



Cybersecurity Awareness Training



**Why Are You
Required to Have
Cybersecurity
Training?**



**Texas Government Code
Section 2054.5191**



■ *Full Name (if not common)*

■ *Social Security Number*

■ *IP Address*

■ *Vehicle Plate Number*

■ *Drivers License Number*

PII

**Personally Identifiable
Information**

Credit Card Number ■

Date of Birth ■

Birthplace ■

Generic Information ■

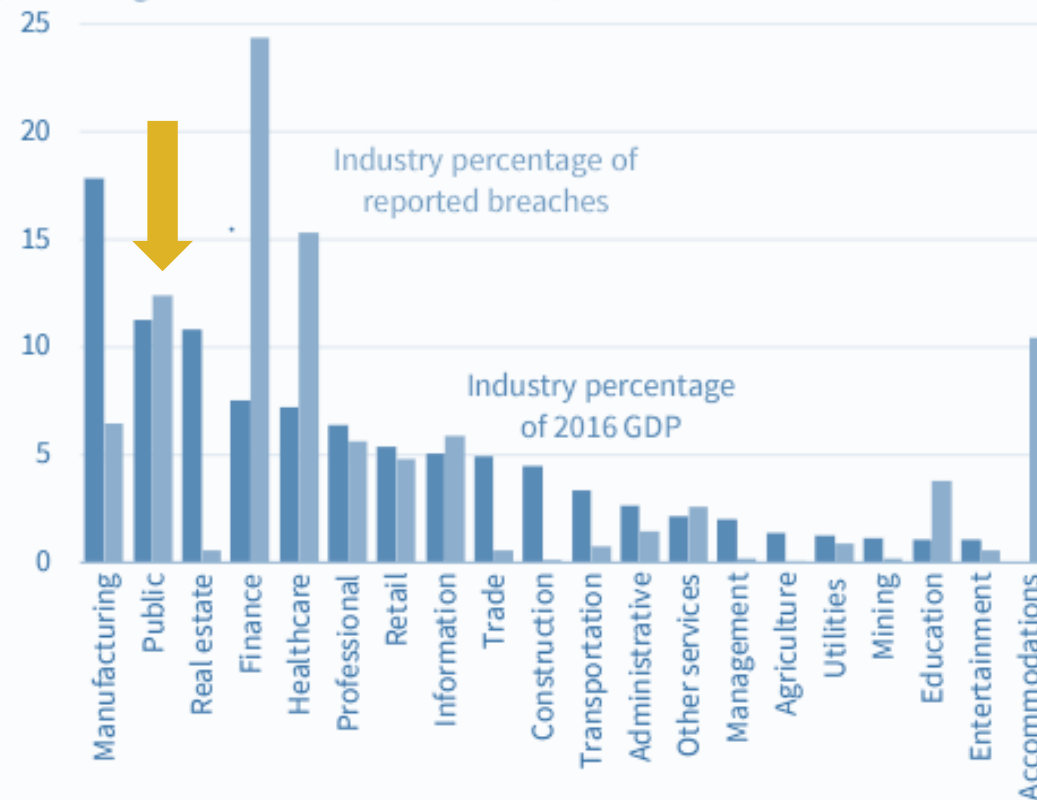
Fingerprints, Handwriting, Face ■



Cyber Landscape

[Public Sector: 13%]

Figure 6. Distribution of Security Breaches by Industry
(Percentage of 2016 GDP and Breaches)



Source: Bureau of Economic Analysis; Verizon; CEA Calculations.



Cyber Landscape

[Top 10 States by Number
of Victims & Losses*]

**According to FBI Internet Crime Report 2017*



Cyber Landscape

[Top 10 States
Breakdown]



Victims

CA: 41,974
FL: 21,887
TX: 21,852
NY: 17,622
PA: 11,348
VA: 9,436
IL: 9,381
OH: 8,157
CO: 7,909
NJ: 7,657

Losses

CA: \$214.2M
TX: \$115.7M
FL: \$110.6M
NY: \$88.6M
MA: \$39M
WA: \$43M
IL: \$42.9M
AZ: \$59.4M
CO: \$39.9M
NJ: \$40.4M

**According to FBI Internet Crime Report 2017*



Principles of Information Security



- Information Security
- Define the different types of information
- What information am I responsible for safeguarding



Data Classification

Sensitive

Data with the most limited access and requires a **high degree of integrity**. This is typically data that will do the most damage to the organization should it be disclosed

Confidential

Data that might be less **restrictive within the organization** but might cause damage if disclosed

Private

Usually compartmental data that might not cause damage but **must be kept private for other reasons**. Ex: Human Resources data

Proprietary

Data disclosed outside the organization on a limited basis or contains information that **could impact an organization's competitive advantage**, such as the technical specs of a new product

Public

Least sensitive data used by the organization and would cause the least harm if disclosed. Ex: data used for marketing or number of employees



4 Main Pillars of Cybersecurity

Machine
Level

Data
Level

Network
Level

Internet
Level



4 Main Pillars of Cybersecurity

[Machine Level Pillar]



The **Machine Level** includes work computers and devices, such as **phones** and **tablets**, or **home computers** that must be **treated with as much care as the data they contain**. The explosion in the use of personal computers and other personal electronic devices has led to innovation and production increases, but this ever-expanding use also creates potential risks.



4 Main Pillars of Cybersecurity

[Machine Level Pillar]



Potential exposures to your organization:

- Weak passwords that are never changed allow hackers access to machines (single word passwords unacceptable)
- Anti-virus software is not installed or not updated
- Employees are not aware of dangers lurking related to cybersecurity
- Email rules and training are lacking or non-existent (clicking on links or attachments)
- Lack of control of flash drives and other portable connections
- No controls for accessing public Wi-Fi connections
- Lack of administrator controls to prevent downloading of apps or programs onto machines
- Lack of cybersecurity training



UNCOMMON (NON-GIBBERISH) BASE WORD

ORDER UNKNOWN

Tr0ub4dor &3

CAPS? COMMON SUBSTITUTIONS NUMERAL PUNCTUATION

(YOU CAN ADD A FEW MORE BITS TO ACCOUNT FOR THE FACT THAT THIS IS ONLY ONE OF A FEW COMMON FORMS.)

~28 BITS OF ENTROPY

$2^{28} = 3 \text{ DAYS AT } 1000 \text{ GUESSES/SEC}$

(PLAUSIBLE ATTACK ON A WEAK REMOTE WEB SERVICE: YES, CRACKING A STOLEN HASH IS FASTER, BUT IT'S NOT WHAT THE AVERAGE USER SHOULD WORRY ABOUT.)

DIFFICULTY TO GUESS: **EASY**

WAS IT TROMBONE? NO, TROUBADOR. AND ONE OF THE 0s WAS A ZERO?

AND THERE WAS SOME SYMBOL...

DIFFICULTY TO REMEMBER: **HARD**

correct horse battery staple

FOUR RANDOM COMMON WORDS

~44 BITS OF ENTROPY

$2^{44} = 530 \text{ YEARS AT } 1000 \text{ GUESSES/SEC}$

DIFFICULTY TO GUESS: **HARD**

THAT'S A BATTERY STAPLE.

CORRECT!

DIFFICULTY TO REMEMBER: YOU'VE ALREADY MEMORIZED IT

THROUGH 20 YEARS OF EFFORT, WE'VE SUCCESSFULLY TRAINED EVERYONE TO USE PASSWORDS THAT ARE HARD FOR HUMANS TO REMEMBER, BUT EASY FOR COMPUTERS TO GUESS.



4 Main Pillars of Cybersecurity

[Data Level Pillar]



The **Data Level** applies to the quantities, characters or symbols on which operations are performed by a computer, being stored and transmitted in the form of electrical signals and recorded on magnetic, optical or mechanical recording media. The **organization's data must be treated as it is “bundles of cash”** due to the efforts necessary to recreate, if even possible. In simpler terms, “once it’s gone it’s gone”.



4 Main Pillars of Cybersecurity

[Data Level Pillar]



Potential exposures to your organization:

- Employees are not aware of the data created by all organizations and the importance of that data or the cost and effort necessary to restore damaged or lost data (if possible, to be restored)
- "Off-site" data backup is not provided, or backups are not performed regularly
- Employees do not believe their organization's data is relevant or "important enough" for a cyberattack
- Organization's data is not encrypted to protect from hackers



4 Main Pillars of Cybersecurity

[Network Level Pillar]



The **Network Level** is becoming all-encompassing as **computers no longer operate on an “island”**, and computers are becoming connected in ways most users do not expect.

Potential exposures to your organization:

- Anti-virus, anti-spyware or anti-malware software or firewalls are not effective
- Daily full system scans are not performed to find, quarantine and remove malicious agents from your network before damage is done
- Off-site backups are not maintained
- Lack of administrator controls of networks



4 Main Pillars of Cybersecurity

[Internet Level Pillar]



The Internet Level. The “internet of everything” brings people, processes and data to together in a way that was not even imaginable a few years ago. Along with all the positives associated with this new experience, are the exposures and risks created for you and your employer.



4 Main Pillars of Cybersecurity

[Internet Level Pillar]



Potential exposures to your organization:

- Almost all devices are now capable of connecting to the internet but there are few controls in some organizations to control how they are connected
- Public wi-fi is used continuously without any concern for potential issues
- Administrators do not control or limit access to the internet
- Work provided devices are used away from work extensively
- Employees are not aware of potential issues and training is not provided





Best Practices for Detecting, Assessing, Reporting, & Addressing Threats





Meaning Of Threat

Threat is the potential targeting of a network or system in an attempt to damage, harm or disrupt its capability to operate. This targeting can potentially impact the confidentiality, integrity and availability of the organization's data.





[Meaning Of Threat]

Common types of threats include:

- Theft of confidential, proprietary, or sensitive information
- Modification of existing data, and the compromise of how that data is collected, processed, and stored
- Unauthorized access allowing an external user to gain control of a system to block access to data



What is a “Threat Actor” and What Are Their Goals?

A threat actor is **anyone who tries to exploit vulnerabilities** in an organization’s systems or users.

- Profit, financial or otherwise
- Damaging the victim, financially or otherwise
- Damaging the reputation of the victim gathering data that might be used in future attacks
- Gathering data that might be traded or sold to other actors
- Curiosity or malice



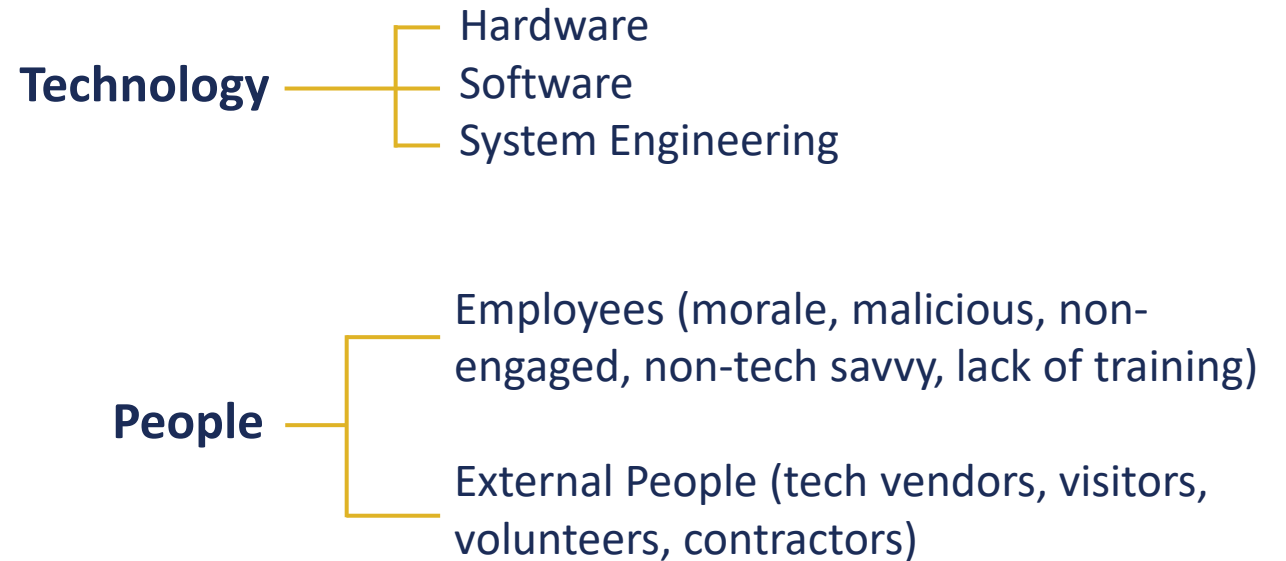
Consider This

The idea of a hacker sitting in a dark room deftly finding cracks in firewalls and guessing passwords is still valid, but just as often these days the door is opened for them by unsuspecting users. **Malware sent in infected email attachments still work**, despite the best efforts of anti-virus software companies to stamp it out. Often that is not needed, however. An email containing a link to a website inviting the user to log in to receive an invoice or other enticement is just as likely to succeed by harvesting that user's username and password as someone with advanced technical skill sneaking in through an arcane software vulnerability.





Information security risks are choices made by an organization in its technology and people (internal & external)





What is meant by “Attack”

Attacks on information security can be defined as any **attempt to gain access or control of** an organization's **data or information systems**, no matter what the level of sophistication

Types of Attacks can Include

- Emails
- Phone Calls
- Texts
- USB Drives / Flash drives
- Internet of Things
- Letter





Types of Tactics Used in an Attack

- Phishing
- Spear Phishing
- Social Engineering
- Whaling
- Malware
- Ransomware
- Vishing
(voice phishing)



Recognizing Common Attacks

Malware, covering software with many names like viruses, trojans, worms, backdoors, spyware, and so on, is very common and pernicious. While there are many reputable companies doing excellent work to combat it, it is always true that some get through, especially new formulations that have not yet been recognized. **The risk of user aptitude in how to handle attachments comes into play.** No attachment should be delivered to an inbox without scanning, and a user should not open a document without scanning it again.



Top 10 Tips for Identifying a Phishing Email



1. The message contains a mismatched URL (Uniform Resource Locator)
2. The URL contains a misleading domain name (website name)
3. The message contains poor spelling and/or grammar
4. The message asks for personal information
5. The offer seems too good to be true
6. You didn't initiate the action
7. You're asked to send or provide money or payment
8. The message includes unrealistic threats
9. Something just doesn't look right
10. The email includes an embedded link or attachment that you are asked/tempted to open





Responding To and Reporting Common Attacks





Responding to an Attack

The common thread to all the attacks outlined previously is the reliance on the user not to question or verify the actions requested. The internet was built on trust, with all the threats present today not even imagined when much of the technology at its core was created. Thus, **responsibility falls on the users and organization** to employ a sustained, suspicious vigilance in any contact.

The most powerful key in any security system is the “delete” key. When a user receives **an email that is even a little suspicious, deleting it is usually the best course of action**. Where possible, verification by calling a known phone number is best. The email might contain a phone number to call in case of questions, but better for the user to find a number independently if not already known.





Responding to an Attack

Many organizations have an IT department, whether a dedicated, in-house team or an outside contractor, and they should be utilized as a resource for validation of suspicion. Any IT professional will say that it's better to be asked a thousand questions about benign material than to have to eradicate one rampant virus.

Management should be sensitive to user questions and doubts. Without a full-time staff, management should **develop methods for reporting and tracking threat detection**. Without that, an organization might be under continued siege without anyone recognizing it, making improvements to defense impossible.





Responding to an Attack

Attackers might send out a million phishing messages a day with virtually no cost. **Failure to recognize** even one of these **attacks can yield thousands of dollars** to the attackers **and a blow to the reputation** of the organization, not to mention the employee.





Users should be aware of how to identify, respond to, and report on threats to information security and suspicious activity

- **Internal Reporting**

All suspicious activity should be reported according to your internal policy

- **External Reporting**

Contact all involved parties (contractors, vendors)

- **Cybercrime must be reported to law enforcement**





Provide external and internal stakeholders with tools needed to ensure **reliability, usability, and security**

- Policies that ensure information security
- Vetting of internal and external stakeholders
- Employee Training Programs
 - ✓ Meets Texas Government Code Requirements
 - ✓ Awareness Based Training
 - ✓ Internal Policy Training
 - ✓ Ongoing Training (new exposures as identified)



Conclusion

- **Testing/Assessment of Knowledge (Corrected to 100%)**
- **Sign In Log**
- **Certificate of Completion (Personnel File)**





Free Resources for Public Entities

- TMLIRP members (must login): eriskhub at www.tmlirp.org
- All governmental entities have free access to: <https://www.cisecurity.org/ms-isac/>



