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Hardware

Hardware Spec

Installation instructions

Preparation

Current EA8500 stock firmware (since 1.1.4.168206, depending on if your Router is a US or an international version) does not allow to flash 3rd party software anymore. You can attempt to see if doing a revert to older firmware on the help icon will yield version 1.1.4.167984. If the revert goes to anything newer than firmware 1.1.4.167984 you will not be able to gui flash dd-wrt onto the EA8500. Linksys has encrypted the newer files and they will not revert back to an older version.

An extremely helpful page containing links to 1.1.3 and 1.1.4 versions of EA8500 stock firmware and checksums is this: https://www.linksys.com/us/support-article?articleNum=208639 (checked on 06/02/2019)

MRJCD has put together a very good, and detailed, how-to flash from newer, "locked-out", stock builds to dd-wrt using the serial port on the EA8500. Board version 305 XD has had their serial header pins removed too, so you either need to find a Molex KK 5ckt header and solder it on or need to solder on wire leads. What makes it more challenging is that the solder holes will be filled, except the gnd, and there is nearly no copper pad to solder wire or header pins onto the board. There has also been a single report by MSOENGINEER that newer units may have resistors and/or capacitors removed further making it impossible to even use MRJCD's method to install dd-wrt onto the router.

AS SUCH, as of October 2020, WE CANNOT ENDORSE BUYING A EA8500 ANYMORE

Read this about using a usb-to-ttl adapter so you don't get weird characters from putty
**Linksys Logo LED Workaround**

Once you've installed DD-WRT onto the EA8500 there is a bug with the code that prevents the Linksys LED from working on top running any K4 builds (Kernel 3.x builds have a working LED). The workaround is to use these commands to fix the issue:

On start-up.

```
sleep 5 gpio enable 0
```

And on cronjobs

```
0 */2 * * * root /sbin/gpio enable 0
```

Though the above code may still not yield the LED staying on the whole time. MRJCD reports "if you change ANYTHING AT ALL in the webif ...any settings and/or just tinker around in the webif for long while the top LINKSYS light will go off after minute or so..."

YMMV

**Upload via Web UI**

Reset the router first (press the reset button until it reboots). Ignore the warning of ?no internet access? being available and go to manual setup. Read the README on http://mrjcd.com/Malachi/KONG-EA8500/. Upload the Kong Build EA8500-factory-to-ddwrt.img for a US router or EA8500WW-factory-to-ddwrt.img for an international one. When the installation is complete (a ?Reboot? button appears on the UI), reset the router again. It will boot into dd-wrt, afterwards. You have reached your destination. Note: the BS factory-to-ddwrt build I tried did not boot. After some time, the boot loader switched back to the 1.1.3 stock firmware flashed on preparation. The reaction on the dd-wrt forum was, that BS factory-to-ddwrt builds never seem to have worked. **This seems to have been corrected.**

**Configuration**

Do not forget to set the WiFi Regulatory Domain to the country you are operating the router in (check ?Advanced Settings?). You may want to follow the recommendations for the WiFi settings here: QCA wireless settings

**Forum Thread**

DD-WRT Forum discussing thread
Builds

Builds can be found here: Where can I download firmware? (linksys-ea8500 folder).

Boot Info

This router's flash has dual system design.

ubootenv get boot_part to know which partition is the currently active boot partition; use ubootenv set boot_part 1 or 2 to activate the partition as a boot partition.

boot log r30082
CPU: Testing write buffer coherency: ok
CPU0: thread -1, cpu 0, socket 0, mpidr 80000000
Setting up static identity map for 0x422131d8 - 0x42213230
CPU: Booted secondary processor
CPU1: thread -1, cpu 1, socket 0, mpidr 80000001
Brought up 2 CPUs
SMP: Total of 2 processors activated (25.00 BogoMIPS).
CPU: All CPU(s) started in SVC mode.
VFP support v0.3: implementor 51 architecture 0 part 4d variant 2 rev 0
pinctrl core: initialized pinctrl subsystem
regulator-dummy: no parameters
NET: Registered protocol family 16
cpuidle: using governor ladder
cpuidle: using governor menu
qcom_rpm 108000.rpm: RPM firmware 1.0.126
qcom_rpm 108000.rpm: failed to mark irq as wakeup
qcom_rpm 108000.rpm: failed to mark wakeup irq as wakeup
smb208-sla: 1050 --> 1150 mV
smb208-slib: 1050 --> 1150 mV
smb208-s2a: 800 --> 1250 mV
smb208-s2b: 800 --> 1250 mV
pps_core: LinuxPPS API ver. 1 registered
pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
PTP clock support registered
pcie_init: pcie_init: unable to create IPC log context for pcie0-short
pcie_init: pcie_init: unable to create IPC log context for pcie0-long
pcie_init: pcie_init: unable to create IPC log context for pcie1-short
pcie_init: pcie_init: unable to create IPC log context for pcie1-long
Switched to clocksourse dg_timer
NET: Registered protocol family 2
TCP established hash table entries: 4096 (order: 2, 16384 bytes)
TCP bind hash table entries: 4096 (order: 3, 32768 bytes)
TCP: Hash tables configured (established 4096 bind 4096)
TCP: reno registered
UDP hash table entries: 256 (order: 1, 8192 bytes)
UDP-Lite hash table entries: 256 (order: 1, 8192 bytes)
NET: Registered protocol family 1
PCI: CLS 0 bytes, default 64
futex hash table entries: 512 (order: 3, 32768 bytes)
squashfs: version 3.0 (2006/03/15) Phillip Lougher
msgmni has been set to 939
io scheduler noop registered
io scheduler deadline registered (default)
1b500000.pci supply vdda not found, using dummy regulator
1b500000.pci supply vdda_phy not found, using dummy regulator
1b500000.pci supply vdda_refclk not found, using dummy regulator
qcom-pcie 1b500000.pci: PCI host bridge to bus 0000:00
pci_bus 0000:00: root bus resource [io 0xe000000-0xfffff] (bus address [0x1fc0000-0x30000000])
pci_bus 0000:00: root bus resource [mem 0x00000000-0x0f000000]
pci_bus 0000:00: root bus resource [bus 00-ff]
pci 0000:00:00.0: [17cb:0101] type 01 class 0x060400
pci 0000:00:00.0: supports D1
pci 0000:00:00.0: supports D1
pci 0000:00:00.0: PME# supported from D0 D1 D3hot
PCI: bus0: Fast back to back transfers disabled
pci 0000:01:00.0: [168c:0040] type 00 class 0x028000
pci 0000:01:00.0: reg 0x10: [mem 0x00000000-0x001ff000] 64bit
pci 0000:01:00.0: PME# supported from D0 D3hot D3cold
pci 0000:01:00.0: BAR 8: assigned [mem 0x08000000-0x081fffffff] 64bit
pci 0000:01:00.0: BAR 0: assigned [mem 0x08000000-0x081fffffff] 64bit
Boot Info 5

Linksyst_EA8500

[ 0.253805] pci 0000:00:00.0:0: PCI bridge to [bus 01]
[ 0.253825] pci 0000:00:00.0: bridge window [mem 0x08000000-0x081fffff]
[ 0.254262] aer 0000:00:00.0:0:pcie02: service driver aer loaded
[ 0.254605] 1b700000.pci supply vdda not found, using dummy regulator
[ 0.254690] 1b700000.pci supply vdda_phy not found, using dummy regulator
[ 0.254768] 1b700000.pci supply vdda_refclk not found, using dummy regulator
[ 0.284243] qcom-pcie 1b700000.pci: PCI host bridge to bus 0001:00
[ 0.284262] pci_bus 0001:00: root bus resource [io 0x31e10000-0xfffff] (bus address [0x63c00000-0x31eeffff])
[ 0.284277] pci_bus 0001:00: root bus resource [mem 0x2e000000-0x31dfffff]
[ 0.284302] pci_bus 0001:00: root bus resource [bus 00-ff]
[ 0.284465] pci 0001:00:00.0: PME# supported from D0 D1 D3hot
[ 0.284478] pci 0001:00:00.0: PME# supported from D0 D3hot D3cold
[ 0.284788] PCI: bus0: Fast back to back transfers disabled
[ 0.285130] gsbi 16300000.gsbi: GSBI port protocol: 6 crci: 0
[ 0.285327] pci 0001:01:00.0: reg 0x10: [mem 0x00000000-0x001fffff 64bit]
[ 0.286266] pci 0001:01:00.0: PME# supported from D0 D3hot D3cold
[ 0.286696] PCI: bus1: Fast back to back transfers disabled
[ 0.286714] pci_bus 0001:01: busn_res: [bus 01-ff] end is updated to 01
[ 0.286931] pci 0001:00:00.0: BAR 8: assigned [mem 0x2e000000-0x2e1fffff]
[ 0.286951] pci 0001:01:00.0: BAR 0: assigned [mem 0x2e000000-0x2e1fffff 64bit]
[ 0.287057] pci 0001:00:00.0: PCI bridge to [bus 01]
[ 0.287075] pci 0001:00:00.0: bridge window [mem 0x2e000000-0x2e1fffff]
[ 0.287468] aer 0000:00:00.0:0:pcie02: service driver aer loaded
[ 0.287807] 1b900000.pci supply vdda not found, using dummy regulator
[ 0.287885] 1b900000.pci supply vdda_phy not found, using dummy regulator
[ 0.287956] 1b900000.pci supply vdda_refclk not found, using dummy regulator
[ 0.418962] qcom-pcie 1b900000.pci: link initialization failed
[ 0.421079] qcom-pcie 1b900000.pci: PCI host bridge to bus 0002:00
[ 0.421114] pci_bus 0002:00: root bus resource [io 0x35e20000-0xfffff] (bus address [0x6bc00000-0x35edffff])
[ 0.421131] pci_bus 0002:00: root bus resource [mem 0x32000000-0x35dfffff]
[ 0.421181] PCI: bus0: Fast back to back transfers enabled
[ 0.423893] gsbi 16300000.gsbi: GSBI port protocol: 6 crci: 0
[ 0.425237] Serial: 8250/16550 driver, 2 ports, IRQ sharing disabled
[ 0.426268] msm_serial 16340000.serial: msm_serial: detected port #0
[ 0.426365] msm_serial 16340000.serial: uartclk = 1843200
[ 0.426478] 16340000.serial: ttyMSM0 at MMIO 0x16340000 (irq = 184, base_baud = 115200) is a MSM
[ 0.426481] msm_serial: console setup on port #0
[ 1.153373] console [ttyMSM0] enabled
[ 1.158150] msm_serial: driver initialized
[ 1.164979] nand: device found, Manufacturer ID: 0x01, Chip ID: 0xa1
[ 1.165420] nand: AMD/Spansion S34MS01G2
[ 1.180517] Scanning device for bad blocks
[ 1.587202] random: nonblocking pool is initialized
[ 1.890159] 19 ofpart partitions found on MTD device qcom-nandc
[ 1.890188] Creating 19 MTD partitions on "qcom-nandc":
[ 1.899470] 0x000000000000-0x000000040000 : "SBL1"
[ 1.901018] 0x000000040000-0x000000180000 : "MIBIB"
[ 1.905803] 0x000000180000-0x0000002c0000 : "SBL2"
[ 1.910519] 0x0000002c0000-0x000000540000 : "SBL3"
[ 1.915456] 0x000000540000-0x000000660000 : "DDRCONFIG"
[ 1.920162] 0x000000660000-0x000000780000 : "SSD"
[ 1.925327] 0x000000780000-0x000000a00000 : "T2"
[ 1.930144] 0x000000a00000-0x000000c80000 : "RPM"
[ 1.934907] 0x000000c80000-0x000000dc0000 : "art"
[ 1.939445] 0x000000dc0000-0x000000ec0000 : "APPSBL"
[ 1.944186] 0x000000ec0000-0x000000f00000 : "u_env"
[ 1.949186] 0x000000f00000-0x000000f40000 : "s_env"
[ 1.953858] 0x000000f40000-0x000000f80000 : "devinfo"
[ 1.958596] 0x000000f80000-0x000003780000 : "linux"
mtd: partition "rootfs" set to be root filesystem

libphy: Fixed MDIO Bus: probed

libphy: GPIO Bitbanged MDIO: probed

switch0: Atheros AR8337 rev. 2 switch registered on gpio-0

libphy: Enhanced/Alternate descriptors

libphy: Enabled extended descriptors

RX Checksum Offload Engine supported (type 2)

TX Checksum insertion supported

RX Checksum Offload Engine supported (type 2)

TX Checksum insertion supported

Wake-Up On Lan supported

Enable RX Mitigation via HW Watchdog Timer

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Enable RX Mitigation via HW Watchdog Timer

PPP generic driver version 2.4.2

PPP BSD Compression module registered

PPP Deflate Compression module registered

PPP MPPE Compression module registered

NET: Registered protocol family 24

PPTP driver version 0.8.5

i2c /dev entries driver

Speed bin: 0

PVS bin: 1

platform cpufreq-krait.0: Driver cpufreq-krait requests probe deferral

L2 @ QSB rate. Forcing new rate.

L2 @ 387500 KHz

CPU0 @ 800000 KHz

CPU1 @ 384000 KHz

GACT probability NOT on

Mirror/redirect action on

Simple TC action Loaded

netem: version 1.3

u32 classifier

Performance counters on

input device check on

Actions configured

Netfilter messages via NETLINK v0.30.

nf_contrack version 0.5.0 (7519 buckets, 30076 max)

nf_contrack_rtsp v0.7 loading

xt_time: kernel timezone is -0000
ath10k_pci 0001:01:00.0: enabling device (0140 -> 0142)
ath10k_pci 0001:01:00.0: pci irq msi oper_irq_mode 2 irq_mode 0 reset_mode 0
ath10k_pci 0001:01:00.0: Direct firmware load for ath10k/pre-cal-pci-0001:01:00.0.bin failed with error -2
ath10k_pci 0001:01:00.0: Falling back to user helper
ath10k_pci 0001:01:00.0: qca99x0 hw2.0 target 0x01000000 chip_id 0x003b01ff sub 168c:0002
ath10k_pci 0001:01:00.0: kconfig debug 1 debugfs 1 tracing 0 dfs 0 testmode 0
ath10k_pci 0001:01:00.0: firmware ver 10.4.1.00030-1 api 5 features no-p2p crc32 d2901e01
ath10k_pci 0001:01:00.0: unable to read from the device
ath10k_pci 0001:01:00.0: could not execute otp for board id check: -110
ath10k_pci 0001:01:00.0: failed to get board id from otp: -110
ath10k_pci 0001:01:00.0: failed to fetch board data for bus=pci,vendor=168c,device=0040,subsystem-vendor=168c,subsystem-device=0002 from ath10k/QCA99X0/hw2.0/board-2.bin
ath10k_pci 0001:01:00.0: board_file api 1 bmi_id N/A crc32 62700264
ath10k_pci 0001:01:00.0: htt-ver 2.2 wmi-op 6 htt-op 4 cal file max-sta 512 raw 0
ath: EEPROM regdomain: 0x0
ath: EEPROM indicates default country code should be used
ath: Country alpha2 being used: US
ath: Regpair used: 0x3a
device br0 entered promiscuous mode
device vlan1 entered promiscuous mode
device eth0 entered promiscuous mode
device vlan2 entered promiscuous mode
br0: port 2(vlan2) entered forwarding state
br0: port 2(vlan2) entered forwarding state
br0: port 1(vlan1) entered forwarding state
br0: port 1(vlan1) entered forwarding state
br0: port 3(ath0) entered forwarding state
br0: port 3(ath0) entered forwarding state
br0: port 4(ath1) entered forwarding state
br0: port 4(ath1) entered forwarding state
br0: port 4(ath1) entered forwarding state
br0: port 3(ath0) entered forwarding state
br0: port 3(ath0) entered forwarding state
br0: port 4(ath1) entered forwarding state
br0: port 4(ath1) entered forwarding state
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