QUICK START GUIDE

E200 Series – Cellular / WAN / LAN / Wi-Fi Router

Version 0.5

Copyright

Copyright© 2015 Maestro Wireless Solutions Limited. All right reserved. This document is for the use of intended recipients only and the contents may not be reproduced, redistributed, or copied in whole or in part for any purpose without Maestro prior express consent.

ⓘ Note: This document is subject to change without notice

This manual cover the following products:

- Maestro E205XT02
- Maestro E205XT04
- Maestro E206XT

DOCUMENT VERSION	DATE

PRELIMINARY

This manual is written without any warranty.

Maestro Wireless Solutions Ltd. reserves the right to modify or improve the product and its accessories which can also be withdrawn without prior notice.

Our company stresses the fact that the performance of the product and its accessories depends on the proper use conditions as well as the surrounding environment.

Maestro Wireless Solutions Ltd. assumes no liability for damage incurred directly or indirectly from errors, omissions or discrepancies between the router and this manual.

This software, solution or application is provided on an "as is" basis. No warranty whether expressed or implied is given by **Maestro Wireless Solutions Ltd.** in relation to this software, solution or application. User shall assume the entire risk of using or relying on this software, solution, and application.

In no event will **Maestro Wireless Solutions Ltd.** be liable for any loss or damage including without limitation, indirect or consequential loss, damage, or any loss, damage whatsoever arising from loss of data or profit arising out of, or in connection with, the use of this router product. Every effort is made to keep the product and its software up and running smoothly. However, **Maestro Wireless Solutions Ltd.** takes no responsibility for, and will not be liable for, the product or its software being temporarily unavailable due to technical issues beyond our control.

The above terms and conditions are subject to change without prior notice. The present use of this product solution implies that the user approves and understands all the above terms and conditions.

PRELIMINARY

Table of Contents

2 SAFETY PRECAUTIONS 7

2.1 GENERAL PRECAUTIONS 7
2.2 USING THE ROUTER IN VEHICLE 7
2.3 PROTECTING YOUR ROUTER 7

3 OVERVIEW 8

3.1 SCOPE 8
3.2 TARGET AUDIENCE 8

4 PREREQUISITES 8

5 USER MANUAL CONVENTIONS 9

6 PRODUCT OVERVIEW 10

6.1 E205 SERIES AT A GLANCE 10
6.2 E206 SERIES AT A GLANCE 11
6.3 BUNDLE CONTENT 11

7 PRODUCT FEATURES 12

8 PHYSICAL DIMENSIONS AND LED 13

8.1 PHYSICAL DIMENSIONS 13
8.2 LED INDICATORS 14
8.3 ETHERNET PORT LED INDICATORS 15

9 HARDWARE INSTALLATION 16

9.1 INSTALL THE SIM CARD 16
9.2 CONNECT THE CELLULAR (WWAN) ANTENNA(S) 16
9.3 CONNECT THE POWER SUPPLY 17
9.4 CONNECTION TO THE DEVICE 17
9.4.1 CONNECTION WITH THE LAN CABLE 17
9.4.2 CONNECTION VIA WI-FI 17

10 E205 BASIC CONFIGURATION 18

10.1 CONNECTING TO THE WEB INTERFACE 18
10.2 LAN CONFIGURATION 19
10.3 WAN CONFIGURATION 20
10.3.1 MANUAL 20
10.3.2 AUTOMATIC 20
10.3.3 PPPOE (POINT-TO-POINT PROTOCOL OVER ETHERNET) 20
10.4 CELLULAR SETUP 21
10.5 WIRELESS (WI-FI) 22

PRELIMINARY

11 E205 ADVANCED CONFIGURATION 24
11.1 FLASHING FIRMWARE AND UPDATING YOUR DEVICE 24
12 STATUS PAGES EXPLAINED 26
12.1 OVERVIEW: 27
12.1.1 SYSTEM 27
12.1.2 CELLULAR 28
12.1.3 MEMORY 28
12.1.4 NETWORK 29
12.1.5 WIRELESS 29
12.1.6 ASSOCIATED STATIONS 29
12.1.7 MWAN INTERFACE LIVE STATUS 30
12.2 FIREWALL 30
12.3 ROUTES 31
12.4 SYSTEM LOG 31
12.5 REALTIME GRAPHS 31
13 SYSTEM 32
13.1 SYSTEM PROPERTIES 32
13.1.1 GENERAL SETTING 32
13.1.2 LOGGING 32
13.2 ADMINISTRATION 34
13.2.1 ROUTER PASSWORD 34
13.2.2 SSH ACCESS 34
13.3 SOFTWARE 35
14 NETWORK 35
14.1 INTERFACES 35
14.2 LAN INTERFACE 37
14.2.1 GENERAL SETUP 37
14.2.2 ADVANCED SETTINGS 38
14.2.3 PHYSICAL SETTINGS 39
14.2.4 FIREWALL SETTINGS 39
14.2.5 DHCP SERVER 40
14.3 WIRED WAN INTERFACE 42
14.3.1 GENERAL SETUP 42
14.3.2 ADVANCED SETTINGS 43
14.3.3 PHYSICAL SETTINGS 43
14.3.4 FIREWALL SETTINGS 44
14.4 CELLULAR INTERFACE (3G OR 4G) 45
14.4.1 GENERAL SETUP 45
14.4.2 ADVANCED SETTINGS 46
14.4.3 FIREWALL SETTINGS 47
14.5 ADD VPN INTERFACE 47
14.5.1 PPTP 48
14.5.2 OPENVPN 50

PRELIMINARY

15 WI-FI 57

15.1 INTRODUCTION 57
15.2 WI-FI AS ACCESS POINT 57
15.2.1 DEVICE CONFIGURATION - GENERAL SETUP 58
15.2.2 DEVICE CONFIGURATION - ADVANCED SETTINGS 59
15.2.3 INTERFACE CONFIGURATION – GENERAL SETUP 60
15.2.4 INTERFACE CONFIGURATION – WIRELESS SECURITY 61
15.2.5 INTERFACE CONFIGURATION – MAC-FILTER 61
15.3 WI-FI AS CLIENT 62
15.4 CREATING MULTIPLE SSID 63

16 SETTING UP FAILOVER AND LOAD BALANCING 65

16.1 FAILOVER MODE CONFIGURATION 65
16.1.1 SETTING UP LOAD BALANCING FOR FAILOVER 66
16.2 LOAD BALANCING MODE CONFIGURATION 70

17 FIREWALL BASICS 72

18 SERVICES 73

18.1 DYNAMIC DNS 73
18.2 SMS DIAGNOSTIC 75
18.3 DOTA 76
18.4 GPS 77
18.5 EVENT 78

19 APPENDIX 79

19.1 DEFAULT SETTINGS 79
19.2 RESET TO FACTORY DEFAULT SETTING 79
19.2.1 USING THE WEB-BASED USER INTERFACE 79
19.2.2 USING THE RESET BUTTON ON THE SIDE OF THE ROUTER 79
19.3 LIST OF ACRONYMS 81
19.4 SUPPORT 83

PRELIMINARY

1 Safety Precautions

1.1 General precautions

- The router generates radio frequency (RF) power. When using the router, care must be taken to ensure safety as well as compliance with all the regulations surrounding the use of RF equipment.
- Do not use the router in aircraft, hospitals and petrol stations or in places where using GSM products or other RF equipment is prohibited.
- Be sure that the router will not be interfering with nearby equipment such as pacemakers or medical equipment. The antenna of the router should be directed away from computers, office equipment, home appliance, etc.
- Always keep the router at a minimally safe distance of 26.6cm or more from a human body.
- Do not put the antenna inside metallic boxes or other containers

1.2 Using the router in vehicle

- Check for any regulation or law authorizing the use of GSM equipment in vehicles in your country before installing the router.
- Installation of the router should be done by qualified personnel. Consult your vehicle dealer for any possible interference concerns related to the use of the router.
- Be careful when the router is powered by the vehicle's main battery. The battery may be drained after extended period.

1.3 Protecting your router

To ensure error-free usage, please install and operate your router with care and comply with the following:

- Do not expose the router to extreme conditions such as high humidity/rain, high temperatures, direct sunlight, caustic/harsh chemicals, dust, or water.
- Do not try to disassemble or modify the router as there are no user serviceable parts inside and the warranty would be void in case of tampering.
- Do not drop, hit or shake the router.
- Do not use the router under extreme vibrating conditions.
- Do not pull the power supply cable. Please attach or detach it by holding the connector after switching off the supply.
- Install and connect the router in accordance to the instruction manual. Failure to do so will void the warranty.

PRELIMINARY

2 Overview

2.1 Scope

This document provides you all the information you need to set-up, configure and use the Maestro E200 Series router.

2.2 Target audience

This document is intended for customers and integrators who understand basic telecommunications and information technology terminology and concepts.

3 Prerequisites

Before continuing with the installation of your E200 Series router, make sure you have a computer equipped with the following:

- A computer with an Ethernet port or Wi-Fi connectivity
- A web browser such as Google Chrome, Mozilla Firefox or Apple Safari

PRELIMINARY

4 User manual conventions

The following symbols are used throughout the user manual:

The following symbol indicates **attention** must be paid

The following symbol indicates a **warning**

The following symbol provides **information**

PRELIMINARY

5 Product overview

5.1 E205 Series at a glance

- Dual-band HSDPA (E205XT02), tri-band HSDPA (E205XT04
- GPRS/EDGE auto-fallback
- LAN on RJ45 port
- Switchable WAN/LAN on RJ45 port
- Built-in Wi-Fi with an external RP-SMA antenna connector
- Automatic WAN / 3G failover
- Built-in GPS supporting active antenna via an external SMA connector
- External SMA antenna connectors for 3G
- One digital inputs/outputs
- Six color LED's for displaying for Wi-Fi and network activity, signal, power and alarm
- Device management and configuration via a web GUI
- DIN rail mountable

PRELIMINARY

5.2 E206 Series at a glance

- Quad-band HSPA+ & dual-band EV-DO (E206XT)
- GPRS/EDGE auto-fallback
- LAN on RJ45 port
- Switchable WAN/LAN on RJ45 port
- Built-in Wi-Fi with an external RP-SMA antenna connector
- Automatic WAN / 3G failover
- Built-in concurrent diversity/GPS antenna supporting active antenna via an external SMA connector
- External SMA antenna connectors for 3G
- One digital inputs/outputs
- Six color LED's for displaying for Wi-Fi and network activity, signal, power and alarm
- Device management and configuration via a web GUI
- DIN rail mountable

5.3 Bundle content

- E200 Series router x 1
- 1m Ethernet cable 8P8C x 1
- 2G/3G/4G terminal antenna 90 degree hinged SMA x 1
- 5 dBi, 2.4/5.1~5.9 GHz dipole antenna RP-SMA (M) hinged 90° x 1
- Industrial grade 1.2 A power supply x 1
- DIN clip x 1

If any of these items are missing or damaged, please contact Maestro Support immediately. The Maestro Support website can be found at: http://support.maestro-wireless.com/

PRELIMINARY

6 Product features

With high-speed cellular (3G and beyond), WAN, LAN and Wi-Fi connectivity, the E200 is a highly versatile, reliable and rugged router designed for mission-critical enterprise applications requiring faultless connectivity.

The E200 comes in two models; the cost-effective HSDPA ensures always-on connectivity for 2G migration or low-latency applications such as energy and sales & payment, while the HSPA+ penta-band is ideal for deployment in vertical markets requiring high-speed data or global roaming, such as security and transportation.

The E200 can be configured through an easy-to-use web interface; quick setup section will facilitate basic router configuration. Advanced configuration setting for functions such as Wi-Fi, failover, load balancing, VPN, firewall are also directly available through the web interface. Once configured, a set of 6 LED's on the top of the aluminum alloy casing will help the user ensure that the device is operating correctly. Users can also remotely manage the router is also available through an HTTPS connection over the LAN or WAN.

PRELIMINARY

7 Physical dimensions and LED

7.1 Physical dimensions

E200 Series dimensions without connector	
Lenght	83.9mm
Depth	60mm
Height	25mm
Weight	90g

PRELIM

7.2 LED indicators

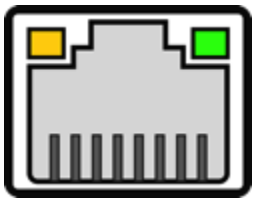
The E200 Series features 6 LEDs on the front to display critical system information

NAME	COLOUR	STATE	DESCRIPTION
WI-FI		**OFF**	Wi-Fi network is deactivated
		Flashing	Wi-Fi network connection traffic
		ON	Wi-Fi network is activated
Activity		**OFF**	Cellular data service is not connected
		ON	Cellular data service is connected
Network		**OFF**	SIM card is not inserted, or device is not registered on the cellular network
		Flashing	Device is registered on the cellular home network
		ON	Device is registered on the cellular roaming network
Signal		**OFF**	No signal (CSQ=0,99)
		ON	Weak signal (CSQ<7)
		Flashing	Strong signal (CSQ>7)
Power		**OFF**	Power off
		ON	Power on
Alert		**OFF**	No alert, device is running smoothly
		Flashing	Software fault (crash, issues…)
		ON	Hardware fault (high temperature, problem with module or SIM card)

PRELIMINARY

7.3 Ethernet port LED indicators

The E200 Series router features two Ethernet ports, each with with two LED.



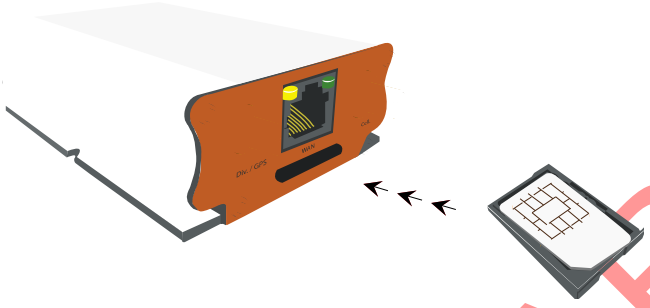
LED	STATUS	DESCRIPTION
Green	On	There is a valid network link.
	Off	No valid network link detected.
Amber	Flashing	There is activity on Ethernet port
	Off	There is not activity on the Ethernet port

PRELIMINAR

8 Hardware installation

8.1 Install the SIM card

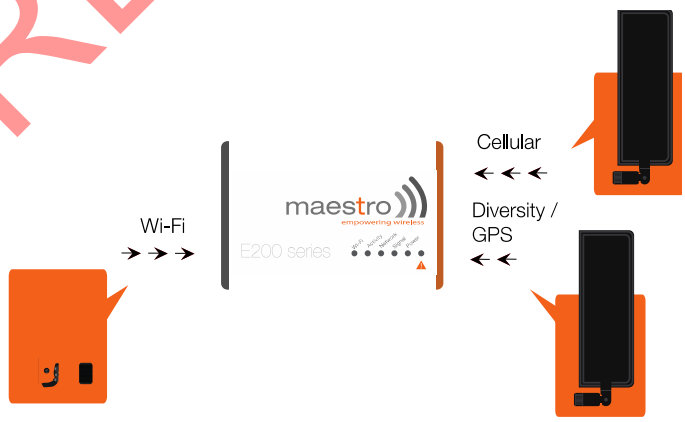
SIM card(s) should be inserted into the SIM tray as illustrated in the image below. SIM card contact should be face up.



8.2 Connect the Cellular (WWAN) Antenna(s)

Connect the cellular antenna to the “Cellular” connector (SMA Female) on the unit. If the unit is equipped with a secondary cellular antenna connector “Div.”, it is highly recommended to connect an additional antenna to this connector for diversification. Dual antennas will provide improved signal strength thus better performance.

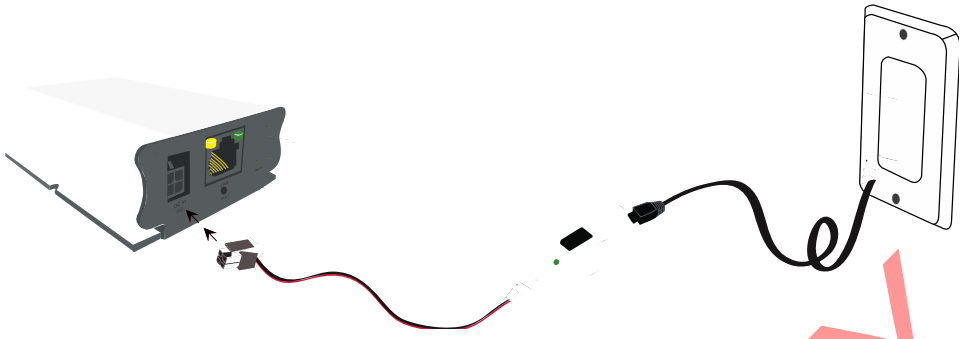
Note: For most applications, the antenna(s) included with the unit will provide suitable reception, but some circumstances/environments may require a higher quality antenna or one mounted in a different location. If this is the case, Maestro has many antenna options to chose from, please contact us or visit maestro-wireless.com.



PRELIMINARY

8.3 Connect the power supply

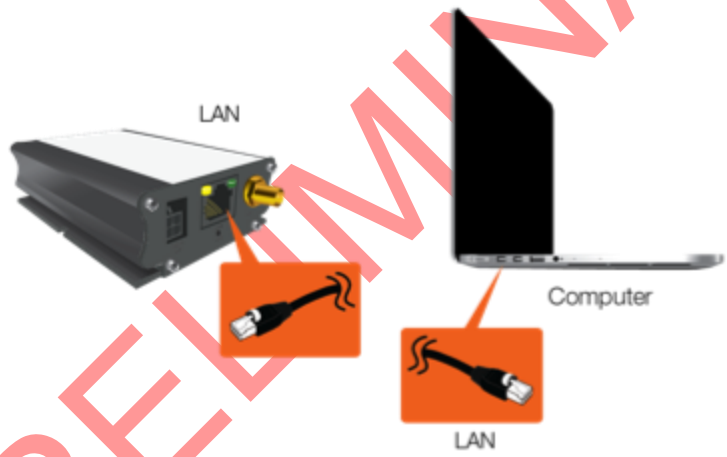
Connect the Micro-Fit 4-pin male connector of the power supply to the power connector located on the LAN side of the unit.



8.4 Connection to the device

8.4.1 Connection with the LAN Cable

Connect one end of the Ethernet cable to the “LAN” port on the unit and the other end to a LAN port on a PC.



8.4.2 Connection via Wi-Fi

Make sure Wi-Fi antenna is connected (see chapter 8.2) and Wi-Fi is ON on your computer, phone or tablette. Scan for network and select SSID “Maestro E200”. You will be prompted to enter a WPA/WPS-2 mixed-mode password. Default password is ‘ **W1rele$$’.**

PRELIMINARY

9 E205 Basic configuration

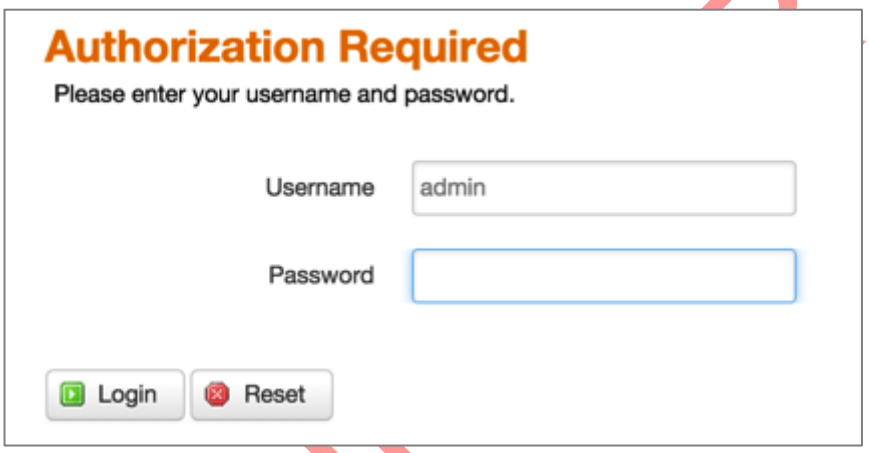
9.1 Connecting to the web interface

Connect the LAN interface of your E200 to a computer via the RJ-45 cable and and start your web browser. Enter the device LAN IP address in the browser address field.

http://192.168.1.1

Note: If you change the IP address, remember to reboot the router and enter the new IP address into your browser address bar.

You will be invited to enter the admin username and password:



- Default login – **admin**
- Default password – **admin**

(This is the default username and password for Maestro routers. The admin and read-only user passwords can be changed at **System>Administration**

After successfully login the **Quick Setup** page will show up

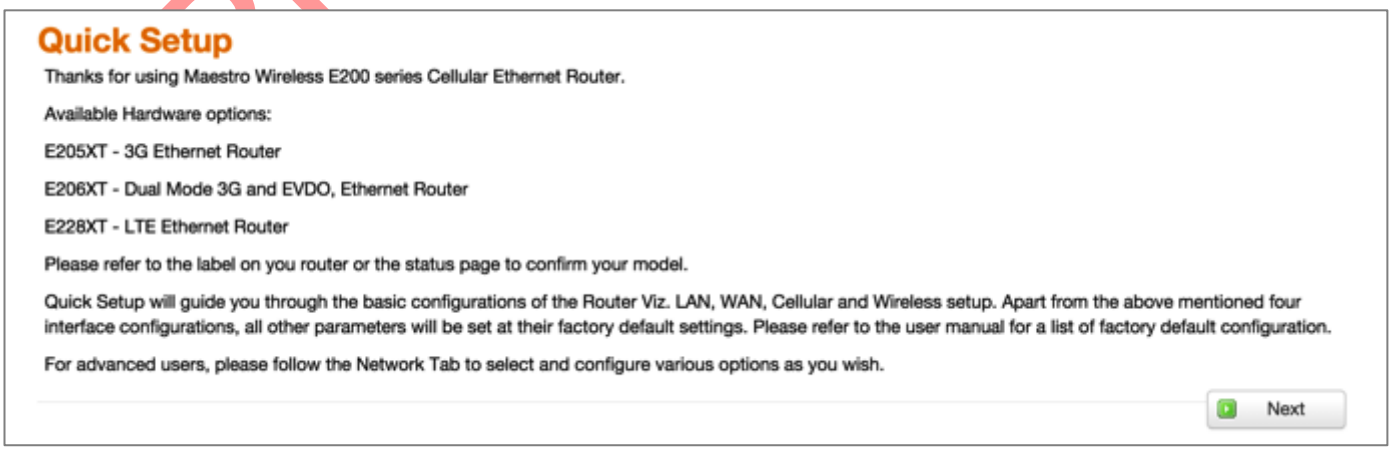


Figure 1: Quick Setup

If you need to access advanced feature you can navigate directly in the menu.

If you want to follow the quick user guide click on the **Next** button and you will enter quick setup page.

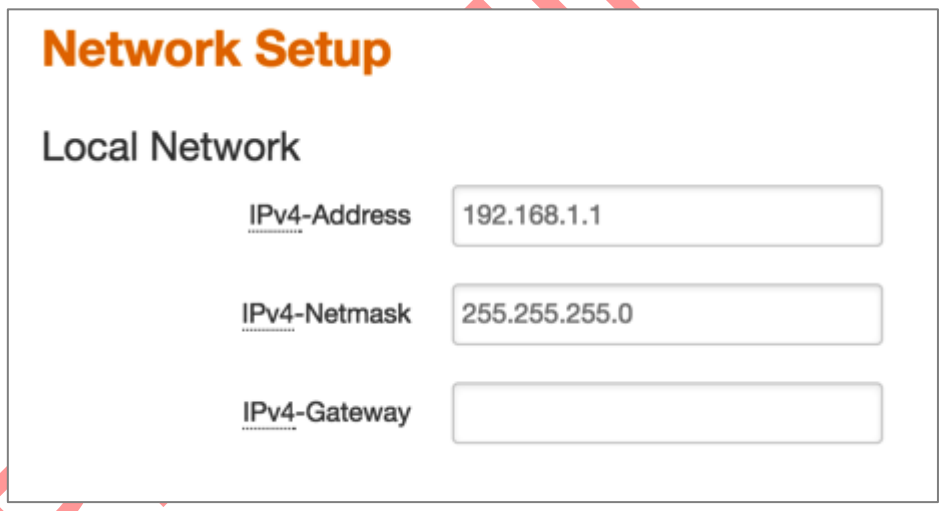
Since E200 has multiple WAN interfaces, the default priority settings for switching between various WAN interfaces is as follows and cannot be changed in Quick setup. To make any changes on the WAN priority settings, please go to the **Network/Interfaces** and **Network/Load Balancing** Tab. By default the router is configured in failover mode with WAN priorities as listed below:

- Priority 1 – Wired WAN
- Priority 2 – Wi-Fi as WAN (WWAN) (Wi-Fi in Client Mode)
- Priority 3 – Cellular

In the quick setup page, you can perform basic configuration settings for the **LAN, WAN, Cellular and Wi-Fi** interfaces. All other configurations will be set to the factory default or previously saved values..

9.2 LAN configuration

The LAN configuration page is used to configure the LAN settings of the router



The modem router is shipped preconfigured to use private IP addresses on the LAN side, and to act as a DHCP server. The modem router's default LAN IP configuration is as follows:

- LAN IP address: 192.168.1.1
- IPv4 Netmask : 255.255.255.0

These addresses are part of the designated private address range for use in private networks, and should be suitable in most applications. If your network has a requirement to use a different IP addressing scheme, you can make those changes here and click.

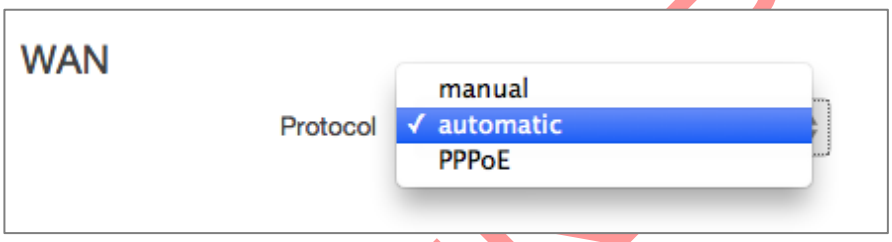
The LAN TCP/IP Setup settings are

- **IPv4 Address:** This is the LAN IP address of the modem router.
- **IPv4 Netmask:** This is the LAN subnet mask of the modem router. Combined with the IP address, the IP subnet mask allows a device to know which other addresses are local to it, and which must be reached through a gateway or modem router.

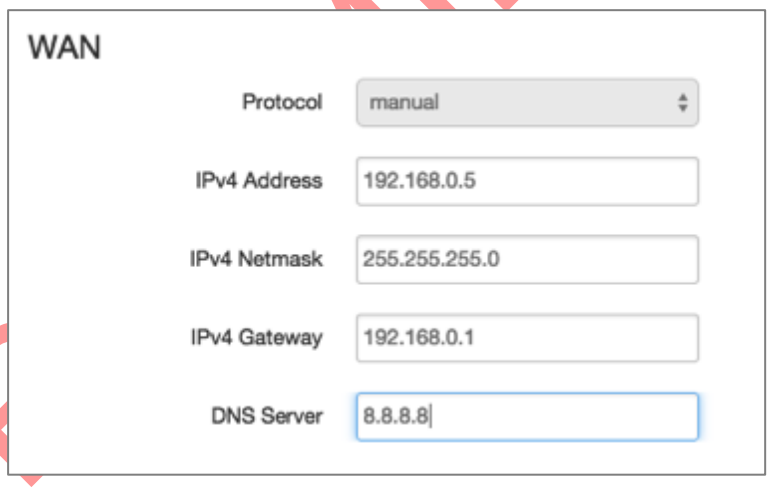
Advanced LAN configuration parameters could be found under **Network/Interfaces,** under LAN parameters click **Edit > Advanced Settings.**

9.3 WAN configuration

By default the WAN is in **automatic** mode, you can also set it to **Manual** or **PPPoE**



9.3.1 Manual



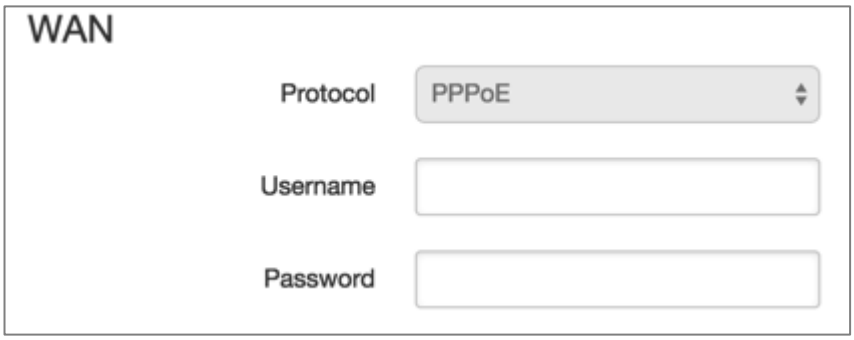
- IPv4 Address: The IP address to assign to the selected WAN interface.
- IPv4 Netmask: The Subnet mask of the IP address above.
- IPv4 Gateway: The gateway to assign this WAN interface.
- DNS server: The DNS server for the WAN interface.

9.3.2 Automatic

The WAN will be setup automatically.

9.3.3 PPPoE (Point-to-Point Protocol over Ethernet)

Acquire IP Address automatically from your Provider using the PPPoE protocol.

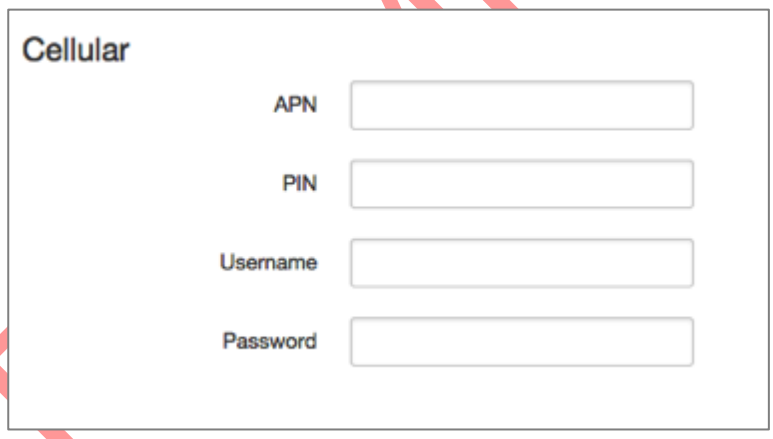


Many DSL providers use PPPoE. To acquire an IP Address from the PPPoE server, a username and password are required. Ask your provider for your username and password if you don't know them.

Advanced WAN configuration parameters could be found under **Network/Interfaces,** under WAN parameters click **Edit > Advanced Settings.**

Selecting PPPoE in the quick setup will require some advance configurations.

9.4 Cellular Setup



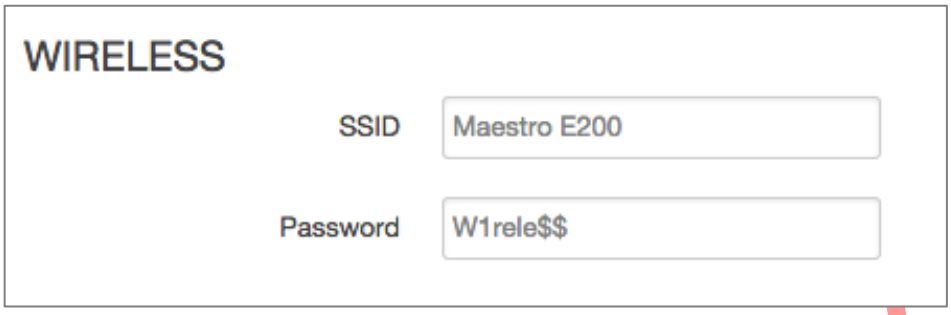
You can enter the cellular settings like APN, SIM PIN for security, Username and Password corresponding to your cellular connection (SIM Card), which you will receive from your Cellular Operator.

- **APN:** Access Point Name, enter the access point name provided by your network operator
- **PIN:** If required please enter your SIM card's PIN code
- **Username and Password:** If required enter login credentials provided by your network operator

Advanced cellular configuration parameters could be found under **Network/Interfaces,** under 3G parameters click **Edit > Advanced Settings.**

PRELIMINARY

9.5 Wireless (Wi-Fi)



By default, the Wi-Fi is in Access Point mode:

- **Default SSID:** Maestro E200
- **Default Password:** W1rele$$

The E200 Wi-Fi can be configured either as

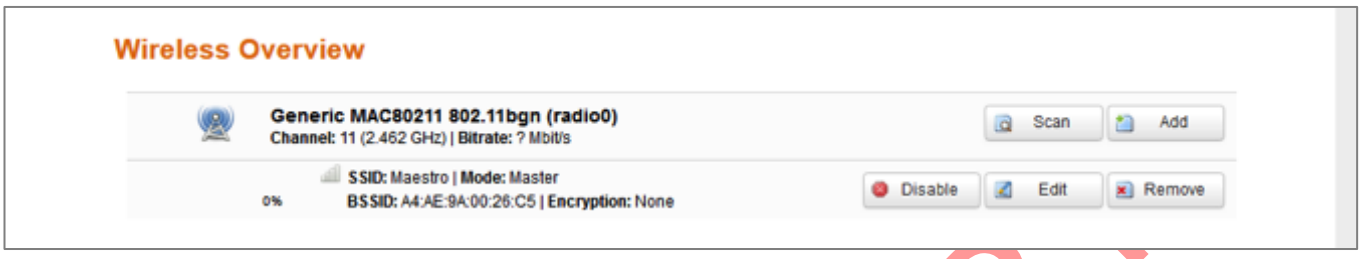
- An Access Point, in which case, the Wi-Fi acts as a LAN or
- As a Wi-Fi Client in which case, the E200 connects to an external Wi-Fi source which will be the source of Internet or WAN for the E200.

Default security settings used are WPA-PSK, WPA2-PSK Mixed Mode. You can choose your encryption and change your password accordingly. Bring up on boot tick box in Wireless section by default is enabled. Ticking the box will enable the Wi-Fi (Wireless) interface every time the Router Reboots.

PRELIMINARY

Wi-Fi section from this Quick setup page will disappear when

- The default Wi-Fi interface is removed from Network / Wi-Fi page
- When you scan for available Wi-Fi networks and convert the Router to Client Mode.



If you create multiple access point networks (Multiple SSDI's), the additional Wi-Fi networks created will not show up in Quick Setup.

Advanced Wi-Fi configuration parameters could be found under **Network/Wi-Fi,** under Wireless Overview parameters click **Edit > Advanced Settings.**

Once the Quick Setup is done, you will have basic LAN connectivity, Internet access over WAN and/or Cellular and Wi-Fi will be configured as Access Point.

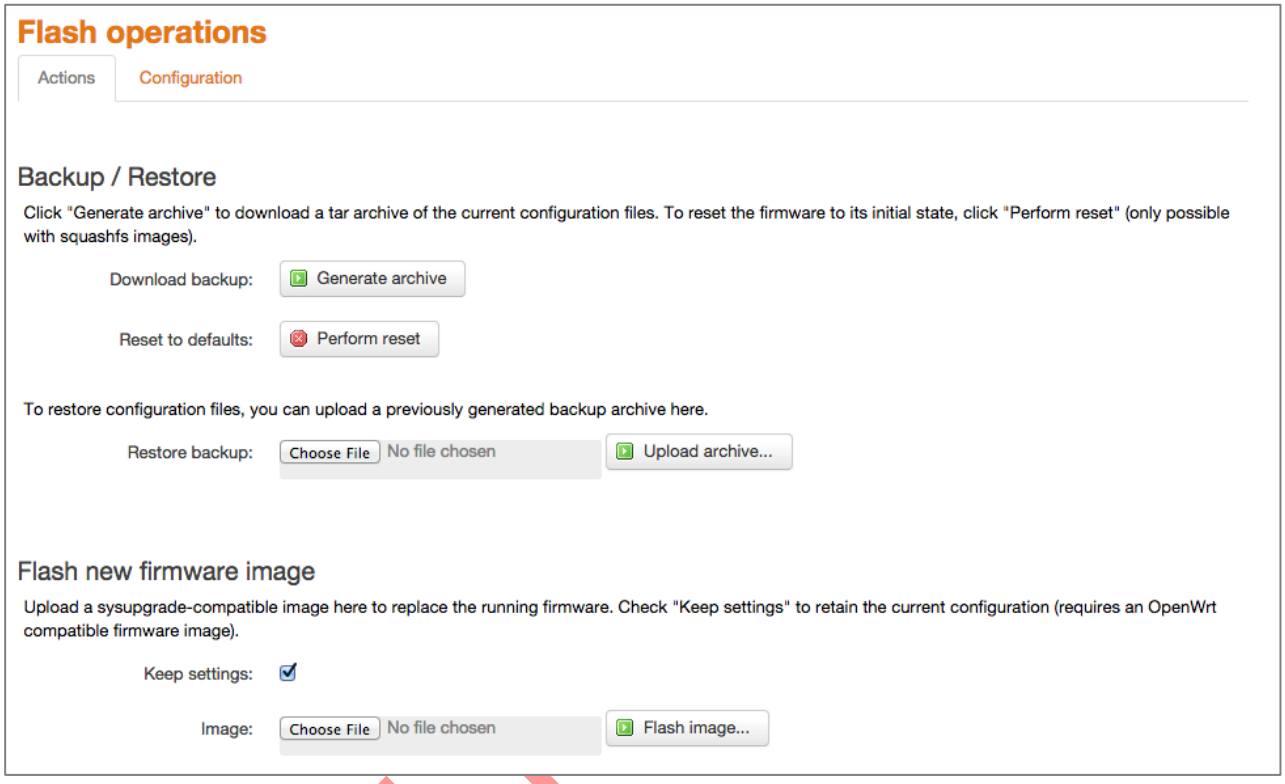
To verify that your setup were succefully applied and your router is now running go to **Network/Interfaces.**

PRELIMINARY

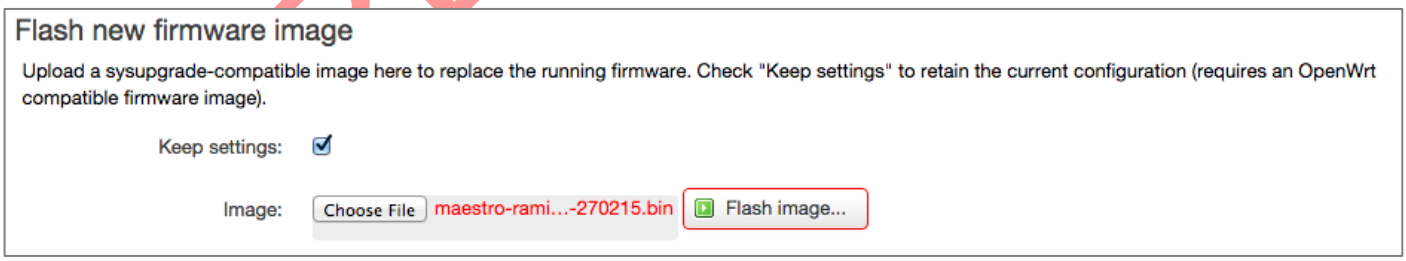
10 E205 advanced configuration

10.1 Flashing firmware and updating your device

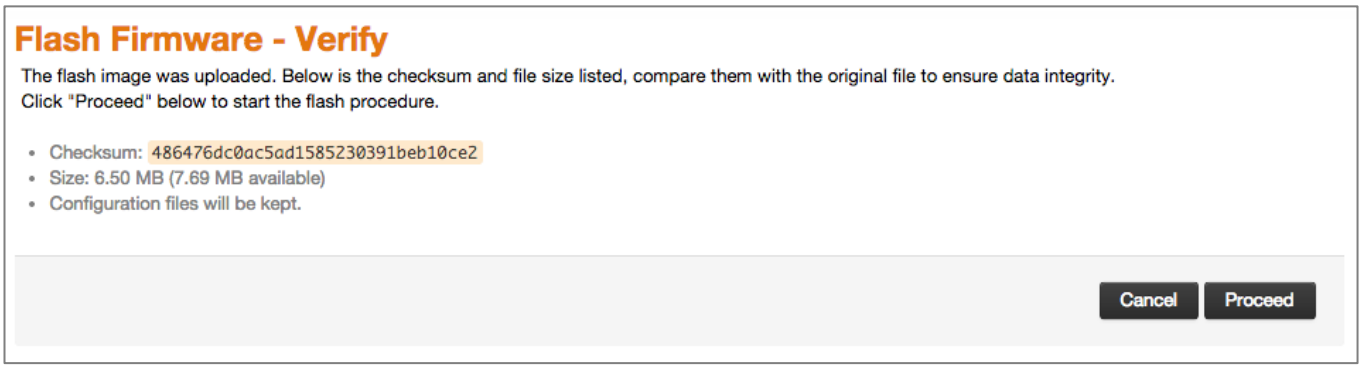
E200 Series can be updated through the web interface. Go to **System/Back-up / Flash Firmware.**



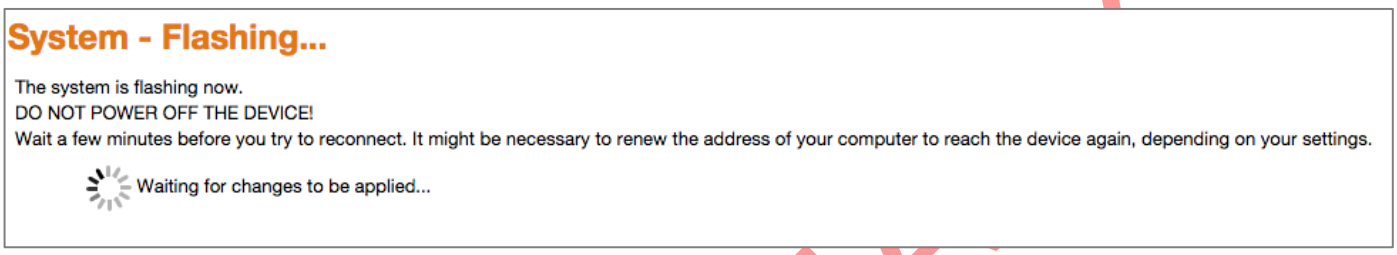
Under **Flash new firmware image**, click on Choose File and locate the .bin file on your computer.



Once the file located on the computer click **Flash image…**



Click **Proceed**



The system will now be flashing.

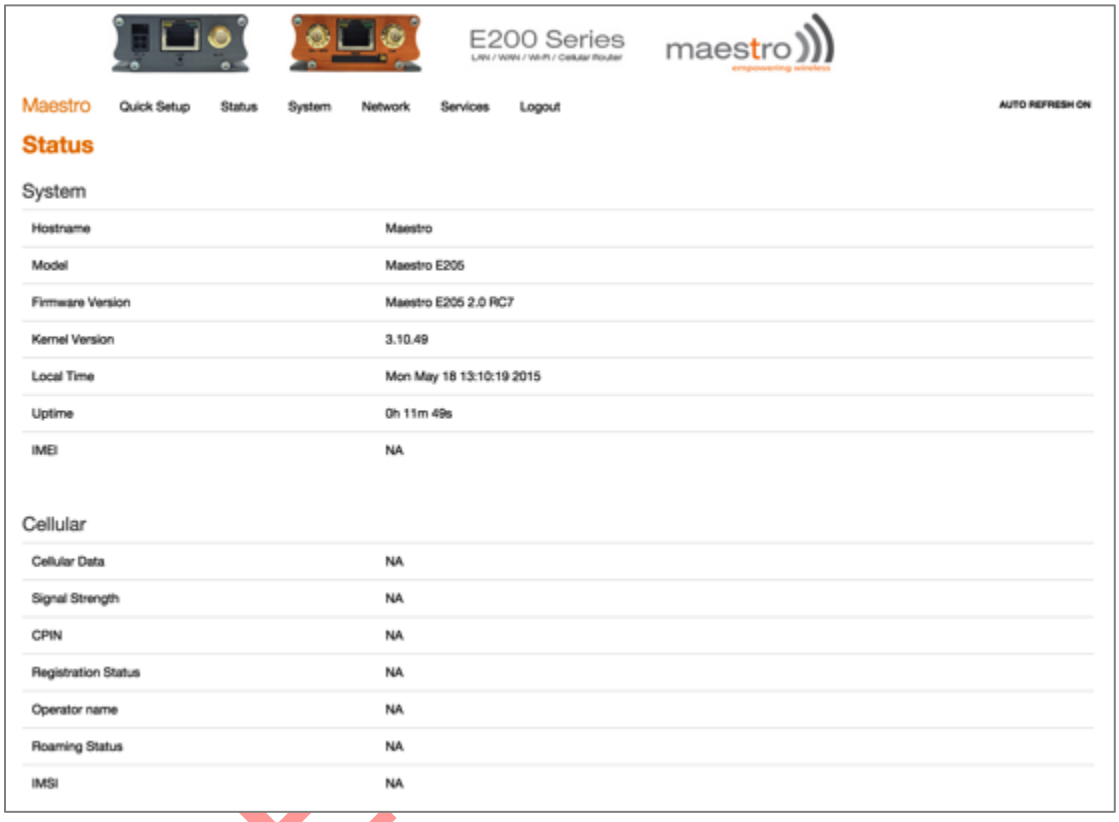
DO NOT POWER OFF THE DEVICE!
Wait a few minutes before you try to reconnect. It might be necessary to renew the address of your computer to reach the device again, depending on your settings.

PRELIMINA

11 Status pages explained

- Open your browser on your computer with the address http://192.168.1.1
- Enter the default login “admin” and password “admin”

By clicking on **Status or Overview** the page below will be displayed:



The Status menu is divided in 5 sub-menus:

- Overview
- Firewall
- Routes
- System Log
- Real time Graphs

PRE

11.1 Overview:

11.1.1 System

The system tabs displays all information related to your device hardware and software version as well as basic settings:

Status

System

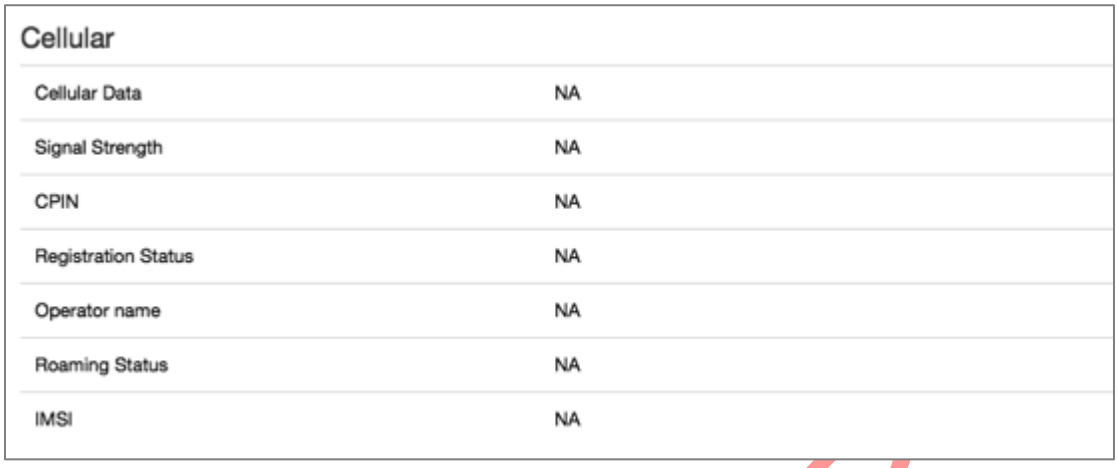
Hostname	Maestro
Model	Maestro E205
Firmware Version	Maestro E205 2.0 RC7
Kernel Version	3.10.49
Local Time	Mon May 18 13:11:14 2015
Uptime	0h 12m 44s
IMEI	NA

ITEM	DEFINITION
Hostname	The name assigned to your router
Model	Model of your router
Firmware Version	The firmware version that is currently residing and controlling the router
Kernel Version	The Linux kernel version on the router
Local time	The date and time set up on the router
Uptime	The time in HH: MM: SS, for which the router is working since last power ON
IMEI	The IMEI (International Mobile Equipment Identity) of the router, a unique code for identifying devices on a GSM network.

PRELIMINARY

11.1.2 Cellular

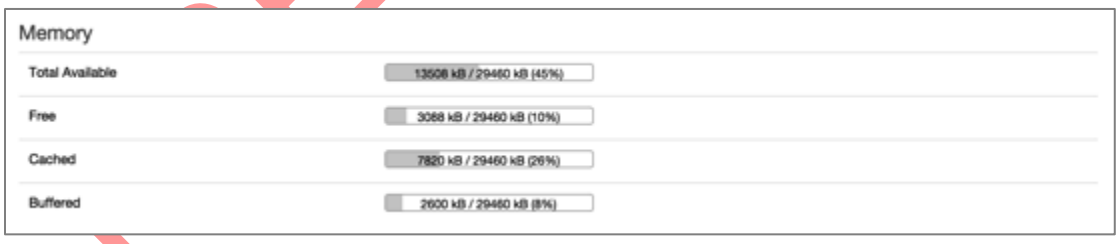
The Cellular group provides the status of the SIM card inserted in the router.



ITEM	DEFINITION
Signal Strength	Scale from 0 to 32. For a good cellular data connection Signal Strength must be 15 or above.
Registration Status	Indicates if the device is registered on the cellular network
Operator Name	Name of the cellular service provider
Roaming Status	Indicate if the device is roaming on another network
Uptime	The time in HH: MM: SS, for which the router is working since last power ON
Imsi	The International Mobile Subscriber Identity or IMSI is used to identify the user of a cellular network and is a unique identification associated with all cellular networks.

11.1.3 Memory

The Memory group provides information on the memory in KB available with the router.



ITEM	DEFINITION
Total available	Total available RAM memory
Free	Free RAM memory
Cached	Memory used to cache internal router data
Buffered	Amount of memory used as an internal router buffer

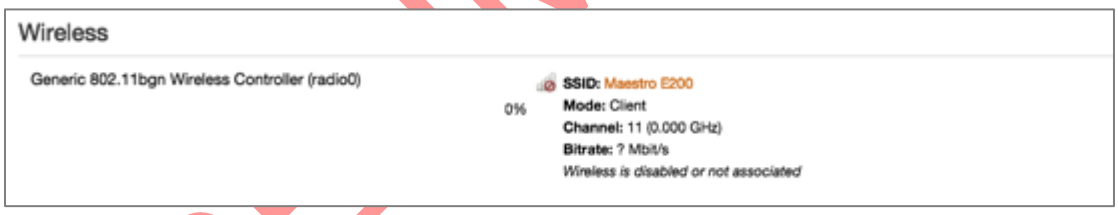
11.1.4 Network

The Network group gives the status of IPV4 and IPV6 WAN status.

DHCP and DHCPV6 leases list out the computers connected to the router through respective DHCP lease. This includes IPV4 as well as IPV6 connections

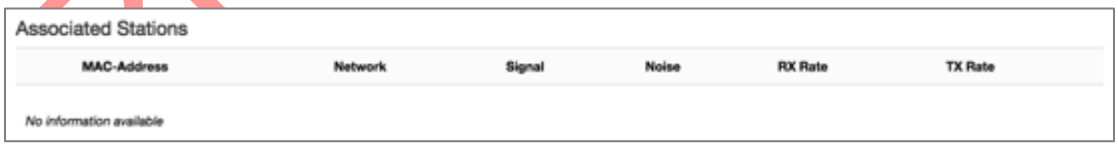
11.1.5 Wireless

The wireless group gives the status of the Wi-Fi network being used by the router.



11.1.6 Associated Stations

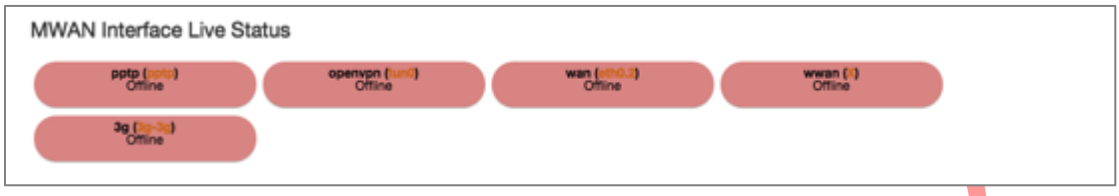
The associated stations group lists out the computers connected to the router.



PRELIMINARY

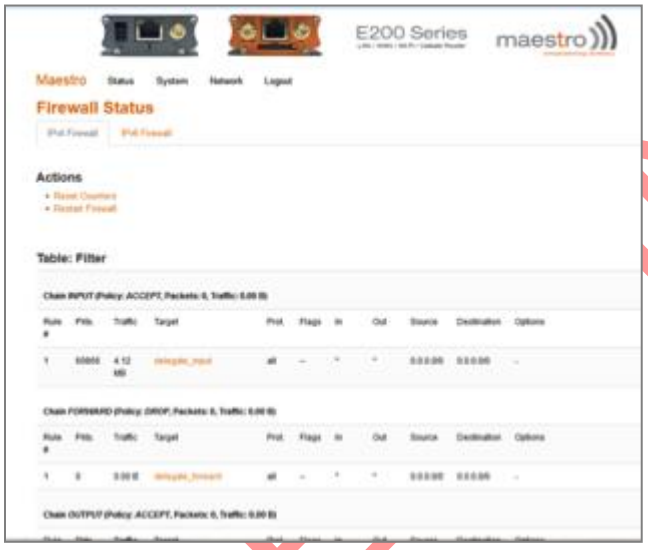
11.1.7 MWAN Interface Live status

MWAN Interface provides a live view of all the available and connected WAN options. In the above screenshot, you can see that the interfaces marked in Green are live and connected while the ones in red are available but offline.



11.2 Firewall

You can verify parameters related to firewall and its settings here. Status of firewalls for both IPv4 and IPv6 can be seen here.



PRELIMINARY

11.3 Routes

The rules that are currently active on this E205 are shown here.

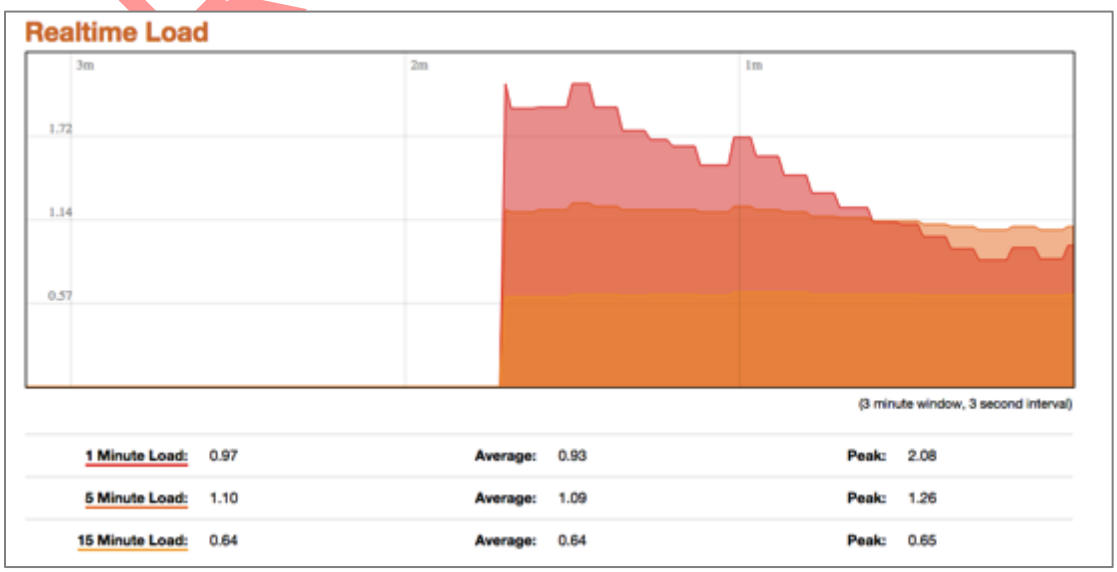
11.4 System Log

The log of all configured events regarding this E200 is displayed here.

11.5 Realtime graphs

This screen provides real time graphs of:

ITEM	DEFINITION
Load	Load indicates the load on CPU
Traffic	Traffic indicates the WAN side incoming and outgoing traffic
Wireless	Wireless indicates the traffic on Wi-Fi irrespective on whether Wi-Fi is used as an access point (LAN) or Client (WAN)
Connections	This page gives an overview over currently active network connections.



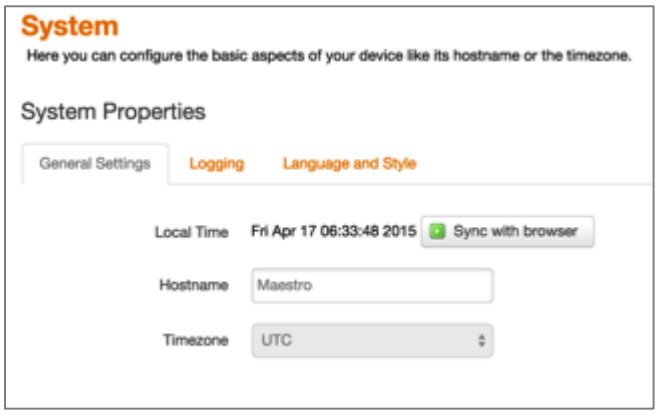
PRELIMINARY

12 System

12.1 System properties

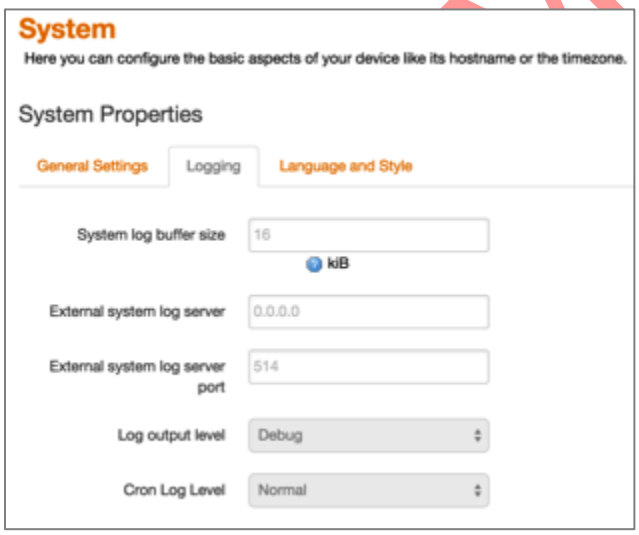
12.1.1 General Setting

This page allows you to configure the basic aspects of your device like its hostname or the time zone.



12.1.2 Logging

Parameters about system log like buffer size and log output level can be set here.



ITEM	DEFINITION	
System log buffer size	Size of log displayed under Status page / Logs. Default is 16KiB	
External system log server	IP address of any external TCP server where the real time log will be posted	
External system log server port	Port of any external TCP server where the real time log will be posted	
Log output level	Debug	Provides Information useful for

MINARY

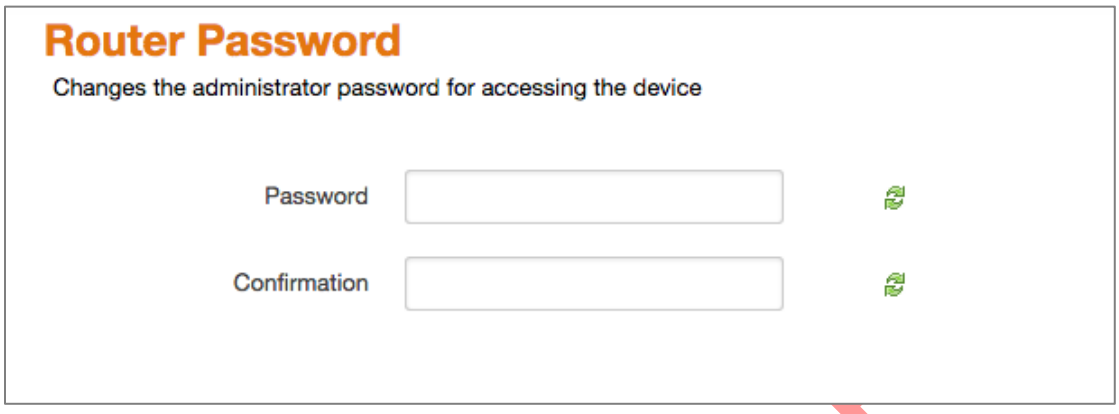
		developers for debugging the application,not useful during operations.
	Info	Normal operational messages which provide information which can be used for general purposes like reporting.
	Notice	Events which are unusual but not an error. Used to spot potential problems. Immediate action is not necessary.
	Warning	Warning messages but not error, indicating that error might occur if action is not taken
	Error	Error conditions which should be relayed to developers or admins for resolution.
	Critical	Should be corrected immediately but indicates failure in the secondary systems.
	Alert	Problems which should be corrected immediately.
	Emergency	System is Unusable.
Cron Log Level	Debug	Helps you debug cron process which has failed during runtime.
	Normal	Normal informational messages
	Warning	Indicates some issues can happen or error could be generated in Cron process.

PRELIM

12.2 Administration

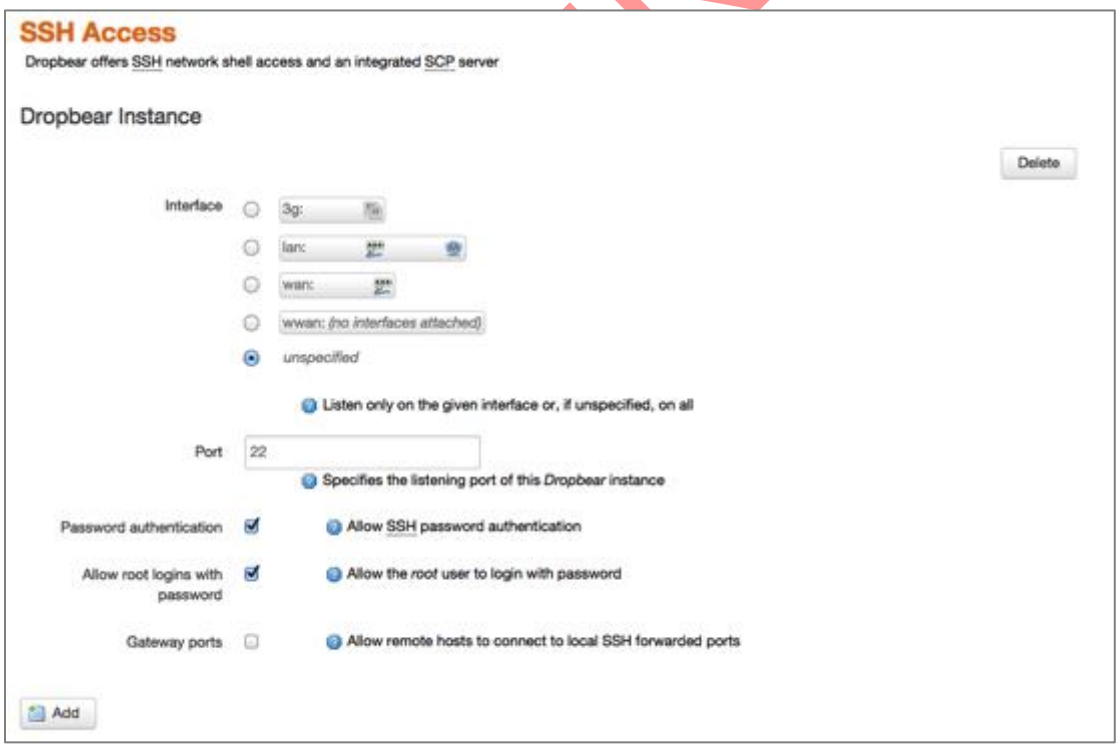
12.2.1 Router Password

On this page you can change the administrator password for accessing the device.



12.2.2 SSH access

The E200 integrate Dropbear which offers SSH network shell access and an integrated SCP server.

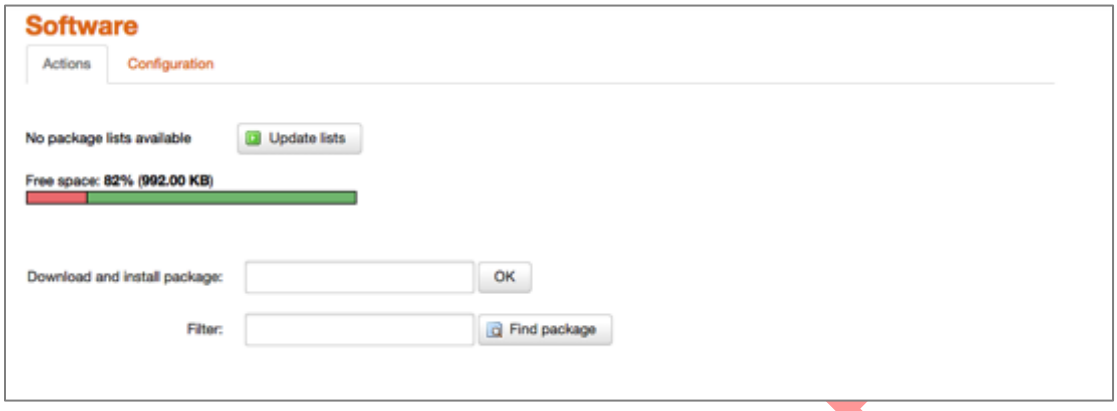


You can also set parameters for Dropbear Instance for SSH Access and you can paste public SSH-Keys (one per line) for SSH public-key authentication.

By default the remote SSH access over WAN is disabled, you need to send an SMS from a registered admin number to enable remote SSH access. Please refer to section Services / SMS

12.3 Software

Software page give you access to the list of package installed, you can also add package or filter packaged installed on your router.

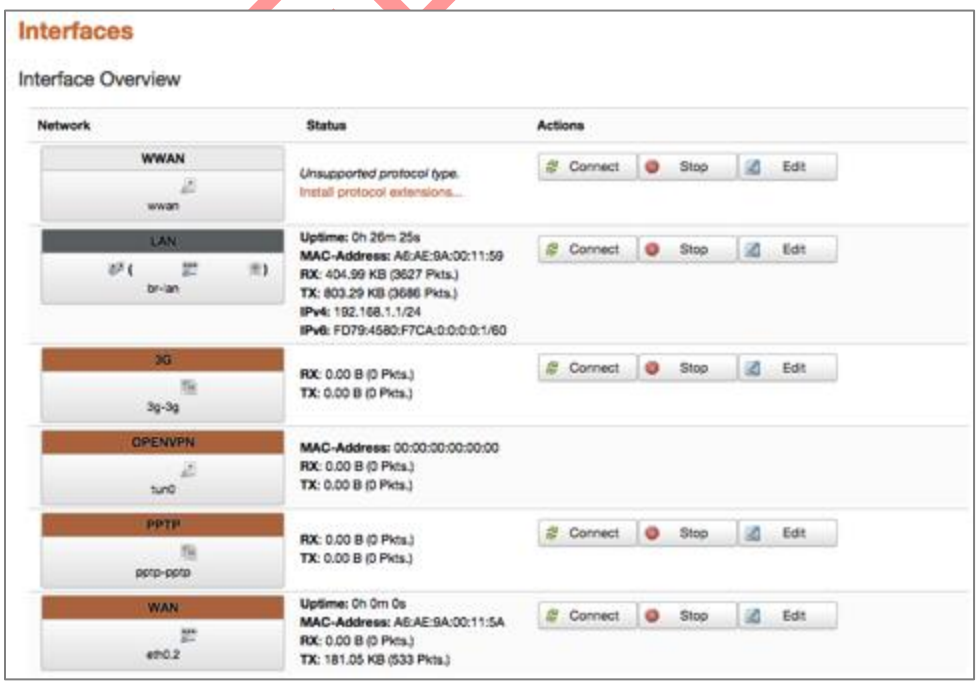


13 Network

13.1 Interfaces

The E200 has various physical interfaces namely,

- Wired LAN
- Wired WAN
- Wi-Fi
- Cellular



PRELIMINARY

In addition to these pre-created interfaces, you can add Virtual interfaces. You can also delete those virtual interfaces

However, you cannot delete the LAN, WAN and cellular interface.

When Wi-Fi is set-up as Client, interface WWAN will turn active.

Next to the interfaces, there is information regarding the interfaces like connection time, Packets sent, Packets received and IP address.

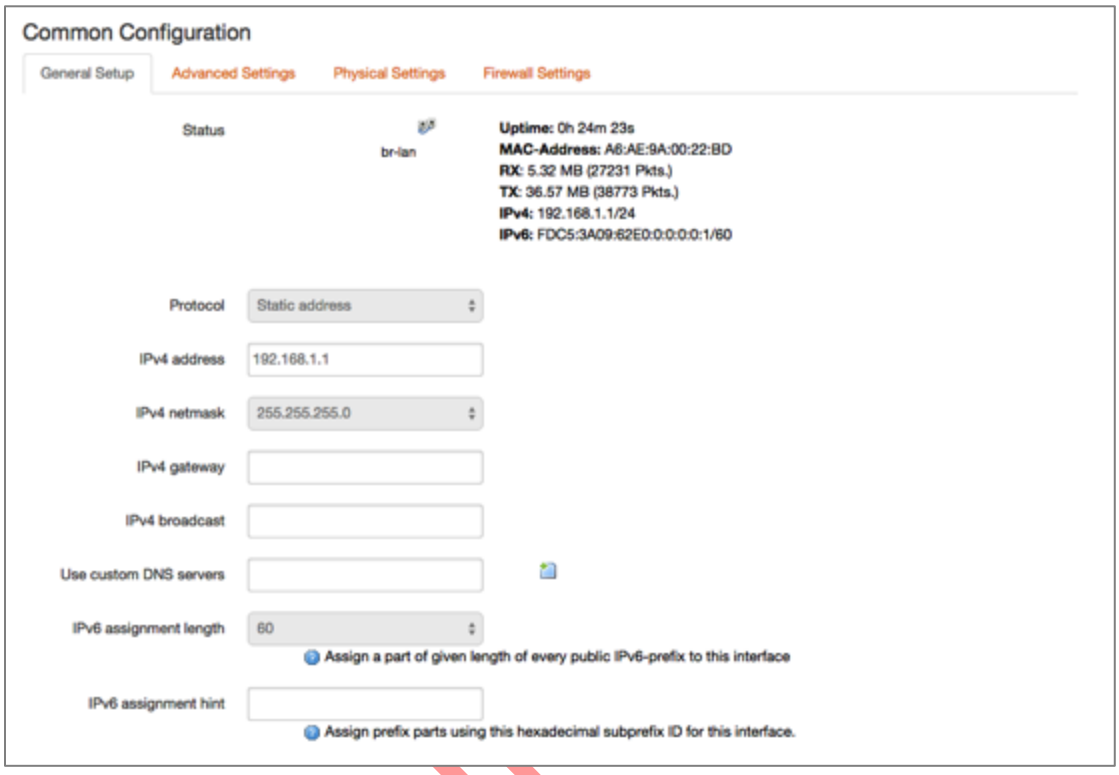
Connect button will connect the interface or reconnect if already connected. Stop will stop the interface. Click Edit to change the Interface Parameters.

PRELIMINARY

13.2 LAN interface

13.2.1 General Setup

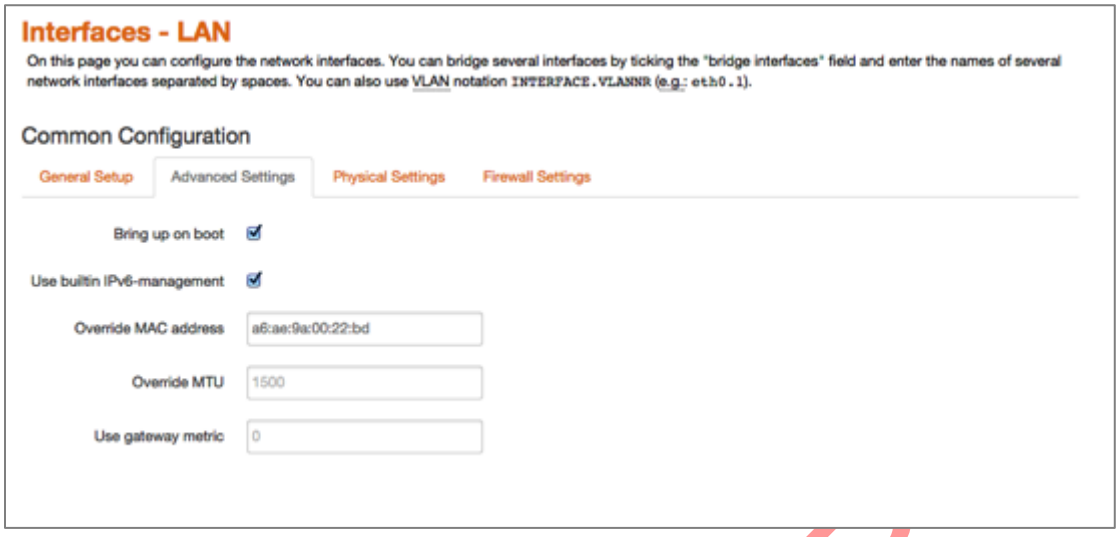
Click **edit** next to the LAN interface to access configurations



ITEM	DEFINITION
Protocol	Be absolutely sure that you choose **Static address** for LAN else you will end up losing access to Web-Interface. Accidently if you choose any other option other than Static address for LAN and loose access to the Web Page. Please perform a Hardware factory reboot.
IPv4 address	The IPv4 address of your LAN interface
IPv4 netmask	The IPv4 netmask of your LAN interface
IPv4 broadcast	
Use custom DNS server	
IPv6 assignment length	Assign a part of given length of every public IPv6-prefix to this interface
IPv6 assignment hint	Assign prefix parts using this hexadecimal subprefix ID for this interface.

PRELI

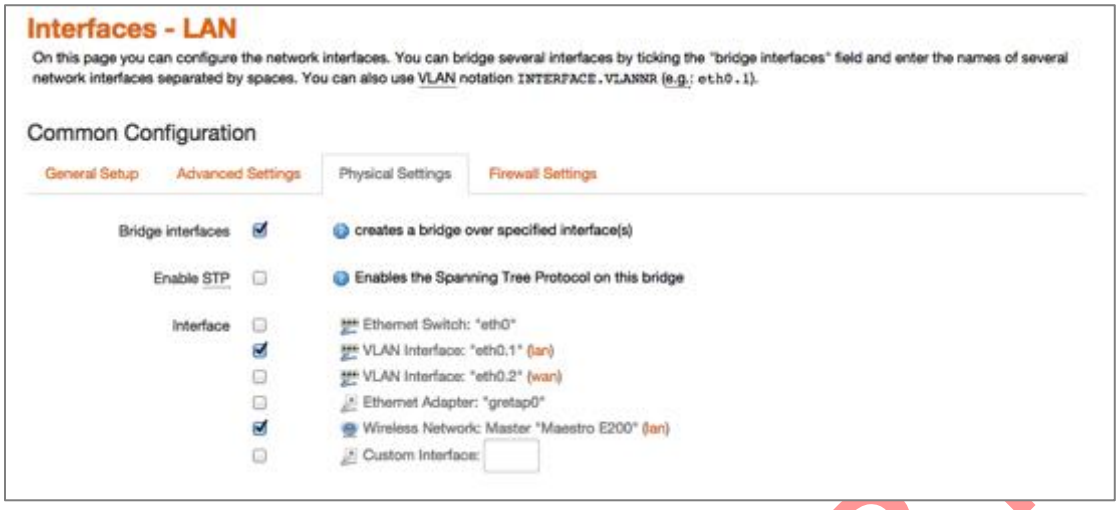
13.2.2 Advanced Settings



ITEM	DEFINITION
Bring up boot	This option will enable LAN interface to start on every boot. Please be aware that un-ticking this box will not bring up the LAN interface in the next boot cycle and you will no longer be able to access the Web Interface of the Router until you perform a Factory Reboot.
Use built-in IPv6 management	If ticked it enables IPv6 support in the LAN side.
Override MAC address	
Override MTU	
Use gateway metric	It is advisable to enter metric for every interface. Metric indicates the priority of the interface. The lower the value the higher the priority of the interface. If no metric is added, it will assume a default value of “0” The default metric for LAN interface is “0”

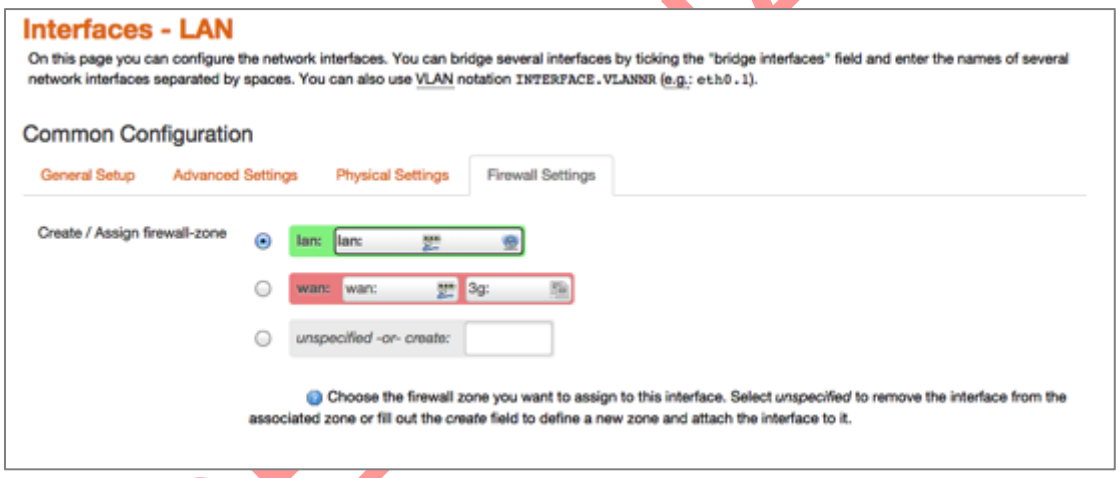
PRELIMINARY

13.2.3 Physical Settings



The configuration shown above is the default configuration. Unless you are an advanced user, we recommend not making any changes to this page.

13.2.4 Firewall Settings



It is extremely critical that you assign every interface to a Firewall Zone. By default LAN is assigned to a LAN firewall Zone.

You can also create a different Firewall Zone and assign your interface to the New Created Zone.

Why creating a different Firewall Zone?

You can create a different VLAN interface and assign the same to a different Firewall Zone. You can then set rules and policies in the firewall section on how you want to channelize the Traffic between two LAN zones. For details, please refer to the firewall section.

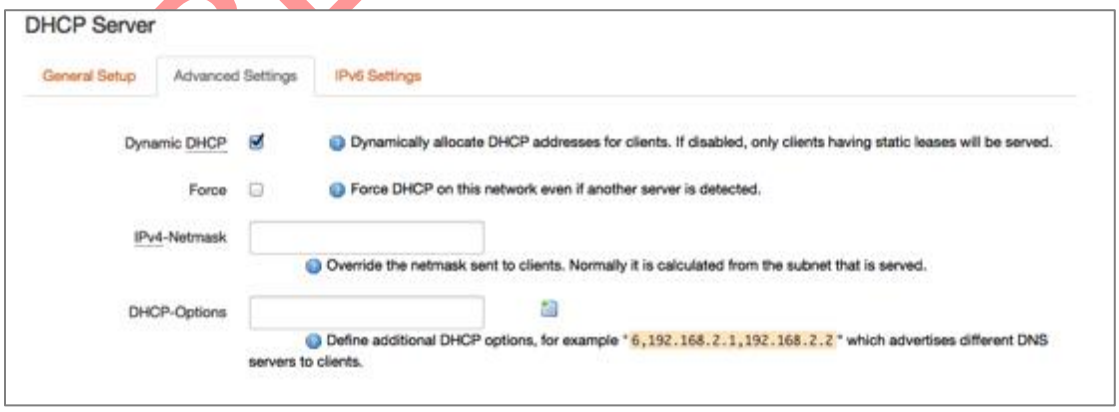
13.2.5 DHCP server

Here you can set your LAN side DHCP network.

13.2.5.1 General Setup

ITEM	DEFINITION
Ignore interface	Disable DHCP for this interface. Please note that if you disable DHCP for this interface, all the LAN devices connected to the router should have a static LAN IP configured
Start	Lowest leased address as offset from the network address.
Limit	Maximum number of leased addresses.
Leasetime	Expiry time of leased addresses, minimum is 2 minutes. Please note that the IP address allocated by the router will disappear from the Wi-Fi / Overview / Associates stations list only after individual lease time for each IP expires.

13.2.5.2 Advanced Settings

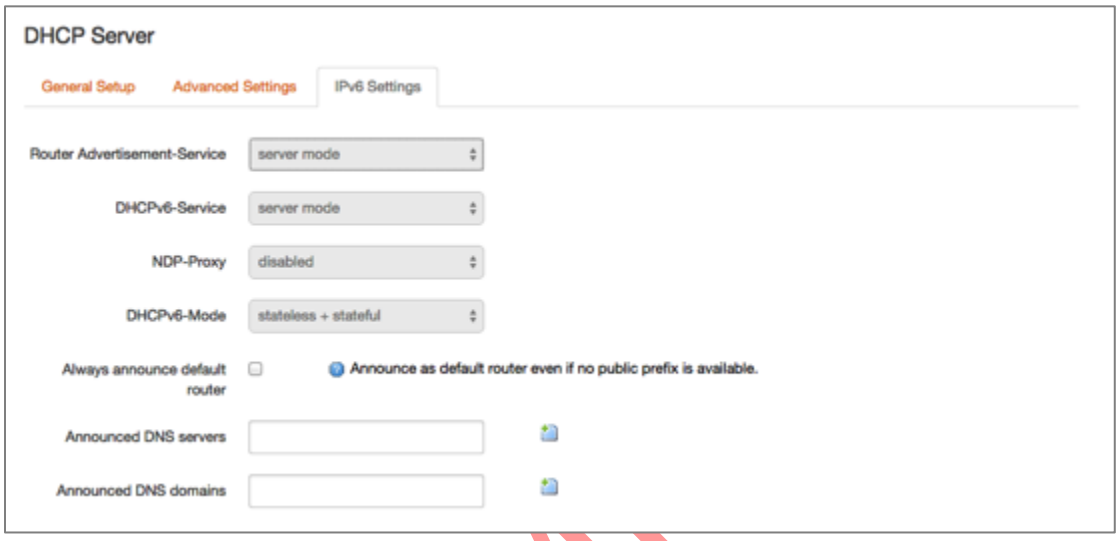


ITEM	DEFINITION
Dynamic DHCP	Dynamically allocate DHCP addresses for clients. If disabled, only clients having static leases will be served.
Force	Force DHCP on this network even if another server is detected.

IPv4-Netmask	Override the netmask sent to clients. Normally it is calculated from the subnet that is served.
DHCP-Options	Define additional DHCP options, for example "6,192.168.2.1,192.168.2.2" which advertises different DNS servers to clients.

13.2.5.3 IPv6 Settings

This help will help you setup a DHCP IPv6 network on your LAN side.

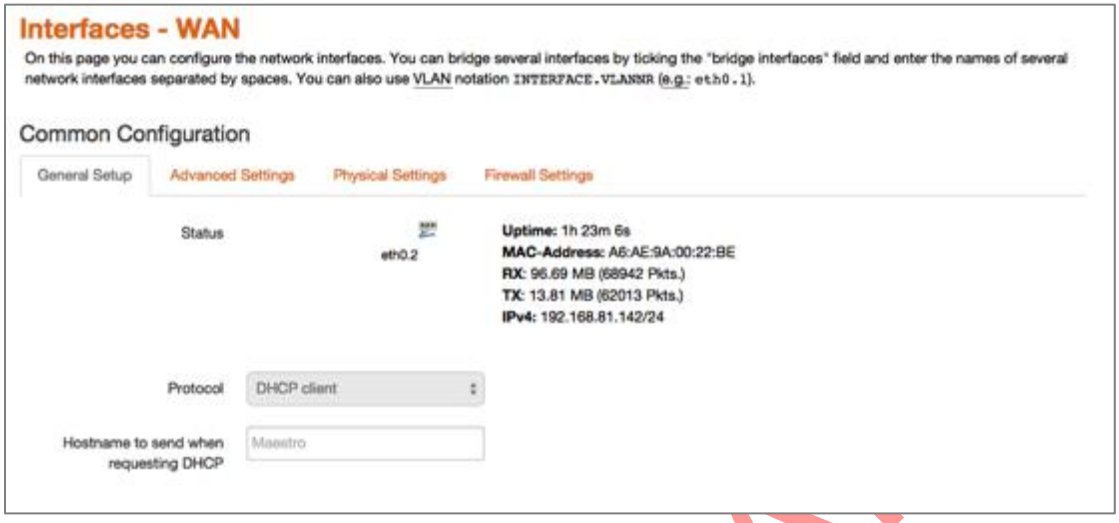


ITEM	DEFINITION	
Router Advertisement-Service	Disabled	
	server mode	
	relay mode	
	hybrid mode	
DHCPv6-Service	Disabled	
	server mode	
	relay mode	
	hybrid mode	
NDP-Proxy	Disabled	
	relay mode	
	hybrid mode	
DHCPv6-Mode	stateless	
	stateless + stateful	
	Stateful only	
Always announce default router	If ticked Announce as default router even if no public prefix is available.	
Announced DNS servers		
Announced DNS domains		

13.3 Wired WAN interface

Click **edit** next to the wired WAN interface to access configurations

13.3.1 General Setup



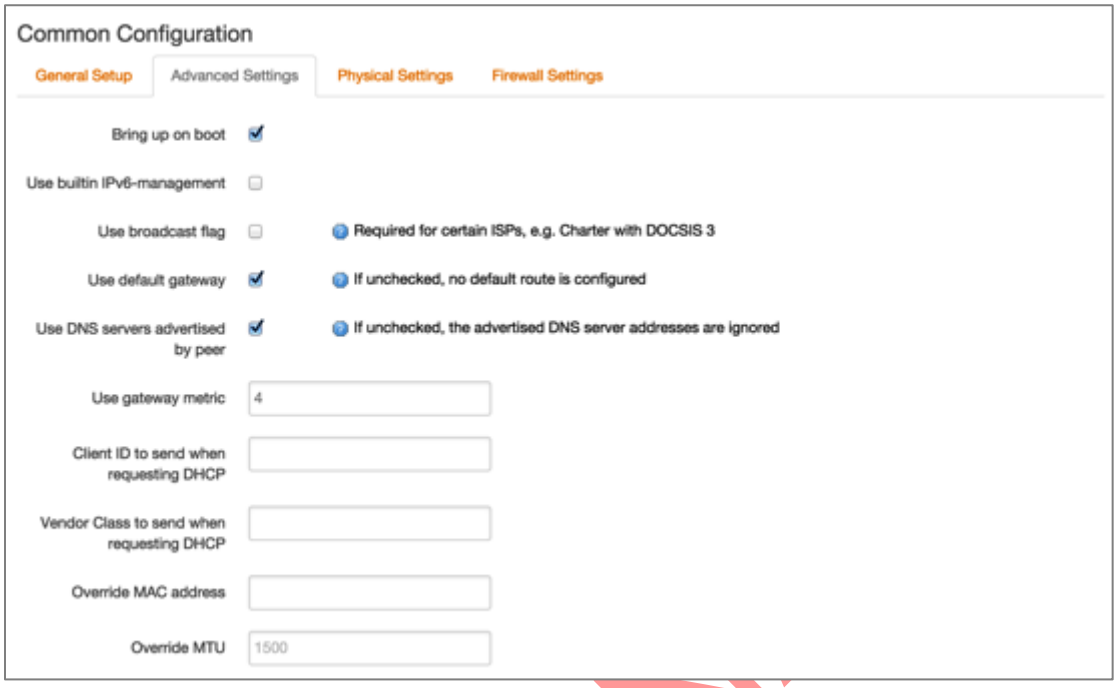
ITEM	DEFINITION
Static address	This option will enable the user the assign WAN side IP address to E200. Be sure that the IP that you enter in Static address mode is in the same LAN domain as the Router or ISP that it is connected to.
DHCP client	This will enable the Router to acquire WAN IP from the DHCP Router it is connected to
PPPoE	This option will enable dial-up over Ethernet network. Your ISP should support PPPoE and you need appropriate login credentials for the same
PPPoATM	This is a specialized protocol supported by a few ISPs. You need appropriate login credentials from your ISP for the same

Do not select any other protocol other than DHCP, Static, PPPoE or PPPoATM.

PRELIMINARY

13.3.2 Advanced Settings

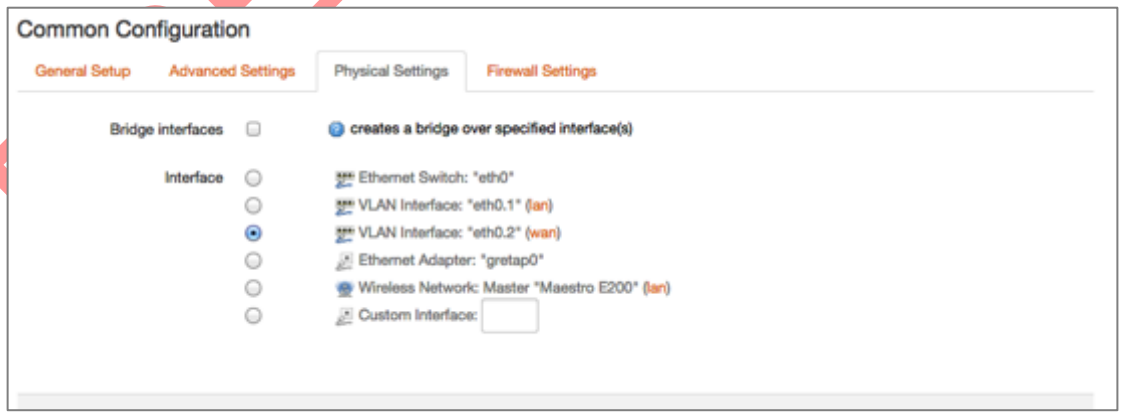
The configuration options are mostly similar to the LAN options.



ITEM	DEFINITION
Use Gateway metric	The default value is “3”. Between all the available physical WANs, this interface has the highest default priority.

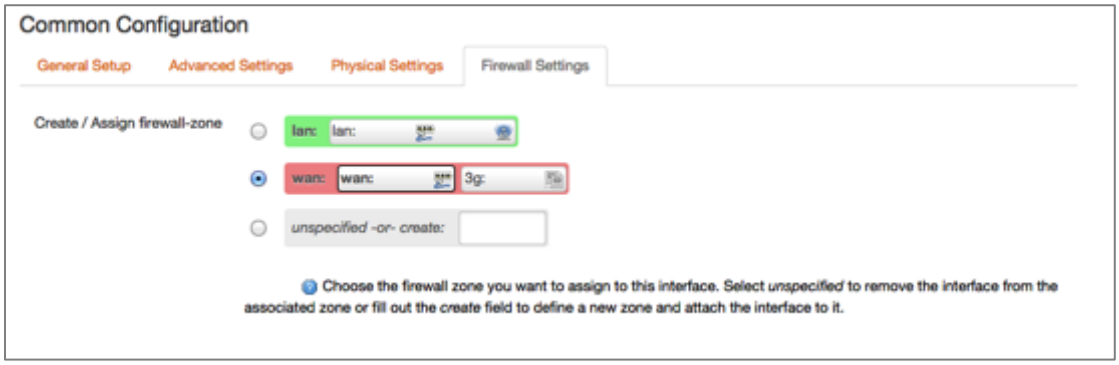
The Load Balancer will use these Metric Values to determine priority of a particular WAN.

13.3.3 Physical Settings



Unless you are an advanced user do not change setting of this page.

13.3.4 Firewall Settings



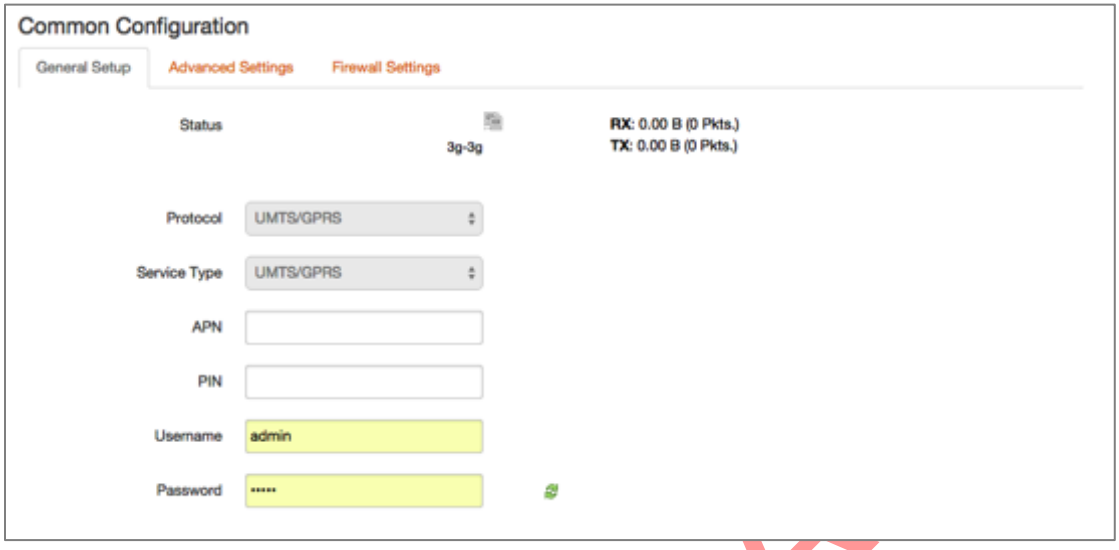
It is extremely critical that you assign every interface to a Firewall Zone. By default the WAN interfaces is assigned to a 'wan' firewall zone. In firmware version 2.0, you cannot create a WAN side firewall zone (Planned in firmware release 2.1). Hence it is advisable to keep this configuration untouched.

PRELIMINARY

13.4 Cellular interface (3G or 4G)

Click **edit** next to the 3G interface to access configurations

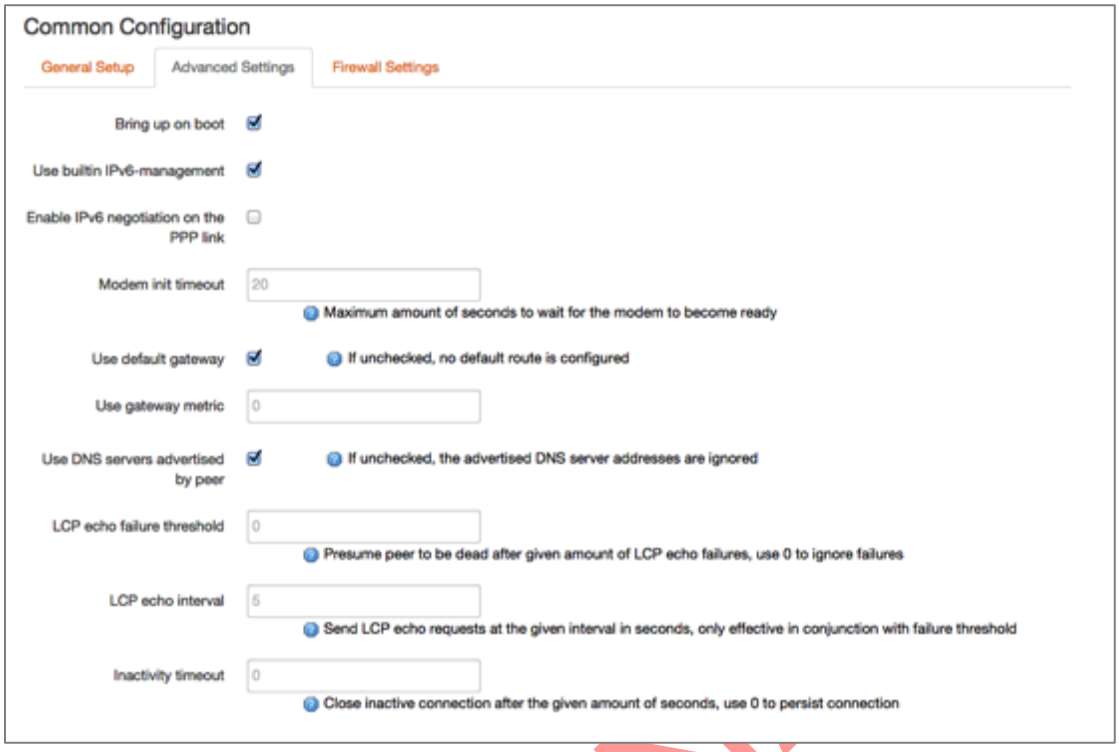
13.4.1 General Setup



ITEM	DEFINITION	
Protocol	Be absolutely sure that you select only UMTS/GPRS incase of E205 and UMTS/GPRS or EVDO in case of E206. Please do not select any other protocol.	
Service Type	UMTS/GPRS	The router will select the best service available
	UMTS	The router will connect only to 3G/ UMTS network
	GPRS	The router will connect only to GPRS network
APN	Enter the APN provided by your network operator	
PIN	Enter the SIM PIN if any	
Username	Username for your SIM card if any	
Password	Password for your SIM card if any	

PRELIMINARY

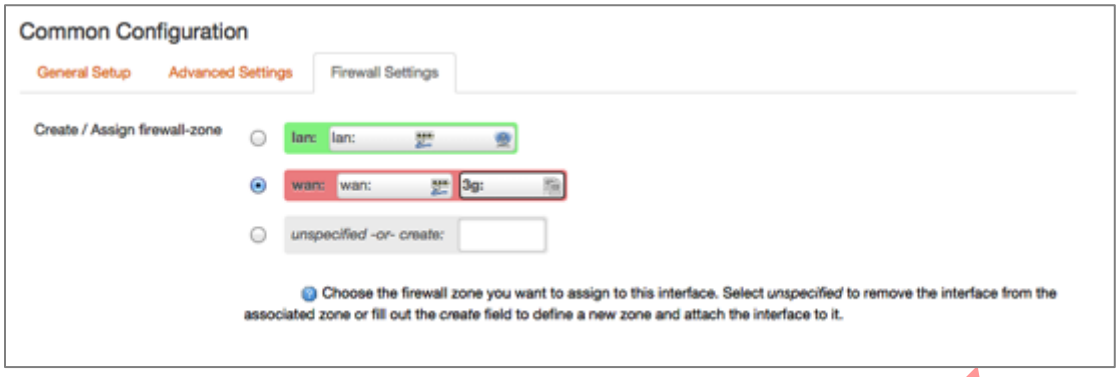
13.4.2 Advanced Settings



ITEM	DEFINITION
Bring up boot	Keep the tick on for “Bring up on Boot” if you want the 3G Interface to be live on every reboot.
Use gateway metric	Enter the gateway metric if you wish to use this WAN as a failover
LCP echo failure threshold	Enter LCP details only if you have the correct information on the same from your operator else leave them to their default value
Inactivity timeout	“0” value will keep the 3G connection always on. Any other value ‘X’ will turn off the 3G connection after ‘X’ seconds of inactivity

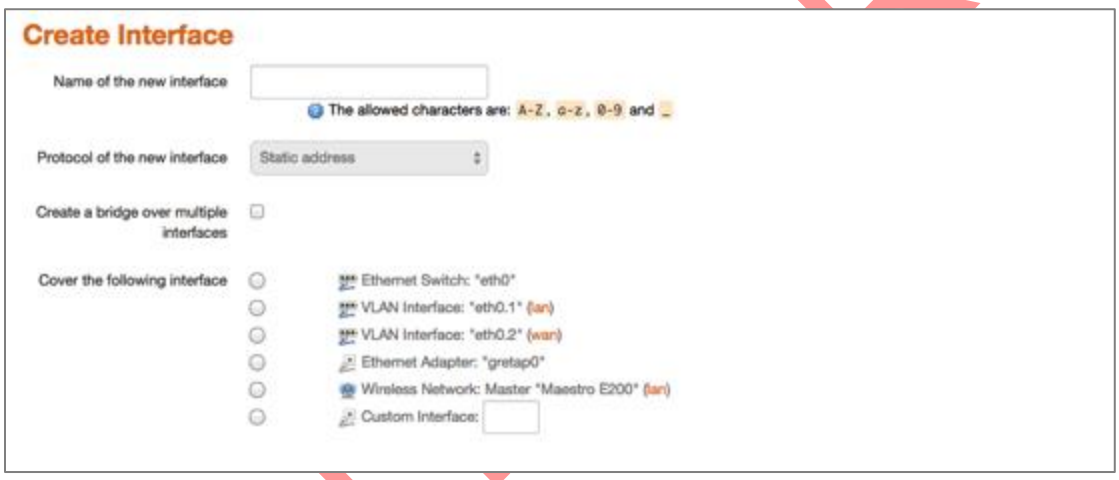
PRELIMINARY

13.4.3 Firewall Settings



13.5 Add VPN interface

In addition to configuring the above-mentioned 3 basic interfaces, you can add virtual interfaces by clicking on the “Add VPN Interface” Button.



You can add either PPTP or L2TP interface.

For more details on adding PPTP or L2TP interface, please refer to the PPTP and L2TP configuration guides.

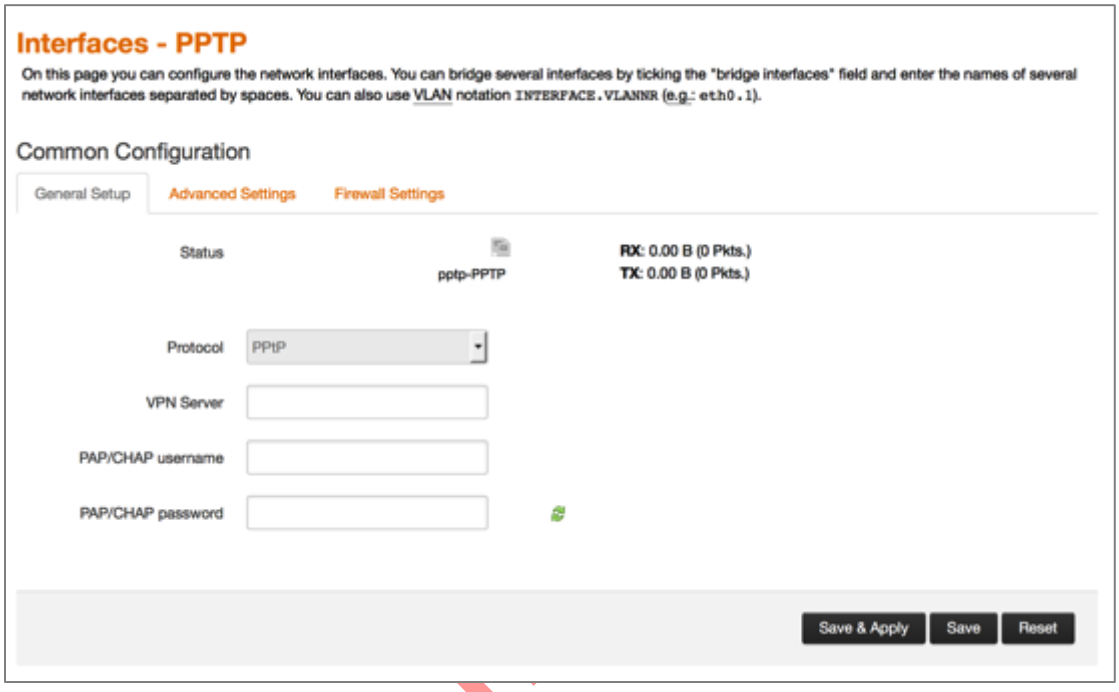
PRELIMINARY

13.5.1 PPTP

13.5.1.1 General Setup

Point-to-Point Tunneling Protocol (PPTP) is used for creating VPN tunnels over the Internet between two networks.

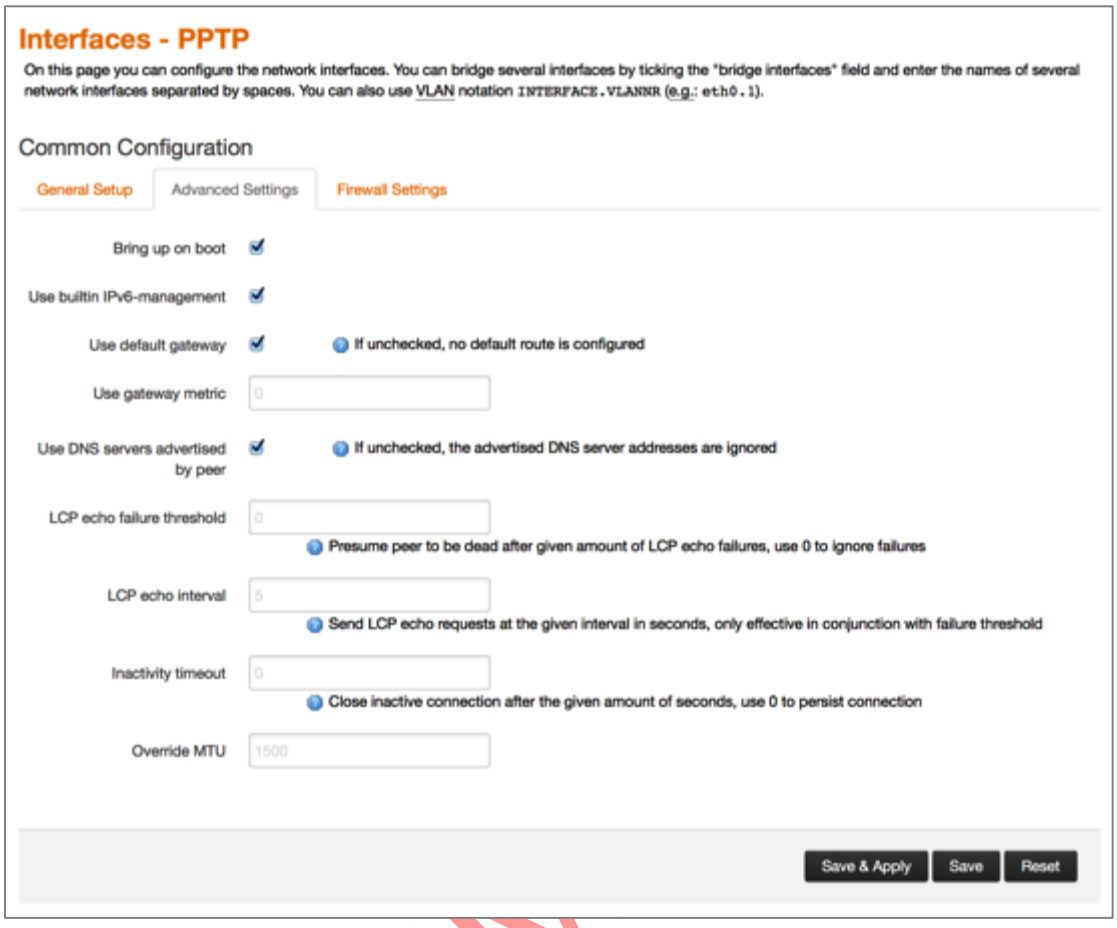
When you create a new VPN interface (refer to chapter 13.5) select PPTP



Enter the IP address of the VPN server in your network, followed by the username and password for this server. Click **save and apply** to add the PPTP VPN interface.

PRELI

13.5.1.2 Advanced Settings

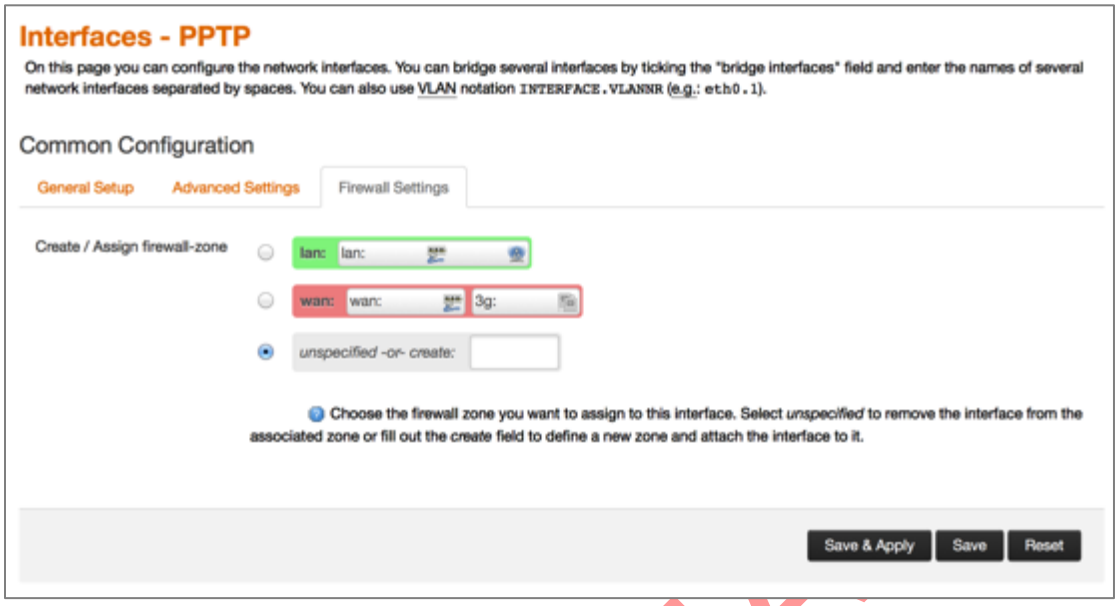


ITEM	DEFINITION
Bring up boot	Keep the tick on for “Bring up on Boot” if you want the 3G Interface to be live on every reboot.
Use builtin IPv6-management	
Use gateway metric	Enter the gateway metric if you wish to use this WAN as a failover. If unchecked, no default route is configured.
Use DNS servers advertised by peer	If unchecked, the advertised DNS server addresses are ignored
LCP echo failure threshold	Enter LCP details only if you have the correct information on the same from your operator else use 0 to ignores failures
LCP echo interval	Send LCP echo requests at the given interval in seconds, only effective in conjunction with failure threshold
Inactivity timeout	“0” value will keep the 3G connection always on. Any other value ‘X’ will turn off the 3G connection after ‘X’ seconds of inactivity
Override MTU	

Press **Save and Apply** to apply your settings.

13.5.1.3 Firewall Settings

The firewall settings tabs show you the existing firewall zone.



You can choose to add the new interface to the WAN zone or create a new zone for the interface. Choose the appropriate button, and enter a name for the new zone and click on SAVE AND APPLY button.

When you assign the new VPN interface to a zone it implies that the properties associated with that zone get applied to the VPN interface. The properties of a zone can be set under **Network > Firewall**. Please refer to the document on Firewalls and Port forwarding.

Implications of the VPN Interface: Once you create a VPN interface on the router, it implies that the router is placed in the company network, even if it is located at a remote location. It can be accessed by a device in the company network for controlling it and acquiring any data associated with it.

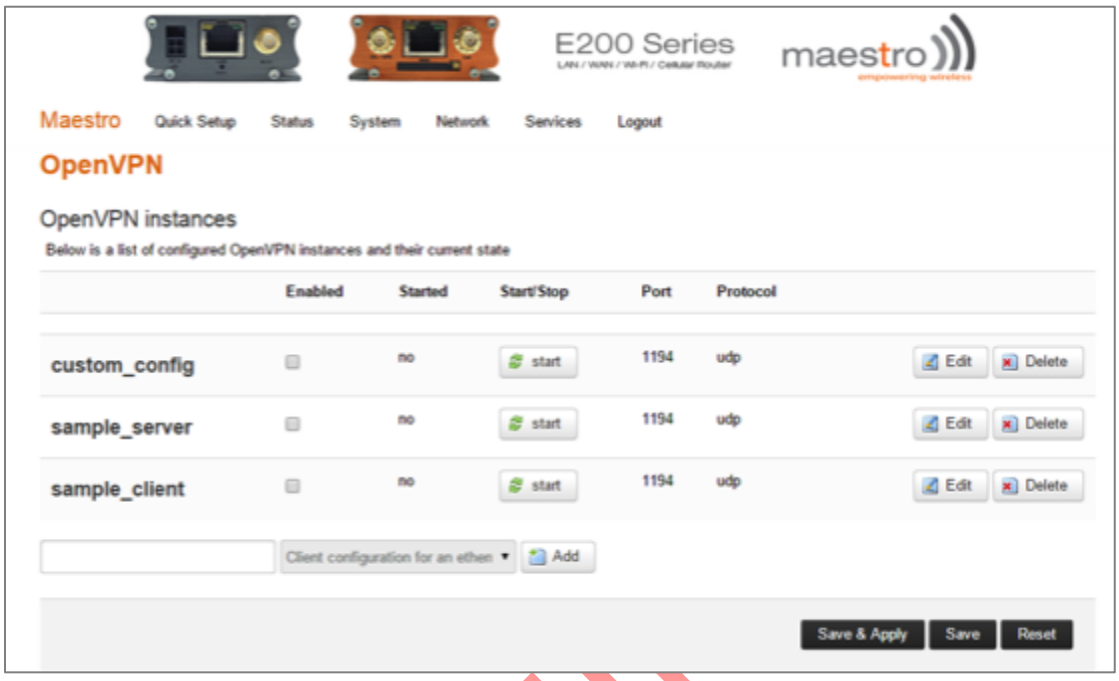
13.5.2 OpenVPN

Open VPN is an open-source software application that implements virtual private network (VPN) techniques for creating secure point-to-point or site-to-site connections. It uses the Open SSL library to provide encryption of both the data and control channels. Open VPN can run over User Datagram Protocol (UDP) or Transmission Control Protocol (TCP) transports, multiplexing created SSL tunnels on a single TCP/UDP port. Open VPN fully supports IPv6 as protocol of the virtual network inside a tunnel and the Open VPN applications can also establish connections via IPv6. It has the ability to work through most proxy servers (including HTTP) and is good at working through Network address translation (NAT) and getting out through firewalls. The server configuration has the ability to "push" certain network configuration

PRELIMINA

options to the clients. These include IP addresses, routing commands, and a few connection options

E200 series supports Open VPN client, Server and Pass Through.



PRELIMI

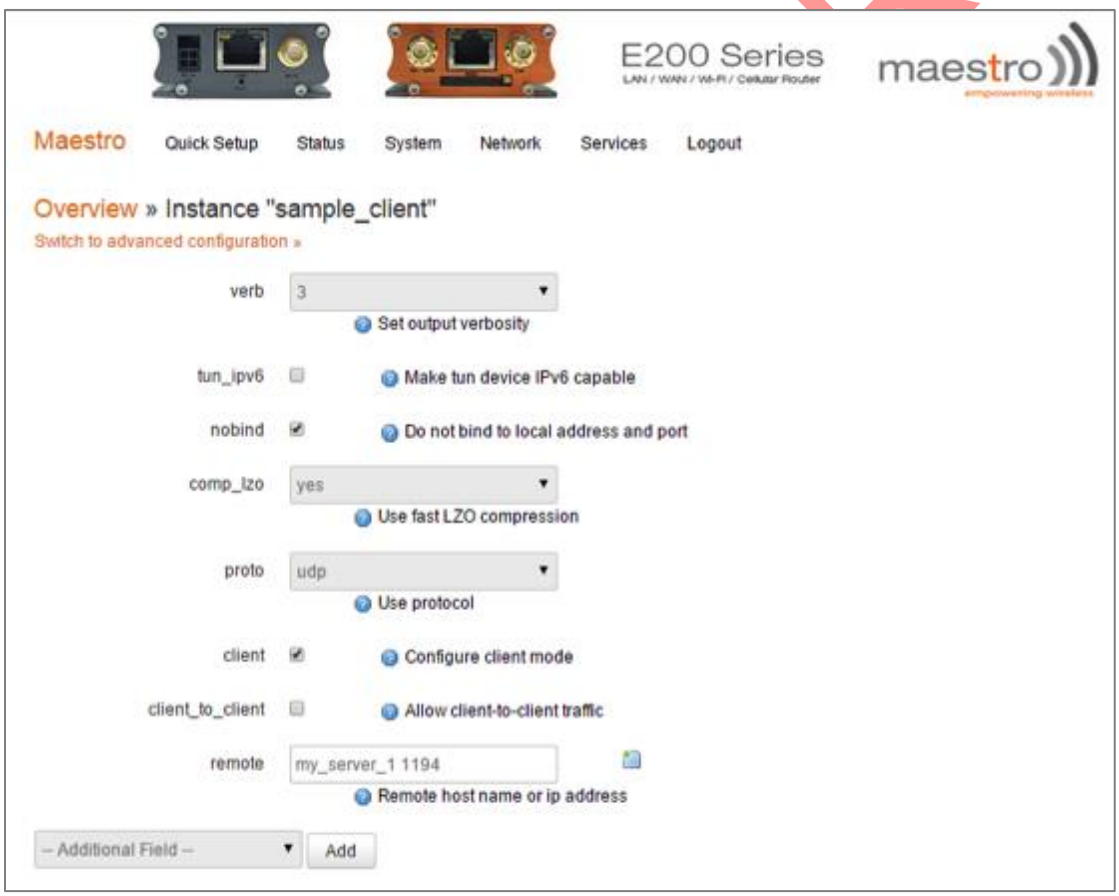
13.5.2.1 OpenVPN client

You can access the OpenVPN client under **Services / OpenVPN**.

OpenVPN Client will attach itself to the configured OpenVPN server over any available WAN interface. If the auto-connect function is enables, OpenVPN will not only connect over available WAN but also switch between WANs as and when one WAN fails-over to another and also auto starts in every reboot. This can be achieved by clicking on the '**enabled**' tick box.

You can either edit the sample client or create your own configuration from ground up.

Click on the Edit sample_client and you will see the following menu

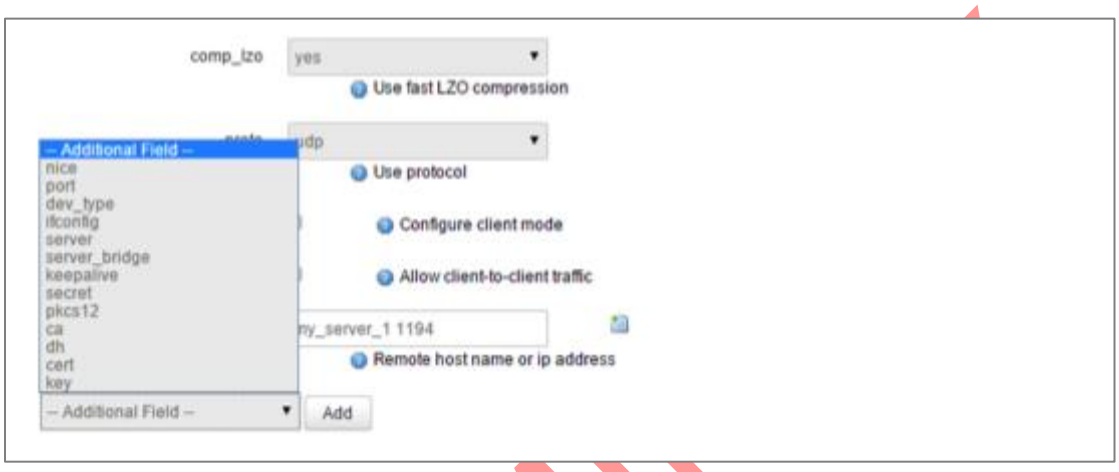


This is the basic configuration menu, which you need to configure

ITEM	DEFINITION
Verb	Here you can set the output verbosity level. Higher the verbosity, higher will be the internal log details
Tun_ipv6	This will make the tunnel IPv6 capable
Nobind	Does not bin local address and port
Comp_lzo	Uses lzo compression

Proto	Allows you to choose between TCP and UDP
Client	Tick for client mode and on tick for Open VPN server Mode
Client to Client	Facilitates client to client communication for clients connected to the same VPN server
Remote	VPN server IP

In addition to the above configuration, you need to add the following for basic Open VPN client creation.



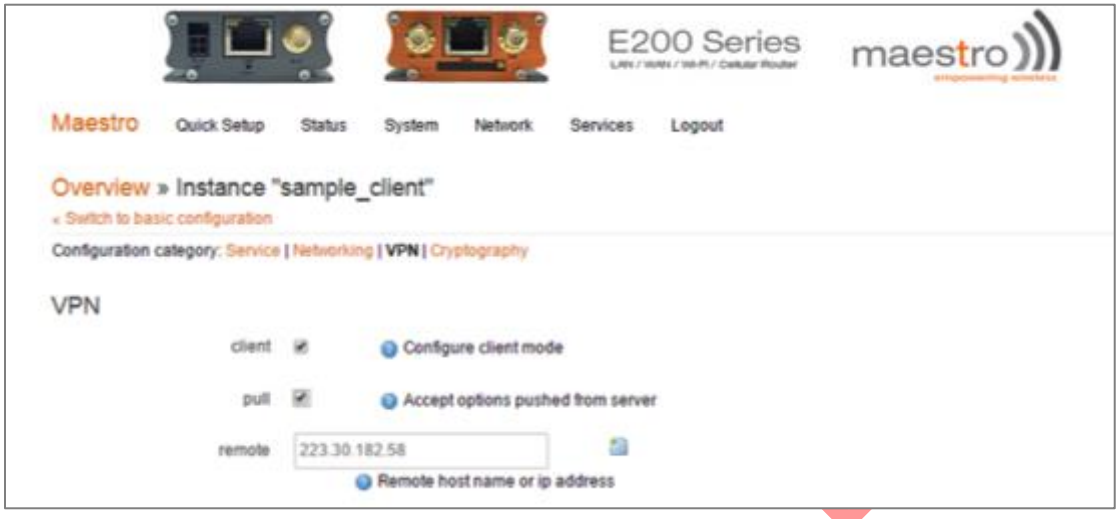
ITEM	DEFINITION
Port	Open VPN server Port
Ca	Authority certificate common to both Server and Client. Browse to the location where Ca certificate is located on the computer. Select and upload
Cert	Client certificate generated at the server side. Browse to the location where client.cert certificate is located on the computer. Select and upload
Key	Client key generated at the server side. Browse to the location where client key is located on the computer. Select and upload

(Select each and add to enter configuration)

Once you have the entire configuration loaded and certificates loaded, your screen should look like this:

PRE

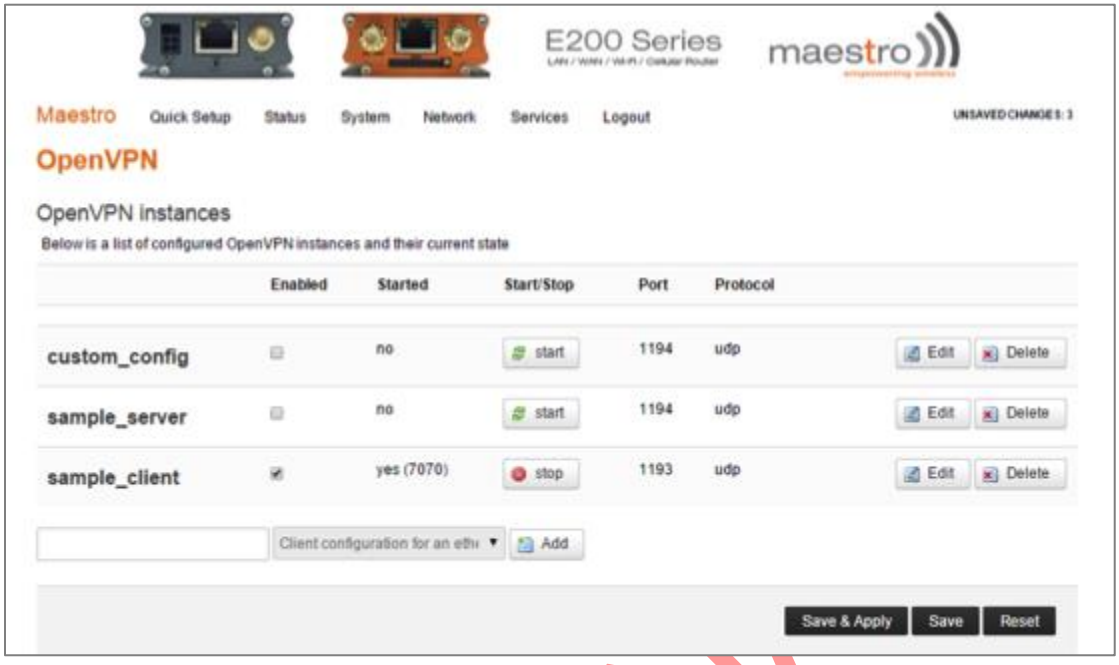
Once this is configured, go to advanced option and choose configuration as per your VPN scheme.



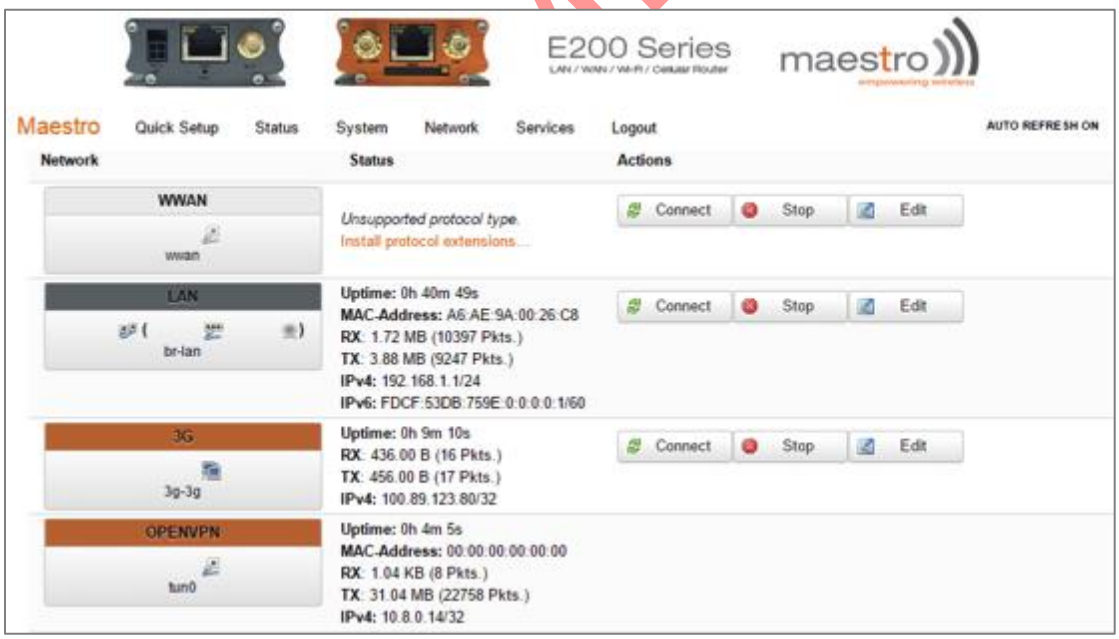
Pull – Accept options pushed from the Server – enabling this option will enable the router to accept the routes pushed from the OpenVPN server. It is recommended to keep it ticked.

PRELIMINAR

Once you have the entire configuration in place, you can start the VPN service as follows



The above screen shows that Open VPN service has started and the below screen shows OpenVPN is connected and running smoothly.



14 Wi-Fi

14.1 Introduction

The router can work in 2 modes:

- **Wi-Fi as access point:** It provides Internet to other host machines in its network over Wi-Fi. It can get Internet connection from WAN or cellular. If you have a cellular SIM card inserted in the router, it has a capability to switch between WAN and cellular in case either of them fails. However, at any point of time only one of the networks will be active.
- **Wi-Fi as client mode:** the router will act as a client to existing wireless networks. The router will accept the Internet access through wireless access provided by another service provider and then distribute the access to the machines connected to the router on its LAN interface.

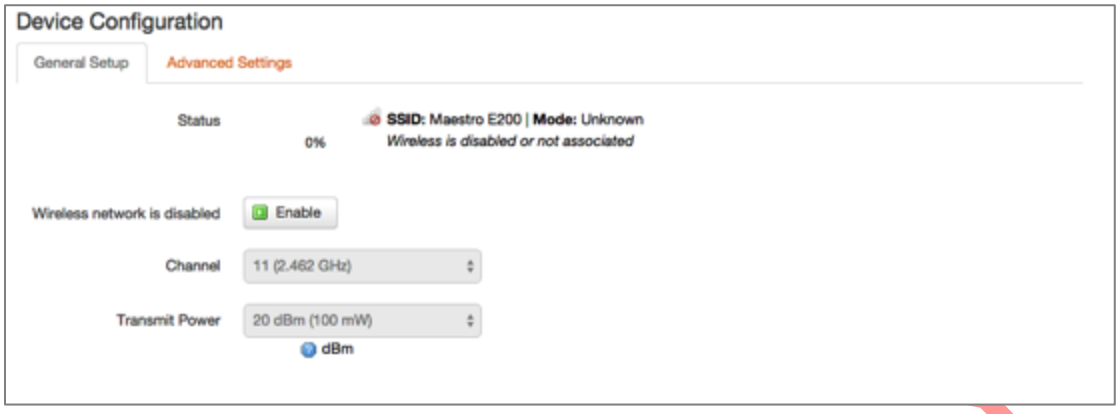
At any point of time, the router can work either in client mode or in Master mode.

14.2 Wi-Fi as Access Point

It shows a Generic connection, with no network configured on the router. To enable connection click the edit button to configure the default network with the SSID Maestro E200.

PRELIMINARY

14.2.1 Device Configuration - General Setup



You can choose the channel frequency from the drop down menu, or choose ‘auto’, to select it automatically.

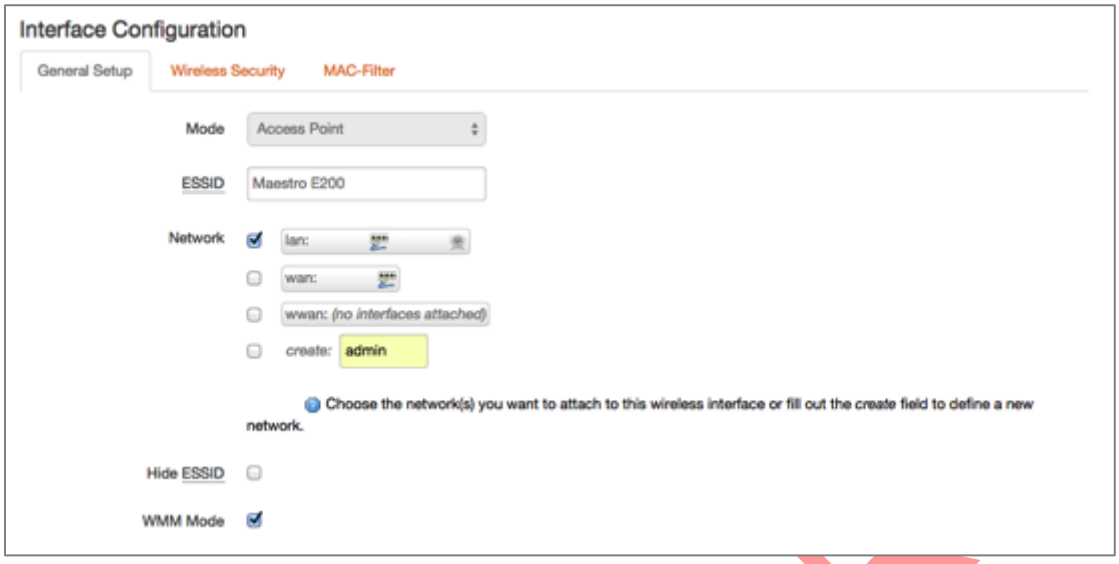
You can also choose transmit power, the default being 20dBM or 100mW, which is the maximum value.

PRELIMINARY

14.2.2 Device Configuration - Advanced Settings

ITEM	DEFINITION
Band	Default value is 2.4GHz
HT mode	Default value is 20MHz, this can be set to 40MHz or disabled
Country Code	Choose the country code corresponding to the country where the router is operational. This ensures that the channels available in that country are enabled. By choosing '00' (World), the router will select the appropriate channel in your country.
Distance Optimization	You can optimize the operation of your Wi-Fi network, if you know the distance of the farthest machine in your network from the router. Value is meter.
Fragmentation Threshold	Choose Fragmentation threshold value (in number of bytes). Fine-tuning Fragmentation Threshold parameter can result in good throughput but a wrong value can result in low throughput. The range of values is 256 to 2346 bytes. In a noisy environment, a smaller value of Fragmentation Threshold may result in more efficient communication.
RTS/CTS Threshold	You can choose RTS/CTS threshold between 0 to 2347 bytes, typical value being 500. This setting is for advanced users. It prevents collision of wireless packets, particularly in case of hidden nodes or in a noisy environment. In case of access point setting, it is recommended not to use RTS/CTS threshold.

14.2.3 Interface Configuration – General Setup

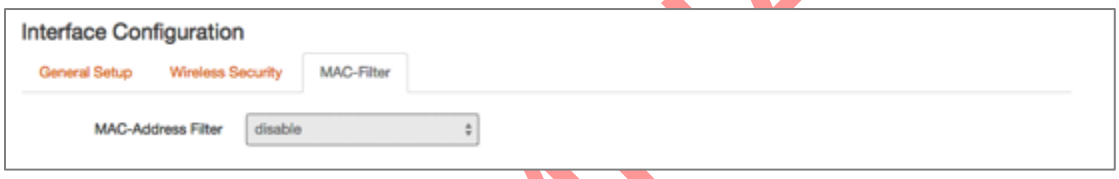


ITEM	DEFINITION
Mode	Should be set-up as Access Point
ESSID	ESSID shows the device name you have assigned to the router, by default, it is Maestro E200
Network	In Access Point LAN must be selected, as the router will supply Wi-Fi internet to its clients on LAN
Hide ESSID	Select Hide SSID, if you want your router SSID to be hidden when client machines scan for available Wi-Fi networks
WMM	Wi-Fi Multimedia (WMM), is a subset of the 802.11e wireless LAN (WLAN) specification that enhances quality of service (QoS) on a network by prioritizing data packets. 802.11n spec requires devices to support 802.11e (Quality of Service [QoS] enhancements for wireless LAN) in order to use HT (High Throughput) link rates, i.e. higher than 54 Mbps. WMM's Traffic Identifier (TID) field is key to aggregation mechanisms, including block acknowledgement (block ACK), that enable 802.11n's high throughput rates. Since WMM support is required for products to be certified for 802.11n, WMM comes enabled by default in all Wi-Fi Certified n APs and wireless routers. So even if you don't have any WMM-aware devices on your network, leave WMM enabled or you may find your clients connecting only at 54 Mbps rates.

14.2.4 Interface Configuration – Wireless Security

ITEM	DEFINITION
Encryption	Choose the type of encryption for your Wi-Fi network, default is WPA-PSK/WPA2-PSK Mixed mode
Cypher	Choose the cipher type from the drop down as appropriate for your router. Similarly enter the key that a client machine must enter to join this network.
Key	Enter the key corresponding to your cypher type

14.2.5 Interface Configuration – MAC-filter



You can:

- Disable
- Allow listed Mac addresses
- Allow all EXCEPT listed MAC addresses.

When entering the last 2 options, use '+' button to the right of the MAC Address List field. You can choose the MAC addresses that are currently connected to the router. If you choose 'Custom' a new field is added to the screen, in which you may enter any other MAC address likely to join the network. Please take care that you enter the MAC address in the required format, else, the field will be shown RED.

After you are satisfied with all your selections, press SAVE AND APPLY button. Your settings will be applied to the router.

PRELIMINARY

14.3 Wi-Fi as Client

In Client mode, the router will act as a client to existing wireless networks. The router will accept the Internet access through wireless access provided by another network and then distribute the access to the machines connected to the router on its LAN interface.

At any point of time, the router can work either in client mode or in Master mode. To change from Access Point mode to client mode, you have to remove all networks in Access Point mode.

Under **Network > Wi-Fi** click on **Scan.**

Select the Wi-Fi network you want to join and click **Join Network.**

ITEM	DEFINITION
WPA passphrase	Enter the WPA pass phrase for the chosen network.
Create / Assign firewall-zone	Assign this network to firewall zone. Since you want your router to work in client mode, the internal network is connected on LAN so the firewall must be on the WAN side. Alternatively you can create your own firewall zone.

14.4 Creating multiple SSID

Though only one router is physically present to provide Internet access to any host machines in your network, it is possible to create virtual interface so that you can restrict and control access to different groups of users based on security and functionality. This is achieved by creating multiple SSIDs and assigning separate SSIDs to group of users. Please note that only one router is servicing multiple SSIDs.

Click on **Add** button (next to Generic interface) to add another network (SSID).

Follow the same procedure as given in Wi-Fi section to create ANOTHER interface in Access Point mode. Please note that the device configuration for both interfaces remain the same. However, the Interface configuration can be different.
Assign a new ESSID to the interface.

You can make different choices for Network, Security and MAC address filtering, so that you can differentiate between different groups of users.

For example, you can choose one interface with MAC Address filtering DISABLED whereas another with 'ALLOW only listed MAC Addresses'. This way, you can provide full Internet access to only second group while restricting it for former group.

After you make all the settings, click on SAVE AND APPLY button to create the new interface.

Back to the **Network / Wi-Fi** you will see the second SSID.

PRELIMINA


Channel: 2 (2.417 GHz) | Bitrate: 52 Mbit/s
98%
SSID: Maestro | Mode: Master
BSSID: A4:AE:9A:00:26:C5 | Encryption: mixed WPA/WPA2 PSK (CCMP)
Disable
Edit
Remove
60%
SSID: Maestro2 | Mode: Master
BSSID: A4:AE:9A:00:26:C4 | Encryption: None
Disable
Edit
Remove
Associated Stations
SSID
MAC-Address
IPv4 Address
Signal
Noise
RX Rate
TX Rate
Maestro
64:09:80:C6:B3:F8
192.168.1.216
-41 dBm
0 dBm
6.0 Mbit/s, MCS 0, 20MHz
72.2 Mbit/s, MCS 7, 20MHz
Maestro2
00:73:8D:6A:C6:6A
?
-68 dBm
0 dBm
65.0 Mbit/s, MCS 7, 20MHz
52.0 Mbit/s, MCS 5, 20MHz

PRELIMINAR

15 Setting up Failover and Load Balancing

Maestro E200 and E220 series Router can be configured in a way that it could have 3 sources of WAN:

- Wired Ethernet WAN
- Wi-Fi when configured in Client Mode (WWAN)
- Cellular

You can setup the Load Balancing functions in two different way depending what you want to achieve:

- Failover – to provide connectivity persistency
- Load Balancing – to distribute traffic among different WAN

Please note that once configured for load balancing, the router can't be used for failover and will assume that all available WAN are connected. The router will balance the load among WANs as per the policies and rules set.

If configured for failover, the router will only use 1 WAN at a time.

15.1 Failover mode configuration

By default the following is the priority assigned to each interface

- Priority 1 – Wired WAN
- Priority 2 – Wi-Fi WAN (Wi-Fi setup in Client Mode)
- Priority 3 – Cellular

This section will guide you through the following

- Change the priority of WAN interfaces
- Setup failover policies to facilitate automatic failover between various WAN interfaces

Once all the three interfaces are setup as WAN, go to **Network > Load Balancing**. The page will show live view of available active and available inactive WAN Interfaces.

PRELIMINARY

15.1.1 Setting up Load Balancing for Failover

15.1.1.1 Overview

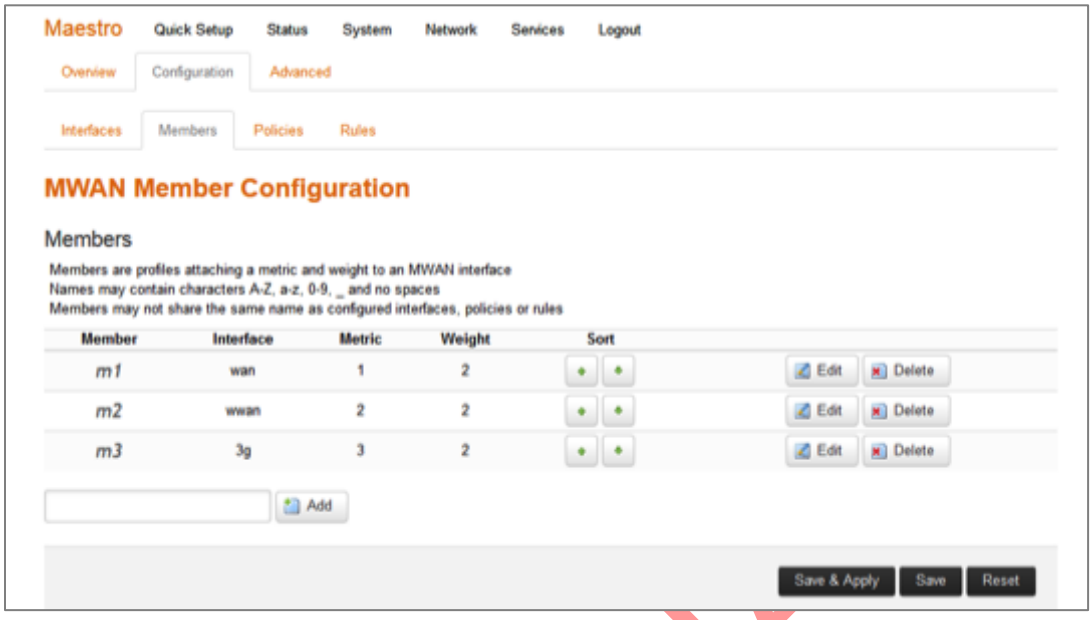
Above screenshot indicated that wired Wan is available and connected as well as 3G is available and connected while Wi-Fi WAN is offline.

Above screenshot indicates all three interfaces active

When all three interfaces are active, the one used for data transmission is as per the priority setup in **Load Balancing / Configuration** tab as shown below. Rest of the interfaces are still beings used for “tracking interface up / down” purposes.

You can re-assign or change the interface priority and failover policies by clicking on the **Configuration** tab.

15.1.1.2 Configuration

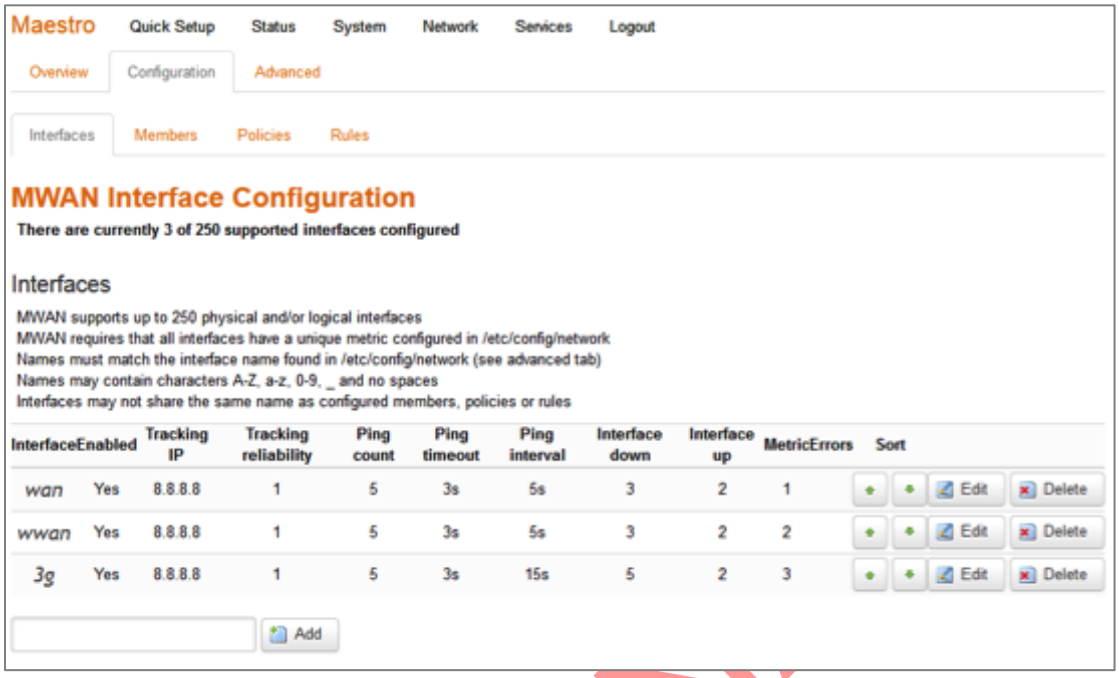


Metric defines the priority. The screenshot shown above is the default configuration.

*You assign **Rules** for **Policies** which are associated with **Members** which are linked to **Interfaces***

PRELIMINA

15.1.1.2.1 Interface



Here you can see that there are 3 Interfaces: wan, wwan and 3g.

ITEM	DEFINITION
Tracking IP	This IP will be used to determine if the interface is active or inactive. You can enter more than one Tracking IP
Tracking Reliability	“1” determines the number of Tracking IP successes to be considered. Meaning, if there are more than one Tracking IPset, the above configuration will determine WAN active or inactive status depending on the result of any one Tracking IP.
Ping Count	Indicates the number of PING packets sent in every Ping Session to determine the interface availability / un-availability
Ping Timeout	Time to wait for PING response
Ping Interval	How frequently should the PING packets be sent
Interface down / interface up	Number of iterations before declaring interface up/down and eventually switching to another interface
Metrics	These are Network Interface Metrics, the default values are 1 for WAN, 2 for WWAN and 3 for 3G. It is extremely critical these values are exactly same as the values in Load Balancing / Members. If you choose to change these values, please ensure that they are same at both places.

The above configuration will facilitate failover between WAN, WWAN and 3G in order of priority and will facilitate roll back when connection on respective interface is back as per order of priority.

Please note that Tracking IP, Ping Count and Ping Interval will consume data.

High Tracking IPs, Higher Ping count and low Ping interval will result in faster switchover but will consume high amount of data and vice-e-versa. Please be careful in adjusting these values as per your requirements.

15.1.1.2.2 Policies and Rules

You need to note that in Failover Mode, the following is the configuration for Policies and Rules. Changing these parameters will revert the router in Load Balancing.

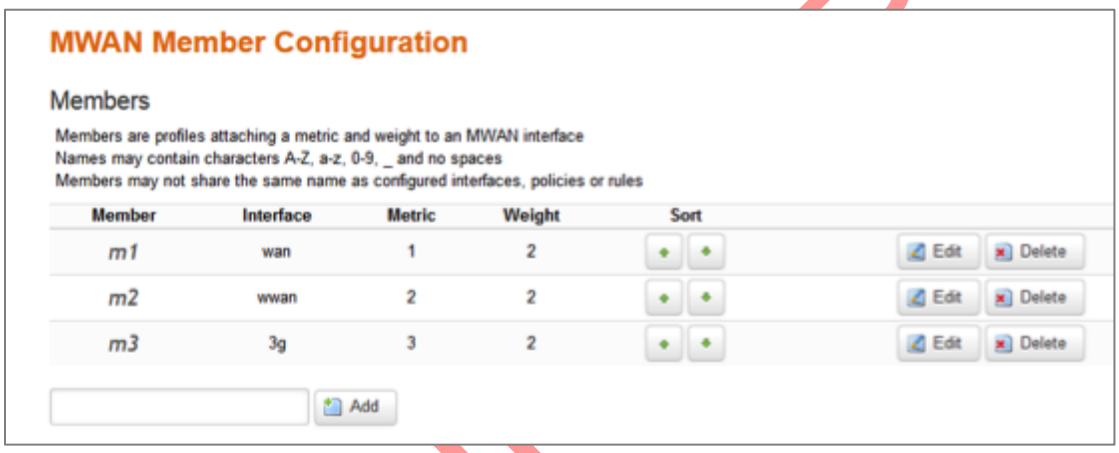
15.2 Load balancing mode configuration

Load Balancing Mode configuration will enable the router to use all three WANs simultaneously and facilitate the user to associate policies and rules for each interface.

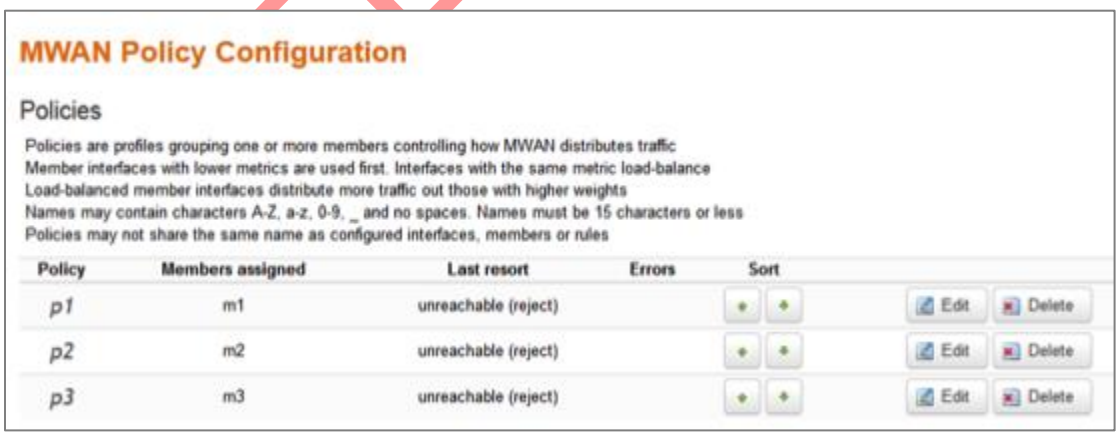
Exemples”

- You can bind a particular interface with a particular source or destination IP;
- You can bind a particular interface with a particular protocol like TCP, UDP, L2TP etc.

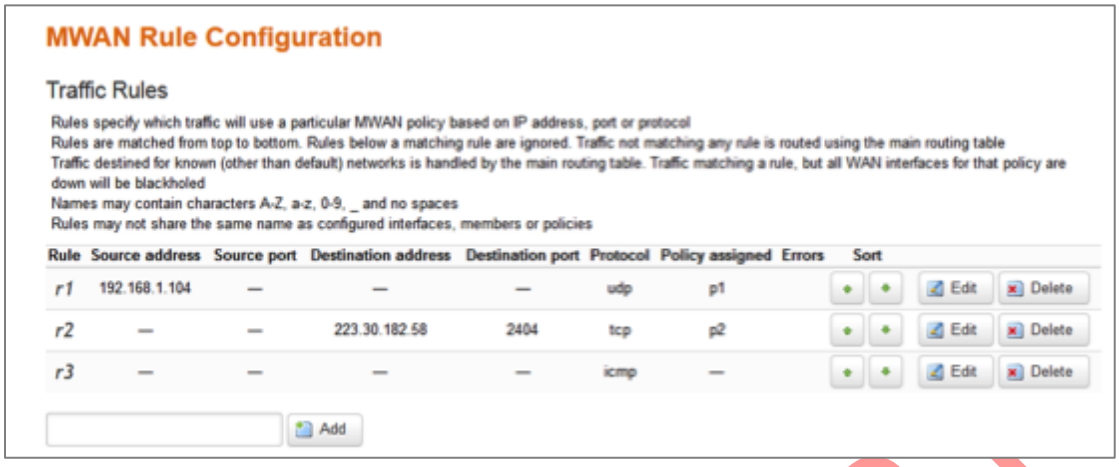
To set the Router in Load Balancer Mode, you need to first assign Metric and Weight to all the Members and create more Members if necessary



Next step would be to create Policies corresponding to each Member



Next would be create rules for each Policy



MWAN Rule Configuration

Traffic Rules

Rules specify which traffic will use a particular MWAN policy based on IP address, port or protocol
Rules are matched from top to bottom. Rules below a matching rule are ignored. Traffic not matching any rule is routed using the main routing table
Traffic destined for known (other than default) networks is handled by the main routing table. Traffic matching a rule, but all WAN interfaces for that policy are down will be blackholed
Names may contain characters A-Z, a-z, 0-9, _ and no spaces
Rules may not share the same name as configured interfaces, members or policies

Rule	Source address	Source port	Destination address	Destination port	Protocol	Policy assigned	Errors	Sort			
r1	192.168.1.104	—	—	—	udp	p1				Edit	Delete
r2	—	—	223.30.182.58	2404	tcp	p2				Edit	Delete
r3	—	—	—	—	icmp	—				Edit	Delete

Add

In the above screenshot, you can see that there are 3 rules created

Rule r1 is linked to policy p1 which is linked to member m1 which is linked to Interface wan

Rule r2 is linked to policy p2 which is linked to member m2 which is linked to Interface wwan

Rule r3 is linked to policy p3 which is linked to member m3 which is linked to Interface 3G

The above configuration means

- UDP connections from LAN IP 192.168.1.104 will be sent via WAN
- All requests to WAN IP 223.30.182.58 on Port 2404 will be sent via WWAN
- All incoming and outgoing PING will be sent via 3G

PRELIMINARY

16 Firewall Basics

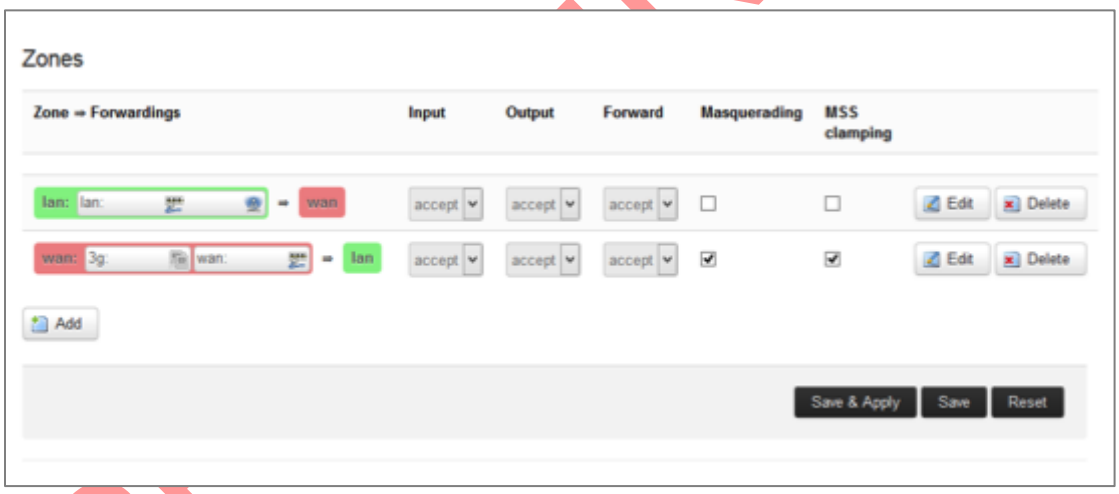
E200 and E220 Series follows a Zone Based firewall concept.

Every interface of E200 Router physical or virtual needs to be assigned to a firewall zone however one firewall zone can have multiple interfaces.

By default, two zones exists namely LAN zone and WAN zone as shown in the screenshot below.

You can create a new zone either from the Firewall section nuder **Network / Firewall** or when you create an additional network interface.

For the current version of Firmware, only LAN side Firewall Zones can be created and you can associate multiple VLANs to the LAN side firewall Zones. However there will be a single WAN side firewall zone.



PRELIMINARY

17 Services

17.1 Dynamic DNS

The E200 and E220 series router gets the internet access through WAN or 3G. The LAN interface is used for connecting to the local network. The service provider for WAN or 3G will periodically change the IP address assigned to the router, unless you ask for a static IP address.

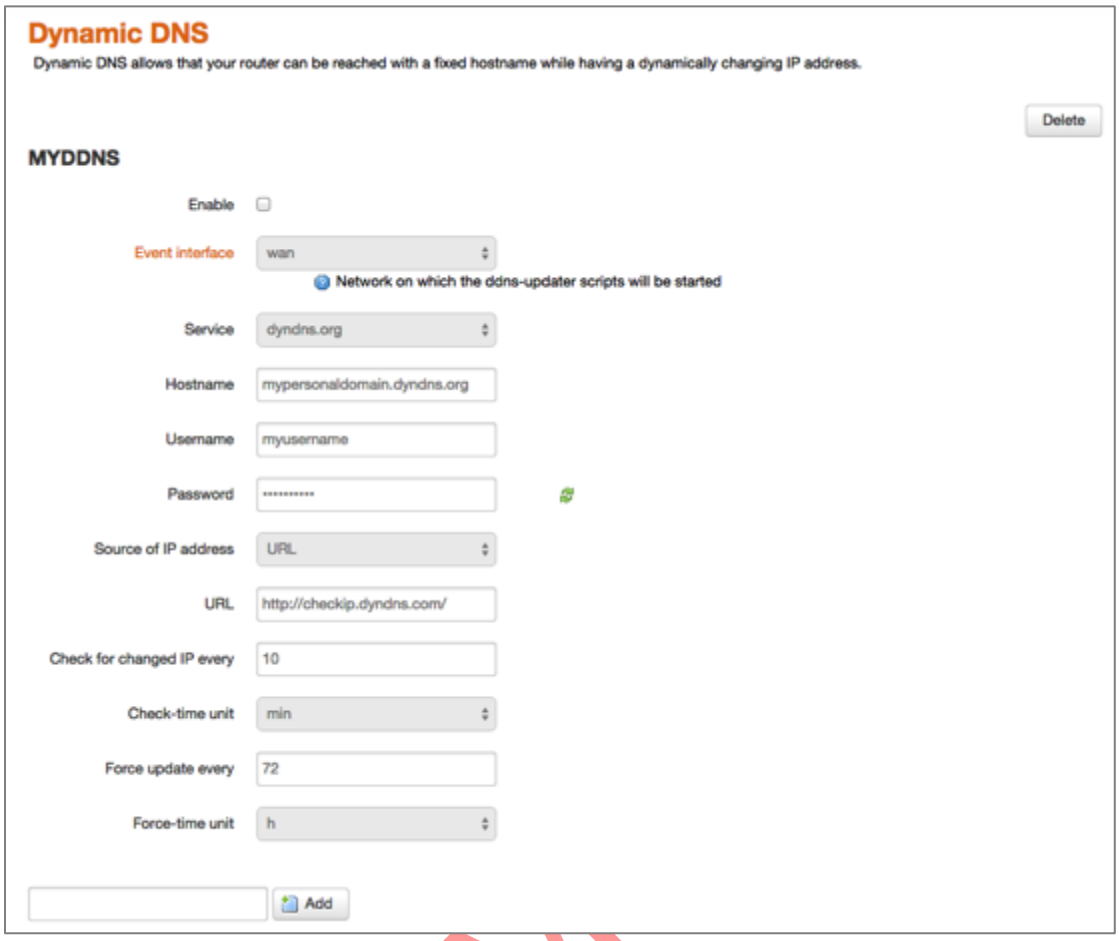
However, it is not possible for a remote client of the router to change the address in tune with the service provider. In such case, Dynamic DNS or DynDNS comes in handy. The concept is same as DNS, however, it retains the “Name” given to the router even if the underlying IP address is changed.

For this, you need to register with the provider of dynamic DNS and configure the router with the details. Dynamic DNS allows that your router can be reached with a fixed hostname while having a dynamically changing IP address.

The following note describes the procedure to create Dyn DNS.

Click on **Services / Dynamic DNS**.

PRELIMINARY



ITEM	DEFINITION
Enable	Enable DynDNS service
Event interface	Network on which the ddns-updater scripts will be started
Service	Your DynDNS service provider
Hostname	Hostname received from your DynDNS service provider
Username	Username received from your DynDNS service provider
Password	Password received from your DynDNS service provider

Next, you have to choose the source of IP address and the network. The source of IP address can be either Network or Interface or URL. This is the mechanism through which an IP address is assigned to the router.

If you choose Network, then you have to choose the type of network namely WAN or 3G.

Similarly, if you choose Interface, then you have to choose the appropriate interface from the dropdown.

If you select the option URL, then a URL needs to be given which fetches IP address of the router from Internet. An example of such URL is http://checkip.dyndns.com/ and appears by default.

Next, choose the frequency with which you want to check, if the IP address is changed, minutes or hours.

You can also force a change in IP address, after an assigned period of time.

After making these entries, you can enable the new DDNS entry by checking the **Enable** box at the top of the page.

Choose **Save and Apply** to effect the change. You will see the new entry with your parameters in addition to any old entries.

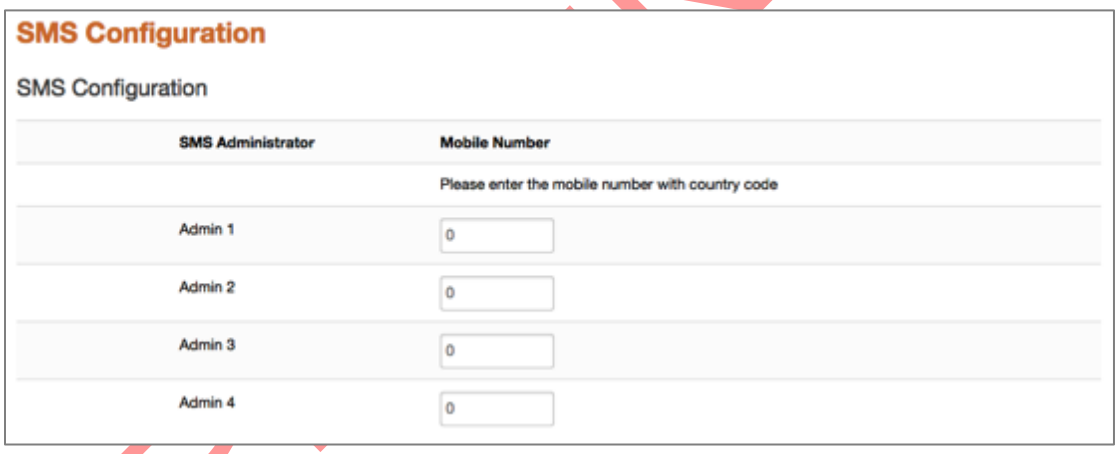
Now, you will be able to access the router with the hostname assigned, rather than the IP address.

You can add a new DynDNS by choosing a name and clicking on ADD button.

17.2 SMS diagnostic

SMS diagnostic let you configure up to 4 admins to receive diagnostic information of the router after a command is send by SMS.

International number format is as follow: <countrycode><phonenumber>



PRELIMINARY

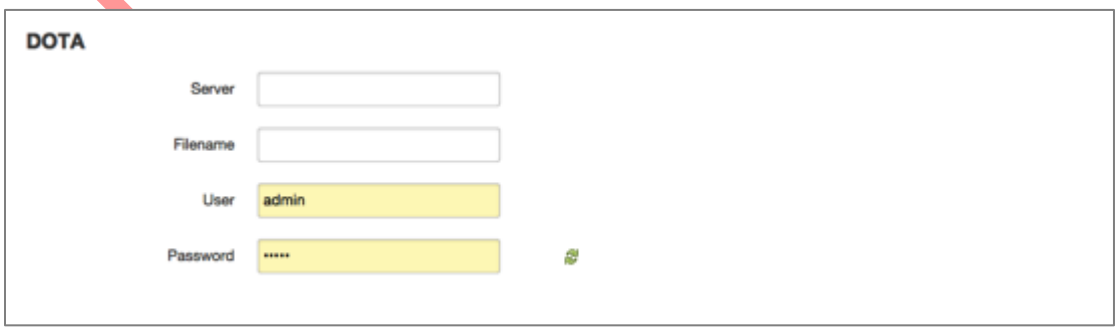
COMMAND	DEFINITION
AT+REBOOT=1	Reboot: reboot the modem
AT+CELLDIAG?	Cell diagnostics: will give you IMEI, CREG, COP, CSIG
AT+LANDIAG?	LAN diagnostics: Will give LAN IP address,
AT+WANDIAG?	Wired WAN diagnostics:
AT+WANPING=<IPA>	Wired WAN ping: will ping the wired WAN interface
AT+LANPING=<IPA>	LAN ping: will ping the wired LAN interface
AT+REMACC=<1/0>	Remote access: will enable; AT+REMACC=<1> or disable AT+REMACC=<0> remote access
AT+HWI?	Hardware information: will give you hardware information such as model number
AT+SWI?	Software information: will give you software information such as firmware version

List of Commands

No.	Command name	Command
1	Reboot	AT+REBOOT=1
2	Cell Diagnostics	AT+CELLDIAG?
3	LAN Diagnostics	AT+LANDIAG?
4	WAN Diagnostics	AT+WANDIAG?
5	WAN Ping	AT+WANPING=<IPA>
6	LAN Ping	AT+LANPING=<IPA>
7	Enable Remote access	AT+REMACC=<1/0>
8	Hardware information	AT+HWI?
9	Software information	AT+SWI?

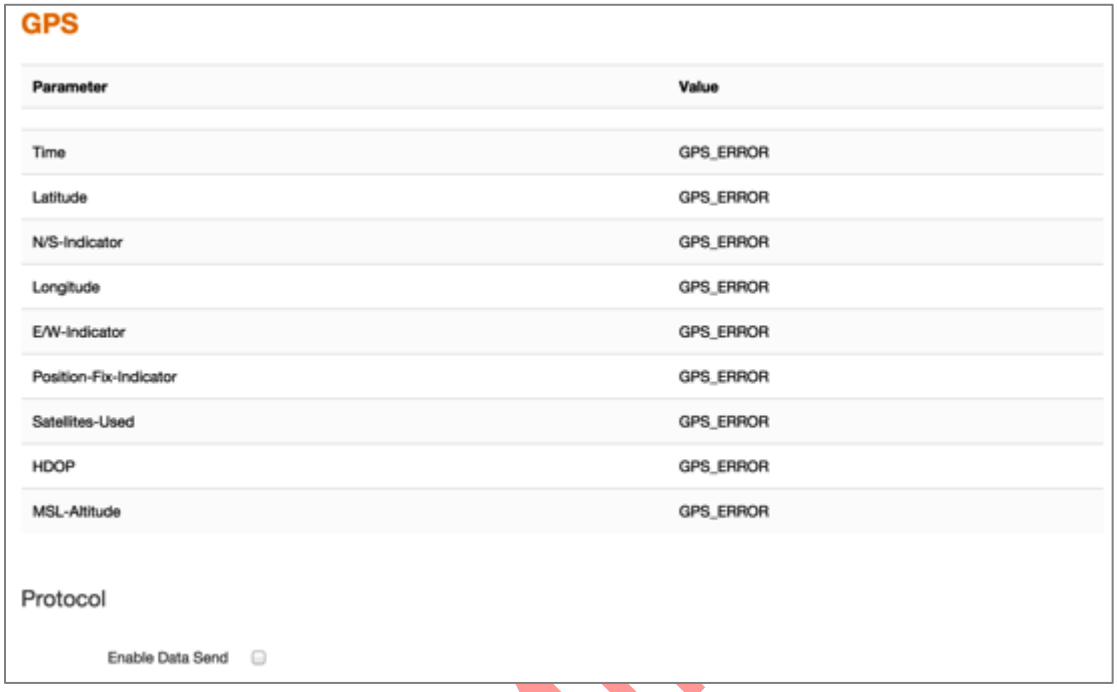
17.3 DOTA

DOTA (download over the air) will allow you to remotely update your firmware, enter your server IP address the filename, username and password



17.4 GPS

You can get GPS parameters as describes below



GPS

Parameter	Value
Time	GPS_ERROR
Latitude	GPS_ERROR
N/S-Indicator	GPS_ERROR
Longitude	GPS_ERROR
E/W-Indicator	GPS_ERROR
Position-Fix-Indicator	GPS_ERROR
Satellites-Used	GPS_ERROR
HDOP	GPS_ERROR
MSL-Altitude	GPS_ERROR

Protocol

Enable Data Send

By clicking **Enable Data Send** you will open a new menu where you could select the IP address, the port and the protocol format to receive the data, etheir TCP, UDP or HTTP. You can also setup a backup server by clicking on the **Backup** checkbox

Protocol

Enable Data Send

Protocol TCP

IP1 0.0.0.0

Port1 0

Backup If selected and data sending failed on primary ip then backup ip will be used. If backup ip failed then again primary ip will be used. There will be 3 such tries

Send Interval in Minute 0

17.5 Event

The Event menu let you set-up action based on preset event.

Those events can be:

- GPIO_H
- GPIO_L
- SIM_CHANGE

Available actions are:

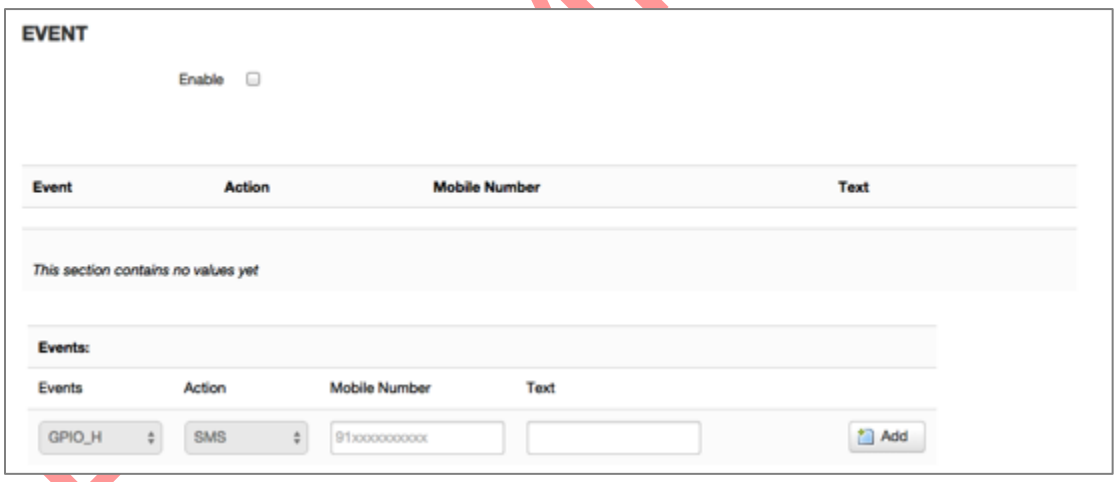
- SMS
- REBOOT

International number format is as follow: <countrycode><phonenumber>

On the text box enter a text (max.160 characters) that will be send to the corresponding mobile number when a change of event occurs.

Click add once your rules are set-up.

Click Save and Apply to save preset events.



PRELIMINARY

18 Appendix

18.1 Default settings

The following tables list the default settings for the E200 Series router.

LAN (MANAGEMENT)	
Static IP Address:	192.168.1.1
Subnet Mask:	255.255.255.0
Default Gateway:	192.168.1.1
ADMIN MANAGER ACCOUNT	
Username:	admin
Password:	admin

18.2 Reset to factory default setting

Restoring factory defaults will reset the E200 Series router to its factory default configuration. You may encounter a situation where you need to restore the factory defaults on your E200 Series router such as:

- You have lost your username and password and are unable to login to the web configuration page
- You are asked to perform a factory reset by Maestro support staff.

There are two methods you can use to restore factory default settings on your E200, using the web-based user interface or using the reset button on the side of the router.

18.2.1 Using the web-based user interface

To restore your router to its factory default settings, please follow these steps:

Open a browser window and navigate to the IP address of the router (default address is http://192.168.1.1). Login to the router using **admin** as the User Name and **admin** as the password.

Click the **System** item from the top menu bar, then **Backup / Flash Firmware** and then under **Flash operations** select the **Actions** tabs.

Under the **Actions** tabs, click the **Perform reset** button. The router asks you to confirm that you wish to reset all changes. Click OK to continue. The router will erase the configuration partition and reboot.

18.2.2 Using the reset button on the side of the router

Use a pin to push the Reset button on the device for 10 seconds. The router will restore the factory default settings and reboot.

PRELIMINARY

When you have reset your E200 Series router to its default settings you will be able to access the device's configuration web interface using http://192.168.1.1 with username **admin** or **root** and password **admin**.

PRELIMINARY

18.3 List of acronyms

Acronym	Expansion / Meaning
2G	2nd Generation
3G	3rd Generation
ADSL	Asymmetric digital subscriber line, ADSL is a type of DSL broadband communications technology used for connecting to the Internet
AES	Advanced Encryption Standard
AP Client	Access Point Client
CSQ	
DHCP	Dynamic Host Configuration Protocol (DHCP) is a standardized networking protocol used on Internet Protocol (IP) networks for dynamically distributing network configuration parameters, such as IP addresses for interfaces and services.
DIN	DIN connector is an electrical connector that was originally standardized by the Deutsches Institut für Normung (DIN)
DMZ	In computer security, a DMZ or Demilitarized Zone is a physical or logical sub network that contains and exposes an organization's external-facing services to a larger and un-trusted network, usually the Internet.
DNS	Domain Name System (DNS) is a hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network
DynDNS, DDNS	Dynamic DNS (DDNS) is a method of automatically updating a name server in the Domain Name System (DNS), often in real time, with the active DNS configuration of its configured hostnames, addresses or other information.
EDGE	Enhanced Data rates for GSM Evolution (EDGE) is a digital mobile phone technology that allows improved data transmission rates as a backward-compatible extension of GSM.
GPRS	General packet radio service (GPRS) is a packet oriented mobile data service on the 2G and 3G cellular communication system's global system for mobile communications
GSM	Global system for mobile communications
HT Physical mode	High Throughput Physical Mode
ICMP	Internet Control Message Protocol (ICMP) is one of the main protocols of the Internet Protocol Suite. It is used by network devices, like routers, to send error messages
IGMP	Internet Group Management Protocol is a communications protocol used by hosts and adjacent routers on IP networks to establish multicast group memberships
IP Sec	Internet Protocol Security is a protocol suite for securing Internet Protocol (IP) communications by authenticating and encrypting each IP packet of a communication session
ISP	Internet service provider
L2TP	Layer 2 Tunneling Protocol is a tunneling protocol used to support virtual private networks
LAN	Local Area Network
Acronym	Expansion / Meaning
LLTD	Link Layer Topology Discovery is a proprietary Link Layer protocol for network topology discovery and quality of service diagnostics
M2M	Machine to machine
MAC address	Media access control address is a unique identifier assigned to network interfaces for communications on the physical network segment
MTU	Maximum transmission unit of a communications protocol of a layer is the size (in bytes) of the largest protocol data unit that the layer can pass onwards
NAT	Network address translation is a methodology of modifying network address information in Internet Protocol (IP) datagram packet headers while they are in transit across a traffic routing device for the purpose of remapping one IP address space into another.
NTP	Network Time Protocol is a networking protocol for clock synchronization between computer systems over packet-switched, variable-latency data networks
PPPoE	Point-to-Point Protocol over Ethernet
PPTP	Point-to-Point Tunneling Protocol
PSK	Pre-shared key
QoS	Quality of Service
RF	Radio Frequency
Rx	Reception
SIM	Subscriber identity module
SMA	SMA (Sub Miniature version A) connectors are semi-precision coaxial RF connectors
SMS	Short Message Service
SPI	Serial Peripheral Interface
SSID	Service set identification
TCP	Transmission Control Protocol
TKIP	Transmission Control Protocol
Tx	Transmission
UDP	User Datagram Protocol
UPnP	Universal Plug and Play
VPN	Virtual private network
WAN	Wide Area network

PRELIMINARY

WCDMA	Wideband Code Division Multiple Access
WDS	Wireless distribution system
WEP	Wired Equivalent Privacy, is a wireless network security standard
Wi-Fi	Local area wireless technology that allows an electronic device to exchange data or connect to the internet using 2.4 GHz UHF and 5 GHz SHF radio waves
WPA	Wi-Fi Protected Access
WPA2	Wi-Fi Protected Access II

PRELIMINARY

18.4 Support

There are several resources available to you for support and troubleshooting of your Maestro product or for resolving configuration difficulties at Maestro's support website, http://support.maestro-wireless.com/knowledgebase.php.

Try these troubleshooting steps to eliminate your problem. After working through these steps and if your problem is not solved, please send a ticket to Maestro support team.

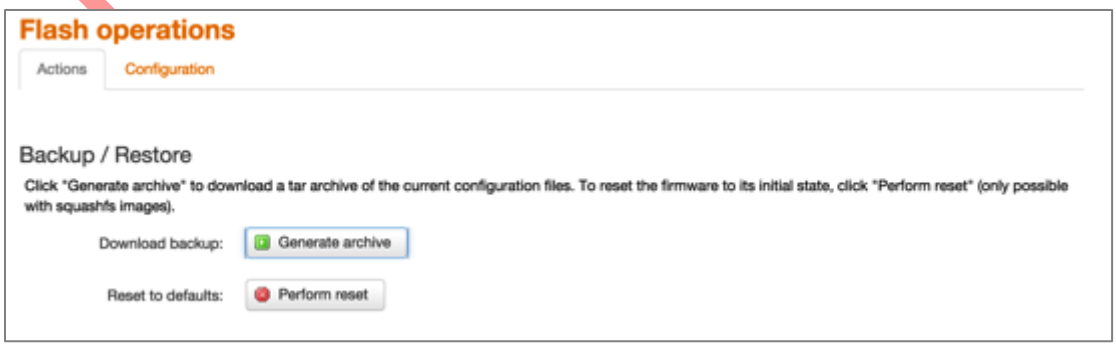
Fill out an Online Support Request via: http://support.maestro-wireless.com/index.php?a=add. You will need to create a user account if one is not already set up.

When submitting a support request, please include a copy of the **System Log** file from the unit's and the **configuration files**. This will greatly improve the quality of the initial response you receive. Without this file, it is often very difficult for the support team to provide accurate answers to your queries.

To create a copy of the system login on your router and go to **Status > System Log.**

Select the entire log, copy it and paste it on a new document file .

To generate an archive of your configuration go to **System > Backup / Flash Firmware,** under the Actions tabs click on **Generate archive.**



PRELIMINARY

An archive file “backup-Maestro-201x-xx-xx.tar.gz will be downloaded on your default download folder, please attached the file while filling the support request online.

PRELIMINARY