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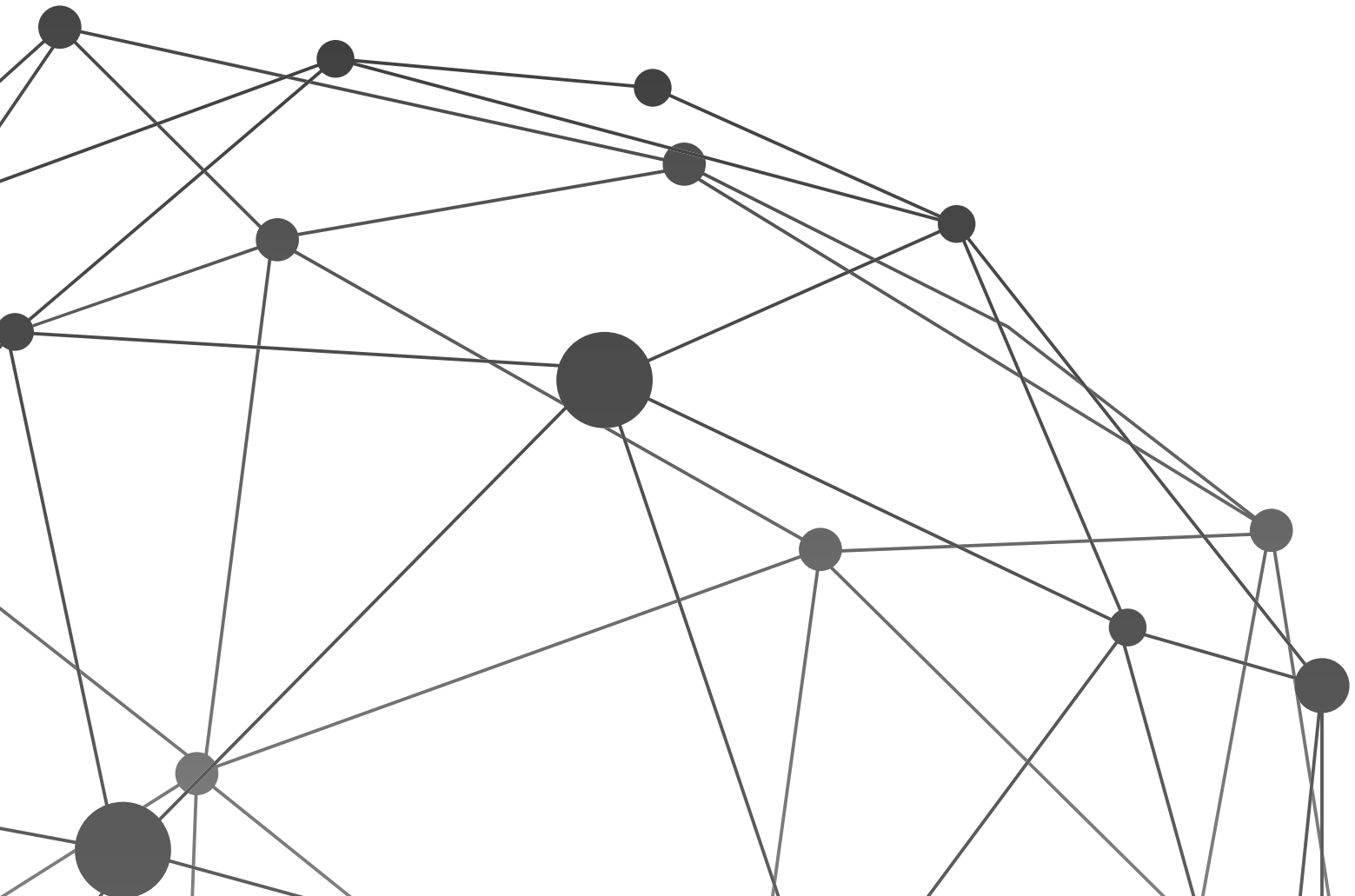
Intelligent Whitelisting:

An Introduction to More Effective and Efficient Endpoint Security

September 2015



Introduction

The volume and sophistication of malware is skyrocketing, and traditional anti-virus approaches are struggling to keep up. Historically, the approach to dealing with the growing quantity and complexity of malware has been to build a better anti-virus "mousetrap," without any shift in the underlying management model for vetting change in endpoint environments. The result has been bloated anti-malware technology with ineffective protection and abysmal performance. This increases endpoint total cost of ownership due to increased strain on IT resources and reduced enduser productivity, which puts further pressure on already flat or reduced IT budgets.

It's time to rethink how we protect our endpoints.

The typical security professional tends to look at endpoint control as a choice between black and white: the blacklisting signature-based anti-virus technologies that struggle with today's threats or the first-generation whitelisting technologies that tend to impede user productivity. Think again, though.

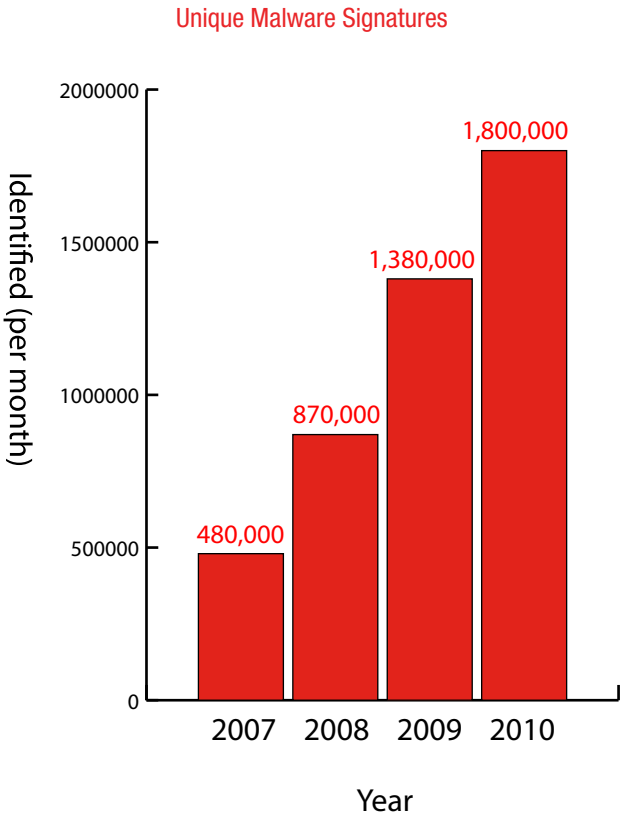
A new "intelligent" approach to application whitelisting uses both methods and adds an automated way to determine whether the stuff in between – the so-called graylist – should be trusted and allowed onto your network. Intelligent whitelisting provides a unified workflow that brings signature-based and behavioral detection together with the power of whitelisting capabilities, and adds a "trust engine" which controls what changes are allowed. This streamlines and automates the process of adding trusted applications to the whitelist. Intelligent whitelisting automates important queries against applications such as "Do I know where this came from?" and "Are others using it?" by using data from other endpoint security applications such as patch management to dial in the level of control and security desired. Not only does it dramatically reduce malware infection rates without affecting productivity, it also allows you to reduce the TCO of maintaining endpoints.

The Need for a New Approach

The sad fact that endpoint TCO has gone up while security effectiveness has gone down has been noticed by executives who hold the purse strings. Even as malware proliferation escalates, the Csuite is asking IT to clamp down on security costs. Today, there are three clear drivers which cause IT professionals to pause and rethink their endpoint protection strategies:

I. Exponential rise in volume and sophistication of malware

Between 2007 and 2010, the number of threats security researchers found needing new AV signatures has risen from around 480,000 per month to about 1.8 million per month.[1] (see graph below) Not only has the volume increased rapidly, but so has the sophistication of attacks. Much of the malware is now designed by financially motivated criminal syndicates, which develop malicious code to bypass antivirus defenses and to target specific organizations.



II. Limitations of traditional approach

On average, AV software detection rates of new malware upon initial discovery are just 19%, and a mere 62% after 30 days.[2] Traditional anti-virus came of age during a very different era, when malware variants remained limited. Vendors of signature-based anti-virus have struggled to keep up with the exponential growth in malware, to no avail. Not only has the glut in signatures degraded endpoint performance, but the typical anti-virus vendor can no longer keep up with the surge of new and sophisticated variants. So, many slip through the cracks.

1. Extrapolated from: McAfee Labs, McAfee Threats-Report: Third Quarter 2010, November 2010
2. Cyveillance, Malware Detection Rates for Leading AV Solutions, August 2010
3. Gartner, Vic Wheatman, Research Director, June 2010
4. Ponemon Institute, State of Endpoint Risk 2011, November 2010

III. Budget constraints and increasing endpoint TCO

CIOs and CFOs are holding the line on IT spending in the near future. Gartner predicts that organizations will reduce the share of security spending by 3 – 6% of their overall IT budgets through 2011.[3] That's bad news for organizations stuck in endpoint security status quo. The current AV model has made it more and more costly for IT departments to keep endpoints infection-free. In fact, the average organization now reports upwards of 50 malware incidents that impact productivity per month,[4] leading to an increase in IT help desk, incident response, and remediation costs.

Application Whitelisting and Application Control:

What's the Difference?

If you're more than just a little confused about the difference between application whitelisting and application control, have no fear. The truth is that the two terms are separated by about as much difference as to-MAY-to and to-MAH-to. These two terms both describe the same process. We've just chosen to consistently use the term application whitelisting because application control has also taken on other connotations as application firewall vendors have searched for an appropriate term to describe their worthwhile--but different--product base.

The Shift to Intelligent Whitelisting

In its purest sense, application whitelisting turns the traditional anti-virus approach on its head. Instead of poking at a suspect piece of software and looking to see if it's bad in every which way possible, application whitelisting asks the fundamental question, "Do I have reason to trust this code?" At its heart, a whitelist solution is seeking to confirm an application as a valid piece of software – until it does so, that application cannot run on the endpoint. In the most simple of deployments during whitelisting's early days, all executions of application and code were limited to that verified list of known good code, which was an extremely solid way to keep malware off mission-critical servers. It then evolved as a security layer for "locked down" endpoints, such as retail environments with point-of- sale (POS) systems or call center environments.

However, most workers today operate in a much more complex and dynamic environment. More applications are downloaded and used to perform job duties, including open source tools, web applications, home-brew code, and commercial programs – all of which change endpoint configurations and make them unique to each worker. Add remote and mobile workers and the growing push to extend applications into the cloud into this mix, and it becomes clear that whitelisting policies need to be more flexible – both for IT and for end-users. In order to facilitate this kind of environment, whitelisting has to be able to offer enforcement that has enough adaptability to allow workers to safely leverage new tools that improve productivity.

Fortunately, forward-looking vendors have taken these issues into account and developed smarter whitelisting solutions that offers better security yet remains flexible enough for dynamic environments. Rather than constantly managing a centralized whitelist before changes are allowed, intelligent whitelist users define a set of automated trust rules that are fine-tuned to their risk appetite and control tolerance. This eliminates the need for constant intervention by IT, by automating the verification of good software using common indicators such as the reputation of the software publisher or the reputation of the tool implementing an update or a new piece of software.

Managing Trust

It seems like a simple concept: trust. Either you trust something to run on your endpoints, or you don't. But in reality, we know it's a lot more complicated. For instance, suppose you find a P2P application running in your environment. The files are not corrupt, and it's a widely used program. But do you want it on your network? If you work at an organization with highly confidential information then P2P applications are probably not appropriate. On the other hand, if you work at an advertising agency which zips files back and forth with regularity, perhaps it's not such a bad thing. In the end, you should be in charge of that "security dial" so you can decide, instead of being limited by your technology.

In order to ensure improved endpoint protection, our intelligent application whitelisting solution should include the following capabilities:

Trust engine

Your intelligent whitelist solution should validate endpoint changes based on trust rules your organization establishes, and automatically update the whitelist accordingly. These trust rules should be flexible enough to allow you to validate based on: the publisher of the software, using digital certificates and other metadata; the updater that introduces new or updated software; the path or centralized location, to ensure in-house developed or unsigned executables that change frequently are not blocked; and local authorization for specific trusted users with a lot of unanticipated change needs.

Snapshots

A snapshot capability should allow you to create a local whitelist of all executables. By creating a local whitelist, you can prevent any further undesirable or unwanted changes to the endpoint environment and eliminate the need for a "perfect" global gold image which you shoehorn your entire organization into. A snapshot capability also allows you to greatly speed up whitelist deployment and roll up unique whitelists to the global level for central visibility, grouping and policy assessment.

Control over "local admin" users

In many organizations like yours, end users are granted local administrator privileges to ensure they have the flexibility to install and run application updates in order to get their jobs done. This approach to end-user management has led to chaos, resulting in a complete lack of control over endpoint configurations. This leaves systems much more vulnerable to exploits. Intelligent whitelisting allows your users to maintain their local admin roles, but puts limits on the kind of changes they can make and how much access they have to local system consoles that affect configuration changes. The end result is a more productive end-user, while you obtain greater visibility and control of your desired endpoint security configuration and posture.

Ability to fit into an overall endpoint management workflow

Application whitelisting is only intelligent if it is easily layered into an overall framework that includes a spectrum of other endpoint security and management tools. By consolidating information that has traditionally been siloed off into these different types of tools and also look at any provenance and prevalence information, you can significantly enhance endpoint protection. While antivirus may be losing its effectiveness as a stand-alone solution, it is still a valuable tool when the information that is produced and stored within it is paired with application whitelisting. Similarly, if the information stored within a whitelisting tool can be smoothly integrated with patch management and trusted change policies, you can improve your organization's security posture and also reduce total cost of ownership for endpoints.

Creating Trust Based Policies - Questions an intelligent whitelisting solution will help you answer:

- Is this known bad?
- Is this known good?
- Is this unwanted?
- Is this authorized?
- Is this properly licensed?
- Do I trust the vendor?
- Do I trust the program that introduced it?
- Do I trust where it came from?
- Do I trust this user to install it?

Not a Black or White Issue

Deciding to use application whitelisting is no longer an 'either-or' decision. The choice is no longer between antivirus and whitelisting. As Nigel Stanley, analyst at Bloor Research puts it,

> "I think the problem with whitelisting and blacklisting is that, superficially, it is too black and white! Of course there is a range of code out there which can easily be deemed to be nasty and is easy to blacklist. Similarly, there is code which is easier to whitelist – think downloads from major software suppliers. That said, I have known what appears to be "goodware" downloaded from a trusted vendor which then promptly screws up an IT estate due to application compatibility problems. The merger of whitelisting with blacklisting is probably inevitable, with greylisted code sitting in the middle, maybe subjected to some heuristic analysis."[5]

[5] Nigel Stanley in Lumension blog, Winning the Malware Battle: The Move Towards Whitelisting, December 2009

Similarly, organizations no longer need to decide whether or not to use whitelisting based on how static or dynamic the environment is. Instead, the decision is about what policies will be used that balance flexibility and security. In very secure and static environments, you may want to use a pure whitelist policy. In dynamic endpoint environments, you may trust the user but need to ensure that proposed changes are both trusted and authorized. In the corporate network, perhaps new code that cannot be identified on a whitelist must be introduced by your systems management tools.

Either way, any smart organization should strive for a defense-in-depth approach that controls application deployment in conjunction with malware cleanup and automated patch management. This ensures that machines are configured securely, and that whitelists are properly and constantly updated. In the end, this blended trust-centric approach is both more flexible and more secure than current endpoint protection approaches. With this intelligent whitelisting approach, you will see:

- Improved security
- Reduced costs
- Better control over endpoints
- Improved productivity

This trusted change approach to endpoint protection allows you to balance usability with security, increasing end user productivity without adding IT administrative burden. And in today's IT environment, that's a good thing.

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