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Default Information and Preparation

Current defaults

access point (AP) radio default IP address: 192.168.10.100
client radio default IP address: 192.168.10.101

The following defaults apply to the AP and the client radios.

default username: root
default password: root

default extended service set identifier (ESSID): Netwave-1
default pre-shared key (PSK): 12345678

When any radio is defaulted, it defaults to client mode at 192.168.10.101 with subnet mask 255.255.255.0

Before starting

IPv4 addresses

Please be sure to have the IPv4 addresses that will be used for the access point (AP) radio(s) and for the client radio(s).

Power Source

ComNet NetWave radios are powered via PoE. They comply with the PoE standard IEEE802.3af Type 1 Class 2 and consume about 6 Watts of PoE. ComNet recommends a Gigabit PoE switch, Gigabit PoE injector, or Gigabit PoE midspan with the appropriate environmental rating to provide operating power to the NetWave radios.

Extended Service Set Identifier (ESSID)

The ESSID specifies the name of the wireless network as it is provided in the beacon message. In AP mode, it is the name of the network as advertised in the beacon message. In client mode, it is the network name with which the client associates.

Decide on the ESSID('s) that will be used. Each ESSID must contain alpha-numeric characters only and can include spaces. An ESSID can be up to thirty-two characters in length. Please note that the ESSID of the client radio(es) must exactly match the ESSID of the associated AP radio.

Pre-Shared Key (PSK)

The pre-shared key (PSK) is the password for the wireless network.

Decide on the pre-shared key(s) that will be used. The key must contain alpha-numeric characters only (no spaces) and be from 8 to 63 characters in length. Please note that the PSK of the client radio(es) must exactly match the PSK of the associated AP radio.

[4] Referring to the procedure below – ***Adding multiple IP addresses to a Windows machine*** – as needed, please confirm that your computer has an available IP address in the 192.168.10 network and if the radios will not be in that same network, confirm that your computer has an available IP address in the network that will be used by the radios, as well.

[5] Refer to the procedure below – ***Starting and stopping a continuous PING*** – as needed, if assistance is needed to start or stop a continuous PING.

[6] If other NetWave radios are on site and at default settings, please power them down, if possible, to avoid conflicts.

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Radio Configuration

AP radio setup

[1] Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed, if assistance is needed to add multiple IP addresses to a Windows machine.

- [1a] As needed, add IPv4 addresses to your computer so that your computer has IPv4 addresses
  - on the 192.168.10 network, and;
  - on the network that the radio is currently on, and;
  - on the network that the radio will be set to.

[2] Refer to the procedure – ***Starting and stopping a continuous PING*** – as needed, if assistance is needed to start or stop a continuous PING.

- [2a] Start a continuous PING to 192.168.10.101
- [2b] If the current IPv4 address of the radio is 192.168.10.101, skip to Step [3].
- [2c] Open a second PING window and start a continuous PING to the current IPv4 address of the radio.

[3] Power up the radio, open a browser, browse to the radio's IP address, and log in. In the browser,

- [3a] Click the System tab.
- [3b] Click the Backup / Flash Firmware tab.
- [3c] Click the Perform Reset button.
- [3d] Confirm that the radio has reset by looking for PING replies to stop from the current IPv4 address and to start from 192.168.10.101.

[4] Once successful PING replies are seen from 192.168.10.101, open a new command prompt window and start a continuous PING for the IP address to which the radio will be set.

[5] In the browser, open a new tab and login to 192.168.10.101.

- [5a] Click the Network tab.
- [5b] Click the Edit button.
- [5c] Enter the new IP address and subnet mask.
- [5d] Click the Save & Apply button.
- [5e] Confirm that the radio has reset by looking for PING replies to stop from the 192.168.10.101 and to start from the new IP address.

[6] Once successful PING replies are seen from the new IPv4 address, in the browser, open a new tab and login to the radio at the new IP address.

[7] Set the Mode, ESSID, and PSK

- [7a] Click the Network tab.
- [7b] Click the Wi-Fi tab.
- [7c] Click the Edit button.
- [7d] Scroll down to the Interface Configuration section.
- [7e] In the General Setup tab,
  - Change the Mode from Client to Access Point.
  - Change the ESSID. Refer to the section – Extended Service Set Identifier (ESSID) – as needed.
- [7f] In the Wireless Security tab,
  - Change the PSK. Refer to the section – Pre-Shared Key (PSK) – as needed.
- [7g] Click the Save & Apply button.

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Client radio setup

[1] Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed, if assistance is needed to add multiple IP addresses to a Windows machine.

- [1a] As needed, add IPv4 addresses to your computer so that your computer has IPv4 addresses
  - on the 192.168.10 network, and;
  - on the network that the radio is currently on, and;
  - on the network that the radio will be set to.

[2] Refer to the procedure – ***Starting and stopping a continuous PING*** – as needed, if assistance is needed to start or stop a continuous PING.

- [2a] Start a continuous PING to 192.168.10.101
- [2b] If the current IPv4 address of the radio is 192.168.10.101, skip to Step [3].
- [2c] Open a second PING window and start a continuous PING to the current IPv4 address of the radio.

[3] Power up the radio, open a browser, browse to the radio's IP address, and log in. In the browser,

- [3a] Click the System tab.
- [3b] Click the Backup / Flash Firmware tab.
- [3c] Click the Perform Reset button.
- [3d] Confirm that the radio has reset by looking for PING replies to stop from the current IPv4 address and to start from 192.168.10.101.

[4] Once successful PING replies are seen from 192.168.10.101, open a new command prompt window and start a continuous PING for the IP address to which the radio will be set.

[5] In the browser, open a new tab and login to 192.168.10.101.

- [5a] Click the Network tab.
- [5b] Click the Edit button.
- [5c] Enter the new IP address and subnet mask.
- [5d] Click the Save & Apply button.
- [5e] Confirm that the radio has reset by looking for PING replies to stop from the 192.168.10.101 and to start from the new IP address.

[6] Once successful PING replies are seen from the new IPv4 address, in the browser, open a new tab and login to the radio at the new IP address.

[7] Set the ESSID and PSK

- [7a] Click the Network tab.
- [7b] Click the Wi-Fi tab.
- [7c] Click the Edit button.
- [7d] Scroll down to the Interface Configuration section.
- [7e] In the General Setup tab,
  - Change the ESSID. Refer to the section – Extended Service Set Identifier (ESSID) – as needed.
- [7f] In the Wireless Security tab,
  - Change the PSK. Refer to the section – Pre-Shared Key (PSK) – as needed.
- [7g] Click the Save & Apply button.

[8] From the client radio, start a continuous PING for the IP address of the associated AP. Confirm that the radios are communicating wirelessly by looking for successful PING replies from the AP radio.

In a point-to-multipoint topology, additional client radios can continue to be set up the same way.

- All client radios must use an ESSID that exactly matches the ESSID of the associated AP radio.
- All client radios must use a PSK that exactly matches the PSK of the associated AP radio.
- All client NW1 and NW9 radios must be within the 17-degree beamwidth (vertical and horizontal) of the AP radio.
- An NW1/m radio has a 30-degree beamwidth.

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Command Prompt Utilities

Adding multiple IPv4 addresses to a Windows machine

[1] Navigate to your Network Connections page.
[2] Navigate to the TCP/IPv4 Properties page of your network adapter.

[3a] If the radio button next to "Use the following IP address:" is selected, continue to Step 4.

[3b] Otherwise, DHCP is enabled and the radio button next to "Obtain an IP address automatically" will be selected.
To set your computer to a static IPv4 address, click the radio button next to "Use the following IP address:".
Enter an IP address and Subnet mask for your computer.
If there will be no additional IP addresses added, click OK as needed to apply and save the changes, and exit.
Otherwise, continue to Step 4.

[4] To add an additional IP address in a different network to your computer, click the Advanced... button.
[5] In the section labeled IP addresses, click the Add... button.
[6a] Add an available IP address in the new network.
[6b] Add a subnet mask and click the Add button.

[7] If there will be no additional IP addresses added, click OK as needed to apply and save the changes, and exit.
Otherwise, to add additional IP addresses, repeat Steps 5, 6a, and 6b.

Starting and stopping a continuous PING

[1] Confirm that your computer has an IPv4 address on the same network as the device that you will PING. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Press and release the Windows key, type cmd, then press Enter to open a Command Prompt window.

[3] Start a continuous PING as follows: into the Command Prompt window, type the PING command followed by a space followed by –t followed by a space followed by the IP address to PING, then press Enter.

ping –t IP address to PING [Enter]

[3] Multiple PING windows can be opened simultaneously and resized as needed for visibility.

[4] Ctrl C stops a continuous PING

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Factory Defaulting and Rebooting

Returning a radio to factory default via the GUI

[1] Confirm that your computer has an IPv4 address on the 192.168.10 network. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Press and release the Windows key, type cmd, then press Enter to open a Command Prompt window.

[3] Start a continuous PING as follows: into the Command Prompt window, type the PING command followed by a space followed by –t followed by a space followed by 192.168.10.101, then press Enter.

ping –t 192.168.10.101 [Enter]

[4] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[5] In the browser page, click the System tab.
[6] Click the Backup / Flash Firmware tab.
[7] Click the Perform Reset button and confirm that you would like to return the radio to factory default.

[8] Verify that the radio has returned to factory default by looking for successful PING replies from 192.168.10.101.

Rebooting a radio via the GUI

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Press and release the Windows key, type cmd, then press Enter to open a Command Prompt window.

[3] Start a continuous PING as follows: into the Command Prompt window, type the PING command followed by a space followed by –t followed by a space followed by the IP address of the radio, then press Enter.

ping –t IP address of the radio [Enter]

[4] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[5] In the browser page, click the System tab.
[6] Click the Reboot tab.
[7] Click the Perform reboot button.

[8] Verify that the radio has rebooted by looking for successful PING replies from the radio.

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Network-Related Procedures

Changing a radio's static IPv4 address

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Press and release the Windows key, type cmd, then press Enter to open a Command Prompt window.

[3] Start a continuous PING as follows: into the Command Prompt window, type the PING command followed by a space followed by –t followed by a space followed by the new IP address of the radio, then press Enter.

ping –t new IP address of the radio [Enter]

[4] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[5] In the browser page, click the Network tab.
[6] Click the Interfaces tab.
[7] Click the Edit button.

[8] Locate the Common Configuration section.
To change the IPv4 address and/or IPv4 netmask, enter the new parameter(s) and then click the Save & Apply button.

[9] Verify that the radio has accepted the new parameters by looking for successful PING replies from the radio.

Determining a radio's MAC address

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Network tab.
[4] Click the Interfaces tab.

[4] Under the Status section, note the MAC address of the radio.

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Firmware-Related Procedures

Determining a radio's installed firmware and kernel versions

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Status tab.
[4] Click the Overview tab.

[5] Under the Status section, note the Firmware Version and the Kernel Version.

Installing / upgrading a radio's firmware

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Press and release the Windows key, type cmd, then press Enter to open a Command Prompt window.

[3] Start a continuous PING as follows: into the Command Prompt window, type the PING command followed by a space followed by –t followed by a space followed by the IP address of the radio, then press Enter.

ping –t IP address of the radio [Enter]

[4] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[5] In the browser page, click the System tab.
[6] Click the Backup / Flash Firmware tab.

[7] Navigate to the bottom of the page to the section labeled Flash new firmware image.
Check the checkbox "Keep settings" to retain the current configuration.
Click the Browse… button to navigate to the new firmware file.
Once the new firmware file is selected, click the Flash image… button.

[8] Verify that the image has been replaced by looking for successful PING replies from the radio.

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Security-Related Procedures

Changing a radio's login username and/or password

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the System tab.
[4] Click the Administration tab.

[5] Enter the new username and/or password and confirm.
[6] Click the Save & Apply button.

Viewing or changing the pre-shared key (PSK)

The pre-shared key (PSK) is the password for the wireless network.
Please note that the PSK must be common to the AP and the associated client radio(s).
[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Network tab.
[4] Click the Wi-Fi tab.
[5] Click the Edit button.

[6] Scroll down to the Interface Configuration section.

[7] Click the Wireless Security tab.
The current key can be viewed by clicking the two green arrows to the right of the key field.
To change the key, enter the new key – alpha-numeric between 8 and 63 characters – and then click the Save & Apply button.

Hiding / unhiding the ESSID

The ESSID can be hidden or allowed to be broadcast in the beacon message.
[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Network tab.
[4] Click the Wi-Fi tab.
[5] Click the Edit button.

[6] Scroll down to the Interface Configuration section.

[7] In the General Setup tab, use the checkbox to hide or unhide the ESSID.
[8] Click the Save & Apply button.

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Viewing or changing the Extended Service Set Identifier (ESSID)

The ESSID specifies the name of the wireless network as it is provided in the beacon message. In AP mode, it is the name of the network as advertised in the beacon message. In client mode, it is the network name with which the client associates.

Decide on the ESSID('s) that will be used. Each ESSID must contain alpha-numeric characters only and can include spaces. An ESSID can be up to thirty-two characters in length. Please note that the ESSID of the client radio(es) must exactly match the ESSID of the associated AP radio.

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Network tab.
[4] Click the Wi-Fi tab.
[5] Click the Edit button.
[6] Scroll down to the Interface Configuration section.

[7] In the General Setup tab, change the ESSID.
Each ESSID must contain alpha-numeric characters only and can include spaces.
An ESSID can be up to thirty-two characters in length.
Please note that the ESSID of the client radio(es) must exactly match the ESSID of the associated AP radio.

[8] Click the Save & Apply button.

Enabling / disabling MAC filter (AP's only)

MAC Filter allows you to Whitelist (Allow Listed Only) or Blacklist (Allow All Except Listed) stations
Please note that MAC filter can only be enabled in point-to-point topologies.

[1] Confirm that your computer is on the same network as the radio. Refer to the procedure – ***Adding multiple IP addresses to a Windows machine*** – as needed.

[2] Power up the radio, open a browser, browse to the radio's IP address, and log in.

[3] In the browser page, click the Network tab.
[3] Click the Wi-Fi tab.
[4] Click the Edit button.

[5] Scroll down to the Interface Configuration section.

[6] In the MAC-Filter tab, click the dropdown arrow of the dropdown box.
To disable MAC filter, select Disable from the drop-down menu, then click the Save & Apply button.
Otherwise, to Allow listed only or Allow all except listed, select the appropriate item from the drop-down list.
Enter the MAC address(es) of the associated client radio(es) using a colon (:) between octets , then click the Save & Apply button.