Resisting and Recovering from a Ransomware Attack – Are You Ready?

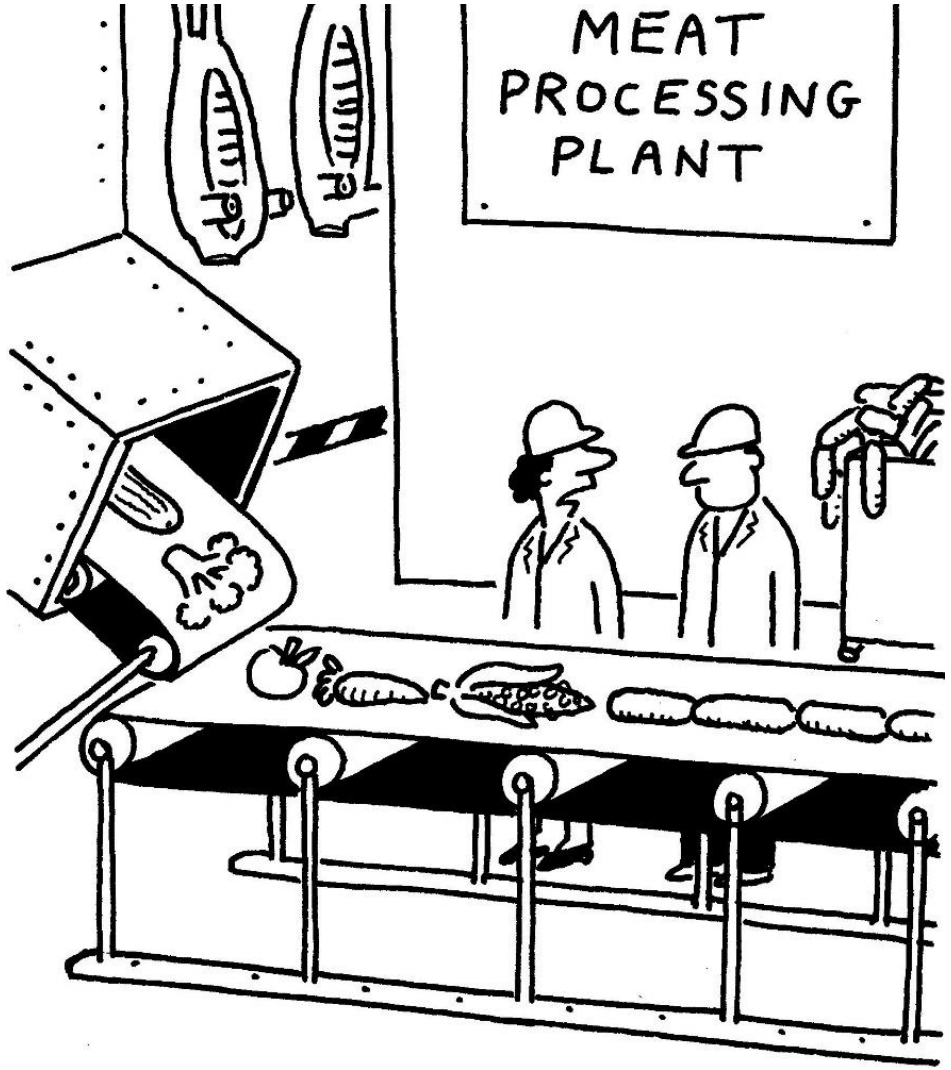
Dr. Sarbari Gupta, CEO, Electrosoft

8.8 Andina Computer Security Conference

July 16, 2021

Computer Security Conference

Malware Spares No One!



"I THINK WE'VE BEEN HACKED"

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Recent Ransomware Attacks

May

2021 May - Colonial Pipeline

- U.S. energy company shut down its entire fuel distribution pipeline
- Threatened gasoline and jet fuel distribution across the U.S. east coast
- DarkSide responsible. Paid $5M ransom

July

2021 July - Kaseya

- Remote Monitoring and Management Platform
- REvil ransomware spread from MSPs to ~1500 businesses worldwide
- Supply Chain attack - Authentication bypass vulnerability used to upload malicious payload

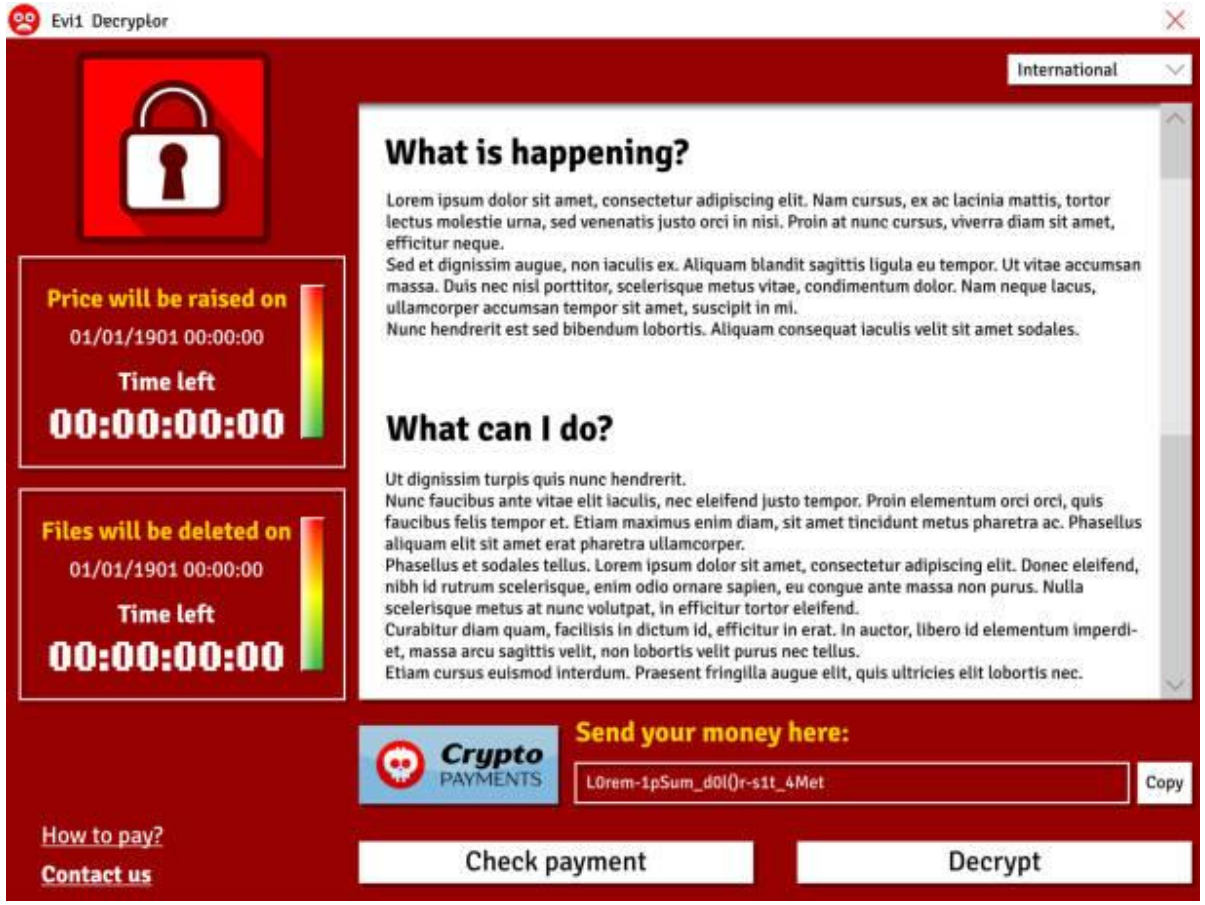
June

2021 June - JBS

- Largest meat supplier
- Took systems offline and stopped work
- Russian cyber gang REvil
- Paid $11M in bitcoin

Ransomware - What is it?

- A type of malware that compromises data or systems with the single goal of extorting a ransom payment from the victims.
- The attack can be used to steal, corrupt or scramble data, hijack systems, disrupt operations or threaten exposure.
- Typically, a ransom note is left on the system, demanding payment to restore the data or keep the data confidential.



Malware vs. Ransomware

Malware

- *Software or firmware intended to perform an unauthorized process that will have adverse impact on the confidentiality, integrity, or availability of an information system. [NIST SP 800-53 Rev 4]*
- *Many types – Spyware, Keylogger, Rootkit, Virus, Worm, Trojan, etc. [https://www.thepcinsider.com/malware-types-explained/*
- *Most malware tries to evade detection!*

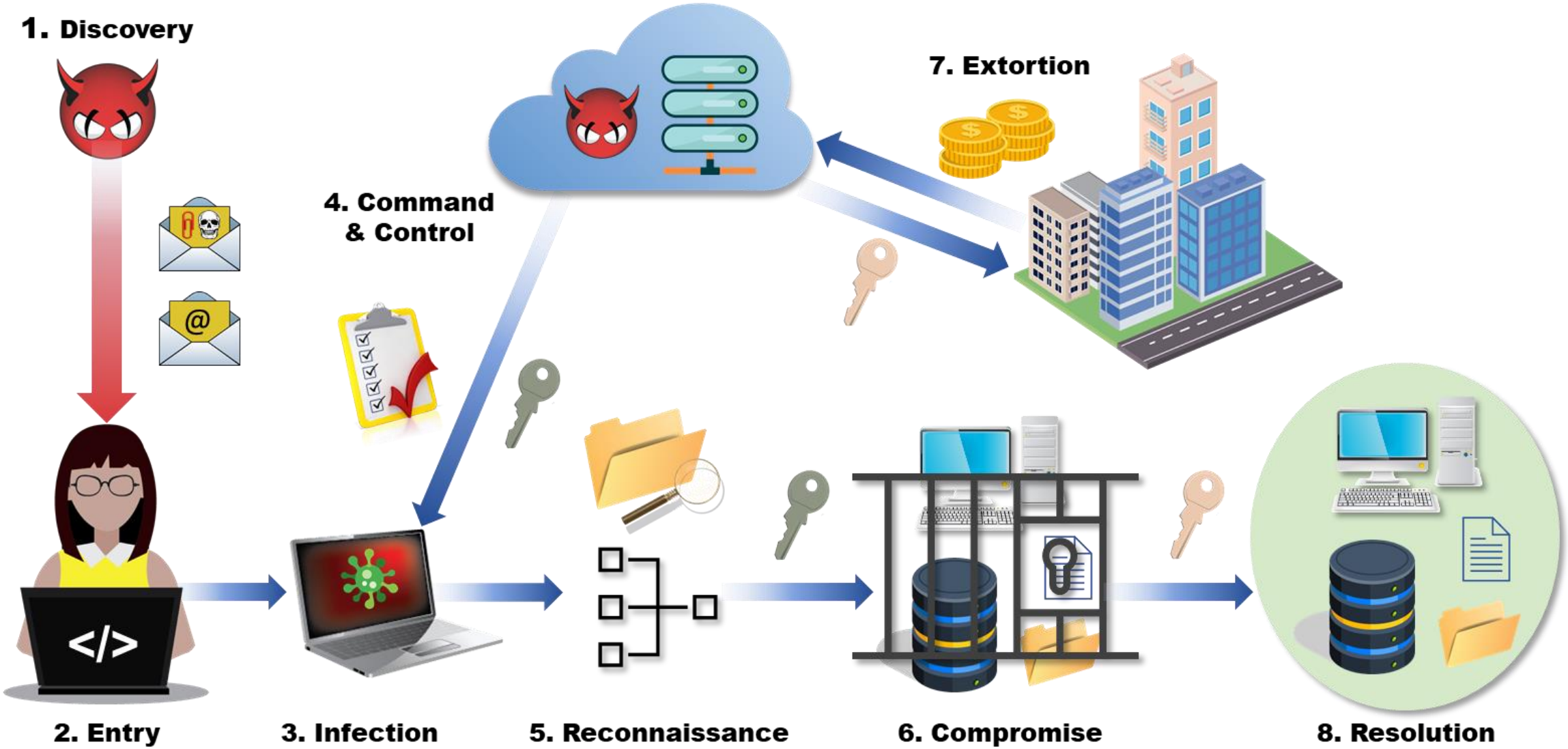
Ransomware

- *A type of malicious attack where attackers encrypt an organization's data and demand payment to restore access. [Courtesy NIST IR 8374 draft]*
- *Attackers may also steal an organization's information and demand payment for not disclosing the information*
- *Ransomware does not try to HIDE!*

Ransomware (RW) Kill Chain

- **Discovery – Attacker tries to collect information about Organization or Users**
- **Entry – Injection of RW to corporate network**
- **Infection – RW installs on local platform**
- **Command & Control – RW client establishes connection with C&C Server**
- **Reconnaissance – Leveraging initial foothold, scan for high value targets**
- **Compromise – Identify and compromise target files, processes and systems**
- **Extortion – Demand ransom through threat**
- **Resolution - Restore the targets to enable normal operations**

Ransomware Kill Chain!



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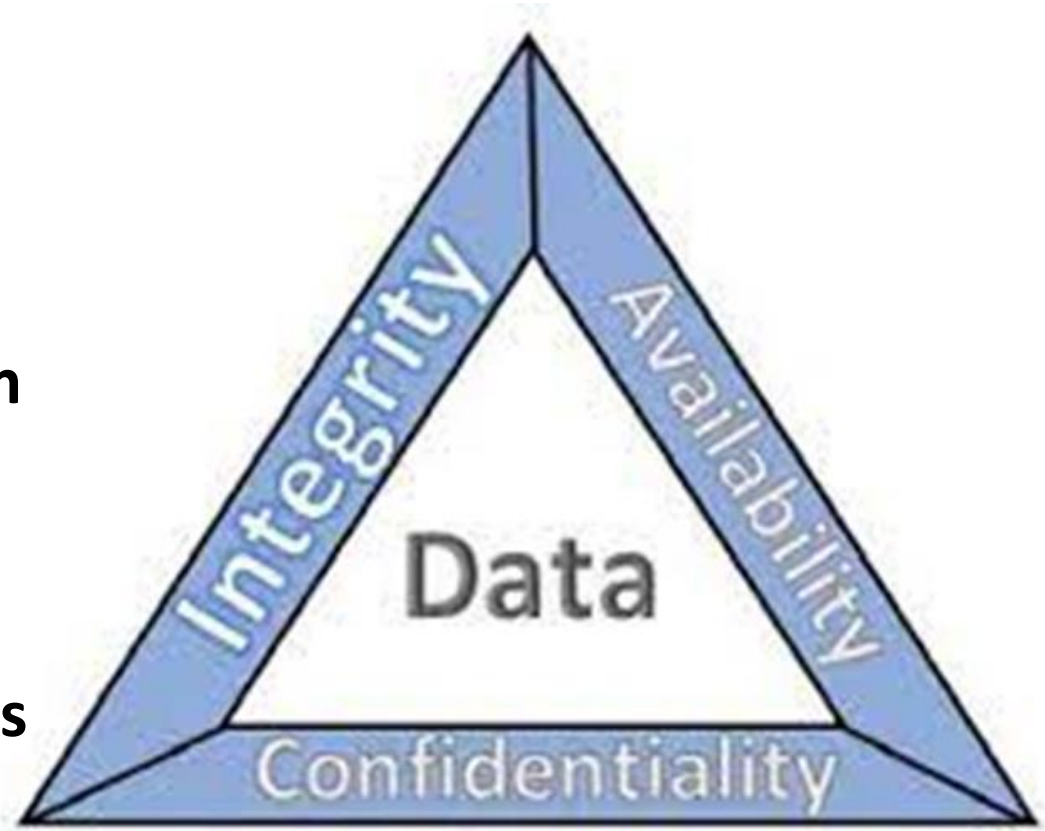
CIA of Ransomware

- **Confidentiality Attack – Steal sensitive data and threaten to reveal it unless ransom is paid**
- **Integrity Attack – Encrypt data to make it unusable and demand ransom to decrypt it**
- **Availability Attack – Compromise of data leads to applications and systems becoming unavailable for legitimate users**

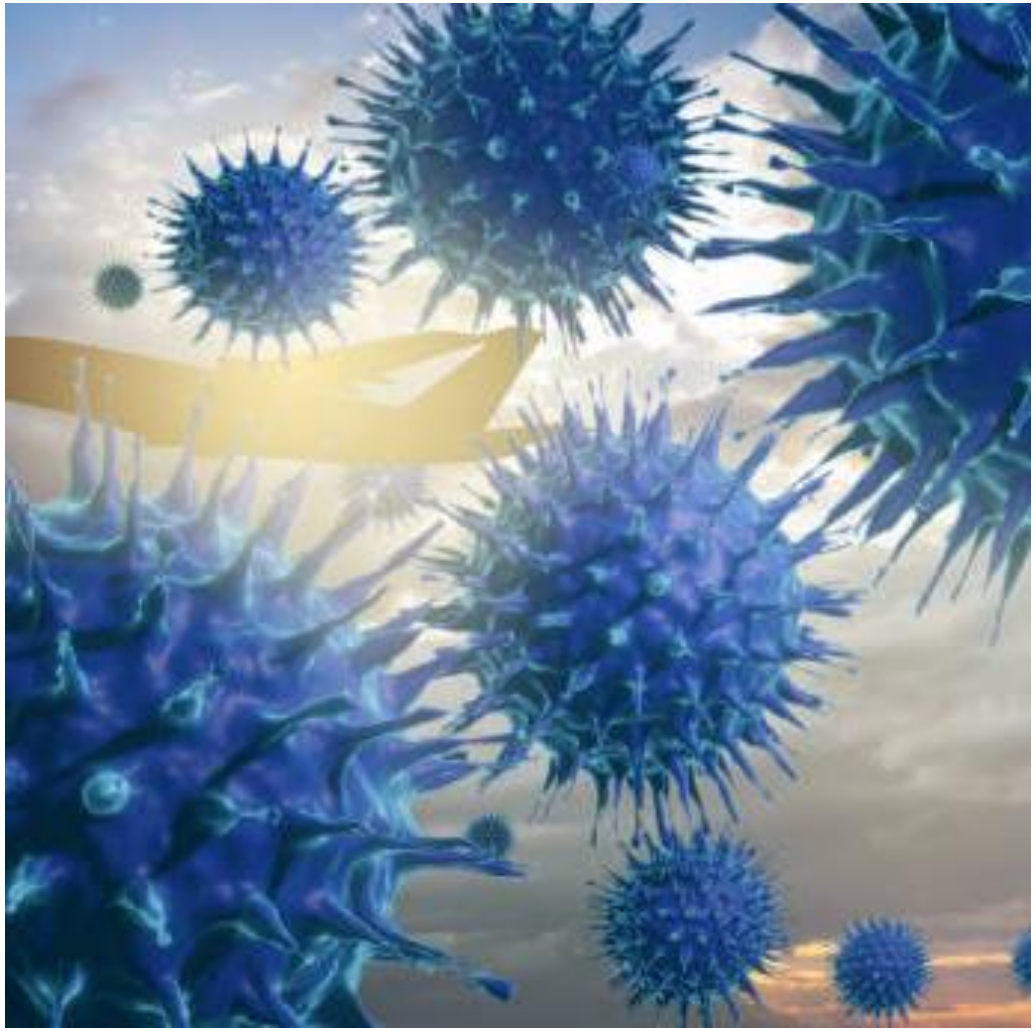


Courtesy NIST SPECIAL PUBLICATION 1800-25

How Ransomware Enters

- Malware-laden Email
- Web Browsing
- Downloading Rogue Applications
- Vulnerable Remote Connections
- Connecting Infected Systems to the network
- Connecting infected storage drives to a network computer

How Ransomware Spreads



- Identify and exploit vulnerabilities
- Leverage access to local and network/cloud files
- Delete backup copies
- Disable backups
- Disable system recovery

Protecting and Defending Against Cyber Attacks

Courtesy NIST SPECIAL PUBLICATION 1800-25

- **NIST Cybersecurity Framework V1.1**
  - ***Identify* – Develop understanding of enterprise cyber risk**
  - ***Protect* – Implement appropriate safeguards**
  - ***Detect* – Identify occurrence of cyber events**
  - ***Respond* - Take action on identified incident**
  - ***Recover* – Restore capabilities or services**

[https://nvlpubs.nist.gov/nistpubs/CSWP/NIST.CSWP.04162018.pdf]

Defense Techniques - Good Cyber Hygiene

- **Maintain security posture of network/systems**
  - ***Secure Configurations***
  - ***Timely Patching***
  - ***Vulnerability Scanning and Remediation***
  - ***Strong Security Policies and Enforcement***
  - ***Minimize User Privileges (Least Privilege Principle)***
  - ***Network Segmentation***

Defense Techniques – User Awareness and Training

- **Train Users**
  - ***Security Policies***
  - ***Phishing***
  - ***Unsafe Browsing***
  - ***Downloading Applications***
  - ***Connecting Non-Work Devices to Network***
  - ***Securing Home Network***
  - ***Allow Patching***
  - ***Protect authentication credentials***

Defense Techniques – Border Control

- Endpoint Detection and Recovery (Anti-Virus)
- Scan Incoming Emails
- Block Access to Malicious Websites
- Multi-factor Authentication

Defense Techniques – Detection and Response

- **Security Monitoring**
  - ***Event Logs***
  - ***Network Activity***
- **Incident Response**
  - ***Maintain Incident Response (IR) Plan***
  - ***Test IR Plan regularly***
  - ***Forensic capabilities***

Defense Techniques – Backup and Restore

- **Maintain Working Backups**
  - ***Identify critical data/files/systems for continuity***
  - ***Implement online and offline backups***
  - ***Maintain multiple backups***
  - ***Test restoration from backups regularly***

Summary

- **Ransomware attacks can be highly disruptive!**
- **Any and every Organization can become a target**
- **Important to understand the Ransomware Kill Chain to develop defensive techniques**
- **Two lines of defense**
  - ***Proactive – resistance to attacks***
  - ***Reactive – resiliency in case of attack***
- ***Taking effective proactive and reactive steps can make us more resistant and resilient to ransomware attacks!***

Contact Information

- **Contact Info: Dr. Sarbari Gupta – Electrosoft**
  - *Founder and CEO*
  - *Email: sarbari@electrosoft-inc.com;*
  - *LinkedIn: https://www.linkedin.com/in/sarbari-gupta/*
- **Electrosoft**
  - *Web: http://www.electrosoft-inc.com*
  - *LinkedIn: https://www.linkedin.com/company/electrosoft/*
  - *Twitter: https://twitter.com/Electrosoft_Inc*
  - *HQ: 1893 Metro Center Drive, Suite 228; Reston VA 22066*