



grammm Man Pages

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1.1 Synopsis

gromox — overview of the Gromox groupware server

1.2 Overview

Gromox is a groupware server capable of serving as a replacement for Microsoft Exchange. Connectivity options include RPC/HTTP (Outlook Anywhere), IMAP, POP3, an SMTP-speaking LDA, and a PHP module with a Z-MAPI function subset.

Gromox relies on other components to provide a sensibly complete mail system, such as Postfix as a mail transfer agent, and `grammm-admin` for user management. A web interface is available with `grammm-web`. The `grammm` distribution ships these essentials and has a ready-to-run installation of Gromox system.

1.3 Configuration files

Program configuration files reside within `/etc/gromox`. Most of the programs have a `config_file_path` directive with which the search path for further config files can be specified. For example, `http(8gx)` defaults to `config_file_path=/etc/gromox/http:/etc/gromox`, so the `mysql_adaptor(4gx)` plugin as loaded by `http` will first try `/etc/gromox/http/mysql_adaptor.cfg`, then `/etc/gromox/mysql_adaptor.cfg`. This allows having one file that is shared between multiple programs as well as being able to override on a per program-basis.

1.4 Databases

- User information is held in a MariaDB/MySQL database. This database can be accessed by multiple Gromox servers, and so enables distributed Gromox operation. The MariaDB system itself provides the necessary utilities for distributing or replicating this database.
- Per-user e-mail messages are stored in a SQLite database (e.g. `/var/lib/gromox/user/m1/1/1/exchange.sqlite3`), as is a message index (e.g. `/var/lib/gromox/user/m1/1/1/midb.sqlite3`). These are normally only used by one system, but can be shared through network filesystems provided that file locking is properly implemented in the filesystem driver. Normal file mechanisms can be used to backup or transfer the database to another Gromox host.

1.5 Exchange subsystem

- `autodiscover(4gx)` — Autodiscover HTTP Service Protocol handler
- `exchange_emsmb(4gx)` — `http(8gx)` processing plugin for the Wire Format Protocol (Outlook/Exchange RPCs).
- `exchange_nsp(4gx)` — `http(8gx)` processing plugin for the Exchange Server Name Service Provider Interface Protocol.
- `exchange_rfr(4gx)` — `http(8gx)` processing plugin for the Address Book Name Service Provider Interface Referral Protocol.
- `exmdb_provider(4gx)` — `http(8gx)` service plugin for `exmdb` connections
- `freebusy(8gx)` — C++ helper for the EWS Freebusy mechanism
- `http(8gx)`
- `mod_cache(4gx)` — `http(8gx)` processing plugin for serving objects from a local filesystem
- `mod_fastcgi(4gx)` — `http(8gx)` processing plugin for proxying requests to FastCGI servers
- `mod_rewrite(4gx)` — `http(8gx)` processing plugin for altering HTTP request URIs before processing
-
-
- `timer(8gx)` — deferred command executor

1.6 PHP-MAPI subsystem

- `rtf2html(1gx)` — C++ helper for `php_mapi`'s `map_i_decompressrtf` function
- `zcore(8gx)`

1.7 Mail retrieval agent subsystem

- `imap(8gx)` — IMAP server
- `midb_agent(4gx)` — Service plugin for conversing with `midb(8gx)`
- `pop3(8gx)` — POP3 server

1.8 Local delivery agent

- `alias_translator(4gx)` — Alias resolution plugin for `delivery(8gx)`
- `delivery(8gx)` — Backend for local delivery
- `domain_list(4gx)` — instance of `str_table(4gx)`
- `message_enqueue(4gx)` — Message enqueueing flusher plugin for `smtp(8gx)`
- `smtp(8gx)` — SMTP frontend for local delivery
- `str_table(4gx)` — string table match plugin
- `user_filter(4gx)` —

1.9 Auxiliary services

- pam_gromox(8gx) — a PAM plugin to authenticate with Gromox
- rtf2html(1gx) — C++ helper for php_mapi's mapi_decompressrtf function
- adaptor(8gx)
- event(8gx)
- midb(8gx)

1.10 System administration

- gromox-abktconv(8gx) — Utility for converting between ABKT and JSON
- gromox-abktpull(8gx) — Utility to extract ABKT templates from LDIF
- gromox-dbop(8gx) — Database maintenance utility
- gromox-mailq(8gx) — SMTP queue lister
- gromox-pffimport(8gx) — Utility for importing PFF/PST/OST into Gromox mailboxes
- mkmidb(8gx)
- mkprivate(8gx)
- mkpublic(8gx)
- rebuild(8gx)
- sa.cfg(5gx) — configuration file for system administration CGI programs

1.11 Service plugins

- at_client(4gx) — Service plugin for deferred command execution with at(1)
- authmgr(4gx) — Demultiplexer for authentication requests
- ip6_container(4gx) — trivial source connection counter
- ldap_adaptor(4gx) — LDAP connector for user metadata and authentication
- logthru(4gx) — service plugin for a stdout/file logger
- mysql_adaptor(4gx) — MySQL/MariaDB connector for user metadata and authentication
- textmaps(4gx) — Various data maps
- timer_agent(4gx) — Service plugin for deferred command execution with timer(8gx)

1.12 Language bindings

- mapi(4gx) — PHP module for Gromox services

1.13 Listening sockets

- /run/gromox/zcore.sock — zcore(8gx)
- *:25 — smtp(8gx) SMTP service
- *:80 — http(8gx) HTTP service
- *:110 — pop3(8gx) POP3 service
- *:143 — imap(8gx) IMAP service
- *:443 — http(8gx) HTTP over implicit TLS
- *:993 — imap(8gx) IMAP over implicit TLS
- *:995 — pop3(8gx) POP3 over implicit TLS
- [::1]:3344 — zcore(8gx) management console
- [::1]:4455 — imap(8gx) management console
- [::1]:5000 — exmdb_provider(4gx) plugin inside http(8gx)
- [::1]:5555 — midb(8gx) service
- [::1]:5566 — smtp(8gx) management console
- [::1]:6666 — timer(8gx) service
- [::1]:7788 — pop3(8gx) management console
- [::1]:8899 — http(8gx) management console
- [::1]:9900 — midb(8gx) management console
- [::1]:22222 — pad(8gx) service
- [::1]:33333 — event(8gx) service

1.14 Files

The exact paths depend on the options used when Gromox's build was configured. Especially the path for libraries, represented in this documentation as /usr/lib/gromox, may for example actually be /usr/lib64/gromox or /usr/lib/riscv64-linux-gnu, depending on the platform.

- /usr/lib/gromox/libgxf_*.so: flusher plugins for smtp(8gx)
- /usr/lib/gromox/libgxxh_*.so: HTTP processing plugins for http(8gx)
- /usr/lib/gromox/libgxm_*.so: hook plugins for delivery(8gx)
- /usr/lib/gromox/libgxp_*.so: PDU processing plugins for http(8gx)
- /usr/lib/gromox/libgxs_*.so: service plugins

ADAPTOR

2.1 Synopsis

adaptor [-c *config*]

2.2 Description

adaptor reads table data from MySQL and builds text files that act as caches for modules that utilize them. See the FILES section for example uses.

2.3 Options

-c *config* Read configuration directives from the given file. If this option is not specified, /etc/gromox/adaptor.cfg will be read if it exists.

-version Output version information and exit.

-? Display option summary.

2.4 Files

- *state_path/alias_addresses.txt*: generated by adaptor from MySQL data, used by alias_translator(4gx).
- *state_path/console_table.txt*: static file (edited by admin only) telling adaptor which consoles to contact to issue reload commands.
- *state_path/uncheck_domains.txt*: generated by adaptor from MySQL data, used by mysql_adaptor(4gx).

2.5 Configuration file directives

collector_mailbox Default: (unset)

limit_type Default: (unset)

log_file_path Default: /var/log/gromox/sa.log

mysql_dbname Default: *email*

mysql_host

The hostname/IP address for contacting the SQL server.

Default: *localhost*

mysql_password Default: (unset)

mysql_port

The TCP port number for contacting the SQL server.

Default: *3306*

mysql_username Default: *root*

state_path

Directory for additional files.

Default: */var/lib/gromox*

subsystem_address Default: (unset)

2.6 See also

gromox(7)

ALIAS_TRANSLATOR

3.1 Name

`alias_translator` — Alias resolution plugin for `delivery(8gx)`

3.2 Description

`alias_translator` is a mail transfer agent hook plugin which rewrites the envelope FROM and RCPT addresses of mails and replaces aliases by their respective primary addresses.

Alias mappings are read from `state_path/alias_addresses.txt`, whereby `state_path` is the eponymous directive from the program that loaded the plugin. The `alias_address.txt` file constitutes a caching mechanism and is normally generated from MySQL data by `adaptor(8gx)`. The adaptor process is also the one triggering the reload in `alias_translator(4gx)` via `delivery(8gx)`'s telnet console mechanism.

3.3 See also

`gromox(7)`, `adaptor(8gx)`, `delivery(8gx)`

4.1 Name

`at_client` — Service plugin for deferred command execution with `at(1)`

4.2 Description

`at_client` is a loadable plugin that will utilize the `at(1)` framework to schedule deferred commands.

In practice, this is used by `exchange_emsmb(4gx)` and `zcore(8gx)` to implement delayed sending of messages.

The `atd(8)` daemon needs to be running for commands to get executed.

4.3 Configuration file directives

This plugin has no directives.

4.4 Caveats

The `at` implementation of Thomas Koenig and maintained by Calhariz (as of 2020) is present in Linux distributions as well as FreeBSD, and it wraps the job ID counter at 1048576 back to 0. New jobs can receive an ID that is still in use by a prior pending job.

The `at` implementation of OpenBSD (derived from Thomas Koenig's) has a modification by Millert that changes job IDs into job "names", which are of the form "`<starttime>.<queue>`", i.e. no longer a single integer. This is unsupported by Gromox. Due to the job names, the `at` implementation supports storing at most one job every second — the start time is shifted forwards if a collision is detected, but only up to 120 seconds, which means that job enqueueing can trivially fail.

4.5 See also

`gromox(7)`, `at(1)`, `atd(8)`

5.1 Name

authmgr(4gx) — Demultiplexer for authentication requests

5.2 Description

authmgr is a service plugin that, for mail account authentication, dynamically selects the authentication backend per user account. The `libgxs_mysql_adaptor.so` and/or `libgxs_ldap_adaptor.so` plugins need to be loaded in advance (this is the case by default).

5.3 Configuration file directives

auth_backend_selection

This controls how authmgr will verify passwords supplied with login operations. See the “Authentication modes” section below for details.

Available: *deny_all*, *allow_all*, *always_mysql*, *always_ldap*, *externid*

Default: *externid*

5.4 Authentication modes

- *deny_all* rejects every attempt at authentication. This is at best useful for testing.
- *allow_all* permits every attempt at authentication (provided the user exists). This may be handy when doing the initial mass-import of mailboxes via external IMAP-to-IMAP synchronization utilities such as `imapsync` without needing to know user passwords.
- *always_mysql* will cause authmgr to exclusively attempt password verification with the password field in the MySQL database.
- *always_ldap* will cause authmgr to exclusively attempt password verification with LDAP servers.
- *externid* will cause authmgr to selectively pick LDAP/MySQL, depending on whether the user was imported from LDAP or not.

5.5 See also

`gromox(7)`, `ldap_adaptor(4gx)`, `mysql_adaptor(4gx)`

AUTODISCOVER

6.1 Name

Autodiscover HTTP Service Protocol handler

6.2 Description

Autodiscover clients can locate the Autodiscover server for a given domain *example.com* by attempting to resolve the **_autodiscover._tcp.example.com** IN SRV record from DNS, and otherwise fall back to **autodiscover.example.com**.

To force using a particular Autodiscover server, such as when Gromox is run in a development environment with a fake domain, `c:\windowssystem32\drivers\etc\hosts` can be populated with a static entry for **autodiscover.example.com** to get that particular scenario working.

An Autodiscover client would make a “POST /Autodiscover/Autodiscover.xml” request to the autodiscover server that was determined moments ago. The mailbox credentials are presented using HTTP authentication.

In a Gromox minimal setup, `http(8gx)` will receive this POST request and, in conjunction with the built-in defaults of `mod_rewrite(4gx)` and `mod_fastcgi(4gx)`, is forwarded to a `php-fpm` instance, since the Autodiscover handler is coded in PHP. Alternative setups where, for example, an `nginx` frontend is used, `nginx` can also be the server that passes the request to a PHP executor.

The Autodiscover response contains a HTTP server (generally the HTTP home server) and the designated choice for protocol framing. A client uses this to set up the EMSMDB MAPI service within a MAPI profile. Because the HTTP home server is then known, Autodiscover is not used again when making a connection to the message store service. However, the Address Book always issues Autodiscover requests. (In other words, removing the DNS entry for the Autodiscover server after a profile is set up would break the address book, but not the message store.)

6.3 Configuration file directives

The configuration file is `/etc/gromox/autodiscover.ini`. In its absence, built-in defaults, tuned for the minimal Gromox installation, are used. A few ini sections and keys are recognized.

6.3.1 [database]

host Host and optionally port to pass to php-mysqli. Default: *localhost*.

username User for the SQL connection. Default: *root*.

password Password for the same. Default: (empty string).

dbname Database name. Default: *email*.

6.3.2 [exchange]

hostname The hostname of the Autodiscover server. This is used by the Autodiscovery handler to issue HTTP->HTTPS upgrades. Default: (system hostname).

mapihhttp

This setting controls which server types the Autodiscover handler should respond with. The two options are MAPI-in-DCERPC-in-HTTP (a.k.a. RPCH, RPC/HTTP, Outlook Anywhere) and simply MAPI-in-HTTP (a.k.a. MOH, MAPI-over-HTTP). MOH is supported from Outlook >= 2013 SP1 onwards. *0* selects RPC/HTTP, *1* selects MAPI/HTTP.

Default: *0*.

6.3.3 [default]

timezone Default: (unspecified)

6.3.4 [system]

6.3.5 [http-proxy]

This section contains the emsmdb multiserver map. This conveys the HTTP home server for users. If a HTTP home server is not also the exmdb/sqlite home server for a user, said HTTP server will proxy the datastream to the right exmdb home server, which may result in lower performance than when connecting to the right server from the start.

Keys in this ini section are homedir prefixes, and values are the corresponding HTTP server, quite similar to exmdb_list.txt.

Default:

```
/var/lib/gromox/user/ = (system hostname)
/var/lib/gromox/domain/ = (system hostname)
```

6.4 Normative references

- MS-OXDISCO: Autodiscover HTTP Service Protocol
- MS-OXDSCCLI: Autodiscover Publishing and Lookup Protocol

6.5 See also

gromox(7)

DELIVERY

7.1 Name

delivery(8gx) — Backend for local delivery

7.2 Synopsis

delivery [-c *config*]

7.3 Options

-c *config* Read configuration directives from the given file. If this option is not specified, /etc/gromox/delivery.cfg will be read if it exists.

-? Display option summary.

7.4 Plugins

The delivery daemon can be extended by a number of plugins. In Gromox, their filenames begin with **libmtahook_**.

7.5 Configuration file directives

admin_mailbox Default: (unspecified)

config_file_path

Colon-separated list of directories in which further configuration files, especially those used by plugin instances, will be searched.

Default: /etc/gromox/delivery:/etc/gromox

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: ::1

console_server_port

The TCP port number to expose the management console frontend on.

Default: 6677

data_file_path

Colon-separated list of directories in which static data files will be searched.

Default: */usr/share/gromox/delivery*

default_domain Default: (system domainname)

dequeue_max_mem Default: *1024M*

dequeue_path Default: */var/lib/gromox/queue*

domain_list_valid Default: *true*

free_context_num Default: *512*

host_id Default: (system hostname)

mpc_plugin_ignore_errors

If set to yes, MPC plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

mpc_plugin_list

Path to a text file which lists the filenames of MPC plugins to load, one per line.

Default: (unspecified)

mpc_plugin_path

Path to a secondary directory where MPC plugins will be loaded from if a primary search in standard directories (as per *ld.so(8)*) was unsuccessful.

Default: */usr/lib/gromox*

running_identity

An unprivileged user account to switch the process to after startup.

Default: *gromox*

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per *ld.so(8)*) was unsuccessful.

Default: */usr/lib/gromox*

state_path

Directory for runtime variadic data.

Default: */var/lib/gromox*

work_threads_max Default: *32*

work_threads_min Default: *16*

7.6 Files

- /usr/lib/gromox/libgxm_*.so: hook plugins
- /usr/lib/gromox/libgxs_*.so: service plugins

7.7 See also

gromox(7)

8.1 Synopsis

`digest message_file`

8.2 Options

`-version` Output version information and exit.

`-?` Display option summary.

8.3 See also

`gromox(7)`

STR_TABLE

9.1 Name

`str_table` — string table match service plugin

9.2 Description

`str_table` implements checking for a trivial presence lookup of something in a text file. The plugin can be used in any Gromox process, but in practice only makes an appearance in `smtp(8gx)` and `delivery(8gx)`.

The `str_table` plugin has multiple instances. These are: **`domain_list`**.

These instances are factual copies of the module to please the plugin loader and make it load different `.cfg` files. (This is clearly inefficient and may be fixed in a future release.) For example, the plugin loader will derive the name “`domain_list.cfg`” from the module name “`libgxs_domain_list.so`”, and then pass this filename to the module so it can be loaded as a config file.

The plugin supports temporary modification of the string table as it exists in memory through the telnet console mechanism. A reload of the table from disk purges these modifications.

9.3 Configuration file directives

`add_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_add*

`growing_num`

The maximum number of additional string table entries on top of what the on-disk table file has supplied. So when the table file contains 40 entries and `growing_num` is 100, the in-memory copy of the table can hold up to 140 entries total.

Default: *100*

`is_case_sensitive`

Flag which determines whether matches should treat uppercase and lowercase differently or not.

Default: *false*

`query_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_query*

`remove_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_remove*

9.4 Files

- *config_file_path/instance.cfg*: configuration file for the instance of *str_table* (e.g. */etc/gromox/delivery/domain_list.cfg* when *delivery(8gx)* was made to load *libgxs_domain_list.so*.)
- *state_path/instance.txt*, *config_file_path/instance.txt*: string table on which matches are carried out (e.g. */var/lib/gromox/domain_list.txt*)

9.5 See also

gromox(7)

10.1 Synopsis

event [-c *config*]

10.2 Description

The event daemon is a software bus, inter-process communication (IPC) mechanism that allows communication between multiple processes running concurrently on multiple machines.

In practice, it is used by midb(8gx), pop3(8gx) and imap(8gx) to notify imap(8gx) instances of changed folder/message states.

10.3 Options

-c *config* Read configuration directives from the given file. If this option is not specified, */etc/gromox/event.cfg* will be read if it exists.

-version Output version information and exit.

-? Display option summary.

10.4 Files

- *config_file_path/event_acl.txt*: A file with one address (IPv6 or v4-mapped) per line of allowed clients. In its absence, *::1* is default-whitelisted.

10.5 Configuration file directives

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files.

Default: */etc/gromox/event:/etc/gromox*

event_listen_ip

An IPv6 address (or v4-mapped address) for exposing the event service on.

Default: *::1*

event_listen_port

The TCP port number for exposing the event service on.

Default: 33333

event_threads_num

The minimum number of client processing threads to keep around.

Default: 50

10.6 Event protocol

The event service is exposed as a line-based text protocol. Upon connection, the event server gratuitously writes “OK” and will wait for commands. Each connection to the event daemon starts out in Enqueue Mode, and this is the only mode from which commands can be issued.

“FALSE” may be emitted by the server if there is a syntax error.

The command “ID <res_id>” declares the particular connection to be a notification sender. `res_id` is generally the hostname and the PID. The server always responds with “TRUE”. (The connection stays in Enqueue Mode.)

The command “LISTEN <res_id>” declares the particular connection to be a notification receiver. `res_id` follows the same pattern. The server responds with “TRUE” and the connection state changes to the Dequeue Mode (see below).

The command “SELECT <username> <folder>” subscribes those connections that have registered as a **listener for `res_id`** to notifications. (This means that a process wishing to use `event_stub(4gx)` to listen for notifications strictly requires loading `event_proxy(4gx)` too, and, in essence, use two connections to `event(8gx)`.) The server responds with “FALSE” if no listener exists, or “TRUE” on success.

The command “UNSELECT <username> <folder>” unsubscribes those connections that had registered as a listener for `res_id`. The server always responds with “TRUE”.

Auxiliary self-explanatory commands available are: “QUIT” and “PING”.

Any other input is treated as a notification item and is not interpreted by `event(8gx)` beyond checking the number of fields:

The notification “FOLDER-TOUCH <username> <folder>” informs listeners that the folder metadata has changed and warrants being reloaded.

The notification “MESSAGE-FLAG <username> <folder> <messageid>” informs listeners that the message metadata has changed and warrants being reloaded.

Clients in Dequeue Mode will receive notifications. Each notification line received by the client needs to be acknowledged with a “TRUE” response. It is not possible to exit Dequeue Mode; connection termination is the only way out.

10.7 See also

`gromox(7)`, `event_proxy(4gx)`, `event_stub(4gx)`

EVENT_PROXY

11.1 Name

event_stub — event sender service plugin

11.2 Description

event_proxy connects to the event(8gx) daemon and sets itself up so as to be able to send notifications.

event_proxy installs three service functions, “broadcast_event”, “broadcast_select” and “broadcast_unselect”, though the latter two are just convenience functions for broadcast_event. broadcast_event is for synchronously sending a notification into the event distribution system. Arbitrary notifications and commands can be sent this way. The return value is ignored.

In practice, midb(8gx), imap(8gx) and pop3(8gx) issue FOLDER-TOUCH notifications. Only imap(8gx) issues MESSAGE-FLAG notifications.

11.3 See also

event(8gx), event_stub(4gx)

EVENT_STUB

12.1 Name

event_stub — event receiver service plugin

12.2 Description

event_stub connects to the event(8gx) daemon and sets itself up to receive notifications asynchronously with the help of an extra thread. (No notifications are sent towards event(8gx) by this service plugin.)

event_stub installs one service function, “install_event_stub”, with which imap(8gx) registers a callback function that, in turn, is invoked whenever a notification is received from the event daemon.

In practice, imap handles FOLDER-TOUCH and MESSAGE-FLAG notifications received through this event channel.

12.3 See also

event(8gx), event_proxy(4gx)

EXCHANGE_EMSEMBD

13.1 Description

exchange_emsmdb is a processing plugin for http(8gx) which handles the remote procedure calls for the EMSMDB v1 and AsyncEMSMDB v1 RPC interfaces, as well as OXCROPS as issued by the EcDoRpcExt2 call or the MAPIHTTP EXECUTE call.

EMSMDB is a DCE/RPC interface with just a few RPC calls (6 are still used today). ecDoRpcExt2, a call offered by that interface, takes an opaque byte buffer argument not interpreted by DCE/RPC. That byte buffer contains another protocol, "Remote Operation(s) Encoding Protocol" [OXCROPS]. No reason for this wrapping is given in the OXCROPS spec. MAPIHTTP runs OXCROPS directly without the extra EMSMDB framing.

OXCROPS consists of 130 calls that make up the mailbox protocol.

13.2 Config file directives

async_threads_num Default: 4

average_handles Default: 1000

average_mem Default: 4K

mailbox_ping_interval Default: 5 minutes

mail_max_length Default: 64M

max_ext_rule_length Default: 510K

max_mail_num Default: 1000000

max_rcpt_num

The maximum number of recipients that an e-mail is allowed to have.

Default: 256

rop_debug

Log every incoming OXCROPS call and the return code of the operation in a minimal fashion to stderr. Level 1 emits RPCs with a failure return code, level 2 emits all RPCs.

Default: 0

separator_for_bounce Default: ;

smtp_server_ip

SMTP server hostname or address to contact for outgoing mail.

Default: ::1

smtp_server_port

SMTP server TCP port number to connect to for outgoing mail.

Default: 25

submit_command Default: `/usr/bin/php /usr/share/gromox/sa/submit.php`

x500_org_name Default: (unspecified)

13.3 Files

- `data_file_path/notify_bounce/`: response templates for when mail cannot be delivered
- `data_file_path/msgchg_grouping/.txt*`

13.4 Normative references

- DCERPC / C706: Technical Standard DCE 1.1: Remote Procedure Call by The Open Group, 1997
- MS-OXCRPC: Wire Format Protocol. This is the document for the EMSMDB RPC interface.
- MS-OXCROPS: Remote Operations List and Encoding Protocol.

13.5 See also

gromox(7), **http(8gx)**

EXCHANGE_NSP

14.1 Description

`exchange_nsp` is a processing plugin for `http(8gx)` which handles the Exchange Server Name Service Provider Interface Protocol, in essence providing the Address Book for the EMSMDB connector.

14.2 Config file directives

`cache_interval` Default: *5 minutes*

`hash_table_size` Default: *3000*

`max_item_num` Default: *100000*

`session_check` Default: *false*

`x500_org_name` Default: (unspecified)

14.3 Notes

A number of properties are always synthesized by `exchange_nsp` and never read from any storage; this includes key properties such as `PR_ENTRYID`, `PR_RECORD_KEY`, etc. The following properties need mentioning:

- `PR_DEPARTMENT`: This property is synthesized from the department that a user has been assigned to (cf. SQL table “users”, column “group_id”, and SQL table “group”, column “title”).

For user-defined properties that are read from SQL (cf. table “user_properties”), `exchange_nsp` (as well as `zcore(8gx)`’s AB) only handles a subset of property types: `PT_BOOLEAN`, `PT_SHORT`, `PT_LONG`, `PT_I8`, `PT_SYSTIME`, `PT_BINARY`, `PT_UNICODE/STRING8` and `PT_MV_UNICODE/STRING8`.

Multi-valued properties are only supported up to 1 element due to current limitations in the SQL schema.

14.4 Normative references

- MS-OXNSPI: Exchange Server Name Service Provider Interface (NSPI) Protocol

14.5 See also

gromox(7), **http(8gx)**

EXCHANGE_RFR

15.1 Description

exchange_rfr is a processing plugin for http(8gx) which handles the Address Book Name Service Provider Interface Referral Protocol.

15.2 Configuration file directives

This plugin has no directives.

15.3 Normative references

MS-OXABREF: Address Book Name Service Provider Interface (NSPI) Referral Protocol

15.4 See also

gromox(7), **http(8gx)**

EXMDB_LOCAL

16.1 Name

`exmdb_local(4gx)` — LDA hook plugin that offers a `exmdb_provider(4gx)` client with a C API

16.2 Description

An LDA hook plugin for `delivery(8gx)` which places mail into a store by connecting to a `exmdb_provider(4gx)` service.

16.3 Config file directives

This plugin has no directives.

16.4 Files

- `data_file_path/propnames.txt`
- `config_file_path/exmdb_list.txt`: `exmdb` multiserver selection map, see `exmdb_provider(4gx)` for details.
- `data_file_path/local_bounce/`: response templates for when mail cannot be delivered

16.5 See also

`gromox(7)`, `delivery(8gx)`, `exmdb_provider(4gx)`

EXMDB_PROVIDER

17.1 Description

exmdb_provider is a service plugin for http(8gx). It offers a plethora of individual functions (124 of them) for operating on mailbox stores. In addition, this functionality is also exposed by way of a Gromox-specific network protocol on port 5000.

17.2 Configuration file directives

cache_interval Default: *2 hours*

exrpc_debug

Log every incoming exmdb network RPC and the return code of the operation in a minimal fashion to stderr. Level 1 emits RPCs with a failure return code, level 2 emits all RPCs. Note that direct function calls from within the process image are not logged this way, so this will not show exmdb_provider invocations from exchange_emsmb(4gx).

Default: *0*

listen_ip

An IPv6 address (or v4-mapped address) for exposing the timer service on.

Default: *::1*

listen_port

The TCP port number for exposing the timer service on.

Default: *5000*

max_ext_rule_number Default: *20*

max_router_connections Default: *unlimited*

max_rpc_stub_threads Default: *unlimited*

max_rule_number Default: *1000*

max_store_message_count Default: *200000*

notify_stub_threads_num Default: *4*

populating_threads_num Default: *4*

rpc_proxy_connection_num Default: *10*

separator_for_bounce Default: *;*

sqlite_mmap_size

See https://www.sqlite.org/prAGMA.html#prAGMA_mmap_size for details.

Default: *0* (use SQLite default)

sqlite_synchronous

Enables/disables synchronous mode for SQLite databases. See https://www.sqlite.org/pragma.html#pragma_synchronous for details.

Default: *off*

sqlite_wal_mode

Selects the particular journal mode for SQLite databases; **off** selects DELETE mode, **on** selects WAL mode. See https://www.sqlite.org/pragma.html#pragma_journal_mode for details.

Default: *on*

table_size Default: *5000*

x500_org_name

Default: (unspecified)

17.3 Multiserver selection map

The SQL column **users.homedir** specifies a home directory location in an abstract namespace. This abstract namespace is shared between all Gromox programs, and can be used to divide users into custom subsets and steer connections to different servers.

`exmdb_list.txt` specifies how to map from this namespace to exmdb servers. The file is used by exmdb clients to select the right server to connect to, and the file is used by exmdb_provider to set up its own data structures.

Each line in this file consists of 4 columns separated by whitespace:

- Initial prefix to match a user's exmdb home directory on. The pattern should almost always end in a '/' character, otherwise a prefix of "/home" is able to match a userdir of "/home2/username" as well, which may be undesired.
- The type of mail stores that are served beneath the prefix. This must either be "private" or "public".
- The IPv6 (or v4-mapped) address of the midb server to use for this prefix.
- The port number.

In the absence of `exmdb_list.txt`, two implicit default entries are used:

```
/var/lib/gromox/user/ private ::1 5000
/var/lib/gromox/domain/ public ::1 5000
```

17.4 Network protocol

The transmissions on the socket are simple concatenations of protocol data units built using the NDR format. The PDU length is present within the PDU itself near the start.

```
{
    leuint32_t length;
    char pdu[];
}
```

```
pdu := {
    uint8_t call_id;
    string directory;
```

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```
    switch (call_id) {  
        ...  
    }  
}
```

17.5 Files

- *config_file_path/exmdb_acl.txt*: A file with one address (IPv6 or v4-mapped) per line of allowed clients. In its absence, ::1 is default-whitelisted.
- *config_file_path/exmdb_list.txt*: exmdb multiserver selection map.
- *data_file_path/mail_bounce/*

config_file_path and *data_file_path* is determined by the configuration of the program that loaded the *exmdb_provider* plugin.

17.6 See also

gromox(7), **http(8gx)**

18.1 Synopsis

freebusy — helper utility for EWS Freebusy actions

18.2 Description

The freebusy program is used by the EWS handler (a PHP script) to implement the GetUserAvailabilityRequest request.

18.3 Files

- /usr/share/gromox/agent/exmdb_list.txt: exmdb multiserver map

GROMOX-ABKTCONV

19.1 Name

`gromox-abktconv` — Utility for converting between ABKT and JSON

19.2 Synopsis

`gromox-abktconv` `{-b|-j}` `[-gw?]` `[-c cpid]`

19.3 Description

`gromox-abktconv` can be used to convert between data streams as specified in MS-OXOABKT and a textual representation. It reads and writes to standard input and output, respectively.

19.4 Options

- `-b` Produce ABKT from JSON.
- `-c cpid` When converting to ABKT (`-b`), convert strings to the given codepage and emit them as 8-bit strings.
- `-g` When converting to ABKT (`-b`), emit extraneous gaps in the data stream to mimic what Exchange would do. Without `-g`, the ABKT stream will have no unnecessary gaps.
- `-j` Produce JSON from ABKT.
- `-w` When converting to ABKT (`-b`), emit strings in UTF-16 form. This is the default.
- `-?` Display option summary.

19.5 Normative references

- MS-OXOABKT: Address Book User Interface Templates Protocol

19.6 See also

`gromox(7)`, `gromox-abktpull(8gx)`

GROMOX-ABKTPULL

20.1 Name

`gromox-abktpull` — Utility to extract ABKT templates from LDIF

20.2 Synopsis

`ldapsearch ... | gromox-abktpull`

20.3 Description

`gromox-abktpull` reads LDIF from standard input and extracts the values from attributes matching `/DisplayTable/` — i.e. generally `originalDisplayTable`, `originalDisplayTableMSDOS`, `addressEntryDisplayTable` and `addressEntryDisplayTableMSDOS` — and saves them in separate files in the current working directory.

20.4 Normative references

- RFC 2849: LDAP Data Interchange Format

20.5 See also

`gromox(7)`, `gromox-abktconv(8gx)`

GROMOX-DBOP

21.1 Name

`gromox-dbop` — Database maintenance utility

21.2 Synopsis

`gromox-dbop [-CU] [-create-old] [-c mysql_adaptor.cfg]`

21.3 Options

- `-C` Create the initial set of tables for the user information database (in MySQL).
- `-U` Upgrade the schema of the user information database. The database (MYSQL_DBNAME) should exist and be blank.
- `-create-old` Create blank initial database using version n0. (This can be used for testing.)
- `-c mysql_adaptor.cfg` Path to a configuration file that defines MYSQL_HOST, MYSQL_USERNAME, etc. If omitted, `gromox-dbop` will read `/etc/gromox/http.cfg` to locate `mysql_adaptor.cfg` to locate the `mysql` parameter.

21.4 See also

`gromox(7)`, `mysql_adaptor(4gx)`

GROMOX-MAILQ

22.1 Name

`gromox-mailq` — SMTP queue lister

22.2 Synopsis

`gromox-mailq`

22.3 Description

`gromox-mailq` looks in the queue directory for `smtp(8gx)` and prints the summaries for all queued mail.

22.4 See also

`smtp(8gx)`

GROMOX-PFFIMPORT

23.1 Synopsis

gromox-pffimport [-npt -u *user@company*] *input.pst*...

23.2 Description

gromox-pffimport reads files in the Personal Folder File (PFF) and the Offline Folder File (OFF) format and writes their data into a Gromox mail store. The PFF format is used in several file types:

- PAB (Personal Address Book)
- PST (Personal Storage Table)
- OST (Offline Storage Table)

By default, **pffimport** creates a new folder “Import of <xyz.pst> on <date>” within IPM_SUBTREE (“Top of Information Store”) and places all PFF objects into that new subfolder.

23.3 Options

- n Dry run, do not contact server.
- p Show properties in detail (enhances -t).
- s Splice objects from the PFF into existing folders. Specifically, the PFF root is mapped to the store root, and special folders (Sent Items, Deleted Items, etc.) are mapped to special folders in the store if the PFF has the necessary information.
- t Output tree analysis of the PFF file.
- u *user@company* Target mail store which to import mails to.

All remaining non-options arguments specify PFF files to be read.

23.4 See also

gromox(7)

24.1 Synopsis

`http [-c config]`

24.2 Description

`http(8gx)` is a trivial HTTP server. It understands the special HTTP methods as used by RPC-over-HTTP protocol as used by Outlook, it can serve files verbatim, or forward requests to a FastCGI server such as `php-fpm(8)`.

24.3 Options

`-c config` Read configuration directives from the given file. If this option is not specified, `/etc/gromox/http.cfg` will be read if it exists.

`-?` Display option summary.

24.4 URI processing order

- Requests are passed to the `mod_rewrite(4gx)` module (built-in) to have their URI potentially rewritten.
- If a HTTP request is using the methods `RPC_IN_DATA` or `RPC_OUT_DATA`, the data stream is handed off to the `exchange_emsmdb(4gx)` plugin.
- Otherwise, HPM plugins are invoked. Processing ends when one plugin signals that the request was handled. The order depends on the HPM plugin list (cf. `http.cfg(5gx):hpm_plugin_list`).
- Otherwise, the `mod_fastcgi(4gx)` module (built-in) is invoked. Processing ends if the module handled the request.
- Otherwise, the `mod_cache(4gx)` module (built-in) is invoked. Processing ends if the module handled the request.
- Otherwise, the request is rejected.

24.5 RPC-over-HTTP

RPC-over-HTTP utilizes two special HTTP methods, `RPC_IN_DATA` and `RPC_OUT_DATA`. These requests can, similarly to HTTP `CONNECT`, be very long-lived. The RPC data stream is handled by the included `exchange_emsmb(4gx)` plugin.

24.6 Configuration file directives

block_interval_auths

The amount of time a user is blocked from connecting to the service after too many failed logins.
Default: *1 minute*

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files, especially those used by plugin instances.
Default: */etc/gromox/http:/etc/gromox*

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.
Default: *::1*

console_server_port

The TCP port number to expose the management console frontend on.
Default: *8899*

context_average_mem Default: *256K*

context_num Default: *400*

data_file_path

Colon-separated list of directories which will be scanned when locating data files.
Default: */usr/share/gromox/http*

default_domain Default: (inherited from system)

fastcgi_cache_size

If the HTTP request to a CGI endpoint uses Chunked Transfer Encoding and the Content-Length field contains a larger value than this limit, the data is buffered in a file */tmp/http-%d* (%d replaced by internal context id).
Default: *256K*

fastcgi_exec_timeout

Maximum execution time for CGI scripts.
Default: *10 minutes*

fastcgi_max_size

If the Content-Length of a HTTP request to a CGI endpoint is larger than this value, the request is rejected.
Default: *4M*

host_id

The hostname that the server uses to identify itself (e.g. Server: header in HTTP responses).
Default: (inherited from system)

hpm_cache_size

If the HTTP request to a HPM endpoint uses Chunked Transfer Encoding and the Content-Length field contains a larger value than this limit, the data is buffered in a file `/tmp/http-%d` (%d replaced by internal context id).

Default: *512K*

hpm_max_size

If the Content-Length of a HTTP request to a HPM endpoint is larger than this value, the request is rejected.

Default: *4M*

hpm_plugin_ignore_errors

If set to yes, HPM plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

hpm_plugin_list

Path to a text file which lists the filenames of HPM plugins to load, one per line.

Default: (unspecified)

http_auth_times

The number of login tries a user is allowed before the account is blocked.

Default: *10*

http_certificate_passwd

The password to unlock TLS certificates.

Default: (unset)

http_certificate_path

Filesystem path to a certificate file for use with encrypted connection. The complete certificate chain should be present (as there is no other config directive to pull CA certs in).

Default: (unset)

http_conn_timeout

If a HTTP connection stalls for the given period, the connection is terminated.

Default: *3 minutes*

http_private_key_path

Filesystem path to the key file needed to unlock the TLS certificate.

Default: (unset)

http_support_ssl

This flag controls whether (or not) the server offers TLS at all. The default is false because you need a certificate for this first.

Default: *false*

listen_port

The TCP port to expose the HTTP protocol service on. (The IP address is fixed to the wildcard address.)

Default: *80*

listen_ssl_port

The TCP port to expose implicit-TLS HTTP protocol service (HTTPS) on. (The IP address is fixed to the wildcard address.)

Default: (unset)

proc_plugin_ignore_errors

If set to yes, processor plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

proc_plugin_list

Path to a text file which lists the filenames of processor plugins to load, one per line.

Default: (unspecified)

proc_plugin_path

Filesystem path for processor plugins.

Default: */usr/libexec/gromox*

request_max_mem The maximum hint size for fragmented RPC PDU requests that will be allowed (C706 §12.6.3.7, RPCE §2.2.2.6).

running_identity

An unprivileged user account to switch the process to after startup. To inhibit the switch, assign the empty value.

Default: *gromox*

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per `ld.so(8)`) was unsuccessful.

Default: */usr/lib/gromox*

state_path

Directory for runtime variadic data.

Default: */var/lib/gromox*

tcp_mss_size

Sets the `TCP_MAXSEG` socket option with the given MSS value for the listening socket(s), cf. `tcp(7)`.

Default: *0* (do not limit the MSS)

thread_charge_num

The maximum number of connections that each thread is allowed to process.

Default: *20*

thread_init_num

The minimum number of client processing threads to keep around.

Default: *5*

user_default_lang Default: *en*

24.7 Files

- /usr/lib/gromox/libgxm_*.so: HTTP processing plugins
- /usr/lib/gromox/libgxp_*.so: PDU processing plugins
- /usr/lib/gromox/libgxs_*.so: service plugins

24.8 Normative references

- MS-RPCE: Remote Procedure Call Protocol Extensions
- DCERPC / C706: Technical Standard DCE 1.1: Remote Procedure Call by The Open Group, 1997

24.9 See also

gromox(7), **mod_cache(4gx)**, **mod_fastcgi(4gx)**, **mod_rewrite(4gx)**

25.1 Name

imap — Gromox IMAP server

25.2 Synopsis

imap [-c *config*]

25.3 Options

-c *config* Read configuration directives from the given file. If this option is not specified, /etc/gromox/imap.cfg will be read if it exists.

-version Output version information and exit.

-? Display option summary.

25.4 Configuration file directives

block_interval_auths

The amount of time a user is blocked from connecting to the service after too many failed logins.

Default: *1 minute*

config_file_path

Colon-separated list of directories in which further configuration files, especially those used by plugin instances, will be searched.

Default: */etc/gromox/imap:/etc/gromox*

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: *::1*

console_server_port

The TCP port number to expose the management console frontend on.

Default: *4455*

context_average_mem Default: *128K*

context_average_mitem

Lower clamp is at 128.

Default: *512*

context_max_mem Default: *2M*

context_num

Maximum number of concurrently active sessions.

Default: *200*

data_file_path

Colon-separated list of directories in which static data files will be searched.

Default: */usr/share/gromox/imap*

default_domain Default: (system domainname)

default_lang Default: *en*

enable_rfc2971_commands

RFC 2971 specifies the “ID” command with which a client can inquire the program name and version of the server. This is disabled by default, as it can facilitate potential attackers’ information gathering.

Default: *no*

host_id Default: (system hostname)

imap_auth_times

The number of login tries a user is allowed before the account is blocked.

Default: *10*

imap_autologout_time

If an IMAP connection is idle for the given period, the connection is terminated.

Default: *30 minutes*

imap_certificate_passwd

The password to unlock TLS certificates.

Default: (unset)

imap_certificate_path

Filesystem path to a certificate file for use with encrypted connection. The complete certificate chain should be present (as there is no other config directive to pull CA certs in).

Default: (unset)

imap_conn_timeout

If an IMAP connection stalls for the given period, the connection is terminated.

Default: *3 minutes*

imap_force_starttls

This flag controls whether clients must utilize TLS, either by way of implicit TLS (cf. **listen_ssl_port**), or through the STARTTLS command.

Default: *false*

imap_lang_path

Path to the file for IMAP folder name translations. If only a basename is specified, the file will be searched in *data_file_path*.

Default: *imap_lang.txt*

imap_private_key_path

Filesystem path to the key file needed to unlock the TLS certificate.

Default: (unset)

imap_support_starttls

This flag controls the offering of the STARTTLS extension (RFC 2595) to clients.

Default: *false*

listen_port

The TCP port to expose the IMAP protocol service on. (The IP address is fixed to the wildcard address.)

Default: *143*

listen_ssl_port

The TCP port to expose implicit-TLS IMAP protocol service (IMAPS) on. (The IP address is fixed to the wildcard address.)

Default: (unset)

running_identity

An unprivileged user account to switch the process to after startup.

Default: *gromox*

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per ld.so(8)) was unsuccessful.

Default: */usr/lib/gromox*

state_path

Directory for runtime variadic data.

Default: */var/lib/gromox*

thread_charge_num

The maximum number of connections that each thread is allowed to process.

Default: *40*

thread_init_num

The minimum number of client processing threads to keep around.

Default: *1*

25.5 Files

- *data_file_path/imap_code.txt*: Mapping from internal IMAP error codes to textual descriptions.
- *data_file_path/imap_lang.txt*: Translations for IMAP folder names.
- */usr/lib/gromox/libgxs_*.so*: service plugins

25.6 See also

gromox(7), **midb_agent(4gx)**

IP6_CONTAINER

26.1 Name

`ip6_container` — trivial source connection counter

26.2 Description

`ip6_container` is used by one or more daemons to keep track of the number of connections made by every source address, and to block them from exceeding a connection limit.

26.3 Configuration file directives

`connection_max_num`

The maximum number of concurrent connections any one source address is allowed to make.

Default: *200*

26.4 See also

`gromox(7)`

LDAP_ADAPTOR

27.1 Description

ldap_adaptor is a service plugin that facilitates querying an LDAP directory server.

27.2 Configuration file directives

auth_connections

Maximum number of LDAP connections to utilize for authentication requests. (Authentication cannot be run on the metadata connections.) This parameter has fixed value and is currently not settable.

Default: (same as data_connections)

data_connections

Number of LDAP connections to keep active to the server for metadata lookup.

Default: 4

ldap_bind_user

Specifies the default bind DN to use when performing general LDAP operations, i.e. searches. The bind DN must be specified as a Distinguished Name in LDAP format.

Default: (unset)

ldap_bind_pass

Password for Simple Authentication of ldap_bind_user.

Default: (unset)

ldap_host

Whitespace-separated RFC 2255-style set of LDAP URIs that specify protocol and host.

Default: (libldap default, see ldap.conf(5))

ldap_mail_attr Default: *mail*

ldap_search_base Default: (libldap default)

ldap_start_tls

Enable TLS on ldap:// connections.

Default: *off*

27.3 See also

`gromox(7)`, `authmgr(4gx)`

LOGTHRU

28.1 Name

logthru — service plugin for a stdout/file logger

28.2 Description

logthru registers a “log_info” service function. Log messages sent to this API will be emitted without delay to stdout or a file of choice. When programs are run under the control of systemd (i.e. have been started with systemctl), journald will take care of capture, storage and periodic log rotation.

logthru is the default logging plugin for all Gromox services.

28.3 Configuration file directives

log_file_name

Path to the file where log messages will be appended to. Setting this to the empty value implies that logging will go to stdout.

Default: (stdout)

log_level

Controls which messages will be shown. Messages with a equal or higher severity (lower numeric value) will pass, messages with lower severity (higher numeric value) will be suppressed. The levels used in practice are: critical (2), error (3), warning (4), notice/info (5), debug (6).

Default: 4

28.4 See also

gromox(7)

29.1 Description

mapi.so is a PHP module that makes available a number of functions to PHP for connecting to Gromox services. In particular, it will talk to zcore(8gx).

29.2 Configuration

The PHP ini fragment, mapi.ini, may look like this:

```
extension=mapi.so
[mapi]
zcore_socket=/run/gromox/zcore.sock
```

29.3 Compatibility with other implementations

The Gromox implementation of mapi.so is missing (-) some functions and offering others (+) compared to KGWC:

```
-mapi_createconversationindex
-mapi_folder_openmodifytable
-mapi_freebusydata_enumblocks
-mapi_freebusydata_getpublishrange
-mapi_freebusydata_setrange
-mapi_freebusyenumblock_ical
-mapi_freebusyenumblock_next
-mapi_freebusyenumblock_reset
-mapi_freebusyenumblock_restrict
-mapi_freebusyenumblock_skip
-mapi_freebusy_openmsg
-mapi_freebusysupport_close
-mapi_freebusysupport_loaddata
-mapi_freebusysupport_loadupdate
-mapi_freebusysupport_open
-mapi_freebusyupdate_publish
-mapi_freebusyupdate_reset
-mapi_freebusyupdate_savechanges
-mapi_icaltomapi2
-mapi_importcontentschanges_importmessagechange
-mapi_rules_gettable
-mapi_rules_modifytable
```

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```
-mapi_vcftomapi2
-mapi_zarafa_getcompanylist
-mapi_zarafa_getgrouplist
-mapi_zarafa_getgrouplistofuser
-mapi_zarafa_getquota
-mapi_zarafa_getuser_by_id
-mapi_zarafa_getuser_by_name
-mapi_zarafa_getuserlist
-mapi_zarafa_getuserlistofgroup
-mapi_zarafa_setquota
+mapi_folder_getrulestable
+mapi_folder_modifyrules
+mapi_getuseravailability
+mapi_importcontentschanges_importmessagechange
+mapi_linkmessage
+mapi_logon_ex
+mapi_openpropertytostream
+mapi_table_createbookmark
+mapi_table_findrow
+mapi_table_freebookmark
+nsp_getuserinfo
+nsp_setuserpasswd
```

29.4 See also

gromox(7), **zcore(8gx)**

MESSAGE_ENQUEUE

30.1 Name

`message_enqueue` — Message enqueueing flusher plugin for `smtp(8gx)`

30.2 Description

When the SMTP server has finished processing a mail, the mail will be handed off to a flusher plugin. `message_enqueue` is such a plugin, in fact, presently the only flusher plugin available.

`message_enqueue(4gx)` is the approximate equivalent of the Postfix `cleanup(8)` process.

30.3 See also

`gromox(7)`, `smtp(8gx)`

31.1 Synopsis

midb [-c *config*]

31.2 Options

-c *config* Read configuration directives from the given file. If this option is not specified, */etc/gromox/midb.cfg* will be read if it exists.

-version Output version information and exit.

-? Display option summary.

31.3 Configuration file directives

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files, especially those used by plugin instances.

Default: */etc/gromox/midb:/etc/gromox*

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: *::1*

console_server_port

The TCP port number to expose the management console frontend on.

Default: *9900*

data_file_path

Colon-separated list of directories which will be scanned when locating data files.

Default: */usr/share/gromox/midb*

default_charset Default: *windows-1252*

default_timezone Default: (unspecified)

midb_cache_interval Default: *30minutes*

midb_listen_ip

An IPv6 address (or v4-mapped address) for exposing the event service on.

Default: *::1*

midb_listen_port

The TCP port number for exposing the event service on.
Default: *5555*

midb_mime_number Default: *4096*

midb_table_size Default: *5000*

midb_threads_num

The minimum number of client processing threads to keep around.
Default: *100*

notify_stub_threads_num Default: *10*

rpc_proxy_connection_num

Default: *10*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.
Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per `ld.so(8)`) was unsuccessful.
Default: */usr/lib/gromox*

sqlite_mmap_size

See https://www.sqlite.org/pragmas.html#pragma_mmap_size for details.
Default: *0* (use SQLite default)

sqlite_synchronous

Enables/disables synchronous mode for SQLite databases. See https://www.sqlite.org/pragmas.html#pragma_synchronous for details.
Default: *off*

sqlite_wal_mode

Selects the particular journal mode for SQLite databases; **off** selects DELETE mode, **on** selects WAL mode. See https://www.sqlite.org/pragmas.html#pragma_journal_mode for details.
Default: *on*

state_path

Directory for runtime variadic data.
Default: */var/lib/gromox*

x500_org_name Default: (unspecified)

31.4 Files

- *config_file_path/exmdb_list.txt*: exmdb multiserver selection map.
- *config_file_path/midb_acl.txt*: A file with one address (IPv6 or v4-mapped) per line of allowed clients. In its absence, ::1 is default-whitelisted.
- */usr/lib/gromox/libgxs_*.so*: service plugins

31.5 See also

gromox(7)

MIDB_AGENT

32.1 Name

midb_agent — Service plugin for conversing with midb(8gx)

32.2 Configuration file directives

connection_num

The number of connections to keep open towards every midb target.

Default: 5

context_average_mem

Enables and sets the size of a memory pool (in object count; the actual size is 256 bytes * context_num * context_average_mem). imap(8gx) and pop3(8gx) require this to be non-zero for full functionality.

Default: 1024

32.3 Multiserver map

The SQL column **users.homedir** specifies a home directory location in an abstract namespace. This abstract namespace is shared between all Gromox programs, and can be used to divide users into custom subsets and steer connections to different servers.

midb_list.txt specifies how to map from this namespace to midb servers. Each line in this file consists of 3 columns separated by whitespace:

- Initial prefix to match a user's exmdb home directory on. The pattern should almost always end in a '/' character, otherwise a prefix of "/home" is able to match a userdir of "/home2/username" as well, which may be undesired.
- The IPv6 (or v4-mapped) address of the midb server to use for this prefix.
- The port number.

In the absence of midb_list.txt, an implicit default entry is used:

```
/ ::1 5555
```

32.4 Files

- *config_file_path/instance.cfg*: configuration file for the instance of `midb_agent`. (Instance is usually **midb_agent**, as there is not much point in loading `midb_agent` twice.)
- *config_file_path/midb_list.txt*: `midb` multiserver map

config_file_path is determined by the configuration of the program that loaded the `midb_agent` plugin.

32.5 See also

`gromox(7)`

33.1 Synopsis

mkmidb [-c *config*] [-d *datapath*] *username*

33.2 Options

- c *config* Read configuration directives from the given file. If this option is not specified, `/etc/gromox/sa.cfg` will be read if it exists.
- d *datapath* This option can be used to override the `data_file_path` variable from the config file.
- ? Display option summary.

33.3 Files

- `data_file_path/sqlite3_midb.txt`: SQLite instructions to generate a message index database.

33.4 See also

gromox(7), **sa.cfg(5gx)**

MKPRIVATE

34.1 Synopsis

mkprivate [-c *config*] [-d *datapath*] *username*

34.2 Options

-c *config* Read configuration directives from the given file. If this option is not specified, `/etc/gromox/sa.cfg` will be read if it exists.

-d *datapath* This option can be used to override the `data_file_path` variable from the config file.

-? Display option summary.

34.3 Files

- `data_file_path/folder_lang.txt`: Translations for essential folders in a message store.
- `data_file_path/proppnames.txt`: Initial set of named properties to add to the new private store.
- `data_file_path/sqlite3_common.txt`: SQLite instructions to generate part of a private store.
- `data_file_path/sqlite3_private.txt`: SQLite instructions to generate part of a private store.

34.4 Config file directives

The config file is shared with other pgorams. See `sa.cfg(5gx)`.

34.5 See also

`gromox(7)`, `sa.cfg(5gx)`

35.1 Synopsis

mkpublic [-c *config*] [-d *data_path*] *domainname*

35.2 Options

-c **config** Read configuration directives from the given file. If this option is not specified, `/etc/gromox/sa.cfg` will be read if it exists.

-d **datapath** This option can be used to override the `data_file_path` variable from the config file.

-? Display option summary.

35.3 Files

- `data_file_path/proprnames.txt`: Initial set of named properties to add to the new private store.
- `data_file_path/sqlite3_common.txt`: SQLite instructions to generate part of a public store.
- `data_file_path/sqlite3_public.txt`: SQLite instructions to generate part of a public store.

35.4 Config file directives

The config file is shared with other pgorams. See `sa.cfg(5gx)`.

35.5 See also

`gromox(7)`, `sa.cfg(5gx)`

MOD_CACHE

36.1 Name

`mod_cache` — `http(8gx)` processing plugin for serving objects from a local filesystem

36.2 Description

`mod_cache` serves local files when certain URIs are requests.

`mod_cache` is built into `http(8gx)` and not a separate `.so` file.

36.3 Config file directives

This (built-in) plugin shares `http.cfg`. See `http(8gx)`.

36.4 URI map

The filemap that specifies which URIs to handle is `cache.txt`, which is searched for in `config_file_path`.

Each line in this file consists of 3 columns separated by whitespace:

- Domain or wildcard to match the HTTP Host: header with.
- URI path (prefix) to match
- Target directory within the filesystem

If the file has no lines, no documents will be served this way. If the file is absent however, a set of default entries will be used.

36.4.1 Default entries

```
* /web /usr/share/grammm-web
```

36.5 Files

- *config_file_path/cache.txt*: URI map specifying which paths this plugin shall handle.

36.6 See also

gromox(7), **http(8gx)**

37.1 Name

`mod_fastcgi` — `http(8gx)` processing plugin for proxying requests to FastCGI servers

37.2 Description

`mod_fastcgi` can forward HTTP requests to one or more FastCGI servers when certain URIs are requested. `mod_fastcgi` plugin is built into `http(8gx)` and not a separate `.so` file.

37.3 Config file directives

This (built-in) plugin shares `http.cfg`. See `http(8gx)`.

37.4 URI map

The filemap that specifies which URIs to handle is `fastcgi.txt`, which is searched for in `config_file_path`.

Each line in this file consists of 7 columns separated by whitespace:

- Domain or asterisk-based wildcard (“*”, “*.example.com”) to match the HTTP Host: request header with.
- URI path (prefix) to match
- Mapped path that will be passed to the FastCGI executor. Note that the FastCGI process may additionally have a document root setting that could map the path one more time.
- File suffix (without dot) to match on, e.g. *php*.
- A file to use as the default file for a directory (similar to Apache `httpd`’s `DirectoryIndex`).
- A set of headers, separated by the pipe symbol `|`, which should be forwarded to the CGI handler. In absence of any desired extra headers, a single pipe can be used to fill the column.
- An `AF_LOCAL` socket path to make the FastCGI request to.

If the file has no lines, no documents will be served this way. If the file is absent however, a set of default entries will be used.

37.4.1 Default entries

```
* /ews /usr/share/gromox/http/php/ews php index.php X-MAPIHttpCapability|X-
↳AnchorMailbox|X-ClientCanHandle /run/gromox/php-fpm.sock
* /sync /usr/share/grammm-sync php index.php | /run/gromox/php-fpm.sock
* /web /usr/share/grammm-web php index.php | /run/gromox/php-fpm.sock
```

37.5 Files

- *config_file_path/fastcgi.txt*: URI map specifying which paths this plugin shall handle.

37.6 See also

gromox(7), **http(8gx)**

MOD_REWRITE

38.1 Name

`mod_rewrite` — http(8gx) processing plugin for altering HTTP request URIs before processing

38.2 Description

`mod_rewrite` can alter request URIs. It runs before any of the other built-in or HPM processing plugins.

38.3 Config file directives

This (built-in) plugin shares `http.cfg`. See `http(8gx)`.

38.4 Rewrite map

The filemap that specifies which URIs to handle is `rewrite.txt`, which is searched for in `config_file_path`.

Each line in this file consists of 3 columns separated by whitespace:

- A POSIX Basic Regular Expression (cf. `regcomp(3)`) for matching the original URI.
- The fixed sequence “=>”.
- Replacement string. Captures can be spliced using `\1`, `\2`, .. up to a maximum of `\9`. The sequence `\0` splices the entire string (equivalent of Perl’s `$&`).

If the file has no lines, no paths will be rewritten. If the file is absent however, a set of default entries will be used.

38.5 Default rules

```
/autodiscover/autodiscover.xml => \0/ews/autodiscover.php
/EWS/Exchange.asmx => \0/ews/exchange.php
/OAB/oab.xml => \0/ews/oab.php
\/(Microsoft-Server-ActiveSync\) => \1/grammm-sync/index.php
\/(.well-known/autoconfig/mail/config-v1.1.xml\) => \1/well-known/autoconfig-mail.php
```

38.6 Files

- *config_file_path/rewrite.txt*: Rewrite map specifying which paths this plugin shall handle.

38.7 See also

gromox(7), **http(8gx)**

MYSQL_ADAPTOR

39.1 Description

`mysql_adaptor` is a service plugin for integrating mail accounts from a MySQL/MariaDB database.

39.2 Configuration file directives

connection_num

Number of SQL connections to keep active.
Default: 8

enable_firsttimepw

This flag determines whether non-LDAP users with no recorded password (empty `users.password` SQL column) will have the account's password set to whatever credential was passed along in the first authentication request.
Default: 0

mysql_dbname Default: *archive*

mysql_host

The hostname/IP address for contacting the SQL server.
Default: *localhost*

mysql_password Default: (unset)

mysql_port

The TCP port number for contacting the SQL server.
Default: 3306

mysql_rdwr_timeout

This sets the `MYSQL_OPT_READ_TIMEOUT` and `MYSQL_OPT_WRITE_TIMEOUT` option values on the MySQL connection.
Default: 0 (no timeout)

mysql_username Default: *root*

scan_interval Default: *1 minute*

schema_upgrades This controls what to do when a database schema update is available. Because there is no locking mechanism available that works across machines, the `mysql_adaptor` plugin does not use any locking locally either. As a result, the default is to not perform any upgrades.

autoupdate Do perform automatic schema upgrades when `mysql_adaptor` is started. Warning: This option can potentially be harmful if multiple programs try to upgrade the database at the same time.

host:xyz Perform automatic schema upgrades, but only when executing from http(8gx) and only when http.cfg's **host_id** value matches *xyz*.

skip No automatic schema upgrades are performed. The initialization will report completion and the program continues execution. The mysql_adaptor plugin may not properly work when desired tables are missing and cannot deliver data.

abort No automatic schema upgrades are performed. The initialization is aborted and the program terminates. Schema upgrades can be done manually with gromox-dbop(8gx).

Default: *skip*

39.3 Files

- *state_path/unchecked_domains.txt*

39.4 See also

gromox(7), **authmgr(4gx)**

PAM_GROMOX

40.1 Synopsis

`pam_gromox` — a PAM plugin to authenticate with Gromox

40.2 Overview

This module forwards authentication requests to the Gromox service plugins which themselves may pick MySQL or LDAP as a backend. `pam_gromox` is meant to be used in conjunction with non-Gromox SMTP/IMAP/etc. server processes that may be logically located before Gromox services and serving as accelerators.

40.3 Incantation in `/etc/pam.d/smtp`

Gromox accounts are not mapped from or to any Unix accounts, so the `pam_unix.so` module that is present in the default `/etc/pam.d/smtp` module list within Linux distributions is not suitable and can be wholly replaced. In otherwords, `/etc/pam.d/smtp` need just contain:

```
auth required pam_gromox.so
account required pam_permit.so
```

(`pam_gromox` does not provide a usable “account” handler, therefore “account required `pam_gromox.so`” would do nothing. The PAM framework always starts out with an initial deny policy, so at least one module needs to be called to make the PAM request succeed. For this reason, if there are no other “account” modules listed, `pam_permit.so` should be used.)

40.4 Configuration directives in `/etc/gromox/pam.cfg`

config_file_path

Colon-separated list of directories in which further configuration files, especially those used by plugin instances, will be searched.

Default: `/etc/gromox/pam:/etc/gromox`

pam_prompt

If `pam_gromox` detects the absence of a password but presence of a PAM conversation function, it will attempt to retrieve the password that way, and in doing so, will show this label just ahead of the nonechoing password prompt.

Default: `Password:`

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per ld.so(8)) was unsuccessful.

Default: */usr/lib/gromox*

40.5 See also

gromox(7)

41.1 Name

pop3 — Gromox POP3 server

41.2 Synopsis

pop3 [-c *config*]

41.3 Options

-c *config* Read configuration directives from the given file. If this option is not specified, */etc/gromox/pop3.cfg* will be read if it exists.

-version Output version information and exit.

-? Display option summary.

41.4 Configuration file directives

block_interval_auths

The amount of time a user is blocked from connecting to the service after too many failed logins.

Default: *1 minute*

cdn_cache_path Default: */var/lib/gromox/cdn*

config_file_path

Colon-separated list of directories in which further configuration files, especially those used by plugin instances, will be searched.

Default: */etc/gromox/pop3:/etc/gromox*

console_server_ipFP

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: *::1*

console_server_port

The TCP port number to expose the management console frontend on.

Default: *7788*

context_average_mem Default: *256K*

context_average_units

Lower clamp is 256.

Default: *1024*

context_max_mem Default: *2M*

context_num Default: *200*

data_file_path

Colon-separated list of directories in which static data files will be searched.

Default: */usr/share/gromox/pop3*

default_domain Default: (system domainname)

enable_capa_implementation

When enabled, the server will include an “IMPLEMENTATION” line in the CAPA response (RFC 2449 §6.9). This is disabled by default, as it can facilitate potential attackers’ information gathering.

Default: *no*

host_id Default: (system hostname)

listen_port

The TCP port to expose the POP3 protocol service on. (The IP address is fixed to the wildcard address.)

Default: *110*

listen_ssl_port

The TCP port to expose implicit-TLS POP3 protocol service (POP3S) on. (The IP address is fixed to the wildcard address.)

Default: (unset)

pop3_auth_times

The number of login tries a user is allowed before the account is blocked.

Default: *3*

pop3_certificate_passwd

The password to unlock TLS certificates.

Default: (unset)

pop3_certificate_path

Filesystem path to a certificate file for use with encrypted connection. The complete certificate chain should be present (as there is no other config directive to pull CA certs in).

Default: (unset)

pop3_conn_timeout

If a POP3 connection stalls for the given period, the connection is terminated.

Default: *3 minutes*

pop3_force_stls

This flag controls whether clients must utilize TLS, either by way of implicit TLS (cf. **listen_ssl_port**), or through the **STLS** command.

Default: *false*

pop3_private_key_path

Filesystem path to the key file needed to unlock the TLS certificate.

Default: (unset)

pop3_support_stls

This flag controls the offering of the STARTTLS extension/STLS command (RFC 2595) to clients.
Default: *false*

running_identity

An unprivileged user account to switch the process to after startup. To inhibit the switch, assign the empty value.
Default: *gromox*

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.
Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.
Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per ld.so(8)) was unsuccessful.
Default: */usr/lib/gromox*

state_path

Directory for runtime variadic data.
Default: */var/lib/gromox*

thread_charge_num

The maximum number of connections that each thread is allowed to process.
Default: *40*

thread_init_num

The minimum number of client processing threads to keep around.
Default: *1*

41.5 Files

- *data_file_path/pop3_code.txt*: Mapping from internal POP3 error codes to textual descriptions.
- */usr/lib/gromox/libgxs_*.so*: service plugins

41.6 See also

gromox(7), **midb_agent(4gx)**

42.1 Synopsis

rebuild [-c *config*] [-d *datapath*] *maildir*

42.2 Options

-c **config** Read configuration directives from the given file. If this option is not specified, `/etc/gromox/sa.cfg` will be read if it exists.

-d **datapath** This option can be used to override the `data_file_path` variable from the config file.

42.3 Files

- `config_file_path/exmdb_list.txt`: exmdb multiserver selection map.
- `data_file_path/sqlite3_common.txt`: SQLite instructions to generate part of a private store.
- `data_file_path/sqlite3_private.txt`: SQLite instructions to generate part of a private store.

42.4 Config file directives

The config file is shared with other pgorams. See `sa.cfg(5gx)`.

42.5 See also

`gromox(7)`, `sa.cfg(5gx)`

43.1 Synopsis

rtf2html — RTFCP to HTML converter

43.2 Description

rtf2html decodes an RTFCP file from standard input and converts the included RTF text to HTML, which is emitted on standard output. This utility does not support headerless RTF as emitted by word processors such as LibreOffice.

43.3 Options

-version Output version information and exit.

-? Display option summary.

43.4 Files

- */usr/share/gromox/cpid.txt*: codepage number <-> name definition table

43.5 Normative references

- MS-OXRTFCP: Rich Text Format (RTF) Compression Algorithm

43.6 See also

gromox(7)

44.1 Name

sa.cfg — configuration file for `mkmidb`, `mkprivate`, `mkpublic`

44.2 Directives

backup_hash_num Default: *10*

backup_valid_days Default: *30*

config_file_path

Colon-separated list of directories in which further configuration files will be searched.

Default: */etc/gromox*

data_file_path

Colon-separated list of directories in which static data files will be searched.

Default: */usr/share/gromox*

extpasswd_type

A value ≥ 2 and ≤ 5 .

Default: *2*

gateway_mount_path Default: */var/lib/gromox/gateway*

http_accept_language

Ignore whatever Accept-Language was sent by HTTP clients and assume this new value.

Default: (unset)

log_file_path

Default: */var/log/gromox/sa.log*

logo_link

The hyperlink that is associated with the logo image.

Default: (unspecified)

mysql_dbname Default: *email*

mysql_host

The hostname/IP address for contacting the SQL server.

Default: *localhost*

mysql_password Default: (unset)

mysql_port

The TCP port number for contacting the SQL server.

Default: *3306*

mysql_username Default: *root*

oversea_relay_switch

Default: *true*

public_store_ratio Default: *10*

token_file_path Default: */run/gromox/sa*

ui_timeout Default: *10 minutes*

44.3 See also

gromox(7), **mkmidb(8gx)**, **mkprivate(8gx)**, **mkpublic(8gx)**

45.1 Name

smtp — SMTP frontend for local delivery

45.2 Synopsis

smtp [-c *config*]

45.3 Description

The SMTP server accepts network connection requests and performs zero or more SMTP transactions per connection. Each received message is given to one configured flusher plugin, of which there currently is also just one to choose from, `message_enqueue(4gx)`.

`smtp(8gx)` is the equivalent of the Postfix `smtpd(8)` process. `message_enqueue(4gx)` is the approximate equivalent of the Postfix `cleanup(8)` process.

45.4 Options

-c *config* Read configuration directives from the given file. If this option is not specified, `/etc/gromox/smtp.cfg` will be read if it exists.

-? Display option summary.

45.5 Configuration file directives

block_interval_sessions

The amount of time a source IP address is blocked from connecting to the service because it tried to queue too many messages.

Default: *1 minute*

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files, especially those used by plugin instances.

Default: */etc/gromox/smtp:/etc/gromox*

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: `::1`

console_server_port

The TCP port number to expose the management console frontend on.

Default: `5566`

context_average_mem Default: `256K`

context_max_mem Default: `2M`

context_num Default: `200`

data_file_path

Colon-separated list of directories which will be scanned when locating data files.

Default: `/usr/share/gromox/sntp`

default_domain Default: (system domainname)

domain_list_valid Default: *false* if server mode is 0 (incoming), *true* otherwise

flusher_plugin_path

Filename of a flusher plugin to load and use. (Only one can be in use at any time.)

Default: `libgxf_message_enqueue.so`

host_id Default: (system hostname)

listen_port

The TCP port to export the SMTP protocol service on.

Default: `25`

listen_ssl_port

The TCP port to expose the implicit-TLS SMTP protocol service on.

Default: (unset)

mail_max_length

Maximum permitted length of a message.

Default: `64M`

running_identity

An unprivileged user account to switch the process to after startup. To inhibit the switch, assign the empty value.

Default: `gromox`

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: `no`

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per `ld.so(8)`) was unsuccessful.

Default: `/usr/lib/gromox`

smtp_certificate_passwd

The password to unlock TLS certificates.

Default: (unset)

smtp_certificate_path

Filesystem path to a certificate file for use with encrypted connection. The complete certificate chain should be present (as there is no other config directive to pull CA certs in).

Default: (unset)

smtp_conn_timeout

If an SMTP connection stalls for the given period, the connection is terminated.

Default: *3 minutes*

smtp_force_starttls

This flag controls whether clients must utilize TLS, either by way of implicit TLS (cf. **listen_ssl_port**), or through the STARTTLS command.

Default: *false*

smtp_max_mail_num

The maximum number of messages that a client is allowed to queue within one connection before its source IP address is blocked.

Default: *10*

smtp_private_key_path

Filesystem path to the key file needed to unlock the TLS certificate.

Default: (unset)

smtp_support_pipeline

This flag controls the offering of the PIPELINING extension (RFC 2920) to clients.

Default: *true*

smtp_support_starttls

This flag controls the offering of the STARTTLS extension (RFC 3027) to clients.

Default: *false*

state_path

Directory for runtime variadic data.

Default: */var/lib/gromox*

thread_charge_num

The maximum number of connections that each thread is allowed to process.

Default: *40*

thread_init_num

The minimum number of client processing threads to keep around.

Default: *1*

45.6 Files

- *data_file_path/smtp_code.txt*: Mapping from internal SMTP error codes to textual descriptions.
- */usr/lib/gromox/libgxs_*.so*: flusher plugins
- */usr/lib/gromox/libgxs_*.so*: service plugins

45.7 See also

`gromox(7)`, `delivery(8gx)`, `message_enqueue(4gx)`, `midb_agent(4gx)`

46.1 Name

`str_table` — string table match service plugin

46.2 Description

`str_table` implements checking for a trivial presence lookup of something in a text file. The plugin can be used in any Gromox process, but in practice only makes an appearance in `smtp(8gx)` and `delivery(8gx)`.

The `str_table` plugin has multiple instances. These are: **`domain_list`**.

These instances are factual copies of the module to please the plugin loader and make it load different `.cfg` files. (This is clearly inefficient and may be fixed in a future release.) For example, the plugin loader will derive the name “`domain_list.cfg`” from the module name “`libgxs_domain_list.so`”, and then pass this filename to the module so it can be loaded as a config file.

The plugin supports temporary modification of the string table as it exists in memory through the telnet console mechanism. A reload of the table from disk purges these modifications.

46.3 Configuration file directives

`add_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_add*

`growing_num`

The maximum number of additional string table entries on top of what the on-disk table file has supplied. So when the table file contains 40 entries and `growing_num` is 100, the in-memory copy of the table can hold up to 140 entries total.

Default: *100*

`is_case_sensitive`

Flag which determines whether matches should treat uppercase and lowercase differently or not.

Default: *false*

`query_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_query*

`remove_service_name`

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_remove*

46.4 Files

- *config_file_path/instance.cfg*: configuration file for the instance of *str_table* (e.g. */etc/gromox/delivery/domain_list.cfg* when *delivery(8gx)* was made to load *libgxs_domain_list.so*.)
- *state_path/instance.txt*, *config_file_path/instance.txt*: string table on which matches are carried out (e.g. */var/lib/gromox/domain_list.txt*)

46.5 See also

gromox(7)

TEXTMAPS

47.1 Description

textmaps is a service plugin that reads various data maps into memory and offers lookups in them.

It is vital that it be able to load the text files and initialize the mappings, as otherwise, character set conversions cannot be performed and e.g. `exchange_nsp(4gx)` responds with failure to RPCs made by Outlook that involve character set IDs or locale IDs.

47.2 Files

- `data_file_path/cpid.txt`: mapping between character set IDs and names
- `data_file_path/lang_charset.txt`: mapping from language code to character set
- `data_file_path/lcid.txt`: mapping between locale IDs and names
- `data_file_path/mime_extension.txt`: mapping between file extensions and MIME types

`data_file_path` is determined by the configuration of the program that loaded the textmapplug plugin.

47.3 See also

`gromox(7)`

48.1 Name

timer — deferred command executor

48.2 Synopsis

timer [-c *config*]

48.3 Description

The timer daemon can be used to schedule commands to be executed once, at a particular time in the future. It is similar to the `at(1)` command and its associated daemon, `atd`.

`timer(8gx)` generally receives commands from `timer_agent(4gx)`.

48.4 Options

-c *config* Read configuration directives from the given file. If this option is not specified, `/etc/gromox/timer.cfg` will be read if it exists.

-version Output version information and exit.

-? Display option summary.

48.5 Files

- `config_file_path/timer_acl.txt`: A file with one address (IPv6 or v4-mapped) per line of allowed clients. In its absence, `::1` is default-whitelisted.
- `/var/lib/gromox/timer.txt`: This file is used to save the state of `timer(8gx)` and persist them across restarts.

48.6 Configuration file directives

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files, especially those used by plugin instances.

Default: */etc/gromox/timer:/etc/gromox*

timer_listen_ip

An IPv6 address (or v4-mapped address) for exposing the timer service on.

Default: *::1*

timer_listen_port

The TCP port number for exposing the timer service on.

Default: *6666*

timer_state_path Default: */var/lib/gromox/timer.txt*

timer_threads_num

The minimum number of client processing threads to keep around.

Default: *50*

48.7 Timer protocol

The timer service is exposed as a line-based text protocol. Upon connection, the event server gratuitously writes “OK”, following which the server will wait for timer commands, and execute them synchronously.

The command “ADD <seconds> <command>” installs a new timer for the given command to be executed in that many seconds from now. The server will respond with “FALSE 2”, “FALSE 3”, or respond with the timer ID as “TRUE <id>”.

The command “CANCEL <id>” revokes the timer with the chosen ID.

48.8 See also

gromox(7), **timer_agent(4gx)**

TIMER_AGENT

49.1 Name

`timer_agent` — Service plugin for deferred command execution with `timer(8gx)`

49.2 Description

`timer_agent` connects to a remote `timer(8gx)` daemon and locally installs two service functions, “`add_timer`” and “`cancel_timer`”, which can be used to set up and rescind, respectively, jobs for later execution.

In practice, this is used by `exchange_emsmb(4gx)` and `zcore(8gx)` to implement delayed sending of messages.

49.3 Configuration file directives

connection_num

Number of connections to keep active.

Default: 8

timer_host

The hostname/IP address for contacting the timer daemon.

Default: `::1`

timer_port

The TCP port number for contacting the timer daemon.

Default: 6666

49.4 See also

`gromox(7)`, `timer(8gx)`, `at_client(4gx)`

50.1 Configuration file directives

add_service_name

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_add* (e.g. *user_filter_add* for *libgxs_user_filter.so*)

audit_interval Default: *1minute*

audit_max_num Default: *0*

audit_times Default: *10*

grey_growing_num Default: *0*

growing_num

The maximum number of additional string table entries on top of what the on-disk table file has supplied. So when the table file contains 40 entries and *growing_num* is 100, the in-memory copy of the table can hold up to 140 entries total.

Default: *0*

is_case_sensitive

Flag which determines whether matches should treat uppercase and lowercase differently or not.

Default: *false*

judge_service_name

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_judge*

query_service_name

The plugin instance will expose its function through this service function name. You should not generally this, because other plugins rely on certain fixed values.

Default: *instance_name_query*

temp_list_size Default: *2000*

50.2 Files

- *config_file_path/instance.cfg*: configuration file for the instance of `str_filter` (e.g. `/etc/gromox/http/user_list.cfg` when `http(8gx)` was made to load `libgxs_user_list.so`.)
- *state_file_path/instance.txt*: greylist

50.3 See also

gromox(7)

51.1 Synopsis

zcore [-c *config*]

51.2 Description

zcore is a bridge process (proxy) between mapi(4gx) and exmdb_provider(4gx). It listens on /run/gromox/zcore.sock (hardcoded) for zcore RPCs, a Gromox-specific protocol. It issues exmdb RPCs to exmdb_provider(4gx).

51.3 Options

- c *config* Read configuration directives from the given file. If this option is not specified, /etc/gromox/zcore.cfg will be read if it exists.
- version Output version information and exit.
- ? Display option summary.

51.4 Network protocol

The transmissions on the zcore socket are simple concatenations of protocol data units built using the NDR format. The PDU length is present within the PDU itself near the start.

```
{
    leuint32_t length;
    char pdu[];
}
```

```
pdu := {
    uint8_t call_id;
    string directory;
    switch (call_id) {
        ...
    }
}
```

51.5 Store lookup

zcore determines the store path for a user from the user database, which may be provided by a service plugin like `mysql_adaptor(4gx)`.

The filemap that specifies how paths are handled is located at `data_file_path/exmdb_list.txt`, whereby `data_file_path` is the eponymous directive from the config file.

Each line in this file consists of 4 columns separated by whitespace:

- A portion of the store path to match on
- The type of store (“private” or “public”)
- An IPv6 address (or v4-mapped address) of the server running `exmdb_provider(4gx)`
- The TCP port number of the server

51.6 Files

- `data_file_path/exmdb_list.txt`: exmdb multiserver map
- `data_file_path/folder_lang.txt`: Translations for essential folders in a message store.
- `data_file_path/langmap.txt`: Mapping between translation names and libc locale names.
- `data_file_path/msgchg_grouping/`: Data files for `exchange_emsmb(4gx)`
- `data_file_path/notify_bounce/`: A directory with translation files for various bounce notifications.
- `/usr/lib/gromox/libgxs_*.so`: service plugins

51.7 Configuration file directives

address_cache_internal Default: *5 minutes*

address_item_num Default: *100000*

address_table_size Default: *3000*

config_file_path

Colon-separated list of directories which will be scanned when locating further configuration files, especially those used by plugin instances.

Default: */etc/gromox/zcore:/etc/gromox*

console_server_ip

An IPv6 address (or v4-mapped address) to expose the management console frontend on.

Default: *::1*

console_server_port

The TCP port number to expose the management console frontend on.

Default: *3344*

data_file_path

Colon-separated list of directories which will be scanned when locating data files.

Default: */usr/share/gromox/zcore*

default_charset Default: *windows-1252*

default_timezone Default: (unspecified)

freebusy_tool_path Default: */usr/libexec/gromox/freebusy*

host_id Default: (system hostname)

mailbox_ping_interval Default: *5 minutes*

mail_max_length Default: *64M*

max_ext_rule_length Default: *510K*

max_mail_num Default: *1000000*

max_rcpt_num

The maximum number of recipients that an e-mail is allowed to have.

Default: *256*

notify_stub_threads_num Default: *10*

rpc_proxy_connection_num Default: *10*

separator_for_bounce Default: *;*

service_plugin_ignore_errors

If set to yes, service plugins that fail to load on startup are ignored. If set to no, the daemon will exit if any plugin cannot be loaded.

Default: *no*

service_plugin_list

Path to a text file which lists the filenames of service plugins to load, one per line.

Default: (unspecified)

service_plugin_path

Path to a secondary directory where service plugins will be loaded from if a primary search in standard directories (as per ld.so(8)) was unsuccessful.

Default: */usr/lib/gromox*

smtp_server_ip

SMTP server hostname or address to contact for outgoing mail.

Default: *::1*

smtp_server_port

SMTP server TCP port number to contact for outgoing mail.

Default: *25*

state_path

Directory for runtime variadic data.

Default: */var/lib/gromox*

submit_command Default: */usr/bin/php /usr/share/gromox/sa/submit.php*

user_cache_interval

Sets the time how long a zcore-specific "OBJECT_TREE" structure is cached. At the end of this interval, user settings like PR_EC_WEBACCESS_JSON (stored in a separate file, not in SQLite) are flushed to disk.

Default: *1 hour*

user_table_size Default: *5000*

x500_org_name Default: (unspecified)

zarafa_mime_number Default: *4096*

zarafa_threads_num

The minimum number of client processing threads to keep around.

Default: *100*

zcore_listen

The named path for the AF_LOCAL socket that zcore will listen on.

Default: */run/gromox/zcore.sock*

zrpc_debug

Log every incoming zcore RPC and the return code of the operation in a minimal fashion to stdout. Level 1 emits RPCs with a failure return code, level 2 emits all RPCs.

Default: *0*

51.8 Files

- *config_file_path/exmdb_list.txt*: *exmdb multiserver selection map, see exmdb_provider(4gx) for details.*
- *data_file_path/langmap.txt*: *mapping between language code and its corresponding libc locale name.*
- *data_file_path/msgchg_grouping/.txt**
- *data_file_path/notify_bounce/*: *response templates for when mail cannot be delivered*
- */var/lib/gromox/user/*/config/zarafa.dat*: *file for the* PR_EC_WEBACCESS_JSON property.*

51.9 Notes

Behavior for the address book generally mirrors *exchange_nsp(4gx)*, so see that manpage for additional notes.

51.10 See also

gromox(7)

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