

## Prerequisites:

### Wi-Fi Radios: 2 x TP-LINK WA7510 v2

- Both radios must be on the 192.168.2.0/24 subnet and accessible
- The provider side radio must have an IP address of 192.168.2.5
- The client side radio must have an IP address of 192.168.2.6

The screenshot shows a web interface with a green header labeled 'Status'. Below the header, there are two rows of information: 'Firmware Version: 3.13.0 Build 140730 Rel.39812n' and 'Hardware Version: WA7510N v2 00000000'. A horizontal line separates this from the 'LAN' section below. The 'LAN' section displays 'MAC Address:' followed by a blurred box, 'IP Address: 192.168.2.5', and 'Subnet Mask: 255.255.255.0'.

- Both radios must have SNMP enabled.

The screenshot shows a web interface with a sidebar on the left containing a menu with items like 'Status', 'Quick Setup', 'QSS', 'Operation Mode', 'Network', 'Wireless', 'DHCP', 'System Tools' (highlighted), and several sub-items under 'System Tools' including '- SNMP' (highlighted in green), '- Diagnostic', '- Ping Watch Dog', '- Speed Test', '- Firmware Upgrade', '- Factory Defaults', '- Backup & Restore', '- Reboot', '- Password', and '- System Log'. The main content area has a green header labeled 'SNMP Settings'. Below the header, there are several configuration fields: 'SNMP Agent:' with radio buttons for 'Enable' (selected) and 'Disable'; 'SysContact:' with an empty text box; 'SysName:' with the text 'Lunokhod 1'; 'SysLocation:' with the text 'On the Light Side of the M'; 'Get Community:' with the text 'public'; 'Get Source:' with the text '0.0.0.0'; 'Set Community:' with the text 'private'; and 'Set Source:' with the text '0.0.0.0'. At the bottom right, there is a 'Save' button.

**LMS Server Operating System:** Raspbian Jessie running on a Raspberry Pi

## LMS Server Network

- Same subnet as the Wi-Fi radios
- LMS is not intended to be run on a publicly accessible machine. It should be installed on a machine in a private network.

## Automatic Installation

Automatic installation should be used on a new installation of Raspbian.

### Install Git

```
sudo apt-get update
sudo apt-get install git
```

### Clone the Repository

```
sudo mkdir /183LMS
sudo chown pi:pi /183LMS # Where pi is your username
cd /
git clone https://github.com/183LMS/183LMS
```

### Run the Installer

```
cd /183LMS
./install.sh
```

If prompted for the MySQL root user password, enter “rootpass”

### Run the Server

To start a rails server daemon, run the following:

```
cd /183LMS/website
rails server -d
```

The application is now bound to port 3000 on the LMS server.

Wait 5 minutes to allow the LMS to collect statistics.

To verify the website is running, visit [http://\[192.168.2.x\]:3000/](http://[192.168.2.x]:3000/) with a web browser, where 192.168.2.x is the IP address of the LMS server.

# Manual Installation

## Clone the Repository

```
sudo mkdir /183LMS
sudo chown pi:pi /183LMS # Where pi is your username
cd /
git clone https://github.com/183LMS/183LMS
```

## Install Required Packages

The NMS server requires the following packages:

- mysql-server
- ruby-rails
- snmp
- snmpd
- python-mysqldb
- git
- libmysqlclient-dev

To install the packages, run the following on the NMS server:

```
sudo apt-get update
sudo apt-get install mysql-server ruby-rails snmp \
snmpd python-mysqldb git libmysqlclient-dev
```

When prompted for the MySQL root user password, enter “rootpass”

## Set Up Database

To create database tables, run the following:

```
mysql -u root -prootpass < /183LMS/setup_db.sql
```

## Set Up Cron Jobs

To setup the cron jobs that grab statistics from the Wi-Fi radios, open `/etc/crontab` as root with a text editor, and add the following lines to the crontab:

```
* * * * * root /183LMS/lms_ping.pl
* * * * * root /183LMS/lms_asnmp.pl && /cs183/update_cumulative.py atable
* * * * * root /183LMS/lms_bsnmp.pl && /cs183/update_cumulative.py btable
```

## Start Up Ruby On Rails App

To install the required Ruby gems, run the following:

```
cd /183LMS/website
bundle install
```

To start a rails server daemon, run the following:

```
cd /183LMS/website
rails server -d
```

The application is now bound to port 3000 on the LMS server.

Wait 5 minutes to allow the LMS to collect statistics.

To verify the website is running, visit [http://\[192.168.2.x\]:3000/](http://[192.168.2.x]:3000/) with a web browser, where 192.168.2.x is the IP address of the LMS server.