

Unlocking DFIR: Free Resources for Efficient Triage and Acquisition

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Cyber Unpacked
Exploring enterprise DFIR





Triage in DFIR

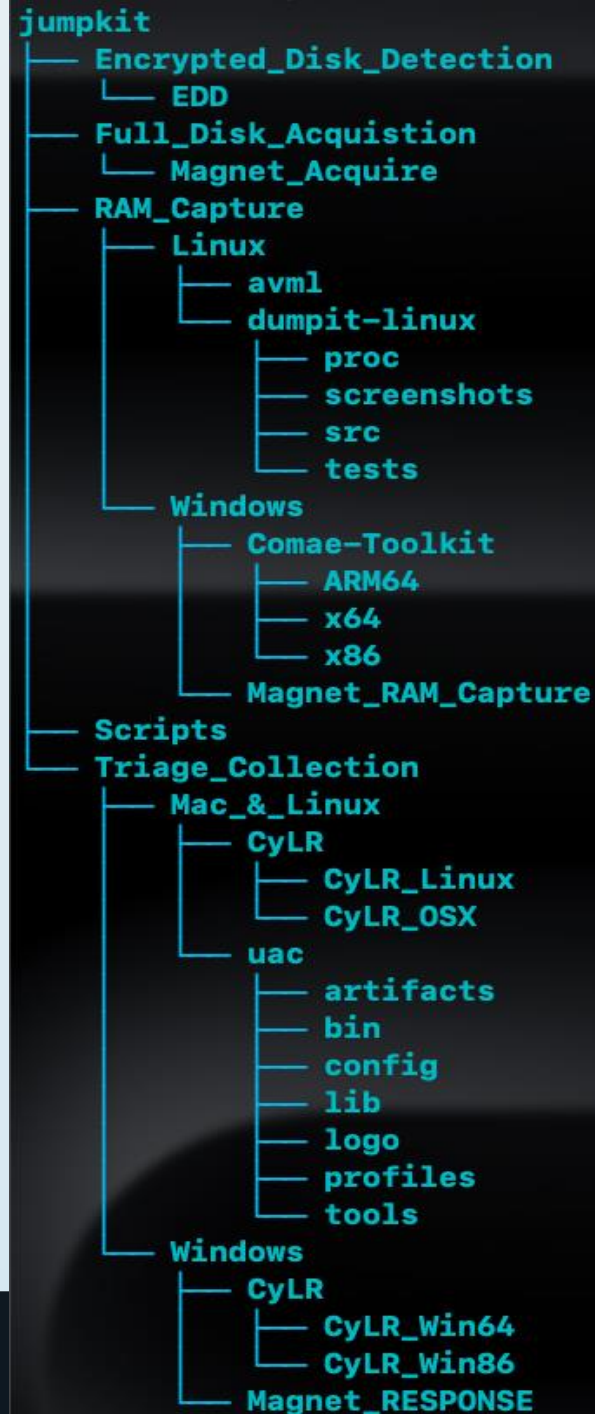
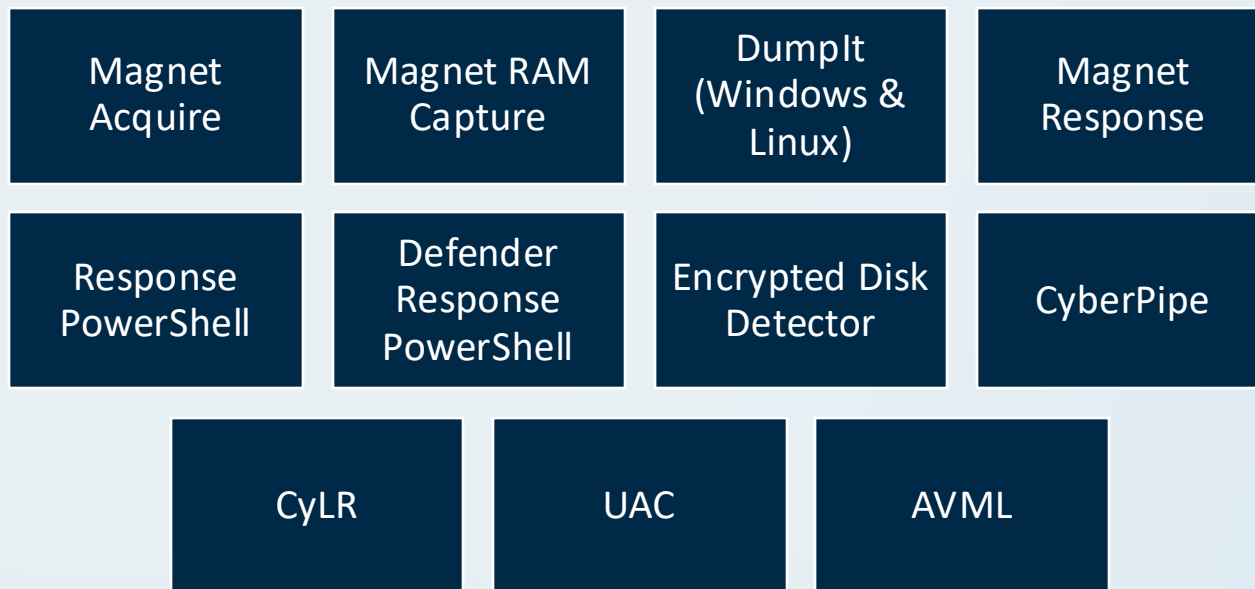
- Incident Identification
- Impact Assessment
- Urgency Classification
- Containment and Mitigation
- Resource Allocation



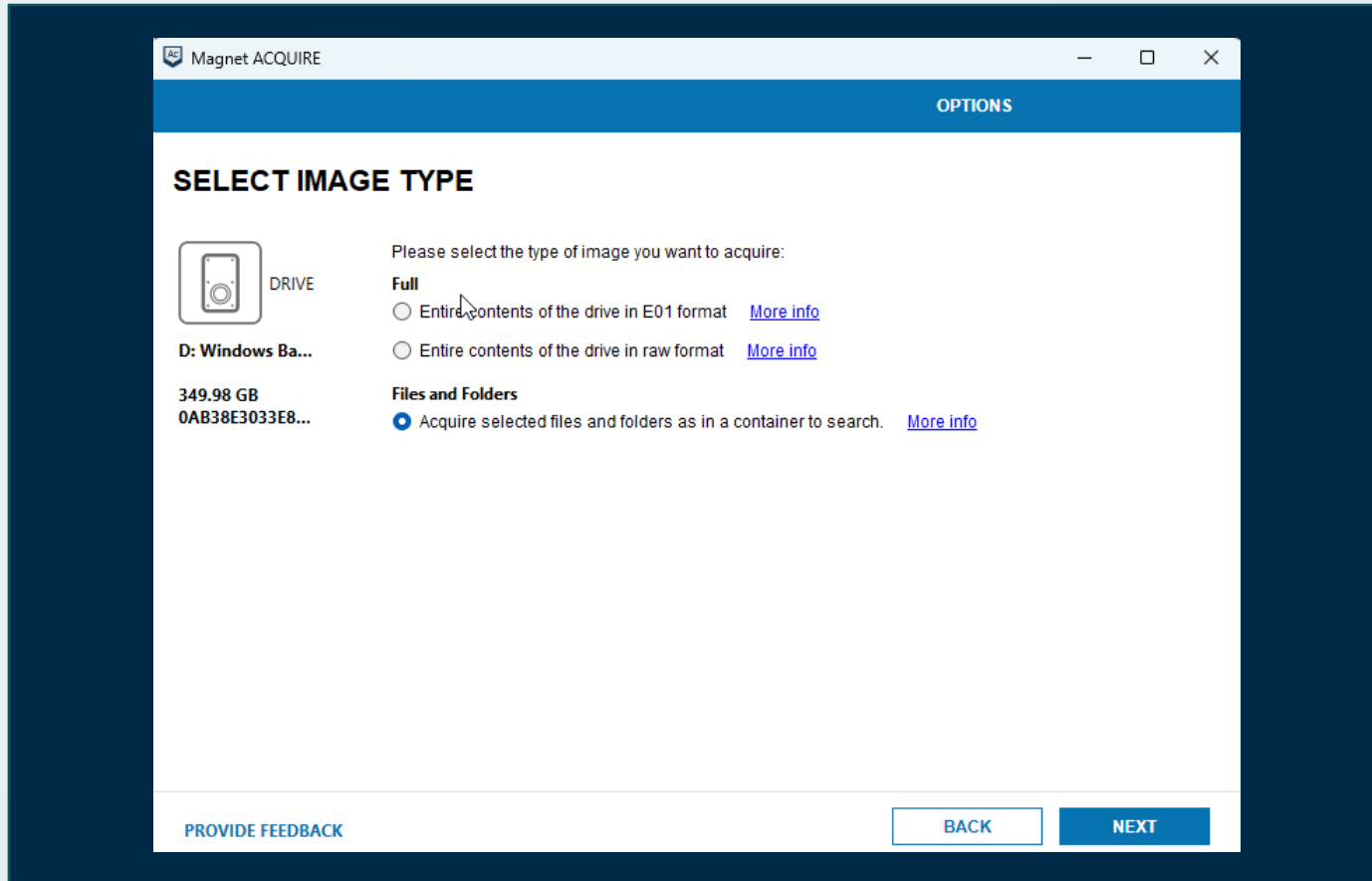
The Triage Jump Kit

- Triage Collection
- Memory Acquisition
- Windows, Mac, Linux
- Scalable for 'mass casualty incident'

Jump Kit Contents



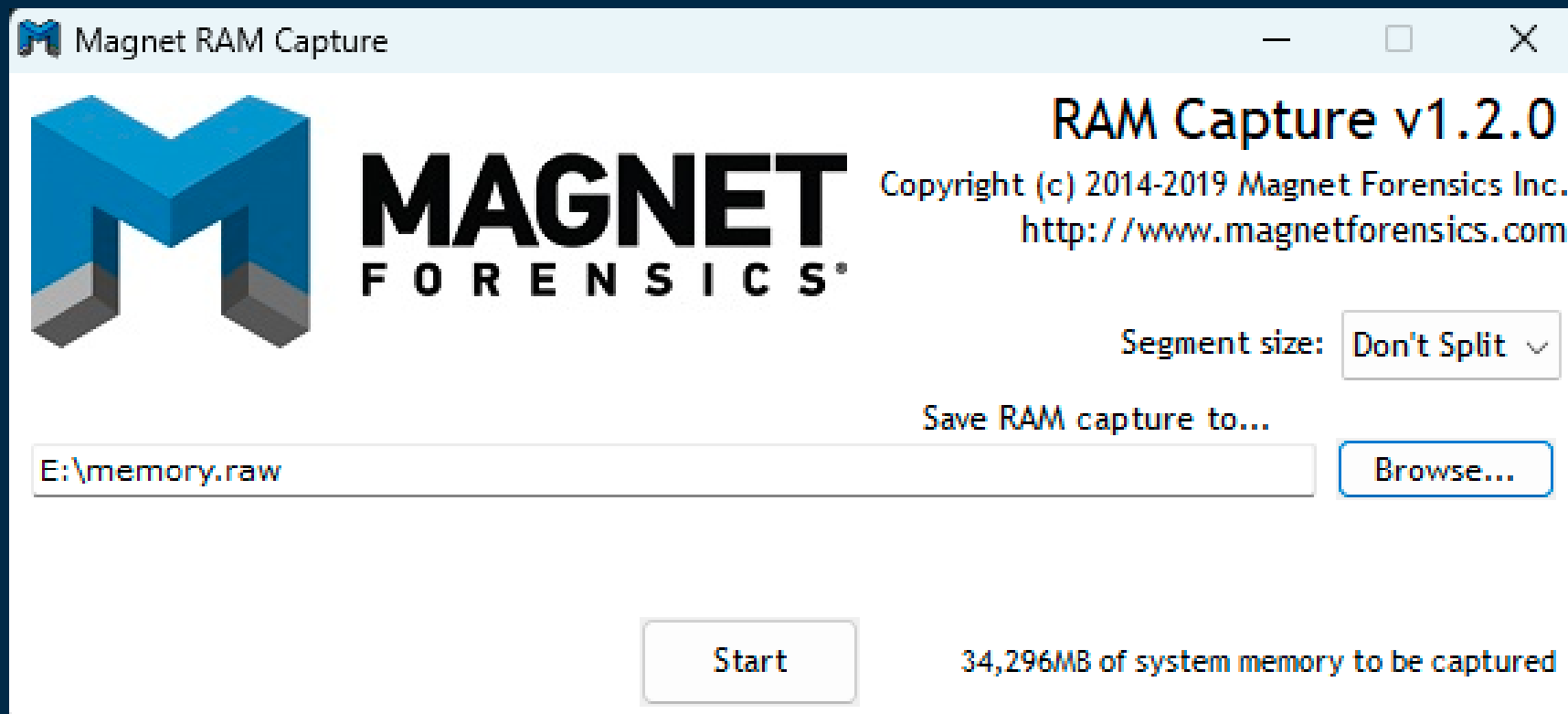
Magnet Acquire



- Dead box acquisition
- Hard drives and removable media
- Full Disk Image
- Patient 0
- iOS & Android acquisition

Magnet RAM Capture

- Windows Memory Acquisition
- GUI
- RAW Format
- Legacy to Modern Windows systems
- x86 & x64



Dumplt for Windows

- Windows Memory Acquisition
- CLI
- DMP (default) or RAW Format
- Legacy to Modern Windows systems
- x86 & x64 and ARM

```
PS F:\jumpkit\RAM_Capture\Windows\Comae-Toolkit\x64> .\DumpIt.exe
```

```
DumpIt 3.6.20230117 (X64) (Jan 17 2023)
Copyright (C) 2007 - 2021, Matt Suiche (msuiche)
Copyright (C) 2016 - 2021, Comae Technologies DMCC <https://www.comae.com>
Copyright (c) 2022, Magnet Forensics, Inc. <https://www.magnetforensics.com/>
All rights reserved.
```

```
Thanks for using DumpIt! Always use Microsoft crash dumps!
```

```
Destination path:          \??\F:\jumpkit\RAM_Capture\Windows\Comae-Toolkit\x64\WIN11-AXVM-20241031-152509.dmp
```

```
Computer name:             WIN11-AXVM
```

```
--> Proceed with the acquisition ? [y/n]
```


Dumplt for Linux

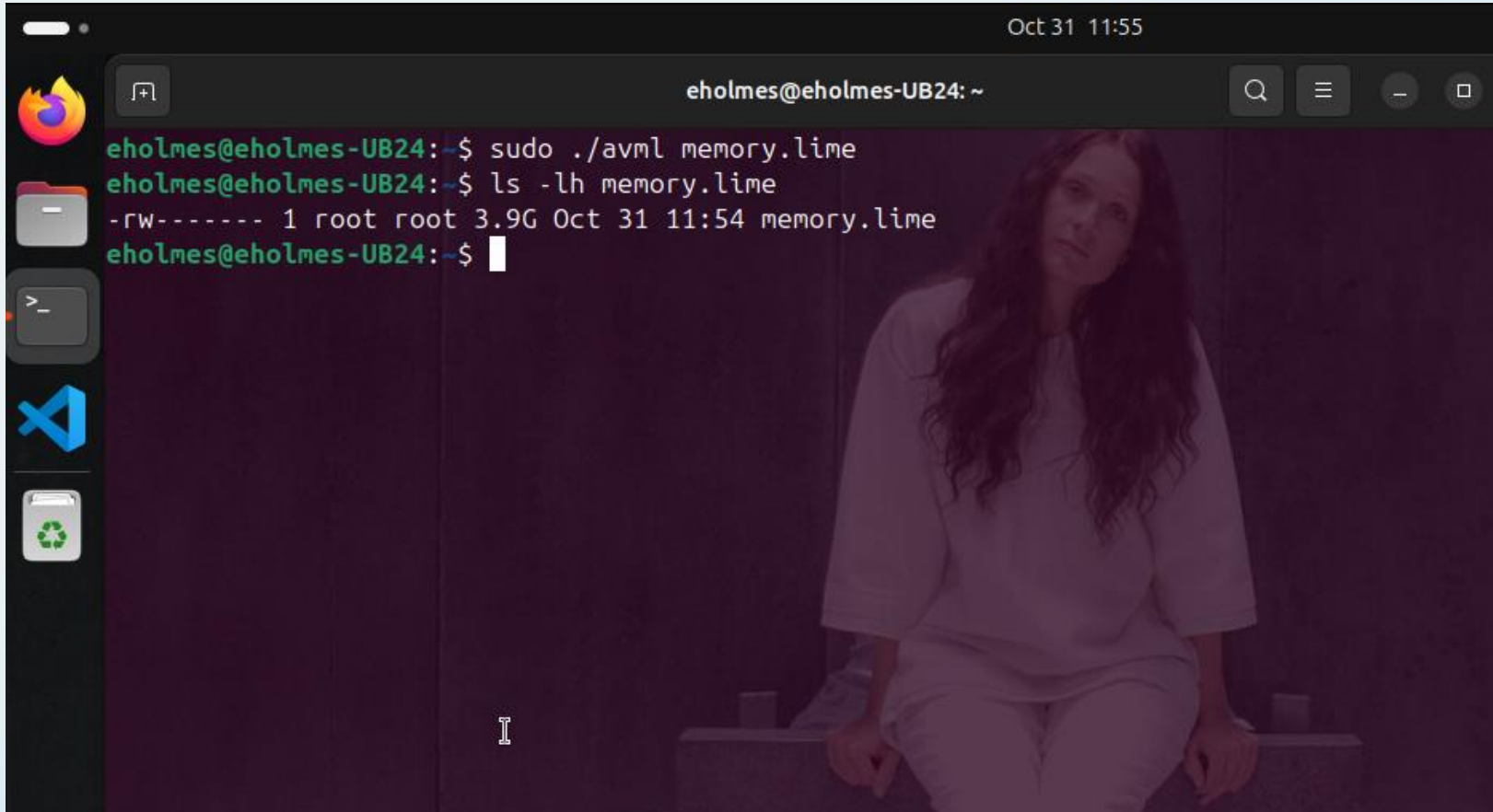


The screenshot shows a terminal window titled "eholmes@eholmes-UB24: ~/dumpit/dumpit-linux/target/release". The terminal output is as follows:

```
eholmes@eholmes-UB24:~/dumpit/dumpit-linux/target/release$ sudo ./dumpitforlinux
[sudo] password for eholmes:
DumpIt (For Linux - x64 & ARM64) 0.1.0 (2023-11-21T13:20:21Z)
Linux memory acquisition that makes sense.
Copyright (c) 2022, Magnet Forensics, Inc.
Press any key to continue...
```

- Open-Source
- Magnet GitHub
- CLI
- Built in Rust
- Compile for specific kernel versions
- Ubuntu & Redhat
- Core dump

AVML (Acquire Volatile Memory for Linux)



A terminal window titled "eholmes@eholmes-UB24: ~" with a search icon, menu icon, and window control buttons. The terminal shows the following commands and output:

```
eholmes@eholmes-UB24:~$ sudo ./avml memory.lime
eholmes@eholmes-UB24:~$ ls -lh memory.lime
-rw----- 1 root root 3.9G Oct 31 11:54 memory.lime
eholmes@eholmes-UB24:~$
```

The terminal background features a faint image of a woman with long dark hair sitting on a bench.

- Open-Source
- Developed by Microsoft
- CLI
- Built in Rust
- Run ready
- Ubuntu, Redhat, Debian, Oracle...
- LIME output

Magnet RESPONSE

- Free triage collection tool
- Intuitive interface
- Collects RAM, Volatile info and Operating System artifacts

The screenshot shows the 'Magnet RESPONSE Configuration' window. At the top, it says 'Enter a case reference, select your collection preferences, and output location:'. Below this, there are three main sections: 'Case Reference', 'Collection Options', and 'Output'. The 'Case Reference' section has a text box for 'Case number / reference:'. The 'Collection Options' section has several checkboxes: 'Capture RAM' (checked), 'Collect Volatile Data' (checked), 'Collect Critical System Files' (checked), 'Capture Running Processes - Extended Info' (checked), and 'Collect Files' (checked). There are also sub-options for 'Capture RAM' (Save the pagefile.sys file immediately after capturing RAM), 'Capture Running Processes - Extended Info' (Save a copy of the located processes/loaded modules), and 'Collect Files' (Collect ransomware ransom note files, Save a copy of files containing these keywords: .vbs,.ps1,.wsh, Skip Program Files/ProgramData/Windows folders, Skip files larger than 500 KB). There are 'More Info' and 'Configure' buttons. The 'Output' section has a 'Save output to:' label, a text box with 'C:\Tools\Magnet RESPONSE', and a 'Browse' button. At the bottom right, there is a 'Start Capture' button.

Magnet RESPONSE Configuration

Enter a case reference, select your collection preferences, and output location:

Case Reference

Case number / reference:

Collection Options

☒ Capture RAM [More Info](#)

☐ Save the pagefile.sys file immediately after capturing RAM

☒ Collect Volatile Data

☒ Collect Critical System Files [Configure](#)

☒ Capture Running Processes - Extended Info

☐ Save a copy of the located processes/loaded modules

☒ Collect Files

☒ Collect ransomware ransom note files

☐ Save a copy of files containing these keywords: .vbs,.ps1,.wsh

☐ Skip Program Files/ProgramData/Windows folders

☐ Skip files larger than 500 KB

Output

Save output to: [Browse](#)

C:\Tools\Magnet RESPONSE

Start Capture

Magnet RESPONSE Output

HTCIA Demo-MagnetRESPONSE-2023.03.14_13.16.33

Name	Date modified	Type	Size
MORIARTY_jmoriarty_2023.03.14_13.16.33...	3/14/2023 1:21 PM	ZIP File	909,893 KB
RAMDump-MORIARTY-20230314-131633...	3/14/2023 1:17 PM	DMP File	16,382,988 ...

HTCIA Demo-MagnetRESPONSE-2023.03.14_13.16.33 > extracted


Name	Date modified	Type
Logs	3/14/2023 1:37 PM	File folder
Processes	3/14/2023 1:37 PM	File folder
Saved_Files	3/14/2023 1:37 PM	File folder
Volatile_Data	3/14/2023 1:37 PM	File folder


Magnet RESPONSE Output

HTCIA Demo-MagnetRESPONSE-2023.03.14_13.16.33 > extracted > Saved_Files >			
Name	Date modified	Type	
Amcache	3/14/2023 1:37 PM		
Browser_History	3/14/2023 1:37 PM		
Jumplists-AutomaticDestinations	3/14/2023 1:37 PM		
Jumplists-CustomDestinations	3/14/2023 1:37 PM		
MFT	3/14/2023 1:37 PM		
NTUSER.DAT	3/14/2023 1:37 PM		
PowerShell_History	3/14/2023 1:37 PM		
Prefetch_Files	3/14/2023 1:37 PM		
Recent_Files	3/14/2023 1:37 PM		
Recycle_Bin	3/14/2023 1:37 PM		
Registry_Hives	3/14/2023 1:37 PM		
Scheduled_Tasks	3/14/2023 1:37 PM		
SRIIM	3/14/2023 1:37 PM		

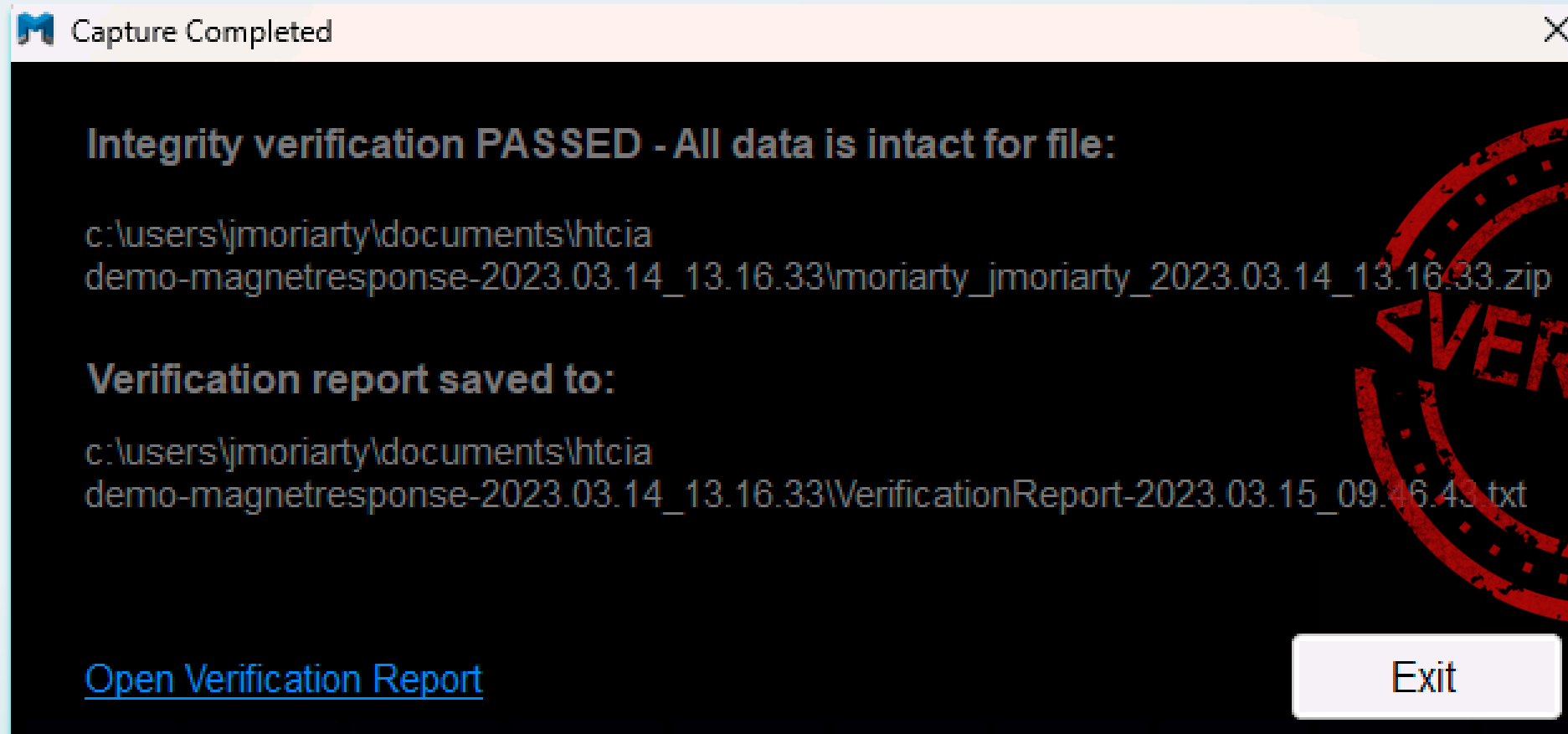
HTCIA Demo-MagnetRESPONSE-2023.03.14_13.16.33 > extracted > Volatile_Data			
Name	Date modified	Type	Size
Firewall_Info.txt	3/14/2023 1:19 PM	Text Document	5 KB
IP_Info.txt	3/14/2023 1:19 PM	Text Document	7 KB
Logged_On_Users.txt	3/14/2023 1:19 PM	Text Document	1 KB
Network_Connections.txt	3/14/2023 1:17 PM	Text Document	21 KB
Scheduled_Tasks.txt	3/14/2023 1:19 PM	Text Document	42 KB
User_Accounts.txt	3/14/2023 1:19 PM	Text Document	5 KB
Wifi_Info.txt	3/14/2023 1:19 PM	Text Document	26 KB
Windows_Services.txt	3/14/2023 1:19 PM	Text Document	53 KB
Windows_Version.txt	3/14/2023 1:19 PM	Text Document	1 KB

Auto Collect Options

 MagnetRESPONSE_AutoCapture.exe

 MagnetRESPONSE_AutoCaptureMinimal.exe

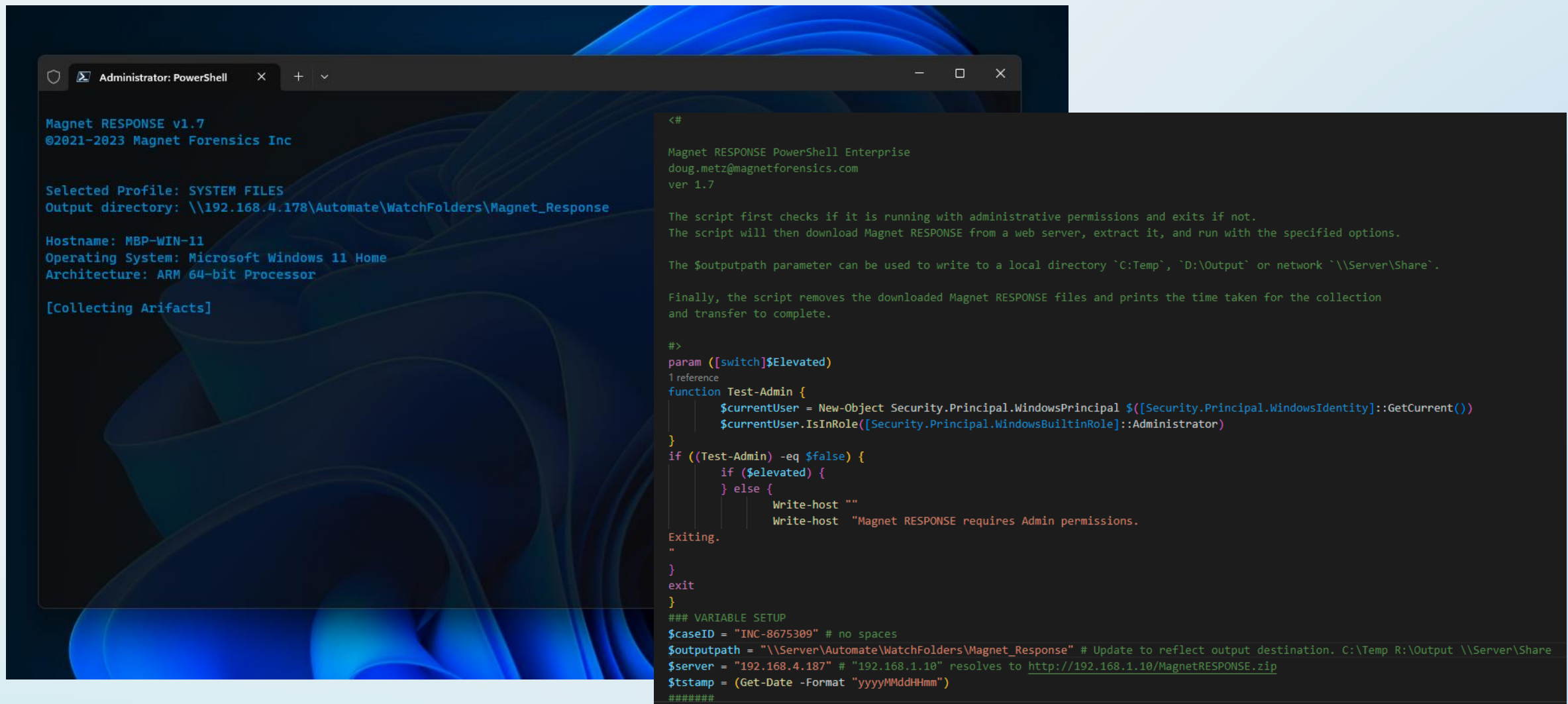
Verifying a Capture Package



Magnet RESPONSE CLI

- /captureram - Enables RAM capture
- /capturepagefile - Enables capture of pagefile.sys file
- /capturevolatile - Enables volatile data capture
- /capturesystemfiles - Enables critical system file collection
- /captureextendedprocessinfo - Enables extended info capture for running processes/loaded modules
- /saveprocfiles - Enables saving copies of running processes/loaded modules. Must be used with /captureextendedprocessinfo switch
- /capturefiles:<keyword.csv> - Enables scanning for files with filenames containing specified keywords
e.g. /capturefiles:secret,badfile,.vbs,confidential
- /skipsystemfolders - Indicates that the Program Files/ProgramData/Windows folders should be skipped when searching for files based on filename keywords. Must be used with /capturefiles
- /maxsize:<file size in KB> - Indicates the maximum file size to collect from hits found using /capturefiles – any files above this size are skipped e.g. /maxsize:500
- /captureransomnotes - Enables the ransomware ransom note collection
- /silent - No GUI output to screen

Magnet RESPONSE PowerShell



```
Magnet RESPONSE v1.7
@2021-2023 Magnet Forensics Inc

Selected Profile: SYSTEM FILES
Output directory: \\192.168.4.178\Automate\WatchFolders\Magnet_Response

Hostname: MBP-WIN-11
Operating System: Microsoft Windows 11 Home
Architecture: ARM 64-bit Processor

[Collecting Arifacts]
```

```
<#

Magnet RESPONSE PowerShell Enterprise
doug.metz@magnetforensics.com
ver 1.7

The script first checks if it is running with administrative permissions and exits if not.
The script will then download Magnet RESPONSE from a web server, extract it, and run with the specified options.

The $outputpath parameter can be used to write to a local directory 'C:\Temp', 'D:\Output' or network '\\Server\Share'.

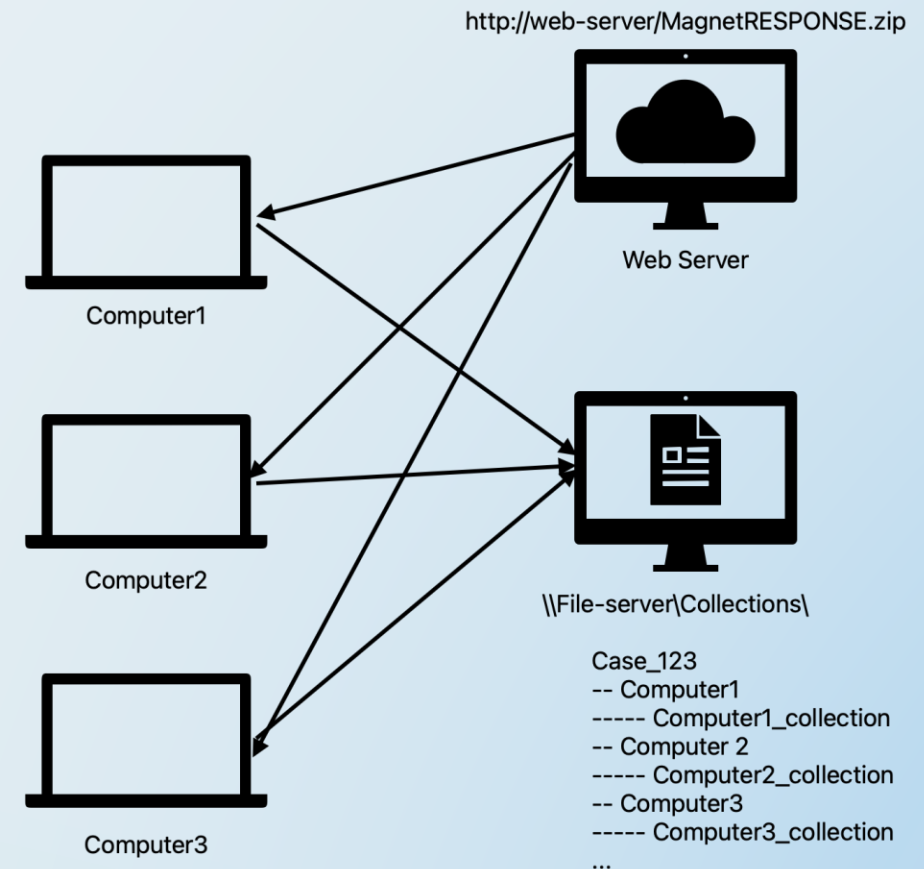
Finally, the script removes the downloaded Magnet RESPONSE files and prints the time taken for the collection
and transfer to complete.

#>
param ([switch]$Elevated)
1 reference
function Test-Admin {
    $currentUser = New-Object Security.Principal.WindowsPrincipal $([Security.Principal.WindowsIdentity]::GetCurrent())
    $currentUser.IsInRole([Security.Principal.WindowsBuiltinRole]::Administrator)
}
if ((Test-Admin) -eq $false) {
    if ($elevated) {
    } else {
        Write-host ""
        Write-host "Magnet RESPONSE requires Admin permissions."
    }
}
Exiting.
"
}
exit
}

### VARIABLE SETUP
$caseID = "INC-8675309" # no spaces
$outputpath = "\\Server\Automate\WatchFolders\Magnet_Response" # Update to reflect output destination. C:\Temp R:\Output \\Server\Share
$server = "192.168.4.187" # "192.168.1.10" resolves to http://192.168.1.10/MagnetRESPONSE.zip
$stamp = (Get-Date -Format "yyyyMMddHHmm")
#####
```

Magnet RESPONSE PowerShell

- Web server hosting MagnetRESPONSE.zip
- File server with folder share for collections



Case Variables

VARIABLE SETUP

`$caseID = "demo-161"` # no spaces

`$outputpath = "\\server\share"` # Update to reflect output destination.

`$server = "192.168.4.187"` # "192.168.4.187" resolves to <http://192.168.4.187/MagnetRESPONSE.zip>

`$caseID` – Name of your case or incident. (no spaces)

`$outputpath` – Where the collection output is sent

`$server` – Address for web server hosting [MagnetRESPONSE.zip](http://192.168.4.187/MagnetRESPONSE.zip)

Collection Profiles

```
#### Extended Process Capture
<#
$profileName = "EXTENDED PROCESS CAPTURE"
$arguments = "/capturevolatile /captureextendedprocessinfo /saveprocfiles"
#>

#### System Files
$profileName = "SYSTEM FILES"
$arguments = "/capturesystemfiles"
#>

#### Just RAM
<#
$profileName = "CAPTURE RAM"
$arguments = "/captureram"
#>
```

Magnet RESPONSE and



Microsoft Defender
for Endpoint

Defender_RESPONSE.ps1

```
C:\> library
```

```
File name
```

```
Description
```

```
Parameters
```

```
Parameters description
```

```
Uploaded on
```

```
Uploaded by
```

```
Defender_RESPONSE.ps1
```

```
-0500 (Eastern Standard Time)
```

```
MagnetRESPONSE.exe
```

```
-0500 (Eastern Standard Time)
```

Endpoints

General

Advanced features

Licenses

Email notifications

Auto remediation

Permissions

Roles

Device groups

APIs

SIEM

Rules

Alert suppression

EDR Exclusions

Indicators

Process Memory Indicators

Web content filtering

☒ On

Download quarantined files

Backup quarantined files in a secure and compliant location so they can be downloaded directly from quarantine.

☒ On

Live Response

Allows users with appropriate RBAC permissions to investigate devices that they are authorized to access, using a remote shell connection.

☐ Off

Live Response for Servers

Allows users with Live Response privileges to connect remotely to servers (Windows Server or Linux devices) that they are authorized to access.

☒ On

Live Response unsigned script execution

Enables using unsigned PowerShell scripts in Live Response.

☐ Off

Share endpoint alerts with Microsoft Compliance Center

Forwards endpoint security alerts and their triage status to Microsoft Compliance Center, allowing you to enhance [insider risk management](#) policies with alerts and remediate internal risks before they cause harm. Forwarded data is processed and stored in the same location as your Office 365 data.

☒ On

Microsoft Intune connection

Connects to [Microsoft Intune](#) to enable sharing of device information and enhanced policy enforcement.

Intune provides additional information about managed devices for secure score. It can use risk information to enforce [conditional access](#) and other security policies.

☒ On

Authenticated telemetry

```
Command index
C:\> run Defender_RESPONSE.ps1
Transcript started, output file is C:\ProgramData\Microsoft\Windows Defender Advanced Threat Protection\Temp
\PSScriptOutputs\PSScript_Transcript_{94264446-9ED8-497F-AFE7-45A1DD98777A}.txt

Magnet RESPONSE v1.7
©2021-2023 Magnet Forensics, LLC

Hostname: OFFICE-2701139
Operating System: Microsoft Windows 10 Enterprise
Architecture: 64-bit

[Collecting Arifacts]
** Acquisition Completed in 0 minutes and 11 seconds.**

C:\> █
```

Retrieving the Data from the Defender console:

Once the script finishes, the zipped output will be saved to “C:\Temp\RESPONSE” on the remote machine.

- Navigate to the output folder using the command — `cd c:\Temp\RESPONSE`
- List files using the “`dir`” command
- Copy the zip filename
- Download <filename.zip>

Encrypted Disk Detector

```
Copyright (c) 2009-2022 Magnet Forensics Inc.  
http://www.magnetforensics.com  
// By using this software from Magnet Forensics, you agree that your use is governed by the End User License Agreement a  
vailabale at www.magnetforensics.com/legal. //
```

* Checking physical drives on system... *

```
Checking PhysicalDrive2 - USB SanDisk 3.2Gen1 USB Device (123 GB) - Status: OK  
Checking PhysicalDrive1 - VMware Virtual NVMe Disk (376 GB) - Status: OK  
Checking PhysicalDrive0 - VMware Virtual NVMe Disk (107 GB) - Status: OK
```

* Completed checking physical drives on system. *

* Now checking logical volumes on system... *

```
Drive C: (PhysicalDrive0), Drive Type: Fixed, Filesystem: NTFS, Size: 106 GB, Free Space: 16 GB  
Drive D: [Label: Data] (PhysicalDrive1), Drive Type: Fixed, Filesystem: NTFS, Size: 376 GB, Free Space: 63 GB  
Drive E: [Label: <Error getting label: The device is not ready.>] (CD/DVDRom0), Drive Type: CDRom, Filesystem: Unknown,  
Size: Unknown, Free Space: Unknown  
Drive F: [Label: DU0] (PhysicalDrive2), Drive Type: Removable, Filesystem: exFAT, Size: 123 GB, Free Space: 122 GB
```

* Completed checking logical volumes on system. *

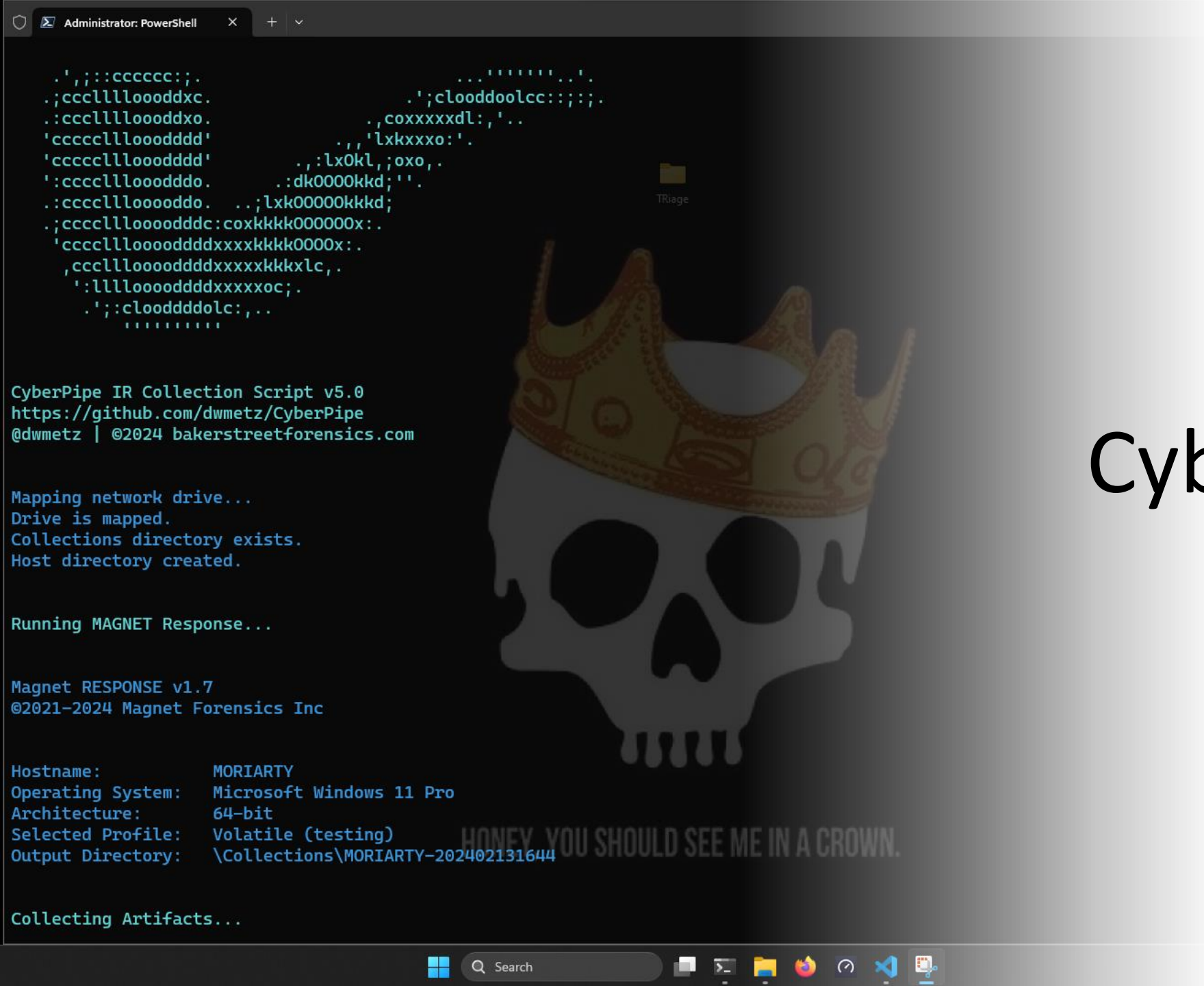
* Running Secondary Bitlocker Check... *

* Completed Secondary Bitlocker Check... *

* Checking for running processes... *

* Completed checking running processes. *






- CLI
- checks the physical drives for encrypted volumes
- Detects TrueCrypt, PGP, Bitlocker, and other full disk encryption products



CyberPipe

CyberPipe (v5)

Functions:

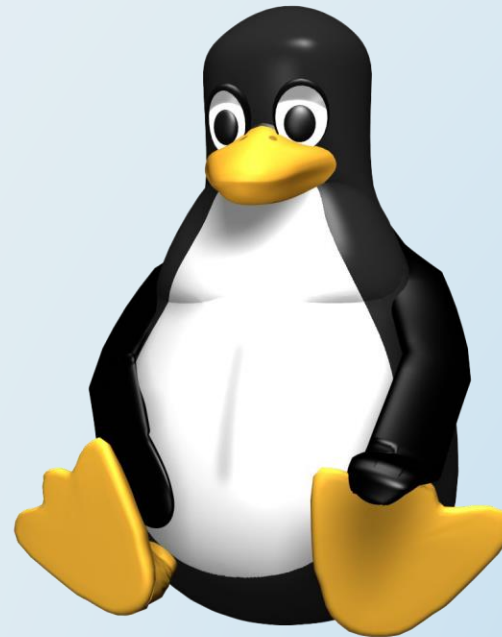
-  Capture a memory image with MAGNET DumpIt for Windows, (x32, x64, ARM64), or MAGNET RAM Capture on legacy systems;
 -  Create a Triage collection with MAGNET Response;
 -  Check for encrypted disks with Encrypted Disk Detector;
 -  Recover the active BitLocker Recovery key;
 -  Save all artifacts, output, and audit logs to USB or source network drive.
- Volatile Artifacts
 - Triage Collection (Volatile, RAM, Pagefile, Triage artifacts)
 - Just RAM
 - RAM & Pagefile
 - or build your own using the RESPONSE CLI options

Prerequisites:

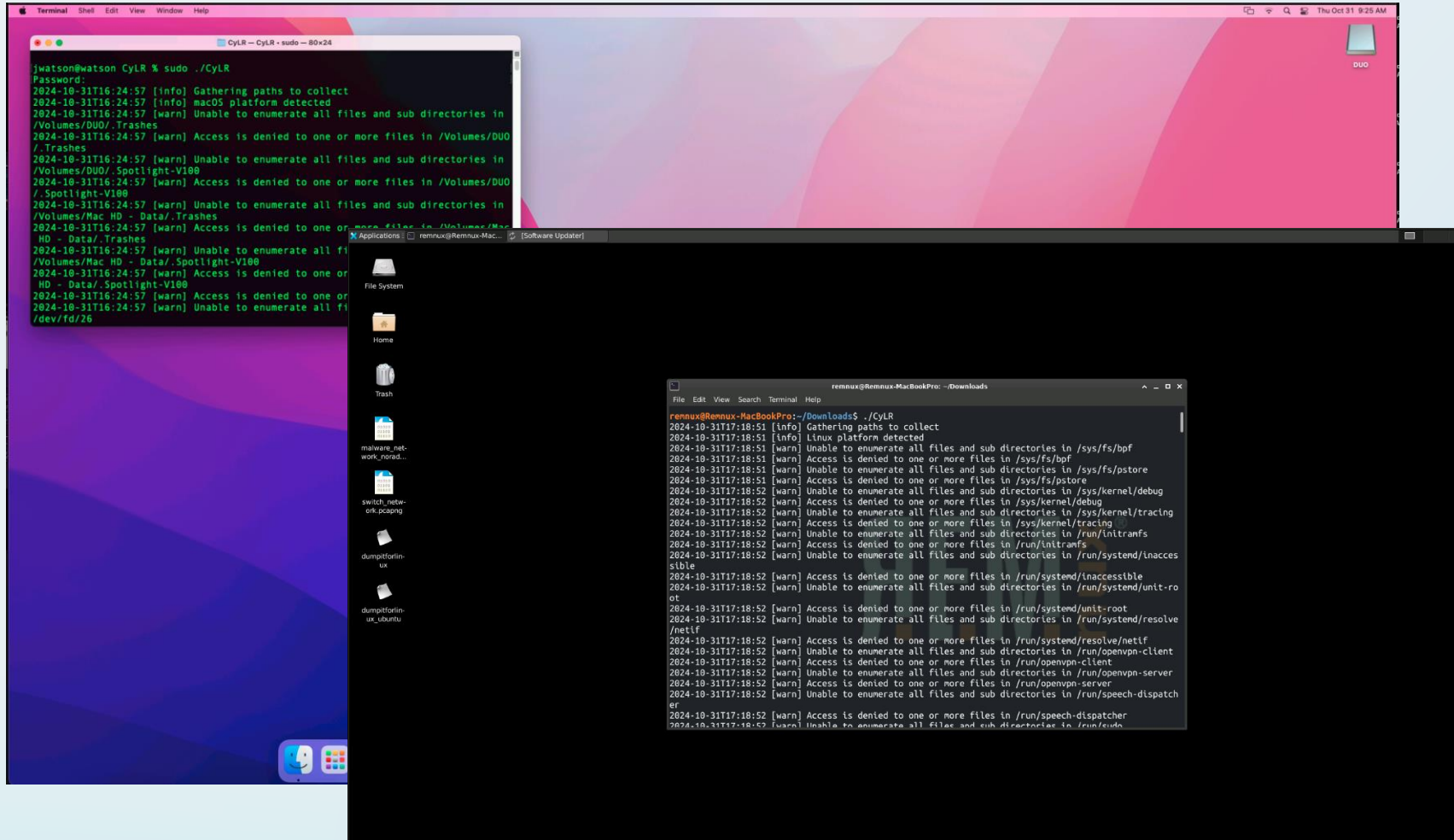
- MAGNET Response
- MAGNET Encrypted Disk Detector

Collection Profiles:

Triage Collection for Mac & 'Nix

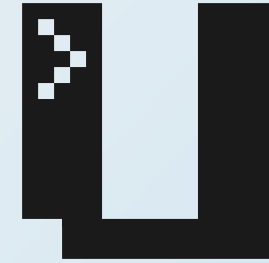


CyLR



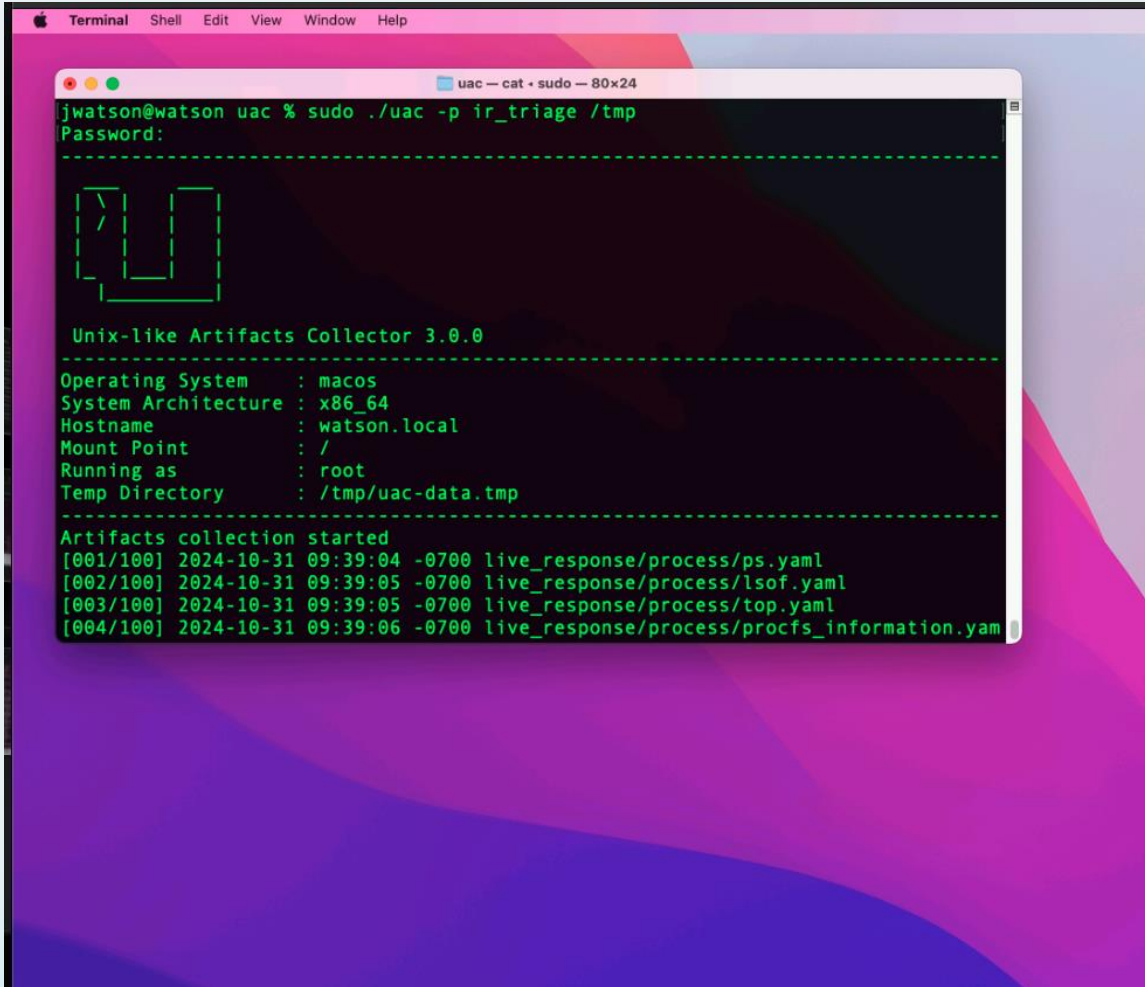
- Triage Collection
- Open-Source
- CLI
- Updated 2021 (v3)
- Windows, Linux, Mac
- Different executables for each
- Output zip file

UAC (Unix-like Artifacts Collector)



- Triage Collection
- CLI
- Open-Source
- Actively maintained
- Linux, Mac, ESXi, OpenBSD, Solaris...+
- Extensible via YAML files

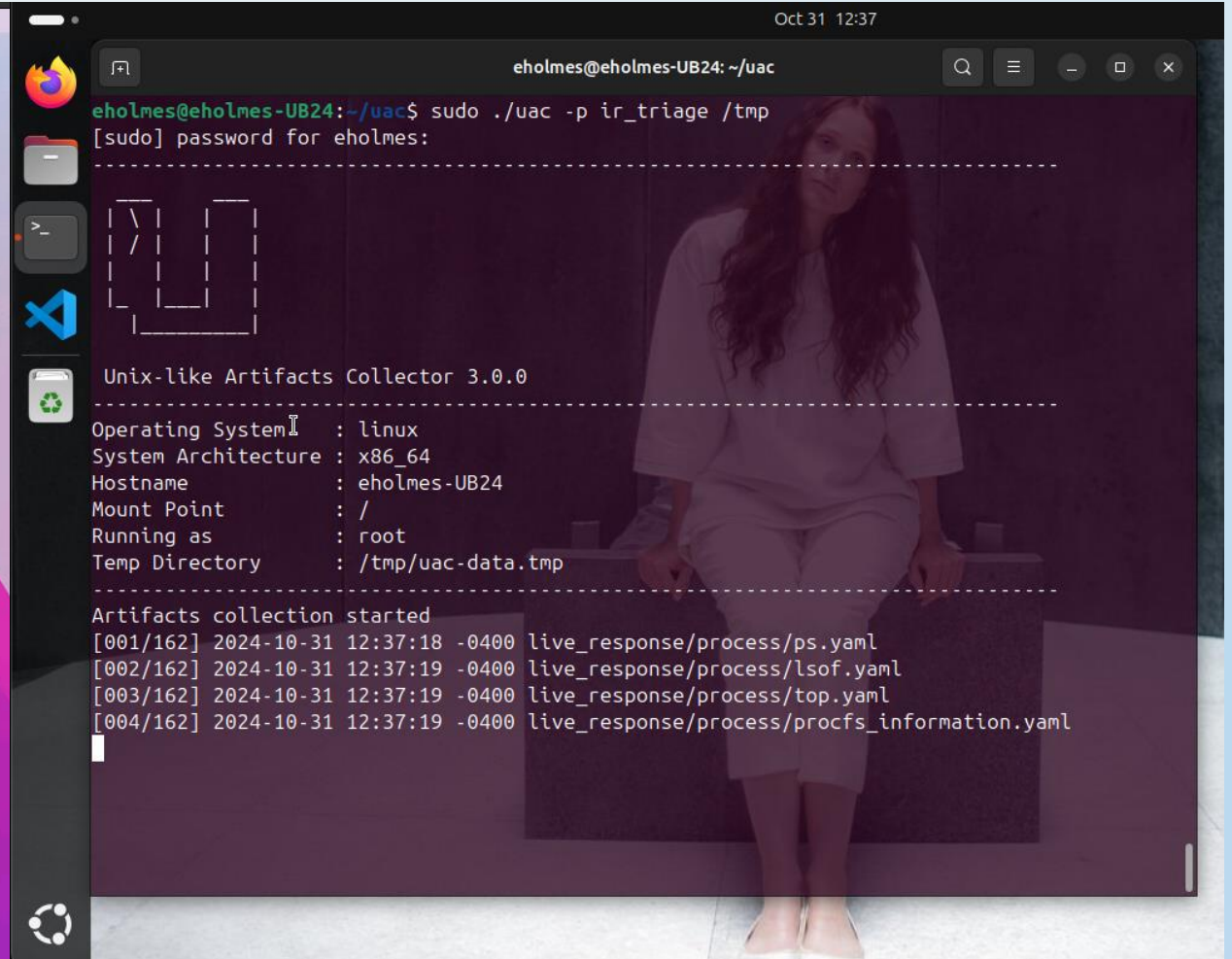
UAC (Unix-like Artifacts Collector)



A terminal window on a macOS system. The user 'jwatson' runs 'sudo ./uac -p ir_triage /tmp'. The prompt asks for a password. After entering it, the UAC tool displays its logo and system information. The background of the terminal has a pink and purple abstract pattern.

```
jwatson@watson uac % sudo ./uac -p ir_triage /tmp
Password:

-----
[Logo]
-----
Unix-like Artifacts Collector 3.0.0
-----
Operating System   : macos
System Architecture : x86_64
Hostname          : watson.local
Mount Point       : /
Running as        : root
Temp Directory    : /tmp/uac-data.tmp
-----
Artifacts collection started
[001/100] 2024-10-31 09:39:04 -0700 live_response/process/ps.yaml
[002/100] 2024-10-31 09:39:05 -0700 live_response/process/lsof.yaml
[003/100] 2024-10-31 09:39:05 -0700 live_response/process/top.yaml
[004/100] 2024-10-31 09:39:06 -0700 live_response/process/procfs_information.yaml
```



A terminal window on a Linux system (Ubuntu 24.04). The user 'eholmes' runs 'sudo ./uac -p ir_triage /tmp'. The prompt asks for a password. After entering it, the UAC tool displays its logo and system information. The background of the terminal has a dark purple abstract pattern with a faint image of a person.

```
eholmes@eholmes-UB24: ~/uac
eholmes@eholmes-UB24:~/uac$ sudo ./uac -p ir_triage /tmp
[sudo] password for eholmes:

-----
[Logo]
-----
Unix-like Artifacts Collector 3.0.0
-----
Operating System   : linux
System Architecture : x86_64
Hostname          : eholmes-UB24
Mount Point       : /
Running as        : root
Temp Directory    : /tmp/uac-data.tmp
-----
Artifacts collection started
[001/162] 2024-10-31 12:37:18 -0400 live_response/process/ps.yaml
[002/162] 2024-10-31 12:37:19 -0400 live_response/process/lsof.yaml
[003/162] 2024-10-31 12:37:19 -0400 live_response/process/top.yaml
[004/162] 2024-10-31 12:37:19 -0400 live_response/process/procfs_information.yaml
```

Continue with

MAGNET AXIOM CYBER™



Sources:

- Magnet Acquire Images (.e01, .raw)
- Magnet RAM Capture Images (.raw)
- Magnet DumpIt for Windows (.dmp, .raw)
- Magnet Response Triage (.zip)
- CyberPipe (.zip, .dmp, .raw)
- CyLR (.zip)
- UAC (.zip)



Enhance the Evidence:

- Magnet.AI
- YARA
- MITRE ATT&CK
- \$MFT
- Remote Acquisition
- Cloud Sources
- Co-Pilot

UNLOCKING DFIR: FREE RESOURCES FOR EFFICIENT TRIAGE AND ACQUISITION

Resources:

Magnet Free Tools

Magnet Response: <https://www.magnetforensics.com/resources/magnet-response/>

Magnet DumpIt for Windows: <https://www.magnetforensics.com/resources/magnet-dumpit-for-windows/>

Magnet RAM Capture: <https://www.magnetforensics.com/resources/magnet-ram-capture/>

Magnet Acquire: <https://www.magnetforensics.com/resources/magnet-acquire/>

Magnet Encrypted Disk Detector: <https://www.magnetforensics.com/resources/encrypted-disk-detector/>

+ PowerShell

CyberPipe: <https://github.com/dwmetz/CyberPipe>

Defender Response PowerShell: <https://github.com/MagnetForensics/Magnet-RESPONSE-PowerShell>

Ginsu: <https://github.com/dwmetz/ginsu>

Magnet Response PowerShell: <https://github.com/MagnetForensics/Magnet-RESPONSE-PowerShell>

Open Source Tools

AVML (Acquire Volatile Memory for Linux): <https://github.com/microsoft/avml>

CyLR: <https://github.com/orlikoski/CyLR>

Uac (Unix-like Artifacts Collector): <https://github.com/tclahr/uac>

Magnet DumpIt for Linux: <https://github.com/magnetforensics/dumpit-linux>

Products

Magnet Axiom Cyber: <https://www.magnetforensics.com/products/magnet-axiom-cyber/>

References

Baker Street Forensics <https://bakerstreetforensics.com>

Cyber Unpacked: <https://www.magnetforensics.com/cyber-unpacked/>

HTCIA - High Tech Crime Investigators Association <https://www.htcia.org>

Magnet Response CLI Guide: https://github.com/MagnetForensics/Magnet-RESPONSE-PowerShell/blob/main/Magnet_RESPONSE_CLI_Guide.pdf



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Thank you!

