BlackBerry | CYLANCE

WHITE PAPER

Ransomware Prevention Is Possible

Fighting Today's Extortive Threats

All it takes is a couple clicks and the ransomware infects your entire network, encrypting every file, every drive, every server it can gain access to, and within minutes, your organization's most important data is encrypted.

Ransomware holds system data hostage by encrypting files and demanding users pay a fee for decryption. Cyber criminals may pressure users by threatening to increase decryption costs or delete the captive files if their demands are not met swiftly. A recent NTT security survey revealed a third of global businesses may consider paying ransom more cost-effective than investing in additional cybersecurity[1]. With so many compliant victims available, it is not surprising that ransomware continues to plague organizations worldwide.

In May of 2017, the WannaCry ransomware attacks made history with a multi-national assault costing organizations billions of dollars[2] in combined damages. The cyber attacks used an exploit called Eternal Blue and a backdoor tool called DoublePulsar to discover and compromise vulnerable Windows systems. A criminal group called the Shadow Brokers was credited with publicizing the Eternal Blue exploit and creating DoublePulsar to facilitate WannaCry attacks.

The latest EternalBlue and DoublePulsar based attacks, delivering the WannaCry Ransomware, have so far been hugely damaging to healthcare organizations while also impacting over 200,000 endpoints in 150 countries. WannaCry-WanaCryptor 2.0 was coupled with the EternalBlue exploit, allowing it to automatically propagate itself to vulnerable machines across the Internet. While not technically advanced, the use of EternalBlue and DoublePulsar created a ransomworm that spread much faster than any other previously reported ransomware outbreak.

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[1] https://www.nttsecurity.com/docs/librariesprovider3/resources/gbl_report_risk-value_2018_uea.pdf?sfvrsn=56f637b0_5

[2] https://www.reuters.com/article/us-cyber-lloyds-report/global-cyber-attack-could-spur-53-billion-in-losses-lloyds-of-london-idUSKBN1A20AB

Anatomy of an Enterprise Attack

The WannaCry attack exploits a flaw in the Server Message Block (SMB) in Microsoft Windows, which can allow for remote code execution upon proper and successful exploitation. This flaw was patched in Microsoft's March 2017 update cycle (MS17-10).

However, many environments are still behind on patches for various reasons and may also be running legacy operating systems, such as XP, which are no longer updated/supported with security updates, leaving those systems exposed. Leveraging this exploit, the attackers can fully execute arbitrary code.

In the case of the WanaCrypt issue, we are dealing with a ransomware executable that includes additional worm functionality. It has the ability to scan and locate other machines and propagate itself to other adjacent and exposed hosts via the EternalBlue vulnerability.

Due to the nature of the flaw, machines propagated via the worm functionality do not require interaction from the user on the victimized host.

Petya is a form of ransomware that overwrites the master boot record in order to block access to the user's files and operating system.

The worm/ransomware binary handles the remote execution. In most confirmable cases today, stage one is a malicious phishing email. This includes an attachment that the victim executes, which infects them, while simultaneously kick-starting stage two — the worm-type functionality and internal propagation/pivoting.

Ransomware has existed for decades, but traditional antivirus solutions still require every single piece of malware to be discovered by its execution on an endpoint, meaning these solutions cannot stop ransomware until it infects that first victim. If your organization is the sacrificial lamb traditional antivirus providers need, you could be faced with an extremely costly ransom that may or may not yield the ability to decrypt your locked data. Depending on your organization's industry, this can affect every single one of your customers and every aspect of your business, and can even put critical infrastructure and human life in jeopardy.

All it takes is a couple clicks and the ransomware infects your entire network, encrypting every file, every drive, every server it can gain access to, and within minutes, your organization's most important data is encrypted. The only way to decrypt your data is to hope that once you pay the expensive ransom, the cyber criminal extortionist will be satisfied enough to send you the decryption code. Good luck with that!

Medical Industry Hit Hard, but Just One Example

There is certainly no shortage of threats to write about these days when it comes to ransomware and the recent surge of activity involving high profile attacks and victims. It is deeply concerning to hear about the high-profile medical entities that have been targeted lately. In this scenario, the cost of the attack is not limited to the money paid as the ransom. A ransomware attack on a health center has proven to cause delays in patient care, which can also even lead to loss of human life.

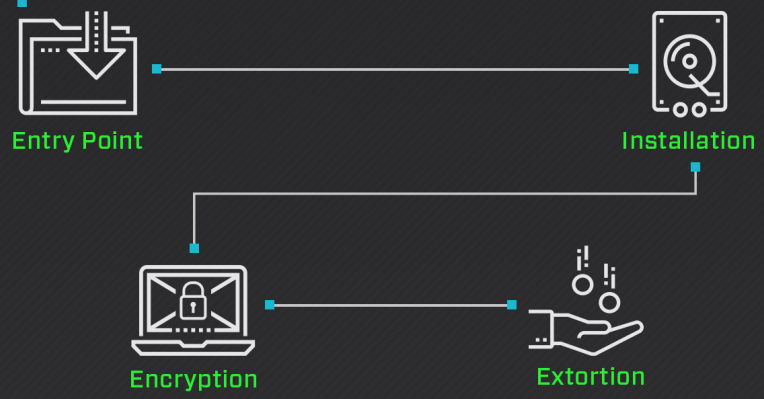
In a highly publicized example of this type of attack, 40 hospitals that are part of the U.K.'s National Health Service (NHS), were hit simultaneously by the WannaCry Ransomware. Reports of canceled surgeries, medical appointments, and lab results on hold due to the ransomware flooded the news, and public outrage escalated the incident to worldwide news. The WannaCry infection highlighted the outdated and vulnerable infrastructure and security of the NHS. In the weeks after the attack, the hospital network was slow to recover and resume operations at each of the 40 hospitals.

Petya Ransomware Returns as Goldeneye

A new variant of the notorious ransomware Petya is back again, and with yet another James Bond reference for a name: Goldeneye. Presumably from the same author of Petya and the Petya-Mischa combo, Janus Cybercrime Solution's latest creation is another step in the evolution of their ransomware-as-a-service expansion.

Petya is a form of ransomware that overwrites the master boot record in order to block access to the user's files and operating system. Safe Mode access is also disabled.

HOW RANSOMWARE WORKS



WHAT MAKES A COMPANY VULNERABLE

Lack of a Formal Backup Plan

No Cybersecurity Strategy in Place

Using Legacy Software and Outdated Hardware

Downloads from Email or Compromised Websites

Unpatched Operating Systems

RESPONSE AND RECOVERY

When you are the victim of an attack, you should have someone to call for help.
Our Incident Response team will work with you to contain the active threat and mitigate the risk.

Agentless Analysis for Linux, MAC, and Windows

Proprietary Machine Learning Techology

Analysis Tools Identify Scope of Incident Within Hours

Immediate Resolution for Quicker Incident Response

Once Petya executes, the user's machine will crash, restart, and show a skull-and-crossbones animation before displaying a ransom note asking for payment in bitcoins in order to decrypt the system.

Ransomware-as-a-Service (Satan)

Ransomware is probably the most popular form of cyber extortion. It has been around for many years, but lately there has been a significant increase in the number of variations of ransomware. Due to its notoriety and potential for a high payout, ransomware is quickly evolving, and cyber criminals are developing new ways to distribute malware to make money.

In years past, expert malware authors would package up their know-how into costly exploit kits and sell them on the underground market. Cyber criminals would pay a hefty upfront cost before ever infecting a victim's machine and realizing a profit.

One such ransomware-as-a-service is called Satan. Satan's developers have posted the ransomware online and made it available for free. Any would-be cyber criminal with absolutely no programming skills can download and deploy Satan in just three easy steps, while also managing their ransomware campaigns in a central console hosted on the Satan developer page. Instructions on payload delivery, translation services, and customer support are even provided to would-be criminals. Then, when Satan is successful in an attack, the downloader pays the developer 30% and keeps 70% of the paid ransom.

What Should Security-Minded Enterprises Do?

These are examples from just one industry and three ransomware families, but they provide real-world examples of how enterprises can easily be infected, causing great harm to operations, brand reputation, customer relationships, and even the critical infrastructure that organizations all over the world rely upon. The true tragedy of the consequences of ransomware is that they are avoidable with the right endpoint security product.

In the cases of the ransomware examples mentioned — WannaCry, Goldeneye, and Satan — BlackBerry Cylance's award-winning artificial-intelligence-based product, CylancePROTECT®, was successful in protecting against all the variants with its predictive mathematical models dating back to September 2015, long before the ransomware variants were even created. That's the power of machine learning. BlackBerry Cylance's math models train on massive data sets to identify zero-day and emerging malware and prevent it from getting into systems in the first place.

CylancePROTECT can stop ransomware before it ever executes, and the Cylance Consulting Services team can remediate and repair the damage caused by ransomware attacks that have already occurred. To learn more, visit www.cylance.com/ransomware.

About BlackBerry Cylance

BlackBerry Cylance develops artificial intelligence to deliver prevention-first, predictive security products and smart, simple, secure solutions that change how organizations approach endpoint security. BlackBerry Cylance provides full-spectrum predictive threat prevention and visibility across the enterprise to combat the most notorious and advanced cybersecurity attacks, fortifying endpoints to promote security hygiene in the security operations center, throughout global networks, and even on employees' home networks. With AI-based malware prevention, threat hunting, automated detection and response, and expert security services, BlackBerry Cylance protects the endpoint without increasing staff workload or costs.

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