Wi-Fi hardware setup for Raptor streaming using AmpliFi Alien

by Playback Technologies, Inc.

Summary

- In a single device, the Ubiquiti AmpliFi Alien router gives great Wi-Fi 6 for streaming as well as providing wired Ethernet ports for your Raptor and Videohub.

- It's easy set setup and manage from a phone or tablet (even with no internet is available), and is extremely simple to update.

- The Alien starts up in 60 seconds, and displays a progress bar on the front panel LCD as it's powering on. Unfortunately, since it will generally be used without an internet connection (on set), the front panel LCD will read only "Check Connection", instead of displaying useful information.

- Currently an Alien router costs $380 for a single router, or $700 for an Alien router and one Alien Mesh Point. If you think you'll be covering large areas, you might consider buying the $700 version. For even larger installations, additional Alien Routers can be added to your mesh network, though we haven't done this, and these instructions don't cover that situation.

- Once you've set your cart up to work with an Ethernet router, it becomes an important part of your cart, and if it's not hooked up, your Raptor will have a different IP address. Since the Alien router is the Ethernet router for your cart, we do not suggest putting your only Alien router outside your cart (like at the director's monitor), since it (or it's Ethernet cable) could get damaged. If you want Wi-Fi at another location on the set, we'd suggest you setup an additional Alien router in a mesh configuration, and place the additional router wherever you need, hooked up to the Alien router in your cart with a long Ethernet cable.

What you need

- Ubiquiti AmpliFi Alien router

- Smartphone (or tablet) with "AmpliFi" app installed.

- A wired Ethernet connection to the internet (only needed during initial setup).

- Ethernet cables (Cat5e, or Cat6). Here's a list of cables you might use to hook up our example network:

  - Assorted short cables, 3 to 5 feet long, to make Ethernet connections at your cart. At a minimum, you'll need cables to plug your Raptor and Videohub into your Alien Router.

  - If your network will include an Alien Mesh Point (or additional Alien router), you should get a long Ethernet cable (100-200 feet, 300 feet is the longest possible Ethernet cable) and a backup, to connect the devices with a wired back haul. While it is possible for Alien Routers and Alien Mesh Points to connect wirelessly, a wired connection gives the best performance.

Things you must choose

- Wi-Fi network name _____ and password _____
  - *NOTE: Your clients will need the above name and password to log into your Wi-Fi network.*

- Alien Router admin password (secret) _____
  - *Anyone can manage this Alien router by running the AmpliFi app while connected to the Alien Wi-Fi, skipping the search for devices to set up, clicking "I already have configured AmpliFi", and entering this password.*

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Set up AmpliFi Alien router.

- Plug an Ethernet cable (that has internet access) into the WAN Ethernet port on the bottom of the Alien. Plug in the power cable, and power on the Alien. Watch the Alien's LCD screen to see when it's done initializing. If you have a mesh point, power it on, but don't hook up any Ethernet cables to it.

- Update the firmware

  - Wait a few minutes to see if the front panel reports that an update is available. If it is, tap on the LCD to install it, then wait 10 minutes for it to finish. If you've got the mesh point, wait a few minutes to see if a second "Update available" message appears. If it does, it's for the mesh unit's firmware, so tap to install it, then wait 10-ish minutes for it to finish.

- Assign names and passwords

  - After the Alien has finished initializing, launch the AmpliFi app on your phone. Wait a few seconds for the app to find the Alien. Allow any permissions requests that come from the app.

    - *If the app can't find your Alien router, you can hold a paperclip in the reset hole on the bottom of the router until the front panel reports that it's "Resetting to factory defaults".*

  - Uncheck "Set the same password for admin access"

  - Enter (and confirm) the Wi-Fi network name, Wi-Fi password, and admin password from page 1.

  - Tap done, then continue. Wait about a minute for the router to be configured.

  - The AmpliFi app will help you attach your phone to the Alien's Wi-Fi.

  - In the app, click "Skip" (then "Proceed") to skip logging into a UniFi (UI) account.

    - *This account lets you manage a device across the internet, but that's not likely very useful to a video assist operator. The Alien Router admin password is used by others to manage an Alien router after it has been setup.*

- Set mesh point to wired (if present)

  - Attach an Ethernet cable from the rear of the router to the bottom of the mesh point.

  - In the AmpliFi app, tap the mesh point to enter "Settings".

  - Tap "General", then set "Mesh point connection" to "Ethernet backbone".

  - On main AmpliFi screen, wait for a "<..>" to appear between the router and mesh point, indicating they're connected.

- Disconnect router from the internet

  - Unplug the Ethernet cable from the WAN port on the bottom of the Alien.

  - The Alien front panel will now report "Check Connection" since it lacks internet – this is normal.

- Turn off night mode

  - In the AmpliFi app, tap the Alien router to enter "Settings".

  - Tap the control to turn off "Night mode"

- Silence the router

  - In the AmpliFi app, tap the Alien router to enter "Settings", then tap "General"

  - Slide the Sound Effects Volume slider all the way to the left.

  - Tap "<" to go back to settings.

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- Assign the IP address of the Alien router.

  - In the AmpliFi app, tap the Alien router to enter "Settings", then tap "Internet"

  - Change "Network type" from "DHCP" to "Static".

  - Enter 192.168.5.1 for "IP address", "Gateway Address", and "Primary DNS Address"

  - At "Network mask", enter 255.255.255.0

  - Click to turn off "UPNP"

  - Click the check mark in the upper right corner of the window to apply these changes.

  - Click "Proceed" at the warning about Wi-Fi reconnecting.

- Setup the DHCP server in the Alien router.

  - In the AmpliFi app, tap the Alien router to enter settings, then under "Advanced", tap "DHCP server"

  - Change "Subnet" to 5

  - Change "Start" to 30

  - Change "Lease Validity" to 1 day

  - Click the check mark in the upper right corner of the window to apply these changes.

  - Click "Proceed" at the warning about Wi-Fi reconnecting. The AmpliFi app will show a twirl graphic.

  - Wait a few minutes, then remove power to the Alien router (and mesh point), wait 10 secs, plug it in.

  - After Alien router starts, reconnect phone to Alien Wi-Fi.

- Assign a static IP address to your Raptor, so your streaming clients can always enter the same address.

  - Plug an Ethernet cable between your Raptor and one of the rear panel LAN connections on the Alien.

  - In the AmpliFi app, click, "Devices" to see a list of connected devices.

  - Tap on the Raptor. It will say *"Ethernet Port 1, 2, 3, or 4"* under the device name.

  - Under "Advanced", tap "Create static lease"

  - Tap on the IP address, then tap 192.168.5.5 to choose it for the static IP address. Click the checkmark to apply these settings.

  - Tap "Proceed" at the warning message. Your phone will likely disconnect from the Alien Wi-Fi.

- Select channel bandwidth for the 5GHz radio

  - In the AmpliFi app, tap the Alien router to enter settings, then under "Wireless", tap "Advanced"

  - Under "5GHz", tap Bandwidth, then tap "20 MHz"

    - If you have another section for a second 5GHz radio, set it to "20 Mhz", too.

    - "20 MHz" makes it easiest for your router to find an available radio channel in which to operate.

    - If you have more than 25 clients, or have your Raptor "Streaming Quality" set to "High", you might choose "40 MHz" to provide enough bandwidth for your streams to look smooth. However, "40 MHz" might not improve your video quality if the RF spectrum is very crowded, and your Alien can't find a clear 40 MHz channel.

Updates

- Every few months, it's smart to plug an Ethernet cable that has internet access into the WAN Ethernet port on the bottom of the Alien, and power it on. Let it start, and tap to install any available update.

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Usage notes

- On the AmpliFi app's "Devices" tab, all devices are shown along with the amount of data they are receiving. If all devices show similar data rates, they're probably working well. If some device show much smaller data rates, they're probably not working well.

- The Alien router seems to scan for RF interference and assign it's radios to avoid RF traffic while it's powering on. If your Wi-Fi performance isn't as good as you'd like and you want to scan for interference, you can either re-power the router or reboot from the AmpliFi app by tapping "Settings" / "General" / "Reboot".