PGP, GPG, and Enigmail... Oh My!

Jack Rosenthal

25 January 2016
PGP is a data encryption, decryption, and signing program. It follows the OpenPGP standard.

- People use PGP to sign, encrypt, and decrypt emails, files, folders, and even whole disk partitions.
- PGP allows you to specify a recipient to encrypt a message for given only their public key, you can even encrypt to multiple recipients given only their public keys.
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How it Works

Encrypt

Data

Encrypt data using random key

Encrypt key using receiver's public key

RSA

Encrypted Key

Encrypted Message

Decrypt

Encrypted Message

Encrypted Key

Decrypted using receiver's private key

RSA

Data

Data

Encrypted data using key

Decrypted

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GNU Privacy Guard

GnuPG

- Free implementation of OpenPGP standard
- Typically interfaced through gpg command line tool, but various GUI’s are available
- Probably already on your system as most package managers (pacman, apt, etc) require it for package verification
- See man gpg for all of its options
GNU Privacy Guard

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How can I trust PGP content someone sends me?

Phil Zimmermann, PGP creator

As time goes on, you will accumulate keys from other people that you may want to designate as trusted introducers. Everyone else will each choose their own trusted introducers. And everyone will gradually accumulate and distribute with their key a collection of certifying signatures from other people, with the expectation that anyone receiving it will trust at least one or two of the signatures. This will cause the emergence of a decentralized fault-tolerant web of confidence for all public keys.

- Meet with them in person and verify the key fingerprints match, then sign their key.
- Or, verify someone you trust has signed their key.
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Making your own PGP key

1. $ gpg --gen-key

2. gpg will ask you a number of questions... answer them

3. After making a secure passphrase, you will have to wait a few minutes for it to generate a key. During this time, you may want to browse the web, or do something else to increase system entropy, as this will speed up the prime number generation.

4. $ gpg --list-keys and make sure your new key is there

5. Upload your key to a keyservers like pgp.mit.edu

   $ gpg --keyserver pgp.mit.edu --send-keys B20E73F7
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Generating a Revocation Certificate

1. $ gpg --output revoke.asc --gen-revoke B20E73F7

2. “If you forget your passphrase or if your private key is compromised or lost, this revocation certificate may be published to notify others that the public key should no longer be used.”

3. Revoked public keys:
   - Can still verify signatures made by you in the past
   - Cannot be used to encrypt future messages to you
   - Do not affect ability to decrypt previously received messages (because that depends on your private key)

4. Store a physical (e.g., printed) copy of the revocation certificate in a lock box
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KEEP IT SECRET, KEEP IT SAFE
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Integrating GnuPG with your email client

- Thunderbird: Install the Enigmail addon. The GUI is pretty self explanatory.
- Mutt: See http://dev.mutt.org/trac/wiki/MuttGuide/UseGPG
- Android: Use K9 mail and install APG
- Other email clients: Google it

When setting up your email client, please use PGP/MIME, as *inline PGP is considered harmful*. 