The Ransomware Strikes Back

Virus Bulletin 2013

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Bitdefender

October 4, 2013

Agenda

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An incursion into the past

1989

An incursion into the past

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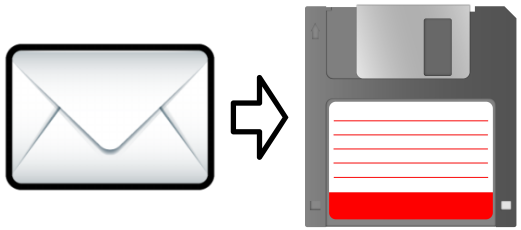

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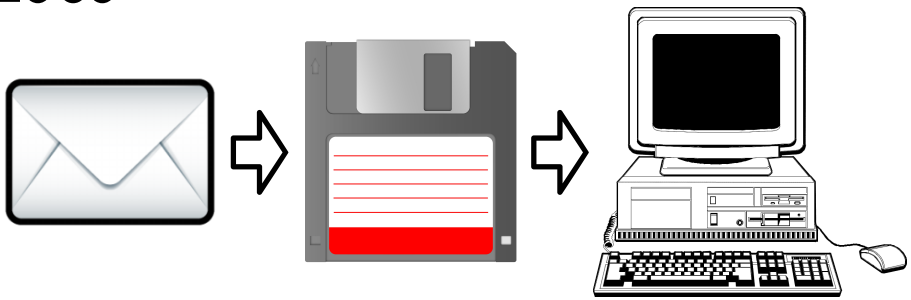

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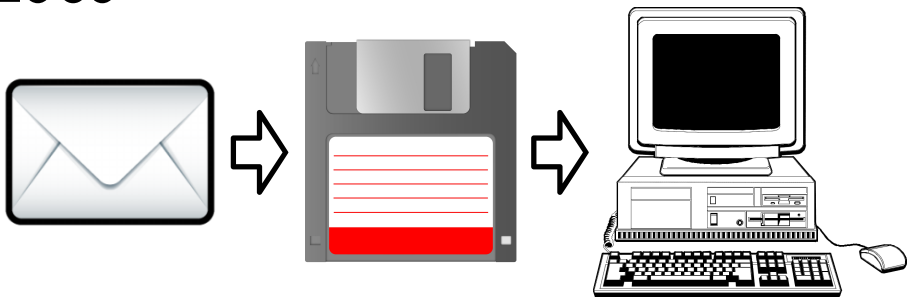

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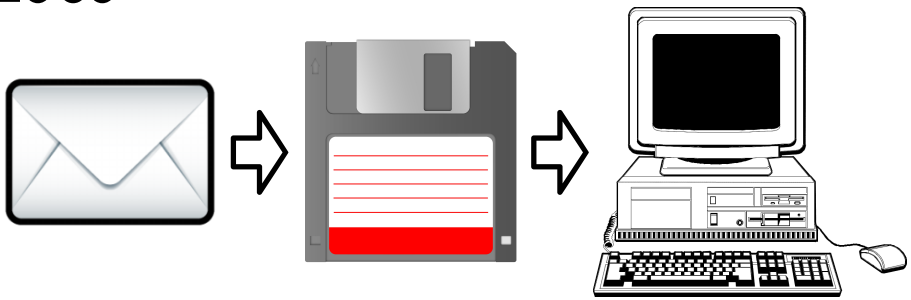

INSTALL.EXE (including license agreement)

- counts 90 boots
- scrambles file names
- displays ransom note
  - *send $189 to a post office box in Panama*

The present ransomware

Definition (Ransomware)

Malware that restricts access to a computer system and demands a ransom in order to restore it.

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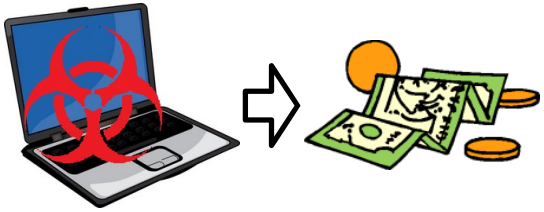

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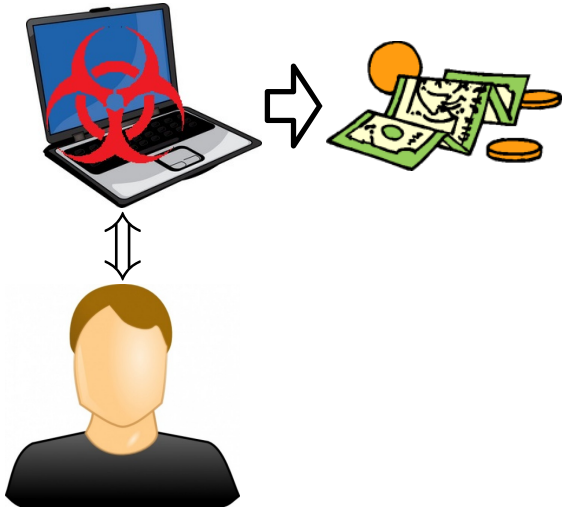

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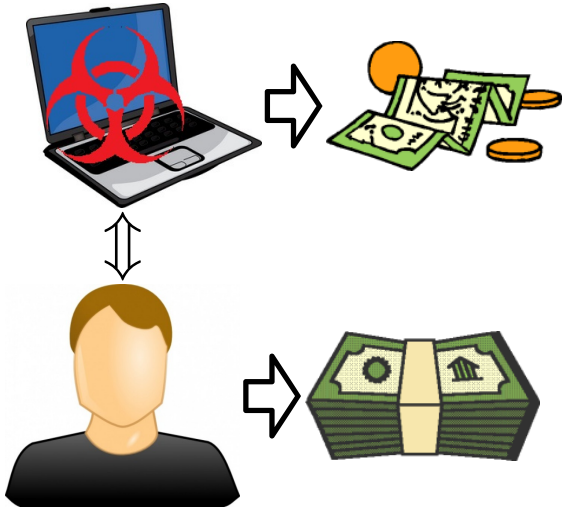

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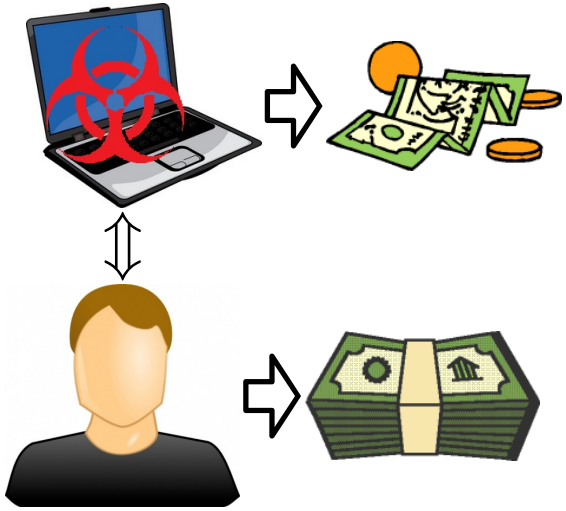

Types of ransomware

- Screen lockers
- File encryptors

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The screen lock anatomy

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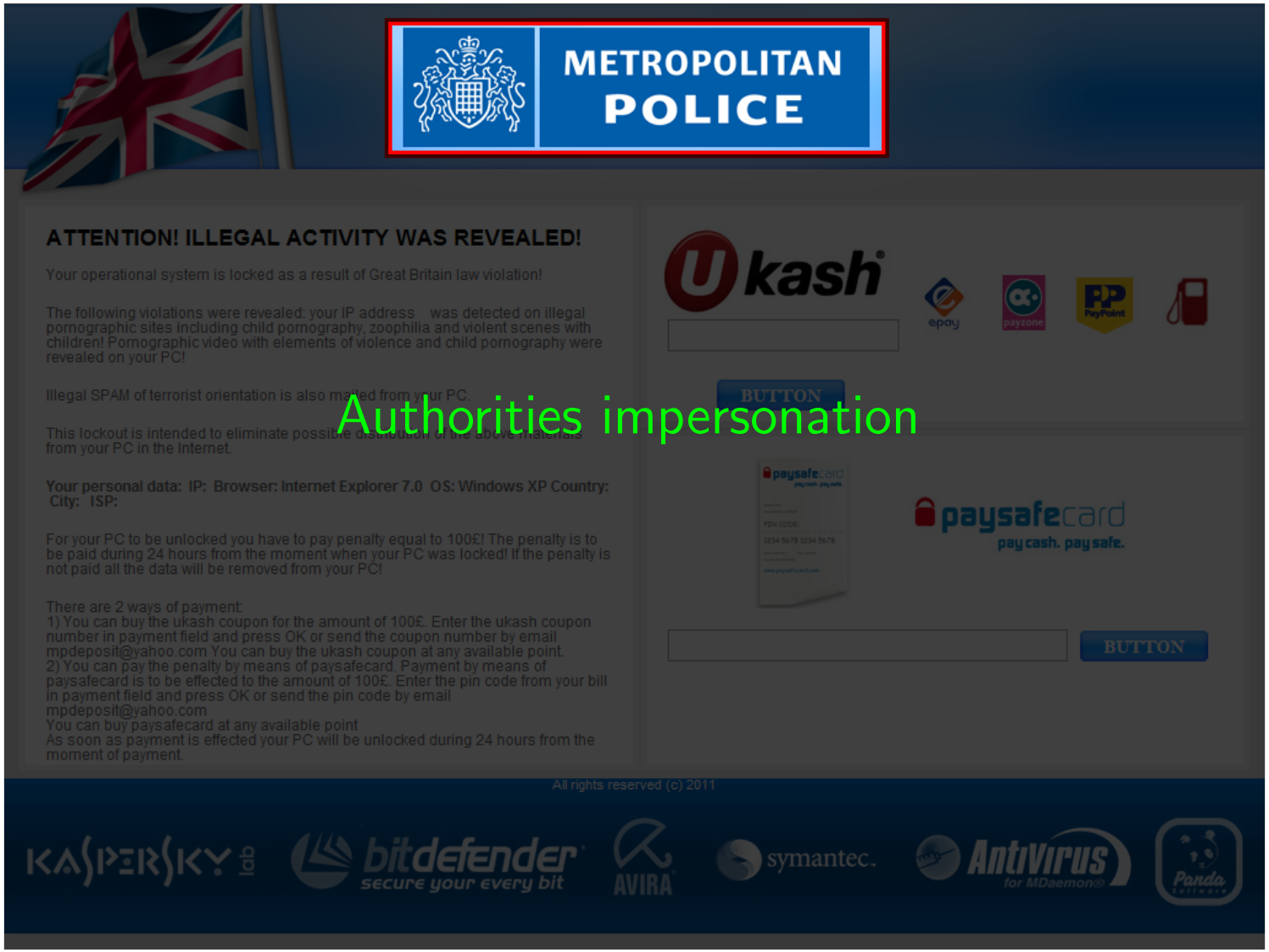


Authorities impersonation

The screen lock anatomy

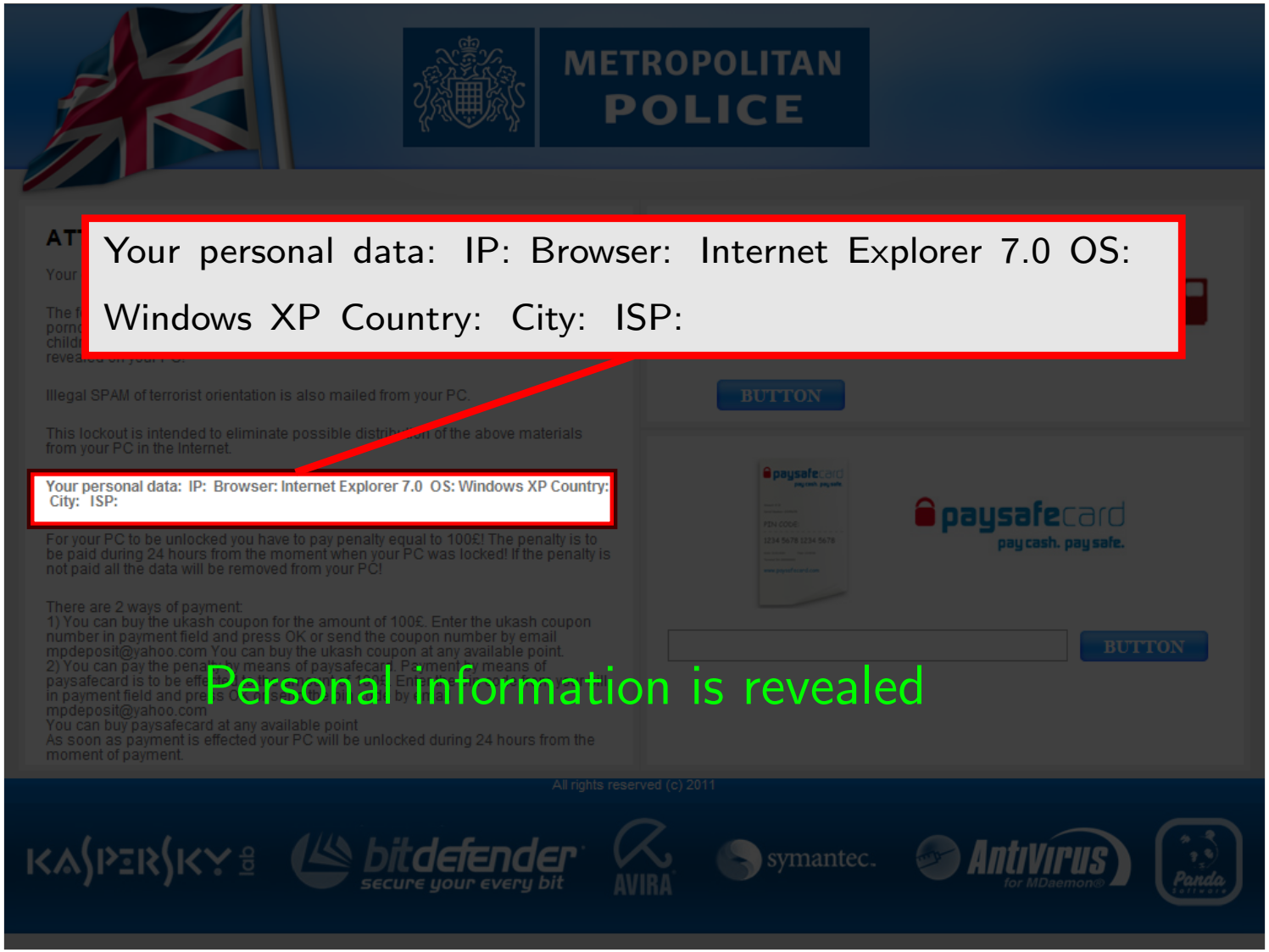
Known anti-malware companies make the things look even more serious

The screen lock anatomy

- child pornography
- zoophilia
- illegal spam of terrorist orientation

The user is blamed for illegal activities

The screen lock anatomy



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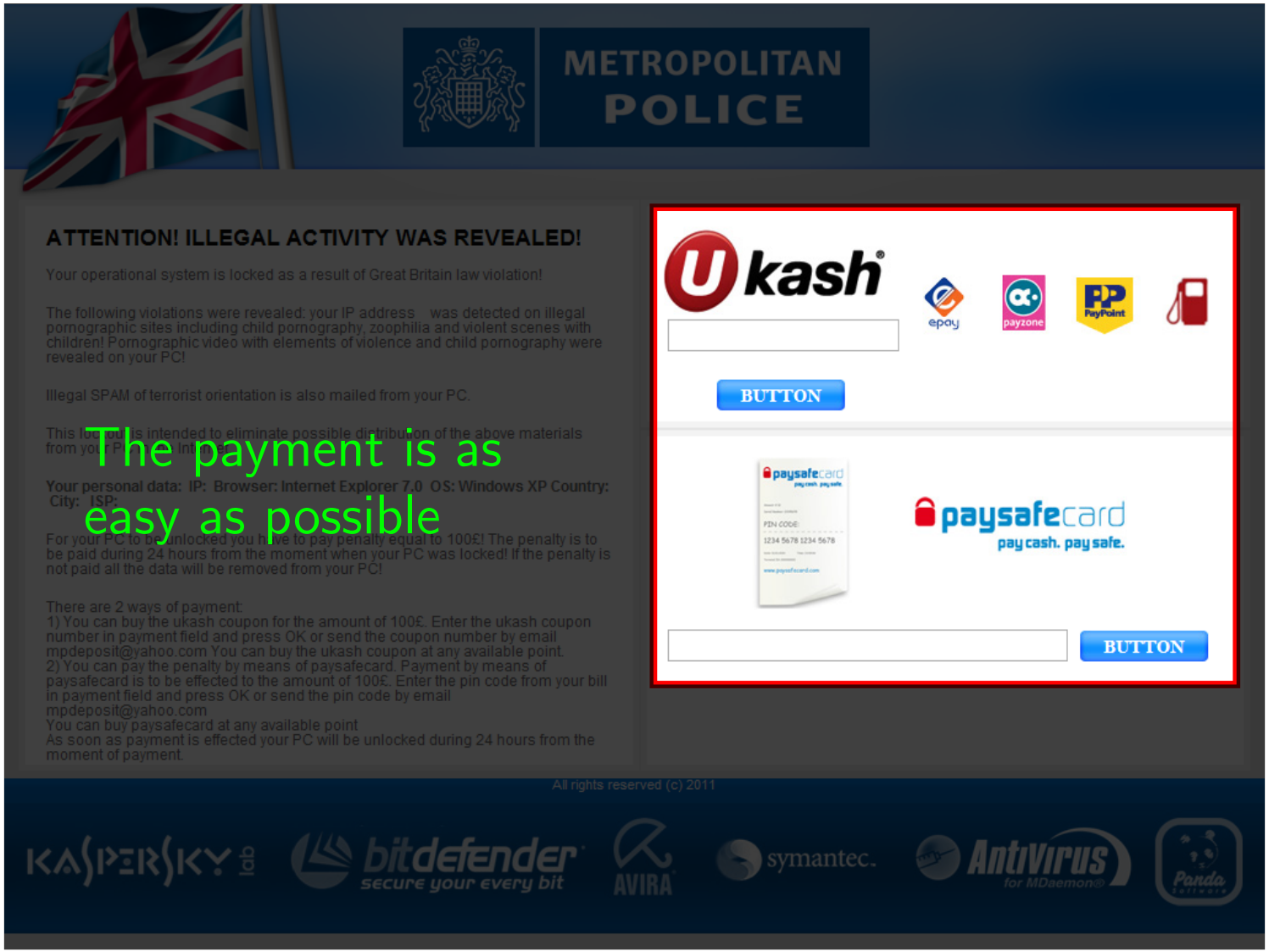

The payment is as easy as possible

Why does it work?

It's not that hard to regain control

- Live CD
- Restart in safe mode
- Restart without Internet
- Sometimes it won't even cover the entire screen

The trick is to prevent the user to get help

- The screen lock does part of the job
- Make him feel ashamed
- Limited time

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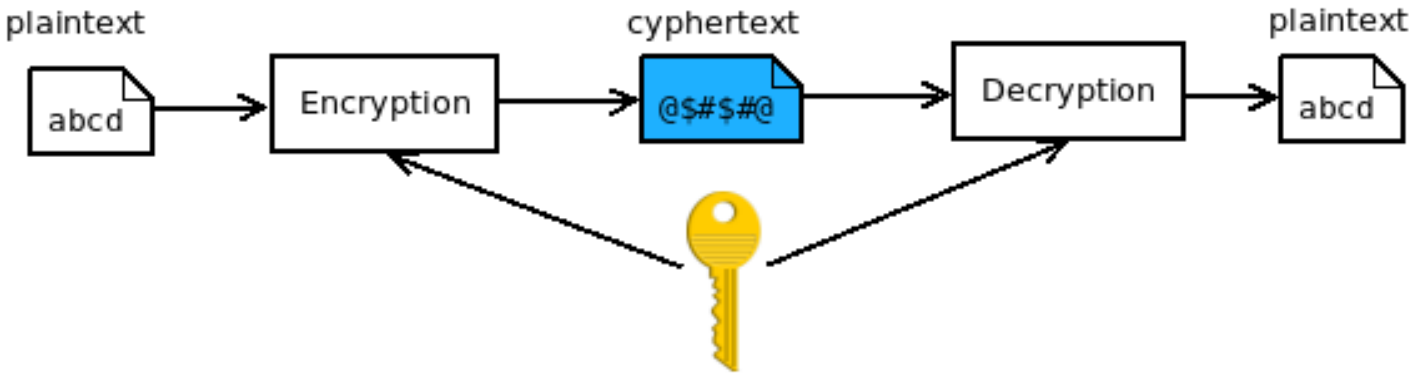
A (very short) crash course in cryptography

Symmetric encryption



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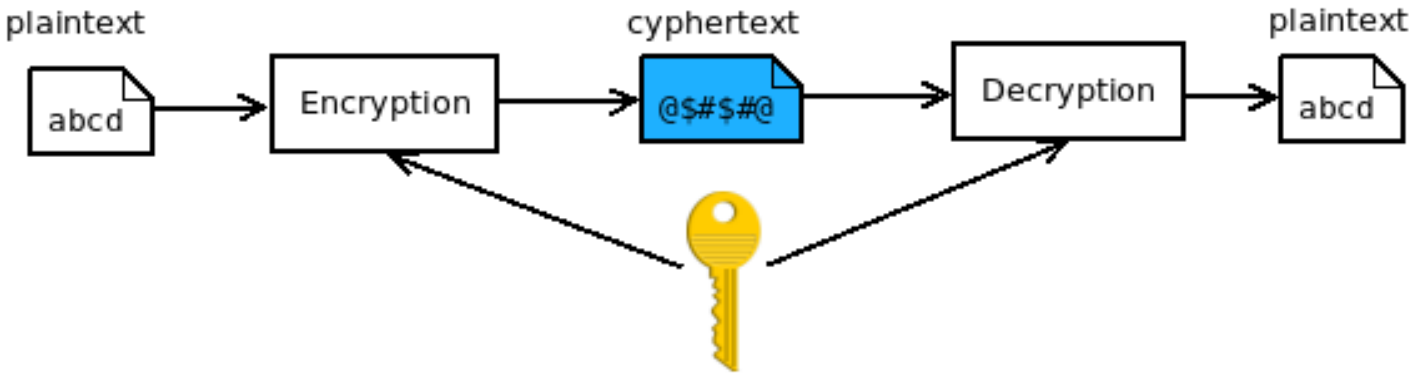

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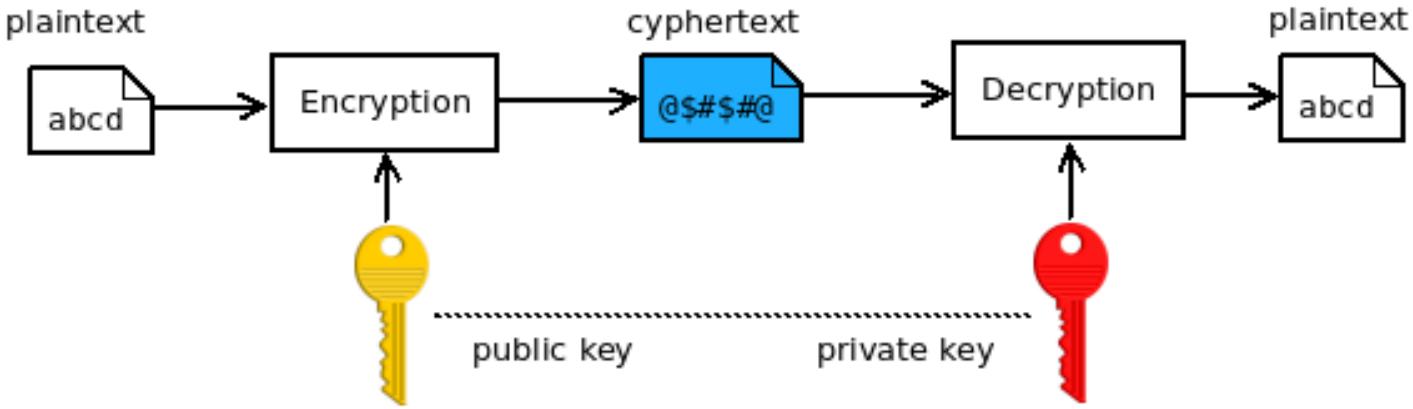

Important features for file encryptors (1)

Feature 1

The ability to encrypt files in a non-trivial manner. It shouldn't be possible to decrypt the encrypted files without a secret key.

Feature 2

The decryption key should be impossible to obtain in a reasonable amount of time, given the malware sample and/or pairs of original/encrypted files.

Important features for file encryptors (2)

Feature 3

After a user has paid the ransom, the key/decryption tool should work for his system alone.

Feature 4

The decryption key should be available to the attacker after a successful attack. The decryption key should not be lost, even if the victim is offline during the encryption.

A proper file encryptor: GPCode (1)

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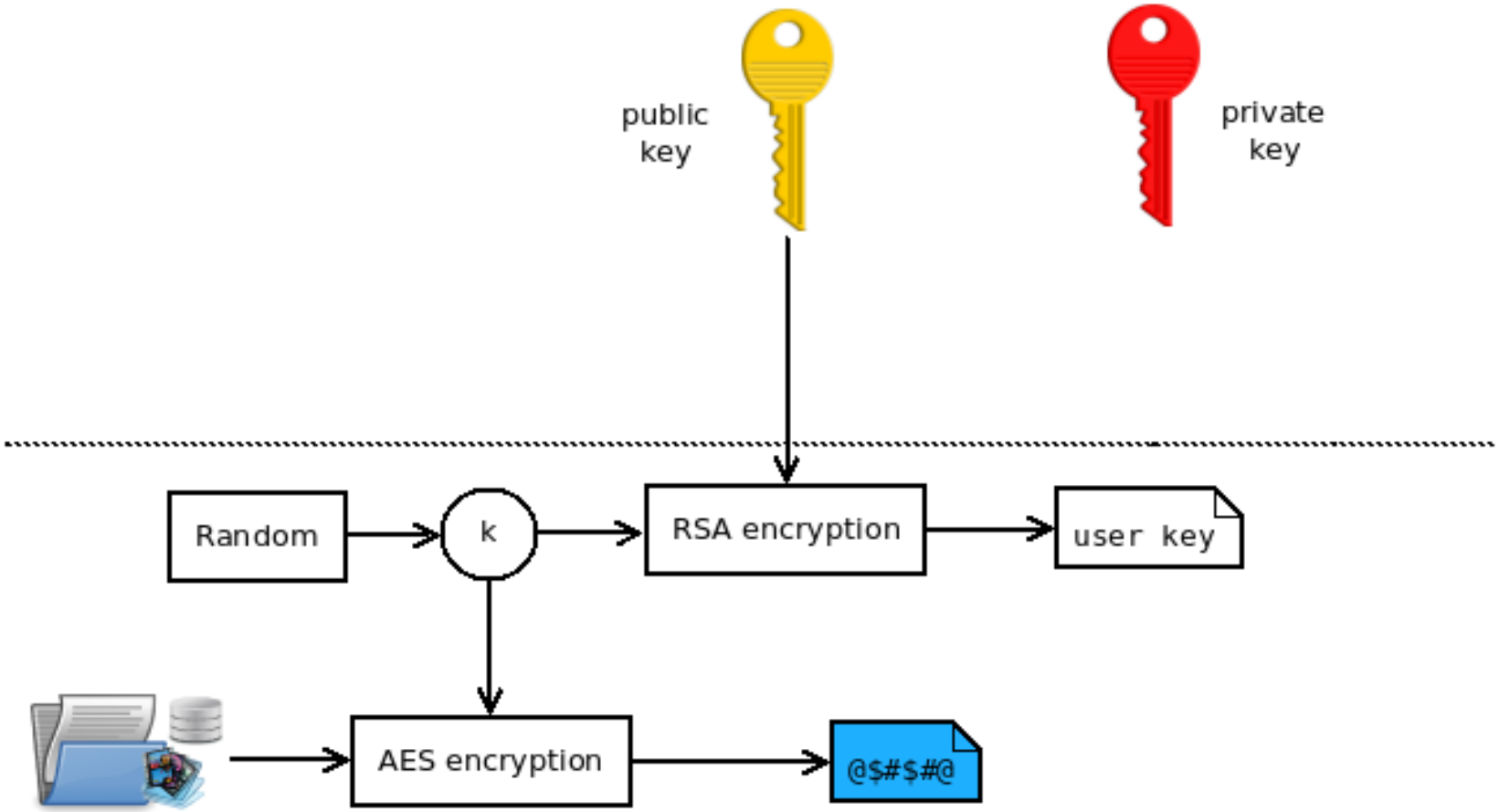

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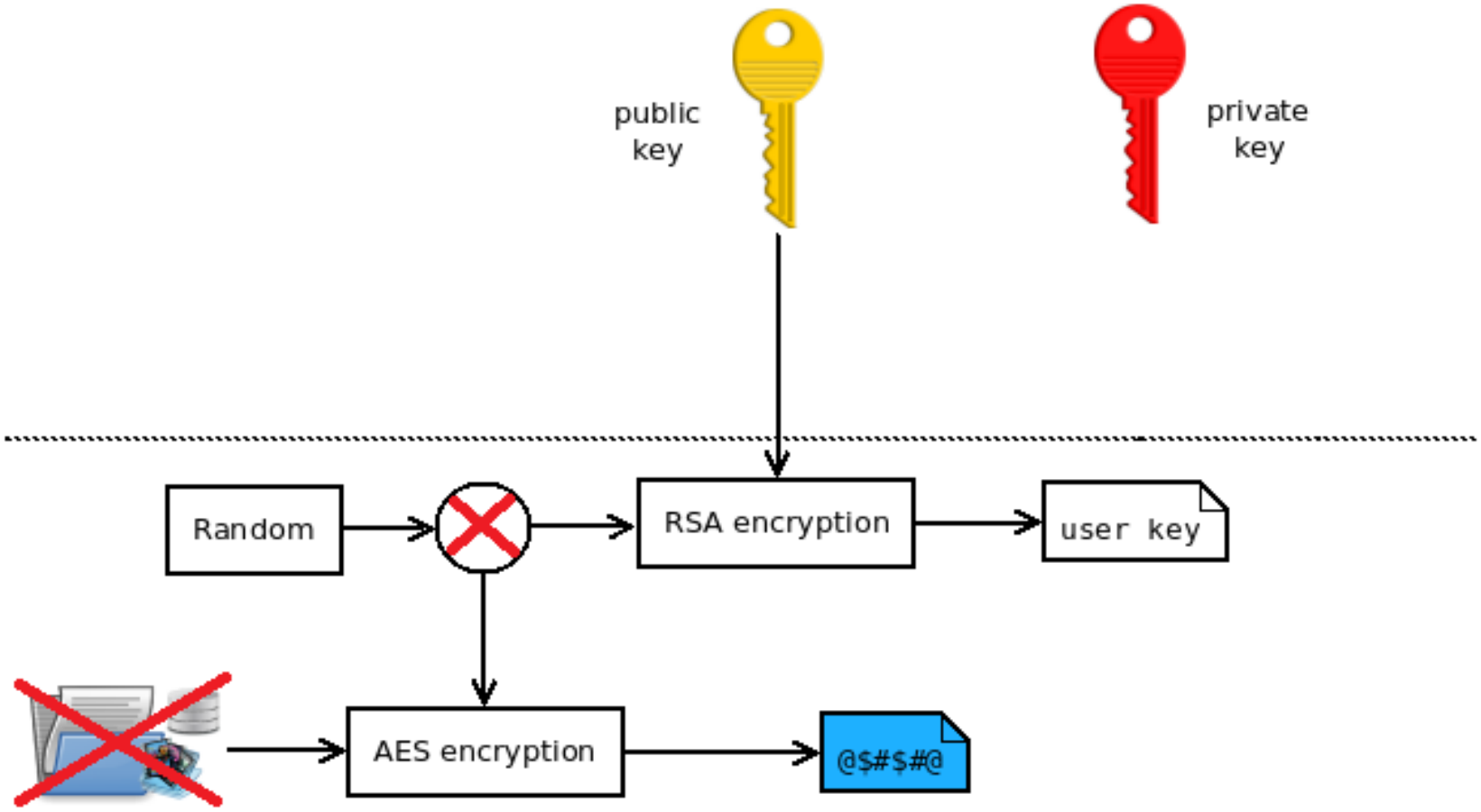

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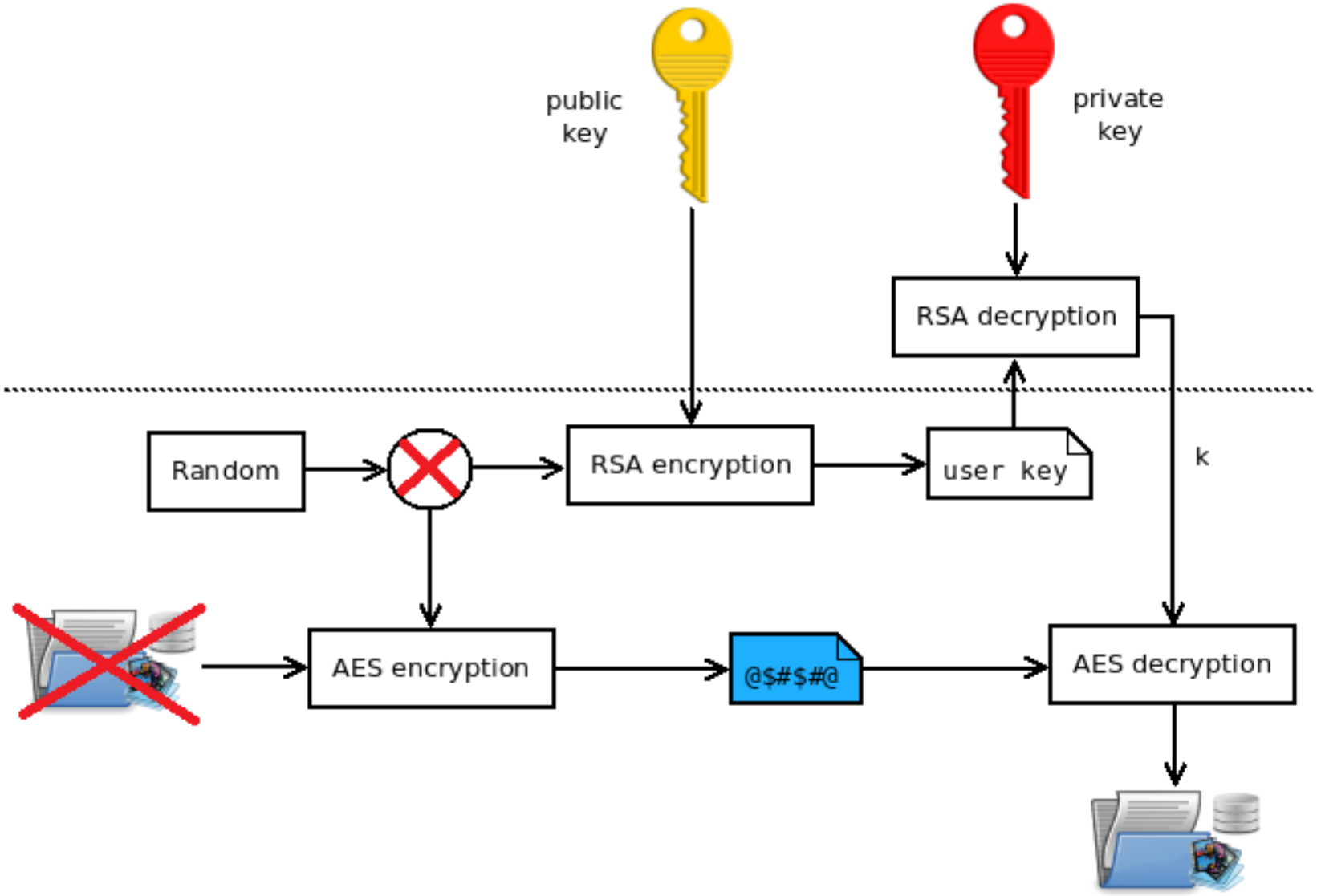

A proper file encryptor: GPCode (2)

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	✓	AES encryption
	✓	the AES key is encrypted with RSA
	✓	the AES key is random
	✓	the attacker can derive the AES key from the user key

ACCDFISA evolution (1)

Version 1 (100$)

	✓ (∼)	encrypted RAR archive
	✗	static password
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Version 5 (5000$)

- ✓ fake BSoD
- ✓ services killer

"We know that you have money"

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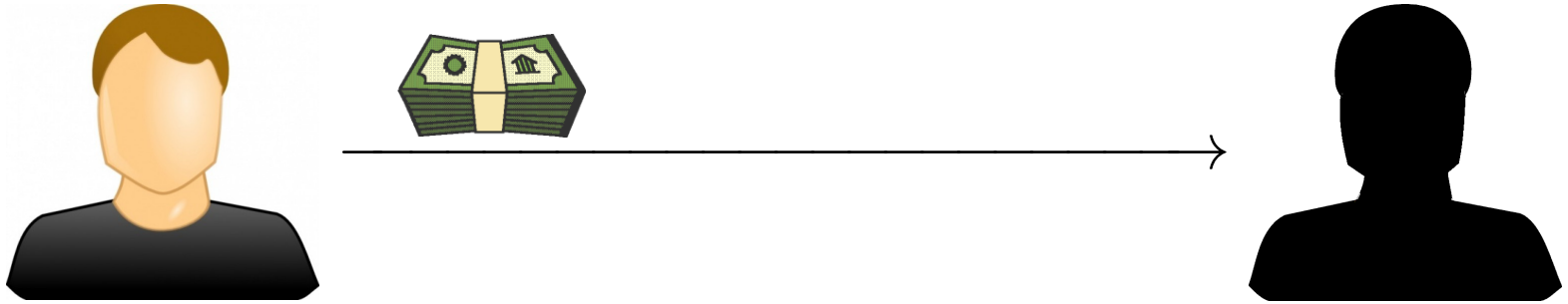
How about the money?

PC Cyborg Trojan (1989)

- post office box in Panama



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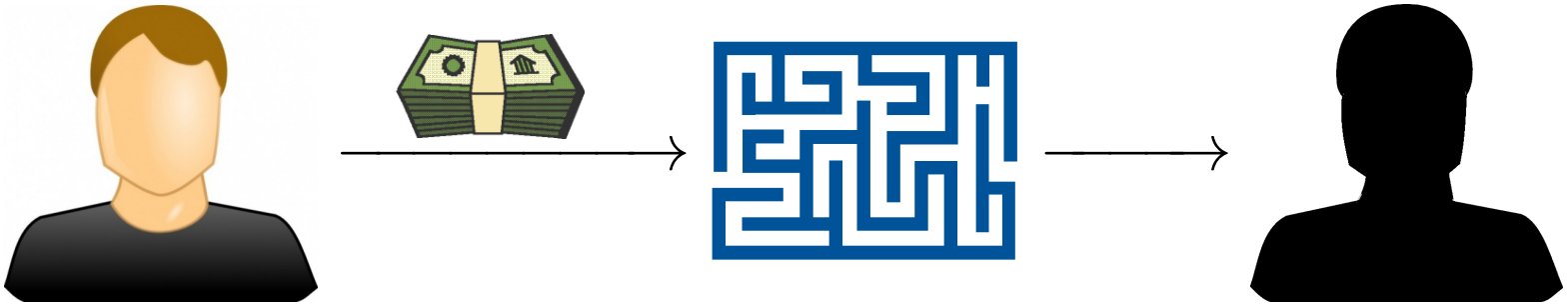
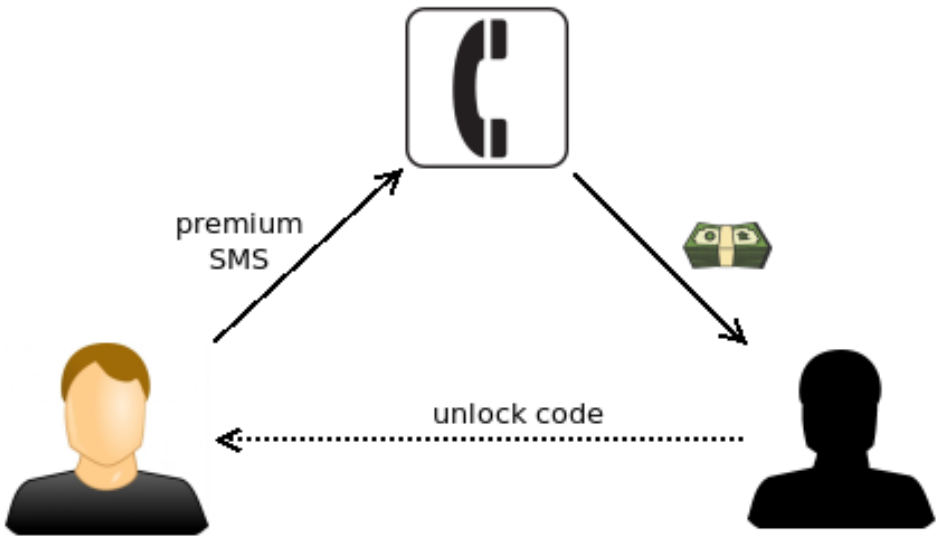


SMS money laundering



Alternative: ask the victim to send recharging codes for cell phone cards

Problems:

- only works in the same country
- small amount of money

Outsourcing the money collection task

Money transfer services

- prepaid cupons for online spending
- easy to buy
- easy to transfer
- hard to track

Liberty reserve

The most commonly used money transfer service on the black market.

- 1LR (1 Liberty Reserve) = 1$
- 1% transaction fee
- 0.75$ privacy fee

- only name, e-mail and date of birth required to open an account
- 55 million transactions
- more than $6 billion laundered money so far

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Where is it going?

- Other platforms are targeted
  - Mac OS
  - Android
- Ransomware gets more integrated into the malware industry
  - Recently discovered ransomware also exhibits bot behaviour (C&C server, DGA)

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Conclusions

- The amount of ransomware in the wild is increasing.
  - $> 10^5$ recent samples
- File encryptors can be a real threat
  - sometimes backup is the only option

You are not safe!

Bitdefender®

Thank you!

Questions?