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Advanced deduplication, beyond digital fingerprints

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Speaker

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- Irène Wilson
  - Bsc in Forensic Sciences
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  - EnCe
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  - Nuix eDiscovery Specialist
  - More than 9 years experience

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- Independent consulting firm for:
  - eDiscovery/Litigation Support
  - IT Forensics and Cyber Security/Investigations
  - Information Governance
- Offices in Singapore and Switzerland
- Operates Relativity datacenters in an ISO 27001:2013 certified environment in Singapore and Switzerland
- Uses standard and proprietary software solutions
- Staff certified on market leading software and hardware solutions
- Recognized by Who'sWho Legal and GIR

Agenda

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- Introduction
- Benefits of deduplication
- MD5 hash: definition and limitations
- Problematic situations and solutions:
  - Email headers
  - Different file formats
  - Inclusive content within a same thread
  - Email format and variations
  - Email archives
- Risks
- Conclusion

Introduction

“Digital fingerprint”

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Benefits of deduplication

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- Meet deadlines while saving money
- Increase consistency of review decisions and redactions on identical and similar documents

MD5 hash: definition and limitations

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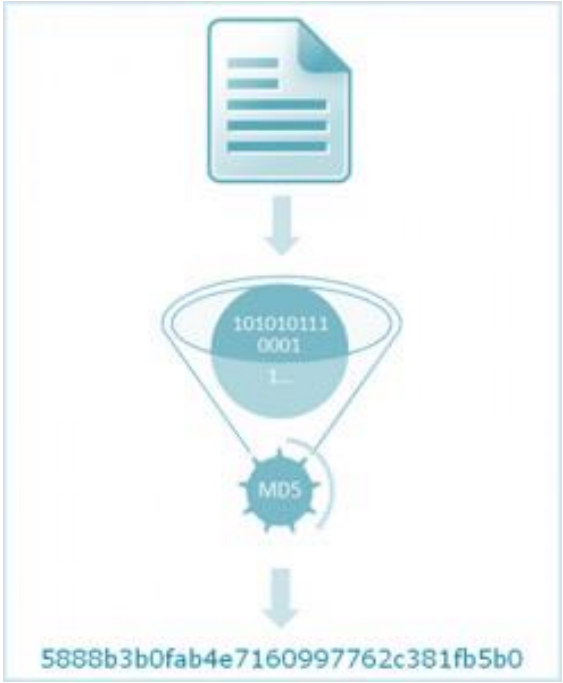
- What?
  - 32-characters value based on binary content
- Why used in forensics?
  - Reproducible
  - One-way algorithm
  - Low chances of collision
  - Short identifier
- Limitations?
  - Format-sensitive
  - Based on the content only



Problematic situations and solutions

Email headers

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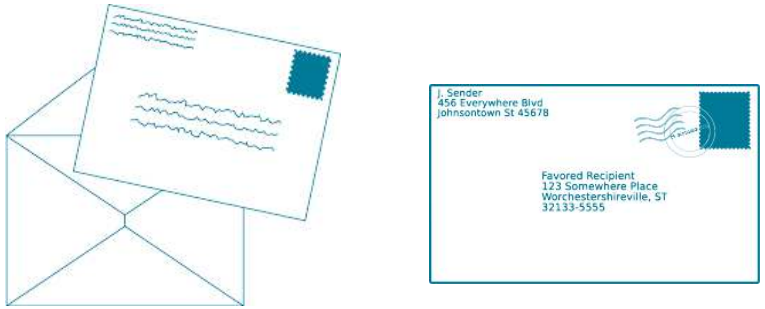
- Problem:
  - The route an email takes impacts its header, therefore its binary content.



- Solution:
  - Nuix custom MD5
    - Subject
    - From
    - To
    - Cc
    - Email body (text tokenized so whitespace and irrelevant characters are removed)
    - Binary streams of all attachments

Problematic situations and solutions

Different file formats

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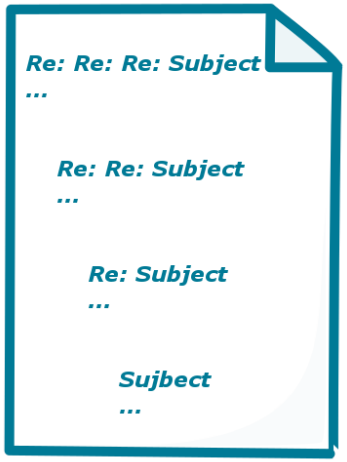
- Problem:
  - Same content into different file formats

- Solutions:
  - Near duplicates (shingles, textual duplicates)
  - Fuzzy hashing (SSDeep)
  - PhotoDNA (law enforcement forces only)

Problematic situations and solutions

Inclusive content within a same thread

- Problem:
  - Redundant content because of conversation history



- Solution:
  - Email threading
    - What was not sent to threading (loose files for ex.)
    - What was ignored by the process
    - Unclustered items
    - Endpoint items
    - Endpoint-attach items

Problematic situations and solutions

Email format and variations

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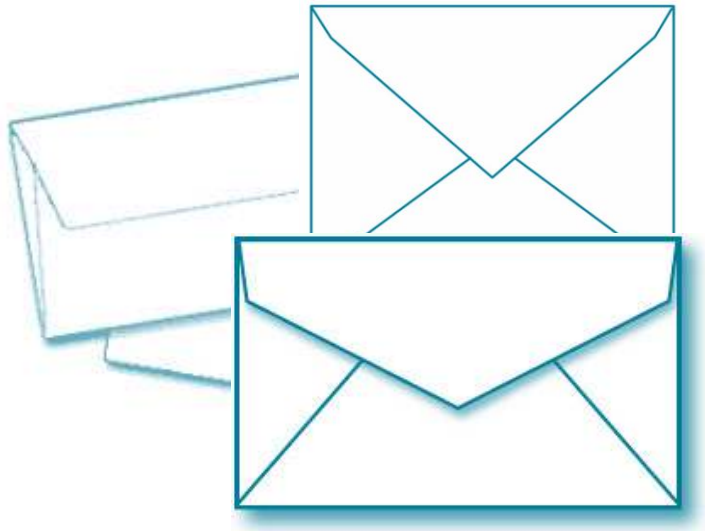
- Problems:
  - Internal vs. external email addresses
  - Attachment order
  - Etc.



- Solutions:
  - Custom deduplication using a metadata profile
  - Custom script

Problematic situations and solutions

Email archives

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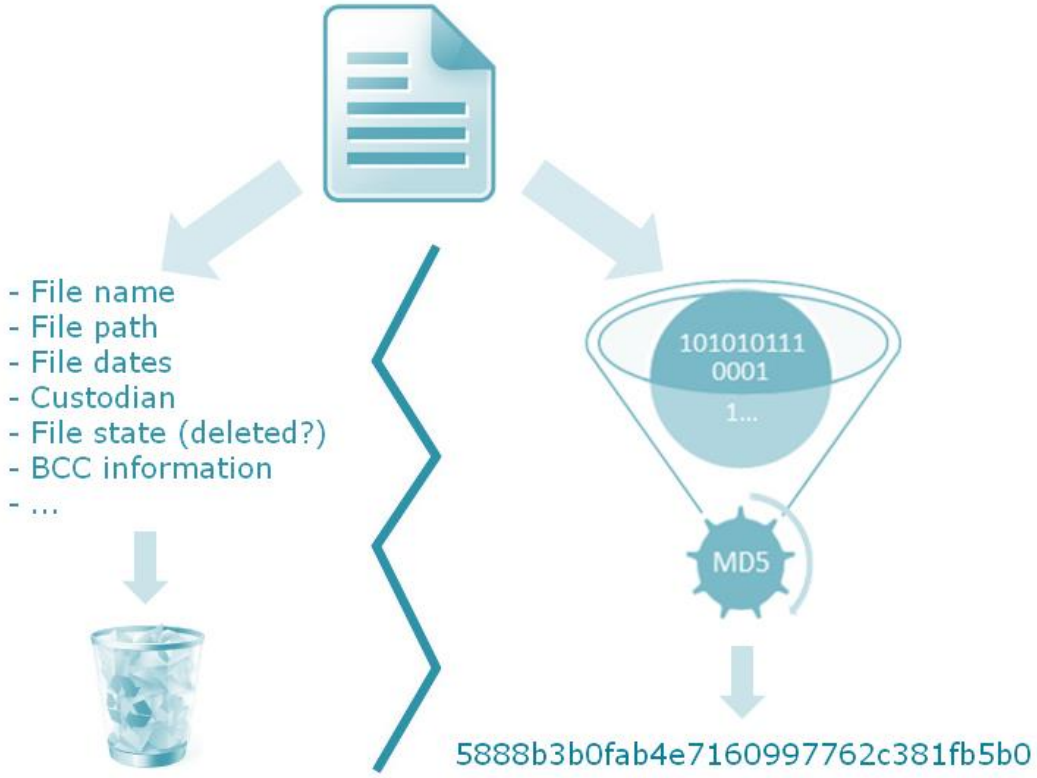
- Problem:
  - Original emails vs. archived emails

- Solution:
  - Custom script:
    - Search for “This message has been archived”.
    - Identify potential original emails with same Name, From, Item Date
    - Export text and compare (original text starts with archived text, without archiving message)

Risks

Ignored metadata

- Relevance of external or ignored metadata
  - Data leakage investigation
  - Date filtering
  - Custodian filtering
  - Evidentiary value based on location



Risks

False duplicates

- Empty files
- Calendar entries

Conclusion

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- Deduplication and data reduction are a real need in eDiscovery.
- Advanced deduplication requires performant tools and creative approaches, while ensuring reproducibility.
- Deduplication risks need to be kept in mind all along the project.

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CAN WE ASSIST YOU OR DO YOU HAVE ANY QUESTIONS?

If so, simply call or email us.

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