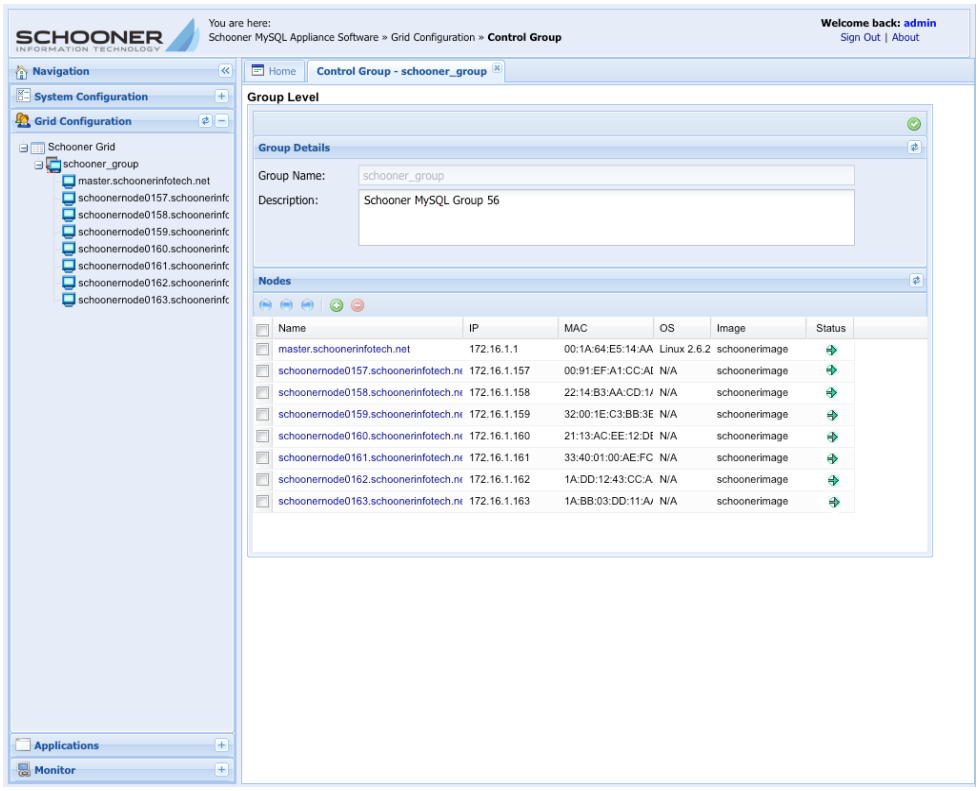
Application & Administration Guide

Schooner Appliance for MySQL Enterprise™

Version 2.0



SCHOONER
INFORMATION TECHNOLOGY

Technical Support

Go to the IBM support Web site at http://www.ibm.com/systems/support/to check for technical information, hints, and tips.

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Schooner Appliance for MySQL Enterprise™ - Application & Administration Guide

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Contents

Chapter 1: Introduction

This Guide will familiarize you with the *Schooner Administrator* GUI and Command Line Interfaces, and provides descriptions of some common management and administrative tasks.

The information in this Guide is organized as follows:

- Chapter 2: “Chapter 2: Configuring the MySQL Environment” discusses special considerations in optimizing MySQL for a Schooner system.
- Chapter 3: “The Schooner Administrator” describes the GUI.
- Chapter 4: “Common Management Tasks” describes how to manage and monitor nodes, groups, and applications.
- Chapter 5: “Chapter 5: Common Administrative Tasks” describes how to upgrade the system, perform back-ups, restore configuration files, manage users, and change passwords.
- Chapter 6: “Chapter 6: Troubleshooting” provides advice about resolving problems.
- Chapter 7: “Schooner MySQL Command Line Interface” describes how to use the command line interface.

Hardware and Software Requirements

System Requirements

Windows or Linux system with:

- Internet Explorer 7.0 or later
- FireFox 2.0 or later

Hardware Requirements

This Guide assumes that at least one appliance has been physically installed in a rack, cabled, and initially configured using one of the FirstTime Wizards. Refer to the Schooner Appliance for MySQL Enterprise™ *Installation & Setup Guide* for more information.

Schooner Administrator

The *Schooner Administrator* is a system-management tool that can manage multiple appliances and their applications. In order to perform more efficiently, and to be effectively managed, these appliances are combined together in a hierarchy of increasingly-larger groupings:

- A single appliance is referred to as a “node”
- Two or more nodes are a “cluster”
- Two or more clusters are a “group”
- Two or more groups are a “grid”

The Administrator manages multiple nodes (appliances) by utilizing the concept of a “master node”, which can control a virtually unlimited number of “client” nodes.

Master Node

The *Schooner Administrator* operates exclusively through the “master” node, which provides access to all of the other nodes in the cluster, group, or grid. In the event of a master-node failure, a new master node will automatically be selected from the remaining nodes. Operation of the remaining nodes will continue normally, controlled by the new master node.

Client Node

A “client” node is any node that is not the master node. Client nodes cannot be directly accessed from the GUI, using the *Schooner Administrator*, but can be directly accessed through the Command Line Interface.

Alternate Administration

Schooner appliances can be administered via the Command Line Interface (CLI). The CLI does not utilize the concept of master and client nodes. Each node (appliance) is accessed individually. To perform management and administrative tasks, using the CLI, refer to **Chapter 7**.

Chapter 2: Configuring the MySQL Environment

The first decision to make is whether to create a new database, or to import an existing one. This chapter discusses the special considerations involved when implementing MySQL on a Schooner appliance.

Schooner has optimized the InnoDB data file format for high throughput in two important areas:

Optimized checksum: Standard InnoDB employs checksum algorithms that are inherently heavy users of CPU time. Schooner replaces these algorithms with fast checksums, which are specially optimized for the large I/O throughput available with the Schooner appliance.

Choice of storage block size: Standard InnoDB maintains a storage block size of 16kB (16384 bytes) for all data (index and data files), and operates under the assumption that one size works for all applications and hardware configurations. Most On-line Transaction Processing (OLTP) workloads benefit from smaller storage block sizes. Schooner offers a flexible block size, which allows the data to be tuned for a specific application.

NOTE: The above two options create a database format which is not compatible with standard InnoDB.

The following properties need to be added to my.cnf in order to specify Schooner optimized file format:

```
Innodb-fast-checksums
Innod-page-size=4096 (or: innodb-page-size=8192)
```

The /opt/schooner/mysql/config/my.cnf file can be edited via a text editor, or using the GUI Console xxxx.

To use Schooner's optimized MySQL environment:

1. **When creating a new database:** Make sure that the properties mentioned above exist in my.cnf before creating database.

2. **When importing a standard-format database:** Utilize ***mysqldump*** or MAATKIT's ***mk-parallel-dump/mk-parallel-restore***. Make sure that the properties mentioned above exist in my.cnf before inserting data using ***mysql*** client and the dump:
   - Run ***mysqldump***
   - Either stream the output to a ***mysql*** client that connects to the database, or save the dump first, and then redirect the dump to the ***mysql*** client connected to the Schooner database.

3. **When importing a previously-optimized database:**
   If the database format is already in Schooner's optimized format, it may save time to simply copy the data files, or restore from a backup (rather than using mysqldump). Ensure that the target my.cnf reflect the properties chosen for the source database.
   However, copying data files from an existing database or from a back-up

source does not necessarily provide a new database that is in a consistent format. Replay of the transaction log may be required (as part of the normal process of database recovery) so that all the data in the data files is consistent with the committed transactions.

4. **When exporting an optimized database to a database in standard format**: Utilize ***mysqldump*** as in Step 2.

Before deciding how the data will be moved, consider the trade-off between performance and direct compatibility. Use direct compatibility only if your deployment cannot tolerate the time required to dump an existing database. Also, consider that with MySQL replication, you can have a heterogeneous cluster of Schooner appliances and Stock InnoDB database replicas.

Chapter 3: The Schooner Administrator Interface

Starting the Schooner Administrator

Point your browser to **http://*master_node*/**

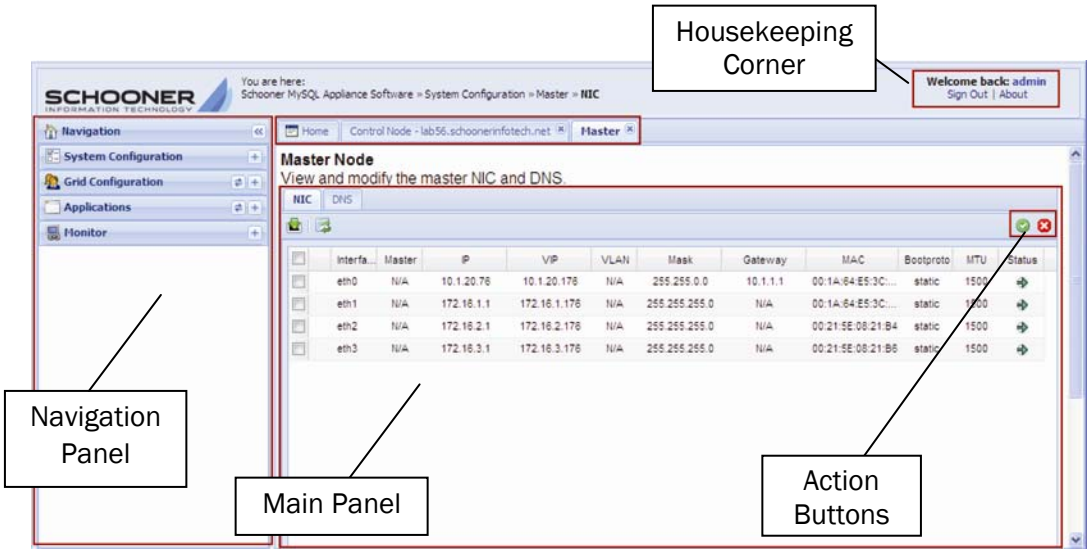
master_node is the master node's IP address (or host and domain name) on the administration subnet (**eth0**). This is the address that you entered in Step 1 of the FirstTime Wizard.

Log in with the username and password assigned by your administrator.

- Once you log in, you can change your password.
- If you are the administrator, login as "**admin**" using the password you entered in the FirstTime Wizard.

Console Screen Layout

The console is the first screen displayed after you login to the Schooner Administrator. The primary features of the console are shown in the following illustration.



Navigation Panel

The *Navigation Panel*, on the left side of the console, is where you choose the task that you want to perform. All of the available tasks are organized into four expandable menu items:

- System Configuration
- Grid Configuration
- Applications
- Monitor

Main Panel

When you select a menu item from the Navigation Panel, the information and/or tasks that correspond to your selection appear in the *Main Panel*. The row of tabs, across the top of the panel, provides a sequential history of the tabs you have selected. Previously-selected tabs are grey; the current (active) tab is white.

Housekeeping Corner

The *Housekeeping Corner* is in the upper right corner of the console. Click "About" to display the software version information. Click "Sign Out" to log out of the administrator.

Action Buttons

Individual panels may display one or more of the following action buttons:

- **Apply** button commits changes made to the configuration.
- **Cancel** button removes changes made to the configuration that were not committed.
- **Reload** button reloads the configuration values currently displayed in the panel.
- **Add** button adds the selected item.
- **Delete** button deletes the selected item.

Navigation Panel Menu Items

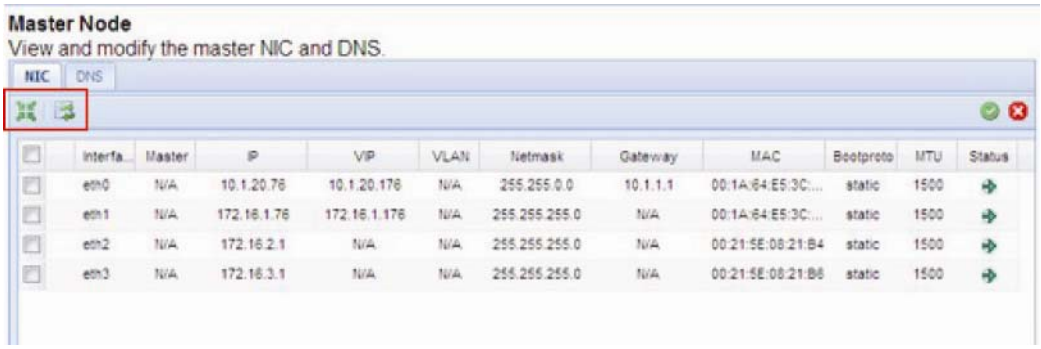
This section describes all of the functions provided by the four Navigation Panel Menu Items.

System Configuration

Expanding the *System Configuration* menu item displays the following options:

Master

Select *Master* to display information about the "master" node.



Note the two buttons highlighted in the above illustration. The button on the left is the "bonding configuration" button. The button on the right is the "Load the NICs" button.

Bonding Configuration  – Select this button to display the following screen.

You can bond a maximum of 6 physical interfaces together as one virtual interface. Seven different bonding modes are supported. Select a mode from the pull-down menu next to the “Mode” field.

Refresh  - refresh the data on the screen.

Client Nodes

Select *Client Nodes* to display any physical nodes that have not yet been added to a cluster/group. The first (master) node is added automatically, but if you add physical units to your system later, you can start, stop, identify and authenticate them using this menu item. (Go to *Grid Configuration* for information about adding new nodes to a cluster.)

Syslog

Review the system event logs. (See “Check System Logs” on page 20.)

NTP

Select an NTP server by clicking on the  button.

Time Zone

Displays the current time zone, along with all of the other available zones.

Backup/Restore

Displays the paths to all of the system configuration files. There are three buttons in the top, left corner of the Main Panel. From left-to-right, they are: “Backup all configs”, “Restore all configs”, and “refresh”.

Upgrade

Choose to upgrade the application using either “RPM” or “Image”. *RPM* upgrades the application software from an RPM file provided by Schooner. *Image* upgrades the appliance software from a USB drive, CD-ROM, or network boot.

Note: The RPM upgrade is the only option available at this time.

User Management

Select this menu item to change your password or (if you are an administrator) add or delete users from the system.

SNMP

Set SNMP read and write access policies. Options are “rocommunity” and “rwcommunity”.

Monitor Control

Enable or disable the system-monitoring software applications (i.e., Ganglia, Cacti, and Nagios). The Schooner Administrator can work with all the three system-monitoring applications simultaneously. However, the user may choose to use any one of them in order to conserve system resources. You can also disable just the internet links to the monitors.

Diagnostics

Choose where the diagnostic log file is stored.

Grid Configuration

Expanding the *Grid Configuration* menu item displays the following options (this is an example of a typical grid, your configuration may differ):

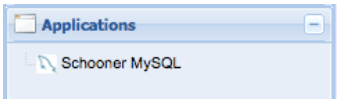
This menu item is an expandable tree view of the entire grid. The icon, corresponding to each group/node, is blue if the group/node is operating normally. The icon is gray if the group/node is off-line. Click the refresh button to update the status of the groups/nodes.

Clicking on any level, in the tree view, displays information specific to that level in the Main Panel.

Following the initial setup of the first appliance, using the FirstTime Wizard; the grid will consist of one group, containing one node (by default, the master node), running one instance of MySQL. As nodes are added, use *System Configuration>Client Nodes* to define, recognize, and authenticate the new nodes. Use *Grid Configuration* to add them to groups.

Click after making changes to the grid, to update the tree view in the navigation panel.

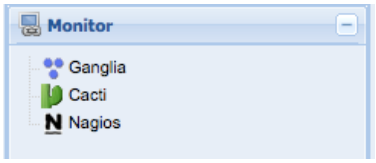
Applications



Expanding this menu item displays the available applications. (Following the initial setup, there will always be one instance of MySQL running on the master node.) Click the "Schooner MySQL" icon to display information about all of the MySQL instances running on any node in the grid. Select any instance displayed in the Main Panel and use the action buttons to:

- Start, stop, and restart an existing instance
- Click  to edit the parameters of an existing instance

Monitor



This menu item provides access to the Ganglia, Cacti, and Nagios monitoring software. Click a link to open the application.

Getting Support

Go to the IBM support Web site at **http://www.ibm.com/systems/support/**to check for technical information, hints, and tips.

Chapter 4: Common Management Tasks

This chapter describes how to:

- Monitor and manage MySQL instances
- Monitor and manage the Schooner appliance
- Add new nodes to create groups/clusters

Monitor System Status

Each node, group, or instance, has an associated icon that displays its operational status.

Status Icon	Description
	Operating normally
	Not operating

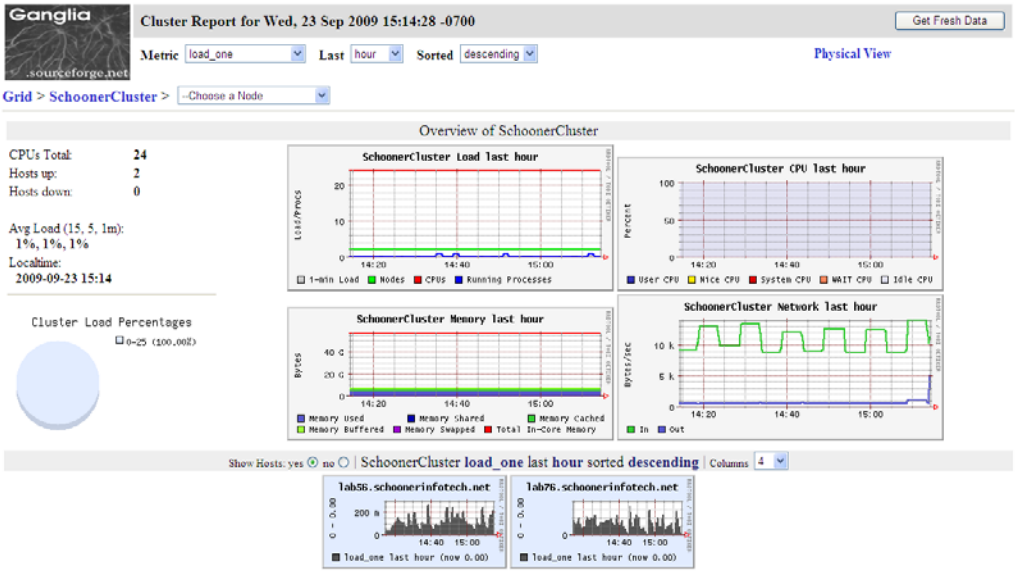
If any component in the grid is not operating correctly, see Chapter 6, Chapter 6: Troubleshooting.

Monitor the System

To monitor the system:

1 Expand the *Monitor* menu item, and click the **Ganglia** icon. The page shown in the following illustration opens in a new window.

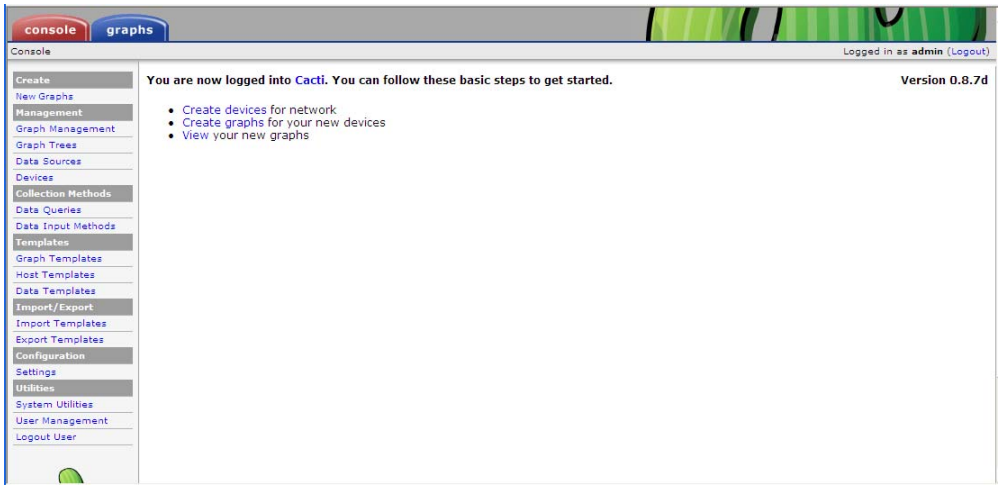
2 Select a node from the pull-down menu in the “Choose a Node” field. Information about the selected node’s network usage, as well as the CPU, memory, Flash, and disk activity, is displayed.



Monitor a MySQL Instance

To monitor a MySQL instance:

1 Expand the *Monitor* menu and click the **Cacti** icon. The Cacti console opens in a new window.



2 From the top of the screen, click the "Graphs" tab to display data in the "Tree View".

3 **Expand** "Schooner MySQL" to display **the monitoring options associated with the appliance (Storage, Network, System, and Mysql)**.

4 In the "Graphs per Page" field, enter the number of graphs to be displayed per page.

5 Click the "Thumbnail" checkbox to view compact versions of the graphs.

Manage a MySQL Instance

To manage the application instances:

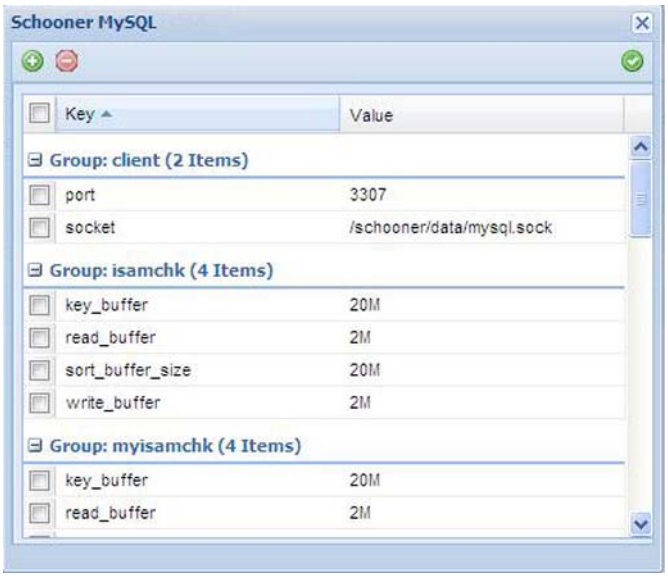
1 Expand the ***Applications* menu**.

2 Select "**Schooner MySQL**". A list of instances is displayed in the Main Panel.

3 Select the checkboxes of the instances that you want to manage.

4 Use the Action Buttons to start, stop, or restart the checked instances.

5 To change the properties of a MySQL instance, click the button. The following window is displayed.



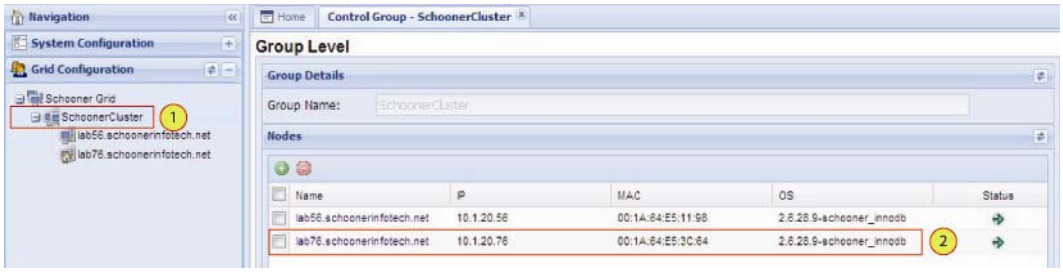
6 When you're finished making changes, click the button. The instance will be restarted and the new properties applied.

Manage a Node or Group

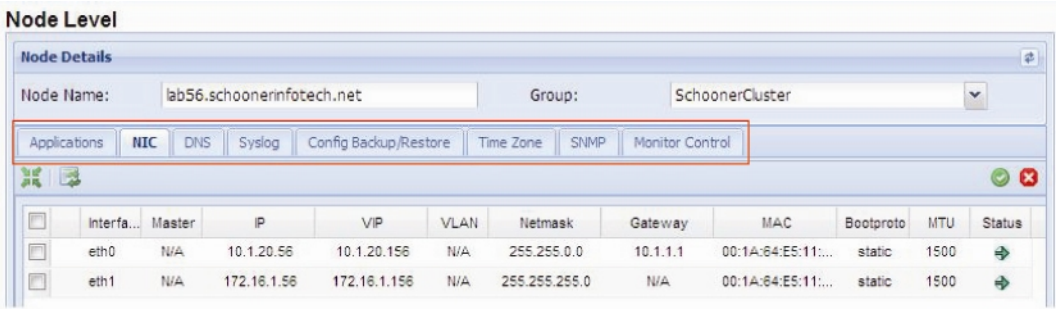
To change the properties of a node:

1 Expand the ***Grid Configuration*** **menu**.

2 Select the node that you want to manage. (Select a node directly from the ***Grid Configuration*** **menu**, or select a cluster and then choose the node from the list displayed in the Main Panel.)



When a node is selected, the "Node Level" screen is displayed in the Main Panel. Choose a property to edit, from the row of tabs at the top of the screen.



3 When you're finished making changes, click the button. The node and its instances will be restarted, with the newly-changed properties.

Add New Nodes

Note: The *Installation & Setup Guide* explains how to physically install and connect additional nodes to your network.

If you are using the *Schooner Administrator*, the initialization of the new nodes will be performed using the GUI. The steps in this process are described below.

(If you are managing each node using your own administration system, you must initialize each new node using the Command Line Interface (see Chapter 7).

When a new node is installed and initialized, it is discovered by the *Schooner Administrator*, and automatically connected to the Master Node.

Backup or Restore an MySQL Instance

To backup or restore a database, or database components, on any node in the grid:

1 Expand the ***Applications* menu item**.

2 Select the Schooner MySQL instance you wish to back up. The "Schooner MySQL" screen displays.

3 Click the **Backup/Restore** tab, at the top of the screen.

4 Select an instance from the "MySQL Instances" field.

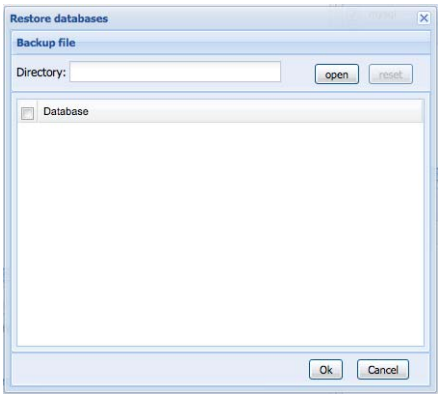
5 Click the **Connect** button, at the bottom of the screen.

6 Select the database you wish to restore from the "MySQL Instances" field.

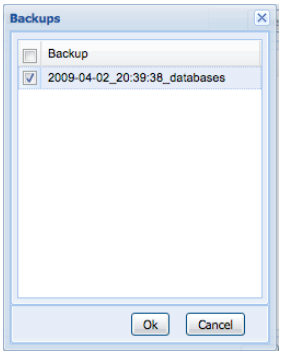
7 Select the **Database** checkbox, in the "Database" field, and click to backup, or to restore.

8 Select the Restore button to bring up the "Restore Databases" screen.

9 Enter the directory containing the backup.



10 Click the **Open** button to open the “Backups” window.



11 Select the backup and click **Ok**.

12 Select the database to restore and click **Ok**.

Replicate a MySQL Instance

To replicate a database:

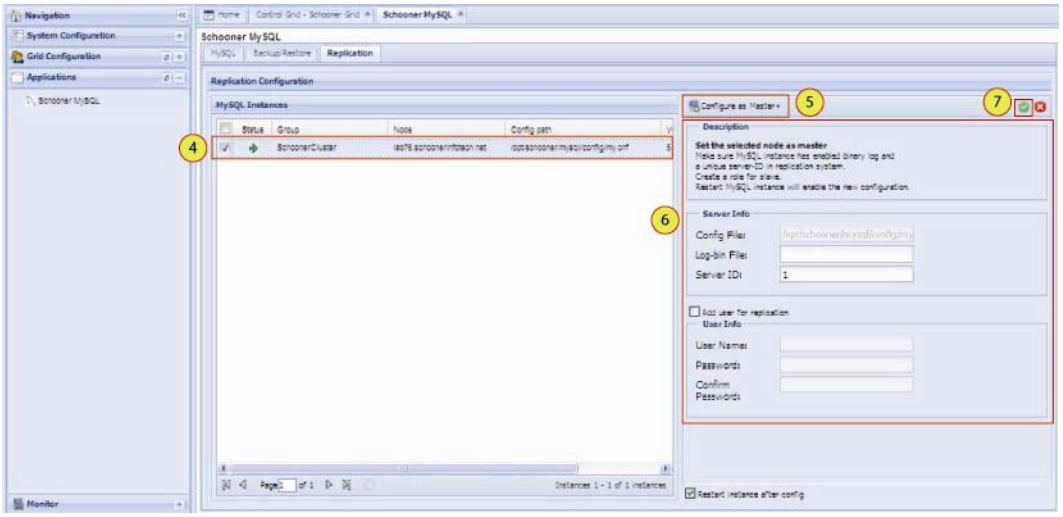
1 Expand the ***Applications*** **menu item**.

2 Select the Schooner MySQL instance you wish to back up. The “Schooner MySQL Instances” screen displays.

3 Click the **Replication** tab, at the top of the screen. The “Replication Configuration” screen displays.

4 Select an instance from the “MySQL Instances” field.

5 Click **Configure as Master** and select either “Master” or “Slave” from the pull-down menu.



6 Fill in the requested information in the fields below the **Configure as Master** button.

7 Click to initiate the replication.

Chapter 5: Common Administrative Tasks

Upgrade the System

Schooner posts upgrade packages periodically on the IBM Support Portal.

Note: Register with IBM Support to receive notification of these postings.

Upgrade packages come in two forms:

- RPM (RPM file contain updates for Schooner applications and services)
- ISO (ISO files contain updates for the Schooner disk image)

Upgrading the appliance will require a reboot and resulting interruption of service. Your configuration files will not be disturbed.

To upgrade the applications and services:

1 Download the update file (.rpm) from the IBM Support Portal at **http://www.ibm.com/systems/support/**.

2 Expand the *System Configurations* menu item, and select "Upgrade". The "RPM Upgrade" screen is displayed.

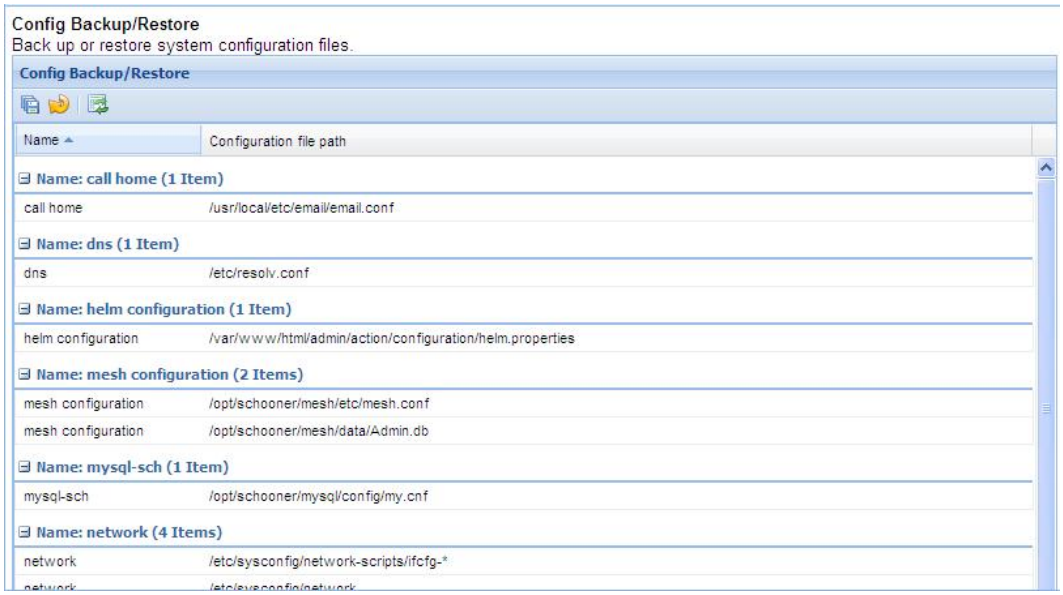
3 Click the button to load the RPM update file into the Schooner Administrators RPM repository.

4 Select the RPM update file and click the button to apply the update.

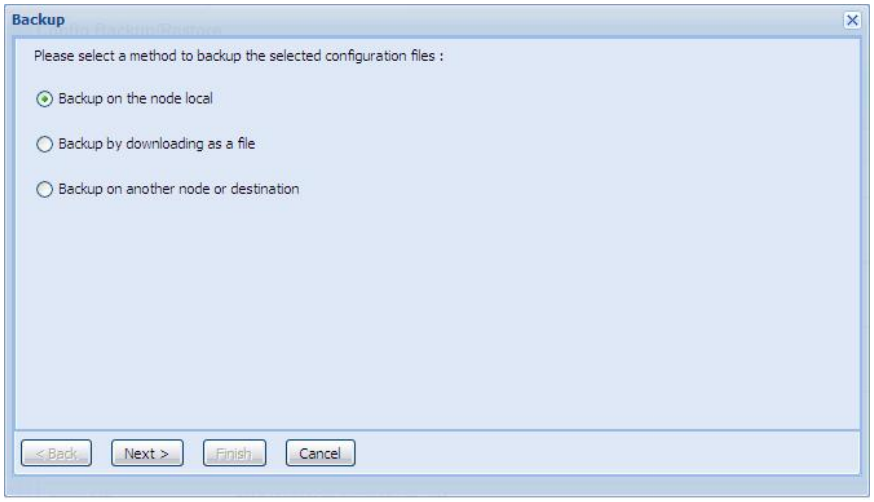
Back Up Configuration Files

To back up the configuration files:

1 Expand the ***System Configuration*** **menu item, and select "Config Backup/Restore"**. The following screen is displayed.



2 Click the backup icon. The "Backup" screen is displayed.



3 Choose the location for the backup, and then click **Next**.

If you select "Backup on the local node", a screen will display with the status of the backed-up files, and their location. If you select either of the other two options, you will be prompted for additional information.

4 Click **Finish** to exit the back-up process.

Restore Configuration Files

To restore your configuration files from backup copies:

1. Expand the ***System Configuration*** **menu item, and select "Config Backup/Restore"**.
2. Click the  restore icon. The "Restore" screen displays.
3. Select a file-restoration method, and then click **Next**. The "Restore" screen appears, and displays the status of the restored files.

   Note: At this time, "Restore from the local host" is the only supported file-restore method.
4. Click **Finish** to exit the restore process.

Add or Delete a User

Note: Only the administrator can add or delete a user.

1. Expand the ***System Configuration*** **menu item, and select "User Management"**.
2. To add a user, click  and enter the user's name and password when prompted.
3. To delete a user, select the user's name from the "User list" and click  .

   Note: User names may be 4-32 characters in length, alphanumeric, and may contain _ (underscores). Passwords may be 1-32 characters in length, of any type.

Change a Password

1. Expand the ***System Configuration*** **menu item, and select "User Management"**.
2. Select a user, and click  in the "Change password" field.
3. Enter the user's name and password when prompted.

Chapter 6: Troubleshooting

This chapter provides general troubleshooting information.

If the problem persists, log into the IBM Support Portal as described in "Getting Support" on page 8. From there you can browse additional support information and, if necessary, open a case. IBM can provide you with help to diagnose the problem and find a solution.

Problem Indicators

The red status icon indicates that the corresponding hardware or software is not operational, or not recognized.

Note: The status icon will be red for any client node that has not yet been added to a cluster.

General Troubleshooting Tips

Refresh and Restart

If an application, node, or cluster is not working properly, or its status icon is red; click to refresh its status. If the green status icon does not appear, try the following:

- Click the start icon to start the application, node, or cluster (assuming that it was stopped).
- Click the restart icon to reboot.

Check System Logs

To inspect the system logs:

1. Expand the ***System Configuration*** **menu item, and select "Syslog"**.
2. Open and inspect the messages displayed on the "Syslog" screen.
3. To set the priority of the Syslog messages, double-click the entry in the "Priority" field. Use the pull-down menu to select a priority.
4. Click to apply the change to the message priority.

To download logs to a local workstation:

Use the checkboxes to select the logs to be downloaded, and click the download icon. Enter an archive name when prompted.

To download logs to another node within the Schooner system:

Click and select the destination node when prompted. Click **OK** when done.

To download logs to a location outside the Schooner system:

Click  and enter the hostname or IP address of the destination when prompted.

Restore Default Values

Performance problems can be caused by NIC, node, or instance properties. Schooner recommends the following:

- Accept default values when possible.
- Keep a record of the default values you change.

The default values may be found in the following locations:

- NICs - System Configuration > Masters > NIC
- Nodes - Grid Configuration under each node
- MySQL instances - Grid Configuration > Schooner MySQL

Reboot

To reboot:

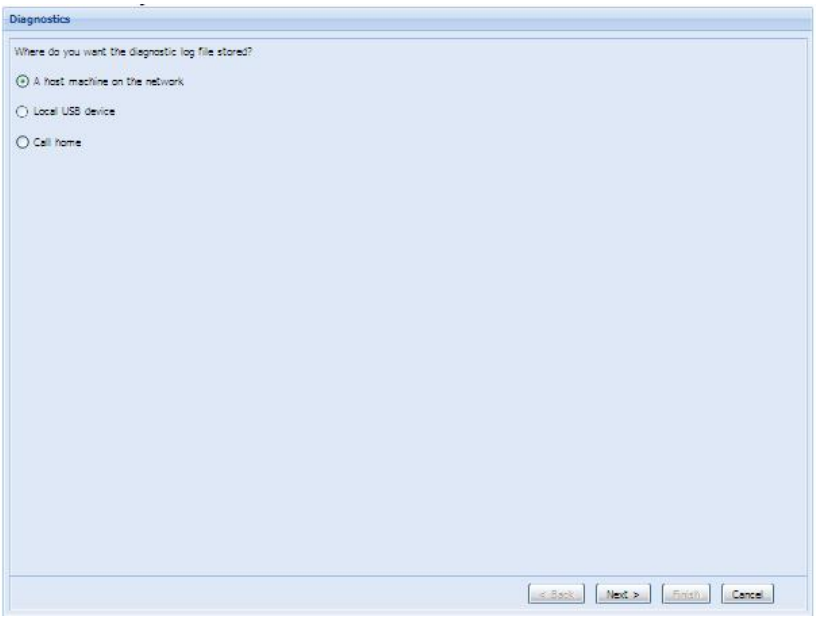
1. Using a terminal program like putty, connect to the appliance using its eth0 host name or IP address.
2. Log in as **admin**
3. Enter `monit stop mysql-sch` (to halt any MySQL traffic)
4. Enter `reboot`

   The system will reboot and become operational in approximately 3 to 5 minutes. At that time, you can log back into the *Schooner Administrator*.

Diagnostics

If IBM Support requests system information, use the Diagnostics interface to save logs and traces, which can be used in troubleshooting:

1 Expand the *Diagnostics* menu item. The following screen is displayed.

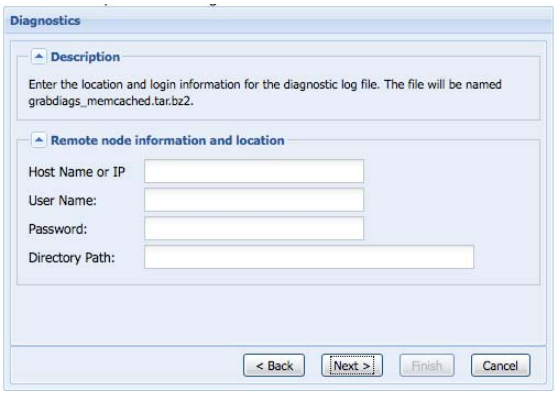


There are three log-file storage options:

- A host machine on the network
- A local USB device
- Call home

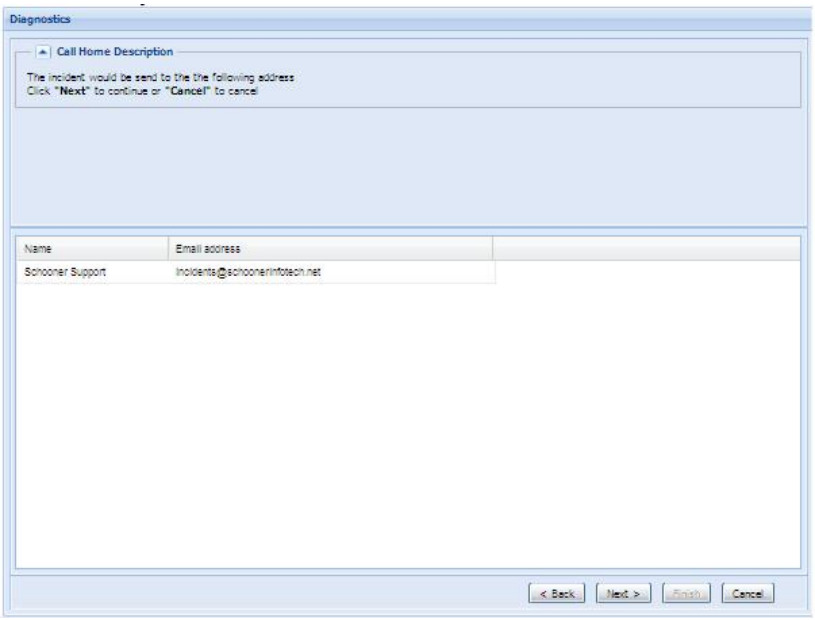
2 *To store log information on a network server*, select "A host machine on the network", and click **Next**.

3 Enter the hostname/IP address, user name, password, and the path to the directory where the log information will be stored. Then click **Next**.



4 Click **Finish** to exit the "Diagnostics menu.

5 *To send log information directly to IBM Support* (recommended), select the "Call home" option from the Diagnostics screen (Step 2), and click **Next**. The following screen is displayed.



6 Verify the email address to which the log information will be sent and click **Next**. The information is immediately sent to **http://www.ibm.com/systems/support/** and a status message indicates that the operation was successful.

7 Click **Finish** to exit the Diagnostics menu.

8 *To send log information to a local USB device,* select "Local USB device", and click **Next**.

Chapter 7: Schooner MySQL Command Line Interface

The MySQL database may also be configured using the Schooner Command Line Interface (CLI). The CLI is comprised of a set of scripts that perform the following tasks:

- Initialize the database
- Administer database users
- Backup/restore the database
- Configure replication
- Manage SSD storage
- Send incident reports

Note: To perform the following configuration tasks, you must open a terminal window with a Telnet/SSH client, like PuTTY.

To begin the database configuration:

1. Log in as admin.
2. Change directories by entering:
   `cd /var/www/html/admin/cli/schooner-mysql/bin/`
3. `Enter: ::./intialize_database_setup.php`
   The "Initial Setup" script starts and displays the following:

```
+-----------------------------------------------------------------------------------------------------------+
| There are 6 steps in the initial database setup:                                                          |
|   1. Initiate the database using "Initial setup"                                                         |
|   2. Create/delete/modify users and grant/revoke user privilege using "Setting access and permissions"   |
|   3. Backup/restore using "Getting started with a new schema or existing database"                        |
|   4. Replication using "Participating in a cluster"                                                       |
|   5. Manage SSD storage format using "SSD management"                                                     |
|   6. Send a incident report if mysql server crash using "Send incident report"                            |
+-----------------------------------------------------------------------------------------------------------+
+-----------------------------------------------------------+
| ID    init database setup steps                           |
+-----------------------------------------------------------+
| 1     Initial setup                                       |
| 2     Setting access and permissions                      |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                          |
| 5     SSD storage system Management                       |
| 6     Send incident report                                |
+-----------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

After the completion of each step, use the "e" key to return to the main setup menu (shown above).

Step 1: Initial Setup

1. Enter "1" to start the database setup.

```
+-----------------------------------------------------------------------------------------------------------+
| Step1. Initial setup                                                                                      |
|    Initial setup will generate a tuning configuration for mysql instance and execute                     |
|    mysql_install_db in specified data directory                                                           |
| Notice or Best Practice:                                                                                  |
|    1. 'Standard Configuration' is designed for common users which will                                    |
|        replace with turning configuration file.                                                           |
|    2. 'Custom Configuration' is designed for advanced users which will                                    |
|        modify parameters based on the turning configuration file.                                         |
+-----------------------------------------------------------------------------------------------------------
------------------------+
+-----------------------------+
| ID    Configuration Type    |
+-----------------------------+
| 1     Standard Configuration |
| 2     Custom Configuration   |
+-----------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

2 Enter “1” to choose the standard database configuration.

```
Please select one option from above options list (type "e" or "q" to escape): 1
Run script mysql_install_db /opt/schooner/mysql/bin/mysql_install_db --defaults-
file=/opt/schooner/mysql/config/my.cnf ...
[Success] Run script mysql_install_db
Change directories ownership...
[Success] Change directories ownership
Startup mysql database...................
[Success] Startup mysql database
+-----------------------------+
| ID    Configuration Type    |
+-----------------------------+
| 1     Standard Configuration |
| 2     Custom Configuration  |
+-----------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

3 Enter “e” to return to the main menu.

```
+-------------------------------------------------------------+
| ID    init database setup steps                             |
+-------------------------------------------------------------+
| 1     Initial setup                                         |
| 2     Setting access and permissions                        |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                            |
| 5     SSD storage system Management                         |
| 6     Send incident report                                  |
+-------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

Step 2: Setting Access and Permissions

1 Enter “2” to create and manage MySQL users.

```
+-----------------------------------------------------------------------------+
| Step2. Setting access and permissions                                       |
|    User account and user privilege management                               |
| privilege management                                                        |
| Notice or Best Practice:                                                    |
|   1. Allow administrator user to create/delete/modify/show user account  |
|   2. Allow administrator user to grant/revoke/show user privilege        |
+-----------------------------------------------------------------------------+
+-------------------------------------------------+
| ID    Actions of Setting Access and Permissions |
+-------------------------------------------------+
| 1     Account Management                        |
| 2     Privilege Management                      |
+-------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

2 Enter “1 to create a MySQL user. Follow the prompts to enter a user name and password.

```
+-------------------------------------+
| ID    Actions of account management |
+-------------------------------------+
| 1     Create User                   |
| 2     Delete User                   |
| 3     Modify User Password          |
| 4     Show Users                    |
+-------------------------------------+
Please select one option from above options list (type "e" or "q" to escape): 1
Please type user name which will be created: dbuser
Please type user password:
Are you sure you want to create user 'dbuser'? y/n [y]: y
[Success] create user 'dbuser'
+-------------------------------------+
| ID    Actions of account management |
+-------------------------------------+
| 1     Create User                   |
| 2     Delete User                   |
| 3     Modify User Password          |
| 4     Show Users                    |
+-------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

3 Enter “e” to return to the account management menu.

```
+--------------------------------------+
| ID    Actions of privilege management |
+--------------------------------------+
```

```
| 1     Show User Privileges            |
| 2     Grant User Privileges           |
| 3     Revoke User Privileges          |
+---------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

4 Enter “1” to display the list of users.

```
+--------------+
| ID    Users  |
+--------------+
| 1     dbuser |
| 2     root   |
+--------------+
Please select one option from the list above (type "e" or "q" to escape): 1
```

5 Enter “1” to select the newly-added user (*dbuser*). The user privileges are displayed.

```
+-------------------------------------------------------------------------------+
| Host                     | %                      localhost                 |
| User                     | dbuser                 dbuser                    |
| Select_priv              | N                      N                         |
| Insert_priv              | N                      N                         |
| Update_priv              | N                      N                         |
| Delete_priv              | N                      N                         |
| Create_priv              | N                      N                         |
| Drop_priv                | N                      N                         |
| Reload_priv              | N                      N                         |
| Shutdown_priv            | N                      N                         |
| Process_priv             | N                      N                         |
| File_priv                | N                      N                         |
| Grant_priv               | N                      N                         |
| References_priv          | N                      N                         |
| Index_priv               | N                      N                         |
| Alter_priv               | N                      N                         |
| Show_db_priv             | N                      N                         |
| Super_priv               | N                      N                         |
| Create_tmp_table_priv    | N                      N                         |
| Lock_tables_priv         | N                      N                         |
| Execute_priv             | N                      N                         |
| Repl_slave_priv          | N                      N                         |
| Repl_client_priv         | N                      N                         |
| Create_view_priv         | N                      N                         |
| Show_view_priv           | N                      N                         |
| Create_routine_priv      | N                      N                         |
| Alter_routine_priv       | N                      N                         |
| Create_user_priv         | N                      N                         |
| Event_priv               | N                      N                         |
| Trigger_priv             | N                      N                         |
+-------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

6 Enter “2” to go to the “Grant User Privileges” screen.

```
+---------------------------------------+
| ID    Actions of privilege management |
+---------------------------------------+
| 1     Show User Privileges            |
| 2     Grant User Privileges           |
| 3     Revoke User Privileges          |
+---------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 2
+--------------+
| ID    Users  |
+--------------+
| 1     dbuser |
| 2     root   |
+--------------+
Please select one option from the list above (type "e" or "q" to escape):
```

7 Enter “1” to select *dbuser*. The list of available privileges is displayed.

```
+-------------------------------+
| ID    Privileges              |
+-------------------------------+
| 1     ALL PRIVILEGES          |
| 2     ALTER                   |
| 3     ALTER ROUTINE           |
| 4     CREATE                  |
| 5     CREATE ROUTINE          |
| 6     CREATE TEMPORARY TABLES |
| 7     CREATE USER             |
| 8     CREATE VIEW             |
| 9     DELETE                  |
| 10    DROP                    |
| 11    EXECUTE                 |
```

```
| 12    FILE                    |
| 13    SUPER                   |
| 14    LOCK TABLES             |
| 15    USAGE                   |
+-------------------------------+
Please select options from the list above (comma-separated, type "e" or "q" to escape):
```

8 Grant privileges to *dbuser* by entering the numbers assigned to the selected privileges, separated by commas (e.g. 6, 11, 14).

```
[Success] grant privileges to user 'dbuser'
+--------------------------------------+
| ID    Actions of privilege management |
+--------------------------------------+
| 1     Show User Privileges           |
| 2     Grant User Privileges          |
| 3     Revoke User Privileges         |
+--------------------------------------+
Please one option from the list above (type "e" or "q" to escape):
```

9 Enter “1” to return to the “Show User Privileges” screen. Verify that the selected privileges have been granted to *dbuser*.

```
+-------------+
| ID    Users  |
+-------------+
| 1     dbuser |
| 2     root   |
+-------------+
Please select one option from the list above (type "e" or "q" to escape): 1
```

10 Enter “1” to select *dbuser*. Verify that the selected privileges have been granted.

```
+-------------------------------------------------------------------------------+
| Host                    | %                       localhost                   |
| User                    | dbuser                  dbuser                      |
| Select_priv             | Y                       Y                           |
| Insert_priv             | Y                       Y                           |
| Update_priv             | N                       N                           |
| Delete_priv             | N                       N                           |
| Create_priv             | N                       N                           |
| Drop_priv               | N                       N                           |
| Reload_priv             | N                       N                           |
| Shutdown_priv           | N                       N                           |
| Process_priv            | N                       N                           |
| File_priv               | N                       N                           |
| Grant_priv              | N                       N                           |
| References_priv         | N                       N                           |
| Index_priv              | Y                       Y                           |
| Alter_priv              | N                       N                           |
| Show_db_priv            | N                       N                           |
| Super_priv              | N                       N                           |
| Create_tmp_table_priv   | Y                       Y                           |
| Lock_tables_priv        | Y                       Y                           |
| Execute_priv            | Y                       Y                           |
| Repl_slave_priv         | N                       N                           |
| Repl_client_priv        | N                       N                           |
| Create_view_priv        | N                       N                           |
| Show_view_priv          | N                       N                           |
| Create_routine_priv     | N                       N                           |
| Alter_routine_priv      | N                       N                           |
| Create_user_priv        | N                       N                           |
| Event_priv              | N                       N                           |
| Trigger_priv            | N                       N                           |
+-------------------------------------------------------------------------------+
+--------------------------------------+
| ID    Actions of privilege management |
+--------------------------------------+
| 1     Show User Privileges           |
| 2     Grant User Privileges          |
| 3     Revoke User Privileges         |
+--------------------------------------+
Please select options from the list above (type "e" or "q" to escape):
```

11 Enter “e” two times in succession, to return to the main menu.

```
+-------------------------------------------------------------+
| ID    init database setup steps                             |
+-------------------------------------------------------------+
| 1     Initial setup                                         |
| 2     Setting access and permissions                        |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                            |
| 5     SSD storage system Management                         |
| 6     Send incident report                                  |
+-------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

Step 3: Getting Started with a New Schema or Existing Database

1 Enter “3” to select “Getting started with a new schema or existing database”.

```
+-------------------------------------------------------------------------------------------------------------+
| Step3. Getting started with a new schema or existing database.                                              |
|                                                                                                             |
|   Getting started with a new schema or existing database supports features about database data management|
| Notice or Best Practice:                                                                                    |
|                                                                                                             |
|   1. Allow administrator user create a new database by given database name                                  |
|                                                                                                             |
|   2. Allow user basic backup/restore actions                                                                |
+-------------------------------------------------------------------------------------------------------------+
+-----------------------------------+
| ID    Actions for getting started |
+-----------------------------------+
| 1     Create a new database       |
| 2     Backup databases & tables   |
| 3     Restore databases & tables  |
+-----------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

2 Enter “1” to create a new database. Enter a name for the database when prompted (*mydb*).

```
Please type database name which will be created: mydb
[Success] create database mydb
+-----------------------------------+
| ID    Actions for getting started |
+-----------------------------------+
| 1     Create a new database       |
| 2     Dump databases & tables     |
| 3     Restore databases & tables  |
+-----------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

3 Enter “2” to select “Dump databases & tables”.

```
+-----------------------------------------------------+
| Note:                                               |
|       You can choose to back up the whole database  |
|       or only a few tables in the database          |
+-----------------------------------------------------+
+--------------------+
| ID    Backup object |
+--------------------+
| 1     Databases     |
| 2     Tables        |
+--------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

4 Enter “1” to backup the entire database. Enter the required information at the prompts.

```
+-------------------------------------------------------------+
| Note:                                                       |
|    Connect to a MySQL server using your login information:  |
|    IP or host name, user name, password are required        |
+-------------------------------------------------------------+
Please type IP or host name (default localhost): localhost
Please type user (default root): root
Please type password:
The authenticity of host 'localhost (127.0.0.1)' can't be established.
RSA key fingerprint is 02:0e:0a:dc:10:1f:99:c0:ae:8c:37:35:1d:30:02:88.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'localhost' (RSA) to the list of known hosts.
root@localhost's password:
Waiting....
```

```
root@localhost's password:
+------------------------------------------------------------------------+
| Note:                                                                  |
|    1.You can choose several datbases to backup.                        |
|    2.If you choose an empty database, its backup won't be generated  |
+------------------------------------------------------------------------+
+---------------------+
| ID    Databases     |
+---------------------+
| 1     mydb          |
| 2     mysql         |
| 3     test          |
| 4     All databases |
+---------------------+
Please select options from the list above (comma-seperated, type "e" or "q" to escape): 4
+-------------------------------------+
| Note: There are four backup manners  |
+-------------------------------------+
+-------------+
| ID    Target |
+-------------+
| 1     Local  |
| 2     NFS    |
| 3     SCP    |
| 4     Rsync  |
+-------------+
Please select one option from the list above (type "e" or "q" to escape): 1
Please type target directory:/tmp
+-----------------------------+
| Note: choose  backup manner  |
+-----------------------------+
+-----------------------+
| ID    Backup manner    |
+-----------------------+
| 1     Manual backup    |
| 2     Automatic backup |
+-----------------------+
Please select one option from the list above (type "e" or "q" to escape): 1
+----------------------------------------+
| Target information                     |
+----------------------------------------+
| target                Local            |
+----------------------------------------+
| target directory      /tmp             |
+----------------------------------------+
+---------------------------------+
| Backup object                   |
+---------------------------------+
| database1        mydb           |
+---------------------------------+
| database2        mysql          |
+---------------------------------+
| database3        test           |
+---------------------------------+
+---------------------------------+
| Backup manner                   |
+---------------------------------+
| manner           manual         |
+---------------------------------+
Acording to the above form, backup now? y/n [y]: y
root@localhost's password:
[Success] Backup databases and tables
+-----------------------------------+
| ID    Actions for getting started |
+-----------------------------------+
| 1     Create a new database       |
| 2     Backup databases & tables   |
| 3     Restore databases & tables  |
+-----------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

5 Enter “3” to restore a database or table.

```
+------------------------------------------------------------------------+
| Note:                                                                  |
|     You can choose to restore databases or tables in backup files  |
+------------------------------------------------------------------------+
+---------------------+
| ID    Restore object |
+---------------------+
| 1     Databases      |
| 2     Tables         |
+---------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

6 Enter “1” to restore a database.

```
+------------------------------------------------------------+
| Note:                                                      |
|       Connect to a MySQL server using your login information: |
|       IP or host name, user name, password are required       |
+------------------------------------------------------------+
Please type host name or IP(default localhost):1
```

```
Please type user(default root):
Please type password:
ssh: connect to host 1 port 22: Invalid argument
[Failure] Failed to get socket
Do you want to continue y/n [y]:
Please type host name or IP(default localhost):
Please type user(default root):
Please type password:
root@localhost's password:
Waiting....
Please type directory of backup files:/tmp
+----------------------------------------+
| Note: Back up files searched in /tmp/  |
+----------------------------------------+
+-------------------------------------+
| ID    backups                       |
+-------------------------------------+
| 1     2009-03-31_20:14:21_databases |
+-------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 1
+-----------------+
| Note: databases  |
+-----------------+
+-----------------+
| ID    Databases |
+-----------------+
| 1     mysql     |
+-----------------+
Please select one option from the list above (type "e" or "q" to escape): 1
+--------------+
| Note: tables  |
+--------------+
+--------------------------------+
| ID    Tables                   |
+--------------------------------+
| 1     columns_priv             |
| 2     db                       |
| 3     event                    |
| 4     func                     |
| 5     general_log              |
| 6     help_category            |
| 7     help_keyword             |
| 8     help_relation            |
| 9     help_topic               |
| 10    host                     |
| 11    ndb_binlog_index         |
| 12    plugin                   |
| 13    proc                     |
| 14    procs_priv               |
| 15    servers                  |
| 16    slow_log                 |
| 17    tables_priv              |
| 18    time_zone                |
| 19    time_zone_leap_second    |
| 20    time_zone_name           |
| 21    time_zone_transition     |
| 22    time_zone_transition_type |
| 23    user                     |
+--------------------------------+
Please select options from the list above (comma-separated, type "e" or "q" to escape): 1
+-----------------------------------------------------------------------------+
| Backup files                                                                |
+-----------------------------------------------------------------------------+
| directory                          /tmp/2009-03-31_20:14:21_databases |
+-----------------------------------------------------------------------------+
+-----------------------------------------+
| Restore object                          |
+-----------------------------------------+
| table1               mysql.columns_priv |
+-----------------------------------------+
According to the form above, restore now? y/n [y]:
root@localhost's password:
[Success] Restore by backup files
+----------------------------------+
| ID    Actions for getting started |
+----------------------------------+
| 1     Create a new database      |
| 2     Backup databases & tables  |
| 3     Restore databases & tables |
+----------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

7 Enter “e” to return to the main setup menu.

```
+-------------------------------------------------------------+
| ID    init database setup steps                             |
+-------------------------------------------------------------+
| 1     Initial setup                                         |
| 2     Setting access and permissions                        |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                            |
| 5     SSD storage system Management                         |
| 6     Send incident report                                  |
+-------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

Step 4: Participating in a Cluster

1 Enter “4” to select “Participating in a cluster”.

```
+-------------------------------------------------------------------------------------------------------+
| Step4. Participating in a cluster                                                                     |
|     Participating in a cluster support features about replication/failover configuration/setup  |
| Notice or Best Practice:                                                                              |
|   1. Replication configurations                                                                       |
|   2. Failover configurations                                                                          |
+-------------------------------------------------------------------------------------------------------+
```

2 Enter “1” to select “Replication configurations”.

```
+-----------------------------------------------------+
| ID    Configuration Type                            |
+-----------------------------------------------------+
| 1     Configuratin&setup as master for replication |
| 2     Configuratin&setup as slave for replication  |
+-----------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

3 Enter “1” to select “Configuration & setup as master for replication”.

```
+-------------------------------------------------------+
| id          key          value        type          |
+-------------------------------------------------------+
| 1           server-id    1            key-value     |
| 2           log-bin      Disabled     key-value     |
+-------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

4 Enter “1” to select “server-id”. Enter new values for the “server-id” and “log-bin” values.

```
Type new value for server-id: 2
Do you want to config another parameter? y/n [y]: y
+-------------------------------------------------------+
| id          key          value        type          |
+-------------------------------------------------------+
| 1           server-id    1            key-value     |
| 2           log-bin      Disabled     key-value     |
+-------------------------------------------------------+
Type new value for log-bin:6
Are you sure above settings? y/n [y]: y
Do you want to restart mysql as master? y/n [y]: y
Schooner MySQL is shutting down.
Waiting for Schooner MySQL to restart as master
Start Schooner MySQL as master successfully
+-----------------------------------------------------+
| ID    Configuration Type                            |
+-----------------------------------------------------+
| 1     Configuratin&setup as master for replication |
| 2     Configuratin&setup as slave for replication  |
+-----------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

5 Enter “2” to select “Configuration & setup as slave for replication”. Enter the required information when prompted.

```
+-------------------------------------------------------------------------------+
| id                key               value              type                 |
+-------------------------------------------------------------------------------+
| 1                 server-id           2                key-value            |
| 2                 master-host       Disabled           key-value            |
| 3                 master-user       Disabled           key-value            |
| 4                 master-password   Disabled           key-value            |
| 5                 master-port       Disabled           key-value            |
+-------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 1
```

```
Type new value for server-id :2
Do you want to config another parameter? y/n [y]:
+-------------------------------------------------------------------------------+
| id                key               value             type                    |
+-------------------------------------------------------------------------------+
| 1                 server-id           2               key-value              |
| 2                 master-host       Disabled          key-value               |
| 3                 master-user       Disabled          key-value               |
| 4                 master-password   Disabled          key-value               |
| 5                 master-port       Disabled          key-value               |
+-------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 2
Type new value for master-host :mysql-master
Do you want to config another parameter? y/n [y]:
+-------------------------------------------------------------------------------+
| id                key               value             type                    |
+-------------------------------------------------------------------------------+
| 1                 server-id           2               key-value               |
| 2                 master-host       mysql-master      key-value               |
| 3                 master-user       Disabled          key-value               |
| 4                 master-password   Disabled          key-value               |
| 5                 master-port       Disabled          key-value               |
+-------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 3
Type new value for master-user :mysql-master-user
Do you want to config another parameter? y/n [y]:
+-----------------------------------------------------------------------------------------+
| id                  key                 value               type                    |
+-----------------------------------------------------------------------------------------+
| 1                   server-id             2                 key-value               |
| 2                   master-host         mysql-master        key-value               |
| 3                   master-user         mysql-master-user   key-value               |
| 4                   master-password     Disabled            key-value               |
| 5                   master-port         Disabled            key-value               |
+-----------------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 4
Type new value for master-password :
Do you want to config another parameter? y/n [y]:
+-----------------------------------------------------------------------------------------+
| id                  key                 value               type                    |
+-----------------------------------------------------------------------------------------+
| 1                   server-id             2                 key-value               |
| 2                   master-host         mysql-master        key-value               |
| 3                   master-user         mysql-master-user   key-value               |
| 4                   master-password     ******              key-value               |
| 5                   master-port         Disabled            key-value               |
+-----------------------------------------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape): 5
Type new value for master-port :3306
Do you want to config another parameter? y/n [y]: n
+-----------------------------------------------------------------------------------------+
| id                  key                 value               type                    |
+-----------------------------------------------------------------------------------------+
| 1                   master-port         3306                key-value               |
| 2                   master-password     ******              key-value               |
| 3                   master-user         mysql-master-user   key-value               |
| 4                   master-host         mysql-master        key-value               |
| 5                   server-id             2                 key-value               |
+-----------------------------------------------------------------------------------------+
Are you sure above settings? y/n [y]:
Do you want to restart mysql as slave? y/n [y]:
wait mysql start
Start mysql successfully
+-----------------------------------------------------+
| ID    Configuration Type                            |
+-----------------------------------------------------+
| 1     Configuratin&setup as master for replication  |
| 2     Configuratin&setup as slave for replication   |
+-----------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

6 Enter “e” to return to the main setup menu.

```
-------------------------------------------------------------
| ID    init database setup steps                           |
+-----------------------------------------------------------+
| 1     Initial setup                                       |
| 2     Setting access and permissions                      |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                          |
| 5     SSD storage system Management                       |
| 6     Send incident report                                |
+-----------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

Step 5: SSD Storage System Management

1 Enter “1” or “2” to select the SSD storage format. Enter new values when prompted.

```
+-------------------------------------------------+
| ID    Configuration Type                        |
+-------------------------------------------------+
| 1     Configuratin&setup as master for replication |
| 2     Configuratin&setup as slave for replication  |
+-------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

2 Enter “e” to return to the main setup menu.

```
-------------------------------------------------------------
| ID    init database setup steps                           |
+-----------------------------------------------------------+
| 1     Initial setup                                       |
| 2     Setting access and permissions                      |
| 3     Getting started with a new schema or existing database |
| 4     Participating in a cluster                          |
| 5     SSD storage system Management                       |
| 6     Send incident report                                |
+-----------------------------------------------------------+
Please select one option from the list above (type "e" or "q" to escape):
```

Step 6: Send Incident Report

1 Enter “6” to send the incident report.

```
+-------------------------------------------------------------+
| ID    init database setup steps                              |
+-------------------------------------------------------------+
| 1    Initial setup                                          |
| 2    Setting access and permissions                        |
| 3    Getting started with a new schema or existing database |
| 4    Participating in a cluster                            |
| 5    SSD storage system Management                          |
| 6    Send incident report                                  |
+-------------------------------------------------------------+
Please select one option from the list above (type e/q to escape): 6
+-----------------------------------------------------------------------+
| Step6. Send incident report feature                                    |
|    Send incident report feature Send incident report to Schooner.  |
| Notice or Best Practice:                                               |
|  1. This function will send mail to Schooner                       |
+-----------------------------------------------------------------------+
[Success] Send incident report feature
```

Step 7: Configure SMTP Server

```
[Skip] SMTP Server Configuration (Required)
+-------------------------------------------------+
| Step8. SNMP Configuration (Optional)            |
| SNMP Configuration is optional                  |
| Please Note:                                    |
|   1. This step is optional and can be skipped   |
+-------------------------------------------------+
SNMP Configuration is optional, would you like to skip it?, y)es, n)o, b)ack y/n/b [n]: y
[Skip] SNMP Configuration (Optional)
+-------------------------------------------------------------------------------------------------------+
| Step9. SchoonerMySQL Configuration (Required)                                                         |
| SchoonerMySQL Initial Database Setup is mandatory                                                     |
| Please Note:                                                                                          |
|   1. This step is mandatory and can NOT be skipped                                                    |
|   2. This step would run init_database_setup.php standard configuration part to initial database     |
|   3. This step would create default admin/cactiuser passport                                          |
|   4. This step would generate cacti templates                                                         |
|   5. This step would schedule cron job to monitor mysql metrics                                       |
+-------------------------------------------------------------------------------------------------------+
SchoonerMysql Configuration is mandatory, would you like to skip it?, y)es, n)o, b)ack y/n/b [n]:
[Success] SchoonerMySQL Configuration (Required)
+-----------------------------------------------------------------------+
| Congratulations, the First Time Wizard CLI has completed successfully.  |
+-----------------------------------------------------------------------+
+-------------------------------------------------------------------------------------------------------------------------------------------+
| Schooner Mysql CMD scripts are available, you can find them on location '/var/www/html/admin/cli/schooner-mysql/bin'  |
+-------------------------------------------------------------------------------------------------------------------------------------------+
[admin@lab76 ~]$
```