



# **MP01 Administrator Manual**

**Version: V1.0**

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# MP01 Administrator Manual

This document describes detailed information for the MP01, and it will guide you through the installation for setting up telephony system and providing Internet access with MP01.

## 1. Introduction

The MP01 is a WiFi mesh VoIP ATA (analog terminal adapter) operating in the license-exempt 2.4GHz ISM band. The MP01 is the first WiFi mesh ATA in the market, using a wireless mesh network as backhaul to interconnect phones and host LAN/WAN access to computers connected to its Ethernet port. MP01 WiFi mesh ATA helps you to build the wireless VoIP communication system with open hardware design and open source firmware. It provides affordable voice and data services for people.

### 1.1 Mesh networking

Mesh networking is a type of networking wherein each node in the network may act as an independent router, regardless of whether it is connected to another network or not. It allows for continuous connections and reconfiguration around **broken or blocked paths by "hopping" from node to node** until the destination is reached. A mesh network whose nodes are all connected to each other is a fully connected network. Mesh networks differ from other networks. Mesh networks can be seen as one type of ad hoc network.

Mesh networks are self-healing: the network can still operate when one node breaks down or a connection goes bad. As a result, the network may typically be very reliable, as there is often more than one path between a source and a destination in the network.

### 1.2 The client-MP01

MP01 is an 802.11b/g mesh router with a single FXS port and one 10/100Mbit Ethernet port. The Mesh Potato hardware and software is open. The power, Ethernet and FXS ports are robust in order to deal with developing-world conditions like static electricity, lightning, bad power and accidental abuse. It comes in a weatherproof box for outdoor mounting and costs about the same as any other Wi-Fi router.

An analogue phone connects to the MP01 via the FXS port. FXS (Foreign eXchange Station) is a telephone interface that supplies power, dial tone and generates ringing voltage. The mesh network can be augmented via backbone links and connected to the rest of the world using VoIP trunks.

## 1.3 Server

Only one computer is required to provide the services for the Telco system. This computer, called the VT Server, could be anything from a standard laptop to a high-end server for better redundancy. The services on this computer are made up of several elements including Afrimesh, A2Billing and A3Glue. The server part consists of several software elements.

### Afrimesh

Afrimesh provides a simple management dashboard helping network operators create and sustain resilient communications networks with a minimum of fuss.

Featuring

- Powerful mesh network routing with B.A.T.M.A.N.
- Dynamic GIS visualization of your mesh on OpenStreetMap maps.
- Plan your network using the terrain elevation map.
- Visualize live health&traffic information for any mesh node.
- Keep inventory of your network devices.
- Monitor the health&usage of your Internet gateway.
- Monitor live network accounting information from pmacct.
- View network status & log messages in realtime.
- Customer management interface featuring FreeRADIUS support.
- Customer authentication featuring coova-chilli support.
- Online help and live chat support.
- Intelligent configuration assistance.
- Build and manage mesh networks even without an Internet connection.

### A2Billing

A2Billing combined with Asterisk is a full featured telecom platform and softswitch providing converged services, with self contained billing (pre or post-paid), reporting and statistics for IP and TDM based voice networks and can be configured to supply a wide range of services, rate calls, prepare and send out invoices, as well as accept payments via a number of payment service providers.

The A2Billing solution comprises of the following components:

- Server: The computer to run the system.
- Line Interface Cards: The ATCOM telephony cards hardware (optional) to connect to the TDM network (PRI, BRI, Analogue)
- Linux: The base operating system
- Asterisk: The telephony engine
- Apache: The web server
- MySQL/Postgresql: The back end database
- A2Billing: The Billing engine handling Authentication, Authorization and

---

Accounting.

### **A3Glue**

This is the glue, making Afrimesh, A2billing and the Mesh network work together. It gathers data from the network, provisioning the MP01 and make sure everything runs smoothly.

## **2. Scenarios and Installation Guide**

### **2.1 Scenarios**

#### **Stand-alone installation**

MP01s can be deployed from two units and you can make calls between them. You can then add more units to the network one at a time. You will be able to make calls and can have a closed network between the units. For the installation guide, please refer to [ATCOM MP01 Quick Start Guide V1.0.pdf](#).

#### **Telephony installation**

Deploy the MP01 for telephony and add a SIP Provider or PSTN connection to the A2Billing server. This will allow for free calls between the units and cheaper international calls.

#### **Internet Installations**

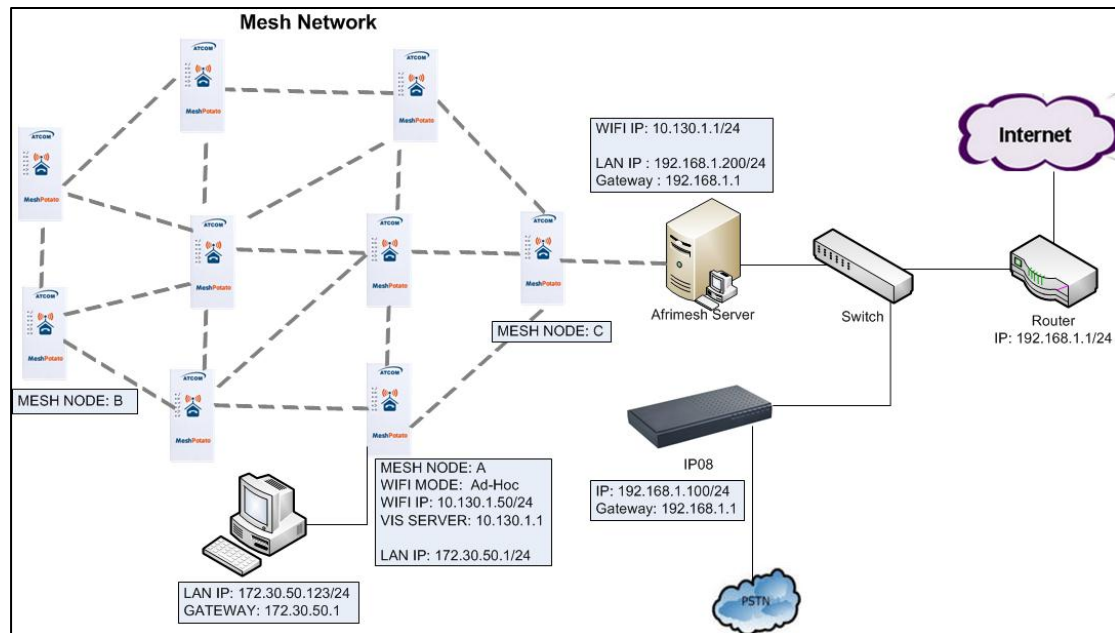
Using the MP01s to provide Internet connection. The Internet traffic goes out through a common gateway. The community needs to pay for an Internet connection through an Internet Service Provider and share the costs between its members.

#### **Combined Internet and Telephony installation**

Deploy MP01s and use it both for Internet and telephony. You connect an Internet gateway for shared broadband for the users and telephony connection to call international.

### **2.2 Installation Guide**

The network topology is shown as below. We are going to deploy a system like this.



In this network topology, all the MP01 is an extension and act as mesh node also. And VT Server is installed Afrimesh and act as a visualization server. We use IP08 as Asterisk server, and all the MP01 are registered to IP08.

The feature of this system is:

- Every MP01 has a WiFi IP and a phone number, the phone number is the same as the last digit of the WiFi IP, for example, the Mesh node A has a WiFi IP 10.130.1.50 and a phone number 50.
- **Every MP01 can be a reply for other MP01. It means even MP01 B can't reach MP01 C directly, it can be still possible to reach MP01 C via MP01 A.**
- MP01 can not only make internal calls, but international calls through IP08.
- It is very convenient to manage the mesh network on the VT Server.
- Any computer on the network should be able to talk to any other computer on the network. For example a computer connected to mesh node A should be able to download content from a web server connected to mesh node C.
- Computers connected to the MP01 by Ethernet port can access the Internet.

The following steps will show you the configurations.

### 2.2.1 Afrimesh Server Setup

This installation assumes that you have installed Ubuntu 10.04 LTS on your server and have since updated and upgraded your packages. It also assumes you have a wireless driver that works in ad-hoc mode. And all the MP01s are running version rv233.

This has been testing on the computer with the following hardware:

CPU: Pentium Dual-Core E5200 2.5GHz  
 Memory: 2GB  
 HDD: 40GB  
 Wireless Adapter: DrayTek Vigor N61 802.11n

1) Add the Afrimesh repository

```
sudo apt-add-repository ppa:afriMesh/ppa  
sudo apt-get update
```

2) Install supporting packages

```
sudo apt-get install batmand polipo villagetelco-dashboard
```

3) Install the batman visualisation server

```
wget http://download.villagetelco.org/vte/afriMesh/954/vis-i386-lucid  
sudo mv vis-i386-lucid /usr/local/sbin/
```

4) Configure pmacct

Edit /etc/pmacctd/pmacctd.conf to reflect the following:

```
!aggregate: src_host,dst_host  
aggregate: dst_host,dst_mac  
!pcap_filter: net 127.0.0.0/8  
pcap_filter: net 10.130.1.0/24  
interface: wlan0 # eth0 on VM
```

Restart pmacct

```
service pmacct restart
```

5) Configure snmpd

Edit /etc/default/snmpd to reflect the following:

```
SNMPDOPTS='-Lsd -Lf /dev/null -u snmp -g snmp -l -smux -p  
/var/run/snmpd.pid'  
/etc/snmp/snmpd.conf  
#com2sec paranoid default public  
com2sec readonly default public
```

Restart snmpd

```
sudo /etc/init.d/snmpd restart
```

Test with:

```
snmpwalk -v 2c -c public 10.130.1.1 .1.3.6.1.2.1.2.2.1.2
```

6) Configure rsyslogd Edit /etc/default/rsyslog to reflect the following:

```
#RSYSLOGD_OPTIONS="-c4"  
RSYSLOGD_OPTIONS="-c2 -r"
```

Restart rsyslogd

```
sudo service rsyslog restart
```

## 2.2.2 MP01 configuration for Afrimesh

Make sure that you have configured all the MP01s to have different WIFI IP like 10.130.1.X (X stands for 2-254). For the configuration guide, please refer to [ATCOM MP01 Quick Start Guide V1.0.pdf](#).

1) Get the Afrimesh packages for the MP01 on Afrimesh Server

```
wget  
http://download.villagetelco.org/vte/afriMesh/954/netcat_0.7.1-1_mips.ipk  
wget  
http://download.villagetelco.org/vte/afriMesh/954/villagetelco-device_1.0pre-  
r954-1_mips.ipk
```



If you haven't already set the password on the MP01, do that now by telneting to 192.168.1.20 and issuing the 'passwd' command. This will enable ssh and you will be able to continue with the following.

2) Copy the packages to the MP01.

```
scp *ipk root@192.168.1.20: /root
```

3) Login into the MP01

```
ssh root@192.168.1.20
```

4) Install and configure the packages on MP01 (Answer 'Y' when asked to replace /etc/config/afrimesh)

```
opkg install netcat_0.7.1-1_mips.ipk
opkg install villagetelco-device_1.0pre-r954-1_mips.ipk
/etc/init.d/provision enable
chmod -R a+rw /etc/config
uci set batmand.general.routing_class=1
uci set afrimesh.settings.root=10.130.1.1
uci set batmand.general.visualisation_srv=10.130.1.1
uci set system.@system[0].log_ip=10.130.1.1
uci commit
reboot
```

5) Configure DNS for MP01

Edit /etc/resolv.conf to reflect the following:

```
nameserver 141.1.1.1
```

### 2.2.3 Start up the Afrimesh Dashboard

You may be able to make this all work with the Network Manager but I ran into problems and disabled it. So, first kill the network-manager and stop any versions of batmand that might be running. You may wish to paste the below into a script for convenience. The commands should be run as root.

stop network-manager

```
killall NetworkManager
killall batmand
```

Then start your wireless interface. Replace wlan0 if necessary with whatever your wireless device.

```
ifconfig wlan0 down
iwconfig wlan0 mode ad-hoc
ifconfig wlan0 up
ifconfig wlan0 10.130.1.1/24
iwconfig wlan0 essid potato
iwconfig wlan0 channel 1
iwconfig wlan0 ap 01:CA:FF:EE:BA:BE
```

Assuming your wired Ethernet port is connected, you can set up that connectivity as well. If your Ethernet port is not eth0, adjust as appropriate.

```
iptables --flush
iptables --table nat --flush
```

```
iptables --table nat --append POSTROUTING --out-interface eth0 -j
MASQUERADE
iptables --append FORWARD --in-interface wlan0 -j ACCEPT
echo 1 > /proc/sys/net/ipv4/ip_forward
```

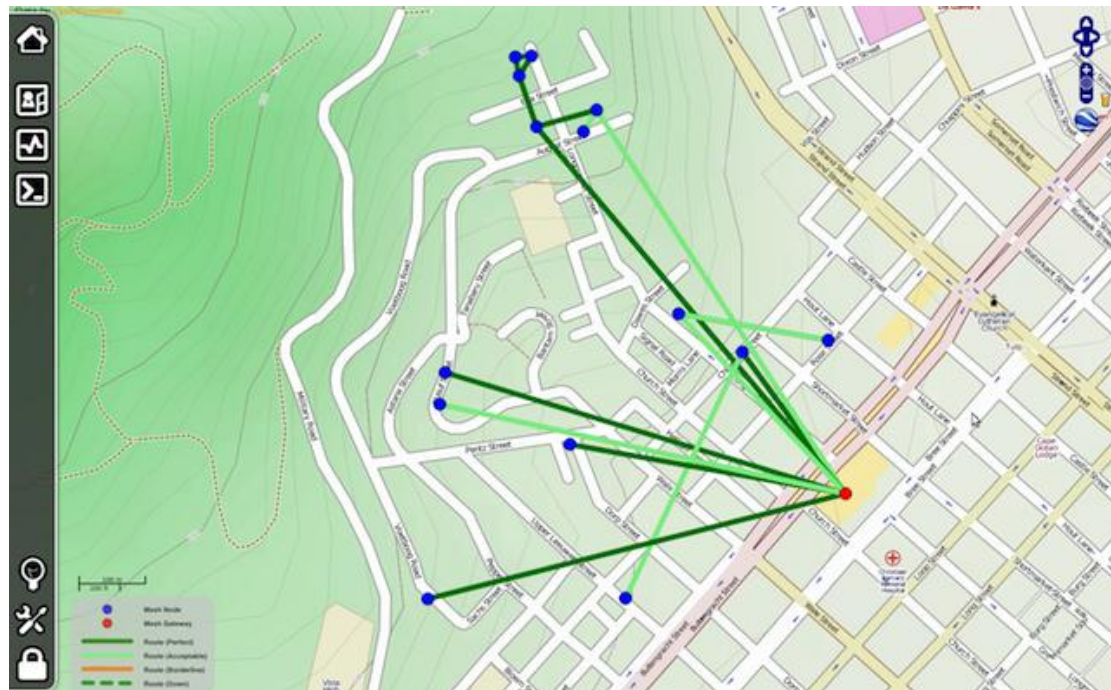
Now start the visualisation server. Initially, it is worth doing this in a separate terminal window so that you can monitor the server. Substitute your wireless device if not wlan0.

```
/usr/local/sbin/vis-i386-lucid -d1 -j wlan0
```

Finally start the batman server. Once again, substitute your wireless device if not wlan0.

```
batmand -d1 -s 10.130.1.1 -g 100mbit -a 192.168.1.0/24 wlan0
```

You're now ready to use Afrimesh. Launch Firefox and point your browser at <http://localhost/afrimesh>, you will see the Afrimesh page as below:



**Note:** Before plugging in any MP01s, don't forget to go to the settings page and set the longitude and latitude for your location.

Now you can plug in your MP01 and wait for the bouncing blue ball to appear and the MP01's phone to ring.

If you want to clear Afrimesh's database and start again, execute the following:

```
redis-cli flushdb
```

After finishing these, you should be able to manage the mesh network on Afrimesh Dashboard.

## 2.2.4 Configure the MP01 to make international calls

Before configuring the MP01, make sure that you can use IP phone which is registered to the IP08 to make international calls.

Assume that you have assigned a SIP account 6015 for MP01.

1) On MP01, edit `/etc/asterisk/sip.conf` and add some lines as below:

```
[general]
register=6015:6015@192.168.1.100
```

```
[6015]
host=192.168.1.100
secret=6015
username=6015
insecure=very
type=friend
disallow=all
allow=gsm,ulaw,alaw
dtmfmode=rfc2833
qualify=yes
canreinvite=no
nat=yes
context=default
```

- 2) On MP01, edit /etc/asterisk/extension.conf and add some lines as below:

```
[default]
exten => _9.,1,Dial(SIP/6015/${EXTEN:1})
```

- 3) Assume that the outgoing calling rules on IP08 is '88+phone number', then you can use MP01 to make international calls by dialing '988+phone number'.

## 2.2.5 Configure the MP01 to let the computers connected to it by Ethernet port can access the Internet

- 1) Paste the below into a script named meshclientgw.sh and save it to /bin on MP01.

```
#!/bin/sh
# This script has been tested with the ash shell from BusyBox.
# Written by Elektra

OLD_WIFIO_IP=`uci show network.wifi0.ipaddr | cut -d = -f 2`

if [ -z $OLD_WIFIO_IP ]
then
echo "You need to set a IP address for the wifi0 interface
before running this script."
exit 1
fi

/etc/init.d/batmand /etc/rc.d/S90batmand

OCTET_A=`uci show network.wifi0.ipaddr | cut -d = -f2 | cut -d . -f1`
```

```
OCTET_B=`uci show network.wifi0.ipaddr | cut -d = -f2 | cut -d . -f2`
OCTET_C=`uci show network.wifi0.ipaddr | cut -d = -f2 | cut -d . -f3`
OCTET_D=`uci show network.wifi0.ipaddr | cut -d = -f2 | cut -d . -f4`

cp /etc/config-mesh/* /etc/config/

uci set network.wifi0.ipaddr=${OCTET_A}.${OCTET_B}.${OCTET_C}.${OCTET_D}
uci set network.lan.ipaddr=172.30.${OCTET_D}.1
uci set network.lan.netmask=255.255.255.0
uci set network.lan.dns=172.30.${OCTET_D}.1
uci set network.lan.gateway=172.30.${OCTET_D}.1
uci set batmand.general.announce=172.30.${OCTET_D}.0/24
uci set batmand.general.disable_client_nat=true
uci set batmand.general.routing_class=1
uci set batmand.general.gateway_class=0
uci set
batmand.general.visualisation_srv=${OCTET_A}.${OCTET_B}.${OCTET_C}.1
uci commit
uci show

killall udhcpd
killall udhcpd

sleep 3

echo "Generating /etc/udhcpd.conf"

echo "start          172.30.${OCTET_D}.100" > /etc/udhcpd.conf
echo "end            172.30.${OCTET_D}.200" >> /etc/udhcpd.conf
echo "interface      eth0" >> /etc/udhcpd.conf
echo "max_leases      100" >> /etc/udhcpd.conf
echo "opt      dns     141.1.1.1" >> /etc/udhcpd.conf
echo "option  subnet  255.255.255.0" >> /etc/udhcpd.conf
echo "opt      router  172.30.${OCTET_D}.1" >> /etc/udhcpd.conf
echo "option  dns     141.1.1.1" >> /etc/udhcpd.conf
echo "option  domain  local" >> /etc/udhcpd.conf
echo "option  lease   864000" >> /etc/udhcpd.conf

sleep 1

rm /etc/rc.d/S99udhcpd
echo "mkdir /var/run/udhcpd.leases" > /etc/init.d/udhcpd
echo "udhcpd -f /etc/udhcpd.conf &" >> /etc/init.d/udhcpd
chmod +x /etc/init.d/udhcpd
```

```
In -s /etc/init.d/udhcpd /etc/rc.d/S99udhcpd
In -s /etc/init.d/batmand /etc/rc.d/S90batmand
In -s /etc/init.d/create-batman-status-page.sh
/etc/rc.d/S99create-batman-status-page.sh
echo "meshclientgw" > /etc/app-profile

echo "Done. Rebooting now."
reboot
```

2) Make this script executable.

```
chmod +x meshclientgw.sh
```

3) Run the script.

```
/bin/meshclientgw.sh
```

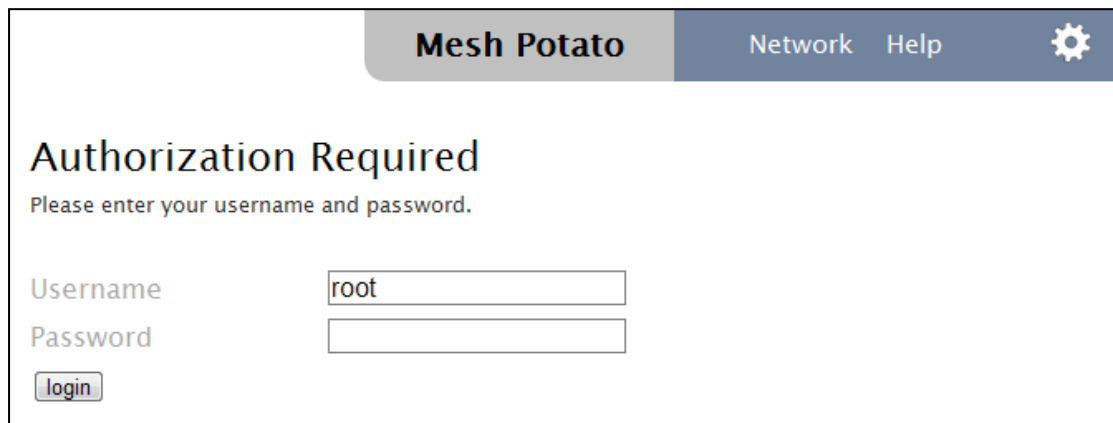
4) The MP01 will reboot after running the script. Connect your computer to MP01 through Ethernet port and set computer to DHCP. After the computer obtains a IP address from MP01, it should be able to access the Internet through MP01.

### 3. Configure MP01 by Web GUI

This section describes each web page of the utility and each page's key functions. You can access the utility via web browser on a computer connected to the MP01. The web-based utility has these main tabs: Overview, Status, System, Services and Network. Additional tabs will be available after you click one of the main tabs.

#### 3.1 How to access the Web-Based Utility

To access the web-based utility, launch the web browser on your computer, and enter the MP01's default IP address **192.168.1.20** in the Address field. Then, press Enter. You will see a login screen as below. Leave the Password field blank. (You can set a new password from the System => Admin Password screen.) Click Login to continue.



*Login screen*

The first screen that appears is the Mesh Potato GUI (shown as below). You can preview the MP01 settings and set up the WiFi network, wireless, B.A.T.M.A.N., and telephony settings here. You should notice that version r238 doesn't have Mesh Potato GUI, so it will appear LUCI interface directly.

**Mesh Potato**
Network Help

### Network

IP Address

Netmask

### Wireless

Channel

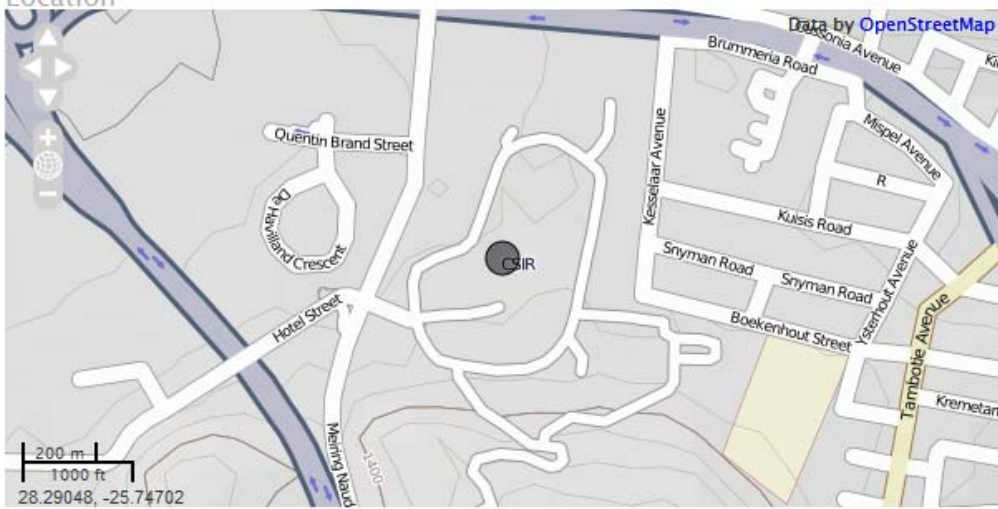
SSID

BSSID

### Map

Map Server

### Location



### B.A.T.M.A.N.

Vis Server

Gateway

Routing Class

### Telephony

SIP Trunk ☒

Address

Username

Password

*Mesh Potato GUI*

**NOTE:** If you forget the MP01 IP address you have set up, you can use fallback IP: 172.31.255.254/30. You should set up the IP Address of your PC as: 172.31.255.253 and Subnet Mask: 255.255.255.252.

## 3.2 LuCI configuration

Move your mouse to the gear icon shown on Mesh Potato GUI, you will see LUCI option. Click LUCI to enter OpenWrt main interface.



# OpenWrt

Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.64 0.29 0.20  
Hostname: OpenWrt

**Overview** Status System Services Network

Changes: 0

**Administration**

## Hello!

This is the administration area of LuCI.

LuCI is a free, flexible, and user friendly graphical interface for configuring OpenWrt Kamikaze.

On the following pages you can adjust all important settings of your router.

Notice: In LuCI changes have to be confirmed by clicking Changes - Save & Apply before being applied.

As we always want to improve this interface we are looking forward to your feedback and suggestions.

And now have fun with your router!

[The LuCI Team](#)

Powered by LuCI 0.8 Branch (v0.8+svn5662)

## OpenWrt GUI

### Overview => User Interface

You can customize the settings and the functionality of LuCI on User Interface.

# OpenWrt

## Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.21 0.23 0.17  
Hostname: OpenWrt

**Overview** Status System Services Network Changes: 0 **Administration**

### Web UI

Here you can customize the settings and the functionality of LuCI.

#### General

Language

Design

#### Files to be kept when flashing a new firmware

When flashing a new firmware with LuCI these files will be added to the new firmware installation.

uploads	<input type="text" value="/lib/uci/upload/"/>
openvpn	<input type="text" value="/etc/openvpn/"/>
uci	<input type="text" value="/etc/config/"/>
dropbear	<input type="text" value="/etc/dropbear/"/>
firewall	<input type="text" value="/etc/firewall.user"/>
passwd	<input type="text" value="/etc/passwd"/>
opkg	<input type="text" value="/etc/opkg.conf"/>

### User Interface

#### Overview => LuCI Components

The LuCI Components screen shows the package list. Here you can download and install package, and find packages using the filter as well.



## System

### Software

#### Status:

Package lists updated: OK

- [Edit package lists and installation targets](#)
- [Update package lists](#)

Download and install package:

☒ OK

Filter:

Package name	Version	Install	Delete	Description
luci-admin-core	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-admin-full	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-admin-rpc	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-cbi	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-core	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-http	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-i18n-english	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-ipkg	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-json	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-sgi-cgi	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-sys	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-theme-base	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-theme-openwrt	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-uci	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-uvl	0.8+svn5662-1	installed	<input type="checkbox"/>	
luci-web	0.8+svn5662-1	installed	<input type="checkbox"/>	
olsrd-luci	0.5.6-r4+edc947c1a5bc+luci1-2	<input type="checkbox"/>	not installed	
olsrd-luci-mod-arprefresh	0.5.6-r4+edc947c1a5bc+luci1-2	<input type="checkbox"/>	not installed	
olsrd-luci-mod-bmf	0.5.6-r4+edc947c1a5bc+luci1-2	<input type="checkbox"/>	not installed	
olsrd-luci-mod-dot-draw	0.5.6-r4+edc947c1a5bc+luci1-2	<input type="checkbox"/>	not installed	

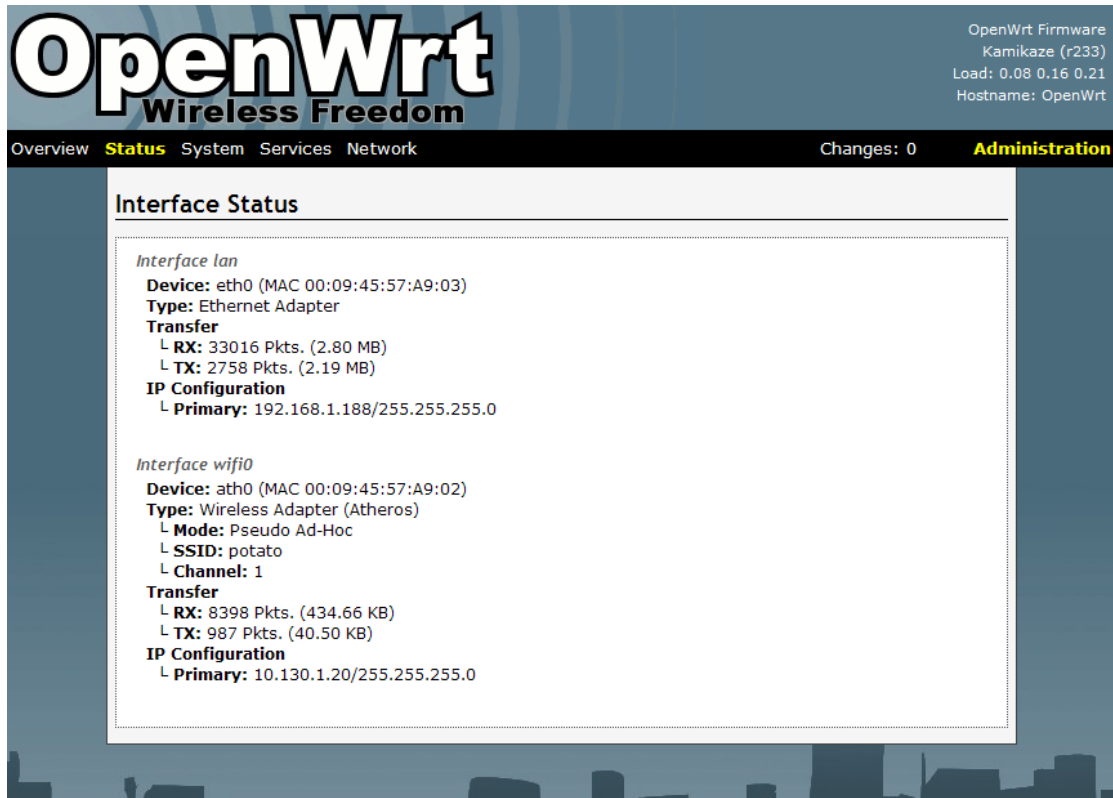
### LuCI Components

## Overview => Logout

Logout OpenWrt GUI.

## Status => Interfaces

The Interfaces screen displays the interface status, such as Device, Type, Transfer, IP Connection etc.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.08 0.16 0.21  
Hostname: OpenWrt

Overview **Status** System Services Network Changes: 0 **Administration**

### Interface Status

*Interface lan*  
**Device:** eth0 (MAC 00:09:45:57:A9:03)  
**Type:** Ethernet Adapter  
**Transfer**  
 L **RX:** 33016 Pkts. (2.80 MB)  
 L **TX:** 2758 Pkts. (2.19 MB)  
**IP Configuration**  
 L **Primary:** 192.168.1.188/255.255.255.0

*Interface wifi0*  
**Device:** ath0 (MAC 00:09:45:57:A9:02)  
**Type:** Wireless Adapter (Atheros)  
 L **Mode:** Pseudo Ad-Hoc  
 L **SSID:** potato  
 L **Channel:** 1  
**Transfer**  
 L **RX:** 8398 Pkts. (434.66 KB)  
 L **TX:** 987 Pkts. (40.50 KB)  
**IP Configuration**  
 L **Primary:** 10.130.1.20/255.255.255.0

### Interfaces

#### Status => Firewall

The Firewall screen shows the firewall configurations. Every rules you have set up for firewall will be shown here. You could set up firewall by command line after accessing MP01 using SSH or Telnet. **This feature is only available with version r238, and it is for advanced users.**

## Firewall Status

### Actions

- [Reset Counters](#)
- [Restart Firewall](#)

### Table: Filter

#### Chain INPUT (Policy: ACCEPT, Packets: 34310, Traffic: 1.64 MB)

#	Packets	Traffic	Target	Prot.	Flags	In	Out	Source	Destination	Options
1	0	0.00 B	ACCEPT	tcp	--	*	*	0.0.0.0/0	0.0.0.0/0	tcp dpt:22

### Table: NAT

No chains in this table


### Table: Mangle

No chains in this table

## Firewall

### Status => Active Connections

The Active Connections page gives an overview over currently active network connections.



OpenWrt Firmware  
Kamikaze (r238)  
Load: 0.00 0.15 0.17  
Hostname: Mesh-Potato

Overview **Status** System Services Network
Changes: 0 **Administration**

### Active Connections

This page gives an overview over currently active network connections.

**ARP**

IPv4-Address	MAC-Address	Interface
172.16.1.185	00:22:68:56:bc:b2	eth0


**Active Connections**

Network	Protocol	Source	Destination
IPV4	UDP	10.130.1.21:4305	10.130.1.255:4305
IPV4	UNKNOWN	192.168.1.1:*	224.0.0.1:*
IPV4	TCP	172.16.1.185:50352	172.16.1.30:23
IPV4	TCP	172.16.1.185:50461	172.16.1.30:80
IPV4	UDP	10.130.1.20:4305	10.130.1.255:4305
IPV4	UNKNOWN	192.168.10.1:*	224.0.0.1:*

Active Connectios

## Status => Routes

This page shows the active routes.



OpenWrt Firmware  
Kamikaze (r238)  
Load: 0.00 0.05 0.12  
Hostname: Mesh-Potato

Overview **Status** System Services Network
Changes: 0 **Administration**

### Routes

**Active IPv4-Routes**

Network	Target	IPv4-Netmask	IPv4-Gateway	Metric
lan	172.31.255.252	255.255.255.252	0.0.0.0	0
wifi0	10.130.1.0	255.255.255.0	0.0.0.0	0
lan	172.16.1.0	255.255.255.0	0.0.0.0	0

Routes

## Status => System Log

This page shows the system logs.



OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.35 0.18 0.16  
Hostname: OpenWrt

Overview **Status** System Services Network
Changes: 0 **Administration**

### System Log

```

Apr  8 14:26:00 OpenWrt syslog.info syslogd started: BusyBox v1.14.4
Apr  8 14:26:00 OpenWrt user.notice kernel: klogd started: BusyBox v1.14.4 (2010-01-13 18:19:00)
Apr  8 14:26:00 OpenWrt user.notice kernel: Linux version 2.6.26.3 (elektra@eee) (gcc version 4.1.2) #52 Thu Apr 8 16:32:42 CEST 2010
Apr  8 14:26:00 OpenWrt user.info kernel: CPU revision is: 00019064 (MIPS 4KEc)
Apr  8 14:26:00 OpenWrt user.warn kernel: Determined physical RAM map:
Apr  8 14:26:00 OpenWrt user.warn kernel:   memory: 01000000 @ 00000000 (usable)
Apr  8 14:26:00 OpenWrt user.debug kernel: Entering add_active_range(0, 0, 4096) 0 entries of 256 used
Apr  8 14:26:00 OpenWrt user.info kernel: Initrd not found or empty - disabling initrd
Apr  8 14:26:00 OpenWrt user.warn kernel: Zone PFN ranges:
Apr  8 14:26:00 OpenWrt user.warn kernel:   Normal      0 ->      4096
Apr  8 14:26:00 OpenWrt user.warn kernel: Movable zone start PFN for each node
Apr  8 14:26:00 OpenWrt user.warn kernel: early_node_map[1] active PFN ranges
Apr  8 14:26:00 OpenWrt user.warn kernel:   0:          0 ->      4096
Apr  8 14:26:00 OpenWrt user.debug kernel: On node 0 totalpages: 4096
Apr  8 14:26:00 OpenWrt user.debug kernel:   Normal zone: 32 pages used for memmap
Apr  8 14:26:00 OpenWrt user.debug kernel:   Normal zone: 0 pages reserved
Apr  8 14:26:00 OpenWrt user.debug kernel:   Normal zone: 4064 pages, LIFO batch:0
Apr  8 14:26:00 OpenWrt user.debug kernel:   Movable zone: 0 pages used for memmap
Apr  8 14:26:00 OpenWrt user.debug kernel:   Built 1 zonelists in Zone order, mobility grouping off.  Total pages: 4064

```

### System Log

## Status => Kernel Log

This page shows the kernel logs.



OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.02 0.14 0.15  
Hostname: OpenWrt

Overview **Status** System Services Network
Changes: 0 **Administration**

### Kernel Log

```

Linux version 2.6.26.3 (elektra@eee) (gcc version 4.1.2) #52 Thu Apr 8 16:32:42 CEST 2010
CPU revision is: 00019064 (MIPS 4KEc)
Determined physical RAM map:
  memory: 01000000 @ 00000000 (usable)
Entering add_active_range(0, 0, 4096) 0 entries of 256 used
Initrd not found or empty - disabling initrd
Zone PFN ranges:
  Normal      0 ->      4096
Movable zone start PFN for each node
early_node_map[1] active PFN ranges
  0:          0 ->      4096
On node 0 totalpages: 4096
  Normal zone: 32 pages used for memmap
  Normal zone: 0 pages reserved
  Normal zone: 4064 pages, LIFO batch:0
  Movable zone: 0 pages used for memmap
Built 1 zonelists in Zone order, mobility grouping off.  Total pages: 4064

```

### Kernel Log

## System => System

Here you can configure the basic aspects of MP01 like its hostname, timezone, system log buffer size, external system log server, log output level and cronloglevel.

# OpenWrt

## Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 3.33 1.44 0.63  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### System

Here you can configure the basic aspects of your device like its hostname or the timezone.

System	Atheros AR2317
Processor	MIPS 4KEc V6.4
Load	3.27, 1.40, 0.61
Memory	13.58 MB (16% cached, 1% buffered, 5% free)
Local Time	Thu Apr 8 17:15:13 2010
Uptime	02h 49min 26s
Hostname	<input type="text" value="OpenWrt"/>
Timezone	<input type="text" value="UTC"/>
<input type="text" value="-- Additional Field --"/> <input type="button" value="Add"/>	

### System

### System => Software

This page will show you the softwares you have installed or not installed. You can download and install the package here.

# OpenWrt

## Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.21 0.26 0.17  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### System

#### Software

- [Edit package lists and installation targets](#)
- [Update package lists](#)

Download and install package:

Filter:

Package name	Version	Install	Delete	Description
afrimesh-potato	r635-0.4alpha-1	installed	<input type="checkbox"/>	
asterisk14	1.4.11-1	installed	<input type="checkbox"/>	
asterisk14-sounds	1.4.11-1	installed	<input type="checkbox"/>	
base-files-atheros	13-r233	installed	<input type="checkbox"/>	
batmand	r1483-1	installed	<input type="checkbox"/>	
busybox	1.14.4-1	installed	<input type="checkbox"/>	
dropbear	0.51-2	installed	<input type="checkbox"/>	
haserl	0.9.24-1	installed	<input type="checkbox"/>	
hotplug2	0.9+r102-2	installed	<input type="checkbox"/>	
ip	2.6.25-1	installed	<input type="checkbox"/>	
kernel	2.6.26.3-atheros-1	installed	<input type="checkbox"/>	

### Software

## System => Admin Password

You can change the password of the system administrator here.



OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.47 0.26 0.19  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### Admin Password


Change the password of the system administrator (User root)

Password	<input type="password"/>
Confirmation	<input type="password"/>

### Admin Password

## System => SSH-Keys

You can paste public SSH-Keys for SSH public-key authentication. Then you don't need to enter a password anymore, you will be automatically authenticated.



OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.09 0.21 0.18  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### SSH-Keys

Here you can paste public SSH-Keys (one per line) for SSH public-key authentication.

```
ssh-rsa
AAAAB3NzaC1yc2EAAAABJQAAAIEAgjZGf7nKegxFXqVZXm6gbNU5hYFgWD4vPT2Ei
6CwTi+u5y9/92dTCRy5dS7waDvuJNkjAZXZeYyf8P01CRXUeI8t1pOso8/oIgC3W+g
jb54zcBinRh7/5ejLFxyoguaUXyaVS+72hNHpErEARKxvOWF+nnrq51p0LQbxAHE1I
k= rsa-key-20100907
```

### SSH-Keys

## System => Processes

This page gives an overview over currently running system processes and their status. You can hang up, terminate or kill the process here.

## Processes

This list gives an overview over currently running system processes and their status.

PID	Owner	Command	CPU usage (%)	Memory usage (%)	Hang Up	Terminate	Kill
1	root	init	0%	14%			
2	root	[kthreadd]	0%	0%			
3	root	[ksoftirqd/0]	0%	0%			
4	root	[events/0]	0%	0%			
5	root	[khelper]	0%	0%			
23	root	[kblockd/0]	0%	0%			
44	root	[pdflush]	0%	0%			
45	root	[pdflush]	0%	0%			
46	root	[kswapd0]	0%	0%			
47	root	[aio/0]	0%	0%			
58	root	[mtdblockd]	0%	0%			
254	root	[jffs2_gcd_mtd2]	0%	0%			
265	root	logger -s -p 6 -t	0%	14%			
277	root	syslogd -C16 -L -R 192.168.1.185	0%	14%			
279	root	klogd	0%	14%			
291	root	/sbin/hotplug2 --override --persisten	0%	8%			
501	root	asterisk	0%	143%			
502	root	asterisk	0%	143%			
506	root	asterisk	0%	143%			
509	root	asterisk	0%	143%			
513	root	/usr/sbin/dropbear -p 22	0%	14%			
518	root	/usr/sbin/httpd -p 80 -h /www -r Open	0%	14%			
522	root	telnetd -l /bin/login	0%	14%			

## Processes

### System => Mount Points

This page displays the mounted file systems, mount points and swap device. Mount points define at which point a memory device will be attached to the filesystem. If your physical memory is insufficient unused data can be temporarily swapped to a swap-device resulting in a higher amount of usable RAM. Be aware that swapping data is a very slow process as the swap-device cannot be accessed with the high datarates of the RAM.



## Mount Points

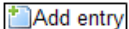
### Mounted file systems

Filesystem	Mount Point	Available	Used
/dev/root	/rom	0.00 B / 3.94 MB	100% (3.94 MB)
tmpfs	/tmp	6.55 MB / 6.79 MB	4% (252.00 KB)
tmpfs	/dev	512.00 KB / 512.00 KB	0% (0.00 B)
/dev/mtdblock2	/jffs	2.73 MB / 3.00 MB	9% (276.00 KB)
mini_fo:/jffs	/	0.00 B / 3.94 MB	100% (3.94 MB)

### Mount Points

Mount Points define at which point a memory device will be attached to the filesystem

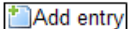
enable	Device	Mount Point	Filesystem	Options
<input type="checkbox"/>	The device file of the memory or partition (e.g., /dev/sda1)		The filesystem that was used to format the memory (e.g., ext3)	see 'mount' manpage
<input type="checkbox"/>	/dev/sda1	/home	ext3	rw, sync



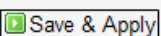


### SWAP

If your physical memory is insufficient unused data can be temporarily swapped to a swap-device resulting in a higher amount of usable RAM. Be aware that swapping data is a very slow process as the swap-device cannot be accessed with the high datarates of the RAM.

enable	Device
<input type="checkbox"/>	The device file of the memory or partition (e.g., /dev/sda1)
<input type="checkbox"/>	/dev/sda2



## Mount Points

### System => LED Configuration

You can customizes the behavior of the device LEDs if possible. Just add an entry, choose the LED device and its trigger, then the LED will twinkle according to the trigger.

## LED Configuration

Customizes the behaviour of the device LEDs if possible.

### Applying changes

- Reloading system...

✖ Remove entry

LED Name	<input type="text" value="test"/>
LED Device	<input type="text" value="gpio2"/>
Default state	<input type="checkbox"/> ? ticked = on
Trigger	<input type="text" value="Timer"/>
On-State Delay	<input type="text" value="200"/> ? Time (in ms) the LED is on
Off-State Delay	<input type="text" value="200"/> ? Time (in ms) the LED is off

+ Add entry

### LED Configuration

**LED Name:** Enter the LED name you like

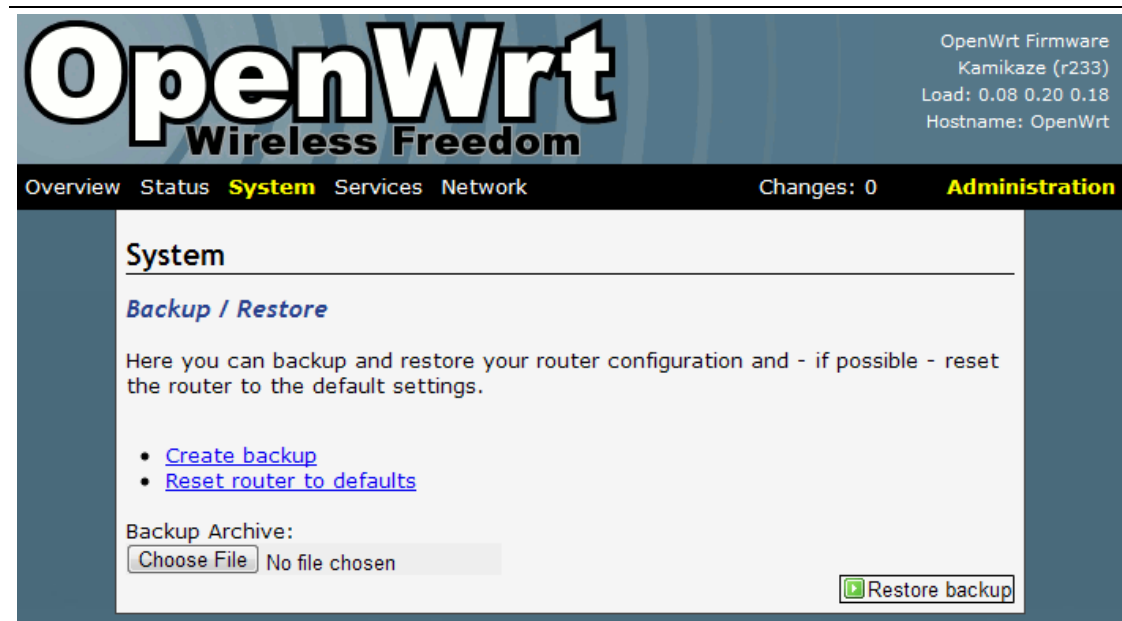
**LED Device:** Choose which LED you want to twinkle

**Default state:** The default state of the specified LED, ticked=on

**Trigger:** On what conditions the specified LED will twinkle. It has 5 options:  
None, Timer(The LED will twinkle according to the timer you set),  
Heartbeat(LEDs will twinkle according to load average), Default On,  
Network Device(LEDs will twinkle according to the network status).

### System => Backup / Restore

On Backup/Restore page, you can create/restore backup or reset router to factory default.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.08 0.20 0.18  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### System

#### Backup / Restore

Here you can backup and restore your router configuration and - if possible - reset the router to the default settings.

- [Create backup](#)
- [Reset router to defaults](#)

Backup Archive:  
 No file chosen

#### *Backup / Restore*

### System => Flash Firmware

This feature allows you to upload an OpenWrt image file to reflash the device.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.03 0.17 0.17  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### System

#### Flash Firmware

Upload an OpenWrt image file to reflash the device.

Firmware image:  
 No file chosen

☒ Keep configuration files

#### *Flash Firmware*

### System => Reboot

Reboot the operating system here.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.52 0.21 0.14  
Hostname: OpenWrt

Overview Status **System** Services Network Changes: 0 **Administration**

### System

**Reboot**

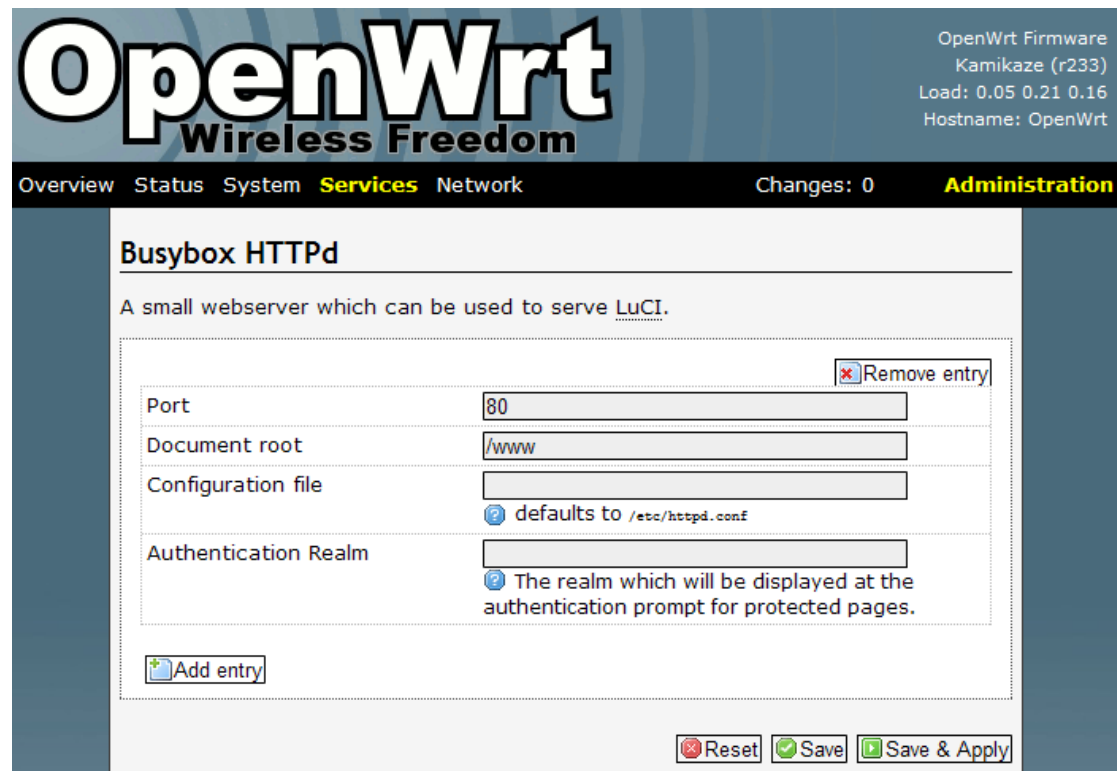
Reboots the operating system of your device

[Perform reboot](#)

### Reboot

### Services => Busybox HTTPd

It is a small web server which can be used to serve LuCI. You can configure the server port and document root.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.05 0.21 0.16  
Hostname: OpenWrt

Overview Status System **Services** Network Changes: 0 **Administration**

### Busybox HTTPd

A small webserver which can be used to serve LuCI.

Port	<input type="text" value="80"/>
Document root	<input type="text" value="/www"/>
Configuration file	<input type="text" value="defaults to /etc/httpd.conf"/>
Authentication Realm	<input type="text" value="The realm which will be displayed at the authentication prompt for protected pages."/>

### Busybox HTTPd

### Services => Dropbear SSHd

Dropbear offers SSH network shell access and an integrated SCP server.



The image shows the OpenWrt Administration web interface. At the top, the OpenWrt logo and 'Wireless Freedom' tagline are visible. The navigation bar includes 'Overview', 'Status', 'System', 'Services' (highlighted), 'Network', 'Changes: 0', and 'Administration' (highlighted). The main content area is titled 'Dropbear SSHd'. Below the title, it states: 'Dropbear offers SSH network shell access and an integrated SCP server'. There is a form with two fields: 'Port' with a value of '22' and 'Password authentication' with a checked checkbox and a link to 'Allow SSH password authentication'. At the bottom right of the form are three buttons: 'Reset', 'Save', and 'Save & Apply'.

### *Dropbear SSHd*

#### **Services => Dnsmasq**

Dnsmasq is a lightweight, easy to configure DNS forwarder and DHCP server. It is designed to provide DNS and, optionally, DHCP, to a small network. It can serve the names of local machines which are not in the global DNS. The DHCP server integrates with the DNS server and allows machines with DHCP-allocated addresses to appear in the DNS with names configured either in each host or in a central configuration file. **In order to use Dnsmasq, you need to install the package. It is for advanced users.**

### Dnsmasq

With DHCP network members can automatically receive their network settings (IP-address, netmask, DNS-server, ...).

#### Settings

Dnsmasq is a combined DHCP-Server and DNS-Forwarder for NAT firewalls

Domain required	<input checked="" type="checkbox"/> Don't forward DNS-Requests without DNS-Name
Authoritative	<input checked="" type="checkbox"/> This is the only DHCP in the local network
Filter private	<input checked="" type="checkbox"/> Don't forward reverse lookups for local networks
Filter useless	<input type="checkbox"/> filter useless DNS-queries of Windows-systems
Localise queries	<input checked="" type="checkbox"/> localises the hostname depending on its subnet
Local Server	<input type="text" value="/lan/"/>
Local Domain	<input type="text" value="lan"/>
Expand Hosts	<input checked="" type="checkbox"/> adds domain names to hostentries in the resolv file
don't cache unknown	<input type="checkbox"/> prevents caching of negative DNS-replies
Use /etc/ethers	<input checked="" type="checkbox"/> Read /etc/ethers to configure the DHCP-Server
Leasefile	<input type="text" value="/tmp/dhcp.leases"/> file where given DHCP-leases will be stored
Resolvfile	<input type="text" value="/tmp/resolv.conf.auto"/> local DNS file
	<input type="text" value=""/> <input type="button" value="Add"/>

Powered by LuCI 0.8 Branch (v0.8+svn5662)

### Dnsmasq

#### Services => Scheduled Tasks

This is the system crontab in which scheduled tasks can be defined. You can edit the configuration file of the cron daemon via Luci. It is for advanced users.

## Scheduled Tasks

This is the system crontab in which scheduled tasks can be defined.

### *Scheduled Tasks*


#### **Network => Interfaces => WIFI0 / LAN**

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You need to install "ppp-mod-pppoe" for PPPoE, or "pptp" for PPTP support.




### Interfaces

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

#### wifi0

 Remove entry




##### Overview

Protocol	static	 You need to install "comgt" for UMTS/GPRS, "ppp-mod-pppoe" for PPPoE, "ppp-mod-pppoe" for PPPoA or "pptp" for PPTP support
Bridge interfaces	<input type="checkbox"/>	 creates a bridge over specified interface(s)
Interface	ath0	
IPv4-Address	10.130.1.20	
IPv4-Netmask	255.255.255.0	
IPv4-Gateway		
-- Additional Field --		 Add

#### Aliases

*This section contains no values yet*

 Add entry

 Reset  Save  Save & Apply

Interfaces => WIFI0






### Interfaces

On this page you can configure the network interfaces. You can bridge several interfaces by ticking the "bridge interfaces" field and enter the names of several network interfaces separated by spaces. You can also use VLAN notation INTERFACE.VLANNR (e.g.: eth0.1).

#### lan

 Remove entry




##### Overview

Protocol	static <small> You need to install "comgt" for UMTS/GPRS, "ppp-mod-pppoe" for PPPoE, "ppp-mod-pppoe" for PPPoA or "pptp" for PPTP support</small>
Bridge interfaces	<input type="checkbox"/> <small> creates a bridge over specified interface(s)</small>
Interface	eth0
IPv4-Address	192.168.1.188
IPv4-Netmask	255.255.255.0
IPv4-Gateway	192.168.1.1
DNS-Server	192.168.1.1
<input type="text" value="-- Additional Field --"/>  Add	

#### Aliases

*This section contains no values yet*

 Add entry

 Reset  Save  Save & Apply


*Interfaces => LAN*

### Network => Wifi

Here you can scan the WiFi networks in your local environment. The following screen shows the WiFi networks in my local environment.

## Wifi

### Networks

Link	ESSID	BSSID	Channel	Protocol	Mode	Enchr.	Power	Scan
65/70	potato	01:CA:FF:EE:BA:BE	1		ad-hoc		17 dBm	

### WLAN-Scan

Wifi networks in your local environment

Link	ESSID	BSSID	Mode	Channel	Enchr.	Signal	Noise
35/70	TP-LINK	00:14:78:FC:21:4C	Master	2.437 GHz (Channel 6)	on	-60 dBm	-95 dBm
25/70	ATCOM-OFFICE	00:50:7F:A1:89:D8	Master	2.457 GHz (Channel 10)	on	-70 dBm	-95 dBm
30/70	Acrosser	00:1A:70:70:4F:2F	Master	2.437 GHz (Channel 6)	on	-65 dBm	-95 dBm

### Create Network

Device

 Reset  Submit

## Wifi




### Network => Wifi => WIFIO

You can run several wifi networks with one device. Be aware that there are certain hardware and driverspecific restrictions. Normally you can operate 1 Ad-Hoc or up to 3 Master-Mode and 1 Client-Mode network simultaneously.




### Networks

You can run several wifi networks with one device. Be aware that there are certain hardware and driverspecific restrictions. Normally you can operate 1 Ad-Hoc or up to 3 Master-Mode and 1 Client-Mode network simultaneously.

#### Device wifi0

Overview	
enable	<input checked="" type="checkbox"/>
Type	atheros
Channel	1 (2.412 GHz)
Transmit Power	<input type="text"/>
	 dBm
Mode	auto
Diversity	<input type="checkbox"/>
<input type="text" value="-- Additional Field --"/> 	

#### Interfaces

	
ESSID	potato
Network	
	 Add the Wifi network to physical network
Mode	Pseudo Ad-Hoc (ahdemo)
BSSID	01:CA:FF:EE:BA:BE
Background Scan	<input type="checkbox"/>
Frame Bursting	<input type="checkbox"/>
Turbo Mode	<input type="checkbox"/>
Encryption	No Encryption

Wifi => WIFI0

**Enable:** To make WiFi available or not.

**Channel:** It has 11 WiFi channels to choose.

**Mode:** MP01 supports 802.11b/g

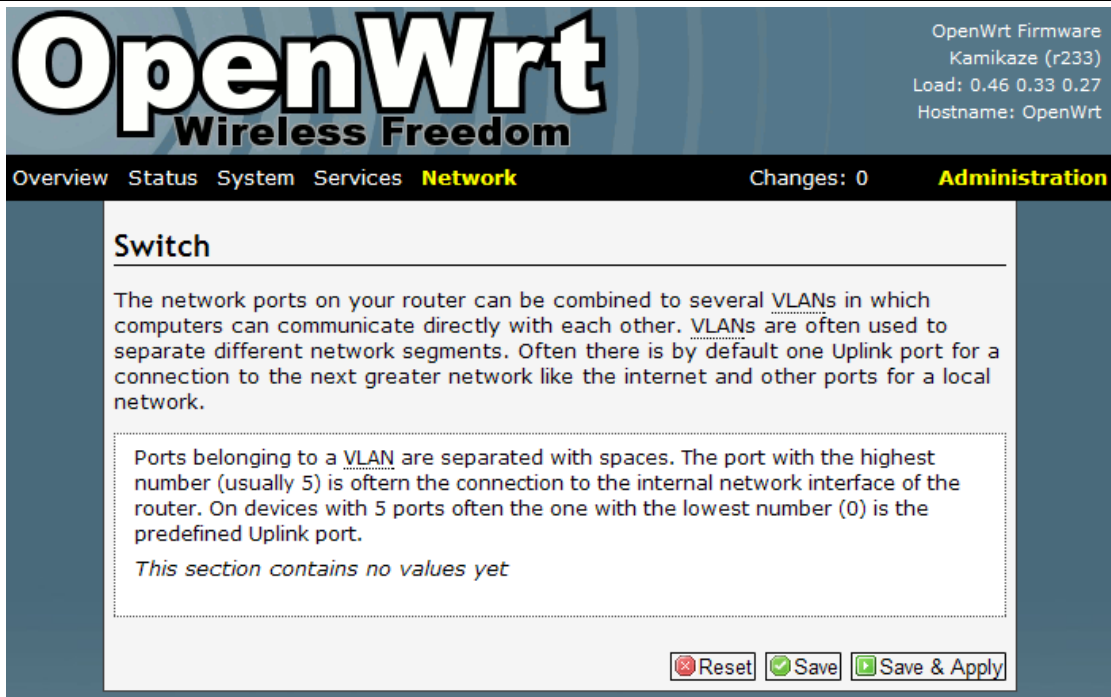
**ESSID/BSSID:** WLAN ID for wireless network

**Mode:** It can work as Access Point, Ad-Hoc, Client, Pseudo Ad-Hoc(ahdemo) and Monitor

**Encryption:** It supports only WEP in version r233.

#### Network => Switch

You can set up VLAN settings in this menu. This is yet another option for advanced users. Since the MP01 doesn't have multiple Ethernet ports, this menu is of very limited use.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.46 0.33 0.27  
Hostname: OpenWrt

Overview Status System Services **Network** Changes: 0 **Administration**

### Switch

The network ports on your router can be combined to several VLANs in which computers can communicate directly with each other. VLANs are often used to separate different network segments. Often there is by default one Uplink port for a connection to the next greater network like the internet and other ports for a local network.

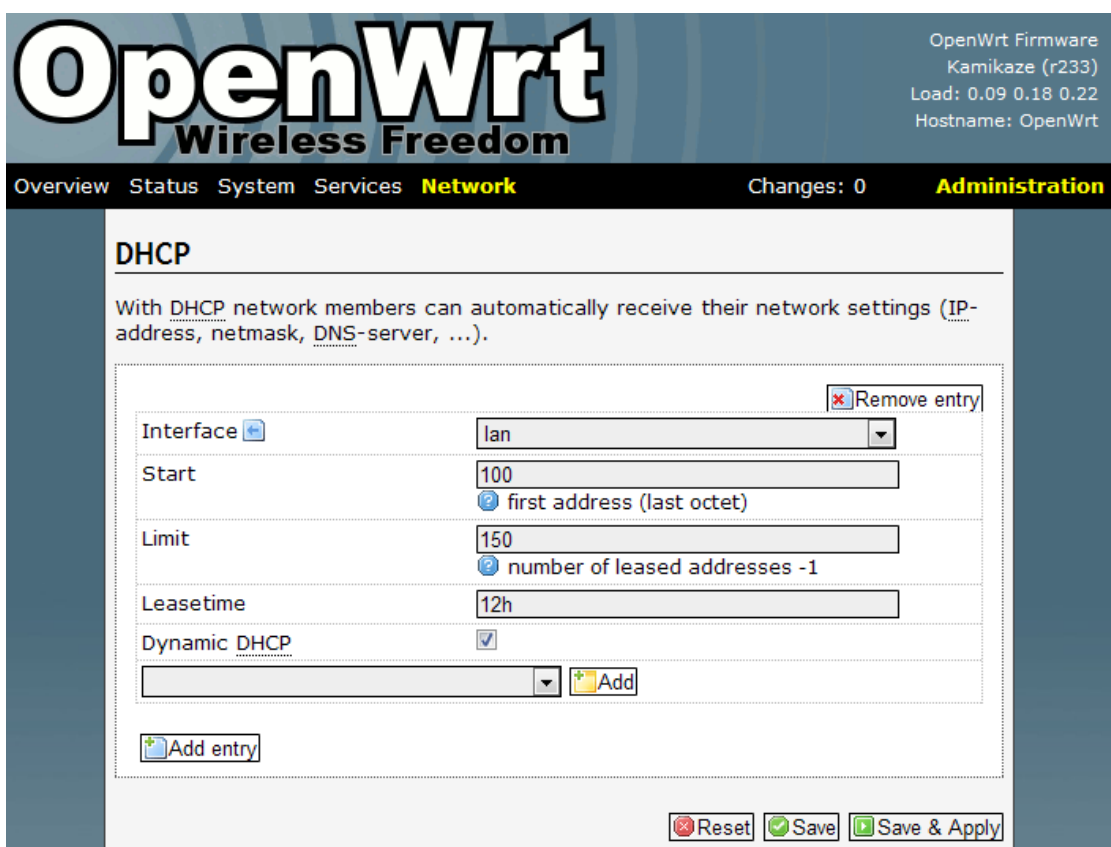
Ports belonging to a VLAN are separated with spaces. The port with the highest number (usually 5) is often the connection to the internal network interface of the router. On devices with 5 ports often the one with the lowest number (0) is the predefined Uplink port.

*This section contains no values yet*

### Switch

### Network => DHCP

You need to install the dnsmasq package before using it. You can configure the DHCP options such as assigned range, lease time and so on.



**OpenWrt**  
Wireless Freedom

OpenWrt Firmware  
Kamikaze (r233)  
Load: 0.09 0.18 0.22  
Hostname: OpenWrt

Overview Status System Services **Network** Changes: 0 **Administration**

### DHCP

With DHCP network members can automatically receive their network settings (IP-address, netmask, DNS-server, ...).

Interface	lan
Start	100 <small>first address (last octet)</small>
Limit	150 <small>number of leased addresses - 1</small>
Leasetime	12h
Dynamic DHCP	<input checked="" type="checkbox"/>
<input type="button" value="Add"/>	

### DHCP

**Interface:** The device to assign IP addresses

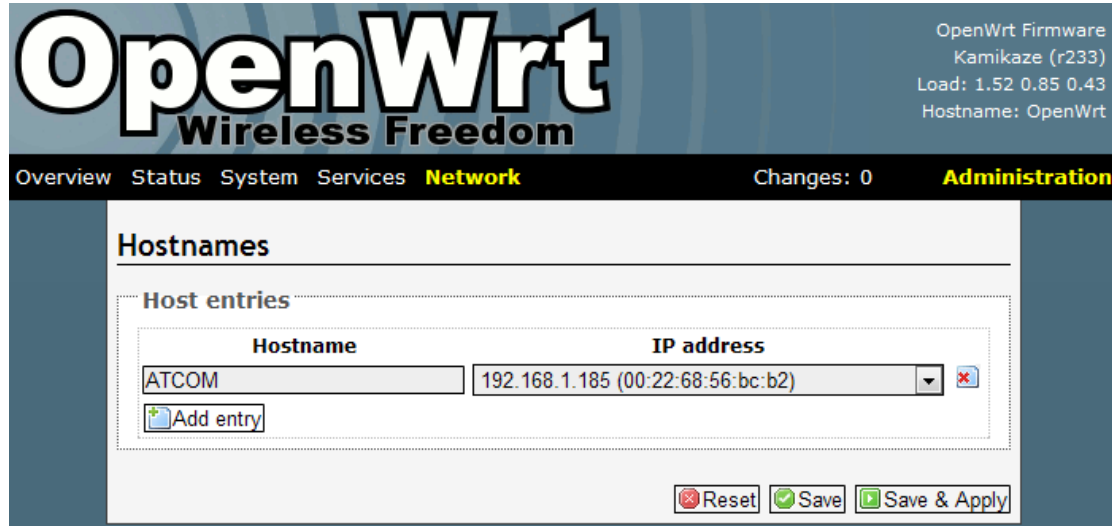
**Start:** The first IP address it will assign

**Limit:** The last IP address it will assign

**Leasetime:** The amount of time a network user will be allowed to connect to the MP01 with their current dynamic IP address.

### Network => Hostnames

You can add hostname entries here.

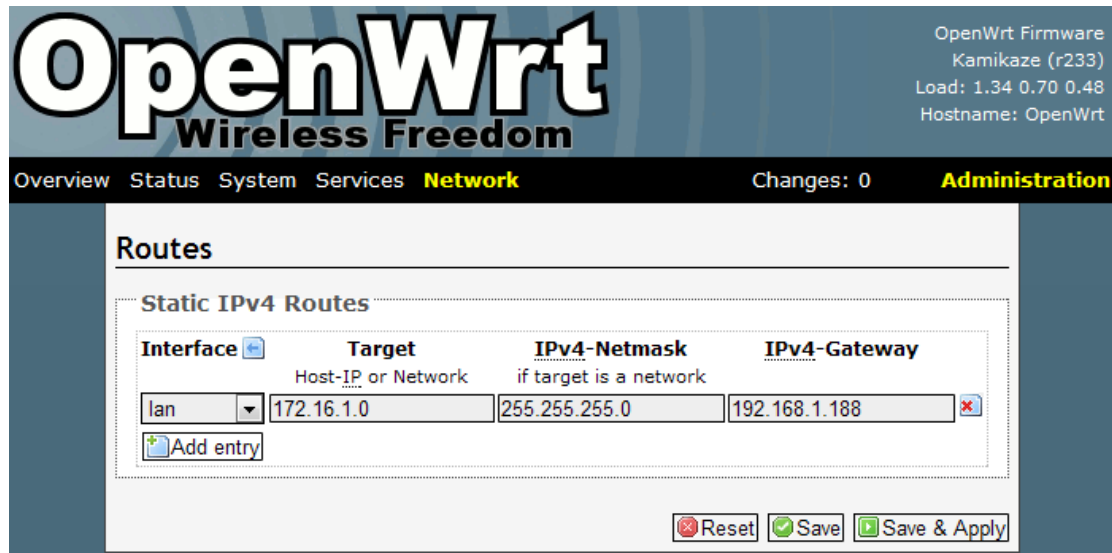


The screenshot shows the OpenWrt 'Hostnames' configuration page. At the top, the OpenWrt logo and 'Wireless Freedom' tagline are visible. The top right corner displays system information: 'OpenWrt Firmware Kamikaze (r233)', 'Load: 1.52 0.85 0.43', and 'Hostname: OpenWrt'. The navigation bar includes 'Overview', 'Status', 'System', 'Services', 'Network' (highlighted), 'Changes: 0', and 'Administration'. The main content area is titled 'Hostnames' and contains a section for 'Host entries'. This section has a table with two columns: 'Hostname' and 'IP address'. The first entry shows 'ATCOM' in the hostname field and '192.168.1.185 (00:22:68:56:bc:b2)' in the IP address field. Below the table is an 'Add entry' button. At the bottom right of the form are three buttons: 'Reset', 'Save', and 'Save & Apply'.

### Hostnames

### Network => Static Routes

A static route is a pre-determined pathway that network information must travel to reach a specific host or network.



The screenshot shows the OpenWrt 'Static IPv4 Routes' configuration page. The layout is similar to the previous page, with the OpenWrt logo and system information at the top. The navigation bar highlights 'Network'. The main content area is titled 'Routes' and contains a section for 'Static IPv4 Routes'. This section has a table with four columns: 'Interface', 'Target', 'IPv4-Netmask', and 'IPv4-Gateway'. The first entry shows 'lan' in the interface field, '172.16.1.0' in the target field, '255.255.255.0' in the netmask field, and '192.168.1.188' in the gateway field. Below the table is an 'Add entry' button. At the bottom right of the form are three buttons: 'Reset', 'Save', and 'Save & Apply'.

### Static Routes

**Interface:** Select the appropriate interface.

**Target:** Target network where you want to assign a static route

**Netmask:** This determines which portion of a target IP address is the network portion, and which portion is the host portion.

**Gateway:** It is the IP address that allows for contact between the MP01 and the remote network or host.

## 4. Troubleshooting

### 4.1 What to do if you can't connect to the MP anymore - using the Fallback-IP

This can easily happen if you are messing around with the IP settings of the MP. Luckily the MP has a additional IP subnet at the Ethernet port that can not be changed or disabled from a web interface.

On your PC configure the Ethernet port to use **172.31.255.253/30** (netmask 255.255.255.252). You can add multiple IP addresses to each interface, so you don't have to reconfigure it if you need other addresses as well.

After finishing the configuration you should be able to access the MP01 using IP **172.31.255.254**.

### 4.2 My MP01 can't make calls

You have set up you MP01 IPs but can't make calls. Here are some basic tests:

1. Can you hear dial tone in a phone connected to the MP? If not please reboot it and try again. Some of the modules have come loose while shipping.
2. Check you mesh network. Telnet/ssh into your MP and:

```
batmand -cbd1
```

You should see the IP of the other MP(s) on your mesh. If you see no IPs then check your WiFi settings are identical except for the IP. These can be checked in /etc/config/wireless or via the GUI. Also compare "iwconfig ath0" on both MPs and "ifconfig ath0".

3. Try pinging one MP from the other.
4. On each MP, dial 4001. This performs an echo test. Can you hear your own voice coming back to you?
5. Start an Asterisk CLI and see what happens when you dial an IP:

```
root@OpenWrt: ~# asterisk -r
OpenWrt*CLI> set verbose 3
```

**Note:** The 'set verbose' command is deprecated, please use 'core set verbose' instead.

Now dial the IP of another MP. You should see something like:

```
-- event_offhook
--   AST_STATE_DOWN:
-- start mp_new
-- event_dtmf 1
-- event_dtmf 4
-- event_dtmf 2
-- event_digit_timer
--   extension exists, starting PBX 142
-- Executing [142@default: 1] Dial("MP/1", "SIP/4000@10.130.1.142")
in new stack
```

```
-- Called 4000@10.130.1.142
-- event_onhook
-- default: hangup sound_on = 1
== Spawn extension (default, 142, 1) exited non-zero on 'MP/1'
-- start mp_hangup
```

### 4.3 Choppy sound

This is most likely caused by a poor wireless link. Check that you have line of sight to other MP01. It is also possible to install another MP01 on a nearby building or tower to relay the signals.

### 4.4 The MP01 is flashed with AP51

The AP51 flash tool re-arranges the disk lay-out. If the MP01 has been updated with the AP51, you CAN NOT upgrade it remotely through wireless. Then you need to do a MP01 Disaster Recovery BEFORE deploying it in the field to be able to remotely upgrade it in the future.

CORRECT FORMAT:

```
root@OpenWrt: ~# cat /proc/mtd
dev: size erasesize name
mtd0: 00030000 00010000 "RedBoot"
mtd1: 000b0000 00010000 "vmlinux.bin.l7"
mtd2: 006f0000 00010000 "rootfs"
mtd3: 00410000 00010000 "rootfs_data"
mtd4: 0000f000 00010000 "FIS directory"
mtd5: 00001000 00010000 "RedBoot config"
mtd6: 00020000 00010000 "boardconfig"
root@OpenWrt: ~#
```

The ap51-utility swaps the position of kernel and rootfs. The kernel needs to be in the second logical block and the rootfs in the third. After flashing with ap51-flash this order is reversed and any flashing attempt from OpenWRT will fail.

Before flashing with ap51-flash:

```
root@OpenWrt: /# cat /proc/mtd
dev: size erasesize name
mtd0: 00030000 00010000 "RedBoot"
mtd1: 000b0000 00010000 "vmlinux.bin.l7"
mtd2: 006f0000 00010000 "rootfs"
mtd3: 00410000 00010000 "rootfs_data"
mtd4: 0000f000 00010000 "FIS directory"
mtd5: 00001000 00010000 "RedBoot config"
mtd6: 00020000 00010000 "boardconfig"
```

After flashing with ap51-flash:

```
RedBoot> fis list
Name FLASH addr Mem addr Length Entry point
```

```
RedBoot 0xA8000000 0xA8000000 0x00030000 0x00000000
rootfs 0xA8030000 0xA8030000 0x006F0000 0x00000000
vmlinux.bin.l7 0xA8720000 0x80041000 0x000B0000 0x80041000
FIS directory 0xA87D0000 0xA87D0000 0x0000F000 0x00000000
RedBoot config 0xA87DF000 0xA87DF000 0x00001000 0x00000000
```

The fix is to flash the system via Redboot with the correct layout and follow the instructions here:

[http://wiki.villagetelco.org/index.php?title=Mesh\\_Potato\\_HOWTOs#Reflash\\_the\\_firmware\\_from\\_RedBoot.](http://wiki.villagetelco.org/index.php?title=Mesh_Potato_HOWTOs#Reflash_the_firmware_from_RedBoot.)

## 5. Appendix

### 5.1 Appendix A - MP01 Features

Feature	Benefit
Integrated WiFi and ATA in a single box	Low power consumption, ease of setup, fewer cables, fewer points of failure, and low cost.
Mesh, Client or AP mode WiFi	Can be a component in Mesh WiFi networks or connect to existing WiFi networks
One-IP configuration	Set one IP and the device is ready to make a receive phone calls. Quickly build voice and IP networks and roll out a Wireless PBX in minutes.
Web GUI or Phone UI	Configure via a web interface or telephone IVR menu. With Phone UI no laptop is required for on-site installation.
UV-resistant, weather-proof enclosure	Long life outdoors, no need to purchase a separate enclosure for outdoor use.
Built in mounting points	Simple and low cost outdoor installation.
Rugged design	Withstands abuse that would destroy other products such as power surges, brownouts, reverse DC, over-voltage DC, and static electricity.
Power supply	Runs on 24VDC voltage, or any AC voltage from 110 to 250VAC via wall-plug type power supply. A solar panel can be directly connected – saving money on a solar regulator.
Power efficient	Consumes just 3W (DC). Can run on a 10W solar panel.
Power over Ethernet (PoE) and Power over	Just one cable run for both power and telephone. PoE and PoTL injectors included.



Telephone Line (PoTL)	
Open Hardware Design	No vendor lock-in. Open to improvement by anyone.
Open Source firmware	Linux, OpenWRT, B.A.T.M.A.N., and Asterisk. Stable, reliable community developed software. Open to improvement, adaptation, and innovation.
Asterisk	Extremely configurable, add IVR menus, connect IP Phones and billing systems

## 5.2 Appendix B - MP01 Specifications

### Hardware Specifications

- Atheros AR2317 system on a Chip (SoC)
- MIPS 4k processor 180 MHz
- 8 MByte Serial Flash EEPROM
- 16 MByte RAM

### Wireless LAN

- IEEE 802.11b/g
- Frequency Band: 2.412GHz to 2.484GHz
- Antenna Type: Internal Omnidirectional PCB Antenna with I-PEX connector
- Transmit EIRP power: 1-24 Mbit 20dBm or 36-54 Mbit 17dBm

### Interfaces/Ports

- LAN Port : 1 x RJ-45
- FXS Port : 1 x RJ-11

### Firmware

- Linux kernel 2.26.3
- OpenWrt Kamikaze (customised version)
- B.A.T.M.A.N. mesh routing daemon Version 0.4
- Asterisk 1.4.11

### Environmental

- Operating Humidity: 5 to 95% Condensing
- Operating Temperature: -20°C to +70°C

### Electrical

- Power Options: AC adaptor, Passive PoE or PoTL (Power over Telephone Line)
- PoTL Wire Requirement: standard 4/6 core telephone cable
- Input Power: 24VDC 300mA
- Power Consumption: 3Watt
- Passive PoE Effective Distance: 0-100 meters
- PoTL Effective Distance: 0-50 meters
- Protected Ports: DC, RJ11 phone, RJ45 Ethernet
- Protection: overvoltage, reverse DC, nearby lightning, static electricity

---

**Physical**

- Casing: UV-protected, weatherproof outdoor enclosure
- Mounting: Pole Mount/Wall Mount
- Enclosure Size: 228 X 106 X 55 mm
- Weight : 0.3 Kg

**Regulatory/Compliance Information**

- RoHS Compliance

## 6. Acronyms

- B.A.T.M.A.N – Better Approach To Mesh Ad-hoc Network
- dBi: decibel isotropic, the antenna gain relative to an isotropic radiator (an antenna which **radiates energy perfectly equal in all directions**).
- LAN – Local Area Connection
- PoE: Power over Ethernet (passive), power is transferred to a device through the unused twisted pairs inside a UTP cable.
- WLAN – Wireless Local Area Network

## 7. Reference

<http://wiki.villagetelco.org/>

<http://www.atcom.cn/>

<http://www.villagetelco.org/about/mesh-potato/>