPasswordWithCompletion:0
x16fd6a950]
99424 ms | - [AAUISignInViewController _setPasswordFieldHidden:0x0]
99424 ms | | - [AAUISignInViewController _isPasswordFieldVisible]
99424 ms | | | - [AAUISignInViewController _showOnlyPassword]
99424 ms | | | - [AAUISignInViewController _passwordFieldIndexPath]
99424 ms | | | - [AAUISignInViewController _showOnlyPassword]
99425 ms | | | - [AAUISignInViewController _passwordFieldIndexPath]
99425 ms | | | - [AAUISignInViewController _passwordCell]
99435 ms | - [AAUISignInViewController _setEnabled:0x1]
99435 ms | | - [AAUISignInViewController _hasValidCredentials]
99436 ms | | | - [AAUISignInViewController _setUsernameCellWaiting:0x0]
/* TID 0xc533 */
99454 ms | - [AAURLSession bodyTaskWithRequest:0x28100b030 completion:0x16fe7e740]
99454 ms | | - [AAURLSession dataTaskWithRequest:0x28100b030 completion:0x16fe7e
6c8]
99454 ms | | | - [AAURLSession _enqueueRequest:0x28100b030 completion:0x16fe7
e6c8]
99455 ms | | | | - [AKAppleIDSession initWithIdentifier:0x281cc6fa0]
99455 ms | | | | - [AAURLSessionContext _initRequiringSigning:0x0 appleIDS
ession:0x2807dddc0]
/* TID 0x10a03 */
99455 ms - [AAURLSession _sessionQueue_enqueueTask:0x129612b80 completion:0x281d62b80]
99469 ms - [AAURLSession URLSession:0x10401f340 dataTask:0x129612b80 didReceiveData:0x
2807d4a00]
99469 ms | - [AAURLSession _sessionQueue_updateTask:0x129612b80WithData:0x2807d4a0
0]
/* TID 0xc533 */
99470 ms - [AAURLSession URLSession:0x10401f340 task:0x129612b80 didCompleteWithError:

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0x0]
99470 ms | -[AAURLSession _sessionQueue_dequeueTask:0x129612b80 withResponse:0x281
6bae20 error:0x0]
99470 ms | | -[AAURLConfiguration _initWithDictionary:0x2816a15c0]
99470 ms | | +[AARemoteServerConfigurationCache cacheWithConfiguration:0x28100c
250 response:0x2816bae20]
99470 ms | | | -[AARemoteServerConfigurationCache initWithConfiguration:0x28
100c250 response:0x2816bae20]
99470 ms | | | -[AARemoteServer _setConfigurationCache:0x2816bb620]
99470 ms | | | -[AAURLConfiguration absintheEnable]
99470 ms | | | +[AAAabsintheSigner sharedSigner]
99470 ms | | | | -[AAAabsintheSigner initWithCacheTimeout:0xfffffffffffffff
c0]
99470 ms | | | | +[AAURLSession sharedSession]
99470 ms | | | -[AAAabsintheSigner signatureForData:0x281d70f90 completion:0x16fe7
e370]
99470 ms | | | | -[AAAabsintheSigner _contextWithCompletion:0x16fe7e2b0]
99470 ms | | | | | -[AAAabsintheSigner context]
99470 ms | | | | | -[AAAabsintheSigner _contextLock_contextInvalidating
IfNecessary]
99470 ms | | | | -[AAURLConfiguration baaInterval]
/* TID 0x10a03 */
99470 ms -[AAAabsintheSigner _contextQueue_contextWithCompletion:0x281d71410]
99471 ms | -[AAAabsintheSigner context]
99471 ms | | -[AAAabsintheSigner _contextLock_contextInvalidatingIfNecessary]
99471 ms | -[AAAabsintheSigner _fetchCertificateDataWithCompletion:0x1703f6808]
99471 ms | | -[AAURLSession dataTaskWithURL:0x28318bcf0 completion:0x1703f67a8]
99471 ms | | | -[AAURLSession dataTaskWithRequest:0x28100b070 completion:0x1
703f67a8]
99471 ms | | | | -[AAURLSession _enqueueRequest:0x28100b070 completion:0x
1703f67a8]
99471 ms | | | | | -[AKAppleIDSession initWithIdentifier:0x281cc6fa0]
99471 ms | | | | | -[AAURLSessionContext _initRequiringSigning:0x0 app
leIDSession:0x2807ddd80]
/* TID 0xc533 */
99471 ms -[AAURLSession _sessionQueue_enqueueTask:0x1006ee7e0 completion:0x281d62ac0]
/* TID 0x10a03 */
99471 ms +[AAURLProtocol canInitWithRequest:0x281008040]
99471 ms +[AAURLProtocol canonicalRequestForRequest:0x281008040]
/* TID 0x873f */
99472 ms -[AAURLProtocol initWithRequest:0x281008010 cachedResponse:0x0 client:0x281d
70960]
99472 ms -[AAURLProtocol startLoading]
99472 ms | +[AARemoteServer sharedServer]
99472 ms | -[AARemoteServer _configurationAndResponseWithCompletion:0x17050da48]
99472 ms | | -[AARemoteServer _configurationCacheInvalidatingIfNecessary]
99472 ms | | | -[AARemoteServer _configurationLock_configurationCacheInvalid
atingIfNecessary]
99472 ms | | | | -[AARemoteServerConfigurationCache creationDate]
99472 ms | | | | -[AARemoteServerConfigurationCache configuration]
99472 ms | | | | -[AARemoteServerConfigurationCache response]
99472 ms | | | | -[AAURLConfiguration urlForEndpoint:0x2816bb260]
99472 ms -[AAURLProtocol stopLoading]
/* TID 0x10a03 */
99481 ms -[AAURLSessionContext URLSession:0x10401f340 task:0x1006ee7e0 getAppleIDHea
dersForResponse:0x0 completionHandler:0x1703f6650]
99481 ms | -[AKAppleIDSession URLSession:0x10401f340 task:0x120360620 getAppleIDHe

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adersForResponse:0x0 completionHandler:0x1703f65c0]
99481 ms | | -[AKAppleIDSession _generateAppleIDHeadersForSessionTask:0x1203606
20 withCompletion:0x1703f6538]
99481 ms | | | -[AKAppleIDSession _nativeAnisetteController]
99481 ms | | | | -[AKAnisetteProvisioningController init]
99481 ms | | | | -[AKAnisetteProvisioningController anisetteDataForURLRequest:
0x28100c0d0 completion:0x1703f6428]
99481 ms | | | | | -[AKAnisetteProvisioningController fetchAnisetteDataAndP
rovisionIfNecessary:0x1 withCompletion:0x1703f6428]
99481 ms | | | | | | -[AKAnisetteProvisioningController _anisetteService
Connection]
99481 ms | | | | | | | +[AKAnisetteProvisioningDaemonInterface XPCInt
erface]
99481 ms | | | | | | | +[AKAnisetteProvisioningClientInterface XPCInt
erface]

/* TID 0x6f1f */
99500 ms +[AKAnisetteData supportsSecureCoding]
99500 ms -[AKAppleIDSession _genericAppleIDHeadersDictionaryForRequest:0x28100c0d0]
99502 ms | +[AKDevice currentDevice]
99502 ms | | -[AKDevice init]
99502 ms | | | -[AKDevice _setShouldUpdateToValue:0x0]
99502 ms | | | -[AKDevice description]
99502 ms | | | -[AKDevice setLinkType:0x1]
99502 ms | | | -[AKDevice _setShouldUpdateToValue:0x1]
99503 ms | -[AKDevice locale]
99503 ms -[AKAnisetteData machineID]
99503 ms -[AKAnisetteData oneTimePassword]
99503 ms -[AKAnisetteData routingInfo]
99503 ms +[AKDevice currentDevice]
99503 ms -[AKDevice localUserUUID]
99503 ms +[AKConfiguration sharedConfiguration]
99503 ms | -[AKConfiguration init]
99504 ms -[AKConfiguration shouldAllowTestApplication]
99504 ms | -[AKConfiguration configurationValueForKey:0x1e8b17ff8]
99504 ms -[AKAppleIDSession _pairedDeviceAnisetteController]
99504 ms -[AAURLSessionContext _additionalHeadersForRequest:0x28100c260 completion:0x
16fdf2270]
99504 ms | +[AADeviceInfo currentInfo]
/* TID 0x1517 */
99504 ms +[NSError _web_errorWithDomain:0x1f61f0440 code:0xfffffffffffffc19 URL:0x283
ceb000]
99504 ms | -[NSError _web_initWithDomain_nowarn:0x1f61f0440 code:0xfffffffffffffc1
9 URL:0x283ceb000]
99508 ms | | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userI
nfo:0x2816bbb20]
99508 ms -[NSError userInfo]
99508 ms -[NSError domain]
99508 ms -[NSError code]
99508 ms -[NSError domain]
99508 ms -[NSError code]
99508 ms -[NSError userInfo]
99508 ms -[NSError userInfo]
99508 ms -[NSError domain]
99508 ms -[NSError code]
99508 ms +[NSError errorWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0x281
6bffa0]

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99508 ms | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0
x2816bffa0]
99508 ms -[NSError code]
99508 ms -[NSError code]
99508 ms -[NSError description]
99508 ms | -[NSError userInfo]
99508 ms | -[NSError domain]
99508 ms | -[NSError userInfo]
99508 ms | -[NSError domain]
99508 ms | -[NSError userInfo]
99508 ms | -[NSError userInfo]
99508 ms | -[NSError domain]
99508 ms | -[NSError code]
/* TID 0x6f1f */
99511 ms +[AADeviceInfo clientInfoHeader]
99511 ms | | -[AADeviceInfo productType]
99511 ms | | -[AADeviceInfo osName]
99511 ms | | +[AADeviceInfo osVersion]
99511 ms | | -[AADeviceInfo buildVersion]
99513 ms +[AAPreferences isExperimentalModeEnabled]
99513 ms | +[AADeviceInfo isInternalBuild]
99513 ms | -[AAURLSessionContext requiresSigning]
/* TID 0x103 */
99780 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99780 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99780 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99780 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99794 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99794 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
99797 ms -[AAUISignInViewController _keyboardWillShow:0x28169c800]
99797 ms | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
99797 ms -[AAUISignInViewController _keyboardWillShow:0x28169c800]
99797 ms | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
100321 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
100321 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
/* TID 0x10a03 */
100579 ms -[AAURLSession URLSession:0x10401f340 dataTask:0x1006ee7e0 didReceiveData:0x
280701280]
100580 ms | -[AAURLSession _sessionQueue_updateTask:0x1006ee7e0 withData:0x28070128
0]
100581 ms -[AAURLSession URLSession:0x10401f340 task:0x1006ee7e0 didCompleteWithError:
0x0]
100581 ms | -[AAURLSession _sessionQueue_dequeueTask:0x1006ee7e0 withResponse:0x281
65acc0 error:0x0]
100581 ms | | +[AAAbsintheSigner _contextCreationBlock]
100581 ms | | -[AAAbsintheContext init]
100582 ms | | -[AAAbsintheContext TgBfo02wtF5L:0x101068e00 error:0x1703f6518]
100651 ms | | -[AAAbsintheSigner _fetchSessionInfoWithRequestInfo:0x28169c3e0 co
mpletion:0x1703f64e8]
100652 ms | | | -[AAURLSession bodyTaskWithRequest:0x28100c480 completion:0x1
703f64e8]
100652 ms | | | | -[AAURLSession dataTaskWithRequest:0x28100c480 completio
n:0x1703f63f8]
100652 ms | | | | | -[AAURLSession _enqueueRequest:0x28100c480 completi
on:0x1703f63f8]
100652 ms | | | | | | -[AKAppleIDSession initWithIdentifier:0x281cc6

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fao]
100652 ms | | | | | | -[AAURLSessionContext _initRequiringSigning:0x
0 appleIDSession:0x2807d7340]
100652 ms -[AAURLSession _sessionQueue_enqueueTask:0x1203690e0 completion:0x281d751d0]
/* TID 0x6f1f */
100652 ms +[AAURLProtocol canInitWithRequest:0x281008710]
100652 ms +[AAURLProtocol canonicalRequestForRequest:0x281008710]
/* TID 0x873f */
100652 ms -[AAURLProtocol initWithRequest:0x281009ad0 cachedResponse:0x0 client:0x281d
060d0]
100652 ms -[AAURLProtocol startLoading]
100652 ms | +[AARemoteServer sharedServer]
100652 ms | -[AARemoteServer _configurationAndResponseWithCompletion:0x17050da48]
100652 ms | | -[AARemoteServer _configurationCacheInvalidatingIfNecessary]
100652 ms | | | -[AARemoteServer _configurationLock_configurationCacheInvalid
atingIfNecessary]
100652 ms | | | | -[AARemoteServerConfigurationCache creationDate]
100652 ms | | | -[AARemoteServerConfigurationCache configuration]
100652 ms | | | -[AARemoteServerConfigurationCache response]
100652 ms | | | -[AAURLConfiguration urlForEndpoint:0x281690140]
100652 ms -[AAURLProtocol stopLoading]
/* TID 0x1517 */
100653 ms -[AAURLSessionContext URLSession:0x10401f340 task:0x1203690e0 getAppleIDHe
dersForResponse:0x0 completionHandler:0x170482650]
100653 ms | -[AKAppleIDSession URLSession:0x10401f340 task:0x129628bd0 getAppleIDHe
dersForResponse:0x0 completionHandler:0x1704825c0]
100653 ms | | -[AKAppleIDSession _generateAppleIDHeadersForSessionTask:0x129628b
d0 withCompletion:0x170482538]
100653 ms | | | -[AKAppleIDSession _nativeAnisetteController]
100653 ms | | | | -[AKAnisetteProvisioningController init]
100653 ms | | | | -[AKAnisetteProvisioningController anisetteDataForURLRequest:
0x281008810 completion:0x170482428]
100653 ms | | | | | -[AKAnisetteProvisioningController fetchAnisetteDataAndP
rovisionIfNecessary:0x1 withCompletion:0x170482428]
100653 ms | | | | | | -[AKAnisetteProvisioningController _anisetteService
Connection]
100653 ms | | | | | | +[AKAnisetteProvisioningDaemonInterface XPCInt
erface]
100653 ms | | | | | | +[AKAnisetteProvisioningClientInterface XPCInt
erface]
/* TID 0x6f1f */
100657 ms +[AKAnisetteData supportsSecureCoding]
100657 ms -[AKAppleIDSession _genericAppleIDHeadersDictionaryForRequest:0x281008810]
100657 ms | +[AKDevice currentDevice]
100657 ms | -[AKDevice locale]
100657 ms -[AKAnisetteData machineID]
100657 ms -[AKAnisetteData oneTimePassword]
100657 ms -[AKAnisetteData routingInfo]
100657 ms +[AKDevice currentDevice]
100657 ms -[AKDevice localUserUUID]
100657 ms +[AKConfiguration sharedConfiguration]
100657 ms -[AKConfiguration shouldAllowTestApplication]
100657 ms | -[AKConfiguration configurationValueForKey:0x1e8b17ff8]
100657 ms -[AKAppleIDSession _pairedDeviceAnisetteController]
100657 ms -[AAURLSessionContext _additionalHeadersForRequest:0x281008640 completion:0x
16fdf2270]

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100657 ms | -[AAURLConnection requiresSigning]
 /* TID 0x1517 */
100657 ms +[NSError _web_errorWithDomain:0x1f61f0440 code:0xfffffffffffffff19 URL:0x283
98c0e0]
100657 ms | -[NSError _web_initWithDomain_nowarn:0x1f61f0440 code:0xfffffffffffffff19 URL:0x28398c0e0]
100657 ms | | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffff19 userInfo:0x28169c340]
100657 ms -[NSError userInfo]
100658 ms -[NSError domain]
100658 ms -[NSError code]
100658 ms -[NSError domain]
100658 ms -[NSError code]
100658 ms -[NSError userInfo]
100658 ms -[NSError userInfo]
100658 ms -[NSError domain]
100658 ms -[NSError code]
100658 ms +[NSError errorWithDomain:0x1f61f0440 code:0xfffffffffffffff19 userInfo:0x281
69c7a0]
100658 ms | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffff19 userInfo:0
x28169c7a0]
100658 ms -[NSError code]
100658 ms -[NSError code]
100658 ms -[NSError description]
100658 ms | -[NSError userInfo]
100658 ms | -[NSError domain]
100658 ms | -[NSError userInfo]
100658 ms | -[NSError domain]
100658 ms | -[NSError userInfo]
100658 ms | -[NSError userInfo]
100658 ms | -[NSError domain]
100658 ms | -[NSError code]
/* TID 0x103 */
100683 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
100683 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
100684 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
100684 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
/* TID 0x1517 */
100849 ms -[AAURLConnection URLSession:0x10401f340 dataTask:0x1203690e0 didReceiveData:0x
28073adc0]
100849 ms | -[AAURLConnection _sessionQueue_updateTask:0x1203690e0 withData:0x28073adc
0]
/* TID 0x6f1f */
100850 ms -[AAURLConnection URLSession:0x10401f340 task:0x1203690e0 didCompleteWithError:
0x0]
100850 ms | -[AAURLConnection _sessionQueue_dequeueTask:0x1203690e0 withResponse:0x281
658520 error:0x0]
100850 ms | | -[AAABsintheContext R6XtwiyjL3q2:0x2816470e0 error:0x16fdf24c8]
100856 ms | | -[AAABsintheSigner setContext:0x281025c00]
100856 ms | | | +[AAABsintheSignerContextCache cacheWithContext:0x281025c00]
100856 ms | | | -[AAABsintheSignerContextCache initWithContext:0x281025c
00]
100856 ms | | | -[AAABsintheSigner _contextLock_enqueueContextCleanup]
100856 ms | | | | -[AAABsintheSigner cacheTimeout]
100857 ms | | -[AAABsintheContext cao1NI5PNJBn:0x281d70f90 error:0x16fdf23f8]
/* TID 0x103 */

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101013 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
101013 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
101015 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
101015 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
101609 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x0 replacementString:0x0]
101617 ms -[AAUISignInViewController _textFieldDidChange:0x2816be1e0]
101617 ms | -[AAUISignInViewController _isValidCredentials]
102121 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102122 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102124 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102124 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102577 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x1 replacementString:0x0]
102588 ms -[AAUISignInViewController _textFieldDidChange:0x28164f8e0]
102588 ms | -[AAUISignInViewController _isValidCredentials]
102924 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102924 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102926 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
102926 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
103292 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
103293 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
103294 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
103294 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
103991 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x2 replacementString:0x0]
104004 ms -[AAUISignInViewController _textFieldDidChange:0x2816b0640]
104004 ms | -[AAUISignInViewController _isValidCredentials]
104028 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
104028 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
104030 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
104030 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
104474 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x3 replacementString:0x0]
104488 ms -[AAUISignInViewController _textFieldDidChange:0x2812fe3e0]
104488 ms | -[AAUISignInViewController _isValidCredentials]
104974 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x4 replacementString:0x0]
104988 ms -[AAUISignInViewController _textFieldDidChange:0x28125e020]
104988 ms | -[AAUISignInViewController _isValidCredentials]
105393 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x5 replacementString:0x0]
105406 ms -[AAUISignInViewController _textFieldDidChange:0x2812638e0]
105406 ms | -[AAUISignInViewController _isValidCredentials]
105674 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x6 replacementString:0x0]
105686 ms -[AAUISignInViewController _textFieldDidChange:0x28165aa40]
105686 ms | -[AAUISignInViewController _isValidCredentials]
105907 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x7 replacementString:0x0]
105920 ms -[AAUISignInViewController _textFieldDidChange:0x28125eb60]
105920 ms | -[AAUISignInViewController _isValidCredentials]
106173 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x8 replacementString:0x0]
106186 ms -[AAUISignInViewController _textFieldDidChange:0x2812631c0]
106186 ms | -[AAUISignInViewController _isValidCredentials]

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106490 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0x9 replacementString:0x0]
106504 ms -[AAUISignInViewController _textFieldDidChange:0x28125e300]
106505 ms | -[AAUISignInViewController _isValidCredentials]
106858 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
106858 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
106860 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
106860 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
107456 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0xa replacementString:0x0]
107470 ms -[AAUISignInViewController _textFieldDidChange:0x2816b2fa0]
107470 ms | -[AAUISignInViewController _isValidCredentials]
107773 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
107773 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
107775 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
107775 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
108325 ms -[AAUISignInViewController textField:0x10186c200 shouldChangeCharactersInRange:0xb replacementString:0x0]
108339 ms -[AAUISignInViewController _textFieldDidChange:0x2816a8640]
108339 ms | -[AAUISignInViewController _isValidCredentials]
109055 ms -[AAUISignInViewController _nextButtonSelected:0x10067b1a0]
109055 ms | -[AAUISignInViewController _attemptAuthentication]
109055 ms | | -[AAUISignInViewController _setEnabled:0x0]
109078 ms | | | -[AAUISignInViewController _keyboardWillShow:0x2816a8240]
109078 ms | | | | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
109079 ms | | | | -[AAUISignInViewController _keyboardWillHide:0x28169c3e0]
109079 ms | | | | -[AAUISignInViewController _updateContentInsetWithHeight:0x1f095f050]
109081 ms | | | | -[AAUISignInViewController _setUsernameCellWaiting:0x1]
109081 ms | | | | | -[AAUISignInViewController _showOnlyPassword]
109081 ms | | | -[AAUISignInViewController _prewarmSignInFlowIfApplicable]
109081 ms | | | | -[AAUISignInViewController showServiceIcons]
109081 ms | | | | -[AASignInFlowController init]
109081 ms | | | | | -[ACAccountStore init]
109081 ms | | | | | | -[ACAccountStore initWithRemoteEndpoint:0x0 effectiveBundleID:0x0]
109081 ms | | | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
109081 ms | | | | | | | | -[ACTimedExpirer init]
109081 ms | | | | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
109081 ms | | | | | | | | | -[ACTimedExpirer init]
109081 ms | | | | | | | | +[ACNotificationRebroadcaster sharedRebroadcaster]
109081 ms | | | | | | | -[AASignInFlowController prewarmOperationsWithCompletion:0x0]
109081 ms | | | | | | | | +[AARemoteServer sharedServer]
109081 ms | | | | | | | | -[AARemoteServer configurationWithCompletion:0x16fd690b8]
109081 ms | | | | | | | | -[AARemoteServer _configurationAndResponseWithCompletion:0x16fd69058]
109081 ms | | | | | | | | -[AARemoteServer _configurationCacheInvalidateingIfNecessary]
109081 ms | | | | | | | | | -[AARemoteServer _configurationLock_configurationCacheInvalidateingIfNecessary]
109081 ms | | | | | | | | | | -[AARemoteServerConfigurationCache createOnDate]
109081 ms | | | | | | | | | | -[AARemoteServerConfigurationCache configuration]
109081 ms | | | | | | | | | | -[AARemoteServerConfigurationCache response]
109081 ms | | | | | | | | | | -[AAURLConfiguration absintheEnable]

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109081 ms | | | | | +[AAAbsintheSigner sharedSigner]
109081 ms | | | | | -[AAAbsintheSigner signatureForData:0x281d763d0 com
pletion:0x16fd68e80]
109081 ms | | | | | -[AAAbsintheSigner _contextWithCompletion:0x16
fd68dc0]
109081 ms | | | | | | | -[AAAbsintheSigner context]
109081 ms | | | | | | | -[AAAbsintheSigner _contextLock_cont
extInvalidatingIfNecessary]
109081 ms | | | | | | | | | -[AAAbsintheSignerContextCache
creationDate]
109082 ms | | | | | | | | | -[AAAbsintheSignerContextCache
context]
109082 ms | | | | | | | | | -[AAAbsintheContext cao1NI5PNJBn:0x281d76
3d0 error:0x16fd68d08]
109085 ms | | | | | | | -[AAURLConfiguration baaInterval]
109085 ms | -[ACTimedExpirer _cancelTimer]
109085 ms | | -[ACTimedExpirer _unsafeCancelTimer]
109085 ms | -[ACTimedExpirer _cancelTimer]
109085 ms | | -[ACTimedExpirer _unsafeCancelTimer]
109602 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
109602 ms | | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
/* TID 0x6f1f */
110997 ms | -[AKAppleIDAuthenticationContextManager shouldContinueWithAuthenticationResu
lts:0x2816b3020 error:0x0 forContextID:0x2816b3500 completion:0x283925d50]
110998 ms | | -[AKAppleIDAuthenticationContextManager delegate]
/* TID 0x103 */
111116 ms | -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d75080]
111117 ms | -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283c263
00 completion:0x16fd69d98]
111117 ms | | -[ACAccountStore remoteAccountStoreSession]
111117 ms | | | -[ACAccountStore connectionDelegate]
111117 ms | | | -[ACRemoteAccountStoreSession initWithListenerEndpoint:0x0 delegat
e:0x0]
111117 ms | | | | -[ACAccountStoreClientSideListener initWithDelegate:0x0]
111117 ms | | | | -[ACAccountStore effectiveBundleID]
111117 ms | | | | -[ACRemoteAccountStoreSession setEffectiveBundleID:0x0]
111117 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
111117 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111117 ms | | | | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
111117 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0x6f1f */
111117 ms | -[ACAccountStore dmc_visibleRemoteManagementAccounts]
/* TID 0x103 */
111117 ms | | | | -[ACTrackedXPCCConnection init]
111117 ms | | | | +[ACRemoteAccountStoreInterface XPCInterface]
111118 ms | | | | -[ACRemoteAccountStoreSession _locked_configureRemoteAccounts
toreWithConnection:0x282340820]
111119 ms | -[AMSAccountsChangedObservable _accountStoreDidChange:0x281659980]
111119 ms | | +[AMSLogConfig sharedAccountsConfig]
111119 ms | | -[AMSLogConfig OSLogObject]
111119 ms | | | -[AMSLogConfig propertyAccessQueue]
111119 ms | | | -[AMSLogConfig backingOSLogObject]
/* TID 0x6f1f */
111119 ms | | -[ACAccountStore dmc_RemoteManagementAccounts]
111119 ms | | | -[ACAccountStore dmc_RemoteManagementAccountType]

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111119 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
111119 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
111119 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
111120 ms | | | | | | -[ACAccountStore connectionDelegate]
111120 ms | | | | | | -[ACRemoteAccountStoreSession initWithListener
Endpoint:0x0 delegate:0x0]
111120 ms | | | | | | | -[ACAccountStoreClientSideListener initWi
thDelegate:0x0]
111120 ms | | | | | | | | -[ACAccountStore effectiveBundleID]
111120 ms | | | | | | | | -[ACRemoteAccountStoreSession setEffectiveBund
leID:0x0]
 /* TID 0xc533 */
111120 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
111120 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
111120 ms | -[ACAccountStore aa_primaryAppleAccount]
111120 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x28100d400 pr
eloadedProperties:0x0 error:0x0]
111120 ms | | | -[ACAccountStore remoteAccountStoreSession]
 /* TID 0x6f1f */
111121 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fdf24c
0]
111121 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111121 ms | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fdf24a0]
111121 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
111121 ms | | | | | | | | -[ACTrackedXPCCConnection init]
 /* TID 0xc533 */
111121 ms | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e410]
111121 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111121 ms | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxywit
hErrorHandler:0x16fe7e3f0]
111121 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
 /* TID 0x6f1f */
111121 ms | | | | | | | | +[ACRemoteAccountStoreInterface XPCInterf
ace]
111121 ms | | | | | | | | -[ACRemoteAccountStoreSession _locked_con
figureRemoteAccountStoreWithConnection:0x282342080]
 /* TID 0xc533 */
111139 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
111139 ms | +[AMSUnitTests isRunningUnitTests]
 /* TID 0x6f1f */
111146 ms | | | | | | +[ACAccountType supportsSecureCoding]
 /* TID 0xc533 */
111147 ms | | +[ACAccountStore defaultStore]
 /* TID 0x6f1f */
111147 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111147 ms | | | | | | -[ACAccountType description]
111147 ms | | | | | | | -[ACAccountType accountTypeDescription]
111147 ms | | | | | | | | -[ACAccountType identifier]
 /* TID 0xc533 */
111148 ms -[ACAccountStore ams_activeiTunesAccount]
111148 ms | -[ACAccountStore ams_mediaType]
111148 ms | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111148 ms | | | +[AMSAccountStoreCache cacheAccessQueue]

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111148 ms | | | | +[AMSAccountStoreCache cache]
111148 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]
/* TID 0x6f1f */
111148 ms | | | -[ACAccountStore accountsWithAccountType:0x2839f4620]
111148 ms | | | | -[ACAccountType description]
111148 ms | | | | | -[ACAccountType accountTypeDescription]
111148 ms | | | | | -[ACAccountType identifier]
111148 ms | | | -[ACAccountStore remoteAccountStoreSession]
111148 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fdf2470]
111148 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111148 ms | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fdf2450]
111148 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
111148 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
/* TID 0x6f1f */
111148 ms | | | | -[ACAccountType encodeWithCoder:0x101a88e00]
111148 ms | | | | | -[ACAccountType identifier]
/* TID 0xc533 */
111148 ms | | | | | +[AMSUnitTests isRunningUnitTests]
111148 ms | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
/* TID 0x6f1f */
111148 ms | | | | | | -[ACAccountType accountTypeDescription]
111148 ms | | | | | | -[ACAccountType objectID]
111149 ms | | | | | | -[ACAccountType visibility]
111149 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
111149 ms | | | | | | -[ACAccountType supportsAuthentication]
111149 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
111149 ms | | | | | | -[ACAccountType owningBundleID]
111149 ms | | | | | | -[ACAccountType isObsolete]
/* TID 0xc533 */
111149 ms | | | -[ACAccountStore ams_iTunesAccounts]
111149 ms | | | | -[ACAccountStore ams_mediaType]
111149 ms | | | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111149 ms | | | | | | +[AMSAccountStoreCache cacheAccessQueue]
111149 ms | | | | | | +[AMSAccountStoreCache cache]
111149 ms | | | | | | | +[AMSAccountStoreCache cacheAccessQueue]
111149 ms | | | | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
111149 ms | | | | | | | | +[AMSUnitTests isRunningUnitTests]
111149 ms | | | | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
111149 ms | | | | | | | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0]
]
111149 ms | | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e7418878 options:0x1 error:0x16fe7e5c8]
111149 ms | | | | | -[ACAccountStore _ams_accountTypeWithAccountTypeIdentifier:0x1e7418878 error:0x16fe7e5c8]
111149 ms | | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e7418878 error:0x16fe7e4e8]
111149 ms | | | | | | | -[ACAccountStore remoteAccountStoreSession]
111149 ms | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e280]
111149 ms | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111149 ms | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fe7e260]
111149 ms | | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
111152 ms | | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]

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111152 ms | | | | | -[ACAccountType description]
111152 ms | | | | | | -[ACAccountType accountTypeDescription]
111152 ms | | | | | | -[ACAccountType identifier]
111152 ms | | | -[ACAccountStore _ams_accountsWithAccountType:0x2839f4540 options:0x1 error:0x16fe7e5c8]
111152 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839f4540 options:0x1 error:0x16fe7e548]
111152 ms | | | | | -[ACAccountType description]
111152 ms | | | | | | -[ACAccountType accountTypeDescription]
111152 ms | | | | | | -[ACAccountType identifier]
111152 ms | | | | -[ACAccountStore remoteAccountStoreSession]
111152 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e210]
111152 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111152 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fe7e1f0]
111152 ms | | | | | -[ACRemoteAccountStoreSession _connection]
111153 ms | | | | | -[ACAccountType encodeWithCoder:0x101a88e00]
111153 ms | | | | | | -[ACAccountType identifier]
111153 ms | | | | | | -[ACAccountType accountTypeDescription]
111153 ms | | | | | | -[ACAccountType objectID]
111153 ms | | | | | | -[ACAccountType visibility]
111153 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
111153 ms | | | | | | -[ACAccountType supportsAuthentication]
111153 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
111153 ms | | | | | | -[ACAccountType owningBundleID]
111153 ms | | | | | | -[ACAccountType isObsolete]
111163 ms | | | | +[ACAccount supportsSecureCoding]
111163 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
111163 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
111163 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
111163 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
111163 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
111163 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
111164 ms | | | | -[ACAccount description]
111164 ms | | | | | -[ACAccount username]
111164 ms | | | | | | -[ACAccount _useParentForCredentials]
111164 ms | | | | | | | -[ACAccount authenticationType]
111164 ms | | | | | | -[ACAccount identifier]
111164 ms | | | | -[ACAccount description]
111164 ms | | | | | -[ACAccount username]
111164 ms | | | | | | -[ACAccount _useParentForCredentials]
111164 ms | | | | | | | -[ACAccount authenticationType]
111164 ms | | | | | | -[ACAccount identifier]
111164 ms | | | | -[ACAccount description]
111164 ms | | | | | -[ACAccount username]
111164 ms | | | | | | -[ACAccount _useParentForCredentials]
111164 ms | | | | | | | -[ACAccount authenticationType]
111164 ms | | | | | | -[ACAccount identifier]
111164 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111164 ms | | | -[ACAccount isActive]
111164 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111164 ms | | | -[ACAccount isActive]
111164 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111164 ms | | | -[ACAccount isActive]
111186 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith

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Identifier:0x2807dbf00]
/* TID 0x103 */
111186 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28165a440]
111186 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dbf00]
111199 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d26580]
111199 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283cd60
00 completion:0x16fd69d98]
111199 ms | -[ACAccountStore remoteAccountStoreSession]
111199 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
111199 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
111199 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
111199 ms | | -[ACRemoteAccountStoreSession _connection]
111199 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x28165a440]
111199 ms | +[AMSLogConfig sharedAccountsConfig]
111199 ms | -[AMSLogConfig OSLogObject]
111199 ms | | -[AMSLogConfig propertyAccessQueue]
111199 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0x11c23 */
111201 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]
111201 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
111201 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
111201 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
111201 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
111201 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
111201 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1703f64c
0]
111201 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xc533 */
111201 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
111201 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
111201 ms | -[ACAccountStore aa_primaryAppleAccount]
111201 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x28100d400 pr
eloadedProperties:0x0 error:0x0]
111201 ms | | | -[ACAccountStore remoteAccountStoreSession]
111201 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e410]
111201 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111201 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x16fe7e3f0]
111201 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0x11c23 */
111201 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObj
ectProxyWithErrorHandler:0x1703f64a0]
111201 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
111202 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
111202 ms | +[AMSUnitTests isRunningUnitTests]
111202 ms | +[ACAccountStore defaultStore]
111202 ms -[ACAccountStore ams_activeiTunesAccount]
111202 ms | -[ACAccountStore ams_mediaType]
111202 ms | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111202 ms | | | +[AMSAccountStoreCache cacheAccessQueue]
111202 ms | | | | +[AMSAccountStoreCache cache]
111202 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]

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111202 ms | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
111202 ms | | | | +[AMSUnitTests isRunningUnitTests]
111202 ms | | | | +[AMSProcessInfo defaultMediaAccessQueue]
111202 ms | -[ACAccountStore ams_iTunesAccounts]
111203 ms | | -[ACAccountStore ams_mediaType]
111203 ms | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111203 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
111203 ms | | | | +[AMSAccountStoreCache cache]
111203 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]
111203 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
111203 ms | | | | | +[AMSUnitTests isRunningUnitTests]
111203 ms | | | | | +[AMSProcessInfo defaultMediaAccessQueue]
111203 ms | | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0
]
111203 ms | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e741887
8 options:0x1 error:0x16fe7e5c8]
111203 ms | | | | -[ACAccountStore _ams_accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e5c8]
111203 ms | | | | | -[ACAccountStore accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e4e8]
111203 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
111203 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e28
0]
111203 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111203 ms | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e260]
111203 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0x11c23 */
111203 ms | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111203 ms | | | | | | | | | -[ACAccountType description]
111203 ms | | | | | | | | | | -[ACAccountType accountTypeDescription]
111203 ms | | | | | | | | | | -[ACAccountType identifier]
/* TID 0xc533 */
111203 ms | | | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111203 ms | | | | | | | | | | -[ACAccountType description]
111203 ms | | | | | | | | | | | -[ACAccountType accountTypeDescription]
111203 ms | | | | | | | | | | | -[ACAccountType identifier]
111203 ms | | | | | | | | | | -[ACAccountStore _ams_accountsWithAccountType:0x283996e60 opt
ions:0x1 error:0x16fe7e5c8]
111203 ms | | | | | | | | | | | -[ACAccountStore accountsWithAccountType:0x283996e60 opt
ions:0x1 error:0x16fe7e548]
111203 ms | | | | | | | | | | | | -[ACAccountType description]
111203 ms | | | | | | | | | | | | | -[ACAccountType accountTypeDescription]
111203 ms | | | | | | | | | | | | | -[ACAccountType identifier]
111203 ms | | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
111203 ms | | | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e21
0]
111203 ms | | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0x11c23 */
111203 ms | | | | | | | | | | | | | -[ACAccountStore accountsWithAccountType:0x283928310]
111203 ms | | | | | | | | | | | | | | -[ACAccountType description]
111203 ms | | | | | | | | | | | | | | | -[ACAccountType accountTypeDescription]
111203 ms | | | | | | | | | | | | | | | -[ACAccountType identifier]
111203 ms | | | | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
/* TID 0xc533 */
111203 ms | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje

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ctProxyWithErrorHandler:0x16fe7e1f0]
111203 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
 /* TID 0x11c23 */
111203 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1703f6470]
111203 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
 /* TID 0xc533 */
111203 ms | | | | | -[ACAccountType encodeWithCoder:0x10225c800]
111203 ms | | | | | -[ACAccountType identifier]
111203 ms | | | | | -[ACAccountType accountTypeDescription]
111203 ms | | | | | -[ACAccountType objectID]
111203 ms | | | | | -[ACAccountType visibility]
111203 ms | | | | | -[ACAccountType credentialProtectionPolicy]
111203 ms | | | | | -[ACAccountType supportsAuthentication]
111203 ms | | | | | -[ACAccountType supportsMultipleAccounts]
111203 ms | | | | | -[ACAccountType owningBundleID]
111204 ms | | | | | -[ACAccountType isObsolete]

 /* TID 0x11c23 */
111204 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x1703f6450]
111204 ms | | | | | -[ACRemoteAccountStoreSession _connection]
111204 ms | | | | | -[ACAccountType encodeWithCoder:0x101a88e00]
111204 ms | | | | | -[ACAccountType identifier]
111204 ms | | | | | -[ACAccountType accountTypeDescription]
111204 ms | | | | | -[ACAccountType objectID]
111204 ms | | | | | -[ACAccountType visibility]
111204 ms | | | | | -[ACAccountType credentialProtectionPolicy]
111204 ms | | | | | -[ACAccountType supportsAuthentication]
111204 ms | | | | | -[ACAccountType supportsMultipleAccounts]
111204 ms | | | | | -[ACAccountType owningBundleID]
111204 ms | | | | | -[ACAccountType isObsolete]

 /* TID 0x1251f */
111205 ms -[AKAppleIDAuthenticationContextManager dismissBasicLoginUIForContext:0x12036fed0 completion:0x2839f4620]
111205 ms | -[AKAppleIDAuthenticationContextManager _clientSideContextForServerContext:0x12036fed0]
111205 ms | | -[AKAppleIDAuthenticationContext _identifier]
111205 ms | | -[AKAppleIDAuthenticationContext _identifier]
111205 ms | | -[AKAppleIDAuthenticationContext _updateWithValuesFromContext:0x12036fed0]
111205 ms | -[AKAppleIDAuthenticationInAppContext dismissBasicLoginUIWithCompletion:0x2839f4620]
111205 ms | | -[AKAppleIDAuthenticationInAppContext inAppAuthUIProvider]
111205 ms | | | -[AKInAppAuthenticationRemoteUIProvider initWithContext:0x10410b850]
111205 ms | | | | -[AKInAppAuthenticationRemoteUIDelegate initWithContext:0x10410b850]
111205 ms | | | -[AKInAppAuthenticationRemoteUIProvider dismissBasicLoginUIWithCompletion:0x2839f4620]

 /* TID 0x103 */
111205 ms -[AKInAppAuthenticationRemoteUIProvider cleanUpBasicLoginWithCompletion:0x16fd6a988]
111205 ms | -[AKInAppAuthenticationRemoteUIProvider _shouldShowAsView]
 /* TID 0xf107 */
111206 ms +[AKAppleIDAuthenticationController sensitiveAuthenticationKeys]
111206 ms +[AKAppleIDAuthenticationController sensitiveAuthenticationKeys]
111206 ms +[AKAppleIDAuthenticationController sensitiveAuthenticationKeys]

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/* TID 0xc533 */
111206 ms | | | | | | -[ACAccount _setAccountStore:0x283916df0]
111206 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111206 ms | | | | | | -[ACAccount _setAccountStore:0x283916df0]
111206 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111206 ms | | | | | | -[ACAccount _setAccountStore:0x283916df0]
111206 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111206 ms | | | | | | -[ACAccount description]
111206 ms | | | | | | | -[ACAccount username]
111206 ms | | | | | | | | -[ACAccount _useParentForCredentials]
111206 ms | | | | | | | | | -[ACAccount authenticationType]
111206 ms | | | | | | | | -[ACAccount identifier]
111206 ms | | | | | | | -[ACAccount description]
111206 ms | | | | | | | | -[ACAccount username]

/* TID 0xf107 */
111206 ms +[AKAppleIDAAuthenticationController sensitiveAuthenticationKeys]
/* TID 0xc533 */
111206 ms | | | | | | | -[ACAccount _useParentForCredentials]
/* TID 0xf107 */
111206 ms +[AKAppleIDAAuthenticationController sensitiveAuthenticationKeys]
111206 ms +[AKAppleIDAAuthenticationController sensitiveAuthenticationKeys]
/* TID 0xc533 */
111206 ms | | | | | | | | | -[ACAccount authenticationType]
/* TID 0xf107 */
111207 ms +[AKAppleIDAAuthenticationController sensitiveAuthenticationKeys]
/* TID 0xc533 */
111207 ms | | | | | | | -[ACAccount identifier]
111207 ms | | | | | | | -[ACAccount description]
111207 ms | | | | | | | -[ACAccount username]
111207 ms | | | | | | | | -[ACAccount _useParentForCredentials]
111207 ms | | | | | | | | | -[ACAccount authenticationType]
111207 ms | | | | | | | | -[ACAccount identifier]
111207 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111207 ms | | | -[ACAccount isActive]
111207 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111207 ms | | | -[ACAccount isActive]
111207 ms | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111207 ms | | | -[ACAccount isActive]
/* TID 0xf107 */
111207 ms -[AKAppleIDAAuthenticationContextManager unregisterContext:0x10410b850]
111207 ms | | -[AKAppleIDAAuthenticationContext _identifier]
/* TID 0x103 */
111207 ms -[AAUISignInViewController _delegate_signInViewControllerDidCompleteWithAuth
enticationResults:0x2816ab1e0]
111207 ms | | -[AAUISignInViewController delegate]
111207 ms | | -[AAUISignInController signInViewController:0x10400ce10 didCompleteWith
AuthenticationResults:0x2816ab1e0]
111207 ms | | | -[AAUISignInController _mainQueue_presentSpinnerViewControllerAnimatedInPa
rentViewController:0x103812200 withCompletion:0x16fd6a8d8]
111207 ms | | | | -[AAUISignInController _spinnerViewController]

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111207 ms | | | | | -[AAUISignerViewController initWithNibName:0x0 bundle:0
x0]
111207 ms | | | | | | -[AAUISignerViewController _commonInit]
111208 ms | | | | | | | -[AAUISignerViewController setSpinning:0x1]
111208 ms | | | | | | | -[AAUISignerViewController label]
111208 ms | | | | | | | -[AAUISignInController serviceType]
111208 ms | | | | | | | -[AAUISignInController _spinnerMessageForService:0x0]
 /* TID 0x11c23 */
111208 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807e3e40]
 /* TID 0x1251f */
111210 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dfb00]
 /* TID 0x103 */
111211 ms | | | | | -[AAUISignInController _mainQueue_continueSignInWithAuthentic
ationResults:0x2816ab1e0 parentViewController:0x103812200]
111211 ms | | | | | | -[AAUISignInController serviceType]
111211 ms | | | | | | -[AAUISignInController serviceContextWithResults:0x2816a
b1e0 parentViewController:0x103812200]
111211 ms | | | | | | | -[AAUISignInController _shouldForceOperation]
111212 ms | | | | | | | -[AAUISignInFlowControllerDelegate initWithPresenti
ngViewController:0x103812200]
111212 ms | | | | | | | | -[ACAccountStore init]
111212 ms | | | | | | | | | -[ACAccountStore initWithRemoteEndpoint:0
x0 effectiveBundleID:0x0]
111212 ms | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
111212 ms | | | | | | | | | | | -[ACTimedExpirer init]
111212 ms | | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
111212 ms | | | | | | | | | | | | -[ACTimedExpirer init]
111212 ms | | | | | | | | | | | | | +[ACNotificationRebroadcaster shared
Rebroadcaster]
111212 ms | | | | | | | | | | | | | | -[AAUISignInController _serviceOwnersManager]
111212 ms | | | | | | | | | | | | | | | -[AAUISignInController _serviceOwnersManager]
111213 ms | | | | | | | | | | | | | | | | -[AACloudServiceOwner signInService:0x1ecb2df10 withCont
ext:0x2831f0730 completion:0x16fd6a660]
111213 ms | | | | | | | | | | | | | | | | | +[AACloudServiceOwner _serviceTypeForPlatform]
111213 ms | | | | | | | | | | | | | | | | | | -[AASignInFlowController init]
111213 ms | | | | | | | | | | | | | | | | | | | -[ACAccountStore init]
111213 ms | | | | | | | | | | | | | | | | | | | | -[ACAccountStore initWithRemoteEndpoint:0
x0 effectiveBundleID:0x0]
111213 ms | | | | | | | | | | | | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
111213 ms | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer init]
111213 ms | | | | | | | | | | | | | | | | | | | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer init]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | | +[ACNotificationRebroadcaster shared
Rebroadcaster]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController setShouldAutomaticallySave
SignInResults:0x1]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController setCdpUIProvider:0x2836f47
e0]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController setDelegate:0x2831f0820]
111213 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController signInWithIDMSAuthenticati

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onResults:0x28169c620 completion:0x16fd6a5b0]
111213 ms | | | | | | | -[AASignInFlowController _updateOrCreateAppleA
ccountForAuthResults:0x28169c620 accountCreationError:0x16fd6a4b0]
111213 ms | | | | | | | -[ACAccountStore aa_appleAccountWithPerso
nID:0x28169cf40]
111213 ms | | | | | | | | | -[ACAccountStore accountsWithAccount
TypeIdentifiers:0x28100d780 preloadedProperties:0x0 error:0x0]
111213 ms | | | | | | | | | | -[ACAccountStore remoteAccounts
storeSession]
111213 ms | | | | | | | | | | | -[ACAccountStore connectio
nDelegate]
111213 ms | | | | | | | | | | | | -[ACRemoteAccountStoreSess
ion initWithListenerEndpoint:0x0 delegate:0x0]
111213 ms | | | | | | | | | | | | | -[ACAccountStoreClien
tSideListener initWithDelegate:0x0]
111213 ms | | | | | | | | | | | | | | -[ACAccountStore effective
BundleID]
111213 ms | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSess
ion setEffectiveBundleID:0x0]
111213 ms | | | | | | | | | | | | | | | | -[ACTimedExpirer scheduleE
xpiration:0x16fd6a030]
111213 ms | | | | | | | | | | | | | | | | | -[ACTimedExpirer _uns
afeCancelTimer]
111213 ms | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession s
ynchronousRemoteObjectProxyWithErrorHandler:0x16fd6a010]
111213 ms | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSess
ion _connection]
111213 ms | | | | | | | | | | | | | | | | | | | | -[ACTrackedXPCCConnect
ion init]
111213 ms | | | | | | | | | | | | | | | | | | | | | +[ACRemoteAccountStor
eInterface XPCInterface]
111213 ms | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStor
eSession _locked_configureRemoteAccountStoreWithConnection:0x282346080]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | -[AASignInFlowController _createNewAppleA
ccountWithAuthResults:0x28169c620 accountCreationError:0x16fd6a4b0]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore aa_appleAccountType
]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore accountTypeWit
hAccountTypeID:0x1e74187d8 error:0x0]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore remoteAcc
ountStoreSession]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer sche
duleExpiration:0x16fd6a110]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer
_unsafeCancelTimer]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSess
ion synchronousRemoteObjectProxyWithErrorHandler:0x16fd6a0f0]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStor
eSession _connection]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | +[ACAccountType supportsSe
cureCoding]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType setAccount
Store:0x2839f4a10]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType descriptio
n]
111215 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType accou

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ntTypeDescription]
111216 ms | | | | | | | | | | | -[ACAccountType identifier]
111216 ms | | | | | | | | | | | -[ACAccount initWithAccountType:0x2839f4460]
111216 ms | | | | | | | | | | | -[ACAccountType supportsAuthentication]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417f18]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417f98]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417e98]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417f58]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417f78]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417d78]
111216 ms | | | | | | | | | | | -[ACAccount setUsername:0x281d07cc0]
111216 ms | | | | | | | | | | | -[ACAccount _useParentForCredentials]
111216 ms | | | | | | | | | | | -[ACAccount authenticationType]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417e58]
111216 ms | | | | | | | | | | | -[ACAccount _aa_setPersonID:0x281659c0]
111216 ms | | | | | | | | | | | -[ACAccount setAccountProperty:0x2816599c0 forKey:0x1e8b42670]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
111216 ms | | | | | | | | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42670]
111216 ms | | | | | | | | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0x1e8b42670]
111216 ms | | | | | | | | | | | -[AASignInFlowController _userPersonUniqueString]
111216 ms | | | | | | | | | | | +[AAPreferences isMultipleFullAccountsEnabled]
111216 ms | | | | | | | | | | | +[AADeviceInfo isInternalBuild]
111216 ms | | | | | | | | | | | -[ACAccountStore aa_primaryAppleAccount]
111216 ms | | | | | | | | | | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x28100d4e0 preloadedProperties:0x0 error:0x0]
111216 ms | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
111216 ms | | | | | | | | | | | -[ACTimedExpire scheuleExpiration:0x16fd69fe0]
111216 ms | | | | | | | | | | | -[ACTimedExpire _unsafeCancelTimer]
111216 ms | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fd69fc0]
111216 ms | | | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
111216 ms | | | | | | | | | | | -[ACAccountStore aa_dataSeparatedAcc
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ounts]
111216 ms | | | | | | | | | -[ACAccountStore aa_appleAccoun
ts]
111216 ms | | | | | | | | | -[ACAccountStore accountsW
ithAccountTypeIdentifiers:0x281008790 preloadedProperties:0x0 error:0x0]
111216 ms | | | | | | | | | -[ACAccountStore remo
teAccountStoreSession]
111216 ms | | | | | | | | | -[ACTimedExpirer
scheduleExpiration:0x16fd69fc0]
111216 ms | | | | | | | | | -[ACTimedEx
pirer _unsafeCancelTimer]
111216 ms | | | | | | | | | -[ACRemoteAccountStor
eSession synchronousRemoteObjectProxyWithErrorHandler:0x16fd69fa0]
111216 ms | | | | | | | | | -[ACRemoteAccoun
tStoreSession _connection]
111216 ms | | | | | | | | | -[AASignInFlowController _nameForClo
udService]
111218 ms | | | | | | | | | -[ACAccount setAccountDescription:0x
b40cf5309fe54ceb]
111218 ms | | | | | | | | | -[ACAccount parentAccount]
111218 ms | | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417e78]
111218 ms | | | | | | | | | -[ACAccount aa_setAccountClass:0x1e8
b42a50]
111218 ms | | | | | | | | | -[ACAccount accountType]
111218 ms | | | | | | | | | -[ACAccountType identifier]
111218 ms | | | | | | | | | -[ACAccount setObject:0x1e8b42a
50 forKeyedSubscript:0x1e8b42c10]
111218 ms | | | | | | | | | -[ACAccount setAccountProp
erty:0x1e8b42a50 forKey:0x1e8b42c10]
111218 ms | | | | | | | | | -[ACAccount _unsafe_m
arkPropertyDirty:0x1e7417df8]
111218 ms | | | | | | | | | -[ACAccount _markAcco
untPropertyDirty:0x1e8b42c10]
111218 ms | | | | | | | | | -[ACAccount _uns
afe_markAccountPropertyDirty:0x1e8b42c10]
111218 ms | | | | | | | | | -[ACAccount setObject:0x1f6189a
f8 forKeyedSubscript:0x1e8b426f0]
111218 ms | | | | | | | | | -[ACAccount setAccountProp
erty:0x1f6189af8 forKey:0x1e8b426f0]
111218 ms | | | | | | | | | -[ACAccount _unsafe_m
arkPropertyDirty:0x1e7417df8]
111218 ms | | | | | | | | | -[ACAccount _markAcco
untPropertyDirty:0x1e8b426f0]
111218 ms | | | | | | | | | -[ACAccount _uns
afe_markAccountPropertyDirty:0x1e8b426f0]
111218 ms | | | | | | | | | -[AASignInFlowController _saveTermsW
ithAuthResults:0x28169c620 account:0x282b408c0]
111218 ms | | | | | | | | | -[AASignInFlowController _updateAppleAcco
unt:0x282b408c0 withAuthenticationResults:0x28169c620]
111218 ms | | | | | | | | | +[ACAccountCredential credentialWith
Password:0x100711390]
111218 ms | | | | | | | | | -[ACAccountCredential initWithP
assword:0x100711390]
111218 ms | | | | | | | | | -[ACAccountCredential setP
assword:0x100711390]
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_unsafe_markPropertyDirty:0x1e7417d98]
111219 ms | | | | | | | | - [ACAccount aa_isAccountClass:0x1e8b42a50]
]
111219 ms | | | | | | | | - [ACAccount aa_accountClass]
111219 ms | | | | | | | | - [ACAccount objectForKeyedSubsc
ript:0x1e8b42c10]
111219 ms | | | | | | | | - [ACAccount accountPropert
yForKey:0x1e8b42c10]
111219 ms | | | | | | | | - [AASignInFlowController _createCDPContex
tForPrimaryAccount:0x282b408c0 withAuthResults:0x28169c620]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AAUISignInFlowControllerDelegate s
kipCDPEnablement]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AAUISignInFlowControllerDelegate c
dpContext]
111219 ms | | | | | | | | - [AASignInFlowController messageSess
ion]
111219 ms | | | | | | | | - [AASignInFlowController ignoreLockA
ssertErrors]
111219 ms | | | | | | | | - [AASignInFlowController _delegateRequiresTerm
s]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AASignInFlowController delegate]
111219 ms | | | | | | | | - [AAUISignInFlowControllerDelegate requir
edTerms]
111219 ms | | | | | | | | - [AASignInFlowController _registerAndVerifyLog
inForCloudAccount:0x282b408c0 withCompletion:0x2807d6400]
111219 ms | | | | | | | | +[AAPreferences shouldUseUnifiedLoginEndp
oint]
111221 ms | | | | | | | | +[AAiCloudLoginAccountRequester delegateP
aramsForAllDelegates]
111221 ms | | | | | | | | - [ACAccountStore aa_loginAndUpdate iCloudA
ccount:0x282b408c0 delegateParams:0x2807d5040 withCompletion:0x16fd6a398]
111221 ms | | | | | | | | - [ACAccount accountType]
111221 ms | | | | | | | | - [ACAccountType identifier]
111221 ms | | | | | | | | - [AAiCloudLoginAccountRequester logi
nWithAccount:0x282b408c0 forDelegates:0x2807d5040 completion:0x16fd6a2b0]
111221 ms | | | | | | | | - [AALoginAccountRequest initWith
Account:0x282b408c0 delegates:0x2807d5040]
111221 ms | | | | | | | | - [AARequest performSignedReques
tWithHandler:0x16fd6a258]
111221 ms | | | | | | | | +[AAURLSession sharedSigni
ngSession]
111221 ms | | | | | | | | - [AARequest performRequest
WithSession:0x281cc68b0 withHandler:0x16fd6a258]
111221 ms - [AAUISignInViewController _setEnabled:0x1]
111221 ms | - [AAUISignInViewController _hasValidCredentials]
111221 ms | - [AAUISignInViewController _setUsernameCellWaiting:0x0]
111221 ms - [ACMonitoredAccountStore credentialsChangedNotification:0x28169d280]
111221 ms | - [ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807e3e40]
111222 ms - [ACAccount credentialsChanged:0x28169d280]
111222 ms | - [ACAccount identifier]
111222 ms - [ACMonitoredAccountStore credentialsChangedNotification:0x28169d0a0]
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111222 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dfb00]
111222 ms -[ACAccount credentialsChanged:0x28169d0a0]
111222 ms | -[ACAccount identifier]
/* TID 0x11c23 */
111222 ms -[AALoginAccountRequest urlString]
111222 ms | +[AAURLConfiguration urlConfiguration]
111222 ms | | +[AAURLConfiguration _urlConfigurationWithError:0x0]
111222 ms | | | +[AAURLConfiguration remoteServer]
111222 ms | | | | +[AARemoteServer sharedServer]
111222 ms | | | | -[AARemoteServer configurationWithCompletion:0x1703f6d48]
111222 ms | | | | | -[AARemoteServer _configurationAndResponseWithCompletion
:0x1703f6ce8]
111222 ms | | | | | | -[AARemoteServer _configurationCacheInvalidateIfN
ecessary]
111222 ms | | | | | | | -[AARemoteServer _configurationLock_configuration
CacheInvalidateIfNecessary]
111222 ms | | | | | | | | -[AARemoteServerConfigurationCache creati
onDate]
111222 ms | | | | | | | | | -[AARemoteServerConfigurationCache configuration]
111222 ms | | | | | | | | | -[AARemoteServerConfigurationCache response]
111222 ms | | -[AAURLConfiguration loginAccountURL]
111222 ms | | | -[AAURLConfiguration _urlStringForKey:0x1e8b3eb10]
111222 ms -[AALoginAccountRequest urlRequest]
111222 ms | -[AARequest urlRequest]
111222 ms | | -[AALoginAccountRequest urlString]
111222 ms | | | +[AAURLConfiguration urlConfiguration]
111222 ms | | | | +[AAURLConfiguration _urlConfigurationWithError:0x0]
111222 ms | | | | | +[AAURLConfiguration remoteServer]
111222 ms | | | | | | -[AARemoteServer configurationWithCompletion:0x1703
f6b18]
111222 ms | | | | | | | -[AARemoteServer _configurationAndResponseWith
Completion:0x1703f6ab8]
111222 ms | | | | | | | | -[AARemoteServer _configurationCacheInval
idatingIfNecessary]
111222 ms | | | | | | | | | -[AARemoteServer _configurationLock_
configurationCacheInvalidateIfNecessary]
111222 ms | | | | | | | | | | -[AARemoteServerConfigurationCa
che creationDate]
111222 ms | | | | | | | | | | | -[AARemoteServerConfigurationCache config
uration]
111223 ms | | | | | | | | | -[AARemoteServerConfigurationCache respon
se]
111223 ms | | | | -[AAURLConfiguration loginAccountURL]
111223 ms | | | | | -[AAURLConfiguration _urlStringForKey:0x1e8b3eb10]
/* TID 0x103 */
111226 ms -[AAUISpinnerViewController viewDidLoad]
/* TID 0x11c23 */
111227 ms | | -[AARequest flushCache]
111227 ms | | +[AADeviceInfo clientInfoHeader]
111228 ms | | | +[AADeviceInfo clientInfoHeader]
111228 ms | | | | -[AADeviceInfo productType]
111228 ms | | | | | -[AADeviceInfo osName]
111228 ms | | | | | +[AADeviceInfo osVersion]
111228 ms | | | | | | -[AADeviceInfo buildVersion]
/* TID 0x103 */
111228 ms -[AAUISpinnerViewController viewWillAppears:0x1]

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 /* TID 0x11c23 */
111230 ms | | +[AAPreferences isExperimentalModeEnabled]
111230 ms | | +[AADeviceInfo isInternalBuild]
111231 ms | -[AARequest bodyDictionary]
111231 ms | | +[AARequest protocolVersion]
111231 ms | | +[AADeviceInfo appleIDClientIdentifier]
111231 ms | | +[AADeviceInfo appleIDClientIdentifier]
111236 ms | +[AADeviceInfo udid]
111237 ms | +[AADeviceInfo udid]
111237 ms | | +[AADeviceInfo udid]
/* TID 0x103 */
111237 ms -[AAUIServiceIconView didMoveToWindow]
/* TID 0x11c23 */
111237 ms | -[ACAccount description]
111237 ms | | -[ACAccount username]
111237 ms | | | -[ACAccount _useParentForCredentials]
111237 ms | | | -[ACAccount authenticationType]
111237 ms | | -[ACAccount identifier]
111237 ms | -[ACAccount username]
111237 ms | | -[ACAccount _useParentForCredentials]
111237 ms | | | -[ACAccount authenticationType]
111237 ms | | -[ACAccount aa_password]
111237 ms | | -[ACAccount credential]
111237 ms | | | -[ACAccount credentialWithError:0x0]
111237 ms | | | -[ACAccount _useParentForCredentials]
111237 ms | | | | -[ACAccount authenticationType]
111237 ms | | -[ACAccountCredential password]
111238 ms | | | -[ACAccountCredential credentialItemForKey:0x1e7419098]
111238 ms | | | -[ACZeroingString length]
111238 ms | | | -[ACZeroingString getCharacters:0x129628580 range:0x0]
111238 ms | -[ACAccount username]
111238 ms | | -[ACAccount _useParentForCredentials]
111238 ms | | | -[ACAccount authenticationType]
111238 ms | | -[ACAccount aa_password]
111238 ms | | -[ACAccount credential]
111238 ms | | | -[ACAccount credentialWithError:0x0]
111238 ms | | | -[ACAccount _useParentForCredentials]
111238 ms | | | | -[ACAccount authenticationType]
111238 ms | | -[ACAccountCredential password]
111238 ms | | | -[ACAccountCredential credentialItemForKey:0x1e7419098]
111238 ms | | | -[ACZeroingString length]
111238 ms | | | -[ACZeroingString getCharacters:0x12961eb90 range:0x0]
111238 ms | -[ACAccount aa_altdSID]
111238 ms | | -[ACAccount accountPropertyForKey:0x1e8b3c830]
111238 ms | | -[ACAccount aa_repairState]
111238 ms | | -[ACAccount parentAccount]
111238 ms | | -[ACAccount accountPropertyForKey:0x1e8b42bf0]
111238 ms | | -[ACAccount aa_personID]
111238 ms | | -[ACAccount accountPropertyForKey:0x1e8b42670]
111238 ms | | -[AADeviceProvisioningSession initWithDSID:0x2816599c0]
111238 ms | | -[AADeviceProvisioningSession addProvisioningInfoToURLRequest:0x28100c0
c0 sendEmptyValues:0x0]
111238 ms | | -[AADeviceProvisioningSession deviceProvisioningInfo]
/* TID 0x103 */
111241 ms -[AAUIServiceIconView didMoveToWindow]
/* TID 0x11c23 */

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111242 ms | +[AKDevice currentDeviceAuthenticationMode]
111242 ms | | +[AKDevice _currentDeviceAuthenticationMode]
111242 /* TID 0x1251f */
111242 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dacc0]
111242 /* TID 0x11c23 */
111244 ms | +[AARequest redactedHeadersFromHTTPHeaders:0x2807d67c0]
111244 ms | | -[AARequest redactedBodyStringWithPropertyList:0x281659c00]
111244 ms -[AAURLSession dataTaskWithRequest:0x28100c0c0 completion:0x1703f6e40]
111244 ms | -[AAURLSession _enqueueRequest:0x28100c0c0 completion:0x1703f6e40]
111245 ms | | -[AKAppleIDSession initWithIdentifier:0x281cc6e50]
111245 ms | | -[AAURLSessionContext _initRequiringSigning:0x1 appleIDSession:0x2
807d6380]
111245 /* TID 0xc533 */
111246 ms -[AAURLSession _sessionQueue_enqueueTask:0x1006f4b90 completion:0x281cc79c0]
111246 /* TID 0x11c23 */
111248 ms -[AAURLSessionContext URLSession:0x104216cb0 task:0x1006f4b90 getAppleIDHead
ersForResponse:0x0 completionHandler:0x1703f6650]
111248 ms | -[AKAppleIDSession URLSession:0x104216cb0 task:0x12035aed0 getAppleIDHe
adersForResponse:0x0 completionHandler:0x1703f65c0]
111248 ms | | -[AKAppleIDSession _generateAppleIDHeadersForSessionTask:0x12035ae
d0 withCompletion:0x1703f6538]
111248 ms | | | -[AKAppleIDSession _nativeAnisetteController]
111248 ms | | | -[AKAnisetteProvisioningController init]
111248 ms | | | -[AKAnisetteProvisioningController anisetteDataForURLRequest:
0x28100c4f0 completion:0x1703f6428]
111248 ms | | | -[AKAnisetteProvisioningController fetchAnisetteDataAndP
rovisionIfNecessary:0x1 withCompletion:0x1703f6428]
111248 ms | | | -[AKAnisetteProvisioningController _anisetteService
Connection]
111248 ms | | | +[AKAnisetteProvisioningDaemonInterface XPCInt
erface]
111248 ms | | | +[AKAnisetteProvisioningClientInterface XPCInt
erface]
111248 /* TID 0x103 */
111254 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281c22490]
111254 /* TID 0xf107 */
111254 ms +[AKAnisetteData supportsSecureCoding]
111254 ms -[AKAppleIDSession _genericAppleIDHeadersDictionaryForRequest:0x28100c4f0]
111254 /* TID 0x103 */
111254 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x2816bfce0]
111254 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dacc0]
111254 ms -[ACAccount credentialsChanged:0x2816bfce0]
111254 ms | -[ACAccount identifier]
111254 /* TID 0xf107 */
111255 ms | +[AKDevice currentDevice]
111255 ms | -[AKDevice locale]
111255 ms -[AKAnisetteData machineID]
111255 ms -[AKAnisetteData oneTimePassword]
111255 ms -[AKAnisetteData routingInfo]
111255 ms +[AKDevice currentDevice]
111255 ms -[AKDevice localUserUUID]
111255 ms +[AKConfiguration sharedConfiguration]
111255 ms -[AKConfiguration shouldAllowTestApplication]
111255 ms | -[AKConfiguration configurationValueForKey:0x1e8b17ff8]
111255 ms -[AKAppleIDSession _pairedDeviceAnisetteController]

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111255 ms -[AAURLSessionContext _additionalHeadersForRequest:0x28100daa0 completion:0x
1701c6270]
111255 ms | -[AAURLSessionContext requiresSigning]
/* TID 0xc533 */
111255 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]
111255 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
111255 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
111255 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
111255 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
111255 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
111255 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e4c
0]
111255 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0x103 */
111255 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283c299
00 completion:0x16fd69d98]
111255 ms | -[ACAccountStore remoteAccountStoreSession]
111255 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
111255 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
111255 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
111255 ms | | -[ACRemoteAccountStoreSession _connection]
111256 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x2816be8a0]
111256 ms | +[AMSLogConfig sharedAccountsConfig]
111256 ms | -[AMSLogConfig OSLogObject]
111256 ms | | -[AMSLogConfig propertyAccessQueue]
111256 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0xf107 */
111256 ms | -[AAURLSessionContext remoteServer]
111256 ms | | +[AARemoteServer sharedServer]
111256 ms | -[AARemoteServer configurationWithCompletion:0x1701c61f0]
111256 ms | | -[AARemoteServer _configurationAndResponseWithCompletion:0x1701c61
98]
111256 ms | | | -[AARemoteServer _configurationCacheInvalidateingIfNecessary]
111256 ms | | | | -[AARemoteServer _configurationLock_configurationCacheIn
validatingIfNecessary]
111256 ms | | | | | -[AARemoteServerConfigurationCache creationDate]
111256 ms | | | | | -[AARemoteServerConfigurationCache configuration]
111256 ms | | | | | -[AARemoteServerConfigurationCache response]
111256 ms | | | | +[AADeviceInfo currentInfo]
111256 ms | | | | +[AADeviceInfo udid]
/* TID 0x1251f */
111256 ms +[NSError _web_errorWithDomain:0x1f61f0440 code:0xfffffffffffffc19 URL:0x283
9f5500]
111256 ms | -[NSError _web_initWithDomain_nowarn:0x1f61f0440 code:0xfffffffffffffc1
9 URL:0x2839f5500]
111256 ms | | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userI
nfo:0x2816bd3e0]
111256 ms | -[NSError userInfo]
111256 ms | -[NSError domain]
111256 ms | -[NSError code]
111256 ms | -[NSError domain]
111256 ms | -[NSError code]
111256 ms | -[NSError userInfo]

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111256 ms -[NSError userInfo]
111256 ms -[NSError domain]
111256 ms -[NSError code]
111256 ms +[NSError errorWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0x2816bc540]
111256 ms | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0x2816bc540]
111256 ms -[NSError code]
111256 ms -[NSError code]
111256 ms -[NSError description]
111256 ms | -[NSError userInfo]
111256 ms | -[NSError domain]
111256 ms | -[NSError userInfo]
111256 ms | -[NSError domain]
111256 ms | -[NSError userInfo]
111256 ms | -[NSError domain]
111256 ms | -[NSError code]
/* TID 0x11c23 */
111257 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
111257 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
111257 ms | -[ACAccountStore aa_primaryAppleAccount]
111257 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x2810210d0 pr
eloadedProperties:0x0 error:0x0]
111257 ms | | | -[ACAccountStore remoteAccountStoreSession]
/* TID 0xc533 */
111257 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e4a0]
111257 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf107 */
111257 ms | | | | +[AADeviceInfo currentInfo]
111257 ms | | | | +[AADeviceInfo serialNumber]
111257 ms | | | | -[AAURLConfiguration absintheEnable]
111257 ms | | | | -[AAURLSessionContext _additionalAbsintheHeadersForData:0x120
32b4b0 completion:0x2807ea140]
111258 ms | | | | -[AAURLSessionContext absintheSigner]
/* TID 0x11c23 */
111258 ms | | | | -[ACTimedExpirer scheduleExpiration:0x1703f6410]
111258 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111258 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x1703f63f0]
111258 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
111258 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
111258 ms | | | | | -[ACAccountType description]
111258 ms | | | | | | -[ACAccountType accountTypeDescription]
111258 ms | | | | | | -[ACAccountType identifier]
111258 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839f4ee0]
111258 ms | | | | | -[ACAccountType description]
111258 ms | | | | | | -[ACAccountType accountTypeDescription]
111258 ms | | | | | | -[ACAccountType identifier]
/* TID 0xf107 */
111258 ms | | | | | | +[AAAabsintheSigner sharedSigner]
111258 ms | | | | | | -[AAAabsintheSigner signatureForData:0x12032b4b0 completi
on:0x1701c5f28]
111258 ms | | | | | | -[AAAabsintheSigner _contextWithCompletion:0x1701c5e

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b0]
111258 ms | | | | | | | -[AAAbsintheSigner context]
111258 ms | | | | | | | -[AAAbsintheSigner _contextLock_contextIn
validatingIfNecessary]
111258 ms | | | | | | | | -[AAAbsintheSignerContextCache creat
ionDate]
111258 ms | | | | | | | | -[AAAbsintheSignerContextCache conte
xt]
111258 ms | | | | | | | | -[AAAbsintheContext cao1NI5PNJBn:0x12032b4b0 e
rror:0x1701c5df8]
/* TID 0xc533 */
111259 ms | | | | -[ACAccountStore remoteAccountStoreSession]
111259 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e470]
111259 ms | | | | -[ACTimedExpirer _unsafeCancelTimer]
111259 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxywit
hErrorHandler:0x16fe7e450]
111259 ms | | | | -[ACRemoteAccountStoreSession _connection]
111259 ms | | | | -[ACAccountType encodeWithCoder:0x10225c800]
111259 ms | | | | -[ACAccountType identifier]
111259 ms | | | | -[ACAccountType accountTypeDescription]
111259 ms | | | | -[ACAccountType objectID]
111259 ms | | | | -[ACAccountType visibility]
111259 ms | | | | -[ACAccountType credentialProtectionPolicy]
111259 ms | | | | -[ACAccountType supportsAuthentication]
111259 ms | | | | -[ACAccountType supportsMultipleAccounts]
111259 ms | | | | -[ACAccountType owningBundleID]
111259 ms | | | | -[ACAccountType isObsolete]

/* TID 0x11c23 */
111259 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
111259 ms | +[AMSUnitTests isRunningUnitTests]
111259 ms | +[ACAccountStore defaultStore]
111260 ms -[ACAccountStore ams_activeiTunesAccount]
111260 ms | -[ACAccountStore ams_mediaType]
111260 ms | | +[MSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111260 ms | | | +[MSAccountStoreCache cacheAccessQueue]
111260 ms | | | +[MSAccountStoreCache cache]
111260 ms | | | | +[MSAccountStoreCache cacheAccessQueue]
111260 ms | | | +[MSProcessInfo defaultMediaTypeForCurrentProcess]
111260 ms | | | | +[MSUnitTests isRunningUnitTests]
111260 ms | | | | +[MSProcessInfo defaultMediaTypeAccessQueue]
111260 ms | | -[ACAccountStore ams_iTunesAccounts]
111260 ms | | | -[ACAccountStore ams_mediaType]
111260 ms | | | | +[MSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
111260 ms | | | | | +[MSAccountStoreCache cacheAccessQueue]
111260 ms | | | | | +[MSAccountStoreCache cache]
111260 ms | | | | | | +[MSAccountStoreCache cacheAccessQueue]
111260 ms | | | | | +[MSProcessInfo defaultMediaTypeForCurrentProcess]
111260 ms | | | | | | +[MSUnitTests isRunningUnitTests]
111260 ms | | | | | | +[MSProcessInfo defaultMediaTypeAccessQueue]
111260 ms | | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0
]
111260 ms | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e741887
8 options:0x1 error:0x1703f65c8]
111260 ms | | | | -[ACAccountStore _ams_accountTypeWithAccountTypeIdentifier:0x
1e7418878 error:0x1703f65c8]
111260 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x

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1e7418878 error:0x1703f64e8]
111260 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
111260 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1703f628
0]
111260 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111260 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1703f6260]
111260 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
111261 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111261 ms | | | | | | | -[ACAccountType description]
111261 ms | | | | | | | | -[ACAccountType accountTypeDescription]
111261 ms | | | | | | | | -[ACAccountType identifier]
111261 ms | | | | | -[ACAccountStore _ams_accountsWithAccountType:0x2839a8230 opt
ions:0x1 error:0x1703f65c8]
111261 ms | | | | | | -[ACAccountStore accountsWithAccountType:0x2839a8230 opt
ions:0x1 error:0x1703f6548]
111261 ms | | | | | | | -[ACAccountType description]
111261 ms | | | | | | | | -[ACAccountType accountTypeDescription]
111261 ms | | | | | | | | -[ACAccountType identifier]
111261 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
111261 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1703f621
0]
111261 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
111261 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1703f61f0]
111261 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
111261 ms | | | | | | | -[ACAccountType encodeWithCoder:0x102837c00]
111261 ms | | | | | | | | -[ACAccountType identifier]
111261 ms | | | | | | | | -[ACAccountType accountTypeDescription]
111261 ms | | | | | | | | -[ACAccountType objectID]
111261 ms | | | | | | | | -[ACAccountType visibility]
111261 ms | | | | | | | | -[ACAccountType credentialProtectionPolicy]
111261 ms | | | | | | | | -[ACAccountType supportsAuthentication]
111261 ms | | | | | | | | -[ACAccountType supportsMultipleAccounts]
111261 ms | | | | | | | | -[ACAccountType owningBundleID]
111261 ms | | | | | | | | -[ACAccountType isObsolete]
111266 ms | | | | | | -[ACAccount _setAccountStore:0x283916df0]
111266 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111267 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
111267 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111267 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
111267 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
111267 ms | | | | | | | -[ACAccount description]
111267 ms | | | | | | | | -[ACAccount username]
111267 ms | | | | | | | | | -[ACAccount _useParentForCredentials]
111267 ms | | | | | | | | | | -[ACAccount authenticationType]
111267 ms | | | | | | | | | -[ACAccount identifier]
111267 ms | | | | | -[ACAccount description]
111267 ms | | | | | | -[ACAccount username]
111267 ms | | | | | | | -[ACAccount _useParentForCredentials]
111267 ms | | | | | | | | -[ACAccount authenticationType]
111267 ms | | | | | | | | -[ACAccount identifier]
111267 ms | | | | | -[ACAccount description]
111267 ms | | | | | | -[ACAccount username]
111267 ms | | | | | | | -[ACAccount _useParentForCredentials]
111267 ms | | | | | | | | -[ACAccount authenticationType]

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111267 ms | | | | | -[ACAccount identifier]
111267 ms | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111267 ms | | -[ACAccount isActive]
111267 ms | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111267 ms | | -[ACAccount isActive]
111267 ms | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
111267 ms | | -[ACAccount isActive]
/* TID 0x1251f */
111268 ms +[NSError errorWithDomain:0x1e753a3e0 code:0x1 userInfo:0x281262e60]
111268 ms | -[NSError initWithDomain:0x1e753a3e0 code:0x1 userInfo:0x281262e60]
/* TID 0xf107 */
111268 ms | | | -[AAURLConfiguration baaInterval]
/* TID 0x1251f */
111281 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dea80]
/* TID 0x103 */
111281 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28164f7e0]
111281 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dea80]
111281 ms -[ACAccount credentialsChanged:0x28164f7e0]
111281 ms | -[ACAccount identifier]
/* TID 0x11c23 */
111286 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807daa00]
/* TID 0x103 */
111287 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x2816a8640]
111287 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807daa00]
111287 ms -[ACAccount credentialsChanged:0x2816a8640]
111287 ms | -[ACAccount identifier]
/* TID 0x11c23 */
111292 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dedc0]
/* TID 0x103 */
111292 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28164f860]
111292 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dedc0]
111292 ms -[ACAccount credentialsChanged:0x28164f860]
111292 ms | -[ACAccount identifier]
/* TID 0x11c23 */
111298 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c1180]
/* TID 0x103 */
111298 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169db60]
111298 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c1180]
111298 ms -[ACAccount credentialsChanged:0x28169db60]
111298 ms | -[ACAccount identifier]
/* TID 0x11c23 */
111304 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c1140]
/* TID 0x103 */
111306 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169de60]
111306 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c1140]
111306 ms -[ACAccount credentialsChanged:0x28169de60]
111306 ms | -[ACAccount identifier]
111307 ms +[NSError errorWithDomain:0x1e753a3e0 code:0x1 userInfo:0x1f13a58c8]
111307 ms | -[NSError initWithDomain:0x1e753a3e0 code:0x1 userInfo:0x1f13a58c8]
/* TID 0x1251f */
111310 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith

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Identifier:0x2807e9240]
 /* TID 0x103 */
111310 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111310 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807e9240]
111310 ms -[ACAccount credentialsChanged:0x28169e200]
111310 ms | -[ACAccount identifier]
 /* TID 0x1251f */
111316 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807ded00]
 /* TID 0x103 */
111316 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111316 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807ded00]
111316 ms -[ACAccount credentialsChanged:0x28169e200]
111316 ms | -[ACAccount identifier]
 /* TID 0xf107 */
111318 ms +[NSError errorWithDomain:0x1e753a3e0 code:0x1 userInfo:0x28164f860]
111318 ms | -[NSError initWithDomain:0x1e753a3e0 code:0x1 userInfo:0x28164f860]
 /* TID 0x103 */
111319 ms +[NSError errorWithDomain:0x1e753a3e0 code:0x1 userInfo:0x28169cb60]
111319 ms | -[NSError initWithDomain:0x1e753a3e0 code:0x1 userInfo:0x28169cb60]
 /* TID 0x1251f */
111322 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807d76c0]
 /* TID 0x103 */
111322 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169df60]
111322 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807d76c0]
111322 ms -[ACAccount credentialsChanged:0x28169df60]
111322 ms | -[ACAccount identifier]
 /* TID 0x1251f */
111328 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dea80]
 /* TID 0x103 */
111328 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e020]
111328 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dea80]
111328 ms -[ACAccount credentialsChanged:0x28169e020]
111328 ms | -[ACAccount identifier]
 /* TID 0x1251f */
111333 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c0a00]
 /* TID 0x103 */
111333 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e020]
111333 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c0a00]
111333 ms -[ACAccount credentialsChanged:0x28169e020]
111333 ms | -[ACAccount identifier]
 /* TID 0x1251f */
111338 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c54c0]
 /* TID 0x103 */
111338 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111338 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c54c0]
111338 ms -[ACAccount credentialsChanged:0x28169e200]
111338 ms | -[ACAccount identifier]
 /* TID 0x1251f */
111343 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dedc0]
 /* TID 0x103 */

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111343 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111343 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dedc0]
111343 ms -[ACAccount credentialsChanged:0x28169e200]
111343 ms | -[ACAccount identifier]
/* TID 0x1251f */
111348 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dab80]
/* TID 0x103 */
111348 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111348 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dab80]
111348 ms -[ACAccount credentialsChanged:0x28169e200]
111348 ms | -[ACAccount identifier]
/* TID 0x1251f */
111356 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dbec0]
/* TID 0x103 */
111357 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111357 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dbec0]
111357 ms -[ACAccount credentialsChanged:0x28169e200]
111357 ms | -[ACAccount identifier]
/* TID 0x1251f */
111362 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c0ac0]
/* TID 0x103 */
111362 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111362 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c0ac0]
111362 ms -[ACAccount credentialsChanged:0x28169e200]
111362 ms | -[ACAccount identifier]
/* TID 0x1251f */
111368 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c4000]
/* TID 0x103 */
111368 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e020]
111368 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c4000]
111368 ms -[ACAccount credentialsChanged:0x28169e020]
111368 ms | -[ACAccount identifier]
/* TID 0x1251f */
111373 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c54c0]
/* TID 0x103 */
111373 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169e200]
111373 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c54c0]
111373 ms -[ACAccount credentialsChanged:0x28169e200]
111373 ms | -[ACAccount identifier]
111769 ms -[AAUIServiceIconView didMoveToWindow]
111770 ms -[AAUISignInViewController viewDidDisappear:0x1]
111770 ms | -[AAUISignInViewController _endObservingSizeCategoryNotification]
111770 ms | -[AAUISignInViewController _endObservingTextFieldDidChangeNotifications
]
111771 ms | -[AAUISignInViewController _endObservingKeyboardWillShowNotifications]
/* TID 0x1251f */
116376 ms -[AAURLSession URLSession:0x104216cb0 dataTask:0x1006f4b90 didReceiveData:0x
2807c0b40]
116376 ms | -[AAURLSession _sessionQueue_updateTask:0x1006f4b90 withData:0x2807c0b4
0]
116377 ms -[AAURLSession URLSession:0x104216cb0 task:0x1006f4b90 didCompleteWithError:

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0x0]
116377 ms | -[AAURLSession _sessionQueue_dequeueTask:0x1006f4b90 withResponse:0x281263500 error:0x0]
116377 ms | | -[AARequest _handleDataTaskCompletionWithData:0x123b14000 response:0x281263500 error:0x0]
116379 ms | | | +[AALoginAccountRequest responseClass]
116379 ms | | | -[AALoginAccountResponse initWithHTTPResponse:0x281263500 data:a:0x123b14000]
116380 ms | | | | -[AAResponse initWithHTTPResponse:0x281263500 data:0x123b14000 bodyIsPlist:0x1]
116381 ms | | | | | -[AAResponse _parsePlistResponse:0x123b14000]
116384 ms | | | | | -[AAResponse responseDictionary]
116384 ms | | | | | -[AALoginAccountResponse _parseResponse:0xc8 responseBody:y:0x2816b2020]
116384 ms | | | | | | -[AAResponse responseDictionary]
116384 ms | | | | | | -[AAResponse responseDictionary]
116384 ms | | | | | | -[AAResponse responseDictionary]
116384 ms | | | | | | -[AALoginResponseAppleAccountInfo initWithDictionary:y:0x2816591e0]
116384 ms | | | | | | -[AALoginResponseCloudTokens initWithTokens:0x281659e60]
116384 ms | | | | | | -[AALoginResponseDataclasses initWithCloudServiceData:0x2816b03a0]
116385 ms | | | | -[AAResponse error]
116385 ms | | | | -[AALoginAccountResponse convertToProvisioningResponse]
116385 ms | | | | | -[AALoginAccountResponse responseParametersForServiceIdentifier:0x1e8b3f330]
116385 ms | | | | | | -[AALoginAccountResponse responseForDelegates]
116385 ms | | | | | | -[AAProvisioningResponse initWithDictionary:0x2816591e0]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[AAResponse responseDictionary]
116385 ms | | | | | | | -[ACAccount aa_updateWithProvisioningResponse:0x283126260]
116385 ms | | | | | | | | -[ACAccount username]
116386 ms | | | | | | | | -[ACAccount _useParentForCredentials]
116386 ms | | | | | | | | | -[ACAccount authenticationType]
116386 ms | | | | | | | | -[ACAccount aa_needsToVerifyTerms]
116386 ms | | | | | | | | | -[ACAccount parentAccount]
116386 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b42ad0]
116386 ms | | | | | | | | | -[ACAccount aa_suspensionInfo]
116386 ms | | | | | | | | | -[ACAccount parentAccount]
116386 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b3fc90]
116386 ms | | | | | | | | | -[AAAAuthenticationResponse altDSID]
116386 ms | | | | | | | | | -[ACAccount setAccountProperty:0x2807e9640 forKey:0x1e8b3c830]
116386 ms | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116386 ms | | | | | | | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3c830]
116386 ms | | | | | | | | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0x1e8b3c830]
116386 ms | | | | | | | | | | | -[AAProvisioningResponse dataclassProperties]
116387 ms | | | | | | | | | | | | -[AAProvisioningResponse provisionedDataclasses]
116387 ms | | | | | | | | | | | | -[ACAccount _aa_setDataclassProperties:0x2816591e0]
116387 ms | | | | | | | | | | | | | -[ACAccount setDataclassProperties:0x2816591e0]
116387 ms | | | | | | | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807]

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e9d40]
116387 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9d40]
116387 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e8600]
116387 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e8600]
116387 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c7270]
116387 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc7270]
116387 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c9aa0]
116387 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc9aa0]
116387 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
caafo]
116387 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ccaafo]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e8100]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e8100]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c9ef0]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc9ef0]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e8400]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e8400]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c7e70]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc7e70]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c9260]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc9260]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
ea3c0]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807ea3c0]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
daaf0]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cdAAF0]
116388 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
da730]
116388 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cdA730]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e8a40]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e8a40]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c

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c8930]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc8930]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
cbae0]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ccbæ0]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e9400]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9400]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
ca580]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cca580]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e9700]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9700]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c9b60]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc9b60]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
cbfc0]
116389 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ccbfc0]
116389 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e8e40]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e8e40]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
ea200]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807ea200]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c8450]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc8450]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e9e80]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9e80]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
e4300]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ce4300]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e9a40]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9a40]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281d
17210]
116390 ms | | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281d17210]
116390 ms | | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
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c98f0]
116390 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc98f0]
116390 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
cbc90]
116390 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ccbc90]
116390 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
ca6a0]
116390 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cca6a0]
116390 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281d
17240]
116390 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281d17240]
116390 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
e9940]
116391 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807e9940]
116391 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
e5740]
116391 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281ce5740]
116391 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x2807
ea880]
116391 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x2807ea880]
116391 ms | | | | | | | -[ACAccount _markDataclassPropertyDirty:0x281c
c8ba0]
116391 ms | | | | | | | -[ACAccount _unsafe_markDataclassProperty
Dirty:0x281cc8ba0]
116391 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417
e18]
116391 ms | | | | | | | -[AAAAuthenticationResponse personID]
116391 ms | | | | | | | -[ACAccount setAccountProperty:0x2816b08e0 forKey:0x1e8b
42670]
116391 ms | | | | | | | -[AAProvisioningResponse firstName]
116391 ms | | | | | | | -[ACAccount setAccountProperty:0x2816b2200 forKey:0x1e8b
3c550]
116391 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116391 ms | | | | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3c550]
116391 ms | | | | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3c550]
116391 ms | | | | | | | -[AAProvisioningResponse lastName]
116391 ms | | | | | | | -[ACAccount setAccountProperty:0x2816b03c0 forKey:0x1e8b
3c570]
116391 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116391 ms | | | | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3c570]
116391 ms | | | | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3c570]
116392 ms | | | | | | | -[AAProvisioningResponse primaryEmail]
116392 ms | | | | | | | -[ACAccount setAccountProperty:0x281cc7ab0 forKey:0x1e8b
3f5f0]
116392 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116392 ms | | | | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f5f0]
116392 ms | | | | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0

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x1e8b3f5f0]
116392 ms | | | | -[AAProvisioningResponse primaryEmailVerified]
116392 ms | | | | -[ACAccount setAccountProperty:0x1f6189af8 forKey:0x1e8b
3f610]
116392 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116392 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f610]
116392 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f610]
116392 ms | | | | -[AAProvisioningResponse appleIDAliases]
116392 ms | | | | -[ACAccount setAccountProperty:0x281cdafa0 forKey:0x1e8b
42710]
116392 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116392 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42710]
116392 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b42710]
116392 ms | | | | -[AAResponse protocolVersion]
116392 ms | | | | -[ACAccount setAccountProperty:0xb43ecf8729c4e1d3 forKey
:0x1e8b3c650]
116392 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116392 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3c650]
116393 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3c650]
116393 ms | | | | -[AAProvisioningResponse appleID]
116393 ms | | | | -[ACAccount setAccountProperty:0x281cc7ab0 forKey:0x1e8b
3f630]
116393 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116393 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f630]
116393 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f630]
116393 ms | | | | -[AAProvisioningResponse regionInfo]
116393 ms | | | | -[ACAccount setAccountProperty:0x2816b1fe0 forKey:0x1e8b
3f750]
116393 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116393 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f750]
116393 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f750]
116393 ms | | | | -[AAProvisioningResponse isManagedAppleID]
116393 ms | | | | -[ACAccount setAccountProperty:0x1f6189b10 forKey:0x1e8b
3f670]
116393 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116393 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f670]
116393 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f670]
116393 ms | | | | -[AAProvisioningResponse isNotesMigrated]
116393 ms | | | | -[ACAccount setAccountProperty:0x1f6189af8 forKey:0x1e8b
3f690]
116393 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116393 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f690]
116393 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f690]
116394 ms | | | | -[AAProvisioningResponse isRemindersMigrated]
116394 ms | | | | -[ACAccount setAccountProperty:0x1f6189b10 forKey:0x1e8b
42b90]
116394 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116394 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42b90]
116394 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0

```

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x1e8b42b90]
116394 ms | | | | -[AAProvisioningResponse isRemindersAutoMigratableToCK]
116394 ms | | | | -[ACAccount setAccountProperty:0x1f6189b10 forKey:0x1e8b
42bb0]
116394 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116394 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42bb0]
116394 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b42bb0]
116394 ms | | | | -[AAProvisioningResponse isSandboxAccount]
116394 ms | | | | -[ACAccount setAccountProperty:0x1f6189b10 forKey:0x1e8b
3f6f0]
116394 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116394 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f6f0]
116394 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f6f0]
116394 ms | | | | -[AAProvisioningResponse isCloudDocsMigrated]
116394 ms | | | | -[ACAccount setAccountProperty:0x1f6189af8 forKey:0x1e8b
42b50]
116394 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116394 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42b50]
116394 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b42b50]
116394 ms | | | | -[AAProvisioningResponse isCloudDocsMigrated]
116394 ms | | | | -[ACAccount setAccountProperty:0x1f6189af8 forKey:0x1e8b
42b10]
116394 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116395 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b42b10]
116395 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b42b10]
116395 ms | | | | -[AAProvisioningResponse hasOptionalTerms]
116395 ms | | | | -[ACAccount setAccountProperty:0x1f6189b10 forKey:0x1e8b
3f730]
116395 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116395 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f730]
116395 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f730]
116395 ms | | | | -[AAProvisioningResponse isFamilyEligible]
116395 ms | | | | -[ACAccount setAccountProperty:0x1f6189af8 forKey:0x1e8b
3f790]
116395 ms | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417df8]
116395 ms | | | | -[ACAccount _markAccountPropertyDirty:0x1e8b3f790]
116395 ms | | | | -[ACAccount _unsafe_markAccountPropertyDirty:0
x1e8b3f790]
116395 ms | | | | -[AAProvisioningResponse provisionedDataclasses]
116395 ms | | | | +[AADataclassManager sharedManager]
116395 ms | | | | -[AADataclassManager init]
116395 ms | | | | -[ACAccountStore init]
116396 ms | | | | -[ACAccountStore initWithRemoteEndpoint:0
x0 effectiveBundleID:0x0]
116396 ms | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
116396 ms | | | | -[ACTimedExpirer init]
116396 ms | | | | +[ACTimedExpirer expirerWithTimeout:
0x1e]
116396 ms | | | | -[ACTimedExpirer init]
116396 ms | | | | +[ACNotificationRebroadcaster shared

```

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Rebroadcaster]
116396 ms | | | | | -[AADataclassManager filteredServerProvidedFeatures:0x10
4013130 forAccount:0x282b408c0]
116396 ms | | | | | | -[ACAccount aa_accountClass]
116396 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c1
0]
116396 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b4
2c10]
116396 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e9d40 forAccount:0x282b408c0]
116396 ms | | | | | | | | | +[AADataclassManager sharedManager]
116396 ms | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e9d40]
116397 ms | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e9d40]
116397 ms | | | | | | | | | | | +[AADataclassManager sharedManager]
116397 ms | | | | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807e9d40]
116397 ms | | | | | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116397 ms | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116397 ms | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116397 ms | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116397 ms | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e8600 forAccount:0x282b408c0]
116397 ms | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116397 ms | | | | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e8600]
116397 ms | | | | | | | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e8600]
116397 ms | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116397 ms | | | | | | | | | | | | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807e8600]
116397 ms | | | | | | | | | | | | | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116397 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116397 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116397 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116397 ms | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc7270 forAccount:0x282b408c0]
116397 ms | | | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116397 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc7270]
116397 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc7270]
116400 ms | | | | | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116400 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc7270]
116400 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116400 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[NSError initWithDomain:0x1f61f0180 code
:0xfffffffffffffd5c2 userInfo:0x2816bf080]

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116400 ms | | | | | | | -[NSError initWithDomain:0x1f61f0180 code
:0xfffffffffffffd5c2 userInfo:0x2816bf080]
116401 ms | | | | | | | -[NSError initWithDomain:0x1f61f0180 code
:0xfffffffffffffd5c2 userInfo:0x2816bf080]
116402 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc9aa0 forAccount:0x282b408c0]
116402 ms | | | | | | | +[AADataclassManager sharedManager]
116402 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc9aa0]
116402 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc9aa0]
116402 ms | | | | | | | +[AADataclassManager sharedManager]
116402 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc9aa0]
116402 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116402 ms | | | | | | | -[ACAccount aa_accountClass]
116402 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116403 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116403 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
ccaaef0 forAccount:0x282b408c0]
116403 ms | | | | | | | +[AADataclassManager sharedManager]
116403 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281ccaaef0]
116403 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281ccaaef0]
116403 ms | | | | | | | +[AADataclassManager sharedManager]
116403 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281ccaaef0]
116403 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116405 ms | | | | | | | -[ACAccount aa_accountClass]
116406 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116406 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116406 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e8100 forAccount:0x282b408c0]
116406 ms | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e8100]
116406 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e8100]
116406 ms | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807e8100]
116406 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116406 ms | | | | | | | -[ACAccount aa_accountClass]
116406 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116406 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116406 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281

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cc9ef0 forAccount:0x282b408c0]
116406 ms | | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc9ef0]
116406 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc9ef0]
116406 ms | | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc9ef0]
116406 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
fierDictionary]
116406 ms | | | | | | | | -[ACAccount aa_accountClass]
116406 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116406 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116406 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e8400 forAccount:0x282b408c0]
116406 ms | | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e8400]
116406 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e8400]
116406 ms | | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807e8400]
116406 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
fierDictionary]
116406 ms | | | | | | | | -[ACAccount aa_accountClass]
116406 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116406 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116406 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc7e70 forAccount:0x282b408c0]
116406 ms | | | | | | | | +[AADataclassManager sharedManager]
116406 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc7e70]
116406 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc7e70]
116407 ms | | | | | | | | +[AADataclassManager sharedManager]
116407 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc7e70]
116407 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
fierDictionary]
116408 ms | | | | | | | | -[ACAccount aa_accountClass]
116408 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116408 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116408 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x1e7
416ab8 forAccount:0x282b408c0]
116408 ms | | | | | | | | +[AADataclassManager sharedManager]
116408 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x1e7416ab8]
116408 ms | | | | | | | | -[AADataclassManager _isRestrictedForData

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```

class:0x1e7416ab8]
116408 ms | | | | | | | | +[AADataclassManager sharedManager]
116408 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x1e7416ab8]
116408 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116408 ms | | | | | | | | -[ACAccount aa_accountClass]
116408 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116408 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116408 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc9260 forAccount:0x282b408c0]
116408 ms | | | | | | | | +[AADataclassManager sharedManager]
116408 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc9260]
116408 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc9260]
116408 ms | | | | | | | | +[AADataclassManager sharedManager]
116408 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc9260]
116408 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116409 ms | | | | | | | | -[ACAccount aa_accountClass]
116409 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116409 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116409 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7ea3c0 forAccount:0x282b408c0]
116409 ms | | | | | | | | +[AADataclassManager sharedManager]
116409 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807ea3c0]
116409 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807ea3c0]
116409 ms | | | | | | | | +[AADataclassManager sharedManager]
116409 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807ea3c0]
116409 ms | | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116409 ms | | | | | | | | -[ACAccount aa_accountClass]
116409 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116409 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116409 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cdaf0 forAccount:0x282b408c0]
116409 ms | | | | | | | | +[AADataclassManager sharedManager]
116409 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cdaf0]
116409 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cdaf0]
116409 ms | | | | | | | | +[AADataclassManager sharedManager]
116409 ms | | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cdaf0]
116409 ms | | | | | | | | +[AADataclassManager appBundleIdentifi

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fierDictionary]
116410 ms | | | | | | | -[ACAccount aa_accountClass]
116410 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116410 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116410 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cda730 forAccount:0x282b408c0]
116410 ms | | | | | | | | +[AADataclassManager sharedManager]
116410 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cda730]
116410 ms | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cda730]
116410 ms | | | | | | | | | | +[AADataclassManager sharedManager]
116410 ms | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281cda730]
116410 ms | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116412 ms | | | | | | | -[ACAccount aa_accountClass]
116412 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116412 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116412 ms | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e8a40 forAccount:0x282b408c0]
116412 ms | | | | | | | | | | | +[AADataclassManager sharedManager]
116412 ms | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e8a40]
116412 ms | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e8a40]
116412 ms | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116412 ms | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x2807e8a40]
116412 ms | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116412 ms | | | | | | | -[ACAccount aa_accountClass]
116412 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116412 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116412 ms | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc8930 forAccount:0x282b408c0]
116412 ms | | | | | | | | | | | +[AADataclassManager sharedManager]
116412 ms | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc8930]
116412 ms | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc8930]
116412 ms | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116412 ms | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281cc8930]
116412 ms | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116412 ms | | | | | | | -[ACAccount aa_accountClass]
116412 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116412 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x

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1e8b42c10]
116412 ms | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
ccbae0 forAccount:0x282b408c0]
116412 ms | | | | | | +[AADataclassManager sharedManager]
116412 ms | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281ccbae0]
116412 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281ccbae0]
116412 ms | | | | | | | +[AADataclassManager sharedManager]
116413 ms | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281ccbae0]
116413 ms | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116414 ms | | | | | | | | -[ACAccount aa_accountClass]
116414 ms | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116414 ms | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116414 ms | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e9400 forAccount:0x282b408c0]
116414 ms | | | | | | | | | | | +[AADataclassManager sharedManager]
116414 ms | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e9400]
116414 ms | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e9400]
116414 ms | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116414 ms | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x2807e9400]
116414 ms | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116414 ms | | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116414 ms | | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116414 ms | | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116414 ms | | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cca580 forAccount:0x282b408c0]
116415 ms | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116415 ms | | | | | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cca580]
116415 ms | | | | | | | | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cca580]
116415 ms | | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116415 ms | | | | | | | | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281cca580]
116415 ms | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116415 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116415 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116415 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116415 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
ccbfc0 forAccount:0x282b408c0]
116415 ms | | | | | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116415 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe

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movedForDataclass:0x281ccbf0]
116415 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281ccbf0]
116415 ms | | | | | | | | +[AADataclassManager sharedManager]
116415 ms | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281ccbf0]
116415 ms | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116416 ms | | | | | | | | -[ACAccount aa_accountClass]
116416 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116416 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116416 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc9b60 forAccount:0x282b408c0]
116416 ms | | | | | | | | +[AADataclassManager sharedManager]
116416 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc9b60]
116416 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc9b60]
116416 ms | | | | | | | | +[AADataclassManager sharedManager]
116416 ms | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281cc9b60]
116416 ms | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116416 ms | | | | | | | | -[ACAccount aa_accountClass]
116417 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116417 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116417 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e9700 forAccount:0x282b408c0]
116417 ms | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e9700]
116417 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e9700]
116417 ms | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x2807e9700]
116417 ms | | | | | | | | +[AADataclassManager AppBundleIdentifi
erDictionary]
116417 ms | | | | | | | | -[ACAccount aa_accountClass]
116417 ms | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116417 ms | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116417 ms | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e8e40 forAccount:0x282b408c0]
116417 ms | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e8e40]
116417 ms | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e8e40]
116417 ms | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | -[AADataclassManager AppBundleIdentifierF

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orDataclass:0x2807e8e40]
116417 ms | | | | | | | | | +[AADataclassManager appBundleIdentifierDictionary]
116417 ms | | | | | | | | | -[ACAccount aa_accountClass]
116417 ms | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
116417 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
116417 ms | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x2807ea200 forAccount:0x282b408c0]
116417 ms | | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrMovedForDataclass:0x2807ea200]
116417 ms | | | | | | | | | -[AADataclassManager _isRestrictedForDataclass:0x2807ea200]
116417 ms | | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | | -[AADataclassManager appBundleIdentifierForDataclass:0x2807ea200]
116417 ms | | | | | | | | | +[AADataclassManager appBundleIdentifierDictionary]
116417 ms | | | | | | | | | -[ACAccount aa_accountClass]
116417 ms | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
116417 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
116417 ms | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281cc8450 forAccount:0x282b408c0]
116417 ms | | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrMovedForDataclass:0x281cc8450]
116417 ms | | | | | | | | | -[AADataclassManager _isRestrictedForDataclass:0x281cc8450]
116417 ms | | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | | -[AADataclassManager appBundleIdentifierForDataclass:0x281cc8450]
116417 ms | | | | | | | | | +[AADataclassManager appBundleIdentifierDictionary]
116417 ms | | | | | | | | | -[ACAccount aa_accountClass]
116417 ms | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
116417 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
116417 ms | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x2807e9e80 forAccount:0x282b408c0]
116417 ms | | | | | | | | | +[AADataclassManager sharedManager]
116417 ms | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrMovedForDataclass:0x2807e9e80]
116417 ms | | | | | | | | | -[AADataclassManager _isRestrictedForDataclass:0x2807e9e80]
116418 ms | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | -[AADataclassManager appBundleIdentifierForDataclass:0x2807e9e80]
116418 ms | | | | | | | | | +[AADataclassManager appBundleIdentifierDictionary]
116418 ms | | | | | | | | | -[ACAccount aa_accountClass]
116418 ms | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8

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b42c10]
116418 ms | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116418 ms | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e9a40 forAccount:0x282b408c0]
116418 ms | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e9a40]
116418 ms | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e9a40]
116418 ms | | | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x2807e9a40]
116418 ms | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116418 ms | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116418 ms | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116418 ms | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116418 ms | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
d17210 forAccount:0x282b408c0]
116418 ms | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281d17210]
116418 ms | | | | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281d17210]
116418 ms | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281d17210]
116418 ms | | | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116418 ms | | | | | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116418 ms | | | | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116418 ms | | | | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116418 ms | | | | | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc98f0 forAccount:0x282b408c0]
116418 ms | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | | | | | | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc98f0]
116418 ms | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc98f0]
116418 ms | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager sharedManager]
116418 ms | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager AppBundleIdentifierF
orDataclass:0x281cc98f0]
116418 ms | | | | | | | | | | | | | | | | | | | | | | +[AADataclassManager AppBundleIdentifi
fierDictionary]
116419 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount aa_accountClass]
116419 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116419 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116419 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
ccbc90 forAccount:0x282b408c0]

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116419 ms | | | | | | | +[AADataclassManager sharedManager]
116419 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281ccbc90]
116419 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281ccbc90]
116419 ms | | | | | | | +[AADataclassManager sharedManager]
116419 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281ccbc90]
116419 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116420 ms | | | | | | | -[ACAccount aa_accountClass]
116420 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cca6a0 forAccount:0x282b408c0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cca6a0]
116421 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cca6a0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cca6a0]
116421 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116421 ms | | | | | | | -[ACAccount aa_accountClass]
116421 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
ce5740 forAccount:0x282b408c0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281ce5740]
116421 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281ce5740]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281ce5740]
116421 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116421 ms | | | | | | | -[ACAccount aa_accountClass]
116421 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7e9940 forAccount:0x282b408c0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807e9940]
116421 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807e9940]

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116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807e9940]
116421 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116421 ms | | | | | | | -[ACAccount aa_accountClass]
116421 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x280
7ea880 forAccount:0x282b408c0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x2807ea880]
116421 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x2807ea880]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x2807ea880]
116421 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116421 ms | | | | | | | -[ACAccount aa_accountClass]
116421 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[AADataclassManager shouldProvisionDataclass:0x281
cc8ba0 forAccount:0x282b408c0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager isSystemAppRestrictedOrRe
movedForDataclass:0x281cc8ba0]
116421 ms | | | | | | | -[AADataclassManager _isRestrictedForData
class:0x281cc8ba0]
116421 ms | | | | | | | +[AADataclassManager sharedManager]
116421 ms | | | | | | | -[AADataclassManager appBundleIdentifierF
orDataclass:0x281cc8ba0]
116421 ms | | | | | | | +[AADataclassManager appBundleIdentifi
erDictionary]
116421 ms | | | | | | | -[ACAccount aa_accountClass]
116421 ms | | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8
b42c10]
116421 ms | | | | | | | -[ACAccount accountPropertyForKey:0x
1e8b42c10]
116421 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807e9d40]
116421 ms | | | | | | | -[ACAccount accountStore]
116421 ms | | | | | | | +[ACAccountStore defaultStore]
116421 ms | | | | | | | -[ACAccountStore provisionedDataclassesForAccount:0
x282b408c0 error:0x170482160]
116421 ms | | | | | | | -[ACAccount description]
116421 ms | | | | | | | -[ACAccount username]
116421 ms | | | | | | | -[ACAccount _useParentForCredentials
]
116421 ms | | | | | | | -[ACAccount authenticationType]
116422 ms | | | | | | | -[ACAccount identifier]
116422 ms | | | | | | | -[ACAccountStore remoteAccountStoreSession]

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116422 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x170
481f00]
116422 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
116422 ms | | | | | | | -[ACRemoteAccountStoreSession synchronousRemot
eObjectProxyWithErrorHandler:0x170481ee0]
116422 ms | | | | | | | -[ACRemoteAccountStoreSession _connection
]
116422 ms | | | | | | | -[ACAccount identifier]
116423 ms | | | | | | | -[ACTrackedSet init]
116423 ms | | | | | | | | -[ACTrackedSet initWithObjects:0x0 count:0x0]
116423 ms | | | | | | | -[ACMutableTrackedSet addObject:0x2807e9d40]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807e8600]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x2807e8600]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cc9aa0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cc9aa0]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281ccaaf0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281ccaaf0]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807e8400]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x2807e8400]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cc9ef0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cc9ef0]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cc7e70]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cc7e70]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807e8100]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x2807e8100]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x1e7416ab8]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x1e7416ab8]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cc9260]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cc9260]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807ea3c0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x2807ea3c0]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cdAAF0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cdAAF0]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cdA730]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cdA730]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x2807e8a40]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x2807e8a40]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281cc8930]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281cc8930]
116423 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417dd8]
116423 ms | | | | | | | -[ACAccount setProvisioned:0x1 forDataclass:0x281ccbAE0]
116423 ms | | | | | | | | -[ACMutableTrackedSet addObject:0x281ccbAE0]

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116424 ms | | | | | | -[ACAccount parentAccount]
116424 ms | | | | | | -[ACAccount accountStore]
116424 ms | | | | | | | +[ACAccountStore defaultStore]
116424 ms | | | | | | -[ACAccountStore enabledDataclassesForAccount:0x282
b408c0 error:0x170482198]
116424 ms | | | | | | | -[ACAccount description]
116424 ms | | | | | | | | -[ACAccount username]
116424 ms | | | | | | | | | -[ACAccount _useParentForCredentials
]
116424 ms | | | | | | | | | | -[ACAccount authenticationType]
116424 ms | | | | | | | | | | | -[ACAccount identifier]
116424 ms | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
116424 ms | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x170
481f30]
116424 ms | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
116424 ms | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemot
eObjectProxyWithErrorHandler:0x170481f10]
116424 ms | | | | | | | | | | | | -[ACRemoteAccountStoreSession _connection
]
116424 ms | | | | | | | | | | | | | -[ACAccount identifier]
116425 ms | | | | | | | | | | | | -[ACAccount provisionedDataclasses]
116425 ms | | | | | | | | | | | | | -[ACAccount parentAccount]
116425 ms | | | | | | | | | | | | | -[ACAccount aa_updateTokensWithProvisioningResponse:0x28
3126260]
116425 ms | | | | | | | | | | | | | | -[AAAuthenticationResponse authToken]
116425 ms | | | | | | | | | | | | | | -[ACAccount aa_setAuthToken:0x282b2d960]
116425 ms | | | | | | | | | | | | | | | -[ACAccount credential]
116425 ms | | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116425 ms | | | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116425 ms | | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116425 ms | | | | | | | | | | | | | | | | | | | -[ACAccountCredential token]
116425 ms | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential credentialItemForKe
y:0x1e74190b8]
116425 ms | | | | | | | | | | | | | | | | | | | | -[ACAccount credential]
116425 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116425 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount credential]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential setToken:0x282b2d960]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0
x282b2d960 forKey:0x1e74190b8]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACZeroingString initWithString:0x2
82b2d960]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential _markPropertyD
irty:0x1e7419578]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _markCredentialDirt
y]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _markPropertyD
irty:0x1e7417d98]
116425 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _unsafe_m

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arkPropertyDirty:0x1e7417d98]
116426 ms | | | | | | | -[ACAccount setAuthenticated:0x1]
116426 ms | | | | | | | | -[ACAccount _useParentForCredentials]
116426 ms | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1
e7417d78]
116426 ms | | | | | | | -[ACAccount setLastCredentialRenewalRejec
tionDate:0x0]
116426 ms | | | | | | | | -[ACAccount _useParentForCredentials
]
116426 ms | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | -[ACAccount _unsafe_markPropertyDirt
y:0x1e7417ed8]
116426 ms | | | | | | | -[AAAuthenticationResponse mapsToken]
116426 ms | | | | | | | | -[ACAccount aa_setMapsToken:0x282b2da40]
116426 ms | | | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116426 ms | | | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | | | -[ACAccountCredential mapsToken]
116426 ms | | | | | | | | | | | | -[ACAccountCredential credentialItemForKe
y:0x1e7419278]
116426 ms | | | | | | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116426 ms | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials
]
116426 ms | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | | | | | | | | | -[ACAccountCredential setMapsToken:0x282b2da40
]
116426 ms | | | | | | | | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0
x282b2da40 forKey:0x1e7419278]
116426 ms | | | | | | | | | | | | | | | | | | | -[ACZeroingString initWithString:0x2
82b2da40]
116426 ms | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential _markPropertyD
irty:0x1e7419578]
116426 ms | | | | | | | | | | | | | | | | | | | | -[ACAccount _markCredentialDirt
y]
116426 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccount _markPropertyD
irty:0x1e7417d98]
116426 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _unsafe_m
arkPropertyDirty:0x1e7417d98]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | -[AAAuthenticationResponse mdmServerToken]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | -[AAProvisioningResponse searchPartyToken]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2d340
forKey:0x1e74193f8]
116426 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACZeroingString initWithString:0x282b2d340]

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116426 ms | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7
419578]
116426 ms | | | | | | | -[ACAccount _markCredentialDirty]
116426 ms | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116426 ms | | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116426 ms | | | | | | | -[AAProvisioningResponse keyTransparencyToken]
116426 ms | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | -[ACAccount _useParentForCredentials]
116426 ms | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2c9a0
forKey:0x1e7419418]
116426 ms | | | | | | | | -[ACZeroingString initWithString:0x282b2c9a0]
116426 ms | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7
419578]
116426 ms | | | | | | | | | -[ACAccount _markCredentialDirty]
116426 ms | | | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116426 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116426 ms | | | | | | | | | | | | -[AAAAuthenticationResponse cloudKitToken]
116426 ms | | | | | | | | | | -[ACAccount credential]
116426 ms | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116426 ms | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
116426 ms | | | | | | | | | | | | -[ACAccount authenticationType]
116426 ms | | | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2df80
forKey:0x1e7419318]
116426 ms | | | | | | | | | | -[ACZeroingString initWithString:0x282b2df80]
116426 ms | | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7
419578]
116426 ms | | | | | | | | | | | -[ACAccount _markCredentialDirty]
116426 ms | | | | | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116426 ms | | | | | | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116426 ms | | | | | | | | | | | | | -[ACAccount aa_cloudKitAccount]
116426 ms | | | | | | | | | | | | | -[ACAccount childAccountsWithAccountTypeIdentifi
fier:0x1e7418a58]
116426 ms | | | | | | | | | | | | | | -[ACAccount accountStore]
116426 ms | | | | | | | | | | | | | | | +[ACAccountStore defaultStore]
116426 ms | | | | | | | | | | | | | | | -[ACAccountStore childAccountsForAccount:
0x282b408c0 withTypeIdentifier:0x1e7418a58]
116427 ms | | | | | | | | | | | | | | | | -[ACAccount description]
116427 ms | | | | | | | | | | | | | | | | | -[ACAccount username]
116427 ms | | | | | | | | | | | | | | | | | | -[ACAccount _useParentForC
redentials]
116427 ms | | | | | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116427 ms | | | | | | | | | | | | | | | | | | | | -[ACAccount identifier]
116427 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore remoteAccountStores
ession]
116427 ms | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer scheduleExpira
tion:0x170481d00]
116427 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCa

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ncelTimer]
116427 ms | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x170481ce0]
116427 ms | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
116427 ms | | | | | | | | | -[ACAccount identifier]
116427 ms | | | | | | | | | -[ACAccount username]
116427 ms | | | | | | | | | -[ACAccount _useParentForCredentials]
116427 ms | | | | | | | | | -[ACAccount authenticationType]
116427 ms | | | | | | | | | +[AAKeychainManager initialize]
116432 ms | | | | | | | | | +[AAKeychainManager setPassword:0x282b2df80 forServiceName:0x1e8b42d10 username:0x281d07cc0 accessGroup:0x1e8b42d30]
116432 ms | | | | | | | | | | +[AAKeychainManager passwordForServiceName:0x1e8b42d10 username:0x281d07cc0 accessGroup:0x1e8b42d30]
116440 ms | | | | | | | | | | -[AAAAuthenticationResponse fmipToken]
116440 ms | | | | | | | | | | -[ACAccount credential]
116440 ms | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116440 ms | | | | | | | | | | | -[ACAccount _useParentForCredentials]
116440 ms | | | | | | | | | | | -[ACAccount authenticationType]
116440 ms | | | | | | | | | | | -[ACAccountCredential setFindMyiPhoneToken:0x282b2db20]
116440 ms | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2db20 forKey:0x1e7419218]
116440 ms | | | | | | | | | | | | -[ACZeroingString initWithString:0x282b2db20]
116440 ms | | | | | | | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7419578]
116440 ms | | | | | | | | | | | | | | -[ACAccount _markCredentialDirty]
116440 ms | | | | | | | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7417d98]
116440 ms | | | | | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417d98]
116440 ms | | | | | | | | | | | | | | -[AAProvisioningResponse fmipAppToken]
116440 ms | | | | | | | | | | | | | -[ACAccount credential]
116440 ms | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116440 ms | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
116440 ms | | | | | | | | | | | | | | -[ACAccount authenticationType]
116440 ms | | | | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2dc0 forKey:0x1e7419238]
116440 ms | | | | | | | | | | | | | | | -[ACZeroingString initWithString:0x282b2dc0]
116440 ms | | | | | | | | | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7419578]
116440 ms | | | | | | | | | | | | | | | | -[ACAccount _markCredentialDirty]
116440 ms | | | | | | | | | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7417d98]
116440 ms | | | | | | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417d98]
116440 ms | | | | | | | | | | | | | | | -[AAProvisioningResponse fmipSiriToken]
116440 ms | | | | | | | | | | | | | | -[ACAccount credential]
116440 ms | | | | | | | | | | | | | | | -[ACAccount credentialWithError:0x0]
116440 ms | | | | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
116440 ms | | | | | | | | | | | | | | | -[ACAccount authenticationType]
116440 ms | | | | | | | | | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2dea0 forKey:0x1e7419258]
116440 ms | | | | | | | | | | | | | | | | -[ACZeroingString initWithString:0x282b2dea0]
116441 ms | | | | | | | | | | | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7

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419578]
116441 ms | | | | | | | -[ACAccount _markCredentialDirty]
116441 ms | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116441 ms | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116441 ms | | | | | | -[AAAAuthenticationResponse fmfToken]
116441 ms | | | | | -[ACAccount credential]
116441 ms | | | | | | -[ACAccount credentialWithError:0x0]
116441 ms | | | | | | | -[ACAccount _useParentForCredentials]
116441 ms | | | | | | | | -[ACAccount authenticationType]
116441 ms | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2d880
forKey:0x1e74192b8]
116441 ms | | | | | | | -[ACZeroingString initWithString:0x282b2d880]
116441 ms | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7
419578]
116441 ms | | | | | | | -[ACAccount _markCredentialDirty]
116441 ms | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116441 ms | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116441 ms | | | | | | | -[AAAAuthenticationResponse fmfAppToken]
116441 ms | | | | | | -[ACAccount credential]
116441 ms | | | | | | | -[ACAccount credentialWithError:0x0]
116441 ms | | | | | | | | -[ACAccount _useParentForCredentials]
116441 ms | | | | | | | | | -[ACAccount authenticationType]
116441 ms | | | | | | | -[ACAccountCredential setCredentialItem:0x282b2e680
forKey:0x1e74192d8]
116441 ms | | | | | | | -[ACZeroingString initWithString:0x282b2e680]
116441 ms | | | | | | | -[ACAccountCredential _markPropertyDirty:0x1e7
419578]
116441 ms | | | | | | | -[ACAccount _markCredentialDirty]
116441 ms | | | | | | | | -[ACAccount _markPropertyDirty:0x1e7
417d98]
116441 ms | | | | | | | | -[ACAccount _unsafe_markPropert
yDirty:0x1e7417d98]
116441 ms | | | | | | | -[AASignInFlowController _verifyLoginResponseForiCloudAccount
:0x282b408c0 withSuccess:0x1 error:0x0 completion:0x2807d6400]
116441 ms | | | | | | | -[ACAccount aa_password]
116441 ms | | | | | | | | -[ACAccount credential]
116441 ms | | | | | | | | | -[ACAccount credentialWithError:0x0]
116441 ms | | | | | | | | | | -[ACAccount _useParentForCredentials]
116441 ms | | | | | | | | | | | -[ACAccount authenticationType]
116441 ms | | | | | | | | -[ACAccountCredential password]
116441 ms | | | | | | | | | -[ACAccountCredential credentialItemForKey:0x1
e7419098]
116441 ms | | | | | | | | | -[ACZeroingString length]
116441 ms | | | | | | | | | -[ACZeroingString getCharacters:0x120370c
70 range:0x0]
116441 ms | | | | | | | | | -[ACAccount setAuthenticated:0x0]
116441 ms | | | | | | | | | | -[ACAccount _useParentForCredentials]
116441 ms | | | | | | | | | | | -[ACAccount authenticationType]
116441 ms | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417d78]
116441 ms | | | | | | | | | | | | -[AASignInFlowController _validateAndEnrollCDPStateForAc
count:0x282b408c0 withCDPContext:0x282558580 completion:0x1704823b8]
116441 ms | | | | | | | | | | | | | -[ACAccount setWarmingUp:0x1]

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116441 ms | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417
eb8]
116441 ms | | | | | | -[ACAccount setEnabled:0x1 forDataclass:0x1e7416758
]
116441 ms | | | | | | | -[ACAccount parentAccount]
116441 ms | | | | | | | -[ACAccount accountStore]
116441 ms | | | | | | | | +[ACAccountStore defaultStore]
116441 ms | | | | | | | -[ACAccountStore enabledDataclassesForAccount:
0x282b408c0 error:0x170482220]
116441 ms | | | | | | | | -[ACAccount description]
116441 ms | | | | | | | | | -[ACAccount username]
116441 ms | | | | | | | | | | -[ACAccount _useParentForCreden
tials]
116441 ms | | | | | | | | | | | -[ACAccount authentication
Type]
116441 ms | | | | | | | | | | | | -[ACAccount identifier]
116441 ms | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSessio
n]
116441 ms | | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:
0x170481fc0]
116441 ms | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelT
imer]
116441 ms | | | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronous
RemoteObjectProxyWithErrorHandler:0x170481fa0]
116441 ms | | | | | | | | | | | | | -[ACRemoteAccountStoreSession _conne
ction]
116441 ms | | | | | | | | | | | | | | -[ACAccount identifier]
116442 ms | | | | | | | | | | | | | -[ACTrackedSet init]
116442 ms | | | | | | | | | | | | | | -[ACTrackedSet initWithObjects:0x0 count:
0x0]
116442 ms | | | | | | | | | | | | | | -[ACMutableTrackedSet addObject:0x1e7416758]
116442 ms | | | | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417
db8]
116442 ms | | | | | | | | | | | | | | | -[ACAccount isProvisionedForDataclass:0x1e7416798]
116442 ms | | | | | | | | | | | | | | | | -[ACAccount provisionedDataclasses]
116442 ms | | | | | | | | | | | | | | | | -[ACAccount parentAccount]
116442 ms | | | | | | | | | | | | | | | | | -[ACAccount setEnabled:0x1 forDataclass:0x1e7416798
]
116442 ms | | | | | | | | | | | | | | | | | | -[ACAccount parentAccount]
116442 ms | | | | | | | | | | | | | | | | | | | -[ACMutableTrackedSet addObject:0x1e7416798]
116442 ms | | | | | | | | | | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417
db8]
116442 ms | | | | | | | | | | | | | | | | | | | | -[ACAccount setEnabled:0x1 forDataclass:0x1e74167b8
]
116442 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccount parentAccount]
116442 ms | | | | | | | | | | | | | | | | | | | | | -[ACMutableTrackedSet addObject:0x1e74167b8]
116442 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccount _unsafe_markPropertyDirty:0x1e7417
db8]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore saveAccount:0x282b408c0 withComple
tionHandler:0x1704822a0]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore _saveAccount:0x282b408c0 veri
fy:0x1 dataclassActions:0x0 completion:0x1704822a0]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount accountType]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType identifier]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount description]
116442 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount username]

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116442 ms | | | | | | | | | | | -[ACAccount _useParentForCreden
tials]
116442 ms | | | | | | | | | | | -[ACAccount authentication
Type]
116442 ms | | | | | | | | | | | | -[ACAccount identifier]
116442 ms | | | | | | | | | | | | -[ACAccount description]
116442 ms | | | | | | | | | | | | | -[ACAccount username]
116442 ms | | | | | | | | | | | | | -[ACAccount _useParentForCreden
tials]
116442 ms | | | | | | | | | | | | | -[ACAccount authentication
Type]
116442 ms | | | | | | | | | | | | | | -[ACAccount identifier]
116442 ms | | | | | | | | | | | | | | -[ACAccount isDirty]
116442 ms | | | | | | | | | | | | | | -[ACAccount accountType]
116442 ms | | | | | | | | | | | | | | -[ACAccountType identifier]
116442 ms | | | | | | | | | | | | | | -[ACAccountStore _checkSaveRateLimitForAc
countType:0x281d76580]
116442 ms | | | | | | | | | | | | | | -[ACAccountStore longLivedRemoteAccountSt
oreSession]
116442 ms | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession initWi
thListenerEndpoint:0x0 delegate:0x0]
116442 ms | | | | | | | | | | | | | | | | -[ACAccountStoreClientSideListe
ner initWithDelegate:0x0]
116442 ms | | | | | | | | | | | | | | | | | -[ACAccountStore effectiveBundleID]
116442 ms | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession setEff
ectiveBundleID:0x0]
116442 ms | | | | | | | | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:
0x170482030]
116442 ms | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelT
imer]
116442 ms | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession remoteObjec
tProxyWithErrorHandler:0x170482010]
116442 ms | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession _conne
ction]
116442 ms | | | | | | | | | | | | | | | | | | | | | -[ACTrackedXPCCConnection init]
116442 ms | | | | | | | | | | | | | | | | | | | | | +[ACRemoteAccountStoreInterface
XPCInterface]
116443 ms | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession _
locked_configureRemoteAccountStoreWithConnection:0x282341900]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccount encodeWithCoder:0x101a84800]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType encodeWithCoder:0x10
1a84800]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType identifier]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType accountTypeDesc
ription]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType objectID]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType visibility]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType credentialProte
ctionPolicy]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType supportsAuthent
ication]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType supportsMultipl
eAccounts]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType owningBundleID]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType isObsolete]
116443 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountCredential encodeWithCode

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jectForCoder:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString _allowsDirect
Encoding]
116444 ms | | | | | | | | | | -[ACZeroingString encodeWithCod
er:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString replacementOb
jectForCoder:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString _allowsDirect
Encoding]
116444 ms | | | | | | | | | | -[ACZeroingString encodeWithCod
er:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString replacementOb
jectForCoder:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString _allowsDirect
Encoding]
116444 ms | | | | | | | | | | -[ACZeroingString encodeWithCod
er:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString replacementOb
jectForCoder:0x101a84800]
116444 ms | | | | | | | | | | -[ACZeroingString _allowsDirect
Encoding]
116444 ms | | | | | | | | | | -[ACZeroingString encodeWithCod
er:0x101a84800]
116444 ms | | | | | | | | | | -[ACAccount accountProperties]
116444 ms | | | | | | | | | | -[ACAccount accountPropertiesTransfo
rmer]
116444 ms | | | | | | | | | | -[ACTrackedSet encodeWithCoder:0x101
a84800]
116444 ms | | | | | | | | | | -[ACTrackedSet encodeWithCoder:0x101
a84800]

/* TID 0xf107 */
118692 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]
118692 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
118692 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
118692 ms | | | -[ACAccountStore accountTypeWithAccountTypeID:0x1e741
8c58]
118692 ms | | | | -[ACAccountStore accountTypeWithAccountTypeID:0x
1e7418c58 error:0x0]
/* TID 0x103 */
118692 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d109f0]
118692 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeID:0x283c277
80 completion:0x16fd69d98]
118692 ms | -[ACAccountStore remoteAccountStoreSession]
118692 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
118692 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
118692 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118692 ms | | -[ACRemoteAccountStoreSession _connection]
118693 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x281696a20]
118693 ms | +[AMSLogConfig sharedAccountsConfig]
118693 ms | -[AMSLogConfig OSLogObject]
118693 ms | | -[AMSLogConfig propertyAccessQueue]
118693 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0xf107 */
118693 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118693 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c64c
0]
118693 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xc533 */
118693 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
118693 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
118693 ms | -[ACAccountStore aa_primaryAppleAccount]

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118693 ms | | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x2810094b0 pr
eloadedProperties:0x0 error:0x0]
118693 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118693 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e410]
118693 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118693 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxywit
hErrorHandler:0x16fe7e3f0]
118693 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf107 */
118693 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1701c64a0]
118693 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
118694 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
118694 ms | +[AMSUnitTests isRunningUnitTests]
118694 ms | +[ACAccountStore defaultStore]
/* TID 0xf107 */
118694 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
/* TID 0xc533 */
118694 ms -[ACAccountStore ams_activeiTunesAccount]
/* TID 0xf107 */
118694 ms | | | | | -[ACAccountType description]
118694 ms | | | | | | -[ACAccountType accountTypeDescription]
118694 ms | | | | | | -[ACAccountType identifier]
118694 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839f4e00]
/* TID 0xc533 */
118694 ms | -[ACAccountStore ams_mediaType]
/* TID 0xf107 */
118694 ms | | | | -[ACAccountType description]
118694 ms | | | | | -[ACAccountType accountTypeDescription]
118694 ms | | | | | | -[ACAccountType identifier]
118694 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118694 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c6470]
118694 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118694 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxywit
hErrorHandler:0x1701c6450]
118694 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
118695 ms | | | +[MSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118695 ms | | | | +[MSAccountStoreCache cacheAccessQueue]
/* TID 0xf107 */
118695 ms | | | | -[ACAccountType encodeWithCoder:0x101a84800]
118695 ms | | | | | -[ACAccountType identifier]
118695 ms | | | | | -[ACAccountType accountTypeDescription]
/* TID 0xc533 */
118695 ms | | | | +[MSAccountStoreCache cache]
118695 ms | | | | | +[MSAccountStoreCache cacheAccessQueue]
/* TID 0xf107 */
118695 ms | | | | | -[ACAccountType objectID]
118695 ms | | | | | -[ACAccountType visibility]
/* TID 0xc533 */
118695 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
/* TID 0xf107 */
118695 ms | | | | | -[ACAccountType credentialProtectionPolicy]
/* TID 0xc533 */
118695 ms | | | | | +[AMSUnitTests isRunningUnitTests]

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118695 ms | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118695 ms | | | | -[ACAccountStore ams_iTunesAccounts]
118695 ms | | | | -[ACAccountStore ams_mediaType]
118695 ms | | | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118695 ms | | | | | | +[AMSAccountStoreCache cacheAccessQueue]
118695 ms | | | | | | +[AMSAccountStoreCache cache]
118695 ms | | | | | | | +[AMSAccountStoreCache cacheAccessQueue]
/* TID 0xf107 */
118695 ms | | | | | | -[ACAccountType supportsAuthentication]
/* TID 0xc533 */
118695 ms | | | | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118695 ms | | | | | | | | +[AMSUnitTests isRunningUnitTests]
/* TID 0xf107 */
118695 ms | | | | | | | | -[ACAccountType supportsMultipleAccounts]
118695 ms | | | | | | | | -[ACAccountType owningBundleID]
/* TID 0xc533 */
118695 ms | | | | | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
/* TID 0xf107 */
118695 ms | | | | | | | | | -[ACAccountType isObsolete]
/* TID 0xc533 */
118695 ms | | | | | | | | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0
]
118695 ms | | | | | | | | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e741887
8 options:0x1 error:0x16fe7e5c8]
118695 ms | | | | | | | | | | -[ACAccountStore _ams_accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e5c8]
118695 ms | | | | | | | | | | -[ACAccountStore accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e4e8]
118695 ms | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
118695 ms | | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e28
0]
118695 ms | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118695 ms | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e260]
118695 ms | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
118696 ms | | | | | | | | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118697 ms | | | | | | | | | | | | | | | | | -[ACAccountType description]
118697 ms | | | | | | | | | | | | | | | | | | -[ACAccountType accountTypeDescription]
118697 ms | | | | | | | | | | | | | | | | | | | -[ACAccountType identifier]
118697 ms | | | | | | | | | | | | | | | | | | | | -[ACAccountStore _ams_accountsWithAccountType:0x283928310 opt
ions:0x1 error:0x16fe7e5c8]
118697 ms | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore accountsWithAccountType:0x283928310 opt
ions:0x1 error:0x16fe7e548]
118697 ms | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType description]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType accountTypeDescription]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType identifier]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountStore remoteAccountStoreSession]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e21
0]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e1f0]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACRemoteAccountStoreSession _connection]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType encodeWithCoder:0x101069e00]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType identifier]
118697 ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | -[ACAccountType accountTypeDescription]

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118697 ms | | | | | | -[ACAccountType objectID]
118697 ms | | | | | | -[ACAccountType visibility]
118697 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
118697 ms | | | | | | -[ACAccountType supportsAuthentication]
118697 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
118697 ms | | | | | | -[ACAccountType owningBundleID]
118697 ms | | | | | | -[ACAccountType isObsolete]
118700 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118701 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118701 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118701 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118701 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118701 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118701 ms | | | | | -[ACAccount description]
118701 ms | | | | | | -[ACAccount username]
118701 ms | | | | | | | -[ACAccount _useParentForCredentials]
118701 ms | | | | | | | | -[ACAccount authenticationType]
118701 ms | | | | | | -[ACAccount identifier]
118701 ms | | | | | -[ACAccount description]
118701 ms | | | | | | -[ACAccount username]
118701 ms | | | | | | | -[ACAccount _useParentForCredentials]
118701 ms | | | | | | | | -[ACAccount authenticationType]
118701 ms | | | | | | -[ACAccount identifier]
118701 ms | | | | | -[ACAccount description]
118701 ms | | | | | | -[ACAccount username]
118701 ms | | | | | | | -[ACAccount _useParentForCredentials]
118701 ms | | | | | | | | -[ACAccount authenticationType]
118701 ms | | | | | | -[ACAccount identifier]
118701 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118701 ms | | | | | | -[ACAccount isActive]
118701 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118701 ms | | | | | | -[ACAccount isActive]
118701 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118701 ms | | | | | | -[ACAccount isActive]
/* TID 0xf107 */
118705 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807daac0]
118708 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c0b80]
/* TID 0x103 */
118709 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x281697420]
118709 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807daac0]
118709 ms -[ACAccount credentialsChanged:0x281697420]
118709 ms | -[ACAccount identifier]
118709 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x281697420]
118709 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c0b80]
118709 ms -[ACAccount credentialsChanged:0x281697420]
118709 ms | -[ACAccount identifier]
/* TID 0xf107 */
118721 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]
/* TID 0x103 */
118721 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d27c30]
118722 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283c2b4
00 completion:0x16fd69d98]
118722 ms | -[ACAccountStore remoteAccountStoreSession]
118722 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]

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118722 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
118722 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118722 ms | | -[ACRemoteAccountStoreSession _connection]
118722 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x281696260]
118722 ms | +[AMSLogConfig sharedAccountsConfig]
118722 ms | -[AMSLogConfig OSLogObject]
118722 ms | | -[AMSLogConfig propertyAccessQueue]
118722 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0xf107 */
118724 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
118724 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
118724 ms | | | -[ACAccountStore accountTypeWithAccountTypeID:0x1e741
8c58]
118724 ms | | | | -[ACAccountStore accountTypeWithAccountTypeID:0x
1e7418c58 error:0x0]
118724 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118724 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c64c
0]
118724 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xec47 */
118724 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
118724 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
118724 ms | -[ACAccountStore aa_primaryAppleAccount]
118724 ms | | -[ACAccountStore accountsWithAccountTypeID:0x281008fb0 pr
eloadedProperties:0x0 error:0x0]
118724 ms | | | -[ACAccountStore remoteAccountStoreSession]
/* TID 0xf107 */
118724 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1701c64a0]
/* TID 0xec47 */
118724 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x17059a410]
118724 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xf107 */
118724 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xec47 */
118724 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x17059a3f0]
118724 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf107 */
118725 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118725 ms | | | | | | -[ACAccountType description]
118725 ms | | | | | | | -[ACAccountType accountTypeDescription]
118725 ms | | | | | | | -[ACAccountType identifier]
118725 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839220d0]
118725 ms | | | | | -[ACAccountType description]
118725 ms | | | | | | -[ACAccountType accountTypeDescription]
118725 ms | | | | | | -[ACAccountType identifier]
118725 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118725 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c6470]
118725 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118725 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x1701c6450]
118725 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118725 ms | | | | -[ACAccountType encodeWithCoder:0x102837400]
118725 ms | | | | | -[ACAccountType identifier]

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118725 ms | | | | | -[ACAccountType accountTypeDescription]
118725 ms | | | | | -[ACAccountType objectID]
118725 ms | | | | | -[ACAccountType visibility]
118725 ms | | | | | -[ACAccountType credentialProtectionPolicy]
118725 ms | | | | | -[ACAccountType supportsAuthentication]

/* TID 0xec47 */
118725 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
118725 ms | +[AMSUnitTests isRunningUnitTests]
118725 ms | +[ACAccountStore defaultStore]
118725 ms -[ACAccountStore ams_activeiTunesAccount]
118725 ms | -[ACAccountStore ams_mediaType]
118725 ms | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118725 ms | | | +[AMSAccountStoreCache cacheAccessQueue]
118725 ms | | | +[AMSAccountStoreCache cache]
118725 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118725 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118725 ms | | | | | +[AMSUnitTests isRunningUnitTests]
118725 ms | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118726 ms | -[ACAccountStore ams_iTunesAccounts]
118726 ms | | -[ACAccountStore ams_mediaType]
118726 ms | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118726 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118726 ms | | | | +[AMSAccountStoreCache cache]
118726 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]
118726 ms | | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118726 ms | | | | | | +[AMSUnitTests isRunningUnitTests]
118726 ms | | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118726 ms | | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0]
]

118726 ms | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e741887
8 options:0x1 error:0x17059a5c8]
118726 ms | | | | -[ACAccountStore _ams_accountTypeWithAccountTypeIdentifier:0x
1e7418878 error:0x17059a5c8]
118726 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418878 error:0x17059a4e8]
118726 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
118726 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x17059a28
0]
118726 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]

/* TID 0xf107 */
118726 ms | | | | | -[ACAccountType supportsMultipleAccounts]
118726 ms | | | | | -[ACAccountType owningBundleID]
118726 ms | | | | | -[ACAccountType isObsolete]

/* TID 0xec47 */
118726 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x17059a260]
118726 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
118727 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118727 ms | | | | | | | -[ACAccountType description]
118727 ms | | | | | | | | -[ACAccountType accountTypeDescription]
118727 ms | | | | | | | | -[ACAccountType identifier]
118727 ms | | | | | | -[ACAccountStore _ams_accountsWithAccountType:0x2839f55e0 opt
ions:0x1 error:0x17059a5c8]
118727 ms | | | | | | | -[ACAccountStore accountsWithAccountType:0x2839f55e0 opt
ions:0x1 error:0x17059a548]
118727 ms | | | | | | | | -[ACAccountType description]

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118727 ms | | | | | | -[ACAccountType accountTypeDescription]
118727 ms | | | | | | -[ACAccountType identifier]
118727 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118727 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x17059a21
0]
118727 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118727 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x17059a1f0]
118727 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
118727 ms | | | | | | | -[ACAccountType encodeWithCoder:0x102837400]
118727 ms | | | | | | | | -[ACAccountType identifier]
118727 ms | | | | | | | | -[ACAccountType accountTypeDescription]
118728 ms | | | | | | | | -[ACAccountType objectID]
118728 ms | | | | | | | | -[ACAccountType visibility]
118728 ms | | | | | | | | -[ACAccountType credentialProtectionPolicy]
118728 ms | | | | | | | | -[ACAccountType supportsAuthentication]
118728 ms | | | | | | | | -[ACAccountType supportsMultipleAccounts]
118728 ms | | | | | | | | -[ACAccountType owningBundleID]
118728 ms | | | | | | | | -[ACAccountType isObsolete]
118732 ms | | | | | | | | -[ACAccount _setAccountStore:0x283916df0]
118732 ms | | | | | | | | | -[ACAccount setAccountStore:0x283916df0]
118732 ms | | | | | | | | -[ACAccount _setAccountStore:0x283916df0]
118732 ms | | | | | | | | | -[ACAccount setAccountStore:0x283916df0]
118732 ms | | | | | | | | -[ACAccount _setAccountStore:0x283916df0]
118732 ms | | | | | | | | | -[ACAccount setAccountStore:0x283916df0]
118732 ms | | | | | | | | -[ACAccount description]
118732 ms | | | | | | | | | -[ACAccount username]
118732 ms | | | | | | | | | | -[ACAccount _useParentForCredentials]
118732 ms | | | | | | | | | | | -[ACAccount authenticationType]
118732 ms | | | | | | | | | | -[ACAccount identifier]
118732 ms | | | | | | | | | -[ACAccount description]
118732 ms | | | | | | | | | | -[ACAccount username]
118732 ms | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118732 ms | | | | | | | | | | | | -[ACAccount authenticationType]
118732 ms | | | | | | | | | | -[ACAccount identifier]
118732 ms | | | | | | | | | -[ACAccount description]
118732 ms | | | | | | | | | | -[ACAccount username]
118732 ms | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118732 ms | | | | | | | | | | | | -[ACAccount authenticationType]
118732 ms | | | | | | | | | | | -[ACAccount identifier]
118732 ms | | | | | | | | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118732 ms | | | | | | | | | | | | | -[ACAccount isActive]
118732 ms | | | | | | | | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118732 ms | | | | | | | | | | | | | -[ACAccount isActive]
118732 ms | | | | | | | | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118732 ms | | | | | | | | | | | | | -[ACAccount isActive]
/* TID 0xf107 */
118768 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dae40]
/* TID 0x103 */
118768 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169d2c0]
118768 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dae40]
118768 ms -[ACAccount credentialsChanged:0x28169d2c0]
118768 ms | -[ACAccount identifier]
/* TID 0xf107 */
118783 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]

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/* TID 0x103 */
118783 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d08ea0]
118783 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283cf80
80 completion:0x16fd69d98]
118783 ms | -[ACAccountStore remoteAccountStoreSession]
118783 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
118783 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
118783 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118783 ms | | -[ACRemoteAccountStoreSession _connection]
118783 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x28169f1e0]
118783 ms | +[AMSLogConfig sharedAccountsConfig]
118783 ms | -[AMSLogConfig OSLogObject]
118783 ms | | -[AMSLogConfig propertyAccessQueue]
118783 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0xf107 */
118784 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
118784 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
118784 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
118784 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
118784 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118784 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c64c
0]
118784 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xc533 */
118785 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
118785 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
/* TID 0xf107 */
118785 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1701c64a0]
118785 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
118785 ms | -[ACAccountStore aa_primaryAppleAccount]
118785 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x2810257f0 pr
eloadedProperties:0x0 error:0x0]
118785 ms | | | -[ACAccountStore remoteAccountStoreSession]
118785 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e410]
118785 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118785 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x16fe7e3f0]
118785 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf107 */
118785 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118785 ms | | | | | | -[ACAccountType description]
118785 ms | | | | | | | -[ACAccountType accountTypeDescription]
118785 ms | | | | | | | -[ACAccountType identifier]
118785 ms | | | | -[ACAccountStore accountsWithAccountType:0x283990fc0]
118785 ms | | | | | -[ACAccountType description]
118785 ms | | | | | | -[ACAccountType accountTypeDescription]
118785 ms | | | | | | | -[ACAccountType identifier]
118785 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118785 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c6470]
118785 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118785 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit

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hErrorHandler:0x1701c6450]
118785 ms | | | | -[ACRemoteAccountStoreSession _connection]
118785 ms | | | -[ACAccountType encodeWithCoder:0x10227d000]
118785 ms | | | | -[ACAccountType identifier]
118785 ms | | | | -[ACAccountType accountTypeDescription]
118785 ms | | | | -[ACAccountType objectID]
118785 ms | | | | -[ACAccountType visibility]
118785 ms | | | | -[ACAccountType credentialProtectionPolicy]
118785 ms | | | | -[ACAccountType supportsAuthentication]
118785 ms | | | | -[ACAccountType supportsMultipleAccounts]
118785 ms | | | | -[ACAccountType owningBundleID]
118786 ms | | | | -[ACAccountType isObsolete]

/* TID 0xc533 */
118786 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
118786 ms | +[AMSUnitTests isRunningUnitTests]
118786 ms | +[ACAccountStore defaultStore]
118786 ms -[ACAccountStore ams_activeiTunesAccount]
118786 ms | -[ACAccountStore ams_mediaType]
118786 ms | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118786 ms | | | +[AMSAccountStoreCache cacheAccessQueue]
118786 ms | | | +[AMSAccountStoreCache cache]
118786 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118786 ms | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118786 ms | | | | +[AMSUnitTests isRunningUnitTests]
118786 ms | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118786 ms | -[ACAccountStore ams_iTunesAccounts]
118786 ms | | -[ACAccountStore ams_mediaType]
118786 ms | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118786 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118786 ms | | | | +[AMSAccountStoreCache cache]
118786 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]
118787 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118787 ms | | | | | +[AMSUnitTests isRunningUnitTests]
118787 ms | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118787 ms | | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0]
]

118787 ms | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e741887
8 options:0x1 error:0x16fe7e5c8]
118787 ms | | | -[ACAccountStore _ams_accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e5c8]
118787 ms | | | | -[ACAccountStore accountTypeWithIdentifier:0x
1e7418878 error:0x16fe7e4e8]
118787 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118787 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e28
0]
118787 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118787 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e260]
118787 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
118787 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118787 ms | | | | | | | -[ACAccountType description]
118787 ms | | | | | | | | -[ACAccountType accountTypeDescription]
118787 ms | | | | | | | | -[ACAccountType identifier]
118787 ms | | | | | -[ACAccountStore _ams_accountsWithAccountType:0x2839f5ab0 opt
ions:0x1 error:0x16fe7e5c8]
118787 ms | | | | | | -[ACAccountStore accountsWithAccountType:0x2839f5ab0 opt

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ions:0x1 error:0x16fe7e548]
118787 ms | | | | | -[ACAccountType description]
118787 ms | | | | | | -[ACAccountType accountTypeDescription]
118787 ms | | | | | | -[ACAccountType identifier]
118787 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118787 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e21
0]
118787 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118787 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e1f0]
118787 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118787 ms | | | | | -[ACAccountType encodeWithCoder:0x101a8d400]
118787 ms | | | | | | -[ACAccountType identifier]
118787 ms | | | | | | -[ACAccountType accountTypeDescription]
118787 ms | | | | | | -[ACAccountType objectID]
118787 ms | | | | | | -[ACAccountType visibility]
118787 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
118787 ms | | | | | | -[ACAccountType supportsAuthentication]
118787 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
118787 ms | | | | | | -[ACAccountType owningBundleID]
118787 ms | | | | | | -[ACAccountType isObsolete]
118789 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
118789 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118789 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
118789 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118789 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
118789 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118789 ms | | | | -[ACAccount description]
118789 ms | | | | | -[ACAccount username]
118789 ms | | | | | | -[ACAccount _useParentForCredentials]
118789 ms | | | | | | | -[ACAccount authenticationType]
118789 ms | | | | | | -[ACAccount identifier]
118789 ms | | | | -[ACAccount description]
118789 ms | | | | | -[ACAccount username]
118789 ms | | | | | | -[ACAccount _useParentForCredentials]
118789 ms | | | | | | | -[ACAccount authenticationType]
118789 ms | | | | | | -[ACAccount identifier]
118789 ms | | | | -[ACAccount description]
118789 ms | | | | | -[ACAccount username]
118789 ms | | | | | | -[ACAccount _useParentForCredentials]
118789 ms | | | | | | | -[ACAccount authenticationType]
118789 ms | | | | | | -[ACAccount identifier]
118789 ms | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118789 ms | | | | | -[ACAccount isActive]
118789 ms | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118789 ms | | | | | -[ACAccount isActive]
118789 ms | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118789 ms | | | | | -[ACAccount isActive]
/* TID 0x103 */
118798 ms | | | -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d0c4b0]
/* TID 0xc533 */
118798 ms | | -[ACAccountStore dmc_visibleRemoteManagementAccounts]
118798 ms | | | -[ACAccountStore dmc_RemoteManagementAccounts]
118798 ms | | | | -[ACAccountStore dmc_RemoteManagementAccountType]
118798 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeID:0x1e741
8c58]

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118798 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
118798 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
/* TID 0x103 */
118798 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283c0ee
00 completion:0x16fd69d98]
/* TID 0xc533 */
118798 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e4c
0]
/* TID 0x103 */
118798 ms | -[ACAccountStore remoteAccountStoreSession]
118798 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
/* TID 0xc533 */
118798 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0x103 */
118798 ms | | | | -[ACTimedExpirer _unsafeCancelTimer]
118798 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118798 ms | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
118798 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x16fe7e4a0]
118799 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0x103 */
118799 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x281697600]
118799 ms | +[AMSLogConfig sharedAccountsConfig]
118799 ms | -[AMSLogConfig OSLogObject]
118799 ms | | -[AMSLogConfig propertyAccessQueue]
118799 ms | | -[AMSLogConfig backingOSLogObject]
/* TID 0x1251f */
118799 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
118799 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
118799 ms | -[ACAccountStore aa_primaryAppleAccount]
118799 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x281038a30 pr
eloadedProperties:0x0 error:0x0]
/* TID 0xc533 */
118799 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118799 ms | | | | | -[ACAccountType description]
118799 ms | | | | | | -[ACAccountType accountTypeDescription]
118799 ms | | | | | | -[ACAccountType identifier]
/* TID 0x1251f */
118799 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118799 ms | | | | -[ACTimedExpirer scheduleExpiration:0x170482410]
118799 ms | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xc533 */
118799 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839f4e00]
118799 ms | | | | -[ACAccountType description]
118799 ms | | | | | -[ACAccountType accountTypeDescription]
118799 ms | | | | | -[ACAccountType identifier]
/* TID 0x1251f */
118799 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x1704823f0]
118799 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xc533 */
118799 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118799 ms | | | | -[ACTimedExpirer scheduleExpiration:0x16fe7e470]

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118799 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118799 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x16fe7e450]
118799 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118799 ms | | | | | -[ACAccountType encodeWithCoder:0x101a84800]
118799 ms | | | | | | -[ACAccountType identifier]
118799 ms | | | | | | -[ACAccountType accountTypeDescription]
118799 ms | | | | | | -[ACAccountType objectID]
118799 ms | | | | | | -[ACAccountType visibility]
118799 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
118799 ms | | | | | | -[ACAccountType supportsAuthentication]
118799 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
118799 ms | | | | | | -[ACAccountType owningBundleID]
118799 ms | | | | | | -[ACAccountType isObsolete]

/* TID 0x1251f */
118800 ms +[ACAccountStore ams_sharedAccountStoreForMediaType:0x1e77eaeb0]
118800 ms | +[AMSUnitTests isRunningUnitTests]
118800 ms | +[ACAccountStore defaultStore]
118800 ms -[ACAccountStore ams_activeiTunesAccount]
118800 ms | -[ACAccountStore ams_mediaType]
118800 ms | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118800 ms | | | +[AMSAccountStoreCache cacheAccessQueue]
118800 ms | | | +[AMSAccountStoreCache cache]
118800 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118800 ms | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118800 ms | | | | +[AMSUnitTests isRunningUnitTests]
118800 ms | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118800 ms | -[ACAccountStore ams_iTunesAccounts]
118800 ms | | -[ACAccountStore ams_mediaType]
118800 ms | | | +[AMSAccountStoreCache mediaTypeForAccountStore:0x283916df0]
118800 ms | | | | +[AMSAccountStoreCache cacheAccessQueue]
118800 ms | | | | +[AMSAccountStoreCache cache]
118800 ms | | | | | +[AMSAccountStoreCache cacheAccessQueue]
118800 ms | | | | +[AMSProcessInfo defaultMediaTypeForCurrentProcess]
118800 ms | | | | | +[AMSUnitTests isRunningUnitTests]
118800 ms | | | | | +[AMSProcessInfo defaultMediaTypeAccessQueue]
118800 ms | | +[ACAccountStore ams_accountTypeIdentifierForMediaType:0x1e77eaeb0]
]

118800 ms | | | -[ACAccountStore _ams_accountsWithAccountTypeIdentifier:0x1e7418878 options:0x1 error:0x1704825c8]
118800 ms | | | | -[ACAccountStore _ams_accountTypeWithAccountTypeIdentifier:0x1e7418878 error:0x1704825c8]
118800 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e7418878 error:0x1704824e8]
118800 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
118800 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x170482280]
118800 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118800 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x170482260]
118800 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
118801 ms | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118801 ms | | | | | | | -[ACAccountType description]
118801 ms | | | | | | | | -[ACAccountType accountTypeDescription]
118801 ms | | | | | | | | -[ACAccountType identifier]
118801 ms | | | | -[ACAccountStore _ams_accountsWithAccountType:0x2839f4e00 opt

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ions:0x1 error:0x1704825c8]
118801 ms | | | | | -[ACAccountStore accountsWithAccountType:0x2839f4e00 options:0x1 error:0x170482548]
118801 ms | | | | | | -[ACAccountType description]
118801 ms | | | | | | | -[ACAccountType accountTypeDescription]
118801 ms | | | | | | | -[ACAccountType identifier]
118801 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118801 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x170482210]
118801 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118801 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x1704821f0]
118801 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
118801 ms | | | | | | | -[ACAccountType encodeWithCoder:0x10227d000]
118801 ms | | | | | | | -[ACAccountType identifier]
118801 ms | | | | | | | -[ACAccountType accountTypeDescription]
118801 ms | | | | | | | -[ACAccountType objectID]
118801 ms | | | | | | | -[ACAccountType visibility]
118801 ms | | | | | | | -[ACAccountType credentialProtectionPolicy]
118801 ms | | | | | | | -[ACAccountType supportsAuthentication]
118801 ms | | | | | | | -[ACAccountType supportsMultipleAccounts]
118801 ms | | | | | | | -[ACAccountType owningBundleID]
118801 ms | | | | | | | -[ACAccountType isObsolete]
118803 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118803 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118803 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118803 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118803 ms | | | | | -[ACAccount _setAccountStore:0x283916df0]
118803 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118803 ms | | | | | -[ACAccount description]
118803 ms | | | | | | -[ACAccount username]
118803 ms | | | | | | | -[ACAccount _useParentForCredentials]
118803 ms | | | | | | | | -[ACAccount authenticationType]
118803 ms | | | | | | | -[ACAccount identifier]
118803 ms | | | | | -[ACAccount description]
118803 ms | | | | | | -[ACAccount username]
118803 ms | | | | | | | -[ACAccount _useParentForCredentials]
118803 ms | | | | | | | | -[ACAccount authenticationType]
118803 ms | | | | | | | -[ACAccount identifier]
118803 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118803 ms | | | | | | -[ACAccount isActive]
118803 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118803 ms | | | | | | -[ACAccount isActive]
118803 ms | | | | | -[ACAccount ams_isActiveForMediaType:0x1e77eaeb0]
118803 ms | | | | | | -[ACAccount isActive]
/* TID 0xf107 */
118835 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWithIdentifier:0x2807dac40]
/* TID 0x103 */
118835 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169dc40]
118835 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dac40]

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118835 ms -[ACAccount credentialsChanged:0x28169dc40]
118835 ms | -[ACAccount identifier]
118835 ms | -[ACAccount isPropertyDirty:0x1e7417d98]
/* TID 0xf107 */
118843 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807c0b00]
/* TID 0x103 */
118843 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x28169dc40]
118843 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807c0b00]
118843 ms -[ACAccount credentialsChanged:0x28169dc40]
118843 ms | -[ACAccount identifier]
118843 ms | -[ACAccount isPropertyDirty:0x1e7417d98]
118856 ms -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d0a460]
118856 ms -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283cfb0
80 completion:0x16fd69d98]
118856 ms | -[ACAccountStore remoteAccountStoreSession]
118856 ms | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
118856 ms | | | -[ACTimedExpirer _unsafeCancelTimer]
118856 ms | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118856 ms | | -[ACRemoteAccountStoreSession _connection]
118857 ms -[AMSAccountsChangedObservable _accountStoreDidChange:0x28169e520]
118857 ms | +[AMSLogConfig sharedAccountsConfig]
118857 ms | -[AMSLogConfig OSLogObject]
118857 ms | | -[AMSLogConfig propertyAccessQueue]
118857 ms | | | -[AMSLogConfig backingOSLogObject]
/* TID 0xf107 */
118858 ms -[ACAccountStore dmc_visibleRemoteManagementAccounts]
118858 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
118858 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
118858 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
118858 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
118858 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118858 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c64c
0]
118858 ms | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xf427 */
118858 ms -[AACloudServiceOwner accountForService:0x1ecb2df10]
/* TID 0xf107 */
118858 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1701c64a0]
118858 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf427 */
118858 ms | +[AACloudServiceOwner _serviceTypeForPlatform]
118858 ms | -[ACAccountStore aa_primaryAppleAccount]
118858 ms | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x281020b20 pr
eloadedProperties:0x0 error:0x0]
118858 ms | | | -[ACAccountStore remoteAccountStoreSession]
118858 ms | | | | -[ACTimedExpirer scheduleExpiration:0x170626410]
118858 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xf107 */
118858 ms | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118858 ms | | | | | | -[ACAccountType description]
118858 ms | | | | | | | -[ACAccountType accountTypeDescription]

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118858 ms | | | | | | -[ACAccountType identifier]
/* TID 0xf427 */
118859 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x1706263f0]
/* TID 0xf107 */
118859 ms | | | -[ACAccountStore accountsWithAccountType:0x2839f4e00]
118859 ms | | | | -[ACAccountType description]
118859 ms | | | | | -[ACAccountType accountTypeDescription]
118859 ms | | | | | -[ACAccountType identifier]
118859 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118859 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c6470]
118859 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
/* TID 0xf427 */
118859 ms | | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0xf107 */
118859 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x1701c6450]
118859 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118859 ms | | | | | -[ACAccountType encodeWithCoder:0x101a84800]
118859 ms | | | | | | -[ACAccountType identifier]
118859 ms | | | | | | -[ACAccountType accountTypeDescription]
118859 ms | | | | | | -[ACAccountType objectID]
118859 ms | | | | | | -[ACAccountType visibility]
118859 ms | | | | | | -[ACAccountType credentialProtectionPolicy]
118859 ms | | | | | | -[ACAccountType supportsAuthentication]
118859 ms | | | | | | -[ACAccountType supportsMultipleAccounts]
118859 ms | | | | | | -[ACAccountType owningBundleID]
118859 ms | | | | | | -[ACAccountType isObsolete]
/* TID 0xf427 */
118861 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
118861 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118861 ms | | | | -[ACAccount description]
118861 ms | | | | | -[ACAccount username]
118861 ms | | | | | | -[ACAccount _useParentForCredentials]
118861 ms | | | | | | | -[ACAccount authenticationType]
118861 ms | | | | | | -[ACAccount identifier]
/* TID 0x1251f */
118861 ms +[ACAccount supportsSecureCoding]
/* TID 0xf427 */
118861 ms | | -[ACAccount aa_isAccountClass:0x1e8b42a50]
118861 ms | | | -[ACAccount aa_accountClass]
118861 ms | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
118861 ms | | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
/* TID 0x1251f */
118861 ms +[ACAccountType supportsSecureCoding]
/* TID 0xf427 */
118861 ms -[ACAccount userFullName]
118861 ms | -[ACAccount objectForKeyedSubscript:0x1e7417798]
118861 ms | | -[ACAccount accountPropertyForKey:0x1e7417798]
118861 ms | -[ACAccount objectForKeyedSubscript:0x1e74177d8]
118861 ms | | -[ACAccount accountPropertyForKey:0x1e74177d8]
118862 ms | -[ACAccount objectForKeyedSubscript:0x1e7417798]
118862 ms | | -[ACAccount accountPropertyForKey:0x1e7417798]
118862 ms | -[ACAccount objectForKeyedSubscript:0x1e74177b8]
118862 ms | | -[ACAccount accountPropertyForKey:0x1e74177b8]
118862 ms | -[ACAccount objectForKeyedSubscript:0x1e74177d8]

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118862 ms | | -[ACAccount accountPropertyForKey:0x1e74177d8]
118862 ms | /* TID 0x1251f */
118862 ms | -[ACAccount _setAccountStore:0x283911b90]
118862 ms | | -[ACAccountType setAccountStore:0x283911b90]
118862 ms | /* TID 0xf427 */
118863 ms | -[ACAccount isSubscriber]
118863 ms | | -[ACAccount accountPropertyForKey:0x1ed6c7680]
118863 ms | /* TID 0x1251f */
118867 ms | -[ACAccountStore dmc_visibleRemoteManagementAccounts]
118867 ms | /* TID 0x103 */
118867 ms | -[ACNotificationRebroadcaster _accountStoreDidChange:0x281d0d080]
118867 ms | -[ACAccountStore visibleTopLevelAccountsWithAccountTypeIdentifiers:0x283cf33
80 completion:0x16fd69d98]
118867 ms | | -[ACAccountStore remoteAccountStoreSession]
118867 ms | | | -[ACTimedExpirer scheduleExpiration:0x16fd69b90]
118867 ms | | | | -[ACTimedExpirer _unsafeCancelTimer]
118867 ms | | -[ACRemoteAccountStoreSession remoteObjectProxyWithErrorHandler:0x16fd6
9b70]
118867 ms | | | -[ACRemoteAccountStoreSession _connection]
118867 ms | -[AMSAccountsChangedObservable _accountStoreDidChange:0x281697e00]
118867 ms | | +[AMSLogConfig sharedAccountsConfig]
118867 ms | | -[AMSLogConfig OSLogObject]
118867 ms | | | -[AMSLogConfig propertyAccessQueue]
118867 ms | | | -[AMSLogConfig backingOSLogObject]
118867 ms | /* TID 0x1251f */
118869 ms | -[ACAccountStore dmc_RemoteManagementAccounts]
118869 ms | | -[ACAccountStore dmc_RemoteManagementAccountType]
118869 ms | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e741
8c58]
118869 ms | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x
1e7418c58 error:0x0]
118869 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118869 ms | | | | | -[ACTimedExpirer scheduleExpiration:0x1704824c
0]
118869 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118869 ms | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1704824a0]
118869 ms | | | | | | -[ACRemoteAccountStoreSession _connection]
118870 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118870 ms | | | | | -[ACAccountType description]
118870 ms | | | | | | -[ACAccountType accountTypeDescription]
118870 ms | | | | | | -[ACAccountType identifier]
118870 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839934f0]
118870 ms | | | | -[ACAccountType description]
118870 ms | | | | | -[ACAccountType accountTypeDescription]
118870 ms | | | | | -[ACAccountType identifier]
118870 ms | | | -[ACAccountStore remoteAccountStoreSession]
118870 ms | | | | -[ACTimedExpirer scheduleExpiration:0x170482470]
118870 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118870 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWit
hErrorHandler:0x170482450]
118870 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118870 ms | | | -[ACAccountType encodeWithCoder:0x10227d000]
118870 ms | | | | -[ACAccountType identifier]
118870 ms | | | | -[ACAccountType accountTypeDescription]
118870 ms | | | | -[ACAccountType objectID]

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118870 ms | | | | | -[ACAccountType visibility]
118870 ms | | | | | -[ACAccountType credentialProtectionPolicy]
118870 ms | | | | | -[ACAccountType supportsAuthentication]
118870 ms | | | | | -[ACAccountType supportsMultipleAccounts]
118870 ms | | | | | -[ACAccountType owningBundleID]
118870 ms | | | | | -[ACAccountType isObsolete]

/* TID 0xf427 */
118871 ms -[ACAccountStore aa_primaryAppleAccount]
118871 ms | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x28100c120 preload
edProperties:0x0 error:0x0]
118871 ms | | -[ACAccountStore remoteAccountStoreSession]
118871 ms | | | -[ACTimedExpirer scheduleExpiration:0x170626450]
118871 ms | | | | -[ACTimedExpirer _unsafeCancelTimer]
118871 ms | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErro
rHandler:0x170626430]
118871 ms | | | | -[ACRemoteAccountStoreSession _connection]
/* TID 0x1251f */
118875 ms -[ACAccount _setAccountStore:0x283911b90]
118875 ms | -[ACAccountType setAccountStore:0x283911b90]
/* TID 0xf427 */
118876 ms | | -[ACAccount _setAccountStore:0x283916df0]
118876 ms | | | -[ACAccountType setAccountStore:0x283916df0]
118876 ms | | -[ACAccount description]
118876 ms | | | -[ACAccount username]
118876 ms | | | | -[ACAccount _useParentForCredentials]
118876 ms | | | | | -[ACAccount authenticationType]
118876 ms | | | | -[ACAccount identifier]
118876 ms | -[ACAccount aa_isAccountClass:0x1e8b42a50]
118876 ms | | -[ACAccount aa_accountClass]
118876 ms | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
118876 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
118877 ms -[AAUIProfilePictureStore initWithAppleAccount:0x282b40ee0 store:0x283916df0
]
118877 ms | -[ACAccountStore aa_grandSlamAccountFor iCloudAccount:0x282b40ee0]
118877 ms | | -[ACAccountStore aida_accountFor iCloudAccount:0x282b40ee0]
118877 ms | | | -[ACAccount aida_alternateDSID]
118877 ms | | | | -[ACAccount accountPropertyForKey:0x1ecb2ded0]
118877 ms | | | -[ACAccountStore aida_AppleIDAuthenticationAccounts]
118877 ms | | | | -[ACAccountStore aida_AppleIDAuthenticationAccountType]
118877 ms | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifi
er:0x1e7418a38]
118877 ms | | | | | | -[ACAccountStore accountTypeWithAccountTypeIdentifier:0x1e7418a38 error:0x0]
118877 ms | | | | | | | -[ACAccountStore remoteAccountStoreSession]
118877 ms | | | | | | | | -[ACTimedExpirer scheduleExpiration:
0x1706263a0]
118877 ms | | | | | | | | | -[ACTimedExpirer _unsafeCancelT
imer]
118877 ms | | | | | | | | | -[ACRemoteAccountStoreSession synchronous
RemoteObjectProxyWithErrorHandler:0x170626380]
118877 ms | | | | | | | | | -[ACRemoteAccountStoreSession _conne
ction]
118878 ms | | | | | | | | | -[ACAccountType setAccountStore:0x283916d
f0]
118878 ms | | | | | | | | | -[ACAccountType description]

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118878 ms | | | | | | | | -[ACAccountType accountTypeDescripti
on]
118878 ms | | | | | | | | -[ACAccountType identifier]
118878 ms | | | | -[ACAccountStore accountsWithAccountType:0x2839938e0]
118878 ms | | | | -[ACAccountType description]
118878 ms | | | | -[ACAccountType accountTypeDescription]
118878 ms | | | | -[ACAccountType identifier]
118878 ms | | | | -[ACAccountStore remoteAccountStoreSession]
118878 ms | | | | -[ACTimedExpirer scheduleExpiration:0x17062635
0]
118878 ms | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118878 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x170626330]
118878 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
118878 ms | | | | | | | | -[ACAccountType encodeWithCoder:0x10227fa00]
118878 ms | | | | | | | | -[ACAccountType identifier]
118878 ms | | | | | | | | -[ACAccountType accountTypeDescription]
118878 ms | | | | | | | | -[ACAccountType objectID]
118878 ms | | | | | | | | -[ACAccountType visibility]
118878 ms | | | | | | | | -[ACAccountType credentialProtectionPolicy]
118878 ms | | | | | | | | -[ACAccountType supportsAuthentication]
118878 ms | | | | | | | | -[ACAccountType supportsMultipleAccounts]
118878 ms | | | | | | | | -[ACAccountType owningBundleID]
118878 ms | | | | | | | | -[ACAccountType isObsolete]
118880 ms | | | | | | | | -[ACAccount _setAccountStore:0x283916df0]
118880 ms | | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118880 ms | | | | | | | | -[ACAccount _setAccountStore:0x283916df0]
118880 ms | | | | | | | | | | -[ACAccountType setAccountStore:0x283916df0]
118880 ms | | | | | | | | -[ACAccount description]
118880 ms | | | | | | | | | | -[ACAccount username]
118880 ms | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118880 ms | | | | | | | | | | | | | -[ACAccount authenticationType]
118880 ms | | | | | | | | | | -[ACAccount identifier]
118880 ms | | | | | | | | | | -[ACAccount description]
118880 ms | | | | | | | | | | -[ACAccount username]
118880 ms | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118880 ms | | | | | | | | | | | | | -[ACAccount authenticationType]
118880 ms | | | | | | | | | | -[ACAccount identifier]
118880 ms | | | | | | | | | | -[ACAccount aida_alternateDSID]
118880 ms | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x1ecb2ded0]
118880 ms | | | | | | | | | | -[ACAccount accountPropertyForKey:0x1ecb2e030]
118880 ms | | | | | | | | | | -[ACAccount username]
118880 ms | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118880 ms | | | | | | | | | | | | | -[ACAccount authenticationType]
118880 ms | | | | | | | | | | -[ACAccount username]
118880 ms | | | | | | | | | | | | -[ACAccount _useParentForCredentials]
118880 ms | | | | | | | | | | | | | -[ACAccount authenticationType]
118880 ms | | | | | | | | | | -[ACAccount aida_alternateDSID]
118880 ms | | | | | | | | | | | | -[ACAccount accountPropertyForKey:0x1ecb2ded0]
118880 ms | | | | | | | | | | -[AAUIProfilePictureStore initWithAppleAccount:0x282b40ee0 grandSlamAcc
ount:0x282b441c0 accountStore:0x283916df0]
118880 ms | | | | | | | | | | | | -[ACAccount accountType]
118880 ms | | | | | | | | | | -[ACAccountType identifier]
118880 ms | | | | | | | | | | -[AAGrandSlamSigner initWithAccountStore:0x283916df0 grandSlamAcco
unt:0x282b441c0 appTokenID:0x1e8b3e6d0]
118880 ms | | | | | | | | | | -[AAUIProfilePictureStore initWithAppleAccount:0x282b40ee0 grandSl

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amSigner:0x281d0c6c0]
118881 ms | | | -[AAGrandSlamSigner accountStore]
118897 ms | | | -[ACAccountStore init]
118897 ms | | | | -[ACAccountStore initWithRemoteEndpoint:0x0 effectiveBun
dleID:0x0]
118897 ms | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
118897 ms | | | | | | -[ACTimedExpirer init]
118897 ms | | | | | +[ACTimedExpirer expirerWithTimeout:0x1e]
118897 ms | | | | | | -[ACTimedExpirer init]
118897 ms | | | | | +[ACNotificationRebroadcaster sharedRebroadcaster]
118897 ms | | | | -[AAUIProfilePictureStore _beginObservingContactStoreDidChang
eNotifications]
118897 ms -[AAUIProfilePictureStore profilePictureForAccountOwnerWithoutMonogramFallba
ck]
118897 ms | -[ACAccount isEnabledForDataclass:0x1e74165f8]
118897 ms | | -[ACAccount enabledDataclasses]
118897 ms | | | -[ACAccount parentAccount]
118897 ms | | | -[ACAccount accountStore]
118897 ms | | | | -[ACAccountStore enabledDataclassesForAccount:0x282b40ee0 err
or:0x170626738]
118897 ms | | | | | -[ACAccount description]
118897 ms | | | | | | -[ACAccount username]
118897 ms | | | | | | | -[ACAccount _useParentForCredentials]
118897 ms | | | | | | | | -[ACAccount authenticationType]
118897 ms | | | | | | | -[ACAccount identifier]
118897 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
118897 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x1706264d0]
118897 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118897 ms | | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectPro
xyWithErrorHandler:0x1706264b0]
118897 ms | | | | | | | | -[ACRemoteAccountStoreSession _connection]
118897 ms | | | | | | | -[ACAccount identifier]
118899 ms | | | | -[ACTrackedSet initWithSet:0x28169e720]
118899 ms | | | | | -[ACTrackedSet _initWithEnumerable:0x28169e720 count:0x3
]
118899 ms | | | | | | -[ACTrackedSet initWithObjects:0x28169f900 count:0x
3]
118899 ms | | | | -[ACAccount aa_personID]
118899 ms | | | | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118899 ms | | | | +[AAUIServerSuppliedProfilePictureCache sharedCache]
118899 ms | | | | | -[AAUIServerSuppliedProfilePictureCache init]
118899 ms | | | | | -[AAUIServerSuppliedProfilePictureCache profilePictureForPersonID:0x281
64eb60 diameter:0x1706267b0 serverFetchBlock:0x70377d30]
118899 ms | | | | | | -[AAUIServerSuppliedProfilePictureCache _ensureMinimumPictureDiameter_
mustBeSynchronized:0xf427]
118899 ms | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry picture]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry updating]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry expired]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry setUpdating:0x1]
118899 ms | | | | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry serverCacheTag]
118899 ms | | | | | | | | -[AAUIProfilePictureStore _fetchProfilePictureForAccountOwnerFromS
erver:0x28164eb60 serverCacheTag:0x0 completion:0x0]
118899 ms | | | | | | | | -[AAMyPhotoRequest initWithAccount:0x282b40ee0]
118899 ms | | | | | | | | -[AAMyPhotoRequest setServerCacheTag:0x0]

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118899 ms | | | | -[AAUIProfilePictureStore _fetchProfilePictureWithRequest:0x2
836f6340 personID:0x28164eb60 completion:0x0]
118899 ms | | | | -[AAUIProfilePictureStore _fetchProfilePictureSupersetWi
thRequest:0x2836f6340 personID:0x28164eb60 completion:0x170626658]
118899 ms | | | | | -[AARequest performRequestWithHandler:0x1706265e8]
118899 ms | | | | | +[AAURLSession sharedSession]
118899 ms | | | | | -[AARequest performRequestWithSession:0x281c39
5c0 withHandler:0x1706265e8]
118899 ms -[AAUIProfilePictureStore profilePictureForAccountOwner]
118899 ms | -[AAUIProfilePictureStore profilePictureForAccountOwnerWithoutMonogramF
allback]
118899 ms | | -[ACAccount isEnabledForDataclass:0x1e74165f8]
118899 ms | | | -[ACAccount enabledDataclasses]
118899 ms | | | | -[ACAccount parentAccount]
118899 ms | | | -[ACAccount aa_personID]
118899 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118899 ms | | | +[AAUIServerSuppliedProfilePictureCache sharedCache]
118899 ms | | | -[AAUIServerSuppliedProfilePictureCache profilePictureForPersonID:
0x28164eb60 diameter:0x170626760 serverFetchBlock:0x8]
118899 ms | | | | -[AAUIServerSuppliedProfilePictureCache _ensureMinimumPicture
Diameter_mustBeSynchronized:0xf427]
118899 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description]
118899 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry picture]
118899 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry updating]
118899 ms | | | -[ACAccount aa(firstName]
118899 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b3c550]
118899 ms | | | -[ACAccount aa(lastName]
118899 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b3c570]
118899 ms | | | -[AAUIProfilePictureStore _fallbackProfilePictureForPersonWithFirstName
:0x28164d340 lastName:0x28164f8a0]
118899 ms | | | | -[AAUIProfilePictureStore _monogrammer]
/* TID 0xf107 */
118899 ms -[AAMyPhotoRequest urlString]
118899 ms | +[AAURLConfiguration urlConfiguration]
118899 ms | | +[AAURLConfiguration _urlConfigurationWithError:0x0]
118899 ms | | | +[AAURLConfiguration remoteServer]
118899 ms | | | | -[AARemoteServer configurationWithCompletion:0x1701c6d48]
118899 ms | | | | | -[AARemoteServer _configurationAndResponseWithCompletion
:0x1701c6ce8]
118899 ms | | | | | -[AARemoteServer _configurationCacheInvalidateingIfN
ecessary]
118899 ms | | | | | | -[AARemoteServer _configurationLock_configuration
CacheInvalidateingIfNecessary]
118899 ms | | | | | | | -[AARemoteServerConfigurationCache creati
onDate]
118899 ms | | | | | | | -[AARemoteServerConfigurationCache configuration]
118900 ms | | | | | | | -[AARemoteServerConfigurationCache response]
118900 ms | | | -[AAURLConfiguration getMyPhotoURL]
118900 ms | | | | -[AAURLConfiguration _urlStringForKey:0x1e8b3ee90]
118900 ms -[AAMyPhotoRequest urlRequest]
118900 ms | -[AARequest urlRequest]
118900 ms | | -[AAMyPhotoRequest urlString]
118900 ms | | | +[AAURLConfiguration urlConfiguration]
118900 ms | | | | +[AAURLConfiguration _urlConfigurationWithError:0x0]
118900 ms | | | | | +[AAURLConfiguration remoteServer]
118900 ms | | | | | -[AARemoteServer configurationWithCompletion:0x1701

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c6b78]
118900 ms | | | | | | | -[AARemoteServer _configurationAndResponseWith
Completion:0x1701c6b18]
118900 ms | | | | | | | -[AARemoteServer _configurationCacheInval
idatingIfNecessary]
118900 ms | | | | | | | | -[AARemoteServer _configurationLock_
configurationCacheInvalidatingIfNecessary]
118900 ms | | | | | | | | | -[AARemoteServerConfigurationCa
che creationDate]
118900 ms | | | | | | | | -[AARemoteServerConfigurationCache config
uration]
118900 ms | | | | | | | | -[AARemoteServerConfigurationCache respon
se]
118900 ms | | | | -[AAURLConfiguration getMyPhotoURL]
118900 ms | | | | | -[AAURLConfiguration _urlStringForKey:0x1e8b3ee90]
118900 ms | | | -[AARequest flushCache]
118901 ms | | | +[AADeviceInfo clientInfoHeader]
118901 ms | | | | +[AADeviceInfo clientInfoHeader]
118901 ms | | | | | -[AADeviceInfo productType]
118901 ms | | | | | -[AADeviceInfo osName]
118901 ms | | | | | +[AADeviceInfo osVersion]
118901 ms | | | | | -[AADeviceInfo buildVersion]
118902 ms | | | | +[AAPreferences isExperimentalModeEnabled]
118902 ms | | | | | +[AADeviceInfo isInternalBuild]
118902 ms | | | -[ACAccount description]
118902 ms | | | | -[ACAccount username]
118902 ms | | | | | -[ACAccount _useParentForCredentials]
118902 ms | | | | | | -[ACAccount authenticationType]
118902 ms | | | | -[ACAccount identifier]
118902 ms | | | -[ACAccount aa_personID]
118902 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118902 ms | | | -[ACAccount aa_authToken]
118902 ms | | | | -[ACAccount credential]
118902 ms | | | | | -[ACAccount credentialWithError:0x0]
118902 ms | | | | | | -[ACAccount _useParentForCredentials]
118902 ms | | | | | | | -[ACAccount authenticationType]
118902 ms | | | | -[ACAccount accountStore]
118902 ms | | | | | -[ACAccountStore credentialForAccount:0x282b40eee0 error:
0x0]
118902 ms | | | | | | -[ACAccount description]
118902 ms | | | | | | | -[ACAccount username]
118902 ms | | | | | | | | -[ACAccount _useParentForCredentials]
118902 ms | | | | | | | | | -[ACAccount authenticationType]
118902 ms | | | | | | | | -[ACAccount identifier]
118902 ms | | | | | | -[ACAccountStore remoteAccountStoreSession]
118902 ms | | | | | | | -[ACTimedExpirer scheduleExpiration:0x1701c69d
0]
118902 ms | | | | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118902 ms | | | | | | -[ACRemoteAccountStoreSession synchronousRemoteObje
ctProxyWithErrorHandler:0x1701c69b0]
118902 ms | | | | | | | -[ACRemoteAccountStoreSession _connection]
118903 ms | | | | | | | -[ACAccount identifier]
118907 ms | | | | | | | +[ACAccountCredential supportsSecureCoding]
118907 ms | | | | | | | +[ACZeroingString supportsSecureCoding]
118907 ms | | | | | | | -[ACAccountCredential _setOwningAccount:0x282b40eee0
]

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118907 ms | | | | | -[ACAccountCredential description]
118907 ms | | | | | -[ACAccount _installCredentialsChangedObserver]
118908 ms | | | -[ACAccountCredential token]
118908 ms | | | | -[ACAccountCredential credentialItemForKey:0x1e74190b8]
118908 ms | | | | | -[ACZeroingString length]
118908 ms | | | | | -[ACZeroingString getCharacters:0x1203769e0 range:0x0]
118908 ms | | | -[ACAccount aa_personID]
118908 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118908 ms | | | -[ACAccount aa_authToken]
118908 ms | | | | -[ACAccount credential]
118908 ms | | | | | -[ACAccount credentialWithError:0x0]
118908 ms | | | | | | -[ACAccount _useParentForCredentials]
118908 ms | | | | | | | -[ACAccount authenticationType]
118908 ms | | | | -[ACAccountCredential token]
118908 ms | | | | | -[ACAccountCredential credentialItemForKey:0x1e74190b8]
118908 ms | | | | | | -[ACZeroingString length]
118908 ms | | | | | | -[ACZeroingString getCharacters:0x120373360 range:0x0]
118908 ms | | | | -[ACAccount aa_altdSID]
118908 ms | | | | | -[ACAccount accountPropertyForKey:0x1e8b3c830]
118908 ms | | | | -[ACAccount aa_repairState]
118908 ms | | | | | -[ACAccount parentAccount]
118908 ms | | | | | -[ACAccount accountPropertyForKey:0x1e8b42bf0]
118908 ms | | -[AAURLSession dataTaskWithRequest:0x28100a090 completion:0x1701c6e40]
118908 ms | | | -[AAURLSession _enqueueRequest:0x28100a090 completion:0x1701c6e40]
118908 ms | | | | -[AKAppleIDSession initWithIdentifier:0x281cc6fa0]
118908 ms | | | | | -[AAURLSessionContext _initRequiringSigning:0x0 appleIDSession:0x2
807c83c0]
118908 ms | | -[AAURLSession _sessionQueue_enqueueTask:0x120376ee0 completion:0x281d00720]
/* TID 0xc533 */
118910 ms | -[AAURLSessionContext URLSession:0x10401f340 task:0x120376ee0 getAppleIDHe
adersForResponse:0x0 completionHandler:0x16fe7e650]
118910 ms | | -[AKAppleIDSession URLSession:0x10401f340 task:0x1203769e0 getAppleIDHe
adersForResponse:0x0 completionHandler:0x16fe7e5c0]
118910 ms | | | -[AKAppleIDSession _generateAppleIDHeadersForSessionTask:0x1203769
e0 withCompletion:0x16fe7e538]
118910 ms | | | | -[AKAppleIDSession _nativeAnisetteController]
118910 ms | | | | | -[AKAnisetteProvisioningController init]
118910 ms | | | | | -[AKAnisetteProvisioningController anisetteDataForURLRequest:
0x28100df0 completion:0x16fe7e428]
118910 ms | | | | | | -[AKAnisetteProvisioningController fetchAnisetteDataAndP
rovisionIfNecessary:0x1 withCompletion:0x16fe7e428]
118910 ms | | | | | | | -[AKAnisetteProvisioningController _anisetteService
Connection]
118910 ms | | | | | | | +[AKAnisetteProvisioningDaemonInterface XPCInt
erface]
118910 ms | | | | | | | +[AKAnisetteProvisioningClientInterface XPCInt
erface]
/* TID 0xf427 */
118911 ms | | -[AAUIProfilePictureStore pictureDiameter]
118911 ms | -[AACloudServiceOwner accountForService:0x1ecb2df10]
118912 ms | | +[AACloudServiceOwner _serviceTypeForPlatform]
118912 ms | | | -[ACAccountStore aa_primaryAppleAccount]
118912 ms | | | | -[ACAccountStore accountsWithAccountTypeIdentifiers:0x281025dc0 pr
eloadedProperties:0x0 error:0x0]
118912 ms | | | | | -[ACAccountStore remoteAccountStoreSession]
118912 ms | | | | | | -[ACTimedExpirer scheduleExpiration:0x170626410]

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118912 ms | | | | | -[ACTimedExpirer _unsafeCancelTimer]
118912 ms | | | | -[ACRemoteAccountStoreSession synchronousRemoteObjectProxyWithErrorHandler:0x1706263f0]
118912 ms | | | | | -[ACRemoteAccountStoreSession _connection]
118918 ms | | | | -[ACAccount _setAccountStore:0x283916df0]
118918 ms | | | | | -[ACAccountType setAccountStore:0x283916df0]
118918 ms | | | | -[ACAccount description]
118918 ms | | | | | -[ACAccount username]
118918 ms | | | | | | -[ACAccount _useParentForCredentials]
118918 ms | | | | | | | -[ACAccount authenticationType]
118918 ms | | | | | | -[ACAccount identifier]
118918 ms | | | | -[ACAccount aa_isAccountClass:0x1e8b42a50]
118918 ms | | | | | -[ACAccount aa_accountClass]
118918 ms | | | | | | -[ACAccount objectForKeyedSubscript:0x1e8b42c10]
118918 ms | | | | | | | -[ACAccount accountPropertyForKey:0x1e8b42c10]
118918 ms | | | | -[ACAccount userFullName]
118918 ms | | | | | -[ACAccount objectForKeyedSubscript:0x1e7417798]
118918 ms | | | | | | -[ACAccount accountPropertyForKey:0x1e7417798]
118918 ms | | | | -[ACAccount objectForKeyedSubscript:0x1e74177d8]
118918 ms | | | | | -[ACAccount accountPropertyForKey:0x1e74177d8]
118919 ms | | | | -[ACAccount objectForKeyedSubscript:0x1e7417798]
118919 ms | | | | | -[ACAccount accountPropertyForKey:0x1e7417798]
118919 ms | | | | -[ACAccount objectForKeyedSubscript:0x1e74177b8]
118919 ms | | | | | -[ACAccount accountPropertyForKey:0x1e74177b8]
118919 ms | | | | -[ACAccount objectForKeyedSubscript:0x1e74177d8]
118919 ms | | | | | -[ACAccount accountPropertyForKey:0x1e74177d8]
/* TID 0x1251f */
118919 ms +[AKAnisetteData supportsSecureCoding]
118919 ms -[AKAppleIDSession _genericAppleIDHeadersDictionaryForRequest:0x28100dfd0]
/* TID 0xf427 */
118919 ms -[ACAccount isSubscriber]
118919 ms | | -[ACAccount accountPropertyForKey:0x1ed6c7680]
/* TID 0x1251f */
118920 ms | | +[AKDevice currentDevice]
118920 ms | | | -[AKDevice locale]
118920 ms -[AKAnisetteData machineID]
118920 ms -[AKAnisetteData oneTimePassword]
118920 ms -[AKAnisetteData routingInfo]
118921 ms +[AKDevice currentDevice]
118921 ms -[AKDevice localUserUUID]
118921 ms +[AKConfiguration sharedConfiguration]
118921 ms -[AKConfiguration shouldAllowTestApplication]
118921 ms | | -[AKConfiguration configurationValueForKey:0x1e8b17ff8]
118921 ms -[AKAppleIDSession _pairedDeviceAnisetteController]
118921 ms -[AAURLSessionContext _additionalHeadersForRequest:0x281025f50 completion:0x170482270]
118921 ms | | -[AAURLSessionContext requiresSigning]
/* TID 0xc533 */
118921 ms +[NSError _web_errorWithDomain:0x1f61f0440 code:0xfffffffffffffff19 URL:0x283993c60]
118921 ms | | -[NSError _web_initWithDomain_nowarn:0x1f61f0440 code:0xfffffffffffffff19 URL:0x283993c60]
118921 ms | | | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffff19 userInfo:0x281691260]
118921 ms | | | | -[NSError userInfo]
118921 ms | | | -[NSError domain]

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118921 ms -[NSError code]
118921 ms -[NSError domain]
118921 ms -[NSError code]
118921 ms -[NSError userInfo]
118921 ms -[NSError userInfo]
/* TID 0xf427 */
118921 ms -[AAUIProfilePictureStore profilePictureForAccountOwnerWithoutMonogramFallback]
118921 ms | -[ACAccount isEnabledForDataclass:0x1e74165f8]
118921 ms | | -[ACAccount enabledDataclasses]
118921 ms | | | -[ACAccount parentAccount]
118921 ms | -[ACAccount aa_personID]
118921 ms | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118921 ms | +[AAUIServerSuppliedProfilePictureCache sharedCache]
118921 ms | -[AAUIServerSuppliedProfilePictureCache profilePictureForPersonID:0x281
64eb60 diameter:0x1706267b0 serverFetchBlock:0x8]
118921 ms | | -[AAUIServerSuppliedProfilePictureCache _ensureMinimumPictureDiameter_mustBeSynchronized:0xf427]
118921 ms | | | -[AAUIServerSuppliedProfilePictureCacheEntry description]
/* TID 0xc533 */
118921 ms -[NSError domain]
118922 ms -[NSError code]
118922 ms +[NSError errorWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0x281
6a06c0]
118922 ms | -[NSError initWithDomain:0x1f61f0440 code:0xfffffffffffffc19 userInfo:0
x2816a06c0]
118922 ms -[NSError code]
118922 ms -[NSError code]
118922 ms -[NSError description]
118922 ms | -[NSError userInfo]
118922 ms | -[NSError domain]
118922 ms | -[NSError userInfo]
118922 ms | -[NSError domain]
118922 ms | -[NSError userInfo]
118922 ms | -[NSError userInfo]
118922 ms | -[NSError domain]
118922 ms | -[NSError code]
/* TID 0xf427 */
118922 ms | | -[AAUIServerSuppliedProfilePictureCacheEntry picture]
118922 ms | | -[AAUIServerSuppliedProfilePictureCacheEntry updating]
118922 ms -[AAUIProfilePictureStore profilePictureForAccountOwner]
118922 ms | -[AAUIProfilePictureStore profilePictureForAccountOwnerWithoutMonogramFallback]
118922 ms | | -[ACAccount isEnabledForDataclass:0x1e74165f8]
118922 ms | | | -[ACAccount enabledDataclasses]
118922 ms | | | | -[ACAccount parentAccount]
118922 ms | | | -[ACAccount aa_personID]
118922 ms | | | | -[ACAccount accountPropertyForKey:0x1e8b42670]
118922 ms | | +[AAUIServerSuppliedProfilePictureCache sharedCache]
118922 ms | | | -[AAUIServerSuppliedProfilePictureCache profilePictureForPersonID:
0x28164eb60 diameter:0x170626760 serverFetchBlock:0x8]
118922 ms | | | | -[AAUIServerSuppliedProfilePictureCache _ensureMinimumPictureDiameter_mustBeSynchronized:0xf427]
118922 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description]
118922 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry picture]
118922 ms | | | | -[AAUIServerSuppliedProfilePictureCacheEntry updating]

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118922 ms | -[ACAccount aa(firstName]
118922 ms | | -[ACAccount accountPropertyForKey:0x1e8b3c550]
118922 ms | -[ACAccount aa(lastName]
118922 ms | | -[ACAccount accountPropertyForKey:0x1e8b3c570]
118922 ms | -[AAUIProfilePictureStore _fallbackProfilePictureForPersonWithFirstName
:0x28164d340 lastName:0x28164f8a0]
118922 ms | | -[AAUIProfilePictureStore _monogrammer]
118922 ms | -[AAUIProfilePictureStore pictureDiameter]
/* TID 0xf107 */
118969 ms -[ACAccount _setObjectID:0x2839a8230]
118969 ms -[ACAccount _clearCachedChildAccounts]
118969 ms -[ACAccount _setAccountStore:0x2839f4a10]
118969 ms | -[ACAccountType setAccountStore:0x2839f4a10]
118969 ms -[ACAccount _clearDirtyProperties]
118969 ms | -[ACTrackedSet allObjects]
118969 ms | -[ACTrackedSet initWithArray:0x281690840]
118969 ms | | -[ACTrackedSet initWithEnumerable:0x281690840 count:0x22]
118969 ms | | | -[ACTrackedSet initWithObjects:0x12962ddb0 count:0x22]
118969 ms | -[ACTrackedSet allObjects]
118969 ms | -[ACTrackedSet initWithArray:0x281690940]
118969 ms | | -[ACTrackedSet initWithEnumerable:0x281690940 count:0x3]
118969 ms | | | -[ACTrackedSet initWithObjects:0x281690dc0 count:0x3]
118969 ms | -[ACAccountCredential _clearDirtyProperties]
118969 ms -[ACAccountStore _unsanitizeError:0x0]
/* TID 0x1251f */
118969 ms -[AASignInFlowController _addKeysAndEnrollCDPStateForAccount:0x282b408c0 wit
hCDPContext:0x282558580 completion:0x281d08510]
118969 ms | -[AASignInFlowController _enrollCDPStateForAccount:0x282b408c0 withCDP
ontext:0x282558580 completion:0x281d08510]
/* TID 0xf107 */
119050 ms -[ACAccountStoreClientSideListener accountCredentialsDidChangeForAccountWith
Identifier:0x2807dba40]
/* TID 0x103 */
119051 ms -[ACMonitoredAccountStore credentialsChangedNotification:0x281690da0]
119051 ms | -[ACMonitoredAccountStore monitoredAccountWithIdentifier:0x2807dba40]
119051 ms -[ACAccount credentialsChanged:0x281690da0]
119051 ms | -[ACAccount identifier]
119051 ms -[ACAccount credentialsChanged:0x281690da0]
119051 ms | -[ACAccount identifier]
/* TID 0xf107 */
119473 ms -[AAURLSession URLSession:0x10401f340 task:0x120376ee0 didCompleteWithError:
0x0]
119473 ms | -[AAURLSession _sessionQueue_dequeueTask:0x120376ee0 withResponse:0x281
6a24e0 error:0x0]
119473 ms | | -[AARequest _handleDataTaskCompletionWithData:0x0 response:0x2816a
24e0 error:0x0]
119474 ms | | | +[AAMyPhotoRequest responseClass]
119475 ms | | | -[AAPhotoResponse initWithHTTPResponse:0x2816a24e0 data:0x0]
119475 ms | | | | -[AAResponse initWithHTTPResponse:0x2816a24e0 data:0x0]
119475 ms | | | | | -[AAResponse initWithHTTPResponse:0x2816a24e0 data:
0x0 bodyIsPlist:0x1]
119476 ms | | | | | -[AAResponse _parsePlistResponse:0x0]
119476 ms | | | | | -[AAResponse responseDictionary]
119476 ms | | | | | -[AAResponse responseDictionary]
119477 ms | | | | | -[AAResponse error]
119477 ms | | | | | +[NSError errorWithDomain:0x1e8b3abf0 code:0x1

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94 userInfo:0x2816a31e0]
119477 ms | | | | | | | -[NSError initWithDomain:0x1e8b3abf0 code
:0x194 userInfo:0x2816a31e0]
119477 ms | | | | | | | -[AAResponse setError:0x281d60db0]
119477 ms | | | | | -[AAResponse data]
119477 ms | | | | -[AAResponse statusCode]
119478 ms | | | | +[AAUIServerSuppliedProfilePictureCache sharedCache]
119478 ms | | | | -[AAUIServerSuppliedProfilePictureCache updateProfilePicture:
0x0 didReceiveNewPicture:0x1 serverCacheTag:0x0 forPersonID:0x28164eb60]
119478 ms | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description
]
119478 ms | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry setUpdating
:0x0]
119478 ms | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry picture]
119479 ms | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry setPicture:
0x0]
119479 ms | | | | | -[AAUIServerSuppliedProfilePictureCacheEntry description
]
/* TID 0x103 */
124786 ms -[AAUISpinnerViewController viewWillDisappear:0x1]
124860 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124860 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124869 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124869 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124870 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124870 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124899 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124899 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124913 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
124913 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:0x0]
/* TID 0xf427 */
141362 ms -[ACTimedExpirer _cancelTimer]
141363 ms | -[ACTimedExpirer _unsafeCancelTimer]
141363 ms -[ACAccountStoreClientSideListener connectionWasInvalidated]
146495 ms -[ACTimedExpirer _cancelTimer]
146495 ms | -[ACTimedExpirer _unsafeCancelTimer]
146496 ms -[ACAccountStoreClientSideListener connectionWasInvalidated]
149545 ms -[ACTimedExpirer _cancelTimer]
149549 ms | -[ACTimedExpirer _unsafeCancelTimer]
149549 ms -[ACAccountStoreClientSideListener connectionWasInvalidated]
/* TID 0x11c3b */
149549 ms -[ACTimedExpirer _cancelTimer]
149549 ms | -[ACTimedExpirer _unsafeCancelTimer]
149550 ms -[ACAccountStoreClientSideListener connectionWasInvalidated]

```

## 经验心得

此处整理frida中的一些经验和心得。

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# hook函数

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# frida

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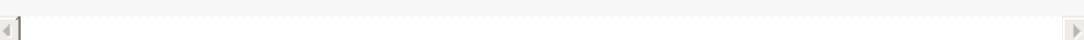
# Interceptor

## 心得

### 通过函数地址去hook拦截函数

- 已知：函数的（二进制内偏移量）地址
- 想要：去hook拦截函数
- 举例说明
  - akd中函数 `__lldb_unnamed_symbol12575$$akd` 的二进制内偏移量是：`0xa0460`
    - 思路：动态计算加上模块后的真实函数地址，再去hook
    - 核心代码：

```
console.log("dynamicDebug/frida/scripts/fridaStalker_akdSymbol12575.js");
// var akdSymbol12575_functionAddress = 0x1000a0460;
var akdSymbol12575_functionAddress = 0xa0460;
// arm64 akd: __lldb_unnamed_symbol12575$$akd
const moduleName = "akd";
const moduleBaseAddress = Module.findBaseAddress(moduleName);
console.log("moduleName=", moduleName, "moduleBaseAddress=", moduleBaseAddress);
const functionRealAddress = moduleBaseAddress.add(akdSymbol12575_functionAddress);
console.log("functionRealAddress=", functionRealAddress);
Interceptor.attach(functionRealAddress, {
 onEnter: function(args) {
 var arg0 = args[0]
 var arg1 = args[1]
 var arg2 = args[2]
 console.log("arg0=" + arg0 + ", arg1=" + arg1 + ", arg2=" + arg2);
 var curTid = Process.getCurrentThreadId();
 console.log("curTid=", curTid);
 }
});
```



#### 输出

```
dynamicDebug/frida/scripts/fridaStalker_akdSymbol12575.js
moduleName= akd moduleBaseAddress= 0x102b40000
functionRealAddress= 0x102be0460
arg0 0xfffffffffffffe, arg1 0x16d346838, arg2 0x16d346838
curTid= 35847
```

- 完整代码和输出，详见：[\\_\\_lldb\\_unnamed\\_symbol12575\\$\\$akd](#)

### onLeave中如何获取到self类本身实例变量

- 思路：`onEnter` 时，把`self`变量赋值保存给 `this.xxx`，`onLeave` 时去读取即可

- 代码

```

Interceptor.attach(curMethod.implementation, {
 onEnter: function(args) {
 this.argSelfObj = argSelfObj
 ...
 },
 onLeave: function (retval) {
 var retValObj = ObjC.Object(retval);
 var retValObjStr = retValObj.toString();
 console.log("onLeave: retValObj=" + retValObj + ", retValObjstr=" + retValObjStr)

 const curSelfObj = this.argSelfObj
 console.log("curSelfObj=" + curSelfObj)
 }
})

```

- 输出

```

=====
-[NSXPConnection setExportedObject:] =====
argSelfObj: <ACTrackedXPConnection: 0x154907c50> connection to service named com.apple.accounts.d.accountmanager
onLeave: retValObj nil, retValObjStr nil
curSelfObj=<ACTrackedXPConnection: 0x154907c50> connection to service named com.apple.accounts.d.accountmanager

```

## 问题

### TypeError: cannot read property 'implementation' of undefined

- 问题：

写frida的hook代码调试ObjC的函数

```

function hook_specific_method_of_class(className, funcName)
{
 var hook = ObjC.classes[className][funcName];
 Interceptor.attach(hook.implementation, {
 onEnter: function(args) {
 console.log("[*] Detected call to: " + className + " -> " + funcName);
 }
 });
}

//Your class name and function name here
hook_specific_method_of_class("AAUISignInViewController", "_nextButtonSelected:")

```

始终报错：

```
TypeError: cannot read property 'implementation' of undefined
```

- 原因：此处iOS的ObjC的函数名 `_nextButtonSelected:` 写法有误
- 解决办法：改为正确的写法：`- _nextButtonSelected:`
  - 注：此处的ObjC的类的函数名的写法：
    - 加上类型是 `class` 的还是 `instance`，所对应的 加号 `= +` 还是 减号 `= -`，以及中间带上空格 `=`
  - 相关代码改动：

```
hook_specific_method_of_class("AAUISignInViewController", "- _nextButtonSelected:")
```
  - 完整代码详见：[单个类的单个函数](#)

## frida去hook函数时确保已执行函数但不触发不输出日志log

- 问题：之前用了 `ApiResolver` 去写了hook代码，后续调试的函数确保被触发了，但是却没输出我们希望的日志
- 原因：此处 `ApiResolver` 只是search查找，函数是否存在，只运行一次，后续的确，本身就不会再次触发，所以后续代码被触发时，就不会打印日志
- 解决办法：真正的要实现，hook函数，待函数被运行后触发日志打印，应该改用：`Interceptor`
  - 注：
    - `ApiResolver` 的完整代码和解释，详见：[ApiResolver](#)
    - `Interceptor` 的完整示例代码，详见：[Interceptor=hook函数](#)

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## Stalker

### 实际内存地址和Stalker输出地址不匹配不一致

某次Stalker调试的log是：

```
===== dynamicDebug/frida/scripts/fridaStalker_akdSymbol12575.js =====
funcRelativeStartAddr=656480, funcSize=9416, funcRelativeEndAddr=665896
moduleName:akd, moduleBaseAddress=0x10054c000
funcRealStartAddr=0x1005ec460, funcRealEndAddr=0x1005ec4609416
[iPhone::PID::13098]-> ----- arg0=0xfffffffffffffe, arg1=0x16fe26838, arg2=0x16fe268
38, arg3=0xfffffffffffffe
curTid=26635

+++ into iterator=
[0x1071dbcd8] b #0x1071dbce8
+++ into iterator=
[0x1071dbce8] str wZR, [x19, #0x90]
[0x1071dbcec] ldr x0, [x19, #0xa0]
[0x1071dbcfc0] str xZR, [x19, #0xa0]
[0x1071dbcfc4] cbz x0, #0x1071dbcfc
+++ into iterator=
[0x1071dbcfc8] bl #0x1070dfef8
+++ into iterator=
[0x1071dbcfc] ldr x0, [x19, #0x98]
[0x1071dbd00] str xZR, [x19, #0x98]
[0x1071dbd04] cbz x0, #0x1071dbd14
...
```

其中指令地址看起来不匹配=不一致：

- 指令地址：0x1071dbcd8
- 函数二进制内偏移量：0xa0460
  - 此处akd模块基地址：0x10054c000
    - 所以函数的实际真实起始地址：0x1005ec460

后来才明白是：

Frida的Stalker中，看到2个函数地址不匹配：

- 函数实际内存起始地址：0x1005ec460
  - 0x1005exxxx之类的地址
- Stalker中运行期间的函数地址：0x1071dbcd8
  - 0x1071dxxxx之类的地址

的原因：

Stalker内部的hook指令的原理就是：把当前代码拷贝一份，加上hook代码及其他逻辑

而此处的：拷贝一份，到别处，别的一段内存地址空间，此处就是指的是：

- 0x1071dbc8
  - 0x1071dxxxx 之类的地址

所以，原始函数代码和被Stalker去hook的代码，两个地址是不同的，是可以理解的。

## Frida的Stalker的transform中Instruction的属性

Frida的Stalker的transform中Instruction指令，有哪些属性，参考官网：

<https://frida.re/docs/javascript-api/#instruction>

得知有如下属性：

- address
- next
- size
- mnemonic
- opStr
- operands
- regsAccessed
- regsRead
- regsWritten
- groups
- `toString()`
- `toJSON()`

注：但是没有（其实希望也有的）`bytes = opcode` 属性。

而这些属性的来源是：`Capstone`

- Capstone
  - Java接口
    - [capstone/Capstone.java at next · capstone-engine/capstone · GitHub](#)
  - Python接口
    - [capstone/init.py at next · capstone-engine/capstone · GitHub](#)

## 举例

如之前示例代码：

[\\_\\_lldb\\_unnamed\\_symbol2575\\$\\$akd](#)

中的，但是注释掉的代码：

（注：当时没加 `regsAccessed` 和 `toJSON()`）

```
// console.log("instruction: address=" + instruction.address
// + ",next=" + instruction.next()
// + ",size=" + instruction.size
// + ",mnemonic=" + instruction.mnemonic
// + ",opStr=" + instruction.opStr
```

```

 // + ",operands=" + JSON.stringify(instruction.operands)
 // + ",regsAccessed=" + JSON.stringify(instruction.regsAccessed)
 // + ",regsRead=" + JSON.stringify(instruction.regsRead)
 // + ",regsWritten=" + JSON.stringify(instruction.regsWritten)
 // + ",groups=" + JSON.stringify(instruction.groups)
 // + ",toString()=" + instruction.toString()
 // + ", toJSON()=" + instruction.toJSON()
 //);

```

取消注释后，可以输出log：

```

instruction: address 0x10f4ecef4,next 0x4,size 4,mnemonic ldr,opStr=x0, #0x10f4ecf78,operands=[{"type":"reg","value":"x0","access":"w"}, {"type":"imm","value":4551790456,"access":"r"}],regsRead=[],regsWritten=[],groups=[],toString()=ldr x0, #0x10f4ecf78 [0x10f4ecef4] ldr x0, #0x10f4ecf78

instruction: address 0x10f4ecef8,next 0x4,size 4,mnemonic bl,opStr=#0x1091a500c,operands=[{"type":"imm","value":4447686668,"access":"r"}],regsRead=[],regsWritten=["lr"],groups=["call","jump","branch_relative"],toString()=bl #0x1091a500c [0x10f4ecef8] bl #0x1091a500c

```

## Frida的Stalker中去判断是否是函数的代码指令的逻辑

- 需求：Frida的Stalker调试期间，想要知道当前所执行的代码，是否属于：真正的要hook的函数的真实代码
- 解决办法

经过调试用如下代码：

```

console.log("===== Frida Stalker hook for arm64 __lldb_unnamed_symbol12575$$akd =====");

// arm64 akd: __lldb_unnamed_symbol12575$$akd
// var funcRelativeStartAddr = 0x1000a0460;
var funcRelativeStartAddr = 0xa0460;
var functionSize = 0x24C8; // 9416 == 0x24C8
var funcRelativeEndAddr = funcRelativeStartAddr + functionSize;
console.log("funcRelativeStartAddr=" + funcRelativeStartAddr + ", functionSize=" + functionSize + ", funcRelativeEndAddr=" + funcRelativeEndAddr);
const moduleName = "akd";
const moduleBaseAddress = Module.findBaseAddress(moduleName);
console.log("moduleName=" + moduleName + ", moduleBaseAddress=" + moduleBaseAddress);
// console.log("moduleName=%s, moduleBaseAddress=%p", moduleName, moduleBaseAddress);
const funcRealStartAddr = moduleBaseAddress.add(funcRelativeStartAddr);
// var funcRealEndAddr = funcRealStartAddr + functionSize;
const funcRealEndAddr = funcRealStartAddr.add(functionSize);
console.log("funcRealStartAddr=" + funcRealStartAddr + ", funcRealEndAddr=" + funcRealEndAddr);
var curTid = null;
Interceptor.attach(funcRealStartAddr, {
 onEnter: function(args) {
 var arg0 = args[0]
 var arg1 = args[1]
 var arg2 = args[2]

```

```

 var arg3 = args[3]
 console.log("----- arg0=" + arg0 + ", arg1=" + arg1 + ", arg2=" + arg2 + ", arg
3=" + arg3);
 var curTid = Process.getCurrentThreadId();
 console.log("curTid=", curTid);
 Stalker.follow(curTid, {
 events: {
 call: true, // CALL instructions: yes please
 ret: false, // RET instructions
 exec: false, // all instructions: not recommended as it's
 block: false, // block executed: coarse execution trace
 compile: false // block compiled: useful for coverage
 },
 // transform: (iterator: StalkerArm64Iterator) => {
 transform: function (iterator) {
 var instruction = iterator.next();
 const startAddress = instruction.address;
 console.log("+++ into iterator: startAddress=" + startAddress);
 // const isAppCode = startAddress.compare(funcRealStartAddr) >= 0 && st
artAddress.compare(funcRealEndAddr) === -1;
 // const isAppCode = (startAddress.compare(funcRealStartAddr) >= 0) &&
(startAddress.compare(funcRealEndAddr) < 0);
 const gt_realStartAddr = startAddress.compare(funcRealStartAddr) >= 0
 const lt_realEndAddr = startAddress.compare(funcRealEndAddr) < 0
 const isAppCode = gt_realStartAddr && lt_realEndAddr
 console.log("isAppCode=" + isAppCode + ", gt_realStartAddr=" + gt_reals
tAddr + ", lt_realEndAddr=" + lt_realEndAddr);
 do {
 if (isAppCode) {
 var curRealAddr = instruction.address;
 var curOffset = curRealAddr.sub(funcRealStartAddr)
 var curOffsetInt = curOffset.toInt32()
 var instructionStr = instruction.toString()
 console.log("\t" + curRealAddr + " <+" + curOffsetInt + ">: " +
instructionStr);
 }
 iterator.keep();
 } while ((instruction = iterator.next()) !== null);
 }
 })
 },
 onLeave: function(retval) {
 console.log("retval:", new ObjC.Object(retval))
 if (curTid != null) {
 Stalker.unfollow(curTid);
 console.log("Stalker.unfollow curTid=", curTid)
 }
 }
});

```

可以输出：

```

===== Frida Stalker hook for arm64 __lldb_unnamed_symbol12575$$akd =====
funcRelativeStartAddr=656480, funcSize=9416, funcRelativeEndAddr=665896

```

```
moduleName akd, moduleBaseAddress 0x10237c000
funcRealStartAddr=0x10241c460, funcRealEndAddr=0x10241e928
[iPhone::akd]-> ----- arg0 0xfffffffffffffff, arg1=0x16dcae838, arg2=0x16dcae838, arg3
 0xfffffffffffffff
curTid= 15635
+++ into iterator: startAddress=0x1089dbcd8
isAppCode false, gt_realStartAddr=true, lt_realEndAddr=false
+++ into iterator: startAddress=0x1089dbce8
...
isAppCode true, gt_realStartAddr=true, lt_realEndAddr=true, arg3=0xfffffffffffffff
 0x10241c470 +18 : stp x22, x21, [sp, #0xc0]
 0x10241c474 +20 : stp x20, x19, [sp, #0xd0]
 0x10241c478 +24 : stp x29, x30, [sp, #0xe0]
 0x10241c47c +28 : add x29, sp, #0xe0
...
```

算是实现了，通过计算，最后用 `isAppCode` 这个变量去判断是否是当前代码

上述代码的所属的完整的示例代码，详见：

[\\_\\_lldb\\_unnamed\\_symbol2575\\$\\$akd](#)

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## frida-trace

### hook指定的多个二进制库文件

想要去用frida-trace追踪的iOS的ObjC的库=Framework=二进制：

- AppleAccount
- AppleAccountUI
- Accounts
- AccountsDaemon
- AuthKitUI
- AuthKit
- UserManagement

最后是用：

- 去include 多个 module

```
frida-trace -U -F com.apple.Preferences -I "AppleAccount*" -I "UserManagement" -I "Accounts*" -I "AuthKit*"
```

可以运行，但是结果：

- 只找到少数几个函数，不是我们要的
  - -》这么多库，一共才有107个函数
  - -》其中AppleAccount只有7个函数，其中就有上面的\_AALogSystem仅仅是日志的函数，而不是我们要的：很多其他账号登录相关的函数
  - -》正常情况下，应该会有非常多的函数才对

注：

也可以换另外写法：

```
frida-trace -U -F com.apple.Preferences -i "AppleAccount\!" -i "AppleAccountUI\!" -i "Accounts\!" -i "AccountsDaemon\!" -i "AuthKit\!" -i "AuthKitUI\!" -i "UserManagement\!"
```

不过结果都一样：hook的函数都很少，不是我们想要的。

### 输出日志到文件中

- 解决办法：加上 -o 参数，去指定输出log到文件
  - 命令

```
frida-trace -U -F com.apple.Preferences -o traceAccount.log -m "*[AA* *]" -m "*[AK* *]" -m "*[AS* *]" -m "*[NSXPC* *]" -M "-[ASDBundle copyWithZone:]" -M "-[ASDInstallationEvent copyWithZone:]" -M "-[NSXPCEncoder _encodeArrayOfObjects:forKey:]" -M "-[NSXPCEncoder _encodeUnkeyedObject:]" -M "-[NSXPCEncoder _replaceObject:]" -M "-[NSXPCEncoder _checkObject:]" -M "-[NSXPCEncoder _encodeObject:]" -M "-[NSXPCCollection replacementObjectForEncoder:object:]"
```

```

27464 ms +[AMURProtocol canInitWithRequest:]@0x28006a820 cachedResponse:@0x0 client:@0x280d44510)
27465 ms | -[AMURProtocol startRequest:]@0x28006a820 canonicalRequest:@0x28069170)
27465 ms | +[AMURProtocol initWithRequest:]@0x28006a820 completionHandler:@0x16c2ee650)
27465 ms | | -[AMURProtocol _canonInitWithRequest:]@0x28006a820)
27465 ms | | | -[AMRemoteServer _configurationAndResponseWithCompletion:]@0x16c031a48)
27465 ms | | | | -[AMRemoteServer _configurationCacheInvalidateIfNecessary:]@0x16c031a48)
27465 ms | | | | | -[AMRemoteServer _configurationCacheCreateIfNecessary:]@0x16c031a48)
27465 ms | | | | | | -[AMRemoteServerConfigurationCache _createOnce:]@0x16c031a48)
27465 ms | | | | | | | -[AMRemoteServerConfigurationCache configuration:]@0x16c031a48)
27465 ms | | | | | | | | -[AMRemoteServerConfigurationCache response:]@0x16c031a48)
27465 ms | | | | | | | | | -[AMRemoteServerConfigurationCache _response:]@0x16c031a48)
27465 ms | | | | | | | | | | -[AMURProtocol stopLoading:]@0x16c031a48)
27467 ms /* TID 0x282e4b */
27467 ms | -[AMAppleIDSession URLSession:@0x10d5f6d0 task:@0x27a5eb30 prtAppleIDHeaderForResponse:@0x0 completionHandler:@0x16c2ee650)
27467 ms | | -[AMAppleIDSession _generateAppleIDHeadersForResponse:@0x0 completionHandler:@0x16c2ee5c0)
27467 ms | | | -[AMAppleIDSession _generateAppleIDHeadersForSessionTask:@0x127ad6d0 withCompletion:@0x16c2ee538)
27467 ms | | | | -[AMAppleIDSession _handleAppleIDSessionTask:@0x127ad6d0 controller:@0x1]
27467 ms | | | | | -[AMAnisetteProvisioningController _setAnisetteDataForURLRequest:@0x28066b320 completion:@0x16c2ee428)
27467 ms | | | | | | -[AMAnisetteProvisioningController _fetchAnisetteDataAndProvisionIfNecessary:@0x1 completion:@0x16c2ee428)
27467 ms | | | | | | | -[AMAnisetteProvisioningController _setAnisetteData:@0x16c2ee428)
27467 ms | | | | | | | | -[AMAnisetteProvisioningController _setCompletion:@0x16c2ee428)
27467 ms | | | | | | | | | -[AMAnisetteProvisioningController _stop:]@0x16c2ee428)
27467 ms | | | | | | | | | | -[AMXPCConnection _initWithMachineName:@0x16d949db8 options:@0x0)
27467 ms | | | | | | | | | | | -[NSXPConnection init]
27467 ms | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceSubClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _methodSignatureForSelector:@0x19d1e17a]
27467 ms | | | | | | | | | | | | | | -[NSXPInterface _interfaceForArgument:@0x16c2ed98 arguments:@0x0 count:@0x0 methodSignature:@0xadd38823499d6c17 selector:@0x19d1e17a withProxy:@0x28216ac80)
27467 ms | | | | | | | | | | | | | | | -[NSXPInterface _initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | -[NSXPEncoder initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | | -[NSXPEncoder setConnection:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | -[NSXPEncoder setDelegate:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | | -[NSXPEncoder setInvocation:@0x16c2ed790 isReply:@0x0 info:@0x28261bba0]
27467 ms | | | | | | | | | | | | | | | | | | | | -[NSXPEncoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | -[NSXPDecoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | | -[NSXPInterface _hasProxiesInReplyBlockArgumentsOfSelector:@0x19d1e17a]
27467 ms | | /* TID 0x10d5f6d2 */
27465 ms | | -[NSXPConnection _decodeAndInvokeReply:@0x16c2ed760 sequence:@0x1 replyInfo:@0x2817b3c0]
27465 ms | | | -[NSXPDecoder init]
27465 ms | | | | -[NSXPDecoder _init]
27465 ms | | | | | -[NSXPDecoder _get_connection:@0x28332626]
27465 ms | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 forSelector:@0x19d1e17a interface:@0x28063f760]
27465 ms | | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 allowingImplMessageSend:@0x0 outInvocation:@0x16dbd4b0 outArguments:@0x0 outMethodSignature:@0x0 outSelector:@0x0 isReply:@0x1 replySelector:@0x19d1
27465 ms | | | | | | | | -[NSXPInterface _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | -[NSXPDecoder _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | | -[NSXPInterface _selector:@0x16c2ed790 isReply:@0x1 methodSignature:@0x16dbd4b0 allowedAccesses:@0x16dbd4b0]

```

## 缺点

- 之前=输出日志到终端：带颜色和缩进 -> 利于查看函数调用关系

```

27464 ms +[AMURProtocol canInitWithRequest:]@0x28006a820 cachedResponse:@0x0 client:@0x280d44510)
27465 ms | -[AMURProtocol startRequest:]@0x28006a820 canonicalRequest:@0x28069170)
27465 ms | +[AMURProtocol initWithRequest:]@0x28006a820 completionHandler:@0x16c2ee650)
27465 ms | | -[AMURProtocol _canonInitWithRequest:]@0x28006a820)
27465 ms | | | -[AMRemoteServer _configurationAndResponseWithCompletion:]@0x16c031a48)
27465 ms | | | | -[AMRemoteServer _configurationCacheInvalidateIfNecessary:]@0x16c031a48)
27465 ms | | | | | -[AMRemoteServer _configurationCacheCreateIfNecessary:]@0x16c031a48)
27465 ms | | | | | | -[AMRemoteServerConfigurationCache _createOnce:]@0x16c031a48)
27465 ms | | | | | | | -[AMRemoteServerConfigurationCache configuration:]@0x16c031a48)
27465 ms | | | | | | | | -[AMRemoteServerConfigurationCache response:]@0x16c031a48)
27465 ms | | | | | | | | | -[AMRemoteServerConfigurationCache _response:]@0x16c031a48)
27465 ms | | | | | | | | | | -[AMURProtocol stopLoading:]@0x16c031a48)
27467 ms /* TID 0x282e4b */
27467 ms | -[AMAppleIDSession URLSession:@0x10d5f6d0 task:@0x27a5eb30 prtAppleIDHeaderForResponse:@0x0 completionHandler:@0x16c2ee650)
27467 ms | | -[AMAppleIDSession _generateAppleIDHeadersForResponse:@0x0 completionHandler:@0x16c2ee5c0)
27467 ms | | | -[AMAppleIDSession _generateAppleIDHeadersForSessionTask:@0x127ad6d0 withCompletion:@0x16c2ee538)
27467 ms | | | | -[AMAppleIDSession _handleAppleIDSessionTask:@0x127ad6d0 controller:@0x1]
27467 ms | | | | | -[AMAnisetteProvisioningController _setAnisetteDataForURLRequest:@0x28066b320 completion:@0x16c2ee428)
27467 ms | | | | | | -[AMAnisetteProvisioningController _fetchAnisetteDataAndProvisionIfNecessary:@0x1 completion:@0x16c2ee428)
27467 ms | | | | | | | -[AMAnisetteProvisioningController _setAnisetteData:@0x16c2ee428)
27467 ms | | | | | | | | -[AMAnisetteProvisioningController _setCompletion:@0x16c2ee428)
27467 ms | | | | | | | | | -[AMAnisetteProvisioningController _stop:]@0x16c2ee428)
27467 ms | | | | | | | | | | -[AMXPCConnection _initWithMachineName:@0x16d949db8 options:@0x0)
27467 ms | | | | | | | | | | | -[NSXPConnection init]
27467 ms | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceSubClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _methodSignatureForSelector:@0x19d1e17a]
27467 ms | | | | | | | | | | | | | | -[NSXPInterface _interfaceForArgument:@0x16c2ed98 arguments:@0x0 count:@0x0 methodSignature:@0xadd38823499d6c17 selector:@0x19d1e17a withProxy:@0x28216ac80)
27467 ms | | | | | | | | | | | | | | | -[NSXPInterface _initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | -[NSXPEncoder initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | | -[NSXPEncoder setConnection:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | -[NSXPEncoder setDelegate:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | | -[NSXPEncoder setInvocation:@0x16c2ed790 isReply:@0x0 info:@0x28261bba0]
27467 ms | | | | | | | | | | | | | | | | | | | | -[NSXPEncoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | -[NSXPDecoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | | -[NSXPInterface _hasProxiesInReplyBlockArgumentsOfSelector:@0x19d1e17a]
27467 ms | | /* TID 0x10d5f6d2 */
27465 ms | | -[NSXPConnection _decodeAndInvokeReply:@0x16c2ed760 sequence:@0x1 replyInfo:@0x2817b3c0]
27465 ms | | | -[NSXPDecoder init]
27465 ms | | | | -[NSXPDecoder _init]
27465 ms | | | | | -[NSXPDecoder _get_connection:@0x28332626]
27465 ms | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 forSelector:@0x19d1e17a interface:@0x28063f760]
27465 ms | | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 allowingImplMessageSend:@0x0 outInvocation:@0x16dbd4b0 outArguments:@0x0 outMethodSignature:@0x0 outSelector:@0x0 isReply:@0x1 replySelector:@0x19d1
27465 ms | | | | | | | | -[NSXPInterface _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | -[NSXPDecoder _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | | -[NSXPInterface _selector:@0x16c2ed790 isReply:@0x1 methodSignature:@0x16dbd4b0 allowedAccesses:@0x16dbd4b0]

```

- 现在=输出日志到文件：丢失了颜色，更主要是缩进也丢失了 -> 非常不利于查看函数调用关系

```

27464 ms +[AMURProtocol canInitWithRequest:]@0x28006a820 cachedResponse:@0x0 client:@0x280d44510)
27465 ms | -[AMURProtocol startRequest:]@0x28006a820 canonicalRequest:@0x28069170)
27465 ms | +[AMURProtocol initWithRequest:]@0x28006a820 completionHandler:@0x16c2ee650)
27465 ms | | -[AMURProtocol _canonInitWithRequest:]@0x28006a820)
27465 ms | | | -[AMRemoteServer _configurationAndResponseWithCompletion:]@0x16c031a48)
27465 ms | | | | -[AMRemoteServer _configurationCacheInvalidateIfNecessary:]@0x16c031a48)
27465 ms | | | | | -[AMRemoteServer _configurationCacheCreateIfNecessary:]@0x16c031a48)
27465 ms | | | | | | -[AMRemoteServerConfigurationCache _createOnce:]@0x16c031a48)
27465 ms | | | | | | | -[AMRemoteServerConfigurationCache configuration:]@0x16c031a48)
27465 ms | | | | | | | | -[AMRemoteServerConfigurationCache response:]@0x16c031a48)
27465 ms | | | | | | | | | -[AMRemoteServerConfigurationCache _response:]@0x16c031a48)
27465 ms | | | | | | | | | | -[AMURProtocol stopLoading:]@0x16c031a48)
27467 ms /* TID 0x282e4b */
27467 ms | -[AMAppleIDSession URLSession:@0x10d5f6d0 task:@0x27a5eb30 prtAppleIDHeaderForResponse:@0x0 completionHandler:@0x16c2ee650)
27467 ms | | -[AMAppleIDSession _generateAppleIDHeadersForResponse:@0x0 completionHandler:@0x16c2ee5c0)
27467 ms | | | -[AMAppleIDSession _generateAppleIDHeadersForSessionTask:@0x127ad6d0 withCompletion:@0x16c2ee538)
27467 ms | | | | -[AMAppleIDSession _handleAppleIDSessionTask:@0x127ad6d0 controller:@0x1]
27467 ms | | | | | -[AMAnisetteProvisioningController _setAnisetteDataForURLRequest:@0x28066b320 completion:@0x16c2ee428)
27467 ms | | | | | | -[AMAnisetteProvisioningController _fetchAnisetteDataAndProvisionIfNecessary:@0x1 completion:@0x16c2ee428)
27467 ms | | | | | | | -[AMAnisetteProvisioningController _setAnisetteData:@0x16c2ee428)
27467 ms | | | | | | | | -[AMAnisetteProvisioningController _setCompletion:@0x16c2ee428)
27467 ms | | | | | | | | | -[AMAnisetteProvisioningController _stop:]@0x16c2ee428)
27467 ms | | | | | | | | | | -[AMXPCConnection _initWithMachineName:@0x16d949db8 options:@0x0)
27467 ms | | | | | | | | | | | -[NSXPConnection init]
27467 ms | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _remoteObjectInterfaceSubClass]
27467 ms | | | | | | | | | | | | | -[NSXPConnection _methodSignatureForSelector:@0x19d1e17a]
27467 ms | | | | | | | | | | | | | | -[NSXPInterface _interfaceForArgument:@0x16c2ed98 arguments:@0x0 count:@0x0 methodSignature:@0xadd38823499d6c17 selector:@0x19d1e17a withProxy:@0x28216ac80)
27467 ms | | | | | | | | | | | | | | | -[NSXPInterface _initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | -[NSXPEncoder initWithStackSpace:@0x16c2ed940 size:@0x0]
27467 ms | | | | | | | | | | | | | | | | | -[NSXPEncoder setConnection:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | -[NSXPEncoder setDelegate:@0x28332600]
27467 ms | | | | | | | | | | | | | | | | | | | -[NSXPEncoder setInvocation:@0x16c2ed790 isReply:@0x0 info:@0x28261bba0]
27467 ms | | | | | | | | | | | | | | | | | | | | -[NSXPEncoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | -[NSXPDecoder dealloc]
27467 ms | | | | | | | | | | | | | | | | | | | | | | -[NSXPInterface _hasProxiesInReplyBlockArgumentsOfSelector:@0x19d1e17a]
27467 ms | | /* TID 0x10d5f6d2 */
27465 ms | | -[NSXPConnection _decodeAndInvokeReply:@0x16c2ed760 sequence:@0x1 replyInfo:@0x2817b3c0]
27465 ms | | | -[NSXPDecoder init]
27465 ms | | | | -[NSXPDecoder _init]
27465 ms | | | | | -[NSXPDecoder _get_connection:@0x28332626]
27465 ms | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 forSelector:@0x19d1e17a interface:@0x28063f760]
27465 ms | | | | | | | -[NSXPDecoder _decodeReplyFromPCObject:@0x283d76760 allowingImplMessageSend:@0x0 outInvocation:@0x16dbd4b0 outArguments:@0x0 outMethodSignature:@0x0 outSelector:@0x0 isReply:@0x1 replySelector:@0x19d1
27465 ms | | | | | | | | -[NSXPInterface _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | -[NSXPDecoder _startReadingFromXPCObject:@0x283d76760]
27465 ms | | | | | | | | | | -[NSXPInterface _selector:@0x16c2ed790 isReply:@0x1 methodSignature:@0x16dbd4b0 allowedAccesses:@0x16dbd4b0]

```

## 想要保留所有的frida-trace的带缩进的日志

如上所述，想要：保留所有的frida-trace的日志，但如果用输出到日志文件，却又丢失缩进（和颜色）

另外有个规避办法：

修改当前终端的最大显示行数 -> 就可以避免输出日志行数太多，之前内容被冲掉，看不到的问题了

比如：

- Mac 中 iTerm2 中，右键当前tab页顶部-> 右键-> Edit Session -> Terminal -> Scrollback Buffer -> Scrollback line : 改为足够大的数值，比如 5000

甚至如果log日志特别长，那么可以考虑：设置为无限行数都保留 == Unlimited scrollback

```

root@192.168.1.16 (ssh) ~1 | ~ (-zsh) 2 | .a/frida-trace (-zsh) 3 |
239062 ms -[NSXPCCConnection setExportedObject:0x2800b3ec0]
239062 ms -[NSXPCCConnection setExportedInterface:0x2806706e0]
239062 ms -[NSXPCCConnection _setQueue:0x282d92f80]
239062 ms -[NSXPCCConnection resume]
239063 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:
239063 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:
239072 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:
239072 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:
239072 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:
239072 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:
239074 ms -[NSXPCCConnection invalidate:]
/* TID 0x6917 */
239074 ms -[NSXPCCConnection invalidationHandler]
239074 ms -[NSXPCCConnection _additionalInvalidationHandler]
239074 ms -[NSXPCCConnection setInvalidationHandler:0x0]
239074 ms -[NSXPCCConnection setInterruptionHandler:0x0]
239074 ms -[NSXPCCConnection setExportedObject:0x0]
/* TID 0x103 */
239079 ms -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x1e7
239079 ms | -[NSXPCCConnection _remoteObjectInterfaceClass]
239079 ms -[NSXPCCConnection _sendInvocation:0x16bcd0a8e0 orArguments:
239080 ms -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x1e7
239080 ms | -[NSXPCCConnection _remoteObjectInterfaceClass]
239080 ms -[NSXPCCConnection _sendInvocation:0x16bcd0a90 orArguments:
239106 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:
239106 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:
239120 ms +[NSError errorWithDomain:0x1e856c458 code:0x191 userInfo:
239120 ms | -[NSError initWithDomain:0x1e856c458 code:0x191 userInfo:
239644 ms -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x1e7
239644 ms | -[NSXPCCConnection _remoteObjectInterfaceClass]
239645 ms -[NSXPCCConnection _sendInvocation:0x16bcde230 orArguments:
239645 ms -[NSXPCCConnection remoteObjectProxyWithErrorHandler:0x1e7
239649 ms | -[NSXPCCConnection _remoteObjectInterfaceClass]
239649 ms -[NSXPCCConnection _sendSelector:0x19b604f82 withProxy:0x2
239649 ms | -[NSXPCCConnection _sendInvocation:0x0 orArguments:0x
/* TID 0x6917 */
255342 ms -[ACTimedExpirer _cancelTimer]
255343 ms | -[ACTimedExpirer _unsafeCancelTimer]
255343 ms -[ACAccountStoreClientSideListener connectionWasInvalidated]
255343 ms -[NSXPCCConnection invalidate]
/* TID 0x2670f */
255343 ms -[NSXPCCConnection invalidationHandler]
255343 ms -[NSXPCCConnection _additionalInvalidationHandler]
255343 ms -[NSXPCCConnection setInvalidationHandler:0x0]
255344 ms -[NSXPCCConnection setInterruptionHandler:0x0]
255344 ms -[NSXPCCConnection setExportedObject:0x0]
`-CACA
+ frida-trace
 frida-trace -
```

这样就完全不用担心日志行数太多，前面的日志被冲掉，看不到的问题了。

# 通过修改特定函数的hook的js去打印参数值

对于之前的需求：frida-trace时，打印其中特定的某个ObjC函数的参数

之前不知道如何解决，后来参考[这里](#)，突然想到：

倒是可以借助其所说的，对于frida-trace自动为每个类的函数，所生成的js文件：

- 位置：`__handlers__/{ClassName}/{FunctionName}.js`

去修改js代码，加上打印对应的 `args` 的代码，即可打印对应参数值了。

## 举例

### -[AAAccountManager addAccount:]

frida-trace为函数 `-[AAAccountManager addAccount:]` 自动生成的：

- js文件

- `/Users/crifan/dev/dev_root/iosReverse/AppleStore/AuthKit_akd/dynamicDebug/frida/scripts/__handlers__/AAAccountManager/addAccount_.js`

```

/*
 * Auto-generated by Frida. Please modify to match the signature of -[AAAccountManager addAccount:].
 * This stub is currently auto-generated from manpages when available.
 *
 * For full API reference, see: https://frida.re/docs/javascript-api/
 */

{
 /**
 * Called synchronously when about to call -[AAAccountManager addAccount:].
 *
 * @this {object} - Object allowing you to store state for use in onLeave.
 */
 onEnter(log, args, state) {
 log(`-[AAAccountManager addAccount:${args[2]}]`);
 }
}

```

- 完整js代码

```

/*
 * Auto-generated by Frida. Please modify to match the signature of -[AAAccountManager addAccount:].
 * This stub is currently auto-generated from manpages when available.
 *
 * For full API reference, see: https://frida.re/docs/javascript-api/
 */

{
 /**
 * Called synchronously when about to call -[AAAccountManager addAccount:].
 *
 * @this {object} - Object allowing you to store state for use in onLeave.
 */
 onEnter(log, args, state) {
 log(`-[AAAccountManager addAccount:${args[2]}]`);
 }
}

```

```

 * @param {function} log - Call this function with a string to be presented to the
 user.
 * @param {array} args - Function arguments represented as an array of NativePoint
 er objects.
 * For example use args[0].readUtf8String() if the first argument is a pointer to
 a C string encoded as UTF-8.
 * It is also possible to modify arguments by assigning a NativePointer object to
 an element of this array.
 * @param {object} state - Object allowing you to keep state across function calls

 * Only one JavaScript function will execute at a time, so do not worry about race
 -conditions.
 * However, do not use this to store function arguments across onEnter/onLeave, bu
 t instead
 * use "this" which is an object for keeping state local to an invocation.
 */
onEnter(log, args, state) {
 log(`-[AAAccountManager addAccount:${args[2]}]`);
}

/**
 * Called synchronously when about to return from -[AAAccountManager addAccount:
].
*
* See onEnter for details.
*
* @this {object} - Object allowing you to access state stored in onEnter.
* @param {function} log - Call this function with a string to be presented to the
 user.
* @param {NativePointer} retval - Return value represented as a NativePointer obj
 ect.
* @param {object} state - Object allowing you to keep state across function calls

*/
onLeave(log, retval, state) {
}
}

```

可以拷贝把其中的：

```
log(`-[AAAccountManager addAccount:${args[2]}]`);
```

改为：

```
log(`-[AAAccountManager addAccount:${new ObjC.Object(args[2])}]`);
```

应该就可以：打印出**ObjC对象的信息了，而不仅仅是：ptr = NativePointer 的指针的字符串而已。**

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# 常用iOS函数

Frida中逆向iOS的app期间，常会涉及到，一些相对通用的，常用的函数，整理如下：

- 网络相关

- 请求=request

- NSURLRequest

```
+[NSURLRequest requestWithURL:]
+[NSURLRequest requestWithURL:cachePolicy:timeoutInterval:]
-[NSURLRequest requestWithURL:cachePolicy:timeoutInterval:]
-[NSURLRequest initWithURL:]
-[NSURLRequest initWithURL:cachePolicy:timeoutInterval:]
```

- NSMutableURLRequest

```
-[NSMutableURLRequest initWithURL:]
-[NSMutableURLRequest setHTTPBody:]
```

- NSURL

```
+[NSURL URLWithString:]
+[NSURL URLWithString:relativeToURL:]
-[NSURL initWithScheme:host:path:]
-[NSURL initWithString:]
-[NSURL initWithString:relativeToURL:]
```

- NSURLConnection

```
+[NSURLConnection sendSynchronousRequest:returningResponse:error:]
+[NSURLConnection sendAsynchronousRequest:queue:completionHandler:]
+[NSURLConnection connectionWithRequest:delegate:]
-[NSURLConnection initWithRequest:delegate:]
-[NSURLConnection start]
-[NSURLConnection cancel]
-[NSURLConnection connection:didReceiveResponse:]
-[NSURLConnection connection:didReceiveData:]
-[NSURLConnection connectionDidFinishLoading:]
-[NSURLConnection connection:didFailWithError:]
```

- 响应=response

- NSHTTPURLResponse

```
-[NSHTTPURLResponse initWithURL:statusCode:HTTPVersion:headerFields:]
-[NSHTTPURLResponse allHeaderFields]
-[NSHTTPURLResponse statusCode]
```

- NSURLResponse

```
-[NSURLResponse initWithURL:MIMEType:expectedContentLength:textEncodingName:]
```



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## 工具类函数

此处整理出，Frida的js逆向hook调试期间，用到的工具类的函数，贴出供参考。

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## 通用js函数

此处整理Frida的js中，通用的js方面的函数：

- 常用写法：
  - 判断key是否在字典dict中

```
curKey in someDict
```

## 对象=Object: Dict/List/...

### `toJsonStr` : 转换成JSON字符串（用于打印js对象）

```
// convert Object(dict/list/...) to JSON string
function toJsonStr(curObj, singleLine = false, space = 2){
 // console.log("toJsonStr: singleLine=" + singleLine)
 // var jsonStr = JSON.stringify(curObj, null, 2)
 var jsonStr = JSON.stringify(curObj, null, space)
 if(singleLine) {
 // jsonStr = jsonStr.replace(/\n/g, '')
 jsonStr = jsonStr.replace(/\n/g, '')
 }
 return jsonStr
 // return curObj.toString()
}
```

用法举例：

```
console.log("Add: address=" + address + ", moduleInfoDict=" + toJsonStr(moduleInfoDict)
+ " into cache gAddrToModuleInfoDict")
```

输出：

```
[*] Add: address: 0x1098ad910, moduleInfoDict={
 "fileName": "/private/var/containers/Bundle/Application/02BED373-87F5-4B48-9F4B-70E85
3B20267/WhatsApp.app/Frameworks/SharedModules.framework/SharedModules",
 "fileAddress": "0x108c84000",
 "symbolName": "WAGetWCIHttpImpl",
 "symbolAddress": "0x1098abad0"
} into cache gAddrToModuleInfoDict
```

## String字符串

### `occurrences` : 字符串搜索

```

/** Function that count occurrences of a substring in a string;
 * @param {String} string The string
 * @param {String} subString The sub string to search for
 * @param {Boolean} [allowOverlapping] Optional. (Default:false)
 *
 * @author Vitim.us https://gist.github.com/victornpb/7736865
 * @see Unit Test https://jsfiddle.net/Victornpb/5axuh96u/
 * @see https://stackoverflow.com/a/7924240/938822
 * @example occurrences("- setExportedObject:", ":") => 1
 */
function occurrences(string, subString, allowOverlapping) {
 // console.log("string=" + string + ",subString=" + subString + ", allowOverlapping=" + allowOverlapping)
 string += "";
 subString += "";
 if (subString.length <= 0) return (string.length + 1);

 var n = 0,
 pos = 0,
 step = allowOverlapping ? 1 : subString.length;

 while (true) {
 pos = string.indexOf(subString, pos);
 // console.log("pos=" + pos)
 if (pos >= 0) {
 ++n;
 pos += step;
 } else break;
 }

 return n;
}

```

用法举例：

```

const argSel = args[1];
console.log("argSel: ", argSel);
const argSelStr = ObjC.selectorAsString(argSel);
console.log("argSelStr: ", argSelStr);

const argCount = occurrences(argSelStr, ":");

console.log("argCount: ", argCount);

```

输出：

```

argSel: 0x19cf48d27
argSelStr: fileURLWithPath:isDirectory:
argCount: 2

```

含义：

(iOS的ObjC中的SEL) 字符串： fileURLWithPath:isDirectory: 中有2个冒号 :

## String - Log日志

```

// Generate single line log string
// input: logStr="Called: -[NSURLRequest initWithURL:]"
// output: "===== Called: -[NSURLRequest initWithURL:] ====="
=====
=====

// function generateLineStr(logStr, isWithSpace=true, paddingChar="", lineWidth=80){
function generateLineStr(logStr, isWithSpace true, paddingChar "", lineWidth=100){
// function generateLineStr(logStr, isWithSpace=true, paddingChar="", lineWidth=120){
 // console.log("logStr=" + logStr, ", isWithSpace=" + isWithSpace + ", paddingChar=" +
 " + paddingChar + ", lineWidth=" + lineWidth)
 var lineStr = ""

 var realLogStr = ""
 if (isWithSpace) {
 realLogStr = " " + logStr + " "
 } else {
 realLogStr = logStr
 }

 var realLogStrLen = realLogStr.length
 if ((realLogStrLen % 2) > 0){
 realLogStr += " "
 realLogStrLen = realLogStr.length
 }

 var leftRightPaddingStr = ""
 var paddingLen = lineWidth - realLogStrLen
 if (paddingLen > 0) {
 var leftRightPaddingLen = paddingLen / 2
 leftRightPaddingStr = times(paddingChar, leftRightPaddingLen)
 }

 lineStr = leftRightPaddingStr + realLogStr + leftRightPaddingStr

 // console.log("lineStr:\n" + lineStr)
 return lineStr
}

```

用法举例：

```

var logStr="Called: -[NSURLRequest initWithURL:]"
generateLineStr(logStr)

```

输出：

```

===== Called: -[NSURLRequest initWithURL:] =====
=====
```

其他输出举例：

```

===== Called: +[WARegistrationURLBuilder preChatdABPropURLWithPhoneNumber:abHash:]
```



## times: 字符串相乘

代码:

```
// String multiple
// eg: str="", num=5 => "====="
function times(str, num){
 return new Array(num + 1).join(str)
}
```

用法举例:

```
var paddingChar = "_"
var leftRightPaddingLen = 10
var leftRightPaddingStr = times(paddingChar, leftRightPaddingLen)
console.log(leftRightPaddingStr)
```

输出:

```

```

## List列表

### isItemInList: 判断元素是否在列表中

```
// check whether is item inside the list
// eg: curItem="abc", curList=["abc", "def"] => true
function isItemInList(curItem, curList){
 // method1:
 return curList.includes(curItem)
 // // method2:
 // return curList.indexOf(curItem) > -1
}
```

用法举例:

```
var iOSObjCallStr = "+[NSURLRequest requestWithURL:]"
let cfgPrintOnceStackExceptionList = [
 "+[NSURLRequest requestWithURL:]",
]
console.log(isItemInList(iOSObjCallStr, cfgPrintOnceStackExceptionList))
```

输出：

```
true
```

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## Frida的js通用函数

### isValidPointer: 判断指针是否有效

- 背景：
  - 正常的指针值：
    - 0x194d20320
    - 0x103e79420
    - 0x2831ac880
  - 异常的一些指针值：
    - 0x0
    - 0xc

代码：

```
// check pointer is valid or not
// example
// 0x103e79560 => true
// 0xc => false
function isValidPointer(curPtr){
 let MinValidPointer = 0x10000
 var isValid = curPtr > MinValidPointer
 return isValid
}
```

用法举例：

```
console.log(isValidPointer(0xc))
```

输出：

```
false
```

## iOS函数

此处整理Frida的js中，iOS（的ObjC）方面的函数：

### objcObjToStr : ObjC的Object转换为C的string

```
// convert ObjC Object to C string
function objcObjToStr(objcObj){
 return objcObj.toString()
}
```

### nsStrToJsStr : NSString转换为js的String

代码：

```
// NSString instance -> js string
function nsStrToJsStr(curNsStr){
 // method 1
 return curNsStr.UTF8String()
 // // method 2:
 // const NSUTF8StringEncoding = 4;
 // https://developer.apple.com/documentation/foundation/nsstring/1408489-cstringusingencoding?language=objc
 // return curNsStr.cStringUsingEncoding_(NSUTF8StringEncoding)
}
```

用法举例：

```
const connnServiceNameNSStr = nsxpcconnectionObj.serviceName();
const connnServiceNameJsStr = nsStrToJsStr(connnServiceNameNSStr);
console.log("connnServiceNameNSStr: ", connnServiceNameNSStr);
console.log("connnServiceNameJsStr: ", connnServiceNameJsStr);
```

输出：

```
connnServiceNameNSStr: com.apple.ak.auth.xpc
connnServiceNameJsStr: com.apple.ak.auth.xpc
```

### toiOSobjcCall : 把Frida的ObjC函数写法，转换成ObjC的函数写法

```
// convert from frida function call to ObjC function call
// "NSURL", "- initWithString:" => "-[NSURL initWithString:]"
function toiOSobjcCall(class_name, method_name){
 const instanceCallStart = "-[" + class_name + " ";
```

```

const classCallStart = "+" + class_name + " ";
var objcFuncCall = method_name.replace("-", instanceCallStart);
objcFuncCall = objcFuncCall.replace("+ ", classCallStart);
objcFuncCall = objcFuncCall + "]";
// console.log(class_name + " -> " + method_name + " => " + objcFuncCall);
return objcFuncCall;
}

```

用法举例：

```

function hook_specific_method_of_class(className, funcName)
{
 console.log("className=" + className + ", funcName=" + funcName)
 var iOSObjCallStr = toiOSObjcCall(className, funcName)
 console.log("iOSObjCallStr=", iOSObjCallStr)
 ...
}

```

输出：

```

className NSXPConnection, funcName - setExportedObject:
iOSObjCallStr= -[NSXPConnection setExportedObject:]

```

其他举例：

- "NSURL", "- \_cfurl" => "-[NSURL \_cfurl]"
- "NSURL", "+ fileURLWithPath:isDirectory:" => "+[NSURL fileURLWithPath:isDirectory:]"
- "NSURL", "- initFileURLWithPath:isDirectory:" => "-[NSURL initFileURLWithPath:isDirectory:]"

## toFridaObjcCall : 把ObjC函数写法，转换成Frida的ObjC函数写法

```

// convert from ObjC function call to frida function call
// "-[NSURL initWithString:]" => ["NSURL", "- initWithString:"]
function toFridaObjcCall(fridaObjcCallStr){
 // console.log("fridaObjcCallStr=" + fridaObjcCallStr)
 const funcCallP = /^([-+])\[(\w+)\s+([\w:]+)\]\$/;
 // console.log("funcCallP=" + funcCallP)
 const funcCallMatch = fridaObjcCallStr.match(funcCallP)
 // console.log("funcCallMatch=" + funcCallMatch)
 const objcFuncTypeChar = funcCallMatch[1]
 const objcClassName = funcCallMatch[2]
 const objcFuncName = funcCallMatch[3]
 const fridaFuncCallList = [objcClassName, objcFuncTypeChar + " " + objcFuncName]
 // console.log("fridaFuncCallList=" + fridaFuncCallList)
 return fridaFuncCallList
}

```

用法举例：

- 输入
  - "+[NSURL URLWithString:]"
  - "-[NSURLConnection start]"
  - "-[NSURL initWithString:relativeToURL:]"
- 输出
  - ["NSURL", "+ URLWithString:]"]
  - ["NSURLConnection", "- start"]]
  - ["NSURL", "- initWithString:relativeToURL:]"]

## initCommonLibFunctions : 初始化常用库中的常用函数

代码：

```

/*
 * Global Variables
 */

var free = null
var objc_getClass = null
var class_copyMethodList = null
var objc_getMetaClass = null
var method_getName = null
var daddr = null
var _dyld_image_count = null
var _dyld_get_image_name = null
var _dyld_get_image_vmaddr_slide = null
var objc_copyClassNamesForImage = null

/******************* iOS Common Lib Functions *******************/

function initCommonLibFunctions(){
 console.log("Init common functions in common libs:")

 // free
 free = new NativeFunction(
 Module.findExportByName(null, 'free'),
 'void',
 ['pointer']
)
 console.log("free=" + free)

 objc_getClass = new NativeFunction(
 Module.findExportByName(null, 'objc_getClass'),
 'pointer',
 ['pointer']
)
 console.log("objc_getClass=" + objc_getClass)

 class_copyMethodList = new NativeFunction(
 Module.findExportByName(null, 'class_copyMethodList'),
 'pointer',
 ['pointer']
)
}

```

```

 ['pointer', 'pointer']
)
console.log("class_copyMethodList=" + class_copyMethodList)

objc_getMetaClass = new NativeFunction(
 Module.findExportByName(null, 'objc_getMetaClass'),
 'pointer',
 ['pointer']
)
console.log("objc_getMetaClass=" + objc_getMetaClass)

method_getName = new NativeFunction(
 Module.findExportByName(null, 'method_getName'),
 'pointer',
 ['pointer']
)
console.log("method_getName=" + method_getName)

/*
int dladdr(const void *, Dl_info *);

typedef struct dl_info {
 const char *dli_fname; // Pathname of shared object
 void *dli_fbase; // Base address of shared object
 const char *dli_sname; // Name of nearest symbol
 void *dli_saddr; // Address of nearest symbol
} Dl_info;

*/
dladdr = new NativeFunction(
 Module.findExportByName(null, 'dladdr'),
 'int',
 ['pointer', 'pointer']
)
console.log("dladdr=" + dladdr)

// uint32_t _dyld_image_count(void)
_dyld_image_count = new NativeFunction(
 Module.findExportByName(null, '_dyld_image_count'),
 'uint32',
 []
)
console.log("_dyld_image_count=" + _dyld_image_count)

// const char* _dyld_get_image_name(uint32_t image_index)
_dyld_get_image_name = new NativeFunction(
 Module.findExportByName(null, '_dyld_get_image_name'),
 'pointer',
 ['uint32']
)
console.log("_dyld_get_image_name=" + _dyld_get_image_name)

// intptr_t _dyld_get_image_vmaddr_slide(uint32_t image_index)
_dyld_get_image_vmaddr_slide = new NativeFunction(
 Module.findExportByName(null, '_dyld_get_image_vmaddr_slide'),
 'pointer',
 ['uint32']
)
console.log("_dyld_get_image_vmaddr_slide=" + _dyld_get_image_vmaddr_slide)

```

```

 'pointer',
 ['uint32']
)
 console.log("_dyld_get_image_vmaddr_slide=" + _dyld_get_image_vmaddr_slide)

 // const char * objc_copyClassNamesForImage(const char *image, unsigned int *outCount)
 objc_copyClassNamesForImage = new NativeFunction(
 Module.findExportByName(null, 'objc_copyClassNamesForImage'),
 'pointer',
 ['pointer', 'pointer']
);
 console.log("objc_copyClassNamesForImage=" + objc_copyClassNamesForImage)
}

```

用法举例：

```

/**
 * Main
**/
initCommonLibFunctions()

```

输出：

```

Init common functions in common libs:
free 0x190f57f10
objc_getClass 0x190f9c098
class_copyMethodList 0x190f96cf8
objc_getMetaClass 0x190f9c100
method_getName 0x190f93b54
dladdr 0x191068174
_dyld_image_count 0x191067b40
_dyld_get_image_name 0x19106806c
_dyld_get_image_vmaddr_slide 0x191068004
objc_copyClassNamesForImage 0x190f97e68

```

说明：

后续其他地方，即可调用这些函数：

```

free(pClasses)

function get_info_form_address(address){
 ...
 var dl_info = Memory.alloc(Process.pointerSize * 4);
 dladdr(ptr(address), dl_info)
}

```



## iOS函数调用堆栈

对于Frida中，打印iOS函数调用堆栈，此处整理出2个函数：

- 地址版本 = 精简版： `printFunctionCallStack_addr`
  - 解释：（尤其是对于自己的二进制）只能输出地址，无法输出完整精确的符号名
    - 优点：代码简洁
    - 缺点：只有地址，没有符号，不够用
- 符号版本 = 详细版： `printFunctionCallStack_symbol`
  - 解释：从地址解析后得到准确的符号=函数名的版本
    - 优点：能看到函数名=解析后的符号名，更好用
    - 缺点：代码比较多比较复杂
  - 说明
    - 参考自
      - <https://github.com/4ch12dy/FridaLib/blob/master/iOS/iOSFridaLib.js>
    - 且做了额外优化
      - 加上cache缓存，提高解析速度

### `printFunctionCallStack_addr`

```
function printFunctionCallStack_addr(curContext){
 console.log('Stack:\n' +
 Thread.backtrace(curContext, Backtracer.ACCURATE)
 .map(DebugSymbol.fromAddress).join('\n') + '\n');
}
```

用法举例：

```
Interceptor.attach(curMethod implementation, {
 onEnter: function(args) {
 printFunctionCallStack_addr(this.context)
```

输出：

```
Stack:
0x109af910 SharedModules WAGetWCIHttpImpl
0x106a14cb4 0x2304cb4 (0x102304cb4)
0x1062e9ff4 0x1bd9ff4 (0x101bd9ff4)
0x1062e9f80 0x1bd9f80 (0x101bd9f80)
0x1069da1fc 0x22ca1fc (0x1022ca1fc)
0x1069d9ee4 0x22c9ee4 (0x1022c9ee4)
0x1069d16a8 0x22c16a8 (0x1022c16a8)
0x1952e99ac UIKitCore -[UIApplication sendAction:to:from:forEvent:]
0x194d1ffbc UIKitCore -[UIControl sendAction:to:forEvent:]
0x194d20320 UIKitCore -[UIControl _sendActionsForEvents:withEvent:]
0x194d1f33c UIKitCore -[UIControl touchesEnded:withEvent:]
0x195323050 UIKitCore -[UIWindow _sendTouchesForEvent:]
```

```

0x195324390 UIKitCore -[UIWindow sendEvent:]
0x195300a9c UIKitCore -[UIApplication sendEvent:]
0x1061487b8 0x1a387b8 (0x101a387b8)
0x195378c20 UIKitCore __dispatchPreprocessedEventFromEventQueue

```

## printFunctionCallStack\_symbol

代码：

```

/**
 * Config & Settings
**/

// Print Function Stack Call
let isUseCache = true

// print only once stack for every function
let isPrintOnlyOnceStack = true

let cfgPrintOnceStackExceptionList = [
 "+[NSURLRequest requestWithURL:]",
]

/**
 * Global Variables
**/

var gPrintedStackDict = {}

var gAddrToModuleInfoDict = {}
var gModulePathToSlideDict = {}
var gModulePathToClassesDict = {}
var gModulePathAddrToSymbolDict = {}
var gClassnameToAllMethodsDict = {}

var free = null
var objc_getClass = null
var class_copyMethodList = null
var objc_getMetaClass = null
var method_getName = null
var dlaaddr = null
var _dyld_image_count = null
var _dyld_get_image_name = null
var _dyld_get_image_vmaddr_slide = null
var objc_copyclassNamesForImage = null

/**
 * iOS Common Lib Functions
**/

function initCommonLibFunctions(){
 console.log("Init common functions in common libs:")
}

// free

```

```

free = new NativeFunction(
 Module.findExportByName(null, 'free'),
 'void',
 ['pointer']
)
console.log("free=" + free)

objc_getClass = new NativeFunction(
 Module.findExportByName(null, 'objc_getClass'),
 'pointer',
 ['pointer']
)
console.log("objc_getClass=" + objc_getClass)

class_copyMethodList = new NativeFunction(
 Module.findExportByName(null, 'class_copyMethodList'),
 'pointer',
 ['pointer', 'pointer']
)
console.log("class_copyMethodList=" + class_copyMethodList)

objc_getMetaClass = new NativeFunction(
 Module.findExportByName(null, 'objc_getMetaClass'),
 'pointer',
 ['pointer']
)
console.log("objc_getMetaClass=" + objc_getMetaClass)

method_getName = new NativeFunction(
 Module.findExportByName(null, 'method_getName'),
 'pointer',
 ['pointer']
)
console.log("method_getName=" + method_getName)

/*
int dladdr(const void *, Dl_info *);

typedef struct dl_info {
 const char *dli_fname; // Pathname of shared object
 void *dli_fbase; // Base address of shared object
 const char *dli_sname; // Name of nearest symbol
 void *dli_saddr; // Address of nearest symbol
} Dl_info;

*/
dladdr = new NativeFunction(
 Module.findExportByName(null, 'dladdr'),
 'int',
 ['pointer', 'pointer']
)
console.log("dladdr=" + dladdr)

// uint32_t _dyld_image_count(void)
_dyld_image_count = new NativeFunction(
 Module.findExportByName(null, '_dyld_image_count'),

```

```

 'uint32',
 []
)
 console.log("_dyld_image_count=" + _dyld_image_count)

// const char* _dyld_get_image_name(uint32_t image_index)
_dyld_get_image_name = new NativeFunction(
 Module.findExportByName(null, '_dyld_get_image_name'),
 'pointer',
 ['uint32']
)
console.log("_dyld_get_image_name=" + _dyld_get_image_name)

// intptr_t _dyld_get_image_vmaddr_slide(uint32_t image_index)
_dyld_get_image_vmaddr_slide = new NativeFunction(
 Module.findExportByName(null, '_dyld_get_image_vmaddr_slide'),
 'pointer',
 ['uint32']
)
console.log("_dyld_get_image_vmaddr_slide=" + _dyld_get_image_vmaddr_slide)

// const char * objc_copyClassNamesForImage(const char *image, unsigned int *outCount)
objc_copyClassNamesForImage = new NativeFunction(
 Module.findExportByName(null, 'objc_copyClassNamesForImage'),
 'pointer',
 ['pointer', 'pointer']
);
console.log("objc_copyClassNamesForImage=" + objc_copyClassNamesForImage)
}

// https://github.com/4ch12dy/FridaLib/blob/master/iOS/iOSFridaLib.js

// xia0 log
function XLOG(log) {
 console.log("[*] " + log)
}

// format string with width
function format(str,width){
 str = str + ""
 var len = str.length;

 if(len > width){
 return str
 }

 for(var i = 0; i < width - len; i++){
 str += " "
 }
 return str
}

function getExecFileName(modulePath){
 modulePath += ""

```

```

 return modulePath.split("/").pop()
 }

// get module info from address
function get_info_form_address(address){
 var moduleInfoDict = null
 var needAddToCache = false

 if (isUseCache){
 if (address in gAddrToModuleInfoDict){
 moduleInfoDict = gAddrToModuleInfoDict[address]
 // XLOG("Found: address=" + address + " in gAddrToModuleInfoDict, moduleInfoDict=" + toJsonStr(moduleInfoDict))
 return moduleInfoDict
 } else {
 needAddToCache = true
 }
 }

var dl_info = Memory.alloc(Process.pointerSize * 4);

dladdr(ptr(address), dl_info)

var dli_fname = Memory.readCString(Memory.readPointer(dl_info))
var dli_fbase = Memory.readPointer(dl_info.add(Process.pointerSize))
var dli_sname = Memory.readCString(Memory.readPointer(dl_info.add(Process.pointerSize * 2)))
var dli_saddr = Memory.readPointer(dl_info.add(Process.pointerSize * 3))

//XLOG("dli_fname:"+dli_fname)
//XLOG("dli_fbase:"+dli_fbase)
//XLOG("dli_sname:"+dli_sname)
//XLOG("dli_saddr:"+dli_saddr)

// var addrInfo = new Array();

// addrInfo.push(dli_fname);
// addrInfo.push(dli_fbase);
// addrInfo.push(dli_sname);
// addrInfo.push(dli_saddr);

// //XLOG(addrInfo)
// return addrInfo;

moduleInfoDict = {
 "fileName": dli_fname,
 "fileAddress": dli_fbase,
 "symbolName": dli_sname,
 "symbolAddress": dli_saddr,
}

if (needAddToCache){
 // XLOG("Add: address=" + address + ", moduleInfoDict=" + toJsonStr(moduleInfoDict) + " into cache gAddrToModuleInfoDict")
 gAddrToModuleInfoDict[address] = moduleInfoDict
}

```

```

 return moduleInfoDict
 }

function get_image_vm_slide(modulePath){
 var moduleSlide = 0

 var needAddToCache = false

 if (isUseCache){
 if (modulePath in gModulePathToSlideDict){
 moduleSlide = gModulePathToSlideDict[modulePath]
 // XLOG("Found: modulePath=" + modulePath + " in gModulePathToSlideDict, moduleSlide=" + moduleSlide)
 return moduleSlide
 } else {
 needAddToCache = true
 }
 }

 var image_count = _dyld_image_count()

 for (var i = 0; i < image_count; i++) {
 var image_name_ptr = _dyld_get_image_name(i)
 var image_slide_ptr = _dyld_get_image_vmaddr_slide(i)
 var image_name = Memory.readUtf8String(image_name_ptr)

 if (image_name == modulePath) {
 //XLOG(Memory.readUtf8String(image_name_ptr) + " slide:" + image_slide_ptr)
 // return image_slide_ptr
 moduleSlide = image_slide_ptr
 break
 }
 //XLOG(Memory.readUtf8String(image_name_ptr) + " slide:" + image_slide_ptr)
 }

 // return 0

 if (needAddToCache){
 // XLOG("Add: modulePath=" + modulePath + ", moduleSlide=" + moduleSlide + " in to cache gModulePathToSlideDict")
 gModulePathToSlideDict[modulePath] = moduleSlide
 }

 return moduleSlide
}

function get_all_objc_class(modulePath){
 var classes = new Array()

 var needAddToCache = false

 if (isUseCache){
 if (modulePath in gModulePathToClassesDict){

```

```

 classes = gModulePathToClassesDict[modulePath]
 // XLOG("Found: modulePath=" + modulePath + " in gModulePathToClassesDict,
classes=" + classes)
 // XLOG("Found: modulePath=" + modulePath + " in gModulePathToClassesDict,
classes.length=" + classes.length)
 return classes
 } else {
 needAddToCache = true
 }
}

// if given modulePath nil, default is mainBundle
if(modulePath){
 var path = ObjC.classes.NSBundle.mainBundle().executablePath().UTF8String()
}else{
 var path = modulePath
}

// create args
var pPath = Memory.allocUtf8String(path)
var p = Memory.alloc(Process.pointerSize)
Memory.writeUInt(p, 0)

var pClasses = objc_copyClassNamesForImage(pPath, p)
var count = Memory.readUInt(p)
classes = new Array(count)

for (var i = 0; i < count; i++) {
 var pClassName = Memory.readPointer(pClasses.add(i * Process.pointerSize))
 classes[i] = Memory.readUtf8String(pClassName)
}

free(pClasses)

if (needAddToCache){
 // XLOG("Add: modulePath=" + modulePath + ", classes=" + classes + " into cache
gModulePathToClassesDict")
 // XLOG("Add: modulePath=" + modulePath + ", classes.length=" + classes.length
+ " into cache gModulePathToClassesDict")
 gModulePathToClassesDict[modulePath] = classes
}

// XLOG(classes)
return classes
}

function get_all_class_methods(classname){
 var allMethods = new Array()

 var needAddToCache = false

 if (isUseCache){
 if (classname in gClassnameToAllMethodsDict){
 allMethods = gClassnameToAllMethodsDict[classname]
 // XLOG("Found: classname=" + classname + " in gClassnameToAllMethodsDict,

```

```

allMethods=" + toJsonStr(allMethods))
 // XLOG("Found: classname=" + classname + " in gclassnameToAllMethodsDict,
allMethods.length=" + allMethods.length)
 return allMethods
} else {
 needAddToCache = true
}
}

// get objclass and metaclass
var name = Memory.allocUTF8String(classname)
var objClass = objc_getClass(name)
var metaClass = objc_getMetaClass(name)

// get obj class all methods
var size_ptr = Memory.alloc(Process.pointerSize)
Memory.writeInt(size_ptr, 0)
var pObjMethods = class_copyMethodList(objClass, size_ptr)
var count = Memory.readUInt(size_ptr)

var allObjMethods = new Array()

// get obj class all methods name and IMP
for (var i = 0; i < count; i++) {
 var curObjMethod = new Array()
 var pObjMethodSEL = method_getName(pObjMethods.add(i * Process.pointerSize))
 var pObjMethodName = Memory.readCString(Memory.readPointer(pObjMethodSEL))
 var objMethodIMP = Memory.readPointer(pObjMethodSEL.add(2 * Process.pointerSize))
 // XLOG("-["+classname+ " "+pObjMethodName+"]" + ":" + objMethodIMP)
 curObjMethod.push(pObjMethodName)
 curObjMethod.push(objMethodIMP)
 allObjMethods.push(curObjMethod)
}

var allMetaMethods = new Array()

// get meta class all methods name and IMP
var pMetaMethods = class_copyMethodList(metaClass, size_ptr)
var count = Memory.readUInt(size_ptr)
for (var i = 0; i < count; i++) {
 var curMetaMethod = new Array()

 var pMetaMethodSEL = method_getName(pMetaMethods.add(i * Process.pointerSize))
 var pMetaMethodName = Memory.readCString(Memory.readPointer(pMetaMethodSEL))
 var metaMethodIMP = Memory.readPointer(pMetaMethodSEL.add(2 * Process.pointerSize))
)

//XLOG("["+classname+ " "+pMetaMethodName+"]" + ":" + metaMethodIMP)
curMetaMethod.push(pMetaMethodName)
curMetaMethod.push(metaMethodIMP)
allMetaMethods.push(curMetaMethod)
}

allMethods.push(allObjMethods)
allMethods.push(allMetaMethods)

free(pObjMethods)

```

```

free(pMetaMethods)

if (needAddToCache){
 // XLOG("Add: classname=" + classname + ", allMethods=" + toJsonStr(allMethods)
+ " into cache gclassnameToAllMethodsDict")
 // XLOG("Add: classname=" + classname + ", allMethods.length=" + allMethods.length
+ " into cache gclassnameToAllMethodsDict")
 gclassnameToAllMethodsDict[classname] = allMethods
}

return allMethods
}

function find_symbol_from_address(modulePath, addr){
 var symbol = "???"
 var modulePathAddr = modulePath + "|" + addr

 var needAddToCache = false

 if (isUseCache){
 if (modulePathAddr in gModulePathAddrToSymbolDict){
 symbol = gModulePathAddrToSymbolDict[modulePathAddr]
 // XLOG("Found: modulePathAddr=" + modulePathAddr + " in gModulePathAddrToS
ymbolDict, symbol=" + symbol)
 return symbol
 } else {
 needAddToCache = true
 }
 }

 var frameAddr = addr
 var theDis = 0xffffffffffffffffffff
 var tmpDis = 0
 var theClass = "None"
 var theMethodName = "None"
 var theMethodType = "u_"
 var theMethodIMP = 0

 var allClassInfo = {}

 var allClass = get_all_objc_class(modulePath)

 for(var i = 0, len = allClass.length; i < len; i++){
 var curClassName = allClass[i]
 // var mInfo = get_all_class_method(curClassName)
 var mInfo = get_all_class_methods(curClassName)

 var objms = mInfo[0]
 for(var j = 0, olen = objms.length; j < olen; j++){
 var mname = objms[j][0]
 var mIMP = objms[j][1]
 if(frameAddr >= mIMP){
 var tmpDis = frameAddr - mIMP
 if(tmpDis < theDis){
 theDis = tmpDis
 theClass = curClassName
 }
 }
 }
 }
}

```

```

 theMethodName = mname
 theMethodIMP = mIMP
 theMethodType = "o"
 }

}

var metams = mInfo[1]
for(var k = 0, mlen = metams.length; k < mlen; k++){
 var mname = metams[k][0]
 var mIMP = metams[k][1]
 if(frameAddr >= mIMP){
 var tmpDis = frameAddr - mIMP
 if(tmpDis < theDis){
 theDis = tmpDis
 theClass = curClassName
 theMethodName = mname
 theMethodIMP = mIMP
 theMethodType = "o"
 }
 }
}
}

symbol = theMethodType + "[" + theClass + " " + theMethodName + "]"

if(symbol.indexOf(".cxx") != -1){
 symbol = "maybe C function?"
}

// if distance > 3000, maybe a c function
if(theDis > 3000){
 symbol = "maybe C function? symbol:" + symbol
}

if (needAddToCache){
 // XLOG("Add: modulePathAddr=" + modulePathAddr + ", symbol=" + symbol + " into
 // cache gModulePathAddrToSymbolDict")
 gModulePathAddrToSymbolDict[modulePathAddr] = symbol
}

return symbol
}

function generateFunctionCallStackList(context){
 var functionCallList = new Array()

 var mainPath = ObjC.classesNSBundle mainBundle().executablePath().UTF8String()
 // XLOG("mainPath=" + mainPath)
 var mainModuleName = getExecFileName(mainPath)
 // XLOG("mainModuleName=" + mainModuleName)

 var backtrace = Thread.backtrace(context, Backtracer.ACCURATE).map(DebugSymbol.from
Address)
 for (var i = 0;i < backtrace.length;i++)

```

```

{
 // curStackFrame=0x10a1d1910 SharedModules!WAGetWCIHttpImpl
 // curStackFrame=0x1070f0cb4 !0x2304cb4 (0x102304cb4)
 // curStackFrame=0x1944a9614 /System/Library/Frameworks/CFNetwork.framework/CFNetwork!+[NSURLRequest requestWithURL:]
 var curStackFrame = backtrace[1] + ''
 // XLOG("curStackFrame=" + curStackFrame)

 // var curSym = curStackFrame.split("!")[1]
 var stackFrameSplittedArr = curStackFrame.split("!")
 var curAddrAndModuleStr = stackFrameSplittedArr[0]
 // XLOG("curAddrAndModuleStr=" + curAddrAndModuleStr)
 var curSym = stackFrameSplittedArr[1]
 // XLOG("curSym=" + curSym)

 // var curAddr = curStackFrame.split("!")[0].split(" ")[0]
 var curAddrAndModuleArr = curAddrAndModuleStr.split(" ")
 // XLOG("curAddrAndModuleArr=" + curAddrAndModuleArr)
 var curAddr = curAddrAndModuleArr[0]
 // XLOG("curAddr=" + curAddr)
 // var curModuleName = curStackFrame.split("!")[0].split(" ")[1]
 var curModuleName = curAddrAndModuleArr[1]
 // XLOG("curModuleName=" + curModuleName)

 var moduleInfoDict = get_info_form_address(curAddr);
 // XLOG("moduleInfoDict=" + toJsonStr(moduleInfoDict))

 var curModulePath = moduleInfoDict["fileName"]
 // XLOG("curModulePath=" + curModulePath)
 var fileAddress = moduleInfoDict["fileAddress"]
 // XLOG("fileAddress=" + fileAddress)
 var symbolName = moduleInfoDict["symbolName"]
 // XLOG("symbolName=" + symbolName)
 var symbolAddress = moduleInfoDict["symbolAddress"]
 // XLOG("symbolAddress=" + symbolAddress)

 // skip frida call stack
 if(curModulePath){
 XLOG("! Omit for empty module path, parsed from curAddr=" + curAddr + ", moduleInfoDict=" + moduleInfoDict)
 continue
 }

 // var fileAddr = curAddr - get_image_vm_slide(curModulePath);
 var curModuleSlide = get_image_vm_slide(curModulePath)
 // XLOG("curModuleSlide=" + curModuleSlide)
 var fileAddr = curAddr - curModuleSlide
 // XLOG("fileAddr=" + fileAddr)

 // is the image in app dir?
 if (curModulePath.indexOf(mainModuleName) != -1) {
 curSym = find_symbol_from_address(curModulePath, curAddr)
 // XLOG("new curSym=" + curSym)
 }

 var curFunctionCallDict = {
}

```

```

 "curModulePath": curModulePath,
 "curAddr": curAddr,
 "fileAddr": fileAddr,
 "curSym": curSym,
 }
 functionCallList.push(curFunctionCallDict)
}

return functionCallList
}

function generateFunctionCallStackStr(functionCallList){
 var functionCallStackStr = "----- printFunctionCallStack_symbol

functionCallStackStr += "\n"
for (var i = 0; i < functionCallList.length; i++) {
 var curFunctionCallDict = functionCallList[i]
 var curModulePath = curFunctionCallDict["curModulePath"]
 var curAddr = curFunctionCallDict["curAddr"]
 var fileAddr = curFunctionCallDict["fileAddr"]
 var curSym = curFunctionCallDict["curSym"]
 var executableFilename = getExecFileName(curModulePath)
 let execMaxWidth = 20
 // let execMaxWidth = 25
 var curFuncCallStr = format(i, 4) + format(executableFilename, execMaxWidth) + "mem
;" + format(ptr(curAddr), 13) + "file:" + format(ptr(fileAddr), 13) + format(curSym, 80)
 functionCallStackStr += curFuncCallStr + "\n"
}
functionCallStackStr += "-----"

return functionCallStackStr
}

function printFunctionCallStack_symbol(context){
 var functionCallStackList = generateFunctionCallStackList(context)
 var functionCallStackStr = generateFunctionCallStackStr(functionCallStackList)
 console.log(functionCallStackStr)
 return functionCallStackStr
}

```

调用举例：

```

 * Main
*****/

initCommonLibFunctions()

// ...
 Interceptor.attach(curmethImplementation, {
 onEnter: function(args) {
 // console.log("==== [*] Detected call to: " +
iosObjCallStr);
 var logstr = "Called: " + iosObjCallStr

```

```

 var lineStr = generateLineStr(logstr)
 console.log(lineStr)

 var shouldPrintStack = true
 if (iosObjCallStr in gPrintedStackDict){
 // console.log("iosObjCallStr=" + iosObjCallStr + " in gPrintedStackDict=" + toJsonStr(gPrintedStackDict.keys))
 if (isPrintOnlyOnceStack){
 // if (iosObjCallStr in cfgPrintOnceStackExceptionList){

 if (isItemInList(iosObjCallStr, cfgPrintOnceStackExceptionList)){
 // console.log("iosObjCallStr=" + iosObjCallStr + " in cfgPrintOnceStackExceptionList=" + toJsonStr(cfgPrintOnceStackExceptionList))
 shouldPrintStack = true
 } else {
 shouldPrintStack = false
 }
 }
 }
 }

 // console.log("shouldPrintStack=" + shouldPrintStack)

 if (shouldPrintStack) {
 // printFunctionCallStack_addr(this.context)

 // printFunctionCallStack_symbol(this.context)
 var functionCallStackList = generateFunctionCallStackList(functionCallStackList)
 var functionCallStackStr = generateFunctionCallStackStr(functionCallStackList)
 console.log(functionCallStackStr)

 gPrintedStackDict[iosObjCallStr] = functionCallStackStr
 }
 }
}

```



(相关) 输出:

```

----- Called: +[NSURLRequest requestWithURL:] -----
----- printFunctionCallStack_symbol -----
0 SharedModules mem:0x1072fd910 file:0xc29910 +[WACertPinning sharedPinned
WhatsAppCertificateWithoutDomainValidation]
1 WhatsApp mem:0x104584cb4 file:0x102304cb4 +[WARegistrationURLBuilder p
reChatdABPropURLRequestWithPhoneNumber:abHash:]
2 WhatsApp mem:0x10458befc file:0x10230befc -[WARegistrationManager requ
estPreChatdABPropsForPhoneNumber:userContext:completion:]
3 WhatsApp mem:0x1045876a0 file:0x1023076a0 -[WARegistrationManager perf
ormSameDeviceCheckForSession:updateRegistrationTokenIfNecessary:fetchPreChatdABProps:w
ithCompletion:]
4 WhatsApp mem:0x10455c220 file:0x1022dc220 -[WAPhoneInputViewController
performDeviceCheckForPhoneNumber:session:isFirstCheck:]
5 WhatsApp mem:0x10455bfff8 file:0x1022dbfff8 -[WAPhoneInputViewController

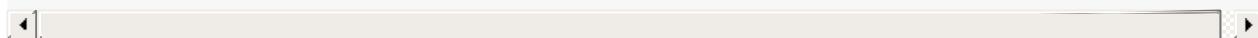
```

```

performSameDeviceCheckForPhoneNumber:]
6 WhatsApp mem:0x10455f658 file:0x1022df658 maybe C function?
7 WhatsApp mem:0x10453e038 file:0x1022be038 +[WATwoFactorWipeToken token
FromResponseDictionary:]
8 WhatsApp mem:0x10455e834 file:0x1022de834 -[WAPhoneInputViewController
doneWithVideo:]
9 WhatsApp mem:0x10455f758 file:0x1022df758 maybe C function?
10 SharedModules mem:0x106a775b0 file:0x3a35b0 -[WDSButtonConfiguration set
DidTap:]
11 SharedModules mem:0x106b451e8 file:0x4711e8 +[WDSViewCallback callback:]
12 SharedModules mem:0x106aacb84 file:0x3d8b84 -[_TtCC15UILibraryShared6But
ton12NativeButton intrinsicContentSize]
13 SharedModules mem:0x106aacbc0 file:0x3d8bc0 -[_TtCC15UILibraryShared6But
ton12NativeButton didTap]
14 UIKitCore mem:0x1c14b99ac file:0x1845199ac -[UIApplication sendAction:t
o:from:forEvent:]
15 UIKitCore mem:0x1c0eef9bc file:0x183f4ffbc -[UIControl sendAction:to:fo
rEvent:]

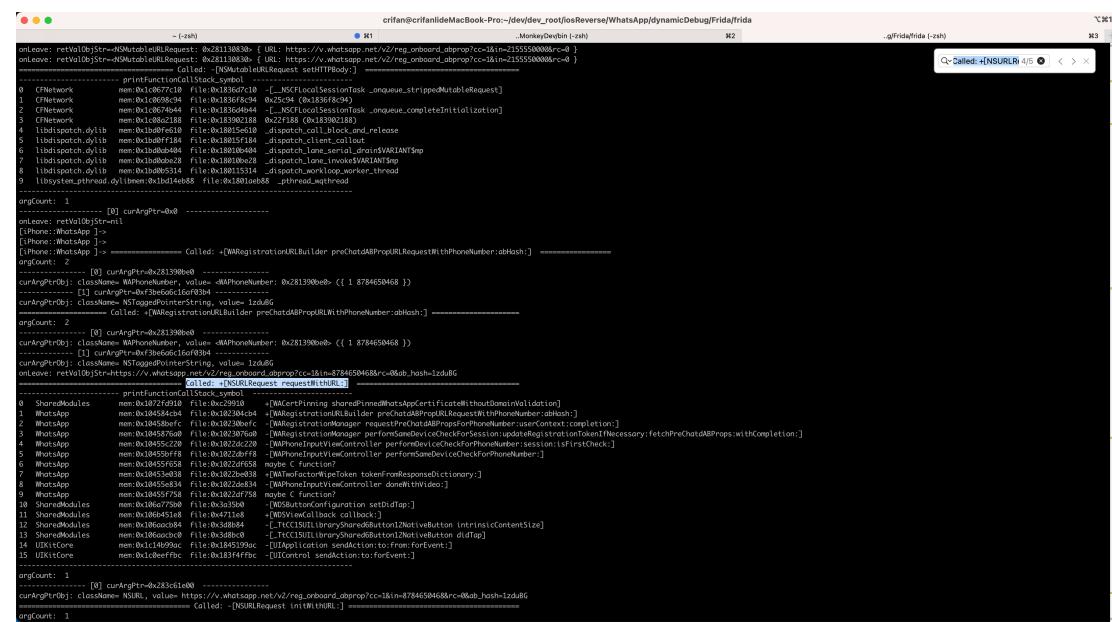
argCount: 1
----- [0] curArgPtr: 0x283c61e00 -----
curArgPtrObj: className= NSURL, value= https://v.whatsapp.net/v2/reg_onboard_abprop?cc=1
&in=8784650468&rc=0&ab_hash=1zduBG

```



## • 截图

### ◦ 新



### ◦ 旧

```

frida -U -F net.whatsapp.WhatsApp -l frida_WhatsApp_register.js
[!] iPhone : WhatsApp[App] > ===== [*] Detected call to: -[NSURLSession requestWithURL:]
[*] 0 SharedModules mem:0x100071910 file:0x29910 [MACertFirming sharedInstanceForWhatsAppCertificateWithoutDomainValidation]
[*] 1 WhatsApp mem:0x101314c40 file:0x102704cb4 [NSURLRequestBuilder preChotd4PropRequestWithPhoneNumber:dbHash:]
[*] 2 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager fetchPhoneCompanionEntryPointWithCompletion:]
[*] 3 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager shouldShowHomeCompanionEntryPointWithCompletion:]
[*] 4 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController fetchPhoneCompanionEntryPointInPreChotd4Prop]
[*] 5 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 6 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 7 UIKitCore mem:0x1052699ac file:0x1845199ac [UIApplication sendAction:to:from:forEvent:]
[*] 8 UIKitCore mem:0x105d1fbcc file:0x183474fbc [UIControl sendAction:to:forEvent:]
[*] 9 UIKitCore mem:0x105d1fbc file:0x183474fbc [UIControl _sendActionsForEvents:withEvent:]
[*] 10 UIKitCore mem:0x105d1fbc file:0x183474fbc [UIWindow _sendTouchesForEvent:]
[*] 11 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow sendEvent:]
[*] 12 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow _sendEvent:]
[*] 13 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow _sendEvent:]
[*] 14 WhatsApp mem:0x102878768 file:0x1010a38798 [WAApplication sendEvent:]
[*] 15 UIKitCore mem:0x105378c20 file:0x1845a8c20 [_dispatchPreprocessedEventFromEventQueue
[*] orgCount: 1
----- [0] curArgPtr=0x283e6a00
curArgPtrObj: className: NSURL, value: https://v.whatsapp.net/v2/reg_onboard_dprop?cc=1&i=21555500000rc-0
----- [*] Detected call to: -[NSURLRequest requestWithURL:]
[*] 0 CFNetwork mem:0x104469614 file:0x1830d9614 [NSURLRequest requestWithURL]
[*] 1 SharedModules mem:0x100071910 file:0x29910 [MACertFirming sharedInstanceForWhatsAppCertificateWithoutDomainValidation]
[*] 2 WhatsApp mem:0x101314c40 file:0x102704cb4 [NSURLRequestBuilder preChotd4PropRequestWithPhoneNumber:dbHash:]
[*] 3 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager fetchPhoneCompanionEntryPointWithCompletion:]
[*] 4 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager shouldShowHomeCompanionEntryPointWithCompletion:]
[*] 5 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController fetchPhoneCompanionEntryPointInPreChotd4Prop]
[*] 6 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 7 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 8 UIKitCore mem:0x1052699ac file:0x1845199ac [UIApplication sendAction:to:from:forEvent:]
[*] 9 UIKitCore mem:0x105d1fbcc file:0x183474fbc [UIControl sendAction:to:forEvent:]
[*] 10 UIKitCore mem:0x105d1fbc file:0x183474fbc [UIControl _sendActionsForEvents:withEvent:]
[*] 11 UIKitCore mem:0x105d1fbc file:0x183474fbc [UIWindow _sendTouchesForEvent:]
[*] 12 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow sendEvent:]
[*] 13 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow _sendEvent:]
[*] 14 UIKitCore mem:0x105d23490 file:0x184519398 [UIWindow _sendEvent:]
[*] 15 WhatsApp mem:0x102878768 file:0x1010a38798 [WAApplication sendEvent:]
[*] orgCount: 1
----- [0] curArgPtr=0x283e6a00
curArgPtrObj: className: NSURL, value: https://v.whatsapp.net/v2/reg_onboard_dprop?cc=1&i=21555500000rc-0
----- [*] Detected call to: -[NSURLRequest requestWithURL:]
[*] 0 CFNetwork mem:0x104469614 file:0x1830d9614 [NSURLRequest requestWithURL]
[*] 1 SharedModules mem:0x100071910 file:0x29910 [MACertFirming sharedInstanceForWhatsAppCertificateWithoutDomainValidation]
[*] 2 WhatsApp mem:0x101314c40 file:0x102704cb4 [NSURLRequestBuilder preChotd4PropRequestWithPhoneNumber:dbHash:]
[*] 3 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager fetchPhoneCompanionEntryPointWithCompletion:]
[*] 4 WhatsApp mem:0x102704f94 file:0x1010a38798 [MACaptionModelingManager shouldShowHomeCompanionEntryPointWithCompletion:]
[*] 5 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController fetchPhoneCompanionEntryPointInPreChotd4Prop]
[*] 6 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 7 WhatsApp mem:0x1031861fc file:0x102704fc [VerificationRegistrationController didAcceptToDSMoveToNextScreen]
[*] 8 UIKitCore mem:0x1052699ac file:0x1845199ac [UIApplication sendAction:to:from:forEvent:]
[*] 9 UIKitCore mem:0x105d1fbcc file:0x183474fbc [UIControl sendAction:to:forEvent:]
[*] 10 UIKitCore mem:0x105d1fbc file:0x183474fbc [UIControl _sendActionsForEvents:withEvent:]

```

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# Android函数

此处整理Frida的js中，Android方面的函数：

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# js

此处整理Frida中js的一些经验心得。

## 常见错误

### RangeError: invalid array index

- 错误： Frida的hook脚本js中

```
Interceptor.attach(functionRealAddress, {
 onEnter: function(args) {
 console.log(args);
```

- 会报错： RangeError: invalid array index

- 原因： 无法知道准确的 args 的数组的大小，无法直接打印，所以报错

- 解决办法：不去直接打印，而改为去获取对应的前几个参数（前提：已知参数个数），再去打印：

```
Interceptor.attach(functionRealAddress, {
 onEnter: function(args) {
 var arg0 = args[0]
 var arg1 = args[1]
 var arg2 = args[2]
 console.log("arg0=" + arg0 + ", arg1=" + arg1 + ", arg2=" + arg2);
```

- 进一步优化：甚至是，计算出此处的ObjC的参数的个数，循环批量打印所有参数

- 具体详见：[ObjC的参数](#)中的 计算ObjC的函数的真正参数的个数 + 打印全部参数

## Frida对于js支持的不够好

Frida对于js支持的不够好，不够完美：

- js报错时，代码错误行数指示有误
- console.log的参数格式化不支持
- putCallout中传递有名的独立函数会导致崩溃，改为匿名函数即可

下面详细解释：

### js报错时，代码错误行数指示有误

- 问题：

Frida的 js 代码文件中，参考别人的 ts 的代码，写了：

```
transform: (iterator: StalkerArm64Iterator) => {
 ...
 var arm64Context = ctx as Arm64CpuContext;
```

结果语法报错

```
Error: could not parse 'xxxxf/ridaStalker_akdSymbol2575.js' line 1: expecting ',',
at anonymous (/frida/repl-2.js:1)
```

The screenshot shows a terminal window with several tabs open. The active tab is titled "fridaStalker\_akdSymbol2575.js - AuthKit\_akd". The terminal output shows the following command sequence:

```
fridaStalker_akdSymbol2575.js
fridaStalker_akdSymbol2575.js:1: expecting ','
at <anonymous> (/frida/repl-2.js:1)
[iPhone::PID:8229]-> ■
```

The terminal also displays the Frida help menu:

```
scripts which frida
/opt/homebrew/bin/frida
scripts frida -U -p 8229 -l ./fridaStalker_akdSymbol2575.js

Frida 16.0.19 - A world-class dynamic instrumentation toolkit

Commands:
 help -- Displays the help system
 object? -- Displays information about 'object'
 exit/quit -- Exit
 ...
 More info at https://frida.re/docs/home/
 Connected to iPhone (id=abcd0dd961c3cb96f5c4afe109de4eb48b88433a)
```

The left side of the image shows a file tree in a sidebar. It includes sections for "AUTHKIT\_AKD", "dynamicDebug", "frida", "result", and "scripts". The "scripts" section contains files like "fridatrace\_akd\_verifyAccount.coffee", "akdObjcMethods.txt", and "commands.coffee". The "frida" section contains "result" and "scripts" sub-sections.

- 解决过程
    - Frida中对js代码报错，始终是第一行代码有问题
    - 后来是，花了很长时间和精力，才定位到真正问题：
  - 原因：js代码中，后面的某2行中，先后出现的2个变量，没有定义
    - 2个变量是：`StalkerArm64Iterator` 和 `Arm64CpuContext`
    - 导致的整体js代码无法运行而报错
  - 解决办法：注释掉2个未定义的变量（`StalkerArm64Iterator` 和 `Arm64CpuContext`）
  - 心得：
    - 总之说明，js代码的解析，是Frida整个框架去基于js引擎（v8或其他？）去解析的
    - 所以最终输出的报错信息，不够友好，导致容易让人误判错误原因，从而增加解决问题的难度

## putCallout中传递有名的独立函数会导致崩溃

- 问题概述
    - 给putCallout传递函数：
      - 传递有名的独立的函数：会导致崩溃
      - 传递匿名的函数：就可以正常运行
  - 详解

Frida的Stalker的transform中去写putCallout代码

注：完整代码详见：[lldb unnamed symbol2575\\$\\$akd](#)

如果把putCallout写成是传入一个独立的js函数：

```
transform: function (iterator) {
 ...
 if (curOffsetInt == 8516) {
 iterator.putCallout(needDebug);
 }
}

...
function needDebug (context) {
 console.log("into needDebug: context=" + context);
}
}
```

->就会导致此处出现崩溃：

```
...
Process terminated

Thank you for using Frida
Fatal Python error: _enter_buffered_busy: could not acquire lock for <_io.BufferedReader name='<stdin>'> at interpreter shutdown, possibly due to daemon threads
Python runtime state: finalizing (tstate 0x000000010308e0c8)

Current thread 0x00000001f4ab4140 (most recent call first):
 no Python frame
```

而如果改为：js匿名名函数

```
transform: function (iterator) {
 ...
 if (curOffsetInt == 8516) {
 // iterator.putCallout(needDebug);
 iterator.putCallout((context) => {
 console.log("into needDebug: context=" + context);
 });
 }
}
```

就不会崩溃

很是诡异。暂时不清楚具体原因。

- 心得：Frida中对于js的支持，还是不够完善
  - 容易遇到一些诡异的bug

## console.log的参数格式化不支持

详见后续章节：[console.log日志](#)

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## console.log

### 问题

#### console.log不支持参数的格式化

- 问题
  - Frida中console.log打印参数，去格式化参数：

```
console.log("moduleName=%s, moduleBaseAddress=%p", moduleName, moduleBaseAddress
)
```

输出：

```
moduleName %s, moduleBaseAddress %p akd 0x10015c000
```

- 结论：Frida中js的console.log，不支持参数格式化 == %s、%d、%o、%p 等格式化参数无效
- 规避办法

- 用逗号 = , 或加号 = + 去打印参数

```
console.log("moduleName=", moduleName, "moduleBaseAddress=", moduleBaseAddress
)

console.log("moduleName=" + moduleName + "moduleBaseAddress=" + moduleBaseAddress)
```

### 心得

## 用 JSON.stringify 打印对象

既然console.log中无法直接（用 %o 去格式化）打印对象，那么可以考虑用 JSON.stringify 去转化为JSON再去打印：

举例：

```
console.log("instruction: address=" + instruction.address
+ ",next=" + instruction.next
+ ",size=" + instruction.size
+ ",mnemonic=" + instruction.mnemonic
+ ",opStr=" + instruction.opStr
+ ",operands=" + JSON.stringify(instruction.operands)
+ ",regsRead=" + JSON.stringify(instruction.regsRead)
+ ",regsWritten=" + JSON.stringify(instruction.regsWritten)
+ ",groups=" + JSON.stringify(instruction.groups)
+ ",toString()=" + instruction.toString())
```

);

输出效果：

```

instruction: address 0x1091dbcd8, next 0x4, size 4, mnemonic b, opStr #0x1091dbce8, operands=[{"type": "imm", "value": "4447911144", "access": "r"}], regsRead=[], regsWritten=[], groups=[["jump", "branch_relative"]], toString()=b #0x1091dbce8
[0x1091dbcd8] b #0x1091dbce8
+++ into iterator=
instruction: address 0x1091dbce8, next 0x4, size 4, mnemonic str, opStr wZR, [x19, #0x90], operands=[{"type": "reg", "value": "wZR", "access": "r"}, {"type": "mem", "value": {"base": "x19", "disp": 144}, "access": "rw"}], regsRead=[], regsWritten=[], groups=[], toString()=str wZR, [x19, #0x90]
[0x1091dbce8] str wZR, [x19, #0x90]

```

## 让console.log输出日志到文件

- 需求：希望Frida中console.log打印的日志，不是输出到当前终端，而是输出到文件中
  - 目的：方便后续随时查看，方便调试
- 解决办法：

在运行Frida带js的命令行最后加上：

- > xxx.log 2>&1
  - 参数说明
    - > xxx.log：把普通的= stdout 日志信息，都输出到 log文件
    - 2>&1：把特殊的 stderr =错误日志信息，输出到终端
- 举例

```
frida -U -p 13098 -l ./fridaStalker_akdSymbol12575.js > stalker_akd1575.log 2 &1
```

## Frida的Stalker中优化hook到指令时的log日志输出

- 需求：Frida的Stalker中，希望输出的log日志，尽量也模拟之前Xcode的汇编代码的形式
- 核心代码：

```

var curRealAddr = instruction.address;
var curOffsetHexPtr = curRealAddr.sub(funcRealStartAddr)
var curOffsetInt = curOffsetHexPtr.toInt32()
var instructionStr = instruction.toString()
console.log("\t" + curRealAddr + " <+" + curOffsetInt + ">: " + instructionStr);

```

- 输出效果

```

+++ into iterator: startAddress=0x104b48470
0x104b48470 +16 : stp x22, x21, [sp, #0xc0]
0x104b48474 +20 : stp x20, x19, [sp, #0xd0]
0x104b48478 +24 : stp x29, x30, [sp, #0xe0]
0x104b4847c +28 : add x29, sp, #0xe0
0x104b48480 +32 : nop

```

```
0x104b48484 +36 : ldr x8, #0x104b9c7d8
```

- 注：完整代码和输出，详见：[\\_\\_lldb\\_unnamed\\_symbol2575\\$\\$akd](#)

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## 自己编译frida-server

iPhone11 中，已用 XinaA15 进行了 rootless越狱，然后去用 frida：

```
crifan@licrifandeMacBook-Pro ~ $ frida -U -f com.apple.store.Jolly -l /Users/crifan/dev
/dev_root/iosReverse/AppleStore/dynamicDebug/frida/hookNSFileManager.js

 / _ \ | Frida 16.0.8 - A world-class dynamic instrumentation toolkit
 | () |
 > _ _ | Commands:
 /_/_ \| help -> Displays the help system
 + + + + object? -> Display information about 'object'
 + + + + exit/quit -> Exit

 + + + + More info at https://frida.re/docs/home/
 + + + + Connected to iPhone (id 00008030-00011C49366B802E)
Failed to attach: missing gProcessInfo
```

结果报错： Failed to attach missing gProcessInfo

之后就是尝试解决此问题，最终涉及到：自己去编译frida-server的过程。

此处记录相关内容和心得，供参考。

## 研究gProcessInfo的来源

### 之前frida-ios-dump也遇到类似问题

而之前就见过此处的 missing gProcessInfo，找到之前的：

- 原因是：属于偶尔的bug
- 解决办法：多试几次

-》此处：继续尝试多次，始终无法规避，始终报错。

## 研究frida中是否存在导入外部变量gProcessInfo

从报错信息 Failed to attach: missing gProcessInfo 中推测：

gProcessInfo是（iOS的app启动阶段涉及到的）dyld中的变量

怀疑是类似于：

- frida import 变量：gProcessInfo
- dyld export 变量：gProcessInfo

这种机制

所以去研究看看：

frida中，是否有import的变量，叫做gProcessInfo

后来确认，missing gProcessInfo 来自iPhone端的 frida-server

去导出 frida-server

```
scp root@192.168.2.12:/var/sbin/frida-server frida-server
```

然后继续静态分析：

```
rabin2 -i frida-server > fridaServer_rabin2_i_imports.txt
rabin2 -E frida-server > fridaServer_rabin2_E_exports.txt
```

没找到 gProcessInfo

另外找到：

- dyld/dyldMain.cpp

```
namespace dyld4 {
...

#if TARGET_OS_OSX
static void* getProcessInfo()
{
 return gProcessInfo;
}
```

而根据：

【记录】dyld相关资料：启动过程

知道了：

- dyld
  - 之前是：dyld2
  - 后来是：dyld3
  - 此处是：dyld4

即：dyld 有3个版本， dyld2 、 dyld3 、 dyld4

最后确认：

不是Frida（的frida-server）引用了外部的变量：

dyld 源码中的 gProcessInfo

而是：

frida源码中有gProcessInfo

即：

frida-core/src/fruity/injector.vala 中就有对应代码：

```
ensure_libsystem_initialized_for_dyld_v4_and_above
 ...
 throw new Error.UNSUPPORTED ("Missing gProcessInfo");
```

## Frida源码中找到了：gProcessInfo

missing gProcessInfo 相关完整的代码：

```
frida-core > src / fruity > injector.vala
819 private async void ensure_libsystem_initialized (Cancellable? cancellable) throws GLib.Error {
820 ...
821 if (!libsystem_initialized)
822 ...
823 else
824 yield restore_main_thread_state (cancelable);
825
826 uint64? libdyld_initialize = dyld_symbols["__ZN5dyld44APIS19__libdyld_initializeEPKNS_16LibSystemHelpersE"];
827 if (libdyld_initialize != null)
828 yield ensure_libsystem_initialized_for_dyld_v4_and_above (libdyld_initialize, cancellable);
829 else
830 yield ensure_libsystem_initialized_for_dyld_v3_and_below (cancelable);
831
832 yield save_main_thread_state (cancelable);
833
834 yield libdb.write_bool (dyld.fields.libsystem_initialized, true, cancellable);
835 libsystem_initialized = true;
836 }
837
838 private async void ensure_libsystem_initialized_for_dyld_v4_and_above (uint64 libdyld_initialize,
839 Cancellable? cancellable) throws GLib.Error {
840 uint64? process_info_ptr = dyld_symbols["_gProcessInfo"];
841 if (process_info_ptr == null)
842 throw new Error.UNSUPPORTED ("Missing gProcessInfo");
843 }
```

- frida-core/src/fruity/injector.vala

```
private async void ensure_libsystem_initialized_for_dyld_v4_and_above (uint64 libdyld_initialize,
 Cancellable? cancellable) throws GLib.Error {
 uint64? process_info_ptr = dyld_symbols["_gProcessInfo"];
 if (process_info_ptr == null)
 throw new Error.UNSUPPORTED ("Missing gProcessInfo");
 ...
}
```

其他地方也有：

- frida-core/src/fruity/helpers/symbol-fetcher.c

```
size_t
frida_fetch_dyld_symbols (char * output_buffer, const void * dyld_load_address)
{
 ...
 for (i = dyld.dysymtab->nlocalsym; i <= dyld.dysymtab->nlocalsym; i++)
 {
 const struct nlist_64 * sym = &symbols[i];
 const char * name = strings + sym->n_un.n_strx;

 if (frida_str_contains (name, "libdyld_initialize") ||
 frida_str_contains (name, "restartWithDyldInCache") ||
 frida_str_equals (name, "_gProcessInfo") ||
 frida_str_contains (name, "launchWithClosure") ||
 frida_str_contains (name, "initializeMainExecutable") ||
 frida_str_contains (name, "registerThreadHelpers") ||
 frida_str_has_prefix (name, "_dlopen") ||
 frida_str_has_prefix (name, "_strcmp") ||
 frida_str_contains (name, "doModInitFunctions") ||
```

```

 frida_str_contains (name, "doGetDOFSections"))
 {
 if (n != 0)
 frida_append_char (&cursor, '\n');

 frida_append_uint64 (&cursor, (uint64_t) (dyld.base + sym->n_value));
 frida_append_char (&cursor, '\t');
 frida_append_string (&cursor, name);

 n++;
 }
}

```

- frida-core/src/darwin/frida-helper-backend-glue.m

```

modern_entry_address = gum_darwin_module_resolve_symbol_address (dyld, "__ZN5dyld44APIs
19_dyld_initializeEPKNS_16LibSystemHelpersE");
instance->dyld_flavor = (modern_entry_address != 0) ? FRIDA_DYLD_V4_PLUS : FRIDA_DYLD_V
3_MINUS;
if (instance->dyld_flavor == FRIDA_DYLD_V4_PLUS)
{
 instance->modern_entry_address = modern_entry_address;
 legacy_entry_address = 0;

 instance->info_ptr_address = gum_darwin_module_resolve_symbol_address (dyld, "_gProce
ssInfo");
 if (instance->info_ptr_address == 0)
 goto dyld_probe_failed;
}

...
instance->dlopen_address = gum_darwin_module_resolve_symbol_address (dyld, "_dlopen");

if (instance->dlopen_address == 0)
 instance->dlopen_address = gum_darwin_module_resolve_symbol_address (dyld, "_dlopen
_internal");
instance->register_helpers_address = gum_darwin_module_resolve_symbol_address (dyld,
"__ZL21registerThreadHelpersPKN4dyld16LibSystemHelpersE");
instance->dlerror_clear_address = gum_darwin_module_resolve_symbol_address (dyld, "__
ZL12dlerrorClearv");
instance->info_address = gum_darwin_module_resolve_symbol_address (dyld, "__ZN4dyld12
gProcessInfoE");
instance->helpers_ptr_address = gum_darwin_module_resolve_symbol_address (dyld, "__ZN
4dyld17gLibSystemHelpersE");
instance->do_modinit_strcmp_checks = frida_find_modinit_strcmp_checks (task, dyld);
...

```

心得：

其中有很多这种：

编译器编译后的固定的函数名：

- \_dlopen

- `_dlopen_internal`
- `__ZL21registerThreadHelpersPKN4dyld16LibSystemHelpersE`
- `__ZL12dlerrorClearv`
- `__ZN4dyld12gProcessInfoE`
  - 其中包含: `gProcessInfo`
- `__ZN4dyld17gLibSystemHelpersE`

## 研究Frida中Missing gProcessInfo出错的逻辑和原因

经过后续了解: 【记录】 dyld源码中的gProcessInfo

应该把:

- 只判断是否存在: `_gProcessInfo`

改为:

- 同时判断多种情况 (先后顺序是)
  - `_gProcessInfo`
    - 对应原始代码中: `gProcessInfo`
  - `__ZN5dyld412gProcessInfoE`
    - 对应原始代码中: `dyld4::gProcessInfo`
  - `__ZN4dyld12gProcessInfoE`
    - 对应原始代码中: `dyld::gProcessInfo` 应该就可以了。

## 研究二进制/usr/lib/dyld中是否包含或导出变量\_gProcessInfo

对于iPhone中的dyld:

```
iPhone11-151:~ root# ls -lh /usr/lib/dyld
-rwxr-xr-x 1 root wheel 630K Oct 15 2021 /usr/lib/dyld*
```

用:

```
scp root@192.168.2.12:/usr/lib/dyld dyld
```

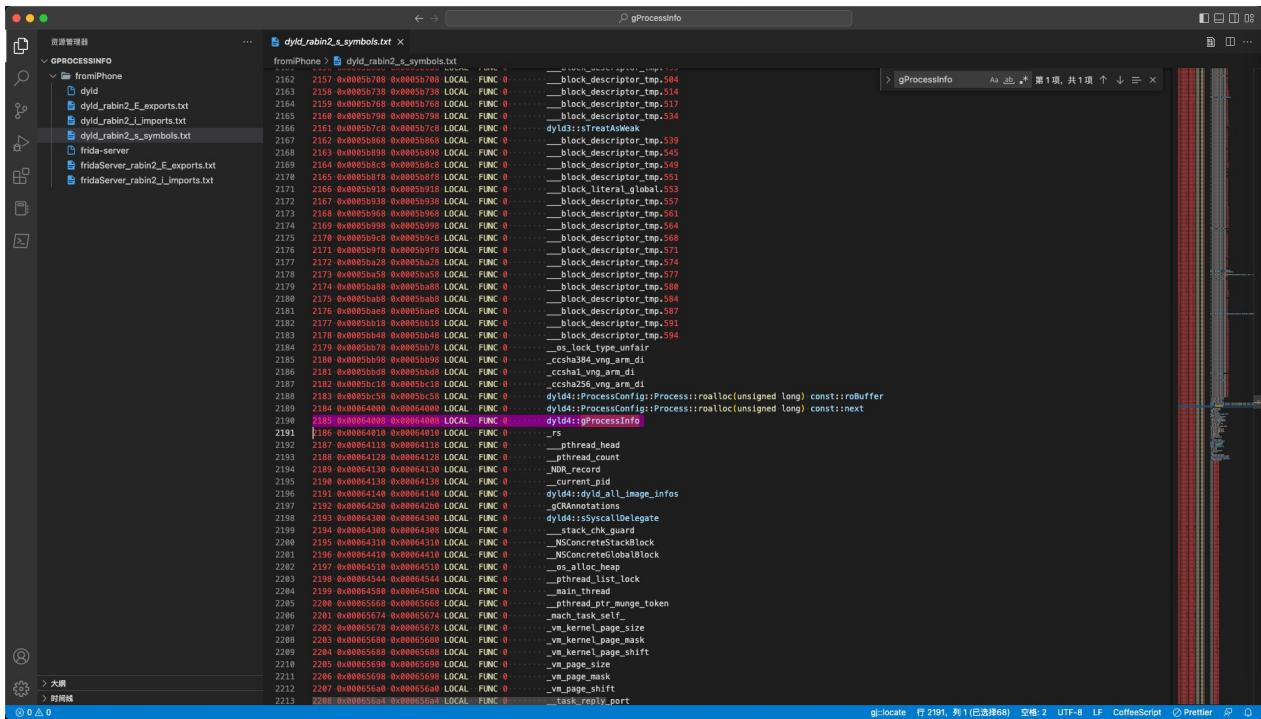
导出后, 再从dyld中导出符号:

```
rabin2 -s dyld > dyld_rabin2_s_symbols.txt
```

发现是有的:

- `dyld_rabin2_s_symbols.txt`

```
2185 0x00064008 0x00064008 LOCAL FUNC 0 dyld4::gProcessInfo
```



另外，突然注意到：

- fromiPhone/dyld\_rabin2\_s\_symbols.txt

```

891 0x00002e500 0x00002e500 LOCAL FUNC 0 dyld4::APIs::dyld_shared_cache_optimized()
892 0x00002e57c 0x00002e57c LOCAL FUNC 0 dyld4::APIs::dyld_register_for_image_loads(void (*)(mach_header const*, char const*, bool))
893 0x00002e680 0x00002e680 LOCAL FUNC 0 __ZN5dyld44APIs30_dyld_register_for_image_loadsEPFvPK11mach_headerPKcbE_block_invoke
894 0x00002e76c 0x00002e76c LOCAL FUNC 0 __ZN5dyld44APIs30_dyld_register_for_image_loadsEPFvPK11mach_headerPKcbE_block_invoke_2
895 0x00002e7b4 0x00002e7b4 LOCAL FUNC 0 __ZN5dyld44APIs35_dyld_register_for_bulk_image_loadsEPFvjPPK11mach_headerPPKcE_block_invoke_2
896 0x00002e7c8 0x00002e7c8 LOCAL FUNC 0 dyld4::APIs::dyld_shared_cache_file_path()
897 0x00002e810 0x00002e810 LOCAL FUNC 0 dyld4::APIs::dyld_has_inserted_or_interposing_libraries()
898 0x00002e874 0x00002e874 LOCAL FUNC 0 dyld4::APIs::dyld_shared_cache_find_iterate_text(unsigned char const*, char const**, void (block_pointer)(dyld_shared_cache_dylib_text_info const*))
899 0x00002ea8c 0x00002ea8c LOCAL FUNC 0 dyld4::findCacheInDirAndMap(dyld4::RuntimeState , unsigned char const*, char const*, unsigned long&)
900 0x00002eb5c 0x00002eb5c LOCAL FUNC 0 __ZN5dyld44APIs35dyld_shared_cache_find_iterate_textEPKhPPKcU13block_pointerFvPK33dyld_shared_cache_dylib_text_infoE_block_invoke.173
901 0x00002ebc0 0x00002ebc0 LOCAL FUNC 0 dyld4::APIs::dyld_shared_cache_iterate_text(unsigned char const*, void (block_pointer)(dyld_shared_cache_dylib_text_info const*))
902 0x00002ec60 0x00002ec60 LOCAL FUNC 0 dyld4::APIs::dyld_fork_child()

```

即：

此处symbol中，也是有一些：

- `__ZN5dyld44APIs30_dyld_register_for_image_loadsEPFvPK11mach_headerPKcbE_block_invoker`

这种编译后的函数名的值的

同时，也有，编译前的，普通的函数名：

- `dyld4::APIs::_dyld_register_for_image_loads(void ()(mach_header const, char const*, bool))`

-》所以突然想到：

估计是，编译前的，普通函数名，是：

此处rabin2，自动帮忙翻译的（因为其懂得编译和反编译函数名 symbol的内在逻辑？）

-》所以去找找：

是否有机会，让rabin2，只输出：

编译后的symbol名字？

这样就能找到，确认：

```
dyld4::gProcessInfo
```

是不是：

```
__ZN5dyld44gProcessInfo
```

了

去找找看：

rabin2的其他参数，能输出原始的symbol的？

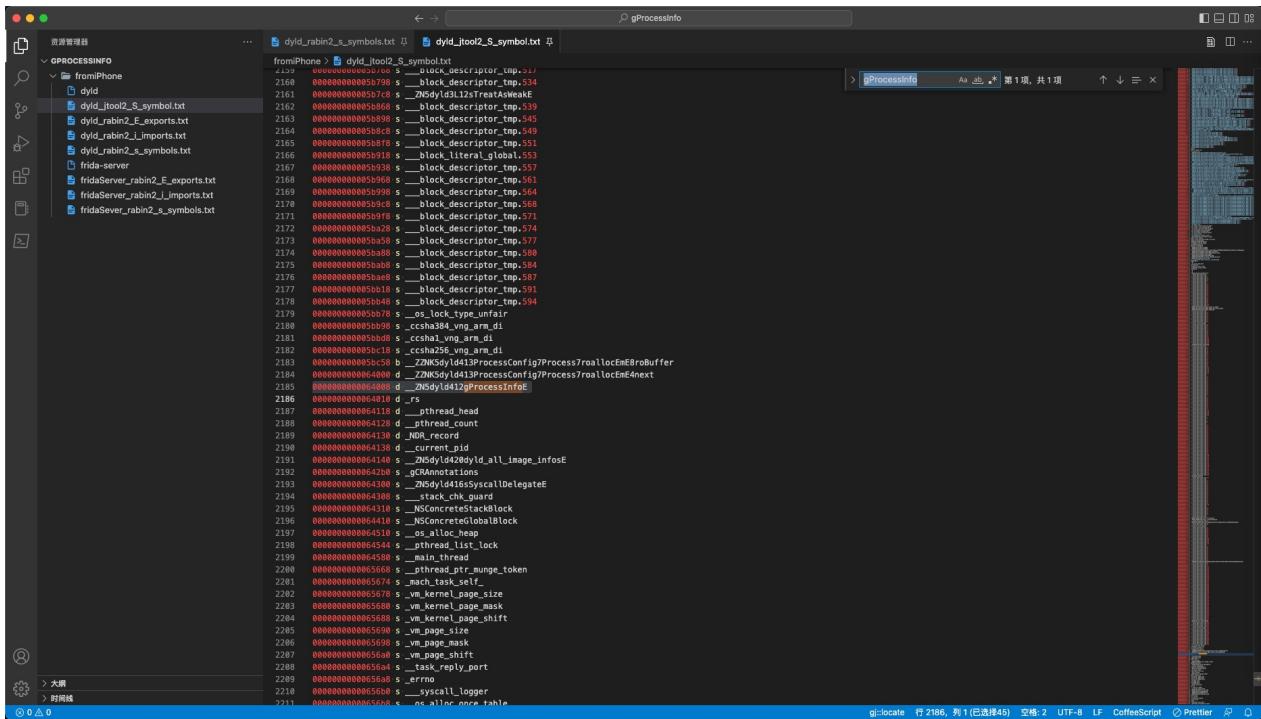
对了，或许也可以用另外的工具： `jtool2`

```
jtool2 -S dyld > dyld_jtool2_S_symbol.txt
```

果然是我们希望的，原始的，编译后的，没有被解析的：`gProcessInfo`

- `dyld_jtool2_S_symbol.txt`

```
00000000000064008 d __ZN5dyld412gProcessInfoE
```



所以就是：

- `dyld4::gProcessInfo`
  - 编译生成: `__ZN5dyld412gProcessInfoE`
  - 不是我以为的: `__ZN5dyld44gProcessInfo`

再去dyld源码中，多搜搜：

```
namespace dyld4
```

看看是否有其他新发现

```
namespace dyld4
```

- `/Users/crifan/dev/dev_src/ios_reverse/AppleOpenSource/dyld/dyld-dyld-1042.1/dyld/DebuggerSupport.h`

```
namespace dyld4 {
 using lsl::Allocator;
 void addImagesToAllImages(RuntimeState* state, uint32_t infoCount, const dyld_image_info info[], uint32_t initialImageCount);
 void removeImageFromAllImages(const mach_header loadAddress);
}

extern "C" void lldb_image_notifier(enum dyld_image_mode mode, uint32_t infoCount, const dyld_image_info info[]);

extern dyld_all_image_infos* gProcessInfo;
```

->也还是: `gProcessInfo`

->不是放在 `namespace dyld4` 中的

- /Users/crifan/dev/dev\_src/ios\_reverse/AppleOpenSource/dyld/dyld-dyld-1042.1/dyld/DyldAPIs.cpp

```
// internal libc.a variable that needs to be reset during fork()
extern mach_port_t mach_task_self_;

using dyld3::MachOFile;
using dyld3::MachOLoaded;

extern const dyld3::MachOLoaded __dso_handle;

...

namespace dyld4 {
...
}
```

-》自己当前是dyld4的namespace，但是也会引用外部变量：

- 其中也有：
  - 没有namespace的：
    - extern mach\_port\_t mach\_task\_self\_;
  - 和另外的namespace的： dyld3
    - extern const dyld3::MachOLoaded \_\_dso\_handle;

然后去：

【未解决】rabin2输出C++的未解析的原始的编译后的函数名mangle name

所以去：

【未解决】C++代码中函数变量编译生成符号symbol的规则

期间去：

【已解决】从C++的编译后的符号symbol得到原始的变量函数名

另外，看看此处的dyld版本：

```
iPhone11-151:~ root# /usr/lib/dyld --version
-sh: /usr/lib/dyld: cannot execute binary file: Exec format error
```

无法查看。

【已解决】iOS 13.3的iPhone7中/usr/lib/dyld的版本和gProcessInfo相关信息

## 也去研究：dyld源码中的gProcessInfo

至此找到：

- gProcessInfo
  - 变量来源：
    - dyld/dyld-dyld-1042.1/dyld/DebuggerSupport.cpp

```
struct dyld_all_image_infos* gProcessInfo = &dyld_all_image_infos;
```

以及：

- struct dyld\_all\_image\_infos
  - 定义
    - libdyld/dyld\_process\_info\_internal.h
    - struct dyld\_all\_image\_infos\_32
    - struct dyld\_all\_image\_infos\_64
    - include/mach-o/dyld\_images.h
    - struct \_\_attribute\_\_((aligned(16))) dyld\_all\_image\_infos

具体定义详见：

(1) include/mach-o/dyld\_images.h

```
// Must be aligned to support atomic updates
// Note sim cannot assume alignment until all host dylds are new enough
#ifndef TARGET_OS_SIMULATOR
struct dyld_all_image_infos
#else
struct __attribute__((aligned(16))) dyld_all_image_infos
#endif
{
 uint32_t version, /* 1 in Mac OS X 10.4 and 10.5 */
 uint32_t infoArrayCount;
#if defined(__cplusplus) && (BUILDING_LIBDYLD || BUILDING_DYLD)
 std::atomic<const struct dyld_image_info*> infoArray;
#else
 const struct dyld_image_info* infoArray;
#endif
 dyld_image_notifier notification;
 bool processDetachedFromSharedRegion;
 /* the following fields are only in version 2 (Mac OS X 10.6, iPhoneOS 2.0) and later */
 bool libSystemInitialized;
 const struct mach_header* dyldImageLoadAddress;
 /* the following field is only in version 3 (Mac OS X 10.6, iPhoneOS 3.0) and later */
 void* jitInfo;
 /* the following fields are only in version 5 (Mac OS X 10.6, iPhoneOS 3.0) and later */
 const char* dyldVersion;
 const char* errorMessage;
 uintptr_t terminationFlags;
 /* the following field is only in version 6 (Mac OS X 10.6, iPhoneOS 3.1) and later */
 void* coreSymbolicationShmPage;
 /* the following field is only in version 7 (Mac OS X 10.6, iPhoneOS 3.1) and later */
 uintptr_t systemOrderFlag;
 /* the following field is only in version 8 (Mac OS X 10.7, iPhoneOS 3.1) and later */
 uintptr_t uuidArrayCount;
```

```

const struct dyld_uuid_info* uuidArray; /* only images not in dyld shared
cache */

/* the following field is only in version 9 (Mac OS X 10.7, iOS 4.0) and later */
struct dyld_all_image_infos* dyldAllImageInfosAddress;

/* the following field is only in version 10 (Mac OS X 10.7, iOS 4.2) and later */
uintptr_t initialImageCount;

/* the following field is only in version 11 (Mac OS X 10.7, iOS 4.2) and later */
uintptr_t errorKind;
const char* errorClientOfDylibPath;
const char* errorTargetDylibPath;
const char* errorSymbol;

/* the following field is only in version 12 (Mac OS X 10.7, iOS 4.3) and later */
uintptr_t sharedCacheSlide;

/* the following field is only in version 13 (Mac OS X 10.9, iOS 7.0) and later */
uint8_t sharedCacheUUID[16];

/* the following field is only in version 15 (macOS 10.12, iOS 10.0) and later */
uintptr_t sharedCacheBaseAddress;

#if defined(__cplusplus) && (BUILDING_LIBDYLD || BUILDING_DYLD)
 // We want this to be atomic in libdyld so that we can see updates when we map it shared
 std::atomic<uint64_t> infoArrayChangeTimestamp;
#else
 uint64_t infoArrayChangeTimestamp;
#endif
 const char* dyldPath;
 mach_port_t notifyPorts[DYLD_MAX_PROCESS_INFO_NOTIFY_COUNT];
#endif __LP64__
 uintptr_t reserved[11 (DYLD_MAX_PROCESS_INFO_NOTIFY_COUNT/2)];
};

#ifndef __LP64__
 uintptr_t reserved[9 DYLD_MAX_PROCESS_INFO_NOTIFY_COUNT];
#endif

// The following fields were added in version 18 (previously they were reserved padding fields)
 uint64_t sharedCacheFSID;
 uint64_t sharedCacheFSObjID;

/* the following field is only in version 16 (macOS 10.13, iOS 11.0) and later */
 uintptr_t compact_dyld_image_info_addr;
 size_t compact_dyld_image_info_size;
 uint32_t platform; // FIXME: really a dyld_platform_t, but those aren't exposed here.

/* the following field is only in version 17 (macOS 10.16) and later */
 uint32_t aotInfoCount;
 const struct dyld_aot_image_info aotInfoArray;
 uint64_t aotInfoArrayChangeTimestamp;
 uintptr_t aotSharedCacheBaseAddress;
 uint8_t aotSharedCacheUUID[16];
};


```

(2) 还有个分32和64的：

- struct dyld\_all\_image\_infos\_32

- struct dyld\_all\_image\_infos\_64
- >
- libdyld/dyld\_process\_info\_internal.h

```

struct dyld_all_image_infos_32 {
 uint32_t version;
 uint32_t infoArrayCount;
 std::atomic<uint32_t> infoArray;
 notification;
 bool processDetachedFromSharedRegion;
 bool libSystemInitialized;
 dyldImageLoadAddress;
 jitInfo;
 dyldVersion;
 errorMessage;
 terminationFlags;
 coreSymbolicationShmPage;
 systemOrderFlag;
 uint32_t uuidArrayCount;
 uint32_t uuidArray;
 dyldAllImageInfosAddress;
 initialImageCount;
 errorKind;
 errorClientOfDylibPath;
 errorTargetDylibPath;
 errorSymbol;
 sharedCacheSlide;
 sharedCacheUUID;
 sharedCacheBaseAddress;
 infoArrayChangeTimestamp;
 dyldPath;
 notifyMachPorts[8];
 reserved;
 sharedCacheFSID;
 sharedCacheFSObjID;
 compact_dyld_image_info_addr;
 compact_dyld_image_info_size;
 uint32_t platform;
 // the aot fields below will not be set in the 32 bit case
 uint32_t aotInfoCount;
 std::atomic<uint64_t> aotInfoArray;
 uint64_t aotInfoArrayChangeTimestamp;
 uint64_t aotSharedCacheBaseAddress;
 std::array<uint8_t, 16> aotSharedCacheUUID[16];
};

struct dyld_all_image_infos_64 {
 uint32_t version;
 uint32_t infoArrayCount;
 std::atomic<uint64_t> infoArray;
 uint64_t notification;
 bool processDetachedFromSharedRegion;
 bool libSystemInitialized;

```

```

 uint32_t paddingToMakeTheSizeCorrectOn32bitAndDoesntAffect64b; // NO
T PART OF DYLD_ALL_IMAGE_INFOS!
 uint64_t dyldImageLoadAddress;
 uint64_t jitInfo;
 uint64_t dyldVersion;
 errorMessage;
 terminationFlags;
 coreSymbolicationShmPage;
 systemOrderFlag;
 uint64_t uuidArrayCount;
 uint64_t uuidArray;
 uint64_t dyldAllImageInfosAddress;
 uint64_t initialImageCount;
 errorKind;
 errorClientOfDylibPath;
 errorTargetDylibPath;
 errorSymbol;
 sharedCacheSlide;
 std::array<uint8_t, 16> sharedCacheUUID;
 uint64_t sharedCacheBaseAddress;
 std::atomic<uint64_t> infoArrayChangeTimestamp;
 uint64_t dyldPath;
 uint32_t notifyMachPorts[8];
 uint64_t reserved[7];
 uint64_t sharedCacheFSID;
 uint64_t sharedCacheFSObjID;
 compact_dyld_image_info_addr;
 compact_dyld_image_info_size;
 uint32_t platform;
 uint32_t aotInfoCount;
 std::atomic<uint64_t> aotInfoArray;
 uint64_t aotInfoArrayChangeTimestamp;
 uint64_t aotSharedCacheBaseAddress;
 std::array<uint8_t, 16> aotSharedCacheUUID[16];
};


```

然后：

【未解决】dyld-932.4中gProcessInfo编译后symbol却是\_\_ZN5dyld412gProcessInfoE

## 自己编译arm64e版的Frida

安装依赖库：

```
pip install colorama prompt-toolkit pygments
```

设置Python用新版 3.10.6

```
local再去设置为3.10.6的版本：
crifan@licrifandeMacBook-Pro ~$/dev/dev_src/ios_reverse/frida$ pyenv versions
system
3.5.2
3.6.6
```

```

3.7.3
* 3.9.4 (set by /Users/crifan/.pyenv/version)
 3.10.6
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida$ pyenv local 3.10.6
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida$ python --version
Python 3.10.6

```

clone frida的代码：

```
git clone --recurse-submodules https://github.com/frida/frida.git
```

先make看看有哪些编译选项：

```

crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida$ \ main$ make
make[1]: Entering directory '/Users/crifan/dev/dev_src/ios_reverse/frida'
Usage: make TARGET [VARIABLE value]

Where TARGET specifies one or more of:

/* gum */
gum-macos Build for macOS
gum-ios Build for iOS
gum-watchos Build for watchOS
gum-tvos Build for tvOS
gum-android-x86 Build for Android/x86
gum-android-x86_64 Build for Android/x86-64
gum-android-arm Build for Android/arm
gum-android-arm64 Build for Android/arm64
check-gum-macos Run tests for macOS

/* core */
core-macos Build for macOS
core-ios Build for iOS
core-watchos Build for watchOS
core-tvos Build for tvOS
core-android-x86 Build for Android/x86
core-android-x86_64 Build for Android/x86-64
core-android-arm Build for Android/arm
core-android-arm64 Build for Android/arm64
check-core-macos Run tests for macOS

/* python */
python-macos Build Python bindings for macOS
check-python-macos Test Python bindings for macOS

/* node */
node-macos Build Node.js bindings for macOS
check-node-macos Test Node.js bindings for macOS

/* tools */
tools-macos Build CLI tools for macOS
check-tools-macos Test CLI tools for macOS

```

```

And optionally also VARIABLE values:
 PYTHON Absolute path of Python interpreter including version suffix
 ix
 NODE Absolute path of Node.js binary

For example:
$ make python-macos PYTHON /usr/local/bin/python3.6
$ make node-macos NODE /usr/local/bin/node

make[1]: Leaving directory '/Users/crifan/dev/dev_src/ios_reverse/frida/frida'

```

此处要去编译：ios 的，所以看起来是：

```
core-ios Build for iOS
```

所以最后去：

```
make core-ios
```

期间解决了证书问题：

- 【已解决】Mac中编译frida-core报错：FAILED /usr/bin/codesign IOS\_CERTID not set

继续：

```

x crifan@licrifandeMacBook-Pro ~/dev/dev_src/ios_reverse/frida/frida` \ main` export
MACOS_CERTID frida-cert
crifan@licrifandeMacBook-Pro ~/dev/dev_src/ios_reverse/frida/frida` \ main` export I
OS_CERTID frida-cert
crifan@licrifandeMacBook-Pro ~/dev/dev_src/ios_reverse/frida/frida` \ main` export W
ATCHOS_CERTID frida-cert
crifan@licrifandeMacBook-Pro ~/dev/dev_src/ios_reverse/frida/frida` \ main` export T
VOS_CERTID frida-cert
crifan@licrifandeMacBook-Pro ~/dev/dev_src/ios_reverse/frida/frida` \ main` make cor
e-ios
make[1]: Entering directory '/Users/crifan/dev/dev_src/ios_reverse/frida/frida'
build/frida-env-ios-arm64.rc; \
builddir build/tmp-ios-arm64/frida-core; \
if [! -f $builddir/build.ninja]; then \
 meson_args="--native-file build/frida-macos-x86_64.txt"; if [ios-arm64 != \
macos-x86_64]; then meson_args="$meson_args --cross-file build/frida-ios-arm64.txt"; fi \
; python3 /Users/crifan/dev/dev_src/ios_reverse/frida/frida/releng/meson/meson.py setup \
$meson_args \
 --prefix /usr \
 --default-library static -Doptimization=s -Db_ndebug=true --strip -Dconnectivity \
enabled -Dmapper auto \
 -Dassets_installed \
 frida-core $builddir || exit 1; \
fi \
&& python3 /Users/crifan/dev/dev_src/ios_reverse/frida/frida/releng/meson/meson.py \
compile -C $builddir \
 && DESTDIR="/Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64" \
python3 /Users/crifan/dev/dev_src/ios_reverse/frida/frida/releng/meson/meson.py install \
-C $builddir
INFO: autodetecting backend as ninja

```

```
INFO: calculating backend command to run: /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/toolchain-macos-x86_64/bin/ninja -C /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core
ninja: Entering directory '/Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core'
[85/85] Generating lib/gadget/frida-gadget with a custom command
ninja: Entering directory '/Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core'
ninja: no work to do.
Installing lib/base/libfrida-base-1.0.a to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib
Installing lib/base/frida-base.h to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/include/frida-1.0
Installing lib/base/frida-base-1.0.vapi to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/share/vala/vapi
Installing lib/payload/libfrida-payload-1.0.a to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib
Installing lib/payload/frida-payload.h to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/include/frida-1.0
Installing lib/payload/frida-payload-1.0.vapi to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/share/vala/vapi
Installing lib/agent/frida-agent.dylib to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/frida
Installing lib/gadget/frida-gadget.dylib to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/frida
Installing src/frida-helper to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/frida
Installing src/api/frida-core.h to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/include/frida-1.0
Installing src/api/frida-core-1.0.vapi to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/share/vala/vapi
Installing src/api/frida-core-1.0.deps to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/share/vala/vapi
Installing src/api/libfrida-core-1.0.a to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib
Installing server/frida-server to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/bin
Installing portal/frida-portal to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/bin
Installing inject/frida-inject to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/bin
Installing /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core/meson-private/frida-base-1.0.pc to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/pkgconfig
Installing /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core/meson-private/frida-payload-1.0.pc to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/pkgconfig
Installing /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/tmp-ios-arm64/frida-core/meson-private/frida-core-1.0.pc to /Users/crifan/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/lib/pkgconfig
make[1]: Leaving directory '/Users/crifan/dev/dev_src/ios_reverse/frida/frida'
```

即可：编译完成。

我们要找到的：frida-server，貌似是：

- Installing server/frida-server to /Users/crifan/dev/dev\_src/ios\_reverse/frida/frida/build/frida-ios-arm64/usr/bin

去看看build目录

```
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/\ main" cd build
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build"\ main" ll
total 56
-rw-r--r-- 1 crifan staff 190B 1 16 11:45 frida-env-ios-arm64.rc
-rw-r--r-- 1 crifan staff 193B 1 16 11:45 frida-env-macos-x86_64.rc
drwxr-xr-x 3 crifan staff 96B 1 16 11:47 frida-ios-arm64
-rw xr-xr-x 1 crifan staff 430B 1 16 11:45 frida-ios-arm64-pkg-config
-rw-r--r-- 1 crifan staff 2.9K 1 16 11:45 frida-ios-arm64.txt
-rw xr-xr-x 1 crifan staff 436B 1 16 11:45 frida-macos-x86_64-pkg-config
-rw-r--r-- 1 crifan staff 2.9K 1 16 11:45 frida-macos-x86_64.txt
-rw-r--r-- 1 crifan staff 217B 1 16 11:44 frida-version.h
drwxr-xr-x 8 crifan staff 256B 1 16 11:45 sdk-ios-arm64
drwxr-xr-x 8 crifan staff 256B 1 16 11:44 sdk-macos-x86_64
drwxr-xr-x 4 crifan staff 128B 1 16 11:47 tmp-ios-arm64
drwxr-xr-x 8 crifan staff 256B 1 16 11:44 toolchain-macos-x86_64
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build"\ main" cd
frida-ios-arm64
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64"\ main" ll
total 0
drwxr-xr-x 6 crifan staff 192B 1 16 11:47 usr
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64"\ main" cd usr
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr"\ main" ll
total 0
drwxr-xr-x 6 crifan staff 192B 1 16 15:14 bin
drwxr-xr-x 3 crifan staff 96B 1 16 11:47 include
drwxr-xr-x 13 crifan staff 416B 1 16 15:14 lib
drwxr-xr-x 3 crifan staff 96B 1 16 11:47 share
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr"\ main" cd bin
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/bin"\ main" ll
total 40752
-rw xr-xr-x 1 crifan staff 6.2M 1 16 15:13 frida-inject
-rw xr-xr-x 1 crifan staff 5.2M 1 16 15:13 frida-portal
-rw xr-xr-x 1 crifan staff 6.4M 1 16 15:13 frida-server
-rw xr-xr-x 1 crifan staff 2.1M 1 16 11:47 gum-graft
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_src/ios_reverse/frida/frida/build/frida-ios-arm64/usr/bin"\ main" file ./frida-server
./frida-server: Mach-O 64-bit executable arm64
```

的确是编译成功了

回去看看之前frida-server的大小和file输出信息

```
crifan@licrifandeMacBook-Pro ~ ~/dev/dev_root/iosReverse/AppleStore/debug/gProcessInfo/i
```

```

Phone11_151「 11
total 55248
-rw-r-xr-x@ 1 crifan staff 629K 1 13 10:06 dyld
-rw-r--r-- 1 crifan staff 2.5M 1 13 22:14 dyld.id0
-rw-r--r-- 1 crifan staff 1.6M 1 13 22:13 dyld.id1
-rw-r--r-- 1 crifan staff 40K 1 13 22:13 dyld.nam
-rw-r--r-- 1 crifan staff 1.3K 1 13 22:13 dyld.til
-rw-r--r-- 1 crifan staff 173K 1 13 10:44 dyld_jtool2_S_symbol.txt
-rw-r--r-- 1 crifan staff 277B 1 13 10:07 dyld_rabin2_E_exports.txt
-rw-r--r-- 1 crifan staff 125B 1 13 10:07 dyld_rabin2_i_imports.txt
-rw-r--r-- 1 crifan staff 249K 1 13 21:33 dyld_rabin2_s_r_symbols.txt
-rw-r--r-- 1 crifan staff 381K 1 13 10:13 dyld_rabin2_s_symbols.txt
-rwxr-xr-x 1 crifan staff 20M 1 12 17:55 frida-server
-rw-r--r-- 1 crifan staff 169B 1 12 17:58 fridaServer_rabin2_E_exports.txt
-rw-r--r-- 1 crifan staff 17K 1 12 17:58 fridaServer_rabin2_i_imports.txt
-rw-r--r-- 1 crifan staff 1.9M 1 13 10:18 fridaSever_rabin2_s_symbols.txt
crifan@licrifandeMacBook-Pro「 ~/dev/dev_root/iosReverse/AppleStore/debug/gProcessInfo/
iPhone11_151「 file ./frida-server
./frida-server: Mach-O universal binary with 3 architectures: [arm64:Mach-O 64-bit executable arm64] [arm64e] [arm64]
./frida-server (for architecture arm64): Mach-O 64-bit executable arm64
./frida-server (for architecture arm64e): Mach-O 64-bit executable arm64e
./frida-server (for architecture arm64e): Mach-O 64-bit executable arm64e

```

-》此处frida-server很大：20M

不过明显是：FAT格式，包含多个架构：

- arm64
- arm64e

那看起来，貌似有个问题：

此处，从iPhone导出的真正在用的 frida-server，支持： arm64e

而此处自己编译出来的，只支持 arm64，不支持 arm64e

而记得：此处的 iPhone 中的架构都是： arm64e 的？

感觉需要：

- 确认 iOS 15.1 的 iPhone11 中，此处 arm 的架构是： arm64e 还是 arm64
  - 确定其中的 frida-server 是否需要支持 arm64e
- 如果需要支持 arm64e，再去看： frida 编译 core-ios 时，如何指定或加上 arm64e 的支持

先去：

【基本解决】iOS 15.1的iPhone11中frida-server所用架构是arm64e还是arm64

-》 arm64 的二进制，是能放到 arm64e 的 A13 的 iPhone11 中运行的。

那就继续看看：

【未解决】自己编译出的arm64的frida-server能否在iPhone11正常运行

其他过程详见：

- 【未解决】用frida源码自己编译出frida的iOS的包含frida-server的deb安装包
- 【未解决】自己编译出包含arm64和arm64e的FAT格式的frida-server二进制
- 【未解决】自己修改编译frida-core源码以尝试解决Frida的Missing gProcessInfo问题
- 【未解决】Frida中如何编译出iOS的arm64e的frida-server二进制
- 【未解决】自己编译Frida的frida-core代码生成可用二进制frida-server

## 找arm64e版的Frida

### 从Frida源码和build中找

- 【未解决】找Frida中iOS的arm6e4：从Frida源码和build中找

### 从Frida的github中找

- 【未解决】找Frida中iOS的arm6e4：从Frida的github中找

### 自己给make加echo打印日志调试

- 【未解决】找Frida中iOS的arm6e4：自己给make加echo打印日志调试

### 从github的ci的workflow中找arm64e

- 【未解决】找Frida中iOS的arm6e4：从github的ci的workflow中找arm64e

### 从编译日志中的Downloading ios-arm64入手

- 【未解决】找Frida中iOS的arm6e4：从编译日志中的Downloading ios-arm64入手

### make时如何传入arm64e的arch参数

- 【未解决】找Frida中iOS的arm6e4：make时如何传入arm64e的arch参数

### 从make编译时的log日志入手

- 【未解决】找Frida中iOS的arm6e4：从make编译时的log日志入手

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2023-06-27 22:18:57

# 常见问题和报错

## 常见问题

### 关于frida启动后，被调试的目标，是否暂停运行的问题

- 背景

- frida启动调试后，被调试的目标（app或进程），是否已经暂停运行

- 旧版frida：自动暂停运行

- 支持参数：`--no-pause`

- 新版frida：（逻辑已经变成了）不暂停运行 = 已经继续运行了

- 

- 支持参数：`--pause`

- 所以

- 旧版frida

- 常会遇到一个问题：每次frida（以Attach后Spawn去）启动调试后，程序自动暂停运行

- 解决办法：手动输入 `%resume`

```
stdout> -400E-BB14-1F1EE9266003/Aweme.app/Frameworks/AwemeCore.framework/AwemeCore (0x103f239b0). One of the two will be used. Which one is undefined.
stdout> objc[26948]: Class MTLValueTransformer is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x116ad08a0) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/AwemeCore.framework/AwemeCore (0x103f23a28). One of the two will be used. Which one is undefined.
stdout> objc[26948]: Class MTLLevelValueTransformer is implemented in both /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/byteaudio.framework/byteaudio (0x116ad0878) and /private/var/containers/Bundle/Application/0C35E4DD-5B6B-40DE-BB14-1F1EE9266003/Aweme.app/Frameworks/AwemeCore.framework/AwemeCore (0x103f23a00). One of the two will be used. Which one is undefined.
[iPhone::com.ss.iphone.ugc.Aweme] >
[iPhone::com.ss.iphone.ugc.Aweme] > %resume
resume
```

行 5, 列 1 (已选择 291) 空格: 4 UTF-8 LF {} JavaScript ✓ Prettier ⌂ ⌂

- 所以就希望：frida调试开始后，自动继续运行，不要每次都输入 `%resume` 才继续运行

- 解决办法：加 `--no-pause` 参数

- 参数含义：`--no-pause automatically start main thread after startup`

- 举例

```
frida -U --no-pause -f com.ss.iphone.ugc.Aweme -l frida/dyldImage.js
```

- 新版frida

- 用新版frida，加了参数 `--no-pause`，报错不支持此参数：`frida: error: unrecognized arguments: --no-pause`

- 解决办法：不要加任何参数

- 举例

```
frida -U -N com.apple.Preferences -l hookAccountLogin_singleClassAllMethod.js
```

- »

- 如果需要启动后

- 自动继续运行

- 则：无需加任何参数

- 因为新版frida已经变成这个逻辑了

- 自动暂停运行
  - 再去加新版才支持的参数: `--pause`
    - 参数含义: `--pause leave main thread paused after spawning program`

## 导致iPhone重启

之前遇到过:

XinaA15的rootless越狱的iPhone11中，用最新版 `v16.0.10` 的 `Frida`，但是却：会导致iPhone重启（从而丢失XinaA15的越狱，需要再去恢复越狱）

但是：没有解决方案。

目前的结论是：

(XinaA15等) rootless越狱后，`Frida` 的使用，基本上是个大问题，有时候（某个旧版本）能用，有时候（此处新版 `v16.0.10`）却又无法正常使用。

## 常见报错

### Process crashed: Bad access due to invalid address

- 问题：

```
Called: -[WARegistrationURLBuilder clientLogRequestURLWithCurrentScreen:previousScreen:
actionTaken:]
...
argCount: 3
----- [0] curArgPtr=0xc
Process crashed: Bad access due to invalid address
...
```

```

crifan@crifanlideMacBook-Pro:~/dev/dev_root/iosReverse/WhatsApp/dynamicDebug/Frida/frida
[...]
Process crashed: Bad access due to invalid address

Incident Identifier: B4558E1B-2383-42FC-B519-CEE8920A85

CrashReporter Key: 07065050-0599-4044-9f4c-7897b648c3d0

Hardware Model: iPhone9,1

Process: WhatsApp [2396]

Identifier: net.whatsapp.WhatsApp

Version: 5.29.1793 (23.21.0)

App Store Tools: ISM240

App Version: 1.19.0

Code Type: ARM-64 (Native)

Role: Foreground

Parent Process: launchd [1]

Coalition: net.whatsapp.WhatsApp [29792]

```

- 原因
  - 表面原因：访问了非法地址： 0xc
  - 深层次原因：对于值明显异常的地址，没有做过滤，没有排除掉
- 解决办法：加上过滤，排除掉，地址值明显异常的地址
- 具体步骤：

代码改为：

```

// check pointer is valid or not
// example
// 0x103e79560 => true
// 0xc => false
function isValidPointer(curPtr){
 let MinValidPointer = 0x10000
 var isValid = curPtr > MinValidPointer
 return isValid
}

...
if (isValidPointer(curArg)) {
 ...
}

```

即可避免访问非法地址指针，避免崩溃。

## Waiting for USB device to appear

- 问题： Mac中运行frida去调试app

```
frida -U -f com.apple.store.Jolly
```

- 但是报错

```
Waiting for USB device to appear...
```

- 原因：（连接iPhone到Mac的）USB数据线没插好
- 解决办法：重新拔插USB数据线，确保USB连接正常
  - 注：
    - 如何确认iPhone是否已插好
      - 方式1：通过爱思助手可以确认
        - 已插好：能看到iPhone详情
        - 没插好：看不到iPhone设备
      - 方式2：用frida的工具[frida-ls-devices](#)

## Failed to attach: need Gadget to attach on jailed iOS

- 问题：Mac中用frida启动iOS版抖音

```
frida -U -f com.ss.iphone.ugc.Aweme
```

- 报错

```
Failed to attach: need Gadget to attach on jailed ios; its default location is:
/Users/crifan/.cache/frida/gadget-ios.dylib
```

- 原因：缺少对应的Frida的 `gadget` 库文件
- 解决办法
  - 概述：下载对应版本的 `gadget` 库文件，放到对应位置（此处提示的 `/Users/crifan/.cache/frida/gadget-ios.dylib`）即可
  - 详见：[安装Frida](#)中的 安装Frida的gadget

## Failed to spawn: unable to find process with name 'Preferences'

- 报错： Failed to spawn: unable to find process with name 'Preferences'

◦

- 原因：frida命令用的是

```
frida -U -l ./hookAccountLogin.js -n Preferences
```

- 其中 `-n` 是加二进制名称，此处 `Preferences` 是app，所以属于参数使用错误，调试目标语法搞错了
- 解决办法：
  - 搞懂frida的调试目标方式，改为别的方式即可
    - 方式1：用 `-N app_package_id`

```
frida -U -l ./hookAccountLogin.js -N com.apple.Preferences
```

- 方式2：换 -p PID

```
frida -U -l ./hookAccountLogin.js -p 18031
```

- 其中是用iPhone中ssh中通过ps查看到

```
~ ps -A | grep Preferences
...
18031 ?? 0:02.43 /Applications/Preferences.app/Preferences
```

- 得知 Preferences 的 PID 是 18031

- 方式3：用 -F

```
frida -U -l ./hookAccountLogin.js -F
```

- 注：确保 Preferences =系统的设置app，处于最前台在运行才能用 -F

## Error: unable to intercept function at 0x202be0460; please file a bug

- 现象： Frida的hook的js代码中， 函数地址写的是：

```
var akdSymbol2575_functionAddress = 0x1000a0460;
```

- 导致报错：

```
moduleName= akd moduleBaseAddress= 0x102b40000
functionRealAddress)= 0x202be0460
Error: unable to intercept function at 0x202be0460; please file a bug
at value (frida/runtime/core.js:367)
```

- 原因： 函数地址写错了 -》 找不到函数地址 -》 所以报错
- 解决办法： 确保函数地址是正确的
- 具体做法： 代码改为：

```
var akdSymbol2575_functionAddress = 0xa0460;
```

- 说明

- 0x1000a0460 是加了 VM 虚拟地址后的 akd二进制内函数的地址
  - 0xa0460 : 是不带VM的， 真正的函数内的偏移地址

## ValueError: file descriptor cannot be a negative integer (-42)

- 问题： frida-ps 、 frida-ls-devices 等frida-tools工具运行时报错： ValueError: file descriptor cannot be a negative integer (-42)
- 原因： 当前 12.0.3 的 frida-tools 有bug
- 解决办法： 升级到最新版 frida-tools

- 具体步骤：

```
pip install --upgrade frida-tools
```

- 注：查看当前frida-tools的版本：

```
pip show frida-tools
```

## Process terminated=进程结束=崩溃退出

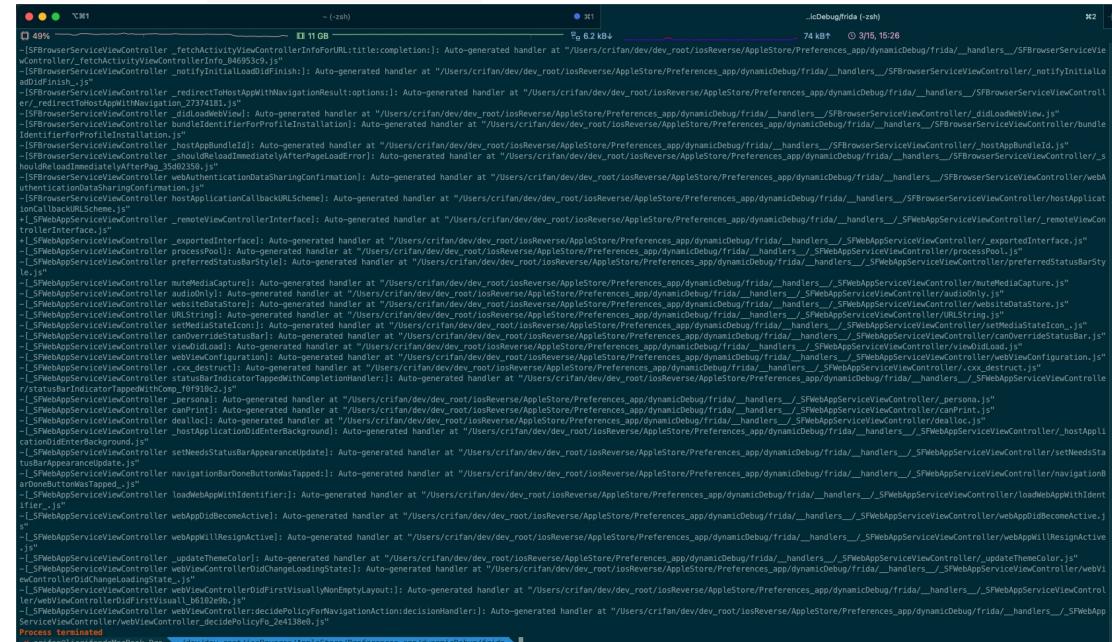
目前遇到多种现象和可能原因：

### 由于hook函数太多导致崩溃

- 现象一：用frida-trace去hook太多的类Obj的函数

```
frida-trace -U -F com.apple.Preferences -m "*[AA* *]" -m "*[AK* *]" -m "*[AS* *]" -m "*[NS* *]" -M "-[ASDBundle copyWithZone:]" -M "-[ASDInstallationEvent copyWithZone:]"
```

- 导致崩溃退出报错： Process terminated



- 原因： frida-trace 去hook的函数太多了，估计是，加了 `-m "*[NS* *]"` 后导致崩溃
  - 注：iOS的ObjC的内部的多数，甚至是大多数，都是 NS 开头的，导致匹配到太多的类和函数，系统处理不过来了，导致frida崩溃，同时导致被调试的app崩溃。
    - 注： NS = NextStep，是iOS系统前身的苹果收购的NextStep公司名字
  - 解决办法：减少hook的范围=缩小匹配范围，比如此处改为：`-m "*[NSXPC* *]"`，暂时只关注我们要调试的 NSXPCConnection 的相关内容，基本上可以：避免崩溃

### frida的 new ObjC.Object 方面的bug

- 现象：

- 概述 frida 调试时，由于加了 `new ObjC.Object(someArg)` 的 ptr 转换成 ObjC的对象，结果

就会时不时的遇到 `Process terminated` , 而崩溃停止退出调试

- 详解=具体现象

代码:

```

...
function hook_class_method(class_name, method_name)
{
 var hook = ObjC.classes[class_name][method_name];
 Interceptor.attach(hook implementation, {
 onEnter: function(args) {
 console.log("===== [*] Detected call to: " + class_name + " -> " + method_name);
 //objc的函数, 第0个参数是id, 第1个参数是SEL, 真正的参数从args[2]开始
 const argId = args[0];
 // console.log("argId: ", argId);

 const argSel = args[1];
 // console.log("argSel: ", argSel);

 const argSelStr = ObjC.selectorAsString(argSel);
 console.log("argSelStr: ", argSelStr);

 const argCount = occurrences(argSelStr, ":");
 console.log("argCount: ", argCount);

 for (let curArgIdx = 0; curArgIdx < argCount; curArgIdx++) {
 const curArg = args[curArgIdx + 2];
 // console.log("[%d] curArg: ", curArgIdx, curArg);
 // console.log("[%d]=", curArgIdx, " ,curArg=", curArg);
 // console.log("[%d]=" + curArgIdx + " ,curArg=" + curArg);
 console.log("----- [" + curArgIdx + "] curArg=" + curArg);
 if (curArg && (curArg != 0x0)) {
 console.log("curArg className: ", curArg.$className);
 const curArgObj = new ObjC.Object(curArg);
 console.log("curArgObj: ", curArgObj);
 console.log("curArgObj className: ", curArgObj.$className);
 }
 }
 });
 });
}
...

```

可以hook输出部分log日志, 但是很快, 时不时的, 就崩溃退出了:

```

* crifan@licrifandeMacBook-Pro ~/dev/dev_root/iosReverse/AppleStore/Preferences_app/dynamicDebug/frida frida -U -l hookAccountLogin_NSURL.js -F

/ _ | Frida 16.0.10 - A world-class dynamic instrumentation toolkit
| (_ |
> _ | Commands:

```

```

/_/ _| help -> Displays the help system
+ + + + object? -> Display information about 'object'
+ + + + exit/quit -> Exit

+ + + More info at https://frida.re/docs/home/

+ + + Connected to iPhone (id abdc0dd961c3cb96f5c4afe109de4eb48b88433a)
[*] Started: Hook all methods of a specific class
[+] Class Name: NSURL
[*] Omit hooking + allocWithZone:
[*] Omit hooking - _cfTypeID
[*] Omit hooking - retain
[*] Omit hooking - release
[*] Omit hooking - copyWithZone:
[*] Completed: Hook all methods of a specific class
[iPhone::设置]-> ===== [*] Detected call to: NSURL -> - scheme
argSelStr: scheme
argCount: 0
===== [*] Detected call to: NSURL -> - _cfurl
argSelStr: _cfurl
argCount: 0
===== [*] Detected call to: NSURL -> - scheme
argSelStr: scheme
argCount: 0
===== [*] Detected call to: NSURL -> - _cfurl
argSelStr: _cfurl
argCount: 0
===== [*] Detected call to: NSURL -> + fileURLWithPath:isDirectory:
argSelStr: fileURLWithPath:isDirectory:
argCount: 2
----- [0] curArg 0x282336580
curArg className: undefined
curArgObj: /var/mobile/Library/Caches/com.apple.AppleAccount
curArgObj className: NSPathStore2
----- [1] curArg 0x0
===== [*] Detected call to: NSURL -> - initFileURLWithPath:isDirectory:
argSelStr: initFileURLWithPath:isDirectory:
argCount: 2
----- [0] curArg 0x282336580
curArg className: undefined
curArgObj: /var/mobile/Library/Caches/com.apple.AppleAccount
curArgObj className: NSPathStore2
----- [1] curArg 0x0
===== [*] Detected call to: NSURL -> - setResourceValues:error:
argSelStr: setResourceValues:error:
argCount: 2
Process terminated
[iPhone::设置]->

```

Thank you for using Frida!

- 原因：暂不清楚
    - 可能原因：frida的objc的object转换方面的bug，暂时无法解决
      - 详见：
        - 【未解决】frida中hook函数打印参数值时最后app崩溃frida输出Process terminated
        - 【未解决】frida中hook调试iOS的ObjC的函数参数时始终出现崩溃Process terminated

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# 基于Frida的工具

- 基于Frida的工具
  - 脱壳/砸壳工具
    - frida-ios-dump
      - <https://github.com/AloneMonkey/frida-ios-dump>
      - pull decrypted ipa from jailbreak device
    - frida-unpack
      - <https://github.com/dstmath/frida-unpack>
      - 基于Frida的脱壳工具
  - 调试工具
    - frick
      - <https://github.com/iGio90/frick>
      - frick - aka the first debugger built on top of frida
      - frick: 基于 (Unicorn、capstone和) frida的调试工具
  - frida-ios-hook
    - <https://github.com/noobpk/frida-ios-hook>
      - A tool that helps you easily trace classes, functions, and modify the return values of methods on iOS platform
  - Fridump
    - <https://github.com/Nightbringer21/fridump>
      - A universal memory dumper using Frida
  - for Android
    - frida\_dump
      - [https://github.com/lasting-yang/frida\\_dump](https://github.com/lasting-yang/frida_dump)
      - frida dump dex, frida dump so
  - frida-cycript
    - <https://github.com/nowsecure/frida-cycript>
      - Cycript fork powered by Frida
  - r2frida
    - <https://github.com/nowsecure/r2frida>
      - Radare2 and Frida better together
  - frida-trace
    - <https://github.com/nowsecure/frida-trace>
      - Trace APIs declaratively through Frida

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## Frida的用途

可以用 Frida 实现各种逆向的用途。

其中 [Frida Codeshare](#) 就有很多例子，感兴趣的自己去挖掘挖掘。

下面整理出部分相关内容。

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## 反调试

据说，可以用frida脚本（临时）去规避掉反调试的 ptrace：

- [使用Frida绕过iOS反调试 | La0s](#)
- [一例简单的frida反调试绕过 - 网安](#)

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## 辅助反混淆

据说可以借助于 Frida 的 Stalker , 追踪提示真正指令执行过程后, 然后: 用于辅助反混淆。

关于Stalker的使用案例, 详见: [Stalker](#)

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## 绕过参数加密

- 通过frida的hook去实现绕过参数加密
  - 用frida绕过apk中加密参数?

部分参考资料：

- 利用frida快速解决APP中某tong加密 | 大熊の笔记
- frida跑加密算法和绕过抓包验证\_不想写程序(〒^\_^(〒)的博客-CSDN博客
- 【保姆级教学】某金融app FRIDA hook加解密算法+jsrpc=乱杀 - T00ls.Com
- 某金融app的加解密hook+rpc+绕过SSLPinning抓包 - T00ls.Com

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# 逆向app

## 抖音

- 从app启动最开始就开始hook调试

- 交互式调试

```
frida -U -f com.ss.iphone.ugc.Aweme
```

- 用js脚本

- 调试 dyld

```
frida -U -f com.ss.iphone.ugc.Aweme -l frida/dyldImage.js
```

- 其他

- 【未解决】Mac中Frida启动抖音app进程并调试和hook函数
- 【未解决】用Frida的frida-trace去hook函数iOS版抖音
- 【未解决】frida调试抖音app去hook函数: \_dyld\_get\_image\_name
- 【未解决】frida去hook函数\_dyld\_get\_image\_name时打印参数为字符串
- 【未解决】用Frida动态调试iOS版抖音app
- 【未解决】Mac中用Frida调试iOS版抖音
- 【已解决】用frida启动hook调试iOS抖音app
- 【未解决】尝试Frida的stalker能否修复抖音AwemeCore中函数名常量字符串

## Apple账号 ~= AppleStore

- Apple账号 ~= AppleStore = Preferences + (AuthKit 的daemon) akd + AppleAccount + AppleAccountUI + AppleMediaServices + libMobileGestalt + 其他
  - 【记录】iOS逆向Apple账号：用frida和frida-trace去hook打印更多账号相关函数调用
  - 【无法解决】iOS逆向Apple账号：用frida的ssl bypass脚本尝试解决Charles抓包代理报错
  - 【未解决】iOS逆向Apple账号：用Frida去监控NSURL去调试Apple账号登录过程
  - 【未解决】iOS逆向Apple账号：用Frida去调试NSURL核心网络请求函数调用
  - 【未解决】iOS逆向Apple账号：分析研究frida抓包到的Apple账号登录过程和网络相关的内容

## 迅雷

- 迅雷

- 【记录】用frida动态调试重新打包后的安卓迅雷apk
- 【未解决】Mac中搭建Frida的动态调试安卓apk的开发环境



## 附录

下面列出相关参考资料。

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## 参考资料

- 【整理】 Frida相关资料
- 【已解决】 frida-core代码对应着frida中是哪个文件
- 【未解决】 Mac中安装frida
- 【记录】 iOS的iPhone中安装Frida
- 【记录】 Sileo中安装tweak插件： Frida
- 【已解决】 Mac M2 Max中安装Frida环境
- 【已解决】 Mac中升级Frida到最新版本16.0.11
- 【未解决】 Mac中安装frida
- 【已解决】 Mac中升级Frida到新版本16.0.10
- 【记录】 palera1n普通越狱后安装插件： Frida
- 【规避解决】 palera1n的rootless越狱iPhone中初始化frida开发环境
- 【记录】 下载Frida的动态库： FridaGadget.dylib
- 【记录】 iPhone8中的升级frida到最新版16.0.11
- 【记录】 iOS的iPhone中安装Frida
- 【已解决】 确认palera1n的rootful普通越狱中Frida是否可用
- 【已解决】 frida-ios-dump砸壳ipa报错： need Gadget to attach on jailed iOS
- 【已解决】 frida启动时到底有哪几种attach和spwan启动方式
- 【整理】 再次研究确认Frida调试目标的几种方式
- 【已解决】 iOS逆向： Frida调试设置出现页面弹框： 接入互联网以登录iPhone
- 【未解决】 XinaA15越狱的rootless的iPhone11中frida出错： 安装和卸载时的路径异常/var/jb/var/jb/
- 【记录】 iPhone11重新安装XinaA15后重新安装Frida
- 【已解决】 XinaA15越狱的iPhone11中安装Frida
- 【记录】 XinaA15恢复越狱环境后重新安装Frida
- 【记录】 iPhone8中用Sileo安装Frida
- 【记录】 iPhone11中Sileo中安装最新版16.0.11的Frida
- 【记录】 Sileo中安装tweak插件： Frida
- 【记录】 iPhone11中用Sileo重新安装最新版16.0.10的Frida
- 【已解决】 iPhone中Cydia中安装升级最新版的16.0.2的Frida
- 【未解决】 Frida从16.0.8到升级到新版本16.0.10
- 【已解决】 越狱后的iPhone11中卸载和重新安装Frida
- 【已确认】 iPhone11中重新确认新版XinaA和新版Frida是否可以正常使用
- 【已解决】 Frida启动js脚本报错： Error could not parse line 1 expecting ,
- 【基本解决】 Frida的Stalker.follow中events的含义和用法
- 【已解决】 优化Frida调用脚本时无需每次查看PID直接传入进程名
- 【已解决】 iOS逆向： frida调试hook类NSXPConnection的setExportedObject
- 【已解决】 Frida中Stalker如何在Stalker.follow中写代码追踪指令代码运行
- 【已解决】 用frida去hook打印一个类的所有方法
- 【已解决】 frida去hook函数时确保已执行函数但不触发不输出日志log
- 【已解决】 iOS逆向Apple账号： 用frida打印com.apple.ak.auth.xpc的NSXPConnection的其他属性值
- 【记录】 iOS逆向akd： frida-trace追踪出iPhone8中iOS15.0中账号验证的函数调用过程结果
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- 【已解决】 Frida中如何通过frida启动被测app程序iOS版抖音
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- 【已解决】 frida调试进程直接运行不要每次都输入%resume才运行
- 【未解决】 iOS逆向Apple账号： 用frida去hook打印所有iOS的ObjC函数调用
- 【已解决】 Frida中js代码中两个地址指针数值相加
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- 【未解决】 iPhone中用launchctl去启动和停止frida-server服务进程
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