SurfRight

Hitman Pro 3

Command-Line Reference for Network Managers

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Introduction to Hitman Pro

Hitman Pro 3 is a solution to counter malicious software such as viruses, spyware, Trojans, worms, adware, bots and rootkits, also known as malware (malicious software). Hitman Pro 3 catches more new malware than traditional virus scanners thanks to new innovative technology which also has a much shorter scan time than traditional Anti-Virus (AV) software. Hitman Pro 3 is an on demand scanner without a real-time component and can be run directly from a USB flash drive, CD/DVD, local or network attached hard drive. This, plus the short scan time, makes Hitman Pro 3 an ideal second opinion AV scanner.

Extensive Virus Recognition

Traditional AV software depends on the quality of the virus signatures and in some cases on the heuristic capabilities of the AV program. SurfRight partners with 5 suppliers of security software and has access to 7 different antivirus engines and databases. Despite the tremendous effort of AV companies, relying on just one Security Suite or Anti-Virus program is no longer adequate against today's malware and this report will give this statement foundation.

Many researchers have come to the same conclusion.

Prevx	"Every day, popular security products are missing thousands of infections" [1]
Cyveilance	"Even the most popular AV solutions detect less than half of the latest malware threats." [2]
Damballa	"This is due in part to the fact that enterprise-grade antivirus and IDS/IPS fail to capture 20% to 70% of new threats, including targeted attacks and common Trojan attacks" [3]
FireEye	"So the conclusion is that AV works better and better on old stuff" [4]
Ikarus	"The increasingly huge number of new malware samples challenges every analysis team. An in-depth analysis performed by human experts may take several days and uses valuable human resources." [5]
VB100	"A few renowned anti virus programs do not pass the VB100 test." [6]

For Hitman Pro 3 SurfRight developed the Behavioral Scan, the Scan Cloud (containing multiple AV technologies) and the Crusader, to locate, identify and remove known and unknown malware. It does this in just a few minutes and without installing any software on the computer of the end user.

[1] http://www.prevx.com
[2] http://www.cyveillance.com/web/docs/WP_CyberIntel_H1_2009.pdf
[3] http://www.damballa.com/downloads/press/Failsafe_3_(PR_FINAL_2009-3-2).pdf
[4] http://blog.fireeye.com/research/2008/11/does-antivirus-stop-bots.html
[5] http://www.virusbtn.com/conference/vb2009/abstracts/Mandl.xml
[6] http://www.virusbtn.com/vb100/index

Behavioral Scan

Hitman Pro 3 is an on-demand signature-less behavioral and cloud based malware scanner. The behavioral based scanner generates a threat score for each file it finds. Depending on this threat score it sends files that are potentially malicious to our Scan Cloud for instantaneous in-depth scanning and verification (which uses our own and multiple technologies from our antivirus partners for virus naming). The Scan Cloud returns the scan results within seconds and the verified malicious files are removed from the computer.

Association Mining

The model behind the Behavioral Scan is an intelligent PE-malware detection system based on association mining and is designed to distinguish legitimate from malicious software. It does not contain signatures to detect malicious software. Instead, it tries to determine: (incomplete list)

Dynamic

- where a file comes from
- how it got on the system
- whether it can be uninstalled appropriately
- how it (automatically) starts and if it is currently running in memory
- if it is visible for the user and through Windows API's
- if it is communicating with untrustworthy computers on the Internet
- if it is associated with another (likely or verified malicious) file on the system
- what people say about the file (program) on security related websites (our Gossip Rating system)
- its global threat confidence level (reputation)

Static

- if the file is a known threat
- which publisher created it
- whether or not it is digitally signed with a trusted (non stolen) certificate
- if it's compressed or encrypted / obfuscated to thwart virus research
- if it has anomalies commonly found in malicious software (PE analysis)

Potential malicious software is sent to the Scan Cloud for verification and virus naming while legitimate software is not queued for upload or further analysis.

Unobtrusive

Contrary to behavioral blockers, the design of the Behavioral Scan is an unobtrusive observation of computer activity. Hitman Pro 3:

- does not require user interaction
- does not need to run continuously
- does not hook into Windows APIs

The Behavioral Scan also collects information on related registry keys, files and shortcuts to ensure complete removal by Hitman Pro's malware removal engine Crusader (which we specifically designed to cope with the most resilient threats).

Fast Scanning

Hitman Pro 3 scans faster than traditional AV programs because it has some different approaches:

- The Behavioral Scan determines which files are safe and which are probably not, depending on their actions. This means not every file needs to be scanned extensively.
- With the built-in whitelist the Behavioral Scan skips known safe files after a quick analysis. The whitelist contains hashes and signatures of known safe Windows 2000, XP, 2003, Vista, 2008 and Windows 7 system files.
- The disk scanner of the Behavioral Scan is not affected by disk fragmentation. Instead of working through folders and files alphabetically (like a human), it scans files in the order they are physically stored and encountered on the disk. Practically, this means that Hitman Pro directs the read head of a regular hard disk to move in just one direction across the disk platter – optimizing the speed of reading data – instead of causing the reading head to move back and forth like a regular AV program, which causes delay.
- The Behavioral Scan is multithreaded (to efficiently use the capabilities of the CPU hardware). Hitman Pro 3 will perform disk, registry, network (for example cloud scanning) and internal analysis tasks simultaneously.
- Hitman Pro will only scan files with a so called PE-header, which are currently loaded in memory, start automatically or have a shortcut. It does not scan or upload any documents to the Scan Cloud which guarantees privacy.

Scan Cloud

Cloud computing is the use of computer technology using the Internet (the term cloud is a metaphor for the Internet). Cloud-based Hitman Pro 3 handles in-depth scanning of files on a remote server, rather than on a user's machine. The Scan Cloud of Hitman Pro 3 contains knowledge and intelligence of multiple collectives and AV technologies from several AV partners. This significantly differs from other currently available cloud-based AV products who are only using their own research and technology.

Striders

The Scan Cloud for Hitman Pro 3 is a group of computers (Striders) connected to the Internet. Each Strider contains multiple (signature based) AV products from our trusted partners to quickly scan if a file is indeed malicious.

The efficient design of the Behavioral Scan and the extensive research behind it ensures that on a typical Windows Vista workstation (about 400.000 files) only a handful of files (the potentially malicious ones) need to be uploaded to and scanned by the Scan Cloud for verification and virus naming. Only suspicious PE-files are sent to the Scan Cloud. Every upload is anonymous and by default encrypted.

Unknown Files

The Scan Cloud identifies tens of thousands of new threats on a daily basis. But despite the amount of recognition technology from our collaboration with 5 AV suppliers, the Scan Cloud is often unable to identify so called zero-day or early life malware. In this case end users can use Early Warning Scoring (EWS) in Hitman Pro 3 to reveal the active yet unknown potential malicious files.

Threat Confidence Levels

The Scan Cloud receives threat score information on each file it receives, anonymously. By correlating information between multiple users the Scan Cloud generates so called Threat Confidence Levels (or reputations) which can be used to counter zero-day or early life malware.

The Scan Cloud contains global information on:

- which malware is currently infecting computers
- which malware is capable of bypassing certain AV protected computers
- which yet unknown files are interesting for immediate human analysis
- which web sites are hosting malware

Malware Analyzer

By centrally correlating the threat information generated by Hitman Pro 3, the Scan Cloud can be used to identify new threats on a global scale. The Behavioral Scan in Hitman Pro 3 has turned every system into an in-depth malware analyzer.

Connecting the AV Industry

The Scan Cloud is also capable of exchanging malware files and other threat information with our AV partners – something major players in the AV industry are still dreaming about[7].

[7] http://www.virusbtn.com/conference/vb2009/abstracts/LastMinute5.xml

Crusader

Besides the Behavioral Scan and the Scan Cloud, Hitman Pro also contains a universal malware removal engine to handle infected and resilient malicious files. This engine is called Crusader and it is capable of not only handling malicious files, related registry keys and shortcuts but is also responsible for replacing essential but infected Windows files with safe versions (so Windows remains running stable).

The Crusader will kill malicious files in memory and deploys countermeasures when it detects re-infection activity. Also, threat objects on the disk are physically disabled, practically preventing them from running again on the computer. Remaining objects are cleaned during boot by Crusader's native NT bootdeleter which runs before other programs start and the desktop appears.

Hitman Pro In Your Network

Every day hundreds of thousands of home computers are infected by malware. Even though business computers and their users are often limited by policies and the network is shielded by multiple antivirus engines, intrusion detection firewalls, proxies and spam filters, virus outbreaks happen in medium or large networks too.

Version 3.5.5 and higher contains extra functionality for IT Network Managers to quickly scan (in less than a few minutes) their networks for threats. The Hitman Pro 3 client software is equipped with extra command-line functions so the program can run silently and report back to a central location. This is particularly useful when administrators are faced with a virus outbreak in their organization and would like to pinpoint the computers that are infected.

The current support for network environments in Hitman Pro 3 is somewhat basic but SurfRight is working on additional server software for real-time visualization and full orchestration of malware scanning, infection removal and in-depth reporting: **Hitman Pro Endpoint Security**

Windows Server 2003

If you have a Windows Server 2003 based network, one solution to initiate a network scan is to use a Group Policy Object (GPO).

Follow this example to scan every computer on the network using a Group Policy Object (GPO):

1. Setup the share: create a network share on the server that must receive the log files. Make certain you give the **Everyone** group **Change** and **Read** permissions on this share.
2. On the Windows Server, copy the program **C:\Windows\System32\schtasks.exe** to the share. This to ensure that every computer runs the same schtasks.exe program, because the /SC switch is OS language dependant.
3. Download the 32-bit and 64-bit versions Hitman Pro and follow these steps:
    a. Copy the **HitmanPro35.exe** and **HitmanPro35_x64.exe** programs to the share.
    b. Create a **RunHMP.bat** file in the share. The following is an example of its contents:

```
\\ServerName\ShareName\schtasks.exe /DELETE /TN "Hitman Pro Scan" /F
goto %PROCESSOR_ARCHITECTURE%
:x86
\\ServerName\ShareName\schtasks.exe /CREATE /RU domain\administrator
/RP password /SC ONIDLE /I 10 /TN "Hitman Pro Scan" /TR
"\\ServerName\ShareName\HitmanPro35.exe /scanonly /quick
/log=\\ServerName\ShareName\%computername%.xml"
goto end
:AMD64
\\ServerName\ShareName\schtasks.exe /CREATE /RU domain\administrator
/RP password /SC ONIDLE /I 10 /TN "Hitman Pro Scan" /TR
"\\ServerName\ShareName\HitmanPro35_x64.exe /scanonly /quick
/log=\\ServerName\ShareName\%computername%.xml"
:end
```

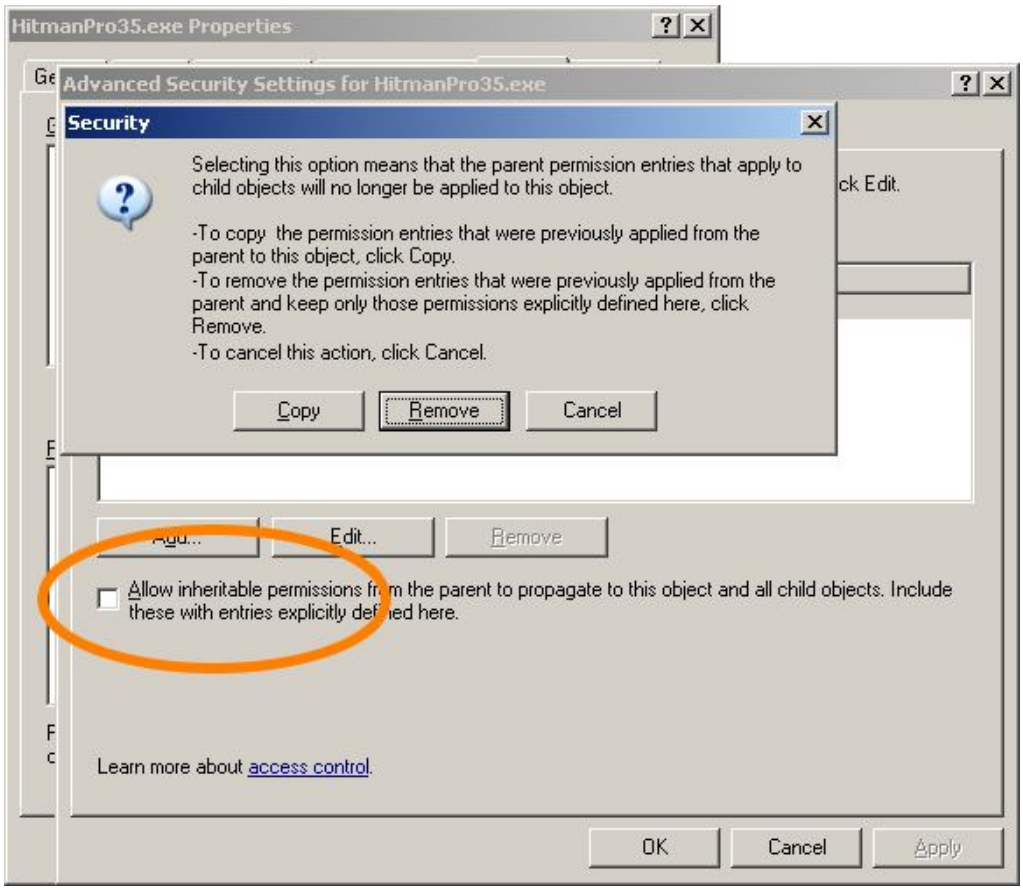
Notes: Change the script, like the **blue** data, according to your wishes and environment. To change the schedule, alter the **orange** data to your preference, for example:

- `/SC DAILY /ST 13:00:00` Scan every day at 1:00 PM
- `/SC ONCE /ST 10:00:00` Scan once at 10:00 PM
- `/SC ONIDLE /I 30` Scan when the computer is idle for 30 minutes

c. To prevent users from tampering with the necessary files, remove the default permissions on each of these files in the share:

- HitmanPro35.exe
- HitmanPro35_x64.exe
- RunHMP.bat
- schtasks.exe

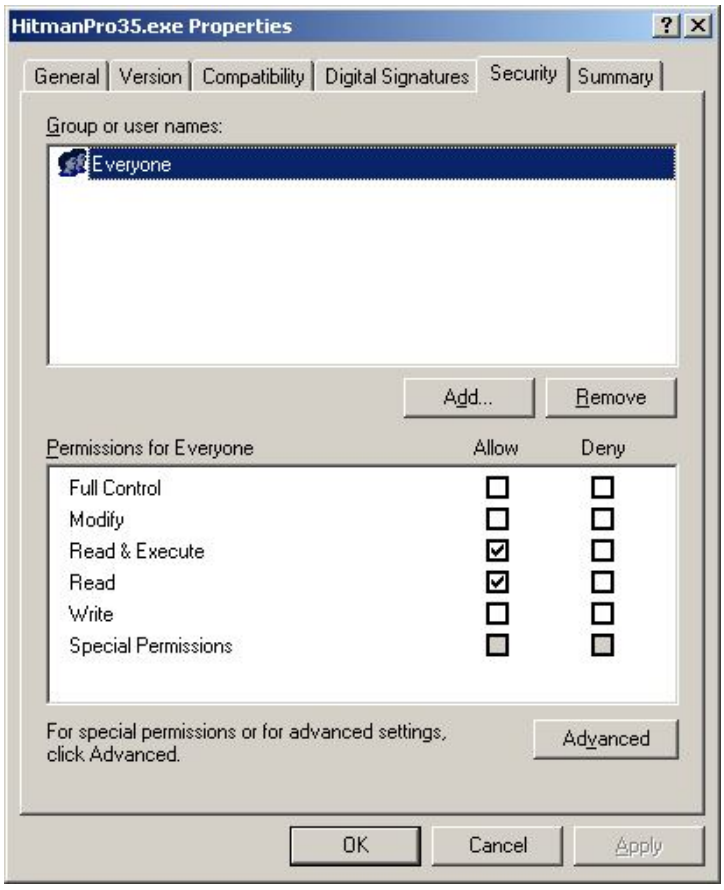
Uncheck **Allow inheritable permissions from the parent...** on the **Permissions** tab through Security > Advanced and click **Remove** on the Security dialog:



d. Click **OK**.

e. Give the **Everyone** group **Read** and **Read & Execute** permissions on each of these files:

- HitmanPro35.exe
- HitmanPro35_x64.exe
- RunHMP.bat
- schtasks.exe



f. Click **OK**.

4. Setup the startup script. To do this, follow these steps:

a. In the **Active Directory Users and Computers** MMC snap-in, right-click the domain name, and then click **Properties**.

b. On the **Group Policy** tab click **Open** to access the Group Policy Management snap-in.

c. Right-click the domain name and click **Create and Link a GPO Here**, and type **Hitman Pro Scan** for the name of the policy.

d. Right-click the new **Hitman Pro Scan** policy, and then click **Edit**.

e. Expand **Windows Settings** for **Computer Configuration**, and then click **Scripts (Startup/Shutdown)**.

f. Double-click **Startup**, and then click **Add**. The **Add a Script** dialog box is displayed.

g. In the Script Name box, type **\\ServerName\ShareName\RunHMP.bat**

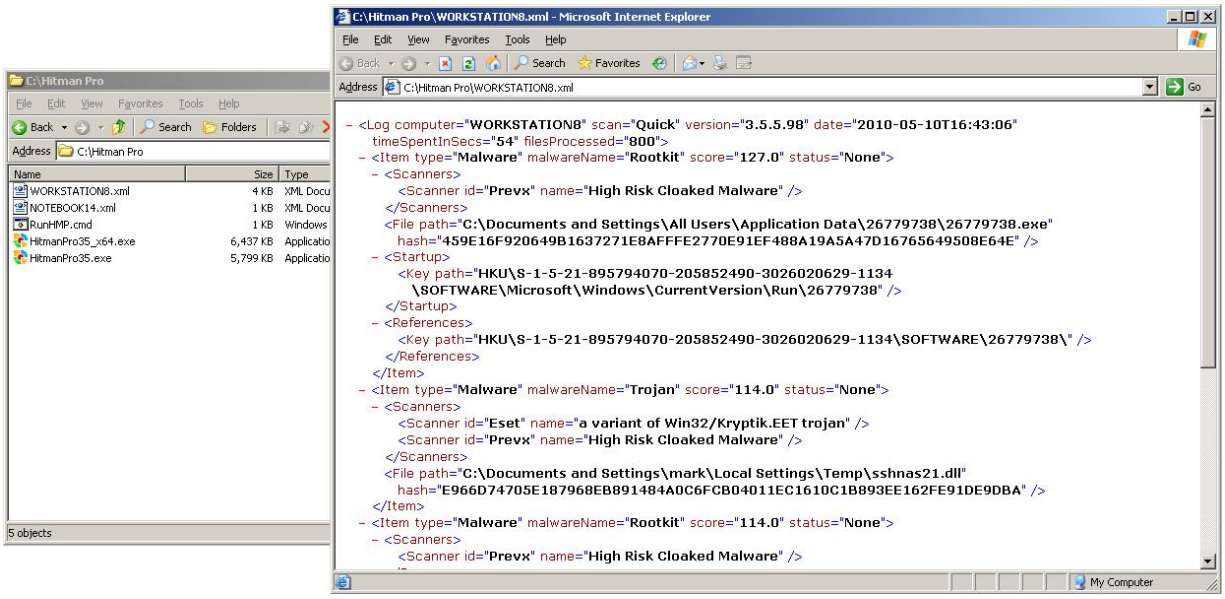
Note: Change the **blue** data according to your environment.

h. Click **OK**, and then click **Apply**.

After you make changes to group policies, you may want the changes to be applied immediately, without waiting for the default update interval (90 minutes on domain members). So, on a regular computer (domain member), run **gpupdate.exe** to force a refresh of the Group Policy settings.

Monitor the Log Files

Monitor the \\ServerName\ShareName and watch for xml files bigger than 1 KB. These xml files contain information about infected objects – in other words, these computers are infected:



Remove the Infections

To remove the infections, visit this computer and run Hitman Pro interactively as an administrator.

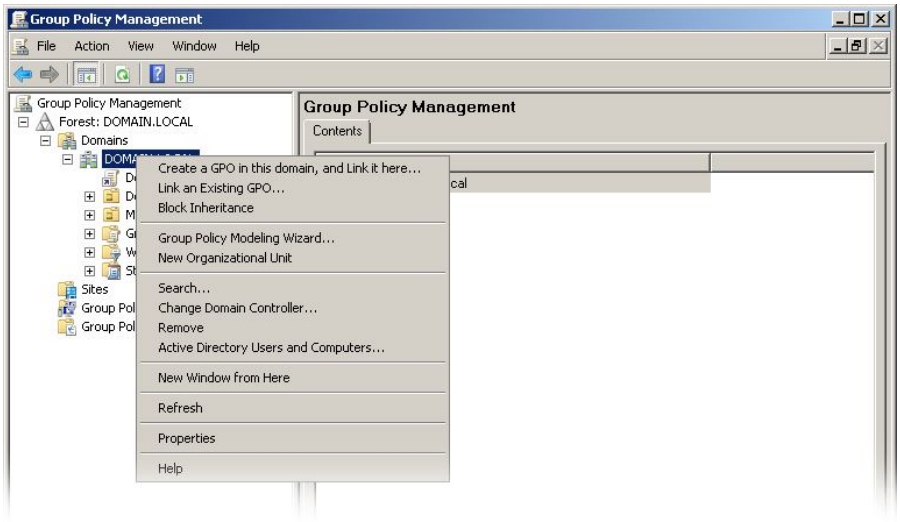
Windows Server 2008 R2

If you have a Windows Server 2008 R2 based network follow this example to scan every computer on the network using a Scheduled Task item in a Group Policy object (GPO):

1. Setup the share: create a network share on the file server that must receive the log files. Make certain you give the **Everyone** group **Change** and **Read** permissions on this share.
2. Download the 32-bit and 64-bit versions Hitman Pro and follow these steps:
    a. Copy the **HitmanPro35.exe** and **HitmanPro35_x64.exe** programs to the share.
    b. Create a **RunHMP.bat** file in the share. The following is an example of its contents:

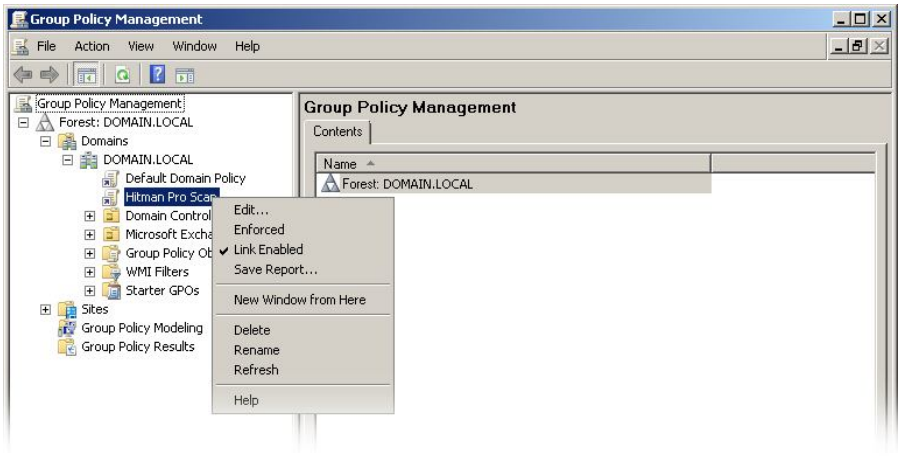
```
goto %PROCESSOR_ARCHITECTURE%
:x86
\\ServerName\ShareName\HitmanPro35.exe /scanonly /quick
   /log="\\ServerName\ShareName\%COMPUTERNAME%.xml"
goto end
:AMD64
\\ServerName\ShareName\HitmanPro35_x64.exe /scanonly /quick
   /log="\\ServerName\ShareName\%COMPUTERNAME%.xml"
:end
```

    Notes: Change the server name, share name and Hitman Pro switches in the script according to your environment and requirements.
3. Open the **Group Policy Management Console** (from Start > Administrative Tools).
4. Right-click the domain name and click **Create a GPO in this domain, and Link it here**.



5. Type **Hitman Pro Scan** for the name of the policy.

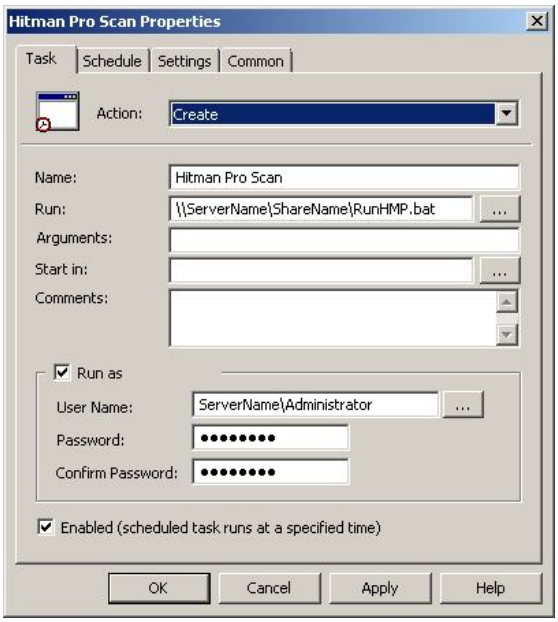
6. Right-click the new **Hitman Pro Scan** policy, and then click **Edit**.



7. In the console tree under **Computer Configuration**, expand the **Preferences** folder, and then expand the **Control Panel Settings** folder.

8. Right-click the **Scheduled Tasks** node, point to **New**, and select **Scheduled Task**.

9. In the **New Scheduled Task Properties** dialog box, select the **Create** action.



10. Make certain the task will run as an administrator.

11. Configure the frequency with which to execute the task on the **Schedule** tab and click **OK**.

After you make changes to group policies, you may want the changes to be applied immediately, without waiting for the default update interval. So, on a regular computer (domain member), run **gpupdate.exe** to force a refresh of the Group Policy settings.

Monitor the Log Files

Monitor the **\\ServerName\ShareName** and watch for xml files bigger than 1 KB. These xml files contain information about infected objects – in other words, these computers are infected:

Remove the Infections

To remove the infections, visit this computer and run Hitman Pro interactively as an administrator.

Command-Line Reference

The following command-line options are available in Hitman Pro and particularly useful in network environments:

Option	Parameters	Meaning
`/scan`		Immediately initiates a scan of the computer and the program will be visible to the user. The EULA is automatically accepted. **Example:** `HitmanPro35.exe /scan`
`/quiet`		Implies /scan but immediately initiates a silent scan of the computer. Hitman Pro will be visible only in the system tray and a notification balloon is displayed, notifying the user his computer is scanned for malware. When infections are found, the program will pop up for interaction with the user. The EULA is automatically accepted. **Example:** `HitmanPro35.exe /quiet`
`/scanonly`		Immediately initiates a silent scan of the computer. Hitman Pro will be visible only in the system tray. Does not show a notification balloon. Program will not be installed on the local computer (implies /noinstall). The EULA is automatically accepted. **Example:** `HitmanPro35.exe /scanonly`

	<file or folder>	Scan a single file or all files in a folder.
		
		Example:
		`HitmanPro35.exe C:\Windows\Explorer.exe`
		`HitmanPro35.exe C:\Windows\System32\`
		
		Note: The EULA is automatically accepted. Does not scan subfolders and a folder specification must end with \

`/quick`		This scan is faster than the regular scan and will only scan load point locations and in memory objects. You typically use the quick scan when you just want to check whether malware is active on the computer. **Example:** `HitmanPro35.exe /scanonly /quick`

/log=	<logfile> or <logfile folder>	This will instruct Hitman Pro to scan a system silently and export the results to an xml log file to the specified log file folder (typically a network location). No dialogs are displayed to the user.
		
		Examples:
		`HitmanPro35.exe /scanonly /log="Z:\%USERNAME%.xml"`
		`HitmanPro35.exe /scanonly /log="Z:\%COMPUTERNAME%.xml"`
		`HitmanPro35.exe /scanonly /log="\\Server\Share\Logs\"`
		
		In these examples Z: is a typical shared folder on a file server. Users (or a user group) must have the write permission on this folder and share.
		
		When specifying a folder as logfile it must end with a \
		When logging to a folder, the file name is constructed using the computer name and a date/time stamp, example:
		
		`WORKSTATION14_20100428114347.xml`

/ews		Initiate a scan of the computer with Early Warning Scoring enabled. The results xml will now also contain files that are highly suspicious but are yet unknown to our Scan Cloud. **Example:** `HitmanPro35.exe /scanonly /ews`
/noupload		Hitman Pro only uploads unknown but suspicious files to the Scan Cloud for virus scanning by our Malware Analysis systems and our AV partners. If you do not wish to upload any files to the Scan Cloud (because of privacy issues or government policies) you can specify this command-line option. **Example:** `HitmanPro35.exe /scanonly /noupload /log="Z:\ThreatLogs\"` Note: The /noupload option will cripple the detection of unique, zero-day or early-life malware.
/noupdate		Disable automatic update of the Hitman Pro program. **Example:** `HitmanPro35.exe /scanonly /noupdate /log="Z:\ThreatLogs\"`

`/noinstall`		Disable copying of the Hitman Pro program to the local computer. Disables creation of shortcuts on the local computer. **Example:** `HitmanPro35.exe /scan /noinstall`
`/nostartboot`		Disables the installation of the scan at startup component on the local computer. **Example:** `HitmanPro35.exe /scan /nostartboot`
`/nostartmenushortcut`		Disables the creation of the Start menu folder and shortcuts. **Example:** `HitmanPro35.exe /scan /nostartmenushortcut`
`/nodesktopshortcut`		Disables the creation of the shortcut to the Hitman Pro program on the desktop. **Example:** `HitmanPro35.exe /scan /nodesktopshortcut`
`/lic=`	<product key>	Automatically activate Hitman Pro for the user with the supplied product key. **Example:** `HitmanPro35.exe /lic=01234-ABCDE-56789-F0123 /scanonly`
`/sr=`	<file>	For experts only! Replaces the first 2 bytes of a file on the disk with SR. This will render a PE file useless. **Example:** `HitmanPro35.exe /sr=C:\Windows\driver\malw.sys` Note: This is a raw write and should only be used on malware files.

Revision History

Version	Author	Remarks
1.3	ML	Added /nostartboot, /nostartmenushortcut and /nodesktopshortcut switches.
1.2	ML	Added /lic= switch.
1.1	ML	Added an example for Windows Server 2008 R2.
1.0	ML	Initial release.