Carbon Black.

Application Control Observations & Strategies for Success

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Executive Summary

It is now widely recognized that antivirus software is insufficient to protect organizations, large or small, from advanced threats and targeted attacks. In response, organizations are increasingly looking to adopt proactive approaches to organizational security, such as application control, to ensure the fidelity and security of intellectual property.

According to Gartner, 17 percent of organizations already leverage application control to limit the execution of unknown software in their environment, and this number is expected to triple by 2017 with more than 50 percent of end-user PCs being restricted to running only pre-approved software.

While highly effective, application control is not always a frictionless technology and does require security personnel, company end users, and management, who may be accustomed to signature-based solutions, to think differently about security.

There is no silver-bullet solution when it comes to cyber security, but when done right, application control can help organizations not only protect their most important assets, but become more efficient, accountable and productive in the process.

This white paper, based on experiences gathered from more than 1,000 application control deployments, provides a blueprint organizations can adopt to help ensure their own successful application control deployment. It also outlines how Carbon Black's unique "trust-based" approach and dedicated support of customers can greatly simplify the process of achieving "high enforcement" in your environment.

Overview

You may have heard that "whitelisting is too hard," but the fact is that's not true, and this paper will show you why. With the rise of advanced threats and targeted attacks, it is clear that endpoint security is no longer a "set-it-and-forget-it" solution. This paper also will explain why deploying proactive solutions such as application control—that provide real, proven, high levels of security—no longer have to be "too hard."

No matter how open or dynamic your environment, there is a straightforward path to success with application control. The path may be different for each organization, and at times may take you down a path less traveled. However, just because a landscape is unfamiliar doesn't mean it is "too hard," and that is what this whitepaper is designed to show you.

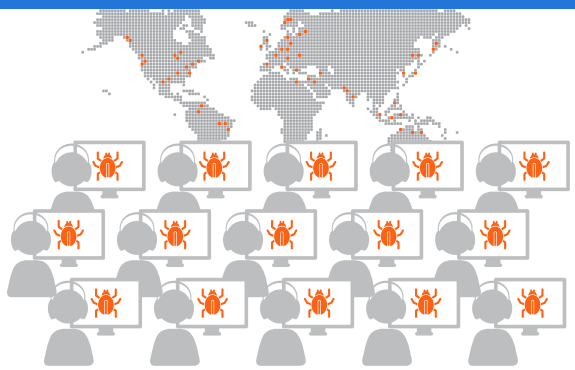
Like anything worth doing, there are better ways and inappropriate ways to accomplish something, and the same holds true for application control. At Carbon Black, we've helped thousands of organizations successfully deploy application control in their environments, and along the way we've developed a set of proven strategies and leading technology solutions to ensure your success.

This paper will outline how you can employ these best practices to successfully deploy an application control solution in your environment.

NEW THREAT LANDSCAPE

What's different about cyber security today than 10 years ago? The answer is simple: Statistics and economics.

Ten years ago there were fewer hackers and relatively few devices connected to the Internet. The so-called "bad guys" numbered no more than a few thousand.

THEN	NOW
	
Small Numbers	Large Numbers
Personal Motivation	Strategic, Economic Motivation
Low Impact	High Impact

Fast forward to today, and now your refrigerator, your wristwatch and your car are online. Half of the world's seven billion people are connected. Nations have standing cyber armies not 1,000, but tens of thousands strong. And for every cyber solider, there are a dozen or more hackers making careers in "private" markets.

Yes, careers.

Ten years ago hacking was mostly about egos. Who could get in, who could wreak havoc; it was all graffiti, all bragging rights. Motivations were personal.

Today, hacking is a multi-billion-dollar business, with shops, guilds, and even regular work hours. Hackers have their own formal markets, and even private currencies, in which to buy, trade and profit off your secrets.

Hacking is no longer a game, but a strategic threat. Hackers now have the same motivation, resources, organization, and staffing that you and your business do. You are no longer dealing with some punk trying to break in through a back window. You are dealing with a true peer, a respected enemy. In a lot of ways you are dealing with an entity not unlike your direct market competition.

If yours is like most organizations, you don't treat hackers with the same focus and attention you place on your competition. But if you treated hackers like you do your business competition, how would that change your perspective? How would you envision, plan, budget, motivate and execute security, if the security threat were as big as your competition? If that's not how your team is addressing security today, it should be.

MOVING FROM PASSIVE PROTECTION TO PROACTIVE DEFENSE

Firewalls are real security. Antivirus is real security. The Coast Guard cutter along our shores and TSA guard at the airport check point are real security. But their threat landscape is like ours used to be 10 years ago. For the most part, the volume is low and motivations are personal. That threat landscape enables them to focus on more passive, perimeter-based security.

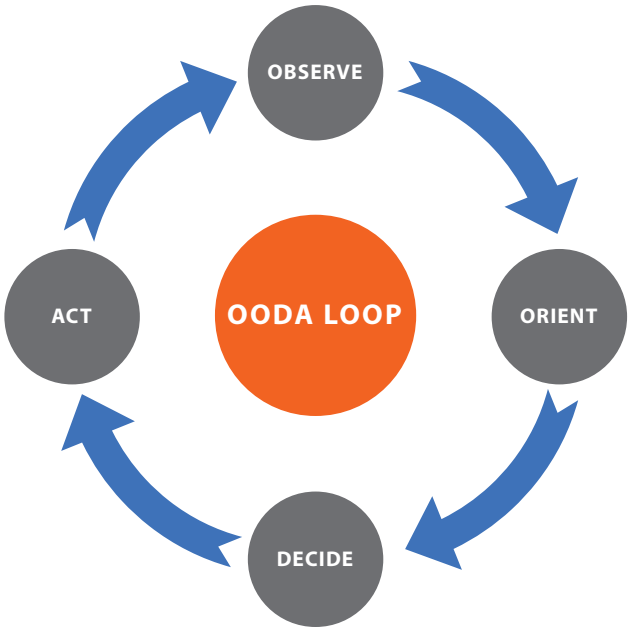
When the threat landscape changes, however, from small bands of random marauders to large armies with focus and motivation, that kind of security is no longer sufficient. You don't just need a fence, you need a fort. And you don't just need a lookout, you need an army.

If you think building a fort will be just like building a fence, if you think you just need a higher tower for your one lookout, then you are expecting that application control will be cheap and easy. And that's probably because you're still just becoming aware of the new threat landscape and what it takes to survive in it.

Conversely, if you think you have no idea how to build a fort, and the idea of having to keep guard scares you, then you are worried that "whitelisting is too hard." And that's because, up until recently, the tools were limited and "doing real security" was assumed to be only the province of well-funded security experts.

The new technologies and automated solutions that Carbon Black Protection offers have changed that. You no longer need to be an engineer to build a fort, and you no longer need an army of special-forces ninjas to guard the gate.

A fort is a lot like a fence, but is somewhat bigger and has some additional structures. There will be some more effort and planning, but the layouts are similar and often your intuition will guide you in the right direction. When you get stuck, our Professional Services Team will assist you with the parts that are unfamiliar.



Being a guard is like being a lookout, except incidents happen more often and you have to be able to not only sound the alarm but take action. You should expect to allocate more staff time to the solution, though this time may be delegated or spread out over existing functions. You might even consider them your "security volunteers"! The console makes security actions intuitive and straightforward—a weapon that's easy to wield—and our Professional Services Team will teach you all the basic moves.

All that being said, a fort is different than a tower and there will be some amount of change for both your team and your end users, and in many ways that's the part that will require the most effort.

I'm not talking so much the raw work of it, but the time it takes to change perspectives. End users do not like change, anyone who has worked in IT operations can attest to this. But when properly educated and informed, they can hear your battle cry and join you in this war.

In security we talk about the OODA loop: Observe, orient, decide, act. This next section of the paper is meant to help you observe the new landscape and orient yourself within the end-user landscape and safely navigate the deployment process, so that you can quickly get on to what you do best, keeping your organization secure.

WHY APPLICATION CONTROL IS ESSENTIAL

Traditional antivirus solutions and other machine-learning controls allow all applications to run unless they are known to be malicious or they exhibit known-bad behaviors. In a world where 70 percent of malware is used only once, this approach doesn't work because you simply cannot know what is bad ahead of time. Using antivirus for protection is like scanning a crowd for a bad guy, only you have no idea what he looks like.

Application control reverses this paradigm and focuses on identifying and only allowing the execution of code that is known and trusted. This approach is far more effective at blocking new and unknown malware, and generalized malware techniques, because it does not need to know what is bad ahead of time. Like a bouncer at a party, application control only allows software "on the guest list" to run. For your company, application control seeks to create an internal software environment not dissimilar from Apple's iOS App Store, where only approved apps are allowed to run. Except you get to decide what's allowed.

According to Gartner, application control is defined as "software that limits the execution of applications to a predefined set of known good applications. It typically consists of a software agent on the endpoint and a central management console for reporting/alerting and policy definition." Also known as "application whitelisting," today's leading solutions have come a long way in limiting the set-up and administration burden associated with identifying trusted software. Leading application

control solutions such as Cb Protection also include real-time access to software reputation scores on known-good applications and malicious programs, as well as access to detonation engines, and even metadata on all binaries, such as prevalence, age, code-signing information, and known vulnerabilities associated with that software.

Gartner also notes that when compared to antivirus, application control provides numerous operations and security benefits including:

1. Reduced malware infections and faster incident response due to real-time visibility.
2. Improved detection of insider threats and risky end-user behavior.
3. Blocks unwanted potential backdoor applications ("torrents," remote access, spyware tools, security probes) that antivirus does not detect.
4. Can reduce vulnerabilities by limiting software sprawl.
5. Even in "monitor only" mode, allows early warning of potentially malicious new files by identifying "gray" files. Advanced solutions can send unknown files to a malware sandbox for automatic analysis.
6. Blocks common malware techniques and indicators of compromise (IOCs) via policy (for example, no execute from trash bin, no double filename extensions and no header extension mismatches).
7. Provides granular incident response investigation capabilities, including a rapid search of all PCs for a given file or process, centralized removal of unwanted or malicious software already deployed, and blocking any newly discovered malware before antivirus signatures are available.

When implemented correctly, application control will provide the highest level of protection against malware infections and targeted attacks. However, when used creatively and leveraged as part of IT operations, it can have the additional benefit of reducing the operational burden of uncontrolled application sprawl and volume license control.

ABOUT CARBON BLACK PROTECTION

Cb Protection is the world's most widely deployed whitelisting solution. Combining a trust-based and policy-driven approach to application control with real-time threat intelligence, Cb Protection continuously monitors and records all endpoint and server activity to prevent, detect and respond to cyber threats that evade traditional security defenses. Cb Protection provides automated and highly granular policy controls with out-of-the-box access to software trust-ratings, detonation engines, and pattern-based advanced threat indicators. With open APIs and a broad partner ecosystem, Cb Protection provides unmatched flexibility to seamlessly integrate with both in-house and third-party tools.

Organization Change and the Importance of Education

First, it is important to understand that the journey to high enforcement is as much a political journey as it is one of technology. You are not turning the boat, you are just adding some life preservers. But for those used to swimming in open water, it may seem like an insurmountable affront to their workplace freedom.

You need to know this and be prepared to handle these objections. The training is straightforward and the disruption is minimal, but getting end users accustomed to any new habit takes time.

What perspectives and habits are barriers to successful application control? Here are some of the most common examples:

1. WHO WELCOMES CONTROLS?

Ask yourself, do you want a dental checkup? Do you want to buy car insurance? No, of course not. You do not want these things, but you know that you need them.

No one welcomes security controls. Even we security professionals tire of the restrictions we place on ourselves. But we accept them because we know they are needed.

Don't expect everyone in your organization to welcome application control. Certainly there will be champions who in their hearts understand the war we are fighting, and the importance of protecting their personal information and your organization's intellectual property. Other folks however, will be reluctant.

2. TELL THEM, TELL THEM WHAT YOU TOLD THEM, AND THEN TELL THEM AGAIN

But you are already familiar with this kind of dynamic. You know that communication, consensus, and concentric circles of implementation are what get the job done. You know how to work your organization and drive it to success. Your project managers, supervisors and leads, and communications officers already know how to make progress.

If you are thinking this will go in transparently and no one will notice, you're still thinking too easy. If you are thinking corporate roadshows and cleaning house, you're still thinking too hard. Think "engage the right leads and let the rest trickle down" and you are on the right path.

3. THE ENDPOINT IS IMPACTFUL!

The reason a fence is easy is because it doesn't disrupt the wandering of the sheep, unless they try to go off the property.

The reason a firewall is easy is because it obstructs only tangential or auxiliary value, often in a way that creates only latency, and no "permanent effects."

If a user can't browse the Web, they may be delayed or irritated, but they can move on to other aspects of their job. If email outside the company is slow, they may be frustrated with the wait, but they can always pick up the phone.

However when we disrupt users' workstations and applications, we stands directly in the way of their productivity. That's what makes any endpoint security solution impactful.

But you are already familiar with this kind of implementation. If you remember the early days of deploying antivirus, or the last time you had a major AV vendor change, you're on the right track. If you've deployed endpoint DLP or rolled out full disk encryption, consider yourself battle-hardened compared to the relative ease of deploying Cb Protection.

If you think this is like rolling out an application, you're still thinking too easy. If you think it will be like taking away user administration rights, you're still thinking too hard. Think "affordable and effective endpoint security agent" and you're on the right path.

4. SECURITY IS ABOUT NUANCE

We security professionals live by a set of core principles. We train in them and are certified by them. We have a true code of ethics.

Here is one of our rules: If it will cost more to protect an asset than the value of that asset, then do not protect the asset. Think about that for a minute. Basically we're saying, if catching the thief costs more than what is in the purse, let him steal the purse!

If you consider the operational cost of that, well it's free, you do nothing! If you analyze it from a profit perspective it makes sense; you are simply cutting your losses. Still, from an emotional standpoint, it's a hard pill to swallow. No one wants to take a loss.

Since you are now going to be doing security like the pros, you will need to become familiar with this type of decision making, to be able to navigate this gray area. At first, your security teams won't want to build just a fort, they will want the perfect castle. And your operations team won't tolerate any infrastructure or end-user impact ever (even though this is IT and we all know it happens every day). Helping your organization come to terms with the nuance may actually be one of the hardest parts of deploying application control.

But… you got this! As a business leader you are already familiar with limited resources and too many asks. You make tough decisions every day, most of them are successful, and you recover from the ones that aren't. In IT, stuff happens. In security, compromise is inevitable. The goal is just to stop as many threats as you can and react quickly when something gets through.

If you are thinking Cb Protection is a perfect castle and you can let users run wild inside it, you are still thinking too easy. If you are thinking that your own security teams are going to be tied up endlessly approving application updates, you are still thinking too hard. Think "mostly automated mechanisms built around appropriate risk tolerances," and you are on the right path.

5. THINGS MUST CHANGE

Right now in the new threat landscape, the most common way to break in is to "phish." Basically, this means you convince, cajole or otherwise fool a user into installing a hijacked application. The second most common way is to "make use of an exploit and then make like IT." You use one of the vulnerabilities we read about in the papers, to catch hold of some IT administrator or operation, and then ride their coattails to your ultimate target.

What if we were to tell you that the problem is not necessarily letting users install applications, or giving IT access to assets? What if instead the problem is not even the way they do it, but the infinite menagerie of ways in which they do it?

What if just getting them all to do it the same way could get you a huge security win?

Attacks show as anomalies, no matter how subtle they are. But anomalies only exist when there are norms to compare them against. When users are allowed to do literally anything possible, it becomes impossible to see the anomalies.

It is a common "whitelisting technique" to allow users to "self-serve," so long as they follow a process. While it's not perfectly secure, it does increase security by orders of magnitude. Asking IT to run tools from a "sandbox folder," or asking users to drag installers to a "safe-prompt folder," can change security triage from impossible to affordable.

Are you ready to ask employees, just in some exception circumstances, to change their work habits, just a little bit? If you're not yet ready to make asks of your employees, you may not yet be ready for the new threat landscape. Our experience is that users care about their jobs and the success of their company, and that yes, when you communicate effectively with them, you can in fact successfully ask them to change behavior to stay secure. They too are concerned about the future.

6. SECURITY ISN'T FREE

What is the cost of a basic firewall? Check with your infrastructure people if you can't guess. Now compare that to the cost of the firewall you have at your home right now, the one that comes free with your Internet subscription.

The old way of doing cybersecurity has become commoditized to the point where Microsoft, and a host of smaller vendors, offer their antivirus products literally for free.

Why are they able to offer these for free? Because the old ways are not working and the value gained from implementing them is declining. Real security cannot be free; its value should be reflected in its price. It cannot be, because of the economics and statistics we talked about at the beginning of this paper. We have to match the enemy on the field, and that includes in the field of finance.

But it's not an easy adjustment to go from free to a sizable percentage of IT spending. It's not just the emotional aspect of it, it requires real decisions about resources, and real effort to change operations. However, it's also true that just throwing money at something will not fix the problem. IT security is about reducing risk to a manageable level and every decision should be based on the ROI you expect to gain in terms of risk reduction.

If you are still hoping there might be a shortcut, you may not yet be ready for application control.

But if you're reading this paper, if you've made it this far, you've made the adjustment, and you're ready to take the next step.

Implementation Methodology

Now, let's say you've decided you want to go down the path of implementing application control for your employees, but you have no idea where to begin. You understand AV, you've deployed firewalls but application control is a whole new ballgame. Wouldn't be great if you had a guide. Someone who had done this before? If there were people with experience making application control successful, not just in narrow contexts with rigid tools, but in a variety of industries and with a wide range of user types, with tools that were flexible and comprehensive? Even though you have experiences in your pocket that can give you intuition about what needs to be done, wouldn't it be nice if you had a guide who knew where the traps were, and what the fastest path was to success?

This is where Cb Protection comes in. Our teams aren't just experienced with our technology. They've spent the last 10 years implementing it successfully in companies large and small, controlled and conservative, open and dynamic, onshore and offshore, in every industry vertical and integrating into the larger security stack. They operate according to a documented methodology that they actively share with every customer.

When you implement, our professional services team will guide you through that methodology, help adapt its flexible parameters to the needs of your organization, and provide you with reports and deliverables that document your progress.

In a nutshell, it goes something like this:

BIG DATA, BIG HARDWARE

If you're read anything on Cb Protection, you already know that "continuous real-time recording of file operations and process executions" is critical to our solution and to any modern security technology. You may have guessed already that this means big data, and that in turn means big hardware.

We will begin by making sure you have the right infrastructure to handle your needs. There will be a very strong focus on database storage performance and throughput. We will provide sample specifications, throughput requirements, and test tools, so you can shape the infrastructure to your existing vendors and operations.

CHALLENGE: Procurement budget will be a noticeable component of TCO.

APPROACH: Understanding requirements early in the sales and implementation process.

CHALLENGE: Requirements may be perceived as "non-standard."

APPROACH: Working directly with infrastructure experts to justify exceptions.

ASSESSING YOUR ORGANIZATION

If you've tried deploying other application control solutions before, you've probably discovered that most of these solutions require you to conform your organization to the way their technology works. This is not how technology is supposed to work! This is why Cb Protection includes rich approval mechanisms, such as trusted publishers, trusted directories, software reputation, detonation engines and more, along with dynamic policy groups, that can be mixed and matched easily to conform to the unique way your organization works. As part of a "Design Workshop" that we conduct at the beginning of every project, we assess your organization's security posture and culture, IT operations and aesthetic, to determine which features are right for your use cases.

This assessment doesn't take 10 weeks and 10,000 pages. We can do it in about an hour, during our face-to-face time in the Design Workshop. We ask if your general security posture will be open or closed, if your IT operations model is staff- or automation-centric, and if the answers are different for different areas. We then recommend what features to use as part of your "primary trust strategy," and help you understand their security footprint and operational characteristics.

CHALLENGE: Understanding how your organization truly operates.

APPROACH: Operations and security stakeholders and SMEs together in a workshop.

CHALLENGE: Balancing operational impact and security risk.

APPROACH: Understanding workflows and options, assessing the threat landscape.

PHASED ROLL-OUT

This is an endpoint security product, and therefore, this will touch end users and their machines. Like anything in life, first impressions when it comes to application control matter, and while interoperability and performance impacts are uncommon, we want to make sure you are successful.

When you're testing something new, where do you see the highest value in terms of finding issues, is it in controlled testing, or in real-world deployments?

A very common technique applied by most security vendors, and other core component and operating system vendors, is so called "dogfood testing." The mostly likely place to find issues quickly is in production itself, not via a full-blown rollout, but rather with acceptance testing, expanded piloting, and then finally a phased rollout. This why we leverage a phased rollout approach and work with you to identify test populations to test agent installation and performance in production before rolling out widely across your organization.

CHALLENGE: Asking end users to participate in quality control.

APPROACH: Selecting known early adopters or trusted representatives.

CHALLENGE: Dealing with unexpected issues that occur in production.

APPROACH: Operationalizing the help desk as part of the pilot.

LOW-HANGING FRUIT

You may be thinking of application control as an actual "whitelist." That metaphor isn't always helpful, but there are times when it is perfectly true. If, at the end of the day, files are not approved, then they are not allowed to execute. We need to look at the list of files arriving on computers, and see if they are getting approved. And you may be thinking there are a lot of files to look at! Ours is not in fact a list-based approach, but rather a policy-based approach.

Our experience shows that policies chosen as part of the "primary trust strategy" will often approve 90 percent or more of the relevant files right out of the gate. For the remaining 10 percent, we then leverage a data-centric, iterative approach, which allows us to identify the additional use cases that generate the most files and affect the most machines. Field-tested design patterns for many use cases, and a straightforward syntax for creating rules, enable additional policies to be developed quickly for all of this "low-hanging fruit."

CHALLENGE: Observing use cases that occur infrequently.

APPROACH: Project dates give sufficient runway; capture business-period activities.

CHALLENGE: Discovering unknown or undocumented business processes.

APPROACH: Working group can do outreach; empowered to make decisions.

THE LAST MILE PROBLEM

We mentioned that by implementing just a few policies, or what we sometimes call "primary trust strategies," you can cover 90 percent or more of all file approvals. But if you are familiar with the "80/20 rule," you know that too often 80 percent of success takes 20 percent of your effort, and then getting to 100 percent success takes the other 80 percent of your effort. In some cases, often for highly controlled, fixed-function environments, you will not have to worry about the 80/20 rule with application control, since the primary trust strategies solve 100 percent of the problem. Even in more dynamic environments, they often solve 95 to 98 percent of the problem. It is that final 2 percent that can require careful handling and may take significant effort.

What is it about this final 2 percent that can make it so hard? It is infinite variety and lack of consistency.

To illustrate the point, let's look at an example from a large company with 10,000 application servers. In this case, the issue with the final 2 percent is not technical, but rather logistical due to varied ownership across the organization. Often, in our experience, individual applications are hosted by no more than 20 servers total. So that means there are potentially 500 different application behaviors and updater workflows that need to be accommodated for whitelisting. And it's likely that each of these applications is overseen by a different group. While in practice relatively few of these applications actually need accommodation and the rules for them are quick to author, simply needing to reach out to 500 different operators can take coordination effort and time on the calendar. In this case, the challenge is human rather than technical, but is one that you should be aware of and build into your implementation timelines.

Let's look at another example, this time with end users. And not just any end users, but the creative and entrepreneurial types, who sit in cross-functional roles and often are provided very wide latitude for getting their job done. These people tend to use a huge variety of tools, may be creating their own lightweight automation, and may even be using consumer or personal applications to meet job requirements. In such a mass of what seems like random behavior, it can be hard for even the most seasoned administrator to discern what to allow and what not, and what the best accommodations are for various workflows. In this case, the issue is technical as several custom rules or policy groups may need to be set up to meet the unique needs of a small group of users. The more you can communicate to these user groups prior to deployment to help them understand their role in educating you on their work needs, the easier this process will be.

CHALLENGE: Unknown unknowns are unpredictable by their nature.

APPROACH: Flexible planning, and measurement of incremental progress.

CHALLENGE: Imposing controls on creative behaviors.

APPROACH: Secure "self-service" mechanisms, communication and outreach.

METRICS-BASED MANAGEMENT

How do I know if we are in the easy part of the 80/20 rule, or the hard part? How do I know which users are or will be the harder ones to lock down? How can I know which users are more stable, and if I should try to lock them down first? How can I account for unknown unknowns if I am trying to build a project plan? How can I know how many phone calls will show up at the help desk? How many incidents are going to get escalated to the SOC team? How long is this going to take, and when will I be done?

Because there are variables at play that cannot be measured or understood until the project is under way, traditional project management techniques may have limited effectiveness during certain phases of an application control deployment. To answer these questions, you must first have a firm understanding of your environment and the technology resources that will be required. To help customers navigate this planning process, Cb Protection provides you and our services team with data-driven intelligence into your environment, and our services team leverages a methodology that is metrics-driven. So no matter the situation there is an "agile and efficient" way to deal with the areas that, by their nature, must be more flexible.

CHALLENGE: Planning for phases that contain unknowns.

APPROACH: Providing high-frequency, high-value reporting about discoveries.

CHALLENGE: Getting the project done by certain deadlines.

APPROACH: Finishing the easy parts first; packaging the go-forward approach.

GETTING TO GOOD ENOUGH

Modern security is not just "set it and forget it." It can't be. The hackers are bringing the human element in huge volume, and we must do the same in order to combat them. Luckily, automation can still do most of the work for us, so we can focus on the high-value exceptions and action items. Part of completing a Carbon Black project is making sure the right teams and personnel are prepared to handle those infrequent but important exceptions.

Part of this process is making sure you have the right players on your team. The best teams are those with diverse sets of skills and experiences, so you might find yourself with a team made up of IT, security and help desk professionals, as well as end users.

Building a team often starts with delegating. Being able to delegate appropriate tiers, "runbooking" and scripting activities, is part of what makes staffing a Cb Protection deployment affordable and effective. The trick is not to try and make security experts out of everyone, but rather to delegate tasks that naturally fit with existing skills and processes. Adding minor items to a "local whitelist" is something that can be easily delegated to the help desk, to managers and leads, or even to users themselves via a "self-service" mechanism, no console access required. This part is easy to accomplish, but also critical to ongoing operation.

CHALLENGE: Staffing infrequent but important exceptions.

APPROACH: Scripts and features that simply or obviate console administration.

CHALLENGE: Making good security decision with only limited expertise.

APPROACH: Policy-based, criteria-driven triggers based on a rich data set.

AUTOMATION AND CONTINUOUS LEARNING

As you handle exceptions in human fashion, triaging and remediating the anomalies you see on a weekly basis, you will begin to see patterns. Some of the patterns may cause you to wonder if there might be better ways to configure your policies. Or possibly even to automate some of the work you are doing manually now.

Continuous learning is part of the modern industrial landscape, and it applies equally well to security. As you become increasingly familiar with our technology and how it operates in your environment, you most certainly should make improvements where you see fit.

If you are thinking full automation is part of that improvement loop, Cb Protection includes a rich REST API out of the box and offers access to a comprehensive set of partner integrations. You can quickly integrate Cb Protection into your security stack, and customize your engineering and orchestration, without needing to be a senior programmer. Integrating Cb Protection into your SIEM, sandbox, firewall, threat intelligence and analytics platforms will allow you to automate actions and enrich the quality of alerts before they ever show up on your screen.

CHALLENGE: Adapting and improving the solution as your business changes.

APPROACH: Advanced training and health check offerings from Carbon Black.

CHALLENGE: Optimizing and automating day-to-day operations.

Success Stories

You may be familiar with the old phrase, "knowing is half the battle." And I hope this paper has increased your understanding of what it takes to implement application control efficiently, and how Carbon Black's technology and services helps make it easy. Of course the other half of the battle is knowing you are surrounded by folks who are going through it with you, and understanding what you can learn from their experiences.

Carbon Black customers shy away from sharing specific details or naming themselves in public. The security reasons for that are obvious. But what we've tried to share below are some brief stories based on our customers' real experiences with application control. Some customers are willing to act as private references; your sales representative can possibly schedule a phone conversation.

THOSE CRAZY KIDS

Many of us are familiar with the stereotypes common for the "Millennials" and "Generation Y." Certainly one is that they require latitude—flexibility and creativity—as part of their job culture. Which doesn't necessarily lend itself to security discipline, at least not in the more traditional sense.

Some well-known giants of the Internet, from e-commerce to social media, have harnessed the culture of that generation to their advantage. Their entire business model is designed around fostering flexibility and creativity, then harnessing the best of its outcomes drive value. They are continuous innovation machines, where everything is constantly changing.

Would you believe that some of those companies have Cb Protection installed in a fully locked down, high-enforcement mode? They are not even using a "block & ask" user bypass mode. How could they possibly have accomplished that?

One aspect has to do with focusing purely on outside persistent threats. When you make security less about enforcing corporate policy, and more about catching certain bad guys, that gives you some flexibility to get creative. Another has to do with trusting that users, peers and leads can make good security decisions, if you give them the right scope and context. Still a third is related to an understanding that breach is inevitable, and a strong program of detection and response, like that offered by Carbon Black, is a cornerstone of any robust security program.

These companies host some of the most open and dynamic work environments on the planet. And yet they've got application control locked down. Being comfortable with the nuances of security is the key to their success. They set an example perspective for all of us.

LONG MARCH

Even controlled environments can show chaos, depending on how you think about it. There may be strict corporate policies about software procurement, but with a huge number of teams and departments, the massive variety of approved software becomes hard to fathom. Companies with many lines of business, or that have grown by acquisition, may have many hundreds of different applications deployed, each with a small footprint but all critical for business.

How do these applications get installed in the environment? How do they update themselves? Do they produce runtime or job control artifacts that Cb Protection tracks? Do any of them bring risks of interoperability issues with endpoint security agents? Are any of them experiencing performance impacts as a result of deploying application control? What company projects might be impacted if each team experiences problems they must resolve? Which members of a given team can participate in quality assurance testing and piloting? Does each team understand that their problem is unique to them? What are they sharing about their experiences with other teams and departments?

When you multiply these questions and their answers by one hundred, what once seemed like a straightforward approach can now seem like a bit of chaos. This can be especially true if some of the problems are very sticky to diagnose, or if the end users are propagating irresponsible and negative rumors about the project. Overlay onto all of that competing schedules and priorities, and suddenly making application control successful has become a "long march."

It's like riding a bicycle 100 miles. Part of it is knowing how to ride for endurance. Part of it is having prior experience getting there successfully, or having faith that you'll be able to do so. There is a skills piece, but also a psychology piece.

Some of our customers have in fact gone through this long march. The most important keys to their success were mandate and consensus. Hearing from executives how important it was, and communicating with users about meeting their needs, not just once but repeatedly, is what made the march both bearable and fruitful. And ongoing incremental successes built powerful momentum, because each incremental success delivered immediate security improvements for all involved.

SECURITY TURN-AROUND

Having the right perspective can make a project successful. But what happens when you start out with a misguided perspective, and what if the forces are aligned against you changing it? How long does it take, and what kind of effort is required to turn things around? How about just a one-day workshop, including a pleasant lunch break?

It's not uncommon for Cb Protection customers to be in a breach situation when they choose to purchase. They are experiencing the new security landscape firsthand, and they need to stop the flood as quickly as possible. If they are thinking of application control as "whitelisting," they may then think to themselves, "It's just a list. I can build a list. How hard is that?" We don't mean to say that customers oversimplify what it takes. But rather, in coming at it from this "list" perspective, they design the wrong methods for getting configuration built correctly and swiftly.

What is difficult about this is that in a breach situation forces have already been marshalled, expectations have already been set, and no one wants to hear that we have to go back to the drawing board. This is especially true if days or weeks of planning have already occurred, or when authorities have set deadlines for getting controls in place. Taking a step back is hard enough when you're in a panic, and much harder still when you're already headed down a certain road.

Carbon Black congratulates its customers in difficult circumstances that, once they engaged our professional services team, and were able to participate in an emergency workshop, they were in fact willing to take a step back. Typically within just one day of face-to-face interactions, they are able to realign their intuitions about how software actually gets onto machines, and therefore how application control must work. This crucial moment of planning results in more swift and efficient implementation, and better management of stakeholder expectations.

Taking a methodic approach, swiftly but also carefully, turns difficult situations into long-term wins.

QUICK & EASY

We know what happens when an environment is open and dynamic, when it is large and varied in character, and when we're still paradigm-shifting our perspective. But what happens when none of that is true? What happens when the environment really is highly controlled and well understood, when there is a limited amount of possible configurations, and when there's time to understand the necessary changes and the right approach?

In that case, application control can in fact be quick and easy.

Cb Protection's strongest and oldest customer base is point-of-sale systems. Generally the configuration of these machines is highly controlled and infrequently changed, and they come through a very short list of well-understood channels. There are only a few types of machines and functions, and usually one or only a few markets and regions. And, despite the high-profile breaches we read about in the news, most point-of-sale customers are not in a difficult situation, but are instead working proactively, for both security and compliance reasons.

Not every point-of-sale installation meets all these criteria. But when they do, implementations are in fact simple, straightforward, efficient and quick, much as you might hope them to be. Application control can in fact be "cheap and easy," it just depends on the right circumstances.

NOT THE RIGHT FIT

Any application control solution will have certain common limitations, and the Cb Protection Agent is no exception. As we mentioned earlier in this paper, any endpoint security agent can impact performance and interoperability, which can be exacerbated under certain conditions. Application control configuration needs to be fully cached so that agents can operate robustly offline, but what happens if unusual conditions cause that configuration to be too large? And, of course, if some user populations have very specific and unusual needs?

Imagine first a giant repository of legacy software, 10 years' worth of high-end applications. While any given application is hardly used at all, there is often an urgent need to check out a particular version from a particular year. At any moment, you may need to test or review one, so all of them have to be available and approved by application control. Furthermore, they are not delivered by any software management agent, such as SCCM or BigFix, so there is no way to just "bless their installer." They all sit on a plain old file server, so each file has to be explicitly approved. In this scenario, the offline cache becomes bloated, and checking it against each file execution becomes a drag on performance.

Imagine that the way the code in these legacy applications works is diametrically opposed to how active endpoint security agents do their jobs. The code relies on massive parallelization, stopping and starting scores of small programs hundreds or even thousands of times per second. When it's deployed against a high-performance computing infrastructure it works great, but when simulated on a regular workstation it's already slow. And if an endpoint security agent has to not only track but enforce against every execution, the overhead becomes too much. If the user base is also the kind used to high-end computing response times, the combination becomes impossible. Application control will not work for this organization.

Though it happens rarely, some customers do come to the conclusion that application control is not the right choice for them. Having that amount of control would have been a great "fort to have built around them," but it ends up being too unwieldy and restricting. That same sort of customer typically will turn to Carbon Black. It enables them to lessen the performance impact, since it is a strictly passive agent. And it makes "posting more guards" affordable and effective.

Conclusions

In the end, application control isn't "too hard." The amount of money and effort required to invest in deployment significantly pays off with real, proven high levels of security. The trick to deciding if application control is right for your organization is understanding what models to use for deployment, and what sort of traps to expect. Different customers require different approaches, and some take more time and effort than others, but the right fit can be found for every situation —and the Carbon Black professional services team can help you get there. The new threat landscape makes security a challenge, but today's technology makes it a challenge your organization can combat.

About the Author

Joel Rising: Joel has 25 years of experience with information technology. After 10 years as an IT guy at a university, where he was considered a security innovator and good neighbor, he transitioned to enterprise security startups, focused primarily on information and the endpoint. Joel leads the solutions architects team at Carbon Black, which is assigned to major enterprise accounts, and responsible for technical best practices. He cares about connecting people and technology through the medium of process, believing that technology can win the day but that the human element is what changes the game..

Carbon Black.

Carbon Black is the leading provider of a next-generation endpoint-security platform designed to enable organizations to stop the most attacks, see every threat, close security gaps, and evolve their defenses. The Cb Endpoint Security Platform helps organizations of all sizes replace legacy antivirus technology, lock down systems, and arm incident response teams with advanced tools to proactively hunt down threats. Today, Carbon Black has approximately 2,000 worldwide customers, including 25 of the Fortune 100 and more than 650 employees. Carbon Black was voted Best Endpoint Protection by security professionals in the SANS Institute's Best of 2015 Awards.

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