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What Every Practice Needs to Know about Ransomware

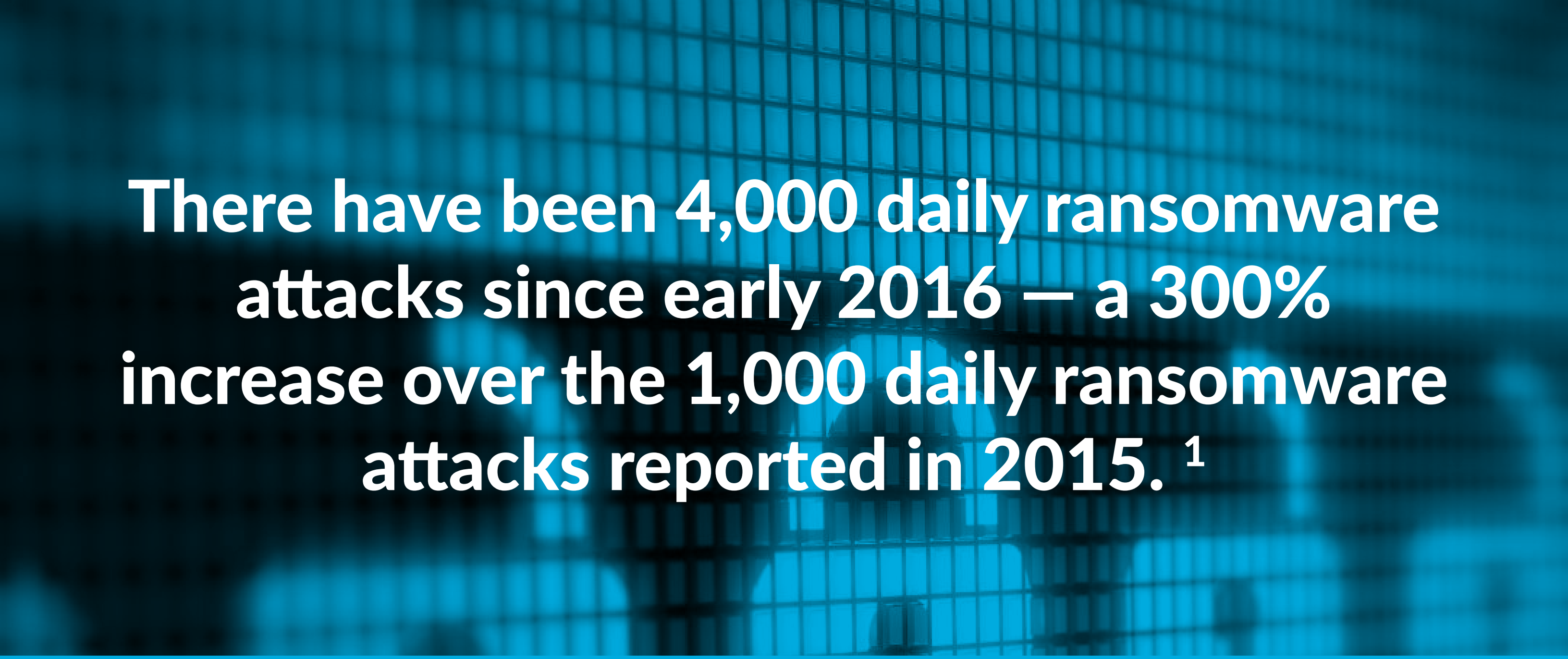
Introduction

Ransomware has become a serious epidemic affecting medical and dental practices of all sizes, and protecting your company is more essential than ever before as the number of ransomware attacks continues to rise. A recent U.S. Government interagency report indicates that, on average, **there have been 4,000 daily ransom-ware attacks since early 2016 — a 300-percent increase over the 1,000 daily ransomware attacks reported in 2015.**

As ransomware spreads, it continues to evolve and get more sophisticated — and more lucrative. In fact, according to Internet Crime Complaint Center, **ransomware victims paid more than $24 million to regain access to their data in 2015 alone.**

What does all this mean for medical and dental practices? In order to protect your organization from cyber threats, you need to keep ransomware and cybersecurity top-of-mind and educate your employees about this destructive type of malware and the damage it can do to your practice.

To help you address the growing threat of ransomware, we've taken a closer look at how ransomware works and the most common variants that are active today. We've also gathered our best advice on how to protect your business both proactively by taking precautions to avoid ransomware and reactively by being prepared to recover quickly and easily if you do fall victim to an attack.



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What is Ransomware?

Ransomware is malicious software that encrypts files, locks the computer, and retains control until the user pays a certain amount of money. Ransomware can appear in two forms — either by locking your screen with a full-screen image or webpage to prevent you from accessing your PC, or by encrypting your files so they can't be opened.

While each ransomware variant has its own twist, there are a few key components that most ransomware types follow:

Email-borne infection – Although some variants have been known to attack via drive-by download advertising, malicious websites, or peer-to-peer network file sharing, ransomware typically attacks through spoofed emails, and the end user is tricked into opening an attachment. It often arrives in zip files with enticingly common names, and the zip file contains an .exe, which downloads onto the target computer, adding a key to the Windows Registry, allowing it to run.

Covert communication – Once downloaded, the malware establishes communication with a command-and-control server. For example, CryptoLocker, which started the modern ransomware craze, relies on a domain generation algorithm and hops between new servers routinely to avoid detection.

Advanced encryption – Once the server connection is established, CryptoLocker generates a pair of encryption keys — one public, one private — using the huge RSA-2048 bit encryption algorithm and military-grade 256-bit AES encryption. Most ransomware variants use a 256-AES (Advanced Encryption Standard) key or a 2048-RSA key, but some even go as far as 4096-RSA.

Bitcoin ransom – After encryption is complete, the cybercriminals usually demand Bitcoin or some form of payment for the key to unencrypt infected files. Ransomware works quickly and quietly in the background before it unveils itself to users asking for ransom.

Tight deadline – A pop-up window usually tells the victim that important files have been encrypted and sets a time limit for payment before the private encryption key is destroyed and the files are lost forever.

The Most Recent Ransomware Threats

Ransomware has grown tremendously since CryptoLocker first made a name for itself in 2013. With new variants of ransomware appearing on a daily basis, it can be tough to keep track of what the newest threat is. So we rounded up the most recent up-and-coming threats that could have a lasting impact on the ransomware landscape:

1 Locky

Identified: February 2016

What defines Locky: Locky uses macros in a Word document to insert code into an IT environment that encrypts all of the organization's data.

Most recent variant: Zepto infects computers with a ".zip" file email attachment that contains malicious JavaScript. The JavaScript runs quietly on the victim's machine, slowly locking files with the ".zepto" extension. The newest version, which appeared in September 2016, uses an embedded RSA key and abandons communication with C2 servers.

2 Cerber

Identified: March 2016

What defines Cerber: Cerber installs itself on the victim's PC and is activated by enabling macros. After encrypting users' files and adding the ".CERBER" extension to them, it asks users to pay the ransom in Bitcoin, and if the ransom goes unpaid for more than a week, the ransom is doubled.

Most recent variant: Cerber3 appeared in August 2016. The file extension added to encrypted files ends with ".Cerber3," and it renames the ransom note to #HELP DECRYPT #.txt.

3 Smrss32

Identified: August 2016

What defines Smrss32: Smrss32 is a CryptoWall copycat, but it isn't as sophisticated. It adds ".encrypted" to the targeted files and drops a ransom note into every folder and desktop containing encrypted files, before it deletes the folder where it installed itself.

4 Cryptxxx

Identified: April 2016

What defines Cryptxxx: CryptXXX scans the entire drive and then encrypts files using the ".crypt" extension. The user's desktop image changes to a picture of the ransom note, and browsers display an HTML version of the note as well.

Most recent variant: CryptXXX 3.1 scans for shared Windows drives and quickly encrypts each one — but that's not all. It also utilizes StillerX, a credential-stealing DLL tool that can steal emails, browser data, and even VPN credentials, leaving users vulnerable even after the ransom is paid and files are unencrypted.

3 Steps to Recover from Ransomware

What do you need to do as a practice if ransomware strikes you? You should take the following three steps immediately after an infection is discovered.

Step 1: Disconnect from the network and stop backing data up immediately

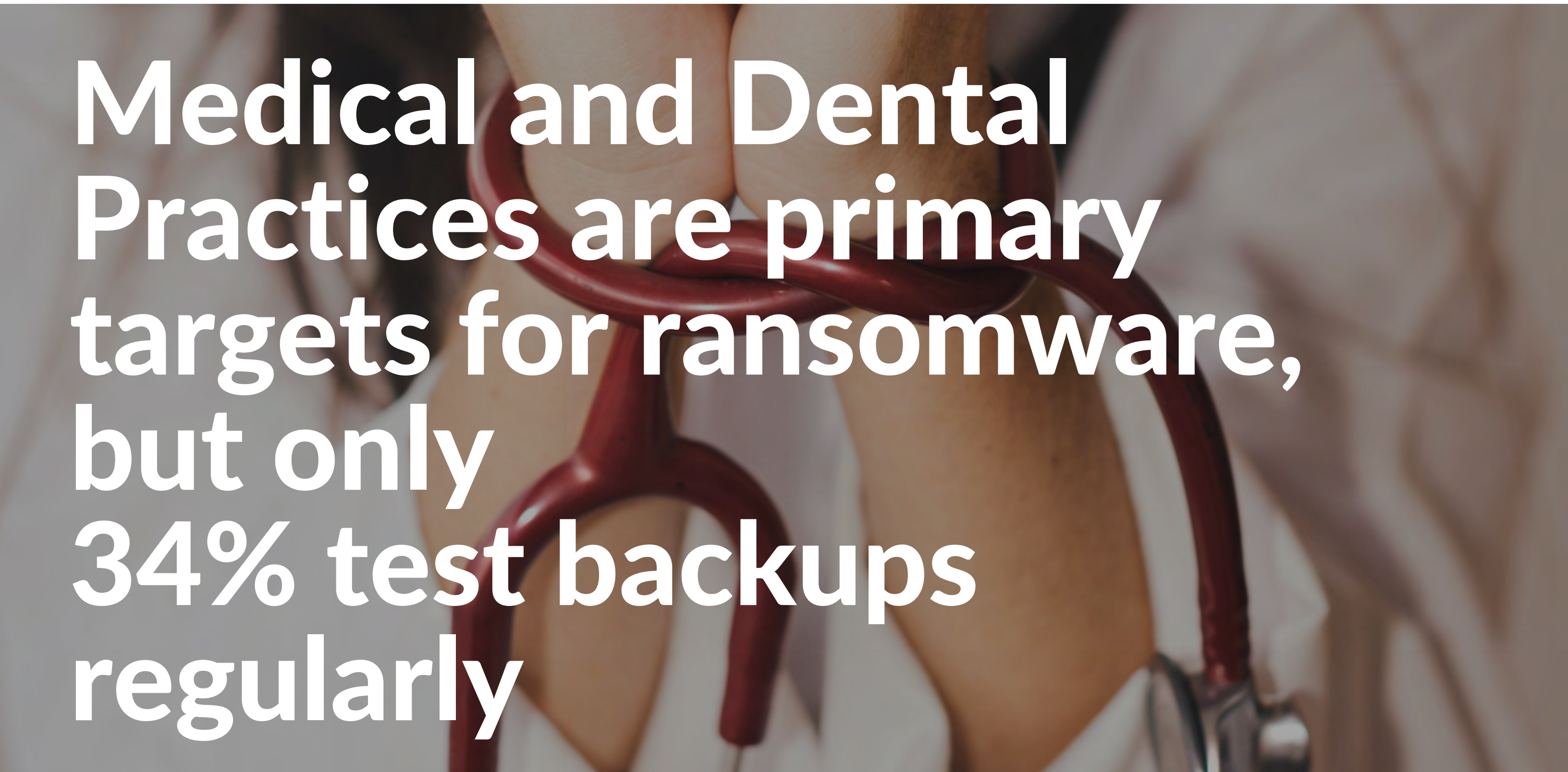
Disconnect the infected machine from the network immediately after the infection is discovered. Not only do some ransomware variants encrypt shared files on the network, but you're also stopping the malicious software from overwriting clean backups with infected files. You should check and see if any other machines have been affected as well.

Step 2: Remove ransomware and clean computers of malicious software

If you have a good restore, remove all traces of the ransomware using antivirus software or an appropriate malware remover before proceeding. Don't test or try to recover data until the ransomware is completely gone. It's important to note that by removing the ransomware you are effectively forfeiting your ability to unlock files by paying the ransom. This shouldn't be a problem if you have backed up your data to a separate offsite location and don't intend to pay the ransom. As an added precaution before you restore files, conduct a test run in Safe Mode on the network to see if there are any additional infected files.

Step 3: Restore from the most recent clean backup

Provided that you maintain consistent backups, locate a clean version of the files, and restore to your most recent backup set. Unfortunately, if you haven't followed best practices for backup, you won't have an alternative. You'll either need to pay the ransom or accept that all of your data is gone.



Medical and Dental Practices are primary targets for ransomware, but only 34% test backups regularly

Best Practices to Protect Your Own Practice from Ransomware

Tip #1: Educate users on security best practices

Education is still the best way to help your business avoid infection by ransomware — or any other form of malware. Make your employees aware of popular social engineering methods and tactics so they don't fall victim to phishing emails or spoofed messages. It's particularly helpful to share examples of these kinds of emails and the types of attachments that are often associated with social engineering attempts so that end users know to avoid them. An MSP is well equipped to help deliver this sort of training.

A few security best practices to share with your employees:

- Do not open emails from strange or unfamiliar email addresses
- Do not disable or deactivate antivirus or anti-malware software
- Do not download software from torrent sites — official or direct downloads are preferable
- If you receive an email from a familiar contact that includes an attachment or link, verify separately that the person or organization actually sent you this message

Tip #2: Consistently update operating systems, antivirus and anti-malware software

Most security vendors are constantly working on updates to catch and stop ransomware before it infects your files. If you use antivirus or anti-malware services, be sure you are running the most recent versions of these products and do regular updates. Contact your vendors or your managed service provider to learn more about how they're defending against ransomware to see if there is any additional protection available.

It's also important to be sure your operating systems are up to date with the latest security patches to avoid leaving any backdoors open. Often, backdoors are fixed in the latest patch or update, and hackers can prey on companies running out-of-date software, which gives them an easy "in" to the system.

Tip #3: Disable macros in Office documents

Many new ransomware strains trick users into running macros on Microsoft Office programs. Macros automate frequently used tasks and hold a potentially serious security risk. If malicious macros are introduced, it starts with one file and quickly spreads. Microsoft Office 2016 automatically disables macros, but if your business is using an older version, an MSP can help you disable it on a GPO (Group Policy Object).

Tip #4: Prevent .exe from running in AppData or LocalAppData folders

Ransomware usually operates within the AppData or LocalAppData folders, so you may be able to prevent the initial malware download from executing by blocking .exe files from running in these folders.

Tip #5 Set up a next-generation firewall

Cybercriminals are releasing new malware variants into the wild at an increasingly fast pace. A next-generation firewall can combat numerous threats, and some can even detect zero-day threats before they infiltrate the system. There was a 79-percent increase in zero-day threats from 2014 to 2015, and that number is expected to continue to climb.

Firewalls help your practice be proactive about defending against ransomware instead of just reacting to an attack. "Network security is akin to a home alarm system, whereas BDR is like a home owner's insurance policy that comes into play if something is stolen or damaged," says Brian Babineau, senior VP and general manager of Intronis MSP Solutions by Barracuda. Thinking of it that way will help you understand the importance of both approaches. Network security, like a next-generation firewall, goes hand-in-hand with a comprehensive BDR plan when protecting your business from the most recent ransomware threats.

Tip #6: Back up your data frequently and consistently

Offsite backup is a critical component to a ransomware recovery strategy and should be an integral part of your disaster recovery plan.
Why offsite? Because ransomware infections have been known to infect local drives and network shares that are mapped as a drive letter on the infected computer. That means if you're using only a local backup solution, there's little chance of recovery without paying the ransom because your backups will most likely get encrypted as well.

1. Keep multiple versions of your protected files
Certain cloud backup offerings provide the advantage of sophisticated version histories, which is a critical component to successful restores after a ransomware infection. If you only back up a single version of your files, it's possible that your software has backed up an infected file. By saving as many revisions as possible, you have a better chance of restoring to a clean version of the data.

2. Keep multiple days' worth of files
Depending on how frequently you perform backups, it's possible to store multiple versions of a single file, all of which were backed up the same day. But it's important to also back up several days' — or even weeks' — worth of files to ensure maximum protection. By retaining clean backups over days, weeks, or months, you give yourself additional safe restore points, raising the likelihood of a successful restore.

3. Frequently test your restores
Your backups are only as good as the restore. Test your restores on a frequent basis to make sure your data is being backed up properly.

More than 70% of ransomware attacks target small businesses

PCIHIPAA & Cornerstone Help Practices Prevent and Respond to Ransomware Attacks

Recommended Steps	PCIHIPAA & Cornerstone's Solution
Every practice should be backing up data in the cloud.	✓ Cornerstone backs up each practice's files in the cloud with point to point encryption.
Every practice should have multiple versions of their data backup daily files.	✓ Cornerstone backs up 10 consecutive daily versions and one monthly version.
Every practice needs to know what steps to take in case they are attacked.	✓ PCIHIPAA's OfficeSafe Compliance Portal helps practices document Disaster Recovery Plans and Data Backup Plans required by HIPAA.
Every practice needs to be able to restore data within 24 hours to keep business operations functioning.	✓ Cornerstone has successfully restored a full data set for many of our practices with regard to ransomware attacks.
Every practice needs to know what steps they need to take to determine if a ransomware attack triggers HIPAA's Notification Rule.	✓ PCIHIPAA works with Cornerstone to help practices document the necessary information required by HIPAA.

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At PCIHIPAA, we specialize in HIPAA compliance services to help you navigate the twists and turns of compliance. If you are serious about compliance and also want solutions to help protect your practice from a ransomware attack. Get started today!

Take Your Complimentary Risk Assessment; or call us at (800) 588-0254.

"PCIHIPAA and their OfficeSafe™ solution has made PCI and HIPAA compliance easy and affordable. I highly recommend their solution to any medical or dental practice that struggles to find the time and resources to navigate all of the regulatory requirements. A home run!"

—Dr. Sclar, Sclar Oral Surgery and Implant Dentistry

Click on the links below for Other Resources:

Take the mandatory HIPAA Risk Assessment

Watch the OfficeSafe™ Video

Learn more about HIPAA Compliance

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