

Just Make it Invisible to the User? A Case Study of Invisible Flash Drive Encryption.

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Background

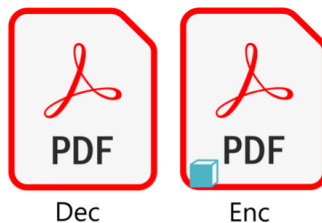
- USB Flash drives are still being used in companies to share data (e.g. in high-security environments with strongly separated networks).
- The software solution we investigated within a company:
 - Almost entirely invisible to the user
 - Automatic *encryption* during copying onto the flash drive
 - Automatic *decryption* during copying from a flash drive
 - No indicator of encryption during copy process
 - Protects data-at-rest

Research Questions

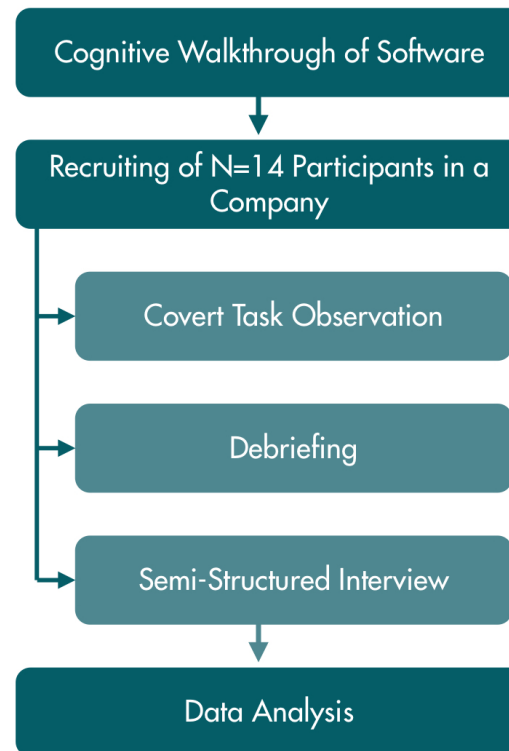
1. Which problems do end-users encounter when (unknowingly) using the flash drive encryption?
2. Do the employees know about the limitations imposed by the automatic flash drive encryption?

The only visible clue the encryption software offers:

A small indicator on top of an encrypted file (only visible when the Windows File Explorer icons were set to (very) large.



Approach



Results

- 3/14 Participants anticipated that the files would be encrypted during the covert task
- All participants encrypted the files – making them unreadable to the researcher requesting them
- The encryption must be temporarily disabled before copying the data to transfer it to someone not using the same encryption software
- To disable the encryption software, a token is required
- The process of getting such a token is time-consuming
- One participant reported needing the token “almost daily”
- Forgetting to disable the encryption when sharing data with customers led to embarrassing situations
- All participants could explain at least some limitations imposed by the encryption software during the interviews
- Every participant forgot to disable the software at least once in their work life

Discussion

- Participants showed a strong disparity between the knowledge of the flash drive encryption during the interviews and the covert task observation
- Invisibility is desirable if no user-interaction is required but can harm the usability, if interaction is necessary