



FortiSwitch Fabric Manager

Version 1.1

Install Guide

FORTINET[®]

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Version 1.1

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1 Introduction

1.1 Scope

This document describes the process of installing the FortiSwitch Fabric Manager on a 64-bit Linux operating system. It also gives some initial steps to add fabrics for management and talks about installing and configuring database to work with the FFM server.

1.2 Audience

This guide is intended for the use of Fortinet engineers and the customers of Fortinet.

1.3 FFM v1.1 Release Package

FortiSwitch Fabric Manager v1.1 release contains the following files for installing in 64-bit Linux operating systems:

A. Install Files:

1. FFM_EMS_Linux.zip
2. my.cnf
3. mysql-connector-java-5.0.7-bin.jar

B. License Tool:

1. FFMLicense.zip

C. Documents

1. FFM_Install_Guide.doc
2. FFM_License_Generation_Tool.doc
3. FFM_Release_Notes.doc

More FortiSwitch documentation is available at <http://docs.fortinet.com/fsw40.html>.

1.4 Customer Service and Technical Support

Fortinet Technical Support provides services designed to make sure that your Fortinet products install quickly, configure easily, and operate reliably in your network.

To learn about the technical support services that Fortinet provides, visit the Fortinet Technical Support web site at <https://support.fortinet.com>.

You can dramatically improve the time that it takes to resolve your technical support ticket by providing your configuration file, a network diagram, and other specific information. For a list of required information, see the Fortinet Knowledge Center article [What does Fortinet Technical Support require in order to best assist the customer?](#)

1.5 Training

Fortinet Training Services provides classes that orient you quickly to your new equipment, and certifications to verify your knowledge level. Fortinet provides a variety of training programs to serve the needs of our customers and partners world-wide.

To learn about the training services that Fortinet provides, visit the Fortinet Training Services web site at <http://training.fortinet.com>, or email them at training@fortinet.com.

1.6 Fortinet Documentation

The Fortinet Technical Documentation web site, <http://docs.fortinet.com>, provides the most up-to-date versions of Fortinet publications, as well as additional technical documentation such as technical notes.

In addition to the Fortinet Technical Documentation web site, you can find Fortinet technical documentation on the Fortinet Tools and Documentation CD, and on the Fortinet Knowledge Center.

1.6.1.1 Fortinet Tools & Documentation CD

Many Fortinet publications are available on the Fortinet Tools and Documentation CD shipped with your Fortinet product. The documents on this CD are current at shipping time. For current versions of Fortinet documentation, visit the Fortinet Technical Documentation web site, <http://docs.fortinet.com>.

1.6.1.2 Fortinet Knowledge Base

The Fortinet Knowledge Base provides additional Fortinet technical documentation, such as troubleshooting and how-to-articles, examples, FAQs, technical notes, a glossary, and more. Visit the Fortinet Knowledge Base at <http://kb.fortinet.com>.

1.6.1.3 Comments on FortiMail technical documentation

Please send information about any errors or omissions in this document to techdoc@fortinet.com.

2 FFM Installation in 64-bit Linux OS with MySQL Database

2.1 Requirements

2.1.1 FortiSwitch Fabric Manager

The following files would be required to install FFM in this environment.

1. FFM_EMS_Linux.zip
2. my.cnf
3. mysql-connector-java-5.0.7-bin.jar

2.1.2 Software Requirement

1. MySQL Server v5.0.x
2. OS: Linux CentOS 5 / Fedora Core 9 / RHEL 4 / RHEL 5

Note: The Linux OS has to be installed in default Server GUI mode.

3. Client Browser Requirements: Mozilla Firefox 3.X (Recommended)

2.1.3 Hardware Requirements

1. Minimum requirements for Server: 2.66 GHz., 2 GB RAM, 40 GB HDD (Recommended only for demo installations)
2. Minimum requirements for Client: 2.66 GHz., 1 GB RAM, 20 GB HDD
3. Recommended requirements for Server: 2.66 GHz, 4 GB RAM, 200 GB HDD

2.2 Setting Up the Environment

Set the Locale to English (United States).

2.3 Verification of the Software requirements

Verify if MySQL server is running by executing the command “**mysql -u root**” on the terminal.

If the MySQL server is running, you will be taken to the mysql prompt as mentioned below

```
[root@fortinet root]# mysql -u root
```

```
Welcome to the MySQL monitor. Commands end with ; or \g.
```

```
Your MySQL connection id is 1
```

```
Server version: 5.0.67-community MySQL Community Edition (GPL)
```

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql>

For steps to install MySQL please check the Section "[MySQL Installation Steps](#)".

2.4 Preconditions

- Verify whether the operating system is 32 bit or 64 bit by executing the command "**uname -a**" from the terminal.
- Verify which version of operating system is installed by executing the command "**cat /proc/version**" from the terminal.
- Ensure that the FFM server is not running currently.
- The server should be installed and started as root user.
- Verify proper FFM license file is generated for corresponding server MAC address (Server running machine)
- DNS for the HOSTNAME of the Linux machine should be resolved to the system's IP. To verify it please do a ping \$HOSTNAME from the shell prompt. If the command is successful and resolves to the correct IP-address assigned for the server, then you can install the server. In case of a problem please edit, the /etc/hosts file to correct the DNS issue. A sample file will look like

127.0.0.1 Local host

172.18.20.221 Management_Server

2.5 Radius Server Configuration

Radius server needs to be configured for the FFM Radius Authentication process. It supports Password Authentication Protocol (PAP) based Username/Password Authentication. A new Vendor Specific Attribute called "FFM-User-Role" has been introduced to indicate the FFM user access privileges.

The syntax is,

FFM-User-Role = <Group-Name>

where Group-Name specifies FFM Security User Group name. The following are the Security Groups available in FFM by default,

- Default - Default user privilege
- Administrator - Administrative user privilege
- Surveillance - View privilege

"FFM-User-Role" is an optional field. If it does not exist, default user privilege provided to the authenticated FFM user.

Vendor Specific Attribute (VSA) configuration steps:

1. Stop the Radius Server.
2. Add the "FFM-User-Role" attribute in existing Radius Fortinet VSA dictionary.

```

VENDOR Fortinet 12356

BEGIN-VENDOR Fortinet
ATTRIBUTE Fortinet-Group-Name 1 string
ATTRIBUTE Fortinet-Client-IP-Address 2 ipaddr
ATTRIBUTE Fortinet-Vdom-Name 3 string
..
ATTRIBUTE FFM-User-Role 10 string

END-VENDOR Fortinet

```

3. Add a new user with FFM-User-Role property,

```

fortinet Cleartext-Password := "fortinet"
FFM-User-Role = "Administrator"

```

4. Start the Radius Server.

2.6 Installing the FFM Application

The FFM can be installed on MySQL database through the following steps.

1. MySQL configuration steps:

Note: These MySQL configuration steps are to be carried out ONLY ONCE during installation of FFM Release 1.1 in any specific machine for the first time. These Steps are NOT required for re-installation of FFM Release1.1 on the same machine.

- i. Stop the MySQL Server (following command may be used)
 - o **/etc/init.d/mysql stop**
 - [root@ FFM bin]# /etc/init.d/mysql stop
 - Shutting down MySQL... [OK]
 - [root@ FFM bin]#
- ii. Delete the files ib_logfile0, ib_logfile1, ibdata1 located in the MySQL installed folder. E.g. /var/lib/mysql
- iii. Copy the my.cnf file to /etc/ folder. This file is provided as part of the release.
- iv. Start the MySQL server. (following command may be used)
 - o **/etc/init.d/mysql start**
 - [root@ FFM bin]# /etc/init.d/mysql start
 - Starting MySQL [OK]
 - [root@ FFM bin]#
- v. Login into the MySQL command prompt and execute the command "**show engines;**" and verify that the Support status of "InnoDB" is set to "Yes" or "Enabled".

-
2. Extract the "FFM_EMS_Linux.zip" file using the following command.

- **unzip FFM_EMS_Linux.zip**

```
[root@FFM 64_bit_OS]# unzip FFM_EMS_Linux.zip
Archive:  FFM_EMS_Linux.zip
  creating:  FFM/EMS/
  creating:  FFM/EMS/db/
      :
      :
  inflating: FFM/EMS/dbrestore/lib/commons-net-1.4.0.jar
  inflating: FFM/EMS/dbrestore/log4j.xml
[root@ FFM 64_bit_OS]#
```

3. Once FFM has been successfully extracted, the FFM directory and subdirectories will have been created.
4. A FFM license must be generated to complete the installation. The hardware MAC address of the interface running FFM is required to generate the License.dat file. Once the License.dat file is received, the user can proceed with the installation.
5. Copy the license file (License.dat), into the folder: "FFM/EMS/server/ems/conf".
6. Copy the "mysql-connector-java-5.0.7-bin.jar" in the following extracted folders "FFM/EMS/server/ems/lib" and "FFM/EMS/dbrestore/lib".
7. Create a new database in MySQL. (Execute this command to create a new database: "**mysqladmin create -u root FFM_EMS_DB**"). Here "FFM_EMS_DB" is the default database name which the FFM server uses.
 - i Login to mysql by executing the command "**mysql -u root**" from the terminal
 - ii Verify whether the newly created database is available by executing the command "**show databases;**"
8. To configure the FFM server, change directories (cd) to "FFM/EMS/bin" and execute the "**sh configureserver.sh**" file. Then set the database as MySQL (which is the default selection) and set the newly created database name in the "Database Name" field, and click "OK" button.

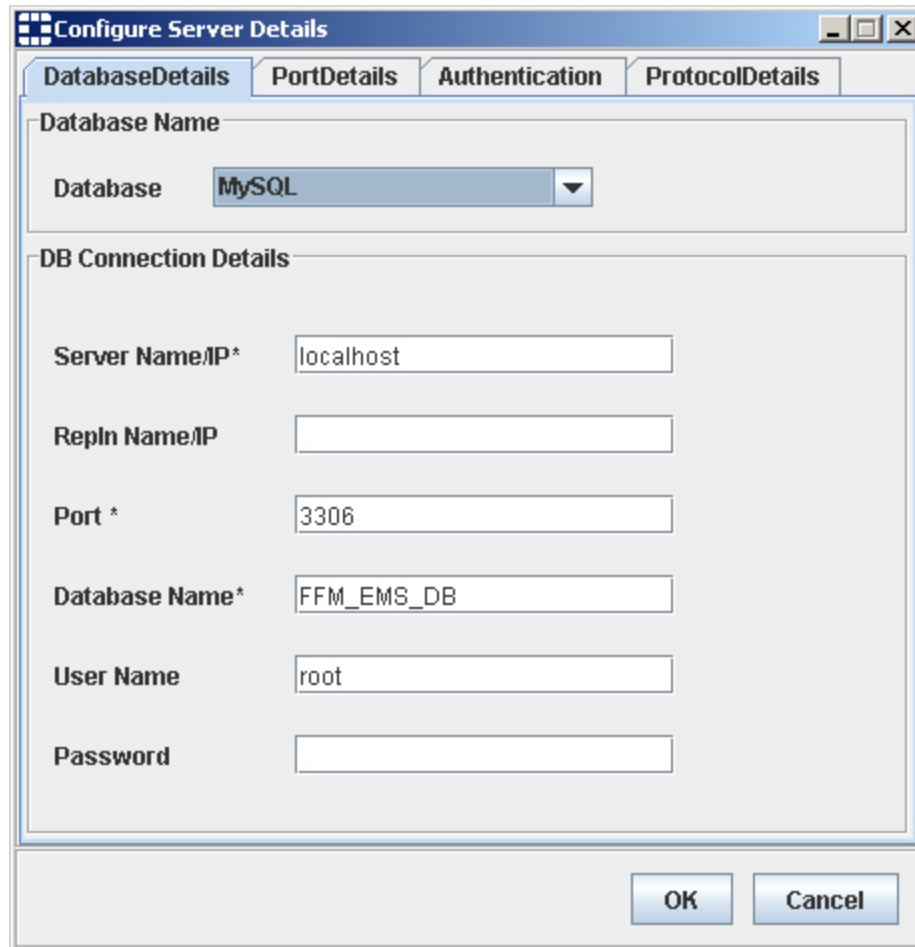


Figure 1: Configure Server Screen for MySQL Database

9. To configure the Radius authentication, again execute the "**sh configureserver.sh**" file, go to "Authentication" tab in Configure Server window. Enable the RADIUS Login module and disable the DBLogin module. Click Edit button to configure the Radius parameter like Radius Server host name, port and the shared secret values. Finally click Save button to save the configuration details.

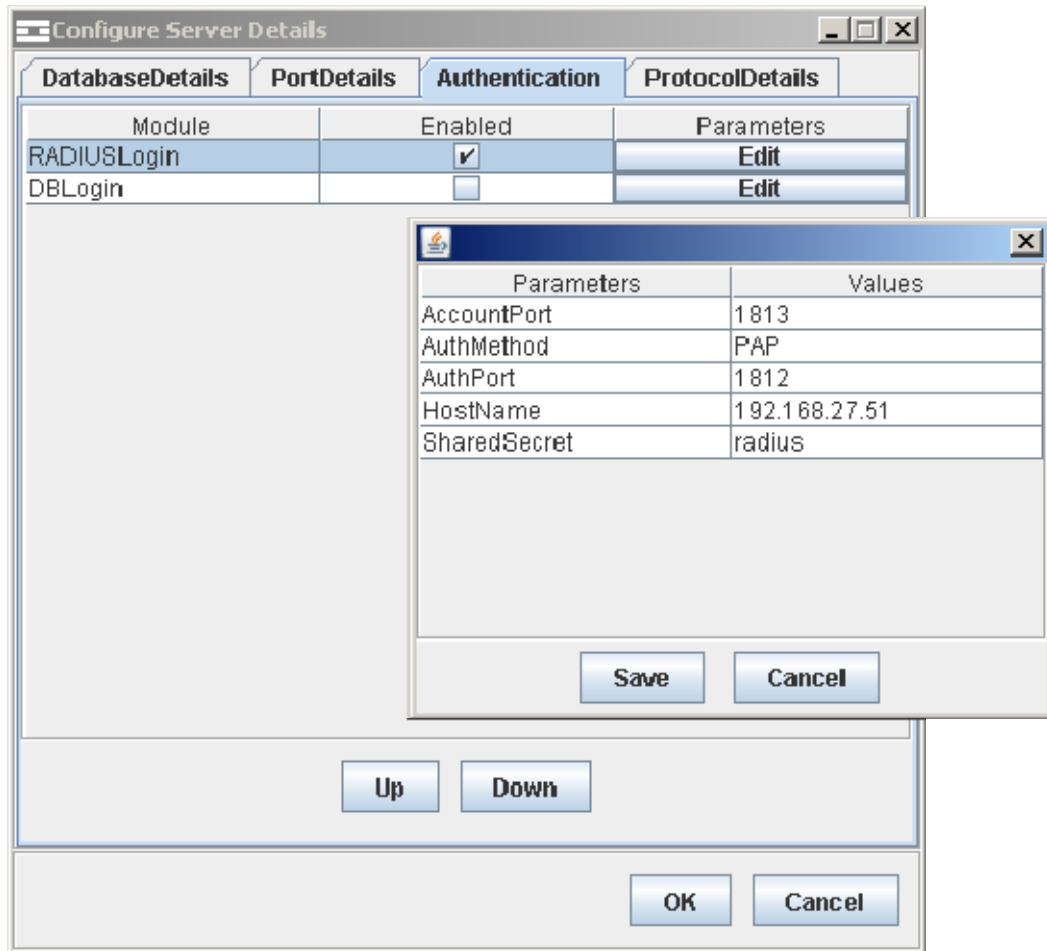


Figure 2: Configure Server Screen for Radius Authentication

10. Start the server, by changing the directory to "FFM\EMS\bin" and run the "**sh startFFMserver.sh**" file. This command must be run either from the server GUI console, or through a VNC connection.



Figure 3: FFM Server Startup screen

11. The client can be started in any machine in the same network, either in an IE 7 browser or Mozilla Firefox 3.x version web browser. Type the following URL scheme of "http ://< IP Address of the machine where the server is running>:8080".

Example: <http://172.18.20.221:8080> to access the FFM server

12. After FFM server has started, the default username and password to login to FFM will be 'admin' and 'admin123' respectively, user will be prompted to change this default password during the first login

2.7 MySQL Installation Steps

1. Download the latest MySQL community edition (server) for RHEL 4 (same rpm can be used for CentOS 5 / Fedora Core 9 / RHEL 5)
2. Download the latest MySQL community edition (client) for RHEL 4 (same rpm can be used for CentOS 5 / Fedora Core 9 / RHEL 5)

Note: Appropriate rpm should be obtained for 64 bit OS.

3. The user must be a super user (i.e. root user) or a user with super user privilege to properly download and install MySQL and FFM.
4. Go to the rpm downloaded path: (in this example, the files are downloaded to the "/" directory.
5. Run the following command "rpm -ivh MySQL-server-community-5.0.67- 0.rhel4.i386.rpm".
6. Run the following command "rpm -ivh MySQL-client-community-5.0.67- 0.rhel4.i386.rpm"
7. Verify whether MySQL Server is running by executing the command "**mysql -u root**" from the terminal.

```
[root@fortinet]# mysql -u root
```

```
Welcome to the MySQL monitor. Commands end with ; or \g.
```

```
Your MySQL connection id is 1
```

```
Server version: 5.0.67-community MySQL Community Edition (GPL)
```

Type 'help;' or '\h' for help. Type '\c' to clear the buffer.

mysql>

8. Getting around in MySQL.

- Typing "**mysql -u root**" will get you into the mysql monitor:
- Typing "**exit**" will quit out of the mysql monitor:

9. To get help on 'mysql' commands, type '?' or '**help**' in the MySQL prompt, as shown below.

mysql>?

mysql> help

3 Working with FFM Server

Client can be started in either a IE 7 browser or Mozilla Firefox 3.x version web browser by typing "http ://<IP Address of the machine where the server is running>:8080"

e.g. <http://172.18.20.221:8080>

1. After starting the client the user will receive the login screen.
2. In the login screen, provide the username and password (default is admin - admin123).
3. Press the "Login" button to connect to the FFM server.
4. User will be prompted to change this default password during the first login

3.1 Discovering a Network

1. Click "Topology" menu in the menu bar and select "Discovery" menu item.
2. You will receive a dialog with the "Discovery" tab (and other tabs). Click 'Add' button.
3. The user will receive the "Add - Discovery Details" dialog with either "Entire Network" or "IP Range" options.
4. If an entire network needs to be discovered, choose "Entire Network", then type the network IP address in "Network Address", e.g., "192.168.20.0", with the net mask address in the "Mask Address" e.g., "255.255.255.0". Then click "Start" button to start the discovery.
5. If a specific IP range is to be discovered, choose "IP Range", then type start the IP address in "Start IP Address", e.g., "192.168.20.11", and end IP address in "End IP Address", e.g., "192.168.20.100". Then click the "Start" button to start the discovery.
6. Then the discovery module will discover the FortiSwitch Fabrics. (default SNMP community used is "public")

3.2 Adding a Device

1. Right click on "FortiSwitch Fabric" node in the topology tree and select "Add Element" menu item.
2. User will get an Add Element dialog where he/she can enter the device's IP address and the device name and click OK button to add the device to the FFM.

3.3 Shutting Down the FFM Server

- To shut the server, open a terminal and change the directory location to " FFM/EMS/bin" and execute "**sh shutdown.sh -S**" command.