

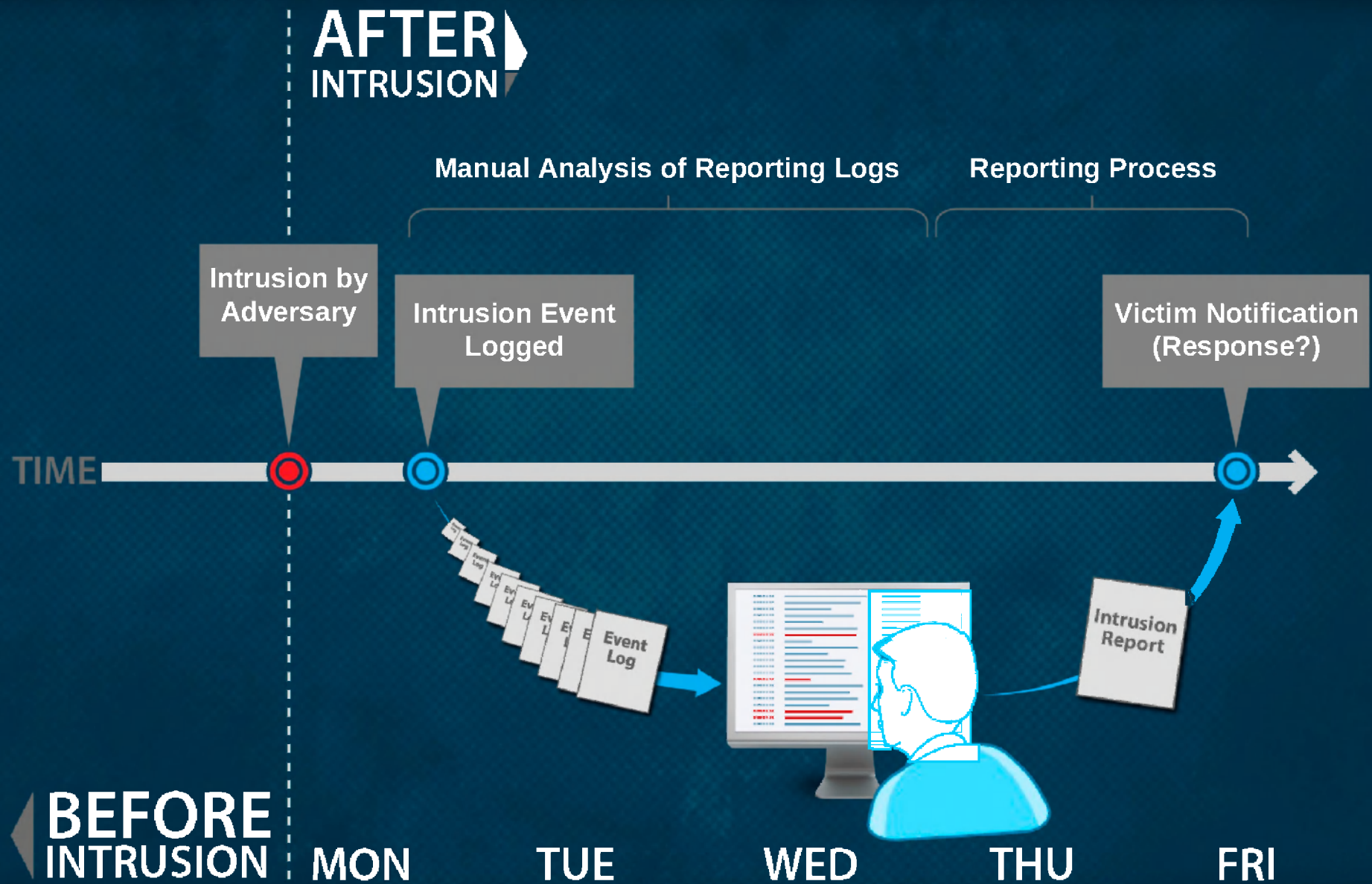
TOP SECRET//COMINT//REL TO USA,
FVEY

TUTELAGE

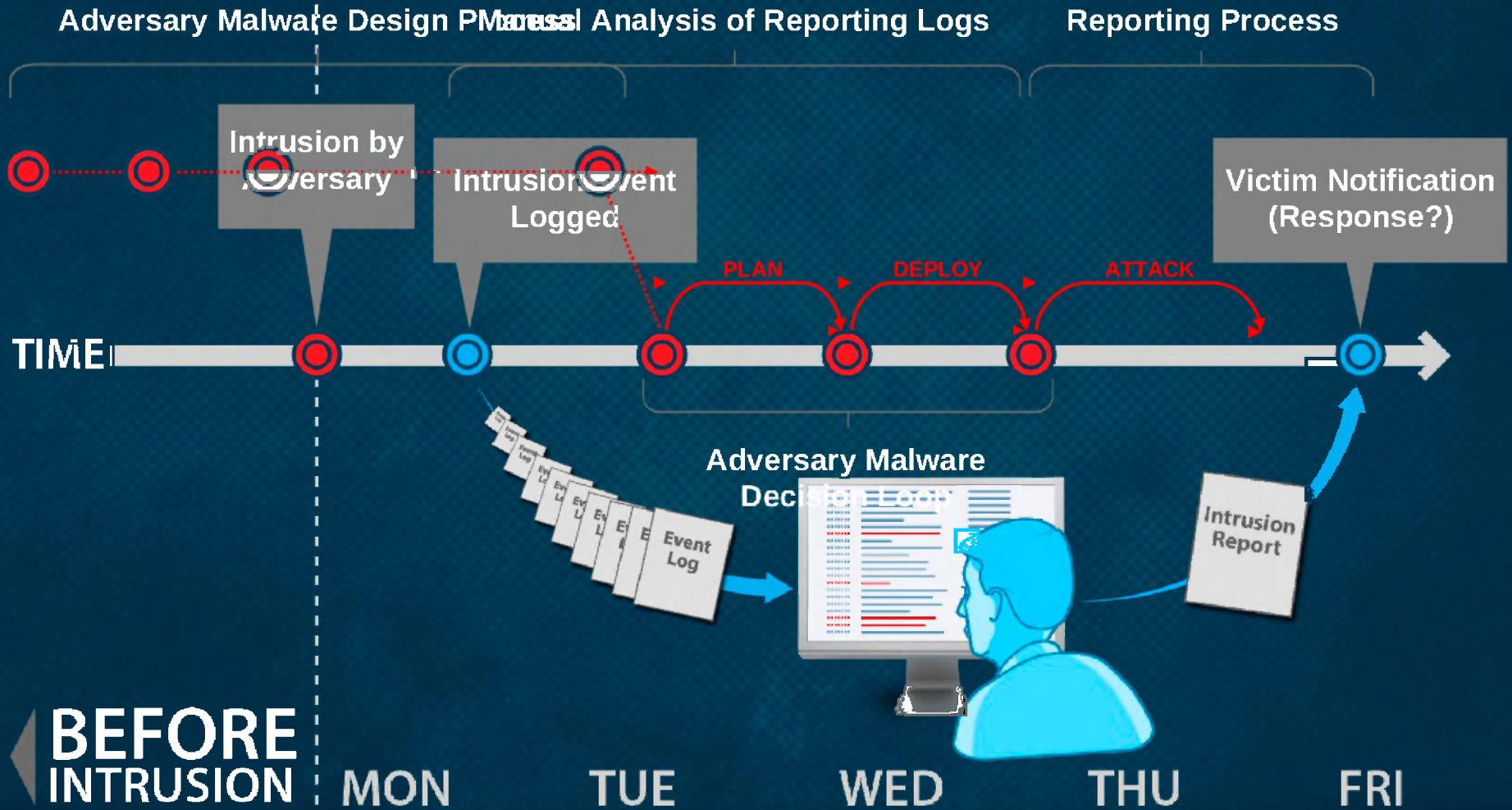
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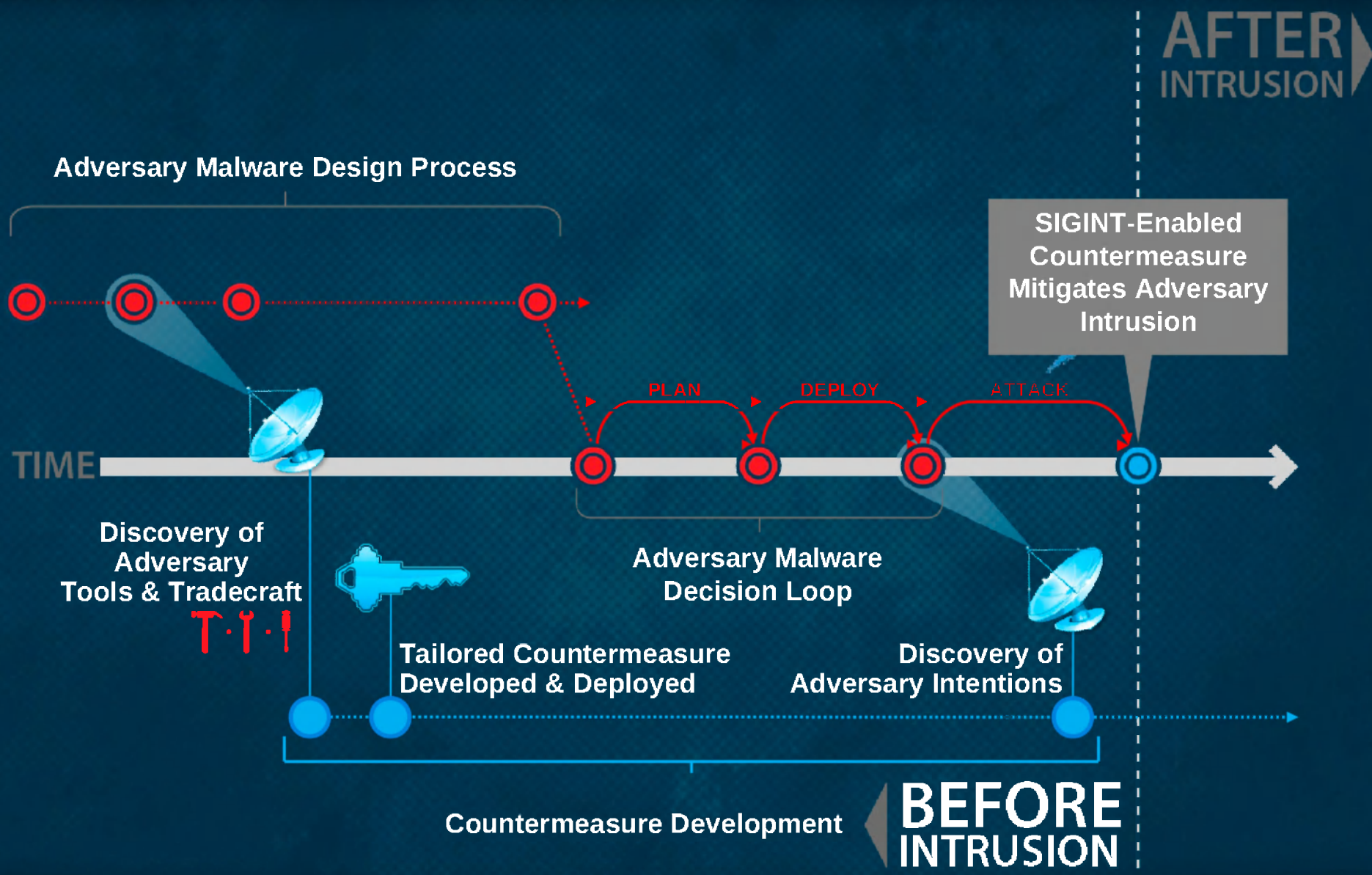


TOP SECRET//COMINT//REL TO USA,



AFTER INTRUSION





Application of Capabilities

Internet



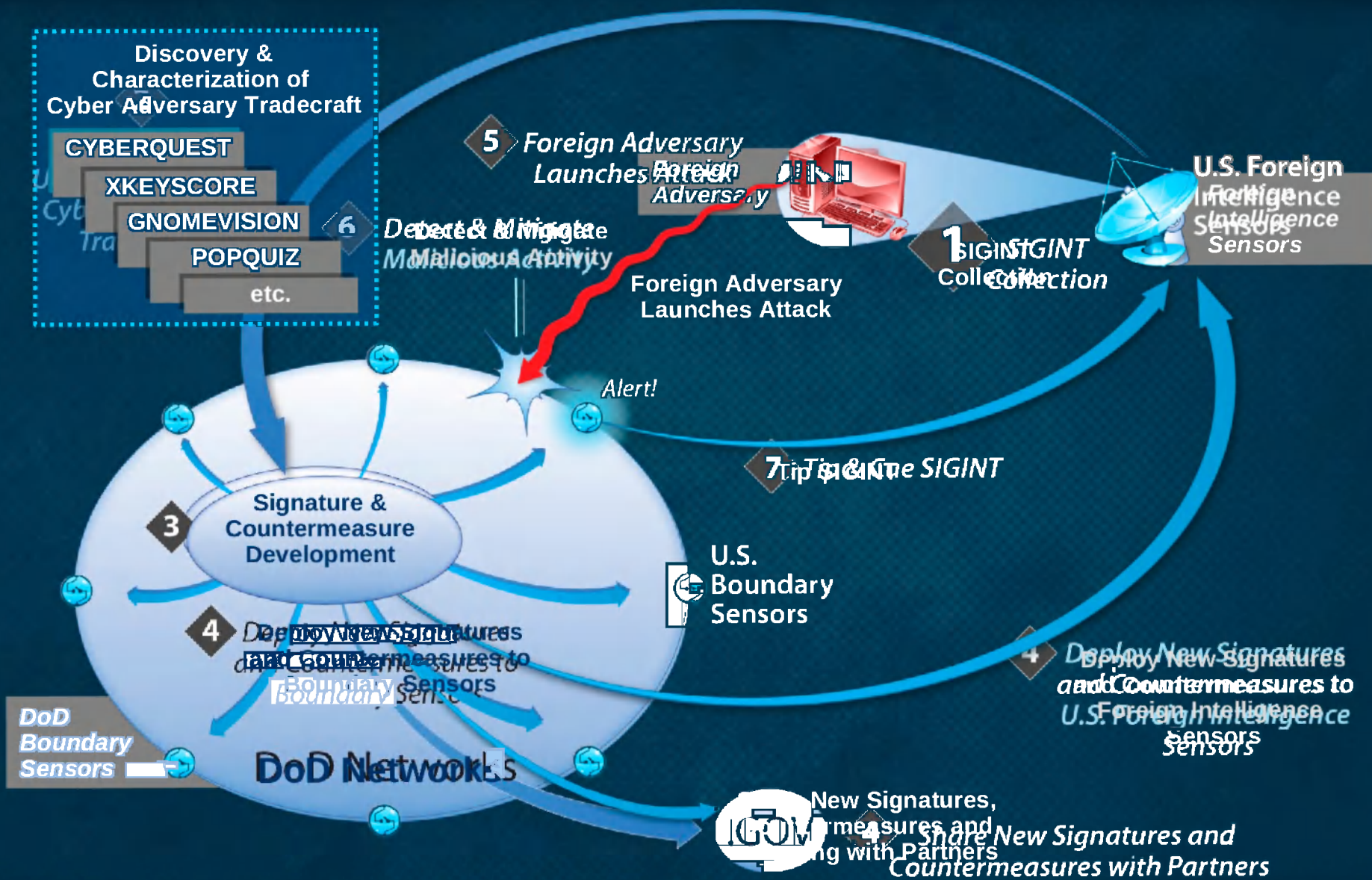
DoD Gateways



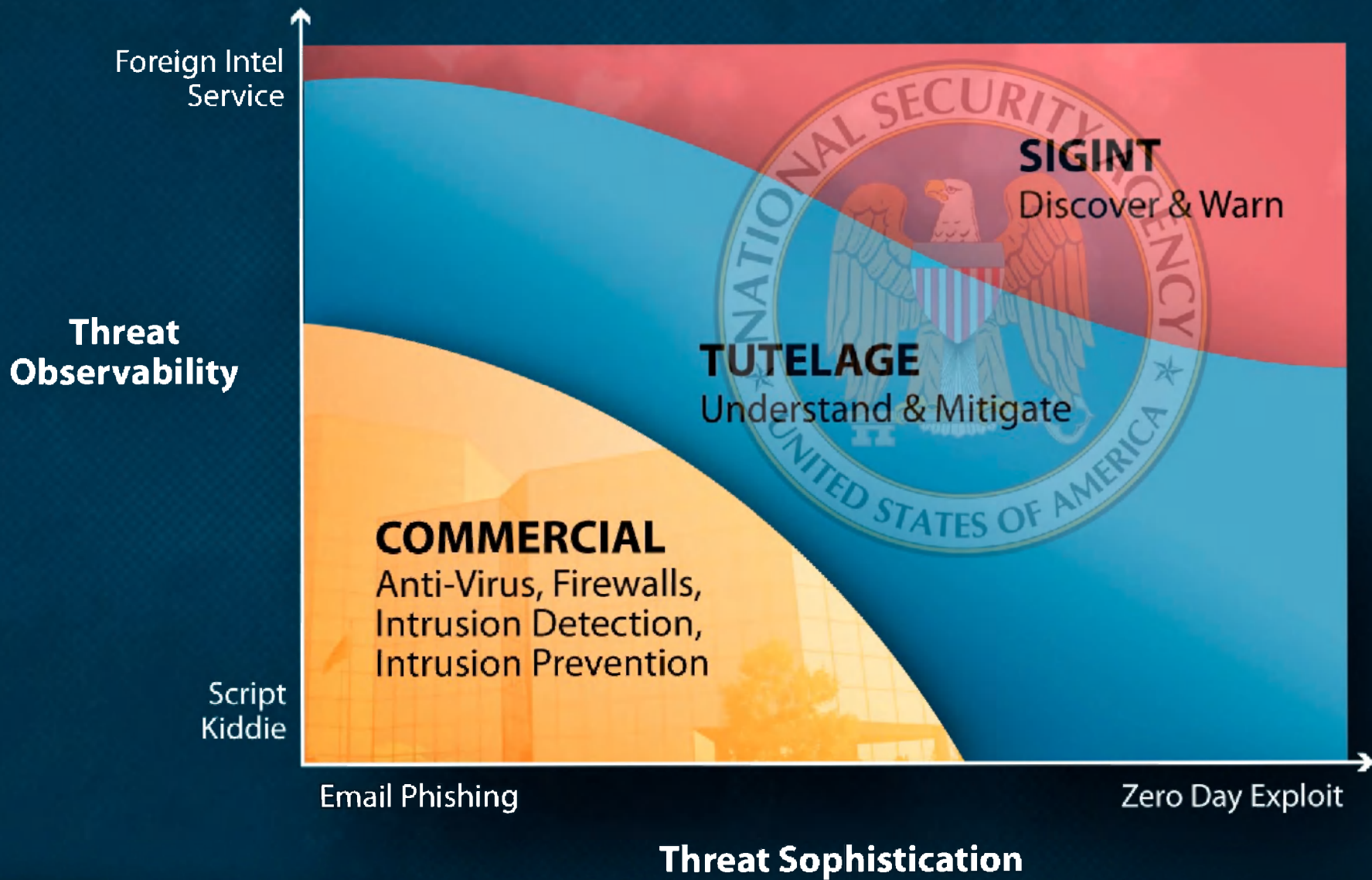
NIPRNet



TUTELAGE Mission Flow



Operational Landscape

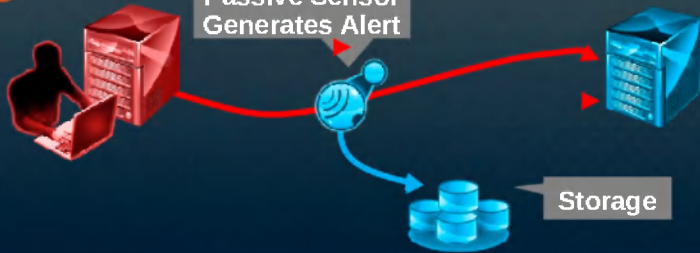


SECRET//COMINT//REL TO USA,
FVEY
TUTELAGE Capabilities



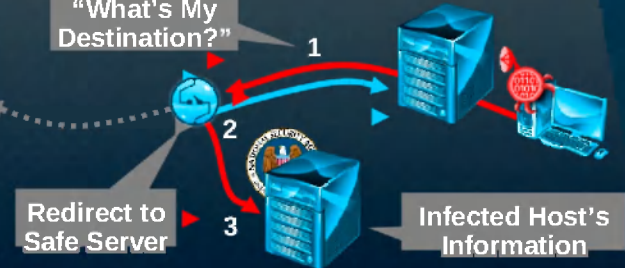
Alert/Tip

Passive Sensor
Generates Alert



Redirect

"What's My
Destination?"



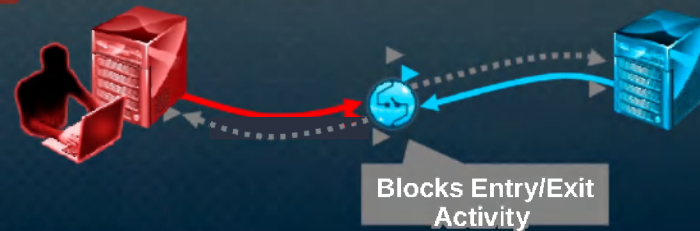
Intercept

Malicious
Activity



Block

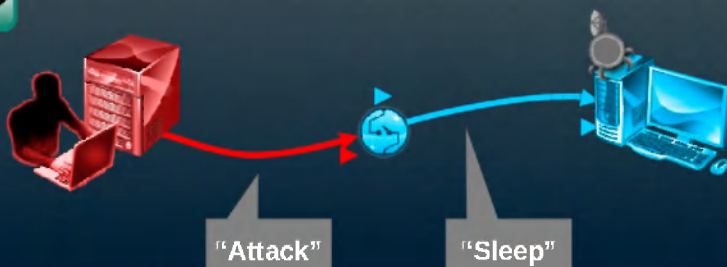
Blocks Entry/Exit
Activity



Substitute

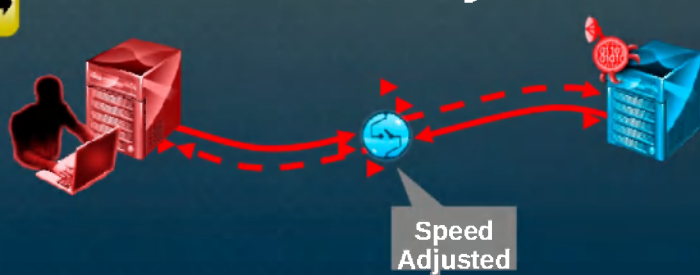
"Attack"

"Sleep"



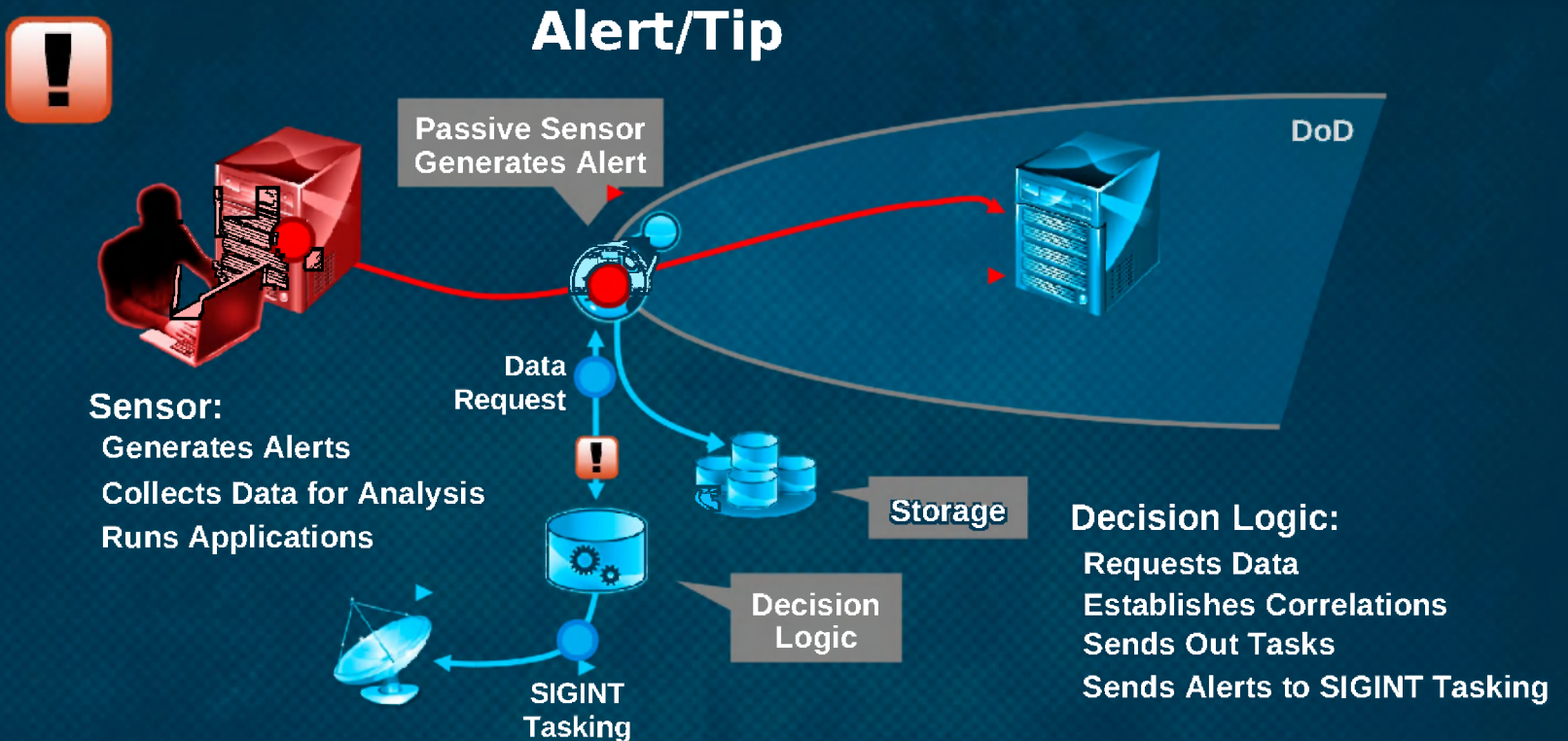
Latency

Speed
Adjusted



TUTELAGE Capabilities

◀ MENU



(S//REL TO USA, FVEY)

Alert/Tip indicates the presence of malicious activity and communicates this information with the rest of the TUTELAGE enterprise and/or the SIGINT (passive/active) enterprise. Rule and Decision Logic determine whether data is stored.

TUTELAGE Capabilities

◀ MENU



Intercept



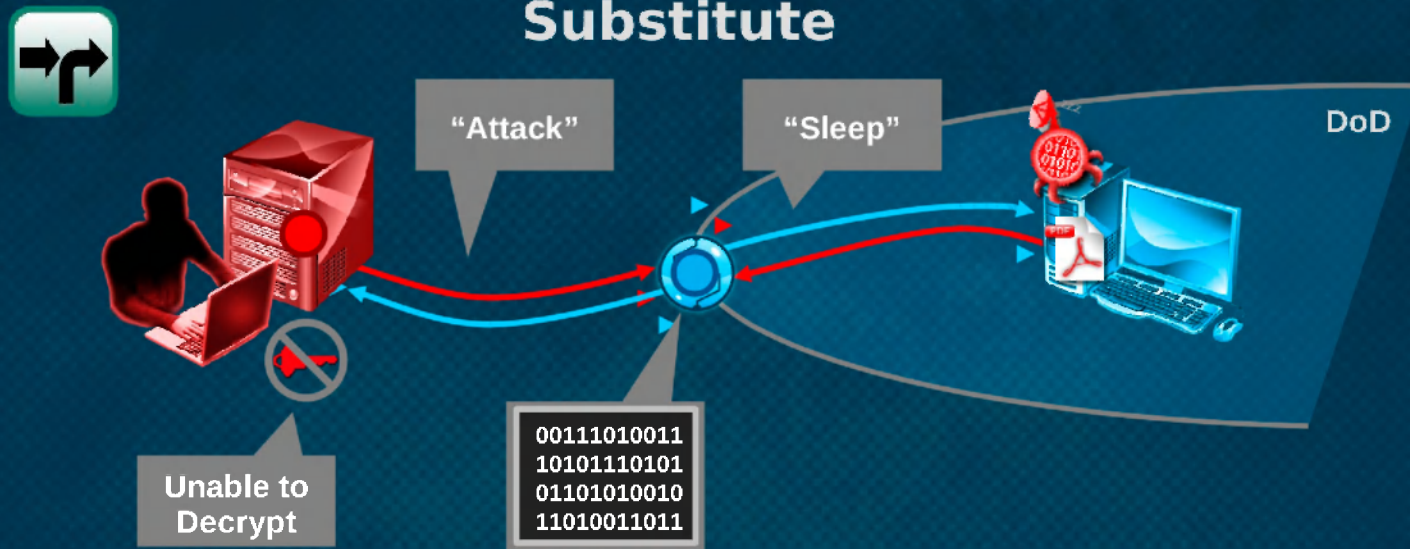
In-Line Packet Processor:
Re-routes traffic dynamically
Modify inbound & outbound packets
Insert and/or delete packets

(S//REL TO USA, FVEY)

Intercept is the means by which the TUTELAGE in-line packet processor can transparently intervene in adversarial activities, permitting the activity to appear to complete without disclosing that it did not reach/affect the intended target.

TUTELAGE Capabilities

◀MENU

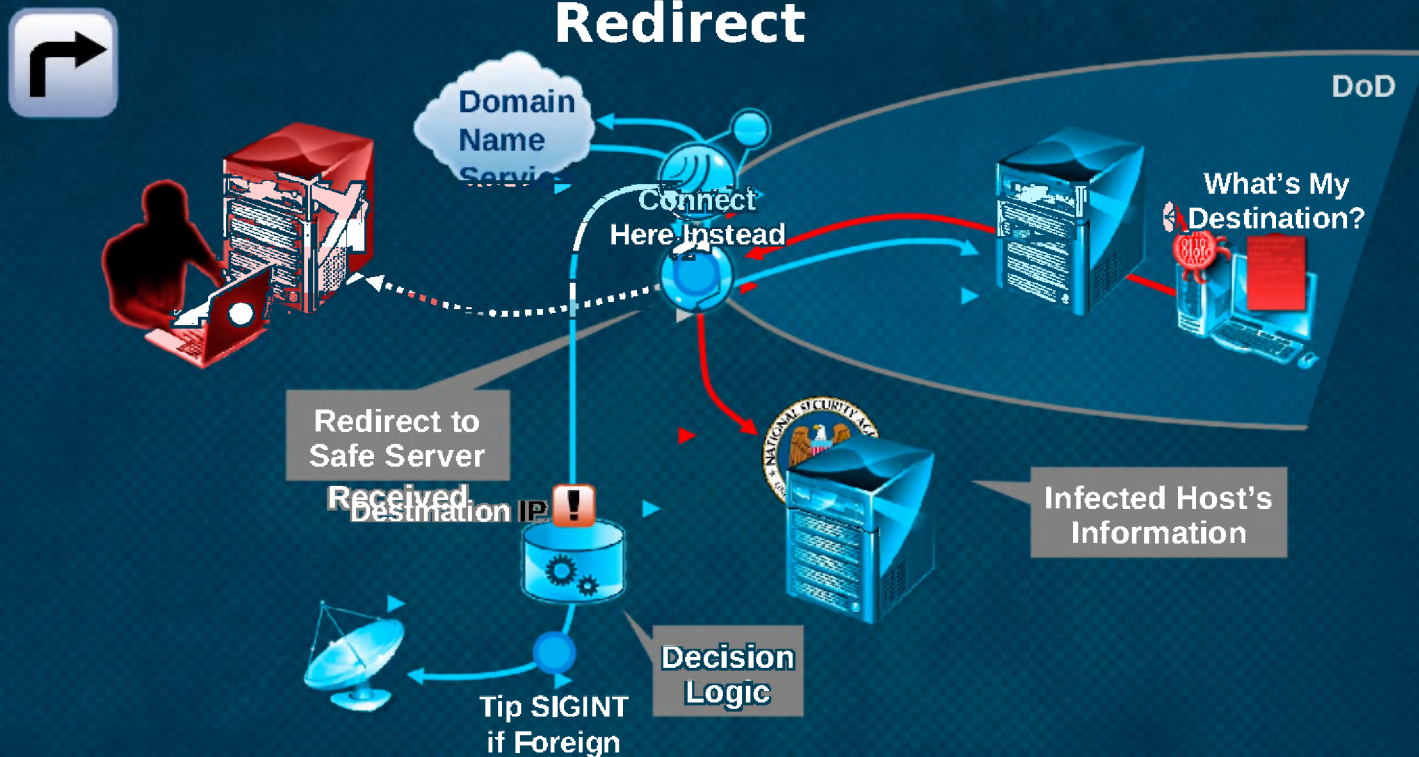


(S//REL TO USA, FVEY)

Substitute is the TUTELAGE in-line packet processor's ability to perform bidirectional content detection and replacement.

TUTELAGE Capabilities

◀ MENU

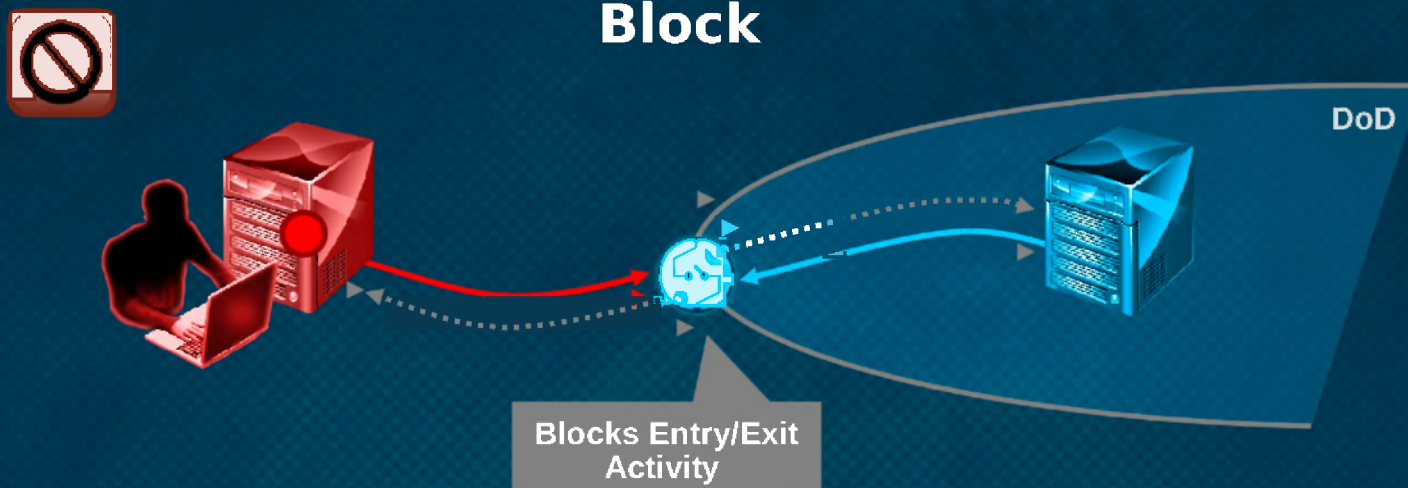


(S//REL TO USA, FVEY)

Redirect is the TUTELAGE in-line packet processor's ability to change the course or direction of an adversarial (or adversarial induced) activity.

TUTELAGE Capabilities

◀ MENU



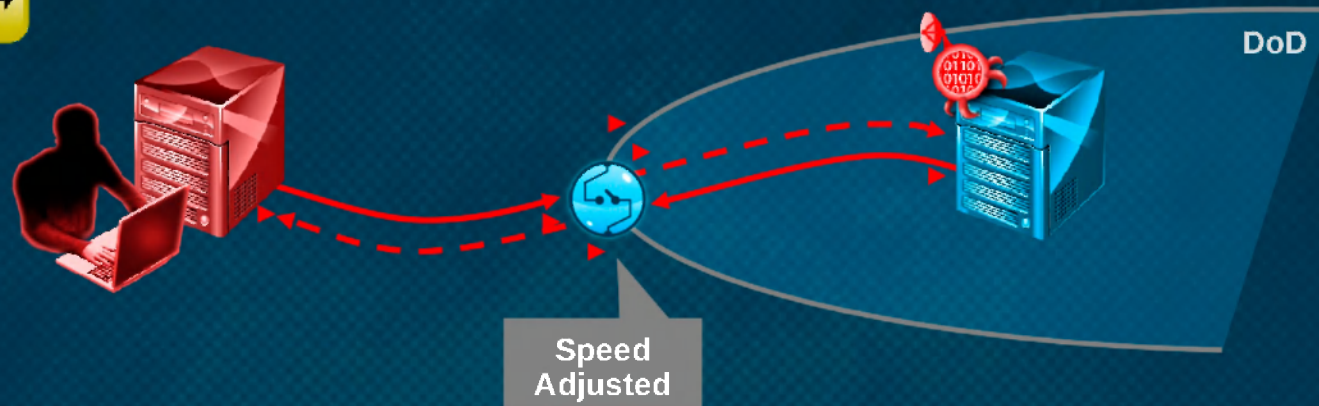
(S//REL TO USA, FVEY)

Block is the means by which the TUTELAGE in-line packet processor can deny entry/exit of network activity at the Internet Access Points (IAPs) based initially on source and/or destination Internet Protocol (IP) addresses and ports.

TUTELAGE Capabilities

[←MENU](#)

Latency









(S//REL TO USA, FVEY)

Latency is the means by which the TUTELAGE in-line packet processor can stealthily vary the in/outbound speed of an adversary's activities traversing the IAPs to provide a diminished quality of service. This creates more time for other TUTELAGE capabilities to be executed.

How Many, How Often

TUTELAGE currently operates against 28 major threat categories, using a total of 794 operational effects encompassed in seven capabilities (alerting/tipping, blocking, interception, sidelining, substitution, redirection and latency).

Cyber Activity	Ops	Alert/Tip 	Block 	Intercept 	Latency 	Redirect 		Substitute 	
						HTTP	DNS		TCP
Adversarial Recon	3			SMTP	HTTP	HTTP	DNS		TCP
Bishop Knight	10				3		10		
Black Energy Bot	24							24	
Blind Marksman	77						77		
Byzantine Foothold	96		1	12			83		
Byzantine Viking	36	1		4			31		
Carbon Peptide	6						6		
Conficker	3							3	
Cross-Domain Violations	77	77					77		
Dancing Panda	2						2		
Discovery	123			4			116	1	2
Eleonore Exploit Kit (TEC)	5						5		
Email	8			8					
GnomeFisher	4						4		
GnomeVision	1						1		
MakersMark	8						8		
Maverick Church	12			4			8		
Native Dancer	26			8			18		
Non Attributed Malware	13						13		
Other	3						3		
Phoenix Exploit Kit	1						1		
Technology	7						6	1	
WeaselWaggle/SubtleSnow	58	1					57		
Widowkey	26	1					25		
Zeus	17	1					16		
TOTAL	794	81	2	61	3	77	552	95	

TUTELAGE posture against major threats as of 11 February 2011.

FUTURE CAPABILITIES

Upgrades & What They Mean

Upgrade to 10G Sensor provides additional capabilities and enables future upgrades:

•Immediate Benefits:

- Increased speed and capacity
- TS//SI signatures
- Full Snort (Current sensors use packet-based Snort. 10G sensors use session-based Snort.)
- Multi-event Snort

•Future Upgrades:

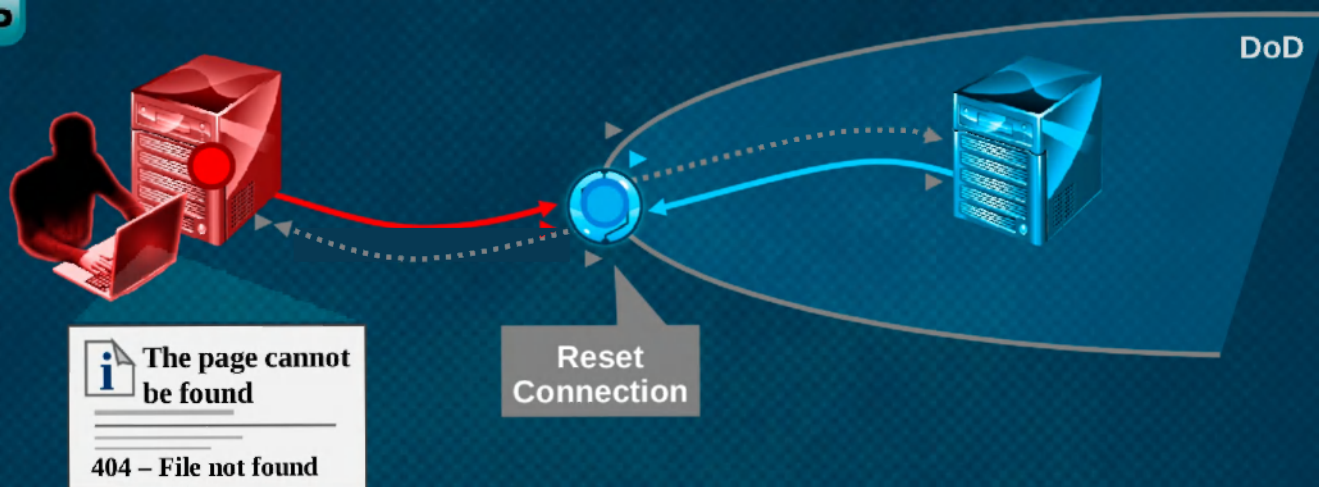
- POPQUIZ: Real-time behavioral analytics
- GNOMEVISION: De-obfuscation of malicious packages
- Cryptanalytic Capabilities
- Netflow: Traffic analysis with GHOSTMACHINE

SECRET//COMINT//REL TO USA,
FVEY

Latest ~~Future~~ TUTELAGE Capability



TCP Reset



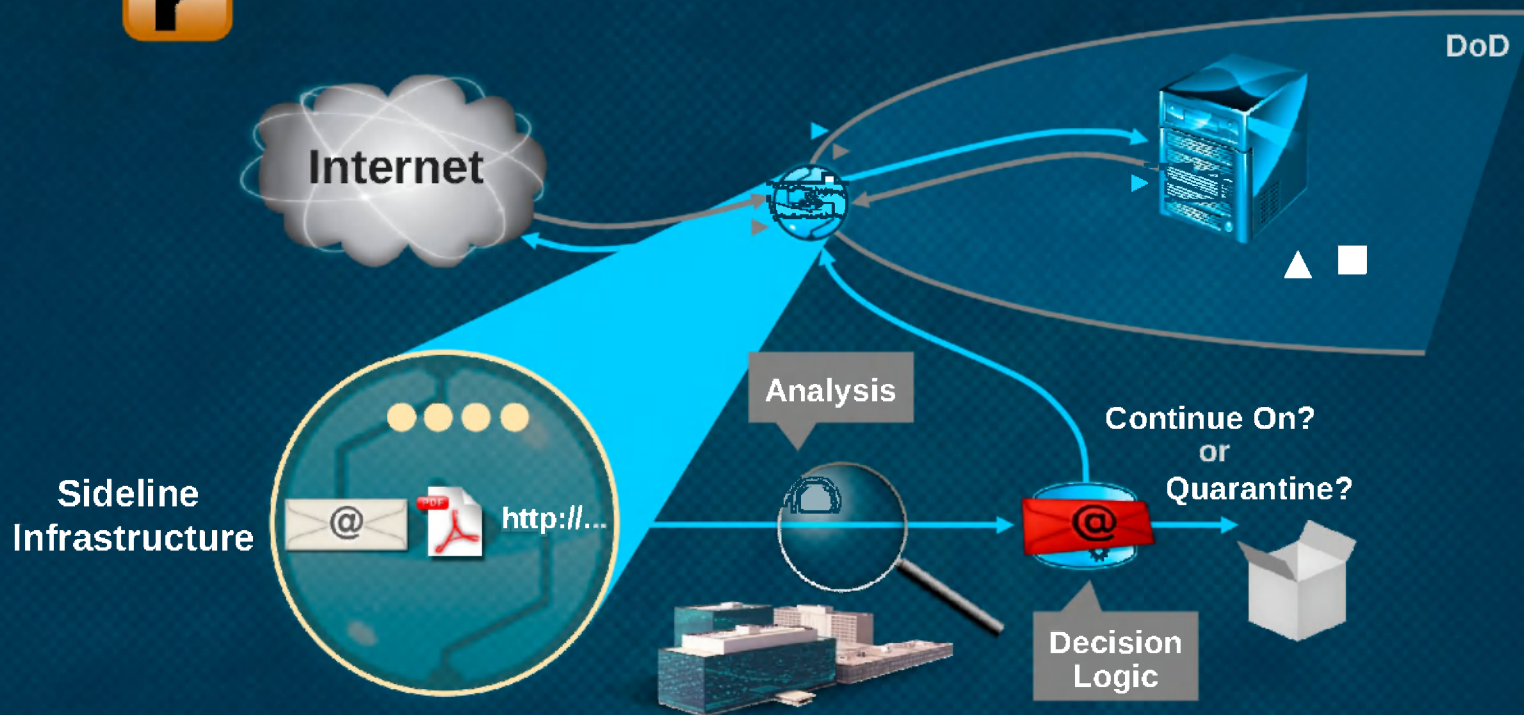
(S//SI//REL TO USA, FVEY)

TCP Reset prevents malicious activity by breaking the connection.

Future TUTELAGE Capabilities



Sideline for Session Analysis



(S//REL TO USA, FVEY)

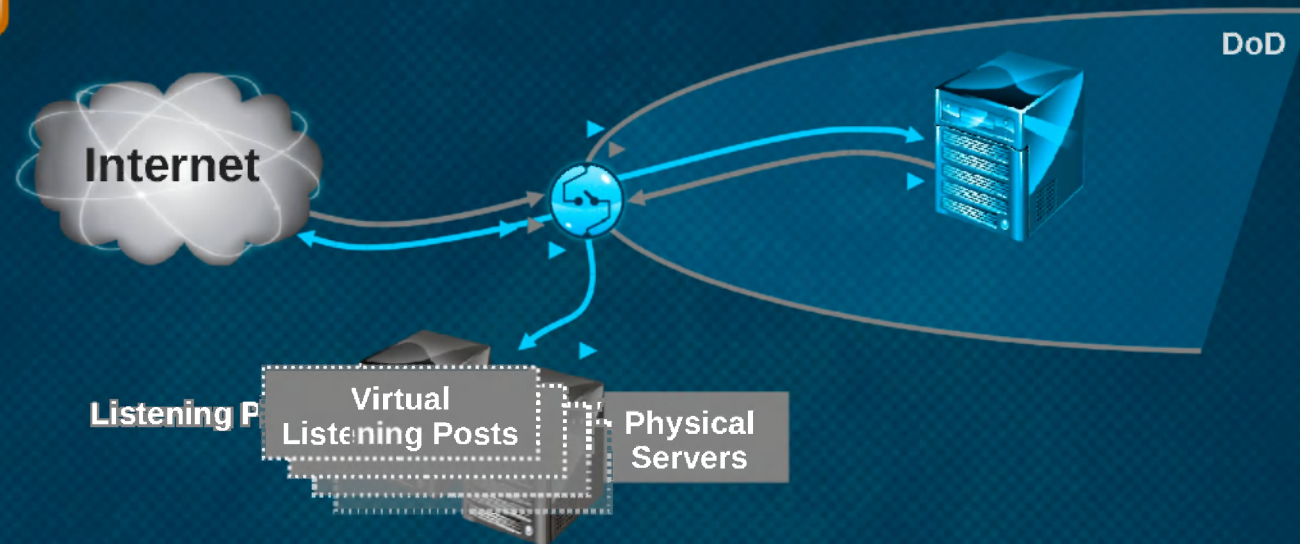
Sidelining is an intentional redirection of an activity to a secondary level of intervention where an intermediate host(s) (e.g. Listening Post, Quarantine, etc.) is staged to provide additional processing/manipulation to better engage and/or thwart adversarial activity.

Future TUTELAGE Capabilities



Sideline for Listening Posts

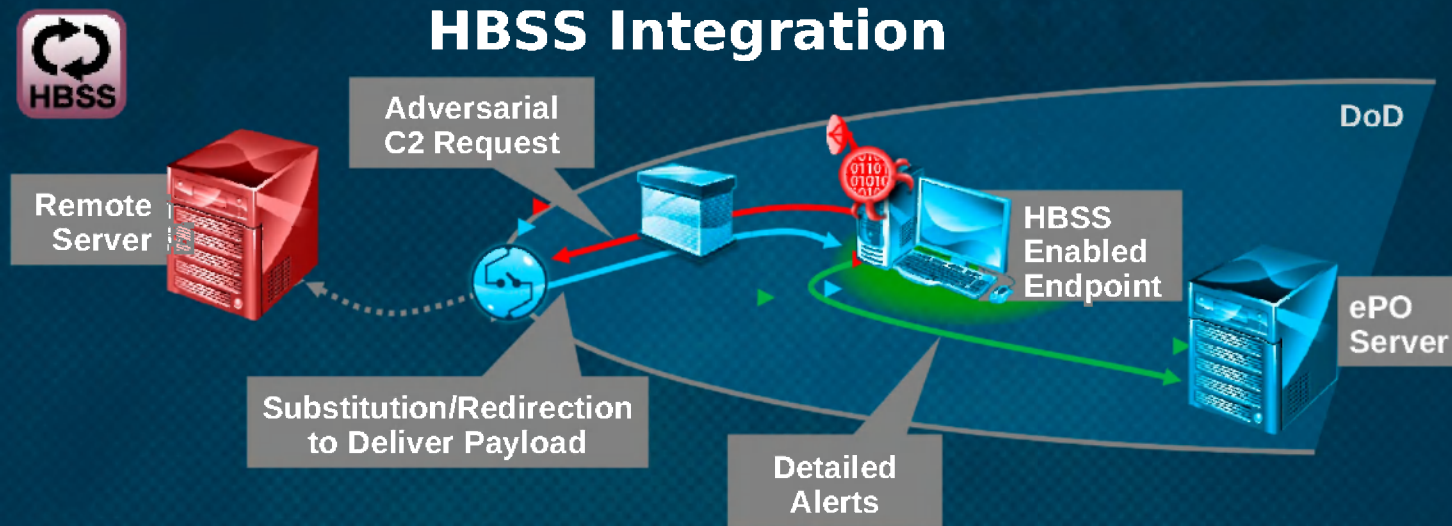
Foday:
DNS Interdiction



(S//REL TO USA, FVEY)

Sideline is an intentional redirection of an activity to a secondary level of intervention where an intermediate host(s) (e.g. Listening Post, Quarantine, etc.) is staged to provide additional processing/manipulation to better engage and/or thwart adversarial activity.

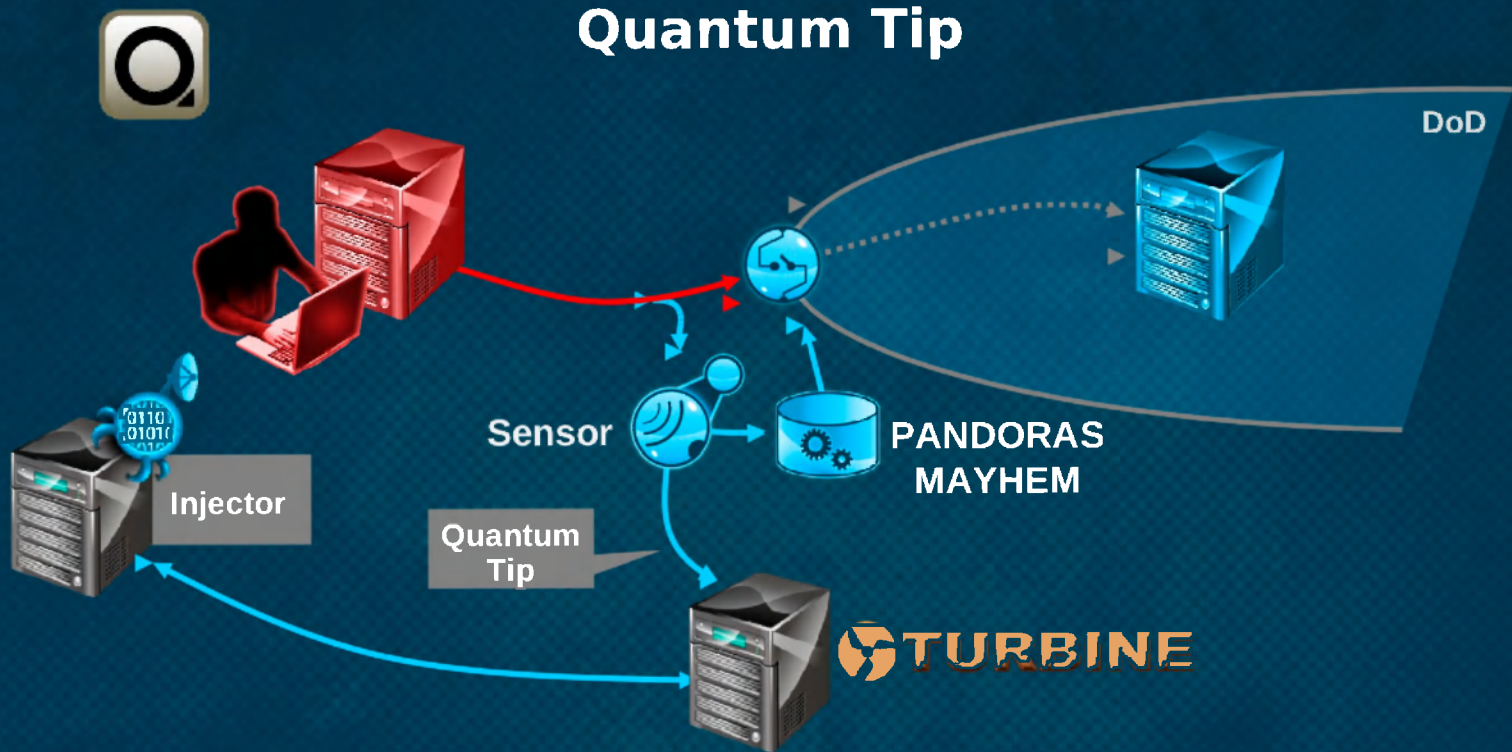
Future TUTELAGE Capabilities



(S//SI//REL TO USA, FVEY)

Integrating with the DOD's Host-Based Security System allows malicious activity detected through classified signatures in TUTELAGE to be dealt with at the host level. Using HBSS, TUTELAGE can trigger less sensitive alerts to local network administrators.

Future TUTELAGE Capabilities



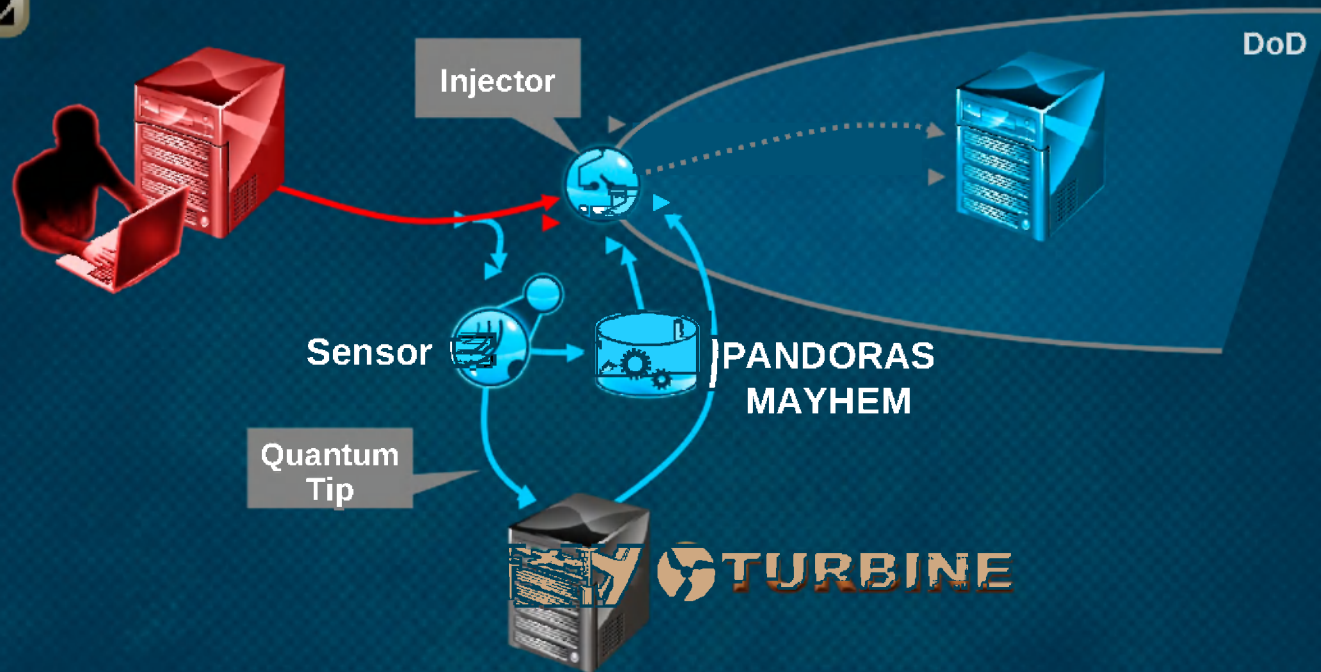
(TS//SI//REL TO USA, FVEY)

TUTELAGE can tip QUANTUM to enable offensive action in adversary space.

Future TUTELAGE Capabilities



Quantum Shooter

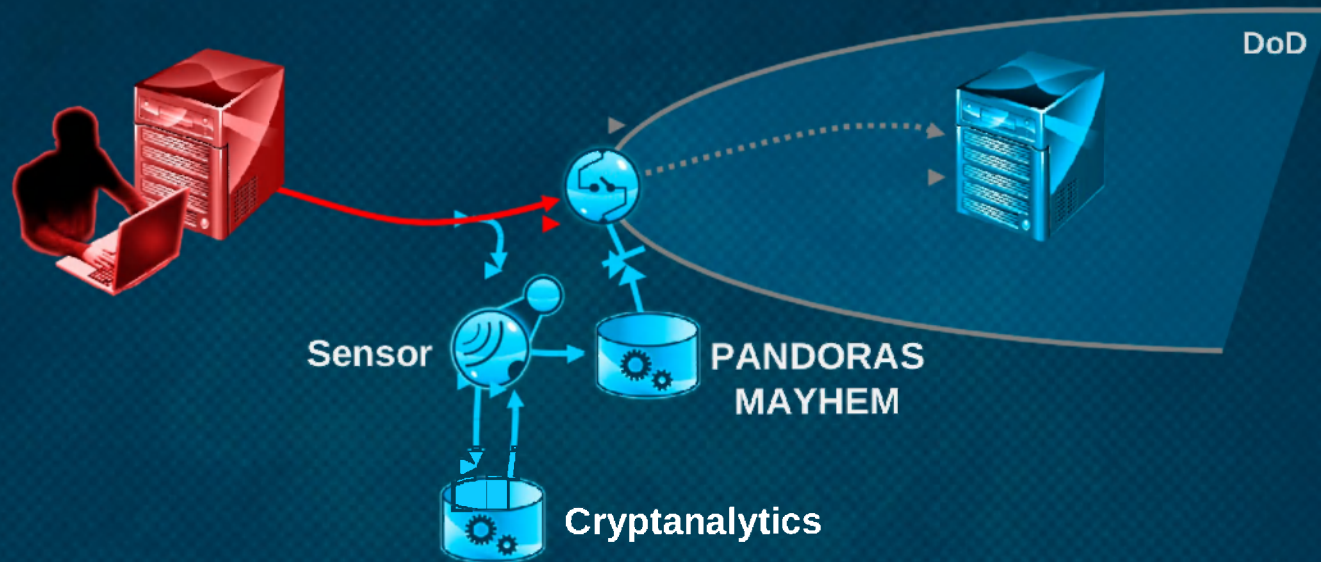


(TS//SI//REL TO USA, FVEY)

TUTELAGE can tip QUANTUM to enable offensive action in adversary space.

Future TUTELAGE Capabilities

Real Time Cryptanalytics

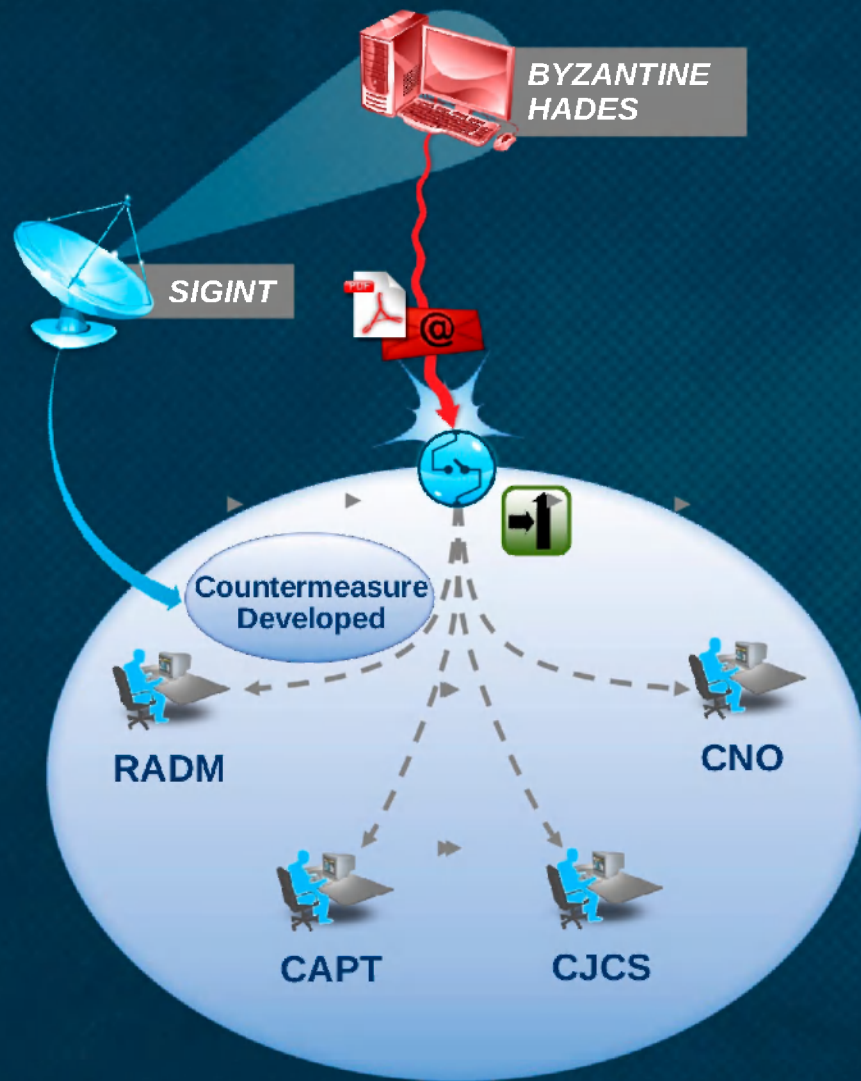


(TS//SI//REL TO USA, FVEY)

Real-time cryptanalytics allows Quantum operations to take place at net-speed.

OPS SUCCESS STORIES

U.S. Military Leaders Defended



- Based on information from SIGINT collection, a TUTELAGE countermeasure was developed and deployed in 2009 for a particular BYZANTINE HADES attack.
- On October 21st and 22nd 2010, the spear-phishing attack was launched. The attack targeted four users, including the Chairman of the Joint Chiefs of Staff and the Chief of Naval Operations, with a carefully disguised malicious PDF.
- NTOC operated the countermeasure and the attack was thwarted.

WAG Attempts to Deliver Holiday Present to DoD

23 December

- NTOC-TX calls ops center advising of phishing campaign with “Merry Christmas” subject associated with WAG actors
- WAG actors attempted to use ZEUS malware to exfiltrate documents
- NTOC-TX did malware analysis and identified 2 new callback domains
- In < 3 hours, received CyberCommand approval and placed domains on DNS interdiction

30 December

- NTOC-TX notices new spike in WAG mail signature
- NTOC-TX discovers new callback domain
- In < 20 minutes, received approval and placed domain on DNS interdiction
- NTOC-W confirmed same malware from Xmas themed event



AMULETSTELLAR Spearphishing... Trying to Make New Friends



- In SIGINT, NTOC observed AMULETSTELLAR use of [redacted]@yahoo.com email account
- On Christmas Day, account was used to generated LinkedIn requests to 10 general and flag grade officers
- NTOC leveraged TUTELAGE and SIGINT for further discovery of activity
- In coordination with CyberCommand,
 - Published 10 advisories
 - Identified 2 additional LinkedIn accounts
 - Deployed 4 countermeasures
 - Intercepted over 2000 emails from AMULETSTELLAR actors

Combating the Low Orbit Ion Cannon (LOIC)

- The open-source LOIC tool has been used by “Anonymous” and others in several DDoS attacks.
- NTOC developed signatures to detect specific content strings generated by this tool.
- For example, for packets containing the string “Sweet_dreams_from_AnonOPs” TUTELAGE will perform an ACL Block against the offending IP once a threshold is met.
- Observed here is traffic from an ongoing DDoS against several DoD IPs. TUTELAGE is blocking the malicious IP from communicating with any DoD machines.



QUESTIONS?