CYBER SECURITY SURVEY

P.Sharon Jerlin
Department of IT
Francis Xavier
Engineering College

S.Hasina Fathima
Department of IT
Francis Xavier
Engineering College

Dr.A.Anitha(Prof&Head)
Department of IT
Francis Xavier
Engineering College

Abstract

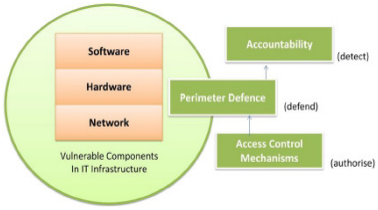
The rampant fleshing out of "The World Wide Web" has become the home of knowledge for both philosophising and contemplating .Albeit parents take pride that their kids are more informed than them in various fields. People face hardships and grievous situations like cyberbullying, harassments, assaults, false identification, terrorism and money laundering hoots called businesses because of the same Cyber. Since cyber has become a great influencer and another world "The E world"." Its our hardware, software, our laptops and desktops, cellphones and smartphones that have intertwined in every aspect of our life. It's the broadband network beneath us and the wireless signals around us, the local networks in our schools, hospitals, businesses are the massive grids that power the nation. It's the classified military and Intelligence works that keeps us safe. It's the world wide web that has interconnected us humans more than ever in t he human history .So cyper space is real and so are the risks that come with it. Its the great irony of our Information Age E that very techonologies that empower us to create and to build also empower those who would disrupt and destroy. And this paradox e seem and unseen e is something we experience everyday". (Obama,2009)It has become a responsibility to provide security to this Virtual World.

Introduction

Our society, economy and critical infrastructures have become completely reliable on networks and Information Technologies and Information Communication Technologies. Cyber attacks have become more attractive and potential threats as our resources have been flooded. According to the Symantecs CyberCrime Report published in April,2012 . Cyber attacks cost USD $114 billion each year. Victims of cyber attack are also significantly growing based on the survey conducted by Symantec which involved

interviewing 20,000 people across 24 countries, 69% reported being the victim of Cyber attack in their life time.

I. Cyber Security



Cybersecurity concerns with the understanding of surrounding issues of diverse cyber attacks and devising defense strategies (i.e., countermeasures) that preserve confidentiality, integrity and availability of any digital and information technologies [18].

- **Confidentiality** is the term used to prevent the disclosure of information to unauthorized individuals or systems.
- **Integrity** is the term used to prevent any modification/deletion in an unauthorized manner.
- **Availability** is the term used to assure that the systems responsible for delivering, storing and processing information are accessible when needed and by those who need them.

II. A Fine Balance

It is widely accepted in industrial security analysis that the security risk faced by an organization is a function of the both the Likelihood of Successful Attack (LAS) against an asset or an act to hide a negative imprint and illegitimate process. The second variable, Consequence, while highly site specific, is generally the easiest to get an understanding of. Often it can be estimated in terms of financial loss, acute health effects or environmental impacts; concepts well understood from years of safety analysis of hazardous processes.

Estimating the Likelihood of Successful Attack is far more difficult. Threat (T): Any indication, circumstance, or event with the potential to cause

the loss of, or damage to an asset. Vulnerabilities (V): Any weakness that can be exploited by an adversary to gain access to an asset. Target Attractiveness (AT): An estimate of the value of a target to an adversary.

These terms are more difficult to estimate, particular with respect to cyber security.

This difficulty is largely because we have little reliable historical or statistical data to work with. The details of safety related incidents have been recorded for over a century, while cyber security incidents have risk, with the potential cost of an event occurring. To do so we need to understand the variables at play in defining the cyber security risk for an industrial facility. Furthermore, we need to continuously monitor the risk variables to determine if they are changing. To be effective from both a technical and cost perspective, our mitigation response must adapt to changes in Threats, Vulnerabilities or Target Attractiveness. The consequences of successful attacks are not insignificant less than two decades of occurrence, never mind record keeping. Furthermore, most organizations are highly reluctant to report security incidents as they are viewed as potential embarrassments. In fact, many organizations have denied that there even is a risk to industrial systems from cyber attack. For example, as recently as March 2002 an article in CIO Magazine entitled "Debunking the Threat to Water Utilities" stated there was no credible risk to SCADA systems from a network-based attack:

"Most public utilities rely on a highly customized SCADA system. No two are the same, so hacking them requires specific knowledge."[3]

There is obviously some security risk faced by industrial control systems and, as difficult as it is to estimate, we still need to understand it. We can't ignore the risk still we also can't afford the infinite cost of perfect security.

III. Emerging threats

Cyber attacks on cyberspace evolve throu gh time capitalizing on new approaches. M ost times, cyber criminals modify the exist ing malware signatures to exploit the flaw s existing
in the new technologies. In other cases, th ey explore unique characteristics of the ne w technologies to find loopholes to inject m alware. Taking advantages of new Internet t echnologies with millions and billionsof acti ve users, cyber criminals utilize these new technologies to reach out toa vast number of victims quickly and efficiently. We select such upcoming technology advancements: so cial media, smartphone technology, and critic al infrastructure, as illustrative examples to e xplore
the threats in these technologies. We discuss unique characteristics of each of the emerging technologies and analyze
number of common attack patterns presented in them.

A. *Social media*

Social media, such as Facebook and Twitt er, has shown explosive growth in recent ye ars. At the
end of 2012, there are450 million active us er accounts in Twitter while the number gr ows exponentially in Facebook reaching alm ost a few hundredbillions.Social networking sites also have raised the stakes for privacy protec tion because of the centralization of massi veamounts of user data, the intimacy of pers onal information collected, and the availabili ty of uptodate data which is consistently tag ged and formatted. This makes social netwo rking sites an attractive target for a variety of organizationsseeking to aggregate large am ounts of user data, some for legitimate purpo ses and some for malicious ones. In most ca ses,extracting data violates users' expectatio n of privacy. Protecting user's private data kept in the social networking service providers has been explored
data using clientside JavaScript. Privacy wiz ard. The wizard iteratively asks the user to assign privacy "labels" to selected friends, and it uses this input to construct a classifier , using a machine learning model,

B. *Smartphones*

Smartphones, coupled with improvement i n wireless technologies, have become an incr easingly sophisticated computer
and communication device that is readily c arried by individuals throughout the day. Th e convergence of increasing com-
puting power, personalization and mobility makes them an attractive means of planning and organizing work and private
life of individuals. According to [16], the s heer volume of mobile phone users around t he world indicates a current need
for proactive mobile security measures. It is assumed that over 4.5 billion use a cell ph one every day and an estimated 2
billion smartphone will be deployed by 2013 .

Going beyond the simple SMS messaging, increasing level of sensitive information is stored in the smartphones. Within companies, these technologies are causing pro found changes in the organization of informa tion systems and therefore have become the source of new risks. As smartpho nes collect and compile increasing amount of sensitive information, the access must be controlled to protect the privacy of t he user and the intellectual property of the c ompany.

These staggering growths in mobile techno logy have created an attractive target for cyb er criminal. Security concerns in mobile are different from the traditional sec urity problems in PC and enterprise computi ng due to their embedded nature and different operational environment. Mullin er [119] listed the following features unique to mobile computing.

- *Mobility*: This is the most important char acteristic of the mobile phones. Since mobile users can take them to anywhere.
- *Technology Convergence*: Today numerou s functional features are integrated in the m obile phones, for example gaming, video and data sharing, and Internet brow sing.
- *Limited Resources and Reduced Capabilities* : Comparing with stationary devices, mobile d evices have four major limitations: a) limited battery life, b) limited comput ing power, c) very small display screen size , and d) very small sized keys for inputs. These limits bring the challenges in building mobile security technology.

IV. Long term impact

National security breaches (e.g. the incident in 2010 where classified/confidential government informati on was leaked to Wikileaks).

Social discontent and unrest (e.g. loss of pub lic confidence in the government even if the actual damage caused by the cyber criminal activities was minimal).

Loss of intellect property, which can affec t the long-term competitiveness of businesses and governm ents in industrial and military espionage incidents.

The million-dollar question is "How prevalent is financially-motivated cyber criminal activity such as u nauthorised access, online extortion and Distrib uted Denial of Service (DDoS) attacks?". Official crime statis tics compiled by law enforcement, prosecution and othe r government agencies, and private sector agencies are unlik ely to indicate the entire cyber threat landscape. For example, victims were not aware that their organizations had exper ienced onemore cyber security incidents, and therefore indicated that they had not experienced any such incidents w hen asked. In addition, victimized organizations may be relu ctant to report breaches due to a range of reasons, such as believing the incident was not serious enoug h to warrant reporting it to law enforcement and other compe tent agencies, believing that there is little chance of a successful prosecution, fearing negative publicity and that reporting would result in a competitive disadvantage (Richards, 2009).

The concern of cyber crime is not only perceiv ed by computer scientists and ICT professionals, but politicians also understand its potential impact as well (Ob ama, 2009).

V. Cyber crime prevention str ategies:

Various crime prevention practices are gene rally based on actor choice (cf. neo-classical deterrence theory). The Routine Activity Theory (RAT), for example, pro poses that crime occurs when a suitable target is in the presence of a motivated offender and is without a capable guardian (Coh en and Felson, 1979)

The theory draws on rational exploitation of 'opportunity'

in the context of the regularity of human conduct to design prevention strategies, especially where terrestrial interventions are possible e for example in the transit of goods. It assumes criminals are rational and appropriately resourced actors that operate in the context of high-value, attractive targets protected by weak guardians (Felson, 1998; Yar, 2005).

In the context of cyber crime, an assumption is that cyber criminals are (1) criminally and/or financially-motivated thatseek out (2) opportunities provided by cyberspace such as anonymity and no geographical limitations, acquire the necessary resources for cyber crime by (inter alia) using delinquent/rogue IT professionals and (3) targeting weakly protected systems/networks and exploiting situations where law enforcement agencies are being hampered by jurisdictional, legislative and evidentiary issues, particularly in cross-border cyber criminal cases (Broadhurst and Choo, 2011).

There are a number of ways that criminological theories such as RAT can be applied to reduce the risk of cyber crime. Cyber crime prevention strategies using RAT, for example, target each of these areas e (1) increasing the effort required to offend; (2) increasing the risk of getting caught; and (3) reducing the rewards of offending e see

No single entity "owns" the issue of cyber security. While governments cannot completely delegate the role of securing cyberspace, governments cannot work in isolation

VI. Conclusion

While cyber criminal and security risks may be seen by some as an extension of existing threats to cyber and national security, the threat landscape is an extremely fast-moving environment. Only seven years ago, several criminologists warned that 'those who fail to anticipate the future are in for a rude shock when it arrives' (Smith et al., 2004: 156). It is essential for our society to be prepared and for our businesses, governments and research institutions to innovate faster than criminals and other actors with malicious intents.

VII. References

http://www.maawg.org/, last accessed: June 2013.

http://www.antiphishing.org/, last accessed: June 2013.

http://www.ostermanresearch.com/downloads.htm, last accessed: June 2013.

http://en.wikipedia.org/wiki/Mebroot, last accessed: June 2013.

http://www.emailtrackerpro.com, last accessed: June 2013.

[http://www.tamos.com, last accessed: June 2013.

https://www.mandiant.com/resources/download/web-historian, last accessed: June 2013.

http://www.majorgeeks.com/index.dat_analyzer_d5259.html, last accessed: June 2013.

http://www.winpcap.org/, last accessed: June

Alperovitch D. Revealed: operation shady RAT. Santa Clara, CA, USA: McAfee Inc; 2011.

Australian Associated Press (AAP). Military faces huge cyber espionage threat. News.com.au 9 October, http://www.news.com.au/technology/military-faces-huge-cyber-espionage-threat/story-e6frfrnr-1225936268254; 2010 [Date last accessed: 06.07.11.].

Australian Crime Commission (ACC). Banks, law enforcement and retailers warn merchants to secure EFTPOS terminals to prevent skimming. Media release 13 April, http://www.crimecommission.gov.au/media/acc_joint/2010/100413.htm; 2010 [Date last accessed: 06.07.11.].

Australian Government House of Representatives Standing Committee on Communications. Hackers, fraudsters and botnets: tackling the problem of cyber crime. Canberra: Commonwealth of Australia; 2010.

Australian Institute of Criminology (AIC). Money mules, High Tech Crime Brief No 16, 2008. Available on: http://www.aic.gov.au/publications/current%20series/htcb/1-20/htcb016.aspx [Date accessed 01.08.2011.].

AVG. AVG Community powered threat report: Q2, 2011, http://

www.avg.com.au/files/media/avg_threat_report_2011-q2.pdf;
2011 [Date last accessed: 06.07.11.].