Cyber Threat Response

CISCO SECURITY

Cisco
BDA Strategy

Defending real world cyber threats requires a layered approach as no single defense tactic is 100% effective. Attacks typically involve multiple steps known as “The Kill Chain”. Your goal is to prevent the attack as early in the kill chain as possible.

At Cisco, we call our recommended layered approach for security the **Before**, **During** and **After** defense design.

Appliance – Virtual – Cloud

BEFORE	DURING	AFTER
NGFW/UTM	NGIPS/Anti-Virus	Breach Detection
Firewall/VPN	Web Security	Behavior Analysis
Secure Access + Identity Services Engine	Email Security	File Analytics

Visibility, Intelligence and Automation

Watch for how each security technology is covered within the Cisco BDA blueprint.

Cyber Threat Response

Brought to you by **CISCO SECURITY**

course architects

Moses Hernandez

Ron Taylor

Katherine McNamara

Jamey Heary

William Young

John Columbus

Jeff Fanelli

Joey Muniz

Bobby Acker

Christopher Heffner

writing

Joey Muniz

art

Tariq Hassan

colors

Brian Arthur McGee

letters

Santos Vega

creative direction

Brian McGee

art direction/design

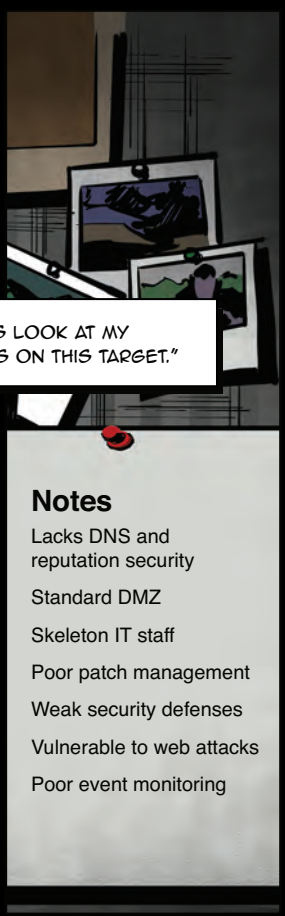
Santos Vega

editing

Andrew Akers

Smash and Grab

Chapter One



Mr. Black (alias)

Laid-off after 25 years of employment

Goal is to obtain 30 million dollars using any means available

No criminal records

No social media, false records, limited digital footprint

Proficient technologist

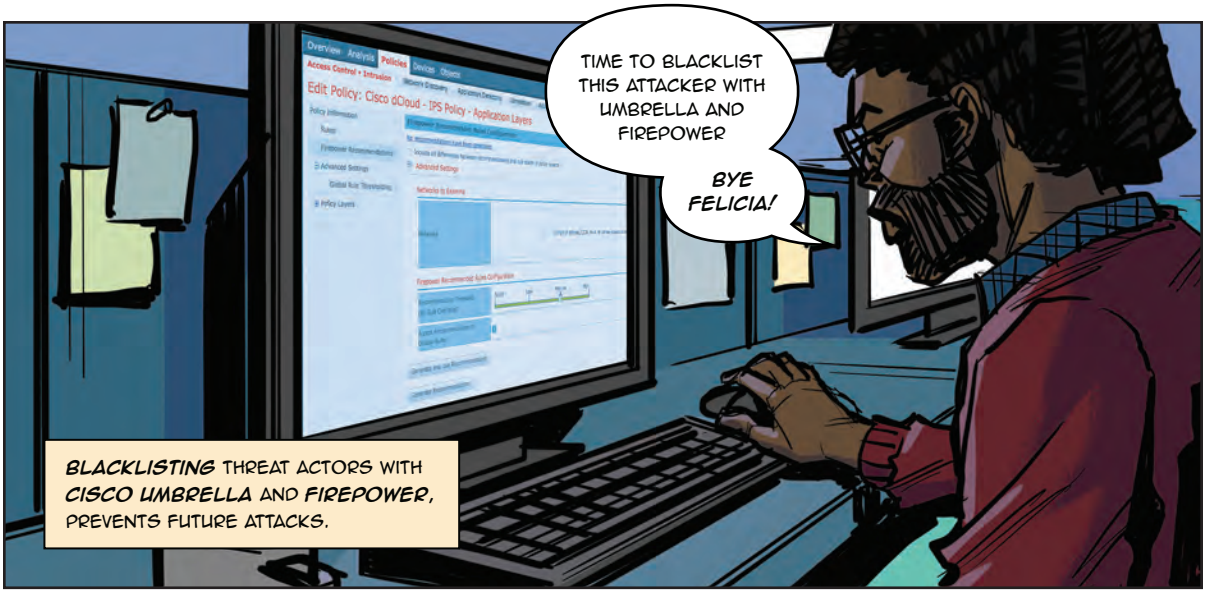
Mr. Orange (alias)

Known as the "Loud Jerk"

Day job unknown but has been dabbling in scripted cyber crime

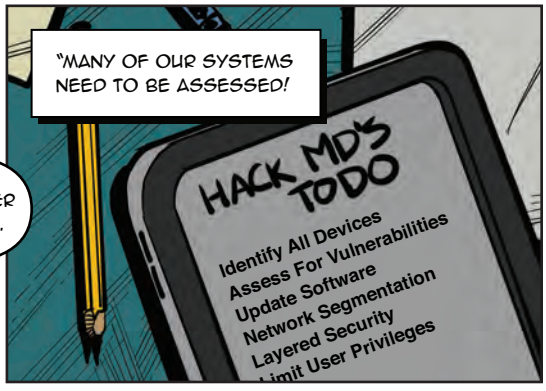
Actively looking to prove himself as an elite hacker

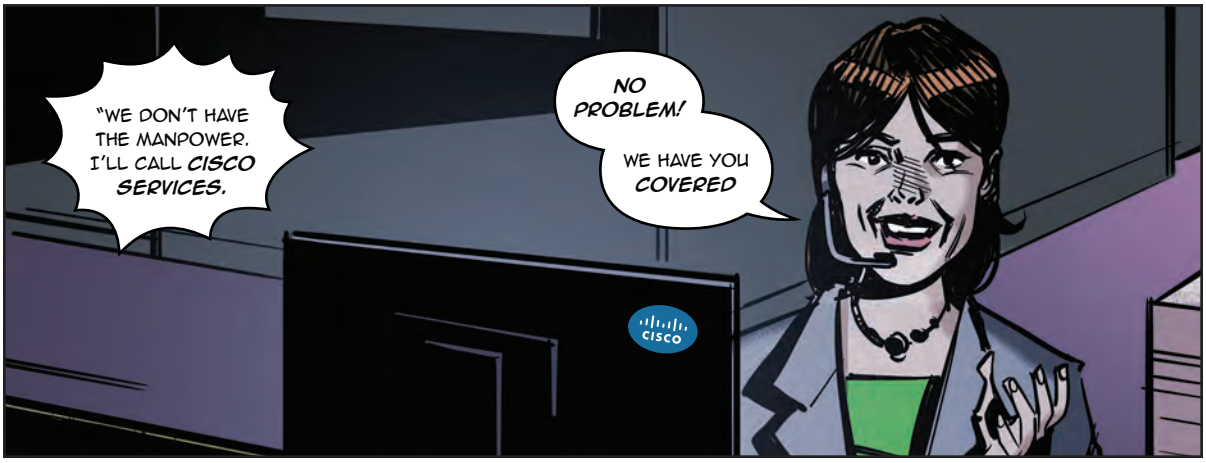
HACKMDS SECURITY OPS CENTER
FIREPOWER GROUPS VARIOUS ALERTS AS A SECURITY INCIDENT.
OUR SERVERS ARE BEING HIT BY SOMETHING
WHAT ARE THESE ALARMS?
ANY HIGH RISK INCIDENT WILL INFORM HACKMDS.
IT LOOKS LIKE SOMEBODY IS TRYING TO EXPLOIT OUR SERVERS.
GOOD THING OUR IPS IS TUNED FOR OUR ENVIRONMENT.
FIREPOWER CAN AUTO-TUNE THE IPS TO ADAPT TO NEW VULNERABILITIES WITHIN THE NETWORK.


TIME TO BLACKLIST THIS ATTACKER WITH UMBRELLA AND FIREPOWER
BYE FELICIA!
BLACKLISTING THREAT ACTORS WITH CISCO UMBRELLA AND FIREPOWER, PREVENTS FUTURE ATTACKS.

I HEARD WE WERE ATTACKED. ARE WE OKAY?

YES SIR!
CISCO FIREPOWER PREVENTED AN ATTACK AGAINST OUR SERVERS
BUT THERE ARE VULNERABILITIES THAT NEED TO BE PATCHED.
AS A MATTER OF FACT ...


"MANY OF OUR SYSTEMS NEED TO BE ASSESSED!
HACK MD'S TODO
Identify All Devices
Assess For Vulnerabilities
Update Software
Network Segmentation
Layered Security
Limit User Privileges


"WE DON'T HAVE THE MANPOWER. I'LL CALL CISCO SERVICES.
NO PROBLEM!
WE HAVE YOU COVERED
CISCO

www.xploitz.com

Infect Me Feeling Lucky

x

Don’t Do It!

Exploits are everywhere!

An exploit kit is a web server designed to identify and exploit vulnerabilities in client machines. The goal is to deliver something malicious such as a backdoor or ransomware.

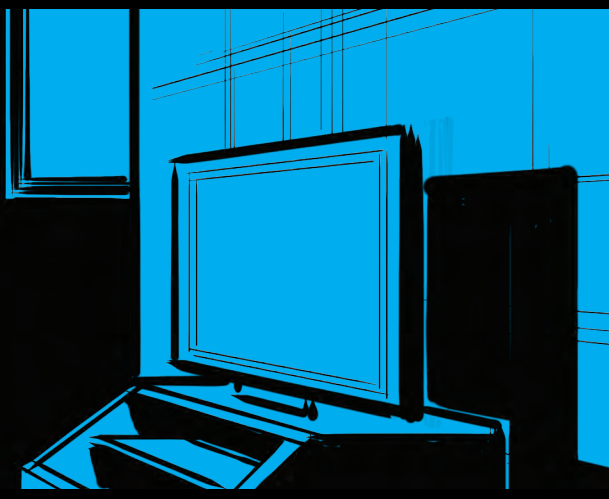
Exploit kits can be rented online making it easy for non-technical attackers to deliver technical attacks without understanding the details of how the attack works.

Coming Soon 2 ur CPU

Ransomware

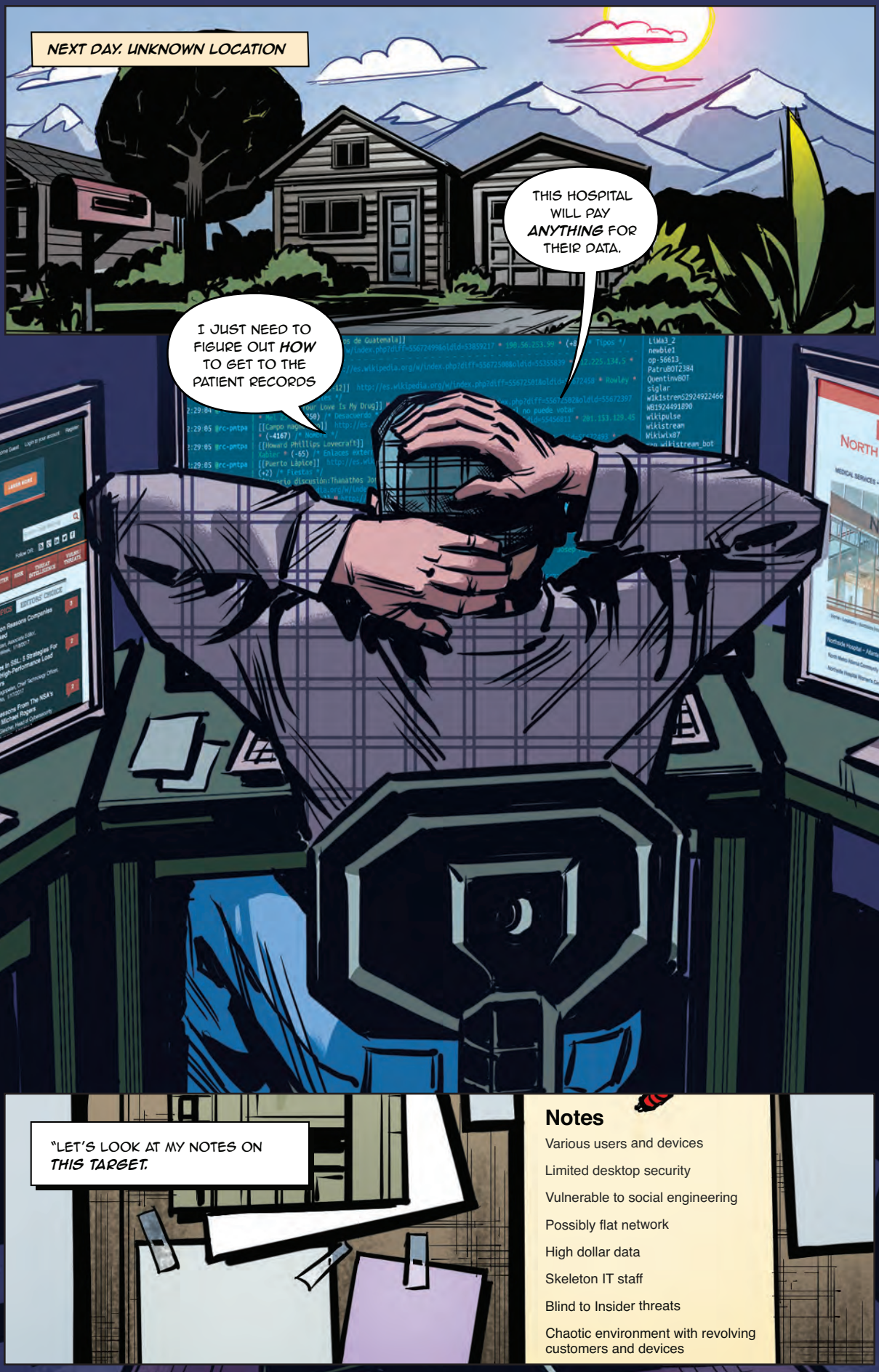
Never stop the incident response at removing the infection, or you may experience it AGAIN!!

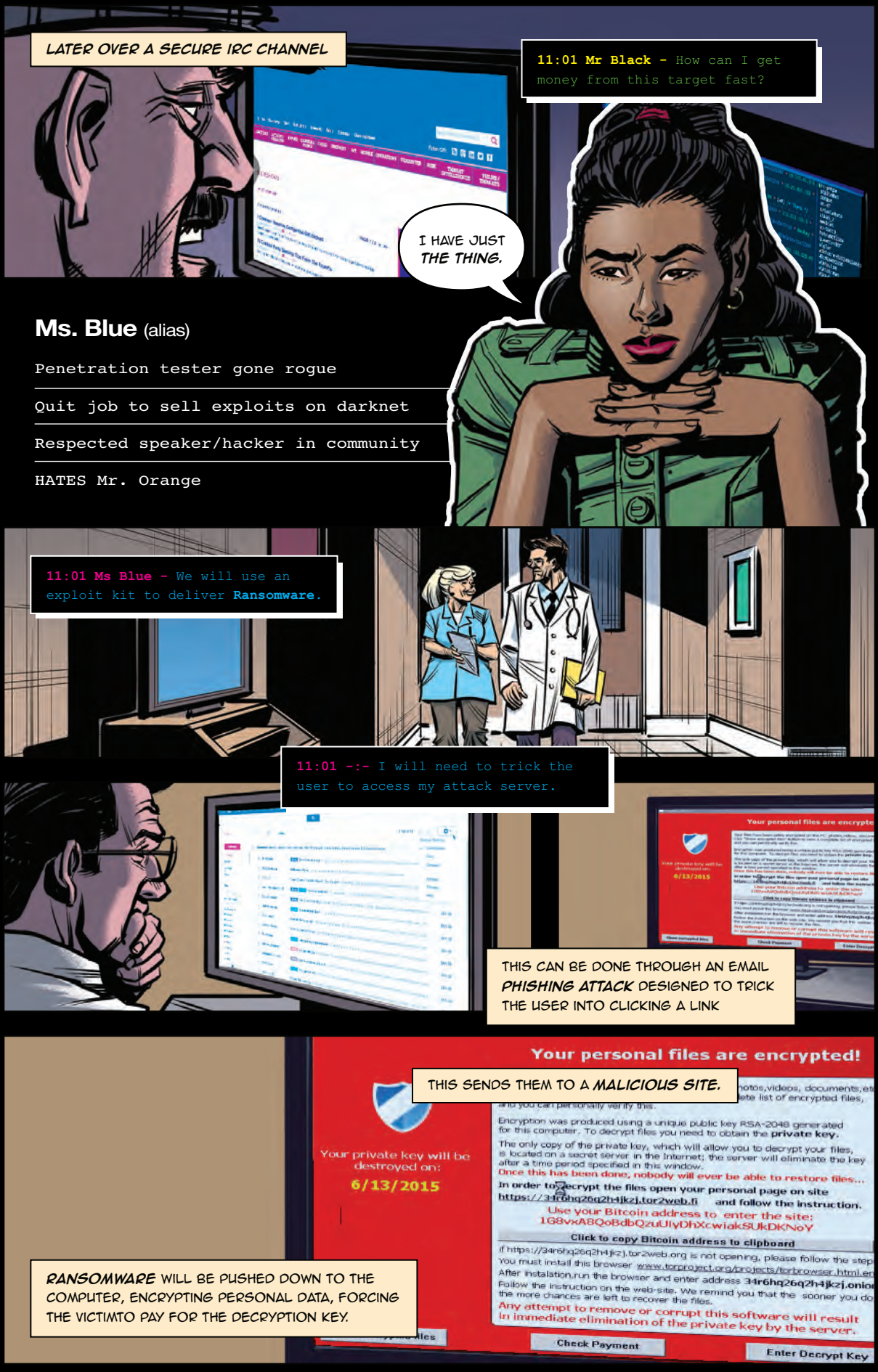
Identifying ransomware means an attacker was able to breach your network and deliver malicious software. **Best practice is to identify and remediate infected machines, harden the network against the attack method used, and blacklist any sources linked to the original attack!**



Ransomware

Chapter Two


NEXT DAY. UNKNOWN LOCATION
THIS HOSPITAL WILL PAY ANYTHING FOR THEIR DATA.
I JUST NEED TO FIGURE OUT HOW TO GET TO THE PATIENT RECORDS
"LET'S LOOK AT MY NOTES ON THIS TARGET.
Notes
Various users and devices
Limited desktop security
Vulnerable to social engineering
Possibly flat network
High dollar data
Skeleton IT staff
Blind to Insider threats
Chaotic environment with revolving customers and devices


LATER OVER A SECURE IRC CHANNEL
11:01 Mr Black - How can I get money from this target fast?
I HAVE JUST THE THING.
Ms. Blue (alias)
Penetration tester gone rogue
Quit job to sell exploits on darknet
Respected speaker/hacker in community
HATES Mr. Orange
11:01 Ms Blue - We will use an exploit kit to deliver Ransomware.
11:01 -:- I will need to trick the user to access my attack server.
THIS CAN BE DONE THROUGH AN EMAIL PHISHING ATTACK DESIGNED TO TRICK THE USER INTO CLICKING A LINK
THIS SENDS THEM TO A MALICIOUS SITE.
Your personal files are encrypted!
Your private key will be destroyed on:
6/13/2015
Encryption was produced using a unique public key RSA-2048 generated for this computer. To decrypt files you need to obtain the private key.
The only copy of the private key, which will allow you to decrypt your files, is located on a secret server in the Internet; the server will eliminate the key after a time period specified in this window.
Once this has been done, nobody will ever be able to restore files...
In order to decrypt the files open your personal page on site
https://34r6hq26q2h4jkzj.tor2web.fi and follow the instruction.
Use your Bitcoin address to enter the site:
1G8vxA8QoBdbQzuUlyDhXcwiakf8UkDKNoY
Click to copy Bitcoin address to clipboard
Check Payment
Enter Decrypt Key
RANSOMWARE WILL BE PUSHED DOWN TO THE COMPUTER, ENCRYPTING PERSONAL DATA, FORCING THE VICTIMTO PAY FOR THE DECRYPTION KEY.

HACKMDS SECURITY OPS CENTER
WE HAVE A BREACH.
TIME TO INFORM THE BOSS.
CISCO ADVANCED MALWARE PROTECTION (AMP) SHOWS VIDEO OF A QUARANTINED THREAT.
WE HAVE A PROBLEM!
AMP CAN GO BACK IN TIME TO IDENTIFY ALL INFECTED SYSTEMS INCLUDING PATIENT ZERO.
CISCO AMP IS SHOWING MULTIPLE HOSTS ARE QUARANTINING A MALICIOUS FILE.
GLAD WE STOPPED THIS ONE FROM INSTALLING
Your personal files are encrypted!
BREACH DETECTION TECHNOLOGIES ARE DESIGNED TO FIND THREATS THAT HAVE PASSED ALL OTHER SECURITY DEFENSES.
BREACH TECHNOLOGY VALIDATES PERIMETER SECURITY!

"I WONDER WHO BROUGHT THIS FILE ONTO THE NETWORK ...
WHY DOES THIS EMAIL KEEP TAKING ME TO THIS WEIRD WEBSITE?
DOOGIE GOT US INFECTED AGAIN!
WELL THIS ISN'T A SURPRISE.
DR. HOWSER CLICKS ANYTHING.
LOOKS LIKE WE NEED TO UPDATE ALL ENDPOINT SYSTEM JAVA ASAP!
FIREPOWER UPDATED OUR DEFENSES.
I'LL CHECK IF THE MALICIOUS SOURCE IS BLOCKED.
FIREPOWER CAN LEARN FROM AMP TO AUTO ADAPT TO NEW VULNERABILITIES PREVENTING FUTURE EXPLOITATION.
GLAD MY HOSPITAL STAFF IS SO ROCK SOLID.
THREAT REMOVED. WE ARE READY IF IT HAPPENS AGAIN.
THE EXTERNAL SOURCE LINKED TO THE ATTACK CAN ALSO BE AUTO BLACKLISTED!

TARGET RE-SEARCH

RECONNAISSANCE*

The first step in a cyber attack. This is where you learn as much as possible about the target. The more you know, the more likely you will find the quickest and most effective attack strategy.

VULNERABILITIES*

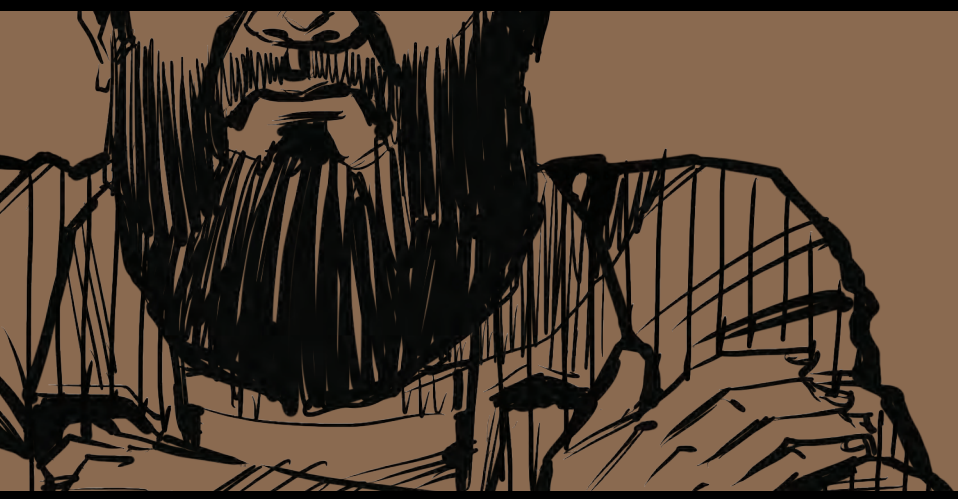
Weakness in a system that can be exploited. This could be a configuration error, missing patch, flaw in design or many other factors happening at any moment.

Security tools such as anti-virus and IPS look for attacks against vulnerabilities using signatures of known exploitation.

EXPLOITS*

Abusing a vulnerability to achieve an outcome. Result could be planting a Remote Access Tool (RAT), delivering Ransomware, Crashing the system, etc.

*Recon finds Vulnerabilities that can be Exploited



Insider Threats

Chapter Three

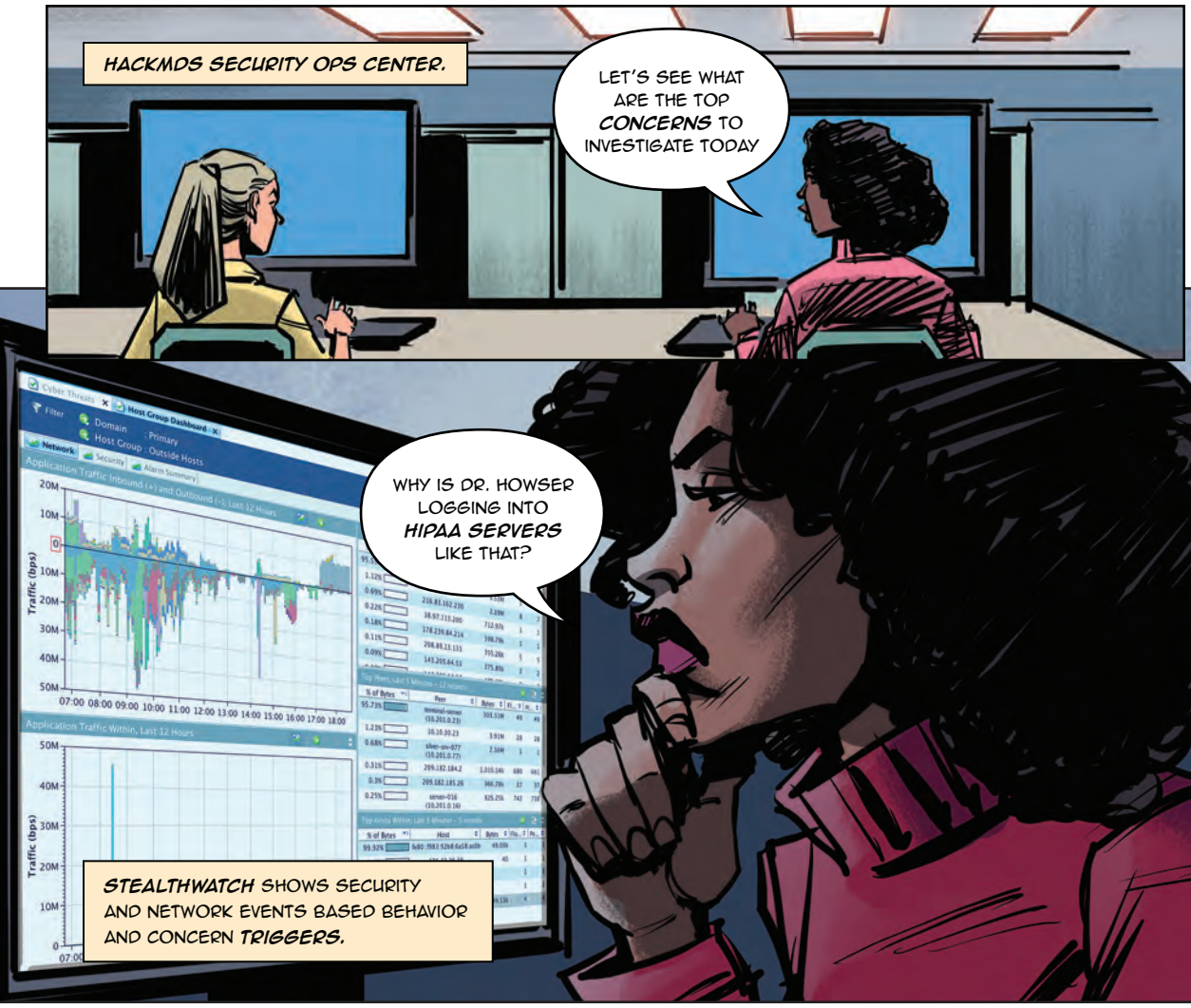
Mr. Brown (alias)

Linked to sales of black market pharmaceutical drugs

Associated with a mafia organization

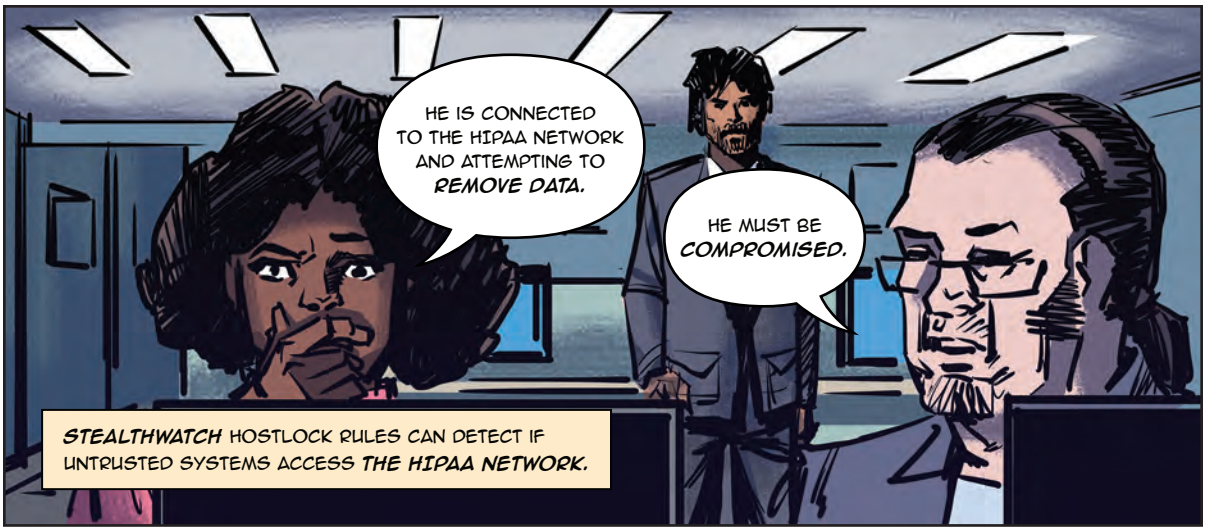
Street criminal for hire

"LET'S LOOK AT MY NOTES AGAIN.
Notes
Various users and devices
Perimeter security focused
Possibly a flat network
High dollar data
Skeleton IT staff
Blind to Insider threats
Lack internal monitoring
PERIMETER SECURITY IS NOT 100%.
YOU SHOULD ASSUME YOU WILL EVENTUALLY HAVE YOUR NETWORK COMPROMISED.
BREACH TECHNOLOGY IS DESIGNED FOR DETECTING INSIDER THREATS
I CAN GET YOU INTO AN INTERNAL MEDICAL UNIT
USING STOLEN, AUTHORIZED CREDS TO BYPASS PERIMETER DEFENSES.
Mr. Green (alias)
Financial advisor on paper but also involved with money laundering
Known for stolen credentials
Minor drug related arrests
10:37 Mr Black - Perfect. Now Mr Brown can bring me the goods.
10:37 Mr Brown - I'll find the data and send it to your cloud drive.
ONCE INSIDE THE HACKMDS NETWORK
MR. BROWN CAN IDENTIFY AND CONNECT TO OTHER SYSTEMS.
10:37 Mr Black - Use this login to access HackMDs network.


HACKMDS SECURITY OPS CENTER.
LET'S SEE WHAT ARE THE TOP CONCERNS TO INVESTIGATE TODAY
WHY IS DR. HOWSER LOGGING INTO HIPAA SERVERS LIKE THAT?
STEALTHWATCH SHOWS SECURITY AND NETWORK EVENTS BASED BEHAVIOR AND CONCERN TRIGGERS.

"WAIT, NOW HE'S SCANNING THE NETWORK FTP?
COME TO DADDY.
NETFLOW CAN GIVE ALL COMMON NETWORK DEVICES SECURITY DETECTION CAPABILITIES.

DR. HOWSER'S ACCOUNT HAS NOW SCANNED THE HIPPA NETWORK!


HE IS CONNECTED TO THE HIPAA NETWORK AND ATTEMPTING TO *REMOVE DATA.*
HE MUST BE *COMPROMISED.*
STEALTHWATCH HOSTLOCK RULES CAN DETECT IF UNTRUSTED SYSTEMS ACCESS *THE HIPAA NETWORK.*

DR. HOWSER'S SYSTEM IS NO LONGER A *THREAT.*
CALL DR. HOWSER.
NOW!
DR. HOWSER, YOU HAVE A *CALL.*
I HAVE NOT TOUCHED A COMPUTER *ALL DAY.*

DON'T WORRY.
WE *QUARANTINED* ALL COMPROMISED SYSTEMS AND *RESET* YOUR LOGIN.
STEALTHWATCH CAN TRIGGER *CISCO IDENTITY SERVICES ENGINE* TO QUARANTINE ALL *CRITICAL THREATS.*

HEY KIDS

There are lots of things to remember about **EXCELLENT** Cyber Threat Response! We know it's a lot to learn, but Cisco has you covered!

SILVER BULLET MYTH

There isn't a silver bullet for providing 100% protection against cyber crime. Sorry... we can't promise that. **NOBODY CAN!**

REDUCE RISK

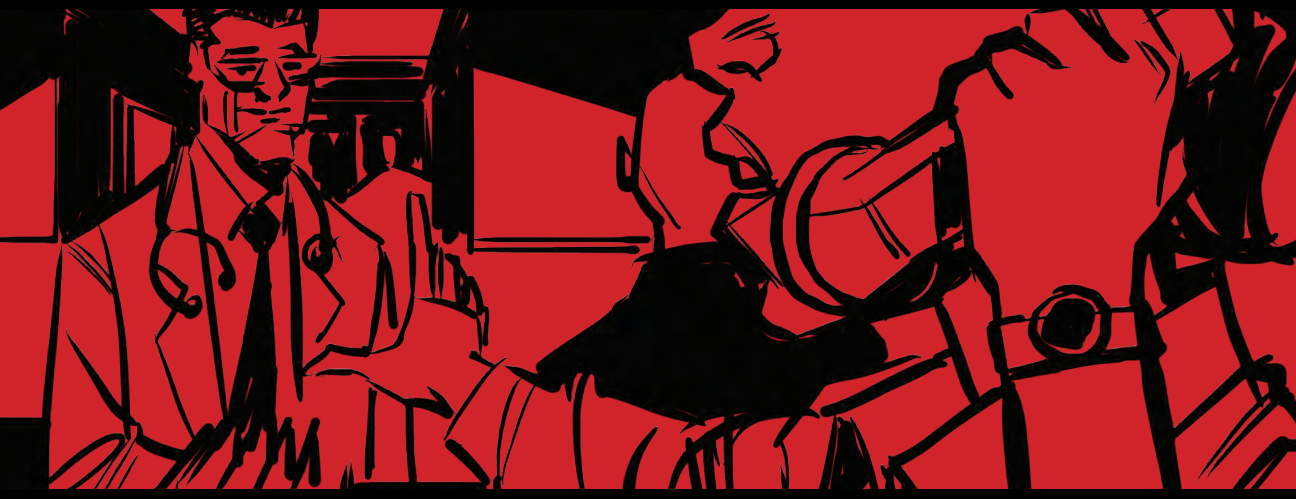
You can, however, learn to reduce the risk of being compromised to an acceptable level using industry best practices for security architecture.

EDUCATE YOURSELF

The Cisco Cyber Threat Response Clinics give you hands-on experience as both **ATTACKER** and **DEFENDER** so you can better understand both sides of the cyber **CAT AND MOUSE** game.

CTR HEROES ACTIVATE!

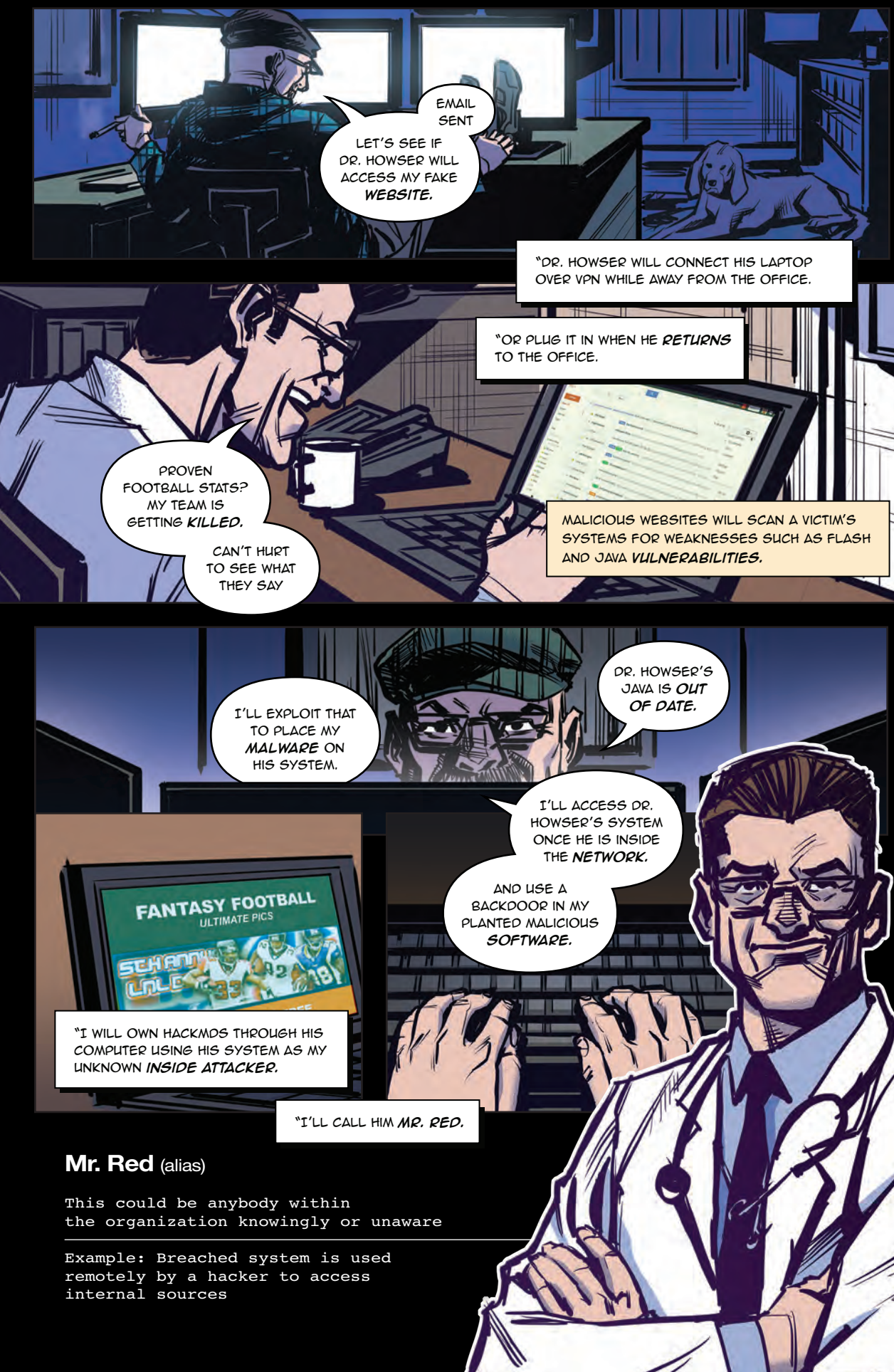
2017 Cisco Cyber Threat Response Clinic 2.0, International.



Compromised Laptop

Chapter Four

THE NEXT MORNING
"DR. HOWSER LIKES FANTASY FOOTBALL ACCORDING TO FACEBOOK.
I CAN CREATE A FAKE FANTASY STATS PAGE AND EMAIL HIM A LINK TO HIS PERSONAL ACCOUNT.
"IT WILL DROP MALWARE ONTO HIS SYSTEMS WHEN HE ACCESSES THE WEBSITE FROM HOME.
DR. HOWSER
"DR. HOWSER WILL GO BACK TO WORK AND CONNECT HIS INFECTED SYSTEM TO THE HACKMDS NETWORK.
GIVING ME INSIDE ACCESS.
"LET'S LOOK AT MY NOTES ON THIS TARGET.
Notes
People will click anything without thinking about it
Limited host security software that is based on signatures
HackMDs not responsible for user's home network
Compromised hosts can provide internal access for outsiders
Social engineering is extremely effective

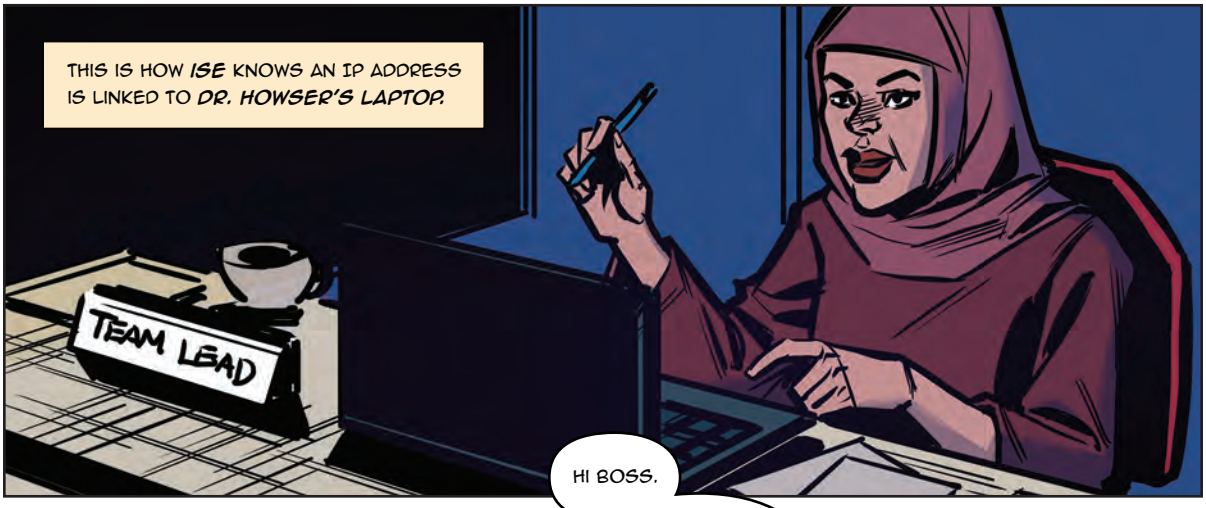


Mr. Red (alias)

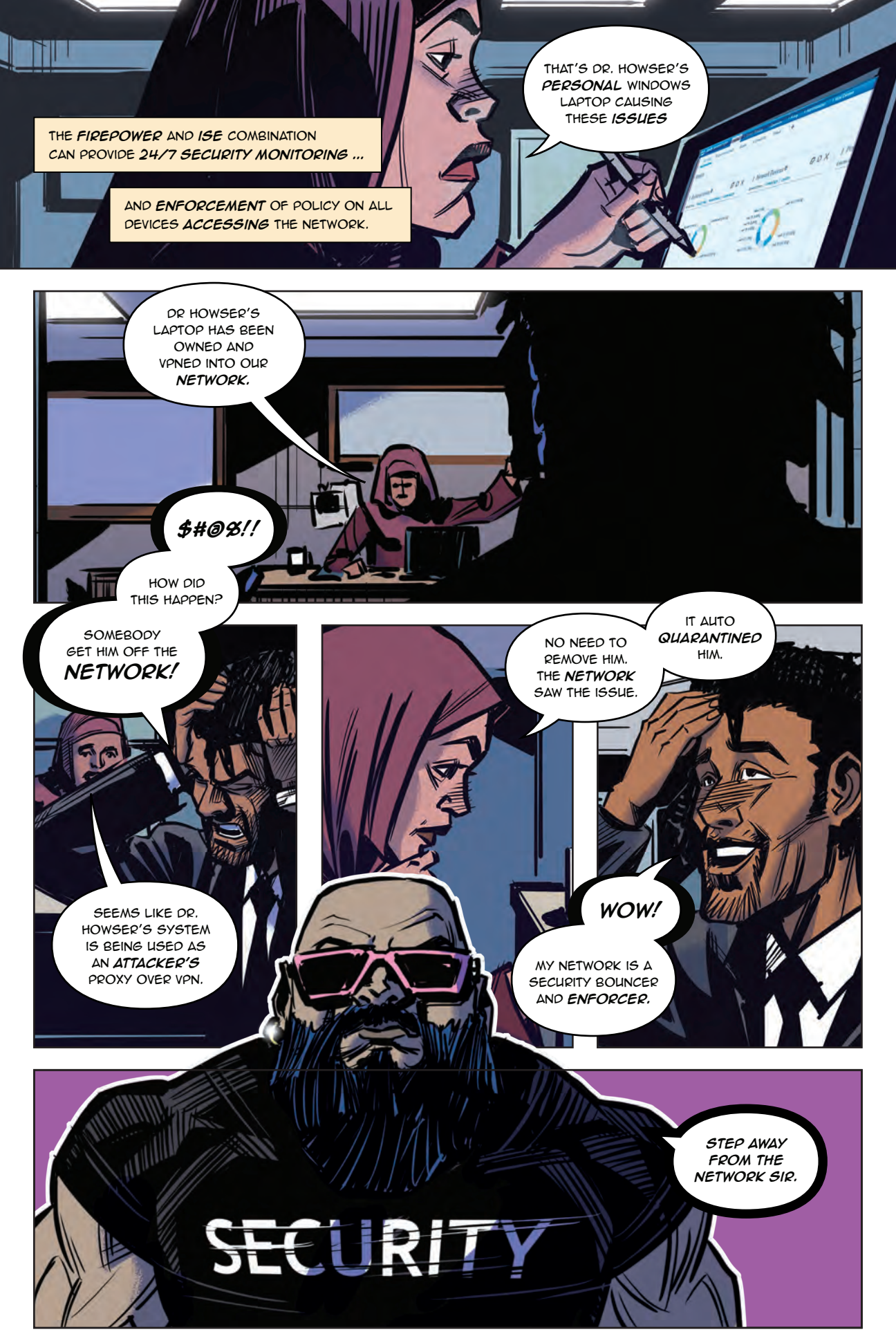
This could be anybody within the organization knowingly or unaware

---

Example: Breached system is used remotely by a hacker to access internal sources



ISE USES TRAFFIC SEEN FROM DEVICES VS MAC ADDRESS TO DETERMINE WHAT THEY ARE.


THE FIREPOWER AND ISE COMBINATION CAN PROVIDE 24/7 SECURITY MONITORING ...
AND ENFORCEMENT OF POLICY ON ALL DEVICES ACCESSING THE NETWORK.
THAT'S DR. HOWSER'S PERSONAL WINDOWS LAPTOP CAUSING THESE ISSUES
DR HOWSER'S LAPTOP HAS BEEN OWNED AND VPNED INTO OUR NETWORK.
$#@%!!
HOW DID THIS HAPPEN?
SOMEBODY GET HIM OFF THE NETWORK!
SEEMS LIKE DR. HOWSER'S SYSTEM IS BEING USED AS AN ATTACKER'S PROXY OVER VPN.
NO NEED TO REMOVE HIM. THE NETWORK SAW THE ISSUE.
IT AUTO QUARANTINED HIM.
WOW!
MY NETWORK IS A SECURITY BOUNCER AND ENFORCER.
SECURITY
STEP AWAY FROM THE NETWORK SIR.

THREAT RESPONDERS WANTED

CTR* CLINIC 2.0

*The Cyber Threat Response

Your **EXCLUSIVE** training platform for learning a range of Cisco Security products and integrated solutions

VOUCHER CODE:
^^Un1z

LEARN

- How environments get compromised
- How breaches get discovered
- How to respond most effectively with Cisco security products and solutions

EXPERIENCE

- Cyber security attack situations in a virtual lab environment
- Play as both **ATTACHER** and **DEFENDER**

Hands On | 8 Modules | Core Certification | Real-World Attacks

Use the Voucher Code Above to receive **EXCLUSIVE** access!

Enjoy this unique lab oriented, hands-on learning and solution demonstration clinic **TODAY!**

APPLY TODAY!

CLIP and **MAIL*** to your Cisco Account Manager **TODAY** to reserve your spot and get your learn on!

Name: _____

Address: _____

City: _____ State: _____

*or visit www.cisco.com/go/security

Attack The Branch

Chapter Five

LATER
BRANCH OFFICES TYPICALLY CONNECT BACK TO THE HEADQUARTERS OVER A TRUSTED VPN CONNECTION.
I CAN'T BELIEVE I HAVEN'T OWNED THIS HOSPITAL YET.
I BET THEY HAVE WEAK SECURITY POLICIES AT THEIR REMOTE BRANCHES.
"I CAN OWN THE HQ THROUGH THE BRANCH!
"LET'S LOOK AT MY NOTES ON THIS TARGET.
Notes
Security ops typically @HQ
Branch security is not as important as HQ
Limited local IT resources
Scalability challenges
Branch tunnels back to HQ bypassing HQ security
Busy environment

LATER OVER A SECURE IRC CHANNEL
08:03 Mr Black - I need a physical device planted at a branch office.
THERE ARE TONS OF TOOLS THAT CAN DO THIS.
Mr. White (alias)
Government engineer and hardware hacking hobbyist
Develops bypass tools
Rarely involved with crime but against "The Man"
08:03 -:- They probably don't enforce security at remote locations.
08:03 Mr White - I'll plant a Pwnie Express at one of their branch offices.
A PWN PLUG LOOKS LIKE A COMMON PLUG, HOWEVER, IS LOADED WITH ATTACKER TOOLS.

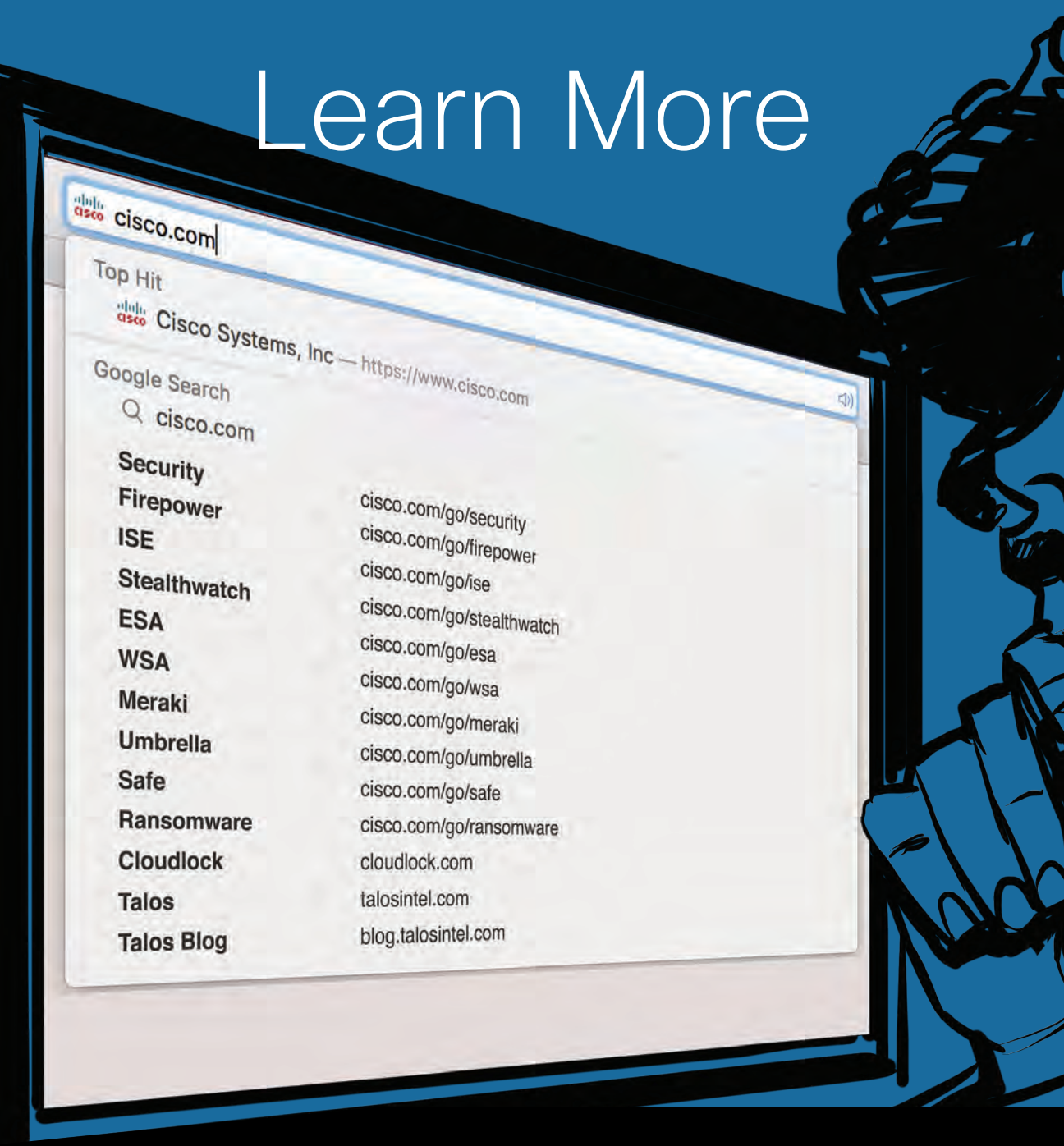
08:03 Mr Black - Once we have access to the branch network, we can hit other internal targets including the HQ through their site-to-site VPN.
08:03 Mr White - I'll pretend to hurt myself skating and plant the tools on site.

HACKMDS SECURITY OPS CENTER
?!
SEEING SOME WEIRD ACTIVITY AT OUR DC BRANCH.
I NEED TO GRAB THE TEAM LEAD.
View new version
Summary report
Usage (Total 138.9 MB ↓ 59.5 MB ↑ 79.4 MB)
Port utilization (4 of 10 ports were active)
Top switches by usage
LOOKS LIKE OUR BRANCH IS BEING HIT.
GOOD THING I JUST PURCHASED THAT CISCO MERAKI AND UMBRELLA STUFF FOR OUR BRANCHES.
BUT I JUST STARTED!
I CAN'T FLY DOWN THERE, CONFIGURE AN APPROVED HACKMDS SECURITY POLICY AND GO LIVE RIGHT NOW.
THIS WILL TAKE WEEKS!

RELAX NOOB. MERAKI AND UMBRELLA ARE MANAGED FROM THE CLOUD.
WE CAN CONFIGURE EVERYTHING RIGHT NOW BEFORE THE HARDWARE IS PLUGGED IN.
CLOUD MANAGED TECHNOLOGIES ARE IDEAL FOR BRANCH LOCATIONS DUE TO FLEXIBILITY IN DEVELOPMENT AND MANAGEMENT.
MERAKI USES FIREPOWER IPS AND AMP.
WE CAN ENABLE SIMILAR POLICIES TO OUR HQ IN A FEW CLICKS.
ALL WE NEED IS TO GET SOMEBODY AT THE DC BRANCH TO PLUG IT IN AND IT WILL GRAB THE CONFIGURATION FROM THE CLOUD.
LATER
HI BOSS. WHAT'S UP?
I'M GETTING CALLS ABOUT NETWORK ISSUES AT THE DC BRANCH!
NO WORRIES. WE JUST DEPLOYED NEW SECURITY FROM CISCO.
NOW WE ARE BLOCKING THE THREAT.
WOW!
I JUST HEARD ABOUT THIS ATTACK THIRTY MINUTES AGO AND WE ALREADY DEPLOYED NEW SEC?
"I'M GOING TO GET A PROMOTION FOR THIS!

THE TAKEDOWN.
MR BLACK'S TEAM FAILED TO STEAL DATA FROM HACKMDS.
DURING THE PROCESS, MR. WHITE AND MR. ORANGE WERE ARRESTED.
7911497110103101
CYBER STATE LOCKUP
981089799107
CYBER STAT
LOCKUP
MR. WHITE WAS CAPTURED ON VIDEO PLANTING A MALICIOUS BACKDOOR TOOL AT A HACKMDS DC BRANCH OFFICE.
MR. ORANGE'S REMOTE ATTACK GENERATED LOGS, WHICH CISCO TALOS AND HACKMDS USED TO IDENTIFY HIS LOCATION
FEDERAL AUTHORITIES CONFISCATED MR. ORANGE'S LAPTOP AND MR. WHITE'S IPHONE TO GET MR. BLACK'S CONTACT INFO.
71114101101
CYBER STATE LOCKUP
87104105116101
CYBER STATE LOCKUP
AND TAKE HIM DOWN!
AFTER IMPERSONATING MR. WHITE, THE FBI WAS ABLE TO CATCH MR. BLACK MARKETING FAKE STOLEN DATA
PUTTING HIM AWAY FOR ENOUGH TIME TO END HIS CRIMINAL CAREER.
83116111114109
CYBER STATE LOCKUP
66108117101
CYBER STATE LOCKUP
UNTIL THE NEXT ADVENTURE
STAY SECURE!

Learn More



We hope you enjoyed the Cisco Cyber Threat Response Clinic!

Make sure to come back and complete any modules you didn't have a chance to work on and check back for more future modules!

Cisco Security

Product Suite

Firepower
URL, IPS, and Breach security

Cisco Umbrella
DNS Security and forensics

ESA
Email security for cloud and on-prem

ISE
Access control and security policy management

Meraki
Cloud managed security, network and collaboration

AMP
Advanced breach detection for endpoint and network

VPN
Encrypted communication

Stealthwatch
Netflow anomaly monitoring and breach detection

CloudLock
Cloud application security

Threatgrid
Threat analytics, detection and prevention

Talos
Security research and threat intelligence

WSA
Secure proxy, content control and security

Physical · Virtual · Cloud