# Quick Start Guide for starting Soft-AP or station in bridge mode

(A) How to add bridge:

```
# The command creates a new instance of the Ethernet bridge
brctl  addbr  br0
```

# The command will make the interface wlan0 a port of the bridge br0. This means that all frames received on wlan0 will be processed as if destined for the bridge.

```
brctl  addif  br0  wlan0
```

# You may get the error message “can't add wlan0 to bridge br0: Operation not supported” when the driver uses CFG80211, the Linux kernel version is greater than 2.5.35.1 and the wlan0 interface is not AP mode. You can modify kernel to remove the limitation of cfg80211 module and below is a modification sample of linux-3.10.63.

```
--- D: /linux-3.10.63/net/ wireless/util.c
+++ D: /linux-3.10.63/net/ wireless/util.c
@@ -815,11 +815,11 @@
                return -EOPNOTSUPP;

        /* if it's part of a bridge, reject changing type to station/ibss */
-       if ((dev->priv_flags & IFF_BRIDGE_PORT) &&
+       /*if ((dev->priv_flags & IFF_BRIDGE_PORT) &&
            (ntype == NL80211_IFTYPE_ADHOC ||
             ntype == NL80211_IFTYPE_STATION ||
             ntype == NL80211_IFTYPE_P2P_CLIENT))
-               return -EBUSY;
+               return -EBUSY;*/

        if (ntype != otype && netif_running(dev)) {
                mutex_lock(&rdev->devlist_mtx);
@@ -870,7 +870,7 @@
                        /* fall through */
                case NL80211_IFTYPE_P2P_CLIENT:
                case NL80211_IFTYPE_ADHOC:
-                       dev->priv_flags |= IFF_DONT_BRIDGE;
+                       //dev->priv_flags |= IFF_DONT_BRIDGE;
                        break;
                case NL80211_IFTYPE_P2P_GO:
                case NL80211_IFTYPE_AP:


--- D: /linux-3.10.63/net/wireless/core.c
+++ D: /linux-3.10.63/net/wireless/core.c
@@ -948,10 +948,10 @@
```

```
          netdev_set_default_ethtool_ops(dev, &cfg80211_ethtool_ops);

-         if ((wdev->iftype == NL80211_IFTYPE_STATION ||
+         /*if ((wdev->iftype == NL80211_IFTYPE_STATION ||
              wdev->iftype == NL80211_IFTYPE_P2P_CLIENT ||
              wdev->iftype == NL80211_IFTYPE_ADHOC) && !wdev-
>use_4addr)
-                 dev->priv_flags |= IFF_DONT_BRIDGE;
+                 dev->priv_flags |= IFF_DONT_BRIDGE;*/
          break;
      case NETDEV_GOING_DOWN:
          cfg80211_leave(rdev, wdev);
```

```
# The command will make the interface eth0 a port of the bridge br0.
brctl  addif  br0  eth0

# The command sets the bridge's “bridge forward delay” to zero seconds
brctl  setfd  br0  0
```

(B) Soft-AP in bridge mode:

(1) Add an additional configuration parameter, bridge, in the rtl_hostapd.conf file

```
bridge=br0
```

(2) The others are the same with normal Soft-AP mode. Please reference “Quick_Start_Guide_for_SoftAP.pdf” to get complete information.

(C) The station in bridge mode:

(1) start wpa_supplicant daemon with bridge name to replace one without bridge name in the background

```
wpa_supplicant -Dwext -iwlan0 -c /tmp/net/wpa.conf  -b br0 -B
```

(2) The wpa_supplicant may receive EAPOL packet fail in Linux kernel 3.9.1 ~ 4.0.5. You still can modify kernel to remove the limitation of bridge module and below is a modification sample of linux-3.10.63.

```
--- D: /linux-3.10.63/net/bridge/br_if.c
+++ D: /linux-3.10.63/net/bridge/br_if.c
@@ -75,7 +75,7 @@
          return;

      spin_lock_bh(&br->lock);
-     if (netif_running(dev) && netif_oper_up(dev)) {
+     if (netif_running(dev)) {
          if (p->state == BR_STATE_DISABLED)
```

```
                        br_stp_enable_port(p);
        } else {
@@ -387,7 +387,7 @@
        spin_lock_bh(&br->lock);
        changed_addr = br_stp_recalculate_bridge_id(br);

-       if (netif_running(dev) && netif_oper_up(dev) &&
+       if (netif_running(dev) &&
            (br->dev->flags & IFF_UP))
                br_stp_enable_port(p);
        spin_unlock_bh(&br->lock);

--- D: /linux-3.10.63/net/bridge/br_notify.c
+++ D: /linux-3.10.63/net/bridge/br_notify.c
@@ -82,7 +82,7 @@
                break;

        case NETDEV_UP:
-               if (netif_running(br->dev) && netif_oper_up(dev)) {
+               if (netif_running(br->dev)) {
                        spin_lock_bh(&br->lock);
                        br_stp_enable_port(p);
                        spin_unlock_bh(&br->lock);


--- D: /linux-3.10.63/net/bridge/br_stp_if.c
+++ D: /linux-3.10.63/net/bridge/br_stp_if.c
@@ -54,7 +54,7 @@
        br_config_bpdu_generation(br);

        list_for_each_entry(p, &br->port_list, list) {
-               if (netif_running(p->dev) && netif_oper_up(p->dev))
+               if (netif_running(p->dev))
                        br_stp_enable_port(p);

        }
```

If the Linux kernel version is greater than 3.16 you may not find the following file br_notify.c Please refer to (3)

(3)

```
--- D: /linux-3.16.51/net/bridge/br.c
+++ D: /linux-3.16.51/net/bridge/br.c
@@ -82,7 +82,7 @@
		break;

	case NETDEV_UP:
-		if (netif_running(br->dev) && netif_oper_up(dev)) {
+		if (netif_running(br->dev)) {
			spin_lock_bh(&br->lock);
			br_stp_enable_port(p);
			spin_unlock_bh(&br->lock);
```

(4) The others are the same with normal station mode. Please reference “wpa_cli_with_wpa_supplicant.pdf” to get complete information.

(D) wlan0 and eth0 don’t need IP address.

```
ifconfig wlan0 0.0.0.0
ifconfig eth0 0.0.0.0
```

(E) The bridge br0 may include multiple ports. Suggest set IP address at br0.

(1) Static ip address

```
ifconfig br0 192.168.0.1
```

(2) DHCP get ip address from DHCP server

```
dhclient br0
```

(F) How to recompile and reinstall cfg80211 and bridge module:

```
#recompile cfg80211 module
make clean -C /usr/src/linux-3.10.63 SUBDIRS=/usr/src/linux-3.10.63/net/wireless/
modules

#reinstall cfg80211 module
rmmod cfg80211.ko
insmod /usr/src/linux-3.10.63/net/wireless/cfg80211.ko

#recompile bridge module
make clean -C /usr/src/linux-3.10.63 SUBDIRS=/usr/src/linux-3.10.63/net/bridge/
modules

#reinstall cfg80211 module
rmmod bridge.ko
insmod /usr/src/linux-3.10.63/net/bridge/bridge.ko
```