## "Hackers Paradise," The Fantasy Island of Cyber Deception, Threats, and Nightmares

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#### DISCLAIMER

The opinions expressed during this presentation are my own. They do not necessarily represent the views of the Tennessee Comptroller of the Treasury, his representatives, or the Tennessee Department of Audit.





#### Goals of Presentation-Don't be a tourist in "Hacker's Paradise." "Hacker's Paradise is Not Paradise!"

- I. Define and Compare Hacker's Paradise/Fantasy Island
- **II.** Define Cybersecurity
- III. Responsibility

Who is at Risk?

- III. Cyber Threats/Nightmares
  - a. Social Engineering
  - b. Phishing/Smishing/Vishing.
  - c. Business Email Compromise-BEC
  - d. Ransomware/Malware
  - d. Weak Passwords
- . IV. Rules of Protection
  - a. Cybersecurity Training
  - b. Create Strong Passwords
  - c. Multifactor Authentication
- V. Conclusion/Questions

## HACKERS PARADISE THE FANTASY ISLAND OF CYBER DECEPTION, THREATS, AND NIGHTMARES







Don't Be a Tourist In Hacker's Paradise.

reature	Fantasy Island
Welcome Message	"Your dreams come true here."
Main Attraction	Magical wish fulfillment.
Guests	Tourists looking for fantasy experiences.
Hotel Wi-Fi	Just convenient.
Key Souvenirs	Photos, memories.
Tour Guides	Charming and helpful.
Entertainment	Adventure, romance, and mystery.
Theme Nights	Masquerade Ball.
Hidden Traps	Cursed relics or strange island magic.
Natural Disasters	Sudden tropical storms.
Exit Plan	Return flight home.

Fantaey leland

Feature

#### **Hacker's Paradise**

"Your worst digital nightmares start here."

Exploiting your digital desires (free Wi-Fi, too-good-to-be-true deals).

Hackers, scammers, cybercriminals looking for low-hanging fruit.

Public and unsecured—ripe for man-in-the-middle attacks.

User credentials, bank logins, sensitive emails.

**Social engineers** posing as tech support, HR, or even friends.

Phishing emails, vishing calls, smishing texts all disguised as urgent or enticing.

**BEC Attacks** (Business Email Compromise) where hackers pretend to be your boss.

Weak passwords, unpatched IoT devices, and default router settings.

**Ransomware attacks** that lock up your files and demand Bitcoin.

No easy way out without **backups**, **cyber hygiene**, and **incident response plans**.

#### "Hacker's Paradise"

NOT A VACATION HAVEN Paradise is NOT Paradise!
Don't be a tourist.

It is an environment with poor cybersecurity practices or a lack of awareness.

- Hackers can enjoy easy access.
- Security holes are like open beach bars.
- Every system is a potential treasure chest.
- The only waves are waves of data being stolen.



## WHAT DO THESE HAVE IN COMMON?

City of Knoxville
Knoxville Police & Fire
Department
Coffee County Sheriff's
Office.

Spring Hill City & 911

Maury County 911

Murfreesboro Police & Fire Department

Rutherford County

Montgomery County Government City of Collierville Sevier County City of Springfeldd Anderson County Pellisisippi State Community College Maury County Public School District Jefferson County Schools

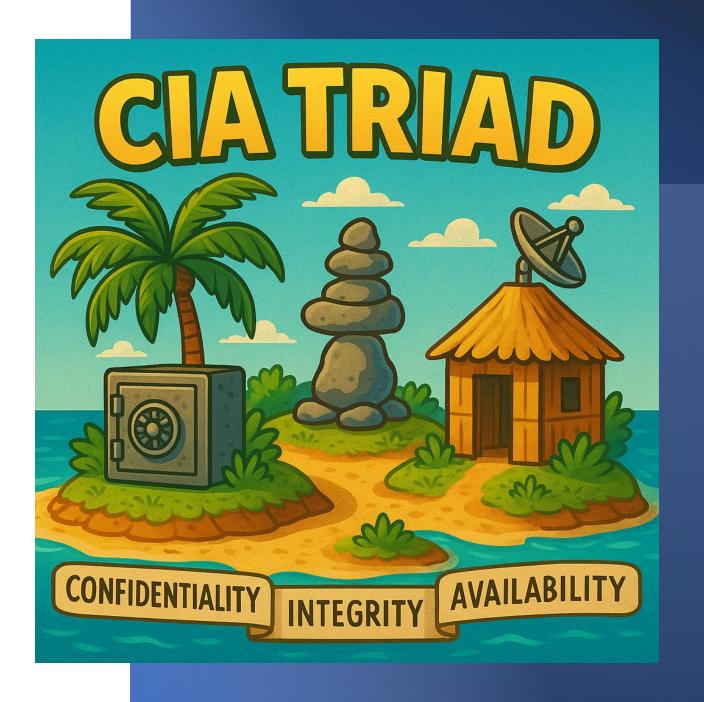
#### I. DEFINE CYBERSECURITY



## What is Cybersecurity?

According to CISA.gov:

Cybersecurity is the art of protecting networks, devices, and data from unauthorized access or criminal use and the practice of ensuring confidentiality, integrity, and availability of information.



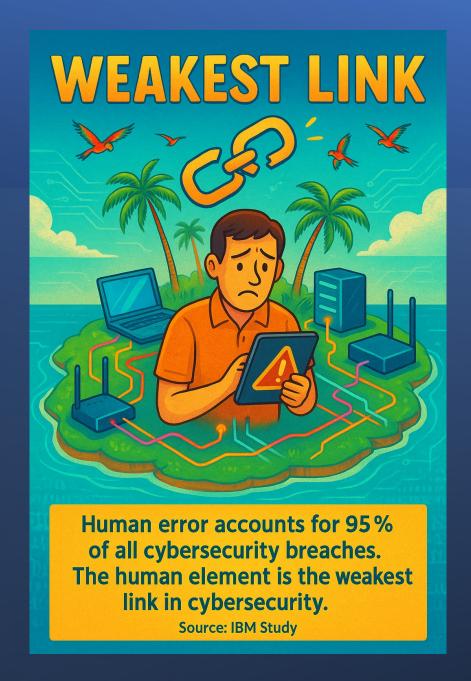
### II. RESPONSIBILITY





SHARED RESPONSIBILITY

**KEEP THE ISLAND SAFE!!!** 













"If we think about cybercrime the way we think about the GDP of countries, it would be the third largest economy in the world after the U.S. and China."

Cisco CEO
Chuck Robbins

#### GROSS DOMESTIC PRODUCT-TOP COUNTRIES 2024

United States \$25.43 trillion

China \$14.72 trillion

. Cybercrimes \$8 trillion-2023 (Estimated to be \$9.5 trillion 2024)

Japan \$4.25 trillion

5.Germany \$3.85 trillion



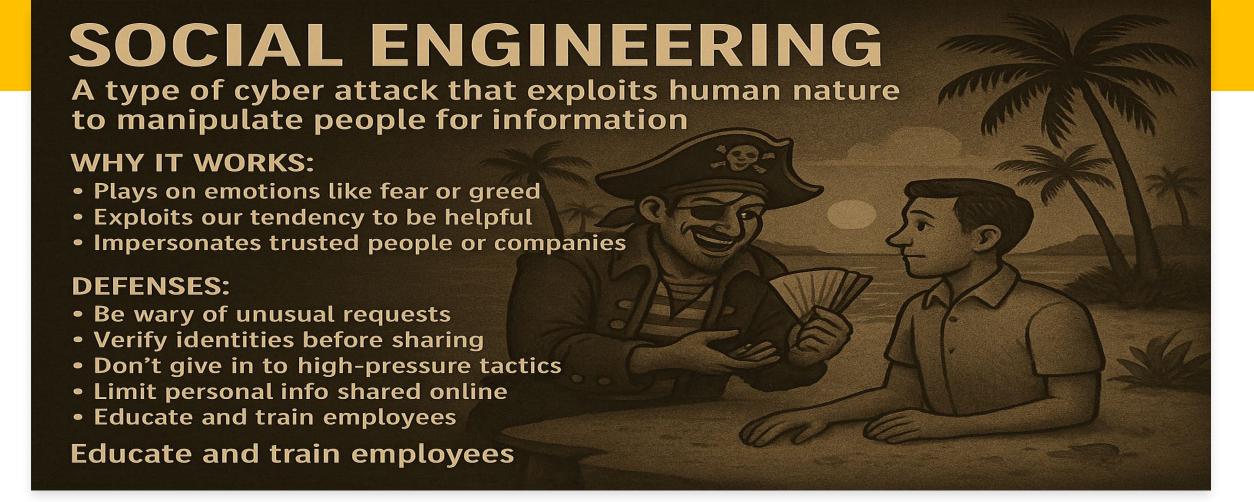




## Cyber Deception/ Threats/Nightmares



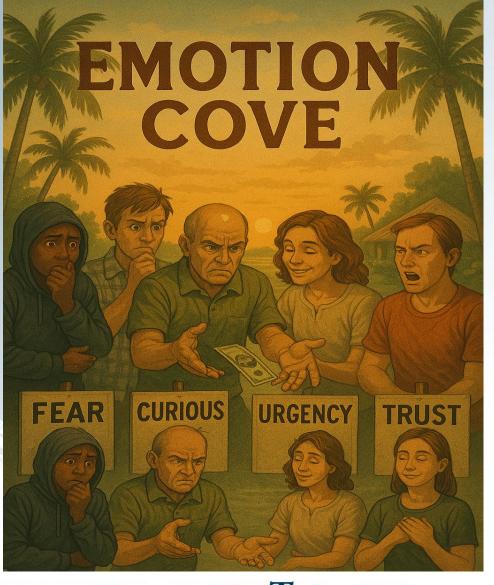




How People Really Get Hacked!

Social Engineering-(in the context of information security) the use of <u>deception</u> to <u>manipulate</u> individuals into divulging confidential or personal information that may be used for fraudulent purposes.

https://languages.oup.com/google-dictionary-en/



TENNESSEE COMPTROLLER OF THE TREASURY

Social Engineering takes advantage of human behaviors using psychological manipulation. The user may respond due to:

- Fear
- Curiosity
- Greed
- Helpfulness
- Urgency
- Trust







# PHISHING AND BUSINESS EMAIL COMPROMISE







OF THE TREASURY

### Phishing

A technique for attempting to acquire sensitive information such as bank account numbers, through fraudulent solicitation in an email or on a website, in which the perpetrator masquerades as a legitimate business or reputable person.



# What is Phishing and What are they Phishing For?



## Phishing Email

----Original Message----

From: Twyla Pratt multiplimpio@multilimio.com.mx>

To: Elisha Crowell <elisha.crowell@cot.tn.gov>

Sent: Tue, Aug 29, 2021 11:07 am Subject: AGA West TN Chapter

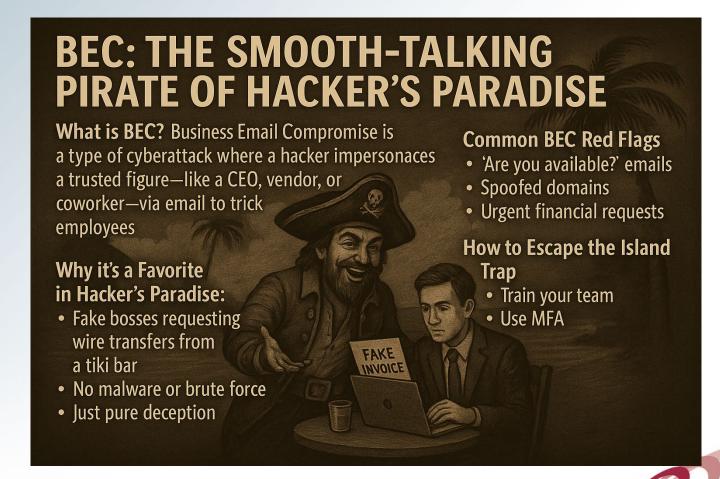
Dear friend,

Called you a few times without success but decided to reach you by email. Are you available? I need to know the status of the attach invoice. Its way past due and the vendor is requesting immediate payment. If not paid yet it can be paid online at this website.

Yours Truly, Twyla

#### Definition: Business Email Compromise

A type of cybercrime in which the attacker uses email to trick someone into sharing sensitive and confidential information or sending funds to them through various means, including wire transfers, gift cards, or other means of paying fake invoices. It is an exploitation of our email by impersonating a trusted party.



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In 2022 BEC accounted for 50 percent of social engineering tactics

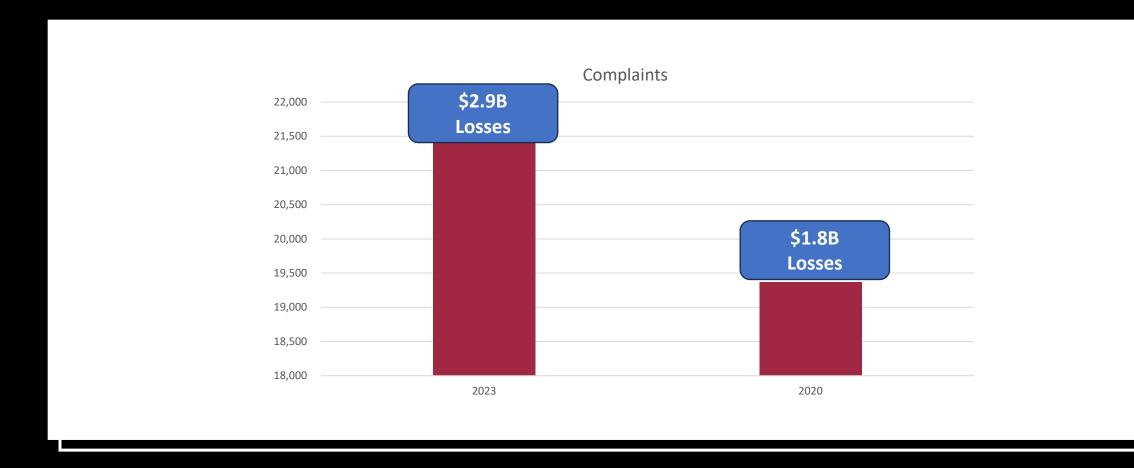
In 2023 BEC accounted for 99 percent of reported email-based threats







### BEC Complaints and Losses



## TYPES OF BEC ATTACKS



**EXECUTIVE**IMPERSONATION



**ATTORNEY IMPERSONATION** 



**ACCOUNT COMPROMISE** 



**VENDOR EMAIL COMPROMISE** 

# The Great Email Heist: A BEC Tale from Paradise



Scene 1: The Disguised Castaway



Scene 2: Deceptive Message from 'the boss.



Scene 3: The Yanishing Message in a bottle



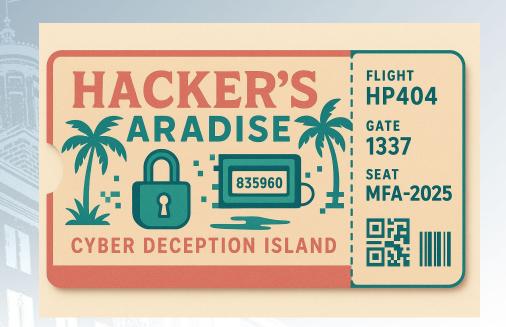
Scene 4: The Vanishing Treasure





OF THE TREASURY





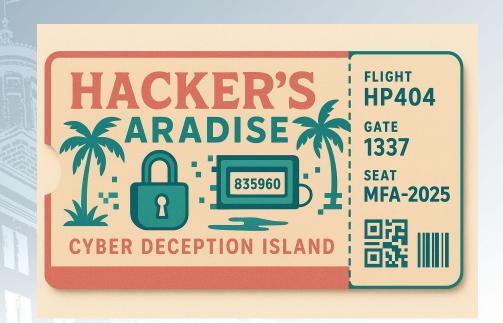
In 2018, the city of Atlanta, Georgia experienced a ransomware attack that severely disrupted municipal services. The ransomware encrypted critical files across the city's network, forcing systems offline and leading significant recovery efforts. The attack, which did not involve a ransom payment, resulted in an estimated financial loss of around \$17 million due to recovery costs and operational downtime.



Atlanta-Children's Hospital -CFO was impersonated convinces the A/P dept. to switch bank on file and send \$3.6 million dollars.



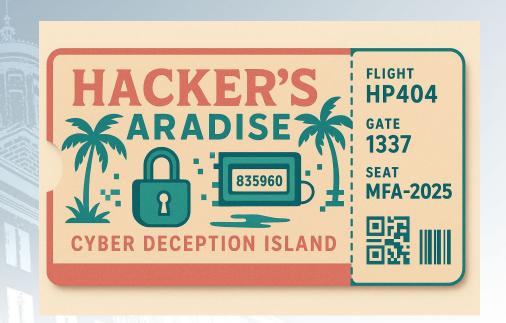




Eagle Mountain City, Utah- Vendor emails that appeared to be legitimate were sent to the city. Instructions were changed on the ACH payment, and \$1.13 million dollars were sent to a fraudulent account. Account compromise for vendor and a VEC for the city.







Toyota-3<sup>rd</sup> party hacker posed as a business partner-Subsidiary emails were sent to the accounting dept. asking them to send funds to a specific bank account or that production would be stopped. This was an account compromise of the business partner and a VEC compromise for Toyota.







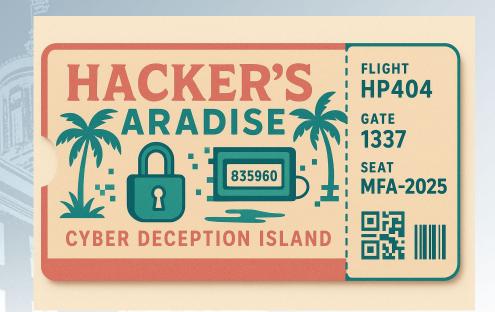
City of Lexington, KY-hacker claims to be from Community Action Council which is a local housing group. They asked to update their account information. 4 million dollars was sent.







In 2020, Rutherford County in Tennessee experienced a BEC attack where scammers gained access to email accounts of county employees. They, used this access to impersonate officials and orchestrate fraudulent wire transfers. The attack led to significant financial losses of \$2.3 millions for the county.



In 2021, the City of Jackson experienced a BEC attack where attackers managed to intercept and alter email communications related to a financial transaction. As a result, they redirected funds intended for a legitimate payment into their own accounts.

The city of Jackson suffered a loss of approximately \$1.5 million due to this attack.



In 2019, the City of Memphis in Tennessee experienced a BEC attack where attackers targeted the city's finance department by compromising email accounts and using them to impersonate officials. This led to fraudulent wire transfers, resulting in approximately \$3.2 million in losses.







In 2019, the city of New Bedford, Massachusetts experienced a BEC attack where attackers used a fake invoice scheme to defraud the city. As a result, the city lost approximately \$3.5 million.







# Real-World Example

```
On Friday, April 1, 2022, 10:38:55 AM CDT, Donna Craig
> <clerkofficeil1@gmail.com> wrote:
> Randi
> I'll need you to process a payment for me today via ACH/WIRE
> TRANSFER/CHECK MAILING. For the
> Administrative networking web-hosting activity expense.
> Get back to me if you can get this done, so i can forward the payment
> details to you.
> Regards
> Donna
   On 4/1/22, Randi French < randifrench@yahoo.com > wrote:
   > Yes ma'am I sure can:)
   > Thank you, Randi FrenchHenry County Trustee
```





From: Donna Craig (clerkofficeil1@gmail.com)

To: randifrench@yahoo.com

Date: Friday, April 1, 2022, 11:05 AM CDT

#### Randi

initiate a an outgoing wire transfer to the account details below:

ACCOUNT HOLDER: CONSTANCE LYON

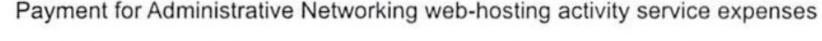
BANK NAME: M&T BANK

ACCOUNT NUMBER: 9888615268

ROUTING NUMBER: 031302955

AMOUNT:\$4,780.00

BANK ADDRESS 550 Suburban Dr, Newark, 19711





Get back to me with the payment confirmation slip once you are done making the payment.





----Original Message-----

From: Tammy Steele < <a href="multilimpio@multilimpio.com.mx">multilimpio@multilimpio.com.mx</a>>

To: Dmyers2382 < Dmyers2382@aol.com >

Sent: Tue, Aug 29, 2017 11:07 am

Subject: Invoice number 8662549 second Notification

Good day First Utility District of Tipton County 2275,

Called you a few times without success. Decided to reach you by email. I need to know the status of this invoice below, it's way past due.

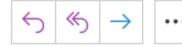
http://funfrance.fr/Invoice-266141-reminder/

Yours Truly, Tammy Steele

#### REIMBURSEMENT



Jennifer M Garoutte <p2345678967778@gmail.com



1:11 PM

Retention Policy COT Inbox (6 months)

To Penny Austin

Expires 4/4/2020

(i) We removed extra line breaks from this message.

---

#### HI Penny

Are you unoccupied to grab me something? i actually need you to make provision for gift cards for me at any local stores around. Let me know when you are ready for details.

I would reimburse you when am through.

Thanks Jennifer M.

TENNESSEE CONSent from my Iphone



March 7, 2024

#### FBI: Scammers Stole \$160 Million From Tennesseans in 2023

KNOXVILLE, TN—Tennessee residents lost more than \$160 million to Internet scammers last year, according to a new report released by the Federal Bureau of Investigation. The report highlights critical vulnerabilities and underscores the imperative for heightened cybersecurity measures in the Volunteer State.

In 2023, Tennessee ranked 31st in the country, with residents lodging a total of 8,484 complaints with the FBI's Internet Crime Complaint Center (IC3), reporting losses amounting to \$161,195,036. These figures underscore the devastating impact cybercrime has on individuals and businesses statewide.

"We've noticed a steady stream of cybercrime here in Tennessee. This means we all need to be extra careful and take action to stay safe online," said Joseph Carrico, special agent in charge of the FBI's Knoxville Field Office. "Cybercriminals are always coming up with new tricks to scam people, whether you're a regular person or a big company. So, it's really important for everyone in Tennessee to pay attention and make sure we're protecting ourselves online."

Tech support scams, investment fraud, and business e-mail compromise (BEC) emerge as the leading categories for losses in Tennessee. Particularly alarming is the heightened risk faced by individuals over 60, who are most susceptible to falling victim to these cyber scams.

Nationwide, in 2023, the IC3 recorded a staggering 880,418 complaints, indicating a substantial rise in cybercrime activities across the nation. The total losses incurred from these incidents exceeded a staggering \$12.5 billion, underscoring the severity of the cyber threat landscape.

Notably, this figure represents a significant increase compared to the average number of complaints received over the past five years. California, Texas, Florida, New York, and Ohio reported the highest number of victims, while California, Texas, and Florida also topped the list in terms of financial losses.

"Protecting yourself online is crucial. Make sure to use strong, unique passwords for your accounts, and be cautious about clicking on links or opening attachments in e-mails from unfamiliar sources," said Jason Jarnagin, supervisory special agent leading the FBI's cybercrime squad in Knoxville. "Keep your computer's software up to date and consider using antivirus software. And most importantly, if something seems suspicious or too good to be true, trust your gut and double-check before sharing personal information or sending money."

The FBI remains committed to working closely with local law enforcement agencies and community partners to mitigate risks and protect Tennesseans against cyber attacks. If your business is the victim of a cyber attack, contact your local FBI office immediately for assistance.

For more information on the 2023 Internet Crime Report and resources for cybersecurity, visit the IC3 website at www.ic3.gov.

### Impact of Business Email Compromise

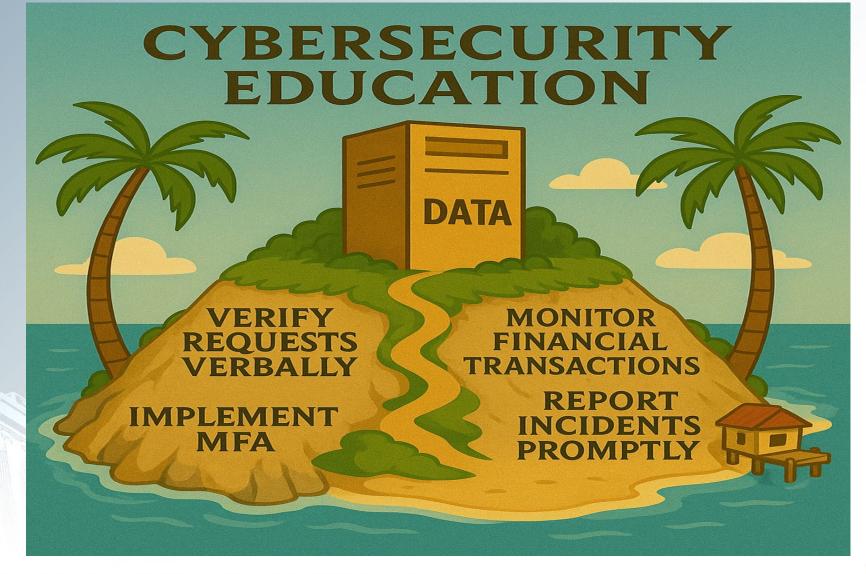


Financial Loss from theft Reputational Damage Lack of public trust Legal and Regulatory Penalties and Fines for non-compliance



Operational
Disruptions
Costs related to
investigation and
remediation









# Ransomware and Malware



# Ransomware/Malware Defined

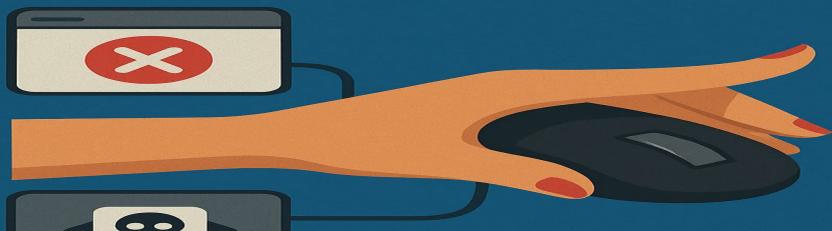
Malware is malicious software.

Ransomware is a type of malicious software that is a form of high-tech extortion where the malicious software hijacks computer systems and holds them hostage until the victim pays a ransom.



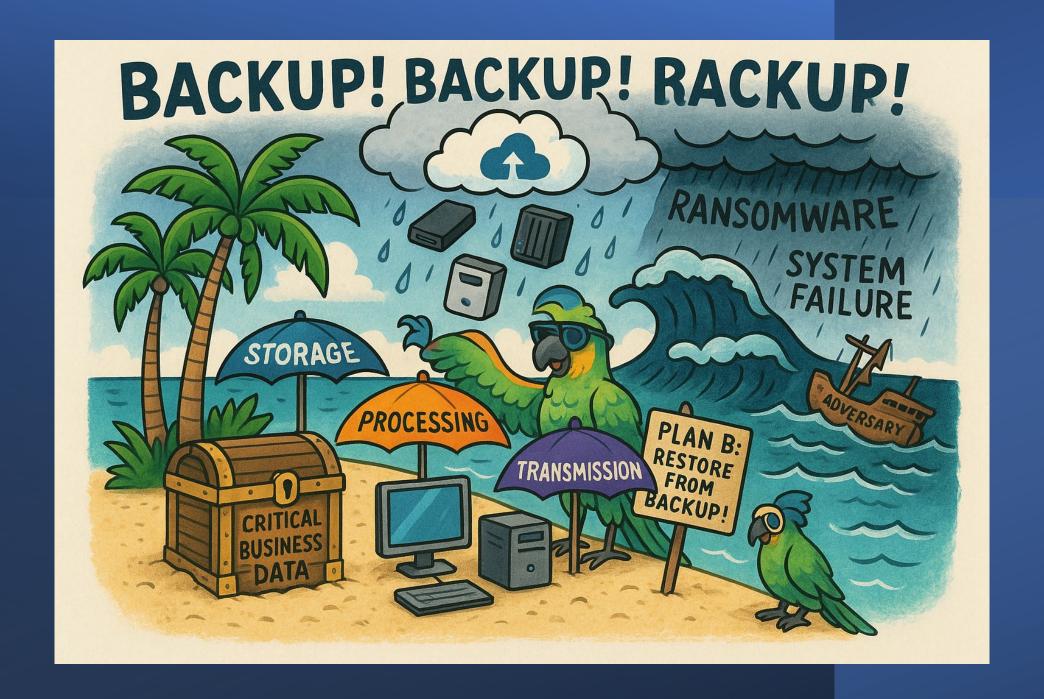


# RANSOMWARE AND MALWARE CLICK! CLICK!



- fake and unsafe websites.
- unsuspeccted emails and attachments.
- bad links in email or social media ads, videos, articles, and Messenger

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# UPDATE!



OPERATING SYSTEM

VIRUS PROTECTION

What Do I Do If
I Suspect I Have
Responded to a
Threat like BEC
or Phishing?



WHAT SHOULD I DO IF I CLICKED?

Don't panic.

Follow your organization's cyber-policy and cyber-attack plan.

Report to management immediately.

If needed, management should seek guidance from software and IT vendors.



# How Do We Stay Away From "Hacker's Paradise?"



# STRONG PASSWORDS AND MULTI-FACTOR AUTHENTICATION









# MULTI-FACTOR AUTHENTICATION

# MFA REQUIRES MORE THAN A PASSWORD



**ACCESS** 



Password Know

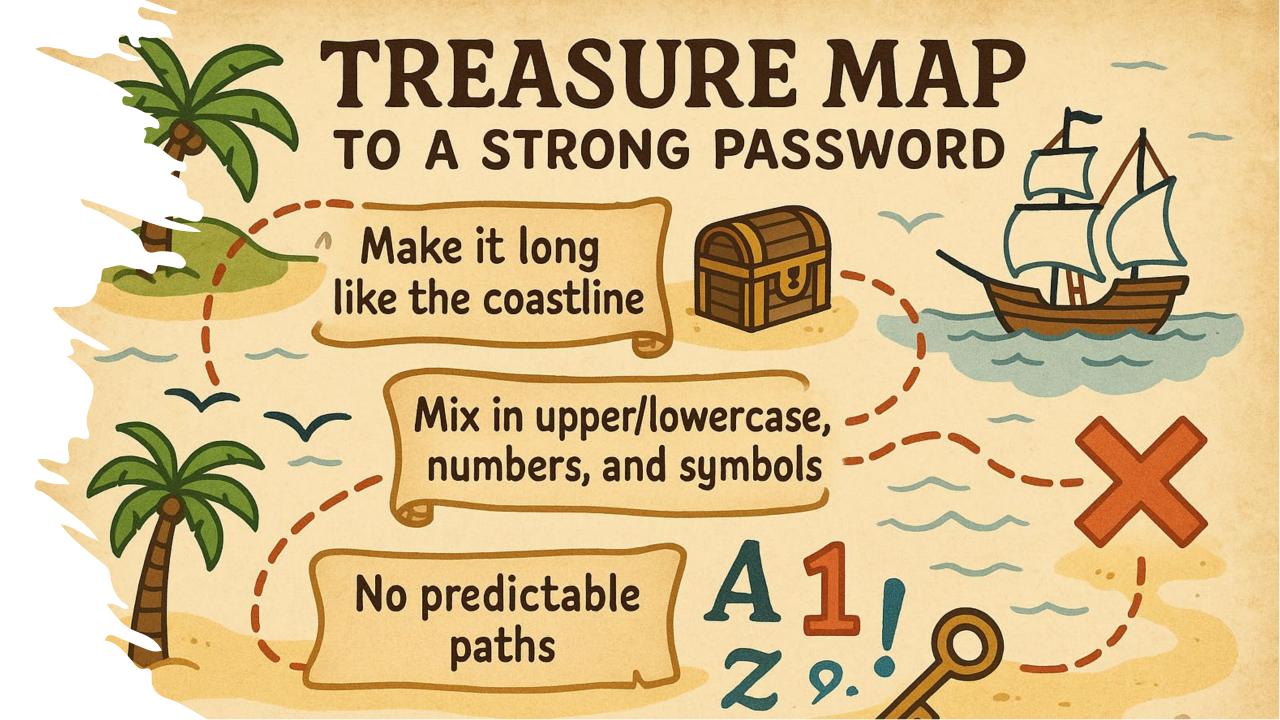




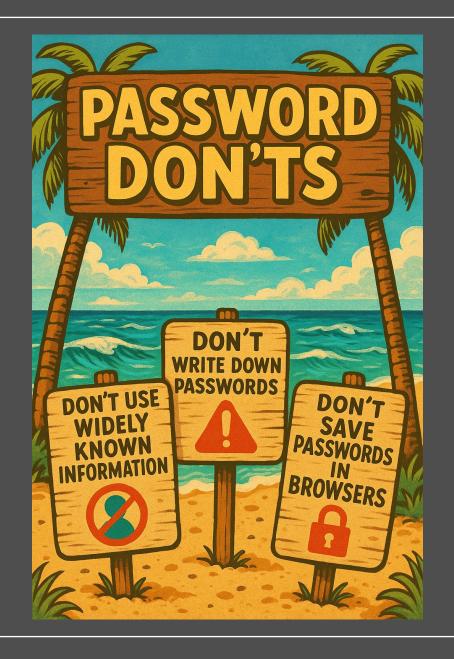


Key Card/
Phone/
Sunscreen
What You Have

OF THE TREASURY









# WEAK







# MODERATE





# STRONG









## Other Important Protection Rules



#### Education

Security
Awareness
Training



#### TNCOT.CC/CYBERAWARE

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Stay Cyber Aware

Cybersecurity Definitions

Questions & Answers

Targeting Local Governments

Working Remotely



. . . . . .

Computer Security

Public Wifi Networks

Protect Your Computer From Malware

Cybersecurity 101



Useful Links

Questions to ask Vendors

Reporting Cyber and Data Incidents

Speaker Request

Cyber Plan Suggestions

Cybersecurity Newsletter Subscription











# UNDERSTAND YOUR CYBERSECURITY POSTURE!



# HAVE A PLAN!





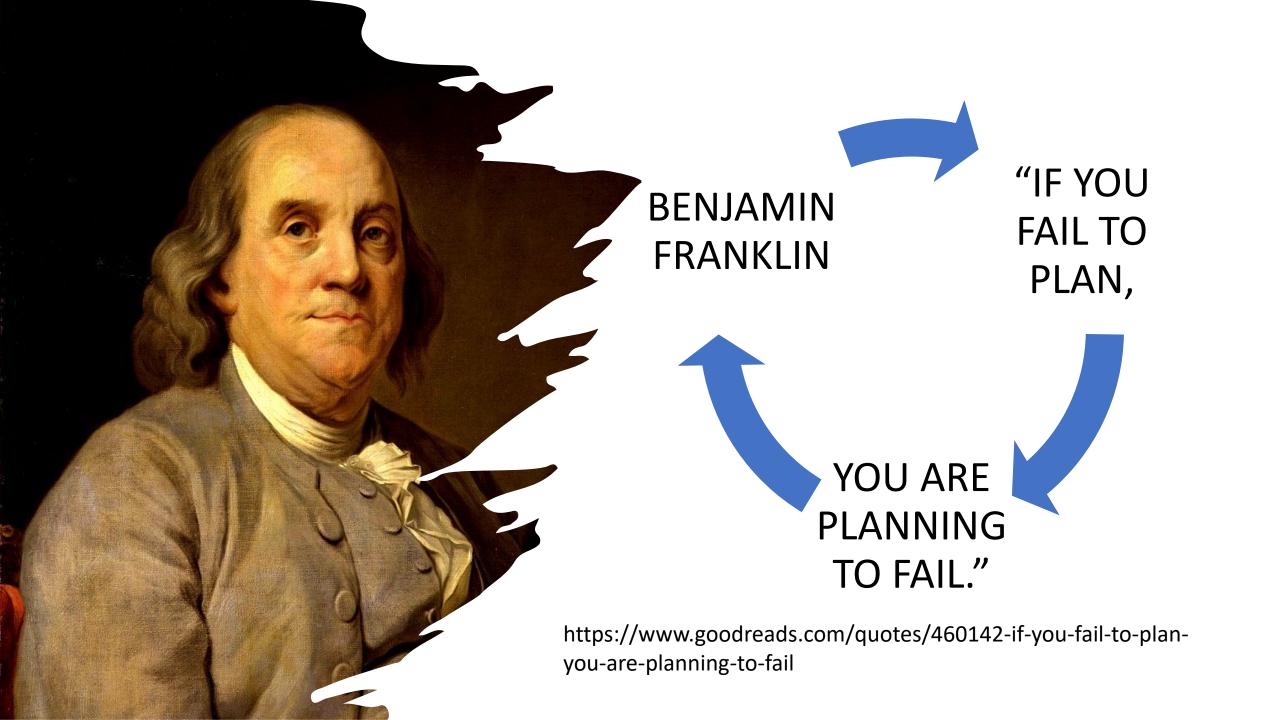
GUIDES STAFF REGARDING STEPS TO TAKE AFTER YOU REALIZED YOU HAVE BEEN ATTACKED.

AND ASSETS—KNOW YOUR DATA
AND ASSET TREASURES
IN YOUR DATA FORTRESS.

PROTECT THAT DATA AND CRITICAL ASSETS.

DIRECTS RESPONSE—CONTACTS
LIST—WHO ARE YOU GOING TO CALL?

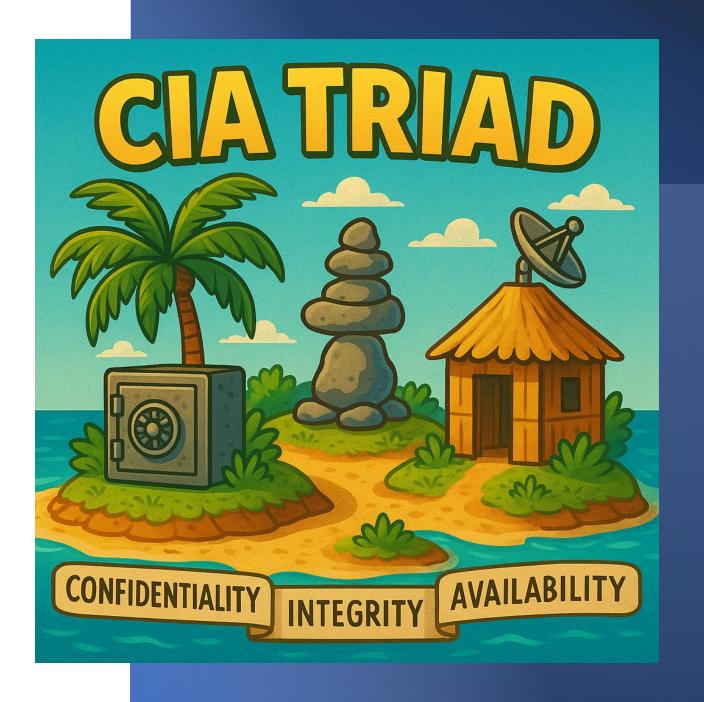
DOCUMENTS CYBERSECURITY
INSURANCE INFORMATION—DO YOU
HAVE CYBER INSURANCE? KNOW
THE INSURANCE INSTRUCTIONS.



# Conclusion







#### Protection Measures-Overlap

#### How Do We Maintain Confidentiality of Our Data and Networks?

- Employee Training
- Know what your sensitive information is and where it is stored.
- Restricting access to least privileged users.
- Strong Password Protection Or Multi-factor Authentication.
- Logging Out of the Application when away from workstations and locking the workstation. To lock select Ctrl+Alt+Delete.
- Password protected screen savers or sleep settings that activate within 30 minutes or less of inactivity.

#### How Do we Maintain Integrity of our Date and Networks?

- Employee Training
- Physical Security
- Backup and Recovery Procedures and Plans
- Least privileged user access
- Data Validation and Verification
- Audit Trails and logs.

#### How Do We Protect Availability of our Data and Networks?

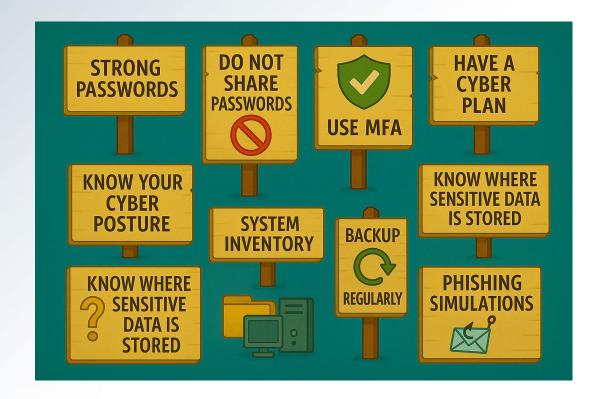
- Employee Training
- Update and Patch
- Backup Data Daily.
- Redundancy of backups/ store off-site weekly.
- Inventory your data.
- Implement and follow Record Retention Policies.
- Proper Disposal of data and records.
- Monitoring



- 1. Education-Participate in Cybersecurity Trainings often.
- **2.** Create Strong Passwords

  Use passphrases or complex combinations change them often.
- 3. Never Share Your Passwords
  Not even with your "captain."
- Use MFA (Multi-Factor Authentication)
   Two keys to unlock the treasure.
- 5. Develop a Cybersecurity Plan Every island needs a map.
- 6. Know Your Sensitive Data and understand your cybersecurity posture.
  What's the treasure, and where is it buried?
- 7. Install Antivirus & Anti-Malware Software 
  Watch for sneaky creatures in the sand.
- 8. Keep Operating Systems Updated Patch those leaky beach huts.
- Backup Regularly
   Keep a lifeboat ready offshore.
- 10. Run Phishing SimulationsPractice spotting the fake bait.
- 10. Be a Good Crew MemberStay alert, think before you click, and report anything suspicious.





#### Data Island Safety Measures



Map Out the Island



OF THE TREASURY

# What to Do If There Is a Cybersecurity Attack



1. Detect and Identify

Monitor for suspicious activity



4. Eradicate the Threat

Remove malware and access



2. Contain the Threat

Isolate affected systems



5. Recover Operations

Restore from clean backups



3. Assess the Damage

Investigate the scope and impact



6. Review and Learn

Analyze the incident and response





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Cyber Aware Resources

#### **Useful Links**

Questions to ask Vendors

Reporting Cyber and Data Incidents

Speaker Request

Cyber Plan Suggestions

Cybersecurity Newsletter Subscription



#### **Useful Links**

State of Tennessee Cyber Hub

Tennessee Cyber Awareness Website

Free Security Awareness Training

Center for Internet Security

FBI Cyber Crime

Department of Homeland Security

AGA - Cybersecurity Hub

# Questions?

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