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

- DMZ1: External programs
- DMZ2: Wireless, Security Cameras
- DMZ3: Management Tools, IT Dept - Backups
- Business Network: Servers and User PCs
- SCADA: Firewall
- BUSINESS Firewall
- INFECTED AREA
- Internet: External access to BTMU
- DMZ1: Plant process control system
  - Very high security
- DMZ2: Data access for T4 Operator
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)
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
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
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
   - 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

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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