

This reference guide is an excerpt from the Mintaka Duo+ / Mintaka Star User’s Guide, which can be viewed in its entirety at [mintakainnovations.com/support, Manuals & Reference Guides](http://mintakainnovations.com/support, Manuals & Reference Guides).

## Introduction: Access Point Mode vs Station Mode

An innovative feature of the Mintaka Duo+ / Star is web browser access by computer, tablet and smart phone via a WiFi connection, its own or an existing one.

The WiFi subsystem can run in one of two modes:

- Access Point mode (or AP mode) is used when the Duo+ / Star creates it’s own WiFi network,
- Station mode is used when the Duo+ / Star connects to an existing WiFi network.

Access Point (AP) mode is the default setting.

### Access Point (AP) Mode

The default network is named “MintakaDuo+-xxxxxxx” or “MintakaStar-xxxxxx” where the ‘x’ field is a hexadecimal number. The default password for joining this network is the Duo+ / Star’s serial number. After joining the network, the Duo+ / Star network will appear in your computer / tablet / smart phone’s WiFi network options. On the Mac, it looks like this:



*Mac WiFi Networks Pop-down*

Connect to this network. Type the instrument’s default IP address, 192.168.4.1, in the address line of any browser window to view the instrument’s Home Page.

AP mode is especially useful when away from commercial Internet access sources, for example while at sea, using a tablet for navigation. The section, [Accessing Duo+ / Star via Web Browser](#), contains additional information on the instrument’s Home Page.

### Station Mode

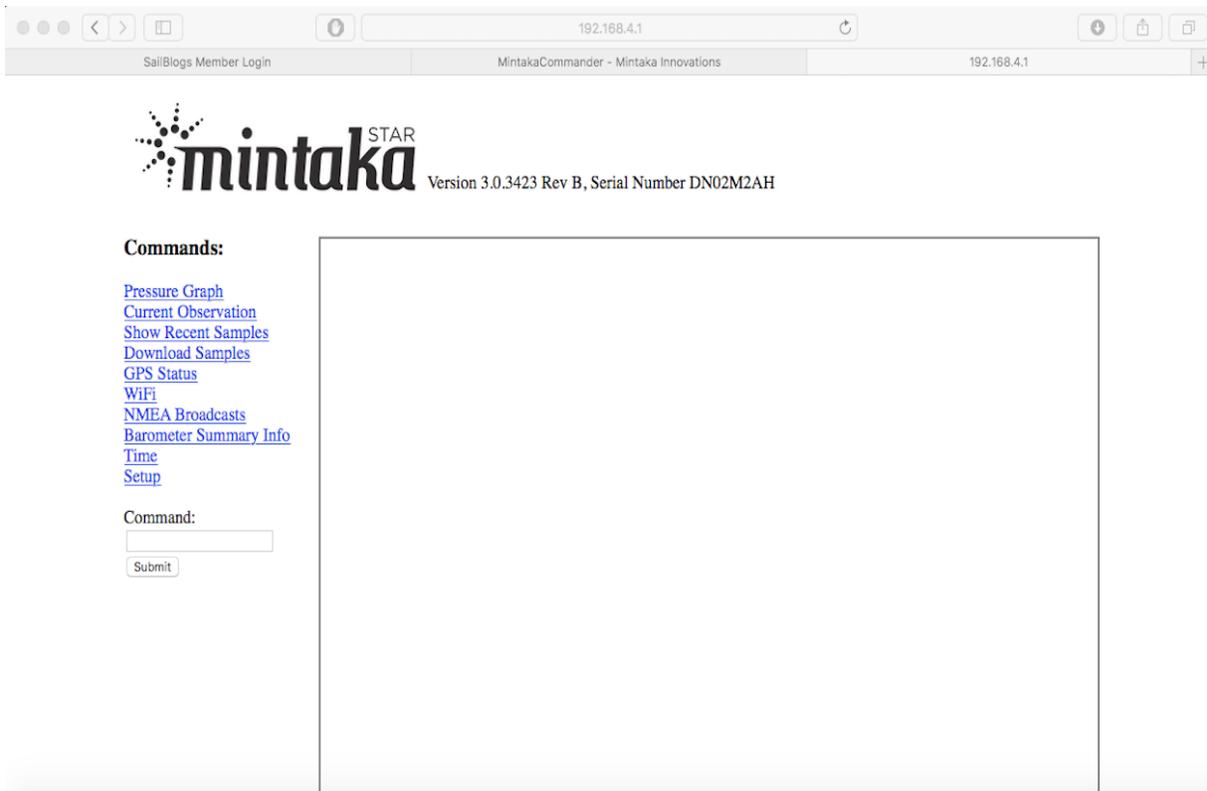
To connect to an existing WiFi network the Duo+ / Star needs the credentials for the network (the network name and password). Within the Duo+ / Star these networks are known as Favorites. Favorites can be entered via the Duo+ / Star’s Home Page via a web browser (easiest method), the instrument’s WiFi Network and Favorites screens, or the command line, all described in this Reference Guide.

## Accessing Duo+ / Star via Web Browser

An innovative feature of the Duo+ / Star is web browser access by computer, tablet and smart phone via a WiFi connection, its own or an existing one.

If the Duo+ / Star is in Access Point (AP) mode, the default setting, the WiFi network is named “MintakaDuo+-xxxxxxx” or “MintakaStar-xxxxxxx” where the ‘x’ field is a hexadecimal number as described in the Introduction. Select this network to connect your computer, tablet, or smart phone to the instrument, then type the instrument’s default IP address, 192.168.4.1 in the address line of any browser window to view the instrument’s Home Page.

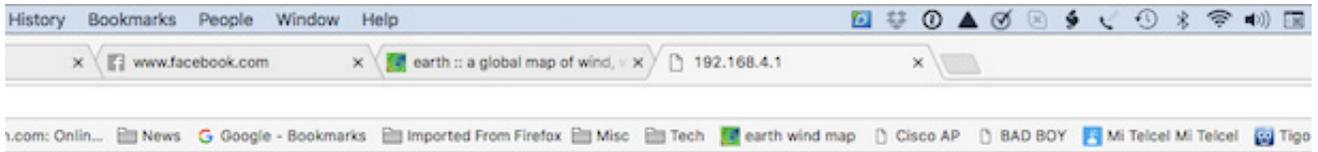
If the Duo+ / Star is in Station mode and connected to a WiFi network, use the WiFi Status screen to view the network name and the instrument’s IP address on that network. Connect a computer, tablet or smart phone to the same network and type this IP address in the address line of any browser window to view the instrument’s Home Page.



*Example Home Page On Initial Connection*

Select a command in the left column. The result will display the output in the box on the right. The commands provide the following:

[Pressure Graph](#) provides a graph of pressure over a past time period. The desired time period can be selected in the displayed pressure graph.



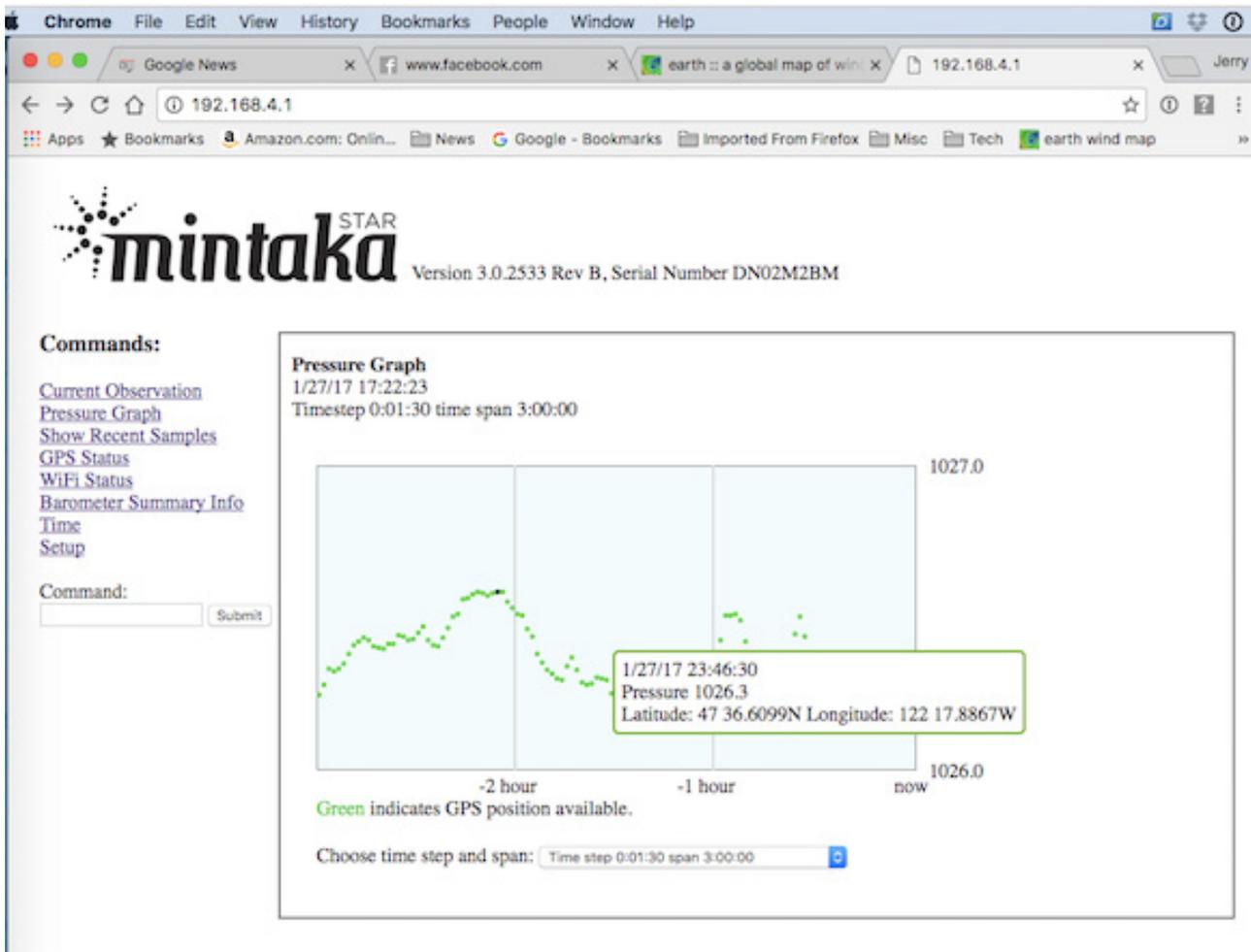
**Commands:**

- [Current Observation](#)
- [Pressure Graph](#)
- [Show Recent Samples](#)
- [GPS Status](#)
- [WiFi Status](#)
- [Barometer Summary Info](#)
- [Time](#)
- [Setup](#)

Command:



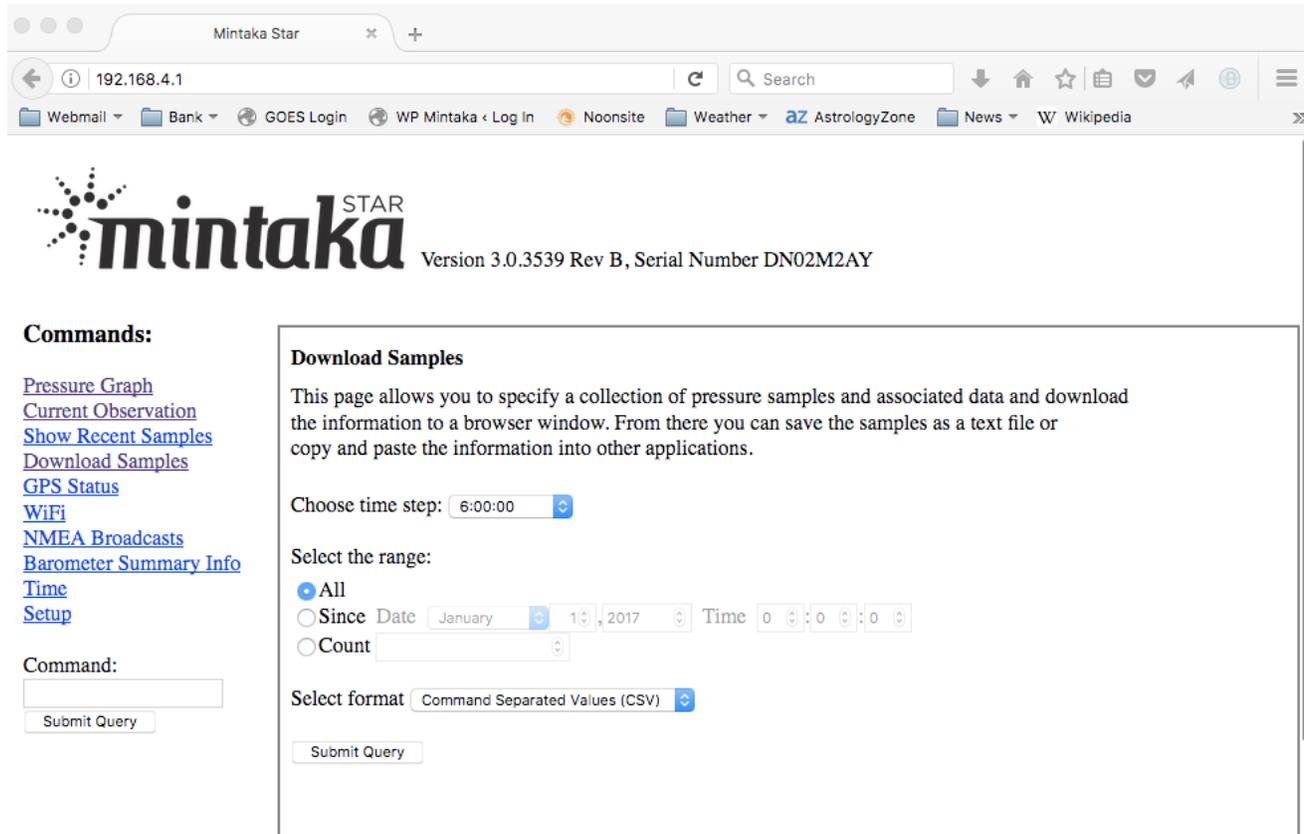
The same Home Page with cursor rollover data display showing date, time, pressure reading, latitude and longitude:



[Current Observation](#) provides the current GPS information along with the current pressure, tendency and tendency code.

[Show Recent Samples](#) displays the result of the 'd -1 5' command, returning the most recent 5 stored samples from all of the storage file.

[Download Samples](#) allows you to specify a collection of pressure samples and associated data and download the information to a browser window. From there you can save the samples as a text file or copy and paste the information into other applications.



[GPS Status](#) displays the status of the GPS.

[WiFi](#) displays the status of the WiFi system, WiFi Access Point Credentials, the ability to add Favorite(s) and change the instrument to Station Mode.

To add a Favorite and change the instrument to Station Mode, click on the box next to Add Favorite, then enter the network name and password (both case sensitive). Select Change to Station mode in the pop-down menu. Press Select.

[Note: if you pressed Enter / Return after entering the network credentials, a message will display that confirms the Favorite has been added. If you did this, select WiFi again then select Change to Station Mode in the pop-down menu. Press Select.]

When the instrument restarts, you'll see messages that it is connecting to the network then display the IP address of the instrument on that network. Write it down. If you didn't get a chance to do this, view the instrument's WiFi Status screen for that information. To view the instrument's Home Page on this network, connect a computer, tablet or smart phone to the same network and type this IP address in the address line of any browser window

**Commands:**

- [Pressure Graph](#)
- [Current Observation](#)
- [Show Recent Samples](#)
- [Download Samples](#)
- [GPS Status](#)
- [WiFi](#)
- [NMEA Broadcasts](#)
- [Barometer Summary Info](#)
- [Time](#)
- [Setup](#)

Command:


**WiFi Status**

Creating network (Access Point mode) 'MintakaStar-15e51d', password 'DN02M2AH', IP Address is 192.168.4.1, listening on port 80. MAC address 62:01:94:15:e5:1d

**Access Point Credentials**

Network name is 'MintakaStar-15e51d' and password is 'DN02M2AH'

**Network Favorites**

No network favorites are defined.

Add a Favorite

Network Name  Password

Password can be empty (no password) otherwise it must be a minimum of 8 characters.

**WiFi Mode**

WiFi is creating it's own network.



NMEA Broadcasts provides the ability to configure the broadcast of NMEA pressure and/or GPS messages.

**Commands:**

- [Pressure Graph](#)
- [Current Observation](#)
- [Show Recent Samples](#)
- [Download Samples](#)
- [GPS Status](#)
- [WiFi](#)
- [NMEA Broadcasts](#)
- [Barometer Summary Info](#)
- [Time](#)
- [Setup](#)

Command:


**NMEA Configuration**

Configure broadcast of NMEA pressure or GPS information.

**Pressure Sentences**

Choose sentences to output.

MDA

XDR

TurboWin

TurboWinG

Choose frequency:   seconds.

Via:  WiFi (UDP Port 10110),  USB (Console)

**GPS Sentences**

Choose sentences to output.

RMC - time, latitude, longitude, course, speed,

GLL - time, latitude, longitude,

GGA - time, latitude, longitude, altitude,

GSA - satellites used,

GSV - Satellites in view,

VTG - Course and speed.

Choose frequency:   seconds.

Via:  WiFi (UDP Port 10110),  USB (Console)

**Barometer Summary Information** displays the result of the 'i' command.

**Time** outputs the current time according to the Mintaka Duo+ / Star's clock and compares it to the time from the GPS satellite system if a GPS fix is available.

**Setup** allows you to set up the barometer by setting the time, hour clock, timezone, units, elevation offset, station pressure adjustment, screen contrast, and baud rate for USB connections.

**Command** field allows one to enter an arbitrary command and display the output. For example, entering 'h' will display a list of all the commands and their documentation. See the section, Mintaka Duo+ / Star Command Line, for additional information.

### Mintaka Duo+ / Star WiFi Screens

Press [EXIT] to display the Mintaka Duo+ / Star main menu:



Use the +/- button to highlight the GPS & WiFi option. Press [SELECT]. You'll see this screen:



*Main Menu / GPS & WiFi / WiFi*

[Select] WiFi.

WiFi menu options are WiFi Status, Networks and Favorites.



*Main Menu / WiFi / WiFi Status*

In this reference guide, WiFi Status screen will be covered after Networks and Favorites.

Highlight Networks, press [Select]:



*Main Menu / WiFi / Networks*

If the Duo+ / Star is in Station Mode, the Networks screen lists the WiFi networks the Duo+ / Star can currently see; to join one, add it as a Favorite. If the Duo+ / Star is in AP mode, no external networks can be seen so none will be shown.



*Available Network(s) Duo+ / Star in Station Mode*

To add a Favorite from this screen, highlight one of these networks, press [SELECT] to display the screen to enter the network's password.



*Add Favorite from Networks screen*

Use the +/- buttons to enter the network password. Highlight, press [OK] and the network will be added to the list of Favorites.

If the Duo+ / Star is in AP mode, the easiest method to add Favorite(s) is via the instrument's Home Page as described in the previous section however Favorites can be added using the Favorites screen. Highlight Favorites, press [SELECT]:



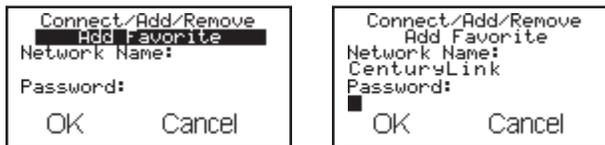
*Main Menu / WiFi / Favorites*

This screen lists the Duo+ / Star's Favorites, WiFi networks the instrument can join. The Duo+ / Star can store up to 5 Favorites.



*Available Favorite(s)*

To add a Favorite, press [SELECT] to display a menu that allows you to Add, Connect To or Remove a Favorite.



*Add Favorite Screen , Favorite In the Process of being Added*

Use the +/- button to change the highlighted selection to Add Favorite. Press [SELECT]. Use the +/- buttons to enter the network name and password. Continue to press [SELECT] until the cursor highlight OK, press [SELECT] to save the Favorite.

**+/- Button Entry Tips:**

- Network names and passwords are case sensitive.
- If the character is a number or capital letter, the fastest way to scroll to it is using the + button. If the character is lower-case letter, the fastest way to scroll to it is using the - button. Take your time. Double-check the character is correct before pressing [SELECT]. Once [SELECT] is pressed the cursor will highlight the next space and there is currently no way to edit entered characters.
- The current WiFi chip does not support a 5-G network connection.

If the Duo+ / Star is already in Station mode, to connect to a Favorite, highlight it. Press [SELECT], use the +/- buttons to change the selection to, Connect To Favorite. Highlight OK, press [SELECT].

If the Duo+ / Star is in AP mode and you do this, a screen will appear that says “WiFi must be in Station mode. Press [EXIT] to view the main menu, navigate to the WiFi Status screen, described below.

To delete a Favorite, highlight the network name, press [SELECT], use +/- to highlight the Remove Favorite selection. Highlight OK, press [SELECT].

Finally, the WiFi Status screen. Highlight WiFiStatus, press [SELECT].



Main Menu / WiFi / WiFi Status

The WiFi Status Screen displays the details of the current WiFi connection, whether it is its own network or an external network.

If in AP mode, the default network name and IP address is displayed. The selection options are No Change, Disable and Connect to Network.

After a Favorite is saved, change the highlighted selection to Connect to Network and press [SELECT]. The Duo+ / Star will restart and attempt to connect to a Favorite network. *What you will see:* Upon re-start a Pop-up screen is displayed announcing that is attempting a connection. After the WiFi network has been joined a second Pop-up screen is displayed. This Pop-up will display the IP address of the Duo+ / Star on that specific WiFi network.



WiFi Status Screen

In the example above, the Duo+ / Star is connected to the WiFi network “Vida Dulce TC Network” in Station mode. The instrument’s IP address on this network is 10.0.1.2. The selection No Change is highlighted. Use the +/- buttons to change this selection if needed; other options are Disable and Create Network. Create Network puts the instrument in AP mode.

### Mintaka Duo+ / Star Command Line

When connected to the Mintaka Duo+ / Star through a USB cable and using a terminal emulator such as CoolTerm, type ‘WiFi h’ to list documentation on the available WiFi commands.

Over the Internet using the Telnet command type `telnet -N<IPAddress> 80` to access the Duo+ / Star. After the connection is made, type a single <return> to establish the connection. When you’re done, type the “q” command to close the connection.

To manage the WiFi subsystem, type ‘wifi <command>’

Commands are:

- **add**      ‘wifi add <name> [<password>]’

This command takes a network name and a password and adds these credentials to the list of Favorites.

- **connect** 'wifi connect <name> [<password>]

This command connects to a network and adds it to Favorites. A network name and password adds the credentials to the Favorites and the Mintaka Duo+ / Star will attempt to connect to that network. If only the name is given and it is in the list a Favorites it will connect to that network. In this case only the first characters of the name are needed to identify the Favorite.

- **delete** 'wifi delete <name>'

This command deletes a network name from the list of Favorites.

- **disable** disable WiFi
- **enable** enable WiFi

These commands can be used to enable or disable the WiFi subsystem.

- **favorites** list favorite (name only) WiFi networks

This command will list all of the known Favorites.

- **mode** 'wifi mode [AP | Station]

This command is used to set the WiFi mode. The argument can be either Station to join an existing WiFi network or AP to create a network. No argument will cause the command to print out the current mode.

- **networks**

This command will list all of the visible WiFi networks if and only if the Mintaka Duo+ / Star is in Station mode.

- **restart**

As with the method above, when the Duo+ / Star is restarted (and in Station mode) it will join the network in the list of Favorites that it can see. If the Mintaka Star sees more than one WiFi network it will join the first one in the Favorites list.

- **setup** 'wifi setup <name> <password>'

This command is used to set the AP credentials for computers that want to join the WiFi network created by the Duo+ / Star. This is used if the default credentials needs to be changed.

- **status** print WiFi status

This command prints out the status of the WiFi subsystem.

### Software Interfaces

For software applications that want to interface to the Duo+ / Star the command 'dm wifi' will print out the status of the wifi subsystem:

In Station mode the following is an example of what would be printed:

```
{"Title" : "WiFiState", "Mode" : "Station", "State" : "Connected to Network", "IPAddress" : "10.0.0.34", "Network" : "TortugalMarinaNort"}
```

Important here is the IP address and the Network to which the Duo+ / Star is connected.

In AP mode the following is an example of what would be printed:

```
{"Title" : "WiFiState", "Mode" : "AP", "State" : "Creating Network", "IPAddress" : 192.168.4.1, "APName" : "MintakaStar-0eef66"}
```

Again, important here is the IP address and the APName or network name.