

Terminus 400AP LCR Products User Manual



JANUS REMOTE
COMMUNICATIONS

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DISCLAIMER

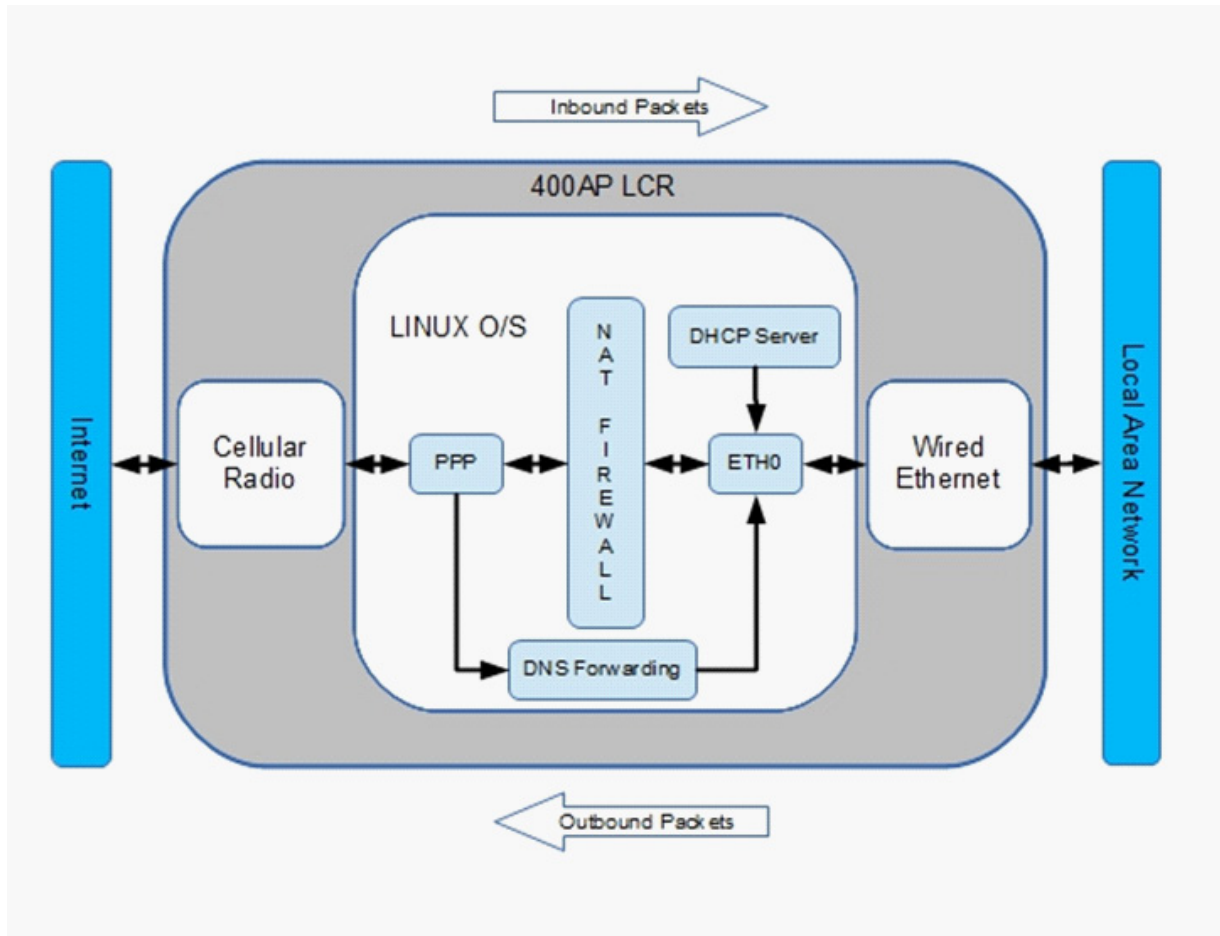
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400AP LCR Open Platform General Description

The 400AP Router is a simplified and focused version of our more open platform 400AP single board computer. It's designed to give the user an easy up and run cellular routing connection; configurable via web GUI it can be set up and in use for the end user very quickly.

Powered by the Terminus Common Footprint, the 400AP router can be utilized across various technologies depending on the user's needs.



Operation

Hardware Requirements:

The following hardware is required for proper operation and setup of the 400AP LCR.

- 400AP LCR
- 12Vdc Power Supply (Janus Part Number: MC-0004)
- Cellular Antennas
 - CDMA/EVDO (Janus Part Number: ANT-0073)
 - GSM/HSPA+ (Janus Part Number: ANT-0003)
- Cat 5 Patch Cable (Janus Part Number: CBL-0014)

Interfaces

DC Power jack

The 2.1mm center conductor power jack accepts input voltages from 7 to 26VDC.

Pin	Description
Center Pin	Supply (+)
Outer Conductor	Supply (-)

Supply power can also be applied to the unit through the 30 Pin locking header.

USB

There are two USB ports on the 400AP router, one device port and one host port. These by default are unused in the router configuration.

RS232

The 400AP Router has access to RS-232 through the front end DB9 debug port, this port only contains RX and TX, but can be used for debugging and lower level access.

Ethernet 10/100 PHY

The 400AP Router contains a single Ethernet port with activity LEDs. Its implementation is compliant with IEEE802.3/IEEE802.3U 10BASE-T /100BASE-TX standards.

SD Memory Card

The micro SD card socket is connected to the multimedia card interface (MCI) of the 9G20 processor, but is unused while in the router configuration.

20P Header

The locking header connection breaks out many signals useful to the 400AP, however in the router configuration it's largely unused, save for power.

Reset

The reset button is connected to the reset controller of the 400AP. When pressed and released the 400AP is reset.

Interfaces continued

Mode

The Mode button is used to place the 400AP Router into different operational modes during boot. It's only recommended to explore this if instructed to do so by Janus as by default the bootloader and router application are already in place.

Mode	Entry Conditions/Summary	Method of Entry
Normal Run Mode	Condition: 400AP powered Summary: After reset is released, the red light will illuminate. Router application begins. <i>Note: If no bootable media is found the processor will boot into SAM-BA mode. The green LED will not illuminate..</i>	1. Apply Power or use Reset 2. Mode button is not pressed.
Factory Default	Condition: 400AP Powered, Red LED is illuminated Summary: During runtime, after the red light has illuminated, you can use this to reset all fields to the factory default. <i>Note: You must wait until the red light is on, otherwise you may enter SAM-BA mode on accident.</i>	1. Apply Power, wait for the red LED to illuminate. 2. Press and hold the Mode button until the red LED blinks. Release Mode.
SAM-BA Mode	Condition: 400AP powered Summary: Processor boots into SAM-BA mode and the green LED illuminates <i>Note: Using this method to enter SAM-BA mode is supported when using the factory supplied bootloader that evaluates the Mode button. If NAND flash has been erased, this functionality will not exist. The 400AP application note uploading files into flash explains how to write the bootloader to flash.</i>	1. Press Mode button. 2. Apply power to device or use Reset. 3. Depress Mode after the Green LED illuminates.

LED Indicators

GPIO controlled LED stack. In the 400AP Router configuration they give some quick feedback on the status of the device.

Red LED State	Description
Permanently OFF	Router is unpowered
Permanently ON	Router is powered

Yellow LED State	Description
Permanently OFF	Cellular radio is off
Permanently ON	A call is active
Fast Blinking (0.5 sec on/ 0.5 sec off)	Unregistered, searching for network
Slow Blinking (0.3 sec on/ 2.7 sec off)	Registered to the network

Green LED State	Description
Permanently OFF	Router function is not ready
Permanently ON	IP address attained, router function ready

Cellular RF Port

SMA – Female

Pin	Description
Center Pin	Cellular Signal
Outer Conductor	Signal Ground

Electrical Specifications

Absolute Maximum Ratings:

Parameter	Minimum	Nominal	Maximum	Unit	Note
Operating Temperature	-30	-	80	°C	1
Supply (Supply & Enable Input)	-36	-	36	Volts	1
VIN (RS-232 Inputs)	-25	-	25	Volts	1

Notes:

- 1) Operation of the device at these or any other conditions beyond those listed under Recommended Operating Conditions is not implied. Exposure to Absolute Maximum Rating conditions for extended periods of time may affect device reliability.
- 2) The supply inputs are protected from reverse voltage and transients beyond the Recommended Operating Conditions. If transients persist the supply will be latched in a disabled state. Once disabled the supply will need to be cycled off and on to reset.
- 3) More verbose table information can be attained in the full 400AP Hardware Guide. This is a more focused table pertaining to only the Routers usable interfaces.

Recommended Operating Conditions:

Parameter	Minimum	Nominal	Maximum	Unit	Note
Operating Temperature	-30	-	80	°C	1
Supply (Supply & Enable Input)	7	-	26	Volts	1
Peak Supply Power	12.5	-	-	Watts	1
Average Supply Current	-	-	TBD		

Notes:

- 1) Peak supply power specification is stated as the minimum amount of power the external power supply must supply during the TX burst of the embedded cellular radio. Please refer to the Plug-In User Manual for power supply characteristics of the embedded Plug-In Module embedded in the 400AP Router.
- 2) Average supply current specification is stated as the maximum average current the 400AP Router can draw while maintaining junction temperatures within the internal power supply IC's specification.

Getting started with the 400AP Router

This section will take you through setting up the 400AP Router and creating a connection to the internet.

Before we begin

If the 400AP Router is a GSM/HSPA type, you must insert a SIM card to the internal Plug in Modem for functionality. The details on how to do that are as follows:

Step 1

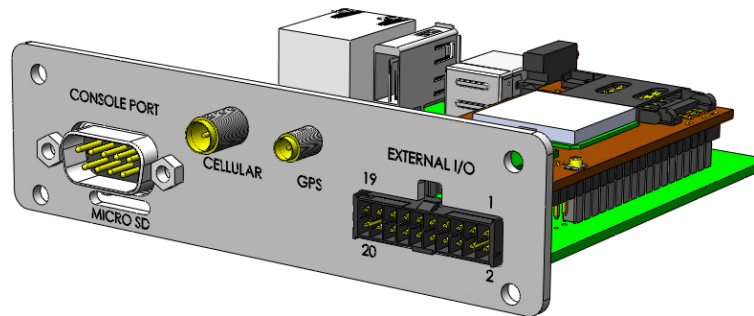
To access the 400AP board, remove the four TX-10 screws from the ruggedized aluminum enclosure. These screws are located on the back panel of the 400AP where the DB9 and lock header are located.



Getting started with the 400AP Router continued

Step 2

Slide out the back panel which will include the 400AP board.

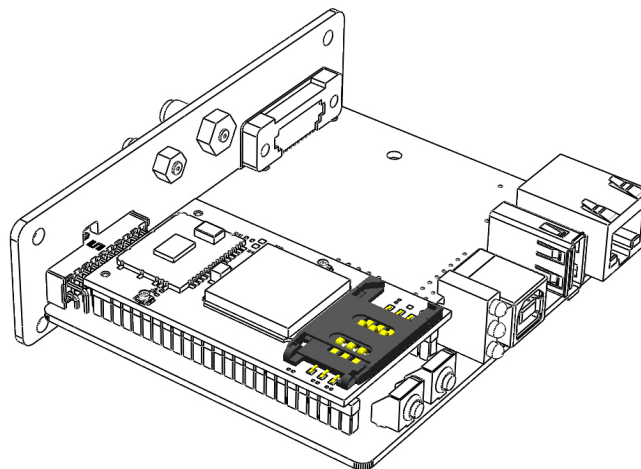


Step 3

Locate the SIM Card slot on top of the Terminus Plug-In board.

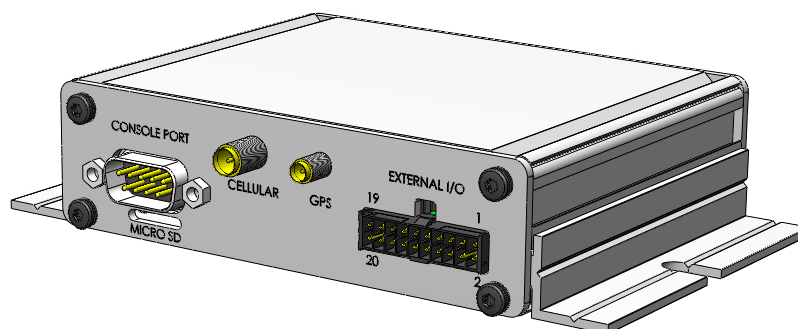
Step 4

To insert the SIM card in the SIM card slot, slide the top of the cover back to unlock. Insert the SIM card in the cover slot and close. Slide back to original position to lock in place.



Step 5

Slide the back panel and 400AP board into the aluminum enclosure. Replace the four TX-10 screws and tighten them back on to enclosure.



Getting started with the 400AP Router continued

Configuring the router

The router can be configured via a web GUI, with the default address at 192.168.2.1:8080

Step 1

Ensure the following are connected to the 400AP Router

- Ethernet cable to your computer
- Power supply
- Antenna

Step 2

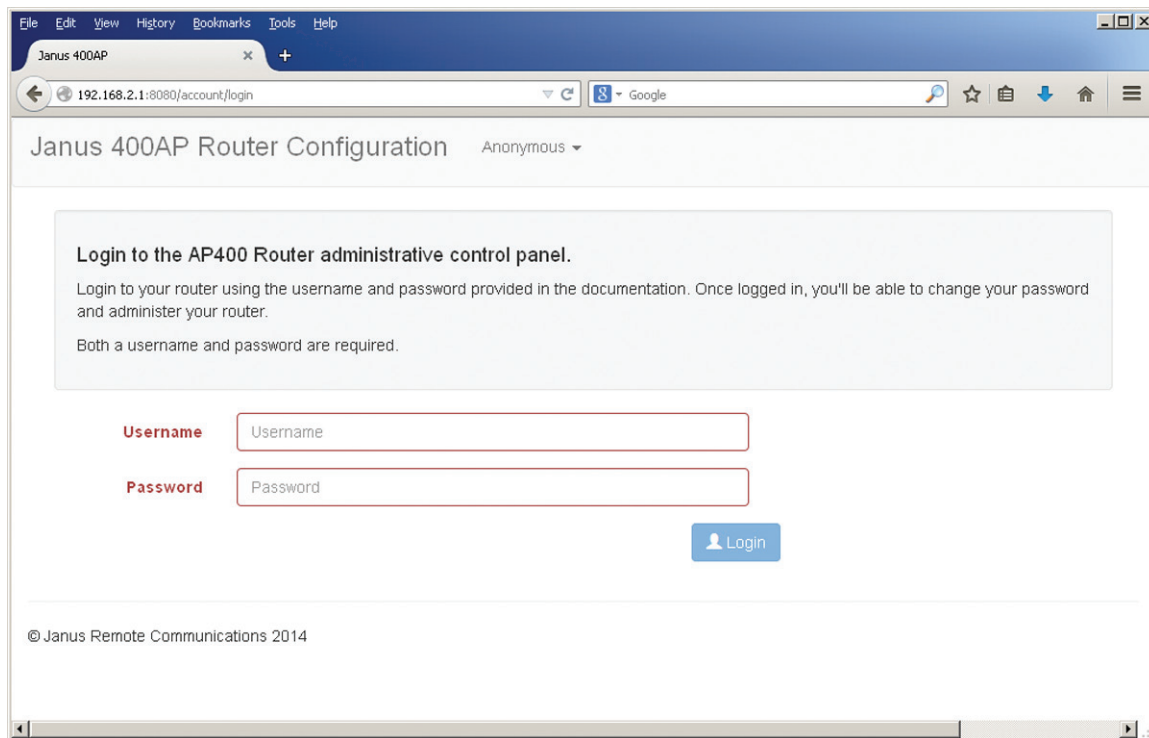
Apply power to the router, you should see the red LED illuminate and the yellow LED illuminate either permanently or blink.

Step 3

Go to your browser of choice, in this demonstration we will be using Mozilla Firefox. Enter the IP address 192.168.2.1:8080, you will be presented with a login page.

Username: admin

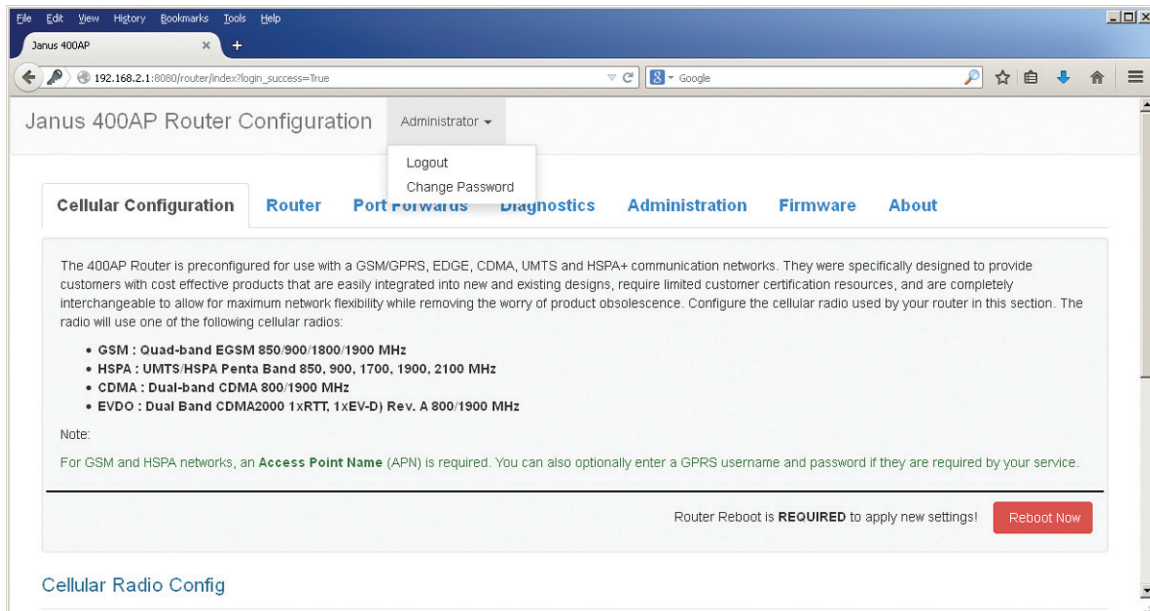
Password: admin



The password can be adjusted in the drop down at the top. You will be prompted for the old password and the new password you wish to use.

Getting started with the 400AP Router continued

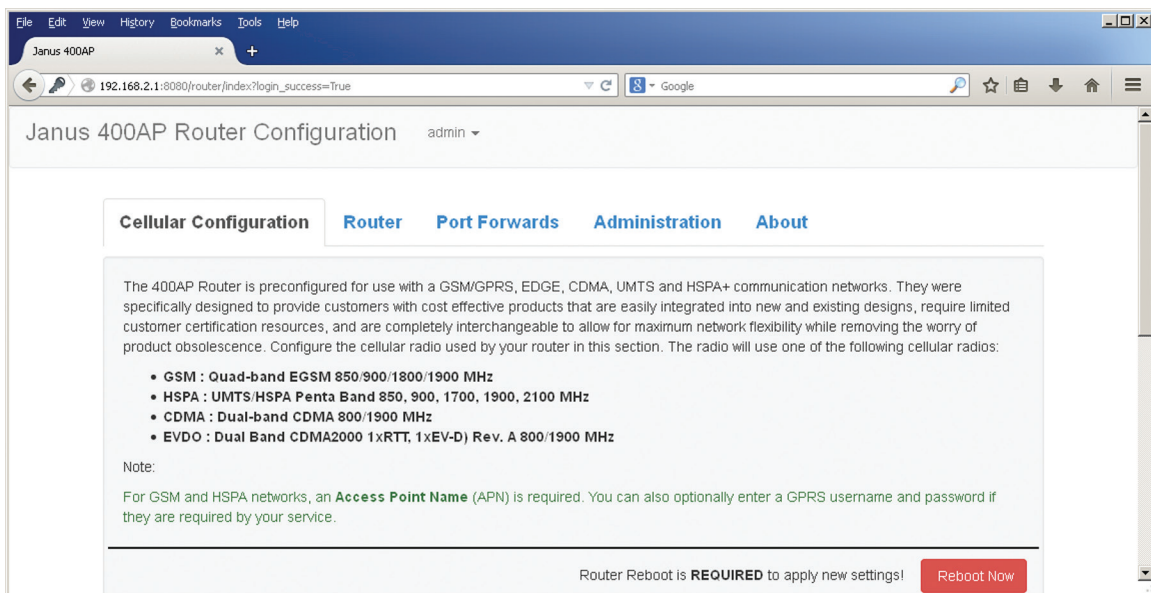
Configuring the router continued



Step 4

On the main page you will be presented with a few tabs

- Cellular Configuration – This is for cellular network settings, such as entry for the APN given by the provider.
- Router – This is where you can set the host IP address, name, and DHCP settings.
- Port Forwards – Set your port forwards as required for your local network
- Administration – Change port number, restore the default configuration
- About - Version lookup and general information

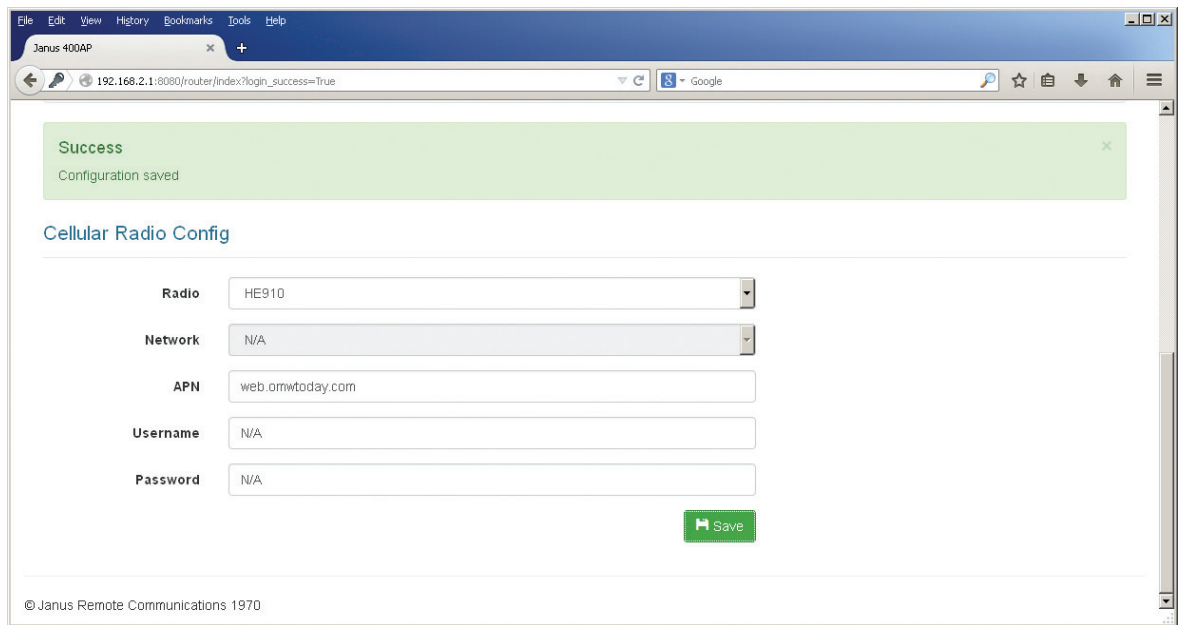


Getting started with the 400AP Router continued

Configuring the router continued

Step 5

On the Cellular Configuration page, scroll to the bottom and find the Cellular Radio Config area.



If not already filled in and grayed through automatic detection, select the cellular modem type.

GSM/HSPA Based Unit (HE910) – Set the APN to what the provider has given you. In this example we are utilizing i2gold. If your account required a username and password, enter it here, most do not though.

CDMA/EVDO (CE910/DE910) Based Unit – If available, set the Network type to Sprint or Verizon. There will be no APN/Username/Password required.

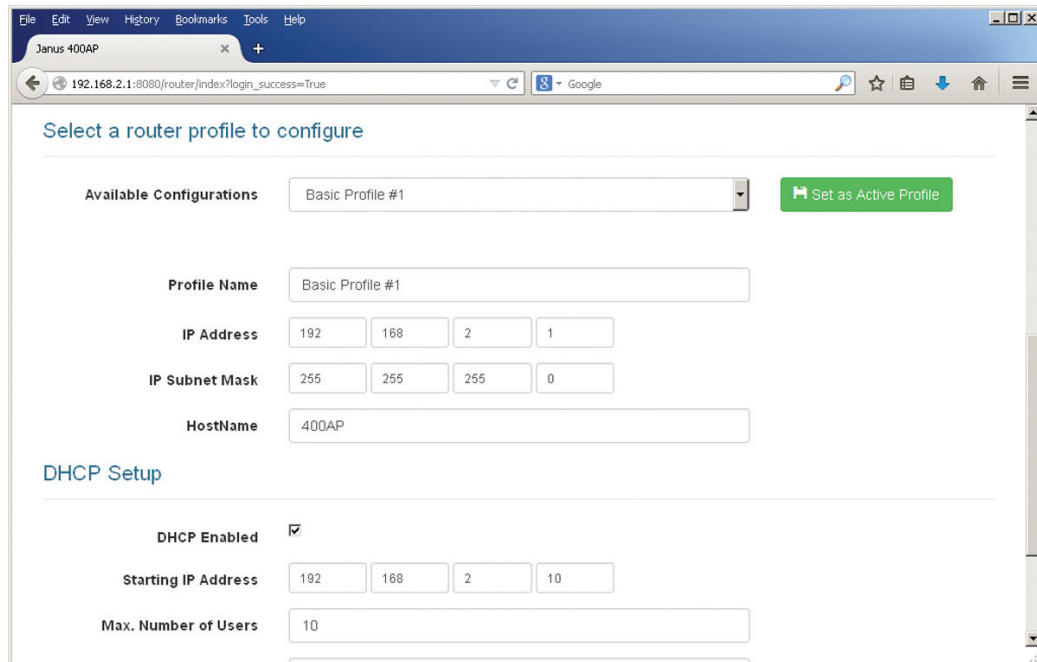
Click “Save” and continue. It will warn of requiring a reboot, which we will do at the end of this.

Getting started with the 400AP Router continued

Configuring the router continued

Step 6

Go to the Router tab, and scroll down to find the available settings.



The screenshot shows the Janus 400AP router configuration interface. The browser address bar shows the URL `192.168.2.1:8080/router/index?login_success=True`. The page title is "Select a router profile to configure". Under "Available Configurations", "Basic Profile #1" is selected, and a green "Set as Active Profile" button is visible. The configuration fields are as follows:

Profile Name	Basic Profile #1			
IP Address	192	168	2	1
IP Subnet Mask	255	255	255	0
HostName	400AP			

Below the IP settings is the "DHCP Setup" section:

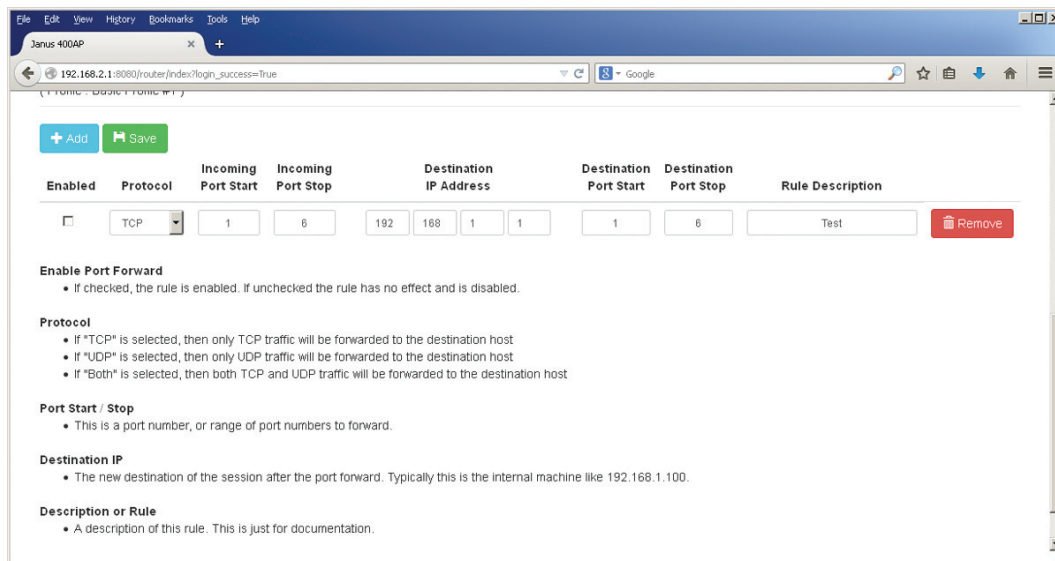
DHCP Enabled	<input checked="" type="checkbox"/>			
Starting IP Address	192	168	2	10
Max. Number of Users	10			

In this example, we are leaving the base IP address and hostname default, with DHCP set. If you are not changing this you may move on, otherwise set to the desired information.

If you changed the information, click "Save" and continue.

Step 7

Go to the Port Forwards tab, and scroll down to find the available settings. There will not be any entries by default.



The screenshot shows the "Port Forwards" configuration page. At the top, there are "+ Add" and "Save" buttons. Below is a table with one entry:

Enabled	Protocol	Incoming Port Start	Incoming Port Stop	Destination IP Address	Destination Port Start	Destination Port Stop	Rule Description
<input type="checkbox"/>	TCP	1	6	192, 168, 1, 1	1	6	Test

Below the table are several sections with instructions:

- Enable Port Forward**
 - If checked, the rule is enabled. If unchecked the rule has no effect and is disabled.
- Protocol**
 - If "TCP" is selected, then only TCP traffic will be forwarded to the destination host
 - If "UDP" is selected, then only UDP traffic will be forwarded to the destination host
 - If "Both" is selected, then both TCP and UDP traffic will be forwarded to the destination host
- Port Start / Stop**
 - This is a port number, or range of port numbers to forward.
- Destination IP**
 - The new destination of the session after the port forward. Typically this is the internal machine like 192.168.1.100.
- Description or Rule**
 - A description of this rule. This is just for documentation.

If you are not entering any port forwards at this time you may move on.

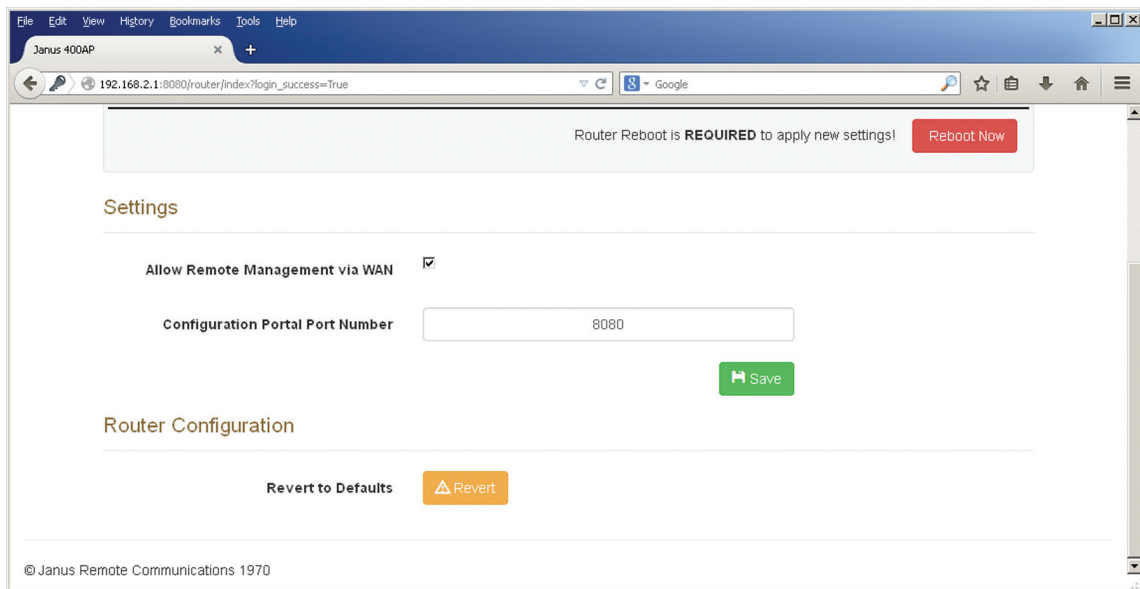
If you are entering any port forwards, click the "Add" button and fill in the information, check the Enabled box and then click "Save."

Getting started with the 400AP Router continued

Configuring the router continued

Step 8

Go to the Administration tab, and scroll down to find the available settings.

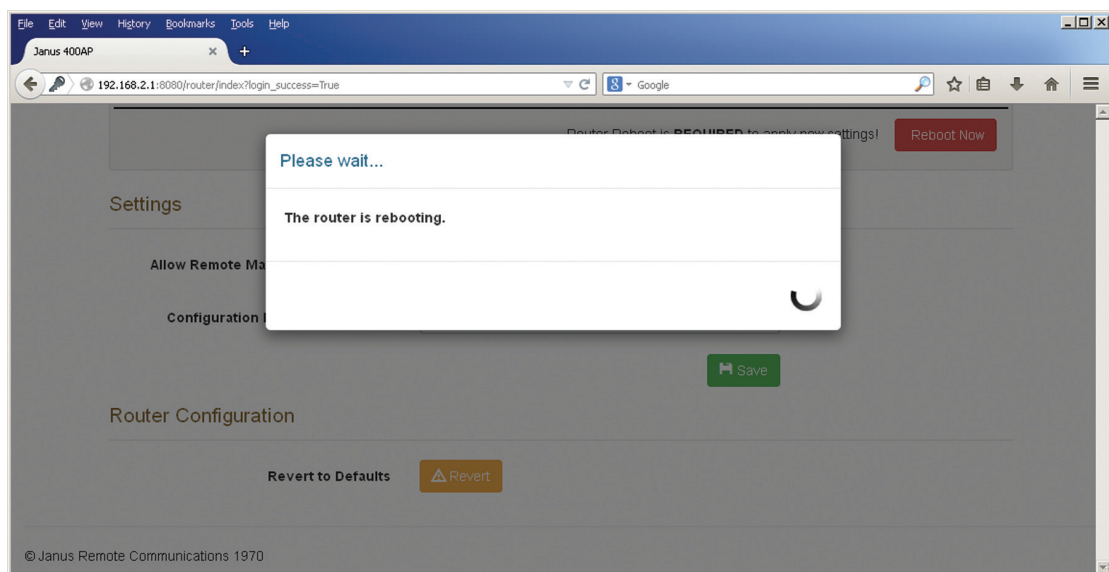


If you are not adjusting the default host port number you may move on. Otherwise you can change it, click “Save” and continue.

Step 9

Now we reboot the device so all settings take effect. You can do this by clicking the “Reboot Now” button located in the upper right hand corner, it appears on all tabs when prompted to do so.

Note: After pressing the “Reboot Now” button, you will be prompted that the router is rebooting with a wait screen. Do not power off the device until this process completes.



Step 10

Once rebooted, if the APN and other network settings are correct the green LED will illuminate upon a successful PPP connection being made.

Once this LED illuminates, open your browser and attempt a simple connection to www.google.com to test.

Terminus 400AP LCR Products User Manual –



Ordering Information

Ordering Information	Description
EVDO400AP LCR v2.0	EV-DO Sprint
EVDO400AP LCR v3.0	EV-DO Verizon
HSPA400AP LCR v1.0	HSPA+ AT&T / T-Mobile

Revision History

Revision	Revision Date	Note
A00	02/27/14	Advanced Release - User Manual
A01	10/23/14	Updates to Configurations and Miscellaneous edits

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