

Séminaire Crans

Les Mails

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Introduction

Spécificités des mails

- pas besoin que le destinataire soit connecté
- plusieurs destinataires (mailing listes, CC, CCI)
- formats divers (texte, html, pièces jointes)
- plusieurs boites mail (`crans.org` + `ens-paris-saclay.fr`)
- plusieurs addresses (alias `crans.org`)
- redirection de mails
- signature GPG

Introduction

Spécificités des mails

- pas besoin que le destinataire soit connecté (\neq IRC)

IMAP ? STMP ? TLS ? WTF ?

The image displays two screenshots of an email client's configuration interface, likely for a mobile device or a specific email client, showing settings for IMAP and SMTP.

Top Screenshot (IMAP Configuration):

- Identity:** Server Type: **IMAP**
- Description:** For reading and storing mail on IMAP servers.
- Configuration:**
 - Server: **imap.crans.org**
 - Port: **993**
 - Username: vanille
 - Forget password
- Security:** Encryption method: **TLS on a dedicated port**
- Authentication:** Check for Supported Types, Password

Bottom Screenshot (SMTP Configuration):

- Identity:** Server Type: **SMTP**
- Description:** For delivering mail by connecting to a remote mailhub using SMTP.
- Configuration:**
 - Server: **smtp.crans.org**
 - Port: **465**
 - Server requires authentication
- Security:** Encryption method: TLS on a dedicated port
- Authentication:** Type: Check for Supported Types, Login
- Username: vanille
- Forget password

Plan

- 1 SMTP
- 2 Lecture directe
- 3 IMAP/POP
- 4 Bonus

Corps

```
-----2CLbKS3ULh3V4yKLIca6
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: quoted-printable
```

Bonjour,

Le prochain s=C3=A9minaire Crans aura lieu ce mercredi 24 novembre en 12h30. Il sera pr=C3=A9sent=C3=A9 par vanille, et vous apprendra le fonctionnement des mails :

[...]

=C3=80 mercredi !

```
--=20
=C5=B8n=C3=A9rant
```

```
-----2CLbKS3ULh3V4yKLIca6
```

En-tête

```
Return-Path: <technique-bounces@lists.crans.org>
Delivered-To: vanille@crans.org
From: =?UTF-8?Q?=C5=B8n=C3=A9rant?= <ynerant@crans.org>
To: apprentis@lists.crans.org
Subject: =?utf-8?q?=5BTechnique=5D_?= =?iso-8859-1?q?S=E9minair
    Crans 27/10 : Python
Date: Sun, 24 Oct 2021 20:27:43 +0200
User-Agent: Evolution 3.40.4
Content-Type: multipart/mixed;
    boundary="====2480633140508953377=="

-----2480633140508953377==
Content-Type: multipart/signed; micalg="pgp-sha256";
protocol="application/pgp-signature";
    boundary="--0Idh1PiSZdeKSx4f400E"
```

Enveloppe

- le corps et l'en-tête ne sont *a priori* pas lus par le distributeur de mail
- From:, To:, Date: peuvent contenir des informations mensongères
- seule compte l'adresse indiquée sur l'enveloppe

SMTP

Commandes:

- HELO pour se connecter
- QUIT pour quitter
- DATA pour le corps (+ en-tête) du mail
- MAIL FROM:<...> pour l'expéditeur
- RCPT TO:<...> pour le destinataire

Un mail avec enveloppe

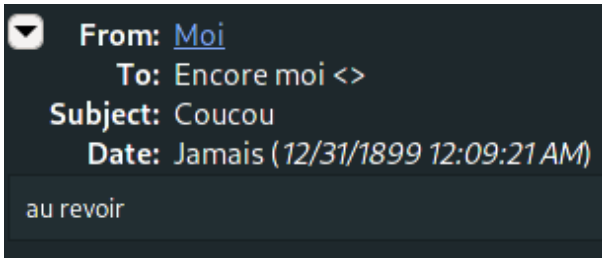
```
vanille@zamok$ telnet smtp.crans.org 25
HELO crans.org
MAIL FROM:<vanille@crans.org>
RCPT TO:<neven.villani@gmail.com>
DATA
From: Moi
To: Encore moi
Subject: Coucou
Date: Jamais
au revoir
.
QUIT
```

Voyage d'un mail

```
MAIL FROM:<vanille@crans.org>  
→ RCPT TO:<neven.villani@gmail.com>
```

- 1 écriture $\xrightarrow{\text{SMTP}}$ smtp.crans.org
- 2 smtp.crans.org cherche gmail.com
\$ dig +short -t MX gmail.com
40 alt4.gmail-smtp-in.1.google.com.
10 alt1.gmail-smtp-in.1.google.com.
20 alt2.gmail-smtp-in.1.google.com.
5 gmail-smtp-in.1.google.com.
30 alt3.gmail-smtp-in.1.google.com.
- 3 smtp.crans.org détermine l'adresse IP de
gmail-[...].google.com
- 4 smtp.crans.org $\xrightarrow{\text{SMTP}}$ gmail-[...].google.com

Et voilà !



(reçu dans mes spams)

Conseil peu éthique: vous pouvez antidater vos mails

En fait le distributeur lit un peu le contenu... ☹

From: Mail Delivery System <MAILER-DAEMON@crans.org>
To: vanille@crans.org
Subject: Undelivered Mail Returned to Sender
Date: Sun, 31 Oct 2021 09:38:41 +0100 (CET)

This is the mail system at host redisdead.crans.org.

I'm sorry to have to inform you that your message could not be delivered to one or more recipients. It's attached below.

For further assistance, please send mail to postmaster.

If you do so, please include this problem report. You can delete your own text from the attached returned message.

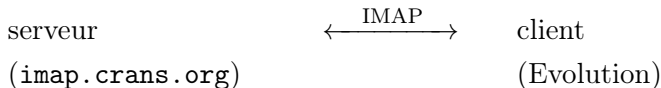
The mail system

<neven.villani@gmail.com>: host
gmail-smtp-in.l.google.com[2a00:1450:4013:c07::1a] said: 550-5.7.1
[2a0c:700:2::ff:fe01:2402 11] Our system has detected that this
550-5.7.1 message is not RFC 5322 compliant: 550-5.7.1 'From' header is
missing. 550-5.7.1 To reduce the amount of spam sent to Gmail, this message
has been 550-5.7.1 blocked. Please visit 550-5.7.1
<https://support.google.com/mail/?p=RfcMessageNonCompliant> 550 5.7.1 and
review RFC 5322 specifications for more information. nc36si6473532ejc.735 -
gsmtip (in reply to end of DATA command)

IMAP

Internet Message Access Protocol

Le serveur a reçu le mail, l'utilisateur veut pouvoir le consulter quand il veut



Mais avant ça...

Le corps (+ en-tête) du mail est stocké quelque part

Il suffit d'aller lire le fichier texte

Liste brute

```

1614526789.V39I89b564M133422.zamok:2,S
1614540665.V39I89e74aM52044.zamok:2,S
1614548610.V39I8a0e09M93033.zamok:2,S
1614621971.V39I8a9eaaM649593.zamok:2,S
1614623171.V39I8aa048M259067.zamok:2,S
1614636355.V39I8abb4eM650342.zamok:2,S
1614681704.V39I8bb1817M193660.zamok:2,S
1614701389.V39I8bd4dfbM112602.zamok:2,S
1614721243.V39I8a8ec0M124912.zamok:2,S
1614754818.V39I8ab524M653682.zamok:2,S
1614757630.V39I8ac586M663565.zamok:2,S
1614766956.V39I8afe0M1206718.zamok:2,S
1614770230.V39I8aeaabM81141.zamok:2,S
1614841221.V39I8ba41bM46965.zamok:2,S
1614846464.V39I8b9b30M160445.zamok:2,S
1614854318.V39I8bcaabM22576.zamok:2,S
1614870451.V39I8bf8d7M225416.zamok:2,S
1614872333.V39I8c0334M102729.zamok:2,S
1614887535.V39I8c3023M951499.zamok:2,S
1614887621.V39I8c246aM205461.zamok:2,S
1614889455.V39I8c3779M148804.zamok:2,S
1614889462.V39I8c377aM229774.zamok:2,S
1614889465.V39I8c37b9M293805.zamok:2,S
1614890389.V39I8c3c83M74739.zamok:2,S
1614927618.V39I8c2348M284458.zamok:2,S
1614942523.V39I881115M115327.zamok:2,S
1614960616.V39I884aedM281601.zamok:2,S
1614962819.V39I885a2dM897020.zamok:2,S
1614962819.V39I885da5M937393.zamok:2,S
1614962821.V39I885a31M118920.zamok:2,S
1614962932.V39I8850a8M973172.zamok:2,S
1614965692.V39I886784M598881.zamok:2,S
1615024254.V39I8a2272M185332.zamok:2,S
1615238971.V39I87c0a9M492437.zamok:2,S
1615283688.V39I8b93e7M48857.zamok:2,S
1617820495.V39I902fb9M789776.zamok:2,S
1617824041.V39I9058bcM100692.zamok:2,S
1617824253.V39I9058bc0M504271.zamok:2,S
1618130225.V39I92b995M842565.zamok:2,S
1618230922.V39I8eea4bM568508.zamok:2,S
1618487490.V39I91e3f8M366882.zamok:2,S
1618490979.V39I91fc97M386922.zamok:2,S
1618820816.V39I92ef4dM124494.zamok:2,RS
1618836396.V39I919dc7M83592.zamok:2,RS
1618839670.V39I91aac6M376821.zamok:2,RS
1619018773.V39I933914M344627.zamok:2,S
1619079643.V39I938dc4M749964.zamok:2,S
1619121941.V39I9202e3M720533.zamok:2,S
1619123874.V39I921000M733336.zamok:2,S
1619164498.V39I9244a0M676282.zamok:2,S
1619165019.V39I9241aeM788454.zamok:2,S
1619165476.V39I924535M941034.zamok:2,S
1619184573.V39I9275d9M204395.zamok:2,S
1619188966.V39I928b0aM508877.zamok:2,S
1619190325.V39I928b9fM602709.zamok:2,S
1619190577.V39I92809fM198778.zamok:2,S
1619190856.V39I928bd5M497805.zamok:2,S
1619293046.V39I933ba0M758572.zamok:2,S
1619297831.V39I934039M394602.zamok:2,S
1619429415.V39I93fc4fM194329.zamok:2,S
1619447500.V39I942dfaM421603.zamok:2,S
1619449183.V39I943a89M148864.zamok:2,S
1619474254.V39I946daeM256816.zamok:2,S
1619474649.V39I946bebM987258.zamok:2,S
1619510168.V39I8f1fd2M6256.zamok:2,S
1619611112.V39I911f8aM900484.zamok:2,S
1619709805.V39I923e9aM582150.zamok:2,S
1619724971.V39I927b97M151768.zamok:2,S
1619889334.V39I93c022M26326.zamok:2,S
1620022895.V39I946126M114367.zamok:2,S

```

Lecture directe d'un mail: tout va bien

```
List-Help: <mailto:nounou-request@lists.crans.org?subject=help>
List-Owner: <mailto:nounou-owner@lists.crans.org>
List-Post: <mailto:nounou@lists.crans.org>
List-Subscribe: <mailto:nounou-join@lists.crans.org>
List-Unsubscribe: <mailto:nounou-leave@lists.crans.org>

--=oupe17ZMYRu0EzfSs9dg
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: quoted-printable

Salut, salut,

On accueille aujourd'hui parmi nous vanille et ds-ac qui deviennent nounous
.

Des bisoux,
--=20
shirenn

--=oupe17ZMYRu0EzfSs9dg
Content-Type: application/pgp-signature; name="signature.asc"
Content-Description: This is a digitally signed message part
Content-Transfer-Encoding: 7bit

-----BEGIN PGP SIGNATURE-----
```


Lecture directe d'un mail: des caractères spéciaux ☹

```
Conform=C3=A9ment =C3=A0 l'article 3.2.2 de la convention entre le Crans et=
l'ENS
Paris-Saclay, je transmets en pi=C3=A8ce jointe l'annexe mise =C3=A0 jour
concernant l'acc=C3=A8s =C3=A0 ce badge.

N'h=C3=A9sitez pas =C3=A0 me dire s'il y a un probl=C3=A8me avec ma requ=C3=
=AAtte.

Bien cordialement,
```

Lecture directe d'un mail: du HTML ☹☹

```

</td>
</tr>
<tr>
<td style="font-family: &quot;Helvetica Neue&quot;; Helvetica, Arial, sans-serif;">
<table border="0" cellpadding="0" cellspacing="0" class="wrapper" style="width: 640px; border-collapse: separate; border-spacing: 0; margin: 0 auto;">
<tbody>
<tr>
<td class="wrapper-cell" style="font-family: &quot;Helvetica Neue&quot;; Helvetica, Arial, sans-serif; border-radius: 3px; overflow: hidden; padding: 18px 25px; border: 1px solid #eded;" align="left" bgcolor="#fff">
<table border="0" cellpadding="0" cellspacing="0" class="content" style="width: 100%; border-collapse: separate; border-spacing: 0;">
<tbody>
<tr>
<td class="text-content" style="font-family: &quot;Helvetica Neue&quot;; Helvetica, Arial, sans-serif; color: #333; font-size: 15px; font-weight: 400; line-height: 1.4; padding: 15px 5px;" align="center">
<p>
You have been granted <span class="highlight" style="font-weight: 500;">owner</span> access to the <a target="_blank" rel="noopener noreferrer" class="highlight" href="https://gitlab.crans.org/groups/nounous" style="color: #3777b0; text-decoration: none; font-weight: 500;">Nounous</a> group.
</p>
<p>
If this was a mistake you can <a href="https://gitlab.crans.org/nounous?leave=1" target="_blank" rel="noopener noreferrer" style="color: #3777b0; text-decoration: none;">leave the group</a>.

```


Lecture directe d'un mail: une pièce jointe ☺☺☺☺

```

Content-Type: image/jpeg; name="IMG_20211105_160715.jpg"
Content-Disposition: attachment; filename="IMG_20211105_160715.jpg"
Content-Transfer-Encoding: base64
Content-ID: <17c7f6c06b53f0892241>
X-Attachment-Id: 17c7f6c06b53f0892241

/9j/4AAQSkZJRgABAgAAQAAD/4UScRhhpZgAATU9kAGAAAQADgEAAAMAAABEAAAAAEBAAWA
AAABCSAAAECAAMAAADAAA09gEPAIAIAAAHAHAATgEQAAIAAAQAAAAAvGEAAAMAAABAAAAEAAE
AAUAABAAAAAAzZEBAAUAAAABAAAA1AEoAAMAAAABAIAAAEAAIAAAABAAABAAZAEyAAIAAAUAAA
/ATIIAAAABAAAEAAIEdpAAQAABABABBEQKLAACAAAAAEABAAAEAAcIUVIPXRXUKAAEINVVQVF5S9Q
YUJMTAAAAASAAAEAAEAAEIAAAVAA3LDBvWfYyR0BSMDA0QzAwQjEwMkRlQDAApQAATCjYpJy
HTcoTmopNSAxNjowNzoxNgRAHQENACAAAAAIAAAIAAAUAAAABAAADLkQkAAUAAAABAAAKGIGs
IAAMAAAABAAIAAIAgnAMAAAABAFTAIAA3AAAEAAAENDLxMjADAATIAAAUAAAKGJAEAAIAAAUAAAK
LJEBAAEAAAEAQIDQJTBAAoAAAABAAADNgICAUAUAAAABAAKEJIDAAoAAAABAAADHgIEAAoAAAAB
AAADJpIHAMAAAABAACAAJIAMAAAABAAEAAAJIJAAMAAAABAAEAAAJKAUAUAAAABAADDPJBAACa
AAoAAAADUpJBAACAAAAAADPpKGAAcAAAAZAAJ7pkQAATIAAAHAHAQJKRRAITIAAAHAHAHSJKS
AAIAAAHAHAUKKAAAEAAAEHDEHKBABAMAAAABAEAAKCAQAAAAABAAQKADAAQAAAAABAAAJ
KFAFAAQARABAAKMBETAAMAAAABATIAAMAAACABABAAAKMBACARABABQAAQAAKQBAAJAAAB
AAEAQACQAAALAAAABAAAAAQDAAMAAAABAAAAKQAAAAAAKQAAAAAAADPQFAAMAAAABAAAKGIAAA
AAABAAAQQAAMAAABAAAAAQQIAAMAAABAAAAAQQIAAMAAABAAAAAQQAAMAAABAAAAAQAAAMAAADQ
IAAMAAAABAAAAAAAAAAA70AAAD6AAAAGQAABIAAAAAAAAAEAAAAAAACQAAAAEAAAABAAAAAB
VAAAJXBWzRdIFs3MCxx55BvMhZTFDA0nx3+TL4vx3/P08T/z9e7u-b6w0ABsJQ57f8pcQVIA
aQAAAAMzH0/18gBf6I3MxVnLhOAEIYAAAAJwGAAAwCBA6AxkAAACwDtML+P/LC68AAAAAADz/
XACKclGLaQAAABtBAALQQAABwAAAPoAAAAAAAgAFQAAAE00sBANQLgAAAAAPv9cAHQAUzAA
AAAAEGEAATBAAMAAAAGAAAACAAAWAAAw7TC/v/zgP-AAAAAA0/1wApACCI3DAARAAAbQAAQ
AEAAAABADAABAAATBAABAG0DBM2L+P/McGABAAADzYACdAL+VQAAAEBAALQQAABAA
APCAAAAAAGAgAAAAJTI0vVY/BQlrgAAAAAD/9cAKQuatLAAABGEAAAIBAAAMAAAA+pAAAAAA
ACAAQEBAQECC9pDw4MBQEBAyCAwICawTFBMSQWcAggEBwoIBoYVHSEVg980gIDAYk0Cwd
ITZVShBaI8AgMUiNhTDQ4SGRGAwICQIBCVBY6BQF8gkI8gMCAQECWAEQYH6yHBwCAGCAeAg
AggBau8G8yYH8gH8gMCQIOCFBQY6BgcHBwgHAgIDeH68gYHbwICAKSEAMCBRQADQY6BwCI
CAKR6YfAggsdIroXRFMSFshfIrxXCWUJ3jYs4b6x4o6T4uIRQEHyK0QDEHh8n0ELNmyMa8YyU
UJLKR6FLDSMTjwp6ww+PLkLVJgI1S5StYZELBcJrBpAIEAJQA+AMQA-gAANgAUAEsMABR/6BA
KXIAAEYCAAAAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAA
IAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAA
IAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAA
IAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAA
IAACAIAAgBAAMFpAAAMAAAIAAAIAAAAEBS/DVBQ6dc4AgAAAFsUCBQcpKAAAAIAAAAACAAEAA
AAAAAAApEAAABADFAQAAAAgAAkAAADz///aAAAAH0z/FB1/2QdFqk//zoEqv06Kf6Bsg5
+gAAAAIAAAAAEBS/0QAAAAIAAAAAIAAAAAIAAAAAIAAAAAADR4GeAPzYCAPzAgAAAAIAAAAA
AACGpWAAb0gAAAAIAAAAAIAAA2qkBAHIAgCjPgIAAAAAIAAACISWAAyLoAAEH9AAAAIAAAAA
AGkNAAB0wAAAwCwAAAAIAAAAAIAAEBAIYANELABGIAAAAAIAAAAAADGwAA1RBAKAAHAAAAIAA
AAAAAJEABTBwAqJyAAAAIAAAAAIAAAcQYAADGGADDBgAIAAAAAIAAAABVAAAAQHEAqTAAAA
IAAAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIA
AAAAIAAAAAIAAAAB0AAABXQAAQLQAAAAIAAAAAIAAACAAALAAAIAAAAAIAAAAAIAAAIAAAI
AAQAAAAIAAAAAIAAAIAAA7AAACAAAAIAAAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAA
IAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAAAIAA
AAk0qgAMDUJ1AAaLCDAAC0LgAALC0cAAgKysAAC0tLgAMTExAABzAVoBQQEoAQAAAAIAAAA
AAAAAAQ1qk7/SYC0QvJ/yYDrAAADWcGAAMAgBKAFDAWQB9QB6AvqB9QD1APUA9QD1APUA9QD1
APUA9QD1APUA9Q8kZGpkZGVLVzVLzVLVLzVZVwBAQDww6ZAAAAIAAAAAIAAA7QAAAAH8egMLQQA

```


Limitations

Ce serait bien de pouvoir

- voir les sujets d'un coup d'œil (on s'en fiche des numéros)
- rendre le HTML
- avoir les pièces jointes sous un format lisible
- télécharger des mail pour les lire hors-ligne
- vérifier les signatures GPG

Discussion avec un serveur IMAP

Structurée, sécurisée, synchronisée.

Basée sur des commandes :

- 1 le client envoie une commande
- 2 le serveur l'exécute
- 3 le serveur renvoie la réponse
- 4 si commande interactive retourner en (1)
- 5 le serveur envoie OK qui signale la fin de la commande
- 6 retourner en (1) pour la commande suivante

Un exemple: RENAME

```
$ ls -R
.:
quux
foo

./foo:
bar
[0]
$ mv quux frob
[0]
$ mv foo eggs
[0]
$ ls -R
.:
frob
eggs

./eggs:
bar
[0]
```

```
C: A682 LIST "" *

S: * LIST () "/" quux
S: * LIST (\Noselect) "/" foo

S: * LIST () "/" foo/bar
S: A682 OK LIST completed
C: A683 RENAME quux frob
S: A683 OK RENAME completed
C: A684 RENAME foo eggs
S: A684 OK RENAME completed
C: A685 LIST "" *

S: * LIST () "/" frob
S: * LIST (\Noselect) "/" eggs

S: * LIST () "/" eggs/bar
S: A685 OK LIST completed
```

POP ?

- même rôle que IMAP
- même boucle d'interaction client/serveur
- téléchargement seulement
- pas de synchronisation dans l'autre sens
- pas de brouillons
- permet de consulter ses mails hors-ligne une fois téléchargés

Interaction avec POP

```
> vanille@zamok:~$ openssl s_client \  
-connect pop.crans.org:995 \  
-quiet  
+OK Dovecot (Debian) ready.  
> USER vanille  
+OK  
> PASS _____  
+OK Logged in.  
> STAT  
+OK 408 58756017  
> LIST  
+OK 408 messages:  
1 2924  
2 2781  
[...]  
407 7932814  
408 7883  
.  
> RETR 408  
+OK 7883 octets  
[...]
```

Danger ?



From: bureau@lists.crans.org

To: bureau@lists.crans.org

Subject: [Bureau] You have outstanding debt.

Date: 5 Nov 2021 11:03:22 -0700 (11/05/2021 07:03:22 PM)

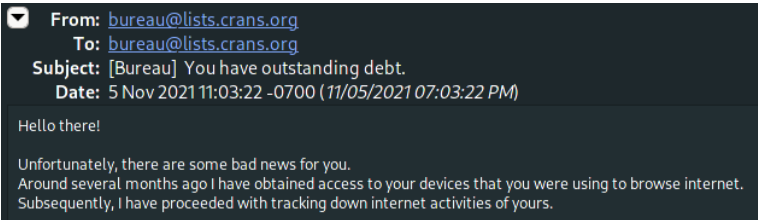
Hello there!

Unfortunately, there are some bad news for you.

Around several months ago I have obtained access to your devices that you were using to browse internet. Subsequently, I have proceeded with tracking down internet activities of yours.

Y a-t'il lieu de s'inquiéter ?

Danger ?



Y a-t'il lieu de s'inquiéter ?

Non.

Redirections diverses

Redirection vers autre adresse

Multiples destinataires

Listes de diffusion

CC, CCI

Redirections diverses

Redirection vers autre adresse

→ Au lieu de stocker le mail on le renvoie

Multiples destinataires

Listes de diffusion

CC, Cc

Redirections diverses

Redirection vers autre adresse

→ Au lieu de stocker le mail on le renvoie

Multiples destinataires

→ On envoie autant de mails que de destinataires

Listes de diffusion

CC, CCI

Redirections diverses

Redirection vers autre adresse

→ Au lieu de stocker le mail on le renvoie

Multiples destinataires

→ On envoie autant de mails que de destinataires

Listes de diffusion

→ Au lieu de stocker le mail on en renvoie un à chaque destinataire

CC, CCI

Redirections diverses

Redirection vers autre adresse

→ Au lieu de stocker le mail on le renvoie

Multiples destinataires

→ On envoie autant de mails que de destinataires

Listes de diffusion

→ Au lieu de stocker le mail on en renvoie un à chaque destinataire

CC, CCi

→ Rien de spécial

Signatures

PGP: signé par l'émetteur DKIM: signé par le domaine

```
=====8762715064322180819==
Content-Type: multipart/signed; micalg="pgp-sha256";
  protocol="application/pgp-signature";
  boundary="--2CLbKS3ULh3V4yKLlIca6"

--2CLbKS3ULh3V4yKLlIca6
Content-Type: text/plain; charset="UTF-8"
Content-Transfer-Encoding: quoted-printable

[...]

--2CLbKS3ULh3V4yKLlIca6
Content-Type: application/pgp-signature; name="signature.asc"
Content-Description: This is a digitally signed message part
Content-Transfer-Encoding: 7bit

-----BEGIN PGP SIGNATURE-----

iQIzBAABCAAGfIEEJdXulk2Vu6+/tirpOnXFwBnIz4UFAMGZi88ACgkQ0nXFwBNI
[...]
ZpUY9dAqKLT5g+zcNp07vJiT6BxYc8WCfUV0w0acM8u59BJu3vM=
=nG14
-----END PGP SIGNATURE-----
```

```
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/simple; d=lists.crans
s=lists; t=1637452757;
bh=y0LISkDKn03wEVzKbABsyQYRgfzr+s2s8zCA7xN9gqI=;
h=From:To:Date:CC:Reply-To:Subject:List-Id:List-Archive:Li
List-Owner:List-Post:List-Subscribe:List-Unsubscribe:From
b=e4X0uf1JSS1+/3m+D2UzX2qv95/fWqy31RfVbJ1W6wCzccSaIDVvc7Z0
[...]
4w1GpgMpHv0+KHSZyNaeX+/I=
DKIM-Signature: v=1; a=rsa-sha256; c=relaxed/simple; d=crans.org;
t=1637452753; bh=AtmRX/HJ5Lwt0cK0zitKrTuaojHl5vatRBR5DaS1/
h=Subject:From:To:Cc:Date:From;
b=kbwdOmjrE3Y6gsHvT9lsT4Sh/OnE1gmU+eN09wYVLLiQ3ynDmQ672kB
[...]
gYX6yTwGxG1wsjqyiNewcOFQ=
```

Fin

Merci de votre attention