HONEY, I'M HOME!

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1

$ whoami

- *CEO @BSidesChicago,*
  2019 COO @dianainitiative,
  CFP Chair @BSidesPGH, DefCon 3!
- *Based in Kirkland, WA and a natural creature of winter, you can typically find me sipping Casa Noblé Añejo whilst simultaneously defending my systems using OSS, magic spells and Dancing Flamingos*
- *Honeypots, Refrigerators and IoT (Internet of Threats) are a few of my favorite things*

2

DISCLAIMER

- The views and opinions expressed in this presentation are my own and do not necessarily reflect the official policy or position of any current or previous employer. Examples of exploitations, coding and vulnerabilities discussed within this presentation are only examples and they should not be utilized in the real-world.

3

WHY WE ARE NOT HERE

- This is not a demo of 5000 different honeypots
- I'm not showing you all my honeypots (duh)
- Honeypots are only PART of your Security Posture

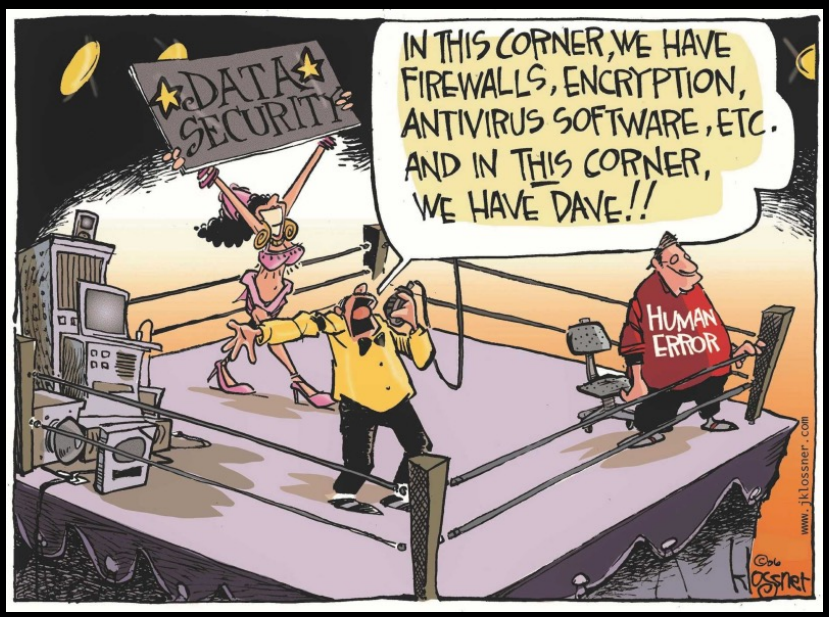
4

WHY WE ARE HERE

- Spending exceeded $123 billion - 2020
- Attacks and breaches are commonplace
- Security "stuff" is vulnerable
- Lateral Movement – (*this will become more important*)
- But what about –
  - Your Security Architecture is not unique
  - What is your "typical day"

Instead of Brilliance, we have standardized mediocrity.
– John Strand, Offensive Countermeasures

5



6

BUT FIRST..

Your Lab!

- Virtualize
  - Proxmox
- PIs
- OpenWRT
- OpnSense
- Random Stuff
- Some Extras

7

HONEYPOTS

- Honeypots vs Deception
  - A resource with no value(?)
    - Value = Use of Resource
  - Does Not Hack Back
- Important Points
  - Deployment
  - Customization = Planning! (more on this)
  - 100's of "types"

8

PICK ONE

- OpenCanary -- https://opencanary.readthedocs.io/en/latest/
- Adhd – https://www.activecountermeasures.com/free-tools/adhd/
- Honey Badger -- https://github.com/adhdproject/honeybadger (GEO!)
- CHN-- https://communityhoneynetwork.readthedocs.io/en/stable/
- Canarytokens -- https://canarytokens.org/generate
- T-pot -- https://github.com/telekom-security/tpotce
- Cowrie -- https://github.com/cowrie/cowrie
- PIs w/lights -- https://github.com/mattymcfatty/HoneyPi
- Lots more -- https://github.com/paralax/awesome-honeypots

- What about the "Real Thing"? Hmmmm..

9

ADHD

ACTIVE DEFENSE HARBINGER DISTRIBUTION

ADHD Version: **4.0.0** | GitHub Page | Project Page

Black Hills Information Security

ADHD

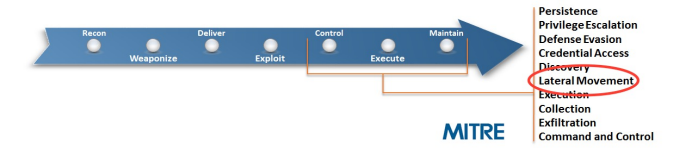
- Credentials
- Artillery
  - Example 1: Running Artillery
  - Example 2: Triggering a Honeyport
  - Example 3: Adding a File to a Watched Directory
- Bear Trap
  - Example 1: Basic Usage
- BeEF
  - Example 1: Hooking a Web Browser
  - Example 2: Browser Based Exploitation With BeEF
- CanaryTokens
  - Example 1: Creating Callbacks Using Local Canary Instance
  - Example 2: Creating Callbacks Using CanaryTokens.org
- Cowrie
  - Example 1: Running Cowrie
  - Example 2: Cowrie In Action
  - Example 3: Viewing Cowrie's Logs

https://www.activecountermeasures.com/free-tools/adhd/

10

LATERAL MOVEMENT

- Enables an adversary to access and control remote systems on a network.
- *(See, I told you it would become important later)*



11

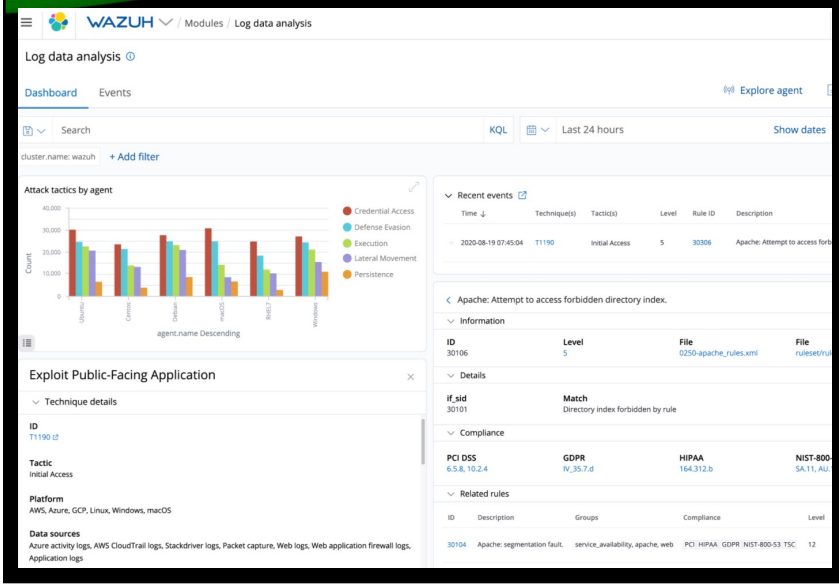
OODA VS CCAD

- OODA
  - Observe
  - Orient
  - Decide
  - Act
- CCAD
  - Confuse
  - Confound
  - Annoy
  - Delay

12

MONITORING

wazuh.com



13

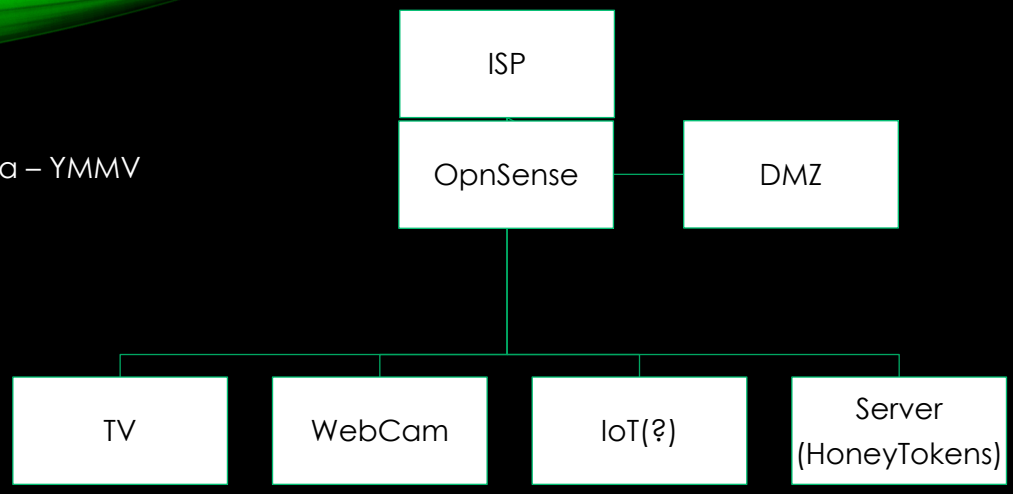
DEPLOYMENT

- Plan, Plan, Plan!
  - Low, Medium, ~~High~~
  - Honeypots, Honeyports, Honeytokens, Honeycreds
  - Customization ← *Ding ding ding!*
    - Real vs Self-Signed Certs
    - Actual Applications
  - HIDS / OSSEC / Wazuh / SIEM
    - Rules! Tuning

- Where?
  - Server Farms
  - Cloud Storage
  - IoT (Shodan is your friend!!)
    - https://shodan.io
  - DMZ (Guest WiFi)
  - MX, DNS
  - PoS
  - WP, Rpi, VMs, VPS

14

- An Idea – YMMV




```
while true ; do nc -l -p 1500 -c 'echo -e "HTTP/1.1 200 OK\n\n $(date)"'; done
```

15

LET'S TALK CUSTOMIZATION

- Think
  - Over = No!
- What?
- Look around
- eBay = fun times
  - Wifi – old
  - Cameras
  - Enable ssh
- Shodan
- Where – more on this later

16

CUSTOMIZATION

- Start with your (friends? Neighbors?) devices
- Shodan
  - Banners
  - Versions!
  - HTML
- Certificates
- HoneyTokens
- Hosts
  - Filesystems
  - Commands
  - History
  - Processes
  - HoneyTokens
- Real Servers and Apps
  - Staging

Too legit to quit!!

Make it look real!

Rename built-in user richard to phil, it's used as detection mechanism.

17

18

FOR REAL?

- Why not use real software?
- RDP
  - Honeytokens
  - Honeydocs
- Think about "discovery"?
- Don't forget monitoring agent (Wazuh)

19

WHAT IS IT?

```
# uname -a
Linux RT-AC5300 2.6.36.4brcmarm #1 SMP PREEMPT Fri Oct 18 16:13:51 CST 2019 armv7l
ASUSWRT
# df
Filesystem           1K-blocks      Used Available Use% Mounted on
rootfs                   40960     40960         0 100% /
/dev/root                40960     40960         0 100% /
devtmpfs                257456         0    257456   0% /dev
tmpfs                   257600       944    256656   0% /tmp
/dev/mtdblock4           65536      2064     63472   3% /jffs
```

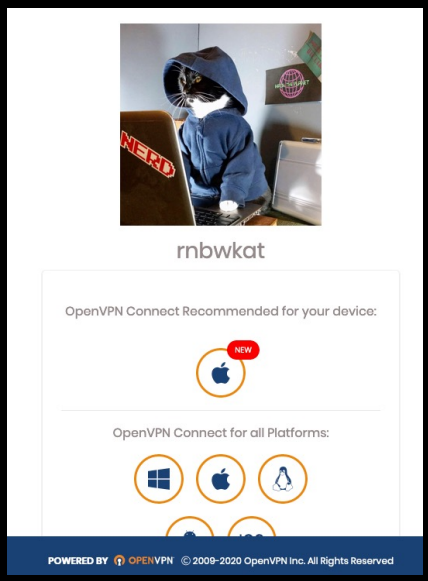
20

COWRIE

```
# ls -al /etc
srwxrwxrwx    1 admin    root             0 May  5  2018 amas_lib_socket
-rw-rw-rw-    1 admin    root          1017 May  5  2018 cert.pem
drwxrwxrwx    2 admin    root           100 May  5  2018 cfg_mnt
srwxrwxrwx    1 admin    root             0 May  5  2018 cfgmnt_ipc_socket
-rw-rw-rw-    1 admin    root           380 May  5  2018 dnsmasq.conf
drwx------    2 admin    root           100 Feb 27 13:24 dropbear
lrwxrwxrwx    1 admin    root            20 Dec 31  1969 e2fsck.conf -> /rom/etc/e2fsck.conf
drwxrwxrwx    2 admin    root            60 May  5  2018 email
lrwxrwxrwx    1 admin    root            19 Dec 31  1969 ethertypes -> /rom/etc/ethertypes
-rw-r--r--    1 admin    root             0 Dec 31  1969 fstab
-rw-r--r--    1 admin    root            52 May  5  2018 group
-rw-rw-rw-    1 admin    root             0 May  5  2018 group.custom
-rw-r--r--    1 admin    root            52 May  5  2018 gshadow
-rw-r--r--    1 admin    root           176 May  5  2018 hosts
lrwxrwxrwx    1 admin    root            23 Dec 31  1969 hotplug2.rules -> /rom/etc/hotplug2.rules
-rw-r--r--    1 admin    root           365 May  5  2018 ipsec.conf
drwxr-xr-x   10 admin    root           200 May  5  2018 ipsec.d
-rw-rw-rw-    1 admin    root          1675 May  5  2018 key.pem
```

21

WHAT IS IT?



22

MORE CUSTOMIZATION

Cowrie

- The obvious
  - Hostname (and MAC!)
    - `openssl rand -hex 6 | sed 's/\(..\)/\1:/g; s/:$//'`
  - Versions
  - History
  - Commands
    - History –s (or just copy .bash_history)
    - Targets?
  - Filesystem
  - Processes
  - Usernames
    - Honeycreds

Remember Proxmox? Monitoring!

23

CUSTOMIZATION EXAMPLES

- Banners = easy, but don't forget ssh headers/ciphers/version
- Ping?
- DNS?
- rsync is your friend – honeyfs / createfs
- ps a running system (cmdoutput.json)
  - Command, cpu, mem, pid, rss, start, stat, time, tty, user, vsz

```
$ ps -eo pcpu,%mem,pid,rss,start_time,stat,bsdtime,tty,user,vsz,args
%CPU %MEM   PID   RSS START STAT   TIME TT       USER         VSZ COMMAND
 0.0  0.0 14995  4456 03:32 S      0:00 ?        dovecot    50052 dovecot/imap-login [67.18.92.27 TLS proxy]
 0.0  0.0 15034  3500 03:32 S      0:00 ?        dovecot    49784 dovecot/imap-login
 0.2  0.0 15154 91232 03:35 Sl     0:51 ?        apache    383516 /usr/sbin/httpd -DFOREGROUND
 0.0  0.0 15233     0 Feb04 S<     0:00 ?        root           0 [kworker/22:1H]
 0.0  0.0 15525  4868 Feb04 Ss     6:14 ?        root      279644 php-fpm: master process
(/usr/local/emps/etc/php-fpm.conf)
 0.0  0.0 15533  6816 Feb04 S      0:00 ?        emps      280408 php-fpm: pool ordinary
 0.0  0.0 15538   408 Feb04 Ss     0:00 ?        root       20828 nginx: master process
/usr/local/emps/sbin/nginx -c /usr/local/emps/etc/nginx/nginx.conf
```

24

REMEMBER

84%

of organizations breached had evidence of the breach in their log files...

Source: Verizon Data Breach Report, 2014

25

TAKEAWAYS

- CCAD
- Low False Positives
  - Defend & Detect
- Lateral Movement
- Cost Effective
- Forensics
- REAL Threat Intelligence
  - It's About Thinking Differently, not "watching everything"

26

27