Attachment #11.5
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Cyber Security Overview

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NYSRC Executive Committee Meeting

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Agenda

- Cyber threats overview for the electric industry
- Sources for cyber security intelligence
- NERC Supply Chain Security Standard

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Cybersecurity Threat Overview for Utilities

- **The threat landscape for utilities has many overlaps with other sectors**
- **Common threats include:**
  - Phishing attacks to install malware and / or harvest credentials
  - Ransomware attack
  - Crypto currency mining
  - Watering hole attack
  - Internet-based scanning for vulnerabilities in a corporate perimeter
  - Distributed Denial of Service (DDoS) attacks

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Phishing Attack

- Very popular form of attack that has been around since the mid-1990's
- Typically a fraudulent email appearing to come from a legitimate source
- Emails include a link to a fraudulent website or an attachment containing malware
- Objective of the attacker is to either install malware on the host computer, or get the victim to divulge private information
- Emails can be sent to a wide audience very quickly
- Can be hard to recognize
- Employee training is very important!

Ransomware Attack

- A form of malware that finds data that a user has access to and encrypts the files
- For a price (or Ransom), the victim is then told how to recover the files
- Often spreads through phishing, although not exclusively
- User access to many active data stores adds risk to this type of attack

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Crypto Mining Attack

- Digital currencies have gained popularity and value
- Mining for digital currencies has become a more popular way for cyber criminals to generate illegal revenues
- Crypto mining is a complex process where computer resources are used for blockchain transaction verification
- Crypto mining is a highly resource intensive activity
- Cyber criminals are hijacking computers in larger numbers to support mining activities
- Business systems slow down or stop functioning due to a lack of resources that is being consumed by the mining malware

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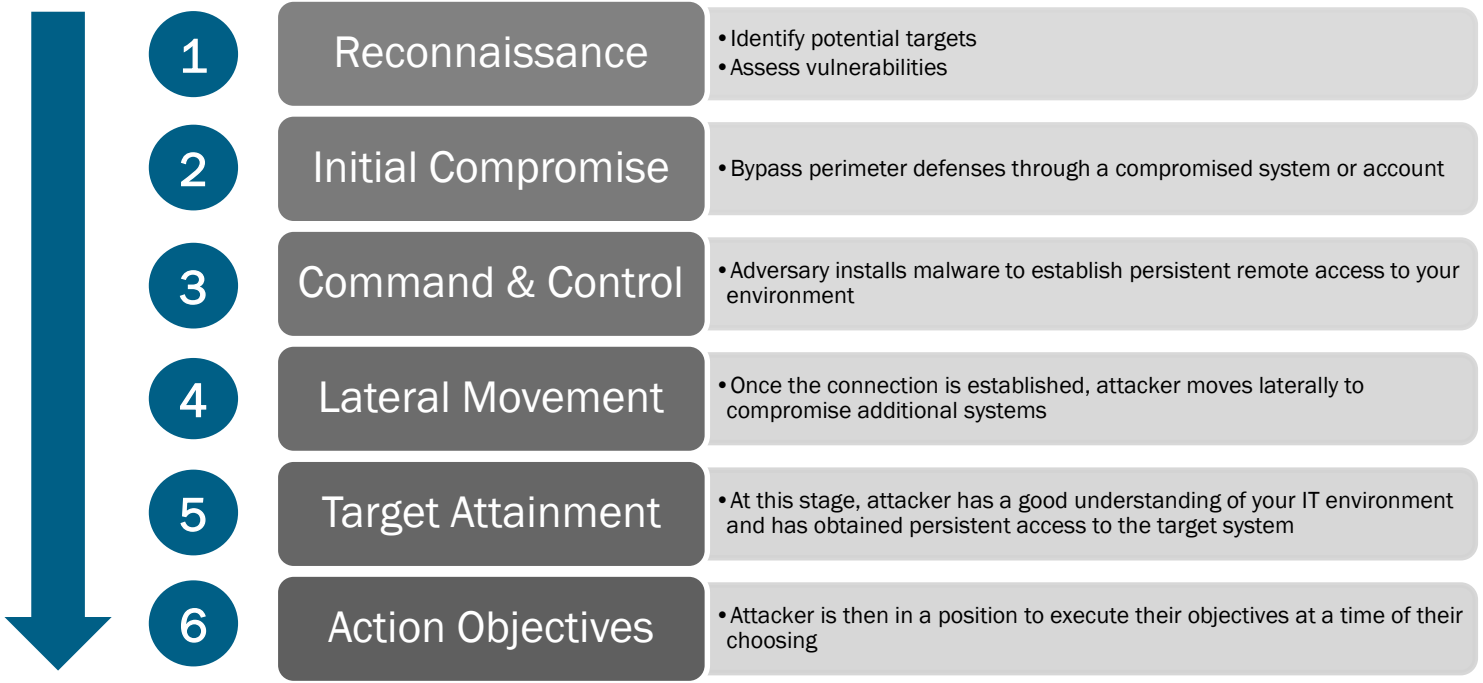
Watering Hole Attack

- Attacker guesses or observes what website a targeted business or group often uses
- Attacker looks for vulnerabilities in the website
- Attacker then compromises the website with malware or redirection code
- A victim from the targeted group visits the compromised website and is infected with the malware

The Classic Cyber Attack Lifecycle



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Unique Risks for Utilities

- Utilities typically implement a logically (or physically) separate network for their critical operations systems
  - Often referred to as the “OT” or Operational Technology environment
- Cyber attackers can use common attack vectors to gain access to a corporate network, then pivot to the OT environment
- Utilities also use a wide variety of “connected” equipment in the field that can provide additional attack vectors to an adversary if not adequately protected
- NERC’s CIP standards are intended to protect the OT environment
- Avoid the trap of targeting only CIP compliance within the security program
- Need to be secure and compliant!

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Significant Cyber Events / Threats

Ukraine Cyber Incident

- December, 2015
- Malware introduced in to corporate network
- Gained credentials
- Pivoted to OT network
- Used valid credentials to gain access to OT systems
- **Used OT systems to cut off power to over 230,000 customers**

Dyn Cyber Attack

- October 2016
- Dyn provides domain name services on the Internet
- Attacker used a Botnet of 10M+ IoT devices to flood DYN with domain name lookup requests
- **Impacted Internet access to many popular services such as Amazon**

Industroyer Malware

- Modular malware that is customizable
- Tailored to target Industrial Control Systems
- Can target substation switches and breakers
- **Thought to have been used in the 2016 attack on the Ukraine power grid**

WannaCry Malware

- May 2017
- Worldwide cyber attack affecting over 150 countries
- Self propagating malware using Windows vulnerability
- Patch was already available from Microsoft
- **Encrypted data and demanded ransom payment**

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Managing Cyber Security Risks

Key Elements of a Strong Security Program

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Sources for Cybersecurity Intelligence

- **MS-ISAC:** Multistate Information Sharing & Analysis Center
- **E-ISAC:** Electricity Information Sharing & Analysis Center
- **CRISP:** Cybersecurity Risk Information Sharing Program
- **ICS-CERT:** Industrial Control Systems Cyber Emergency Response Team

NERC CIP Supply Chain Security Requirements

- New set of requirements to address supply chain security concerns
- NERC submitted draft language to FERC in September, 2017
- FERC has largely accepted the language, but is contemplating some changes
- FERC issued a NOPR in January 2018, with comments due back in March

NERC CIP Supply Chain Security Requirements

Proposed requirements cover 4 primary areas:

1. Implement processes to assess cyber risks from vendor product and services
2. Updates to vendor contracts to meet new compliance requirements
   - Vendor coordination / notification of incidents, vendor remote access, software integrity, etc.
3. Implement processes to manage vendors remote access to critical systems
4. Verification of software integrity and authenticity

Other key points:

- NERC proposed an 18 month implementation, FERC is leaning towards 12 months
- FERC is interested in being more inclusive regarding the types of devices that are in scope

Questions?

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