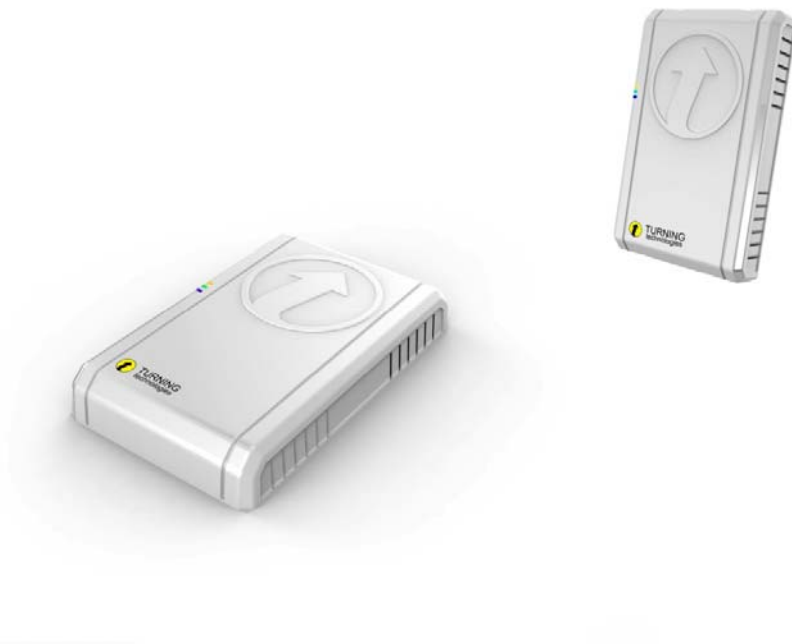# Turning Quick Start Guide

Overview

Turning is a high performance Wi-Fi Access Point combined with a Turning Technologies RF receiver. As an access point, Turning supports the 802.11 a/b/g/n IEEE standard and will support 60 simultaneous client connections in the 2.4GHz ISM band. In addition to Wi-Fi access point functionality, the Turning Technologies RRDR-01 RF dual-radio receiver supports data collection from Turning Technologies response devices and polling applications. The included storage also provides delivery of classroom content regardless of connectivity external to the classroom, thus providing a reliable classroom network for administering learning content and engaging students via Turning Technologies offerings.

Hardware

The Turning model RRAP-01 enclosure exposes two connectors and three LEDs.

Connectors

The RJ-45 connector is for connecting to a Wide Area Network (WAN) and optionally powering the unit. Thee RJ-45 connector supports 10/100/1000 Base-T Ethernet. The RJ-45 connector also supports Power over Ethernet (POE). If the network wiring supports POE this is the only connection needed.

A power connector jack is also provided to support installations without POE wiring. A wall transformer style power supply is included with the unit.

LEDS

Four LED indicate the unit's status. They are:

- Green   Unit Status

    o   Blinks twice every second

- Red   Unit Status

    o   On until unit boots or after an unrecoverable error has occurred

- Blue   Wi-Fi Status

    o   On when the Access Point Wi-Fi is running

- Yellow Ethernet Status

    o   On when the Ethernet port is connected and running

Internally Accessed Hardware

Inside the RRAP-01 enclosure are the following hardware:

- A microSD connector with 8 Gb microSD card

- 2 Red LED indicating read / write access to the microSD slot

- A System Reset button

    o   resets the units processor and hardware

- A User button – resets the User Configuration to factory defaults

    o   Must be held for 5 seconds

- An RJ-45 ethernet connector

    - bridged to the Wi-Fi network (10.4.0.x)

- A mini USB connector – USB to Serial bridge

    - U-Boot / Linux console

- A replaceable coin battery – clock battery

Power up

After powering the unit, either with the power adapter or POE, it will perform the following boot up sequence reflected by its LEDs:

- Power applied, 1st boot stage

    - Red, Blue, Yellow LEDs on

- 2nd boot stage, U-Boot started

    - Red, Green, Blue, Yellow LEDs on

- 3rd boot stage, OS kernel started

    - Green LED on

- Running

    - Green LED blinks twice quickly once per second

    - Blue LED on

    - Yellow LED may be on or off dependent of the ethernet status

Connecting with Wi-Fi

After powering on the unit the access point is ready for connections. The unit's SSID is based on its unique Ethernet MAC address. It's SSID is in the format of "RRAP-xx-yy-zz" where z"xx-yy-zz_ are the least significant three bytes (6 digits) of the unit's Ethernet MAC address.

The default Wi-Fi configuration is 802.11n.

The default security configuration is WPA2-PSK. The default passkey is "Turn1ngT3ch".

To make a connection from Windows 7:

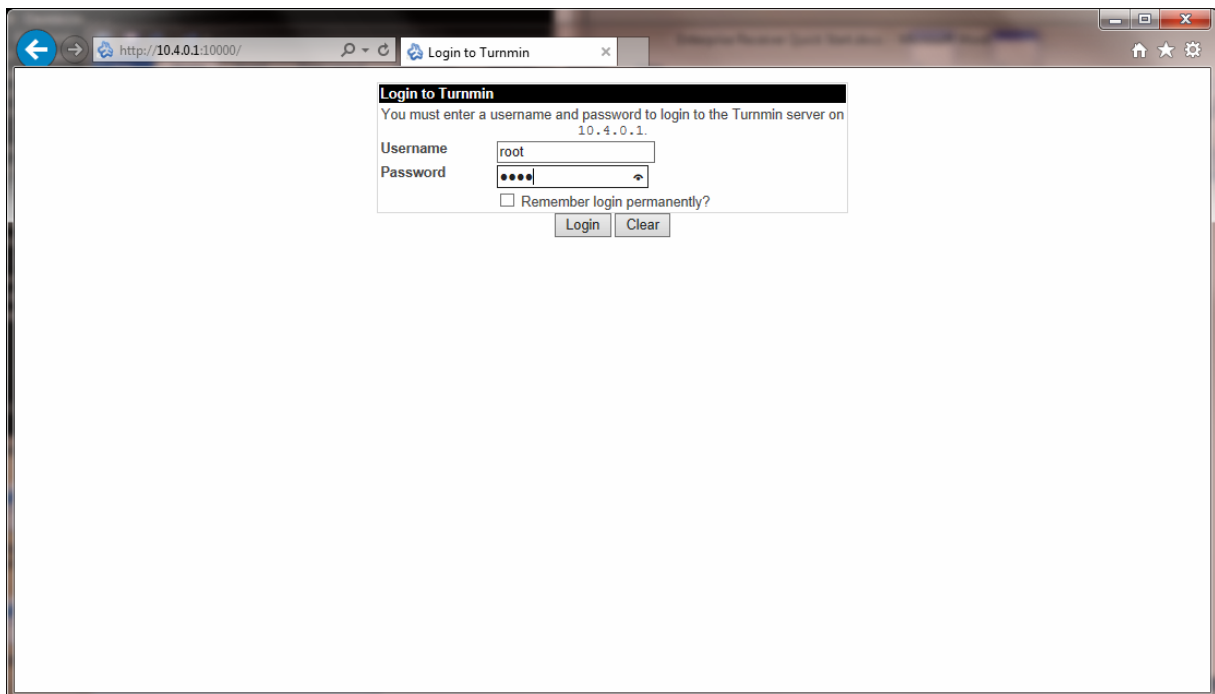- Click on the wireless icon (bar) in the lower right corner of the desktop

- Find the "RRAP…" connection, select it and click Connect

- When Prompted, enter the password "Turn1ngT3ch"
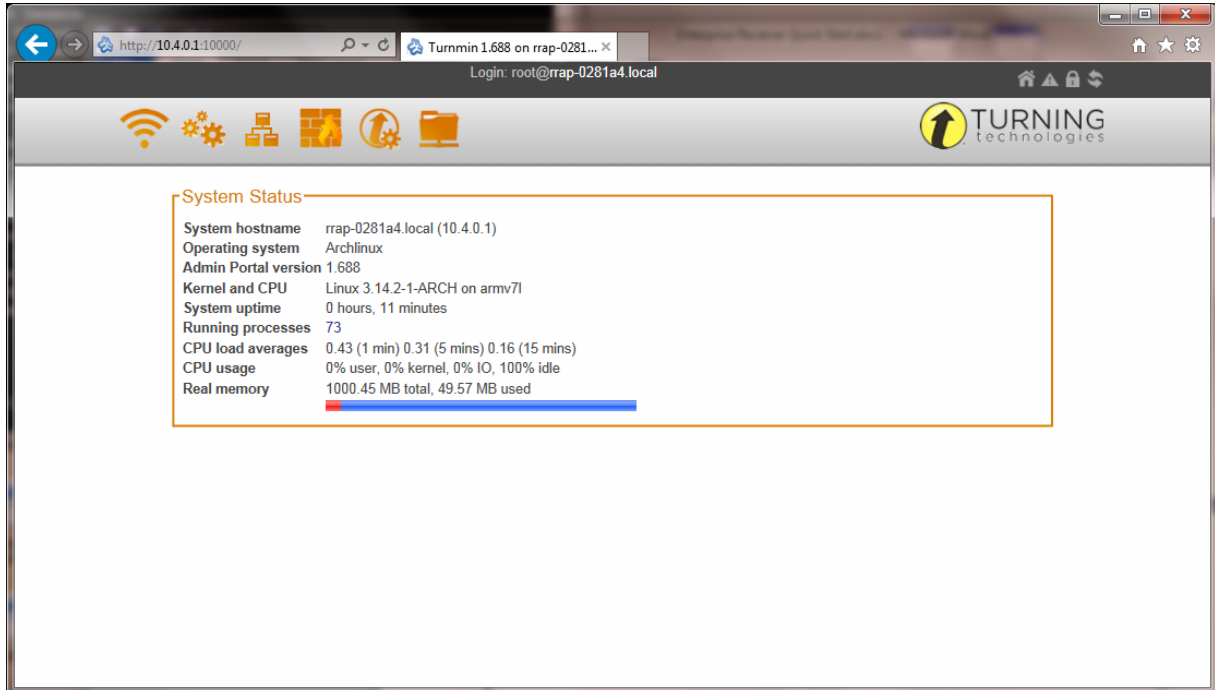
Web Based Configuration

Once connected to the access point, its web based configuration may be used to configure the Wi-Fi and system settings.

To access the Web Based Configuration open an internet browser and enter the address "10.4.0.1:10000"

A login dialog is displayed. Enter the default username "root" and the default password "root" for the password.

After a successful login you will be brought to the system status page

Connecting with SSH

For advanced configuration and usage a secure shell (SSH) connection is available at the default IP address of "10.4.0.1". The super user account "root" can be accessed with the default password "Sassafras".

The following screen shots illustrate making an SSH connection with "Tera Term", a freely downloadable terminal emulation program.
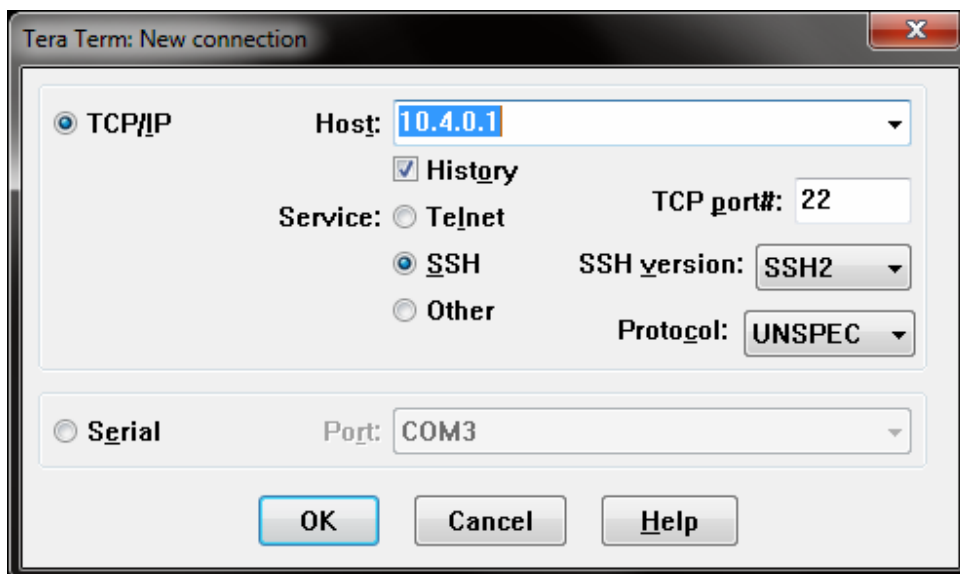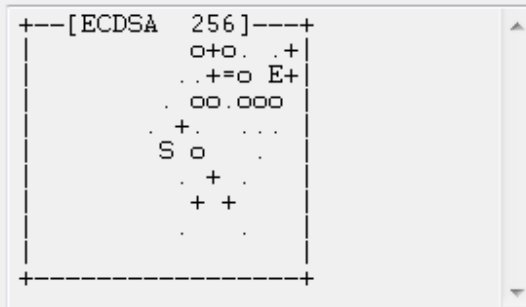
SECURITY WARNING

Your known hosts list has an entry for the server "10.4.0.1", but the machine you have contacted has presented a DIFFERENT KEY to the one in your known hosts list. A hostile machine may be pretending to be the server.
If you choose to add this new key to the known hosts list and continue, then you will not receive this warning again.

The server's host key fingerprint is:

5c:f8:6e:d9:93:40:0d:8d:5b:70:ef:01:39:5f:46:9d

```
+--[ECDSA  256]---+
|            o+o.  .+|
|            . .+=o E+|
|          .  oo.ooo  |
|        . +.   ... |
|         S o     . |
|           . + . |
|             + + |
|           .     . |
|                   |
+-----------------+
```
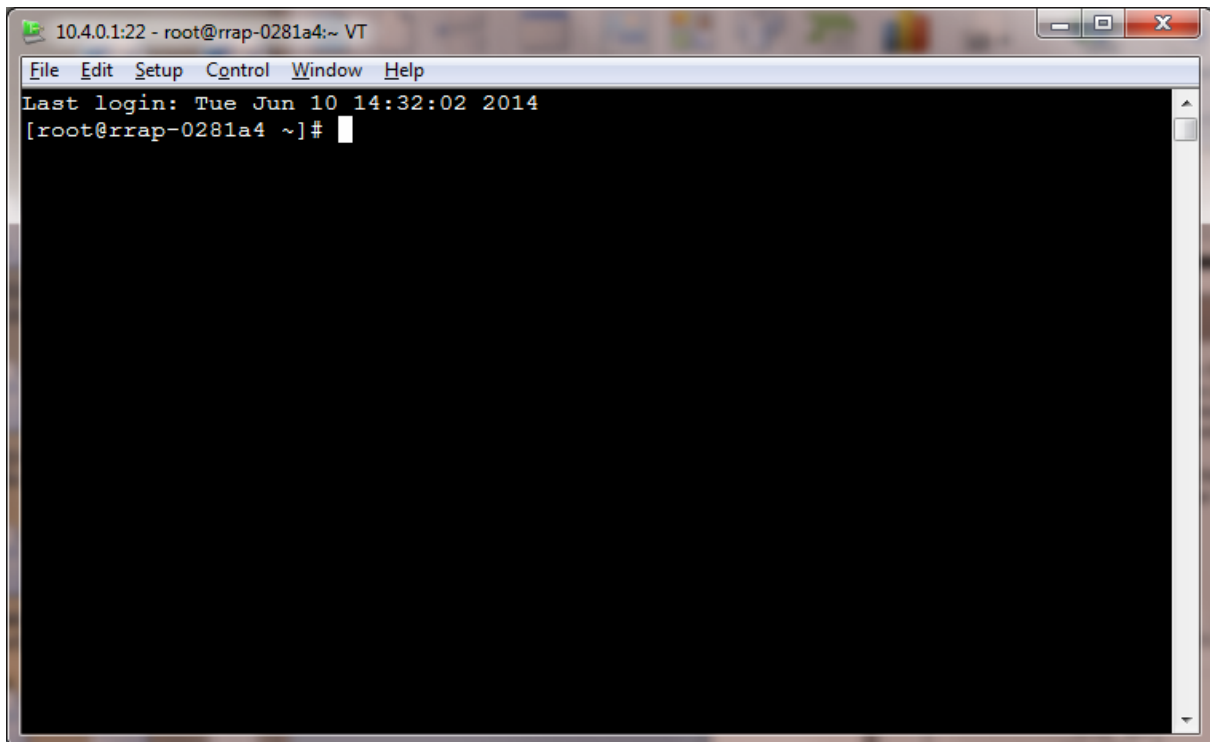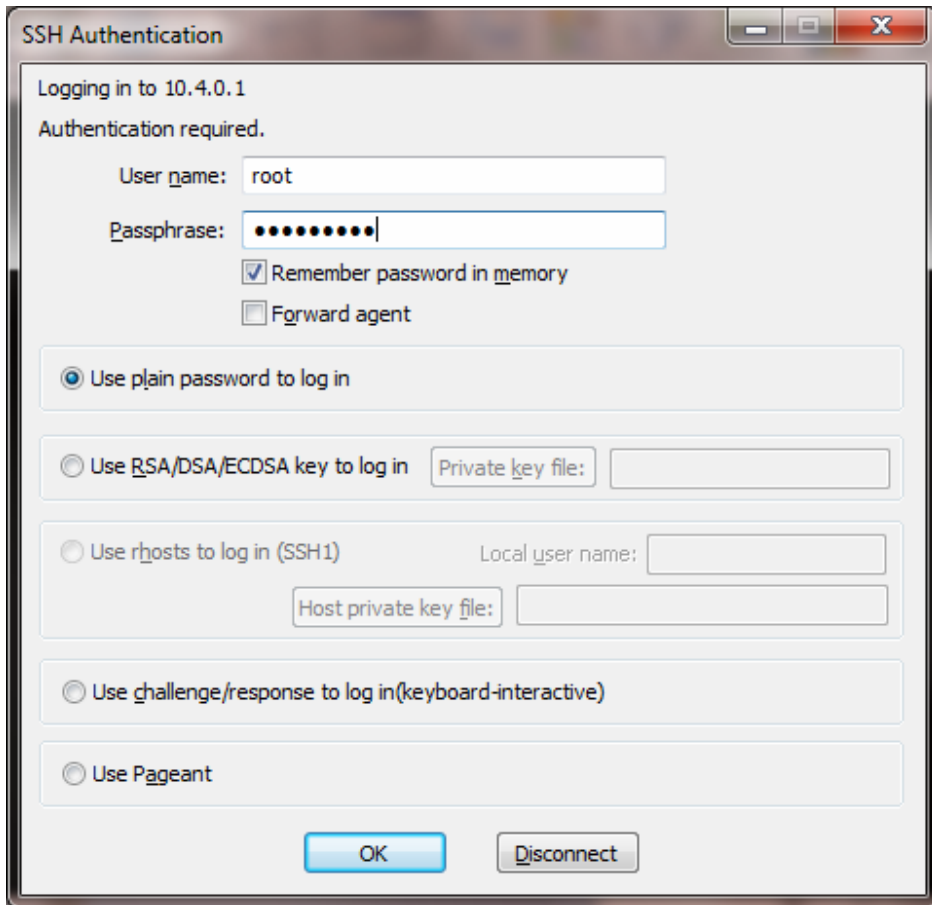
☑ Replace the exist key with this new key

[Continue] [Disconnect]

This device complies with Part 15 of the FCC Rules Operation is subject to the following two conditions:

    (1) this device may not cause harmful interference, and
    (2) this device must accept any interference received, including interference that may cause undesired operation.

NOTICE:

Changes or modifications made to this equipment not expressly approved by (manufacturer name) may void the FCC authorization to operate this equipment.

NOTE: 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be 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 receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance of 20 cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.