



Configuring the RuggedMAX™
WIN7200 Pico Base Station for use
with the GTX-102 ASN Gateway
R0 release

White Paper

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Configuring the RuggedMAX™ WIN7200 Pico Base Station for use with the GTX-102 ASN Gateway R0 release White Paper, version 1.0



1 PREFACE

This section describes the objectives and audience of this White Paper.

1.1 Objectives

This document explains the steps for initial setup and basic configuration of the RuggedMAX™ WiN7200 WiMAX Pico Base Station to work in combination with the GATIX GTX-102 Compact Access Service Network Gateway.

1.2 Audience

This document is for the person installing and configuring the RuggedMAX™ WiN7200 WiMAX Pico Base Station for the first time. The installer should be familiar with network structures, terms, and concepts.

2 WIN7200 WIMAX PICO BASE STATION CONFIGURATION

This document explains how to configure the RuggedMAX Win7200 WiMAX Pico Base Station to exchange Authentication, Authorization and Accounting (AAA) messages with the GTX-102 ASN Gateway R0 release.

The Pico Base Station and the ASN Gateway exchange AAA messages using the R6 interface. The R6 interface on the ASN Gateway adheres to the (open) profile C and is implemented according to the WiMAX Forum Network Architecture Stage 3: Detailed Protocols and Procedures Release 1, Version 1.2, January 11, 2008.

The R6 interface conveys both control messages (for data path establishment, modification, control, and release in accordance with MS mobility) and data plane (intra-ASN data path between BS and ASN-GW) information. The tunneling method used is GRE (MPLS, VLAN or other tunneling methods are currently not supported by the Base Stations).

The ASN Gateway contains a GATIX proprietary R6 manager to handle the R6 messaging between the BS and the ASN Gateway. The R6 manager controls all authentication and GRE tunneling requests between the BS and the Gateway and translates between the R6 messaging and the AAA messaging based on the Radius protocol.

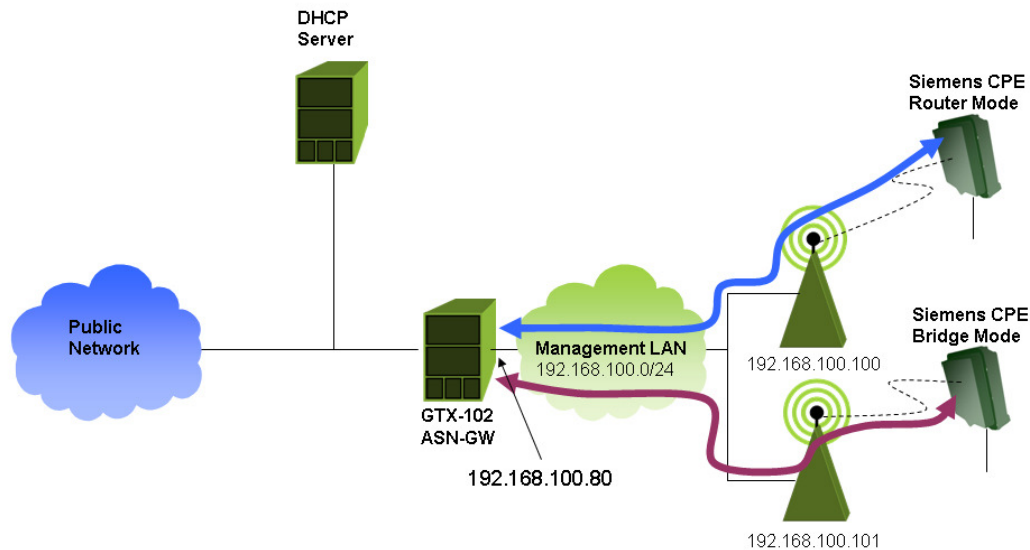


Figure 1: WiMAX Network Overview

For the remainder of this document it is assumed that the WiMAX network topology is as displayed in the network overview above.

It is assumed that the Base Station is set to IP address **192.168.100.100** and the netmask to **255.255.255.0**.

The management LAN of the ASN Gateway is set to IP address **192.168.100.80** and the netmask to **255.255.255.0**.

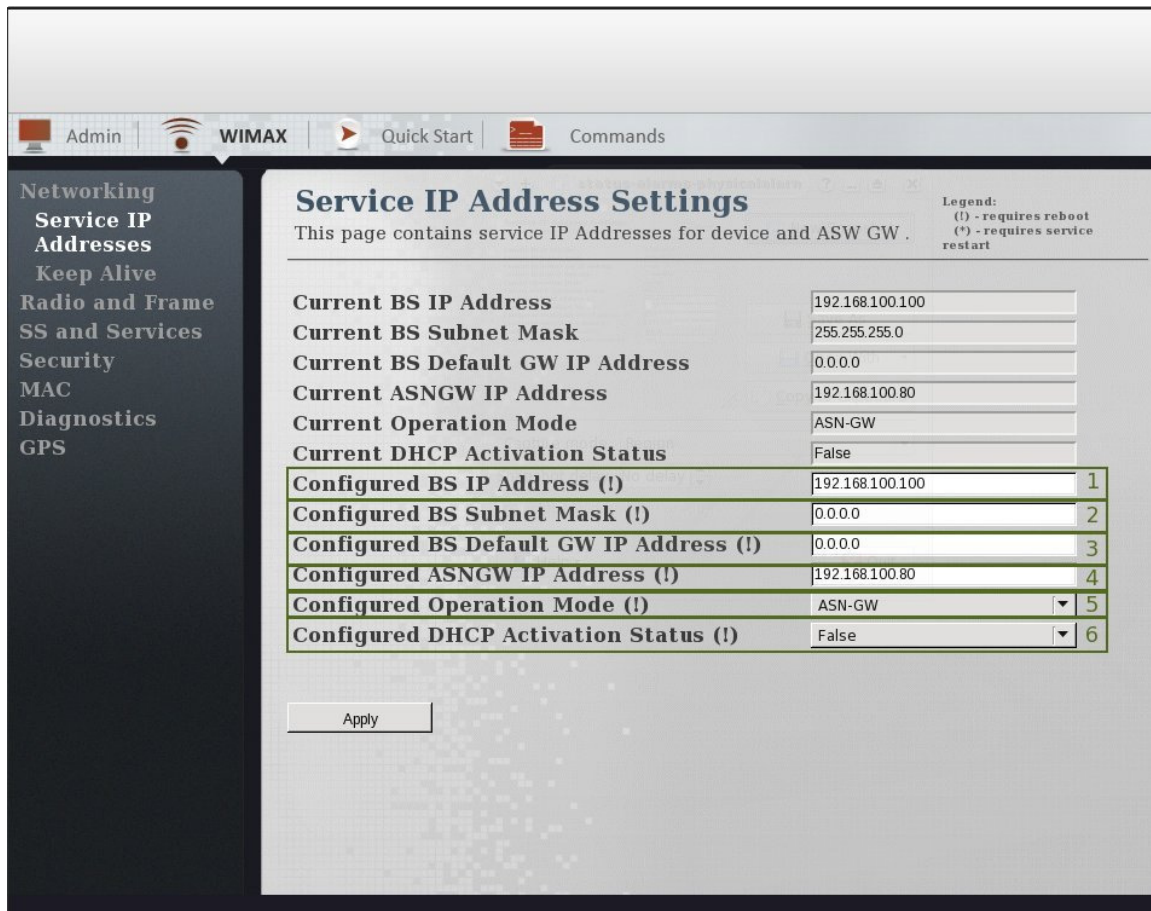
Please change the settings to reflect your actual network setup.

2.1 Logging in to the Pico Base Station

Log in to the webpage of the Pico Base Station (BS) which can be accessed on <http://192.168.100.100/> by default. By default the username is **'admin'** and the password is **'Axxess'**. The remaining part of this section assumes administrator-level access is available.

2.2 Pico Base Station Network Configuration

First, the network configuration of the Base Station needs to be changed to match the settings on the ASN gateway. Click on **'WiMAX'**, then on **'Networking'**, then on **'Service IP Addresses'** and refer to *Figure 2*.



Service IP Address Settings

This page contains service IP Addresses for device and ASW GW .

Legend:
(!) - requires reboot
(*) - requires service restart

Current BS IP Address	192.168.100.100
Current BS Subnet Mask	255.255.255.0
Current BS Default GW IP Address	0.0.0.0
Current ASNGW IP Address	192.168.100.80
Current Operation Mode	ASN-GW
Current DHCP Activation Status	False
Configured BS IP Address (!)	192.168.100.100 1
Configured BS Subnet Mask (!)	0.0.0.0 2
Configured BS Default GW IP Address (!)	0.0.0.0 3
Configured ASNGW IP Address (!)	192.168.100.80 4
Configured Operation Mode (!)	ASN-GW 5
Configured DHCP Activation Status (!)	False 6

Apply

Figure 2: Base Station Network configuration

The following settings must be changed:

1. Set **'Configured BS IP Address'** to **'192.168.100.100'**
2. Set **'Configured BS Subnet Mask'** to **'255.255.255.0'**. Alternatively, leave this value at **'0.0.0.0'** to have the Base Station make an assumption on the correct value of the netmask

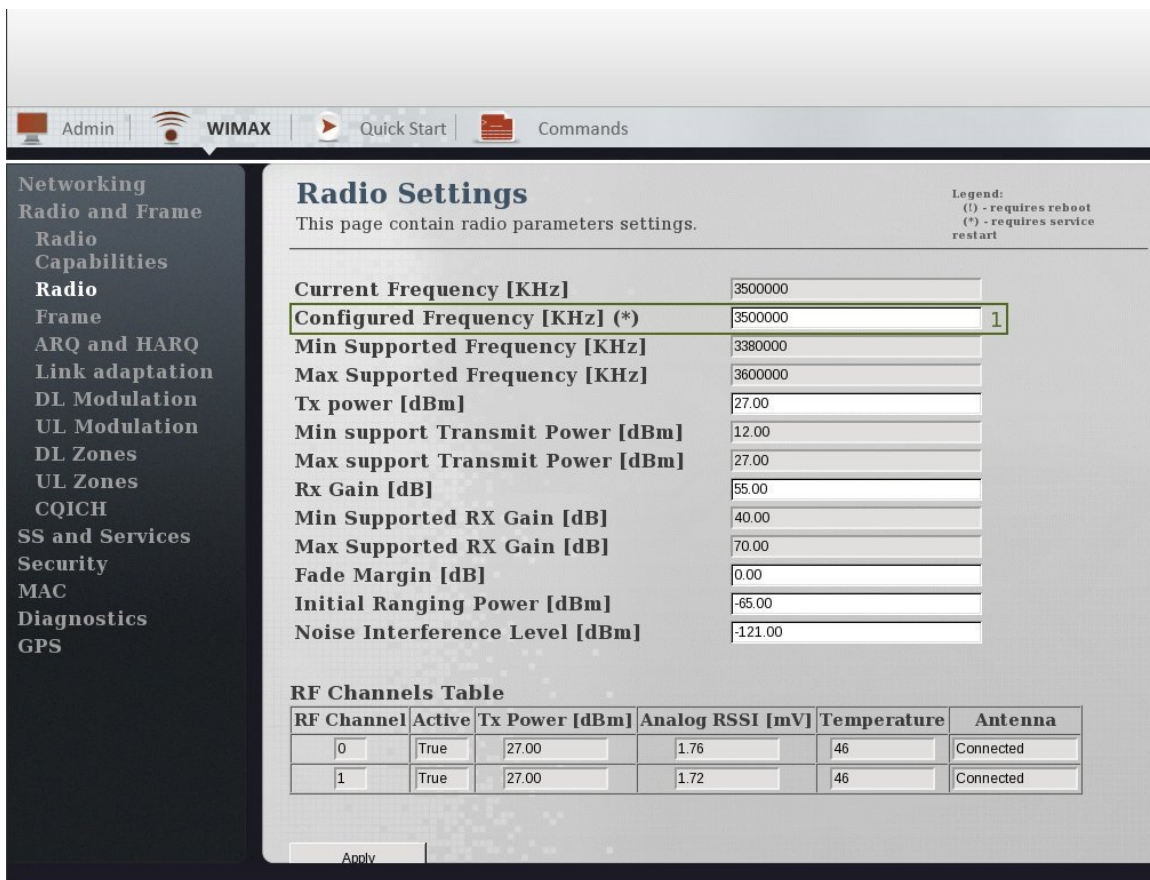
3. Set '**Configured BS Default GW IP Address**' to '**192.168.100.80**' (the value of the ASN gateway IP address)
4. Set '**Configured ASNGW IP Address**' to '**192.168.100.80**'
5. Set '**Configured Operation Mode**' to '**ASN-GW**'
6. Set '**Configured DHCP Activation Status**' to '**False**'

After changing settings, press '**Apply**'.

! **Note:** While it is possible to set the Base Station to a DHCP assigned IP address, this is not recommended in case the Base Station must be accessed run-time (for status information)

2.3 Pico Base Station Frequency Configuration

Next, the radio settings need to be changed. Click on '**WiMAX**', then on '**Radio and Frame**', then on '**Radio**'. Refer to *Figure 3*.



The screenshot shows the 'Radio Settings' page in the web management interface. The left sidebar contains a navigation menu with options like 'Networking', 'Radio and Frame', 'Radio', 'Capabilities', 'Frame', 'ARQ and HARQ', 'Link adaptation', 'DL Modulation', 'UL Modulation', 'DL Zones', 'UL Zones', 'CQICH', 'SS and Services', 'Security', 'MAC', 'Diagnostics', and 'GPS'. The main content area is titled 'Radio Settings' and includes a legend: '(!) - requires reboot' and '(*) - requires service restart'. Below the legend is a list of radio parameters with input fields. The 'Configured Frequency [KHz] (*)' field is highlighted with a green border and contains the value '1'. Below the list is an 'RF Channels Table' with columns for 'RF Channel', 'Active', 'Tx Power [dBm]', 'Analog RSSI [mV]', 'Temperature', and 'Antenna'. The table has two rows of data.

RF Channel	Active	Tx Power [dBm]	Analog RSSI [mV]	Temperature	Antenna
0	True	27.00	1.76	46	Connected
1	True	27.00	1.72	46	Connected

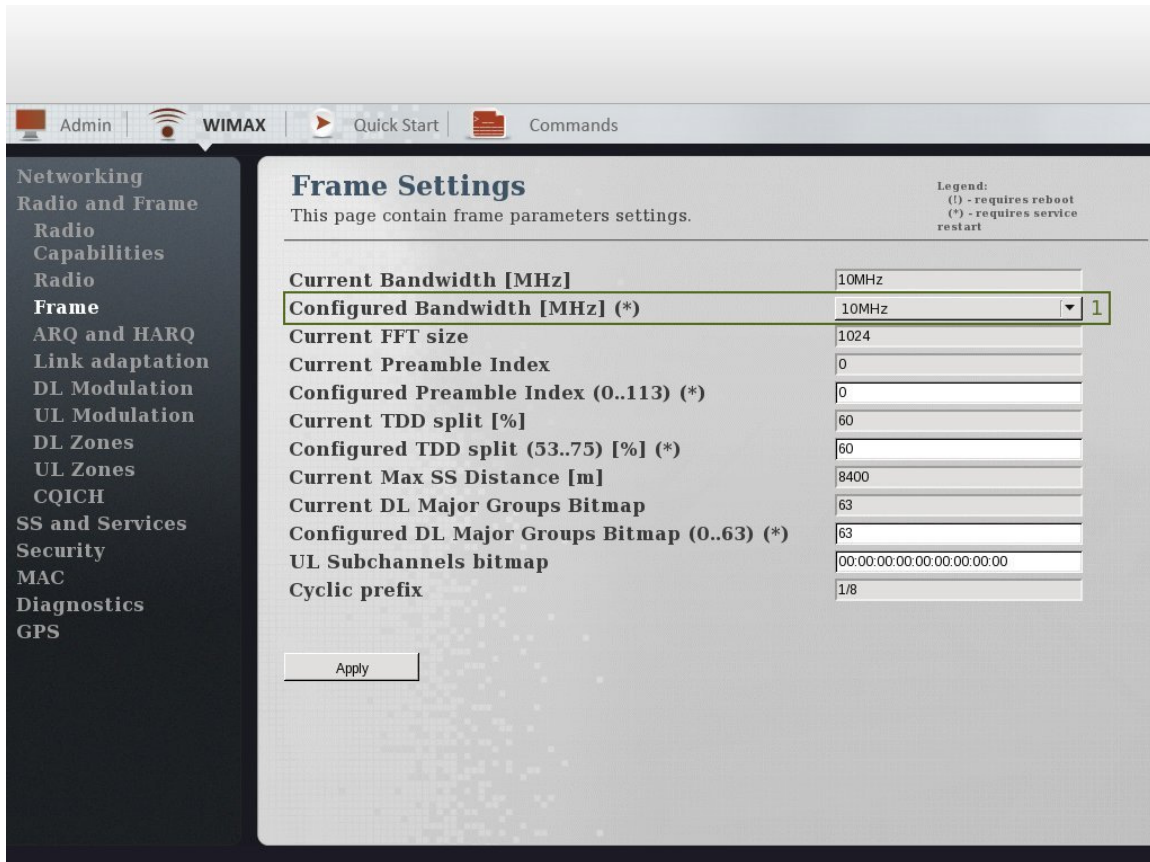
Figure 3: Pico Base Station Frequency Settings

1. Change the '**Configured Frequency**' to the frequency assigned to you by the regulatory agency for your country.

After changing settings, press '**Apply**'.

2.4 Pico Base Station Bandwidth Configuration

Then, click on **'WiMAX'**, then on **'Radio and Frame'**, then on **'Frame'**. Refer to *Figure 4*.



Frame Settings

This page contain frame parameters settings.

Legend:
 (!) - requires reboot
 (*) - requires service restart

Current Bandwidth [MHz]	10MHz
Configured Bandwidth [MHz] (*)	10MHz 1
Current FFT size	1024
Current Preamble Index	0
Configured Preamble Index (0..113) (*)	0
Current TDD split [%]	60
Configured TDD split (53..75) [%] (*)	60
Current Max SS Distance [m]	8400
Current DL Major Groups Bitmap	63
Configured DL Major Groups Bitmap (0..63) (*)	63
UL Subchannels bitmap	00:00:00:00:00:00:00:00:00
Cyclic prefix	1/8

Apply

Figure 4: Pico Base Station Bandwidth Settings

1. Change the **'Configured Bandwidth'** to the bandwidth assigned to you by the regulatory agency for your country.

After changing settings, press **'Apply'**.

2.5 Pico Base Station Authentication Method

After changing the radio settings, the R6 protocol parameters must be set up. Currently, the GTX-102 ASN Gateway R0 release software only supports **Null authentication**. EAP authentication is not supported and will be added in a future release.

Click on '**WIMAX**', then on '**Security**', then on '**Protocol and Timers**'. Refer to *Figure 5*.

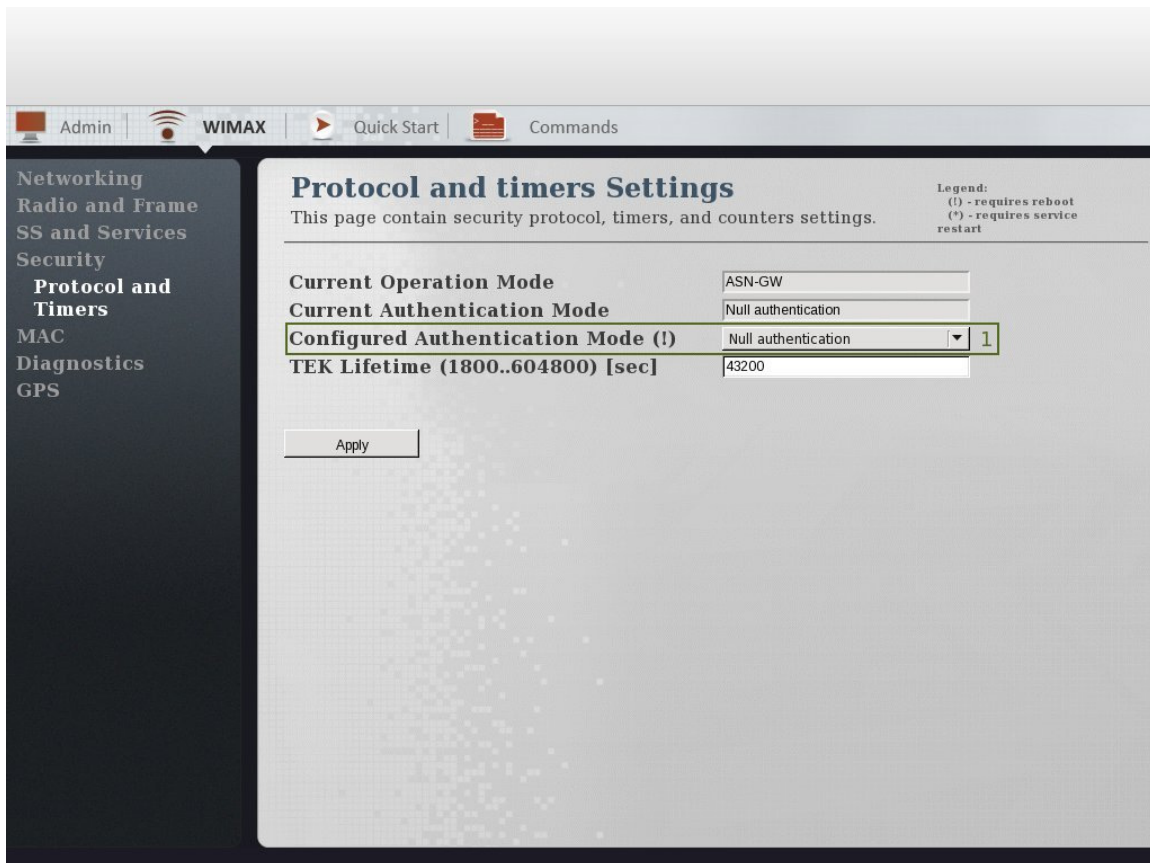


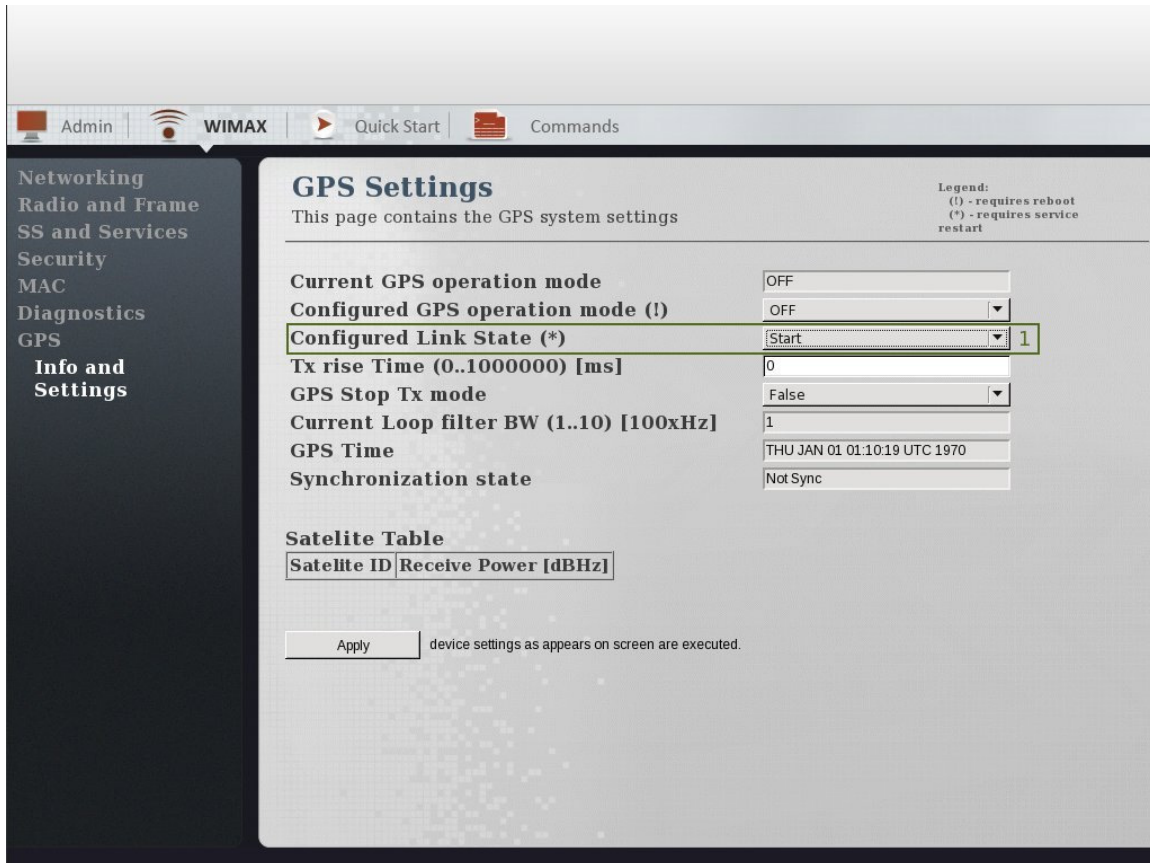
Figure 5: Pico Base Station Authentication Setting

1. Change the '**Configured Authentication Mode**' to '**Null authentication**'.

After changing settings, press '**Apply**'.

2.6 Pico Base Station GPS Settings

Lastly, the GPS settings should be changed. Click on **'WiMAX'**, then on **'GPS'**, then on **'Info and Settings'**. Refer to *Figure 6*.



GPS Settings
This page contains the GPS system settings

Legend:
(!) - requires reboot
(*) - requires service restart

Current GPS operation mode	OFF
Configured GPS operation mode (!)	OFF
Configured Link State (*)	Start
Tx rise Time (0..1000000) [ms]	0
GPS Stop Tx mode	False
Current Loop filter BW (1..10) [100xHz]	1
GPS Time	THU JAN 01 01:10:19 UTC 1970
Synchronization state	Not Sync

Satellite Table

Satellite ID	Receive Power [dBHz]

Apply device settings as appears on screen are executed.

Figure 6: Pico Base Station GPS Settings

1. Change the **'Configured Link State'** to **'Start'**.

After changing settings, press **'Apply'**.

Note: While it is strictly not required to change the GPS settings, it is strongly recommended as the Base Station may refuse service if the GPS signal is lost

To activate the changes in configuration, click on **'Quick Start'**, then on **'Reboot'**. The Base Station will restart and load the new settings.