

SESSION ID: MASH-R01

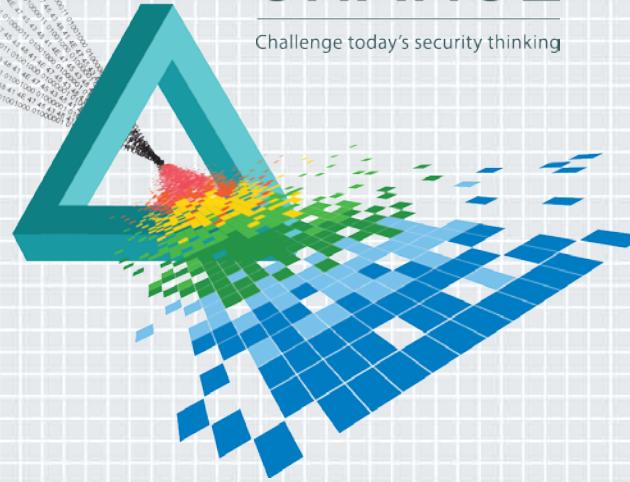
More Books You Should Have Read By Now: The Cybersecurity Canon Project

Rick Howard

Chief Security Officer
Palo Alto Networks

CHANGE

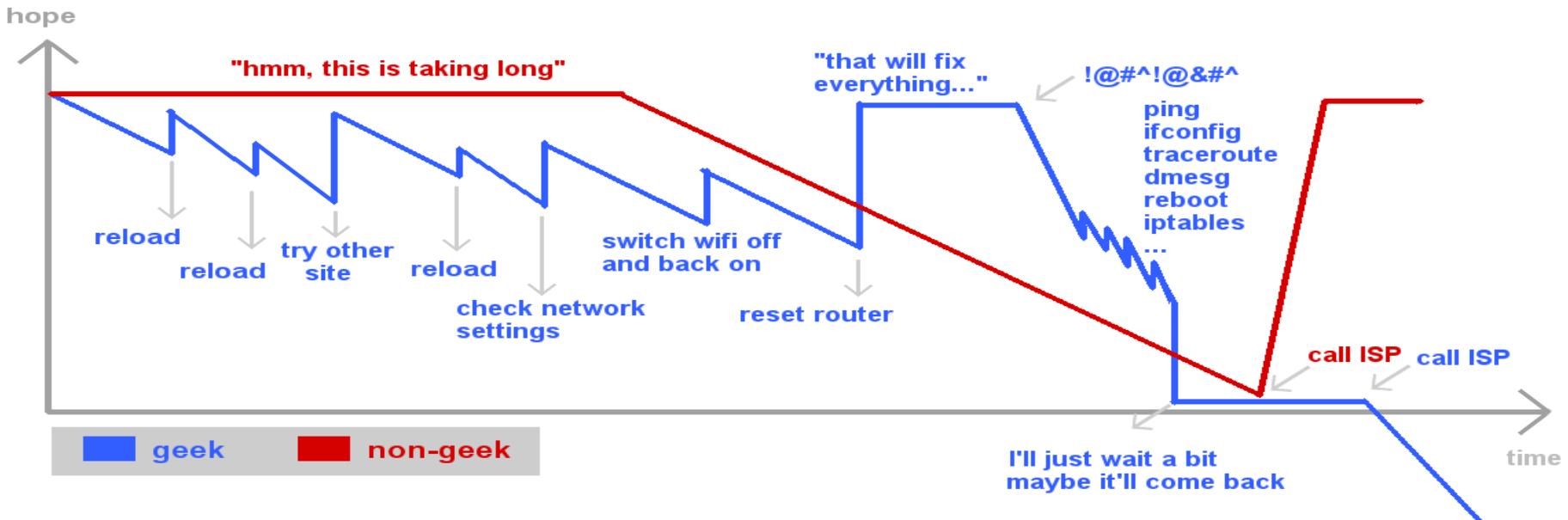
Challenge today's security thinking



How technical are you?

geek vs. non-geek reaction to flaky internet connection

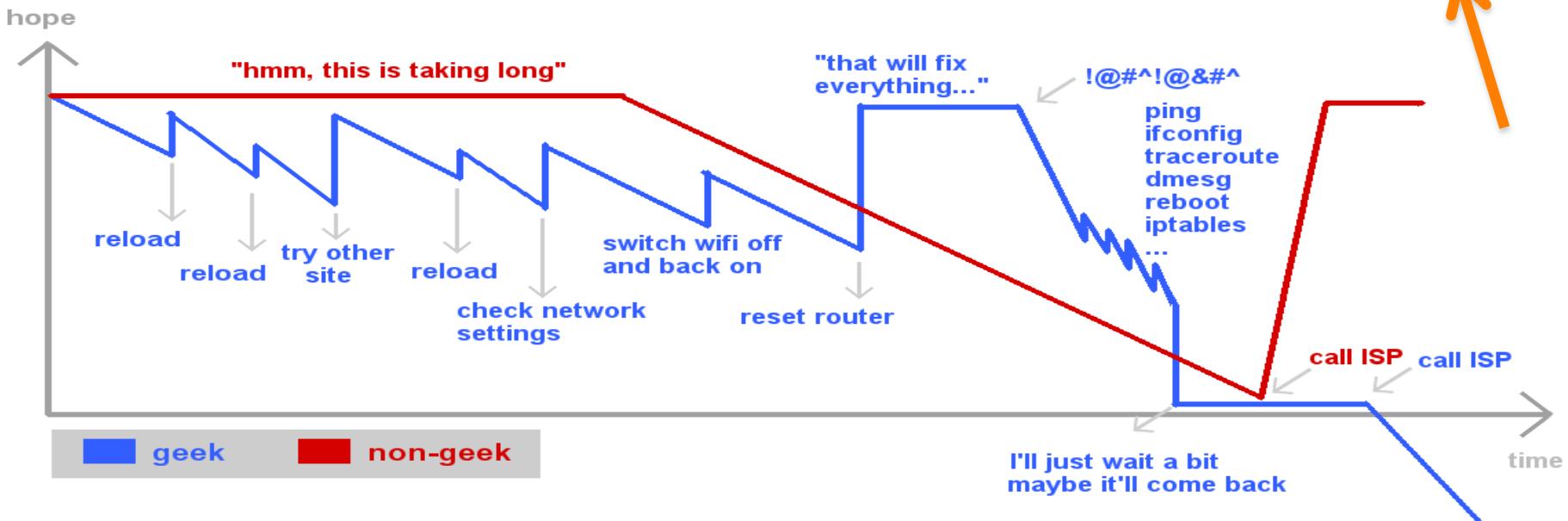
plus.google.com/+BrunoOliveira



How technical are you?

Bruno Oliveira

geek vs. non-geek reaction to flaky internet connection

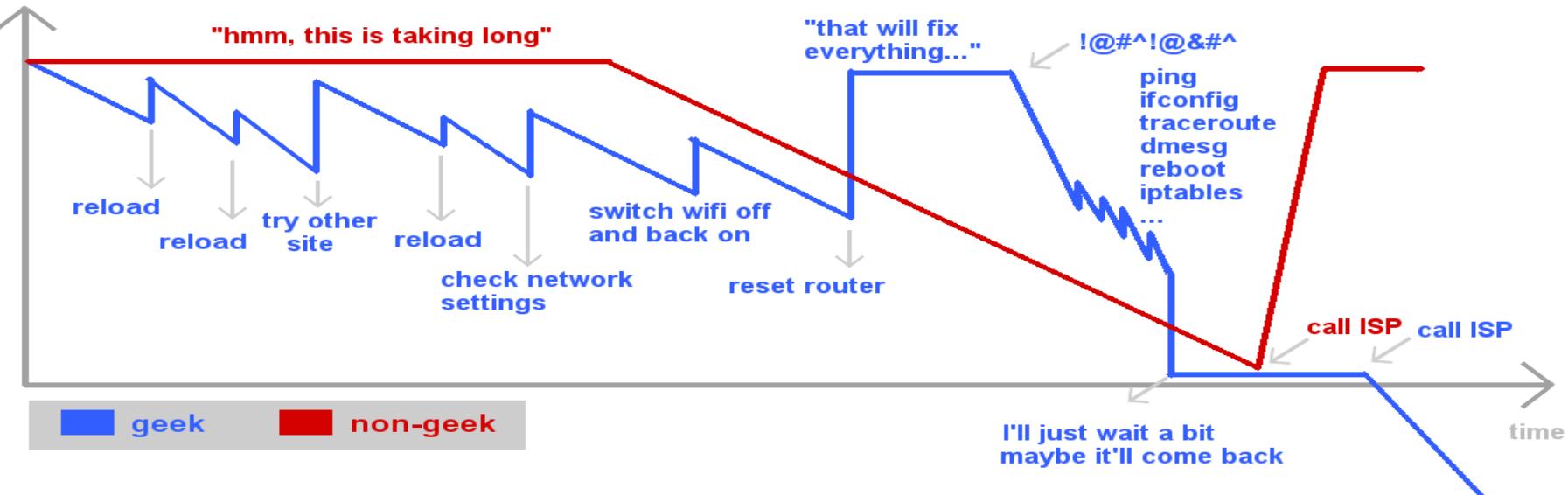


How technical are you?

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hope

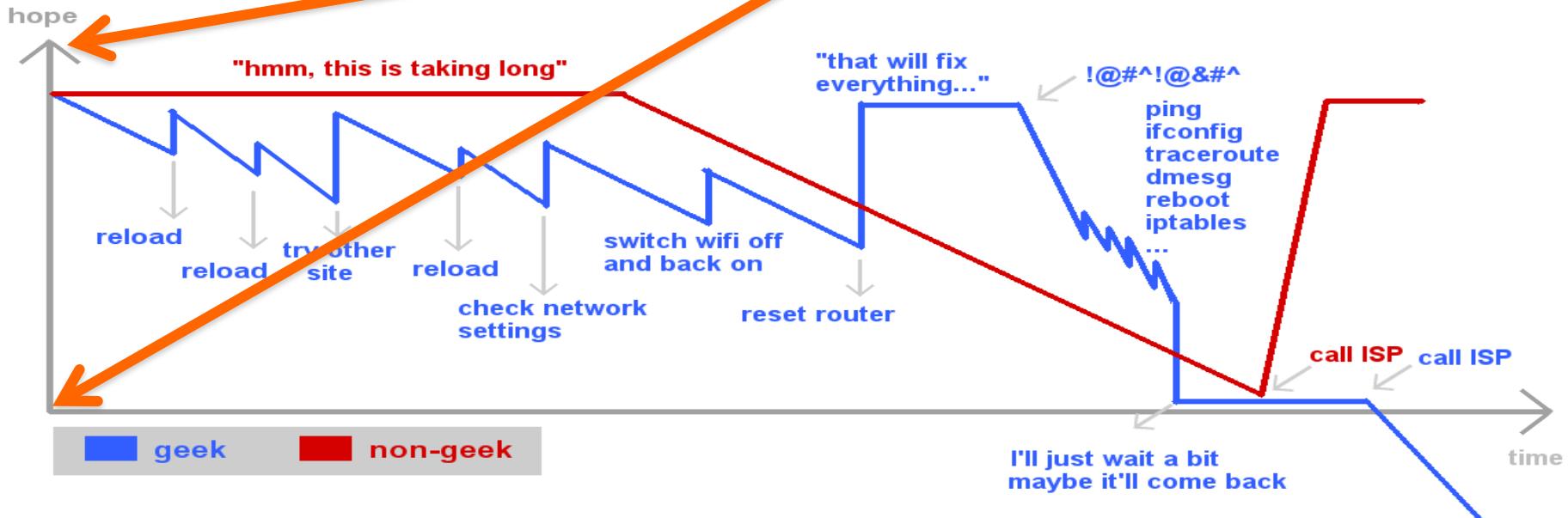


How technical are you?

Y-Axis: Hope

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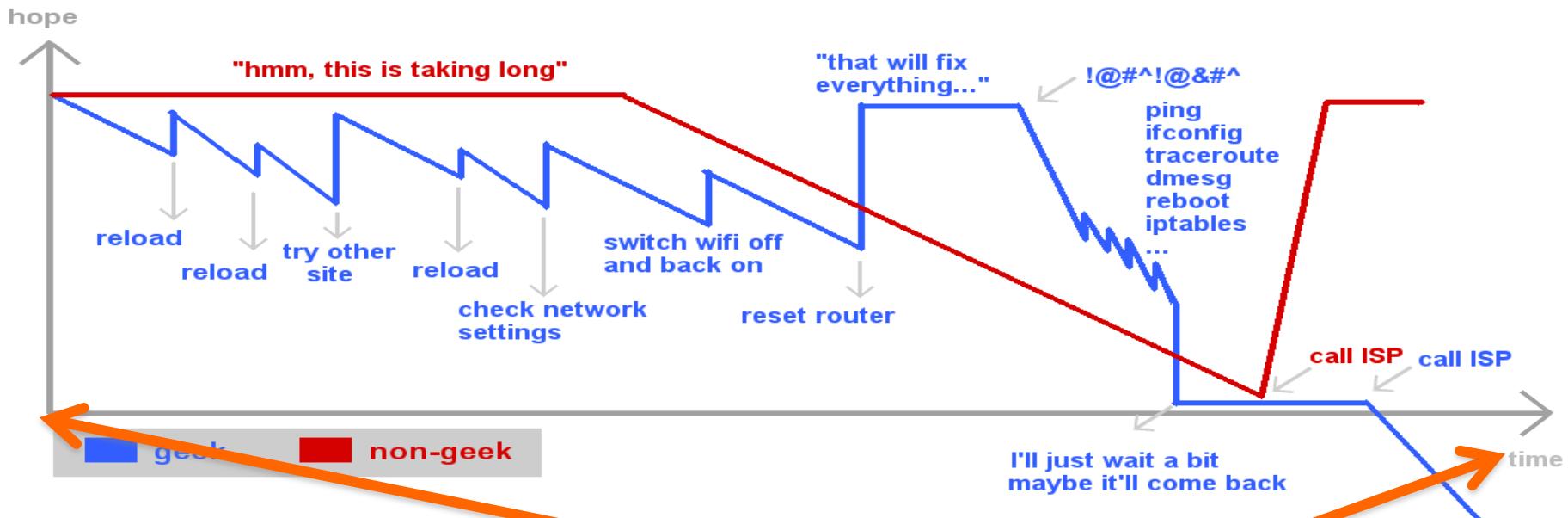
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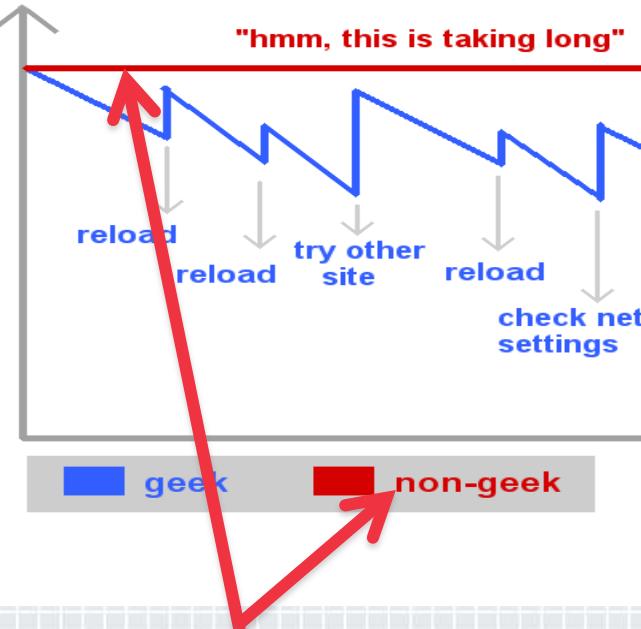


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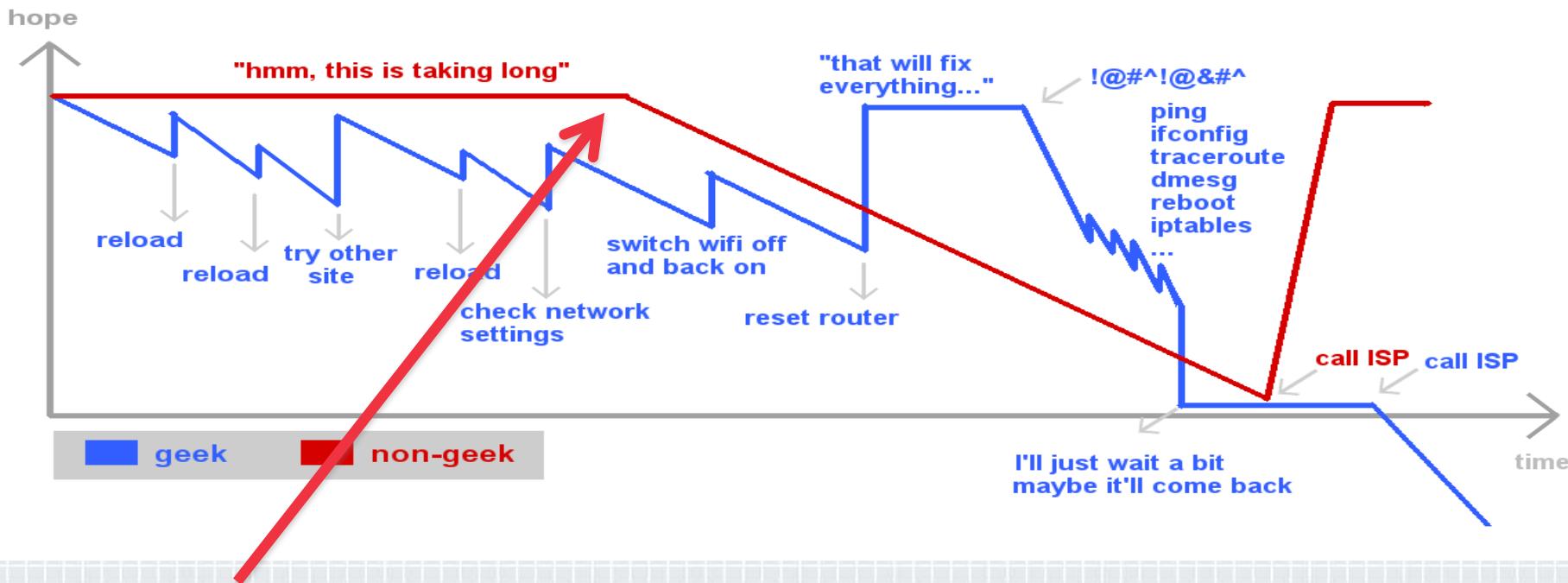




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Non-Geeks – The Beautiful People

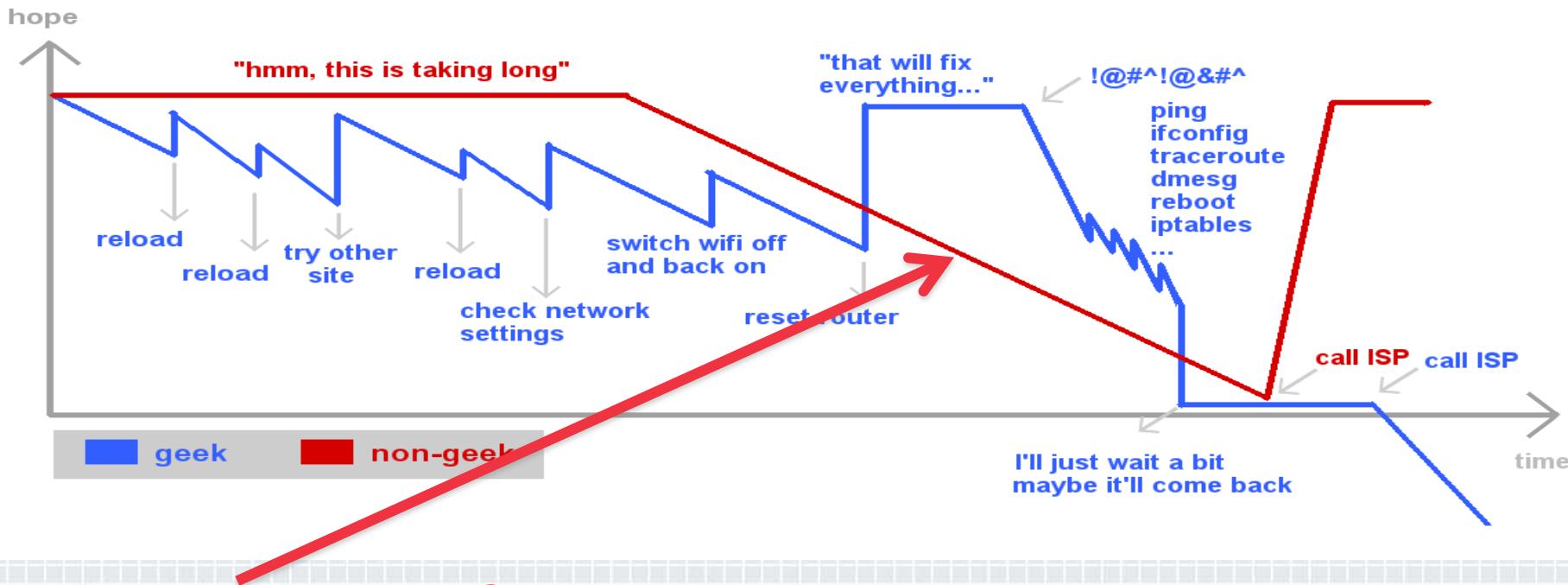




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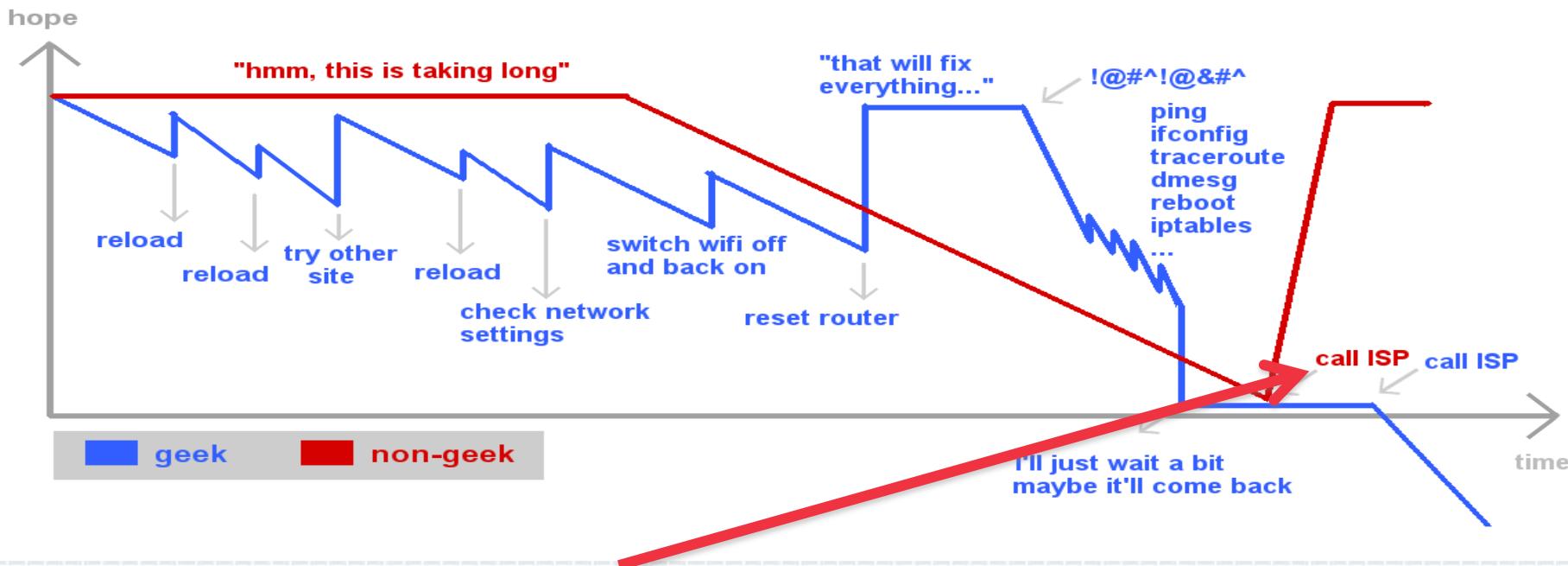




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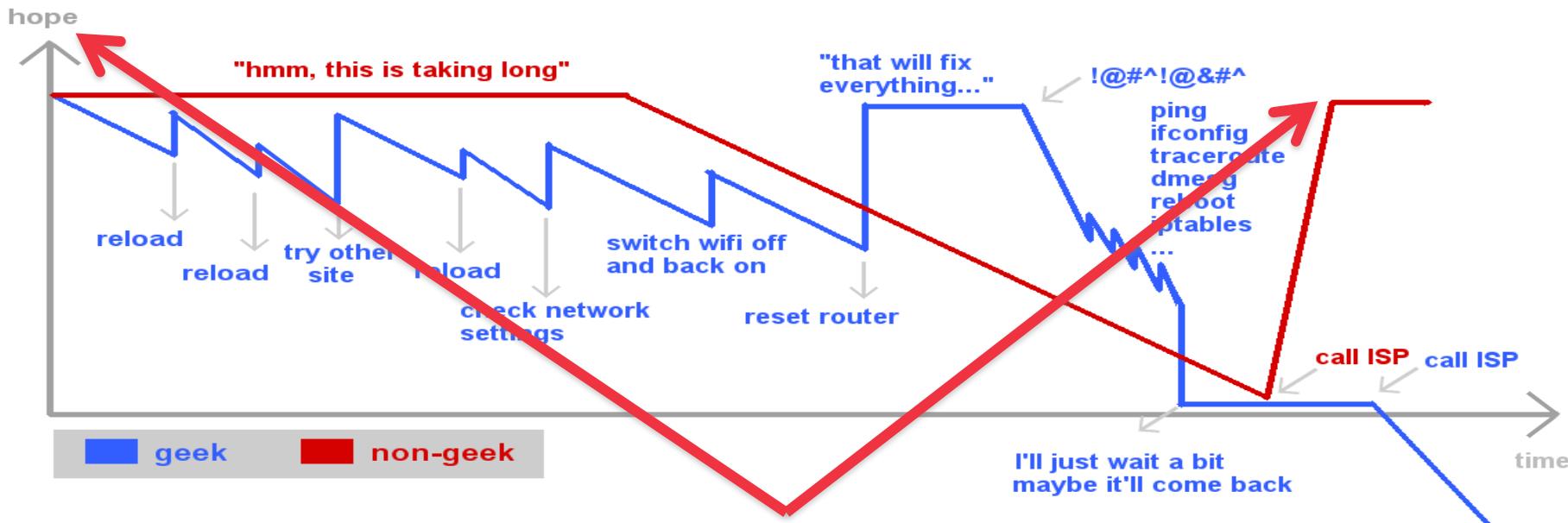




How technical are you?

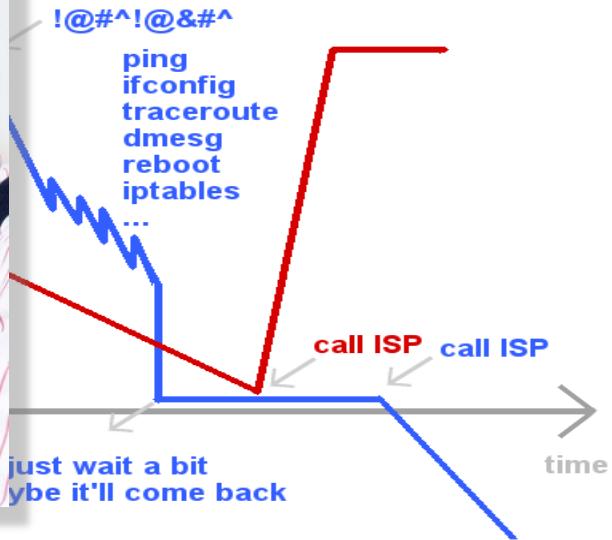
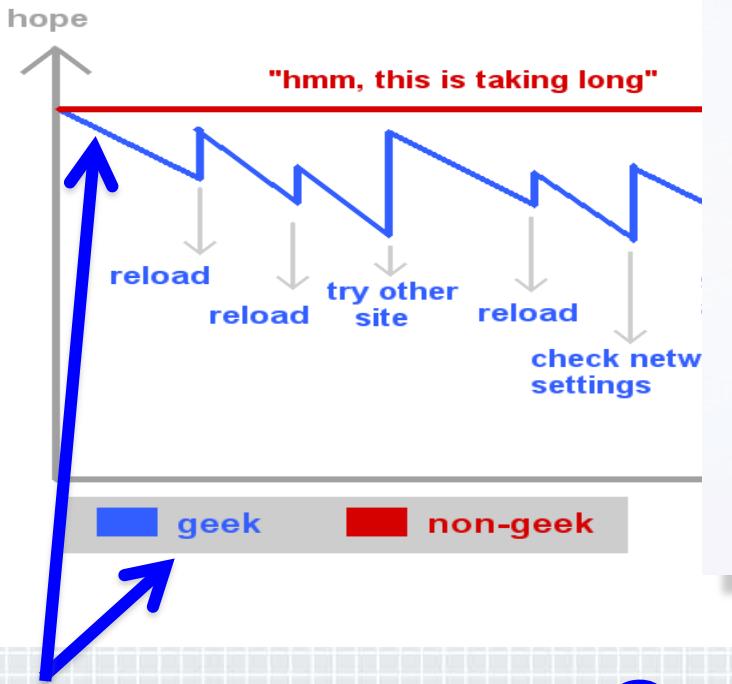
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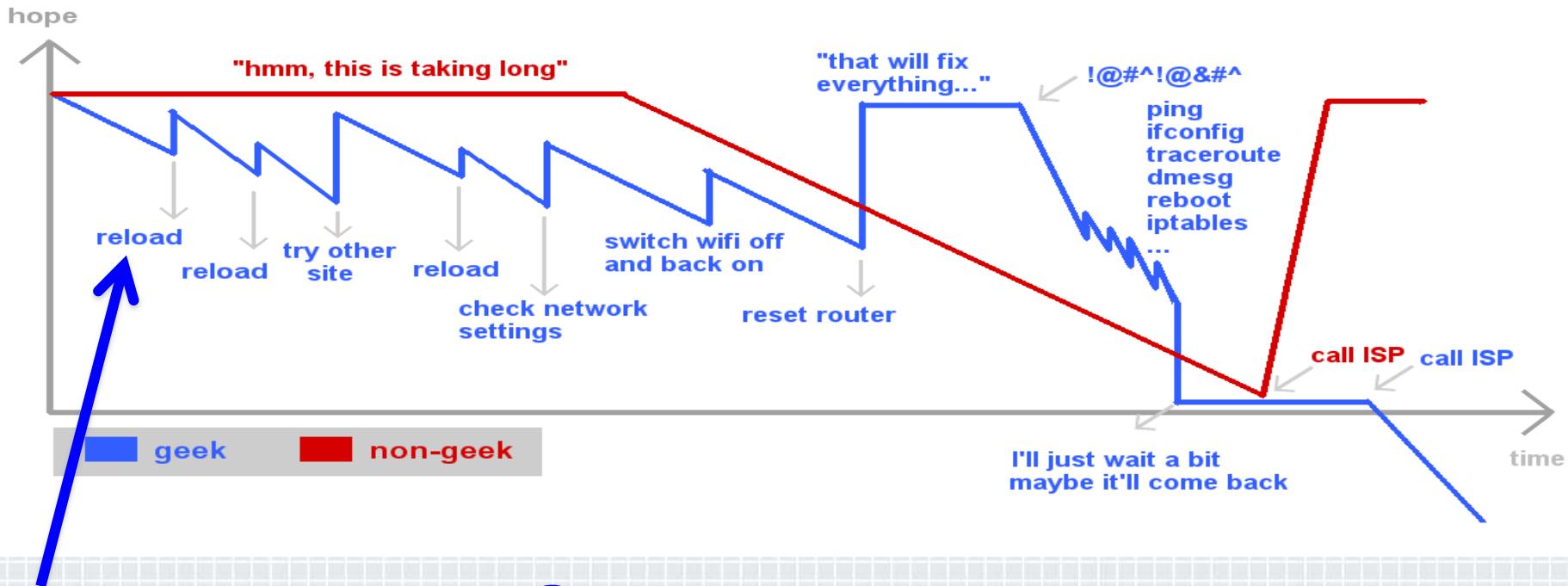




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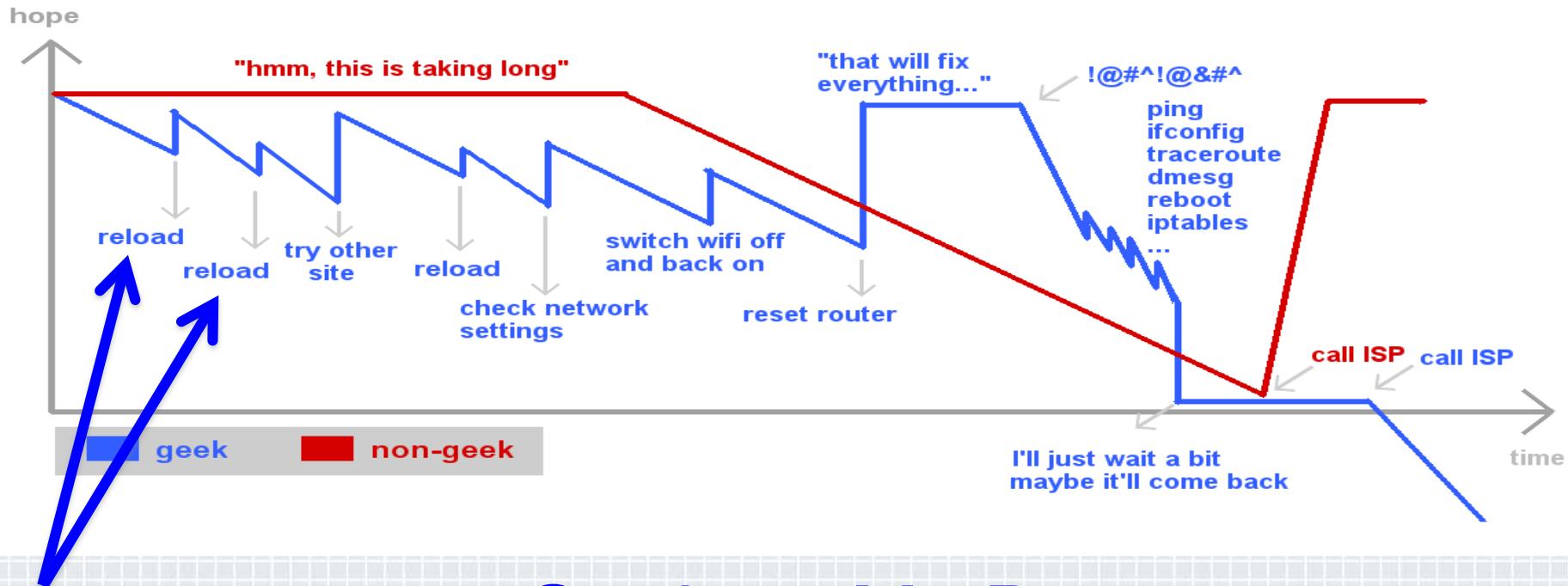




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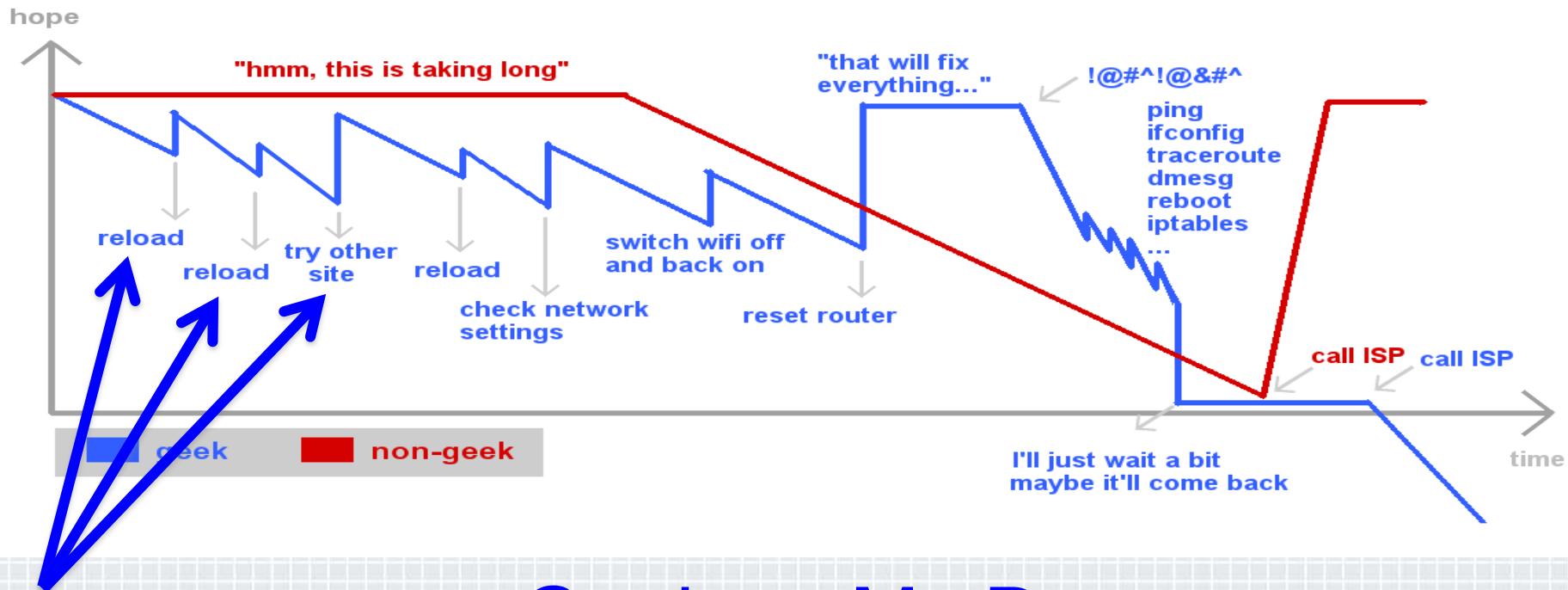




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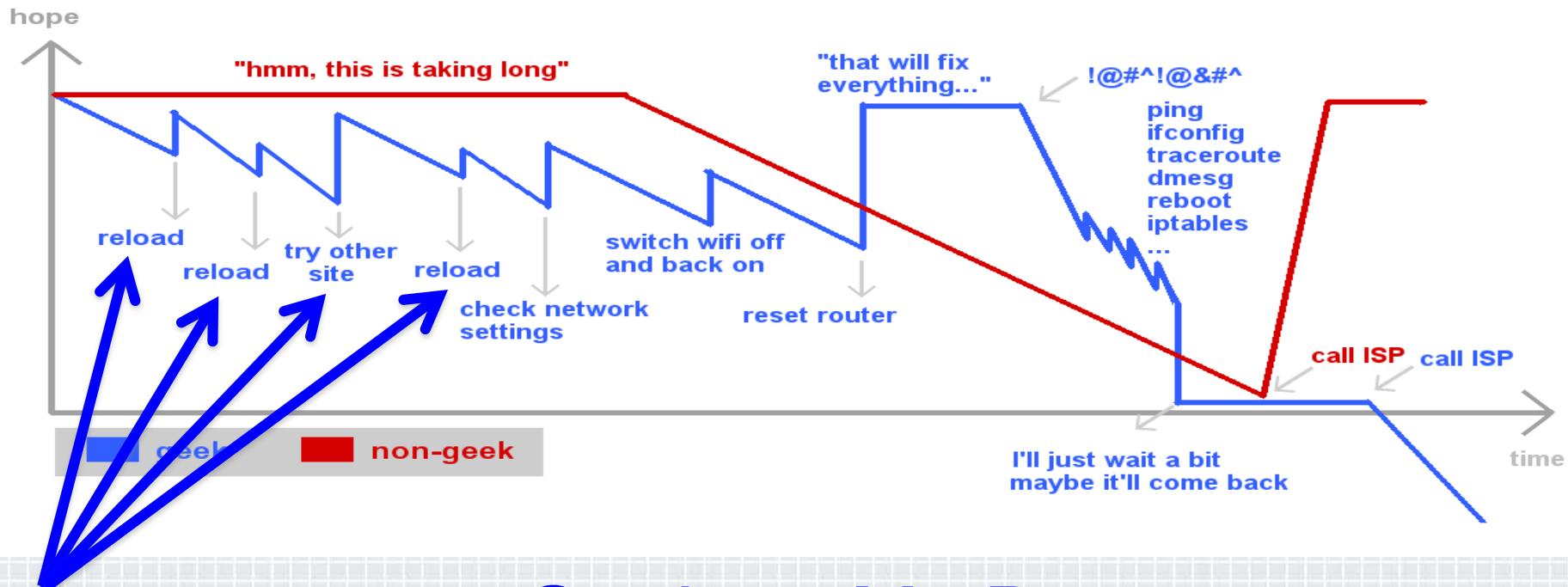




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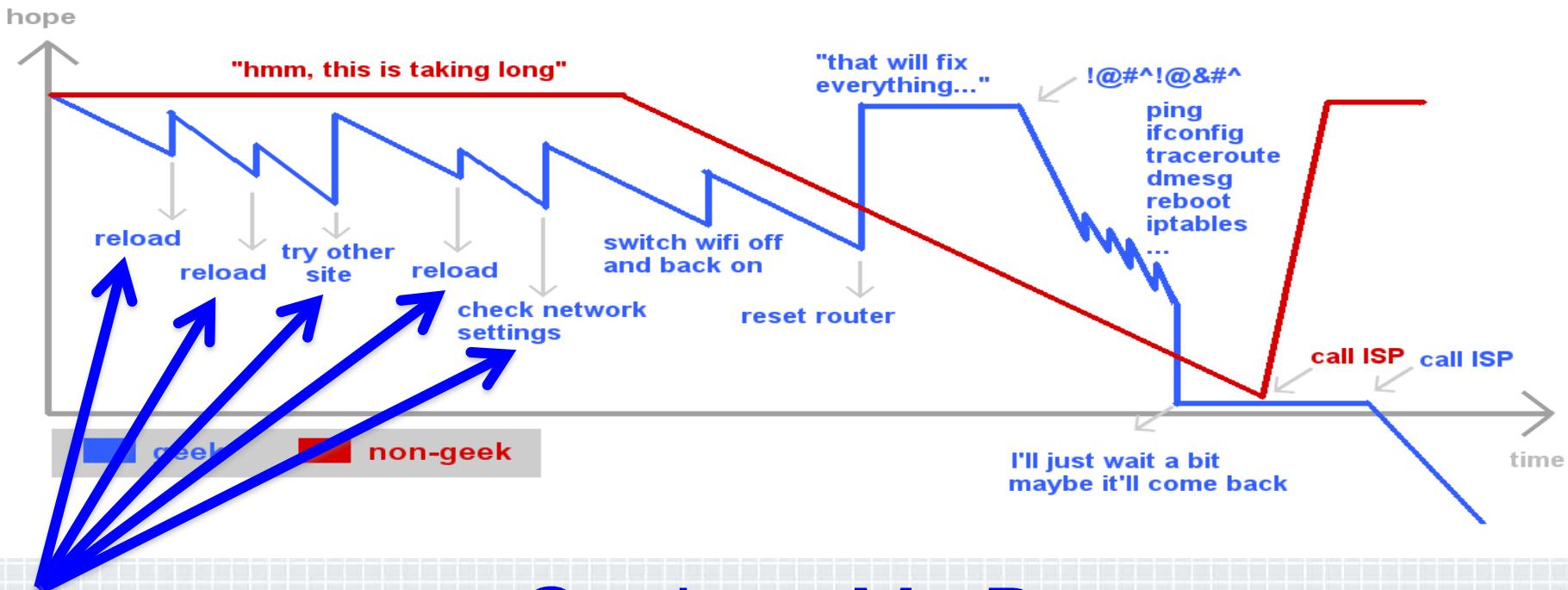




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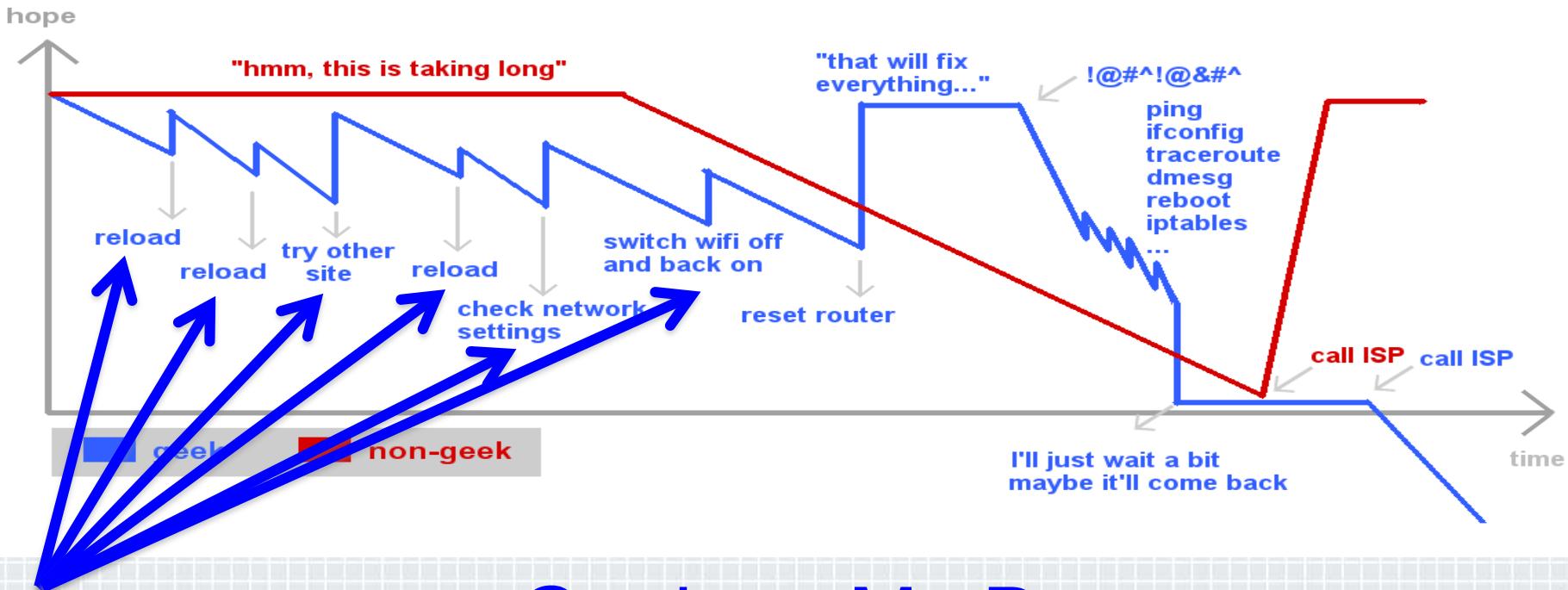




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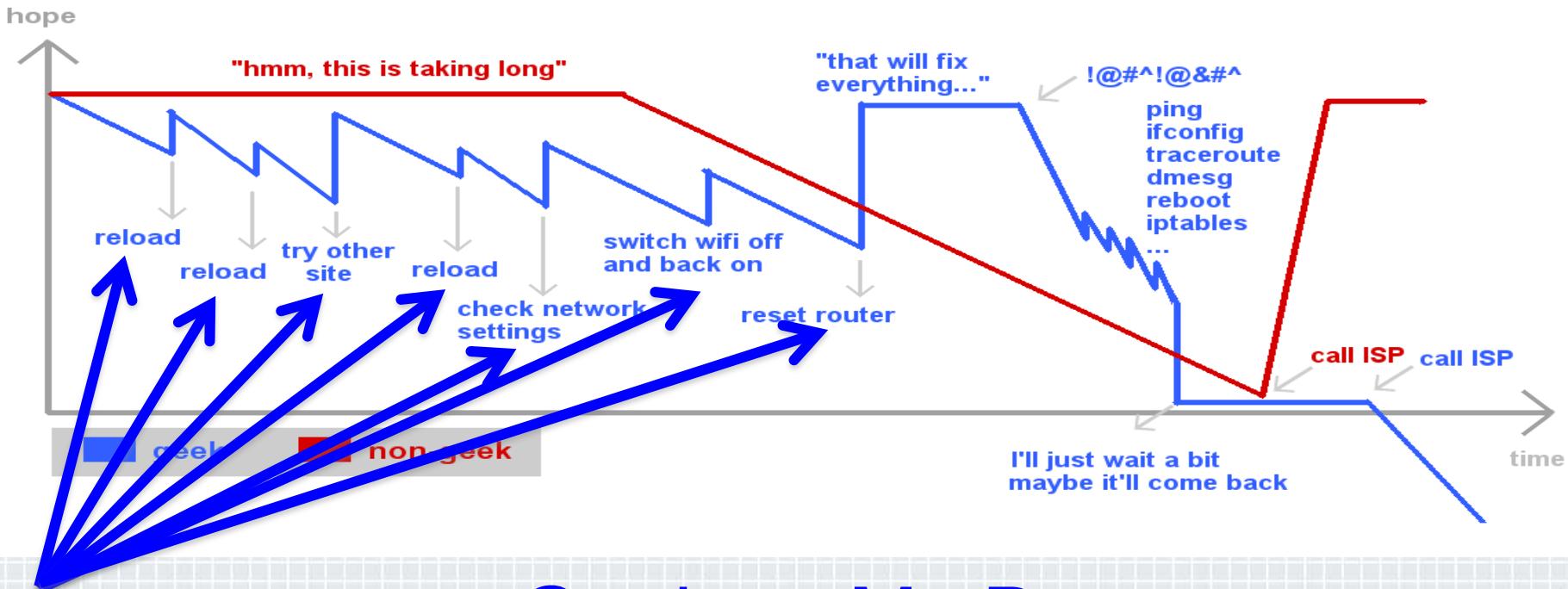




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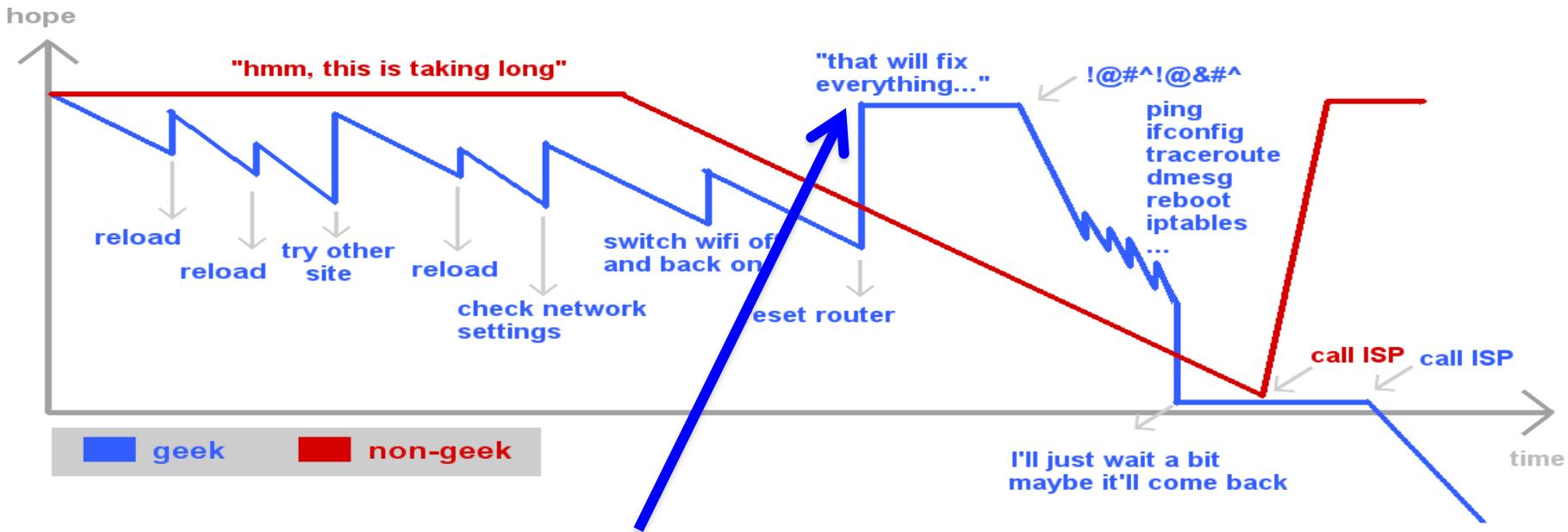




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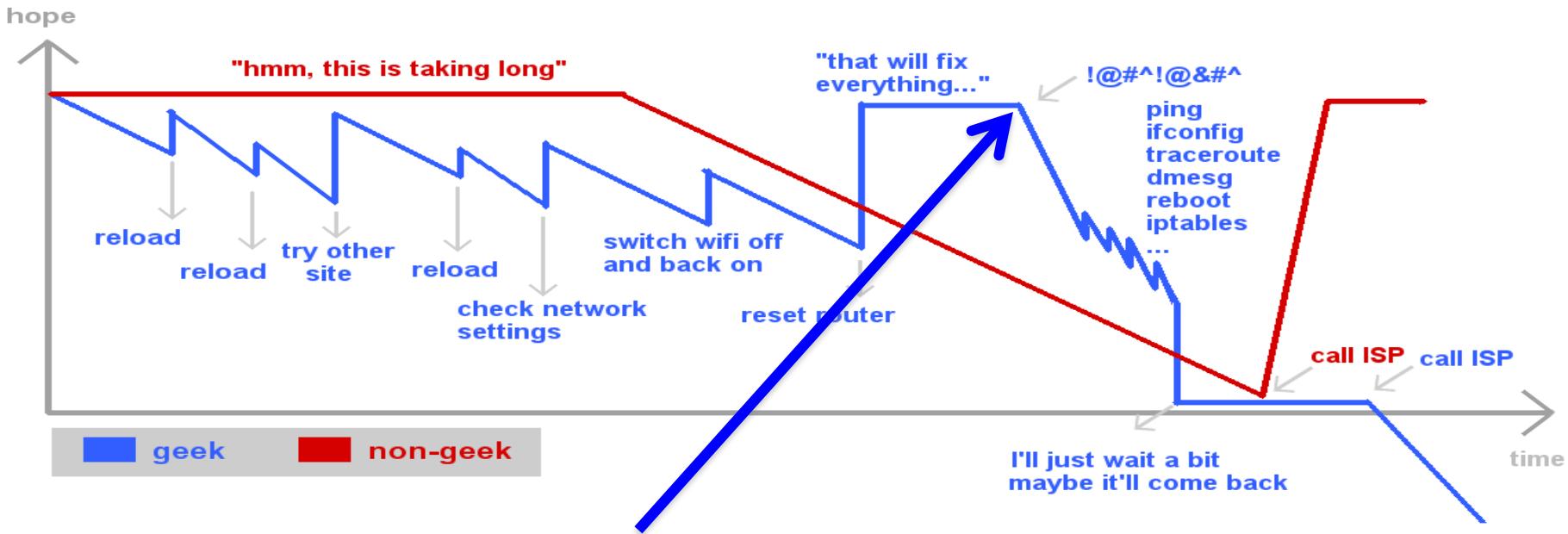




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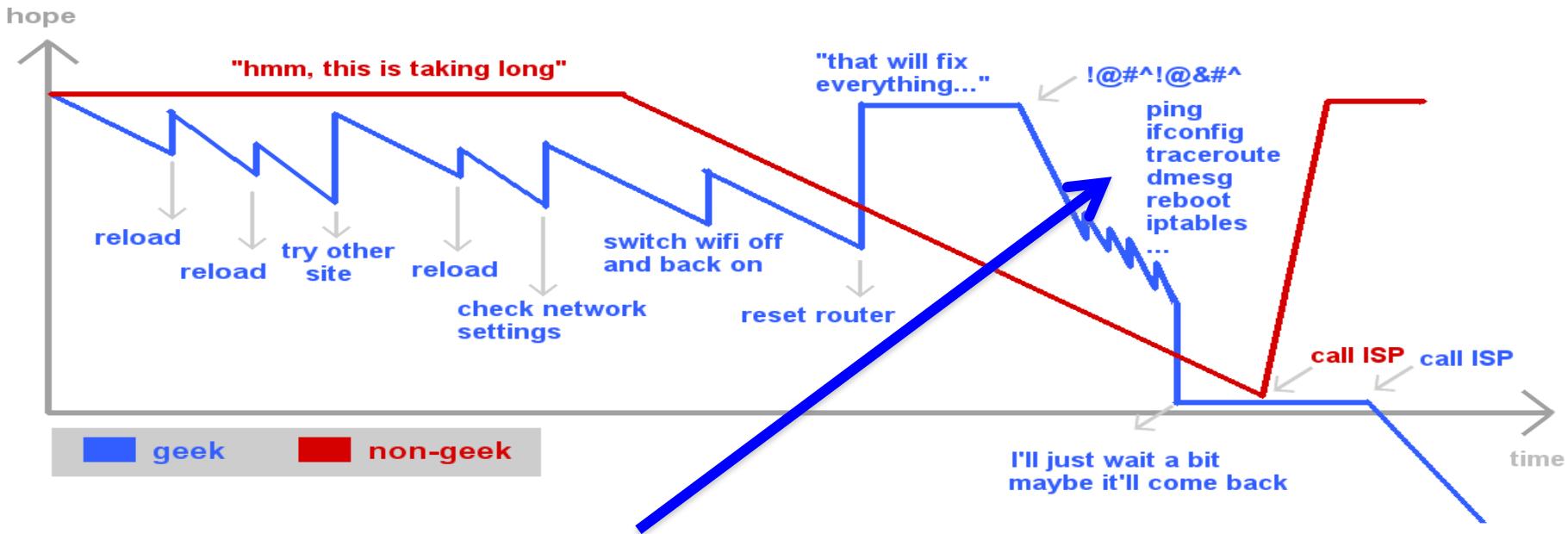




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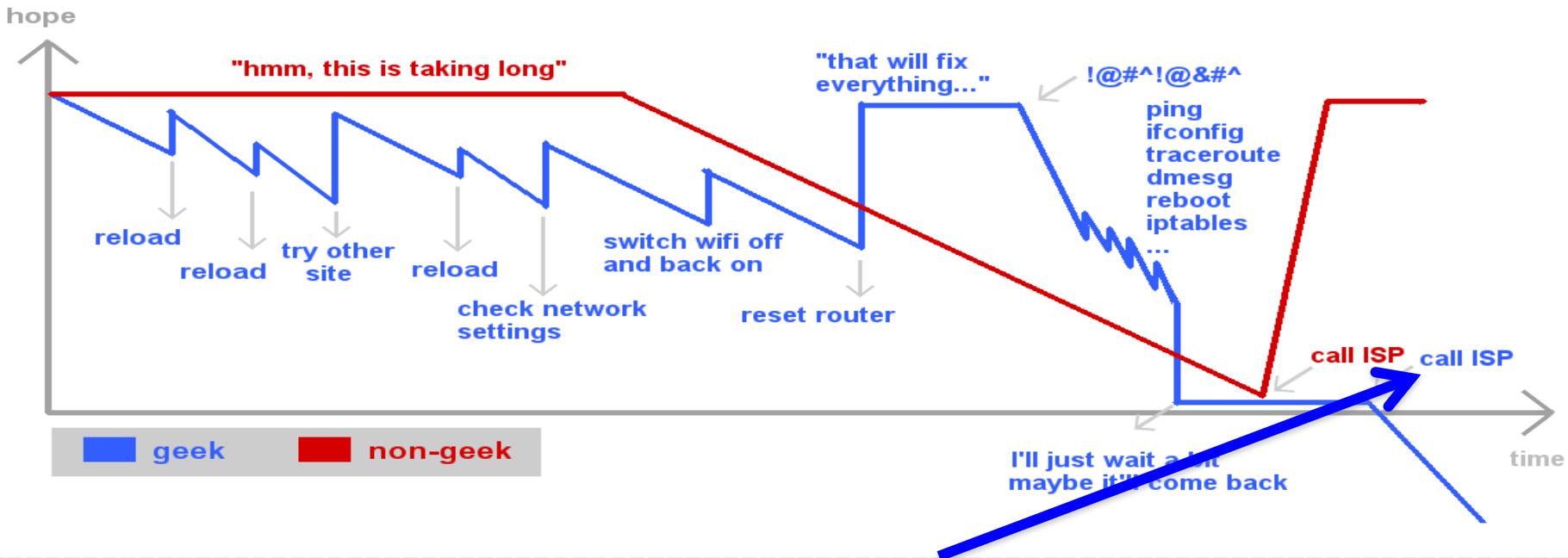




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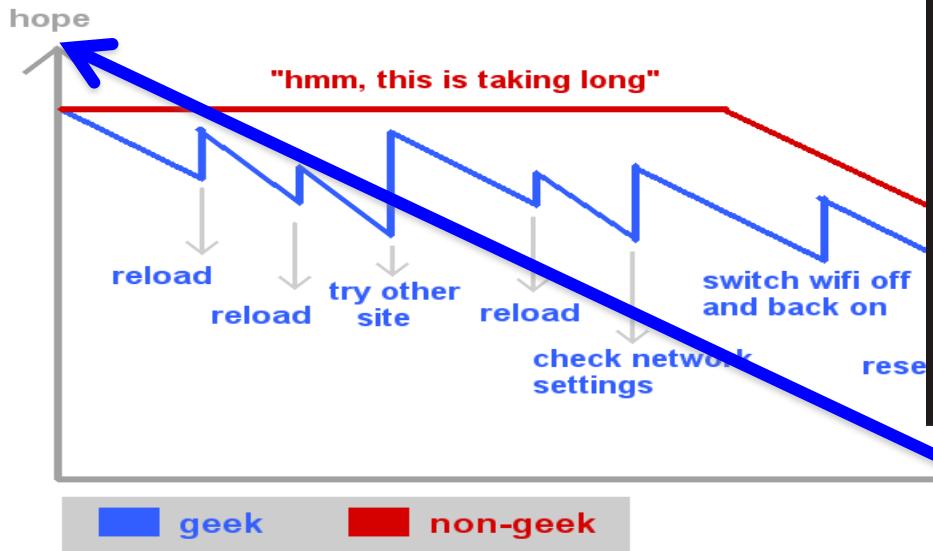




/+BrunoOliveira

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Geeks – My Peeps



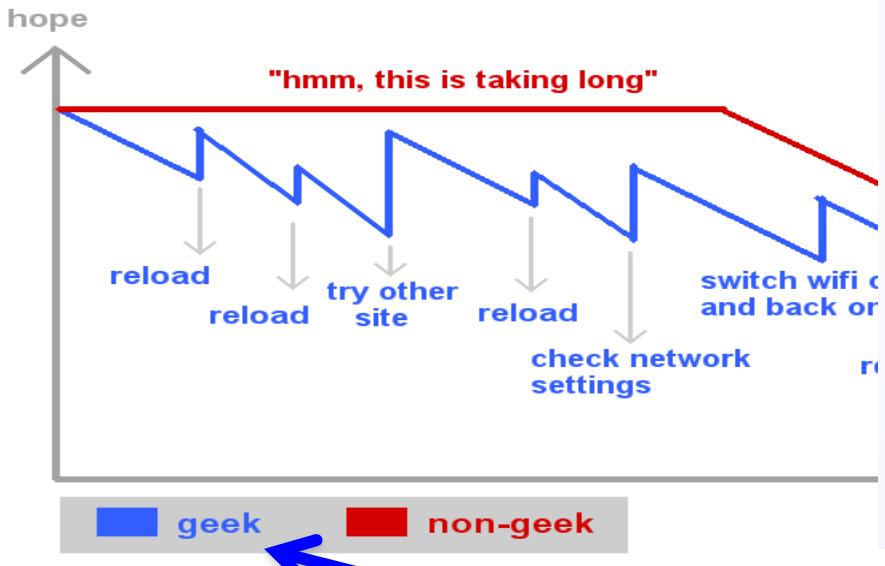
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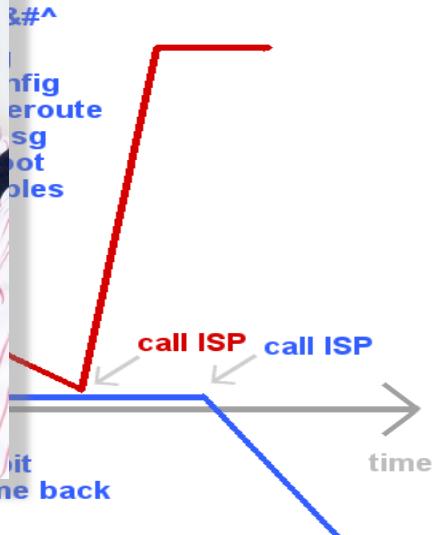


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How technical are you?



**FEAR UNCERTAINTY AND DOUBT COMMITTEE
STATE OF CALIFORNIA**

How technical are you?



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STATE OF CALIFORNIA**



RSA® Conference 2015

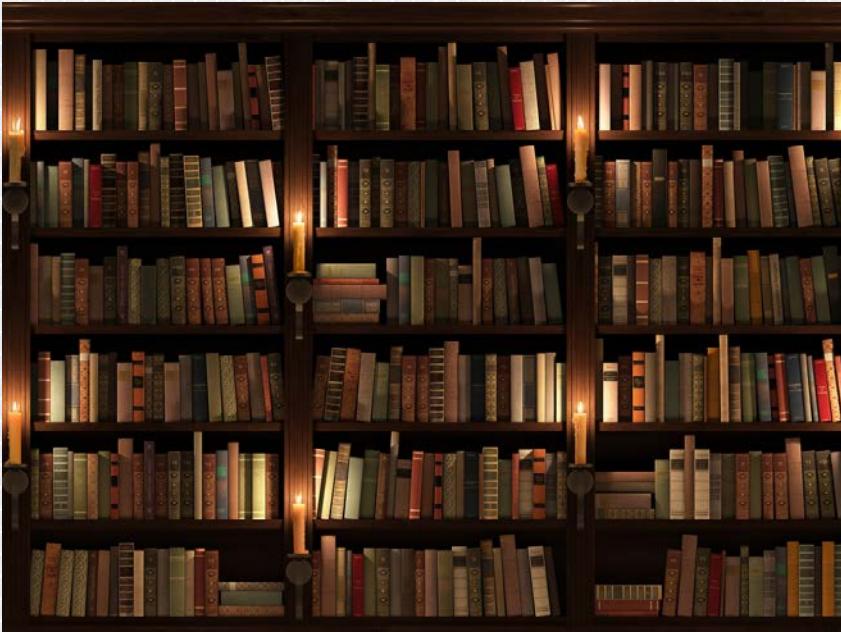
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Setting the Stage:

The Cybersecurity Canon Project: Books You Should Have Read By Now



My Library



My Library



My Blog



My Blog

VERISIGN® **iDefense**®



My Blog

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Terebrate

Piercing the fog of cyber security.

My Blog

Epitome

My Blog

Epitome



My Blog

Epitome History



My Blog

Epitome
History
Culture



My Blog

Epitome

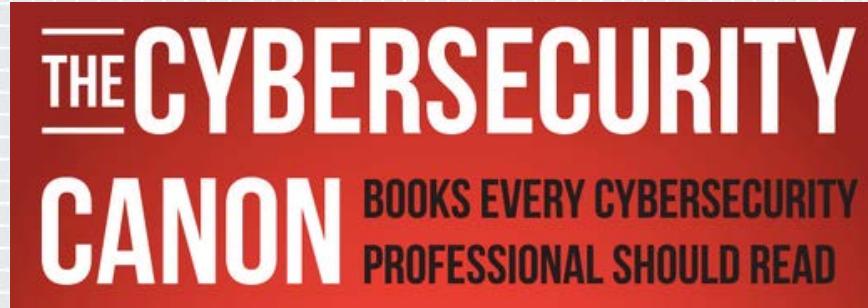
History

Culture

Best Thinking



The Cybersecurity Canon



Definition of the Cyber Security Canon

can·on
/kənən/
noun

Definition of the Cyber Security Canon

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noun

1. A **group** of literary works that are **generally accepted** as **representing a field**: "*the durable canon of American short fiction*" (*William Styron*).

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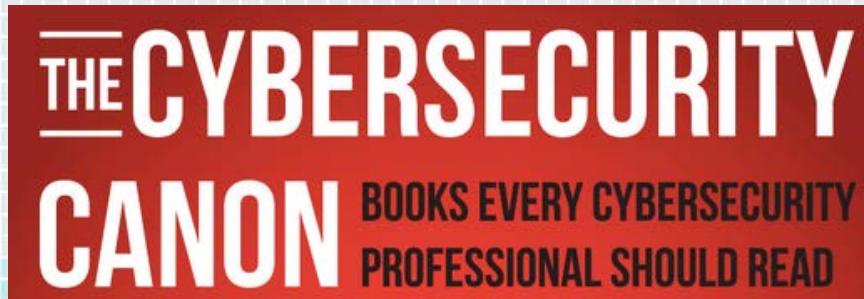


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HALL OF FAME + MUSEUM

For Cybersecurity Books

RSA Conference 2015

The Cybersecurity Canon First Award



The Cybersecurity Canon First Award



CYBERSECURITY CANON AWARD WINNERS

2014 AWARD WINNER

Cyber Hactivism:
We Are Anonymous



Watch Palo Alto Networks' CSO Rick Howard present the inaugural Cybersecurity Canon award to Parmy Olson, author of "We Are Anonymous".

Parmy Olson - Cybersecurity Canon 2014



The Cybersecurity Canon Committee

CSO
Palo Alto Networks



Rick Howard

Journalist



Pammy Olson

Cyber scientist
DARPA



Dan Ragsdale

Cyber law professor
USNA



Bob Clark

ISO
Nordstrom Bank



Steve Winterfeld

Security researcher
Facebook

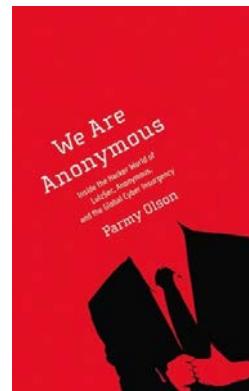


Matt Richard

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CANON BOOKS EVERY CYBERSECURITY
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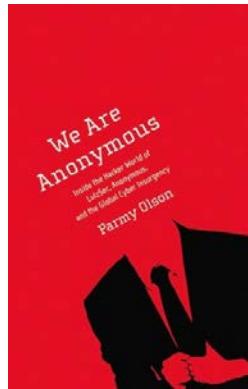


2014 Inductee



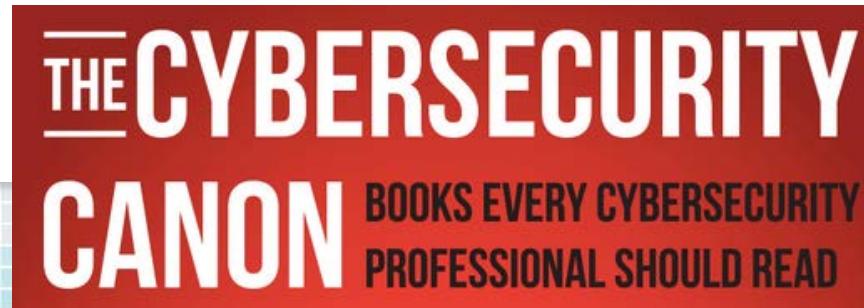
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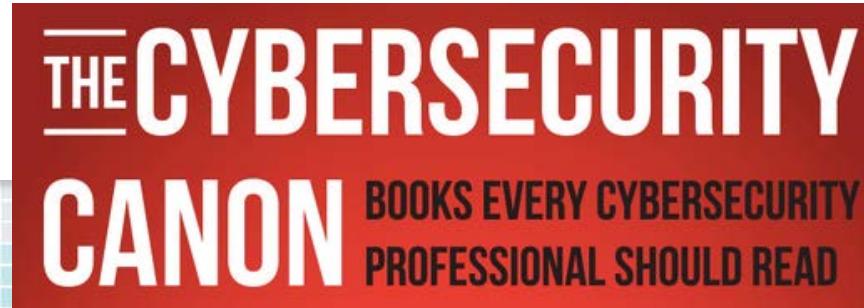
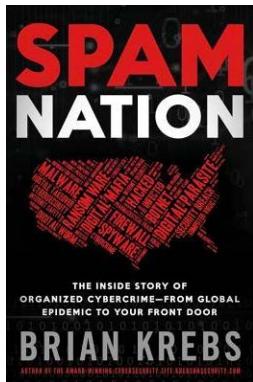


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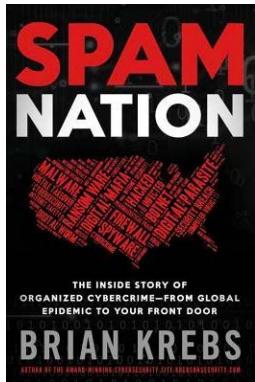
2015 Inductees



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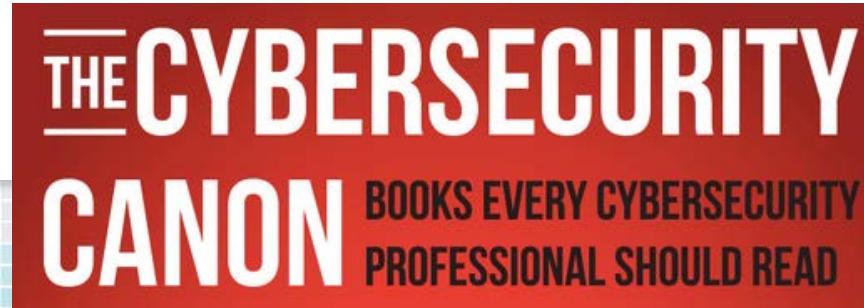
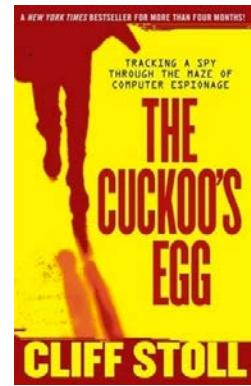
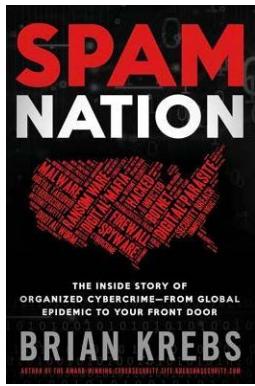
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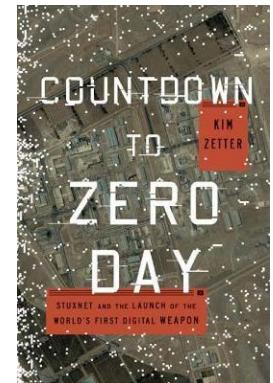
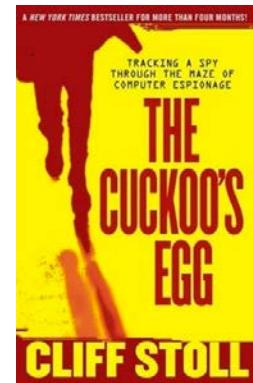
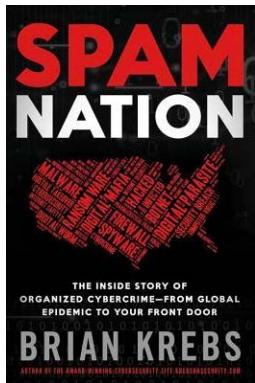
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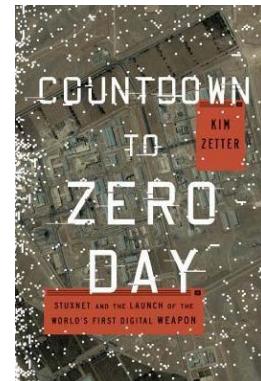
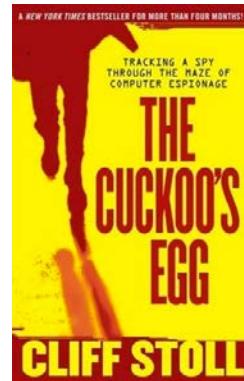
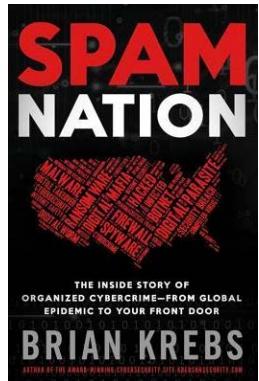
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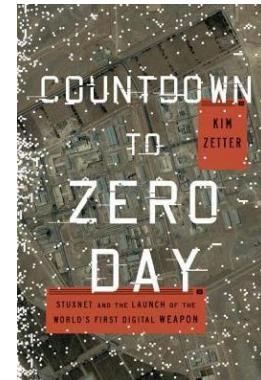
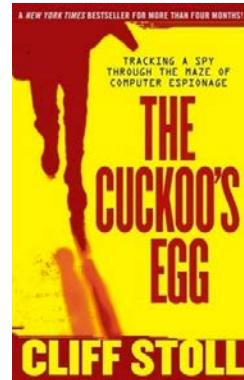
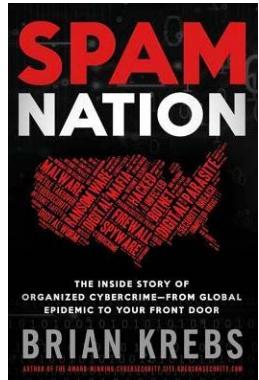


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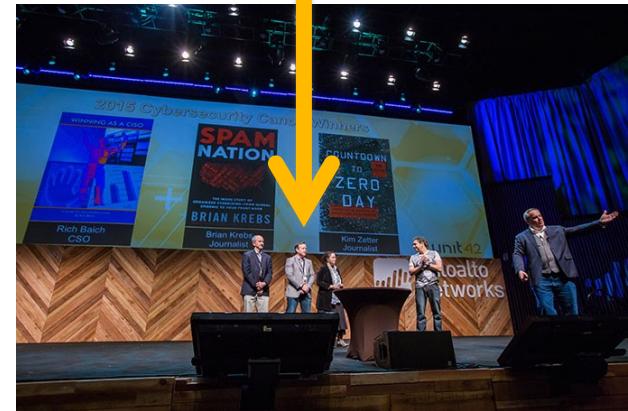
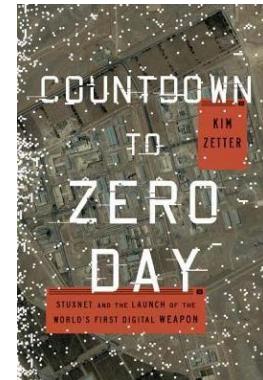
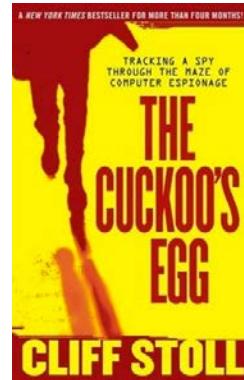
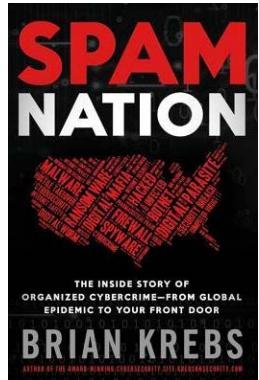
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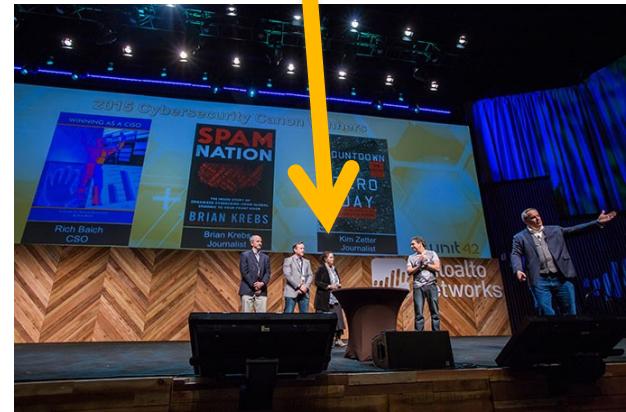
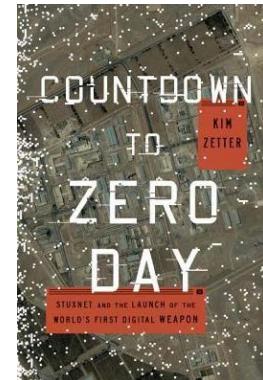
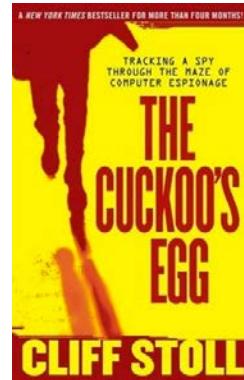
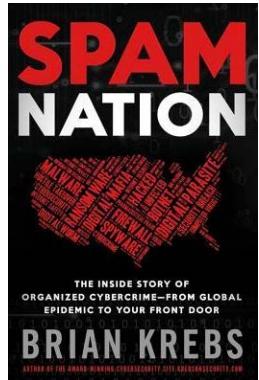
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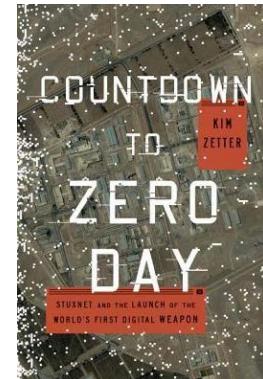
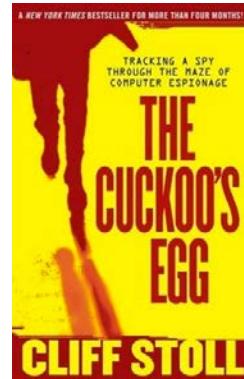
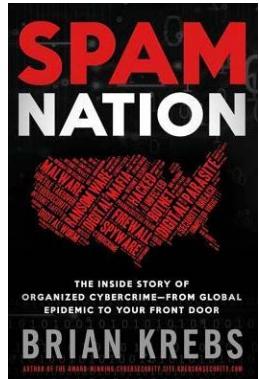
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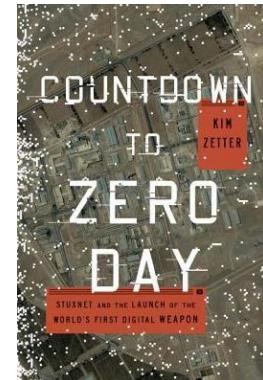
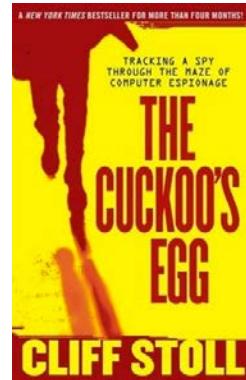
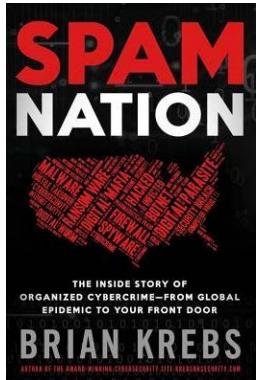
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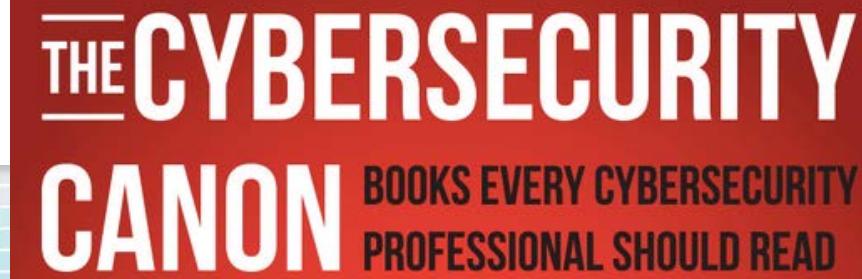
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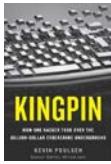
2016 Cybersecurity Canon Candidates



2016 Candidates



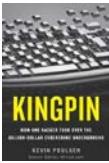
Cyber Crime



2016 Candidates

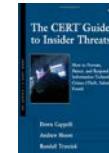
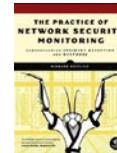
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Cyber Crime



2016 Candidates

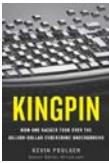
Technical



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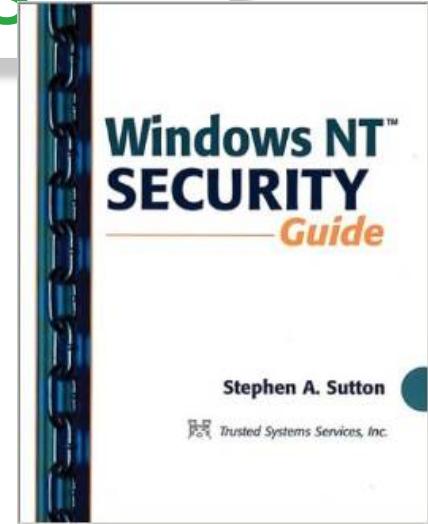
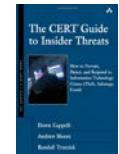
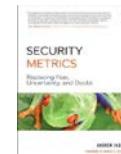
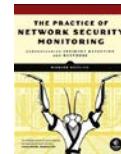


Cyber Crime

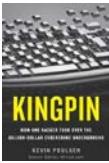


2016 Candidates

Technical

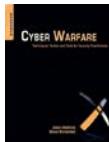
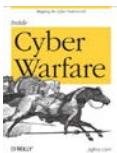
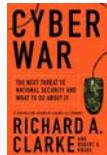


Cyber Crime

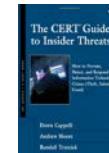
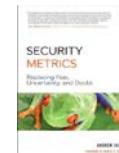
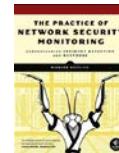


2016 Candidates

Cyber Warfare



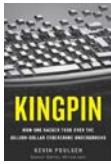
Technical



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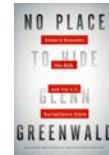
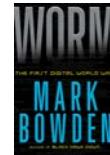


Cyber Crime

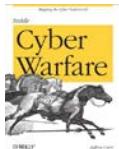
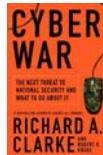
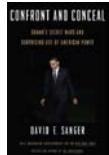


2016 Candidates

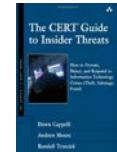
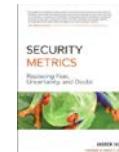
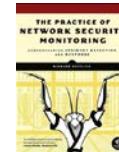
Cyber History and Culture



Cyber Warfare



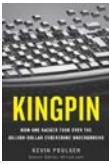
Technical



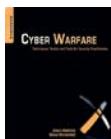
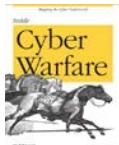
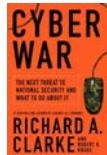
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Cyber Crime

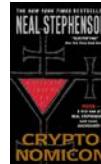
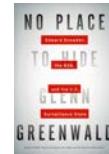
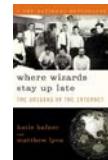
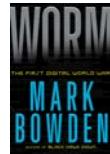


Cyber Warfare



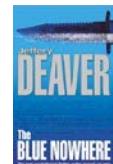
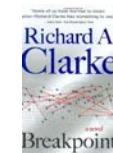
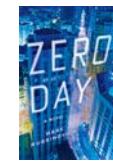
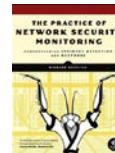
2016 Candidates

Cyber History and Culture



Novels

Technical



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PROFESSIONAL SHOULD READ



San Francisco | April 20-24 | Moscone Center

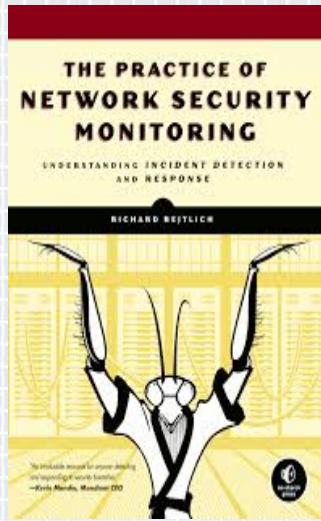
6 Books:

2016 Cybersecurity Canon Candidates

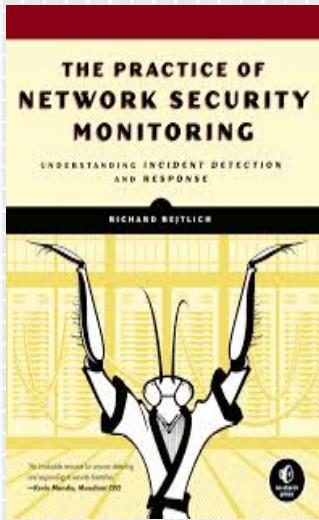


Technical

Technical

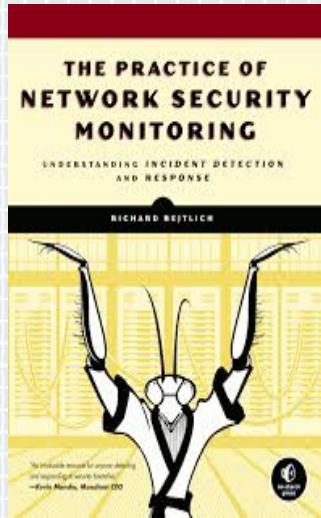


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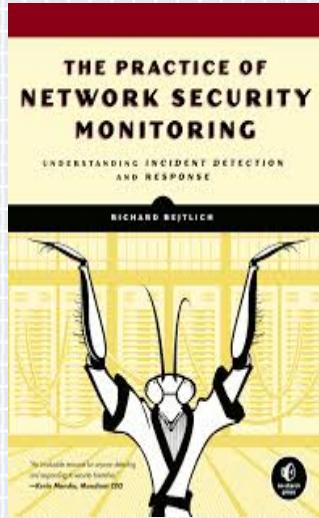
Richard Bejtlich

Technical



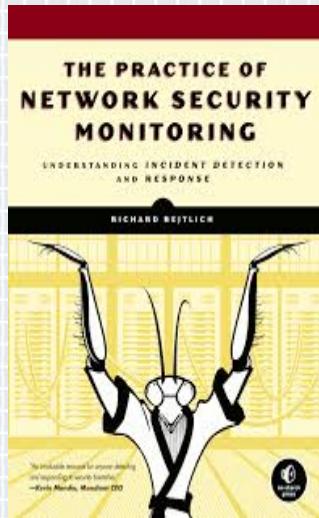
Richard Bejtlich

Technical



Richard Bejtlich

Technical

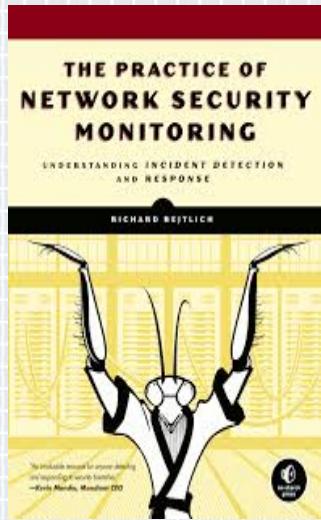


Richard Bejtlich

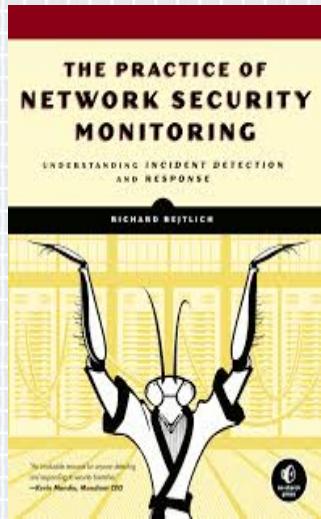
ManTech
International Corporation ®



Technical



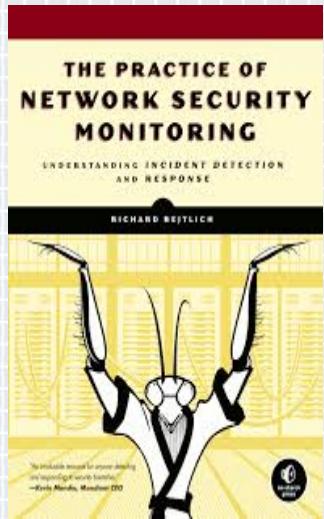
Technical



OPEN
SOURCE



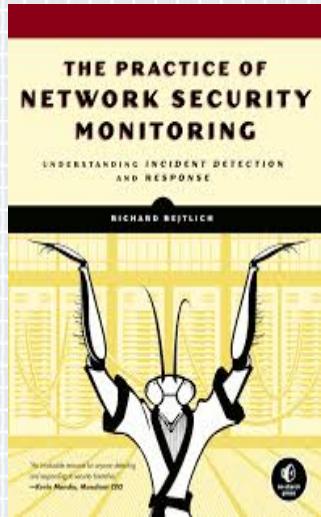
Technical



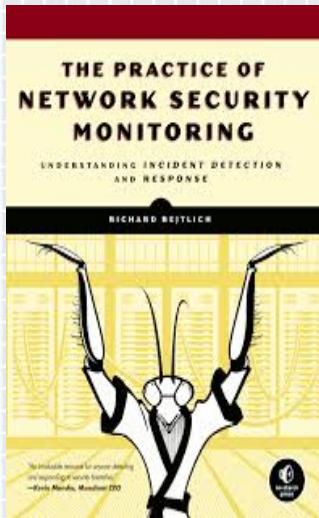
Technical



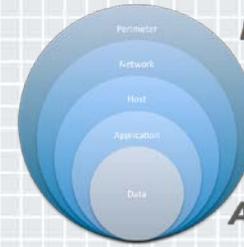
Conga Line of Security
Vendor Solutions



Technical



Defense in Depth



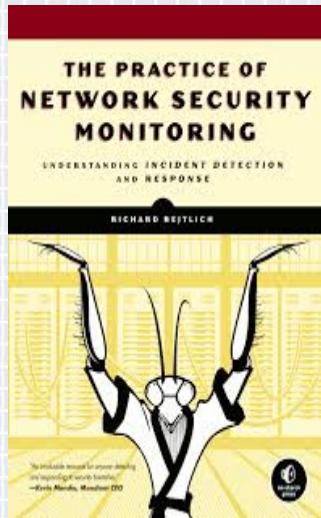
Firewall

Intrusion Detection

Intrusion Prevention

Anti-Virus

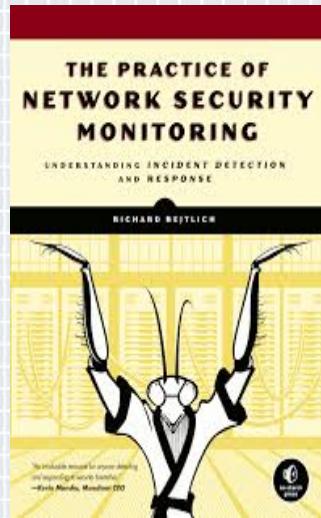
Technical



KILL CHAIN



Technical



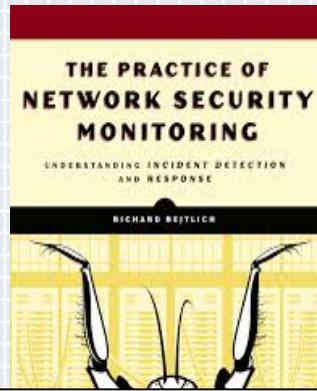
KILL CHAIN



CYBER ESPIONAGE	
CYBER CRIME	
CYBER HACKTIVISM	
CYBER WARFARE	
CYBER MISCHIEF	
CYBER TERRORISM	

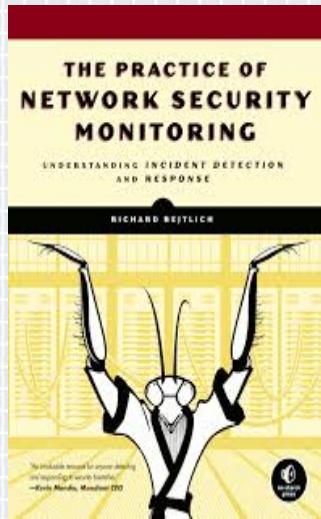


Technical



*"It's become smarter to operate as though your enterprise is
always compromised."*

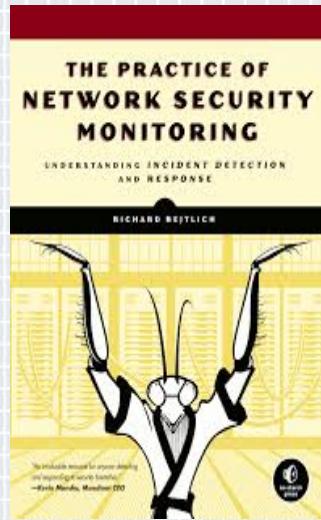
Technical



OPEN
SOURCE



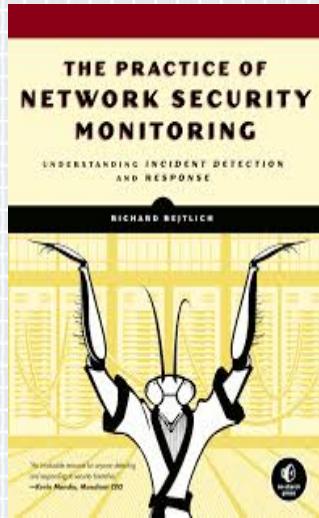
Technical



OPEN
SOURCE

A large, 3D-style graphic of the words "OPEN" and "SOURCE" in orange and green respectively, with a blue cylinder partially visible behind the "O" of "OPEN".

Technical



Data Collection Tool
Argus

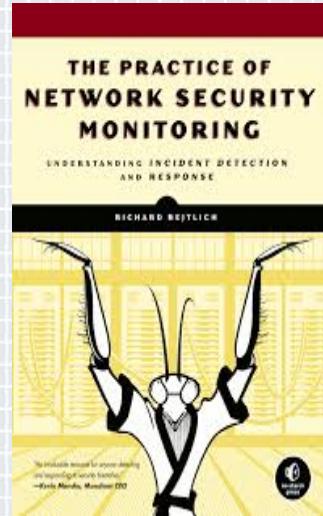


Technical



Data Collection Tool

Argus



OPEN
SOURCE



Data Presentation Tools

Tcpdump

Tshark

Argus Ra Client

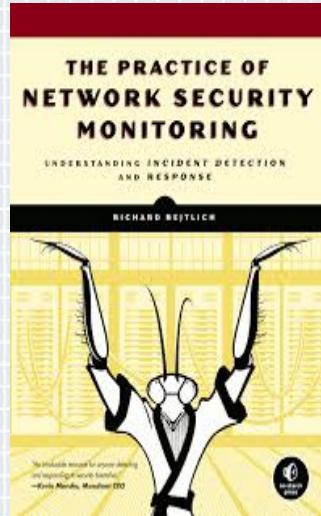
Dumpcap

Technical



Data Collection Tool

Argus



Data Presentation Tools

Tcpdump

Tshark

Argus Ra Client

Dumpcap

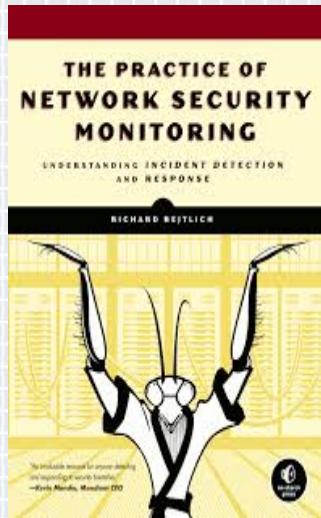
Packet Analysis Tools

Wireshark

Xpilco

NetworkMiner

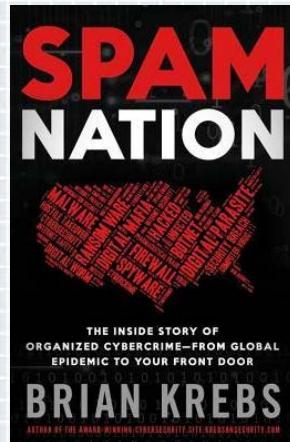
Technical



You Should Have Read this by Now!

Cyber Crime

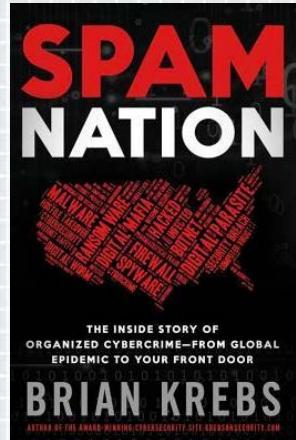
Cyber Crime



Cyber Crime



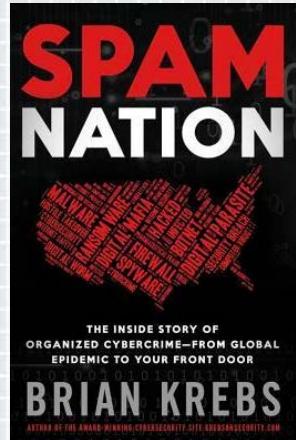
Brian Krebs



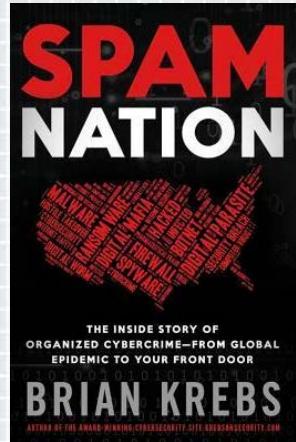
Cyber Crime



Brian Krebs



Cyber Crime



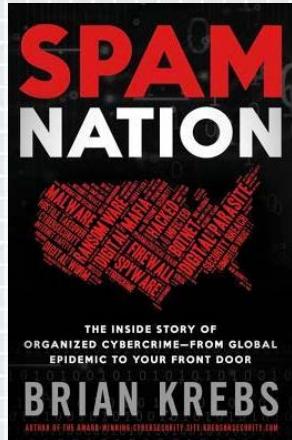
Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

2007-2013

Cyber Crime

Symbiotic Relationship



Brian Krebs

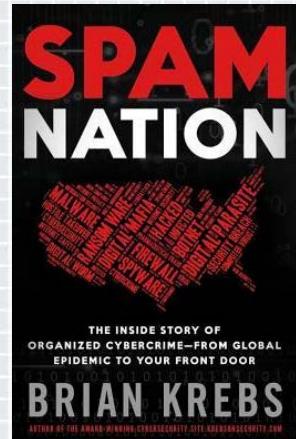
KrebsOnSecurity
In-depth security news and investigation

Cyber Crime



Pavel Vrulevsky

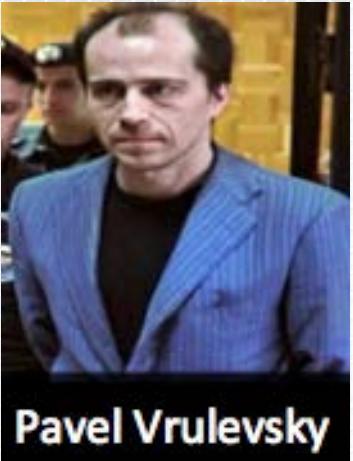
Symbiotic Relationship



Brian Krebs

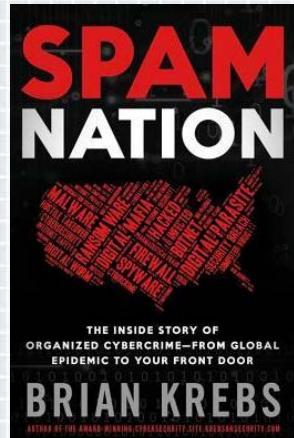
KrebsOnSecurity
In-depth security news and investigation

Cyber Crime



AKA: RedEye

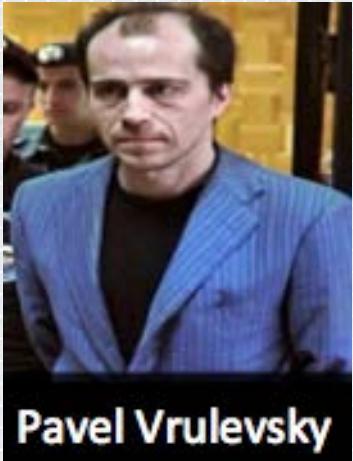
Symbiotic Relationship



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

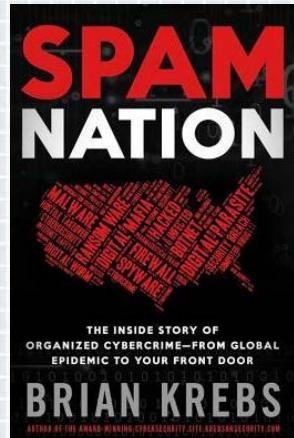
Cyber Crime



AKA: RedEye

AKA: DespDuck

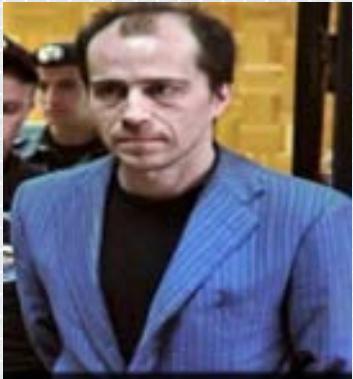
Symbiotic Relationship



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

Cyber Crime

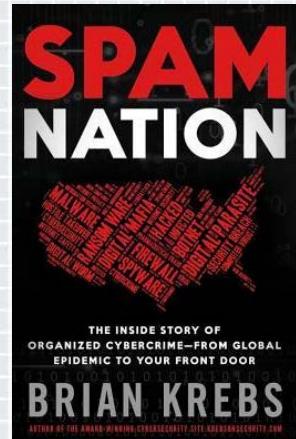


Pavel Vrulevsky

AKA: RedEye

AKA: DespDuck

Symbiotic Relationship



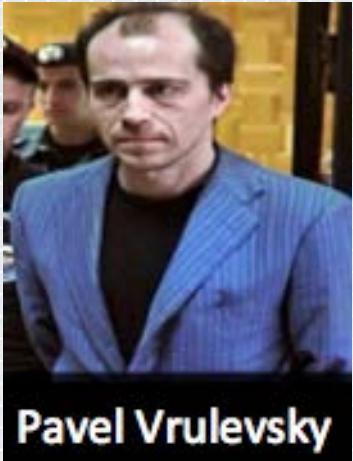
Dimitry Nechvolod



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

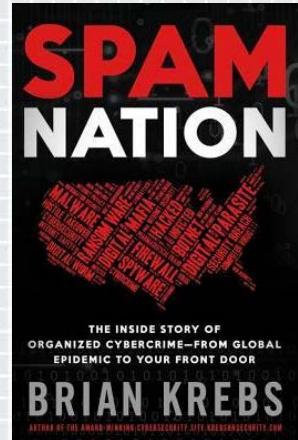
Cyber Crime



AKA: RedEye

AKA: DespDuck

Symbiotic Relationship



AKA: Gugle



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

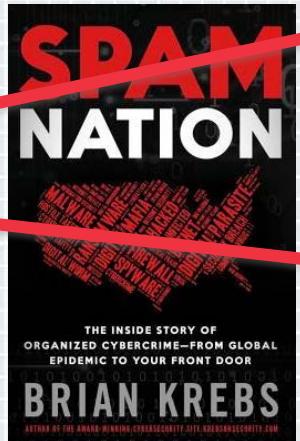
Cyber Crime



AKA: RedEye

AKA: DespDuck

Symbiotic Relationship



AKA: Gugle



KrebsOnSecurity
In-depth security news and investigation

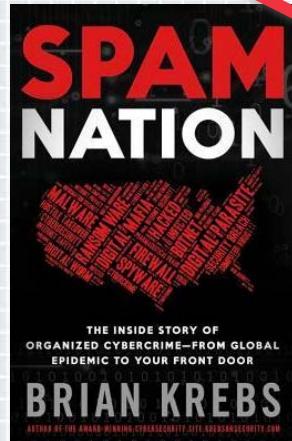
Cyber Crime



Pavel Vrulevsky

AKA: RedEye

AKA: DespDuck

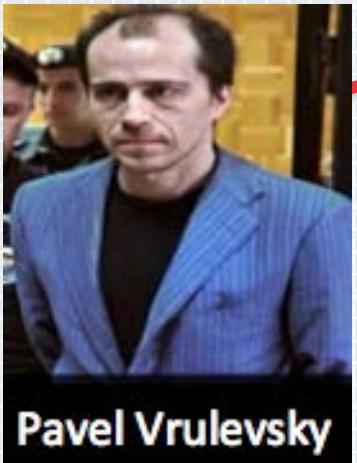


Dimitry Nechvolod

2003



Cyber Crime



AKA: RedEye

AKA: DespDuck



The diagram illustrates a network of cyber criminals. At the top right is the **CHRONOPAY** logo, labeled "Payment Processor". Below it is the **SPAM NATION** logo. A red arrow points from the ChronoPay logo down to the SPAM NATION logo. Another red arrow points from the SPAM NATION logo down to a screenshot of the **Antivirus PC 2009** software interface. The interface shows a "System Scan" results table with three entries:

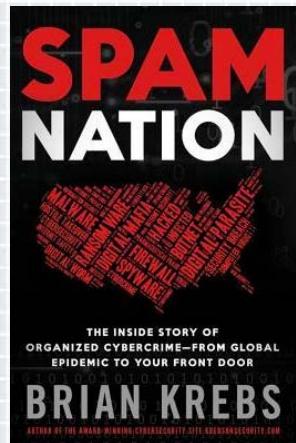
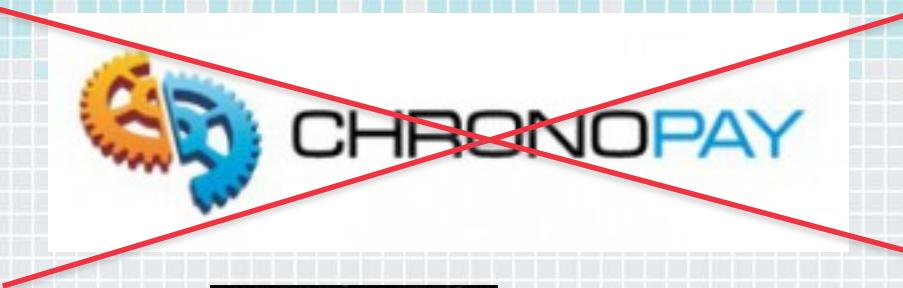
Vendor	Type	Location	Threat
AdWare.Win32.Spy.Zer	Virus	C:\Windows\whipr.exe	
Keylogger.Win.Chi	Virus	C:\Windows\system32\hmn...	
Trojan-Downloader.Win32.easyd	Trojan	C:\Windows\system32\flib...	

The software interface also features a "REGISTRATION" button, a "SUPPORT" button, and a progress bar indicating a 45% scan completion. A large red watermark reading "RED EYE" is overlaid across the center of the screenshot.



2003

Cyber Crime



Dimitry Nekhvolod

AKA: Gugle

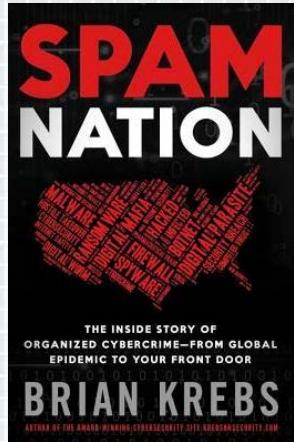
2006



Brian Krebs

Cyber Crime

Pharmaceutical Spam



2006



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

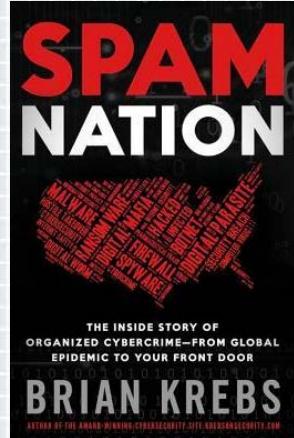


Dimitry Nechvolod

AKA: Gugle

Cyber Crime

Pharmaceutical Spam



Dimitry Nechvolod

AKA: Gugle

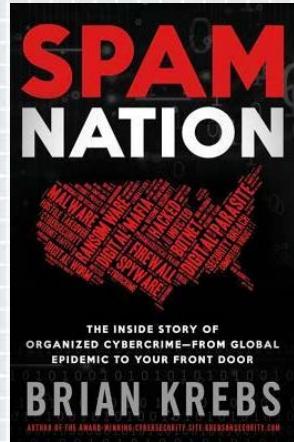
2006



Brian Krebs

Cyber Crime

Pharmaceutical Spam



2006



Dimitry Nechvolod

AKA: Gugle



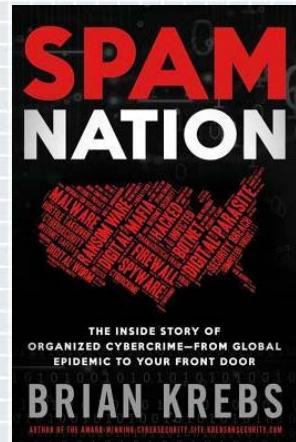
Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

Cyber Crime



Pavel Vrulevsky



Pharmaceutical Spam

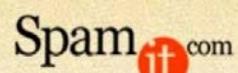
Cyber Crime



Pavel Vrulevsky



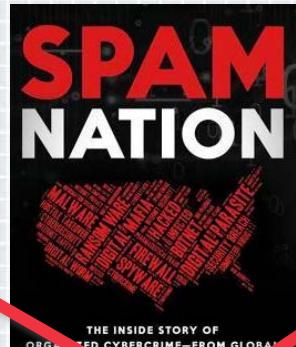
Dimitry Nechvolod



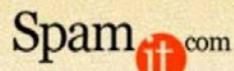
Cyber Crime



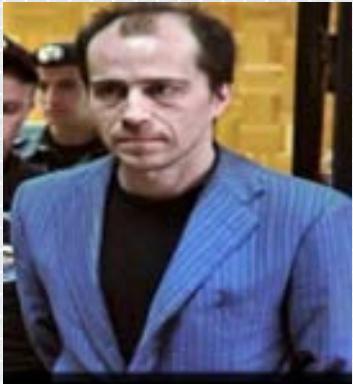
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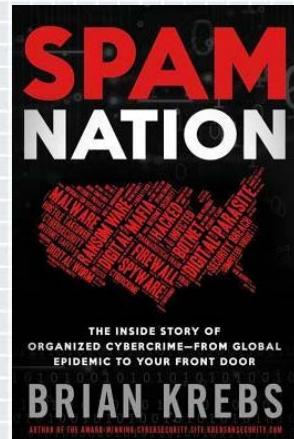
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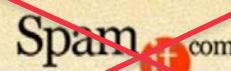
Cyber Crime



Pavel Vrulevsky



Dimitry Nechvolod



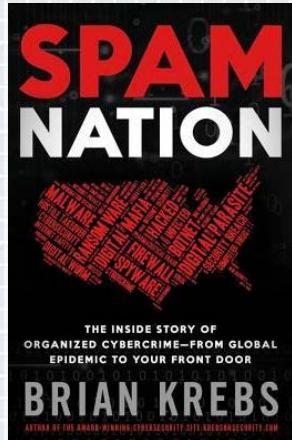
Pharmaceutical Spam



KrebsOnSecurity
In-depth security news and investigation

Cyber Crime

Take A-ways



Brian Krebs



Cyber Crime

Famous Botnets



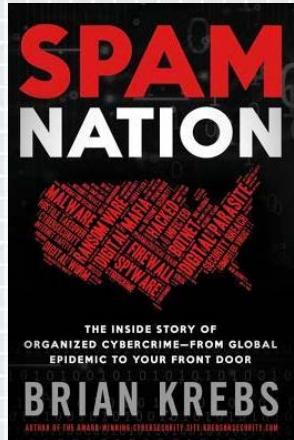
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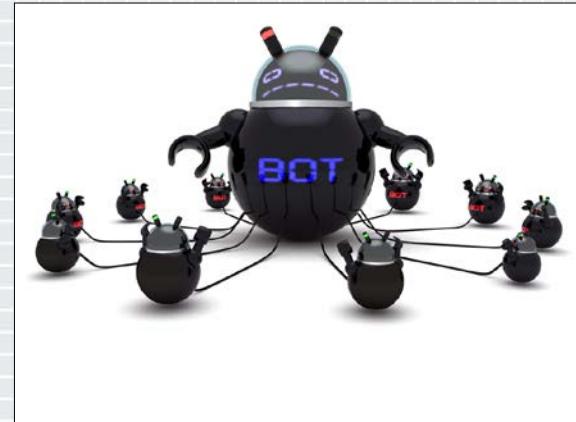
Dimitry Nechvolod



Brian Krebs



KrebsOnSecurity
In-depth security news and investigation



Cyber Crime

Famous Botnets

Conficker



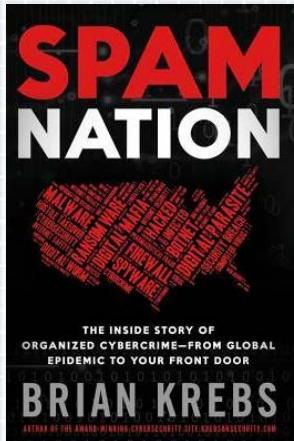
Pavel Vrulevsky



Dimitry Nechvolod



Brian Krebs



Cyber Crime

Famous Botnets

Conficker

Cutwail



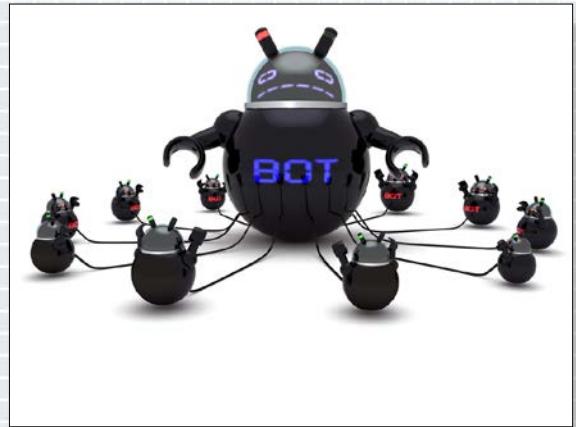
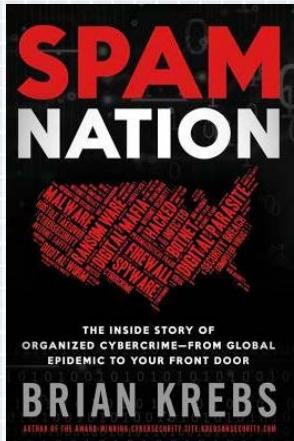
Pavel Vrulevsky



Dimitry Nechvolod



Brian Krebs



Cyber Crime

Famous Botnets

Conficker

Cutwail

Grum

Festi



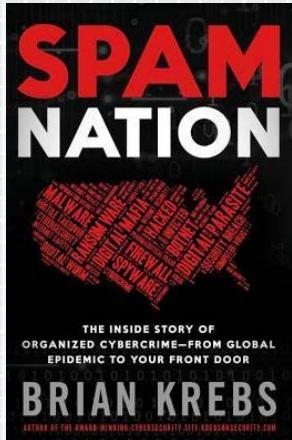
Pavel Vrulevsky



Dimitry Nechvolod



Brian Krebs



KrebsOnSecurity
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Cyber Crime

Famous Botnets

Conficker Rustock

Cutwail

Grum

Festi



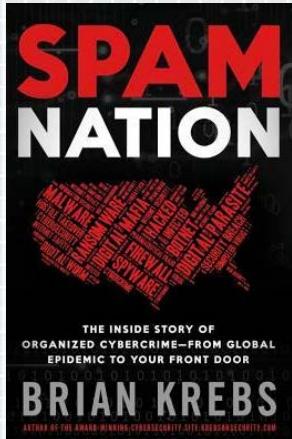
Pavel Vrulevsky



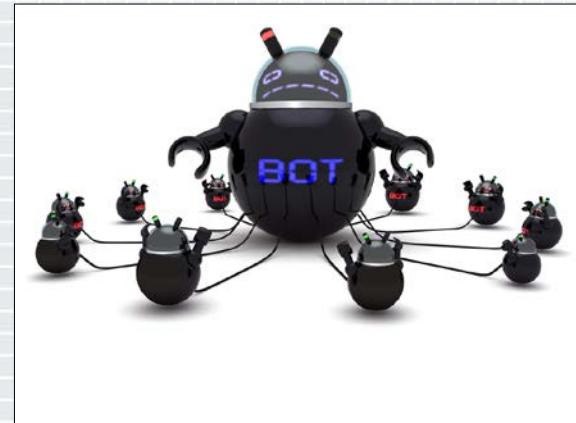
Dimitry Nechvolod



Brian Krebs



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Cyber Crime

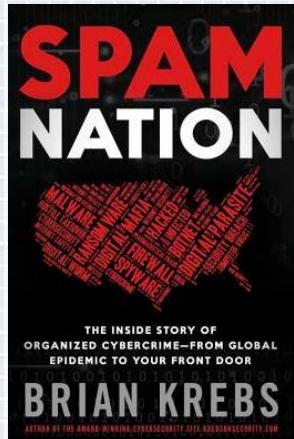
Famous Botnets

Conficker Rustock

Cutwail Storm

Grum

Festi



Cyber Crime

Famous Botnets

Conficker Rustock

Cutwail Storm

Grum Waledeck

Festi



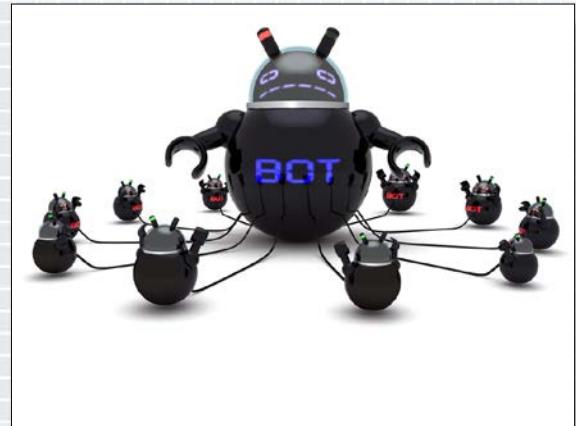
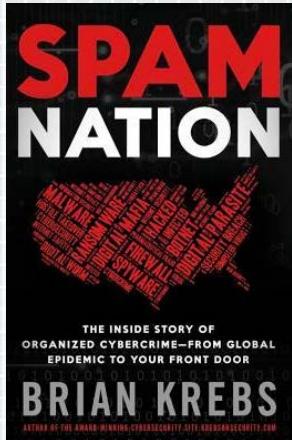
Pavel Vrulevsky



Dimitry Nechvolod



Brian Krebs

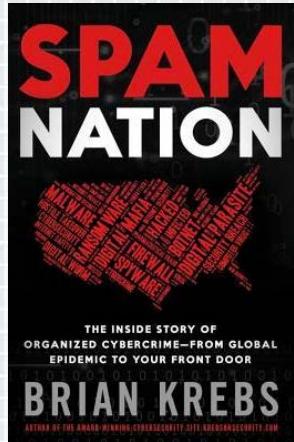


Cyber Crime

Take A-ways

Famous Botnets

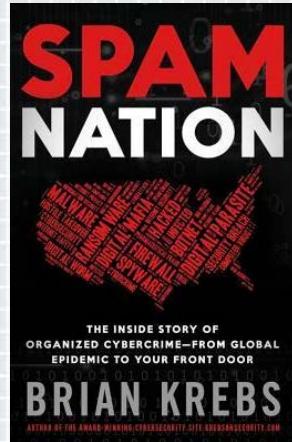
Criminal Business
Operations



Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

Cyber Crime



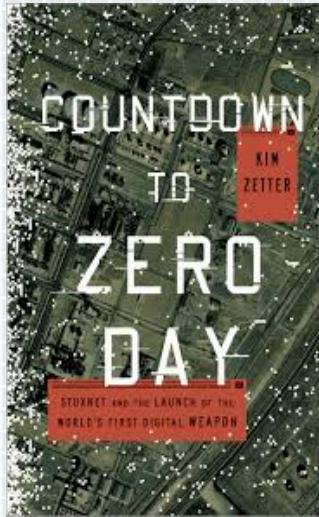
Brian Krebs

KrebsOnSecurity
In-depth security news and investigation

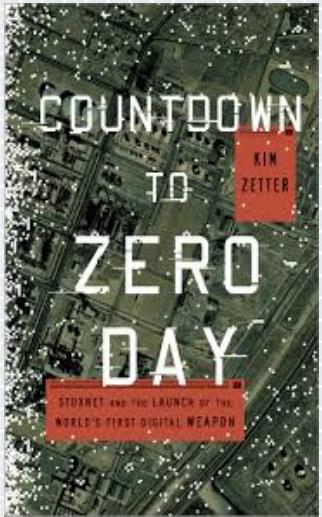
You Should Have Read this by Now

Cyber Warfare

Cyber Warfare

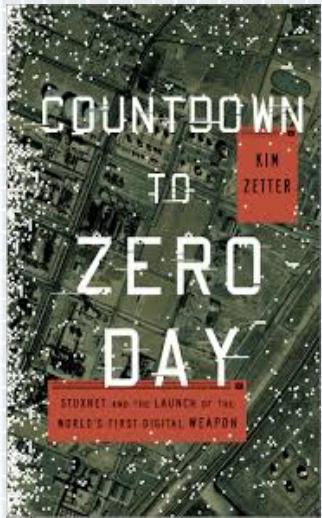


Cyber Warfare



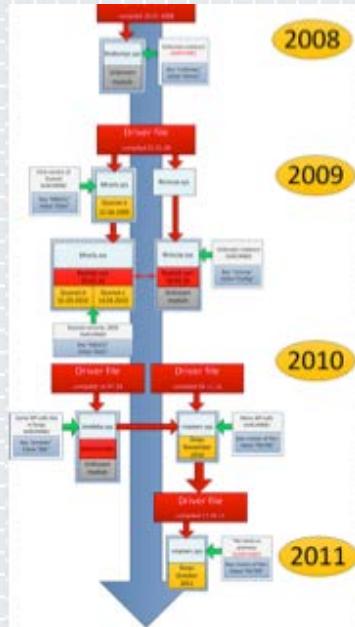
WIRED

Cyber Warfare

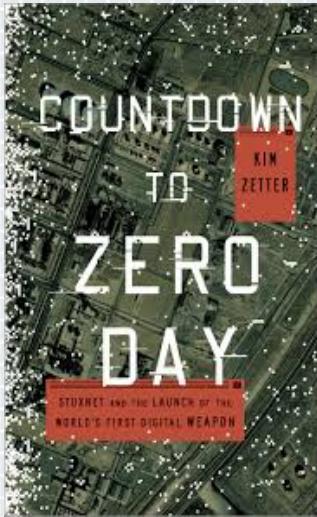


WIRED

Cyber Warfare

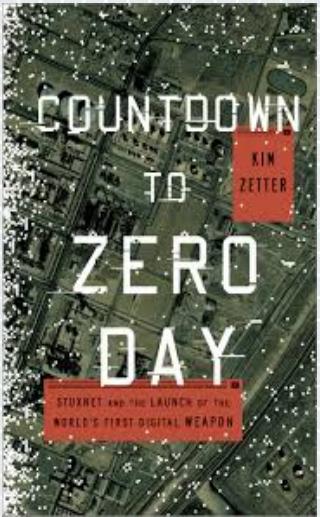


Source: Kaspersky

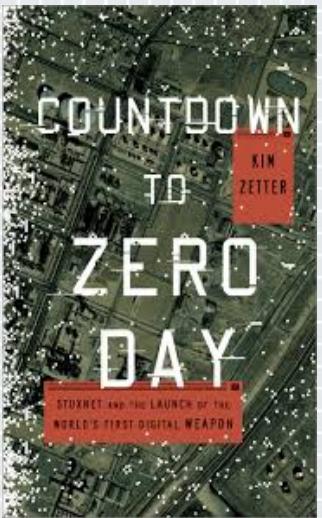
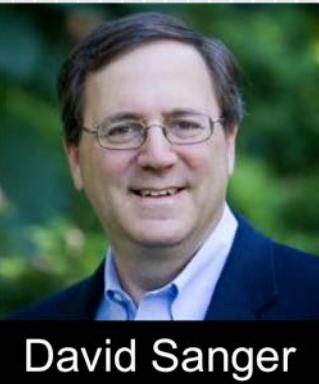
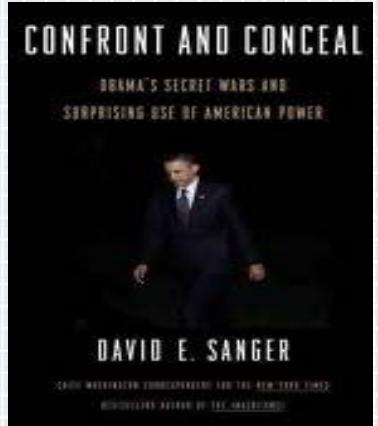


WIRED

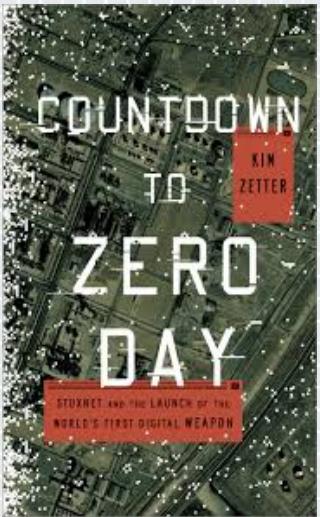
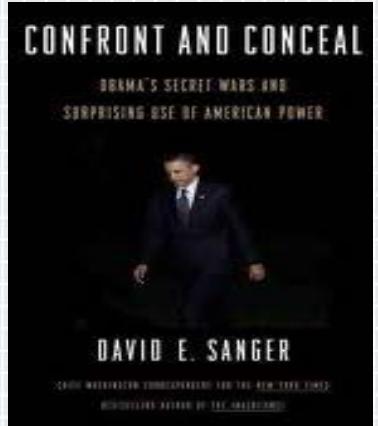
Cyber Warfare



Cyber Warfare

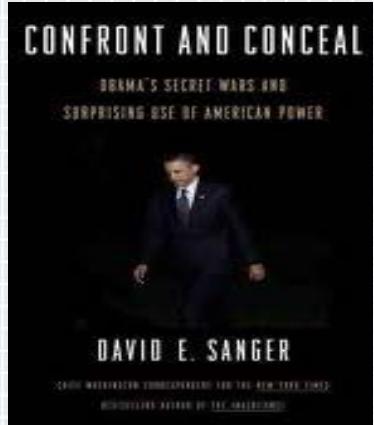


Cyber Warfare

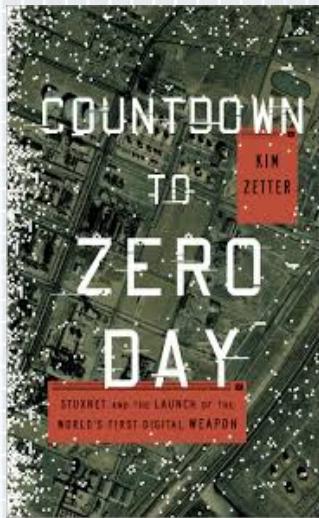


Cyber Warfare

Foreign Policy



David Sanger



Cyber Warfare

People



Eugene Kaspersky



Liam O Murchu



Eric Chien

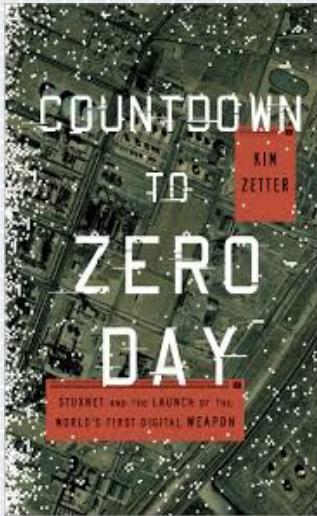


Nicolas Falliere

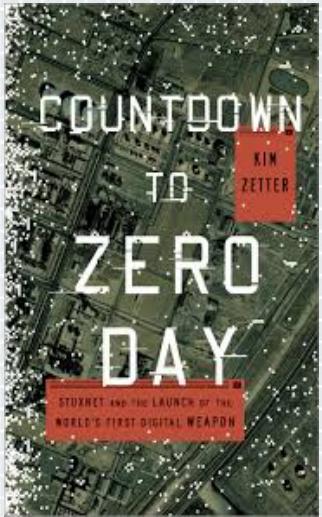


Ralph Langer

Technical Details

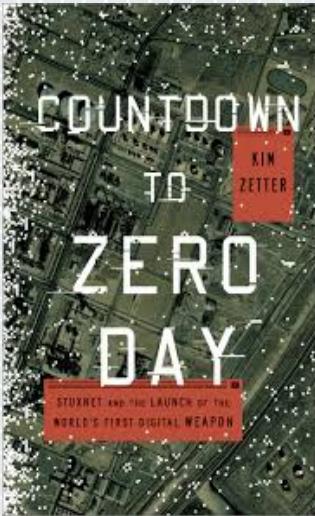


Cyber Warfare



Supervisory Control and Data Acquisition Systems

Cyber Warfare



2800 Power Plants

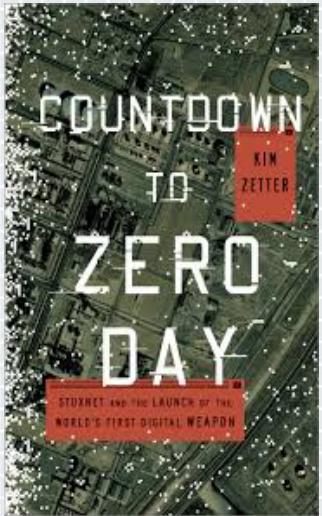
300,000 Oil & Natural Gas Sites

170,000 Public Water Systems

Cyber Warfare



Technical Details



Programmable Logic Controllers (PLCs)

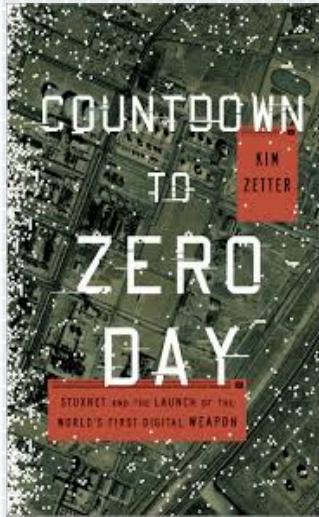


S7-417 PLC

Cyber Warfare



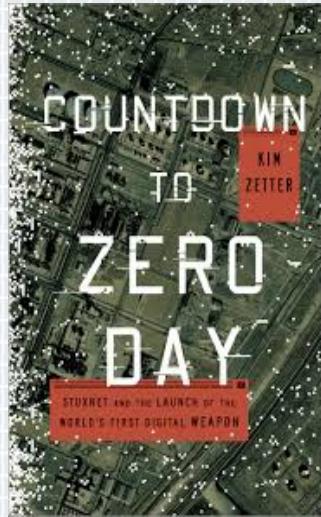
2: Philosophical Conundrums



Cyber Warfare



2:
Philosophical
Conundrums

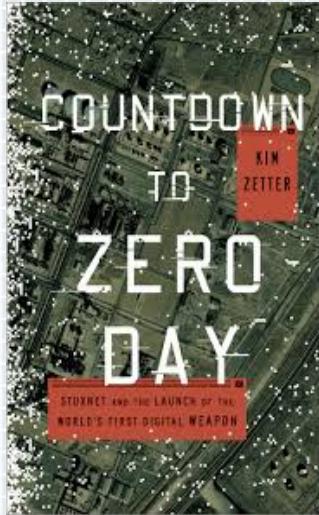


Intelligence Dilemma

Cyber Warfare



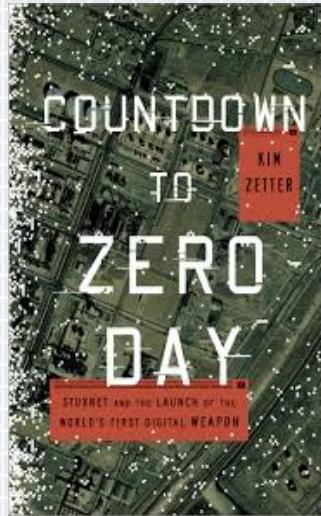
2: Philosophical Conundrums



Intelligence Dilemma

Simultaneous Offense and Defense Operations

Cyber Warfare



You Should Have Read this by Now!

Cyber History and Culture

Cyber History and Culture



2005



Rich Baich
Wells Fargo CISO

Cyber History and Culture



2005



Cyber History and Culture



2005



Cyber History and Culture

rethink
 revise
 redo
redefine
 reconsider
 review
 repulsion
 reevaluate
 remodel



2005



Cyber History and Culture

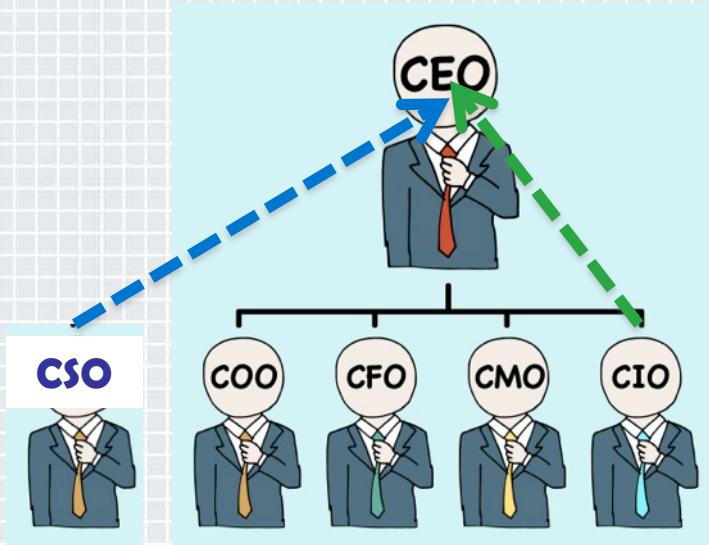


3



Rich Baich
Wells Fargo CISO

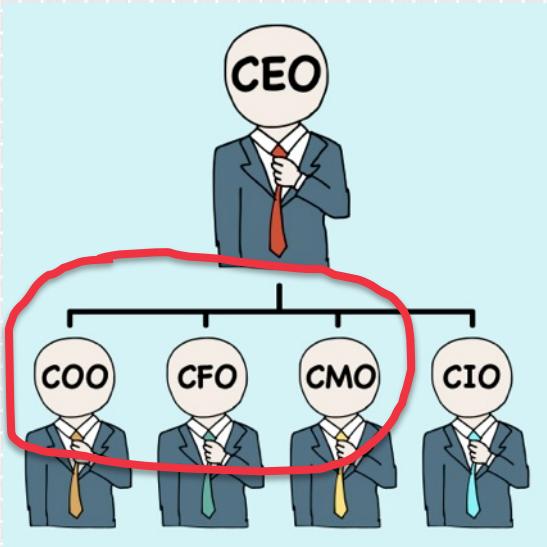
Cyber History and Culture



1



Cyber History and Culture



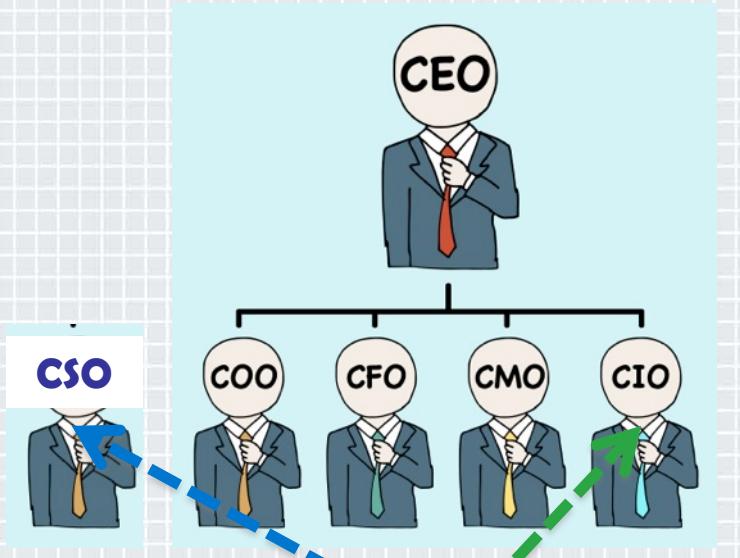
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Not



Cyber History and Culture

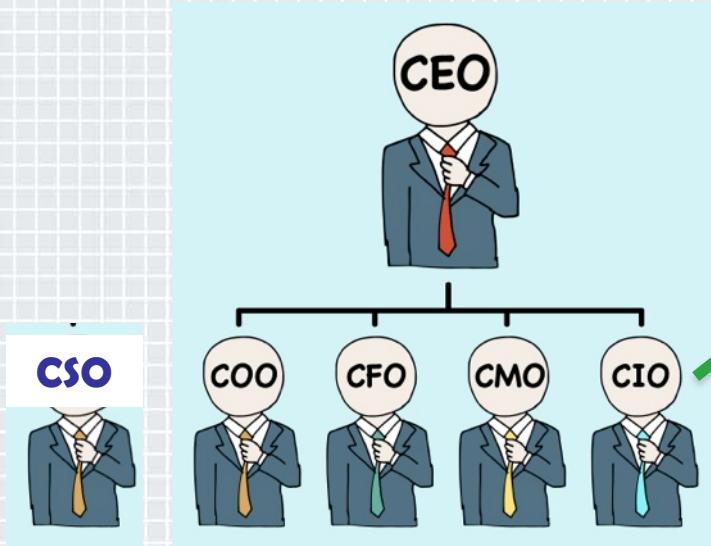


Healthy Tension

1



Cyber History and Culture



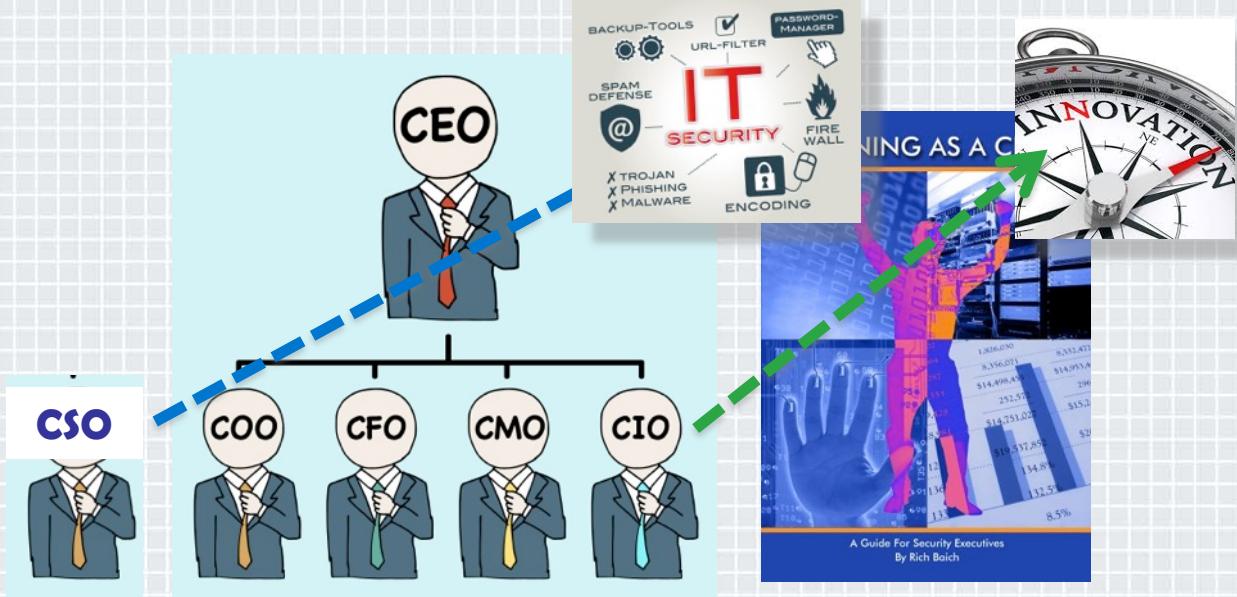
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Healthy
Tension



Cyber History and Culture



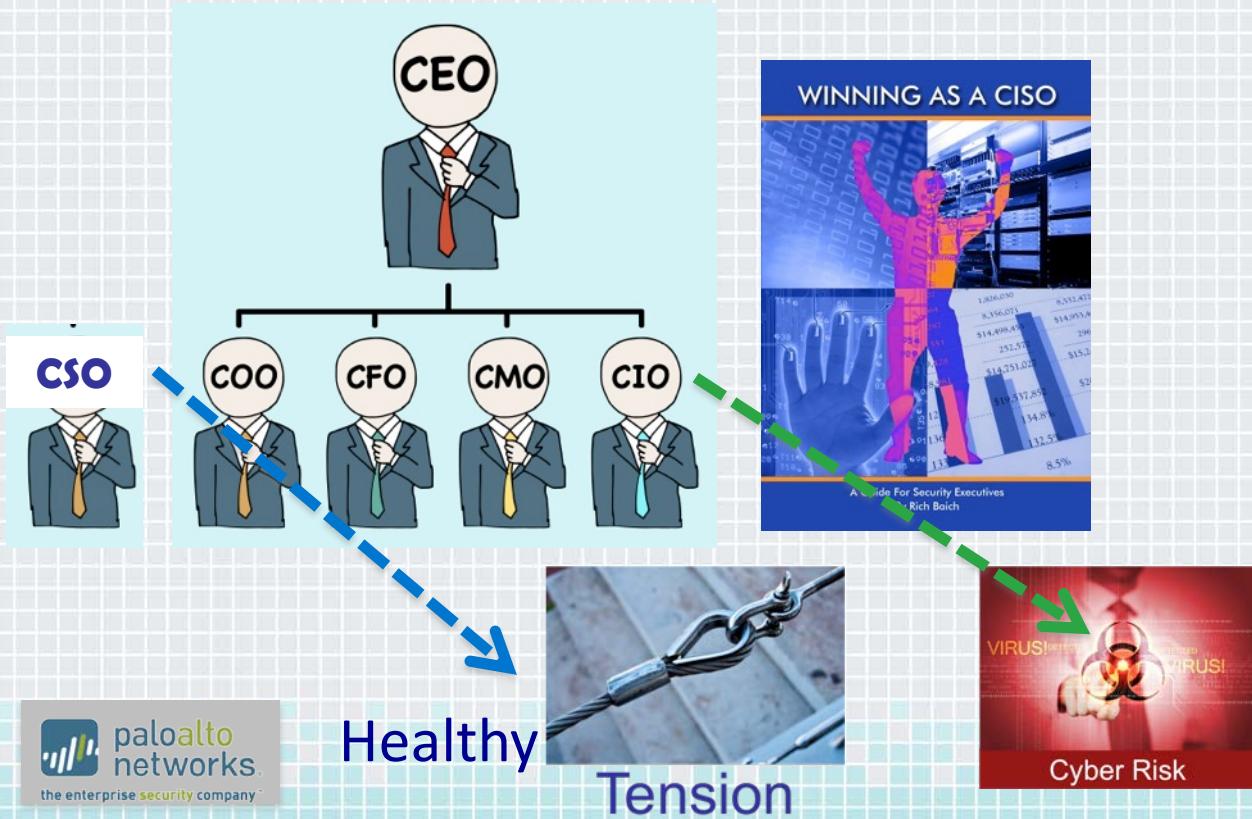
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Healthy
Tension



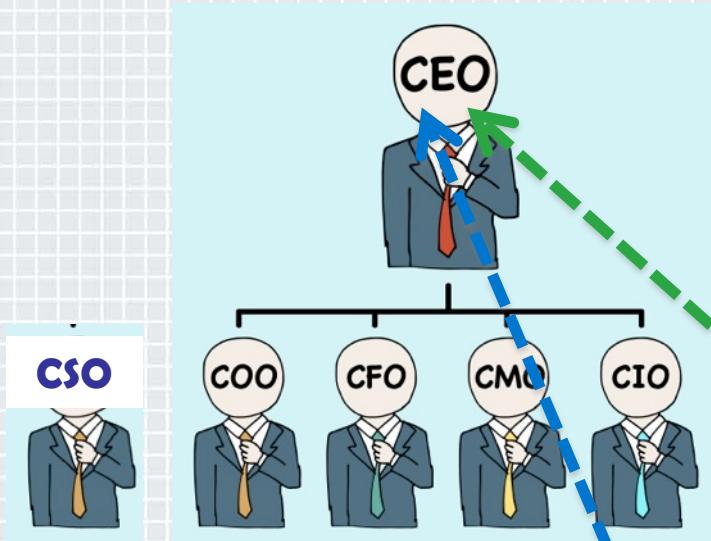
Cyber History and Culture



1



Cyber History and Culture



1



Healthy
Tension



Cyber History and Culture



2



Cyber History and Culture

Business



2



Cyber History and Culture

Business



Product



2



Cyber History and Culture

Business



Product

Marketing



2



Cyber History and Culture

Business



Product

Marketing

Profit & Loss



2



Rich Baich
Wells Fargo CISO

Cyber History and Culture

Business



Product

Marketing

Profit & Loss

Customer Service



2



Cyber History and Culture

Business



Product

Marketing

Profit & Loss

Customer Service



2



Cyber History and Culture



3



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Wells Fargo CISO

Cyber History and Culture

CISO Skills



3



Cyber History and Culture

CISO Skills

- Must have an MBA



3



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Wells Fargo CISO



Cyber History and Culture

CISO Skills

- Must have an MBA
- Prior budget or P&L experience



3



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Wells Fargo CISO

Cyber History and Culture

CISO Skills

- Must have an MBA
- Prior budget or P&L experience
- A proven ability to lead an effective information security organization



3



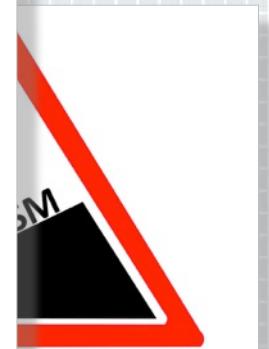
Rich Baich
Wells Fargo CISO

Cyber History and Culture

CISO Skills

- Must have an MBA
- Prior budget or P&L experience
- A proven ability to lead an effective information security organization

“If performing vulnerability assessments, configuring firewalls, and performing network forensics makes you happy then becoming Chief Information Security Officer may not be the right career choice for you.”



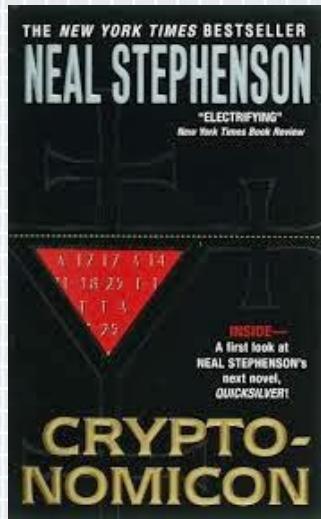
Cyber History and Culture



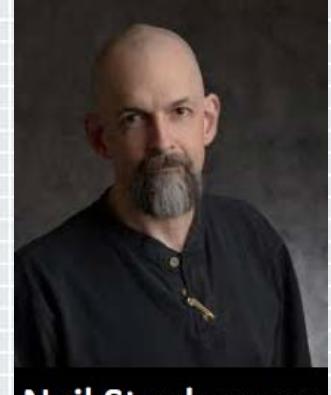
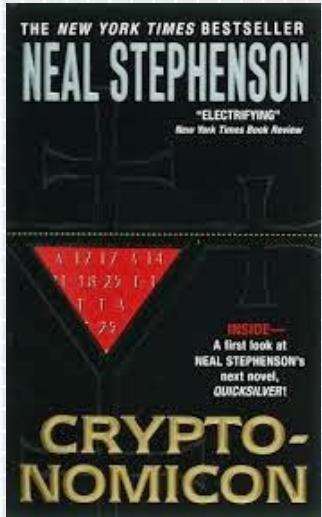
You Should Have Read this by Now

Novel

Novel



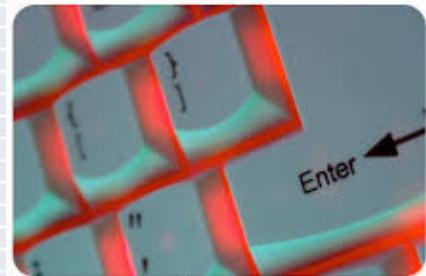
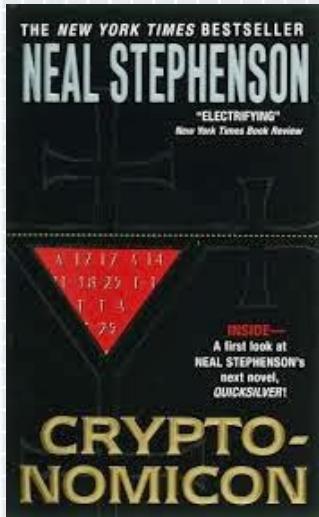
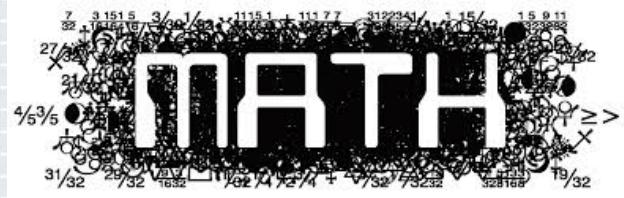
Novel



Neil Stephenson

Quintessential

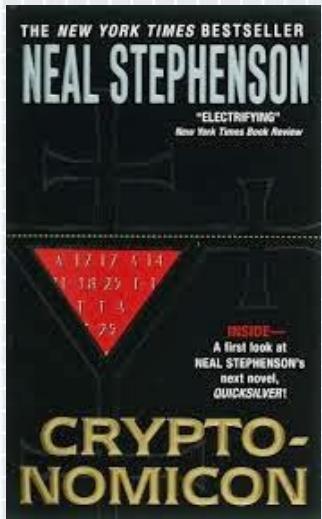
Novel



Computer
Science

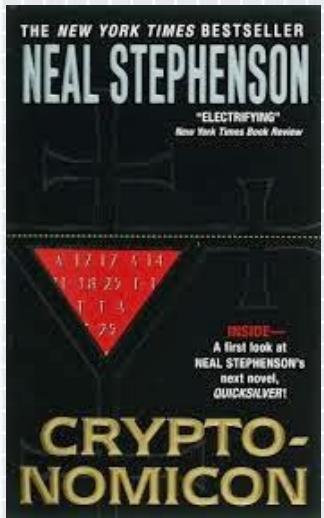
Quintessential

Novel



Quintessential

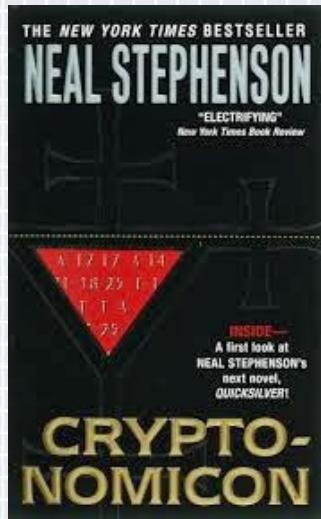
Novel



Quintessential

Novel

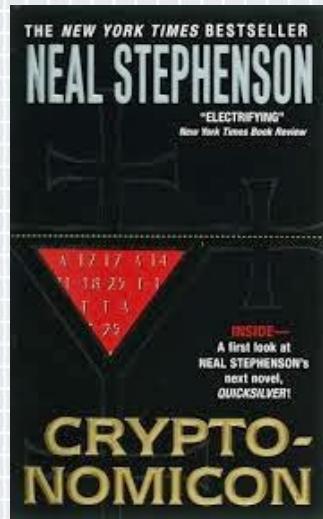
INDIANA JONES



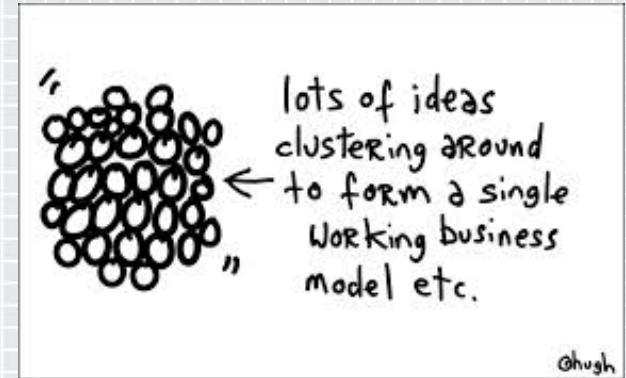
Quintessential

Novel

INDIANA JONES

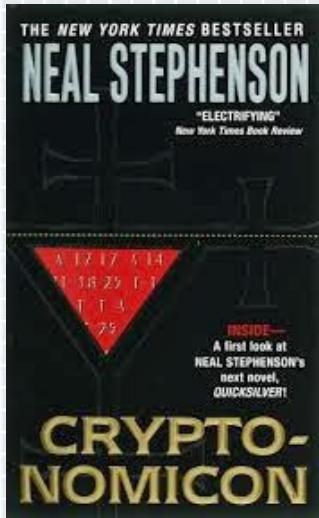


Quintessential



Novel

CYBER SECURITY HISTORY

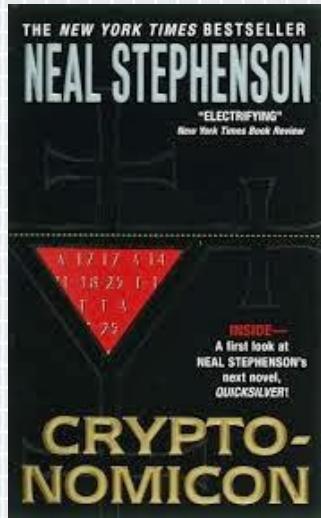


Quintessential

Novel

CYBER SECURITY HISTORY

TRAGEDY

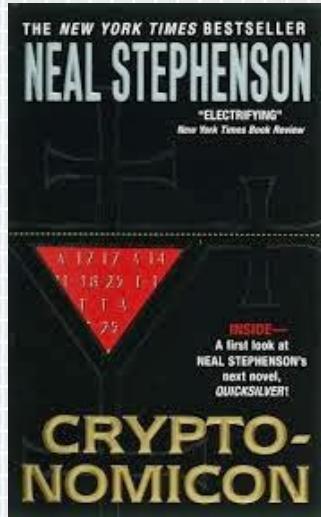


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Novel

CYBER SECURITY HISTORY

TRAGEDY



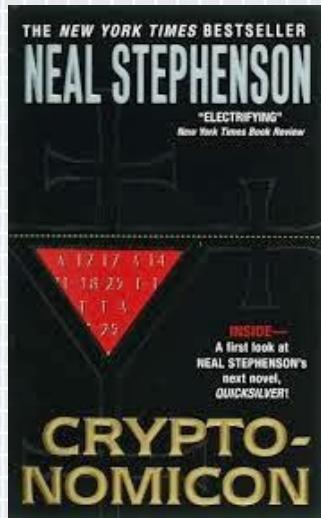
ADVENTURE

Quintessential

Novel

TRAGEDY

GEEK LOVE STORIES

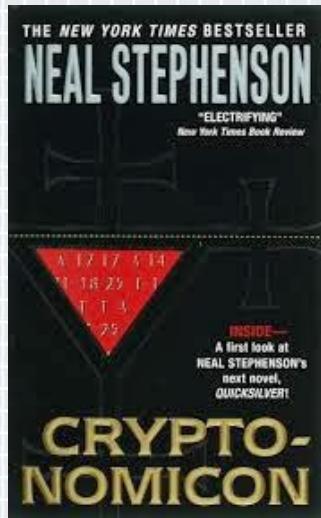


CYBER SECURITY HISTORY

ADVENTURE

Quintessential

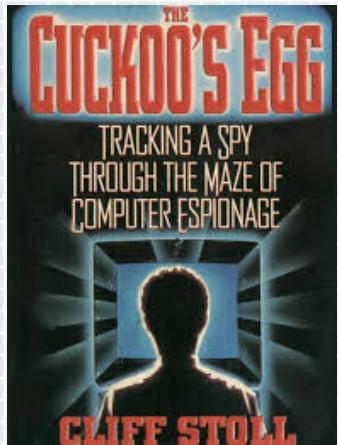
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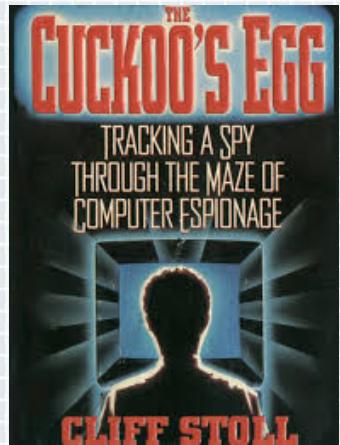
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Cyber Espionage

Cyber Espionage

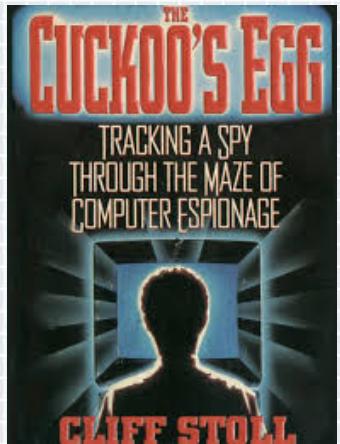


Cyber Espionage



1989

Cyber Espionage



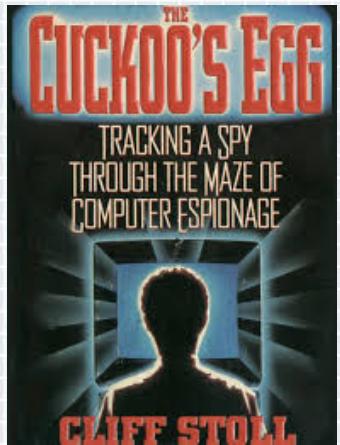
1989



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National Laboratory

Cyber Espionage

Information Sharing



1989



Cliff Stoll

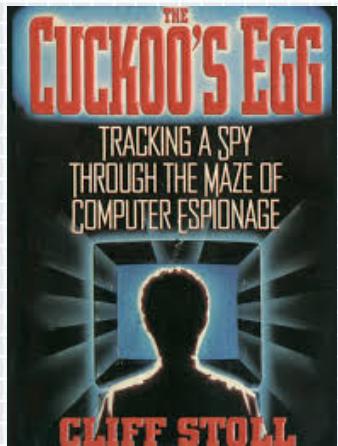


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Cyber Espionage

Information Sharing

Privacy vs Security (R)
Liberty vs Control (D)



1989



Cliff Stoll



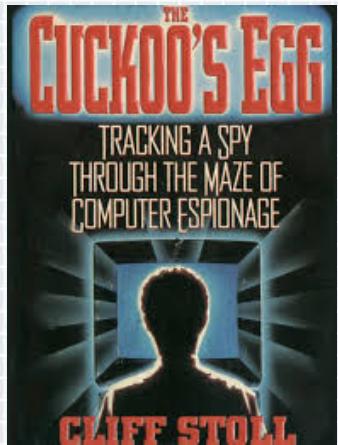
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Cyber Espionage

Information Sharing

Privacy vs Security (R)
Liberty vs Control (D)

Cyber Espionage



1989



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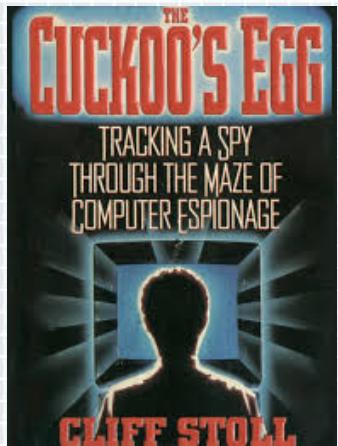
Cyber Espionage

Information Sharing

Privacy vs Security (R)
Liberty vs Control (D)

Cyber Espionage

Intelligence Dilemma



1989

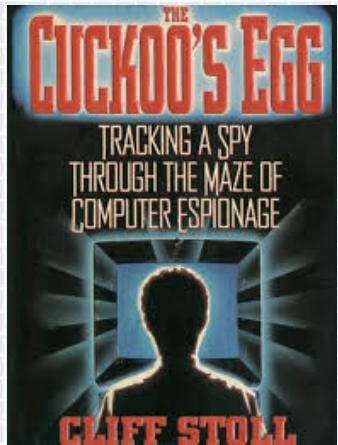


Cliff Stoll



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National Laboratory

Cyber Espionage



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San Francisco | April 20-24 | Moscone Center

Conclusion:

Cybersecurity Canon Project



Apply What You Have Learned Today

- ◆ Next week you should:

Apply What You Have Learned Today

- ◆ Next week you should:
 - ◆ **Go to the Canon Website and read the reviews**

Apply What You Have Learned Today

- ◆ Next week you should:
 - ◆ Go to the Canon Website and read the reviews
- ◆ In the first three months following this presentation you should:

Apply What You Have Learned Today

- ◆ Next week you should:
 - ◆ Go to the Canon Website and read the reviews
- ◆ In the first three months following this presentation you should:
 - ◆ **Compile a list of your favorite books that are not already on the candidate list**
 - ◆ **Send them to me.**

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Questions?

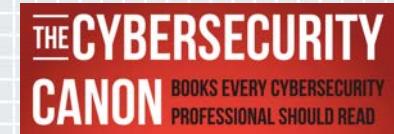
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