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Sent: Thursday, August 19, 2010 11:12 PM
Attach: HBGary IR Services Proposal to L-3.pdf
Subject: HBGary proposal

Mike,

Here is our proposal reflecting the conversation from earlier this week.

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HBGary Proposal

For Incident Response Services to L-3 Communications

August 20, 2010

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Summary

This proposal outlines a methodology and scope of work for countering an advanced cyber-attack that has occurred at the L-3 Klein Associates network. Detailed technical information follows for a phased engagement including detection of compromised hosts, forensic analysis of systems, and ongoing monitoring. The scope of work includes analysis of approximately 150 host systems with a best-faith estimate that one-third of these machines will require forensic analysis. Included is a follow-on phase of monitoring for six months. The engagement makes extensive use of HBGary's product set to increase productivity and effectiveness. There will be no license fee for use of Active Defense over the six month follow-on monitoring phase.

Terminology

Several acronyms are used throughout this document. These are defined for the convenience of the reader.

TTP – Tools, Techniques, and Procedures. These are the methods used by an attacker to compromise and remain persistent within a network. TTP is a broad term and covers all behavioral characteristics of an attacker, including methods used to lateral movement, exfiltration of data, scanning the network, preferences for tools, etc.

APT – Advanced Persistent Threat. This is a catch-all term for any targeted attack that involves one or more human attackers interacting with compromised hosts. In other words, APT and Hacker are synonymous. The term APT is not used when malware is the result of large scale autonomous infection and there is no evidence of interaction with a host (that is, there is no human at the other end of the keyboard).

RAT – Remote Access Tool. These are malware programs designed to allow a remote attacker to execute programs and move files to and from a compromised host. These programs typically connect outbound to a server to get commands.

C2 – Command and Control. This refers to the mechanism used by a RAT to communication with an external host and get commands. The C2 host is usually a compromised host that functions as a cut-out between the compromised network and the attacker. C2 servers are typically moved on a regular basis to overcome perimeter security such as NIDS or DNS blackholes.

FUD – Fully Undetectable. This term applies to malware that has been tested against a large set of known security products and has been verified as undetectable. Most APT attackers use tools that are FUD. FUD typically refers to AV products, but is sometimes used to refer to browser-sandbox technology (sandboxie, etc.) as well. For example, a FUD malware would score zero hits on a scan performed by virustotal.com.

AV – Anti Virus. Refers to anti-virus products and host-based firewalls.

NIDS – Network Intrusion Detection System.

DDNA – Digital DNA. This is HBGary's system to detect suspicious code based on behaviors.

IPI – Initial Point of Infection. This refers to how the machine was initially compromised by an attacker. This can be a autonomous malware infection, such as that caused by visiting a malicious website, or a targeted attack such as those caused by spear-phishing. IPI can also refer to lateral movement.

Lateral Movement. This refers to an attacker who has already compromised the network in one location, but is attempting to gain access to additional machines. Typically this is done using stolen account credentials.

Exfil / Exfiltration. This term refers to the removal of data from the network, typically using some form of covert communications designed to bypass filtering at the perimeter.

Packer / Cryptor. This term refers to a technology that can create many different variants of the same malware in an automated way, easily bypassing MD5 checksum scans and many forms of AV scanning.

Spreader. This refers to a function within a malware that allows it to spread across the network in an automated way; for example, by infecting USB keys or connecting over Windows network shares.

Downloader / Dropper / Sleeper. This refers to how a machine is initially exploited. The dropper is a small program that executes first and downloads a larger program (the payload) and executes the second program. Some downloaders can be configured with a sleep time and will not connect out for weeks or months. In this case, the downloader may be called a 'sleeper agent'.

PUP – Potentially Unwanted Program. These are programs that are suspicious by nature but are not actually malware. Examples are unsanctioned VPN bypass (LogMeIn, etc.), invasive toolbar technology (Google Toolbar, etc), and security tools that are not tied to an attack (packet sniffers, etc.). PUP's are typically whitelisted during an investigation, but are still reported to the customer for informational purposes.

IOC – Indicator of Compromise.

Active Defense Methodology

HBGary's methodology is based on the assumption that attackers will succeed in breaking into a network. Through experience, HBGary knows that existing security controls are not sufficient to keep hackers out of a network. When hackers are detected in a network, this is referred to as "advanced persistent threat" (APT) by most HBGary customers, regardless of the origin or intent of the attacker. For purposes of clarity, HBGary will refer to hackers as APT in this document. HBGary assumes that APT attackers will:

- Employ multiple remote access tools (RATs) each with independent command-and-control (C2) mechanisms
- Will re-use the same RAT tool frameworks over time, but will often recompile variants that defeat anti-virus (AV) scanners
- Will often change the DNS servers used for C2, for example using dynamic DNS services, rendering DNS blacklists largely ineffective
- Employ multiple C2 channels that cover different protocols (HTTP, Instant Messaging, etc.) making it difficult to blackhole communications at the perimeter of the network
- Will employ multiple 'sleeper' RATs that are used as backup in case the primary RATs are discovered
- Will obfuscate DNS or C2 information in pseudo-encrypted data within RAT tools making it difficult to recover this information without reverse engineering
- Employ classic hacking methods to move laterally in the network, including downloading additional tools to dump password hashes, enumerate hosts, etc.
- Target high value data (i.e., intellectual property, email, legal documents, etc.)
- Will prepare data prior to exfiltration, leaving behind evidence of compressed or encrypted files

HBGary's primary method to detect RATs and sleeper-RATs is Digital DNA™ and physical memory assessment. Many enterprises will be infected with a variety of malware that will be detected by HBGary, including botnets that have RAT capabilities and therefore could be a vector for targeted attack. However, botnets are typically large-scale deployments and the botnet-operator doesn't have time to log into every infected machine. In many cases, a botnet-infected machine is not actually in direct-use by a live attacker. Because of this, HBGary examines each malware infected machine for evidence of *interaction with the host*. HBGary makes the distinction between external non-targeted threats and APT based on interaction with the host. Once direct host-interaction begins, HBGary classifies the event as an APT compromise. Host interaction is determined based on forensic evidence such as recorded events and filesystem activity.

HBGary's standard method is live-forensic examination from remote over the network against a live running system. Live forensic examination is an established industry practice that saves a great deal of time during large-scale investigations against enterprise networks. HBGary performs all investigations using the commercially available Active Defense platform.

Architecture

HBGary's employs Active Defense for large-scale incident response and monitoring. Active Defense offers the following capabilities:

- Best-of-breed physical memory analysis (all Windows platforms)
- Automatic identification of suspicious executable code (via Digital DNA)
- Remote forensic drive analysis, preview, search, and acquisition
- Extensive capability for performing IOC queries across thousands of machines concurrently
- Ability to reconstruct a timeline of events occurring at the host
- Architected to minimize the impact on the network

Active Defense is implemented as server with a management console. All communication is encrypted and compressed over HTTPS. Agents phone home to the server over HTTPS. No special ports need to be opened on the firewall. All analysis takes place at the end-node. No files are brought over the network except the "results.XML" file which is a few hundred K in size. Overall the system is designed to be friendly to "small pipes".

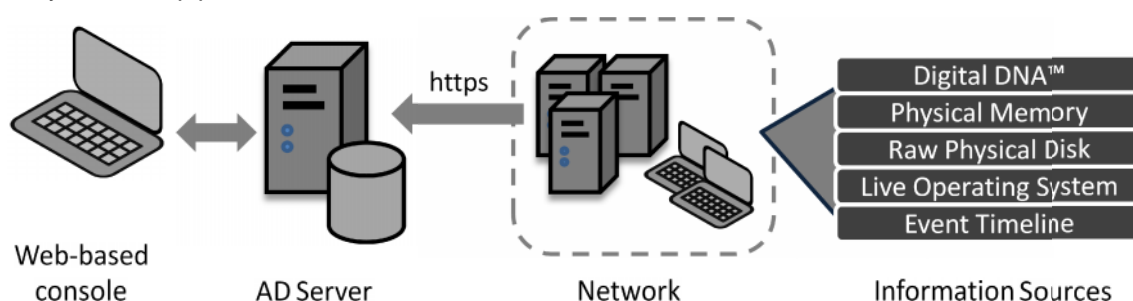


Figure 1 - Active Defense Architecture

Figure 1 - Active Defense offers a comprehensive view of all endpoint data that is pertinent to an investigation. Analysis is high-performance and forensically sound.

HBGary augments Active Defense with Responder Professional for deep-dive analysis of individual memory images. Responder adds the following capabilities:

- Ability to extract decrypted C2 communication from malware memory
- Ability to defeat packing and polymorphism
- Ability to extract additional IOCs and NIDS signatures, including registry keys, file paths, URLs, and other artifacts
- Full reverse engineering capabilities (when appropriate)
- Ability to execute malware samples in a sandbox for rapid behavioral analysis

Whenever possible HBGary employs live-forensics of remote computers with the intent to minimize impact over the network and scale an investigation across many machines. HBGary examines five primary information sources:

- Digital DNA - automated reverse engineering of every code object in physical memory
- Physical Memory - all volatile memory on the host at time of scan
- Timeline - all timestamped events that can be recovered from a host
- Raw Physical Disk - drive-level forensics, including \$MFT, deleted files, and slack space

- Live Operating System - very fast queries for specific files, processes, or registry keys

What follows is a detailed description of how HBGary leverages the five information sources.

Digital DNA to find suspicious code in memory

Digital DNA will detect remote access programs, information stealers, keyloggers, hooks, stealth programs, and injected code. In practice, about 80% of all detected malware falls into the category of external non-targeted or an *unused vector* (potential botnet RAT that remains un-used for targeted attack). About 2-3% of detected malicious code falls into the category of small hand-placed RATs that are directly tied to an APT compromise. About 10% of all detected software falls into the category of PUP (potentially unwanted program) - not malware but could represent a violation of policy (i.e., sniffer, unsanctioned VPN product, Google Toolbar, etc.). When a PUP is found to be a security application (i.e., a kernel mode HIPS that is hooking the SSDT, a TDI pass-thru driver, a virus scanner that injects code into every usermode process, etc.) HBGary will typically whitelist that application and it will be ignored in further analysis.

Group View						
<div> Show in Subgroups Select All Select None Refresh Actions </div>						
Page 1 of 1 (4 items) < [1] >						
Drag a column header here to group by that column						
	Online	Hostname	Agent State	Last Check-in	Last Scan	Last Score
		TESTNODE-1	Machine is offline	08/16/10 03:15 PM	08/02/10 04:12 PM	10.9
		TESTNODE-2	Machine is offline	08/16/10 03:15 PM	08/02/10 04:14 PM	100.7
		TESTNODE-3	System online. Current status: Idle	08/19/10 09:26 AM	08/02/10 04:14 PM	27.8
		TESTNODE-4	Machine is offline	08/16/10 03:15 PM	08/02/10 04:11 PM	10.9

Figure 2 - DDNA scores for malware infected machines

Figure 2 - Because relative suspicion level of a host is available at-a-glance across the entire network, HBGary is able to quickly triage an infection. This saves time and allows HBGary to assess a very large number of hosts in a short period of time.

Digital DNA is a key differentiator for HBGary and is one primary means by which suspicious code is identified in the network. This, combined with the other information sources, makes HBGary's approach stand out from more traditional forensic approaches.

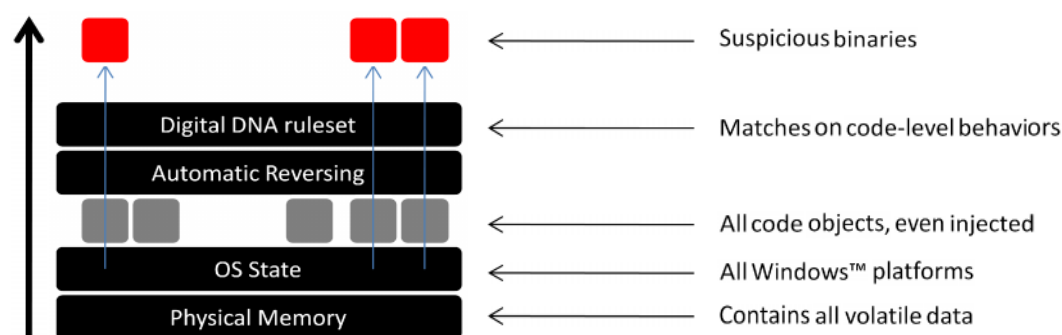


Figure 3 - The Digital DNA Architecture

Figure 3 - Digital DNA reconstructs the entire state of the operating system from physical memory and detects suspicious code based upon behaviors. This allows HBGary to detect threats with no prior knowledge or signature. When Digital DNA is combined with IOC queries for known threats, HBGary is the most comprehensive analysis of the endpoint for compromise.

Extensive Indicators of Compromise (IOC) scans against all sources

This is based on HBGary's prior knowledge of the threat. IOCs are very powerful and they work, but they must be crafted specific to the attacks that are known to be targeting an environment. HBGary's philosophy on IOCs is to craft them loosely to maximize the potential they will catch variants of an attack. For example, HBGary would not typically use an MD5 checksum since it may only match on one variant of a file. Instead, HBGary would craft IOCs based on strings found within the malware binary itself. In particular, HBGary favors IOCs that relate directly to how the code was written, as opposed to how the file was packaged. These code-level IOCs are very good at catching multiple variants of an attack kit. HBGary also favors IOCs that relate to an attacker's tactics, techniques, and procedures (TTPs) - such as detecting the use of certain command-line tools, lateral movement techniques, or exfiltration methods, all of which leave ample evidence on the hard drive of a compromised system. HBGary also leverages IOCs from other customer engagements, IOCs provided by the customer, and IOCs discovered during the course of the engagement (potentially hundreds of individual IOCs in play). IOC scans are run multiple times over the course of the engagement, and are used during the final phase of remission-detection.

Path	Size	Deleted	Created	Last Modified	Last Accessed	Offset	Data
System: TESTNODE-1 (8)							
System: TESTNODE-2 (9)							
System: TESTNODE-3 (10)							
C:\WINDOWS\system32\idcache\hwxipn.dll	13,165,552		[No Data Available]	[No Data Available]	[No Data Available]	0x16B80CFF	`5aHb.2 R.c.7. B0Fg@ @...Q.r.W..B@.Ebfrc.3.s...E. \$BVRxZ.c.S..i.C `SQFPh..3.B..X..J .BRCSd#.C.R..v.
C:\WINDOWS\system32\idcache\hwxht.dll	10,096,640		[No Data Available]	[No Data Available]	[No Data Available]	0x4656D89D	.1.1...R.B.hJ.@c1DUa5DRH.1.1.S.T.T.... B.B.S.T ESccJQh.1. .C.S.R....l...V.w....r EDrcU@x .l.B
C:\WINDOWS\system32\idcache\meshars.dll	36,921		[No Data Available]	[No Data Available]	[No Data Available]	0x3B1D5D36	G@...t`...u..O... (t) ..+b ...t]@.g.k_P.c.....3... ..Q...o.s*...W..UKJ... ..Ar..8....W...p...l..W..P....
C:\Malware\Demo\malware.exe	13,312		[No Data Available]	[No Data Available]	[No Data Available]	0x3A40E1D8	MZ.....@..... {.36..3'.38.....38Rich.38.....PE.L.
C:\Documents and Settings\qol\DesKtop\Software\WinRunner\InetAll\rep.?	30,100,395		[No Data Available]	[No Data Available]	[No Data Available]	0x2FACD6DC	...1J.(C.... N....3Px a..B.....h...- 0.J.-Z-1..... Z*..Jd.I9G...gd..V...rF5.M.. "....B.W.....H..a...@..0
C:\Program Files\IDA\till\sparc\sparc.til	762,237		[No Data Available]	[No Data Available]	[No Data Available]	0x7AC21CAA	...J) .N. ..Y....Q..V.... ..m..?cJ..P..7..\$ Y*.C.3..\$E [.ms"Z.1v..Yu..6YLrH.O4rH.O...03..CF.e..H[
C:\WINDOWS\HBGDNA\mendump.bin	268,435,456		[No Data Available]	[No Data Available]	[No Data Available]	0x2AE8A0223UP&0.. ..P.....

Figure 4 - IOC scan results are easy to navigate

Figure 4 - The Active Defense interface to IOC data is streamlined and offers data preview so that files don't need to be downloaded over the network. This saves time because many hits can be evaluated at-a-glance. This also saves network bandwidth because files typically don't need to be downloaded to the analyst workstation. All focus is placed on doing the most with the minimum amount of time.

Extracted, volatile code snapshots from live memory

Extracted code contains volatile data calculated at runtime (with a strong tendency to defeat packing and reveal C2 mechanisms) and is analyzed in HBGary's Responder product. This information is used to build additional IOCs and NIDS signatures. Protocol level information can be recovered that can then be used in network IDS equipment. DNS and IP address information can also be recovered for subsequent blackholing, lookups in DNS query logs, etc.

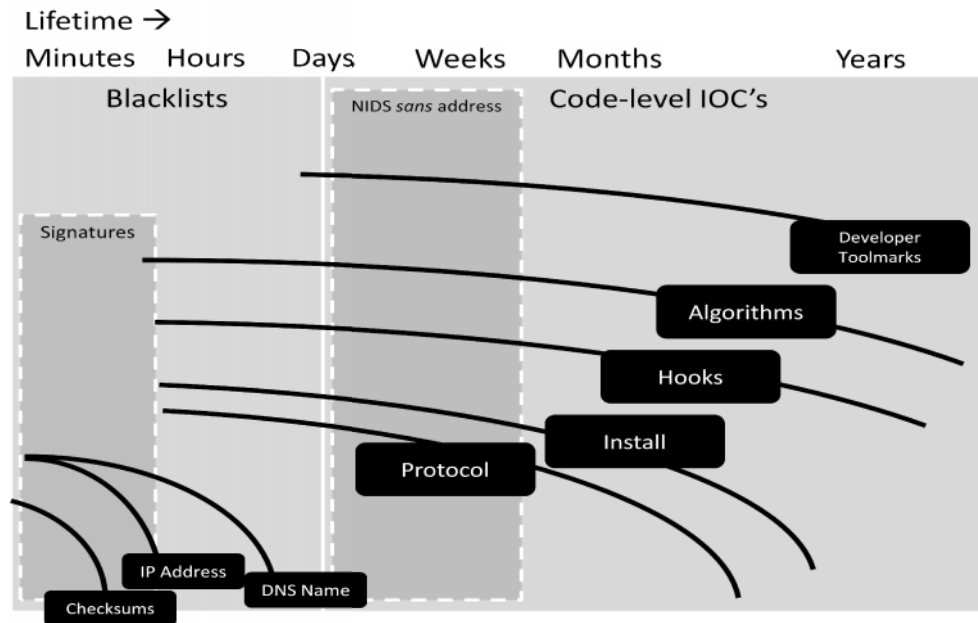


Figure 5 - Effectiveness of various IOC's

Figure 5 - HBGary understands the art of building IOCs and how to focus on searches that have long-term efficacy for detecting the intruder. This directly benefits the customer, especially over the continuous monitoring period that follows the engagement.

Timeline event reconstruction for the host

This includes prefetch queue, temporary internet files, filesystem master file table (\$MFT), event logs, and registry DAT files. Timeline event reconstruction is extremely effective at detecting APT interaction with a host. In particular, execution of command line utilities, movement and creation of files, and use of stolen credentials can be detected.

Timeline		
08/15/10 03:09:00.0 08/15/10 05:27:00.0 08/15/10 07:45:00.0 08/15/10 10:03:00.0 08/16/10 12:21:00.0 08/15/10 02:39:00.0 08/16/10 04:57:00.0 08/16/10 07:15:00.0		
Events		
Page 17 of 31 (612 items) ◀ 1 2 3 ... 16 [17] 18 19 ... 29 30 31 ▶		
Timestamp	Type	Summary
08/16/10 02:35:52	File System	[Last Access] C:\WINDOWS\Media\Windows XP Hardware Remove.wav - Flags: Archive FileSize: 36538
08/16/10 02:35:58	File System	[Last Access] C:\WINDOWS\system32\drivers\usbccgp.sys - Flags: Archive FileSize: 31616
08/16/10 02:35:59	File System	[Last Access] C:\WINDOWS\system32\drivers\hidclass.sys - Flags: Archive FileSize: 36224
08/16/10 02:35:59	File System	[Last Access] C:\WINDOWS\system32\drivers\hidusb.sys - Flags: Archive FileSize: 9600
08/16/10 02:36:00	File System	[Last Access] C:\WINDOWS\system32\drivers\mouhid.sys - Flags: Archive FileSize: 12160
08/16/10 02:36:01	File System	[Last Access] C:\WINDOWS\system32\drivers\kmixer.sys - Flags: Archive FileSize: 171776
08/16/10 02:36:01	File System	[Last Access] C:\WINDOWS\Media\Windows XP Hardware Insert.wav - Flags: Archive FileSize: 36636

Figure 6 - Timeline for a host in Active Defense

Figure 6 - Another HBGary first, bringing time stamped event data to a single cohesive interface at the Active Defense console without the overhead of forensic drive imaging. Again, the goal is to save precious time and do more for the customer. Timeline information is a critical component of APT investigations.

Executable files recovered from disk and traced within a sandbox

This uses HBGary's REcon technology. In order to save time when reverse engineering, HBGary developed a technology called REcon. REcon is able to single-step execute a malware program and record all runtime behavior. REcon captures all runtime and volatile data and allows an analyst to do in five minutes what would otherwise take more than a day. HBGary makes extensive use of REcon during an engagement to minimize the cost and overhead of reverse engineering.

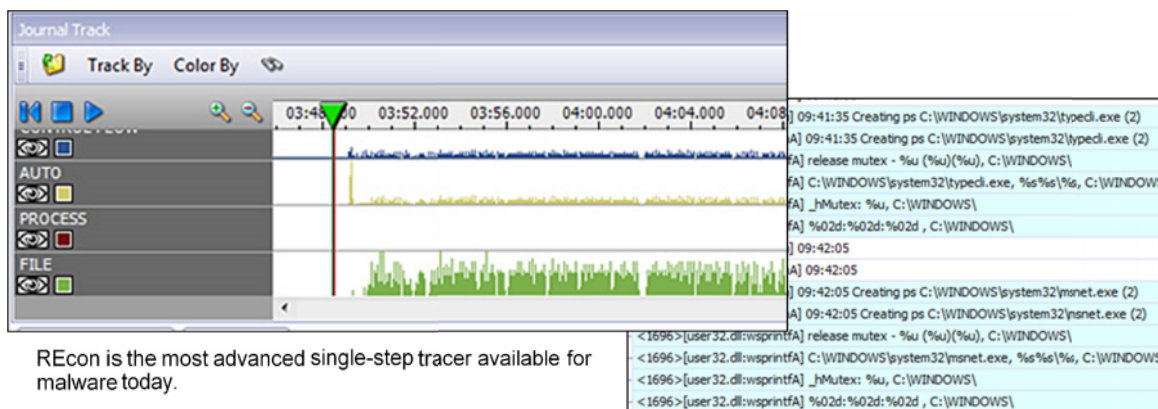


Figure 7 - REcon is a sandboxed runtime tracer for malware samples

Figure 7 - Again in the interest of doing more with less, HBGary uses REcon as a primary means to trace malware behavior. In most cases this eliminates the need for reverse engineering since the malware will simply reveal its behavior by executing.

Deployment Phases

HBGary performs an engagement in multiple phases. Each phase consumes a certain percentage of hours on the engagement, with phases 2 and 3 consuming the majority of the hours. HBGary includes a final long-term remission detection phase to detect reintroduction of the threat, re-infection, or emergence of sleeper agents.

Prerequisites

The following logistics items are requested from you:

- VPN access to the HBGary Active Defense Server
- Support from your local computer and network administration teams when needed
- Access to DNS logs, proxy logs, IDS logs, network flow data, and other logistical support from IT and networking group.

Optionally, HBGary can install a Fidelis Edge 25 XPS at the network gateway for the site. This is a very advanced IDS and would be used over the course of the engagement. Among other things, it would be used to monitor for known C2 traffic related to the APT compromise. In this capacity it would be used for monitoring only. This will incur an additional cost of \$2,600 (assuming period of performance less than 30 days).

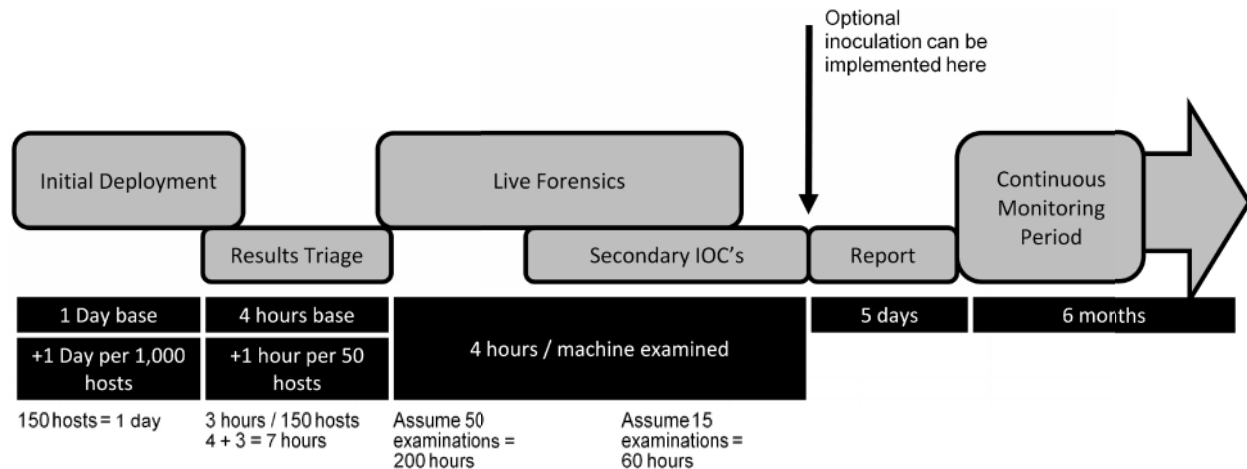


Figure 8 - Deployment Phases

Phase 1: Initial Deployment

We estimate it take one day to deploy the AD agent to additional computer hosts at Klein. During this phase, HBGary deploys agents to the end-nodes and initiates initial physical memory scans and DDNA calculation. As always, some machines are offline or otherwise cannot be deployed to because of network related issues. These remaining machines are attended to over the course of the engagement as they come online, connectivity issues are debugged, etc. Initial deployment from the Active Defense console requires an account with domain administrative credentials. Deployment can optionally be performed using third party mechanisms.

Phase 2: Results Triage

There is a minimum of 4 hours to begin triage. Add to this baseline one hour per 50 machines. During this phase, HBGary examines IOC query results and high-scoring DDNA hits to determine if malware is present on the machine or there is evidence of intrusion. This phase doesn't include deep-dive analysis. The focus is rapid sorting of machine status.

Phase 3: Live Forensics

The proposal is based on a best faith estimate of the number of machines that have been compromised and will require further analysis. This is a not-to-exceed estimate and if the number of machines is far greater than expected, the additional analysis will need to be negotiated as a follow-on to the engagement. Based on prior information HBGary is planning for 50 machines to be analyzed initially.

This phase includes:

- Timeline analysis
- Extraction and analysis of suspicious binaries
- Deep-dive analysis of memory images
- Forensic examination of the filesystem

It is assumed that additional IOCs will be discovered during this phase. These will be included in a subsequent follow-on IOC scan. Actionable intelligence, such as DNS names, IP addresses, C2 protocol information, reboot survival methods, and damage assessment are included in this phase.

Phase 4: Secondary IOC scan

The proposal is based on a best faith estimate that 15 more machines will need to be examined. The process of examination is a continuation of live forensics. At the end of this phase a robust set of IOCs

will have been developed for the environment. The Active Defense deployment will be tuned for the environment and ready for long-term continuous monitoring.

In some engagements, HBGary includes inoculation at this point. HBGary can remove malware effectively from compromised hosts without incurring the cost of re-imaging. In this case, the customer has a policy of re-imaging so this phase has been omitted.

Phase 5: Report

Final report writing will take one week. The report will contain reverse engineering data for any found malware, timeline analysis for any compromised hosts, and a complete list of the IOCs that are populated and ready for use in the Active Defense server.

Phase 6: Continuous Monitoring Period

This is the culminating phase of the engagement. This is a long-term phase to detect remission / re-introduction of compromise by APT. This final remission-detection phase monitors the network for infections by APT malware & RAT tools, and also examines hosts for APT interaction/TTP activity.

This continuous monitoring phase is implemented by scanning the network once a week with the fully populated IOC query set and up-to-date Digital DNA genome. HBGary leaves behind an Active Defense server licensed for the scope of the engagement covering six months. This is included as part of the proposal and does not incur any additional cost. If and when new compromises are detected, these will be reported. The continuous monitoring period does not include follow-up incident response services or live forensics on said hosts.

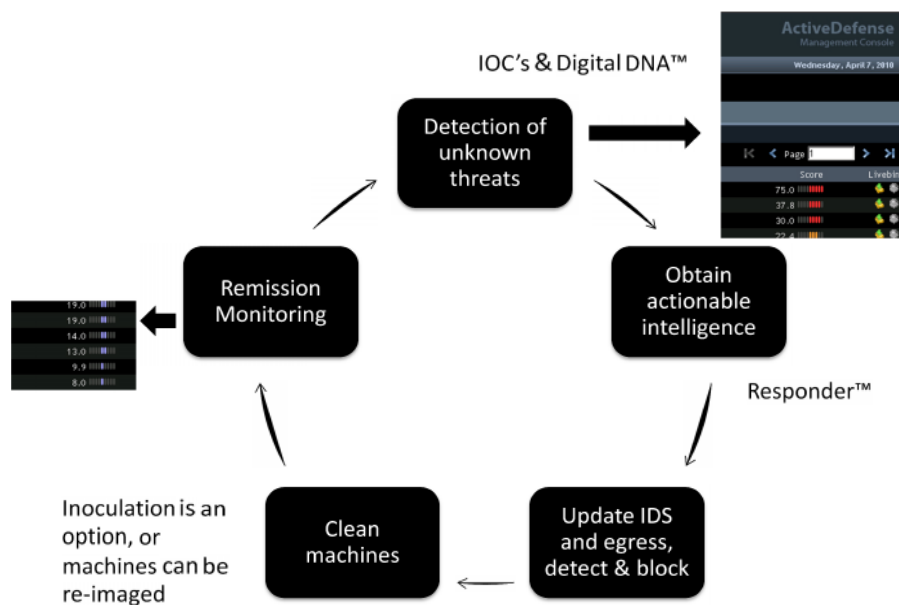


Figure 9 - Ongoing remission detection

Figure 9 - Ideally, Active Defense is used in a continuous monitoring cycle whereby new IOC's are populated into the query set over time and the system evolves to be more effective over time.

When used in a continuous monitoring cycle, Active Defense greatly increases the ability to detect compromise early and prevent loss

Included at the end of this proposal is a follow-on proposal for a fully comprehensive managed service (see Follow-on Proposal, page 12) which would include all aspects of HBGary's incident response practice and an ongoing monitoring cycle.

Work Breakdown and Cost

Below are two options: with and without Fidelis XPS for network monitoring.

Option 1 – Services with network monitoring

Phase	Time	Cost
Initial Deployment	8 hrs	\$2,800
Fidelis XPS 25	max 30 days	\$2,600 (max 30 days)
Triage	7 hrs	\$2,450
Live Forensics	200 hrs (expected)	\$70,000
Secondary scans	16 hrs	\$5,600
Secondary Live Forensics	60 hrs (expected)	\$21,000
Report	40 hrs	\$14,000
Continuous monitoring that includes Fidelis XPS 25	6 months	\$15,600
TOTAL	331 billable hours	\$134,050

Option 2 – Services without network monitoring

Phase	Time	Cost
Initial Deployment	8 hrs	\$2,800
Triage	7 hrs	\$2,450
Live Forensics	200 hrs (expected)	\$70,000
Secondary scans	16 hrs	\$5,600
Secondary Live Forensics	60 hrs (expected)	\$21,000
Report	40 hrs	\$14,000
Continuous monitoring	6 months	included
TOTAL	331 billable hours	\$115,850

Follow-on Proposal: Managed Active Defense Security Service

HBGary recommends our Managed Active Defense Security Service for ongoing host monitoring to ensure security health and provide early detection when systems become compromised with either known or unknown APT and malware. This service is a comprehensive full-scope incident response capability combined with ongoing monitoring.

This service will provide a consistent baseline of recurring work to handle normal computer host monitoring, malware triage analysis, and reporting. The service will be delivered from HBGary facilities. The following describes the service in more detail.

1. Manage, operate and maintain the HBGary Active Defense software system.
 - Schedule and run weekly Digital DNA scans to find new and unknown malware or to confirm that systems are clean
 - Schedule and run weekly Indicators of Compromise (IOC) scans of disk and RAM to find known malware and its variants or to confirm that systems are clean
 - Ensure that the Active Defense system is configured properly to ensure best results
 - Ensure that the Active Defense software is up to date with the current versions
1. Triage analysis of suspicious computers and binaries
 - Digital DNA and IOC scans will flag specific computers and binaries as suspicious
 - Suspicious binaries will be analyzed with Responder Professional and REcon¹ to determine if the binaries are APT or malware. The analyst will quickly identify
 - Network activity and command & control (C2)
 - Child processes the malware drops onto the host computer
 - File system activity
 - Registry activity
 - How the malware survives reboot
2. The Managed Active Defense Service will include the following reporting deliverables
 - Weekly report of machines scanned, what was found, remediation taken and recommendations
 - Prompt reporting of confirmed malware and compromised computers
 - Monthly summary reports to provide an inventory of work performed

Cost: The Managed Active Defense Service is offered at \$3,000 per month and includes the Active Defense software. This is a special pricing offer to L-3 Klein. The baseline managed service does not include incident response services such as deep binary reverse engineering and memory or disk forensics. HBGary recommends adding a retainer for incident response services @ \$350 per hour that would be used on an "as needed" basis.

¹ Responder Professional and REcon are HBGary commercial software systems used in our lab. Responder Pro is used for memory forensics and malware reverse engineering. REcon is a tool to run malware in a sandboxed environment to trace and report its behaviors during execution.

Ownership of Work Product

You will own all deliverables prepared for and delivered to you under this engagement letter EXCEPT as follows: HBGary owns all of its pre-existing materials such as products and technologies included in shipping products of Responder Pro, Digital DNA, Active Defense, Inoculator and REcon, its pre-existing methodologies and any general skills, know-how, and non-client specific processes which we may have discovered or created as a result of the Services.

All works, materials, software, documentation, methods, apparatuses, systems and the like that are prepared, developed, conceived, or delivered as part of or in connection with the Services, and all tangible embodiments thereof, shall be considered "Work Product". You will own no Intellectual Property rights or the ability to create derivatives from HBGary commercial products Responder Pro, Digital DNA, Active Defense, Inoculator and REcon which remain the sole property of HBGary. Use of these products following termination or expiration of this Task Order will require a license to be purchased by you.

In addition to deliverables, we may develop software or electronic materials (including spreadsheets, documents, databases and other tools) to assist us with an engagement. If we make these available to you, they are provided "as is" and your use of these materials is at your own risk.

Use of Deliverables

HBGary is providing the Services and deliverables solely for your internal use and benefit. The Services and deliverables are not for a third party's use, benefit or reliance, and HBGary disclaims any contractual or other responsibility or duty of care to others based upon these Services or deliverables. Except as described below, Client shall not discuss the Services with or disclose deliverables to any third party, or otherwise disclose the Services or deliverables without HBGary's prior written consent.

If Client's third-party professional advisors (including accountants, attorneys, financial and other advisors) or the Federal Government have a need to know information relating to our Services or deliverables and are acting solely for the benefit and on behalf of Client or for national security reasons, Client may disclose the Services or deliverables to such professional advisors provided you acknowledge that HBGary did not perform the Services or prepare deliverables for such advisors' use, benefit or reliance and HBGary assumes no duty, liability or responsibility to such advisors. Third-party professional advisors do not include any parties that are providing or may provide insurance, financing, capital in any form, a fairness opinion, or selling or underwriting securities in connection with any transaction that is the subject of the Services or any parties which have or may obtain a financial interest in Client or an anticipated transaction.

Client may disclose any materials that do not contain HBGary's name or other information that could identify HBGary as the source (either because HBGary provided a deliverable without identifying information or because Client subsequently removed it) to any third party if Client first accepts and represents them as its own and makes no reference to HBGary in connection with such materials. If the Federal Government needs information on this engagement and requires documents containing HBGary identifying marks, these marks may be included.

At the conclusion of the consulting engagement HBGary will destroy all written and electronic information pertaining to your internal computer network. The previously executed NDA between you and us will remain in full force.

Timing and Expenses

The Incident Response Service can begin immediately. The Managed Active Defense Security Service should begin after the after the systems are deemed to be repaired or cleaned.

The man-hours are reasonable estimates of the time required to complete the tasks. Actual times may vary based on information gained during the engagement. Billings will be Time & Materials and will be based on the actual number of hours worked, except for Inoculation Shot Service which is a fixed price.

We also will bill you for our reasonable out-of-pocket expenses and our internal per-ticket charges for booking travel, in the event that non-local travel is required. Sales tax, if applicable, will be included in the

invoices for Services or at a later date if it is determined that sales tax should have been collected. Invoices are due within 15 days of the invoice date.