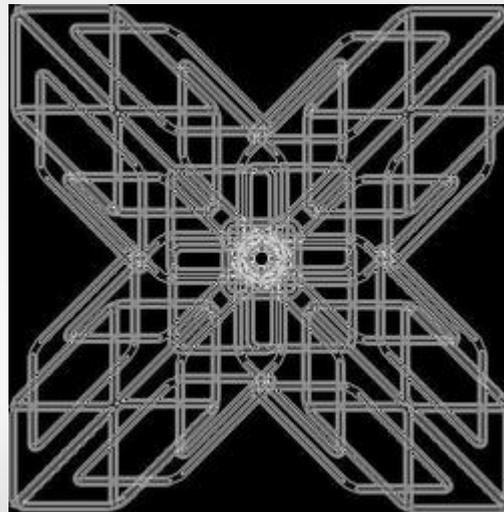


Secret Tracking of Users by Users

Invisible privacy threat in the more and more interconnected digital world

Yæ c@Y



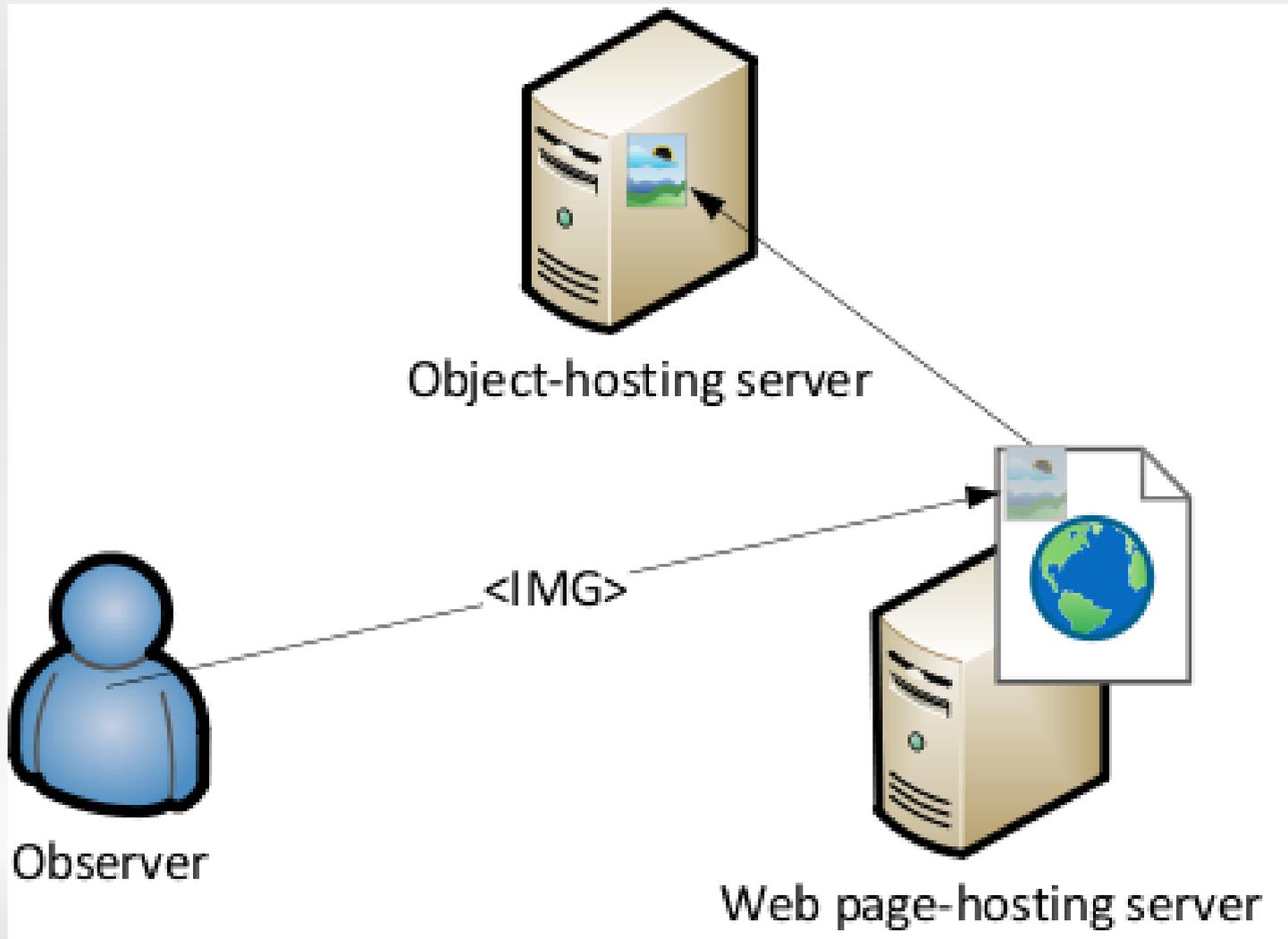
Current Approach

- Remote embedded objects loaded from external locations:
 - Pictures
 - Music
 - Videos
- Digital content is more and more interconnected and composed of physically distributed parts (mashups, social networks...)

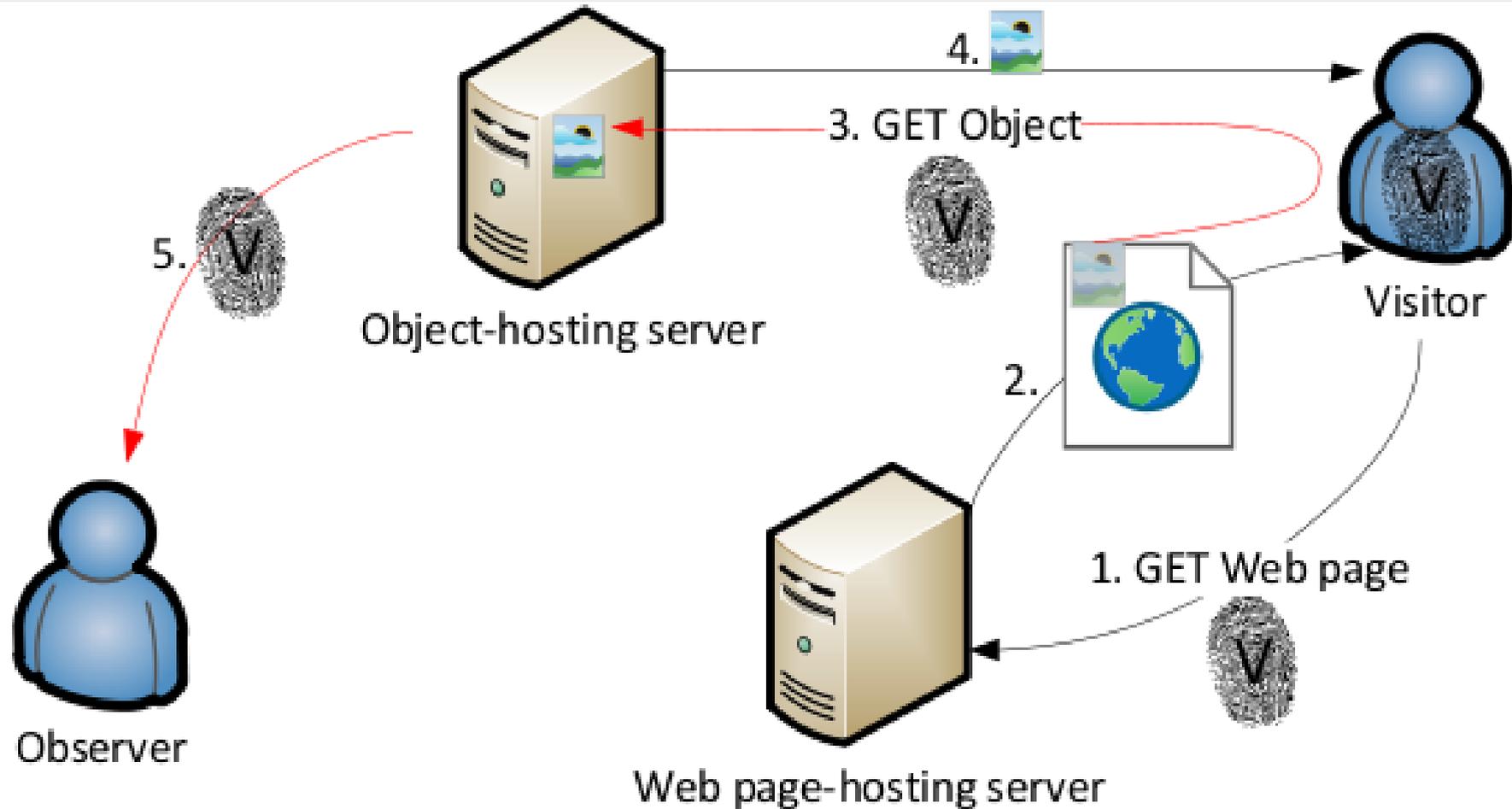
Problem

- Embedded objects loaded from remote locations => tracking capability by design
- Specific action (e.g. Visitor accessing a Web page) triggers side-channel reaction (GET request logged by PHP script) detectable by 3rd party (observer)
- Triggered automatically when accessing the tracked content (embedded objects loaded automatically from remote locations)
- Specific action of user is observable by 3rd party

Embedding Tracking Object



Logging the Tracked Data



Experiments in the real world environment

- Tracking objects embedded to social network environment:
 - Discussion groups (who is interested in a topic)
 - Personal profiles (who is visiting my profile)
 - Personal profiles of other users
- Tracking objects embedded to MS Word document:
 - Who opened the document (Reading my CV)
 - Was work document opened (When?)
 - What is the structure of organisation?

Conclusions

- External embedded objects utilized for:
 - Linking user actions (Time, IP address, Cookie, Browser/OS type)
 - User tracking
 - User profiling
- Users easily tracked by other users
- Different attacker model (specific objectives of individuals)
- Tracking capability of external objects should not be underestimated (problem of trust)

Thank you for attention :-)