OS Security
Malware (Part II)

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Part II

Smartphone Malware

Evolution of Malware: From PC to Smartphone

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- Motivation: 'low risk, high reward'
  - Various app markets: official (e.g. Google Play) and non-official (e.g. Pandaapp)
  - Decentralized: anyone can become an app developer; no proper vetting of new apps

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  - ▶ Malware included the string: *":: Good artist copy, Great artist steal ::"*

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- Android OS - most infected platform to date

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    - See https://thesnkchrmr.wordpress.com/2011/03/24/rageagainstthecage/ for more details about the exploit and its source code

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- Bootkit, `Android.Oldboot` (2014) has the capability of reinstalling itself even after all of its working components have been deleted. Primary targets were rooted Android devices.

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- Malware was deployed through Wallpaper apps, with more than 500 downloads

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- Countermeasures against Android malware:
  - There is no single solution!
  - Download apps from official markets only
  - Read permissions carefully before downloading and installing an app

Intrusion Detection & Prevention

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- IDS/IPS tool: SNORT (more on this later)

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  - ▶ Protocol state analysis detection: This type of detection method identifies deviations of protocol states by comparing observed events with predefined profiles

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  - Header signatures: watch for suspicious combinations in packet headers. For example:s a TCP packet with both the SYN and FIN flags set, signifying that the requester wishes to start and stop a connection at the same time

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- ▶ Problem of behavior-based IDS: hard to obtain good detection rate at low false-positive rate in highly dynamic systems

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- ▶ action proto src_ip src_port direction dst_ip dst_port (options)
- ▶ Example: `log tcp any :1024 -> 192.168.1.0/24 500:`
- ▶ Log tcp traffic from priveleged ports less than or equal to 1024 going to ports greater than or equal to 500

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- There is only one responsible answer: **No.**
- Once a system has been compromised, you don't know what else is broken
- Only reasonable recovery from intrusion:
  - Isolate the system (to prevent further damage)
  - Analyze what was compromised and how (forensics)
  - Restore to a clean state (reinstall, restore clean data backup)