

Internet Security

Protecting Your Data and Online Business

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What could go wrong?

What could go wrong?

- Authentication
 - Who is accessing the resource?
- Access control
 - Can a person only access resources they should be able to access?
- Data confidentiality
 - Can only authorised people access data?
 - Traffic analysis may also be important
- Data integrity
 - Is the data correct?
 - No duplication, replays, reordering, insertion, or modification
- Nonrepudiation
 - Can you prove something was/was not done?
- Availability
 - Can authorised people use the system?

Managing risks

Impact/Likelihood	High	Medium	Low
High	Unacceptable	Unacceptable	Acceptable
Medium	Unacceptable	Acceptable	Low
Low	Acceptable	Low	Low

Each business will have its own matrices

Security before computers

- Physical means
 - Locks
 - Guards
- Administrative means
 - Personnel screening
 - Security clearances

Security for networked computers

Data must be protected:

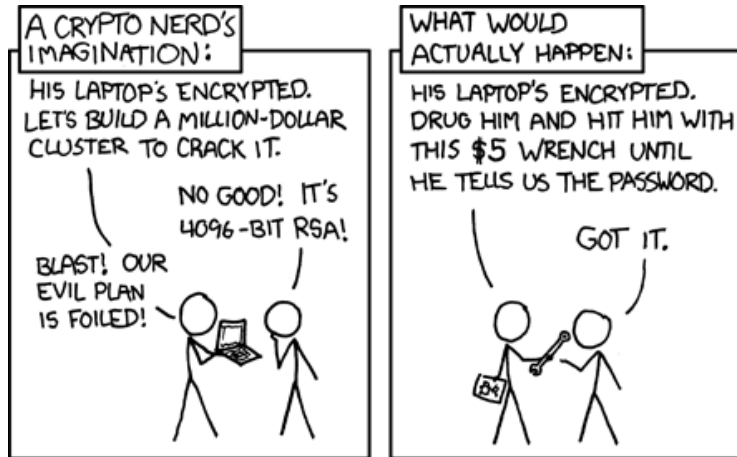
- At rest
- In transit

No physical protection over the Internet

- But we can use encryption

Removing IT risk

You cannot completely remove the risk!



Reducing IT risk

- Secure computers, servers, and communication channels
- Understand legal obligations
- Train staff in IT policies/procedures
- Keep backups
- Maintain insurance

Securing computers, servers, and communication channels

- Regularly update software
- Use anti-virus/anti-malware software
- Use firewalls
- Only run software you need
- Only keep data you need
- Secure wireless networks
- Ensure your Website supports HTTPS
- Don't use email for sensitive information

Legal obligations

Some legal requirements include:

- [Spam Act 2003](#)
- [Electronic Transactions Act 2000](#)
- [NSW Privacy Laws](#)
- [Australian Guidelines for Electronic Commerce](#)
- [Australian Electronic Commerce resources](#)

If relying on services from other companies, remember that different rules may apply (especially if they are outside Australia)

- Especially important with Cloud computing

IT Policies/Procedures



- Ethical training
- Safe computing training
 - Don't leave computer logged on
 - Don't open random email attachments
 - Don't click suspicious links
 - Keep users informed of potential issues
- IT changes policy
- Response to IT incidents
- Code of conduct
- Privacy policy
- Password policy

What makes a password secure?

Rank	Password
1	123456
2	password
3	12345678
4	qwerty
5	12345
6	123456789
7	football
8	1234
9	1234567
10	baseball

Common passwords from 2015

What makes a password secure?

<p>UNCOMMON (NON-GIBBERISH) BASE WORD</p> <p>ORDER UNKNOWN</p> <p>Tr0ub4dor &3</p> <p>CAPS? COMMON SUBSTITUTIONS NUMERAL PUNCTUATION</p> <p>(YOU CAN ADD A FEW MORE BITS TO ACCOUNT FOR THE FACT THAT THIS IS ONLY ONE OF A FEW COMMON FORMATS.)</p>	<p>~28 BITS OF ENTROPY</p> <p>$2^{28} = 3 \text{ DAYS AT } 1000 \text{ GUESSES/SEC}$</p> <p>(PLAUSIBLE ATTACK ON A WEAK REMOTE WEB SERVICE. YES, CRACKING A STOKEN HASH IS FASTER, BUT IT'S NOT WHAT THE AVERAGE USER SHOULD WORRY ABOUT.)</p> <p>DIFFICULTY TO GUESS: EASY</p>	<p>WAS IT TROMBONE? NO, TROUBADOR. AND ONE OF THE 0s WAS A ZERO?</p> <p>AND THERE WAS SOME SYMBOL...</p>  <p>DIFFICULTY TO REMEMBER: HARD</p>
<p>correct horse battery staple</p> <p>FOUR RANDOM COMMON WORDS</p>	<p>~44 BITS OF ENTROPY</p> <p>$2^{44} = 550 \text{ YEARS AT } 1000 \text{ GUESSES/SEC}$</p> <p>DIFFICULTY TO GUESS: HARD</p>	<p>THAT'S A BATTERY STAPLE.</p> <p>CORRECT!</p>  <p>DIFFICULTY TO REMEMBER: YOU'VE ALREADY MEMORIZED IT</p>

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.

Backups

What would happen if:

- the hard drive storing your data stopped working?
- your computer room flooded, destroying all your data?
- the storage provider you were using went out of business?

Solution

Keep regular *offsite* backups

- Ensure they are secure too

Business insurance

You've done your best, but not all risks can be avoided

Solution

- Regularly review and update insurance