Installation guide for the Performance Monitor for MySQL

Important: If you want to install the **MySQL Performance Monitor as a Service (MaaS)** this is the wrong document! Please refer to the mpm MaaS Installation Guide (mpm_maas_installation_guide.pdf).

Prerequisites:

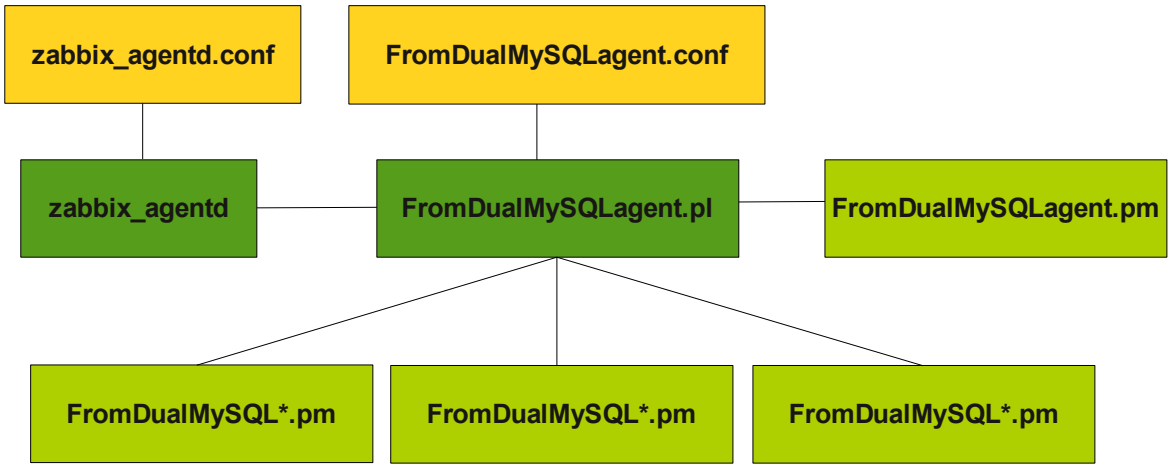
For using the Performance Monitor for MySQL you have to meet the following prerequisites:

- Have a Zabbix server and the Zabbix application (v1.8 or newer) installed and properly running. The Zabbix sever is only available for Linux/Windows systems.
- Have a Zabbix agent installed and running (v1.8 or newer).
  Caution: there is a bug in old glibc which you could hit with the 64-bit pre-compiled binaries.
  Important: The Performance Monitor for MySQL was only tested on Linux. It may work on other Unixoides but possibly will NOT work with Windows yet.

Overview

The Performance Monitor for MySQL will be hooked into the Zabbix agent (zabbix_agentd.conf).
The Performance Monitor for MySQL consists of:

- the Monitor script itself (FromDualMySQLagent.pl) which controls the modules and its own module (FromDualMySQLagent.pm),
- a template for the Performance Monitor configuration (FromDualMySQLagent.conf.template) and
- several different modules for monitoring MySQL (FromDualMySQL*.pm)



Modules:
The Performance Monitor agent is split into several different “modules”. Each for its own specific purpose:

For every “module” there is a:

- Zabbix template (Template_FromDual.MySQL.*.xml)
- Performance Monitor agent Perl module (FromDualMySQL*.pm)

Available “modules” are:

- aria — Module to monitor Aria Storage Engine status variables.
- drbd — Module to monitor DRBD device status information.
- innodb — Module to monitor InnoDB Storage Engine status variables.
- master — Module to monitor a Replication Master in a Master/Slave set-up.
- mpm * — Module to monitor the mpm agent itself. This module is mandatory because it triggers the send process.
- myisam — Module to monitor MyISAM Storage Engine status variables.
- mysql — Module to monitor general MySQL status variables.
- ndb — Module to monitor a MySQL Cluster set-up.
- pbxt — Module to monitor PBXT Storage Engine status variables.
- process — Module to monitor all kinds of Linux processes (mysqld, ndbd, etc.)
- server — Module to monitor a Linux server (additional items in addition to the original one).
- slave — Module to monitor a Replication Slave in a Master/Slave set-up.
- xtradb — Module to monitor XtraDB Storage Engine status variables.

* required modules

Installation of the Zabbix templates

Step 1:
Choose the modules you need. The module mpm is mandatory. All other modules are optional but you have to load them if you want to monitor some specific storage engines or features.

A typical good choice of modules is: mysql, innodb, myisam and process for normal database set-ups. If you run MySQL Cluster you should choose the modules: mysql, process and ndb.
If you go with the MariaDB database you should install the modules: mysql, aria, pbxt and xtradb.
And if you have a master/slave set-up you should add in addition to the above recommendations the master and slave modules.
CAUTION: The modules innodb and xtradb cannot be used concurrently for the same host (= database)!

Step 2:
Load the templates (xml) into the Zabbix monitor:

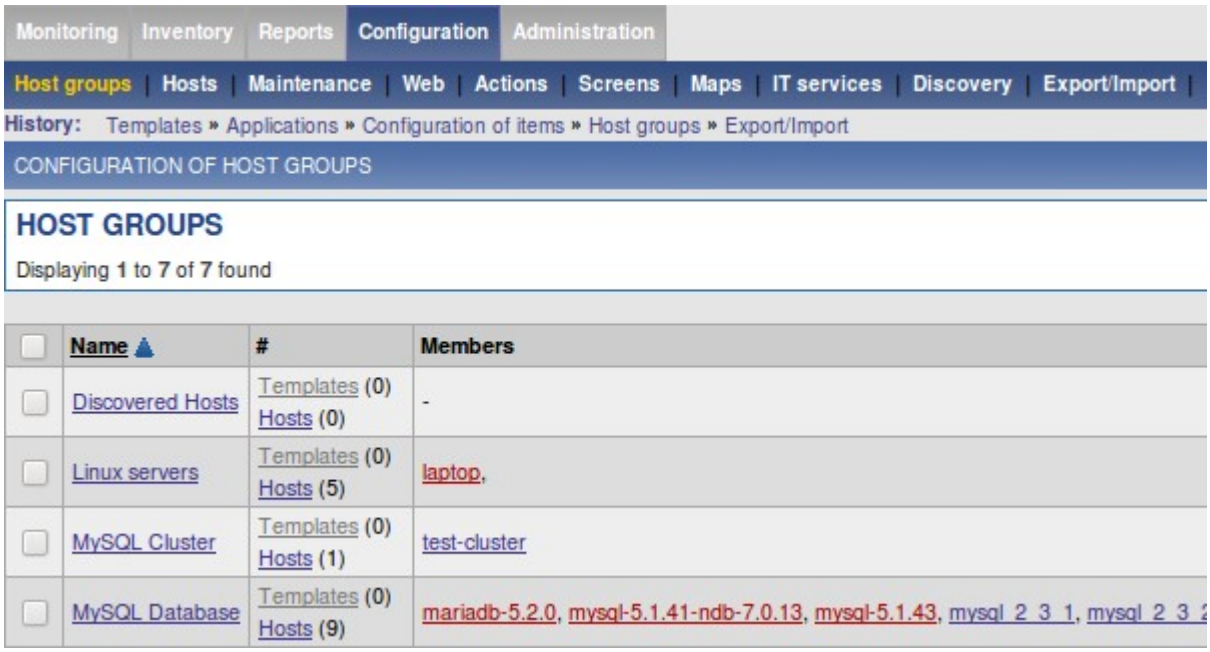
Configuration → Templates → Import Template → Select the module → Import

There should not be any conflict with other rules because a different name space was chosen for the FromDual modules.

Creating groups

We found, that it is a good idea to create a host groups for your MySQL databases and one for your MySQL cluster to separate things. But you are free to have even a more granular separation or to have just one host-group.
We miss-use this host groups for separating our databases and our cluster. So the name could be a bit miss-leading how we used it for our purposes. We do not monitor hosts but databases/instances.

Configuration → Host Groups → Create Group → then enter a group name for example as follows:

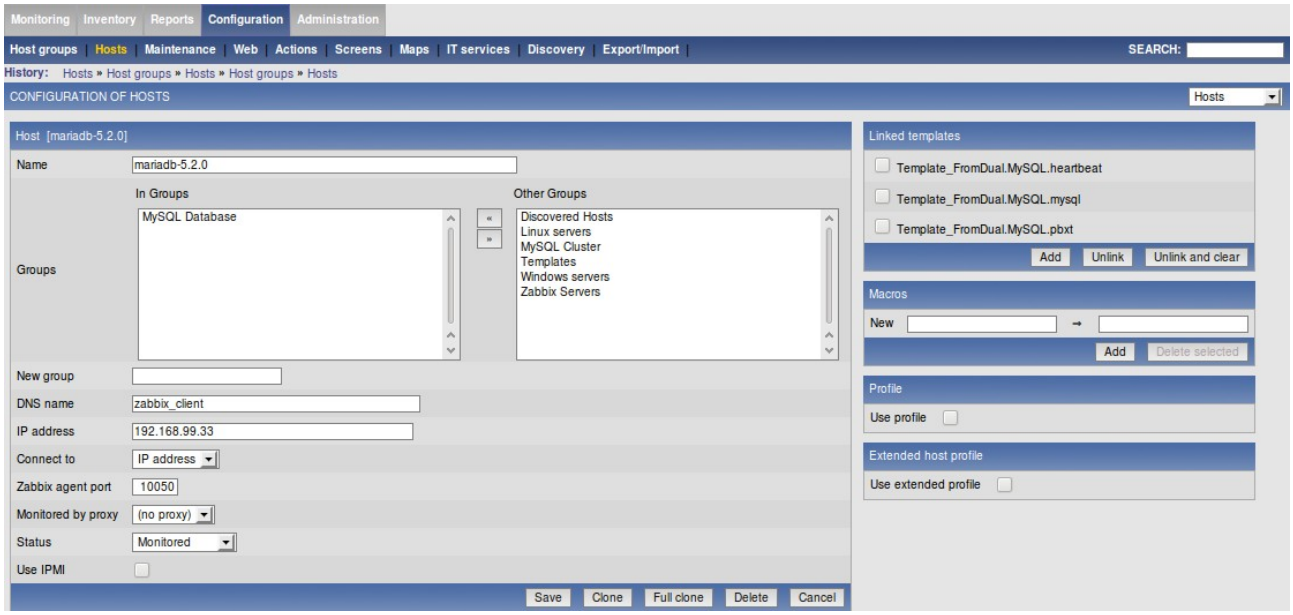


Creating a host

For every database or cluster we want to monitor we need a host (host is miss-leading again because we need it for our databases/instances).

Configuration → Hosts → Create Host

Then enter a UNIQUE Name for this host (= database). Be very careful with choosing the Name (in other places also called Hostname). The Name is the identifier for authenticating the agent to the Zabbix server and is the marker where the data are stored. If the names do not match, the data cannot be delivered. Add this host to the right group, add the IP address and Link at least the template Template_FromDual.MySQL.mpm to it (and possibly some others you have chosen above). Then save the changes.



Hook the Performance Monitor for MySQL into the Zabbix agent

- Copy the Performance Monitor for MySQL Agent (FromDualMySQLagent.pl, FromDualMySQLagent.pm) and all the needed modules (FromDualMySQL*.pm) to /usr/local/mysql_performance_monitor or untar the package there.
- Copy and rename the Performance Monitor for MyASL Agent configuration file template.

```
cd /usr/local
tar xf /download/mysql_performance_monitor-latest.tar.gz
ln -s mysql_performance_monitor-<release> \ mysql_performance_monitor
cd mysql_performance_monitor/etc
cp FromDualMySQLagent.conf.template FromDualMySQLagent.conf
mkdir /var/log/zabbix
chown zabbix:zabbix /var/log/zabbix
touch /var/log/zabbix/FromDualMySQLagent.log
```

- Hook the Performance Monitor for MySQL Agent into the Zabbix Agent by adding the following line at the end of the Zabbix Agent configuration file:

```
# /etc/zabbix/zabbix_agentd.conf

UserParameter=FromDual.MySQL.check,/usr/local/mysql_performance_monitor/FromDualMySQLagent.pl \
/usr/local/mysql_performance_monitor/etc/FromDualMySQLagent.conf
```

- If the default location is NOT /usr/local adjust the “use lib” line in FromDualMySQLagent.pl accordingly.
- Then configure the Performance Monitor for MySQL Agent:

Configuration of the Performance Monitor for MySQL Agent

A typical configuration file for the Performance Monitor for MySQL Agent looks as follows:

```
[default]
Type         = mysqld
LogFile      = /var/log/zabbix/FromDualMySQLagent.log
Username     = root
Password     =
MysqlHost    = 127.0.0.1
MysqlPort    = 3306
ZabbixServer = 127.0.0.1
FetchMethod  = DBI
Modules      = process mysql myisam


[some host name]
Type         = mysqld
Modules      = mpm

[some database name]
Type         = mysqld
Modules      = process mysql myisam innodb

[some other database name]
Type         = mysqld
MysqlPort    = 3307
Modules      = process mysql myisam innodb
```

There is typically a default section where you can specify all the defaults which are valid for this server.
For every database (instance) you want to monitor you have to add an extra section. This allows you to monitor several MySQL databases running on the same server.
The section name MUST match the Hostname which you have entered in the Zabbix server!!!

Database user other than `root`

If you plan to use a monitoring user other than `root` (which is not a bad idea) grant this user the `PROCESS` and the `REPLICATION CLIENT` privilege. Otherwise it cannot access the `SHOW ENGINE INNODB STATUS` and `SHOW SLAVE STATUTS` command.

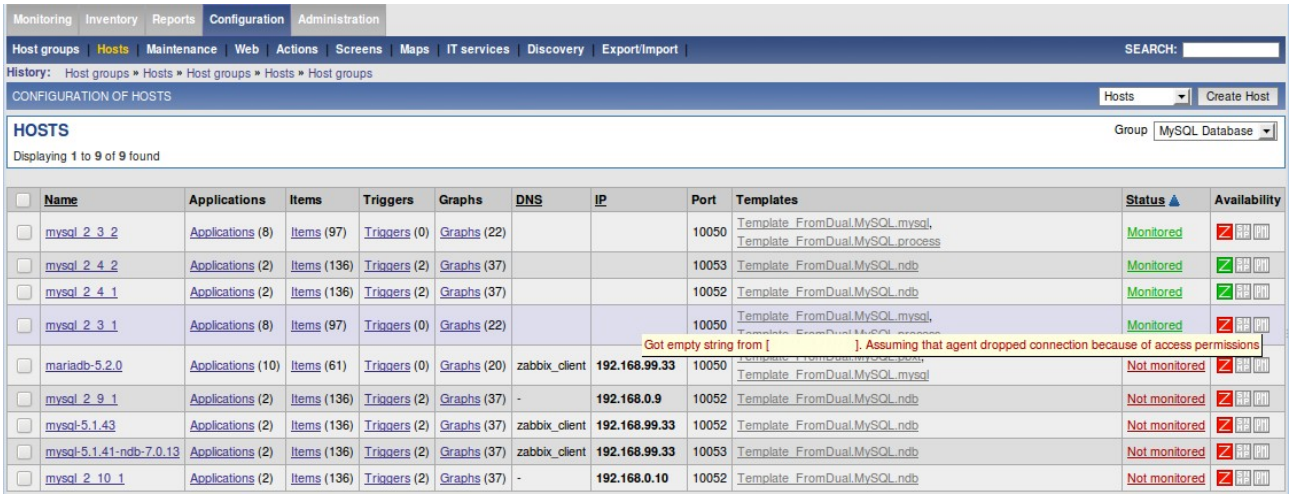
```
CREATE USER 'mpm'@'127.0.0.1' IDENTIFIED BY 'mpmsecret';
GRANT PROCESS ON *.* TO 'mpm'@'127.0.0.1';
GRANT REPLICATION CLIENT ON *.* TO 'mpm'@'127.0.0.1';
```

When you have adapted the configuration file to your needs restart the Zabbix agent as follows:

```
/etc/init.d/zabbix_agentd restart
```

Enable the host (database) for monitoring

When you have done all the steps above you can enable the monitored database by clicking on its “Not monitored” status. In the availability you should see if a certain “host” is monitored and if not why...



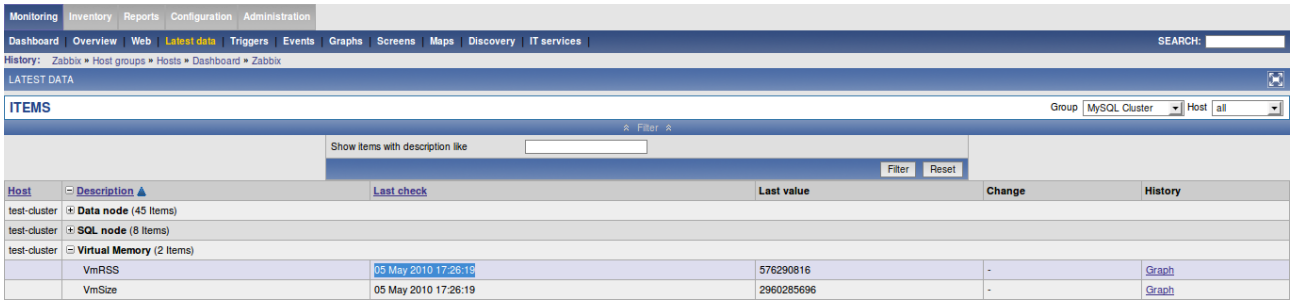
Name	Applications	Items	Triggers	Graphs	DNS	IP	Port	Templates	Status	Availability
mysql_2_3_2	Applications (8)	Items (97)	Triggers (0)	Graphs (22)			10050	Template_FromDual.MySQL.mysql, Template_FromDual.MySQL.process	Monitored	
mysql_2_4_2	Applications (2)	Items (136)	Triggers (2)	Graphs (37)			10053	Template_FromDual.MySQL.ndb	Monitored	
mysql_2_4_1	Applications (2)	Items (136)	Triggers (2)	Graphs (37)			10052	Template_FromDual.MySQL.ndb	Monitored	
mysql_2_3_1	Applications (8)	Items (97)	Triggers (0)	Graphs (22)			10050	Template_FromDual.MySQL.mysql,	Monitored	
mariadb-5.2.0	Applications (10)	Items (61)	Triggers (0)	Graphs (20)	zabbix_client	192.168.99.33	10050	Template_FromDual.MySQL.mysql	Not monitored	
mysql_2_9_1	Applications (2)	Items (136)	Triggers (2)	Graphs (37)	-	192.168.0.9	10052	Template_FromDual.MySQL.ndb	Not monitored	
mysql-5.1.43	Applications (2)	Items (136)	Triggers (2)	Graphs (37)	zabbix_client	192.168.99.33	10052	Template_FromDual.MySQL.ndb	Not monitored	
mysql-5.1.41-ndb-7.0.13	Applications (2)	Items (136)	Triggers (2)	Graphs (37)	zabbix_client	192.168.99.33	10053	Template_FromDual.MySQL.ndb	Not monitored	
mysql_2_10_1	Applications (2)	Items (136)	Triggers (2)	Graphs (37)	-	192.168.0.10	10052	Template_FromDual.MySQL.ndb	Not monitored	

The most common reasons why an agent is not monitored are:

- Hostname on Zabbix Server and Section in Performance Monitor for MySQL Agent configuration file do NOT match.
- Agent is down or not reachable (firewall, etc.).

To see if data is sent and what the actual values are you can go to:

Monitoring → Latest data → then filter by group and host:



Prerequisites for specific modules

For the ndb module

When you want to use the ndb module make sure that you have started your MySQL Cluster with the following parameters:

```
# config.ini

[NDBD DEFAULT]
MemReportFrequency            =  60
LogLevelStatistic             =   8
```

And run the following command in the management client:

```
ndb_mgm> ALL CLUSTERLOG STATISTICS=8;
```

The module needs the information written to the cluster log for sending data to the Zabbix server. With MySQL Cluster >= 7.1 this is not necessary any more!

For the drbd module

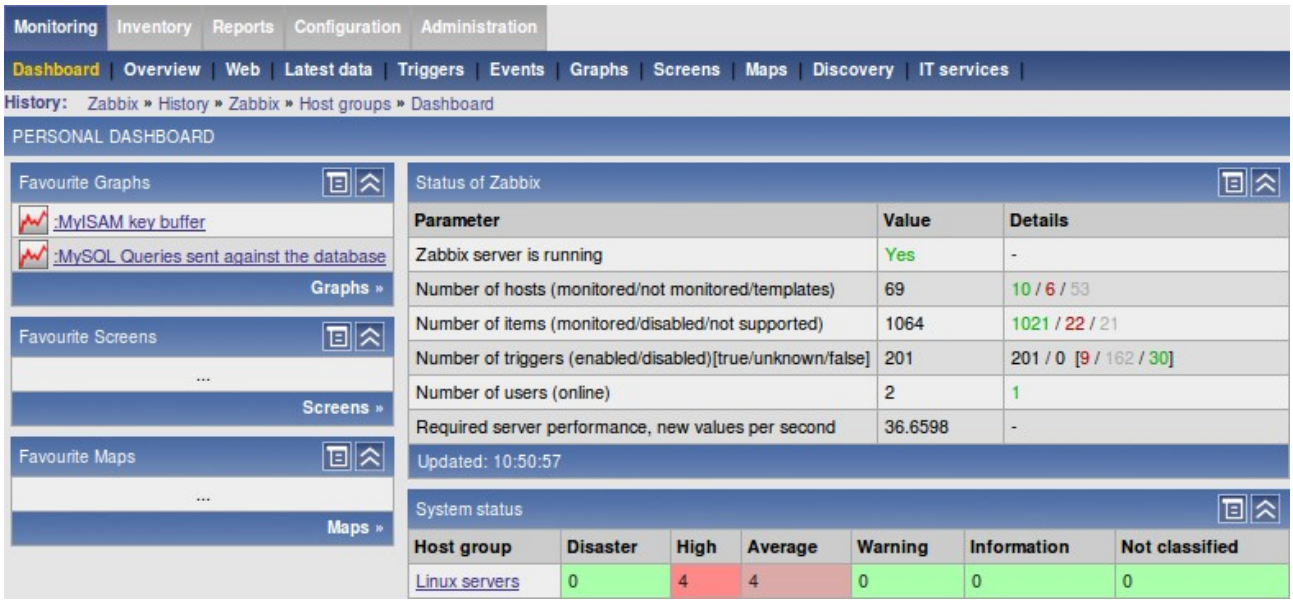
If the DRBD module is run under a different user than root not all information will be displayed correctly because of missing privileges.
You either have to run the FromDual MySQL Performance Monitor Agent under root (security!) or grant the user the agent is running under, the appropriate rights.

Trouble shooting

Troubleshooting the Zabbix server or the Zabbix Web Application:

- Make sure the database of the Zabbix server is running (otherwise the Zabbix web application will complain and the Zabbix server will not start).
- Make sure the Zabbix server is running (check the zabbix_server.log for reasons, check if the database is up an running).

If everything is fine it should look as follows (Zabbix server is running):



Troubleshooting the Zabbix Agent:

- Make sure the Zabbix Agent is running (check the Zabbix agent logfile).
- Check if the Status of the host is on “Monitored” and if “Availability” is on green.
- If “Availability” is red and you see the following message:

```
Got empty string from [137.58.246.161]. Assuming that agent dropped
connection because of access permissions
```

  Check if the hostname of the Zabbix Agent matches with the name on the host in the Zabbix server (case sensitive, white space etc. matters!).
- Set DebugLevel = 4 in the Zabbix Agent configuration file, restart the agent and see if you can see any reason in the agent log file (do not forget to set it back afterwards because it becomes very verbose).
- Try to send a message manually from as the Zabbix Agent to the Zabbix Server:

```
sudo -u zabbix zabbix_sender --zabbix-server=192.168.0.1 \
--host=mysql_2_4_2 --key=FromDual.MySQLmysql.Questions \
--value="123456789" --verbose
Info from server: "Processed 1 Failed 0 Total 1 Seconds spent 0.000180"
sent: 1; skipped: 0; total: 1
```

- Check under: Monitoring → Latest data if the data have been arrived (timestamp).
- Try to reach the Zabbix Agent from as the Zabbix Server:

```
sudo -u zabbix zabbix_get --host=192.168.0.33 --source-address=192.168.0.1
--key="FromDual.MySQL.check"
echo $?
141
```

This typically means that host does not match.

```
sudo -u zabbix zabbix_get –host=192.168.0.33 --source-address=192.168.0.1
--key="FromDual.MySQL.check"
ZBX_NOTSUPPORTED
```

This means that the item FromDual.MySQL.check is not known to the Zabbix Server. Then you have possibly forgotten to ad the mpm module template to the host you want to monitor. If you are using an old mpm version you have to use the mysql module instead.

- If there are no cluster information reported, make sure ALL CLUSTERLOG STATISTICS=8 is set.
- If you run the process module you should make sure, that the user running the Zabbix agent has access to the pid file. Ideally you run the Zabbix agent with the same user as the database or MySQL Cluster process runs.

If all those hints do not help or if you have some comments or feedback please let us know at support@fromdual.com (we do NOT cover Zabbix problems).

Start/stop scripts for Zabbix Agent and Server

Our philosophy is, that the Zabbix Agent and the Zabbix Server is running under the user mysql. For the Zabbix Agent, this is necessary because otherwise we do not have access to the PID file of the mysqld.

To install the start/stop scripts copy the bin/zabbix_agentd.init and the bin/zabbix_server.init to /etc/init.d.

Under Ubuntu you have to enable them with the following command:

```
# sudo cp bin/zabbix_agentd.init /etc/init.d/zabbix_agentd
# sudo cp bin/zabbix_server.init /etc/init.d/zabbix_server

# sudo update-rc.d zabbix_server defaults
# sudo update-rc.d zabbix_agentd defaults
```