

[Guide] airport\_pcie-hm\_details.pdf



### **[Guide] airport\_pcie-hm\_details**

Airport working OOB on Mountain Lion with Broadcom BCM4360 HMS and Atheros AR9280 Mountain Lion (10.8.5 and newer) reports as Airport Extreme. Wake on Wireless (Atheros) and AirDrop supported. Newer Broadcom WiFi cards not longer require rebranding to work in OS X.

BCM943224 HMS, BCM943225 HMB and BCM94352 HMB PCIe Half Mini versions tested. AR9280, AR9285 and AR9287 PCIe Half Mini versions tested. Mini PCIe versions and Mini PCIe to PCIe versions expected to work.

### **WiFi + BT**

1. BCM943352 HMB/AzureWave AW-CE123H supports both Airport and Bluetooth 4.0 (see Installation below)

Note: The Asus Superfast 802.11ac (Z87 Pro & Deluxe motherboards) is the BCM4352

2. BCM943225 HMB supports both Airport and Bluetooth 3.0 (requires dsdt edits or kext edits or injection kext, see below).

3. For any working WiFi without BT, suggest:

GMYLE Micro USB Bluetooth 4.0 Dongle Dual Mode Wireless Adapter | GMYLE Wake, dual mode with Low Energy Technology., native

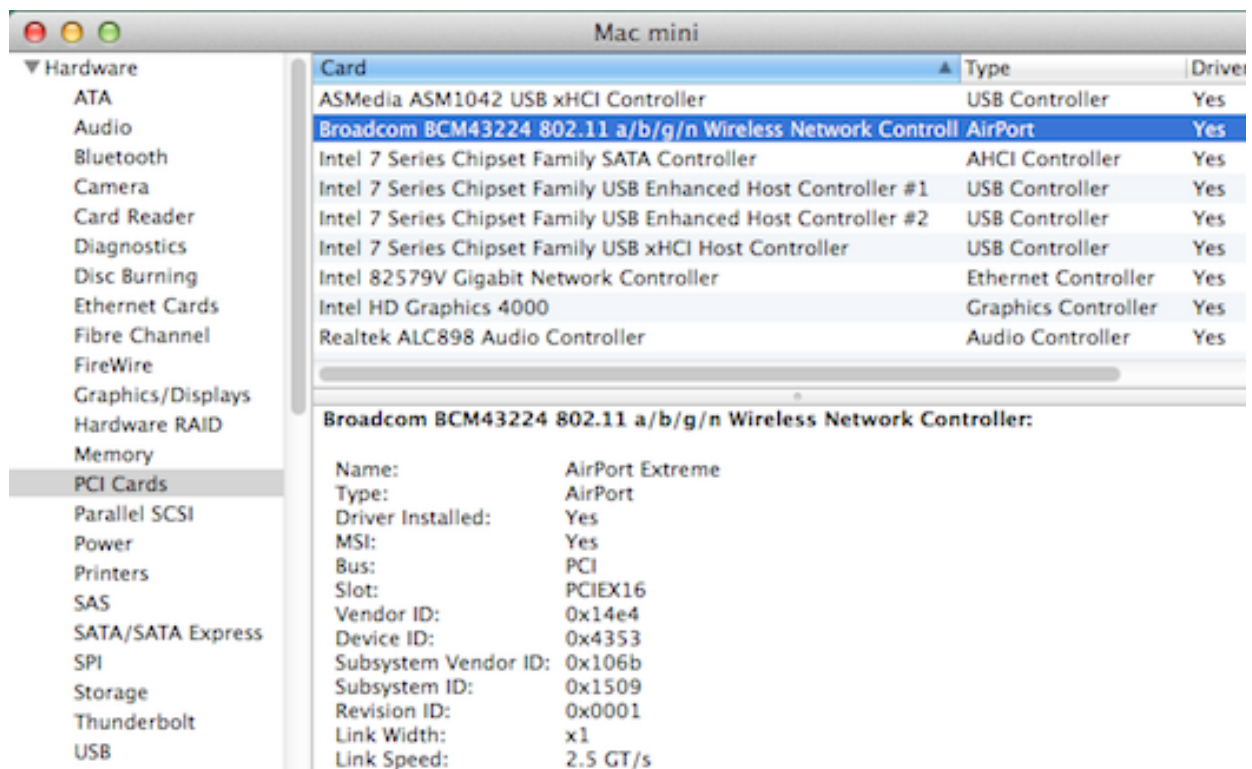
### **Requirements**

1. 10.8.5 or newer (The techniques in this thread do not work in 10.8.4 or earlier)
2. Supported Vendor/Device\_ID (see Note 1)

### **User Responsibilities**

1. WiFi card sources - the usual
2. Antennas - yes
3. Mini PCIe to PCI/PCIe adapters - no suggestions

### **I. Broadcom**



## Details

1. BCM943224 HMS - 2.4/5 GHz abgn, 2 stream, 300 Mbs
2. Half Mini PCIe

Note: BCM4360 - 2.4/5 GHz ac+abgn, 3 Stream, 1300 Mbs (PCIe x1, not half mini at this time)

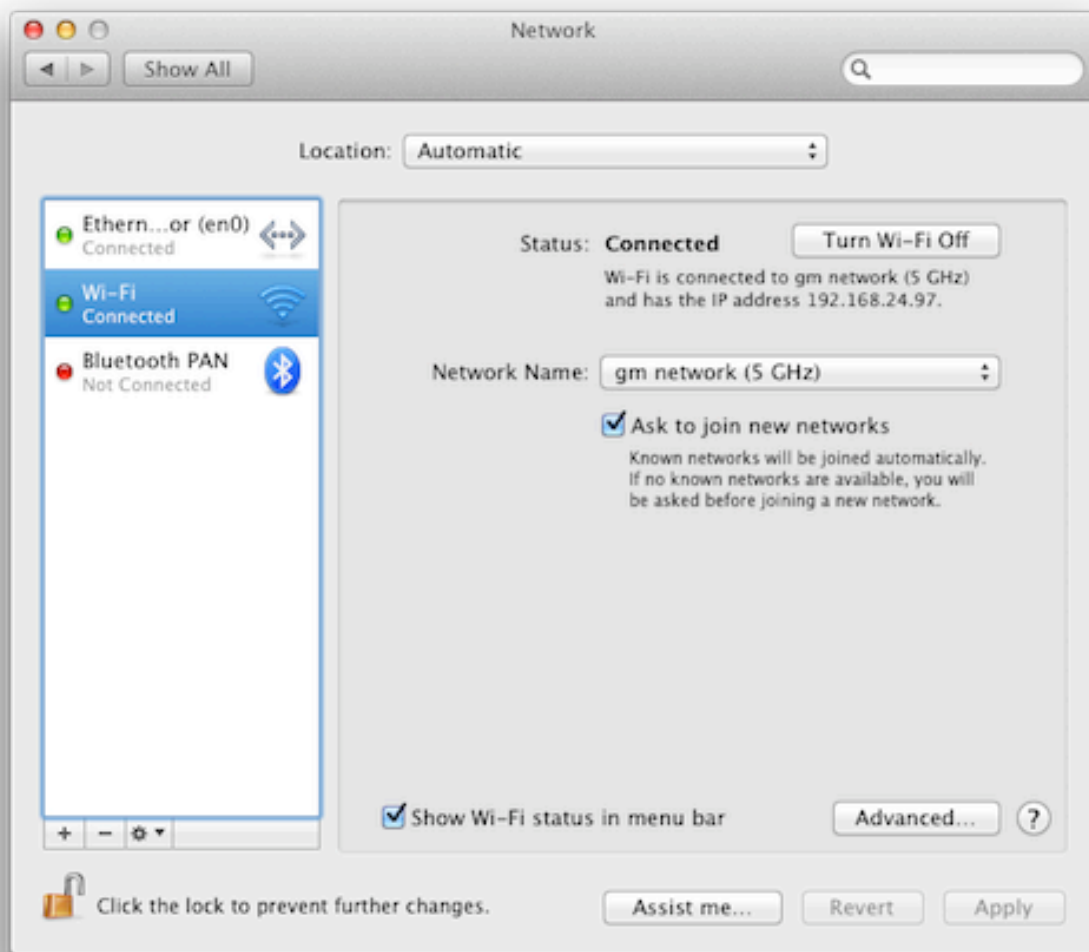
## Alternatives (require dsdt injection or kext editing or kext injection)

1. BCM943224 HMS - 2.4/5 GHz, bgn, 2 stream, 300 Mbs
2. BCM943225 HMB - 2.4, bgn, 2 stream, 108Mbs + BT (3.0)
3. BCM94352 HMB - 2.4/5 GHz, ac+abgn, 2 stream, 867 Mbs + BT (4.0)

## Installation

1. Install Broadcom BCM94322x Wi-Fi card
2. BCM943224, BCM943225 and BCM4352
  - a. Install edited S/L/E/IO80211Family.kext with kext installer
  - b. Install edited Extra/dsdt/ARPT with Finder
  - c. Install S/L/E/toledaARPT.kext with kext installer
4. Restart
5. Open System Preferences/Network
6. Select +
7. In new dialog box:
  - a. Interface WI-FI

- b. Service Name Wi-Fi
- c. Create
8. Select Turn Wi-Fi On
9. In new dialog box:
  - a. Apply
10. Check Show WI-Fi stays in menu bar
11. Select Join Other Networks, Enter
  - a. Network Name
  - b Security
  - c. Join
12. Wi-Fi Connected



## Tools

1. IORegistryExplorer, IOJones
2. dsdt editor- MaciASL Download MaciASL from SourceForge.net
3. property list editor - Xcode, Property List Editor, Plist Editor, or TextEdit

4. Kext installer - KextBeast, Kext Utility, DPCIManager

**Non-Native Airport** (select one, verify WiFi. If no WiFi - install native, restart)

1. ARPTEnablers
2. kext edits
3. dsdt edits

**1. ARPTEnablers** - toledaARPT.kext (see below for Device\_IDs)

- 1a. Advantages: No edits, survives Software Updates and BIOS Updates
- 1b. Disadvantages: Potential signing issue (likely resolved with FakeSMC signing)
- 1c. Download toledaARPT.kext from TBA
- 1d. Copy Downloads/toledaARPT.kext to Desktop
- 1e. Run kext installer
- 1f. More info: see

**2. kext edit**

- 2a. Advantages: Simple edits
- 2b. Disadvantages: Apply after each Software Update, Potential signing issue
- 2c. Backup S/L/E/IO80211Family.kext
- 2d. Property List Editor/Open/S/L/E/IO80211Family.kext/Contents/Plugins/AirPortBrcm4360.kext/Contents/Info.plist
- 2e. find: <string>pci14e4,43a0</string> Native
- 2f. add: <string>pci14e4,4353</string> For BCM943224 HMS
- 2g. add: <string>pci14e4,4357</string> For BCM943225 HMB
- or add: <string>pci14e4,43b1</string> For BCM94352 HMB
- 2h. Save
- 2i. Move to Desktop
- 2j. Run kext installer
- 2k. More info: see [Guide] airport\_pcie-hm\_plist\_edits.pdf

**3. dsdt edit**

- 3a. Advantages: Native, no signing issue
- 3b. Disadvantages: Apply after each BIOS/UEFI Update, advanced technique
- 3c. Backup Extra/dsdt.aml
- 3d. IOREG/Find PEX? or RP0? or ?@1C,? with VendorID of 14e4
- 3e. For MaciASL/airport\_pcie-hm\_dsdt\_edits see [Guide] airport\_pcie-hm\_dsdt\_edits.pdf
- 3f dsdt/add:

```
Method (_DSM, 4, NotSerialized)
{
    If (LEqual (Arg2, Zero))
    {
        Return (Buffer (One))
    }
}
```

```

        {
            0x03
        })
    }

Return (Package (0x0C)
{
    "AAPL,slot-name",
    "AirPort",
    "built-in",
    Buffer (One)
    {
        0x00
    },

    "device_type",
    "AirPort",
    "model",
    "Broadcom BCM4322x 802.11 a/b/g/n Wireless Network
Controller",
    "name",
    "AirPort Extreme",
    "compatible",
    "pci14e4,43a0"
})
}

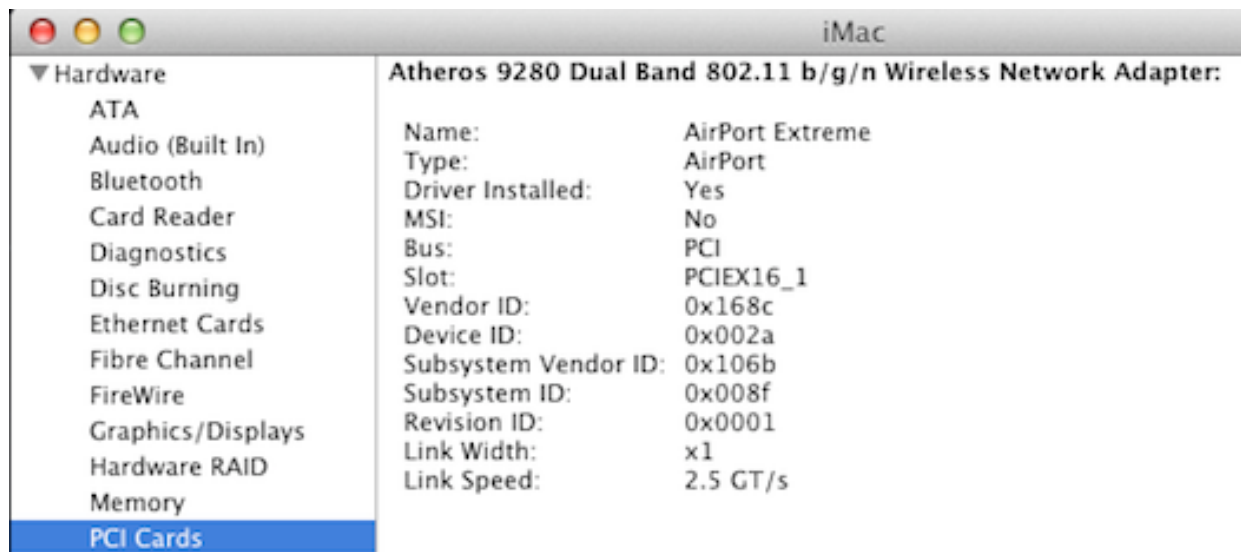
```

3g. Compile

3h. Save

3i. Install: Finder/Copy dsdt.aml and Paste/Extra/dsdt.aml

## II Atheros



### Details

1. AR9280 - 2.4/5 GHz abgn, 2 Stream, 300 Mbs
2. AR9380 - 2.4/5 GHz abgn, 3 Stream, 450 Mbs
3. Half Mini PCIe



### Alternatives (require dsdt injection or kext editing)

1. AR9285 - 2.4 GHz, abgn, 1 stream, 150 Mbs
2. AR9287 - 2.4 GHz, abgn, 2 stream, 300 Mbs
3. Combo - AR928x + Bluetooth (no OS X support for Atheros bluetooth)

### Installation

1. Install Atheros AR928x Wi-Fi card
2. If AR9280 or AR9380 installed jump to Step 4
3. If AR9285 or AR9287 installed edit kext or dsdt
  - a. Install edited S/L/E/IO80211Family.kext with kext installer
  - b. Install edited Extra/dsdt/ARPT with Finder
  - c. Install S/L/E/toledaARPT.kext with kext installer
4. Restart
5. Open System Preferences/Network
6. Select +

7. In new dialog box:
    - a. Interface WI-FI
    - b. Service Name Wi-Fi
    - c. Create
  8. Select Turn Wi-Fi On
  9. In new dialog box:
    - a. Apply
  10. Check Show WI-FI stays in menu bar
  11. Select Join Other Networks, Enter
    - a. Network Name
    - b Security
    - c. Join
  12. Wi-Fi Connected (see screenshot above)
- For the User
1. AR928x Sources - the usual
  2. Antennas - yes
  3. Mini PCIe to PCI/PCIe adapters - no suggestions

## Tools

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3. property list editor - Xcode, Property List Editor, Plist Editor, or TextEdit
4. Kext installer - KextBeast, Kext Utility, DPCIManager

**Non-Native Airport** (select one, verify WiFi. If no WiFi - install native, restart)

1. ARPTEnablers
2. kext edits
3. dsdt edits

### 1. ARPTEnablers - toledaARPT.kext (see below for Device\_IDs)

- 1a. Advantages: No edits, survives Software Updates and BIOS Updates
- 1b. Disadvantages: Potential signing issue (likely resolved with FakeSMC signing)
- 1c. Download toledaARPT.kext from TBA
- 1d. Copy Downloads/toledaARPT.kext to Desktop
- 1e. Run kext installer

### 2. kext edit

- 2a. Advantages: Simple edits
- 2b. Disadvantages: Apply after each Software Update, Potential signing issue
- 2c. Backup S/L/E/IO80211Family.kext
- 2d. S/L/E/IO80211Family.kext/Contents/Plugins/AirPortAtheros40.kext/Contents/Info.plist
- 2e. find: <string>pci168c,2a</string> Native

2f. add: <string>pci168c,2b</string> For AR9285  
or: add: <string>pci168c,2e</string> For AR9287  
2g. Save  
2h. Move to Desktop  
2i. Run kext installer  
2j. More info: see [Guide] airport\_pcie-hm\_plist\_edits.pdf

### 3. dsdt Edit

3a. Advantages: Native, no signing issue  
3b. Disadvantages: Apply after each BIOS/UEFI Update, advanced technique  
3c. Backup Extra/dsdt.aml  
3d. IOREG/Find PEX? of RP0? or ?@1C,? with VendorID of 168c  
3e. For MaciASL/airport\_pcie-hm\_dsdt\_edits see [Guide] airport\_pcie-hm\_dsdt\_edits.pdf  
3f. dsdt/add:

```
Method (_DSM, 4, NotSerialized)
{
    If (LEqual (Arg2, Zero))
    {
        Return (Buffer (One)
        {
            0x03
        })
    }

    Return (Package (0x0C)
    {
        "AAPL,slot-name",
        "AirPort",
        "built-in",
        Buffer (One)
        {
            0x00
        },

        "device-type",
        "AirPort",
        "model",
        "Atheros AR9x8x 802.11 a/b/g/n Wireless Network
Controller",

        "name",
        "AirPort Extreme",
        "compatible",
        "pci168c,30"
    })
}
```



```

    }
3g. Compile
3h. Save
3i. Install: Finder/Copy dsdt.aml and Paste/Extra/dsdt.aml

```

Note: After installation, dsdt.aml shows:

```

    "device-id",
        Unicode ("0"),

```

Same as:

```

    "device-id",
    Buffer (0x04)
    {
        0x30, 0x00, 0x00, 0x00
    },

```

Extra credit: For either Broadcom or Atheros dsdt edits

Note: Do not apply the edit below if Device (PXSX) exists in Device (RP0x)  
For IOReg cosmetic reasons, edit dsdt after:

```

    Device (RP0x)
    {
        Name (_ADR, 0x001C000x)
add:
        Device (ARPT)
        {
            Name (_ADR, Zero)
            Name (_SUN, One)
            Name (_PRW, Package (0x02)
            {
                0x09,
                0x04
            })
        }

```

before:

```

        Method (_DSM, 4, NotSerialized)

```

## Troubleshooting

1. Verify WiFi card installed and antennas connected
  - 1a. System Information/Network
  - 1b. System Information/Network/WiFi
2. Verify Extra/dsdt.aml is
  - 2a. .aml file
  - 2b. edited

3. IOReg/Find PEX? or RP0? or ?@1C,? with VendorID of 14e4
  - 3a. Device\_ID
  - 3b. compatible
  - 3c. name
4. Problem Reporting/Post to
  - 4a. Motherboard/BIOS version/processor/graphics/OS and version/WiFi card info
  - 4b. Procedure/Guide Used
  - 4c. dsdt/native (.dsl)
  - 4d. dsdt/edited (.dsl)
  - 4d. copy of IOReg

**toledaARPT.kext\_v1.0/Contents/Info.plist/Device\_IDs/Supported** (\*native, not present)

1. Broadcom 802.11 PCI

pci14e4,43b1

pci14e4,43a0\*

pci14e4,4357

pci14e4,4353

2. Atheros Wireless LAN PCI

pci168c,30\*

pci168c,2e

pci168c,2b

pci168c,2a\*

3. Broadcom2046FamilyUSBBluetoothHCIController\_10

idProduct: 6069 (0x17b5)

idVendor: 2821 (0x0b05- Toshiba/Broadcom BCM20702/BCM943225 HMB)

EEPROM Programming

See Credit posts

Credit

The KiNG <http://www.projectosx.com/forum/index.php?showtopic=1416>

Andy Vandijck [http://www.insanelymac.com/forum/index.php?](http://www.insanelymac.com/forum/index.php?showtopic=234570)

showtopic=234570

PikeRAlpha

SJ\_UnderWater