# GPG4WIN

GNU'S TOOLS FOR SECURE COMMUNICATION AND DATA STORAGE

USER'S GUIDE

#### **Version Information**

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#### **Acknowledgement**

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The GPG4Win Project Team for their effort in developing GPG4Win software

The developers and/or authors of the following software:

• *GnuPG* • *WinPT* • *GPA* • *GPGol* • *GPGee* • *Sylpheed-Claws* • *GPGME* • *GLIB* • *NSIS* • *Pthreads-win32* • *LIBGPG-ERROR* for making encryption, key management, and secure e-mail easier

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# **Table of Contents**

1.	Introd	uction	1
2.	Obtair	ning GPG4WIN Installation Package	2
3.	Install	ing GPG4WIN	2
4.	Gener	rating/Importing Your Keypair	6
	4.1	Generating Your Keypair	6
	4.2	Importing Your Keypair	9
5.	Expor	ting/Publishing Your Public Key	. 11
	5.1	Exporting Your Public Key Into a File	11
	5.2	Publishing Your Public Key at Keyservers	13
6.	Impor	ting Others' Public Key	. 13
7.	Sendi	ng Encrypted E-mail	. 17
8.	Recei	ving Encrypted E-mail	. 19
9.	Encry	pting Files	. 21
10.	Decry	pting Files	. 23
11.	Wiping	g	. 24
	11.1	Selecting Wipe Mode	24
	11.2	Wiping Files	25
	11.3	Wiping Free Space	26
12.	Apper	ndix A: GNU Free Documentation License	. 29

# 1. Introduction

GPG4WIN is an installer package for Microsoft® Windows operating system (9x/ME/2000/XP/2003) that provides several modules. These modules are aimed in implementing OpenPGP Standard (RFC 2440<sup>1</sup>) for e-mail and file encryption.

It means two things:

- everyone can use GPG4WIN and its modules to encrypt e-mails and files; 1.
- GPG4WIN is compatible with other software that conform with OpenPGP 2. Standard.

The GPG4WIN modules are:

Module Name	Description
GnuPG <sup>2</sup>	Is a free software replacement for the PGP <sup>3</sup> suite of cryptographic software, released under the GNU General Public License. GnuPG is completely compliant with the IETF standard for OpenPGP. This module is the core module; this is the actual encryption tool.
WinPT	A key manager and helper for various encryption matters.
GPA	Another key manager.
GPGol	A plugin for Microsoft® Outlook 2003 (e-mail encryption).
GPGee	A plugin for Microsoft® Windows Explorer.
Sylpheed-Claws	A complete e-mail program with GnuPG plugin.

Depending on your requirement, you can install all or some of the modules, except for the GnuPG module. It is the core module that must be installed. If you are not sure which modules to choose, you can refer to the following tables:

If you	install the following module(s)
want to use the GnuPG command line tools only	GnuPG
have an e-mail program (Outlook, Thunderbird) and want to encrypt e- mail and files	GnuPG, WinPT or GPA

<sup>&</sup>lt;sup>1</sup> Refer to http://tools.ietf.org/html/2440 for detailed information

<sup>&</sup>lt;sup>2</sup> GnuPG is the GNU project's complete and free implementation of the OpenPGP standard. Visit

http://www.gnupg.org for more information <sup>3</sup> Pretty Good Privacy (PGP) is a computer program which provide cryptographic privacy and authentication. Visit http://www.pgp.com for more information

have an e-mail program (Outlook, Thunderbird), want to encrypt e-mail and files, and want a quick access to right-click context menu in Windows Explorer	GnuPG, WinPT or GPG, GPGee
use Microsoft Outlook 2003 and want to send e-mails using GnuPG plugin	GnuPG, WinPT or GPA, GPGol
want to use complete e-mail program with GnuPG plugin	GnuPG, Sylpheed-Claws
want to use all the GPG4WIN modules and features	All modules

**Note :** This document (version 1.0) will describe the third option, which provide a good compatibility for most of user's environment.

It is a good thing to understand some basic principles and concepts of Cryptography and Public Key Cryptography before using GPG4WIN (or other PGP/OpenPGP related products). You can find a good documentation here:

- Applied Cryptography: Protocols, Algorithm, and Source Code in C, 2<sup>nd</sup> ed, Bruce Schneier, John Wiley & Sons, 1996; ISBN 0471117099. If you are going to a remote island and could only pick one cryptography book, this is the one.
- How PGP Works, http://www.pgpi.org/doc/pgpintro/
- Public-Key Cryptography Wikipedia, http://en.wikipedia.org/wiki/Public\_key\_cryptography

# 2. Obtaining GPG4WIN Installation Package

You can obtain the latest GPG4WIN Installation Package here: http://www.gpg4win.org/download.html

If you want to verify the installation file integrity, you can use one of this small program to compute the installation file checksum<sup>4</sup> value:

- Microsoft FCIV, http://support.microsoft.com/?kbid=841290 or
- MD5sums, http://www.pc-tools.net/win32/md5sums/

and compare it with the checksum value posted on this site: http://www.gpg4win.org/package-integrity.html

# 3. Installing GPG4WIN

Before installing this program, please close all of other applications, especially Windows Explorer and Microsoft Outlook.

<sup>&</sup>lt;sup>4</sup> Refer to http://en.wikipedia.org/wiki/Checksum for detailed information about checksum.

To install GPG4WIN, just double-click (or run) the Installation Package, and the installation process will start. You need, of course, administrator/power user privilege to install GPG4WIN.

#### Step 1:

The installation window will appear. Click 'Next >' to proceed.



#### Step 2:

License Agreement window will appear. Click 'Next >' to proceed.



#### Step 3:

You may choose which components to install. In this document, we are going to use GnuPG, WinPT, and GPGee.



Pick the destination folder for the program. Click 'Next >' to proceed.



#### Step 5:

Pick your favourite link type. Click 'Next >' to proceed.



#### Step 6:

Pick the Start Menu folder if you choose Start Menu for your link type. Click 'Next >' to proceed.



#### Step 7:

Some notification message might appear. Just click 'OK'.





#### Step 8:

Now, GPG4WIN is being installed.



#### Step 9:

Click '**Next** >' after completed.

🏶 GnuPG For Windows Setup			_ 🗆 🗙
Installation Complete Setup was completed successfully.			<b>(</b>
Completed			
Show details			
Nullsoft Install System v2.06			
	< Back	Next >	Cancel

#### Step 10:

Installation is now complete. Click 'Finish'.



# 4. Generating/Importing Your Keypair

The very first step in using GPG4WIN is generating or importing your own keypair. Generate keypair if you do not have one. If you already have your own keypair, please jump to section "Importing Your Keypair".

#### 4.1 Generating Your Keypair

#### Step 1 :

You can start this process by selecting WinPT from the Windows Start Menu



#### Step 2: Choose 'Generate a GnuPG key pair'. Click 'OK'.



#### Step 3:

Enter your real name and your e-mail address. Unless you have specific need for RSA keys and other expert setting, leave the '**Prefer RSA keys**' empty<sup>5</sup>. Click '**OK**' to proceed.

Name and E-Mail As:	gnment	
	nust have a name associated with it. The name an t your correspondents that your public key they are o us.	
Real name:		
By accosiating an e	hail address with your key pair, you will enable correspondents in selecting the correct public ating with you.	
By accosiating an e WinPT to assist you	correspondents in selecting the correct public	
By accosiating an e WinPT to assist you key when communic	correspondents in selecting the correct public	

<sup>&</sup>lt;sup>5</sup> For those who are curious enough, GnuPG use 2048-bit DSA and ElGamal algorithm, as specified in the OpenPGP standard as mandatory asymmetric algorithm.

#### Step 4:

Now you have to provide a passphrase<sup>6</sup> that will protect your secret key. Please note that there will be no way to retrieve or reset this passphrase if you forget it, so be very careful. And one more thing: pick a long phrase that hard-to-guess. Click '**OK**' to proceed.

ey Generation		×
Enter Passphrase		
I	🔽 Hid	de Typing
	OK	Cancel

#### Step 5:

Re-type your passphrase for confimation. Click 'OK' to proceed.

ey Generation		
Repeat Passphrase		
J	<b>⊠</b> <u>H</u> id	le Typing
	<u>0</u> K	<u>C</u> ancel

#### Step 6:

GnuPG will create your keypair by generating some random bits. To increase the randomness (and also increasing the keypair quality), you might want to try some of these:

- moving your mouse randomly
- typing random character using keyboard
- opening a large file
- running a resource-intensive program



Step 7:

The key generation process is complete. Click '**OK**' to proceed.



#### Step 8:

<sup>&</sup>lt;sup>6</sup> Passphrase is similar to password, but (should) consists of two or more words. In means that passphrase should have more characters that ordinary password. You can read tips about passphrase at http://www.iusmentis.com/security/passphrasefaq/strength/#HowdoImakeastrongpassphrase

Since your keypair (and your keyring<sup>7</sup>) is an important part in public-key cryptography, we strongly recommend you to store your keyrings in a backup media (floppy disk, CDROM, or other removable media). Losing these keyrings means: (1) you cannot access your encrypted e-mails and files and (2) you need to re-distribute (or re-publish) your new public key. To back it up, choose '**Yes**'.

Please note that your private (secret) keyring is protected by your passphrase, so it would be safe enough to back it up in a common backup media (assuming you pick a good passphrase in previous step).

WARNING - Important hint	× · · · · · · · · · · · · · · · · · · ·
Remember that your hard dis	hat you backup your keyrings because they both contain VERY important data. sk can crash or the files can be deleted by accident; so it is a good rent mass stoarge like a floppy or CDR!
Backup your keyrings now?	
	Yes No

#### Step 9:

Now, you have two different keyring to backup: a public keyring and a private (secret) keyring. Choose your backup media to store your public keyring,



#### Step 10:

and your private (secret) keyring



<sup>&</sup>lt;sup>7</sup> A keyring is a collection of several keys

#### 4.2 Importing Your Keypair

This section is only intended for those who already had their own keypair before WinPT installation. For example: veteran GnuPG command-line user or PGP Desktop<sup>8</sup>.

Tips for PGP Desktop user: You can import PGP Desktop keypair/keyring by simply renaming the **pubring.pkr** and **secring.skr** to **pubring.gpg** and **secring.gpg**. Then, you can import them using steps below.

#### Step 1:

Start the WinPT Program.



#### Step 2:

Choose 'Copy GnuPG keyrings from another location' and click 'OK'.



#### Step 3:

Browse to your public keyring location. Choose that keyring and click 'OK'.



#### Step 4:

Browse to your private (secret) keyring location. Choose that keyring and click 'OK'.

<sup>&</sup>lt;sup>8</sup> © PGP Corporation. All rights reserved.

#### **GPG4WIN User's Guide**

Please choose yo	our Secret Keyrin	ıg			<u>? ×</u>
Look in:	DATA (D:)		-	+ 🗈 💣 🎟-	
History Desktop My Documents	pubring.gpg     secring.gpg     trustdb.gpg				
My Computer	File name: Files of type:	GPG Keyrings (*.gpg)		•	Open Cancel

#### Step 5:

Right-click the WinPT System Tray icon and choose 'Key Manager'.



#### Step 6:

You might encounter this message if WinPT cannot found ultimate trusted key in the current keyring. Just click '**OK**' for this message.



#### Step 7:

In the Key Manager, right-click on the key and choose 'Set Implicit Trust'. This key will become valid and have ultimate trust properties.

🥰 Key Manager							_ 🗆 🗙
File Edit View Key Groups Keys	erver GPG ?						
🗢 🤤 🚰 📝 🔎 🕩 🖬 💼	Ē						
User ID	Key ID	Туре	Size	Cipher	Validity	Trust	Creation
Catherine Dee <catherine.dee@mm< th=""><th>Key Attributes</th><th>eub/arc</th><th>1024/2048</th><th>DSA/ELG</th><th>None</th><th>None</th><th>23-Jun-06</th></catherine.dee@mm<>	Key Attributes	eub/arc	1024/2048	DSA/ELG	None	None	23-Jun-06
	Copy Key to Clipboard Paste Key from Clipboard Send Key to Mail Recipier						
	Add Key Edit	•					
	Sign Revoke Cert Delete List Signatures Enable Disable						
Default Key: 0x28E4FA45	Set Implicit Trust			1 ke	ys		

# 5. Exporting/Publishing Your Public Key

Now you have your own keypair: a public key and a private (secret) key. Bob, for example, will need your public key if he want to send encrypted e-mail to you. So the next logical step will be exporting/publishing your public key so that Bob and everyone else can send encrypted e-mail to you.

## 5.1 Exporting Your Public Key Into a File

#### Step 1:

Start WinPT from the Start Menu.



Step 2:

Activate the Key Manager by right-click on the WinPT system tray icon and choose 'Key Manager'



#### Step 3:

Choose '**Key > Export...**' from the menu.



#### Step 4: Name the key and save it.

🥰 Choose Name	for Key File				<u>?</u> ×
Save in:	🔁 Keys		•	+ 🗈 💣 🎟+	
History Desktop	Alice.asc Bob.asc				
My Documents	File name:	Catherine_Dee.asc		<b>•</b>	Save
My Network P	Save as type:	All Files (*.*)		•	Cancel

#### Step 5:

Click '**OK**' when the notification box appears.

🔍 Key Manager		×
Key(s) successfully	saved in 'D:\Keys\Cathe	erine_Dee.asc'.
	ок	

Now, you can send this file to anyone that need your public key. You can do it by:

- attach the file to your e-mail
- copy-paste its content (it's in ASCII format, just open it with notepad or other text editor) to your e-mail text
- put the file or its content in your website or weblog
- put it in removable media (floppy disk, USB flash, etc.) and circulating it

#### 5.2 Publishing Your Public Key at Keyservers

If you want your public key to be recognized worldwide, you can publish your public key at some internet keyservers.

[this section is not complete yet]

# 6. Importing Others' Public Key

You will need Alice public key if you want to send encrypted e-mail/file to Alice. You can get her public key by asking her to send it to you by e-mail, or download it from keyservers or her website/weblog.

There are lot of methods to obtain Alice's public key. But whatever method you choose, make sure that the key is \*really\* Alice's, not key from someone else who pretends to be Alice.

Usually, public keys are distributed in small file with **.asc** extension (e.g. charlie.asc for Charlie's public key). But if Alice sent you her public key embedded in her e-mail messages, for example :

```
From: Alice
Sent: Tuesday, 27 June, 2004 13:48
To: Catherine Dee
Subject: My public key
Hello,
I have already read your messages. I will send you the files as
soon as possible. Meanwhile, here is my public key:
----BEGIN PGP PUBLIC KEY BLOCK-----
Version: GnuPG v1.4.3 (MingW32)
mQGiBESbqeqRBACUSFAyzJYpy/LlDNSkCyLO4/0afgifLwVt63Rd8BhPHMkI5GSZ
oh1EL9uCNKhSpRTmhWP3EzVHYsU3Vp107MNEcz20AaUUDYtxpwKNrRFKPiR4M3/T
603xal3IXN1X3WRT/3szl2FKORqISQQYEQIACQUCRJup+wIbDAAKCRDmCGMQIAm5
KJorAKC57QqBqDeRQM9fzcGnwA2+hLBd1wCqrEXeqCr27ixJOWA+OOChi6tL84w=
=8R5H
----END PGP PUBLIC KEY BLOCK-----
Allright, that's all for now.
Regards,
Alice
```

then all you have to do is copy the bold lines (from --BEGIN PGP PUBLIC KEY BLOCK-- to --END PGP PUBLIC KEY BLOCK-- ), paste it to your favourite editor, and save it as **alice.asc** file.

After obtaining Alice's public key file, we need to import it to our public keyring

Step 1: Start WinPT from the Start Menu.

	Programs	,	GnuPG For Windows    GnuPG FAQ
<u>a</u>	Documents	•]	GPGee Manual
io 🔊	Settings	•	Run the Windows Privacy Tray key management tool. This is a
<b>ě</b>	Search	•	versatile key management and encryption tool.
ê 🥏	Help		
8 🚰	Run		
§ 🔔	Log Off satria.mulyawan		
<b>1</b>	Shut Down		
Start	] 🚮 🥭 🛛 💁 Proj 🔊 🕽 Ses		

#### Step 2:

A WinPT System Tray icon will appear in the bottom left corner. Activate the Key Manager by right-click on the icon and choose '**Key Manager**'



#### Step 3:

From the Key Manager menu, pick 'Key > Import...'



#### Step 4:

Browse to the public key file, click the file, and click 'OK'

Choose Name	of the Key File				? ×
Look in:	🔁 Keys		•	+ 🗈 💣 🎫	
History Desktop My Documents	Altce.asc Bob.asc				
My Computer	File name:			•	Open
My Network P	Files of type:	All Files (*.*)		<b>_</b>	Cancel
		i open as read-only			1.

#### Step 5:

Information about the public key will be displayed. Click 'Import' to proceed.

User ID	Size	Key ID	Creation	Туре
Alice <alice@somewhere.net></alice@somewhere.net>	1024/2048	0x365C123C	23-Jun-06	DSA/E
<				Þ

#### Step 6:

Key import statistic will be displayed. Click '**OK**' to proceed.

Number of public keys Imported public keys	
Imported public rege	11
Number of secret keys	0
Imported secret keys	0
Revocation certificates	0
No (valid) user ID	0
New user ID's	0
New sub keys	0
New signatures	0

#### Step 7:

Now, we have to sign this public key to validate that this key is truly Alice's public key. At the Key Manager, click the Alice's key. Choose menu '**Key** > **Sign**'.

#### **GPG4WIN User's Guide**

File Edit View	Key Groups Keyserver GPC	i ?						
=> 🗑 💕 📝	New 🕨							
User ID	Edit	y ID	Туре	Size	Cipher	Validity	Trust	Creation
🔜 Alice <alice@< td=""><td>Sign</td><td>365C123C</td><td>pub</td><td>1024/2048</td><td>DSA/ELG</td><td>None</td><td>None</td><td>23-Jun-06</td></alice@<>	Sign	365C123C	pub	1024/2048	DSA/ELG	None	None	23-Jun-06
式 Catherine Dei	Delete Revoke Cert List Signatures List Trust Path	28E4FA45	pub/sec	1024/2048	DSA/ELG	Ultimate	Ultimate	23-Jun-06
	Import via HTTP Import Export Export Secret Key							
	Properties							
	Refresh Keys (Keyserver) Reload Key Cache Reverify Signatures							

#### Step 8:

At the Key Signing dialog box, choose your key (it might have been chosen by default) and type your passphrase. Click '**OK**'.



#### Step 9:

An information box will be displayed. Click 'OK'.



#### Step 10:

Alice's key will now have full validity (see Validity column).

🍳 Key Manager							- 🗆 ×
File Edit View Key Groups Keyserver G	PG ?						
🗢 🗑 🗳 📝 🔎 🖆 📕 💼 🗎							
User ID	Key ID	Туре	Size	Cipher	Validity	Trust	Creation
Alice <alice@somewhere.net></alice@somewhere.net>	0x365C123C	pub	1024/2048	DSA/ELG	Full	None	23Jun-06
Catherine Dee <catherine.dee@mymail.org></catherine.dee@mymail.org>	0x28E4FA45	pub/sec	1024/2048	DSA/ELG	Ultimate	Ultimate	23-Jun-06
Default Key: 0x28E4FA45	1 secret keys			2 key	/5		

# 7. Sending Encrypted E-mail

Let us assume that Alice and Bob have received our public key, and we also have import their public keys into our keyring. Now, we can send encrypted<sup>9</sup> e-mail to them.

#### Step 1:

Compose your e-mail as usual, using your favourite e-mail client. In this example we are going to use Microsoft® Outlook 2000. We are going to send it to Alice and Bob

☑ Information about GPG - Message (Plain Text)	<
Elle Edit View Insert Format Tools Actions Help	
🔄 🔄 🖨 🕼 😫 🕴 😫 Options 🖏 🔹 🔹 🔺	*
To   bob@planetearch.com; alice@somewhere.net	
<u><u><u>C</u>e</u></u>	
Bcc	
Subject: Information about GPG	
Hello,	
GPG is stable, production-quality software. It is frequently included in free operating systems, such as FreeBSD, OpenBSD, and NetBSD and nearly all distributions of GNU/Linux. Although the basic GPG program has a command line interface, there exist various front-ends that provide it with a graphical user interface; for example, it has been integrated into KMail and Evolution, the graphical e- mail clients found in the most popular Linux desktops KDE and GNOME. For GNOME, there is a graphical GPG front-end called Seahorse. A plugin known as Enigmail allows GPG to be integrated with Mozilla and Thunderbird, which works on Microsoft Windows as well as Linux and other operating systems. Web-based software such as Horde also makes use of it. Note that, because the plugin mechanism is not part of GPG itself and not specified by the Open PGP standard, and because neither the GPG nor Open FGP developers were involved in their development, it is possible that GPG's security benefits could be compromised or even lost as a result of using such auxiliaries.	
Regards,	
C. Dee	-

#### Step 2: Right-click the WinPT sytem tray icon. Choose 'Current Window > Sign & Encrypt'.

<sup>&</sup>lt;sup>9</sup> GPG4WIN/GnuPG use Blowfish as default symmetric algorithm. Visit http://www.schneier.com/blowfish.html for more information about this algorithm.

	Key Manager Card Manager File Manager	
	Edit Clipboard	
	Clipboard	
Symmetric	Current Window	Þ
Encrypt	Preferences	•
Sign & Encrypt		
Sign	About	
Decrypt/Verify	Exit	

#### Step 3:

Put check marks on Alice and Bob keys. Click 'OK'.

#### Step 4:

WinPT will ask for your passphrase. Enter your passphrase and click 'OK'.

	ase to unlock the secret key for s <catherine.dee@mymail.org>'' \\45</catherine.dee@mymail.org>
lease enter your pass	sphrase
	✓ Hide Typing

#### Step 5:

WinPT wil automatically replace your e-mail message with encrypted messages. Then, you can send this e-mail by clicking '**Send**' button.

If WinPT does not automatically replace your e-mail messages with encrypted one, you can manually replace it. This could be done easily by using **Ctrl-A** (select all) and then **Ctrl-V** (paste) combination at the e-mail client window.

🔀 Information about GPG - Message (Plain Text)	- O ×
File Edit View Insert Format Tools Actions Help	
🖃 Send 🔲 🎒 🕼 😫 🚦 Options 👋 🔹 🗸 🗸	A »
To alice@somewhere.net; bob@planetearth.com	
<u>B</u> cc	
Subject: Information about GPG	
BEGIN PGP MESSAGE	-
Version: GnuPG v1.4.3 (MingW32) - WinPT 0.12.1	
hQIOAymFiMkrMMYvEAf+P/K1pvCihQCAcb7oQd9gaptAymAOM4fHTjr2SINGjUPM GEs8g9nChRsiOs+J/ML1UKs5va9DnjWOHEDzDhDhLiG1Gs4N4fqCVa/EXQpHVf6L	
RKeBvjfL170fEm6Cj5hQLJKTJ&YiNN1FjfqbCDdfXIt2pIpLSZY5rCTDINLvFNeq	
4qOmp3JDPOokjJJkfj/yD1hM2fJodu5ftoFakatTMMdj2jJhzO3aMrrgNgJCkivt	
8w6+rdiUV+4/x6/kTx8Jqu7GGm2XAQ1pb6GPYJjMevyq9jc/q7HIxmuepfyW8BGy	
/zu9+5x1hERq4GR9D4EqQbAf9ozDW94e1Qswx4/IcAqAhaGjjE1Rt+zGnbtNwm+c	
bfORZLEzT2+Z41BQwYCCH+oOKr+dweJHqQ/oUOWWix/ADehAdRtBAgz3GAQgPyJE	
9E+UERgbWsg8LT5PY7p5LcLRVHTK9wvo5tp6eYcvaKfK7WM98hp15kgSkk1JGmPo	
kWuMzaC2GxPqKDztpQPqzEF0E2CQaef9NIM741sDTL14444L+oOakqRcDp3j1YzV3	
bLgWhD2eU1MMU3tSA7TsCyio3GNK0H0AaOb/pMJ7trG7VZ9PZP6160PTidj+fAcm	
OvrdPxoNXyASPsuOh1517HS3Rae+GkhqlYI3wDxjj6HgnjPoek4DjM1LXbEXTw1T	
aDsxZQugUbM6b3Qff+wkSgwPxcd47C017s61S+Nmdh00SfrmBiX8fn+c3CFXvNym	
m7p6miVBNtHjCa66fyapVTGm8yD/FpVmu3cLCP5nqilORWSdwGJdPUIvKPP8gvud	
AW+u3JW02S0LsCY0rEf1VnruFRm3iYCJaNEWE220EK7Wr0SYdILoBeAgTXfynQR1	
45Z1Hd/9qHE61NxLzm9gqSjddbi7yK80ziPuFi2tkXyyJa56DTZyYoWPkvICFoxg	
G4o2DnDyVFPVCO1jr11uatN9d8b6o2mM1T1Ke3RGky/VDIk2ufojGNNggPN7r4xz	
AB2vBGZxg2/kbNL5xeqKhpBl16k2IikAiOxGpwAnIaiecW2xsybZ5UtOaLzsbUPr	
myci1cMXF751vXQTWzSFJUIE2GbSqWmjo19y6AzxdSjmjL7g59rBE5r1SQhz2Uhr	
n3SGqcYu5PgmRBtdOHf+FgIXzYYawvRe+IPmLekoIKS+YFVg/KnTOA==	
=DPKc	
END PGP MESSAGE	

Alice and Bob will received this encrypted message and decrypt it using their own private (secret) key. They will also (automatically, by their software) verify your signature in the message to prove that it was sent by you.

If you are going to attach files in your encrypted e-mail message, you will need to encrypt the files first. Please refer to '**Encrypting Files**' section in this manual.

# 8. Receiving Encrypted E-mail

Allright, you have successfully sent encrypted e-mail now. One day later, Alice replied your e-mail using encrypted messages. Now, we are going to decrypt her message.

#### Step 1:

Open the e-mail as usual.

#### **GPG4WIN User's Guide**

🔀 Re: Information about GPG - Message (Plain Text)	
Eile Edit View Insert Format Iools Actions Help	
🕼 🖗 Reply to All 🕼 Forward 🚑 🗙 🐉 , 🔹	• 🔺
From: Sent:	
To:	
Co	
Subject: Re: Information about GPG	
BEGIN PGP MESSAGE	
Version: GnuPG v1.4.3 (MingW32) - WinPT 0.12.1	
10 8° 50	
hQIOA1YMOrqwvWpbEAf+ItLYK1TyEzqx79BAYzojiCeIbQVUuxxp+H+GjHhfWBAm	
OE2PVY6XNugmO10/2bmG+Orw5N1Ez6aOM6n3Zif2fwEXVdgNBxYqu5fMneG1VO/W	
Rlz/fSfvzSCjUJiuPmQX8V9QZ5vkZ7e3A00FvbZD6UVvmVECVKVbtKifoJCUF3AG	
yRKVyvFeWEvOHy39BMK1pU3BSCsQb9kOYFbWBi4Hulbj6nBOghORggx8aaI3gKRG	
i+KrriAPBZ1/SegfBQaVf8sWTkA8CbyeCPh9Y8YUoBYI6E9pidWjxg9xSXRaWaJc	
duNg4BgKQSqet9iUUXkx93i5hR1M9QMMdf/jT56ZewgA2AR1wLUcb3uNN80jR0Tc	
JkgVapJhSiQNsixTSroAxsHkAJ8AXESJIkfYCxjMlutOEAbjymmlxxRLh5wEJ1Gc	
da9DrgsYFRrRMd1+v6JND7Ux9+iAJnZmZYp1DBHzd3kji/dUKMd9riOMVUa3KSNZ	
fvokiNIp8wM8njvLaz6ldhkesb4kDPBO1QDaqkZaaQy/lCpjfnkNjfJOBdpJv3gv	
NkXHfrw4Mg7IQ4f41AZBWGyjN+xXexPfEnvzB5nDjXN2C43iXUGZFnuLqEhqlqxf	
tIbwcpM7Z6HLbW86GmViwFUjCUn7w+kMKjBTrNFRs16vEH1B1mvY2FysNVP3bAi9	
69LpAdOSMmGcMLTxwC+Q1zFgWzCMpk40kCKxORA40lzrbo0m3jGq69o+cnyyRRr+	_
fY51cQfc6y4WrnZn3MRLN6axMBVe0EGfhwCgvUp2zyesOfriupu0GaQiWAP3Axfb	
lqk3JSI6+TBmGuOijeBUrtZFZT2NOZOfR7oBizBFax3OcRLpwP6OGcDGu3B/udS4	
UmG2vQZ8LcD2fIQT+P5+7EN3FX5sSNFRExYQten2E+xmnxRKDs6AlqyjCFQiF+qh	
xQVAqObq18AekbhgOxrLxJ9RArEEFGoNcG9xp1G2o/os2CzNuFdEmsOWUBcnutk3	
9NY9/EAIhNMNHIgXPU4zUAj8mReJUyYOv1cB0+HIz1D3rhEeXCGwYN8EAbCBR8+v	
5uOXy/y0OgOqYfPxGgFd9JGhtJvbU9cRGgFZ3Ilw16ksEMoCDCyYqPZR+/K4kCDB	
vIneJfRYqijtj4TnpOrdOjxH/fxYzPTFPjlb9d3FXW2moK/eEHX/3yRvZxfumOeN	-

#### Step 2: Right-click WinPT system tray icon. Choose 'Current Window > Decrypt/Verify'.



#### Step 3:

You need to enter your passphrase to decrypt/verify the message. Click '**OK**' to proceed. Sometimes, you will see other people names in the list (Bob, in this example). It means that Alice is also encrypt the messages with Bob's public key.

ncrypted with the following pu Bob <bob@planetearth.com> Catherine Dee <catherine.dee< th=""><th>(ELG, 0x9398B542)</th><th>BOBD6A5B</th></catherine.dee<></bob@planetearth.com>	(ELG, 0x9398B542)	BOBD6A5B
You need a passphrase to uni		
user: "Catherine Dee <catherin ELG key, ID 28E4FA45 (main Please enter your passphrase</catherin 		
ELG key, ID 28E4FA45 (main	key ID BOBD6A5B)	de Typing

#### Step 4:

WinPT will decrypt the message and verify its signature. Click 'OK' to proceed.



#### Step 5:

WinPT will display the plaintext message in the Clipboard Editor

Hi,			
GPG encrypts messages users. The resulting j variety of ways, such carefully to prevent : identity correspondem signature to a message if a particular corres	public keys can be as Internet key se identity spoofing b ces. It is also pos e, so the message i	exchanged with oth ervers. They must a by corrupting publi sible to add a cry ntegrity and sende	her users in a Always be exchanged Ic key ? 'owner' optographic digital opt can be verified,
GPG does not use paten including the IDEA en from the beginning. I algorithms such as CAX possible to use IDEA : require getting a lice patented.	cryption algorithm nstead, it uses a w ST5, Triple DES, AB in GPG by downloadi	which has been pre variety of other, n CS, Blowfish and Tw .ng a plugin for it	esent in PGP almost non-patented rofish. It is still , however this may
Regards,			
Alice			
Add quotes			

You can read the message in the Clipboard Editor and then click '**Clear**' to ensure that the plaintext message will remain secret. But, of course, you can save this plaintext message into an ordinary text file by clicking '**Save**'. Click '**Close**' to end Clipboard Editor.

If Alice attach encrypted files in her e-mail, you should save the attachments in a folder and decrypt it. Please refer to '**Decrypting Files**' section for more information.

# 9. Encrypting Files

GPG4WIN, through its GPGee modules, provide encrypting/decrypting files feature thorugh it context menu. You can use this feature to protect your confidential file, either in your harddisk or in e-mail attachments.

If you are going to compress the files to reduce their size and then encrypt them, your should know two things:

- 1. You might want compress the files first and then encrypt them. It is almost useless to compress encrypted files because encryption algorithm will reduce (or eliminate) redundancy in digital data for –of course—security reason.
- 2. GPG core modules has bulit-in compression library (zlib). It means that whenever you encrypt files, GPG will automatically compress them using that library. In most cases, you do not need to compress them using seperate compression tools.

Allright, let's encrypt a file.

Step 1: Right-click on the file. Choose 'GPGee > Sign & Encrypt'

#### **GPG4WIN User's Guide**

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× Name 🛆	Si	ze T	уре	Modifie
<ul> <li>pricelist.</li> </ul>	txt 437 I <b>Open</b> Print	1.1.1.1.1.1.1	ext Document	
	🔍 GPGee	•	😭 Sign & Encrypt	
	Scan with OfficeScan Clie Open With 🔮 ZipGenius	nt •	Sign PEncrypt (PK) PEncrypt (Symme	etric)
	Send To	•	Configure	
	Cut Copy			
	Create Shortcut Delete			
	Rename			
	Properties		-	

#### Step 2:

Now, depending on your objective, you may choose which key(s) you are going to use. If:

- 1. you are going to send this file to Alice and Bob as an e-mail attachment, you should encrypt it using their public keys.
- 2. you are going to encrypt the file to protect it from everybody but you, you should encrypt it using your key and wipe the original (plaintext) file. Refer to '**Wiping Files**' section for detailed information about wiping files.

For this example, we are going to send that file to Alice and Bob as e-mail attachments. Put check marks on Alice's and Bob's key, and click '**OK**'.

lame		Keyld	Size	Туре	Validity
Alice <alice@somewhere.ne Bob <bob@planetearth.com> Catherine Dee <catherine.dea< th=""><th></th><th>0x2009B928 0x4FAF0AA7 0x28E4FA45</th><th>2048 2048 2048</th><th>ELG ELG ELG</th><th>Full Full Ultimate</th></catherine.dea<></bob@planetearth.com></alice@somewhere.ne 		0x2009B928 0x4FAF0AA7 0x28E4FA45	2048 2048 2048	ELG ELG ELG	Full Full Ultimate
· · ·	herine.dee@mj	ymail.org> (DSA/I	)x28E4F	A45)	- <sup>3</sup> 8 -
igning Keys: Catherine Dee <cat Signature Options</cat 	herine.dee@mj Encryption		isc. Opti	ons	
ley Groups: igning Keys: Catherine Dee <cat Signature Options C None</cat 			isc. Opti Text c	ons utput (A	SCII Armor)
igning Keys: Catherine Dee <cat Signature Options</cat 	Encryption	Dptions M	isc. Opti Text o Text in	ons utput (A nput (tex	

#### Step 3:

Enter the passphrase and click 'OK'.

ID: 28E4FA45 Type: DSA Size: 1024 Date: 23Jun-	00
	06
Enter passphrase:	de Typing

#### Step 4:

The new encrypted file (with .gpg extension) will be placed in the same folder. Note that the encrypted file (usually) has smaller size than the plaintext file. You can attach this encrypted file to your encrypted e-mail message to Alice and Bob.

rch 🔁 Fi	olders 🎯 🎦 🖓	× 10 000	
x	Name 🛆	Size	Туре
	Pricelist.txt	10410-1114	Text Document
	pricelist.txt.gpg	137 KB	GPG File

# **10. Decrypting Files**

GPGee context menu will automatically detect .gpg, .pgp, .asc, .sig extension file as encrypted file. This is how to decrypt it:

#### Step 1:

Right-click on the encrypted file and choose 'GPGee > Verify/Decrypt'



#### Step 2:

Enter your passphrase and click 'OK'.



#### Step 3:

The report window will be displayed, click 'OK'.



#### Step 4:

The decrypted file will be put in the same folder.



# 11. Wiping

If you delete files using **Del** or **Shift-Del** key or emptying Recycle Bin, the files will leave 'traces' in the storage media (harddisk, USB flash disk, or other storage media). Eve, for example, could use file recovery tool to recover the original files by analyzing this 'trace'. This process is called 'file/data recovery' or 'undelete'.

You can sweep these 'traces' away and truly erase files by overwriting it several times using some defined binary pattern. This is called wipe (or shred or purging) process. WinPT provide several pattern mode in wiping<sup>10</sup>.

Wiping utility is a complement for encryption utility. Imagine this situation: Alice sent some encrypted secret documents to Bob. Eve, Bob's adversary, has access to his computer harddisk. Eve wants to recover the plaintext secret documents so that she can sell it to the higest bidder, but all she gets are the encrypted files. Does it means Bob's and Alice's secrets are safe? Maybe not. If Bob decrypt the files, read them, and then delete the plaintext files using Shift-Del combo, Eve could simply use file recovery tool to recover the plaintext files. And then, the encryption is futile.

#### **11.1 Selecting Wipe Mode**

#### Step 1:

Right-click on WinPT system tray icon. Choose 'Preference > WinPT'.

<sup>&</sup>lt;sup>10</sup> For detailed information: http://en.wikipedia.org/wiki/Data\_remanence#Standard\_patterns\_for\_purging

	Key Manager Card Manager File Manager	
	Edit Clipboard	
	Clipboard	,
	Current Window	,
WinPT	Preferences	)
GPG	About	

#### Step 2:

Pick wipe mode (method) on 'Select wipe mode' dropdown list. The 'Simple' mode is the quickest mode, but the least secure. The 'Gutmann' mode is the slowest mode, but the most secure.



### 11.2 Wiping Files

You can wipe several files at once. Be very careful: it is very hard (if not impossible) to recover wiped files.

#### Step 1:

Right-click on WinPT system tray icon. Choose 'File Manager'.



Step 2:

From File Manager menu, choose '**Always on Top**', This is not mandatory step, but it would be much easier to drag-n-drop files from Windows Explorer to the File Manager if the File Manager always on top.



#### Step 3:

Drag-n-drop the files from Windows Explorer to the File Manager windows.



#### Step 4: Choose 'Edit > Select All' at File Manager window.

Paste			Operation	
Select Al			oporation	
Select Al	Mail (\data2.			
Preferen				
NNUWN	U.NDES\data1.	cap		

#### Step 5:

The confirmation dialog box will appear. Click 'Yes' to wipe these files.

D:\BES\actionsite.afxm D:\BES\data1.cab D:\BES\data1.hdr D:\BES\data2.cab D:\BES\engine32.cab				
	Ye	es	<u>N</u> o	

### 11.3 Wiping Free Space

Instead of wiping files, you can wipe the storage media's free space. This is very useful to sweep 'traces' of previously deleted files. Alice could reformatted her old harddisk and use this feature to ensure that nobody could retreive her secret documents when she dumped her old harddisk in trashcan (or gave it away to someone else).

#### Step 1:

Right-click on WinPT system tray icon. Choose 'File Manager'.



#### Step 2: Choose 'File > Wipe Free Space'

File Manager (use drag	to add files)	_ 🗆 🗙
File Edit View		
Open List Packets Calc Digest	Operation	
Encrypt Encrypt into ZIP Decrypt		
Symmetric		
Sign & Encrypt Sign Verify		
Wipe		
Wipe Free Space		
Reset		
Exit		

#### Step 3:

The Wipe Free Space dialog box will appear. Choose drive to wipe. Click '**OK**' to proceed.



#### Step 4:

A status message will appear after the wiping process complete.

#### **GPG4WIN User's Guide**

Drive to wipe:	F:\  Offset 0 Size 0	
	Operation Status: Done.	
	ОК	Cancel

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