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NUMBER ONE:

What Is Mobile Device Security?

Mobile device security means the security measures designed to protect the sensitive information stored on and transmitted by smartphones, tablets, laptops and other mobile devices.

Mobile device security spans the gamut from user authentication measures and mobile security best practices for protecting against compromised data in the event of unauthorized access or accidental loss of the mobile device to combat malware, spyware and other mobile security threats that can expose a mobile device's data to hackers.

Most mobile devices feature mobile operating systems with built-in mobile device security features, including iOS for iPhones and iPads, Google's Android platform and Microsoft's Windows Phone. Additionally, a variety of third-party mobile device security solutions are available for providing an additional layer of protection for mobile devices.

All these can be achieved by;

Protecting data at rest

One of the components of any good mobility policy is how it addresses the protection of "data at rest." This includes all data that is stored on mobile devices. The key here is to encrypt all data stored on any mobile device, whether it be a notebook computer, a PDA, a mobile phone, or a mobile storage device (for example, a USB drive or SD storage card). There is often a perception that this is unenforceable, particularly with employee-owned devices. This is a fallacy, however, and enterprises must incorporate policies to address any circumstance where corporate data is stored on a mobile device.

A mobile policy should include a statement that mandates the use of strong -- i.e., 128-bit Advanced Encryption Standard (AES) -- encryption on all mobile devices that have the capacity to store data. While some companies may have the ability to enforce this mandate using centrally managed encryption solutions, some may have to rely on users to ensure that data is encrypted. There will be more on policy enforcement in the third tip in this series.

Ideally, the protection of corporate data residing on mobile devices will be enforceable using technology that forces data encryption on all devices that do or could contain corporate data. Whether this is possible or not, a mobile policy clause addressing the securing of data and the responsibility of the user must be included.

In addition to the policy clauses that address the encryption of data at rest, organizations should have technology to remotely wipe the contents of a device in the event that it is lost or stolen. For this reason, include a policy clause that makes it clear that any lost or stolen devices should be reported to IT immediately.

Protecting data in flight

Mobile devices may connect to several networks that are out of the control of the enterprise IT department. For this reason, it is important to define enforceable policies that dictate proper mobile device connectivity practices. In many cases, technology can force compliance with the mobile policy, but if the infrastructure is not in place to force compliance, enterprises must rely on users to understand and adhere to policy. A sample clause might be:

"It is the responsibility of employees, contractors, vendors and agents with remote access privileges on the corporate network to ensure that their remote access connection is given the same consideration as the user's on-site connection to."

Assigning responsibility

There are so many questions to ask when developing a corporate mobility policy. The most questions arise around who is responsible for what in the policy. For example, policy creators might ask:

- Which mobile devices does the IT department support?
- Can employee-owned devices be used for work, or will all mobile devices be assigned by the company?

- Is the company billed directly by service providers for wireless services, or do employees expense their costs?
- Does the company pay for all mobile usage, or is there a monthly spending limit?
- If there is a spending limit, how does the user reimburse the company if the limit is exceeded?

- If a mobile device is lost, stolen or broken, is it the responsibility of the company or the employee to replace it?
- If a mobile device is lost, stolen or broken, what is the process to ensure that the data on the device is/was secure, and at that point, is responsibility handed from the user to the company?
- Does the company have the means and infrastructure to ensure that data at rest and data in flight are encrypted and secure, or is the onus on the employee?

All of these questions will no doubt raise secondary questions. The key is to ask the right questions, because the answers will vary dramatically from company to company. Whatever the questions and answers are, make sure it's clear that this is not the "Wild West" and there is a well-defined policy that must be followed.

Educate users

Protecting valuable information assets against mobile security threats requires a firm commitment to training all users of mobile technology. The reality is that the consequences of device theft or misuse are too great, potentially including a breach of the corporate network, the loss or corruption of critical data, and the violation of applicable industry compliance regulations. Because a single security breach could very well exceed the cost of staff training -- as seen with greater regularity in recent news coverage -- educating users on mobile security best practices should be viewed as an effective preventive measure and a prudent investment for the organization.

Attaching great emphasis to the consequences of mobile device misuse, loss or theft will give employees a greater incentive to follow corporate policy, but training these users on the specifics of the policy is also required. **Among others things, an enterprise mobile training plan should address the following key topics:**

- Protecting devices. Users should be instructed to follow proper procedures for storing and transporting devices, and they should specifically be instructed not to leave devices unattended in vulnerable locations such as offices, airports and hotels.
- Data encryption. A high-level overview of the data-safeguarding and remote-management technologies currently employed by the enterprise will drive more responsible usage. Users should be made aware that breaking enterprise policy by copying sensitive server-hosted data -- including confidential member information and company IP -- to unencrypted local device storage can have serious repercussions for the individual.
- Password management. Users should be educated on the help desk procedures to follow or alternative requirements for changing or setting passwords for mobile devices, in accordance with an existing enterprise password policy.

Technical controls

Technology can help ensure mobile policy compliance in four key ways:

- Forcing encryption of data at rest on mobile devices.
- Forcing secure connectivity on unsecured public networks.
- Ensuring that unauthorized mobile devices do not have access to the corporate network or company data.

- Ensuring that mobile user spending is in line with the mobile policy and that additional costs can be recovered.

Forcing data encryption

Several centrally managed storage encryption products are available that can force encryption on all data stored on the mobile device. While almost all mobile devices have an option to password-protect and encrypt data on the device, this option typically requires the user to turn on encryption and manage password access. Ideally, IT should centrally manage data encryption and take the responsibility out of the hands of users. Centrally managed solutions are available from Check Point (acquired Pointsec), GuardianEdge (also OEMed by Symantec), McAfee (acquired SafeBoot), and Utimaco. Utilize a centrally managed mobile data encryption solution to ensure that data at rest on mobile devices is safe and secure.

Forcing secure connectivity

When mobile users connect to unsecured networks that are beyond IT's control, it is important to ensure that the network connections are secured. There are several ways to ensure that data in flight is encrypted, including IPSec VPN tunnels, SSL VPN portals, and mobile VPN connectivity. The trick is forcing encrypted connections, particularly when a mobile network is used to conduct business. Products from AirDefense and Airtight Networks can enforce secure connectivity on corporate notebooks, while mobile VPN products from Birdstep Technology, Bluefire Security, and NetMotion Wireless can help ensure secure connectivity on mobile devices such as PDAs and smartphones.

Restricting access

It is important to ensure that the users and devices that connect to the corporate network via mobile networks do not pose a threat. Implementing network access control (NAC) for mobile devices should be a part of any corporate mobile policy. Fortunately, most SSL and mobile VPN solutions include some form of NAC. At the very least, inspect endpoints to ensure that their OS security patches are up to date, anti-malware definitions are up to date, and devices connecting to the corporate network are malware-free. Devices that do not comply with policy can be forced to remediate and become compliant prior to gaining network access.

Enforcing usage limitations

Many enterprises will want to restrict device usage and cap spending. In order to do this effectively for more than a few mobile users, it may be necessary to implement a Telecom Expense Management (TEM) solution. This software makes it easier to analyze mobile usage by looking at mobile invoices for anomalies and over-usage. TEM solutions for mobile billing are available from a number of vendors, including AnchorPoint, Rivermine and Tangoe.

Repercussions of noncompliance

Some elements of the mobile policy may not be enforceable using technical controls. For these situations, it is important to ensure that mobile users understand the repercussions of violating the policy. The actions taken by the organization will vary depending on the mobile policy itself and the severity of the violation. For instance, an unintentional violation that does not result in a security breach may bring a written warning, where a deliberate contravention of the policy that results in compromised corporate data may result in immediate termination. Craft the policy based on the needs of the business, and be very clear about how the policy will be enforced.

NUMBER TWO:

What is Industrial Espionage?

Industrial espionage is the illegal and unethical theft of business trade secrets for use by a competitor to achieve a competitive advantage. Industrial espionage is conducted by companies for commercial purposes rather than governments for national security purposes. Industrial espionage may also be referred to as "corporate spying or espionage," or "economic espionage."

Breaking down Industrial Espionage

Industrial espionage describes covert activities, such as the theft of trade secrets by the removal, copying or recording of confidential or valuable information in a company for use by a competitor. It may also involve bribery, blackmail and technological surveillance. Industrial espionage is most commonly associated with technology-heavy industries, particularly the computer, biotech, aerospace, chemical, energy, and auto sectors, in which a significant amount of money is spent on research and development (R&D).

Industrial espionage should be differentiated from competitive intelligence, which is the legal gathering of public information by examining corporate publications, websites, patent filings and the like, to determine a corporation's activities.

Industrial Espionage Types

Industrial espionage can be divided into two types. The first and most common is actively seeking to gather intelligence about a company or organization. It may include the theft of intellectual property, such as manufacturing processes, chemical formulas, recipes, techniques or ideas. Industrial espionage may also entail the concealment or denial of access of key information related to pricing, bidding, planning, research and more. Such a practice is meant to create a competitive advantage for the party who has the information.

Industrial espionage tends to involve "inside jobs," in which an employee steals secrets for financial gain or to hurt the company. It may also be conducted by governments as they pursue economic or financial goals. Less frequently, individuals may break into a company facility to steal documents, computer files or pick through trash for valuable information. More likely, an industrial spy will use the internet to hack into a company's network to gain access to trade secrets on work computers and servers. A relatively new area of industrial espionage involves denying a competitor the use of their information, services, or facilities by way of computer malware, spyware, or a distributed denial of service attack (DDoS). Such industrial espionage tools are helpful in exploiting vulnerable systems.

Performing both types of espionage involves similar goals; gaining access in to the rival company’s system, to achieve this the following steps are taken;

Social Engineering:

Social engineering is the term used for a broad range of malicious activities accomplished through human interactions. It uses psychological manipulation to trick users into making security mistakes or giving away sensitive information.

Social engineering attacks happen in one or more steps. A perpetrator first investigates the intended victim to gather necessary background information, such as potential points of entry and weak security protocols, needed to proceed with the attack. Then, the attacker moves to gain the victim’s trust and provide stimuli for subsequent actions that break security practices, such as revealing sensitive information or granting access to critical resources.

Malware:

After gathering details from the selected weak link of the company and forming a close relationship for cover, the next step would be to infect their devices with malware.

Malware, or malicious software, is any program or file that is harmful to a computer user. Types of malware can include computer viruses, worms, Trojan horses and spyware. These malicious programs can perform a variety of different functions such as stealing, encrypting or deleting sensitive data, altering or hijacking core computing functions and monitoring users' computer activity without their permission.

How malware works

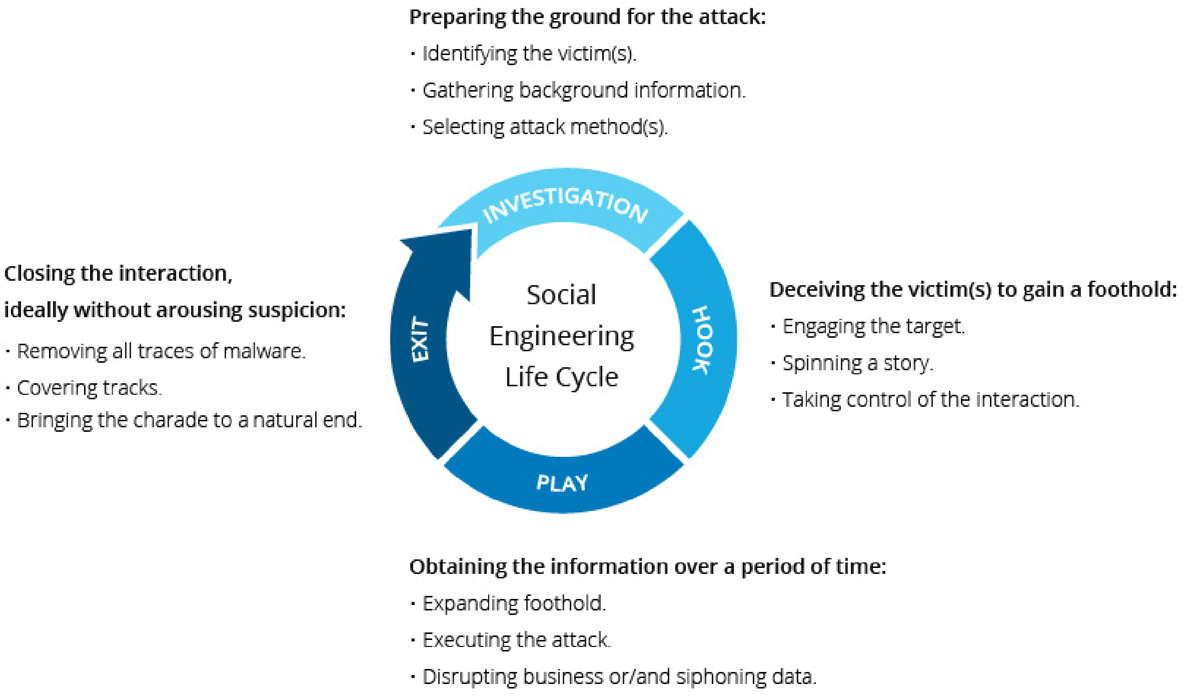
Malware authors use a variety of physical and virtual means to spread malware that infect devices and networks. For example, malicious programs can be delivered to a system with a USB drive or can spread over the internet through drive-by downloads, which automatically download malicious programs to systems without the user's approval or knowledge. Phishing attacks are another common type of malware delivery where emails disguised as legitimate messages contain malicious links or attachments that can deliver the malware executable to unsuspecting users. Sophisticated malware attacks often feature the use of a command-and-control server that allows threat actors to communicate with the infected systems, exfiltration sensitive data and even remotely control the compromised device or server

Spyware is made to collect information and data on the device user and observe their activity without their knowledge.

Spyware would be installed on the victims devices without his knowledge so has to steal his data and record his keystrokes which would give us his login details to the company's network and free access to get anything we need as we can now pose as him on the network.

Once information needed is gotten the malware is removed and every other prints wiped off while gradually ending the relationship developed with the victim.

The above can be graphically expressed as;


Preparing the ground for the attack:
· Identifying the victim(s).
· Gathering background information.
· Selecting attack method(s).
INVESTIGATION
Closing the interaction,
ideally without arousing suspicion:
· Removing all traces of malware.
· Covering tracks.
· Bringing the charade to a natural end.
EXIT
Social
Engineering
Life Cycle
HOOK
Deceiving the victim(s) to gain a foothold:
· Engaging the target.
· Spinning a story.
· Taking control of the interaction.
PLAY
Obtaining the information over a period of time:
· Expanding foothold.
· Executing the attack.
· Disrupting business or/and siphoning data.

HOW TO PREVENT COMPANY ESPIONAGE

Identify Your Companies Trade Secrets

The first step to protecting a company's trade secrets is to identify exactly what those secrets are. This not only involves looking inward, but looking outward as well. Firms cannot deduce the true value of their trade secrets until they understand how these secrets stack up against the technology and best practices of their competitors. By properly evaluating their intellectual property, firms will be more able to establish priorities and allocate security resources to better protect their most vital secrets.

Identify the Threats

Before firms develop strategies to counter industrial espionage, they need to understand what organizations present the largest threat. For instance, a company's competitors may pose the most obvious danger. However, it should be kept in mind that visitors, customers, business partners, hackers, activist groups, and even foreign national governments are all potential threats and should be considered when building a counterespionage plan.

Ensure Physical Security

The same measures that are effective against run-of-the-mill criminals are also effective at protecting businesses from industrial spies. As such, firms should ensure the physical security of their offices, equipment, and infrastructure. This means setting up surveillance systems, securing entry points, and hiring or contracting specialized personnel. It is particularly important that firms identify the most sensitive information and facilities and ensure that these are given extra layers of protection.

Establish Policies for Controlling Information

In many instances, the unwanted disclosure of secrets could have been easily avoided if firms had simply put more thought into controlling the flow of information. Firms should establish policies on what information employees can share inside and outside the workplace. They should also establish procedures for control, reproduction, and storage of sensitive data. Particular attention should be paid to what is disseminated over the Internet and social media sites. Additionally, firms should develop procedures for the proper disposal of paper documents, IT hardware, and other sensitive equipment.

Train the Workforce

While firms may enact policies on the proper storage, control, and dissemination of information, they also need to ensure that their employees are trained to follow these procedures. Firms should conduct periodic training and awareness campaigns to inform employees about the threat from industrial espionage and the importance of information security. Employees should understand that the threat from espionage is internal as well as external. As such, they should instruct workers on the correct procedures for identifying and reporting suspicious activity.

Compartmentalize Information

Not all information needs to be accessible by every employee in a company. That is why information should be compartmentalized on a need to know basis. Even senior members of a particular corporation may not need to know every technical detail about business operations. As such, firms should put in place policies to segregate which employees have access to which information, with special attention given to those employees who have access to a company's most vital trade secrets.

Conduct Background Checks and Monitoring

Firms should conduct a background checks on all employees with access to sensitive data. This may even include often-overlooked individuals such as janitors, caterers, and groundkeepers. Specifically, firms should attempt to identify any possible factors that could make a particular worker more prone to illegally disclosing information. Firms should also continue to carry out periodic security evaluations of their employees even after they have initially been vetted.

Establish Employee Exit Procedures

It is critical that business develop comprehensive employee exit policies. From day one, an employee needs to understand the firm’s policies on information security.

This means that all employees should be required to sign a nondisclosure agreement, and be reminded of this agreement upon leaving the firm. Moreover, firms should be aware that most cases of intellectual property theft perpetrated by employees occur during their last month of work. This is why it is important to make an employee’s exit as smooth and resentment-free as possible. Companies may also consider limiting the access workers who are expected to leave the organization in the near future.

Ensure Cyber Security

Industrial espionage is increasingly becoming the purview of the cyber realm. Therefore, it is important for companies to maintain robust cyber security frameworks. Even while systems should look outward to protect a company from external threats, they should also look inward. Cyber security professionals should monitor their internal networks to uncover suspicious activity and record the transmission, copying, and accessing of sensitive files. Additionally, firms should consider leveraging specialized software to protect critical information, monitor activity, and prevent data loss.

Establish Contingency and Crisis Management Plans

Even the best-laid plans can go wrong. That is why it is important for companies to develop contingency and crisis strategies in the event of intellectual property theft. Firms should attempt to assess the potential damage caused by the theft of trade secrets and develop response plans. They should consider losses to their competitiveness as well as losses to their reputation. Additionally, it is a good idea for firms to have a legal strategy in the wake of an incident of corporate espionage. After all, industrial espionage is illegal in many countries, including the United States, and offenders can face stiff sentences

NUMBER THREE:

a. 3 HAMLETS - M

1 ORACLE- O

9 MESSENGERS-R

1 SHELL- S

4 RODENTS- E

1 CALABASH- C

3 PROPHECIES- O

1 DESTINY- D

6 COWRIES- E

The result is MORSE CODE

b. **SING THAT RAP FALL**

Answer: THINGS FALL APART

NUMBER FOUR:

Encrypted message TSJSFRHGTJQTNZS

a. **Ceasar substitution cipher (key 5)**

ABCDEFGHIJKLMNOPQRSTUVWXYZ

From the English alphabets above Caesar shift of 5 gives:

VWXYZABCDEFGHIJKLMNOPQRSTU

Decrypted Caesar cipher- ONENAMCBOELOIUN

b. **Columnar transposition cipher (key 5)**

Using Key = abcde

a	**b**	**c**	**d**	**e**
1	**2**	**3**	**4**	**5**
o	**n**	**c**	**e**	**i**
n	**a**	**b**	**l**	**u**
e	**m**	**o**	**o**	**n**

Plain text = ONCE IN A BLUE MOON