MaxScale

Debug & Diagnostic Support

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Change History

Date	Comment
20th June 2013	Initial Version
22nd July 2013	Updated with new naming MaxScale Addition of description of login process for the debug CLI Updates debug CLI output examples Addition of show users, shutdown maxscale, shutdown service, restart service, set server, clear server, reload users, reload config and add user commands.
23rd July 2013	Rename of show users command to show dbusers and addition of the show users command to show the admin users. Addition of example configuration data.
14th November 2013	Added enable/disable log commands details Added Galera Monitor as an example in show monitors
3rd March 2014	Added show users details for MySQL users
27th May 2014	Document the new debugcli mode switch and command changes in the two modes. Added the new show server command.
29th May 2014	Addition of new list command that gives concise tabular output
4th June 2014	Added new ‘show monitors’ and ‘show servers’ details

Introduction

MaxScale is a complex application and as such is bound to have bugs and support issues that occur from time to time. There are a number of things we need to consider for the development stages and long term supportability of MaxScale

- Flexible logging of MaxScale activity
- Support for connecting a debugger to MaxScale
- A diagnostic interface to MaxScale

The topic of logging has already been discussed in another document in this series of documents about MaxScale and will not be covered further here.

Debugger Support

Beyond the language support for debugging using tools such as gdb, MaxScale will also offer

convenience functions for the debugger to call and a command line argument that is useful to run MaxScale under the debugger.

Command Line Option

Normally when MaxScale starts it will place itself in the background and setup the signal masks so that it is immune to the normal set of signals that will cause the process to exit, SIGINT and SIGQUIT. This behaviour is normally what is required, however if you wish to run MaxScale under the control of a debugger it is useful to suppress this behaviour. A command line option, -d is provided to turn off this behaviour.

```
% gdb maxscale
(gdb) run -d
```

Convenience Functions

A set of convenience functions is provided that may be used within the debugger session to extract information from MaxScale.

Printing Services

A service within MaxScale provides the encapsulation of the port MaxScale listen on, the protocol it uses, the set of servers it may route to and the routing method to use. Two functions exists that allow you to display the details of the services and may be executed from within a debugger session.

The printAllServices() function will print all the defined services within MaxScale and is invoked using the call syntax of the debugger.

```
(gdb) call printAllServices()
Service 0x60da20
      Service:        Debug Service
      Router:              debugcli (0x7ffff5a7c2a0)
      Started:        Thu Jun 20 15:13:32 2013
      Backend databases
      Total connections:   1
      Currently connected: 1
Service 0x60d010
      Service:        Test Service
      Router:              readconnroute (0x7ffff5c7e260)
      Started:        Thu Jun 20 15:13:32 2013
      Backend databases
           127.0.0.1:3308  Protocol: MySQLBackend
           127.0.0.1:3307  Protocol: MySQLBackend
           127.0.0.1:3306  Protocol: MySQLBackend
      Total connections:   1
      Currently connected: 1
```

```
(gdb)
```

It is possible to print an individual service if you know the memory address of the service.

```
(gdb) call printService(0x60da20)
Service 0x60da20
        Service:        Debug Service
        Router:             debugcli (0x7ffff5a7c2a0)
        Started:        Thu Jun 20 15:13:32 2013
        Backend databases
        Total connections:   1
        Currently connected: 1
(gdb)
```

Printing Sessions

Sessions represent the data for a client that is connecting through MaxScale, there will be a session for each client and one for each listener for a specific port/protocol combination. Similarly there are two calls to print all or a particular session.

```
(gdb) call printAllSessions()
Session 0x60fdf0
        Service:   Debug Service (0x60da20)
        Client DCB:     0x60f6c0
        Connected: Thu Jun 20 15:13:32 2013
Session 0x60f620
        Service:   Test Service (0x60d010)
        Client DCB:     0x60ead0
        Connected: Thu Jun 20 15:13:32 2013
(gdb) call printSession(0x60fdf0)
Session 0x60fdf0
        Service:   Debug Service (0x60da20)
        Client DCB:     0x60f6c0
        Connected: Thu Jun 20 15:13:32 2013
(gdb)
```

Printing Servers

Servers are a representation of the backend database to which MaxScale may route SQL statements. Similarly two calls exist to print server details.

```
(gdb) call printAllServers()
Server 0x60d9a0
        Server:             127.0.0.1
        Protocol:       MySQLBackend
        Port:           3308
Server 0x60d920
        Server:             127.0.0.1
        Protocol:       MySQLBackend
```

```
      Port:           3307
Server 0x60d8a0
      Server:              127.0.0.1
      Protocol:       MySQLBackend
      Port:           3306
(gdb) call printServer(0x60d920)
Server 0x60d920
      Server:              127.0.0.1
      Protocol:       MySQLBackend
      Port:           3307
(gdb)
```

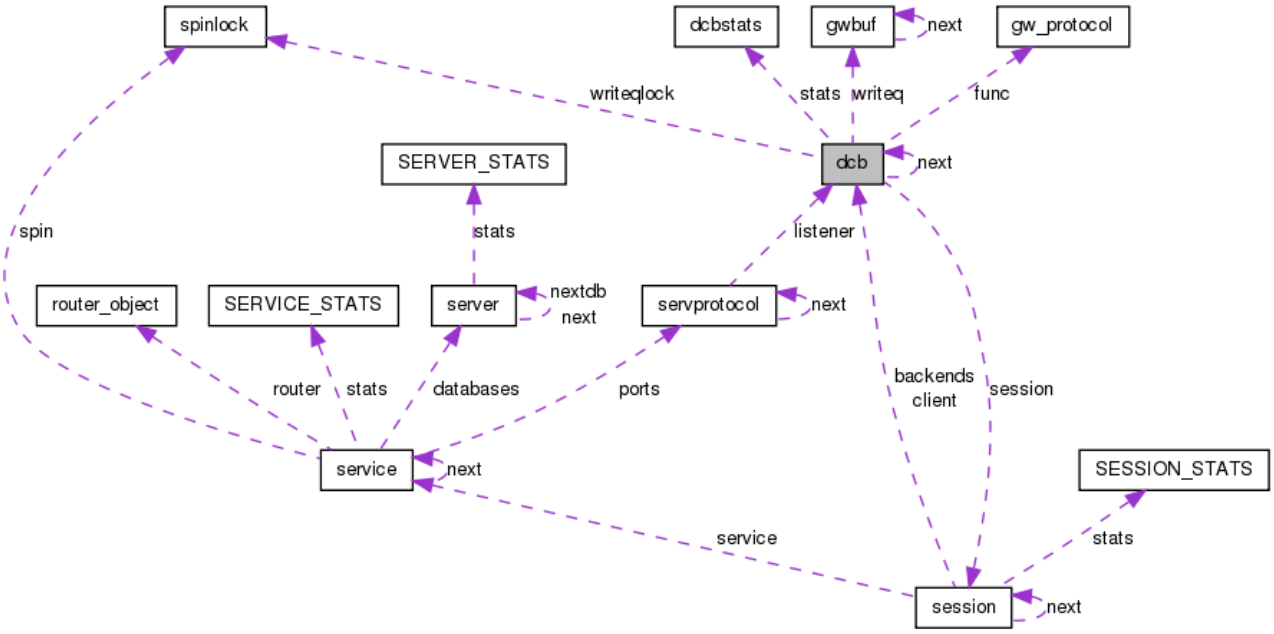
Modules

MaxScale makes significant use of moules, shared objects, that are loaded on demand based on the configuration. A routine exists that will print the currently loaded modules.

```
(gdb) call printModules()
Module Name     | Module Type | Version
--------------------------------------------------
telnetd         | Protocol    | V1.0.0
MySQLClient     | Protocol    | V1.0.0
testroute       | Router      | V1.0.0
debugcli        | Router      | V1.0.0
readconnroute   | Router      | V1.0.0
(gdb)
```

Descriptor Control Blocks

The Descriptor Control Block (DCB) is an important concept within MaxScale since it is this block that is passed to the polling system, when an event occurs it is that structure that is available and from this structure it must be possible to navigate to all other structures that contain state regarding the session and protocol in use.



Similar print routines exist for the DCB

```
(gdb) call printAllDCBs()
DCB: 0x60ead0
	DCB state:		DCB for listening socket
	Queued write data:	0
	Statistics:
		No. of Reads:	0
		No. of Writes:	0
		No. of Buffered Writes:	0
		No. of Accepts:	0
DCB: 0x60f6c0
	DCB state:		DCB for listening socket
	Queued write data:	0
	Statistics:
		No. of Reads:	0
		No. of Writes:	0
		No. of Buffered Writes:	0
		No. of Accepts:	0
(gdb) call printDCB(0x60ead0)
DCB: 0x60ead0
	DCB state:		DCB for listening socket
	Queued write data:	0
	Statistics:
		No. of Reads:	0
		No. of Writes:	0
		No. of Buffered Writes:	0
```

```
            No. of Accepts: 0
(gdb)
```

Diagnostic Interface

It is possible to configure a service to run within MaxScale that will allow a user to telnet to a port on the machine and be connected to MaxScale. This is configured by creating a service that uses the debugcli routing module and the telnetd protocol with an associated listener. The service does not require any backend databases to be configured since the router never forwards any data, it merely accepts commands and executes them, returning data to the user.

The example below shows the configuration that is required to set-up a debug interface that listens for incoming telnet connections on port 4442.

```
[Debug Service]
type=service
router=debugcli

[Debug Listener]
type=listener
service=Debug Service
protocol=telnetd
port=4442
```

The `Debug Service` section sets up a service with no backend database servers, but with a debugcli module as the router. This module will implement the commands and send the data back to the client.

The debugcli accepts router options of either `developer` or `user`, these are used to control the mode of the user interface. If no router options are given then the CLI is in user mode by default.

The `Debug Listener` section setups the protocol and port combination and links that to the service.

Assuming a configuration that includes the debug service, with the listening port set to 4442, to connect from the machine that runs MaxScale you must first install telnet and then simply call telnet to connect.

```
-bash-4.1$ telnet localhost 4442
Trying 127.0.0.1...
Connected to localhost.
Escape character is '^]'.
Welcome the SkySQL MaxScale Debug Interface (V1.1.0).
Type help for a list of available commands.

MaxScale login: admin
```

```
Password:

MaxScale>
```

As delivered MaxScale uses a default login name of admin with the password of skysql for connections to the debug interface. Users may be added to the CLI by use of the `add user` command.

This places you in the debug command line interface of MaxScale, there is a help system that will display the commands available to you

```
MaxScale> help
Available commands:
    add user
    clear server
    disable log
    enable log
    list [listeners|modules|services|servers|sessions]
    reload [config|dbusers]
    remove user
    restart [monitor|service]
    set server
    show
[dcbs|dcb|dbusers|epoll|modules|monitors|server|servers|services|service|session|s
essions|users]
    shutdown [maxscale|monitor|service]

Type help command to see details of each command.
Where commands require names as arguments and these names contain
whitespace either the \ character may be used to escape the whitespace
or the name may be enclosed in double quotes ".

MaxScale>
```

Different command help is shown in user mode and developer mode, in user mode the help for the show command is;

```
MaxScale> help show
Available options to the show command:
    dcbs       Show all descriptor control blocks (network connections)
    dcb        Show a single descriptor control block e.g. show dcb 0x493340
    dbusers    Show statistics and user names for a service's user table.
              Example : show dbusers <service name>
    epoll      Show the poll statistics
    modules    Show all currently loaded modules
    monitors   Show the monitors that are configured
    server     Show details for a named server, e.g. show server dbnode1
    servers    Show all configured servers
```

```
    services   Show all configured services in MaxScale
    service    Show a single service in MaxScale, may be passed a service name
    session    Show a single session in MaxScale, e.g. show session 0x284830
    sessions   Show all active sessions in MaxScale
    users      Show statistics and user names for the debug interface
MaxScale>
```

However in developer mode the help is;

```
MaxScale> help show
Available options to the show command:
    dcbs       Show all descriptor control blocks (network connections)
    dcb        Show a single descriptor control block e.g. show dcb 0x493340
    dbusers    Show statistics and user names for a service's user table
    epoll      Show the poll statistics
    modules    Show all currently loaded modules
    monitors   Show the monitors that are configured
    server     Show details for a server, e.g. show server 0x485390
    servers    Show all configured servers
    services   Show all configured services in MaxScale
    session    Show a single session in MaxScale, e.g. show session 0x284830
    sessions   Show all active sessions in MaxScale
    users      Show statistics and user names for the debug interface
MaxScale>
```

The commands available are very similar to those described above to print things from the debugger, the advantage being that you do not need a debug version or a debugger to use them.

Listing Services

The `list services` command is designed to give a concise tabular view of the currently configured services within MaxScale along with key data that summarises the use beign made of the service.

```
MaxScale> list services
Service Name              | Router Module        | #Users | Total Sessions
--------------------------------------------------------------------------
Test Service              | readconnroute        |      1 |     1
Split Service             | readwritesplit       |      1 |     1
Debug Service             | debugcli             |      2 |     2
MaxScale>
```

This provides a useful mechanism to see what is configured and provide the service names that can be passed to a `show service` command.

Listing Listeners

The `list listeners` command outputs a table that provides the current set of listeners within the MaxScale instance and shows the status of each listener.

```
MaxScale> list listeners
Service Name         | Protocol Module    | Address         | Port  | State
-------------------------------------------------------------------------
Test Service         | MySQLClient        | (null)          |  4006 | Running
Split Service        | MySQLClient        | (null)          |  4007 | Running
Debug Service        | telnetd            | localhost       |  4242 | Running
MaxScale>
```

Listing Servers

The `list servers` command will display a table that contains a row for every server defined in the configuration file. The row contains the server name that can be passed to the `show server` command, the address and port of the server, its current status and the number of connections to that server from MaxScale.

```
MaxScale> list servers
Server             | Address         | Port  | Status             | Connections
---------------------------------------------------------------------------------
server1            | 127.0.0.1       |  3306 | Running            |    0
server2            | 127.0.0.1       |  3307 | Slave, Running     |    0
server3            | 127.0.0.1       |  3308 | Master, Running    |    0
server4            | 127.0.0.1       |  3309 | Slave, Running     |    0
MaxScale>
```

Listing Modules

The `list modules` command displays a table of all the modules loaded within MaxScale.

```
MaxScale> list modules
Module Name     | Module Type | Version
--------------------------------------------------
telnetd         | Protocol    | V1.0.1
MySQLClient     | Protocol    | V1.0.0
mysqlmon        | Monitor     | V1.1.0
readconnroute   | Router      | V1.0.2
readwritesplit  | Router      | V1.0.2
debugcli        | Router      | V1.1.1
MaxScale>
```

Showing Services

The `show services` command will show all the services configured currently

```
MaxScale> show services
Service 0xf44c10
        Service:            Test Service
        Router:                     readconnroute (0x7f7fd8afba40)
        Number of router sessions:       0
        Current no. of router sessions:  0
        Number of queries forwarded:     0
```

```
        Started:            Mon Jul 22 11:24:09 2013
        Backend databases
                127.0.0.1:3309  Protocol: MySQLBackend
                127.0.0.1:3308  Protocol: MySQLBackend
                127.0.0.1:3307  Protocol: MySQLBackend
                127.0.0.1:3306  Protocol: MySQLBackend
        Users data:         0xf454b0
        Total connections:  1
        Currently connected:1
Service 0xf43910
        Service:            Split Service
        Router:                     readwritesplit (0x7f7fd8f05460)
        Number of router sessions:              0
        Current no. of router sessions:         0
        Number of queries forwarded:            0
        Number of queries forwarded to master:  0
        Number of queries forwarded to slave:   0
        Number of queries forwarded to all:     0
        Started:            Mon Jul 22 11:24:09 2013
        Backend databases
                127.0.0.1:3308  Protocol: MySQLBackend
                127.0.0.1:3307  Protocol: MySQLBackend
                127.0.0.1:3306  Protocol: MySQLBackend
        Users data:         0xf449b0
        Total connections:  1
        Currently connected:1
Service 0xea0190
        Service:            Debug Service
        Router:                     debugcli (0x7f7fd910d620)
        Started:            Mon Jul 22 11:24:09 2013
        Backend databases
        Users data:         0xea2d80
        Total connections:  2
        Currently connected:2
MaxScale>
```

Showing Sessions

There are two options to `show sessions`, either an individual session or all sessions

```
MaxScale> show sessions
Session 0x6f8f20
        State:              Session Ready
        Service:            Debug Service (0x649190)
        Client DCB:         0x6f8e20
        Client Address:             0.0.0.0
        Connected:          Mon Jul 22 11:31:56 2013
Session 0x6f83b0
        State:              Session Allocated
```

```
       Service:            Split Service (0x6ec910)
       Client DCB:         0x64b430
       Client Address:            127.0.0.1
       Connected:          Mon Jul 22 11:31:28 2013
Session 0x6efba0
       State:              Listener Session
       Service:            Debug Service (0x649190)
       Client DCB:         0x64b180
       Connected:          Mon Jul 22 11:31:21 2013
Session 0x64b530
       State:              Listener Session
       Service:            Split Service (0x6ec910)
       Client DCB:         0x6ef8e0
       Connected:          Mon Jul 22 11:31:21 2013
Session 0x618840
       State:              Listener Session
       Service:            Test Service (0x6edc10)
       Client DCB:         0x6ef320
       Connected:          Mon Jul 22 11:31:21 2013
MaxScale> show session 0x6f83b0
Session 0x6f83b0
       State:              Session Allocated
       Service:            Split Service (0x6ec910)
       Client DCB:         0x64b430
       Client Address:            127.0.0.1
       Connected:          Mon Jul 22 11:31:28 2013
MaxScale>
```

Show Servers

The configured backend databases can be displayed using the `show servers` command.

```
MaxScale> show servers
Server 0x6ec840 (server1)
       Server:                    127.0.0.1
       Status:                    Running
       Protocol:           MySQLBackend
       Port:               3306
       Number of connections:     0
       Current no. of connections:0
Server 0x6ec770 (server2)
       Server:                    127.0.0.1
       Status:                    Master, Running
       Protocol:           MySQLBackend
       Port:               3307
       Number of connections:     1
       Current no. of connections:1
Server 0x6ec6a0 (server3)
       Server:                    127.0.0.1
       Status:                    Slave, Running
       Protocol:           MySQLBackend
```

```
        Port:               3308
        Number of connections:     1
        Current no. of connections:1
Server 0x6ec5d0 (server4)
        Server:                    127.0.0.1
        Status:                    Down
        Protocol:           MySQLBackend
        Port:               3309
        Number of connections:     0
        Current no. of connections:0
MaxScale>
```

Show Server

Details of an individual server can be displayed by using the show server command. In user mode the show server command is passed the name of the server to display, these names are the section names used in the configuration file.

```
MaxScale> show server server4
Server 0x6ec5d0 (server4)
        Server:                    127.0.0.1
        Status:                    Down
        Protocol:           MySQLBackend
        Port:               3309
        Number of connections:     0
        Current no. of connections:0
MaxScale>
```

In developer mode the show server command is passed the address of a server structure.

```
MaxScale> show server 0x6ec5d0
Server 0x6ec5d0 (server4)
        Server:                    127.0.0.1
        Status:                    Down
        Protocol:           MySQLBackend
        Port:               3309
        Number of connections:     0
        Current no. of connections:0
MaxScale>
```

Show DCBS

There are two forms of the show command that will give you DCB information, the first will display information for all DCBs within the system.

```
MaxScale> show dcbs
DCB: 0x6ef320
        DCB state:          DCB for listening socket
        Service:            Test Service
        Queued write data:  0
        Statistics:
```

```
              No. of Reads:           0
              No. of Writes:          0
              No. of Buffered Writes: 0
              No. of Accepts:         0
DCB: 0x6ef8e0
       DCB state:          DCB for listening socket
       Service:            Split Service
       Queued write data:  0
       Statistics:
              No. of Reads:           0
              No. of Writes:          0
              No. of Buffered Writes: 0
              No. of Accepts:         1
DCB: 0x64b180
       DCB state:          DCB for listening socket
       Service:            Debug Service
       Queued write data:  0
       Statistics:
              No. of Reads:           0
              No. of Writes:          0
              No. of Buffered Writes: 0
              No. of Accepts:         1
DCB: 0x64b430
       DCB state:          DCB processing event
       Service:            Split Service
       Connected to:       127.0.0.1
       Queued write data:  0
       Statistics:
              No. of Reads:           2
              No. of Writes:          3
              No. of Buffered Writes: 0
              No. of Accepts:         0
DCB: 0x6f8400
       DCB state:          DCB in the polling loop
       Service:            Split Service
       Queued write data:  0
       Statistics:
              No. of Reads:           3
              No. of Writes:          1
              No. of Buffered Writes: 0
              No. of Accepts:         0
DCB: 0x6f8b40
       DCB state:          DCB in the polling loop
       Service:            Split Service
       Queued write data:  0
       Statistics:
              No. of Reads:           2
              No. of Writes:          0
              No. of Buffered Writes: 0
              No. of Accepts:         0
```

```
DCB: 0x6f8e20
       DCB state:          DCB processing event
       Service:            Debug Service
       Connected to:       0.0.0.0
       Queued write data:  0
       Statistics:
             No. of Reads:           8
             No. of Writes:          133
             No. of Buffered Writes: 0
             No. of Accepts:         0
MaxScale>
```

An individual DCB can be displayed by passing the DCB address to the `show dcb` command

```
MaxScale> show dcb 0x64b430
DCB: 0x64b430
       DCB state:          DCB processing event
       Connected to:       127.0.0.1
       Owning Session:     7308208
       Queued write data:  0
       Statistics:
             No. of Reads:       2
             No. of Writes:      3
             No. of Buffered Writes:    0
             No. of Accepts: 0
MaxScale>
```

Show Modules

The `show modules` command will display the list of the currently loaded modules

```
MaxScale> show modules
Module Name     | Module Type | Version
--------------------------------------------------
MySQLBackend    | Protocol    | V2.0.0
telnetd         | Protocol    | V1.0.1
MySQLClient     | Protocol    | V1.0.0
mysqlmon        | Monitor     | V1.0.0
readconnroute   | Router      | V1.0.2
readwritesplit  | Router      | V1.0.2
debugcli        | Router      | V1.1.0
MaxScale>
```

Show Polling Statistics

Display statistics related to the main polling loop. The epoll cycles is the count of the number of times epoll has returned with one or more event. The other counters are for each individual events that has been detected.

```
MaxScale> show epoll
```

```
Number of epoll cycles:    7928
Number of read events:     2000920
Number of write events:    2000927
Number of error events:    0
Number of hangup events:   0
Number of accept events:   4
MaxScale>
```

Show Dbusers

The `show dbuser` command allows data regarding the table that holds the database users for a service to be displayed. It does not give the actual user data, but rather details of the hashtable distribution.

The `show dbuser` command takes different arguments in the two modes of MaxScale, in user mode it may be passed the name of a service rather than an address, whilst in developer mode it needs the address of a user structure that has been extracted from a service.

In developer mode the `show users` commands must be passed the address of the user table, this can be extracted from the output of a `show services` command.

```
MaxScale> show services
Service 0x6ec910
       Service:            Split Service
       Router:                    readwritesplit (0x7ffff1698460)
       Number of router sessions:             1
       Current no. of router sessions:        0
       Number of queries forwarded:           2
       Number of queries forwarded to master:  0
       Number of queries forwarded to slave:   1
       Number of queries forwarded to all:     1
       Started:            Mon Jul 22 11:31:21 2013
       Backend databases
              127.0.0.1:3308  Protocol: MySQLBackend
              127.0.0.1:3307  Protocol: MySQLBackend
              127.0.0.1:3306  Protocol: MySQLBackend
       Users data:         0x6ed9b0
       Total connections:  2
       Currently connected:1
…
```

The following example shows the MySQL users.

Users are loaded with the host (IPv4 data) as they are created in the backend.

```
MaxScale> show dbusers 0x6ed9b0
Users table data
```

```
Hashtable: 0x19243a0, size 52
       No. of entries:     16
       Average chain length:      0.3
       Longest chain length:      4
User names: one@%, new@192.168.56.1, new@127.0.0.1, repluser@%, seven@127.0.0.1,
four@%
MaxScale>
```

In user mode the command is simply passed the name of the service

```
MaxScale> show dbusers "Split Service"
Users table data
Hashtable: 0x19243a0, size 52
       No. of entries:     16
       Average chain length:      0.3
       Longest chain length:      4
User names: one@%, new@192.168.56.1, new@127.0.0.1, repluser@%, seven@127.0.0.1,
four@%
MaxScale>
```

Please note the use of quotes in the name in order to escape the white space character.

Show Users

The `show users` command lists the users defined for the administration interface. Note that if there are no users defined, and the default admin user is in use, then no users will be displayed.

```
MaxScale> show users
Administration interface users:
Users table data
Hashtable: 0x25ef5e0, size 52
       No. of entries:     2
       Average chain length:      0.0
       Longest chain length:      1
User names: admin, mark
MaxScale>
```

Show Monitors

The `show monitors` show the status of the database monitors. The address of the monitor can be used for the `shutdown monitor` and `restart monitor` commands.

```
MaxScale> show monitors
Monitor: 0x80a510
       Name:         MySQL Monitor
       Monitor running
```

```
       Sampling interval:  10000 milliseconds
       Monitored servers:  127.0.0.1:3306, 127.0.0.1:3307, 127.0.0.1:3308,
127.0.0.1:3309
Monitor: 0x73d3d0
       Name:        Galera Monitor
       Monitor running
       Sampling interval:  7000 milliseconds
       Monitored servers:  127.0.0.1:3310, 127.0.0.1:3311, 127.0.0.1:3312
MaxScale>
```

Shutdown maxscale

The CLI can be used to `shutdown` the MaxScale server by use of the `shutdown` command, it may be called with the argument either `maxscale` or `gateway`.

```
MaxScale> shutdown maxscale
```

Shutdown monitor

The `shutdown monitor` command stops the thread that is used to run the monitor and will stop any update of the server status flags. This is useful prior to manual setting of the states of the server using the `set server` and `clear server` commands.

```
MaxScale> show monitors
Monitor: 0x80a510
       Name:        MySQL Monitor
       Monitor running
       Sampling interval:  10000 milliseconds
       Monitored servers:  127.0.0.1:3306, 127.0.0.1:3307, 127.0.0.1:3308,
127.0.0.1:3309
MaxScale> shutdown monitor 0x80a510
MaxScale> show monitors
Monitor: 0x80a510
       Name:        MySQL Monitor
       Monitor stopped
       Sampling interval:  10000 milliseconds
       Monitored servers:  127.0.0.1:3306, 127.0.0.1:3307, 127.0.0.1:3308,
127.0.0.1:3309
MaxScale>
```

It may take some time before a monitor actually stops following the issuing of a `shutdown monitor` command. Stopped monitors can be restarted by issuing a `restart monitor` command.

Shutdown service

The `shutdown service` command can be used to stop the listener for a particular service. This will prevent any new clients from using the service but will not terminate any clients already connected to the service.

The `shutdown service` command needs the address of a service to be passed as an argument, this can be obtained by running `show services`.

```
MaxScale> show services
Service 0x6edc10
       Service:            Test Service
       Router:                    readconnroute (0x7ffff128ea40)
       Number of router sessions:       257
       Current no. of router sessions:  0
       Number of queries forwarded:     1000193
       Started:            Mon Jul 22 11:31:21 2013
       Backend databases
              127.0.0.1:3309  Protocol: MySQLBackend
              127.0.0.1:3308  Protocol: MySQLBackend
              127.0.0.1:3307  Protocol: MySQLBackend
              127.0.0.1:3306  Protocol: MySQLBackend
       Users data:         0x6ee4b0
       Total connections:  258
       Currently connected:1
Service 0x6ec910
       Service:            Split Service
       Router:                    readwritesplit (0x7ffff1698460)
       Number of router sessions:             1
       Current no. of router sessions:        0
       Number of queries forwarded:           2
       Number of queries forwarded to master:  0
       Number of queries forwarded to slave:   1
       Number of queries forwarded to all:     1
       Started:            Mon Jul 22 11:31:21 2013
       Backend databases
              127.0.0.1:3308  Protocol: MySQLBackend
              127.0.0.1:3307  Protocol: MySQLBackend
              127.0.0.1:3306  Protocol: MySQLBackend
       Users data:         0x6ed9b0
       Total connections:  2
       Currently connected:1
Service 0x649190
       Service:            Debug Service
       Router:                    debugcli (0x7ffff18a0620)
       Started:            Mon Jul 22 11:31:21 2013
       Backend databases
       Users data:         0x64bd80
```

```
        Total connections:  2
        Currently connected:2
MaxScale> shutdown service 0x6edc10
```

In user mode the `shutdown service` command may be passed the name of the service as defined in configuration file.

```
MaxScale> shutdown service Split\ Service
```

Restart service

The `restart service` command can be used to restart a previously stopped listener for a service. In developer mode the address of the service must be passed.

```
MaxScale> restart service 0x6edc10
MaxScale>
```

In user mode the name of the service may be passed.

```
MaxScale> restart service Test\ Service
MaxScale>
```

As with `shutdown service` the address of the service should be passed as an argument.

Restart Monitor

The restart monitor command will restart a previously stopped monitor.

```
MaxScale> show monitors
Monitor: 0x80a510
        Name:         MySQL Monitor
        Monitor stopped
        Monitored servers:  127.0.0.1:3306, 127.0.0.1:3307, 127.0.0.1:3308,
127.0.0.1:3309
MaxScale> restart monitor 0x80a510
MaxScale>
```

Set server

The `set server` command can be used to set the status flags of a server directly from the user interface. The command should be passed a server address that has been obtained from the output of a `show servers` command.

```
MaxScale> show servers
```

```
Server 0x6ec840 (server1)
       Server:                  127.0.0.1
       Status:             Running
       Protocol:                MySQLBackend
       Port:                    3306
       Server Version:          10.0.11-MariaDB-log
       Node Id:                 29
       Number of connections:   0
       Current n. of conns:0
Server 0x6ec770 (server2)
       Server:                  127.0.0.1
       Status:                  Master, Running
       Protocol:                MySQLBackend
       Port:                    3307
       Server Version:          5.5.35-MariaDB-log
       Node Id:                 1
       Number of connections:   1
       Current n. of conns:0
Server 0x6ec6a0 (server3)
       Server:                  127.0.0.1
       Status:                  Slave, Running
       Protocol:                MySQLBackend
       Port:                    3308
       Server Version:          5.5.35-MariaDB-log
       Node Id:                 2
       Number of connections:   258
       Current n. of conns:0
Server 0x6ec5d0 (server4)
       Server:                  127.0.0.1
       Status:                  Down
       Protocol:                MySQLBackend
       Port:                    3309
       Node Id:                 -1
       Number of connections:   0
       Current n. of conns:0
MaxScale> set server 0x6ec840 slave
```

Valid options that are recognised by the `set server` command are `running`, `master` and `slave`. Please note that if the monitor is running it will reset the flags to match reality, this interface is really for use when the monitor is disabled.

In user mode there is no need to find the address of the server structure, the name of the server from the section header in the configuration file make be given.

```
MaxScale> set server server1 slave
```

Version string is available in the output only if the node is running.
Node_id possible values:

- the value of server-id from MySQL or MariaDB servers in Master/Slave replication setup.
- the value of 'wsrep_local_index' for Galera cluster nodes
- the -1 value for a failure getting one of these informations

Clear server

The `clear server` command is the complement to the `set server` command, it allows status bits related to a server to be cleared.

```
MaxScale> clear server 0x6ec840 slave
```

Likewise in user mode the server name may be given.

```
MaxScale> clear server server1 slave
```

Reload users

The `reload users` command is used to force a service to go back and reload the table of database users from the backend database. This is the data used in the transparent authentication mechanism in the MySQL protocol. The command should be passed the address of the service as shown in the output of the `show services` command.

```
MaxScale> show services
Service 0x6edc10
       Service:            Test Service
       Router:                    readconnroute (0x7ffff128ea40)
       Number of router sessions:       257
       Current no. of router sessions:  0
       Number of queries forwarded:     1000193
       Started:            Mon Jul 22 11:31:21 2013
       Backend databases
              127.0.0.1:3309  Protocol: MySQLBackend
              127.0.0.1:3308  Protocol: MySQLBackend
              127.0.0.1:3307  Protocol: MySQLBackend
              127.0.0.1:3306  Protocol: MySQLBackend
       Users data:         0x6ee4b0
       Total connections:  258
       Currently connected:1
Service 0x6ec910
       Service:            Split Service
       Router:                    readwritesplit (0x7ffff1698460)
```

```
        Number of router sessions:              1
        Current no. of router sessions:         0
        Number of queries forwarded:            2
        Number of queries forwarded to master:  0
        Number of queries forwarded to slave:   1
        Number of queries forwarded to all:     1
        Started:            Mon Jul 22 11:31:21 2013
        Backend databases
              127.0.0.1:3308  Protocol: MySQLBackend
              127.0.0.1:3307  Protocol: MySQLBackend
              127.0.0.1:3306  Protocol: MySQLBackend
        Users data:         0x6ed9b0
        Total connections:  2
        Currently connected:1
Service 0x649190
        Service:            Debug Service
        Router:                   debugcli (0x7ffff18a0620)
        Started:            Mon Jul 22 11:31:21 2013
        Backend databases
        Users data:         0x64bd80
        Total connections:  2
        Currently connected:2
MaxScale> reload users 0x6edc10
Loaded 34 users.
MaxScale>
```

If user mode is in use then the service name may be given.

```
MaxScale> reload users "Test Service"
Loaded 34 users.
MaxScale>
```

Reload config

The `reload config` command can be used to force MaxScale to re-read the MaxScale.cnf and update itself to the latest configuration defined in that configuration file. It is also possible to force the reading of the configuration file by sending a HangUp signal (SIGHUP) to the maxscale process.

```
MaxScale> reload config
Reloading configuration from file.
MaxScale>
```

Note, not all configuration elements can be changed dynamically currently. This mechanism can be used to add new services, servers to services, listeners to services and to update passwords. It can not be used to remove services, servers or listeners currently.

Add user

The `add user` command is used to add new users to the debug CLI of MaxScale. The default behaviour of the CLI for MaxScale is to have a login name of admin and a fixed password of skysql. Adding new users will disable this default behaviour and limit the login access to the users that are added.

```
MaxScale> add user admin july2013
User admin has been successfully added.
MaxScale> add user mark hambleden
User mark has been successfully added.
MaxScale>
```

User names must be unique within the debug CLI, this excludes the admin default user, which may be redefined.

```
MaxScale> add user mark 22july
User admin already exists.
MaxScale>
```

If you should forget or lose the the account details you may simply remove the passwd file in $MAXSCALE_HOME/etc and the system will revert to the default behaviour with admin/skysql as the account.

Enable/disable log

The `enable/disable log` command is used to enable/disable the log facility of MaxScale. The default behaviour for MaxScale is to have all logs enabled in DEBUG version, and only error log in production release.

Examples:

```
MaxScale> help enable log
Available options to the enable command:
    log        Enable Log options for MaxScale, options trace | error | message
E.g. enable log message.

MaxScale> help disable log
Available options to the disable command:
    log        Disable Log for MaxScale, Options: debug | trace | error | message
E.g. disable log debug

MaxScale> disable log trace
```

```
MaxScale>
```

No output for these commands in the debug interface, but in the affected logs there is a message:

2013 11/14 16:08:33 --- Logging is disabled --