SILVERNET

WIRELESS-NETWORK-SOLUTIONS

PRO RANGE

PICO

MICRO

LITE

MAX

User Manual

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INTRODUCTION

This User Guide describes the firmware version 2.1.3 and above which is integrated into all Pro Range products provided by SilverNet Ltd.

SUPPORTED PRODUCTS

This manual covers all GEN4 products listed below:

- PICO
- MICRO
- LITE
- MAX

For more information, visit **www.silvernet.com**

WIRELESS MODES

The Pro Range supports the following wireless modes:

- Station
- Station WDS
- Access Point
- Access Point WDS

SYSTEM REQUIREMENTS

- Windows XP, Windows Vista, Windows 7, Windows 8, Windows 10, Linux, or Mac OS X
- Web Browser: Mozilla Firefox, Apple Safari, Google Chrome, or Microsoft Internet Explorer 9 (or above)

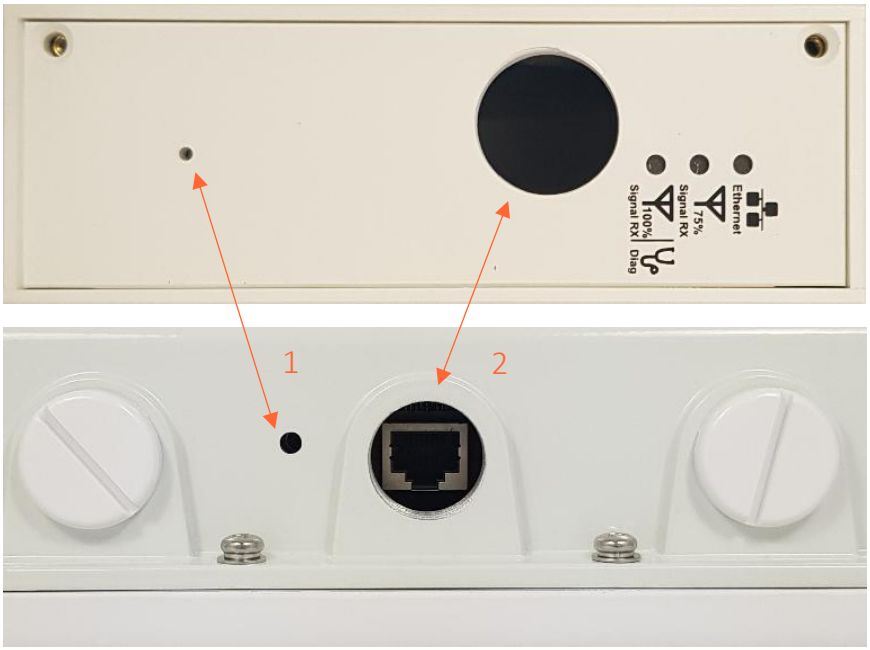
PACKING LIST

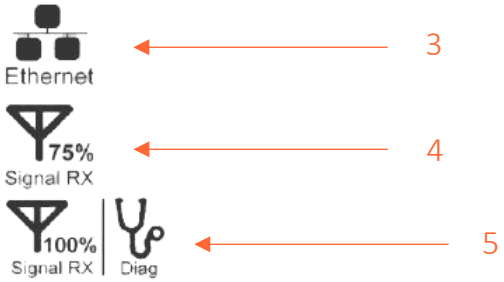
Please check the following items in the package before installing the device

Wireless Radio	1 piece
User manual	1 copy
Cable Gland	1 piece
Mounting bracket	1 piece
Power over Ethernet Injector	1 piece
Power cable	1 piece
Set of screws	1 piece

Please contact your distributor immediately for any missing or damaged items.

THE ENCLOSURE AND LED INDICATORS





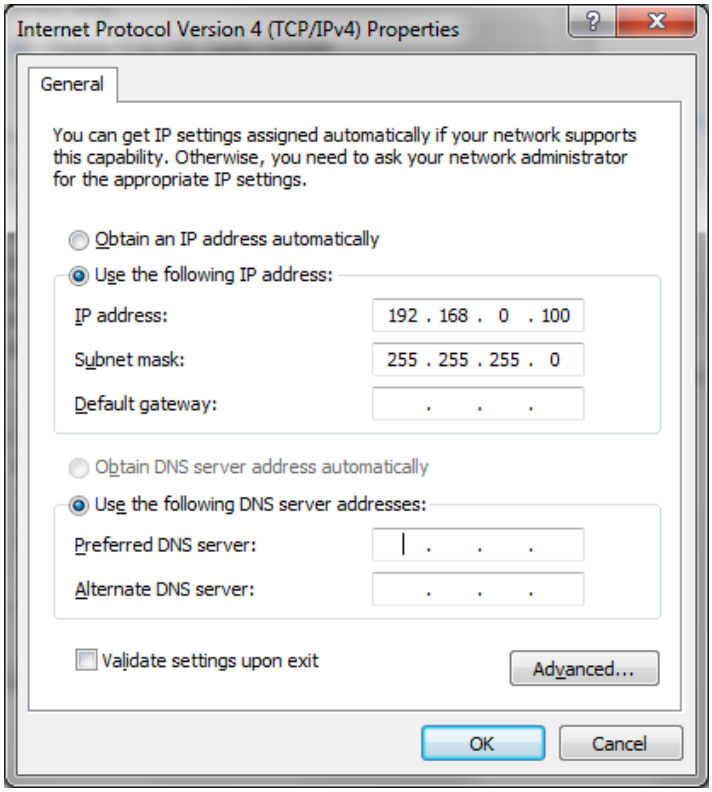
Mark	Name	Function
1	Reset Button	Press to reboot the device manually Hold to rest the device to factory settings
2	Ethernet Port (PoE)	10/100Mbps Ethernet port and PoE power input (48V DC)
3	Ethernet link LED	“On/Blinking”: Power is being supplied and a link has been established to the network. “Off”: No power and/or the Ethernet port has no connection
4	75% Signal Rx LED	“On”: Signal Strength is at 75% “Off”: Signal Strength not at 75%
5	100% Signal Rx LED	“On”: Signal Strength is at 100% “Off”: Signal Strength not at 100% “Blinking”: Device is in diagnostic mode

CONFIGURATION

GETTING STARTED

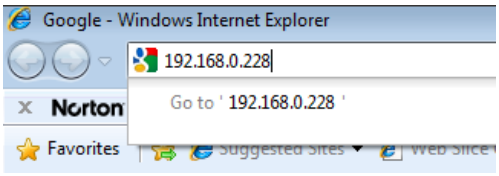
To access the Pro Range Configuration Interface, perform the following steps:

1. Configure the Ethernet adapter on your computer with a static IP address on the 192.168.0.x subnet (for example, IP address: 192.168.0.100 and subnet mask: 255.255.255.0



2. Launch your web browser and enter the default IP address of your device in the address field.

Pro Range products are pre-configured to IP address 192.168.0.229/192.168.0.228



If the unit has been reset, it will go to the default IP address of 192.168.1.1. You will need to change your Ethernet adapter IP address to 192.168.1.x subnet.

3. Enter **admin** in the Username field and **password** in the Password field and click **Login**.

NAVIGATION

The Pro Range Configuration Interface contains four main tabs, each with sub tabs which provide a web-based management page to configure a specific aspect of the SilverNet device:

• **Status** The **"Status Tab"** displays device status, system logs, and real-time graphs.

• **Admin** The **"Admin Tab"** displays basic system properties, NTP configuration, administration, SNMP configuration, LED Configuration, file and firmware management and Reboot.

• **Services** The **"Services Tab"** allows you to configure Dynamic DNS.

• **Network** The **"Network Tab"** configures the network operating mode; This includes LAN Interface settings, Wireless Settings, VLAN Management and Network Diagnostics.

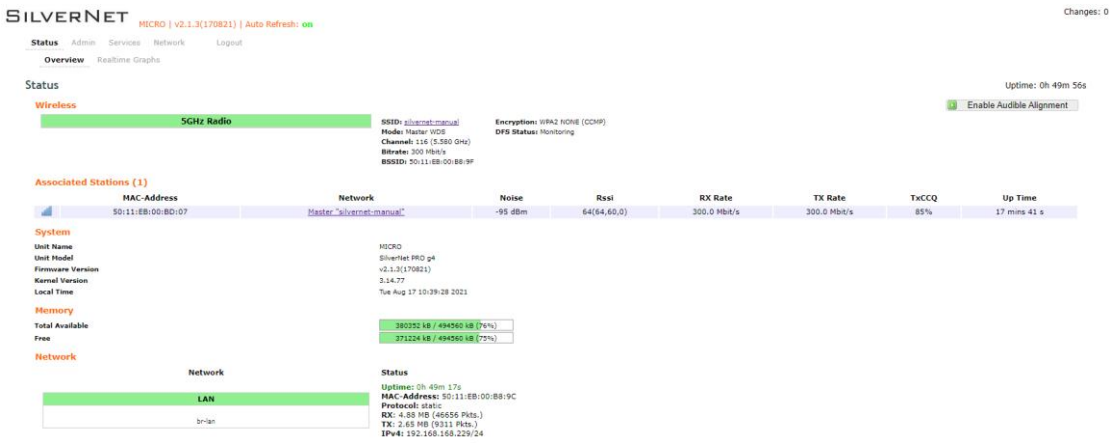
• **Logout** The **"Logout Tab"** allows you to logout of the unit.

Apply Settings To apply any settings to the radio, click **Save and Apply**

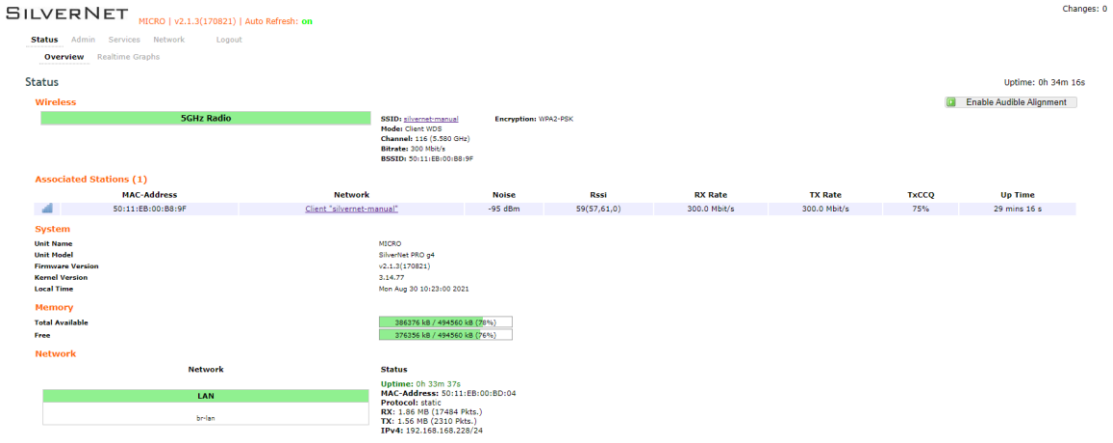
STATUS

The Status tab displays a summary of the link status information, current values of the basic configuration settings (depending on the operating mode), network settings and information, and traffic statistics.

AP status page



Station status page



When using the alignment buzzer, the faster the beeps the better the signal quality.

OVERVIEW

Wireless This shows you the SSID, operating mode, channel frequency, bitrate, BSSID, encryption mode and the DFS status.

Associated Stations Displays the MAC address, SSID and signal information of any stations connected to the AP.

System Displays the name of the device, the firmware version and the current system date and time. The date and time are displayed in DAY-MONTH-YEAR HOURS:MINUTES:SECONDS format.

Memory Displays the total amount of memory on the board and shows how much is free in kB (Kilobytes).

Network Displays local device information including the current uptime, MAC address and IP address.

Wireless Parameters

SSID Displays the name of the wireless network that the AP is transmitting, the Service Set Identifier (SSID), is what you will see if you scan with your laptop.

Mode This is “Master” if the device is set in AP mode or AP WDS Mode.

This will show as “client” if the device is in station mode or station WDS mode.

Channel Shows the channel number and frequency that the device is using.

Bitrate This is the maximum bitrate supported by the radio.

BSSID Displays the MAC address of the device.

Encryption Displays the wireless encryption used.

DFS Status If DFS is enabled, the device will automatically switch channels if any radar is detected on the current channel it is using

Associated Stations Parameters

MAC Address Displays the MAC address of the device.

Network States the name of the wireless network.

Noise Displays the received noise power at the AP.

RSSI Displays the received signal strength.

TX Rate shows the transmit bitrate of the device.

RX Rate shows the receive bitrate of the device.

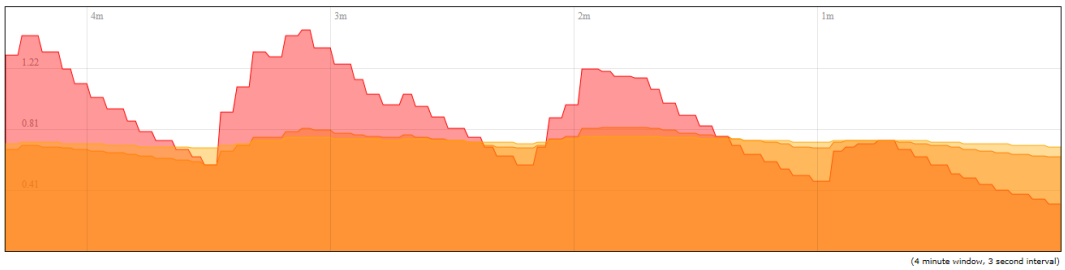
TX CCQ Displays the transmission quality in %. A higher percentage means better wireless connection quality.

Up Time Displays the current uptime of the paired device.

REALTIME GRAPHS

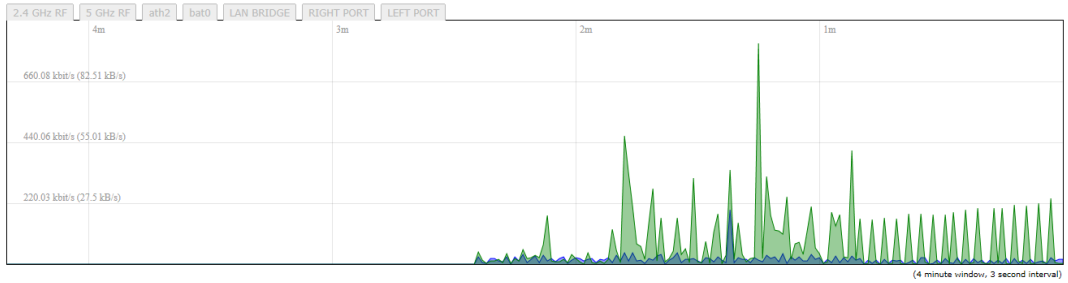
There are four different graphs, you can view Load, Traffic, Wireless and connection graphs.

Realtime Load



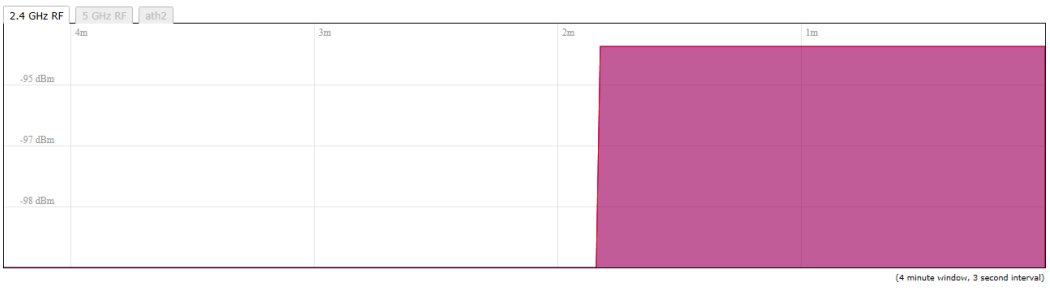
1 Minute Load: 0.32	**Average:** 0.32	**Peak:** 1.48
5 Minute Load: 0.63	**Average:** 0.63	**Peak:** 0.83
15 Minute Load: 0.70	**Average:** 0.70	**Peak:** 0.77

Realtime Traffic



Inbound: 20.45 kbit/s (2.56 kB/s)	**Average:** 17.17 kbit/s (2.15 kB/s)	**Peak:** 199.09 kbit/s (24.89 kB/s)
Outbound: 3.95 kbit/s (0.49 kB/s)	**Average:** 38.69 kbit/s (4.84 kB/s)	**Peak:** 800.1 kbit/s (100.01 kB/s)

Realtime Wireless

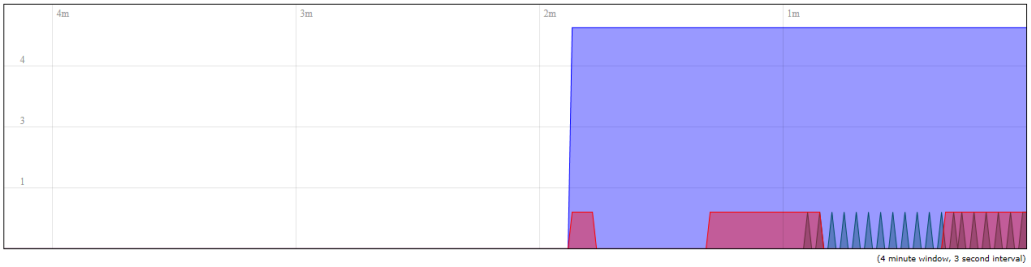


Signal: -95 dBm (SNR 0 dBm)	**Average:** -95 dBm (SNR 0 dBm)	**Peak:** -95 dBm (SNR 0 dBm)
Noise: -95 dBm	**Average:** -95 dBm	**Peak:** -95 dBm

Realtime Connections

This page gives an overview over currently active network connections.

Active Connections

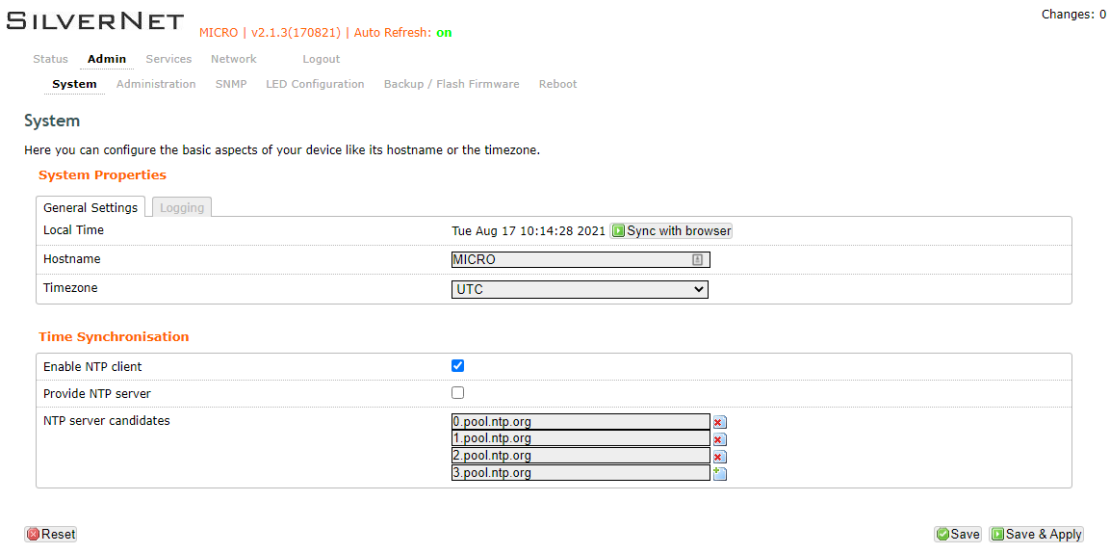


UDP: 6	**Average:** 6	**Peak:** 6
TCP: 1	**Average:** 0	**Peak:** 1
Other: 1	**Average:** 0	**Peak:** 1

ADMIN TAB

The Admin tab contains administrative options. This page enables the administrator to configure System Properties, Time Synchronisation, Logging Settings, User Management, Web Administration, SNMP Configuration, LED Configuration, Backup config files / flash new firmware and reboot the device.

SYSTEM



General Settings

Local Time Displays the local time according to the time zone.

Host Name Enter a name for your device.

Time Zone Select the correct time zone from the drop-down menu.

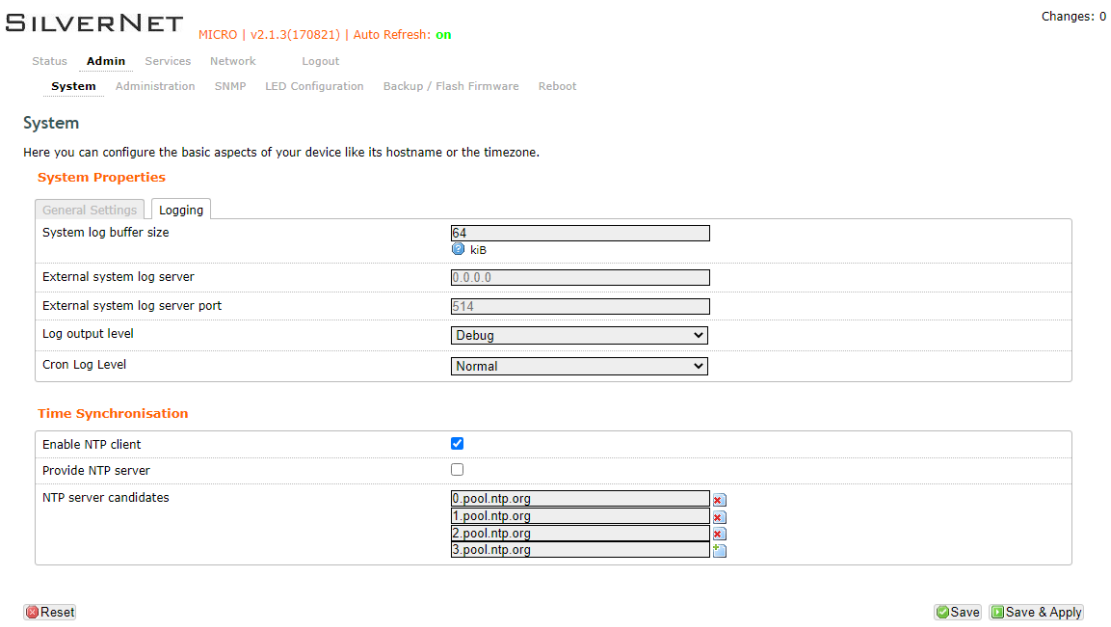
Sync with browser Click to sync device time with your browsers.

Time Synchronisation

Enable NTP Client Check to enable NTP.

Provide NTP Server Enter your preferred NTP Server under NTP candidates.

NTP Server Candidates These are the sources where you get your time information. We recommend you enter at least three for accurate time synchronisation.



Logging

System Log Buffer Size Change the size of the log buffer.

External System Log Server Input an address that the system log is sent to.

External System Log Server Port Input an external server port.

Log Output Level Change the type of log report.

Cron Log Level Change the level of log report.

ADMINISTRATION

Use this section to change the administrator password.

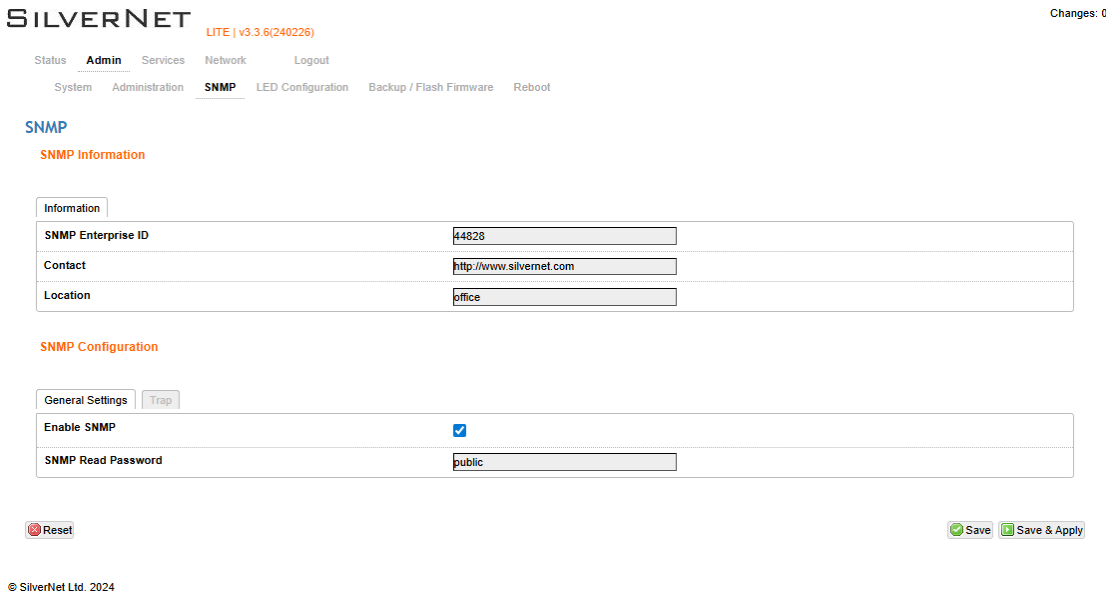
Router Password

Password Enter a new password.

Confirmation Re-enter your new password.

SNMP

Simple Network Management Protocol (SNMP) is a popular protocol for network management. It is used for collecting information from, and configuring, network devices on an IP network.



SNMP Information

These identifiers are arbitrary and do not affect the server's function, but they are useful to have. The contact is the person who manages the server. The location is the server's physical location. Each of these parameters can be up to 64 characters.

SNMP Enterprise ID Enter the ID of the SNMP Server.

Contact Enter the name of the person who manages the server.

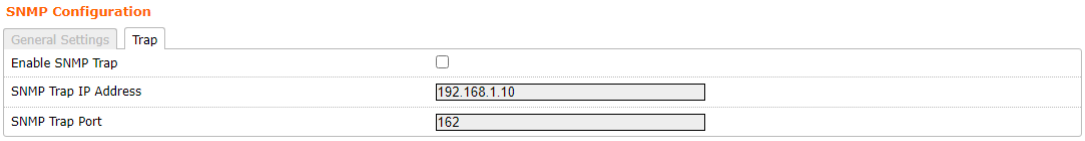
Location Enter the server's physical location.

SNMP Configuration

Enable SNMP Enable SNMP

SNMP Read Password Sets the community string for read-only access (to the carriables on the SNMP agent) by the Network Management Station (NMS). The NMS is the software that runs on the SNMP manager. (default: public)

SNMP Trap



Enable SNMP Trap Allows the SNMP agent to notify the SNMP manager of events.

SNMP Trap IP Address Sets the IP address of the SNMP manager which receives the trap messages.

SNMP Trap Port Sets the port number.

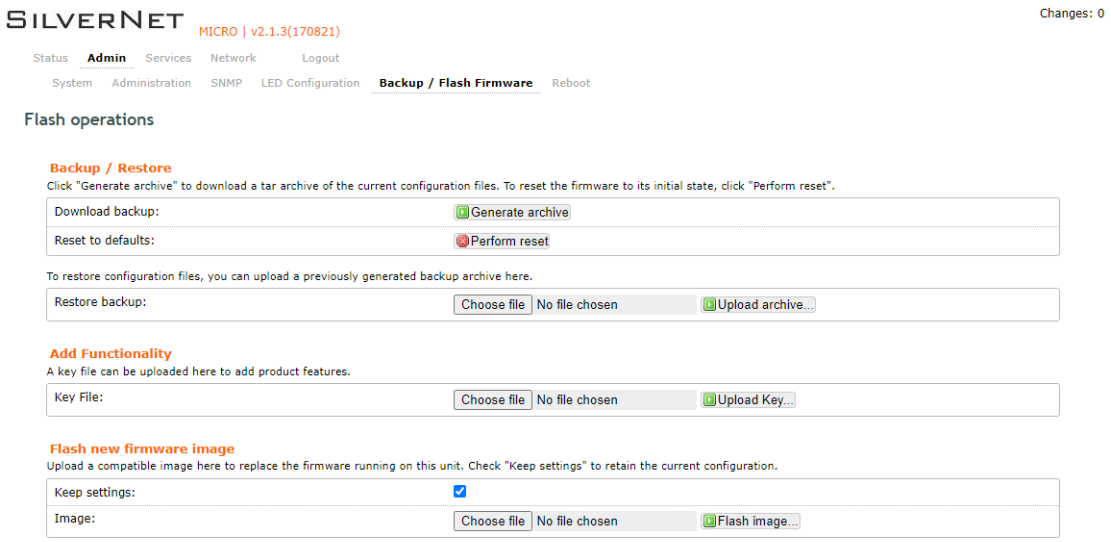
LED Configuration

You can configure the LEDs on the device to light up when received signal levels reach the values defined in the four fields.

Signal Strength Indicator Interface Choose the wireless interface (wireless network name) to display LEDs for.

Signal Strength Indicator LEDs Sets the received signal strength thresholds (in dBm), if the signal is above the threshold, the LED will light up.

BACKUP/FLASH FIRMWARE



Backup / Restore

Download Backup Click to save down the configuration file of the device.

Reset to Defaults This will reset the device to the default factory settings (IP address 192.168.1.1)

Restore Backup Select the configuration file you wish to upload and click the restore button.

Add Functionality

Key File: Select the Key file you wish to upload to add extra functionality to the device.

Flash new firmware

Keep Settings Enable to keep the current settings after firmware upgrade.

Choose File Select the firmware file you wish to upgrade and click upload to begin the update process.

Please be patient, as the firmware upgrade routine can take 5-10 minutes. The device will be un-accessible until the firmware upgrade is completed.

Do not switch off the device! Do not reboot and do not disconnect the device from the power supply during the firmware upgrade process as these actions will damage the device!

REBOOT

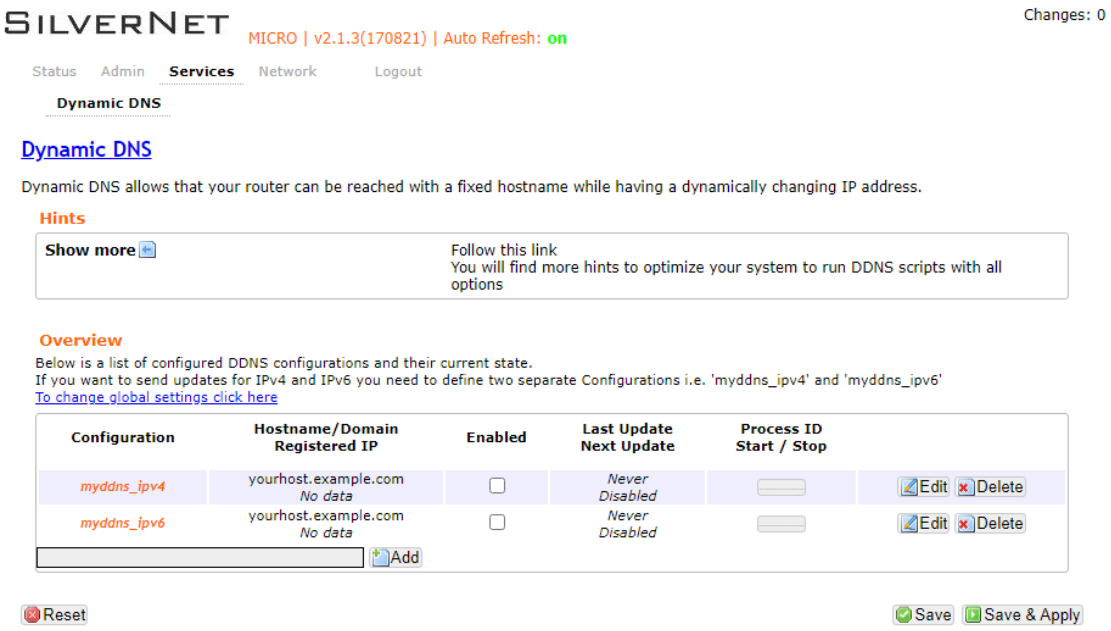
Perform Reboot This option will perform a reboot of your device.

SERVICES

The Services tab provides useful and enhanced functions to help assist device operations.

DYNAMIC DNS

Dynamic DNS (DDNS) allows the device to be reached from the internet via a URL by translating a URL like www.silvernet.com to an IP address like 206.190.36.45



Dynamic DNS Click this link to show information about the current DDNS version.

Hints

Show More Click this link to show hints on how to optimize your DDNS.

Overview

To global settings click here Click to access DDNS global settings.

Configuration Displays the DDNS Configuration Name.

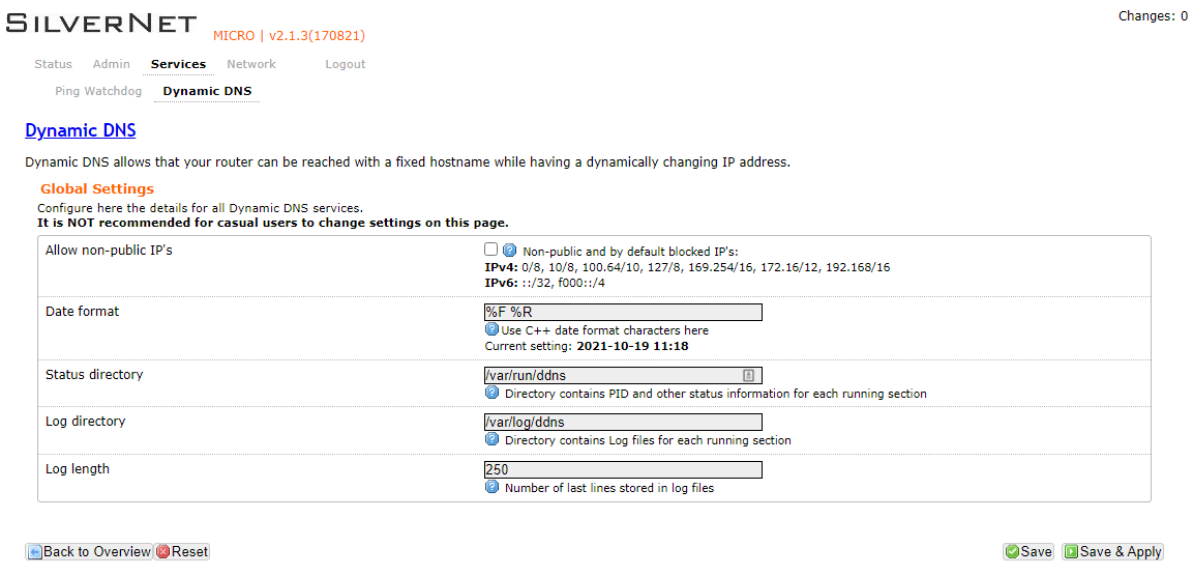
Hostname/Domain Registered IP Displays the Hostname and Domains Registered IP.

Enabled Tick to enable / disable the DDNS configuration.

Last Update / Next Update Displays when the last DDNS update was / when the next DDNS update is.

Process ID Start / Stop Click to start the DDNS Process ID.

Global Settings



Allow Non-public IP's Tick to allow Non-Public IP Addresses.

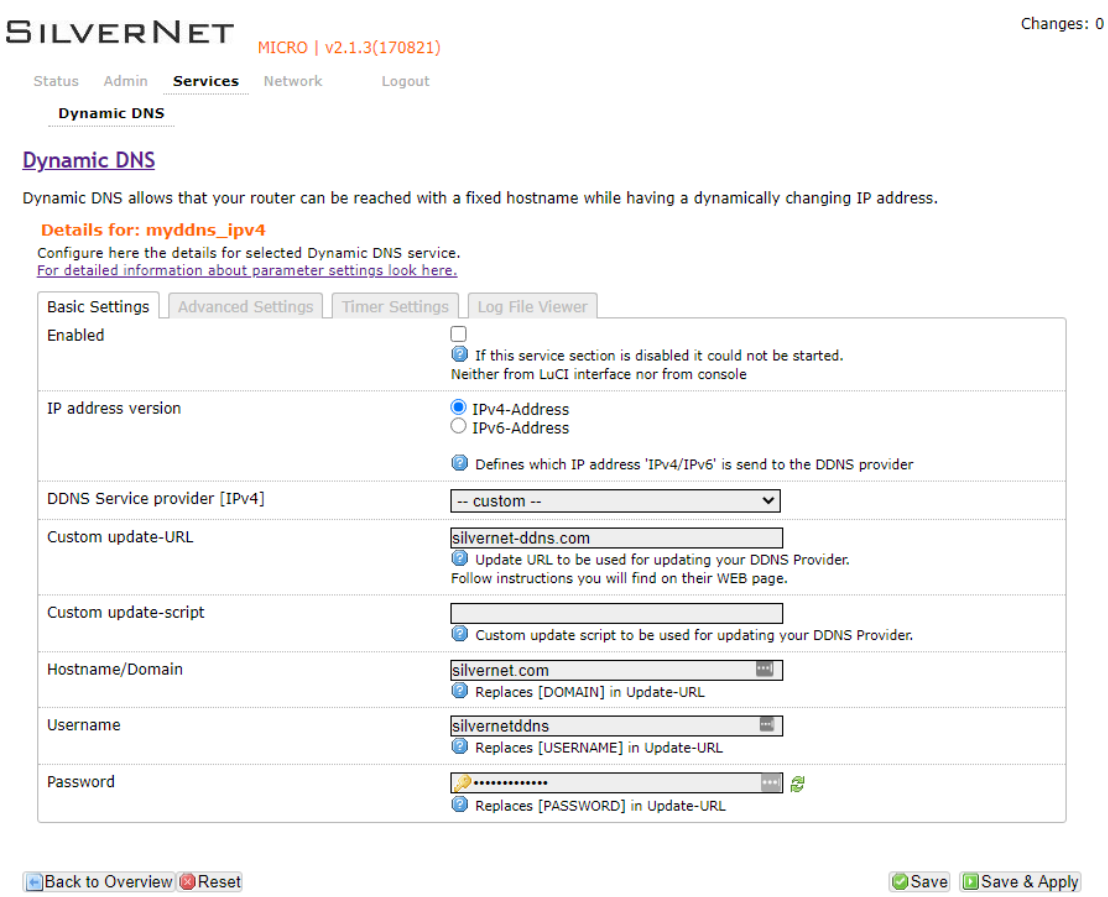
Date Format Input date format code.

Status Directory Input device location of status directory.

Log Directory Input device location of log directory.

Log Length Number of lines stored in log files.

Add DDNS / Edit DDNS



Enabled Tick to enable specified DDNS section.

IP Address Version Choose which Internet Protocol version to use for your DDNS.

DDNS Service Provider [IPv4] Choose which DDNS service provider to use.

Custom Update-URL Input DDNS Update URL from DDNS provider.

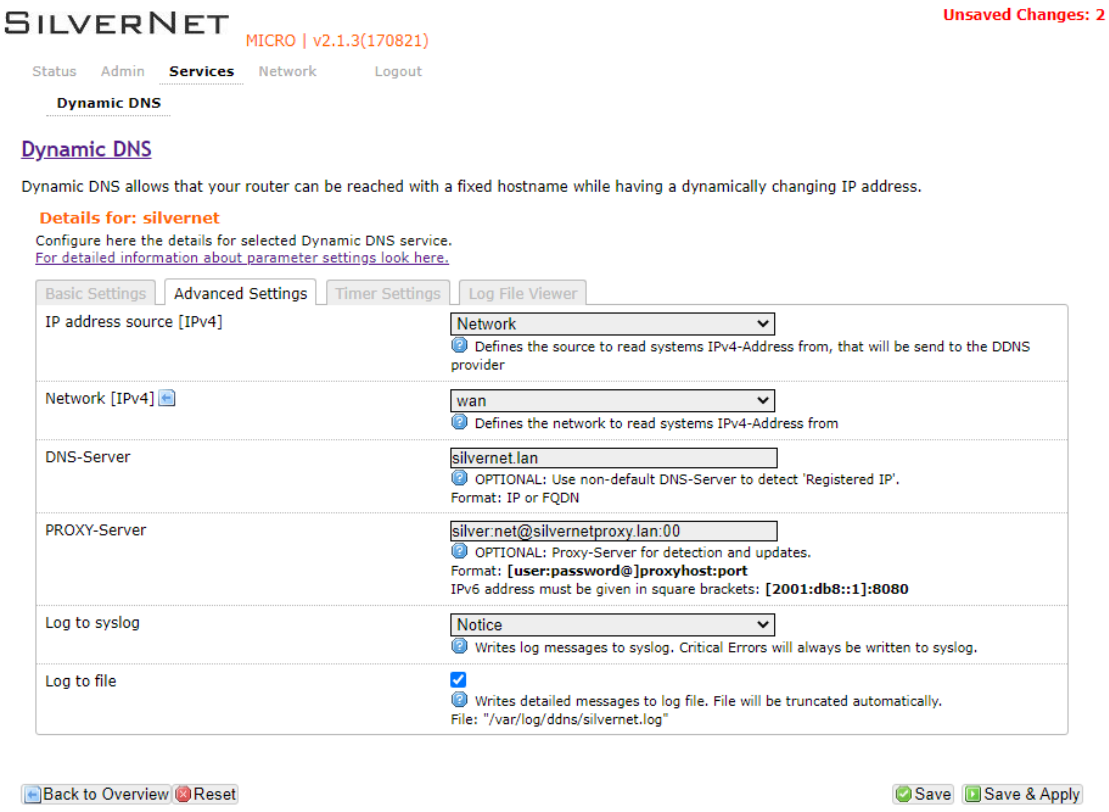
Custom Update-Script Input custom DDNS update script for updating DDNS provider.

Hostname/Domain Input hostname / domain instead of typing into Custom Update-URL.

Username Input Username for custom update URL instead of typing into Custom Update-URL.

Password Input Password for custom update URL instead of typing into Custom Update-URL.

Advanced Settings



IP Address Source [IPv4/6] Defines the source to read systems IPv4-Addresses from, that will be sent to the DDNS provider.

Network [IPv4/6] Defines the interface to read systems IP Addresses from.

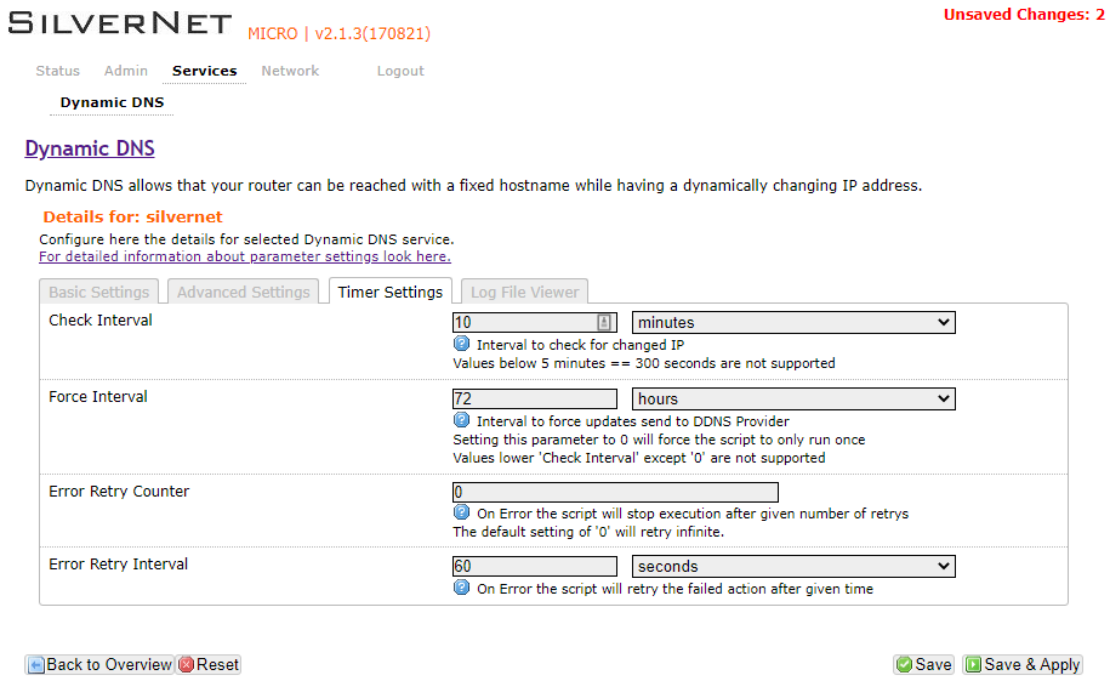
DNS-Server Input non-default DNS Server to detect registered IP Addresses.

PROXY-Server Input Proxy server for DDNS detection and updates.

Log to Syslog Specify which type of log to write to the system log.

Log to File Tick to enable detailed logging messages.

Timer Settings



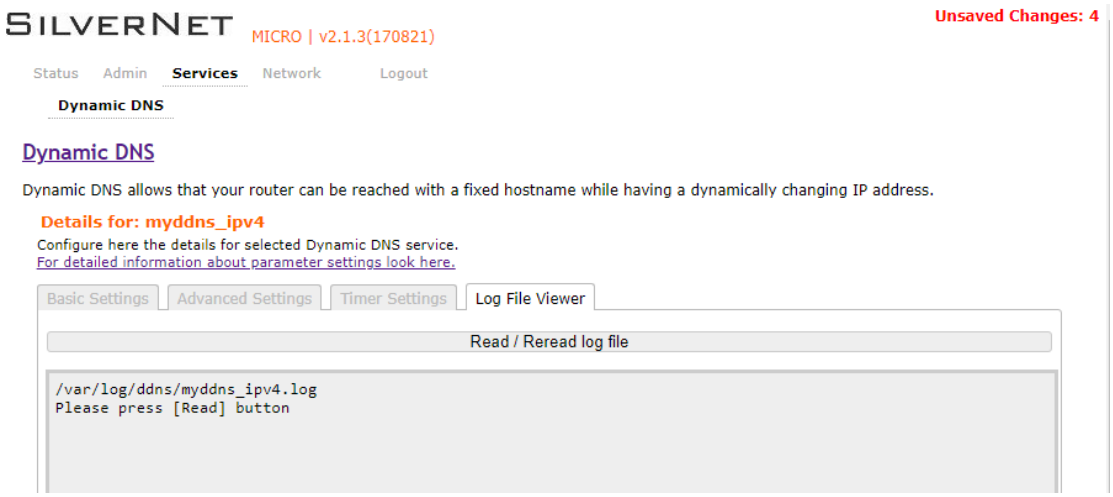
Check Interval Specify interval to check for changed IP address.

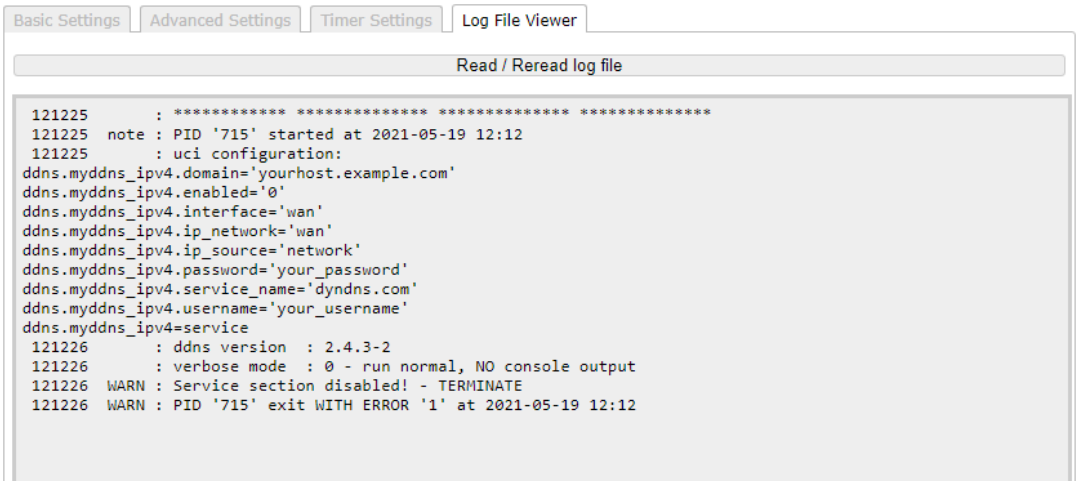
Force Interval Specify interval to force updates from DDNS provider.

Error Retry Counter Specify number of attempts before DDNS script will stop execution.

Error Retry Interval Specify interval in which DDNS script will retry after Error Counter.

Log File Viewer





Read / Reread log file Click to display current system log file.

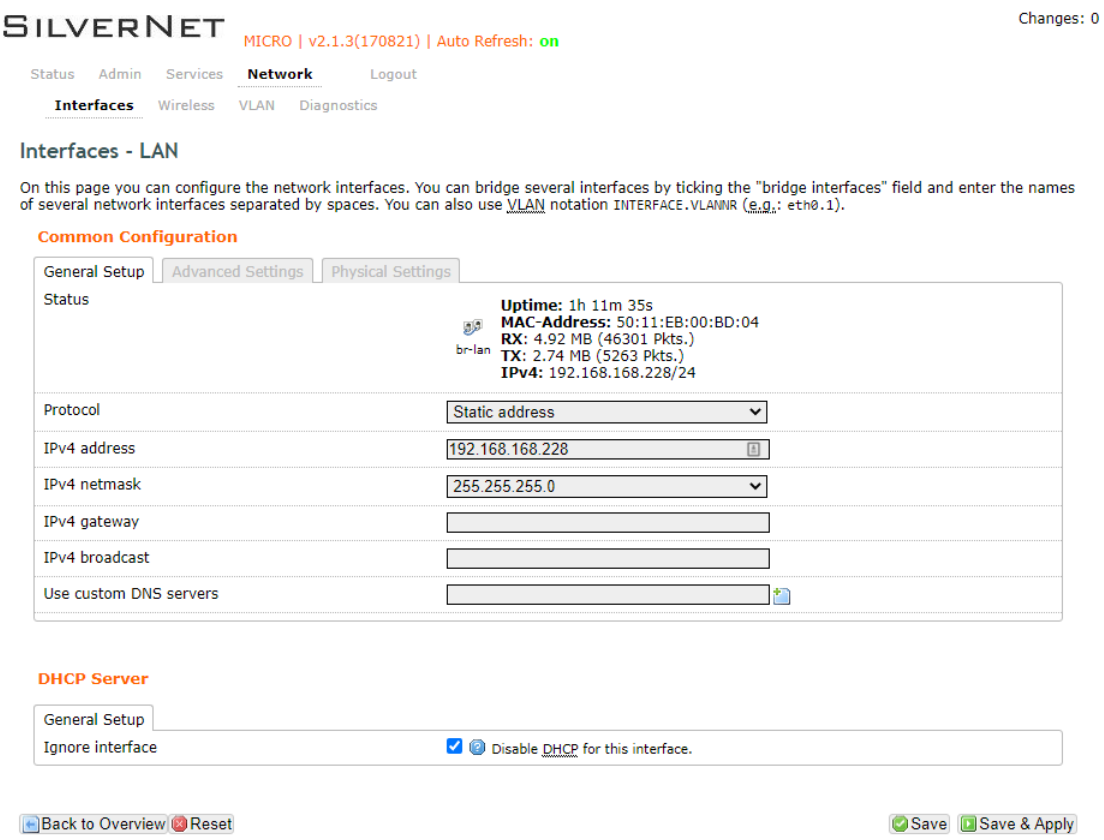
NETWORK TAB

The Network tab contains everything needed to set up the networking part of the link. This includes:

- **LAN Interface**: This allows you to configure the IP Address settings, DHCP Server Settings, DNS Settings, Firewall Settings and Physical settings.
- **Wireless Settings**: This allows you to configure settings such as Country Codes, Channel Selection, ACS Scanning, Antenna Gain, Transmit Power, Interface Configuration, Wireless Security, MAC-filtering, Multipoint Enhancement Settings, Distance Settings, Adaptive Noise Immunity, Chainmask Selection, Dynamic Channel Selection.
- **VLANs**: This allows you to enable and manage VLANs.

Note Click the edit button to enter the set-up page for LAN or WLAN interface.

LAN INTERFACE



General Setup

Protocol Here you can enable **DHCP Client** or **Static** (default)

> **DHCP Client** If enabled, your device will get an IP address automatically from the network. There must be a DHCP server configured on your network for this to function.
>
> **Static** Allows you to enter a static IP address.

IPv4 Address Enter the IP address you wish to give to the device. You will use this IP address to access the device interface.

IPv4 Netmask Enter the class for the IP address. The default is a class C value of 255.255.255.0

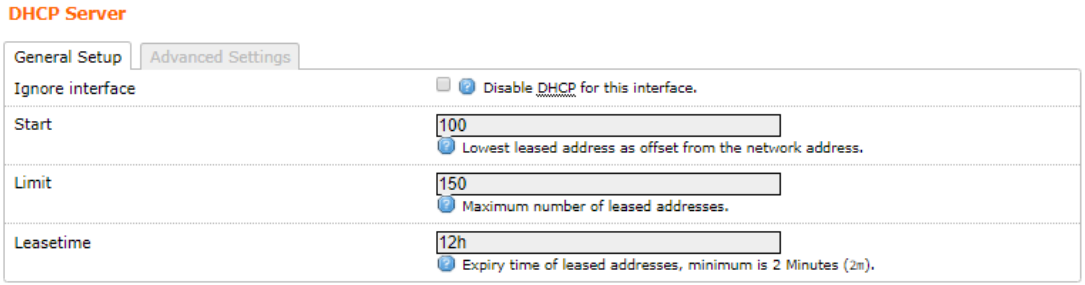
IPv4 Gateway (optional) Enter the gateway IP address of the network the device is connected to.

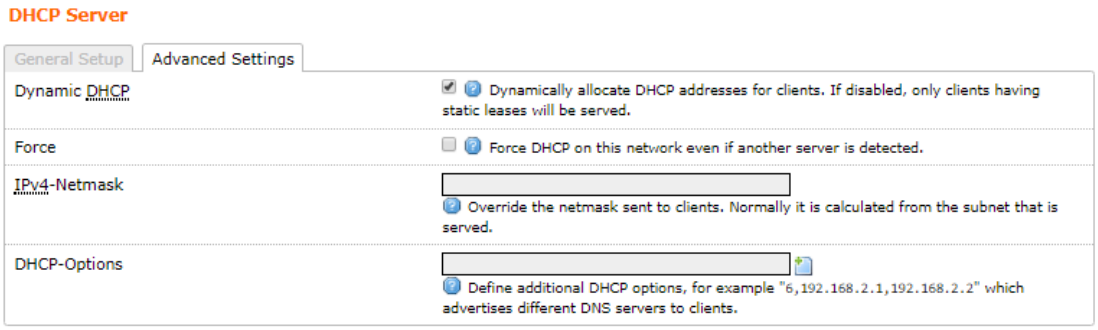
IPv4 Broadcast (optional) Specifies the IPv4 broadcast address

Use Custom DNS Servers Enter the IP address for the DNS server you wish to use

DHCP SERVER

DHCP Server disabled if ticked, un-tick to enable.





DHCP Server The device will act as a DHCP server hand out IP addresses automatically.

Start Specifies the lowest leased address to be issued

Limit Sets the maximum number of leased addresses

Leasetime States the expiry time of leased addresses

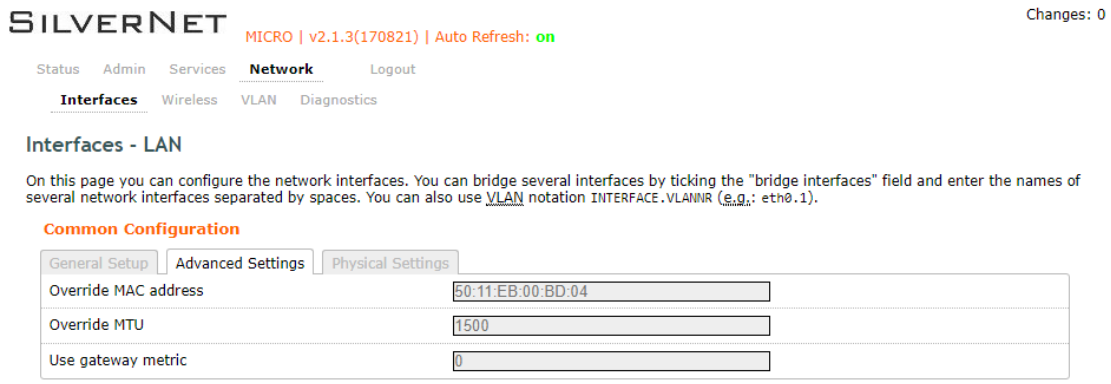
Dynamic DHCP Dynamically allocates DHCP addresses for clients. If disabled, only clients having static leases will be served.

Force Forces DHCP on this network even if another server is detected

IPv4 Netmask Overrides the netmask sent to clients. Normally it is calculated from the subnet that is served.

DHCP Options Defines additional DHCP options, for example "6, 192.168.2.1, 192.168.2.2" which advertises different DNS servers to clients. Normally, connected devices would take this board's IP address as the default gateway. To set an alternative default gateway, add the DHCP option "3, 192.168.2.3" for example.

Advanced Settings



Bring up on boot Tick to enable this interface on device boot.

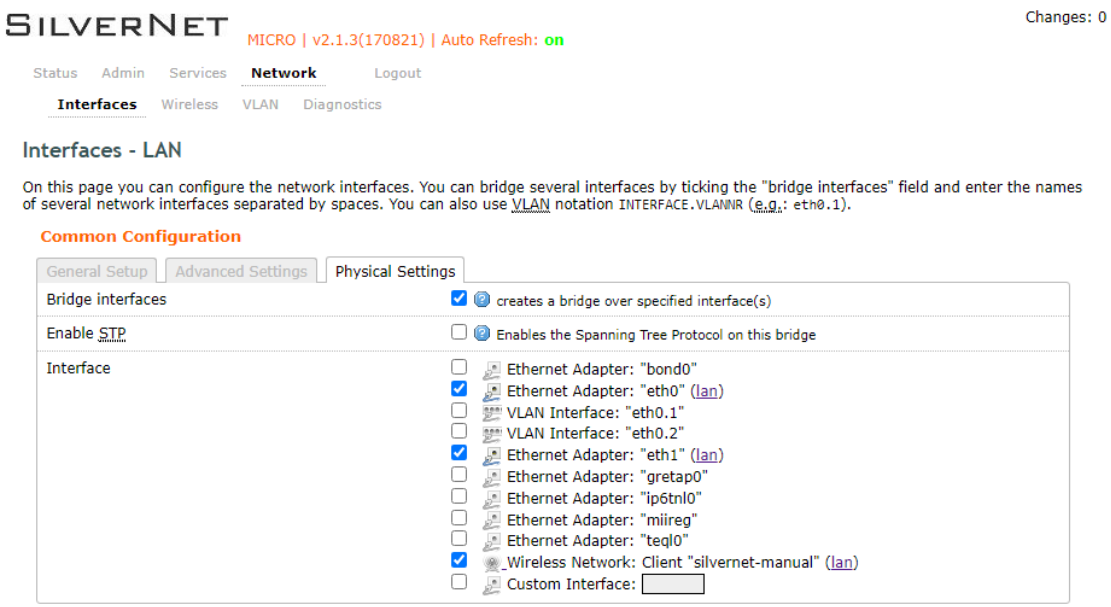
Use built in IPv6-Management Tick to enable usage of built in IPv6 management for this interface.

Override MAC Address Allows you to specify a different MAC address other than the routers original one. This is useful if the ISP uses Mac addresses of routers to identify customers.

Override MTU Sets the maximum transmission unit (MTU), the default being 1500 bytes, we recommend you do not change this unless your ISP requires you to.

Use Gateway Metric Allows you to specify a gateway metric. When a connected device must choose from multiple gateways, the gateway with the smallest/lowest metric is chosen.

Physical Settings



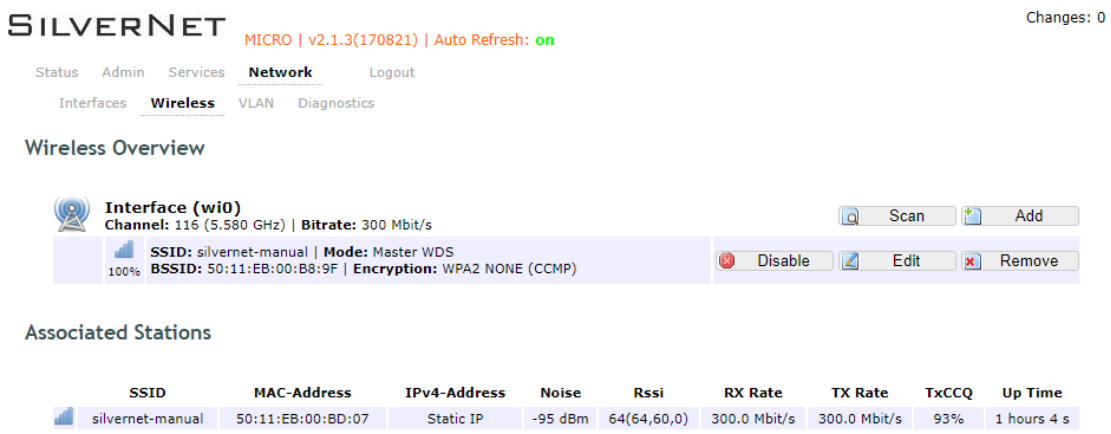
Bridge Interfaces Tick to enable bridging of ticked interfaces.

Enable STP Enables the Spanning Tree Protocol on this unit. This is disabled by default

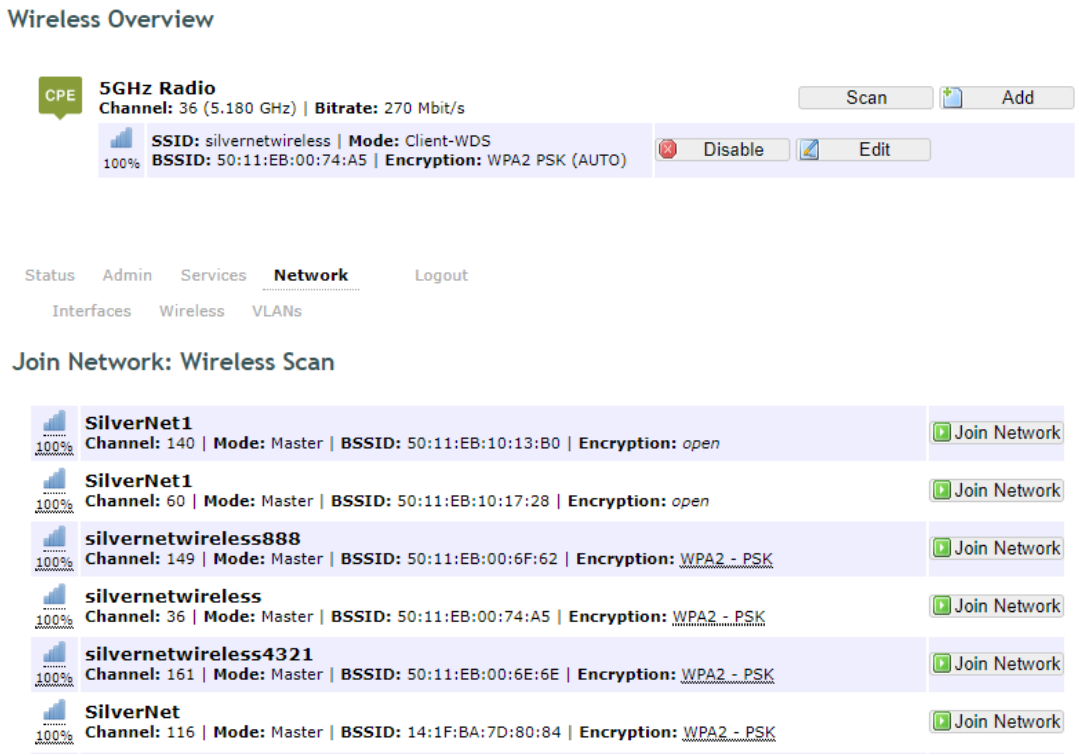
The Spanning Tree Protocol (STP) is a network protocol. The main purpose of **STP** is to ensure that you do not create loops when you have redundant paths in your network. Loops are deadly to a network.

Interface List of all Interfaces and Adapters on device, tick to enable bridging between if Bridge Interfaces is enabled.

WIRELESS INTERFACE



Spectrum scans

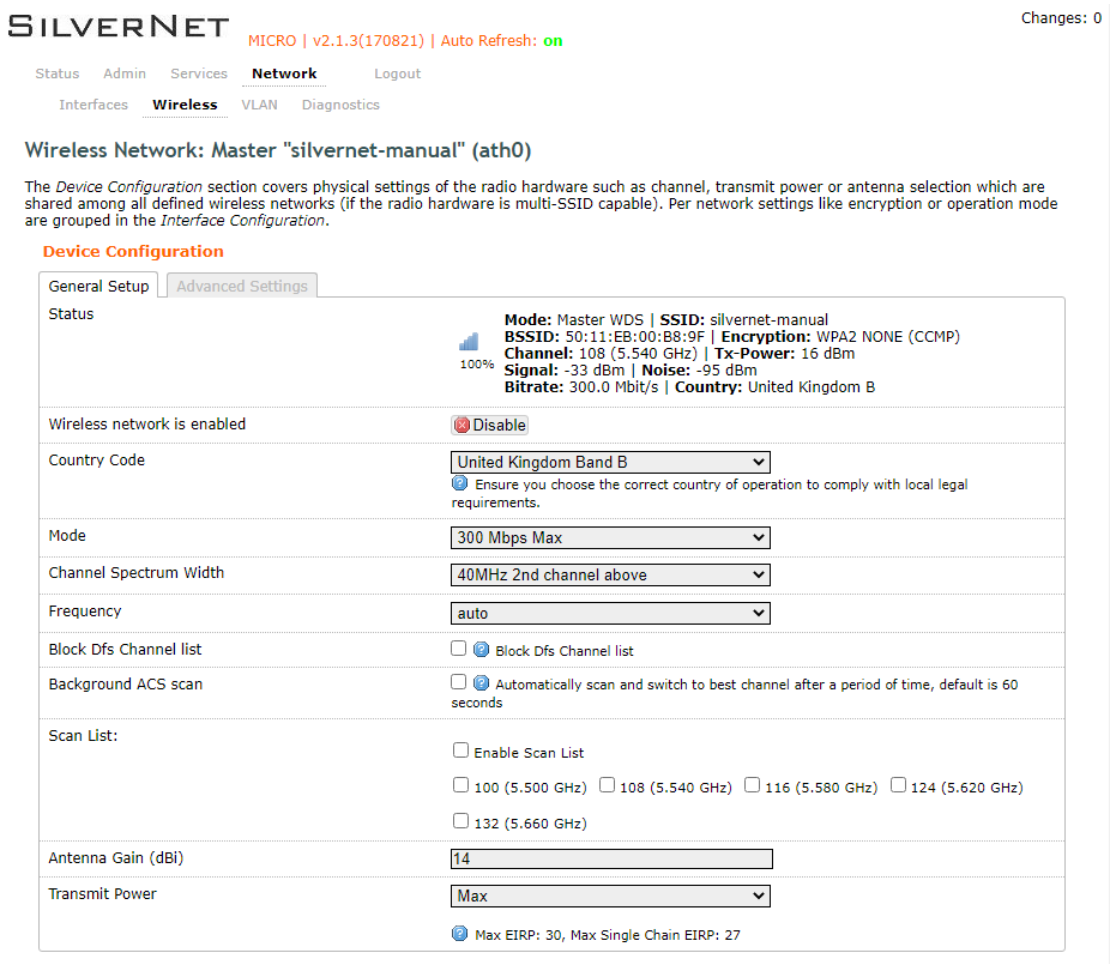


Click the **Scan** button to perform a spectrum scan from the Station

This will show you a list detailing the channel number, MAC address and encryption method of any devise nearby. You can click the “Join Network” button to connect to a specific AP.

From the Wireless Overview page, click the edit button to enter the wireless page

DEVICE CONFIGURATION



Status This shows the current wireless connectivity of the device, similar to the “Status Tab”.

Wireless Network is Enabled Enabled by default, click to disable wireless interface.

Country Code Each country has their own power level and frequency regulations. To ensure the device operates under the necessary regulatory compliance rules, you must select the country where your device will be used. The IEEE 802.11 mode, channel and frequency settings, and output power limits will be tuned according to the regulations of the selected country.

Mode Choose what throughput speeds to limit the wireless communication to. This can be upgraded via License Keys to 866Mbps.

Channel Spectrum Width Displays the spectral width of the radio channel. You can use this option to control the bandwidth consumed by your link. Using higher Channel width increases throughput. Using lower Channel width reduces throughput.

Channel widths available are **5 MHz**, **10 MHz**, **20 MHz**, and **40 MHz**

When the 802.11ac wireless standard is used, the 80 MHz band can be selected. An 80 MHz band can carry twice the amount of data of a 40 MHz band.

Frequency The default, Auto, allows the device to automatically select the frequency. You can specify a frequency from the drop-down list. The frequency range available depends on the country you select in Country Code. Some countries have DFS regulations which may affect and delay the device when attempting to establish a connection. It can take up to 30 minutes to connect.

Block DFS Channel List Tick to block selection of DFS channels to avoid DFS radar interference.

Background ACS Scan / ACS Scan Interval This will allow the device to automatically scan and switch to a better channel after a period of time when no client is connected. Default time for the scan is every 60 seconds.

ACS provides an easy way to optimise channel arrangement. It provides an optimal solution only if it is used on all APs in a site. Using ACS on a single AP provides a useful but sub-optimal solution. Once an AP has selected a channel, it remains operating on that channel until the user changes the channel or it scans again (after a reboot). The best way to make the AP always choose the best channel is to enable Dynamic Channel Selection (see below)

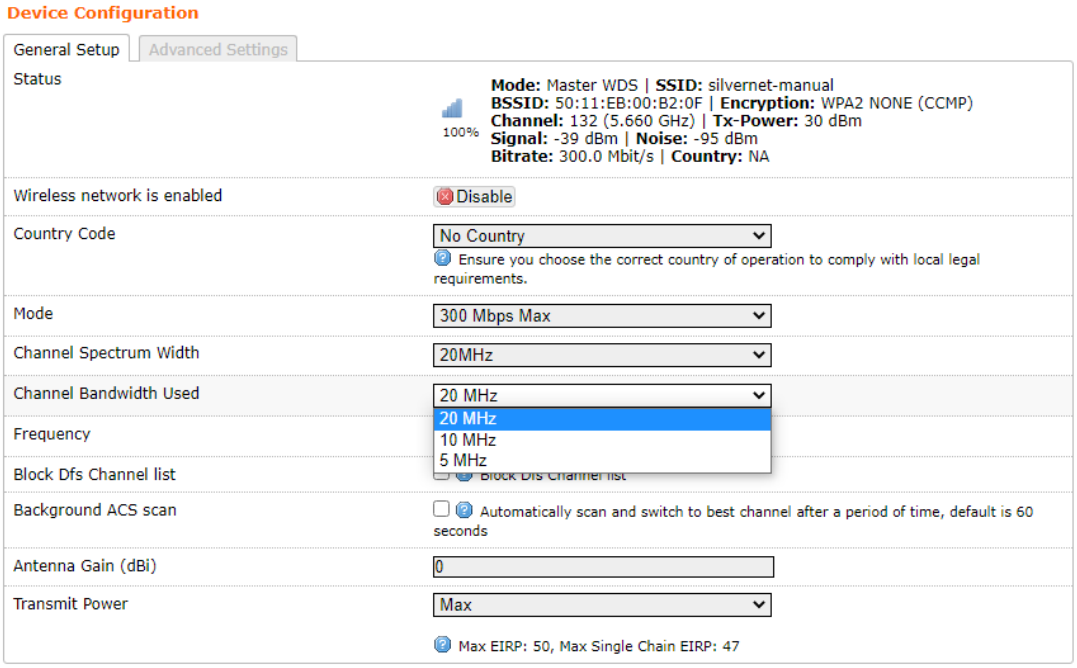
Antenna Gain Represents the gain relative to an isotropic antenna. A higher antenna gain results in the transmit power more focused towards a certain direction. You can set this depending on the antenna you have, e.g. PICO 12dBi, MICRO 15dBi, LITE 18dBi, MAX 25dBi. When country code is set, the value of the antenna gain will be considered to limit the selectable transmit power, such that the EIRP limits of the country are satisfied.

Transmit Power The maximum transmit power displayed is determined by the country code and the maximum transmit power of the radio.

5MHz and 10MHz Channel Spectrum Width

From the Channel Spectrum Width drop down list, choose 20MHz. A new setting will appear, Channel Bandwidth Used. Select either 20MHz, 10MHz or 5MHz from this new drop-down menu.

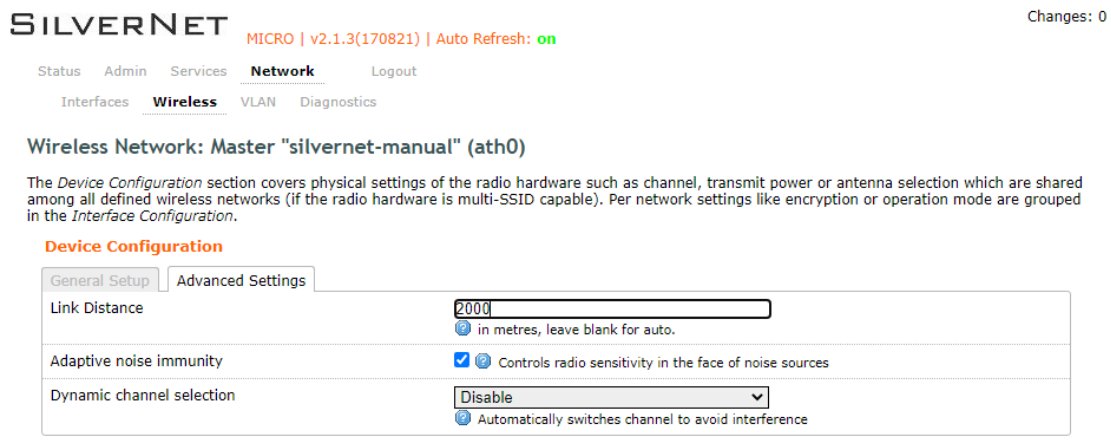
Click Save & Apply to save the configuration.



Using higher bandwidth increases throughput. Using lower bandwidth reduces throughput. Channel widths available are:

5 MHz – TX 32 – 20/25Mbps
10 MHz – TX 65 – 40/45Mbps
20 MHz – TX 130 – 90/95Mbps
20/40 MHz – TX 300 – 90/95Mbps – Both ways

Advanced settings



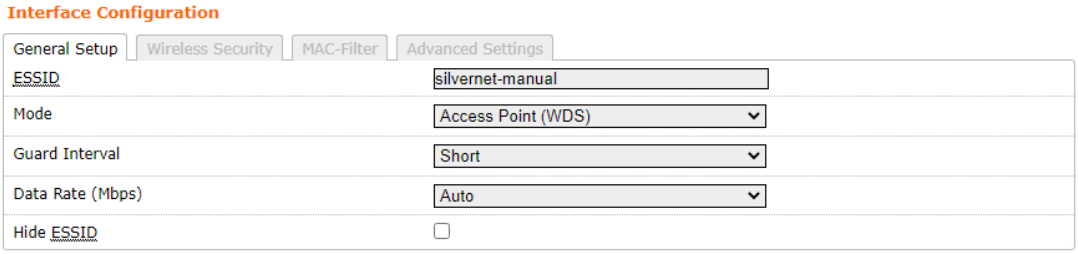
Link Distance Specifies the distance between the AP and the station if the previous option is unchecked. Min: 300, Max: 24000 (40MHz), 48000 (20MHz). This value should be set to slightly more than the physical distance between the AP and the farthest station. Leave blank for auto.

Adaptive Noise Immunity Check to enable. When enabled, it automatically adjusts the signal/noise level for best performance. In a low noise environment, it is recommended you turn off this function.

Dynamic Channel Selection This is a feature to monitor traffic and noise levels. If the noise levels exceed the threshold, the AP will disconnect any associated stations and move to a new channel. The stations are expected to re-associate with the AP on their own. Available selections are:

- **Look for CW Interference** Use this feature to detect and avoid continuous wave (CW) interference.
- **Look for WLAN Interference** Use this feature to detect and avoid wireless interference
- **Look for CW and WLAN Interference** Use this feature to detect and avoid continuous wave (CW) interference and Wireless interference.

Interface Configuration



ESSID If the device is operating in Access Point or Access point WDS mode, specify the wireless network name or SSID (Service Set Identifier) used to identify your WLAN. All the client devices within range will receive broadcast messages from the AP advertising this SSID. If the device is operating in Station mode, specify the SSID of the AP the device is to connect to.

Mode Displays the operating mode of the radio interface. The Pro Range supports four operating modes:

- Station
- Station WDS
- Access Point
- Access Point WDS

Station If you have a client device to connect to an AP, configure the client device as *Station* mode.

The SSID of the AP is used, and it forwards all the traffic to/from the network devices to the Ethernet interface. This mode translates all the packets that pass through to its own MAC address, thus resulting in a lack of transparency.

Station WDS This mode is used to create a transparent bridge and can be connected to a device running in Access Point WDS mode. Multiple stations or Stations WDS can connect to an AP WDS.

Access Point If you have a single device to act as an AP, configure it as *Access Point* mode. The device functions as an AP that connects multiple client devices

Access Point WDS This mode connects to a device running Station WDS mode. It is used to create a transparent bridge.

In most cases, we recommend that you use WDS because it enables transparent Layer 2 traffic. The WDS protocol is not defined as a standard, so there may be compatibility issues between equipment from different vendors.

Guard Interval This is the space between symbols being transmitted. The Guard Interval is there to eliminate inter-symbol interference. For long distance connections, select Long to give better performance.

Data Rate Data Rates consist of both the legacy rates and the MCS (Modulation Coding Scheme – Only for 802.11n) rates.

6 – 54Mbps are Legacy Rates

MCSO to MCS7 are 802.11n rates

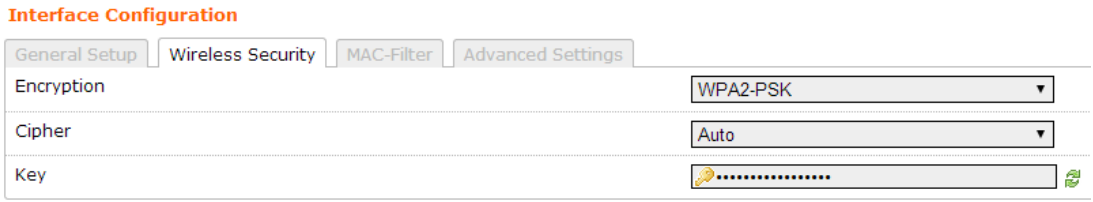
The MCS settings have different rates depending on the Chainmask Selection (see above for Chainmask Selection) that is used.

	Chainmask Selection	
	1x1	**2x2**
MCS0	13.5Mbps	27Mbps
MCS1	27Mbps	54Mbps
MCS2	40.5Mbps	81Mbps
MCS3	54Mbps	108Mbps
MCS4	81Mbps	162Mbps
MCS5	108Mbps	216Mbps
MCS6	121.5Mbps	243Mbps
MCS7	135Mbps	300Mbps

When left on **auto** the data rate will follow an advanced rate algorithm that considers the number of errors at that data rate and fine tunes to the best data rate it can use.

Hide SSID Once checked, this will disable advertising the SSID of the access point in broadcast messages to wireless stations. This option is only available in Access Point and Access Point WDS mode.

WIRELESS SECURITY



All the wireless security settings are set under this section.

The operation of the Keys is the same for ALL the Wireless modes.

Security The Pro 95 range supports the following wireless security methods:

No Encryption If you want an open network without wireless security, select No Encryption.

WEP Open System WEP (Wired Equivalent Privacy) is the oldest and least secure security algorithm.

WEP Shared Key WEP (Wired Equivalent Privacy) with slightly better authentication.

WPA-PSK WPA (Wi-Fi Protected Access) was developed as a stronger encryption method than WEP. This uses TKIP Temporal Key Integrity Protocol which uses RC4 encryption algorithm.

WPA2-PSK WPA2 was developed to strengthen wireless encryption security and is stronger than WEP and WPA. **This is the most secure option.** It uses the latest Wi-Fi encryption standard, and the latest AES (Advanced Encryption Standard) encryption protocol.

WPA2-PSK AES+ As above but with 256bit encryption.

WPA-PSK/WPA2-PSK Mixed Mode This enables both WPA and WPA2 with both TKIP and AES. This provides maximum compatibility with any ancient devices you might have.

IEEE802.1X/WPA-EAP This will require the equipment to be authenticated via a RADIUS server. The RADIUS server must support EAP or be chained/proxied to one that does.

IEEE802.1X/WPA2-EAP This will require the equipment to be authenticated via a RADIUS server. The RADIUS server must support EAP or be chained/proxied to one that does.

WEP

Note: Operating with WEP security will limit AP to maximum wireless link speed of 54Mbps only.

Encryption Select the type of encryption you want to use.

Open System (Default) No authentication. We recommend using this option over shared authentication.

Shared Key May not be compatible with all Access Points. Not recommended.

Used Key Slot Select which key to use

Key #1 Enter a security key to use

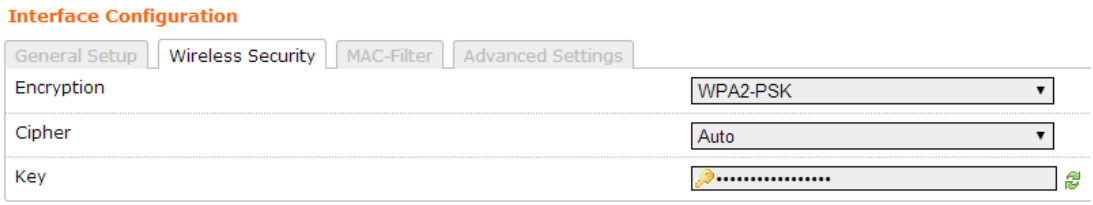
Key #2 Enter a security key to use

Key #3 Enter a security key to use

Key #4 Enter a security key to use

WPA/WPA2 Authentication

The configuration options are the same for WPA and WPA2 authentication. WPA2-PSK is the strongest security method. If all wireless devices on your network support this option, we recommend that you select it.



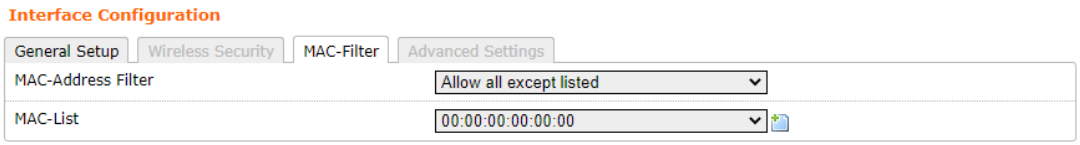
Cipher Specify which of the following to use:

- **Auto** – Uses the most appropriate algorithm for the network
- **CCMP (AES)** - Advanced Encryption Standard (AES) algorithm. (**default**)
- **TKIP and CCMP (AES)** - Temporal Key Integrity Protocol which uses RC4 encryption algorithm and Advanced Encryption Standard (AES) algorithm.
-

Key The key is an alpha-numeric password between 8 and 63 characters long.

MAC-Filter

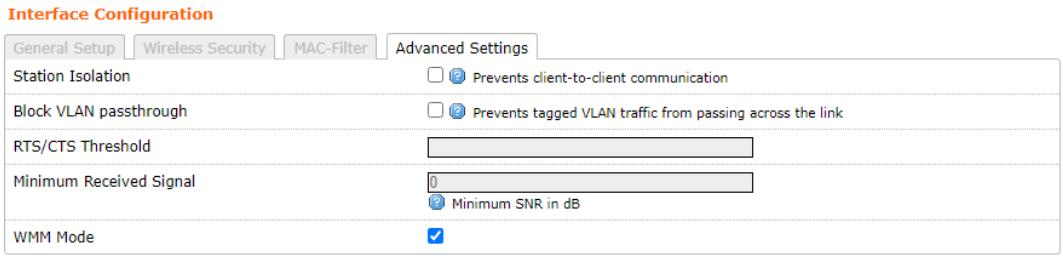
This setting is only available on the Access Point.



MAC-Address Filter Lets you allow only devices with the listed MAC address to associate with this AP, or lets you block devices with the listed MAC address.

Mac List Adds the MAC address of the remote device to either block or allow.

Advanced Settings



Station Isolation When checked, it prevents station-to-station communication. When Station Isolation is disabled, wireless clients can communicate with one another normally by sending traffic through the AP. When Station Isolation is enabled, the AP blocks communication between wireless clients on the same AP.

Block VLAN Passthrough Tick to block VLAN traffic from passing across the link.

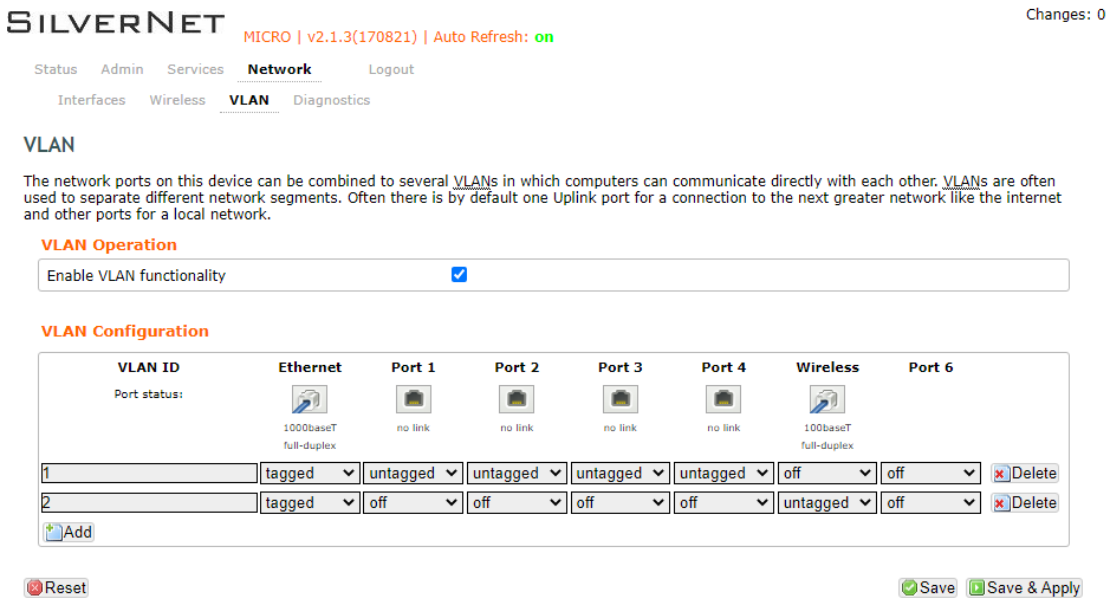
RTS/CTS Threshold This value is set to **2346 as default**, which is the maximum 802.11 packet size. We recommend leaving this setting for Point-to-Point links, however, for Multipoint setups we recommend setting the RTS Threshold lower (538). The AP device sends Request to Send (RTS) frames to a receiving station and negotiates the sending of a data frame. After receiving an RTS, the wireless station responds with a Clear to Send (CTS) frame to acknowledge the right to begin transmission. The CTS contains a hold off time that prevents other clients from sending anything whilst the targeted client sends its data. Setting the RTS lower will improve the stability of a Multipoint setup.

Minimum Received Signal Input a numeric value in dB for the minimum allowed SNR to establish a link.

WMM Mode Provides Quality of Service (QoS) features. This is checked by default. Wireless multimedia (WMM) enables the classification of the network traffic into 4 main types, voice, video, best effort, and background, in decreasing order of priority. Higher priority traffic has a higher transmission opportunity and would have to wait less time to transmit. As a result, an existing video stream would not be interrupted by additional background processes.

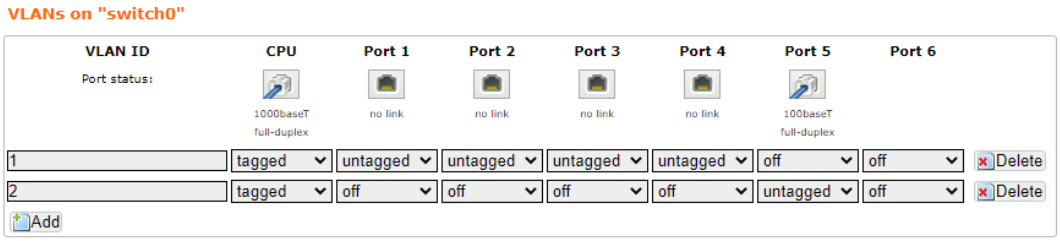
VLANS

The VLANS tab contains everything needed to set up VLANS.



Enable VLAN Functionality Check to enable VLANS

VLAN Entries



VLAN ID Enter the VLAN ID you wish to use

CPU Choose to leave off, or Tag or Untag the Ethernet interface

Port 1 Choose to leave off, or Tag or Untag the Port 1 interface

Port 2 Choose to leave off, or Tag or Untag the Port 2 interface

Port 3 Choose to leave off, or Tag or Untag the Port 3 interface

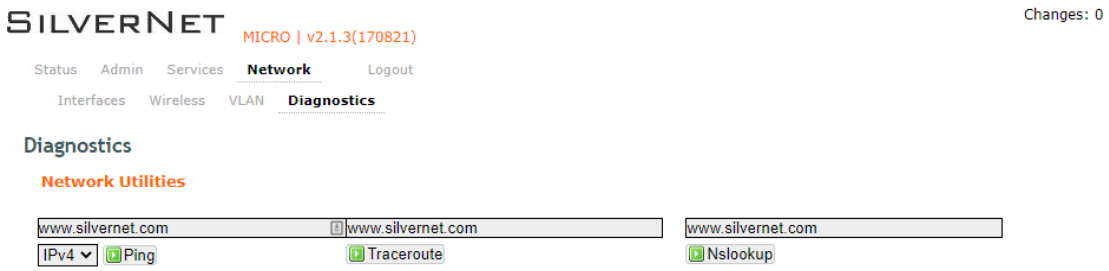
Port 4 Choose to leave off, or Tag or Untag the Port 4 interface

Port 5 Choose to leave off, or Tag or Untag the Wireless interface

Port 6 Choose to leave off, or Tag or Untag the Port 6 interface

Delete Delete the VLAN

DIAGNOSTICS



Use this page to perform some basic network diagnostic tests, such as Ping, Traceroute and Nslookup.

Ping Enter an address to Ping, as well as the Internet Protocol Type. Ping is a command-line utility that acts as a test to see if a networked device is reachable. The ping command sends a small amount of data over the network to a specific device and measures the round-trip time to receive a response.

Traceroute Enter an address to traceroute. Traceroute is a diagnostic command for displaying possible routes and measuring transit delays of packets across a network. The history of the route is recorded as the round-trip times of the packets received from each successive host in the route; the sum of the mean times in each hop is a measure of the total time spent to establish the connection. Traceroute proceeds unless all (usually three) sent packets are lost more than twice; then the connection is lost and the route cannot be evaluated.

Nslookup Enter an address to query. Nslookup is a network administration command-line tool for querying the DNS to obtain domain name or IP address mapping, or other DNS records.

STANDARDS

DECLARATION OF CONFORMITY

SilverNet Limited declares the following:

Product Name: PRO Range GEN4

Model No.: PICO, MICRO, LITE, MAX conforms to the following Product Standards:

This device complies with the Electromagnetic Compatibility Directive (89/336/EEC) issued by the Commission of the European Community. Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards.)

Electromagnetic Interference (Conduction and Radiation): EN 55022 (CISPR 22)

Electromagnetic Immunity: EN 55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11)

Low Voltage Directive: EN 60 950: 1992+A1: 1993+A2: 1993+A3: 1995+A4: 1996+A11: 1997.

Therefore, this product is in conformity with the following regional standards:

FCC Class B: following the provisions of FCC Part 15 directive,

CE Mark: following the provisions of the EC directive.

SilverNet Limited also declares that:

The wireless card in this product complies with the R&TTE Directive (1999/5/EC) issued by the Commission of the European Community. Compliance with this directive implies conformity to the following:

EMC Standards: FCC: 47 CFR Part 15, Subpart B, 47 CFR Part 15, Subpart C (Section 15.247); CE: EN 300 328-2, EN 300 826 (EN 301 489-17)

Therefore, this product is in conformity with the following regional standards:

FCC Class B: following the provisions of FCC Part 15 directive,

CE Mark: following the provisions of the EC directive.

WARNINGS

RADIO FREQUENCY INTERFERENCE REQUIREMENTS

The operation of this device in the 5.15 GHz to 5.25 GHz frequency range is restricted to indoor use. FCC regulations require this product to be used indoors while operating at 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference. However, the operation of this device in the 5.25 GHz to 5.35 GHz frequency range is allowed for both indoor and outdoor use. High power radars are allocated as primary users of the 5.25 GHz to 5.35 GHz and 5.65 GHz to 5.85 GHz bands. These radar stations can cause interference with and/or damage to this device.

FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. No guarantee exists that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the radio/TV receiving antenna.
- Increase the separation between the equipment and the radio/TV receiver.
- Connect the equipment into an outlet on a circuit different from that to which the radio/TV receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help. Modifications made to the product, unless expressly approved by SilverNet Limited, could void the user's authority to operate the equipment.

RF Exposure Requirements

To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in this user guide.

CE Statement

The PRO Range GEN4 is intended to be used by suitably trained individuals or organisations that are familiar with the requirements of the R&TTE directive. In particular the client must ensure that appropriate antennas and transmit power levels are selected to ensure that all power limits are met. Hereby, SilverNet Limited declares that this device is in compliance with the essential requirements and other relevant provisions of the R&TTE Directive 1999/5/EC. However, the use of the following warning symbol

Means that this equipment is subject to restrictions of use in certain countries and selection of the correct country of operation (country code) will ensure that the device operates only on the frequencies permissible within that country. It is also the operator's responsibility to ensure that appropriate licenses have been sought when operating on licensed frequencies, for example UK Band C, 5725-5850MHz.

In the UK, all radios operate under the control of Ofcom. Radio use in the 2.4 & 5GHz bands are deemed to be Licence Exempt with the exception of Band C. Band C (5.725 to 5.825GHz) requires registration with Ofcom under a light licensing scheme. While this band is still effectively licence exempt, Ofcom wants to keep a register of all FWA links and charges a small fee. Any user wishing to set up an outdoor link for FWA needs to apply to Ofcom for a site license; the licence is not hard to obtain and is only £50 which includes registration of up to 50 terminals. For every terminal beyond 50 you should add £1 to the cost of your licence.

Further information on the legal implications of Band C usage can be found on the Ofcom website.

TROUBLESHOOTING

If you are having problems with your links, then please check the following before calling our support team.

Line of Sight The radios work best when they have line-of-sight. If the radios do not have line-of-sight, then you will get a very poor signal or no signal at all.

Alignment If the radios are not correctly aligned the signal quality of the radios will suffer and you may not receive the throughput you require. Run SilverView and use the data test tool.

Power If the units are not powering on then you will need to test the Ethernet cable and re-terminate it if required. We recommend outdoor shielded grade cable for all installations. Please also check that the PSU is plugged in and turned on.

Interference Our radios use auto-channel select and should avoid interferences as best as possible. Rebooting the radios will allow a re-scan. If you are experiencing interference problems when using the radios, try setting them on a static channel. Try each channel until you find one that gives you a better signal. Use SilverView and run a data test.

WARRANTY

The PRO Range GEN4 comes with a 2-year warranty as standard. For full terms and conditions of warranty please go to **www.silvernet.com/terms-and-conditions/**

CONTACT SILVERNET

Email us at support@silvernet.com
Call our support team on **08712233067**
www.silvernet.com

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OTHER SILVERNET PRODUCTS

STREAM 60GHZ RANGE

INDUSTRIAL NETWORK TRANSMISSION

INTELLIGENT WI-FI SOLUTIONS

INDUSTRY LEADING TECHNICAL SUPPORT