

Manual del Sistema

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por Walter Pirri

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Acerca de este manual

Este manual detalla el funcionamiento del Sistema Monitor transaccional Gnu-Monitor detallando las herramientas necesarias para su funcionamiento y los principios del ruteador de transacciones, los servers básicos del sistema y su interrelación.

Capítulo 1. Administracion del sistema

En este capítulo se enumeran y describen los scripts y programas que acompañan al proyecto Gnu-Monitor y permiten administrarlo, configurarlo, arrancarlo, detenerlo, etc.

1.1. Arranque y parada

Para el arranque y la parada del sistema se utiliza el script `gmond` que admite los parámetros *start*, *stop*, *restart*, *status*, *reload*.

Este script se encuentra instalado en `SBINDIR`, por defecto en `/usr/local/sbin` y tiene un link simbólico desde `/etc/init.d` o `/etc/rc.d` según corresponda en el sistema donde se instale el monitor.

1.1.1. Parámetro *start*

Este parámetro provoca el arranque del sistema Gnu-Monitor levantando primero el listener, luego el ruteador de transacciones y a continuación todos los servers configurados.

La línea dentro del script `gmond` que arranca el listener viene comentada por defecto y solo será necesario descomentarla si el sistema no se está utilizando con `inetd` o `xinetd`.

El orden de arranque de los servidores es muy importante, sobretodo el de los que resuelven los servicios básicos de suscripción, timers y buffer ya que de estos servicios depende el funcionamiento del resto de los servidores.

1.1.2. Parámetro *stop*

Este parámetro provoca la detención del sistema en el orden inverso al que arrancó.

1.1.3. Parámetro *restart*

Este parámetro llama primero al *stop* y luego de una pausa al *start*.

1.1.4. Parámetro *status*

Este parámetro permite obtener una lista de los servers configurados y el estado "started" o "stopped" de cada uno.

1.1.5. Parámetro *reload*

Este comando provoca que se envíe una señal 1 SIGHUP al proceso ruteador gmt que provoca la actualización de la tabla de servidores, es de principal utilidad cuando se agrega un nuevo server a la configuración del sistema.

1.2. Configuración

Para facilitar las tareas de configuración del monitor y parametrización de los servers acompaña al sistema un script gmon_config que a través de un menú interactivo permite desarrollar estas facilidades y alguna otras mas por medio de los comandos que se detallan a continuación.

```

spawn.witchblade - PuTTY
Menu de configuracion - Gnu-Monitor
- - - - -
help:      Esta pantalla
list:      Listado de servers y detalles de los mismos
add:       Agrega un nuevo server al sistema
           Solo para servers stand-alone
remove <server>:  Quita un server del sistema
edit <server>:    Modifica los parametros de un server
status:       Estado de los servers
start <server | all>:  Subir server o todos
stop <server | all>:  Bajar server o todos
- - - - -
gmonitor>
  
```

Tabla 1-1. Comandos de gmon_config

Comando	Descripcion
help	Muestra una ayuda en pantalla con los comando permitidos y una breve descripción de ellos, se muestra al iniciar el script y cada vez que se solicita un comandá inválido.
list	Muestra un listado de los servers configurados y los detalles de los parámetros de los mismos.

Comando	Descripción
add	Se utiliza para agregar un nuevo server al la configuración del sistema Gnu-Monitor. Una vez invocado este comando se solicitan los datos necesarios para el alta del nuevo server que son: nombre, path al binario y una descripción. Una vez ingresados los datos se guardan en la tabla de parametrización y se envía una señal <code>SIGHUP</code> al ruteador para que lea la nueva configuración.
remove	Se utiliza para borrar un server de la configuración del sistema Gnu-Monitor. Antes de eliminar el registro correspondiente a este server de la configuración lo detiene para evitar inconvenientes de integridad.
edit	Se utiliza para modificar la configuración de un server del sistema Gnu-Monitor. Antes de modificar el registro correspondiente a este server de la configuración lo detiene para evitar inconvenientes de integridad y luego se lo vuelve a levantar.
status	Muestra un listado de los servidores configurados en el sistema Gnu-Monitor y el estado "started" o "stopped" de cada uno.
start	Permite arrancar un server en particular o todos si se lo convoca con <code>all</code> . Si el server ya se encontraba levantado se inicia una nueva instancia de este ya que el sistema permite la ocurrencia de varias instancias actuando en cada caso según el tipo de servicio que atienden.
stop	Permite detener un server en particular o todos si se lo convoca con <code>all</code> . En caso que haya varias instancia de cada server al cual se convoca la detención serán detenidas todas ellas. Se debe tener especial cuidado de no detener los servicios básicos del sistema Gnu-Monitor y si se lo hace respetar el orden.

1.3. Monitoreo

Para poder monitorear el funcionamiento del sistema Gnu-Monitor se proveen logs de cada aplicación (listener, router, servers) y una herramienta que permite visualizar el contenido de la tabla de parametrización del ruteador que se encuentra en memoria compartida.

Los logs del sistema Gnu-Monitor se encuentran en `/var/log/gmonitor/` con un nombre bastante descriptivo para cada módulo, salvo el listener `gmd` que logea al log del sistema.

La aplicación gm_cfgview accede al bloque de memoria compartida utilizado por el router de transacciones y permite visualizar un listado de los servers configurados, los servicios y la relación entre ellos.

```

spawn.witchblade - PuTTY
root@spawn:~# gm_cfgview
== Configuración de Gnu-Monitor ==

----- Servidor -----
gm_config      | 1 | Server de configuración on-line | 0x000034640
gm_default     | 2 | Server de ejemplo               | 0x0000345F7
gm_timer       | 3 | Server de timers                | 0x000034641
gm_transac     | 4 | Administrador de transacciones  | 0x000034643
gm_buffer      | 5 | Server de buffers               | 0x000034644
gm_status      | 6 | Monitor de estado de UPS        | 0x000034649

----- Servicio -----
eco            | C |                               | gm_default
unsubscribe cli | N |                               | gm_config
check_unsol    | C |                               | gm_config

```

Capítulo 2. Ruteador de transacciones

El ruteador es el encargado de canalizar los requerimientos del cliente, enviarlos al o a los servidores que corresponda y devolver la respuesta total o en fragmentos nuevamente al cliente o server que lo haya solicitado.

2.1. Selección del rutéo

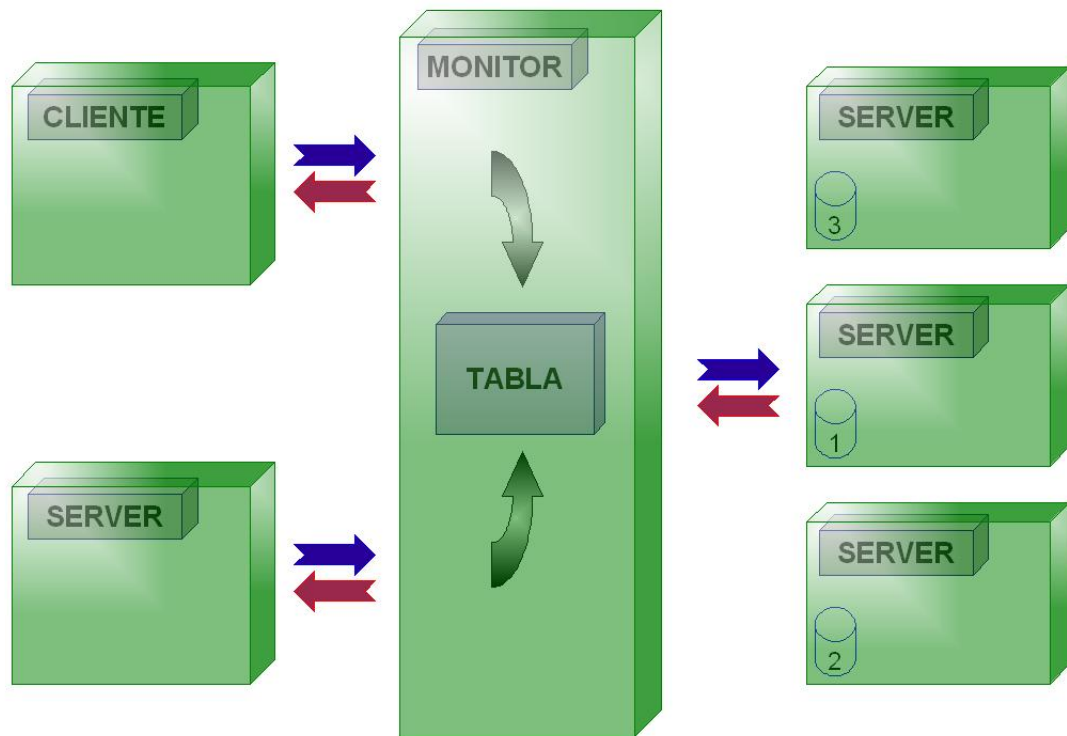
El ruteo se realiza con la información mantenida en una matriz de servicios alojada en memoria compartida.

Al llegar un requerimiento se determina el tipo de mensaje (Consulta/Respuesta, Evento, Aviso, Interactivo o Encolado) y se procede a rutear según corresponda.

2.1.1. Consulta / Respuesta

Para rutear los mensajes de este tipo se arma una lista de los servers que resuelven el servicio solicitado y se envía el mensaje al que tenga menos trabajos encolados.

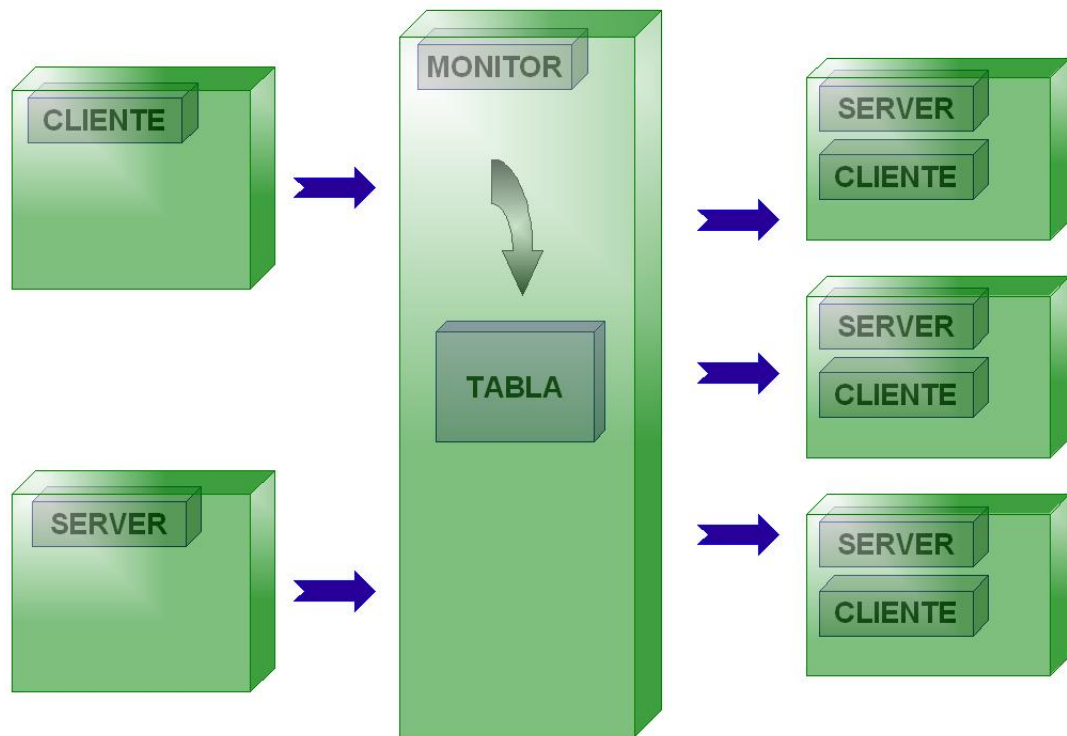
Si la respuesta es correcta se pasan los datos al mensaje de respuesta y se contesta.



2.1.2. Evento

Para rutear los mensajes de este tipo se arma una lista de los servers que resuelven el servicio solicitado y se envía el mensaje a todos ellos.

Si la respuesta de al menos uno de los servers es correcta se contesta OK el servicio.

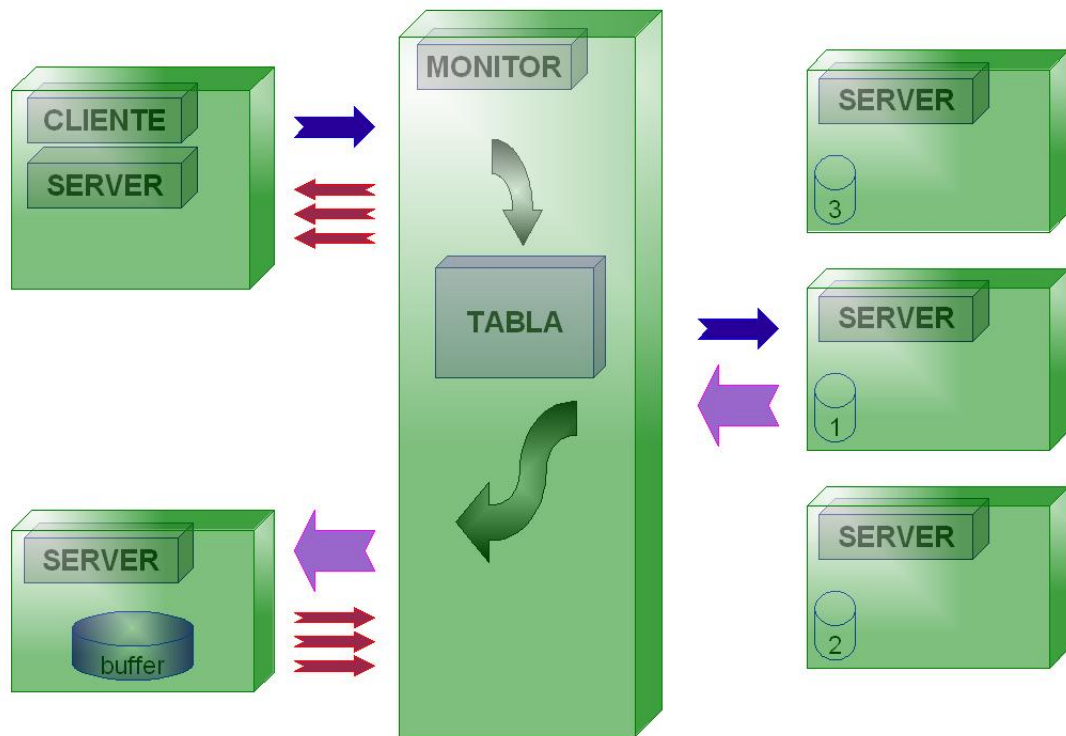


2.1.3. Interactivo

Antes de rutear este tipo de mensaje se verifica si se trata del primer requerimiento o es la continuación de uno previamente realizado.

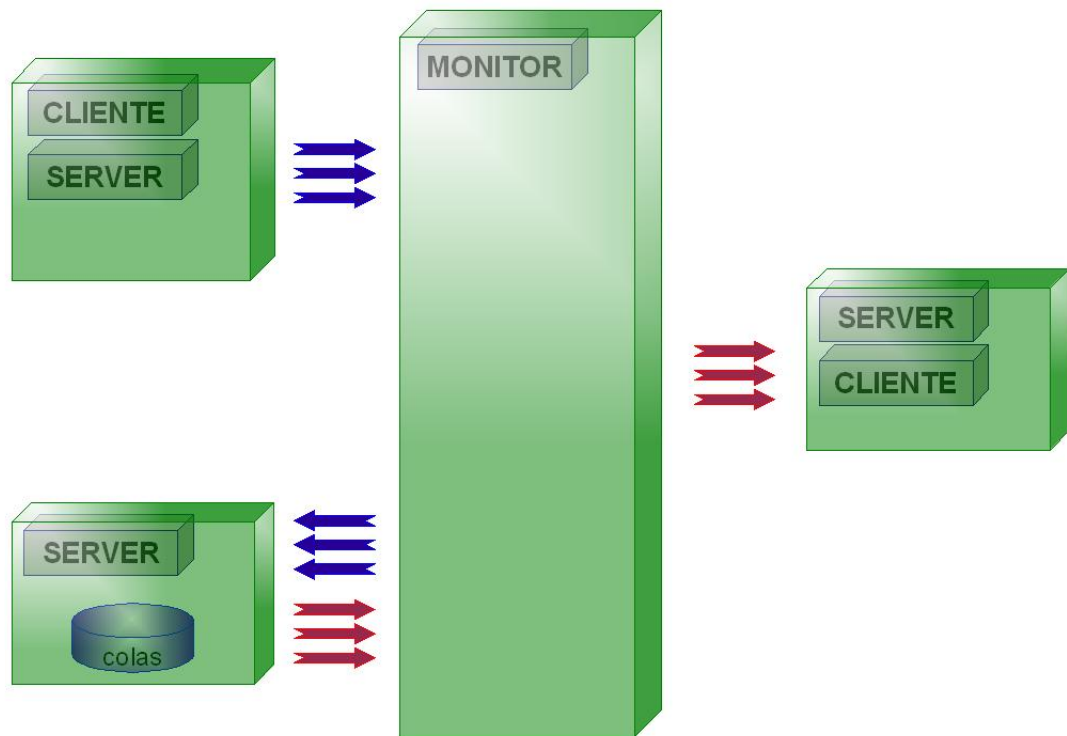
De ser el primero se arma una lista con los servers que resuelven el servicio y se le envía el mensaje. Al volver la respuesta si se supera el tamaño máximo sugerido en el requerimiento se almacena el la respuesta completa en un buffer y se contesta indicando que tiene continuación.

Si no es el primer mensaje del requerimiento se busca el buffer que contenga el mensaje de respuesta y se devuelve hasta donde permita el tamaño máximo sugerido en el requerimiento.



2.1.4. Encolado

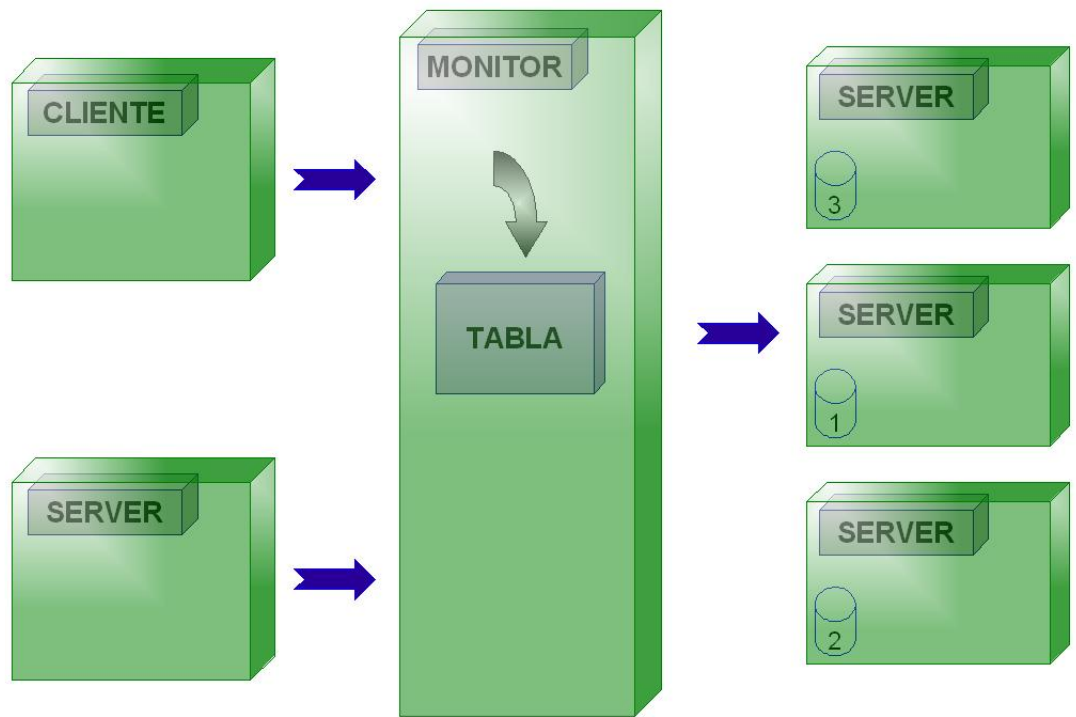
Este tipo de mensaje permite almacenar todos los requerimientos en un archivo de STORE AND FORWARD para que un server offline pueda recogerlos en algún otro momento.



2.1.5. Aviso

Para rutear los mensajes de este tipo se arma una lista de los servers que resuelven el servicio solicitado y se envía el mensaje al que tenga menos trabajos encolados.

Si la respuesta es correcta se contesta aprobada.



Capítulo 3. Servers del sistema

3.1. gm_default

Este server resuelve los servicios básicos del sistema GNU-Monitor.

3.1.1. Servicios

3.1.1.1. .eco

Este servicio es del tipo `GM_MSG_TYPE_CR` y se convoca con `Call()`.

Su función es verificar el circuito básico de ruteo y resolución de transacciones así como los timers de las funciones de consulta.

Devuelve el mismo mensaje enviado en la consulta luego de un segundo.

3.1.1.2. .log

Este servicio es del tipo `GM_MSG_TYPE_MSG` y se convoca con `Post()`.

Su función es registrar en el log del sistema los mensajes recibidos.

3.2. gm_transac

Este server mantiene la lista de transacciones en curso, comunica a los servers transaccionales el inicio de cada una y se encarga de cancelarlas en forma automática al vencimiento del timer de cada una.

3.2.1. Servicios

3.2.1.1. .begintrans

Este servicio es del tipo Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para dar de alta una transacción, devuelve dentro del header del mensaje al cliente el ID de la transacción.

Una vez creada la transacción notifica a los servers transaccionales del inicio.

3.2.1.2. **.committrans**

Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para notificar la finalización normal de una transacción.

Una vez verificada la existencia de la transacción se notifica a los servers transaccionales de la finalización normal.

3.2.1.3. **.aborttrans**

Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para notificar la finalización anormal de una transacción.

Una vez verificada la existencia de la transacción se notifica a los servers transaccionales de la finalización; anormal.

3.3. **gm_timer**

Este server mantiene una lista de timers asociados con eventos a ejecutar a su vencimiento.

Es un server transaccional por lo cual elimina todos los timers pendientes que esten asociados con una transacción que finaliza.

3.3.1. **Servicios**

Los mensajes de estos servicios contienen como parámetros de entrada y salida los datos de la estructura `ST_TIMER` definida en `svcstru.h`.

```
typedef union _ST_TIMER
{
```

```

struct
{
    unsigned int id;
    char servicio[32];
    char modo_servicio;
    unsigned int delay; /* Para setar un timer por tiempo */
    char tipo_timer;    /* Repetitivo / Unico */
    unsigned long at;   /* Para setear un timer en una hora determinada */
    unsigned long len;
    char data[1];
} set_timer;
struct
{
    unsigned int id;
} kill_timer;
} ST_STIMER;

```

3.3.1.1. .set_timer

Este servicio es del tipo `GM_MSG_TYPE_CR` y se convoca con `Call()`.

Se utiliza para dar de alta un timer.

Una vez vencido el timer envía el mensaje solicitado con los datos presentes en el requerimiento.

3.3.1.2. .kill_timer

Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para eliminar un timer previamente creado antes de su vencimiento.

Utiliza la misma estructura que `.set_timer` donde solo es necesario informarle el ID.

3.4. gm_config

Este server cumple la función de interface con la matriz de configuración del sistema Gnu-Monitor, su tabla de rutéo.

La lista de funciones o servicios que sigue no se encuentra aún desarrollada en su totalidad.

3.4.1. Servicios

3.4.1.1. .get_server_list

Este servicio es del tipo GM_MSG_TYPE_INT (interactivo) y se convoca con un esquema como el que sigue:

```
Connect (...);
Send (...);
While( Recv(...) >= 0 )
{
    ...
}
Discon();
```

Devuelve en formato XML la lista de servers que se estén ejecutando con sus datos asociados.

3.4.1.2. .get_service_list

Este servicio es del tipo GM_MSG_TYPE_INT (interactivo) y se convoca con un esquema como el que sigue:

```
Connect (...);
Send (...);
While( Recv(...) >= 0 )
{
    ...
}
Discon();
```

Devuelve en formato XML la lista de servicios declarados por los servers levantados junto con el tipo de mensajería de cada uno y el server que los resuelve.

3.5. gm_sbuffer

Este server permite almacenar buffers de memoria para ser requeridos en algún otro momento.

Su principal utilidad es en los mensajes interactivos para mantener el mensaje total hasta que se terminen se contestar todos los submensajes parciales o se cancele la transacción.

Los servicios soportan el modo transaccional por lo que los buffers almacenados que estén relacionados con una transacción se eliminan automáticamente al finalizar esta.

A los buffers creados se les puede asignar un timer para que se borren automáticamente cierto tiempo luego de creados.

3.5.1. Servicios

Los mensajes de estos servicios contienen como parámetros de entrada y salida los datos de la estructura `ST_SBUFFER` definida en `svcstru.h`.

```
typedef union _ST_SBUFFER
{
    struct
    {
        unsigned int id;
        unsigned long len;
        char data[1];
    } new_buffer;
    struct
    {
        unsigned int id;
        unsigned long len;
        char data[1];
    } add_buffer;
    struct
    {
        unsigned int id;
    } del_buffer;
    struct
    {
        unsigned int id;          /* IN  - identificador del buffer a devolver */
        unsigned long offset;     /* IN  - offset del inicio a devolver */
        unsigned long maxlen;     /* IN  - tam max a devolver */
        unsigned long len;        /* OUT - tam devuelto */
        unsigned long totlen;     /* OUT - tam total del buffer almacenado */
        char data[1];
    } get_buffer;
} ST_SBUFFER;
```

3.5.1.1. .new_buffer

Este servicio es del tipo `GM_MSG_TYPE_CR` y se convoca con `Call()`.

Se utiliza para dar de alta un nuevo buffer.

3.5.1.2. .add_buffer

Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para agregar mas datos al final de un buffer previamente creado.

3.5.1.3. .del_buffers

Este servicio es del tipo `GM_MSG_TYPE_NOT` y se convoca con `Notify()`.

Se utiliza para eliminar un buffer previamente creado.

3.5.1.4. .get_buffer

Este servicio es del tipo `GM_MSG_TYPE_CR` y se convoca con `Call()`.

Se utiliza para obtener datos de un buffer por un tamaño determinado y desde un offset dado.

3.6. gm_squeue

Este server se encarga de resolver los servicios de STORE and FORWARD.

3.6.1. Servicios

3.6.1.1.

3.6.1.2.

3.6.1.3.

3.6.1.4.

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