Israeli Spyware Pegasus

Why in news?

- Cyber-attack reports are emerging from a collaborative investigation by journalists from around the world, including from India's The Wire, titled the 'Pegasus Project'.
- Accordingly, over 300 verified Indian mobile telephone numbers were targeted using spyware made by the Israeli firm, NSO Group.

What is Pegasus?

- Pegasus is also known as Q Suite.
- It is marketed by the NSO Group also known as Q Cyber Technologies, as a world-leading cyber intelligence solution.
- [NSO Group Technologies is an Israeli technology firm.]
- It enables law enforcement and intelligence agencies to remotely and covertly extract data "from virtually any mobile device."
- It was developed by veterans of Israeli intelligence agencies.

How was it earlier?

- Until early 2018, NSO Group clients primarily relied on SMS and WhatsApp messages.
- They use these mediums to trick targets into opening a malicious link, which would lead to infection of their mobile devices.
- This is described as Enhanced Social Engineering Message (ESEM).
- In its October 2019 report, Amnesty International first documented the use of 'network injections.'
- This enabled attackers to install the spyware "without requiring any interaction by the target". This is called zero-click installation.

How is Pegasus different from other spywares?

- Pegasus can achieve such zero-click installations in various ways.
- The over-the-air (OTA) option is to send a push message covertly that makes the target device load the spyware.

- The target remains unaware of the installation and has no control over it.
- This is “NSO uniqueness, which significantly differentiates the Pegasus solution” from any other spyware available in the market.

What kind of devices are vulnerable?

- All devices, practically, are vulnerable to Pegasus intervention.
- iPhones have been widely targeted with Pegasus.
- It is done through Apple’s default iMessage app and the Push Notification Service (APNs) protocol upon which it is based.

- WhatsApp has, in 2019, blamed the NSO Group for exploiting a vulnerability in its video-calling feature.
- In December 2020, a Citizen Lab report flagged how government operatives used Pegasus.
- They used it to hack 37 phones belonging to journalists, producers, anchors, and executives at Al Jazeera and London-based Al Araby TV.
- [Citizen Lab - an interdisciplinary laboratory based at the University of Toronto]

How does it work?

- Usually, an attacker needs to feed the Pegasus system just the target phone number for a network injection.
- The rest is done automatically by the system.
- And the spyware is installed in most cases.
- In some cases, though, network injections may not work.
- E.g., remote installation fails when the target device is not supported by the NSO system, or its operating system is upgraded with new security protections.
- Next, an attacker is likely to fall back on ESEM click baits.
- All else failing, Pegasus can be “manually injected and installed in less than five minutes” if an attacker gets physical access to the target device.

What kinds of information are at risk?

- Once infected, a phone becomes a digital spy under the attacker’s complete control.
- Upon installation, Pegasus contacts the attacker’s command and control (C&C) servers.
- It receives and executes instructions and sends back the target’s private data.
- These may include passwords, contact lists, calendar events, text messages, and live voice calls (even those via end-to-end-encrypted messaging apps).

- The attacker can control the phone's camera and microphone, and use the GPS function to track a target.
- To avoid extensive bandwidth consumption that may alert a target, Pegasus sends only scheduled updates to a C&C server.
- The spyware is designed to evade forensic analysis, avoid detection by anti-virus software.
- It can also be deactivated and removed by the attacker, when and if necessary.

What precautions could be taken?

- Apparently, one way to dodge Pegasus is to change one's default phone browser.
- Installation from browsers other than the device default (and also chrome for android based devices) is not supported by the system.
- In all such cases, installation will be aborted.
- Theoretically, astute cyber hygiene can safeguard against ESEM baits.
- But when Pegasus exploits a vulnerability in one's phone's operating system, there is nothing one can do to stop a network injection.
- Worse, one will not even be aware of it unless the device is scanned at a digital security lab.
- Switching to an archaic handset that allows only basic calls and messages will certainly limit data exposure.
- But it may not significantly cut down infection risk.
- Also, any alternative devices used for emails and apps will remain vulnerable unless one forgoes using those essential services altogether.
- Therefore, the best one can do is to stay up to date with every operating system update and security patch released by device manufacturers.
- Changing handsets periodically is perhaps the most effective, but expensive, remedy.
- [Since the spyware resides in the hardware, the attacker will have to successfully infect the new device every time it is changed.]

Source: The Indian Express

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