Brick Township
Municipal Utilities Authority

Getting Hacked

Presented by:
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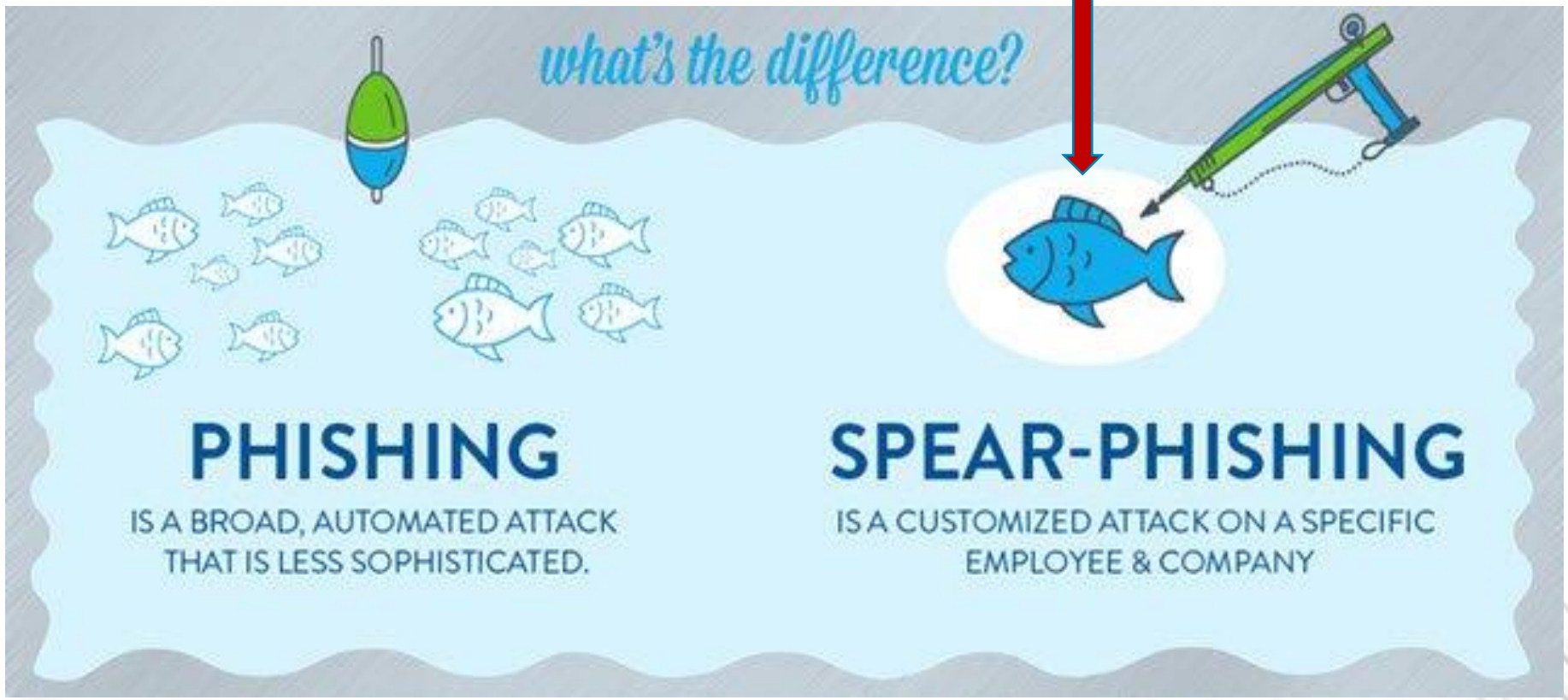
BTMUA Cyber Incident

1. Events leading to cyber attack
2. Informing officials/employees
3. Keeping critical business functions running
4. Virus containment and remediation

Day 1 - Spear Phishing

User opened suspicious email with ‘Invoice.doc’ attachment



Day 2 – Cyber Fraud

- **Unauthorized charges**
  Employee Amazon accounts

- **Unauthorized charges**
  BTMUA Staples account

- **Thousands of emails**
  sent to Finance computer

Day 2 – Get Assistance

McAfee Support

"Total Endpoint Threat Protection" - Identified '*Artemis*' virus

How to we clean/remediate?

Multi-State Information Sharing & Analysis Center (MS-ISAC)

Advice on cyber threat prevention, protection, response, recovery

Confirmed we are infected with **Emotet** trojan

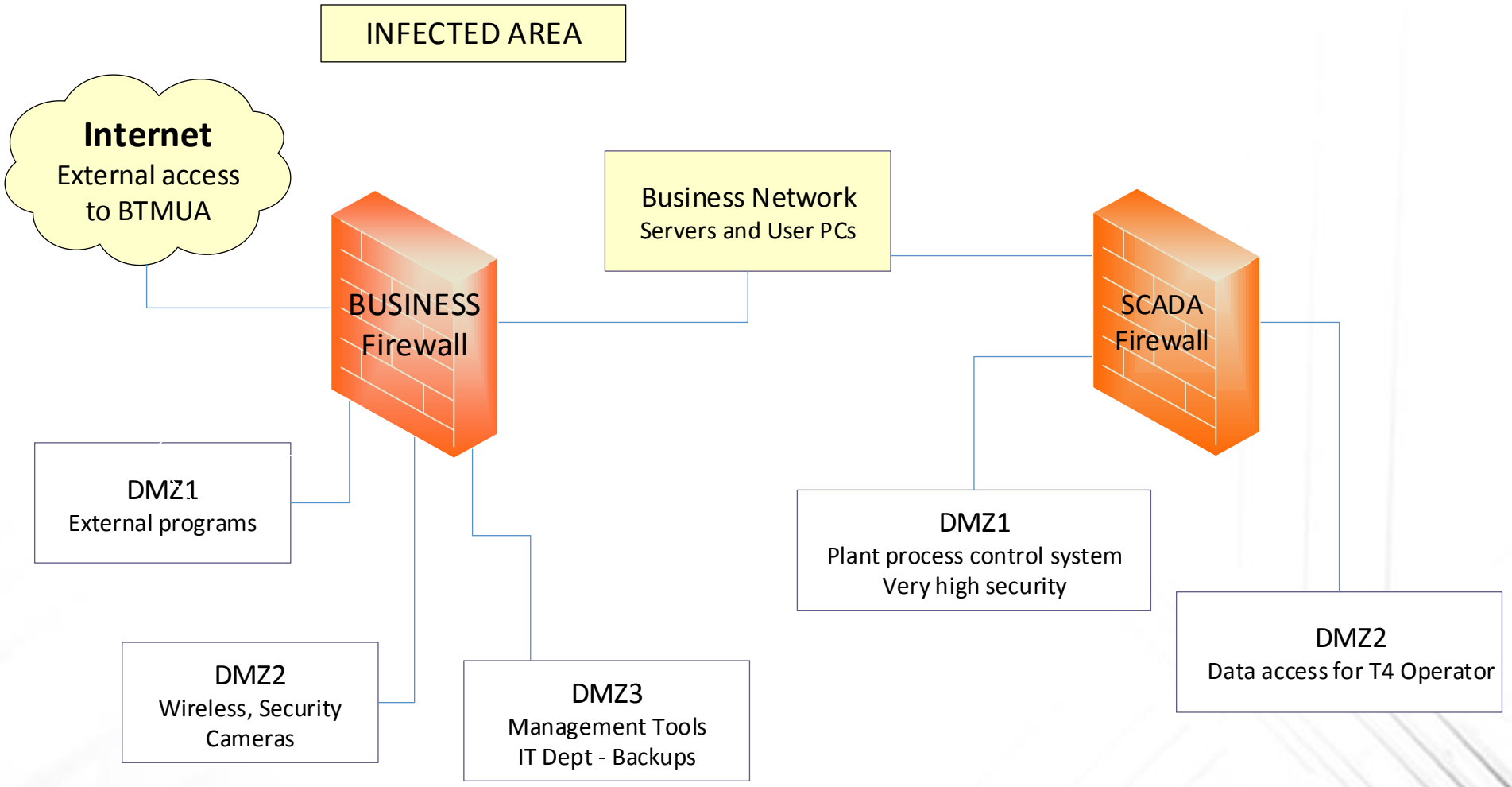
Day 2 – Emotet

Most anti-virus programs do not detect Emotet

- Steals network usernames & passwords

- Steals outlook email contacts
- Steals confidential account credentials used for online payments and banking systems.
  - Credit card info used for online shopping (Amazon, Macys, Etsy, Staples)
  - Banking logon info (PNC, TD, CitiBank)

Day 2 – Scope of Infection



Day 2 - Black Friday

- Emotet is not cleanable
- Hackers in system now
- Shut down network now
- All infected Servers and PCs
  - Restore from backup

    or
  - Wipe clean (reload)

Day 3 – Scope of Infection

Devices

- 26 File Servers
- 120 user PCs

Day 3 – Scope of Infection

Programs

- Email, Excel, Word
- Finance, Billing
- LIMS (Laboratory Information Management system)
- **WIMS** (Water Information Management System)
- **Payroll**

Day 3 – No breach of PII data

SQL Databases

- Personal Identity Information (PII)
- Customer data
- Financial data
- LIMS, WIMS data

Day 4 – Critical Functions

Payroll

Everyone needs to get paid

WIMS

T4 Operator of Record must file monthly reports with DEP

Days 3-4 - Inform Officials/Executive Staff

Conference Call

- Network will be down upcoming week
- Estimated time frame to recover
- Critical Business functions up first

  Payroll, Plant reporting (WIMS)

Day 4 *"Boots on the ground"*

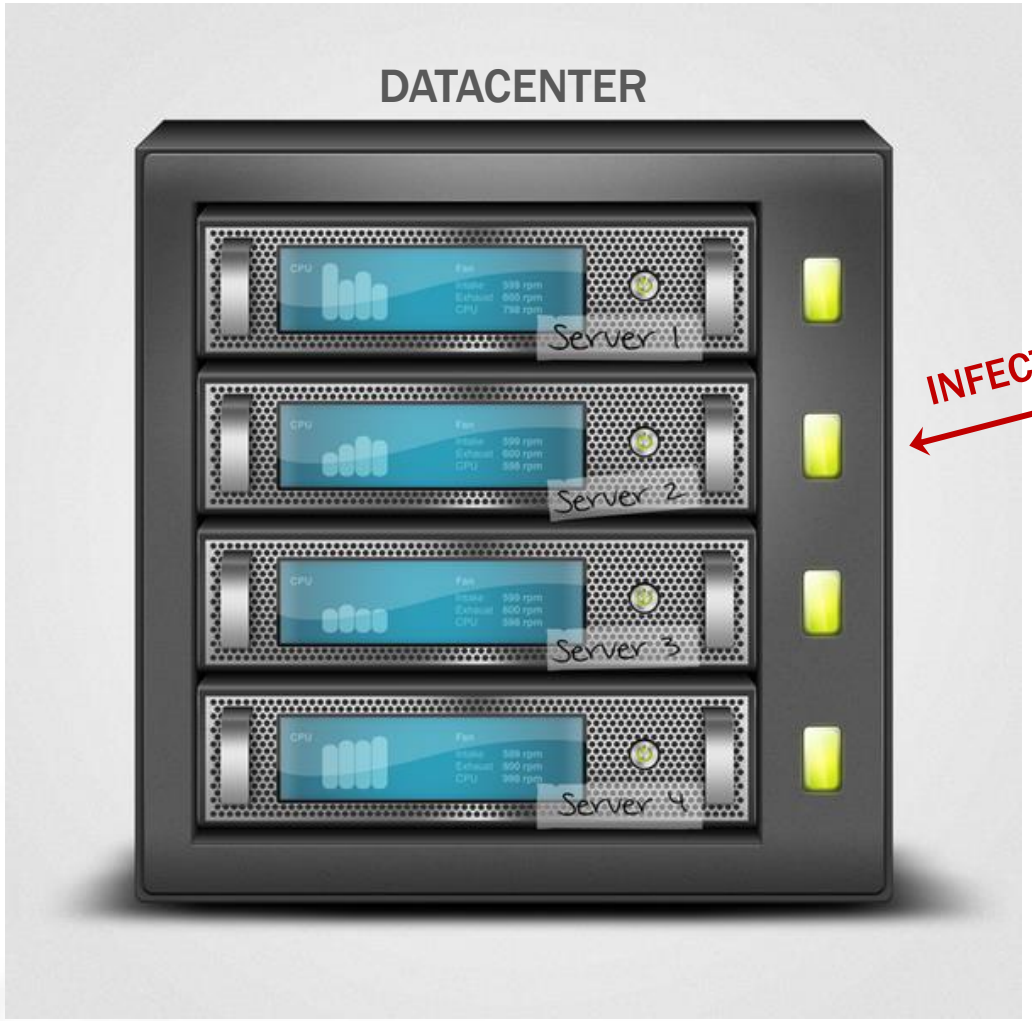
NJCCIC

New Jersey Cybersecurity and Communications Integration Cell

- Provide a team of trained network administrators
- Identified infected PCs
- Reload infected PCs

Day 5 - NJCCIC

Day 5 – Get Everyone Paid



INFECTED NETWORK

Day 5 – Passwords

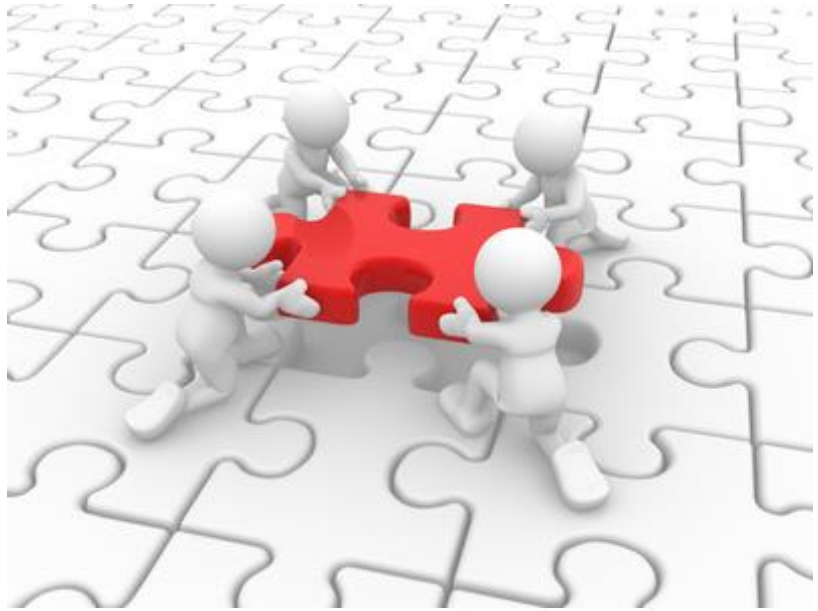
- BTMUA network

  Force new password at next logon

- Change personal passwords for accounts accessed at work

  Order status, Banking, Credit card

Days 5-10 Remediation



Team IT

Restored Servers using backups before Emotet infection

Team NJCCIC

Restored / Reloaded infected user PCs

Days 5–10
How do we stop this from happening again?

Prevention/Containment

- VLANs – Split the network into smaller sections
- Limit user ability to make changes to PC
- User awareness training

Weeks 1 – 4 Getting Users back on the Network

Team IT

- Added users one at a time
- Setup VLANs on the network
- Added each user to assigned VLAN

BTMUA employee downtime
10 days – 4 weeks

Week 5 - User Awareness Training

Will I be the next person to click on an email containing a virus?

- In person staff training

  Review of Emotet, cyber awareness session, how to identify malicious email

- KnowBe4

  Cloud service offering comprehensive ongoing user awareness training

WHAT WE DID WRONG

1. Underestimated the hackers

- Hackers are extremely sophisticated
- Malware is available as ‘open source’
- Free to all hackers
- Emotet used as carrier for other malware

WHAT WE DID WRONG

2. Firewall/network vulnerabilities

- Windows firewalls not ‘ON’
- Firewall logs not being saved beyond 24 hours
- No available firewall logs for the exact time when Emotet hit

WHAT WE DID WRONG

3. Inadequate cyber security awareness training

- Provided basic training on what to look for in suspicious email
- Training not comprehensive

WHAT WE DID RIGHT

1. Reliable, enterprise backup system

- Check backups daily
- Correct issues promptly
- Run test restores
- No data loss after Emotet

WHAT WE DID RIGHT

2. Isolated critical systems behind a firewall

- SCADA system
- Building access system
- Surveillance cameras

Conclusions

- Use an robust enterprise backup system
- Isolate critical systems behind a firewall
- Conduct user cyber security awareness training
- Employ expert, flexible IT staff
- Develop “Cyber Incident Response Plan”

Your Cyber Incident Response Plan

Print and post in a prominent location

1. IT Team response
   - Unplug user(s) from network (Limit scope of damage)
   - Get printed copies – Current IT contacts & system/administrator credentials
   - Determine what has happened (Identify Malware)
   - Call anti-virus & firewall providers

2. Contact experts for assistance
   - MS-ISAC - 866-787-4722, https://www.cisecurity.org/isac/report-an-incident
   - NCCIC (DHS) - 888-282-0870, https://ics-cert.us-cert.gov/Report-Incident
   - NJCCIC (NJ only) - 609-963-6900 x7865, https://www.cyber.nj.gov/report
   - WATER-ISAC (water/wastewater) - 866-426-4722, https://www.waterisac.org/report-incident

3. Business functions
   - Which business functions are up /down?
   - Identify critical business functions and how you will keep them running

4. Inform executives / elected officials
   - Identify scope of the damage
   - Time frame for each business function to be running again
   - List steps IT is taking to remediate the problem

Contact Information

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