2DCRYPT: IMAGE SCALING AND CROPPING IN ENCRYPTED DOMAINS

ABSTRACT

The evolution of cloud computing and a drastic increase in image size are making the outsourcing of image storage and processing an attractive business model. Although this outsourcing has many advantages, ensuring data confidentiality in the cloud is one of the main concerns. There are state-of-the-art encryption schemes for ensuring confidentiality in the cloud. However, such schemes do not allow cloud datacenters to perform operations over encrypted images. In this paper, we address this concern by proposing 2DCrypt, a modified Paillier cryptosystem-based image scaling and cropping scheme for multi-user settings that allows cloud datacenters to scale and crop an image in the encrypted domain. To anticipate a high storage overhead resulted from the naive per-pixel encryption, we propose a space-efficient tiling scheme that allows tile-level image scaling and cropping operations. Basically, instead of encrypting each pixel individually, we are able to encrypt a tile of pixels. 2DCrypt is such that multiple users can view or process the images without sharing any encryption keys – a requirement desirable for practical deployments in real organizations.
Cloud computing is an attractive paradigm for accessing virtually unlimited storage and computational resources. With its pay-as-you-go model, clients access fast and reliable hardware, paying only for the resources they need to use without the risks of large upfront investments. Nowadays, building applications for multimedia content hosted in infrastructures managed by third-party cloud providers is common. Images might contain highly sensitive and personal information. If not protected, sensitive information in the images might be subject to unauthorized accesses by cloud providers. A naive approach to protect confidentiality of outsourced images is to encrypt the images before they are stored in the cloud.

DISADVANTAGES

- Data confidentiality schemes do not allow cloud datacenters to perform operations over encrypted images.
- Standard encryption techniques make the workflow slow and inefficient because a huge amount of data is pre-fetched and processed.
- Cloud-based image processing has data confidentiality issues, which can lead to privacy loss.
Proposed System

Present The 2DCrypt, a modified Paillier cryptosystem-based scheme that allows a cloud server to perform scaling and cropping operations without learning the image content. In 2DCrypt, users do not need to share keys for accessing the image stored in the cloud. Therefore, 2DCrypt is suitable for scenarios where it is not desirable for the image user to maintain per-image keys. Furthermore, 2DCrypt is more practical than existing schemes based on Shamir’s secret sharing because it neither employs more than one datacenter nor assumes that multiple adversaries could collude by accessing a certain number of datacenters. To make 2DCrypt practical, we propose some improvements to decrease overheads resulted from the application of the modified Paillier cryptosystem.

Advantages:

- 2DCrypt is more suitable for practical scenarios and it provides stronger defence against colluding attacks.
- 2DCrypt is such that multiple users can view or process the images without sharing any encryption keys – a requirement desirable for practical deployments in real organizations.
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SYSTEM REQUIREMENTS:

HARDWARE REQUIREMENTS:

System : Pentium IV 2.4 GHz.

Hard Disk : 40 GB.

Floppy Drive : 1.44 Mb.

Monitor : 15 VGA Colour.

Mouse : Logitech.

Ram : 512 Mb.

SOFTWARE REQUIREMENTS:

Operating system : - Windows XP.

Coding Language : JAVA