From:	Lukasz Furman < ▮▮▮▮▮▮▮▮▮▮ >
Sent:	Wednesday, August 8, 2018 11:01 PM
To:	Daniel Vogel < ▮▮▮▮▮▮▮▮▮▮ >
Cc:	Anticheat Core < ▮▮▮▮▮▮▮▮▮ >; Arjan Brussee < ▮▮▮▮▮▮▮▮▮▮ >; Chris Babcock < ▮▮▮▮▮▮▮▮▮ >; Information-Security < ▮▮▮▮▮▮▮▮ >; Amanda Rubright < ▮▮▮▮▮▮▮▮ >; Chris Dyl < ▮▮▮▮▮▮▮▮ >; elizabeth.cook@epicgames.com; FN-Bacchus- ▮▮▮▮▮▮▮▮ >; Heather Hazen < ▮▮▮▮▮▮▮ >; James Calentino < ▮▮▮▮▮▮▮ >; James Unglesbee < ▮▮▮▮▮▮▮ >; Joe Barrett < ▮▮▮▮▮▮▮ >; John Abercrombie < ▮▮▮▮▮▮▮ >; Justin Sargent < ▮▮▮▮▮▮▮ >; Marc Hutcheson < ▮▮▮▮▮▮▮ >; Nick Penwarden < ▮▮▮▮▮▮▮ >; Scott Nolfi < ▮▮▮▮▮▮▮ >
Subject:	Re: Potential mitigations / Pivots to discuss for Android Launch

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This requires explicit whitelisting for given server build (hotfix). We don't have required values (APK size & crc) for final build and will add those tomorrow, shortly after live launch.

On Wed, Aug 8, 2018 at 6:53 PM Daniel Vogel < ▮▮▮▮▮▮▮▮ > wrote:

I thought we ensured integrity of APK?

Wouldn't changing Java trip that check?

Adding a few more folks to chime in on technical bits.

On Wed, Aug 8, 2018 at 6:49 PM Arjan Brussee < ▮▮▮▮▮▮▮▮ > wrote:

Talking to ChrisB, since the Java code was not protected in the leaked intermediate build and the Java code is doing the compatibility checks, it is quite possible for someone to disassemble Java, change code, recompile/repackage APK and <u>release a build that will "work" on any android device</u>.

-arjan

On Wed, Aug 8, 2018 at 18:18 Marc Hutcheson < ▮▮▮▮▮▮▮▮ > wrote:

we generally have messaging already around not sharing accounts. Seems like we can decide reactively to run that if needed.

- Marc

On Wed, Aug 8, 2018 at 5:39 PM, Amanda Rubright < ▮▮▮▮▮▮▮▮ > wrote:

Arjan/Marc - on the last bullet on this list about parties offering to unlock the skin for you - do we have any messaging ready to go from community to remind players not to share their accounts with strangers? Is this something we'd proactively message or reactively message?

On Wed, Aug 8, 2018 at 5:22 PM Arjan Brussee < ▮▮▮▮▮▮▮▮ > wrote:

+ more people

To Dan's question: I'm not convinced we can fully prevent the issues i flag above, even with Arxan and client detections in place. Plus we cannot prevent APK downloads from thirdparty sites. Also, some of our protections have now leaked and might be easier to bypass, and the Xda developers/hacker community seem to be actively engaged already.

i'll do some more investigations with the devs to get deeper insight on the risks, and keeping what happens in-live under close scrutiny

-arjan

On Wed, Aug 8, 2018 at 5:03 PM Elizabeth Cook < ▮▮▮▮▮▮▮▮▮▮▮▮ > wrote:
  +Brooke for email viz

  On Wed, Aug 8, 2018 at 5:01 PM, Daniel Vogel < ▮▮▮▮▮▮▮▮▮▮▮▮ > wrote:
    I thought we had client based detection of running on Samsung and Arxan protected binary anti-tamper we are confident in?

    On Wed, Aug 8, 2018 at 4:59 PM Arjan Brussee < ▮▮▮▮▮▮▮▮▮▮▮▮ > wrote:
      hey

      with the Android leaks ongoing, i'm having a bit of a fright regarding putting up extra roadblocks for people to play the game, since i think there will be MANY workarounds shared immediately, which will all be sideloaded through shady mirrors.

      Listing a bunch of things that i think could very well happen, and mitigations:

      - Seeing many thirdparty downloads/leaks/workarounds/hacks
        o Samsung only required 48h exclusivity. Could we open up on Saturday? what's the worst that could happen?
        o Could we entitle/mail the first group Saturday?
        o Any CCU concerns at all?
      - *"I Signed up, but cannot download , however i see youtubes of people playing, i'm just going to download the YT APK link directly"*
        o maybe just open Downloads for everyone immediately, but then you're still gated (behind entitlement).
        o Pivot to Open invite event completely for everyone ASAP -> serve download page and remove entitlement check from game
      - *"Even though i installed FN, it does not work, since my phone is not compatible. Here's a workaround/sideload"*
        o they might be able to do legit fixes (INI/scalability) somehow
        o with 5.3 open up compat restrictions wider to larger range of GPUs. It's a Beta. (maybe show "unsupported phone" on the menu's etc). I started a discussion if we feel OK releasing this without able to fully test all potential devices worldwide.
      - *lots of parties offering "Unlock Galaxy skin" for you*
        o share your Epic account with me, i will give you Galaxy Skin for $50 or something
        o we know about this hole, but some bad behavior can occur. Can we do anything here?

any other risks/thoughts/insights on the above? could we pivot on the things i identified?

-arjan
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Sent from mobile

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Elizabeth Cook
Epic Games

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Amanda Rubright, PMP
Executive Producer, Epic Games
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Sent from mobile