EntySec

iOS Malware

Overview of Apple iOS malware

Ivan Nikolskiy

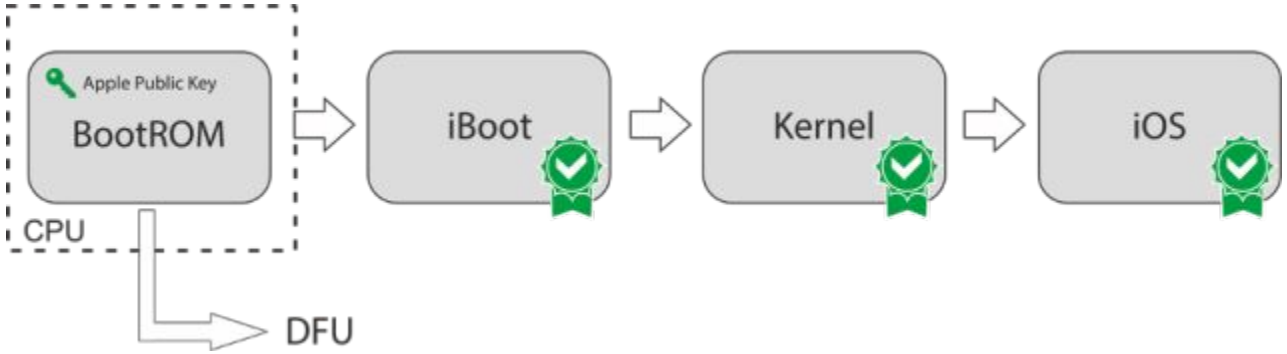
Content

What is iOS?

- **Security & Reliability**
- **User-friendly interface**
- **Closed source code**
- **Additional security measures in AppStore**

What is iOS? (versions)

iOS security layers



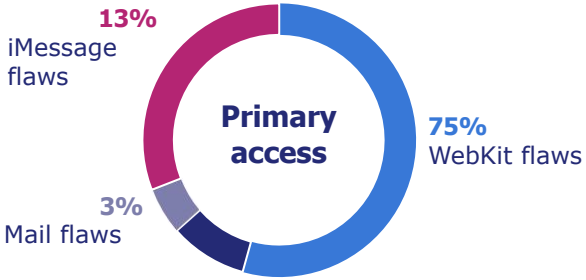
Sandbox	Signature check	AMFI	Secure Enclave (SEP)	LLB	R/O rootfs
Each app is ran inside a sandbox and can't access system files	The iBoot checks signature of a kernel image	Checks app signature to prevent execution of unsigned code	Responsible for data protection, Touch ID and Face ID	Checks the signature of iBoot before jumping to it	The rootfs (aka /) is mounted as read-only by default

Jailbreak

- **Remount file systems as R/W (if /etc/fstab is present)**
- **Disable code signature checks**
- **Disable sandbox**
- **Patch ramdisk (if possible)**

< 5.1.1	5.1.1 - 10.3.4	10.3.4 - 15.4.1	>= 17
Redsn0w, Absinthe	H3lix, Pangu, Blizzard, Phoen1x	Electra, Unc0ver, Checkra1n, Dopamine, Palera1n	No jailbreak available

Attack chain



Attack chain

Primary access to the system

Can be achieved via the WebKit flaws or other flaws

Do jailbreak (aka security bypass)

Disable security checks (!)

Execute implant & connect to C2

(i) Migrate it to the process

Cydia malicious tweaks

What is Cydia?

- Package manager for jailbroken iPhones (AppStore)
- All popular jailbreaks install Cydia
- Anybody can upload their tweaks and apps to Cydia

Cydia malicious tweaks (e.g.)

What malicious tweaks can do?

- Track user activity and exfiltrate user data
- Manage phone remotely, deleting files, make calls, etc.
- Wipe all data and make phone completely unusable
- Flood phone browser with ads (AdWare)

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The End

Thanks for Your Attention

EntySec's website
entysec.com

My website
founder.entysec.com

This presentation can be found at
entysec.com/agenda/ios_malware.pdf