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# Defeating Ransomware and the Targeted Threat — Strengthening Your Defences with a Sandbox Solution

In the continuing arms race between cyber criminals and the organizations whose data and money they want to steal, we continue to see new, ever more sophisticated, tools being deployed on both sides.

There's been a lot in the news about ransomware and businesses large and small are under threat from increasingly aggressive ransomware attacks. Loss of access to critical files, followed by a demand for payment can cause massive disruption to an organization's productivity.

Also, attacks called advanced persistent threats (APT) which were originally used only against very large organizations have become more common and are now being used against smaller companies,

either to attack the smaller entity itself or as a stepping stone to other larger targets. This was evident in the attacks on Target Stores and Home Depot, two large US retailers. Both companies were breached using stolen credentials that had been given to a smaller supplier.

This has thrown the spotlight on small and mid-sized businesses.

Small and mid-sized businesses are on the radar of attackers, who actually see them as low hanging fruits because many of them lack the resources, the security and the multi-layer defence programs to help protect themselves. 42% of small businesses<sup>2</sup> report being a victim of cyber-attacks and the majority of the companies hacked were hacked twice or more.

On average, small businesses report \$32,000 being stolen from bank accounts with the majority of them taking a week or more to resolve the issue.

*£34 billion is the annual cost of data breaches for UK Businesses<sup>1</sup>*

## Growing Awareness

On a positive note, we are seeing a rise in security awareness driven by the increased coverage of cyber threats in the mainstream media. This has helped many organizations improve their security posture: Employees see news about cyber-attacks and develop more awareness of security risks and so are less likely to engage in risky online behaviour; senior management understand the risks more clearly so IT departments find it easier to obtain the budget required to strengthen and improve their defences.

## Demand for Comprehensive Next-Generation Security Solutions

Cyber-attacks and ransomware both use infected websites or phishing emails to begin their attack on your business. So you might think, I've got a good spam solution and I'm blocking risky websites, so I'm protected? Perhaps not. IT teams in organizations of all sizes now understand that sophisticated ransomware and cyber-attacks can use unknown malware that can evade traditional gateway and endpoint protection. This is why many organizations are considering new solutions to combat this problem. Additionally, there's a lot of hype encouraging you to buy additional next generation solutions to deal with these unknown threats.

However, often these technologies are too complex and expensive for many businesses to consider. Many of the complex security solutions used by larger enterprises require multiple dedicated devices which are resource and maintenance intensive. They also tend to have low accuracy; this means a skilled team is required to analyse the results. Buying more solutions from multiple vendors that don't talk to one another isn't a recipe for a manageable threat defence.

## Emergence of Advanced Threats that Fly Under the Radar

### Ransomware

Ransomware has become one of the most widespread and damaging threats that internet users face. Since the infamous CryptoLocker first appeared in 2013, we've seen a new era of file-encrypting ransomware variants delivered through spam messages and exploit kits, extorting money from home users and businesses alike. The current wave of ransomware families can have their roots traced back to the early days of Fake AV, through "Locker" variants and finally to the file-encrypting variants that are prevalent today. Each distinct category of malware has shared a common goal – to extort money from victims through social engineering and outright intimidation. The demands for money have grown more forceful with each iteration:

Fake AV peaked around 2009 and attempted to scare victims into paying up by claiming their computers were riddled with viruses.

"Locker" ransomware locked victims' screens and demanded a payment to unlock, sometimes using the suggestion of illegal activity on the victim's part to help induce payment.

File-encrypting ransomware holds the victim's files at ransom and only releases them when the ransom demand is met. In many cases unbreakable encryption is used, meaning that extortion has evolved from simple social engineering, with little to no consequences for failure to comply, to permanent loss of data unless payment is made. The rise of ransomware can be attributed to the appearance of several significant variants that were extremely successful. This success has been used as a template by later variants, resulting in the mass proliferation we see today.

Ransomware is the number one malware attack affecting organizations today, as the impact to your business can be crippling. This year, Hollywood Presbyterian Medical Center in the United States lost access to its computer systems after ransomware encrypted their files. Ambulances were diverted, electronic medical records disappeared, email was unavailable, and they had no access to X-ray or CT scan information. The hospital paid the hackers \$17,000 worth of bitcoins.

### Advanced Persistent Threat (APT)

An APT is a network attack in which cyber criminals use custom-developed targeted attacks to gain access to a network and remain undetected for long periods of time. While simple attacks use the smash and grab technique (get in and out quickly to avoid detection), the success of APTs depends on staying under the radar as long as possible. For this to happen, they use evasive coding techniques and a series of advanced manoeuvres to slip past traditional security barriers and steal sensitive data.

*74% organizations think they will be hit by an APT in the near future<sup>3</sup>*

### Advanced Evasion Technique (AET)

This is a cyber-attack that uses numerous known evasion tactics to create a single new tactic, whose intrusion cannot be detected by traditional security products. While the AET might not be malicious, its core purpose is to provide the attacker with access to an organization's network that remains undetected.

### New Age Threats Need Next Level Security – Sandbox

One technology, that's had more than its fair share of hype, is the sandbox.

The questions you are probably asking yourself around sandbox technology are:

1. What is a sandbox?
2. Do I really need a sandbox?
3. Why don't my conventional defences protect me from ransomware and APTs?
4. Surely this kind of technology is for larger organizations?
5. Another point solution? That sounds expensive.
6. It sounds complicated – do I have the resources to try and deploy this?
7. How do I choose the right sandbox?

## Let's answer each of these questions one by one:

### 1. What is a sandbox?

A sandbox is a safe, isolated environment that is used to run and analyze malicious code. The sandbox has the capability of emulating entire operating systems and is used to execute suspicious files, allowing administrators to observe its output activity.

### 2. Do I really need a sandbox?

Organizations need a range of security technologies to protect them from threats both known and unknown. It's likely you'll already have deployed Secure Email Gateway, Secure Web Gateway, UTM or Next Generation Firewall at your internet gateway, as well as endpoint protection to your desktops and servers.

Even vendors that only supply standalone sandbox technology would never suggest that their product provides a complete defence against advanced persistent threats. They acknowledge that many security layers are essential to protect against these threats.

What a sandbox does provide, is your own dedicated environment to analyse, understand and take action, on the threats to your organisation that haven't been detected by this stack of conventional security measures. Sophisticated ransomware and targeted malware, designed to evade detection, will be detected and blocked when detonated in your sandbox.

### 3. Why don't my conventional defences protect me from ransomware and APTs?

Ransomware attacks are so successful because they use professional attack methods and skilful social engineering while hiding malicious code in commonly permitted technologies such as Microsoft Office Macros, Javascript, and Flash.

Basic signature-based antivirus will protect you against known malware. But signature-based antivirus is reactive and increasingly outpaced by today's attackers. Most leading security vendors use a range of approaches such as malicious traffic detection capabilities and emulation to supplement signature-based detection. However, if your data or credentials are valuable enough to the attacker, they will have spent time discovering what type of security you are using and tested their unique malware to ensure that it will evade detection by your defences

### 4. Surely this kind of technology is only for larger organizations?

Ransomware is a threat to everyone from the home user to the largest business. Anyone with valuable data that has the resources to pay the ransom is a potential target.

The attack on Target stores resulted in 40-million credit card numbers stolen. This had an enormous impact on trust in the Target brand and led to the company spending a significant amount of money on breach-related expenses, like providing monitoring services to protect customers from fraud. Target is certainly a large organization, but what's important to consider is that the attackers stole the credentials of Target's air conditioning contractor. This small supplier was seen as a soft target and an easier route into the larger business. So organizations of all sizes should consider sandbox technology; a targeted attack could cost you your key customers and is one factor in the statistic that 60% of small firms go out of business<sup>4</sup> within six months of a data breach.

### 5. Another point solution? That sounds expensive.

Sandbox can be expensive, no doubt. But there are ways of reducing your costs. In their [research note](#) on network sandboxing Gartner recommends:

*"If your organization is budget-constrained or looking for a quick path to add sandboxing, first evaluate adding sandboxing as a feature from one of your current security vendors."*

Your existing UTM, Firewall, Secure Web Gateway or Email Gateway may have sandboxing-as-a-feature options available.

With the introduction of cloud computing, the way processing power and storage is delivered and priced has changed. Companies now have access to greater processing

power at affordable prices. This has driven a revolution in what can and can't be delivered as a service. Services like AWS are changing how we think about process intensive solutions.

Sandboxes have proven very effective in identifying and stopping ransomware and APTs by creating a full working environment for the malware to operate in and making it hard for it to identify that it is being analysed. Previously, such a complex solution had to run on dedicated hardware and have a team of analysts to decipher the results limiting it to large enterprises and malware research labs.

By moving sandboxing to the cloud, the reduction in cost means security vendors can apply more processing power and share resources across multiple customers. It also means companies no longer have to rely on in-house expertise as their vendors or partner can provide the analysts from a central location. This reduces the costs to such a level that all organizations can afford sandboxing.

### 6. It sounds complicated – do I have the resources to try and deploy this?

When you begin to trial solutions, consider solutions that are easy to try and deploy. Cloud-based solutions can be rapidly deployed giving you instant results without the need to deploy hardware or upgrade appliances.

### 7. How do I choose the right sandbox?

Choosing a sandboxing solution will be a challenge considering the numerous options available on the market. Consider the following points while making a choice:

#### ▸ Analyze a broad range of suspicious objects

Pick a solution that can detect threats designed to evade sandboxes. Your sandbox needs to be able to analyse a broad range of suspicious files — check that your chosen solution can analyse archives, Microsoft Office documents and pdfs, as well as executables.

#### ▸ Contextual information about the ransomware or targeted attack

Context about the ransomware or targeted attack is mission critical. You need a solution that can give you visible protection with granular incident based reports that provide this context.

#### ▸ Sandbox Analysis Rate

Choose a solution that filters files using antimalware and reputation services to reduce the number of wrongly convicted files and the number of files sent for sandboxing. This helps ensure there is minimal impact on performance and that your users are not disrupted.

#### ▸ Collective Security Intelligence

Choose a solution that uses the collective intelligence of all sandboxing events so you can benefit from all customer threat analysis. Conventional security checks fail to discover all breaches; therefore the need of the hour is to improve the accuracy of detecting unknown threats. For this to happen, it is imperative to adopt a hive-minded approach to IT security, which uses cloud-based collective threat intelligence from multiple events and customer implementations.

## Introducing Sophos Sandstorm

Sophos Sandstorm is an advanced persistent threat (APT) and ransomware defence solution that complements Sophos security products. It quickly and accurately detects, blocks, and responds to evasive threats that other solutions miss, by using powerful, cloud-based, next-generation sandbox technology.

### Highlights:

#### ▸ Advanced protection from ransomware and targeted attacks

Keep ransomware and unknown data-stealing malware off your network. Powerful, cloud-based, next-generation sandbox technology means you quickly and accurately detect, block, and respond to APTs and ransomware.

#### ▸ Simplicity

Sophos Sandstorm is fully integrated into your Sophos security solution. Simply update your subscription, apply the Sandstorm policy and you're protected instantly against ransomware and targeted attacks.

You'll be up and running in minutes.

#### ▸ Block evasive threats that others don't see

Detect unknown threats specifically designed to evade first-generation sandbox appliances. Our full-system emulation approach provides the deepest level of visibility into the behavior of unknown malware and the detection of malicious attacks that others simply miss.

#### ▸ Deep forensic reporting

Accelerate response to advanced threats with simple incident-centric breach analysis. We provide you with prioritized intelligence by correlating the evidence. This approach both reduces noise and saves you time.

#### ▸ Lightning performance

Your Sophos security solution accurately pre-filters traffic, so only suspicious files are submitted to Sandstorm, ensuring minimal latency and end user impact

#### ▸ Synchronized Security

There's no silver bullet to ransomware or the targeted attack. You need a range of security technologies to protect your business from known and unknown threats. That's why Sophos recommend a synchronized approach to dealing with these threats using both network and endpoint defences.

Sophos Endpoint Protection and our completely new approach to endpoint security, Intercept X, Email Security, Web Security, IPS, and Firewall are all critical to your protection and are complemented by Sophos Sandstorm's Next-Generation Sandbox.



## Conclusion

Your organization's security posture needs to evolve keeping in mind the advanced and targeted nature of new age threats. The sandbox not only bolsters your IT security infrastructure but also takes it to the next level. The need to protect your organization from ransomware and unknown evasive threats is best served by a solution that addresses the limitations of traditional antimalware signatures. For many companies, advanced technologies are too expensive and require additional security expertise to implement and monitor. Sophos changes this by providing all businesses access to a next-generation sandbox solution that's affordable and simple to deploy.

If you'd like to find out if Sophos Sandstorm is the right solution for your business, get in touch. Find out more at [sophos.com/sandstorm](https://sophos.com/sandstorm).

1. Centre for Economics and Business Research [CEBR]
2. National small business association report 2015
3. [The Guardian](#)
3. ISACA Advanced Persistent Threat Awareness Study Results
4. [Huffington Post](#)

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