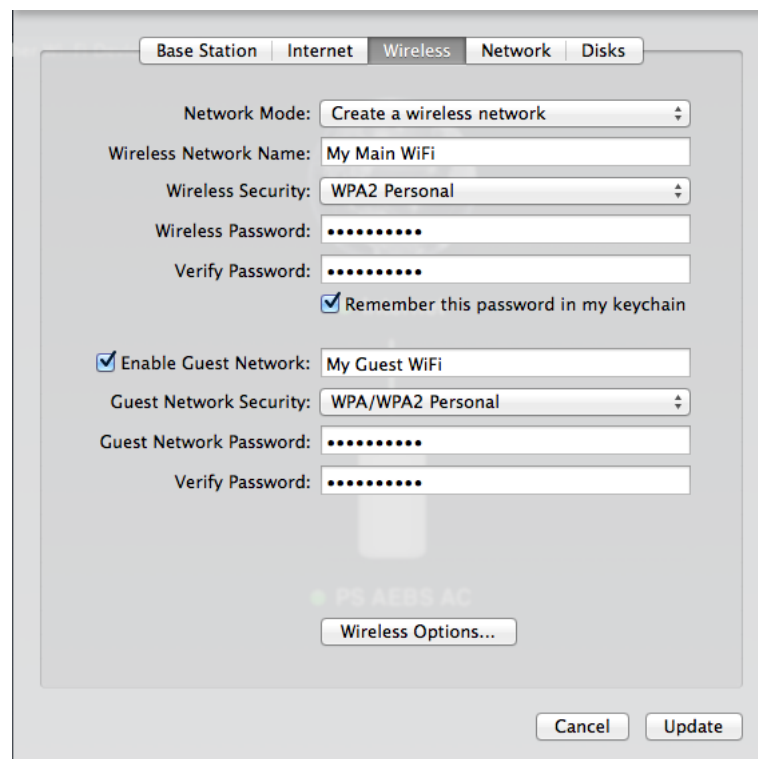


## AirPort Extreme Guest Networks 1.0

Apple's AirPort Extreme offers a private Guest network feature but it only works to route out to the internet if the AEBS is at the top of the chain. i.e. The AEBS must be acting as your internet router. But what if you already have an internet router and are using the AEBS in Bridge Mode?

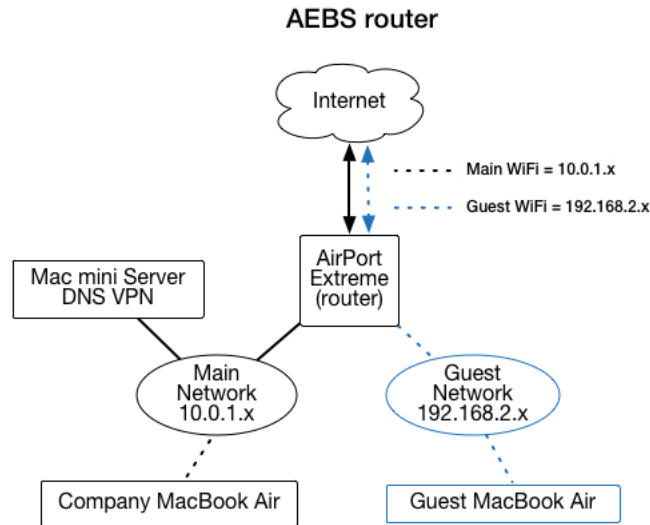
Well, it turns out that it is indeed possible for the AirPort Extreme Base Station (AEBS) to provide a functioning Guest network when it is configured for Bridge Mode below your main internet router. The situation is fairly complex so we have included a number of diagrams and screen shots to make what we are doing clear.

First, let's look at what the AEBS does by itself. In this situation, you are the typical consumer and hook up the AEBS to your internet modem and turn on Guest networking in the Internet pane:



**Fig 1.** Configuring a Guest WiFi network in AirPort Utility

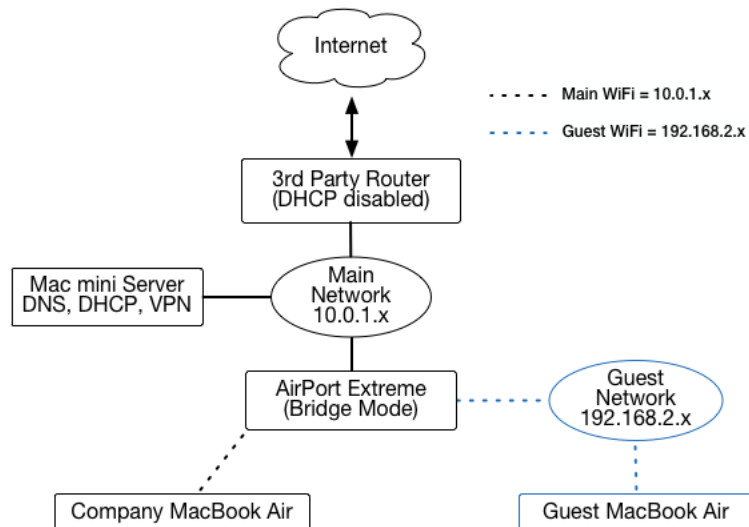
If your AEBS is your top level router than you get this:



**Fig 2.** The AEBS provides both a main and a guest network. They route to the internet separately.

**Note:** The AEBS usually uses 10.0.1.x as its default subnet (and 192.168.2.x as its Guest network subnet). For simplicity here we will stick with these conventions even when we are configuring third party routers. But let's say you use a third party router for internet connectivity and then set up your AEBS in Bridge Mode. Although the AirPort utility Wireless settings will still enable a Guest network the Guest will not route out to the internet proper. A symptom you will note is that it gets a Bonjour i.p. address in the 169.254.xxx.xxx scheme.

### 3rd Party Router with Orphaned Guest Network



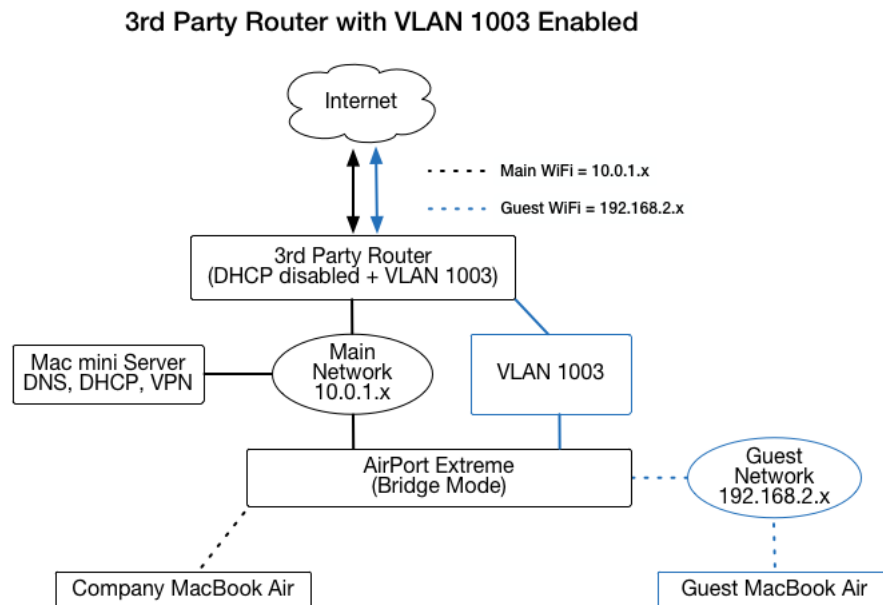
**Fig 3.** The AEBS is in Bridge Mode below a third party router. It still provides a Guest network but clients can't see the internet.

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What we want is a Guest network that can route to the internet and if our third party router supports VLANs then we should be able to do so like this:



**Fig 4.** The AEBS is in Bridge Mode below a third party router.  
By setting up a VLAN with ID 1003 we can route the AEBS Guest network properly

For the proof of concept I set up I used a Cisco RVS4000 router as my third party router.

Here is how:

1) Internet cable to the WAN port

2) LAN cable to port 4 (which we will also set up a VLAN on).

This LAN cable may be going to a switch that feeds the WAN of your AEBS or it may be going directly to the WAN port of your AEBS



3) In the RVS4000 config page we go the "L2 Switch" section and under the first item "Create VLAN" we create a VLAN with the ID of: 1003.

(This is the ID number that the AEBS always seems to use).

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**Fig 5 a/b** Type 1003 and click Add VLAN in the L2 Switch section of the config settings.  
(In the RVS4000 the description line gets added later so don't be confused).

Now that you have created the VLAN we need to set its properties. We want a Trunked Port. On the RVS4000 when the mode of a port is set to Trunk, only the frames to and from the VLAN corresponding to the default PVID are untagged. Frames to and from other VLANs are all tagged with a VLAN ID.

4) In the L2 Switch section under *VLAN Port Settings* change the port (in this case Port 4) from the default of "untagged" to "trunk" and click Save.



**Fig 6** Set the VLAN Port Settings to "Trunk".

Now we are going to tell the new Trunk how to behave.

5) Select the "VLAN Membership" section and you will automatically see the settings for the default VLAN ID 1. This ID is automatically untagged and cannot be changed so its radio buttons are greyed out.

Click the VLAN ID popup menu and select the VLAN ID 1003 you created.

Now you are going to set the membership for VLAN ID 1003 to be "Tagged" and Save the changes.



**Fig 7 a/b** Set VLAN ID 1003 to be tagged in the VLAN Membership settings.

This is going to allow the AEBS to route out to the internet and so it will now provide the Guest clients with an actual i.p. address in the 192.168.2.x subnet instead of the client trying to survive with a Zero-Config Ethernet (Bonjour) address in the 169.254.x.x subnet.

The AEBS Guest network will now be able to hit the internet. But with the way the RVS4000 works it is also going to be able to hit the 10.0.1.x subnet of our main network. So we are going to set up a firewall rule to isolate the 192.168.2.x subnet.

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With the RVS4000 we will create a rule that deny all activity between the subnets. One would think it would be based on the source being in the 192.16.8.2.x network and the destination being in the 10.0.1.x network but it is actually the reverse.

8) Under the Firewall section in the settings select "IP Based ACL" and click the "Add New Rule" button. Change the action to "Deny".

Then supply the source as a range of 10.0.1.1 to 10.0.1.254, and the destination as a range of 192.168.2.1 to 192.168.2.254.

And click "Save".

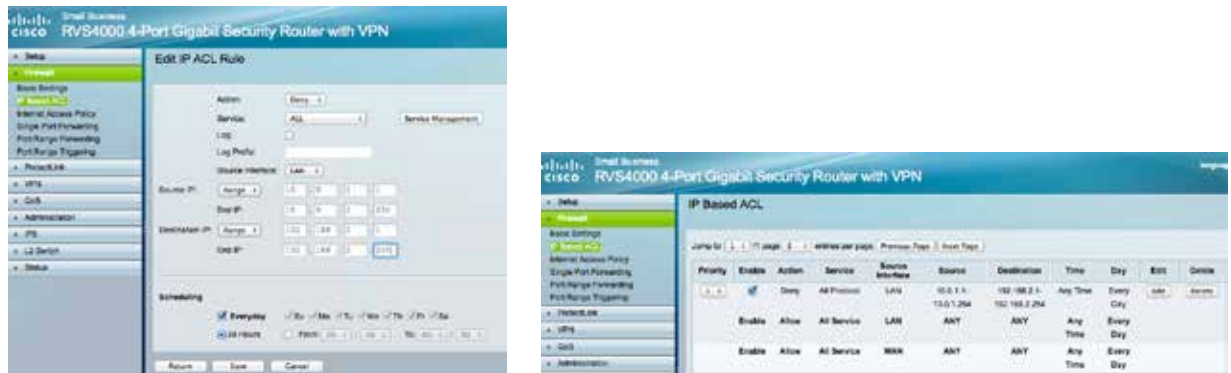


Fig 8 a/b Setting a Firewall rule to isolate the guest network

Now we are ready for our AirPort Extreme Base Station (AEBS). If you haven't already set it up you can now set it up as Bridge Mode.

9) Using AirPort Utility select the *Network* tab and under Router Mode choose *Off (Bridge Mode)*.

This will allow your main WiFi network to get the same DNS/DHCP information as your wired computers.



Fig 9 Setting the AEBS for Bridge Mode

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And now we can set up the Guest network on the AEBS.

10) In the Wireless tab of AirPort Utility put a checkbox in *Enable Guest Network* and supply and verify a password.



**Fig 10** *Enabling the AEBS Guest Network*

With the work we already did to create our VLAN and firewall it, our AEBS Guest network will be able to supply i.p. addresses in the 192.168.2.x range and be able to route out to the internet proper without being able to mess with our main local 10.0.1.x network.

Revision History:

1.0 June 24/14, Show how to set up Guest network for a Cisco RVS4000

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