Reverse Android malware like a Jedi

Axelle Apvrille, Fortinet

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1. Introduction
2. Unpacking
3. Obfuscation
4. CnC
5. Static analysis
6. Conclusion

Who am I?

Axelle Apvrille, @cryptax

Principal Security Researcher for Mobile Malware and IoT at

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Lead organizer of smart devices CTF

ph0wn

Advanced tools for Android reverse engineering

Dexcalibur - 2019
https://github.com/FrenchYeti/dexcalibur

House - 2018
https://github.com/nccgroup/house

MobSF - 2015
https://github.com/MobSF/Mobile-Security-Framework-MobSF

Quark - 2019
https://github.com/quark-engine/quark-engine

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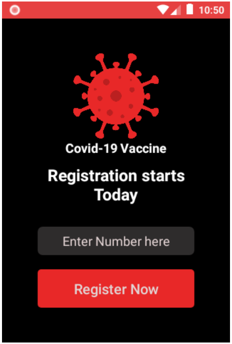
You need this for Dynamic Analysis

Emulator

Frida server `https://github.com/frida/frida/releases/`

and client!



Covid-19 Vaccine

Registration starts Today

Sample of Android/Oji.G!worm

Malware (APK)

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From user point of view...

	Dexcalibur	House	MobSF	Quark
Setup	★	★ ★	★ ★ ★	★ ★ ★
Use	★ ★ ★	★	★ ☆	★ ★ ☆

personal opinion - all tools are actually awesome!

Which tool? (preferred choices only)

- Unpacking
- Network monitoring
- De-obfuscate
- File or shared prefs monitoring
- General API monitoring
- Bypass debugger / rooting detection
- Specific hook
- Static analysis

- Dexcalibur
- House
- MobSF
- Quark

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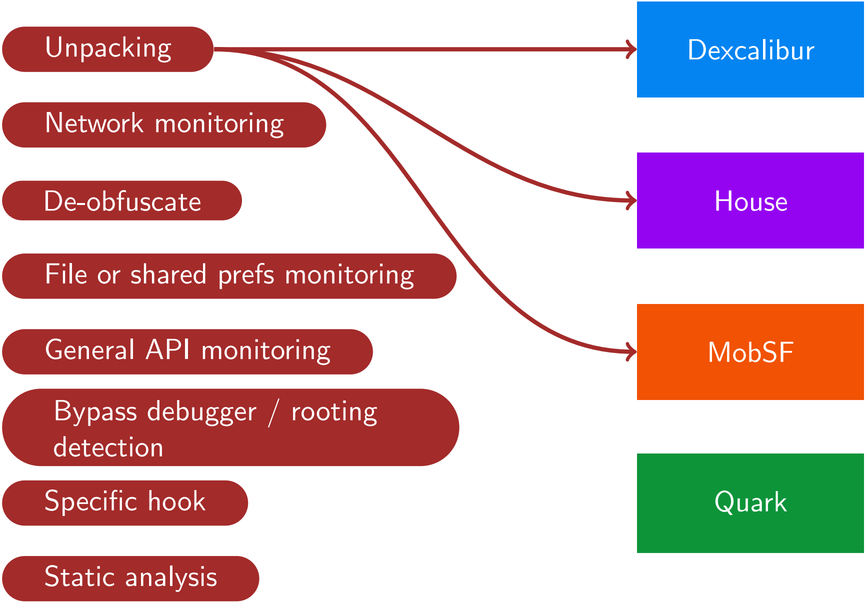

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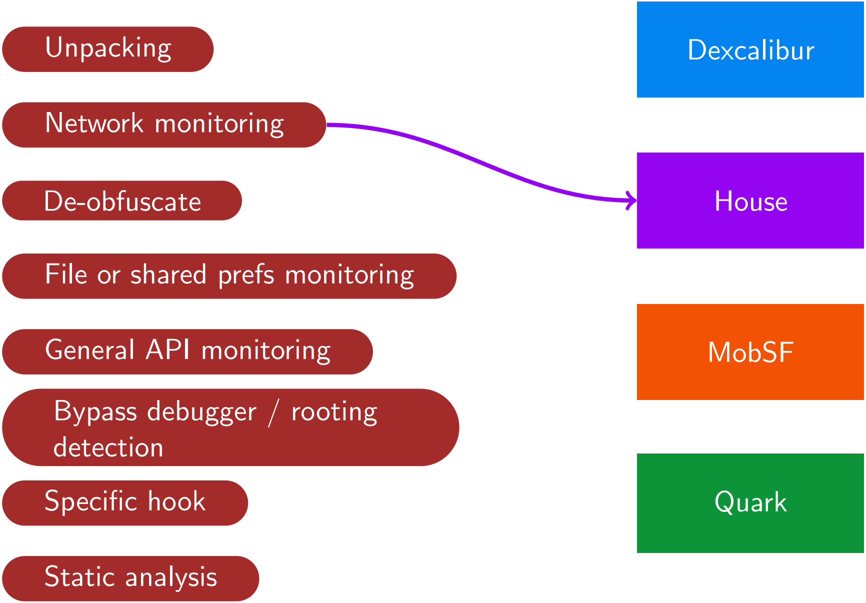

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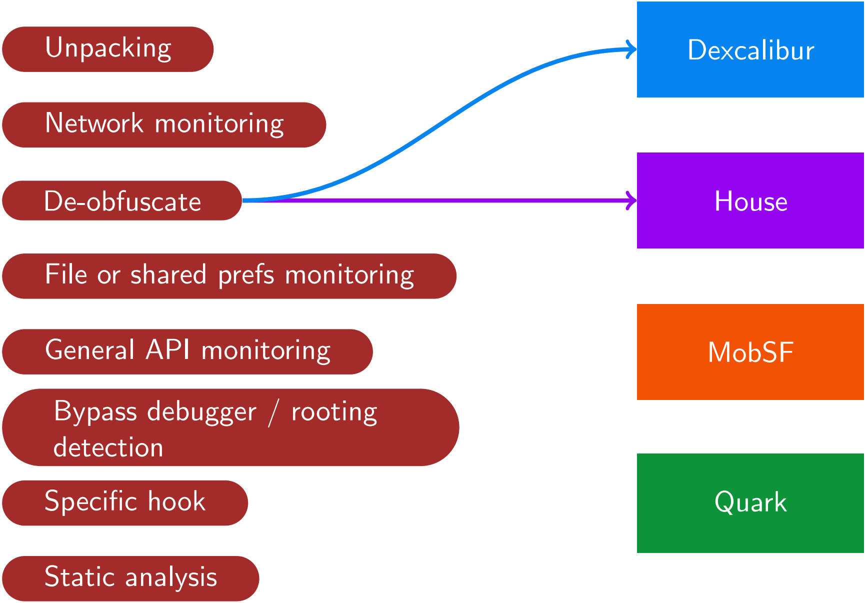
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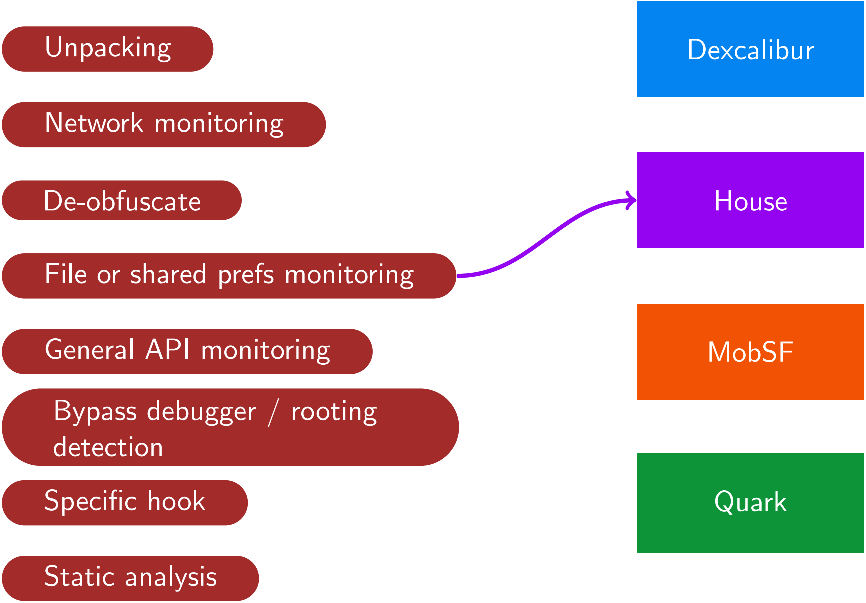

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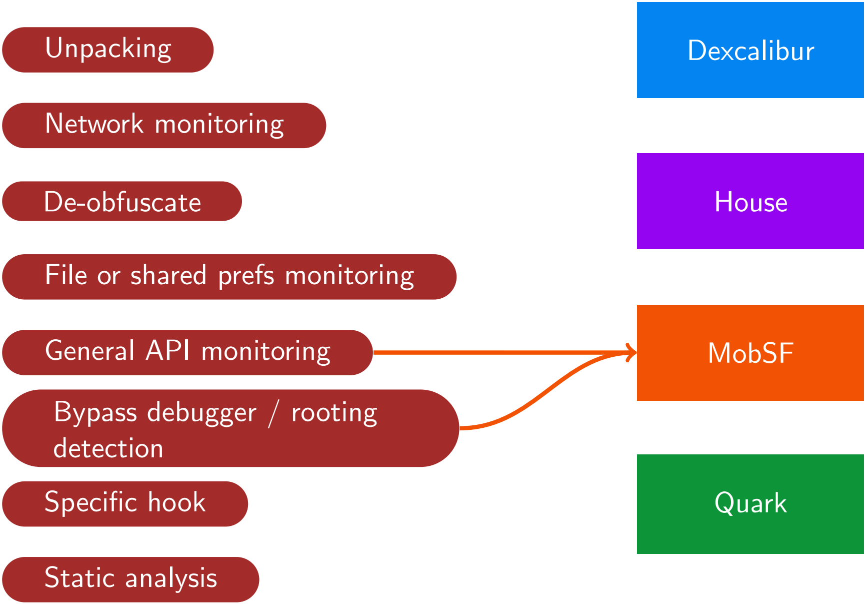

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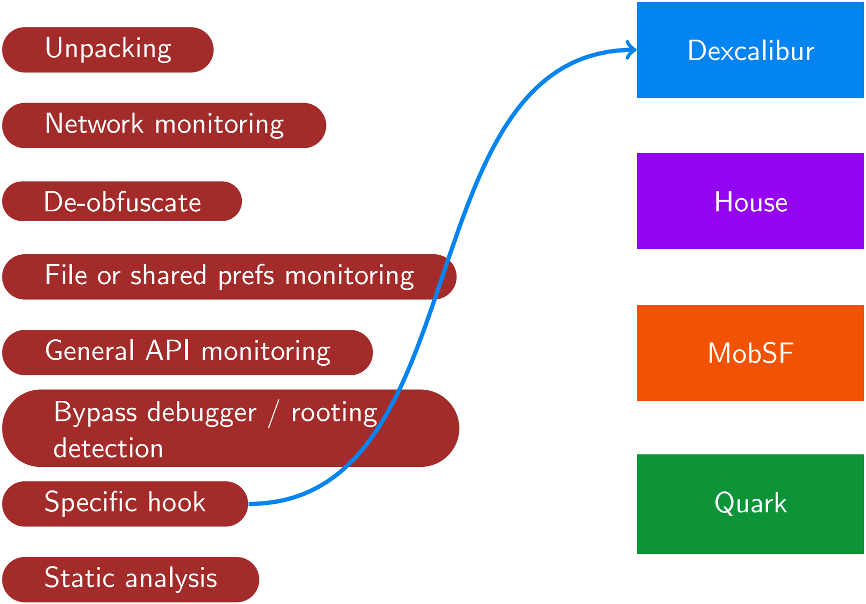

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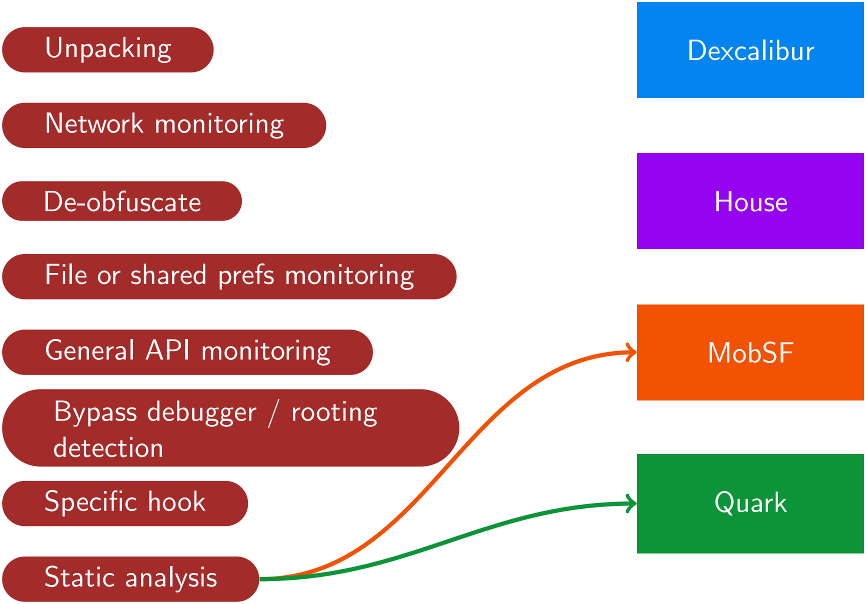

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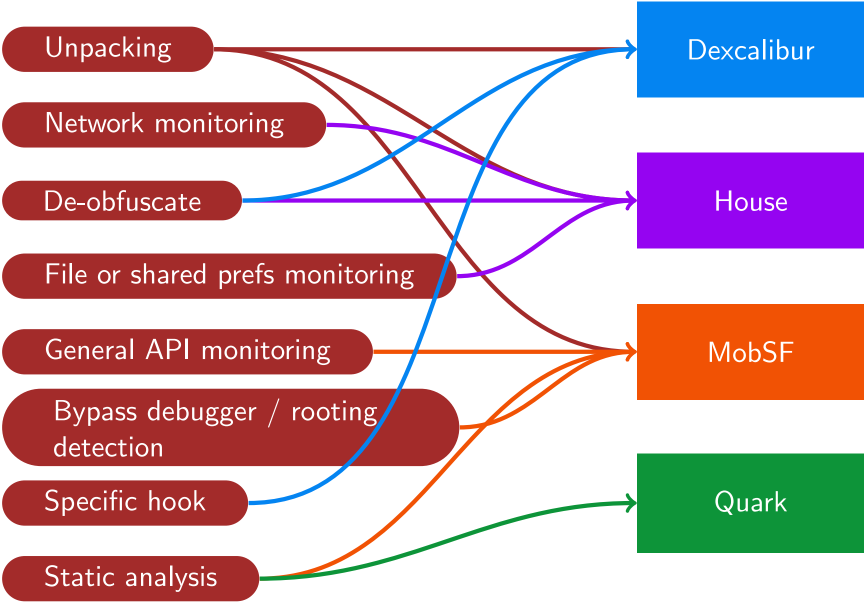

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Advanced advanced features?

If you can do it with **Frida**,
you can *probably* do it with [`replace`]
`replace` = `Dexcalibur/House/MobSF`

- In memory DEX loading
- Native unpacking
- Native anti-reversing
- Native de-obfuscation
- ...

but it might be as easy to use Frida *directly*
If you can't do it with Frida.... unlucky!

Thanks for your attention!

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