SIL765: Network & System Security

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Introduction

Dark clouds on the horizon: using cloud storage as attack vector and online slack space.

Martin Mulazzani, Sebastian Schrittwieser, Manuel Leithner, Markus Huber, and Edgar Weippl. 2011.

In Proceedings of the 20th USENIX conference on Security (SEC'11). USENIX Association, Berkeley, CA, USA, 5-5.

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- Server-side data deduplication

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- Uploaded data stored on Amazon S3 storage service.

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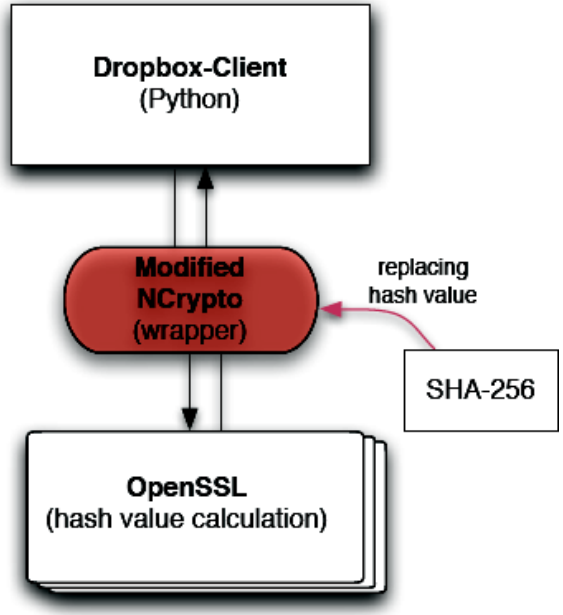
- Owner of file unable to detect attackers accessing the file.

Hash Value Manipulation Attack

- Modify library that Client uses (NCrypto)



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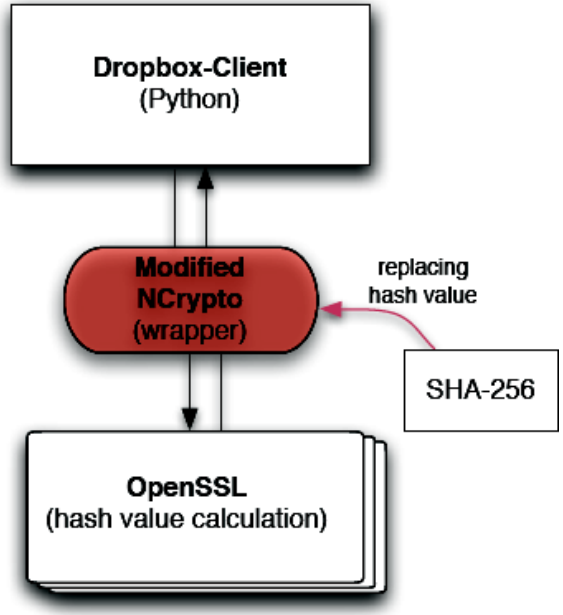

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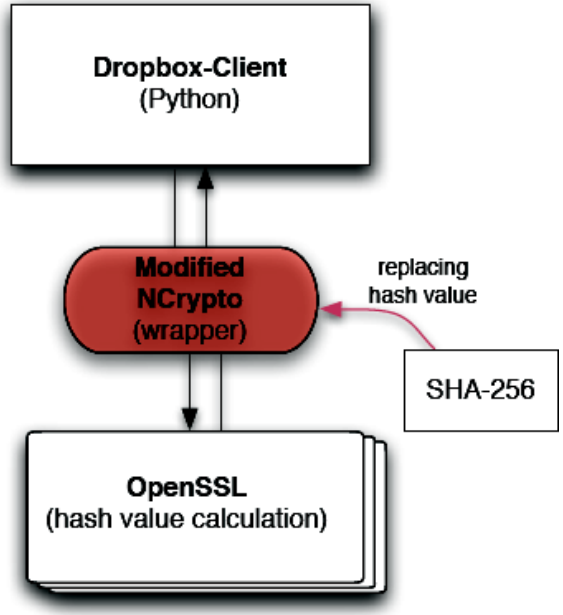

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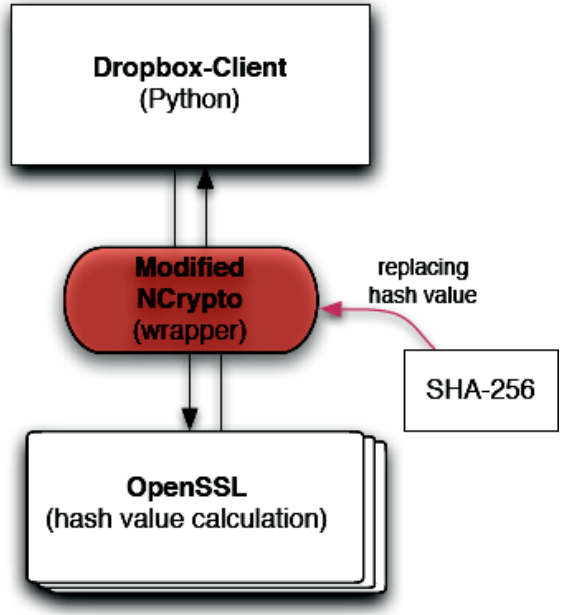

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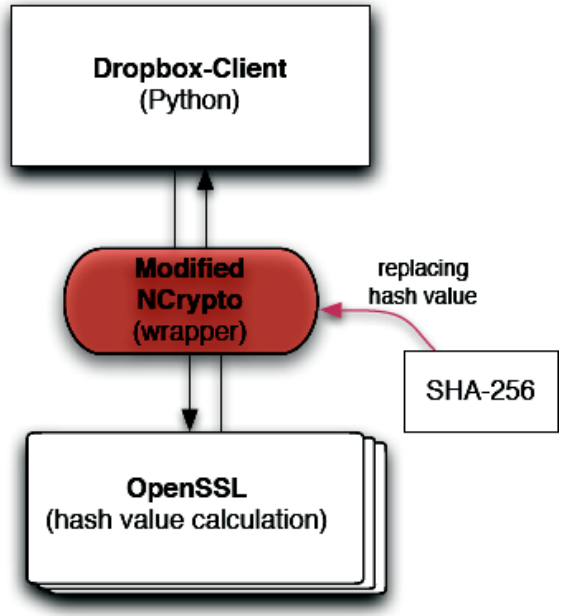
- Instead the corresponding file/chunk on server is linked to the client



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- 128 bit key (Algorithm not public)
- Host ID is used for client user authentication
- If obtained using malware, social engineering, etc., can gives access to all user files.

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- Send Hash value and *ANY* valid Host ID as POST data

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- Send hash value and host ID as HTTPS POST along with actual data.
- After upload, the client software links the uploaded files to the host ID with another HTTPS request
- Modified client can upload unlimited data if linking step is omitted.

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- When victim "previews" malicious file ...

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  - Until Dropbox fixed the HTTPS download attack at the end of April 2011, 100% had been constantly available.
- Online Slack
  - uploaded 30 files of various sizes without linking them to any account
  - 4 weeks later all files were still retrievable
  - When Dropbox fixed the HTTPS download attack in late April 2011, 50% of the files were still available.

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- dynamic host ID would reduce the window of opportunity that an attacker could use to clone a victim's Dropbox by stealing the host ID.
- Dropbox should keep track of which files are in which Dropboxes (enforcement of data ownership)

Thank You