

ALLEGATO
A

Selezione pubblica, per titoli ed esami, per il reclutamento di una unità di personale da assumere con contratto di lavoro a tempo determinato e pieno di categoria C, posizione economica C1, area tecnica, tecnico-scientifica ed elaborazione dati, della durata di 36 mesi, presso il Dipartimento di Matematica dell'Università degli Studi di Roma "Tor Vergata", nell'ambito del Progetto: "Sistemi operativi e server – Progetto Dipartimento di eccellenza"

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PROVA SCRITTA – testo n. 1

Il presente tema d'esame si compone di due parti: un questionario sulla legislazione universitaria e un problema sulla gestione di un sistema operativo.

Richieste, raccomandazioni e regole. Il/la candidato/a restituisca il questionario a pagina 2, debitamente compilato. Inoltre, a lui/lei si richiede di scrivere sul/i foglio/i ricevuto/i inizialmente tutte le istruzioni, che traducono in linguaggio di programmazione la procedura descritta a partire dalla pagina 3. Il linguaggio (*PHP*, *C*, *bash scripting*, etc.) è a scelta del/la candidato/a, ma verrà esplicitamente valutata la fattibilità della soluzione adottata dal/la candidato/a medesimo/a.

Si noti che, al termine della descrizione dell'algoritmo, sono allegate alcune importanti informazioni: la struttura tipica di qualche specifico *file* di sistema; le pagine del manuale *online* che sono accessibili da una finestra di terminale in ambiente *GNU/Linux*) e che descrivono alcuni comandi di sistema; etc. Tali contenuti sono inclusi in opportuni riquadri e, laddove è necessario, ad essi ci si riferisce nel testo seguente.

È possibile (anche se non strettamente necessario) aggiungere commenti tra un'istruzione e l'altra, al fine di introdurre delle spiegazioni, qualora il/la candidato/a lo ritenga opportuno. La commissione raccomanda di adottare soluzioni semplici da implementare e da gestire; inoltre, verrà valutata anche la chiarezza con la quale esse sono esposte.

Durante la prova, è consentito l'accesso a manuali e a un *personal computer*, purché esso sia escluso dalla rete. È invece vietato l'utilizzo di telefoni cellulari, *tablet* e altri oggetti che consentono la comunicazione con l'esterno dell'aula d'esame.

La durata della prova scritta è di due ore, al termine delle quali il/la candidato/a dovrà necessariamente consegnare il proprio elaborato.

Questionario riguardante la legislazione universitaria

- [1] Al Credito Formativo Universitario corrispondono:
- ☐ 25 ore di impegno complessivo per studente;
 - ☐ 60 ore di impegno complessivo per studente;
 - ☐ 50 ore di impegno complessivo per studente.
- [2] Quale delle seguenti alternative è corretta?
- ☐ il Rettore presiede il Senato Accademico;
 - ☐ il Rettore presiede il Collegio di disciplina;
 - ☐ il Rettore presiede il Consiglio di Dipartimento.
- [3] Gli obblighi di frequenza agli insegnamenti dei corsi di laurea e di laurea magistrale sono disciplinati da:
- ☐ Statuto di Ateneo;
 - ☐ Regolamento Didattico del corso di studio;
 - ☐ Regolamento Didattico di Ateneo.
- [4] Secondo la disciplina in tema di lavoro universitario, nel comparto università è prevista la possibilità per i dipendenti di ottenere un'aspettativa?
- ☐ Sì, ma solo se lo consente il Regolamento d'Ateneo concernente l'amministrazione del personale;
 - ☐ No, mai;
 - ☐ Sì, a determinate condizioni.

Problema

Scrivere un programma che, nell'ambito di un *server* di tipo *GNU/Linux*, rimuove temporaneamente gli *account* degli utenti che hanno inviato un eccessivo numero di *e-mail*. Tale programma dovrà anche effettuare operazioni utili per la diagnostica riguardante la posta elettronica.

Descrizione dettagliata dell'algoritmo

- [1] Si interroghi opportunamente il *Mail Transfer Agent* installato sul *server* in modo tale che

se il numero di *e-mail* in coda è superiore a 100, allora le informazioni principali riguardanti le *e-mail* in coda devono essere copiate su di un *file* esterno.

Quando il *Mail Transfer Agent* installato sul *server* è *exim*, la precedente prescrizione può essere messa in pratica utilizzando opportunamente i comandi *exim* e *exiqgrep*. Nei riquadri delle figure 1–14 sono riportate le spiegazioni riguardanti l'utilizzo di *exim* e *exiqgrep*, così come esse sono descritte nel manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*). Al/alla candidato/a è data facoltà di utilizzare opportunamente i comandi messi a disposizione da altri *Mail Transfer Agent*, purché ciò venga fatto in modo consistente con la richiesta precedentemente descritta all'interno di questo stesso punto [1].

- [2] Nel riquadro di figura 15 viene illustrato un esempio la cui struttura è analoga a quella dei *file* generati dal *Mail Transfer Agent* *exim*, così come richiesto al precedente punto [1].

Si analizzi quel *file* procedendo come descritto nei seguenti punti [2A]–[2B].

- [2A] Per ogni utente che ha accesso al *server*, si conti il numero delle sue occorrenze come mittente tra gli *e-mail* in coda, cioè **limitatamente** alle sole righe del suddetto *file* dove compare una sequenza di caratteri che comincia con <, finisce con > e ha @ al suo interno. La lista degli utenti è reperibile nel file */etc/passwd*, la cui struttura tipica è illustrata dall'esempio riportato nel riquadro di figura 16. Per ciascun utente, il numero delle sue occorrenze come mittente degli *e-mail* deve essere memorizzato opportunamente (a scelta del/la candidato/a su di un *file*, in un *array*, in una *lista*, in un'opportuna variabile temporanea,

etc.).

[2B] Per ogni utente il cui numero di occorrenze (come mittente tra gli *e-mail* in coda) è maggiore di 10, si devono intraprendere le seguenti tre azioni.

- Su di un disco di *backup* vengano copiati i seguenti *file* a disposizione di quell'utente: `/var/spool/mail/nomeutente` e tutti quelli nel *folder* `/home/nomeutente` (dove si intende che il `login-name` dell'utente in questione sia proprio *nomeutente*).
- Si rimuova quell'utente e anche tutti i *file* a sua disposizione (tra questi non compaiono, ovviamente, le copie che sono state create così come richiesto al punto precedente; si tenga presente che è bene che tali copie siano di proprietà dell'amministratore del sistema).
- Si mandi un avviso all'amministratore del sistema, tramite *e-mail*, in modo che gli sia comunicata l'avvenuta rimozione di quell'utente.

Per dar seguito alle sopraelencate tre istruzioni, si supponga che uno dei dischi di *backup* del *server* sia associato al *folder* `/media/sdg2` e si tenga presente che l'avviso all'amministratore deve essere inviato utilizzando il comando `mail`; nei riquadri delle figure 17–21 sono riportate le spiegazioni riguardanti l'utilizzo di `mail`, così come esse sono descritte nel manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*).

[3] Per ognuno degli utenti che è stato rimosso, si ispezioni il *file* che contiene le sue *e-mail* **ricevute** e non smistate, cioè la **copia** di

`/var/spool/mail/nomeutente`

La struttura tipica di un *file* `/var/spool/mail/nomeutente` è illustrata dall'esempio riportato nei riquadri di figura 22–23.

Durante l'ispezione della **copia** del *file* `/var/spool/mail/nomeutente` si prendano gli indirizzi *IP* dei **mittenti** dalle righe che cominciano con la scritta

Received: from

Per ognuno di questi indirizzi *IP* si vada a controllare se compare in una riga del *file* `blacklist.txt`. Quest'ultimo, alla fine delle ispezioni delle **copie** dei *file* che stavano in `/var/spool/mail/` (e da cui sono state rimossi così come richiesto al punto [2B]), deve risultare aggiornato in modo tale da soddisfare la seguente regola. Ogni volta che un indirizzo *IP* di un **mittente** è effettivamente presente in `blacklist.txt`, allora

si incrementi di 1 il contatore delle occorrenze, che è riportato nella corrispondente riga del *file*. Si assuma che il *file* `blacklist.txt` sia strutturato così come illustrato nell'esempio riportato nel riquadro di figura 24.

- [4] Utilizzando il comando `crontab`, si scriva un'istruzione, in modo tale che alle ore 0:00, 6:00, 12:00 e 18:00 di ogni giorno venga mandato in esecuzione il programma che mette in pratica tutte le prescrizioni descritte ai precedenti punti [1]–[3]. Nei riquadri di figura 25 sono riportate le spiegazioni riguardanti l'utilizzo di `crontab`, così come esse sono descritte nel manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*).

Allegati. Seguono otto allegati, distribuiti su 25 pagine.

EXIM4 (8)	System Manager's Manual	EXIM4 (8)
NAME	exim4 - a Mail Transfer Agent	
SYNOPSIS	<pre> exim4 [options] arguments ... mailq [options] arguments ... rsmtp [options] arguments ... rmail [options] arguments ... runq [options] arguments ... newaliases [options] arguments ... </pre>	
DESCRIPTION	<p>Exim is a mail transfer agent (MTA) developed at the University of Camá bridge. It is a large program with very many facilities. For a full specification, see the reference manual. This manual page contains only a description of the command line options. It has been automatically generated from the reference manual source, hopefully without too much mangling.</p> <p>Like other MTAs, Exim replaces Sendmail, and is normally called by user agents (MUAs) using the path /usr/sbin/sendmail when they submit messages for delivery (some operating systems use /usr/lib/sendmail). This path is normally set up as a symbolic link to the Exim binary. It may also be used by boot scripts to start the Exim daemon. Many of Exim's command line options are compatible with Sendmail so that it can act as a drop-in replacement.</p>	
M-@M-P		<p>This is a pseudo-option whose only purpose is to terminate the options, and therefore to cause subsequent command line items to be treated as arguments rather than options, even if they begin with hyphens.</p>
M-@M-P		<p>This option causes Exim to output a few sentences stating what it is. The same output is generated if the Exim binary is called with no options and no arguments.</p>
M-@M-P		<p>--version This option is an alias for -bv and causes version information to be displayed.</p>
M-@M-P		<p>-Ac These options are used by Sendmail for selecting configuration files and are ignored by Exim.</p>
M-@M-P		<p>-B-type This is a Sendmail option for selecting 7 or 8 bit processing. Exim is 8-bit clean; it ignores this option.</p>
M-@M-P		<p>-bd This option runs Exim as a daemon, awaiting incoming SMTP connections. Usually the -bd option is combined with the -q-time option, to specify that the daemon should also initiate periodic queue runs.</p>
M-@M-P		<p>The -bd option can be used only by an admin user. If either of the -d (debugging) or -v (verifying) options are set, the daemon does not disconnect from the controlling terminal. When running this way, it can be stopped by pressing ctrl-C.</p>
M-@M-P		<p>By default, Exim listens for incoming connections to the standard SMTP port on all the host's running interfaces. However, it is possible to listen on other ports, on multiple ports, and only on specific interfaces.</p>
M-@M-P		<p>When a listening daemon is started without the use of -ox (that is, without overriding the normal configuration), it writes its process id to a file called /var/run/exim4/exim4.pid. This location can be overridden by setting PID_FILE_PATH in Local/Makefile. The file is written while Exim is still running as root.</p>
M-@M-P		<p>When -ox is used on the command line to start a listening daemon, the process id is not written to the normal pid file path. However, -op can be used to specify a path on the command line if a pid file is required.</p>
M-@M-P		<p>The SIGHUP signal can be used to cause the daemon to re-execute itself. This should be done whenever Exim's configuration file, or any file that is incorporated into it by means</p>

Figure 1. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 1 di 13.

<p>of the .include facility, is changed, and also whenever a new version of Exim is installed. It is not necessary to do this when the files are referenced from the configuration file (for example, alias files) are changed, because these are reread each time they are used.</p> <p>This option has the same effect as -bd except that it never disconnects from the controlling terminal, even when no debugging is specified.</p>	<p>Run Exim in expansion testing mode. Exim discards its root privilege, to prevent ordinary users from using this mode to read otherwise inaccessible files. If no arguments are given, Exim runs interactively, prompting for lines of data. Otherwise, it processes each argument in turn.</p>	<p>If Exim was built with USE_READLINE=yes in Local/Makefile, it tries to load the readline library dynamically whenever the -be option is used without command line arguments. If successful, it uses the readline() function, which provides extensive line-editing facilities, for reading the test data. A line history is supported.</p>	<p>Long expansion expressions can be split over several lines by using backslash continuations. As in Exim's run time configuration, white space at the start of continuation lines is ignored. Each argument or data line is passed through the string expansion mechanism, and the result is output. Variable values from the configuration file (for example, \$qualify_domain) are available, but no message-specific values (such as \$sender_domain) are set, because no message is being processed (but see -bem and -msst).</p>	<p>Note: If you use this mechanism to test lookups, and you change the data files or databases you are using, you must exit and restart Exim before trying the same lookup again. Otherwise, because each Exim process caches the results of lookups, you will just get the same result as before.</p>	<p>This option operates like -be except that it must be followed by the name of a file. For example:</p> <pre>exim4 -bem /tmp/testmessage</pre> <p>The file is read as a message (as if receiving a locally-submitted non-SMTP message) before any of the test expansions are done. Thus, message-specific variables such as \$message_size and \$header_from are available. However, no Received: header is added to the message. If the -t option is set, recipients are read from the headers in the normal way, and are shown in the \$recipients variable. Note that recipients cannot be given on the command line, because further arguments are taken as strings to expand (just like -be).</p>	<p>This option is the same as -bf except that it assumes that the filter being tested is a system filter. The additional commands that are available only in system filters are recognized.</p>	<p>This option runs Exim in user filter testing mode: the file is the filter file to be tested, and a test message must be supplied on the standard input. If there are no messages</p>	<p>age-dependent tests in the filter, an empty file can be supplied.</p> <p>If you want to test a system filter file, use -bf instead of -bf. You can use both -bf and -bf on the same command, in order to test a system filter and a user filter in the same run. For example:</p> <pre>exim4 -bf /system/filter -bf /user/filter </test/message</pre> <p>This is helpful when the system filter adds header lines or sets filter variables that are used by the user filter.</p>	<p>If the test filter file does not begin with one of the special lines</p> <pre># Exim filter # Steve filter</pre> <p>it is taken to be a normal .forward file, and is tested for validity under that interpretation.</p> <p>The result of an Exim command that uses -bf, provided no errors are detected, is a list of the actions that Exim would try to take if presented with the message for real. More details of filter testing are given in the separate document entitled Exim's interfaces to mail filtering.</p> <p>When testing a filter file, the envelope sender can be set by the -f option, or by a "From" line at the start of the test message. Various parameters that would normally be taken from the envelope sender (such as the address of the message) can be set by means of additional command line options (see the next four options).</p>	<p>-bfd <domain></p> <p>This sets the domain of the recipient address when a filter file is being tested by means of the -bf option. The default is the value of \$qualify_domain.</p>	<p>-bfl <local part></p> <p>This sets the local part of the recipient address when a filter file is being tested by means of the -bf option. The default is the username of the process that calls Exim. A local part must be specified with any prefix or suffix stripped, because that is what it appears to the filter when a message is actually being delivered.</p>	<p>-bfp <prefix></p> <p>This sets the prefix of the local part of the recipient address when a filter file is being tested by means of the -bf option. The default is an empty prefix.</p>	<p>-bfs <suffix></p> <p>This sets the suffix of the local part of the recipient address when a filter file is being tested by means of the -bf option. The default is an empty suffix.</p>	<p>-bh <IP address></p> <p>This option runs a fake SMTP session as if from the given IP address, using the standard input and output. The IP address may include a port number at the end, after a full stop. For example:</p> <pre>exim4 -bh 10.9.8.7.1234 exim4 -bh fe80::a00:20ff:fe96:a061.5678</pre> <p>When an IPv6 address is given, it is converted into canonical form. In the case of the second example above, the value of \$sender_host_address after conversion to the canonical form is fe80::0000:0a00:20ff:fe96:a061.5678.</p>			
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Figure 2. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim` – Pagina 2 di 13.

<p>M-^@M-^P</p> <p>Comments as to what is going on are written to the standard error file. These include lines beginning with "LOG" for anyã thing that would have been logged. This facility is provided for testing configuration options for incoming messages, to make sure they implement the required policy. For example, you can test your relay controls using -bh.</p> <p>Warning 1: You can test features of the configuration that rely on ident (RFC 1413) information by using the -oM option. However, Exim cannot actually perform an ident callã out when testing using -bh because there is no incoming SMTP connection.</p> <p>Warning 2: Address verification callouts are also skipped when testing using -bh. If you want these callouts to occur, use -bhc instead.</p> <p>Messages supplied during the testing session are discarded, and nothing is written to any of the real log files. These may be pauses when DNS (and other) lookups are taking place, and of course these may time out. The -oM option can be used to specify a specific IP interface and port if this is important, and -oVaa and -oMai can be used to set parameters as if the SMTP session were authenticated.</p> <p>The exim_checkaccess utility is a "packaged" version of -bh whose output just states whether a given recipient address from a given host is acceptable or not.</p> <p>Features such as authentication and encryption, where the client initiates them, can be tested easily by using -bhc with -bh. Instead, you should use a specialized SMTP test program such as swaks.</p>	<p>M-^@M-^P</p> <p>-bhc <IP address></p> <p>This option operates in the same way as -bh, except that address verification callouts are performed if required. This includes consulting and updating the callout cache database.</p> <p>-bi</p> <p>Sendmail interprets the -bi option as a request to rebuild its alias file. Exim does not have the concept of a single alias file, and so it cannot mimic this behaviour. However, it fails to /usr/lib/sendmail with the -bi option tend to appear in the log files. Exim does not recognize the -bi option, so the option must be recognized.</p>	<p>M-^@M-^P</p> <p>If -bi is encountered, the command specified by the bi_comã mand configuration option is run, under the uid and gid of the caller of Exim. If the -oA option is used, its value is passed to the command as an argument. The command set by bi_command may not contain arguments. The command can use the exim_dbmutils utility, or some other means, to rebuild alias files if this is required. If the bi_command option is not set, calling Exim with -bi is a no-op.</p> <p>-bi:help</p> <p>We shall provide various options starting -bi: for querying Exim for information. The output of many of these will be intended for machine consumption. This one is not. The -bi:help option asks Exim for a synopsis of supported options beginning -bi:. Use of any of these options shall cause Exim to exit after producing the requested output.</p> <p>-bi:dsccp</p> <p>This option causes Exim to emit an alphabetically sorted list of all recognised DSCP names.</p> <p>-bi:sieve</p> <p>This option causes Exim to emit an alphabetically sorted list of all supported Sieve protocol extensions on stdout, one per line. This is anticipated to be useful for ManageSieve (RFC 5804) implementations, in providing that protocol's SIEVE</p>
<p>-bm</p> <p>This option runs an Exim receiving process that accepts an incoming, locally-generated message on the standard input. The recipients are given as the command arguments (except when -t is also present - see below). Each argument can be a domain-separated list of RFC 2822 addresses. This is the default option for selecting the overall action of an Exim call; it is assumed if no other conflicting option is present.</p> <p>If any addresses in the message are unqualified (have no domain), they are qualified by the values of the qualã ify_domain or qualify_recipient options, as appropriate. The -bnq option (see below) provides a way of suppressing this for special cases.</p> <p>Policy checks on the contents of local messages can be enforced by means of the non-SMTP ACL.</p> <p>The return code is zero if the message is successfully accepted. Otherwise, the action is controlled by the -oex option setting - see below.</p> <p>The format of the message must be as defined in RFC 2822, except that, for compatibility with Sendmail and Smail, a line in one of the forms</p> <p>From sender Fri Jan 5 12:55 GMT 1997 From sender Fri, 5 Jan 97 12:55:01</p> <p>(with the weekday optional, and possibly with additional text after the date) is permitted to appear at the start of the message. There is to be no authoritative specification of the format, but Exim recognizes it by matching against the regular expression defined by the uucp_from_data tern option, which can be changed if necessary.</p> <p>The specified sender is treated as if it were given as the argument to the -f option, but if a -f option is also present, its argument is used in preference to the address taken from the message. The caller of Exim must be a trusted user for the sender of a message to be set in this way.</p>	<p>M-^@M-^P</p> <p>-bmalware</p> <p>This debugging option causes Exim to scan the given file, using the malware scanning framework. The option of av_scanã ner influences this option, so if av_scanner's value is dependent upon an expansion then the expansion should have defaults which apply to this invocation. ACLs are not invoked, so if av_scanner references an ACL variable then that variable will never be populated and -bmalware will fail.</p> <p>Exim will have changed working directory before resolving the filename, so using fully qualified pathnames is advisable. Exim will be running as the Exim user when it tries to open the file, rather than as the invoking user. This option requires admin privileges.</p> <p>The -bmalware option will not be extended to be more generã ally useful, there are better tools for file-scanning. This option exists to help administrators verify their Exim and AV scanner configuration.</p>	<p>M-^@M-^P</p> <p>-bnq</p> <p>By default, Exim automatically qualifies unqualified addresses (those without domains) that appear in messages that are submitted locally (that is, not over TCP/IP). This</p>

Figure 3. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 3 di 13.

<p>qualification applies both to addresses in envelopes, and addresses in header lines. Sender addresses are qualified using qualify_domain, and recipient addresses using qualify_recipient (which defaults to the value of qualify_ify_domain).</p> <p>Sometimes, qualification is not wanted. For example, if -bs (batch SMTP) is being used to re-submit messages that originally came from remote hosts after content scanning, you probably do not want to qualify unqualified addresses in header lines. (Such lines will be present only if you have not enabled a header syntax check in the appropriate ACL.)</p> <p>The -bnq option suppresses all qualification of unqualified addresses in messages that originate on the local host. When this is used, unqualified addresses in the envelope provoke errors (causing message rejection) and unqualified addresses in header lines are left alone.</p> <p>If this option is given with no arguments, it causes the values of all Exim's main configuration options to be written to the standard output. The values of one or more specific options can be requested by giving their names as arguments, for example:</p> <pre>exim4 -bp qualify_domain hold_domains</pre> <p>However, any option setting that is preceded by the word 'hide' in the configuration file is not shown in full, except to an admin user. For other users, the output is as in this example:</p> <pre>mysql_servers = <value not displayable></pre> <p>If configure_file is given as an argument, the name of the run time configuration file is output. If a list of configuration files was supplied, the value that is output here is the name of the file that was actually used.</p> <p>If the -n flag is given, then for most modes of -bp operation the name will not be output.</p> <p>If log_file_path or pid_file_path are given, the names of the directories where log files and daemon pid files are written are output, respectively. If these values are unset, log files are written in a sub-directory of the spool directory called log, and the pid file is written directly into the spool directory.</p> <p>If -bp is followed by a name preceded by +, for example,</p> <pre>exim4 -bp +local_domains</pre> <p>it searches for a matching named list of any type (domain, host, address, or local part) and outputs what it finds.</p> <p>If one of the words router, transport, or authenticator is given, followed by the name of an appropriate driver instance, the option settings for that driver are output. For example:</p> <pre>exim4 -bp transport local_delivery</pre> <p>The generic driver options are output first, followed by the driver's private options. A list of the names of drivers of a particular type can be obtained by using one of the words router_list, transport_list, or authenticator_list, and a complete list of all drivers with their option settings can be obtained by using routers, transports, or authenticators.</p>	<p>If invoked by an admin user, then macro, macro_list and macros are available, similarly to the drivers. Because macros are sometimes used for storing passwords, this option is restricted. The output format is one item per line.</p> <p>This option requests a listing of the contents of the mail queue in the standard output. If the -bp option is followed by a list of message IDs, just those messages are listed. By default, this option can be used only by an admin user. However, the queue_list_requires_admin option can be set false to allow any user to see the queue.</p> <p>Each message on the queue is displayed as in the following example:</p> <pre>25m 2.9K 0t5C6f-0000c0-00 <alice@wonderland.fict.example> <other addresses></pre> <p>The first line contains the length of time the message has been on the queue (in this case 25 minutes), the size of the message (2.9K), the unique local identifier for the message, and the message sender, as contained in the envelope. For bounce messages, the sender address is empty, and appears as *>*. If the message was submitted locally by an untrusted user who overrode the default sender address, the user's login name is shown in parentheses before the sender address.</p> <p>If the message is frozen (attempts to deliver it are suspended) then the text **** frozen **** is displayed at the end of this line.</p> <p>The recipients of the message (taken from the envelope, not the headers) are displayed on subsequent lines. Those addresses to which the message has already been delivered are marked with the letter D. If an original address gets expanded into several addresses via an alias or forward file, the original is displayed with a D only when deliveries for all of its child addresses are complete.</p> <p>This option operates like -bp, but in addition it shows delivered addresses that were generated from the original top level address(es) in each message by alias or forwarding operations. These addresses are flagged with '+b' instead of just 'D'.</p> <p>This option counts the number of messages on the queue, and writes the total to the standard output. It is restricted to admin users, unless queue_list_requires_admin is set false.</p> <p>This option operates like -bp, but the output is not sorted into chronological order of message arrival. This can speed it up when there are lots of messages on the queue, and is particularly useful if the output is going to be post-processed in a way that doesn't need the sorting.</p> <p>This option is a combination of -bpr and -bpa.</p> <p>This option is a combination of -bpr and -bpu.</p> <p>This option operates like -bp but shows only undelivered top-level addresses for each message displayed. Addresses generated by aliasing or forwarding are not shown, unless the message was deferred after processing by a router with the one_time option set.</p> <p>This option is for testing retry rules, and it must be followed by up to three arguments. It causes Exim to look for a retry rule that matches the values and to write it to the</p>
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Figure 4. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim` – Pagina 4 di 13.

	standard output. For example: exim4 -brc batch.comp.mus.example Retry rule: *.comp.mus.example F,2h,15m;F,4d,30m;	M-^@M-^P
-brw	The first argument, which is required, can be a complete address in the form local-part@domain, or it can be just a domain name. If the second argument contains a dot, it is interpreted as an optional second domain name; if no retry rule is found for the first argument, the second is tried. This ties in with Exim's behaviour when looking for retry rules for remote hosts: the final domain is sought. Finally, an argument that is the name of a specific delivery method can be used in setting up retry rules. Can be given. For example: exim4 -brt haydn.comp.mus.example quota_3d Retry rule: *haydn.comp.mus.example quota_3d F,h,15m	M-^@M-^P
-bs	This option is for testing address rewriting rules, and it must be followed by a single argument, consisting of either a local part without a domain, or a complete address with a fully qualified domain. Exim outputs how this address would be rewritten for each possible place it might appear.	M-^@M-^P
M-^@M-^P	This option is used for batched SMTP input, which is an alternative interface for non-interactive local message submission. A number of messages can be submitted in a single run. However, despite its name, this is not really SMTP input. Exim reads each message's envelope from SMTP commands on the standard input, but generates no responses. If the caller is trusted, or untrusted_set_sender is set, the senders in the SMTP MAIL commands are believed; otherwise the sender is always the caller of Exim.	M-^@M-^P
M-^@M-^P	The message itself is read from the standard input, in SMTP format (leading dots doubled), terminated by a line containing just a single dot. An error is provoked if the terminating dot is missing. A further message may then follow.	M-^@M-^P
M-^@M-^P	As for other local message submissions, the contents of incoming batch SMTP messages can be checked using the non-SMTP ACL. Unqualified addresses are automatically qualified using qualify_domain and qualify_recipient, as appropriate, unless the -bnq option is used.	M-^@M-^P
M-^@M-^P	Some other SMTP commands are recognized in the input. HELO and EHLO act as RESET; VRFY, EXPN, ETRN, and HELP act as NOOP; QUIT quits, ignoring the rest of the standard input.	M-^@M-^P
M-^@M-^P	If any error is encountered, reports are written to the standard output and error streams, and Exim gives up immediately. The return code is 0 if no error occurred, and 1 if one or more messages were accepted before the error was detected; otherwise it is 2.	M-^@M-^P
-bs	This option causes Exim to accept one or more messages by reading SMTP commands on the standard input, and producing SMTP replies on the standard output. SMTP policy controls, as defined in ACUs, are applied. Some user agents use this interface as a way of passing locally-generated messages to the MTA. In this case, if the caller of Exim is trusted, or untrusted_set_sender is set, the senders of messages taken from the SMTP MAIL commands. Otherwise the content of these commands is ignored and the sender is set up as the	M-^@M-^P
	calling user. Unqualified addresses are automatically qualified using qualify_domain and qualify_recipient, as appropriate, unless the -bnq option is used.	M-^@M-^P
	The -bs option is also used to run Exim from inetd, as an alternative to using a listening daemon. Exim can distinguish the two cases by checking whether the standard input is a TCP/IP socket. When Exim is called from inetd, the source of the mail is assumed to be remote, and the comments above concerning senders and qualification do not apply. In this situation, Exim behaves in exactly the same way as it does when receiving a message via the listening daemon.	M-^@M-^P
	This option runs Exim in address testing mode, in which each argument is taken as a recipient address to be tested for deliverability. The results are written to the standard output. If a test fails, and the caller is not an admin user, no details of the failure are output, because these might contain sensitive information such as usernames and passwords for database lookups.	M-^@M-^P
	If no arguments are given, Exim runs in an interactive manner, prompting with a right angle bracket for addresses to be tested.	M-^@M-^P
	Unlike the -be test option, you cannot arrange for Exim to use the readline() function, because it is running as root and there are security issues.	M-^@M-^P
	Each address is handled as if it were the recipient address of a message (compare the -bv option). It is passed to the routers, which select the best route to the standard output. However, any router that has no address lists is bypassed. This can make -bt easier to use for genuine routing tests: if your first router passes everything to a scanner program.	M-^@M-^P
	The return code is 2 if any address failed outright; it is 1 if no address failed outright but at least one could not be resolved for some reason. Return code 0 is given only when all addresses succeed.	M-^@M-^P
	Note: When actually delivering a message, Exim removes duplicate recipient addresses after routing is complete, so that only one delivery takes place. This does not happen when testing with -br; the full results of routing are always shown.	M-^@M-^P
	Warning: -bt can only do relatively simple testing. If any of the routers in the configuration makes any tests on the sender address of a message, you can use the -f option to set an appropriate sender when running -bt tests. Without it, the sender is assumed to be the calling user at the default qualityifying domain. However, if you have set up (for example) routers whose behaviour depends on the contents of an incoming message, you cannot test those conditions using -bt. The -N option provides a possible way of doing such tests.	M-^@M-^P
	This option causes Exim to write the current version number, compilation number, and compilation date of the exim4 binary to the standard output. It also lists the PAM library that is used, and the names of the modules (such as specific lookup types), the drivers that are included in the library, and the name of the run time configuration file that is in use.	M-^@M-^P

Figure 5. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim` – Pagina 5 di 13.

<p>As part of its operation, -bv causes Exim to read and syntax check its configuration file. However, this is a static check only. It cannot check values that are to be expanded. For example, although a mispelt ACL verb is detected, an error in the verb's arguments is not. You cannot rely on -bv alone to discover all errors in the configuration. You should use some realistic testing is needed. The -bh and -N options provide more dynamic testing facilities.</p> <p>This option runs Exim in address verification mode, in which each argument is taken as a recipient address to be verified by the routers. (This does not involve any verification calls outs). During normal operation, verification happens mostly as a consequence of processing a verify condition in an ACL. If you want to test an entire ACL, possibly including callouts, see the -bh and -bhc options.</p> <p>If verification fails, and the caller is not an admin user, no details of the failure are output, because these might contain sensitive information such as usernames and passwords for database lookups.</p> <p>If no arguments are given, Exim runs in an interactive maná net, prompting with a right angle bracket for addresses to be verified.</p> <p>Unlike the -be test option, you cannot arrange for Exim to use the readline() function, because it is running as exim4 and there are security issues.</p> <p>Verification differs from address testing (the -bt option) in that routers that have no verify set are skipped, and if the address is accepted by a router that has fail verify set, verification fails. The address is verified as a recipient if -bv is used; to test verification for a sender address, -bvs should be used.</p> <p>If the -v option is not set, the output consists of a single line for each address, stating whether it was verified or not, and giving a reason in the latter case. Without -v, generating more than one address by redirection causes verification to end successfully, without considering the generated addresses. However, if just one address is generated, production continues, and the generated address must verify successfully for the overall verification to succeed.</p> <p>When -v is set, more details are given of how the address has been handled, and in the case of address redirection, all the generated addresses are also considered. Verification may succeed for some and fail for others.</p> <p>The return code is 2 if any address failed outright; it is 1 if no address failed outright but at least one could not be resolved for some reason. Return code 0 is given only when all addresses succeed.</p> <p>If any of the routers in the configuration makes any tests on the sender address of a message, you should use the -f option to set an appropriate sender when running -bv tests. Without it, the sender is assumed to be the calling user at the default qualifying domain.</p> <p>This option acts like -bv, but verifies the address as a sender rather than a recipient address. This affects any rewriting and qualification that might happen.</p> <p>This option runs Exim as a daemon, awaiting incoming SMTP</p>	<p>M-^@M-^P</p> <p>-bv</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p>	<p>connections, similarly to the -bd option. All port specifications on the command-line and in the configuration file are ignored. Queue-running may not be specified.</p> <p>In this mode, Exim expects to be passed a socket as fd 0 (stdin) which it listens on for incoming connections. Exim's system to start up and have inlined (or equivalent) listed on the SMTP ports, starting an Exim daemon for each port only when the first connection is received.</p> <p>If the option is given as -bw=times then the time is a timeá out, after which the daemon will exit, which should cause inetd to listen once more.</p> <p>-C <filelist></p> <p>This option causes Exim to find the run time configuration file from the given list, instead of from the list specified in the CONFIGURE file. Usually, the list will consist of just a single file name, but it can be a colon-separated list of names in this case, the first file that exists is used. Failure to open an existing file stops Exim from proceeding any further along the list, and an error is generated.</p> <p>When this option is used by a caller other than root, and the list is different from the compiled-in list, Exim gives up its root privilege immediately, and runs with the real and effective uid and gid set to those of the caller. However, if a TRUSTED_CONFIG_LIST file is defined in Local/Makefile, that file contains a list of full pathnames, one per line, for configuration files which the trusted root privilege is retained. Configuration files specified in this list are treated as if the caller is the Exim user (or the user specified in the CONFIG_URE_OWNER option, if any), and as long as the configuration file is not writeable by inappropriate users or groups.</p> <p>Leaving TRUSTED_CONFIG_LIST unset precludes the possibility of testing a configuration using -C right through message reception and delivery, even if the caller is root. The reception works, but by that time, Exim is running as the Exim user, so when it re-executes to regain privilege for the delivery, the use of -C causes privilege to be lost. However, root can test reception and delivery using two separate commands (one to put a message on the queue, using -odq, and another to do the delivery, using -M).</p> <p>If ALT_CONFIG_PREFIX is defined in Local/Makefile, it specifies a prefix string with which any file named in a -C command line option must start. In addition, the file name must not contain the sequence ./.. However, if the value of the -C option is identical to the value of CONFIGURE_FILE in Local/Makefile, Exim ignores -C and proceeds as usual. There is no default setting for ALT_CONFIG_PREFIX; when it is unset, any file name can be used with -C.</p> <p>ALT_CONFIG_PREFIX can be used to confine alternative configuration files to a directory to which only root has access. This prevents someone who has broken into the Exim account from running a privileged Exim with an arbitrary configuration file.</p> <p>The -C facility is useful for ensuring that configuration files are syntactically correct, but cannot be used for test deliveries, unless the caller is privileged, or unless it is an exotic configuration that does not require privilege. No check is made on the owner or group of the files specified by</p>	<p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>-bvs</p> <p>-bw</p>
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Figure 6. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 6 di 13.

<p>local_scan</p> <p>lookup</p> <p>memory</p> <p>pid</p> <p>process_info</p> <p>queue_run</p> <p>receive</p> <p>resolver</p> <p>rewrite</p> <p>route</p> <p>timestamp</p> <p>tls</p> <p>transport</p> <p>uid</p> <p>verify</p> <p>all</p> <p>also -v</p>	<p>system load checks can be used by local_scan() general lookup code and all lookups memory handling add pid to debug output lines setting info for the process log queue runs general message reception logic turn on the DNS resolver's debugging output debugging address rewriting address routing add timestamp to debug output lines TLS logic transports changes of uid/gid and looking up uid/gid address verification logic almost all of the above (see below), and</p>	<p>The all option excludes memory when used as +all, but includes it for -all. The reason for this is that +all is something that people tend to use when generating debug output for Exim maintainers. If -memory is included, an awful lot of output that is very rarely of interest is generated, so it now has to be explicitly requested. However, -all does turn everything off.</p> <p>The resolver option produces output only if the DNS resolver was compiled with DEBUG enabled. This is not the case in some operating systems. Also, unfortunately, debugging output from the DNS resolver is written to stdout rather than stderr.</p> <p>The default (-d with no argument) omits expand, filter, interface, load, memory, pid, resolver, and timestamp. However, the pid selector is forced when debugging is turned on for a daemon, which then passes it on to the daemon's Exims. Exim automatically adds the pid to debug lines when several remote deliveries are run in parallel.</p> <p>The timestamp selector causes the current time to be inserted at the start of all debug output lines. This can be useful when trying to track down delays in processing.</p> <p>If the debug.print option is set in any driver, it produces output whenever any debugging is selected, or if -v is used.</p>	<p>-dd<debug options></p> <p>This option behaves exactly like -d except when used on a command that starts a daemon process. In that case, debugging is turned off for the subprocesses that the daemon creates. Thus, it is useful for monitoring the behaviour of the daemon without creating as much output as full debugging does.</p> <p>This is an obsolete option that is now a no-op. It used to affect the way Exim handled CR and LF characters in incoming messages.</p> <p>-E</p> <p>This option specifies that an incoming message is a locally-generated delivery failure report. It is used internally by Exim when handling delivery failures and is not intended for external use. Its only effect is to stop Exim generating certain messages to the postmaster, as otherwise message cascades could occur in some situations. As part of the same option, a message id may follow the characters -E. If it does, the log entry for the receipt of the new message contains the id, following "R=", as a cross-reference.</p> <p>-ex</p> <p>There are a number of Sendmail options starting with -oe which seem to be called by various programs without the leads</p>
<p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p>	<p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p>	<p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p>	<p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p>

Figure 7. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 7 di 13.

<p>ing <code>o</code> in the option. For example, the vacation program uses <code>-eq</code>. Exim treats all options of the form <code>-ex</code> as synonymous with the corresponding <code>-oex</code> options.</p> <p>-F <string></p> <p>This option sets the sender's full name for use when a locally-generated message is being accepted. In the absence of this option, the user's <code>gecos</code> entry from the password data is used. As users are generally permitted to alter their <code>gecos</code> entries, no security considerations are involved. White space between <code>-F</code> and the <code><string></code> is optional.</p> <p>-f <address></p> <p>This option sets the address of the envelope sender of a locally-generated message (also known as the return path). The option can normally be used only by a trusted user, but untrusted_set_sender can be set to allow untrusted users to use it.</p> <p>Processes running as root or the Exim user are always trusted. Other trusted users are defined by the trusted users or trusted groups options. In the absence of <code>-f</code>, or if the caller is not trusted, the sender of a local message is set to the caller's login name at the default quality domain.</p> <p>There is one exception to the restriction on the use of <code>-f</code>: an empty sender can be specified by any user, trusted or not, to create a message that can never provoke a bounce. An empty sender can be specified either as an empty string, or as a pair of angle brackets with nothing between them, as in these examples of shell commands:</p> <pre>exim4 -f '<>' user@domain exim4 -f '' user@domain</pre> <p>In addition, the use of <code>-f</code> is not restricted when testing a filter file with <code>-bf</code> or when testing or verifying addresses using the <code>-bt</code> or <code>-bv</code> options.</p> <p>Allowing untrusted users to change the sender address does not of itself make it possible to send anonymous mail. Exim still checks that the <code>From:</code> header refers to the local user, and if it does not, it adds a <code>Sender:</code> header, though this can be overridden by setting <code>no_local_from_check</code>.</p> <p>White space between <code>-f</code> and the <code><address></code> is optional (that is, they can be given as two arguments or one combined argument). The sender of a locally-generated message can also be set (when permitted) by an initial <code>*From *</code> line in the message - see the description of <code>-bm</code> above - but if <code>-f</code> is also present, it overrides <code>*From *</code>.</p> <p>-G</p> <p>This option is equivalent to an ACL applying:</p> <pre>control = suppress_local_fixups</pre> <p>for every message received. Note that Sendmail will complain about such bad formatting, while Exim silently just does not fix it up. This may change in future.</p> <p>As this affects audit information, the caller must be a trusted user to use this option.</p> <p>-h <number></p> <p>This option is accepted for compatibility with Sendmail, but has no effect. (In Sendmail it overrides the 'hop count' obtained by counting Received: headers.)</p> <p>-i</p> <p>This option, which has the same effect as <code>-oi</code>, specifies that a dot on a line by itself should not terminate an incoming, non-SMTP message. I can find no documentation for this option in Solaris 2.4 Sendmail, but the mailx command in Solaris 2.4</p>	<p>uses it. See also <code>-tl</code>.</p> <p>-L <tag></p> <p>This option is equivalent to setting <code>syslog_processname</code> in the config file and setting <code>log_file_path</code> to <code>syslog</code>. Its use is restricted to administrators. The configuration file has to be read and parsed, so to determine access rights, before this is used. To avoid a security test, so early configuration file errors will not honour this flag.</p> <p>The tag should not be longer than 32 characters.</p> <p>-M <message id> <message id> ...</p> <p>This option requests Exim to run a delivery attempt on each message in turn. If any of the messages are frozen, they are automatically thawed before the delivery attempt. The sets of <code>queue_domains</code>, <code>queue_smtp_domains</code>, and <code>hold_domains</code> are ignored.</p> <p>Retry hints for any of the addresses are overridden - Exim tries to deliver even if the normal retry time has not yet been reached. This option requires the caller to be an admin user. However, there is an option called <code>prod_requires_admin</code> which can be set false to relax this restriction (and also the same requirement for the <code>-q</code>, <code>-R</code>, and <code>-S</code> options).</p> <p>The deliveries happen synchronously, that is, the original Exim process does not terminate until all the delivery attempts have finished. No output is produced unless there is a serious error. If you want to see what is happening, use the <code>-v</code> option as well, or inspect Exim's main log.</p> <p>-Mar <message id> <addresses> <addresses> ...</p> <p>This option requests Exim to add the addresses to the list of recipients of the message (<code>'ar'</code> for 'add recipients'). The first argument must be a message id, and the remaining ones must be email addresses. However, if the message is active (in the middle of a delivery attempt), it is not altered. This option can be used only by an admin user.</p> <p>-MC <transport> <hostname> <sequence number> <message id></p> <p>This option is not intended for use by external callers. It is used internally by Exim to invoke another instance of itself to deliver a waiting message using an existing SMTP connection, which is passed as the standard input. This must be the final option, and the caller must be root or the Exim user in order to use it.</p> <p>-MCA</p> <p>This option is not intended for use by external callers. It is used internally by Exim in conjunction with the <code>-MC</code> option. It signifies that the connection to the remote host has been authenticated.</p> <p>-MCP</p> <p>This option is not intended for use by external callers. It is used internally by Exim in conjunction with the <code>-MC</code> option. It signifies that the server to which Exim is connected supports pipelining.</p> <p>M-^QM-^P</p> <p>-MCQ <process id> <pipe fd></p> <p>This option is not intended for use by external callers. It is used internally by Exim in conjunction with the <code>-MC</code> option when the original delivery was started by a queue runner. It passes on the process id of the queue runner, together with the file descriptor number of an open pipe. Closure of the pipe signals the final completion of the sequence of processes that are passing messages through the same SMTP connection.</p> <p>M-^QM-^P</p> <p>M-^QM-^P</p> <p>-MCS</p> <p>This option is not intended for use by external callers. It is used internally by Exim in conjunction with the <code>-MC</code> option, and passes on the fact that the SMTP SIZE option</p>
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Figure 8. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim` – Pagina 8 di 13.

<p>M-~@M-~P</p> <p>-MCT</p> <p>-Mc <message id> <message id> ...</p>	<p>should be used on messages delivered down the existing conda nection.</p> <p>This option is not intended for use by external callers. It is used internally by Exim to mark messages for delivery with the -Mc option, and passes on the fact that the host to which Exim is connected supports TLS encryption.</p> <p>This option requests Exim to run a delivery attempt on each message in turn, but unlike the -M option, it does check for retry hints, and respects any that are found. This option is not very useful to external callers. It is provided mainly for internal use by Exim when it needs to re-invoke itself in order to regain root privilege for a delivery. However, -Mc can be useful when testing, in order to run a delivery that respects retry times and other options such as hold domains that are overridden when -H is used. Such a delivery does not change the queue, and is not intended to be used as a specific delivery method. It is intended to be used as a debugging tool, as if in queue run. You should use a with message id argument. A distinction between queue run deliveries and other deliveries is made in one or two places.</p>	<p>M-~@M-~P</p> <p>-Mset <message id></p>	<p>their status is not altered. This option can be used only by an admin user or by the user who originally caused the message to be placed on the queue.</p> <p>This option is useful only in conjunction with -be (that is, from testing string expansions). Exim loads the given message from the spool file, and then expands the message using the message-specific variables, such as message-specific variables, such as message-specific variables, such as message-specific variables, such as message-specific variables. The recipients variable is used to make use of these variables. However, this option can be used only by an admin user. See also -bem.</p>
<p>M-~@M-~P</p> <p>-Mes <message id> <address></p>	<p>This option requests Exim to change the sender address in the message to the given address, which must be a fully qualified address or "<>". (*es* for "edit sender"). There must be exactly two arguments. The first argument must be a message id, and the second one an email address. However, if the message is active (in the middle of a delivery attempt), its status is not altered. This option can be used only by an admin user.</p>	<p>M-~@M-~P</p> <p>-Mv <message id> <message id> ...</p>	<p>This option requests Exim to "thaw" any of the listed messages that are "frozen", so that delivery attempts can resume. However, if any of the messages are active, their status is not altered. This option can be used only by an admin user.</p>
<p>M-~@M-~P</p> <p>-Mf <message id> <message id> ...</p>	<p>This option requests Exim to mark each listed message as "frozen". This prevents any delivery attempts taking place until the message is "thawed", either manually or as a result of the auto-thaw configuration option. However, if any of the messages are active (in the middle of a delivery attempt), their status is not altered. This option can be used only by an admin user.</p>	<p>M-~@M-~P</p> <p>-Mv1 <message id></p>	<p>This option causes the contents of the message headers (-H) spool file to be written to the standard output. This option can be used only by an admin user.</p>
<p>M-~@M-~P</p> <p>-Mg <message id> <message id> ...</p>	<p>This option requests Exim to give up trying to deliver the listed messages, including any that are frozen. However, if any of the messages are active, their status is not altered. For non-bounce messages, a delivery error message is sent to the sender, containing the text "cancelled by administrator". Bounce messages are just discarded. This option can be used only by an admin user.</p>	<p>M-~@M-~P</p> <p>-m</p>	<p>This is apparently a synonym for -om that is accepted by Sendmail, so Exim treats it that way too.</p>
<p>M-~@M-~P</p> <p>-Mmad <message id> <message id> ...</p>	<p>This option requests Exim to mark all the recipient addresses in the messages as already delivered ("mad" for "mark all delivered"). However, if any message is active (in the middle of a delivery attempt), its status is not altered. This option can be used only by an admin user.</p>	<p>M-~@M-~P</p> <p>-N</p>	<p>This is a debugging option that inhibits delivery of a message at the transport level. It implies -v. Exim goes through many of the motions of delivery, it just doesn't actually transport the message, but instead behaves as if it had successfully done so. However, it does not make any updates to the retry database, and the log entries for deliveries are flagged with ">" rather than ">".</p>
<p>M-~@M-~P</p> <p>-Mmd <message id> <address> <address> ...</p>	<p>This option requests Exim to mark the given addresses as already delivered ("md" for "mark delivered"). The first argument must be a message id, and the remaining ones must be email addresses. These are matched to recipient addresses in the message in a case-sensitive manner. If the message is active (in the middle of a delivery attempt), its status is not altered. This option can be used only by an admin user.</p>	<p>M-~@M-~P</p> <p>-n</p>	<p>Because -N discards any message to which it applies, only root or the Exim user are allowed to use it with -bd, -q, -R or -M. In other words, an ordinary user can use it only when applying an incoming message to which it will apply. The message is never fails when -N is set, an address may be affected because of a configuration problem on a transport or a routing problem. Once -N has been set for a delivery attempt, it sticks to the message, and applies to any subsequent delivery attempts that may happen for that message.</p>
<p>M-~@M-~P</p> <p>-Mrm <message id> <message id> ...</p>	<p>This option requests Exim to remove the given messages from the queue. No bounce messages are sent; each message is simply forgotten. However, if any of the messages are active,</p>	<p>M-~@M-~P</p> <p>-O <data></p>	<p>This option is interpreted by Sendmail to mean "no aliasing". For normal modes of operation, it is ignored by Exim. When combined with -bp it suppresses the name of an option being output.</p>

Figure 9. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 9 di 13.

-oA <file name> M-^@M-^P	This option is used by Sendmail in conjunction with -bi to specify an alternative alias file name. Exim handles -bi differently; see the description above.	in the configuration file is in effect.
-oB <n> M-^@M-^P	This is a debugging option which limits the maximum number of messages that can be delivered down one SMTP connection, overriding the value set in any smtp transport. If <n> is omitted, the limit is set to 1.	When -odgs does operate, a delivery process is started for each incoming message, in the background by default, but in the foreground if -odi is also present. The recipient addresses are routed, and local deliveries are done in the normal way. However, if any SMTP deliveries are required, they are done at this time, so the message remains on the queue until it has been delivered. The delivery process encounters it. Because routing was done, Exim knows which messages are waiting for which hosts, and so a number of messages for the same host can be sent in a single SMTP connection. The queue_smtp_domains configuration option has the same effect for specific domains. See also the -qq option.
-odb M-^@M-^P	This option applies to all modes in which Exim accepts incoming messages, including the listening daemon. It requests "background" delivery of such messages, which means that the accepting process automatically starts a delivery process for each message received, but does not wait for the delivery processes to finish.	If an error is detected while a non-SMTP message is being received (for example, a malformed address), the error is reported to the sender in a mail message.
-odf M-^@M-^P	When all the messages have been received, the reception process exits, leaving the delivery processes to finish in their own time. The standard output and error streams are closed at the start of each delivery process. This is the default action if none of the -od options are present.	Provided this error message is successfully sent, the Exim receiving process exits with a return code of zero. If not, the return code is 2 if the problem is that the original message has no recipients, or 1 for any other error. This is the default -oex option if Exim is called as rmail.
-odi M-^@M-^P	This option requests "foreground" (synchronous) delivery when Exim has accepted a locally-generated message. (For the daemon it is exactly the same as -odb.) A delivery process is automatically started to deliver the message, and Exim waits for it to complete before proceeding.	This is the same as -oee, except that Exim always exits with a non-zero return code, whether or not the error message was successfully sent. This is the default -oex option, unless Exim is called as rmail.
-odq M-^@M-^P	The original Exim reception process does not finish until the delivery process for the final message has ended. The standard error stream is left open during deliveries.	If an error is detected while a non-SMTP message is being received, the error is reported by writing a message to the standard error file (stderr). The return code is 1 for all errors.
-odi M-^@M-^P	However, like -odb, this option has no effect if queue_only_override is false and one of the queueing options in the configuration file is in effect.	This option is supported for compatibility with Sendmail, but has the same effect as -oep.
-odq M-^@M-^P	If there is a temporary delivery error during foreground delivery, the message is left on the queue for later delivery, and the original reception process exits.	This option is supported for compatibility with Sendmail, but has the same effect as -oem.
-odi M-^@M-^P	This option is synonymous with -odf. It is provided for compatibility with Sendmail.	This option, which has the same effect as -i, specifies that a dot on a line by itself should not terminate an incoming, non-SMTP message. Otherwise, a single dot does terminate, though Exim does no special processing for other lines that start with a dot. This option is set by default if Exim is called as rmail. See also -ci.
-odq M-^@M-^P	This option applies to all modes in which Exim accepts incoming messages, including the listening daemon. It specifies that the accepting process should not automatically start a delivery process for each message received, but should instead place on the queue, and remain there until a subsequent queue runner process encounters them. There are several configuration options (such as queue_only) that can be used to queue incoming messages under certain conditions. This option overrides all of them and also -odgs. It always forces queueing.	This option is treated as synonymous with -oi.
-odgs M-^@M-^P	This option is a hybrid between -odb/-odi and -odq. However, like -odb and -odi, this option has no effect if queue_only_override is false and one of the queueing options	A number of options starting with -oM can be used to set values associated with remote hosts on locally-submitted messages (that is, messages not received over TCP/IP). These options can be used by any caller in conjunction with the -bb, -bf, -bt, or -bv testing options. In other circumstances, they are ignored unless the caller is trusted. The -oMa option sets the sender host address. This may include a port number at the end, after a full stop (period). For example: exim4 -bs -oMa 10.9.8.7.1234 An alternative syntax is to enclose the IP address in square brackets, followed by a colon and the port number: exim4 -bs -oMa [10.9.8.7]:1234 The IP address is placed in the \$sender_host_address variable

Figure 10. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 10 di 13.

<p>M-^@M-^P</p> <p>able, and the port, if present, in \$sender_host_port. If both -oMa and -bh are present on the command line, the sender host IP address is taken from whichever one is last.</p> <p>-oMaa <name></p> <p>See -oMa above for general remarks about the -oM options. The -oMaa option sets the value of \$sender_host_authenticated (the authenticator name). This option can be used with -bh and -bs to set up an authenticated SMTP session without actually using the SMTP AUTH command.</p> <p>M-^@M-^P</p> <p>-oMai <string></p> <p>See -oMa above for general remarks about the -oM options. The -oMai option sets the value of \$authenticated_id (the id that was authenticated). This overrides the default value (the caller's login id, except with -bh, where there is no default) for messages from local sources.</p> <p>-oMas <address></p> <p>See -oMa above for general remarks about the -oM options. The -oMas option sets the authenticated sender value in \$authenticated_sender. It overrides the sender address that is created from the caller's login id for messages from local sources, except when -bh is used, when there is no default. For both -bh and -bs, an authenticated sender that is specified on a MAIL command overrides this value.</p> <p>M-^@M-^P</p> <p>-oMi <interface address></p> <p>See -oMa above for general remarks about the -oM options. The -oMi option sets the IP interface address value. A port number may be included, using the same syntax as for -oMa. The interface address is placed in \$received_ip_address and the port number, if present, in \$received_port.</p> <p>M-^@M-^P</p> <p>-oMm <message reference></p> <p>See -oMa above for general remarks about the -oM options. The -oMm option sets the message reference, e.g. message-id, and is logged during delivery. This is useful when some kind of audit trail is required to tie messages together. The format of the message reference is checked and will abort if the format is invalid. The option will only be accepted if Exim is running in trusted mode, not as any regular user.</p> <p>The best example of a message reference is when Exim sends a bounce message. The message reference is the message-id of the original message for which Exim is sending the bounce.</p> <p>-oMr <protocol name></p> <p>See -oMa above for general remarks about the -oM options. The -oMr option sets the received protocol value that is stored in \$received_protocol. However, it does not apply (and is ignored) when -bh or -bs is used. For -bh, the protocol is the name of the standard SMTP protocol names. For -bs, the protocol is always "batched SMTP". However, the protocol can be set by -oMr.</p> <p>-oMs <host name></p> <p>See -oMa above for general remarks about the -oM options. The -oMs option sets the sender host name in \$sender_host_name. When this option is present, Exim does not attempt to look up a host name from an IP address; it uses the name it is given.</p> <p>-oMt <ident string></p> <p>See -oMa above for general remarks about the -oM options. The -oMt option sets the sender value in \$sender_ident. The default setting for local callers is the login id of the calling process, except when -bh is used, when there is no</p>	<p>default.</p> <p>-om</p> <p>In Sendmail, this option means "me too", indicating that the sender of a message should receive a copy of the message if the sender appears in an alias expansion. Exim always does this, so the option does nothing.</p> <p>-oo</p> <p>This option is ignored. In Sendmail it specifies "old style headers", whatever that means.</p> <p>-op <path></p> <p>This option is useful only in conjunction with -bd or -q with a time value. The option specifies the file to which the process id of the daemon is written. When -oX is used with -bd, or when -q with a time is used without -bd, this is the only way of causing Exim to write a pid file, because in those cases, the normal pid file is not used.</p> <p>-or <time></p> <p>This option sets a timeout value for incoming non-SMTP messages. If it is not set, Exim will wait forever for the standard input. The value can also be set by the receive_timeout option.</p> <p>M-^@M-^P</p> <p>M-^@M-^P</p> <p>-os <time></p> <p>This option sets a timeout value for incoming SMTP messages. The timeout applies to each SMTP command and block of data. The value can also be set by the smtp_receive_timeout option; it defaults to 5 minutes.</p> <p>-ov</p> <p>This option has exactly the same effect as -v.</p> <p>-oX <number or string></p> <p>This option is relevant only when the -bd (start listening daemon) option is also given. It overrides the ports and interfaces the daemon uses. When -oX is used to start a daemon, no pid file is written unless -op is also present to specify a pid file name.</p> <p>M-^@M-^P</p> <p>-pd</p> <p>This option applies when an embedded Perl interpreter is linked with Exim. It overrides the setting of the perl_at_start option, forcing the starting of the interpreter to be delayed until it is needed.</p> <p>-ps</p> <p>This option applies when an embedded Perl interpreter is linked with Exim. It overrides the setting of the perl_at_start option, forcing the starting of the interpreter to occur as soon as Exim is started.</p> <p>-p<rvval><sval></p> <p>For compatibility with Sendmail, this option is equivalent to -oMr <rvval> -oMs <sval></p> <p>M-^@M-^P</p> <p>-q</p> <p>This option is normally restricted to admin users. However, there is a configuration option called prod_requires_admin which can be set false to relax this restriction (and also the same requirement for the -M, -R, and -S options).</p> <p>The -q option starts one queue runner process. This scans the queue of pending messages, and runs a delivery process for each one in turn. It waits for each delivery process to find</p>
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Figure 11. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 11 di 13.

EXIM4 (8)	System Manager's Manual	EXIM4 (8)
NAME	exim4 - a Mail Transfer Agent	
SYNOPSIS	<pre> exim4 [options] arguments ... mailq [options] arguments ... rsmtp [options] arguments ... runq [options] arguments ... newaliases [options] arguments ... </pre>	<p>files that a dot on a line by itself does not terminate a non-SMTP message; -oee requests that errors detected in non-SMTP messages be reported by emailing the sender.</p> <p>Behave as if the option -q were present before any other options, for compatibility with Smail. The -q option causes a single queue runner process to be started. It processes the queue once, then exits.</p> <p>newaliases</p> <p>Behave as if the option -bi were present before any other options, for compatibility with Sendmail. This option is used for rebuilding Sendmail's alias file. Exim does not have the concept of a single alias file, but can be configured to run a specified command if called with the -bi option.</p>
DESCRIPTION	<p>Exim is a mail transfer agent (MTA) developed at the University of Cambridge. It is a large program with very many facilities. For a full specification, see the reference manual. This man page contains only a description of the command line options. It has been automatically generated from the reference manual source, hopefully without too much mangling.</p> <p>Like other MTAs, Exim replaces Sendmail, and is normally called by user agents (MUAs) using the path /usr/sbin/sendmail when they submit messages for delivery (some operating systems use /usr/lib/sendmail). This path is normally set up as a symbolic link to the Exim binary. It may also be used by boot scripts to start the Exim daemon. Many of Exim's command line options are compatible with Sendmail so that it can act as a drop-in replacement.</p>	<p>runq</p> <p>Behave as if the option -bi were present before any other options, for compatibility with Smail. The -q option causes a single queue runner process to be started. It processes the queue once, then exits.</p> <p>newaliases</p> <p>Behave as if the option -bi were present before any other options, for compatibility with Sendmail. This option is used for rebuilding Sendmail's alias file. Exim does not have the concept of a single alias file, but can be configured to run a specified command if called with the -bi option.</p>
	<p>DESCRIPTION</p> <p>Exim is a mail transfer agent (MTA) developed at the University of Cambridge. It is a large program with very many facilities. For a full specification, see the reference manual. This man page contains only a description of the command line options. It has been automatically generated from the reference manual source, hopefully without too much mangling.</p> <p>Like other MTAs, Exim replaces Sendmail, and is normally called by user agents (MUAs) using the path /usr/sbin/sendmail when they submit messages for delivery (some operating systems use /usr/lib/sendmail). This path is normally set up as a symbolic link to the Exim binary. It may also be used by boot scripts to start the Exim daemon. Many of Exim's command line options are compatible with Sendmail so that it can act as a drop-in replacement.</p>	<p>OPTIONS</p> <p>--</p> <p>This is a pseudo-option whose only purpose is to terminate the options and therefore to cause subsequent command line items to be treated as arguments rather than options, even if they begin with hyphens.</p> <p>--help</p> <p>This option causes Exim to output a few sentences stating what it is, the same output is generated if the Exim binary is called with no options and no arguments.</p> <p>--version</p> <p>This option is an alias for -bv and causes version information to be displayed.</p> <p>M-^@M-^P</p> <p>-Am These options are used by Sendmail for selecting configuration files and are ignored by Exim.</p> <p>-B<type></p> <p>This is a Sendmail option for selecting 7 or 8 bit processing. Exim is 8-bit clean; it ignores this option.</p> <p>-bd</p> <p>This option runs Exim as a daemon, awaiting incoming SMTP connections. Usually the -bd option is combined with the -q<time> option, to specify that the daemon should also initiate periodic queue runs.</p> <p>M-^@M-^P</p> <p>The -bd option can be used only by an admin user. If either of the -d (debugging) or -v (verifying) options are set, the daemon does not disconnect from the controlling terminal. When running this way, it can be stopped by pressing ctrl-C.</p> <p>By default, Exim listens for incoming connections to the standard SMTP port on all the host's running interfaces. However, it is possible to listen on other ports, on multiple ports, and only on specific interfaces.</p> <p>M-^@M-^P</p> <p>When a listening daemon is started without the use of -ox (that is, without overriding the normal configuration), it writes its process id to a file called /var/run/exim/exim.pid. This location can be overridden by setting PID_FILE_PATH in Local/Makefile. The file is written while Exim is still running as root.</p> <p>When -ox is used on the command line to start a listening daemon, the process id is not written to the normal pid file path. However, -op can be used to specify a path on the command line if a pid file is required.</p> <p>M-^@M-^P</p> <p>The SIGHUP signal can be used to cause the daemon to re-execute itself. This should be done whenever Exim's configuration file, or any file that is incorporated into it by means</p>
	<p>DEFAULT ACTION</p> <p>If no options are present that require a specific action (such as starting the daemon or a queue runner, testing an address, receiving a message in a specific format, or listing the queue), and there are no arguments on the command line, Exim outputs a brief message about itself and exits.</p> <p>However, if there is at least one command line argument, -bm (accept a local message on the standard input, with the arguments specifying the recipients) is assumed. Thus, for example, if Exim is installed in /usr/sbin, you can send a message from the command line like this:</p> <pre> /usr/sbin/exim4 -i <recipient-address(es)> <message content, including all the header lines> CTRL-D </pre> <p>The -i option prevents a line containing just a dot from terminating the message. Only an end-of-file (generated by typing CTRL-D if the input is from a terminal) does so.</p>	
	<p>SETTING OPTIONS BY PROGRAM NAME</p> <p>If an Exim binary is called using one of the names listed in this section (typically via a symbolic link), certain options are assumed.</p> <p>mailq</p> <p>Behave as if the option -bp were present before any other options. The -bp option requests a listing of the contents of the mail queue on the standard output.</p> <p>rsmtp</p> <p>Behaves as if the option -bs were present before any other options, for compatibility with Smail. The -bs option is used for reading in a number of messages in batched SMTP format.</p> <p>rmail</p> <p>Behave as if the -i and -oee options were present before any other options, for compatibility with Smail. The name rmail is used as an interface by some UUCP systems. The -i option specifies</p>	
	<p>M-^@M-^P</p>	

Figure 13. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim` – Pagina 13 di 13.

EXIQGREP(8)	System Manager's Manual	EXIQGREP(8)
NAME		
exiqgrep - Search in the exim queue		
SYNOPSIS		
exiqgrep [-a] [-c]		
DESCRIPTION		
The exiqgrep utility is a Perl script which offers possibilities to grep in the exim queue output. Unlike exiqsumm, it invokes exim -bpu itself and does not need to be invoked in a pipe.		
OPTIONS		
-h Print help		
-f <regexp> Match sender address (field is &M-^< >&M-^@M-^] wrapped)		
-r <regexp> Match recipient address		
-s <regexp> Match against the site field from long output		
-y <seconds> Message younger than		
-o <seconds> Message older than		
-z Frozen messages only (exclude non-frozen)		
-x Non-frozen messages only (exclude frozen)		
-c Display match count		
-l Long Format [Default]		
-i Message IDs only		
-b Brief Format		
-R Reverse order		
BUGS		
This manual page needs a major re-work. If somebody knows better groff than us and has more experience in writing manual pages, any patches would be greatly appreciated.		
SEE ALSO		
exim(8), /usr/share/doc/exim4-base/		
AUTHOR		
This manual page was stitched together from the source code by Marc Haber <mh+debian-packages@zugschluss.de>, using the exiqsumm man page by Andreas Metzler <ametzler at downhill.at.eu.org>, for the Debian GNU/Linux system (but may be used by others).		
March 26, 2003		
EXIQGREP(8)		

Figure 14. Pagina del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exiqgrep*

```

<wolverine@jarvis.mat.uniroma2.it>
visione@mat.uniroma2.it

<captAmerica@jarvis.mat.uniroma2.it>
tony.stark@mit.edu

.
.
.

<paperinik@jarvis.mat.uniroma2.it>
topolino@disney.com
qui@disney.com
quo@disney.com
qua@disney.com

.
.
.

pluto@disney.com
etabeta@disney.com

.
.
.

<wolverine@jarvis.mat.uniroma2.it>
spiderman@mat.uniroma2.it
spiderman@queens-college.edu

```

Figure 15. Esempio di *file* che riguarda gli *e-mail* in coda e con una struttura simile a quelli prodotti dal *Mail Transfer Agent* *exim* – Ovviamente, quando compaiono sequenze verticali di punti del tipo `:`, si deve intendere che le righe mancanti sono analoghe a quelle precedenti.

```

root:x:0:0:root:/root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/bin/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin

.
.
.

saned:x:112:119:./var/lib/saned:/bin/false
Debian-gdm:x:113:120:Gnome Display Manager:/var/lib/gdm3:/bin/false
captAmerica:x:1000:1000:Il primo Vendicatore:/home/captAmerica:/bin/bash
paperinik:x:1001:1001:Eroe della disney:/home/paperinik:/bin/bash
spiderman:x:1002:1002:Uomo Ragno:/home/spiderman:/bin/bash
visione:x:1003:1003:L'unico androide tra i Vendicatori:/home/visione:/bin/bash
wolverine:x:1004:1004:X-Man con artigli retrattili:/home/wolverine:/bin/bash

```

Figure 16. Esempio di *file /etc/passwd* – Ovviamente, quando compaiono sequenze verticali di punti del tipo `:`, si deve intendere che le righe mancanti sono analoghe a quelle precedenti.

MAIL(1)	BSD General Commands Manual	MAIL(1)
NAME	mail, mailx, Mail âM-^@M-^T send and receive mail	
SYNOPSIS	mail [-dlinv] [-a header] [-b bcc-addr] [-c cc-addr] [-s subject] to-addr ... mail [-delinv] -f [file] mail [-delinv] [-u user]	
DESCRIPTION	mail is an intelligent mail processing system which has a command syntax reminiscent of ed(1) with lines replaced by messages. The options are as follows: -a Specify additional header fields on the command line such as "X-Loop: footer" etc. You have to use quotes if the string contains spaces. This argument may be specified more than once, the headers will then be concatenated. -b bcc-addr Send blind carbon copies to bcc-addr. -c cc-addr Send carbon copies to list of users. cc-addr should be a comma separated list of names. -d Causes mail to output all sorts of information useful for debugging mail. M-^@M-^P Don't send messages with an empty body. -E Use an alternate mailbox. Defaults to the user's mbox if no file is specified. When quit, mail writes undeleted messages back to this file. -f Forces mail to run in interactive mode, even when input is not a terminal. In particular, the special - command character, used when sending mail, is only available interactively. -i Ignore tty interrupt signals. This is particularly useful when using mail on noisy phone lines. -N Inhibits initial display of message headers when reading mail or editing a mail folder. -n Inhibits reading /etc/mail.rc upon startup. -s subject Specify subject on command line (only the first argument after the -s flag is used as a subject; be careful to quote subjects containing spaces). -u user Equivalent to: \$ mail -f /var/mail/user except that locking is done. -v Verbose mode. The details of delivery are displayed on the user's terminal. Startup actions At startup time, mail will execute commands in the system command file, /etc/mail.rc, unless explicitly told not to by using the -n option. Next, the commands in the user's personal command file ~/.mailrc are executed. mail then examines its command line options to determine whether the user requested a new message to be sent or existing messages in a	mailbox to be examined. Sending mail M-^P To send a message to one or more people, mail can be invoked with arguments which are the names of people to whom the mail will be sent. You are then expected to type in your message, followed by a control-D (âM-^@M-^X'DâM-^@M-^Y) at the beginning of a line. The section below, Replying to or originating mail, describes some features of mail available to help you compose your letter. Reading mail When using mail, mail is given no arguments and checks your mail out of the mailbox, then prints it to a terminal. The header of each message found. The current message is initially the first message (numbered 1). The message can be printed using the print command (which is described below). Moving among the messages is much like moving between lines in ed(1); you may use + and - to shift forwards and backwards, or simply enter a message number to move directly. Disposing of mail M-^P After examining a message you can delete (d) or reply (r) to it. Deleting a message causes the mail program to forget about the message. This is not irreversible; the message can be undeleted (u) by giving its number, or the mail session can be aborted by giving the exit (x) command. Deleted messages, however, will usually disappear, never to be seen again. Specifying messages Commands such as print and delete can be given a list of message numbers as arguments to apply to a number of messages at once. Thus delete 1 2 deletes messages 1 and 2, while delete 1-5 deletes messages 1 through 5. Messages may also be selected using one of the following categories: * all messages \$ last message :d deleted messages :n new messages :r read messages :u unread messages Thus the command top, which prints the first few lines of a message, could be used in top * to print the first few lines of all messages. Replying to or originating mail You can use the reply command to set up a response to a message, sending it back to the person who it was from. Text you then type in, up to an end-of-file, defines the contents of the message. While you are composing a message, mail treats lines beginning with the tilde (âM-^@M-^X-âM-^@M-^Y) specially. For instance, typing ~m (alone on a line) will place a copy of the current message into the response, right shifting it by a single tab-stop (see the indentprefix variable, below). Other escapes will set up subject fields, add and delete recipients to the message, and allow you to escape to an editor to revise the message or to a shell to run some commands. (These options are given in the summary below.) Ending a mail processing session You can end a mail session with the quit (q) command. Messages which have been examined go to your mbox file unless they have been deleted, in which case they are discarded. Unexamined messages go back to the post office (see the -f option above). Personal and system wide distribution lists It is also possible to create personal distribution lists so that, for instance, you can send mail to âM-^@M-^X-cohortsaM-^@M-^Y and have it go to a group of people. Such lists can be defined by placing a line like

Figure 17. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando mail – Pagina 1 di 5.

mbx	and sends mail to those people.	shell	(sh) Invokes an interactive version of the shell.
	Indicate that a list of messages be sent to mbox in your home directory when you quit. This is the default action for messages if you do not have the hold option set.	size	Takes a message list and prints out the size in characters of each message.
more	(mo) Takes a message list and invokes the pager on that list.	source	The source command reads commands from a file.
	(n) (like + or CR) Goes to the next message in sequence and types it. With an argument list, types the next matching message.	top	Takes a message list and prints the top few lines of each. The number of lines printed is controlled by the variable topline and defaults to five.
preserve	(pre) A synonym for hold.	Type	(T) Identical to the Print command.
	(P) Like print but also prints out ignored header fields. See also print, ignore, and retain.	type	(t) A synonym for print.
Print	(p) Takes a message list and types out each message on the user's terminal.	unalias	Takes a list of names defined by alias commands and discards the remembered groups of users. The group names no longer have any significance.
	(q) Terminates the session, saving all undeleted, unsaved mes&M-^P	undelete	(u) Takes a message list and marks each message as not being deleted.
M-^@M-^P	sages in the user's mbox file in his login directory, preserving all messages marked with hold or preserve or never referenced in his system mailbox, and removing all other messages from his sys&M-^P	unread	(U) Takes a message list and marks each message as not having been read.
	tem mailbox. If new mail has arrived during the session, the message &M-^@M-^PYou have new mail&M-^@M-^P is given. If given whi	unset	Takes a list of option names and discards their remembered val&M-^P
le editing a	mailbox file with the -f flag, then the edit file is rewritten. A return to the shell is effected, unless the rewrite of edit file fails, in which case the user can escape with the exit com&M-^P	visual	uses; the inverse of set.
	mand.	write	(w) Similar to save, except that only the message body (without the header) is saved. Extremely useful for such tasks as sending and receiving source program text over the message system.
Reply	(R) Reply to originator. Does not reply to other recipients of the original message.	xit	(x) A synonym for exit.
	(r) Takes a message list and sends mail to the sender and all recipients of the specified message. The default message must not be deleted.	z	mail presents message headers in windowfuls as described under the headers command. You can move mail's attention forward to the next window with the z command. Also, you can move to the previous window by using z-.
respond	A synonym for reply.	Tilde/escapes	Here is a summary of the tilde escapes, which are used when composing messages to perform special functions. Tilde escapes are only recognized at the beginning of lines. The name &M-^@M-^Ptilde escape&M-^@M-^P is some what of a mis&M-^@M-^P
	retain	-bname	.. Add the given names to the list of carbon copy recipients but do not make the names visible in the Cc: line (*blind* carbon copy).
M-^@M-^P	sage in its entirety. If retain is executed with no arguments, it lists the current set of retained fields.	-cname	.. Add the given names to the list of carbon copy recipients.
	(s) Takes a message list and a filename and appends each message in turn to the end of the file. The filename in quotes, followed by the line count and character count is echoed on the user's terminal.	-d	Read the file dead.letter from your home directory into the mes&M-^@M-^P
save	saveignore	-e	Invoke the text editor on the message collected so far. After the editing session is finished, you may continue appending text to the message.
	saveignore is to save what ignore is to print and type. Header fields thus marked are filtered out when saving a message by save or when automatically saving to mbox.	-fmessage	Identical to -f, except all message headers are included.
saveretain	saveretain	-fmessage	Read the named messages into the message being sent. If no mes&M-^@M-^P
	saveretain is to save what retain is to print and type. Header fields thus marked are the only ones saved with the message. saving by save or when automatically saving to mbox. saveretain overrides saveignore.		
set	(se) With no arguments, prints all variable values. Otherwise, sets option. Arguments are of the form option=value (no space before or after =) or option. Quotation marks may be placed around any part of the assignment statement to quote blanks or tabs, i.e., set indentprefix="-->".		

Figure 19. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando mail – Pagina 3 di 5.

<p>M-^@M-^P sages are specified, read in the current message. Message headers currently being ignored (by the ignore or retain command) are not included.</p> <p>-h Edit the message header fields by typing each one in turn and allowing the user to append text to the end or modify the field by using the current terminal erase and kill characters.</p> <p>-Mmessages Identical to ~m, except all message headers are included.</p> <p>-mmessages Read the named messages into the message being sent, indented by a tab or by the value of indentprefix. If no messages are specified, read the current message. Message headers currently being ignored (by the ignore or retain command) are not included.</p> <p>-p Print out the message collected so far, prefaced by the message header fields.</p> <p>-q Abort the message being sent, copying the message to dead.letter in your home directory if save is set.</p> <p>-Rstring Use string as the Reply-To field.</p> <p>-rfilename Read the named file into the message.</p> <p>-sstring Cause the named string to become the current subject field.</p> <p>-tname ... Add the given names to the direct recipient list.</p> <p>-v Invoke an alternate editor (defined by the VISUAL option) on the message collected so far. Usually, the alternate editor will be a screen editor. After you quit the editor, you may resume appending text to the end of your message.</p> <p>-wfilename Write the message onto the named file.</p> <p>-x Abort the message being sent. No message is copied to ~/dead.letter, even if save is set.</p> <p>-? Prints a brief summary of tilde escapes.</p> <p>-!command Execute the indicated shell command, then return to the message.</p> <p>- command Pipe the message through the command as a filter. If the command gives no output or terminates abnormally, retain the original text of the message. The command fmt(1) is often used as command to rejustify the message.</p> <p>~mail-command Execute the given mail command. Not all commands, however, are allowed.</p> <p>--string Insert the string of text in the message prefaced by a single ~. If you have changed the escape character, then you should double that character in order to send it.</p> <p>~. Simulate end of file on input.</p> <p>Mail options Options are controlled via set and unset commands. Options may be either binary, in which case it is only significant to see whether they are set</p>	<p>or not; or string, in which case the actual value is of interest. The binary options include the following:</p> <p>append Causes messages saved in mbox to be appended to the end rather than prepended. This should always be set (perhaps in /etc/mail.rc).</p> <p>ask, asksub Causes mail to prompt you for the subject of each message you send. If you respond with simply a newline, no subject field will be sent.</p> <p>askbcc Causes you to be prompted for additional blind carbon copy recipients at the end of each message. Responding with a newline indicates your satisfaction with the current list.</p> <p>askcc Causes you to be prompted for additional carbon copy recipients at the end of each message. Responding with a newline indicates your satisfaction with the current list.</p> <p>autoline Causes new mail to be automatically incorporated when it arrives. Setting this is similar to issuing the inc command at each prompt, except that the current message is not reset when new mail arrives.</p> <p>autoprint Causes the delete command to behave like dp; thus, after deleting a message, the next one will be typed automatically.</p> <p>debug Setting the binary option debug is the same as specifying -d on the command line and causes mail to output all sorts of information useful for debugging mail.</p> <p>M-^@M-^P The binary option dot causes mail to interpret a period alone on a line as the terminator of a message you are sending.</p> <p>dot Causes mail to expand message recipient addresses, as explained in the section Recipient address specifications.</p> <p>expandaddr Causes mail to expand message recipient addresses, as explained in the section Recipient address specifications.</p> <p>hold This option is used to hold messages in the system mailbox by default.</p> <p>ignore Causes interrupt signals from your terminal to be ignored and echoed as @'s.</p> <p>ignoreeof An option related to dot is ignoreeof which makes mail refuse to accept a control-D as the end of a message. ignoreeof also applies to mail command mode.</p> <p>keep Setting this option causes mail to truncate your system mailbox instead of deleting it when it's empty.</p> <p>keepsave Messages saved with the save command are not normally saved in mbox at quit time. Use this option to retain those messages.</p> <p>metoo Usually, when a group is expanded that contains the sender, the sender is removed from the expansion. Setting this option causes the sender to be included in the group.</p> <p>noheader Setting the option noheader is the same as giving the -N flag on the command line.</p> <p>nosave Normally, when you abort a message with two interrupt characters (usually control-C), mail copies the partial letter to the file dead.letter in your home directory. Setting the binary option nosave prevents this.</p>
---	--

Figure 20. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *exim* – Pagina 4 di 5.

quiet	Suppresses the printing of the version when first invoked.
Replyall	Reverses the sense of reply and Reply commands.
searchheaders	<p>If this option is set, then a message-list specifier in the form <code>substring ^M-^Xy^M-^EY-^]</code> will expand to all messages containing the <code>substring</code> in the header field <code>^M-^EY-^Xy^M-^EY-^]</code>. The string search is case insensitive. If <code>^M-^EY-^Xy^M-^EY-^]</code> is omitted, it will default to the <code>^M-^EY-^]</code> Subject header field.</p> <p>The form <code>^M-^EY-^Xy^M-^EY-^]</code> is a special case, and will expand to all <code>mesam-^EY-^P</code> messages containing the substring <code>^M-^EY-^Xy^M-^EY-^]</code> in the <code>^M-^EY-^]</code> header field. The check for <code>^M-^EY-^Xy^M-^EY-^]</code> is case sensitive, so that <code>^M-^EY-^Xy^M-^EY-^]</code> can be used to limit the search for <code>^M-^EY-^Xy^M-^EY-^]</code> to just the <code>^M-^EY-^Xy^M-^EY-^]</code> field.</p>
skipempty	Don't send messages with an empty body.
verbose	Setting the option verbose is the same as using the <code>-v</code> flag on the command line. When mail runs in verbose mode, the actual delivery of messages is displayed on the user's terminal.
Option string values	Pathname of the text editor to use in the edit command and <code>-e</code> escape. If not defined, <code>/usr/bin/ex</code> is used.
EDITOR	Pathname of the directory lister to use in the folders command. Default is <code>/bin/ls</code> .
LISTER	The name of the mbox file. It can be the name of a folder. The default is <code>^M-^EY-^Xy^M-^EY-^]</code> in the user's home directory.
MBOX	Pathname of the program to use in the more command or when the <code>crt</code> variable is set. The default paginator <code>more(1)</code> is used if this option is not defined.
PAGER	If set, will be used to initialize the Reply-To field for outgoing messages.
REPLYTO	Pathname of the shell to use in the <code>!</code> command and the <code>!</code> escape. A default shell is used if this option is not defined.
SHELL	Directory in which temporary files are stored.
TMPDIR	Pathname of the text editor to use in the visual command and <code>-v</code> escape. If not defined, <code>/usr/bin/vi</code> is used.
VISUAL	The valued option <code>crt</code> is used as a threshold to determine how long a message must be before PAGER is used to read it. If <code>crt</code> is set without a value, then the height of the terminal screen stored in the system is used to compute the threshold (see <code>stty(1)</code>).
crt	If defined, the first character of this option gives the character to use in the place of <code>~</code> to denote escapes.
M-^EY-^P	The name of the directory to use for storing folders of messages. If this name begins with a <code>^M-^EY-^Xy^M-^EY-^]</code> , make it to be an absolute pathname; otherwise, the folder <code>direct</code>
il	
M-^EY-^P	
indentprefix	String used by the <code>-m</code> tilde escape for indenting messages, in place of the normal tab character (<code>^M-^EY-^Xy^M-^EY-^]</code>).
Be sure to	quote the value if it contains spaces or tabs.
record	If defined, gives the pathname of the file used to record all outgoing mail. If not defined, then outgoing mail is not so saved.
screen	Size of window of message headers for <code>z</code> .
sendmail	Pathname to an alternative mail delivery system.
toplines	If defined, gives the number of lines of a message to be printed out with the top command; normally, the first five lines are printed.
ENVIRONMENT	mail utilizes the HOME, LOGNAME, USER, SHELL, DEAD, PAGER, LISTER, EDITOR, VISUAL, REPLYTO, MAIL, MAILRC, and MBOX environment variables.
	If the MAIL environment variable is set, its value is used as the path to the user's mail spool.
FILES	<p><code>/var/mail/*</code> post office (unless overridden by the MAIL environment variable)</p> <p><code>~/mbox</code> user's old mail</p> <p><code>~/mailrc</code> file giving initial mail commands; can be overridden by setting the MAILRC environment variable</p> <p><code>/tmp/R*</code> temporary files</p> <p><code>/etc/mail.rc</code> help files</p> <p>system initialization file</p>
EXIT STATUS	The mail utility exits 0 on success, and >0 if an error occurs.
SEE ALSO	<p><code>fmc(1)</code>, <code>newaliases(1)</code>, <code>vacation(1)</code>, <code>aliases(5)</code>, <code>mailaddr(7)</code>, <code>mail.local(8)</code>, <code>newaliases(8)</code>, <code>sendmail(8)</code>, <code>smtpd(8)</code></p>
STANDARDS	The mail utility is compliant with the IEEE Std 1003.1-2008 (<code>^M-^EY-^Xy^M-^EY-^]</code> specification).
	The flags <code>[-iNnu]</code> are marked by IEEE Std 1003.1-2008 (<code>^M-^EY-^Xy^M-^EY-^]</code>) as being optional.
	The flags <code>[-efh]</code> are marked by IEEE Std 1003.1-2008 (<code>^M-^EY-^Xy^M-^EY-^]</code>) as being optional, and are not supported by this implementation of mail.
	The flags <code>[-abcdEiv]</code> are extensions to the specification.
HISTORY	A mail command appeared in Version 3 AT&T UNIX. This man page is derived from the Mail Reference Manual originally written by Kurt Shoens.
BUGS	Usually, Mail and mailx are just links to mail, which can be confusing.
BSD	June 9, 2019
BSD	BSD

Figure 21. Parte del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando `exim -` Pagina 5 di 5.

```

From MAILER-DAEMON Fri Jun 7 09:46:24 2019
Date: 07 Jun 2019 09:46:24 +0200
From: Mail System Internal Data <MAILER-DAEMON@jarvis.mat.uniroma2.it>
Subject: DON'T DELETE THIS MESSAGE -- FOLDER INTERNAL DATA
Message-ID: <1559893584@jarvis.mat.uniroma2.it>
X-IMAP: 1153910601 0000081746 $Forwarded $MDNSent
Status: RO

This text is part of the internal format of your mail folder, and is not
a real message. It is created automatically by the mail system software.
If deleted, important folder data will be lost, and it will be re-created
with the data reset to initial values.

From spiderman@jarvis.mat.uniroma2.it Wed May 17 13:25:26 2017
Return-path: <spiderman@jarvis.mat.uniroma2.it>
Envelope-to: paperinik@jarvis.mat.uniroma2.it
Delivery-date: Wed, 17 May 2017 13:25:26 +0200
Received: from spiderman (helo=localhost)
        by jarvis.mat.uniroma2.it with local-esmtp (Exim 4.80)
        (envelope-from <spiderman@jarvis.mat.uniroma2.it>)
        id 1dAx51-00080c-Bd
        for paperinik@jarvis.mat.uniroma2.it; Wed, 17 May 2017 13:25:26 +0200
Date: Wed, 17 May 2017 13:25:23 +0200 (CEST)
From: "Il supereroe di quartiere del Queens" <spiderman@jarvis.mat.uniroma2.it>
To: "Paperino quando e' Paperinik" <paperinik@jarvis.mat.uniroma2.it>
Subject: Re: Altra emergenza x i laboratori
In-Reply-To: <alpine.DEB.2.02.1705171130580.16500@jarvis.mat.uniroma2.it>
Message-ID: <alpine.DEB.2.02.1705171320300.29946@jarvis.mat.uniroma2.it>
References: <alpine.DEB.2.02.1705171130580.16500@jarvis.mat.uniroma2.it>
User-Agent: Alpine 2.02 (DEB 1266 2009-07-14)
MIME-Version: 1.0
Content-Type: TEXT/PLAIN; charset=US-ASCII; format=flowed
jarvis.mat-X-Spam_score: -0.0
jarvis.mat-X-Spam_score_int: 0
jarvis.mat-X-Spam_report: Content analysis details: (-0.0 points, 4.0 required
)

pts rule name description
-----
-0.0 NO_RELAYS Informational: message was not relayed via SMTP
Status: RO
X-Status:
X-Keywords: $Forwarded
X-UID: 63600

PK, a me risulta che il venerdi' pomeriggio una delle aule 25 e 26
e' occupata da e l'altra aula e' libera.
Mettiti d'accordo con Tony Stark, tony.stark@mit.edu
Spidy

From etabeta@disney.com Wed May 17 14:32:33 2017
Return-path: <etabeta@disney.com>
Envelope-to: paperinik@jarvis.mat.uniroma2.it
Delivery-date: Wed, 17 May 2017 14:32:33 +0200
Received: from smtp.etabeta@disney.com ([x.y.z.23])
        by jarvis.mat.uniroma2.it with esmtps (TLS1.2:DHE_RSA_AES_256_CBC_SHA256
:2$
        (Exim 4.80)
        (envelope-from <etabeta@disney.com>)
        id 1dAy7z-000A72-1e
        for paperinik@jarvis.mat.uniroma2.it; Wed, 17 May 2017 14:32:33 +0200
Received: from adminpc ([x.y.z.158])

```

Figure 22. Esempio di *file /var/spool/mailnomeutente* – Ovviamente, quando compaiono sequenze verticali di punti del tipo `:`, si deve intendere che le righe mancanti sono analoghe a quelle precedenti – Pagina 1 di 2

```

by smtp-2015.uniroma2.it (8.14.4/8.14.4/Debian-8) with ESMTTP id v4HCUeu$
for <paperinik@jarvis.mat.uniroma2.it>; Wed, 17 May 2017 14:30:45 +0200
From: "Eta Beta" <etabeta@disney.com>
To: "Paperino quando e' Paperinik" <paperinik@jarvis.mat.uniroma2.it>
References: <005e01d2cef5$0c5b8700$25129500$@it> <alpine.DEB.2.02.1705171225520$
In-Reply-To: <alpine.DEB.2.02.1705171225520.16500@jarvis.mat.uniroma2.it>
Subject: R: Aula multimediale
Date: Wed, 17 May 2017 14:26:05 +0200
Message-ID: <001e01d2cf08$c7577010$56065030$@it>
MIME-Version: 1.0
Content-Type: text/plain;
        charset="iso-8859-1"
Content-Transfer-Encoding: quoted-printable
X-Mailer: Microsoft Office Outlook 12.0
Thread-Index: AdLO+NW44faop1CBS1OSHMo1ll1cagAD5q4Q
Content-Language: it
X-Virus-Scanned: clamav-milter 0.99.2 at smtp-2015
X-Virus-Status: Clean
jarvis.mat-X-Spam_score: 0.0
jarvis.mat-X-Spam_score_int: 0

pts rule name                description
-----
-0.0 RP_MATCHES_RCVD         Envelope sender domain matches handover relay doma$
0.0 URIBL_BLOCKED            ADMINISTRATOR NOTICE: The query to URIBL was block$
                               See
                               http://wiki.apache.org/spamassassin/DnsBlocklists#$
                               for more information.

Status: RO
X-Status:
X-Keywords:
X-UID: 63602

Caro PK,
purtroppo il test inizia alle 15 e ha una durata di 30 minuti. Alle 15:30
l'aula 17 sara' libera. Mi dispiace crearti problema ma veramente dovresti
aiutarmi, se puoi.
Grazie
Eta

.
.
.

```

Figure 23. Esempio di *file* /var/spool/mail/*nomeutente* – Ovviamente, quando compaiono sequenze verticali di punti del tipo `:`, si deve intendere che le righe mancanti sono analoghe a quelle precedenti – Pagina 2 di 2

#	INDIRIZZO IP	NUM. OCCORRENZE
	a.b.12.102	21
	c.d.107.44	6
	e.f.78.188	0
	g.h.21.196	49
	.	
	.	
	.	
	u.v.178.125	1045
	x.y.12.48	322
	w.z.126.88	43

Figure 24. Esempio di *file blacklist.txt* – Ovviamente, i simboli a, b, c, ... w, z stanno a rimpiazzare i primi due numeri delle quaterne che costituiscono l'indirizzo *IP* completo e che qui non viene riportato per comprensibili motivi di correttezza - Inoltre, quando compaiono sequenze verticali di punti del tipo $\dot{}$, si deve intendere che le righe mancanti sono analoghe a quelle precedenti.

CRONTAB(1)	General Commands Manual	CRONTAB(1)
NAME	crontab - maintain crontab files for individual users (Vixie Cron)	
SYNOPSIS	crontab [-u user] file crontab [-u user] { -i -e -l -r }	
DESCRIPTION	crontab is the program used to install, deinstall or list the tables used to drive the cron(8) daemon in Vixie Cron. Each user can have their own crontab, and though these are files in /var/spool/cron/crontabs, they are not intended to be edited directly. If the /etc/cron.allow file exists, then you must be listed (one user per line) therein in order to be allowed to use this command. If the /etc/cron.allow file does not exist but the /etc/cron.deny file does exist, then you must not be listed in the /etc/cron.deny file in order to use this command.	behaviour of the -l option has been changed to not output such header. You may obtain the original behaviour by setting the environment variable CRONTAB_NOHEADER to 'N', which will cause the crontab -l command to emit the extraneous header.
M-@M-P	If neither of these files exists, then depending on site-dependent configuration parameters, only the super user will be allowed to use this command, or all users will be able to use this command.	SEE ALSO crontab(5), cron(8)
M-@M-P	Regardless of the existence of any of these files, the root administrative user is always allowed to setup a crontab. For standard Debian systems, all users may use this command.	FILES /etc/cron.allow /etc/cron.deny /var/spool/cron/crontabs
M-@M-P	If both files exist then /etc/cron.allow takes precedence. Which means that /etc/cron.deny is not considered and your user must be listed in /etc/cron.allow in order to be able to use the crontab.	There is one file for each user's crontab under the /var/spool/cron/crontabs directory. Users are not allowed to edit the files under that directory directly to ensure that only users allowed by the system to run periodic tasks can add them, and only syntactically correct crontabs will be written there. This is enforced by having the directory writable only by the crontab group and configuring crontab command with the setgid bit set for that specific group.
M-@M-P	The first form of this command is used to install a new crontab from some named file or standard input if the pseudo-filename '-', is given.	STANDARDS The crontab command conforms to IEEE Std1003.2-1992 ('POSIX'). This new command syntax differs from previous versions of Vixie Cron, as well as from the classic SVR3 syntax.
M-@M-P	The -l option causes the current crontab to be displayed on standard output. See the note under DEBIAN SPECIFIC below.	DIAGNOSTICS A fairly informative usage message appears if you run it with a bad command line.
M-@M-P	The -r option causes the current crontab to be removed.	crontab requires that each entry in a crontab end in a newline character. If the last entry in a crontab is missing the newline, cron will consider the crontab (at least partially) broken and refuse to install it.
M-@M-P	The -e option is used to edit the current crontab using the editor specified by the VISUAL or EDITOR environment variables. After you exit from the editor, the modified crontab will be installed automatically. If neither of the environment variables is defined, then the default editor /usr/bin/editor is used.	AUTHOR Paul Vixie <paulevix.com> is the author of cron and original creator of this manual page. This page has also been modified for Debian by Steve Greenland, Javier Fernandez-Sanguino and Christian Kastner.
M-@M-P	The -i option modifies the -r option to prompt the user for a 'y/y' response before actually removing the crontab.	4th Berkeley Distribution 19 April 2010 CRONTAB(1)
DEBIAN SPECIFIC	The "out-of-the-box" behaviour for crontab -l is to display the three line "DO NOT EDIT THIS FILE" header that is placed at the beginning of the crontab when it is installed. The problem is that it makes the sequence crontab -l crontab - non-idempotent -- you keep adding copies of the header. This causes pain to scripts that use sed to edit a crontab. Therefore, the default	

Figure 25. Pagine del manuale *online* (accessibile da una qualsiasi finestra di terminale, in ambiente *Linux*) riguardo al comando *crontab*