

[Guide] airport_pcie-hm_details.pdf



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Airport working OOB on Mountain Lion with Broadcom BCM943224 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 and BCM943225 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

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

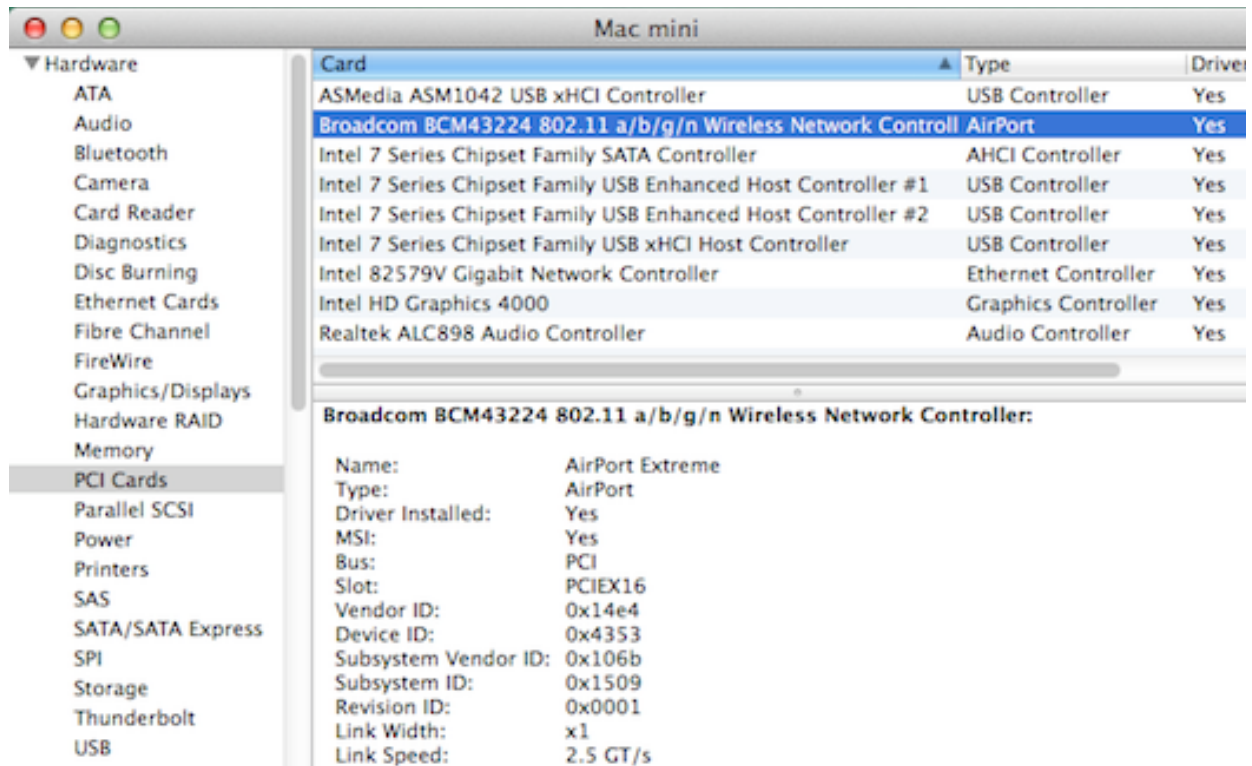
User Responsibilities

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

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)

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 HM at this time)

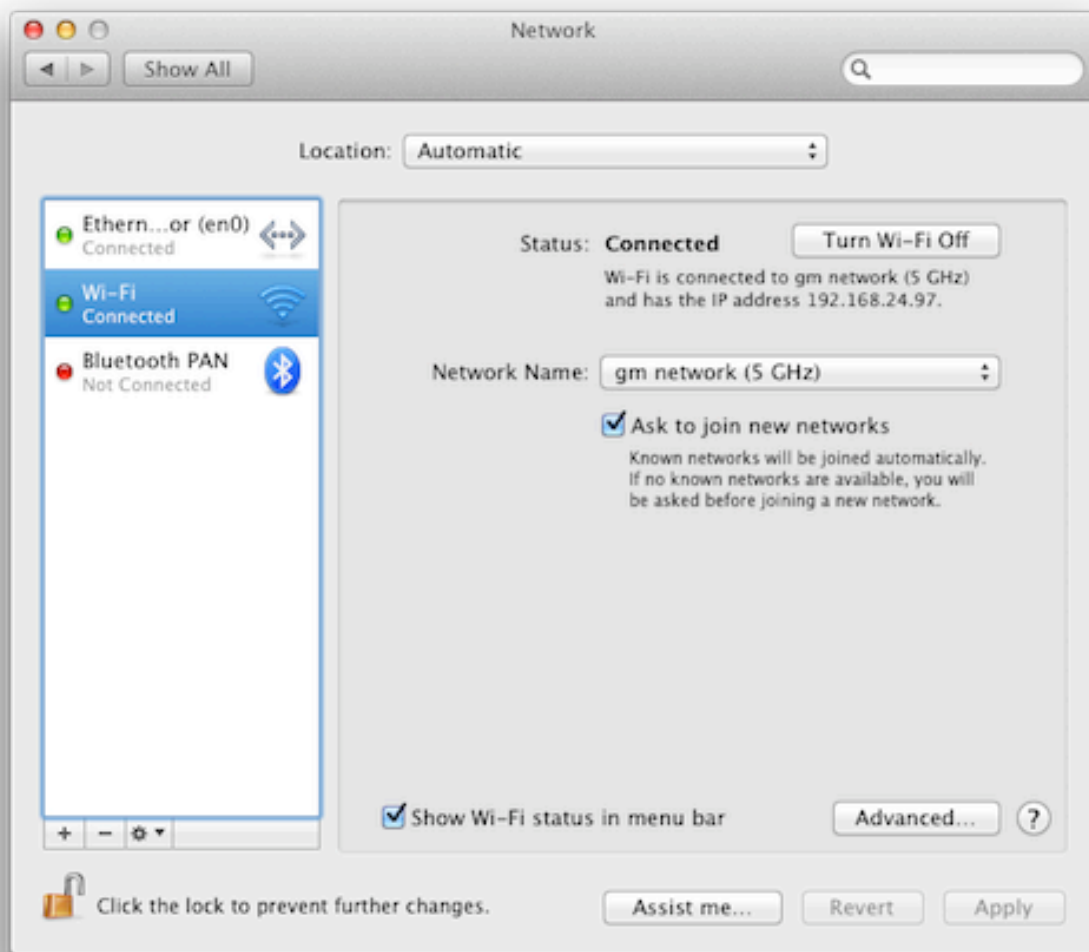
Alternatives (require dsdt injection or kext editing or kext injection)

1. BCM943225 HMS - 2.4/5 GHz, bgn, 2 stream, 300 Mbs
2. BCM943225 HMB - 2.4/5 GHz, bgn, 2 stream, 300 Mbs + 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. If BCM943224 installed jump to Step 4
3. If BCM943225:
 - 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. ARPTInjection
2. dsdt edits
3. kext edits

1. ARPTInjection - 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>pci14e4,4353</string> Native
- 2f. add: <string>pci14e4,4357</string> For BCM943225 HMB
or add: <string>pci14e4,43b1</string> For BCM94352 HMB
- 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? 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

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. ARPTInjection
2. dsdt edits
3. kext edits

1. ARPTInjection - 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*
pci14e4,4331*
pci14e4,432b*

2. Atheros Wireless LAN PCI

pci168c,30*
pci168c,2e
pci168c,2b
pci168c,2a*
pci168c,24*
pci168c,23*
pci168c,1c*

3. Broadcom2046FamilyUSBBluetoothHCIController_10

idProduct: 6069 (0x17b5)

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

4. Broadcom2046FamilyUSBBluetoothHCIController_10

idProduct: 8573 (0x217d)

idVendor: 2652 (0a5c - Broadcom BCM20702/GYLE USB BT 4.0)

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

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