Android SoftAP User Guide

Version: 1.0

Android2.3 Porting:

1. 增加 config.xml 配置项

gingerbread/frameworks/base/core/res/res/values/config.xml

```
<!-- List of regexpressions describing the interface (if any) that represent tetherable
         USB interfaces.   If the device doesn't want to support tething over USB this should
         be empty.   An example would be "usb.*" -->
    <string-array translatable="false" name="config_tether_usb_regexs">
         <item>"usb0"</item>
    </string-array>

    <!-- Regex array of allowable upstream ifaces for tethering - for example if you want
         tethering on a new interface called "foo2" add <item>"foo\\d"</item> to the array -->
    <string-array translatable="false" name="config_tether_upstream_regexs">
        <item>"rmnet\\d"</item>
        <item>"eth\\d"</item>
    </string-array>

    <!-- List of regexpressions describing the interface (if any) that represent tetherable
         Wifi interfaces.   If the device doesn't want to support tethering over Wifi this
         should be empty.   An example would be "softap.*" -->
    <string-array translatable="false" name="config_tether_wifi_regexs">
         <item>"wl0.1"</item>
    </string-array>
WIFI_DRIVER_FW_AP_PATH       := "/system/etc/firmware/fw_bcm4329_apsta.bin"
```

上面定义了三个字符串数组, 要支持 WiFi 和 USB 绑定功能, 这三个数组都必须定义并且至少要有一个字符串成员. config_tether_upstream_regexs 定义了上行网络接口名. 上行网络可以是以太网或者 3G 网络. 比如你的通讯接口名字是 ppp0, 那么就添加一条:

```
<item>"ppp\\d"</item>
```

2. 不同的 WiFi 芯片实现 Softap 的方式并不一样.   Bcm4329 的 firmware 实现了 softap 的 WPA/WPA2 的认证以及加密. 在打开 SoftAP 模式时, bcm4329 需要重新下载 firmware.
因此需要在 BoardConfig.mk 里面定义:

```
WIFI_DRIVER_FW_AP_PATH       := "/system/etc/firmware/fw_bcm4329_apsta.bin"
```

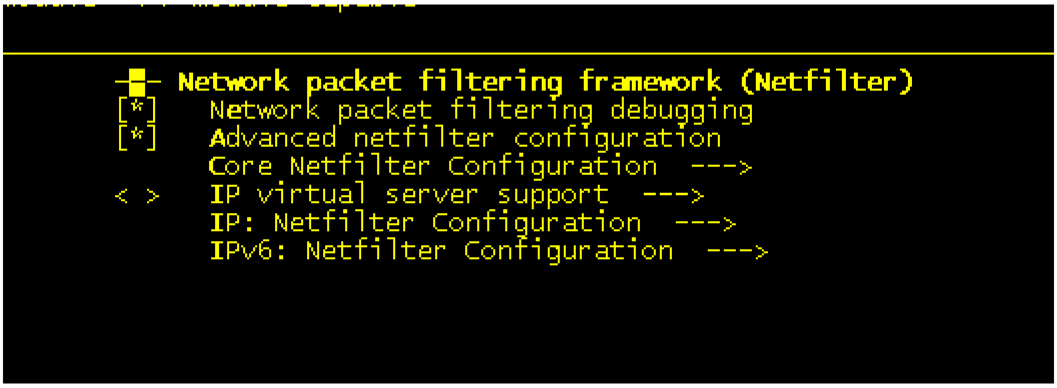
而有些 WiFi 芯片的 WPA/WPA2 认证和加密是通过软件 Hostapd 实现的. Android 的 netd 程序对于不同的实现方法定义了统一的接口. 了解 netd 请参考 gingbread/system/netd.

3. fw_bcm4329_apsta.bin 是 bcm4329 支持 SoftAP 需要下载的固件. 固件存放在 external/wlan_loader/firmware 下面. 编译目标是/system/etc/firmware..

内核 Porting:　(Kernel 2.6.32.27)

1. 内核配置.　make menuconfig.

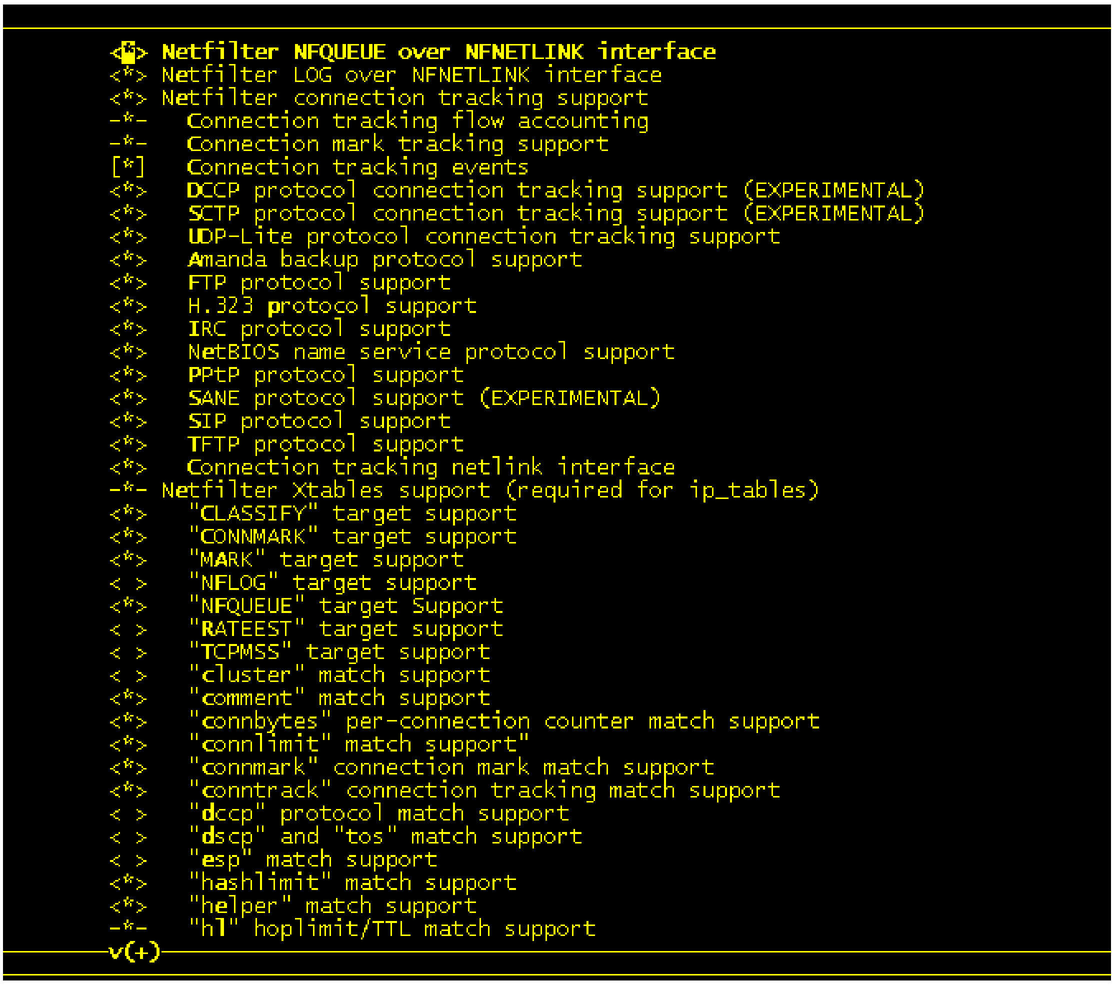
2. 打开 NETFILTER,　NETFILTER 的配置在 Networking Support -- > Networking options → Networking Packet filtering framework(Netfilter)里面.　进入 Netfilter:



```
 -*- Network packet filtering framework (Netfilter)
 [*]   Network packet filtering debugging
 [*]   Advanced netfilter configuration
       Core Netfilter Configuration  --->
 < >   IP virtual server support  --->
       IP: Netfilter Configuration  --->
       IPv6: Netfilter Configuration  --->
```

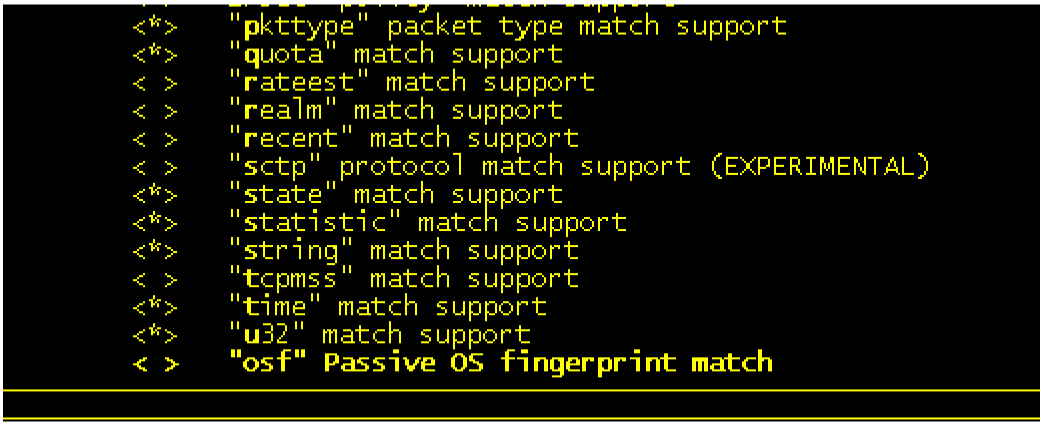
选定 Network packet filtering debugging 和 Advanced netfilter configuration.

3. 进入 Core Netfilter Configuration -→



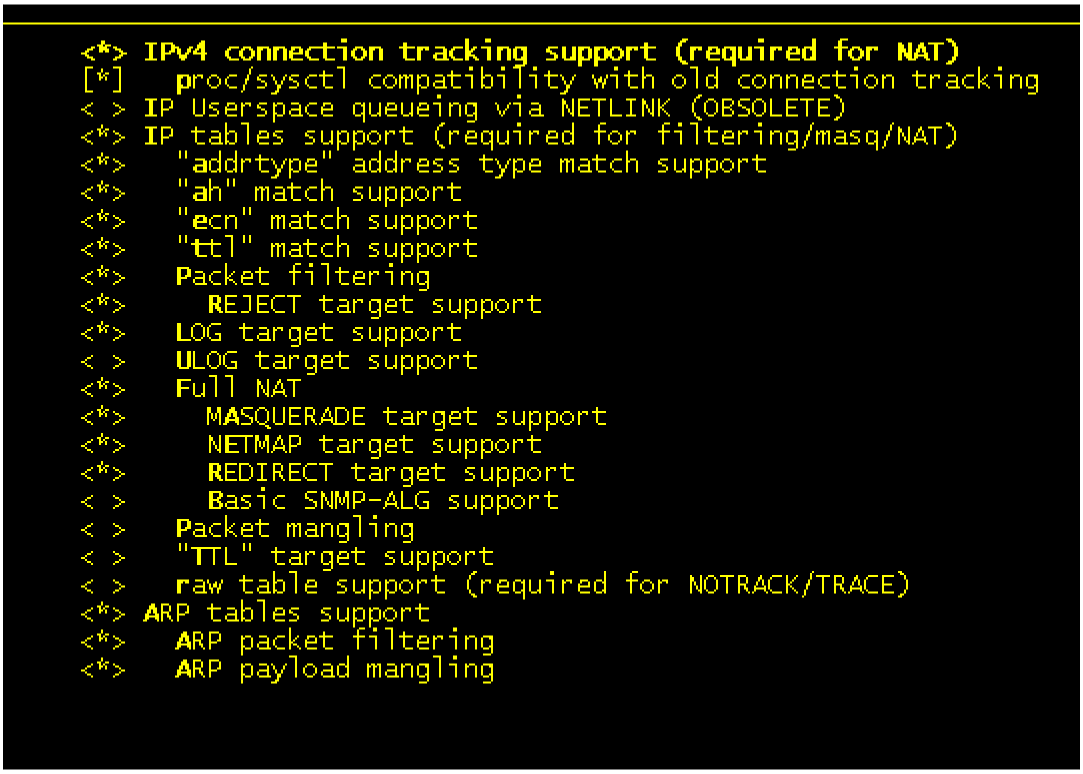
```
<*> Netfilter NFQUEUE over NFNETLINK interface
<*> Netfilter LOG over NFNETLINK interface
<*> Netfilter connection tracking support
-*-   Connection tracking flow accounting
-*-   Connection mark tracking support
[*]   Connection tracking events
<*>   DCCP protocol connection tracking support (EXPERIMENTAL)
<*>   SCTP protocol connection tracking support (EXPERIMENTAL)
<*>   UDP-Lite protocol connection tracking support
<*>   Amanda backup protocol support
<*>   FTP protocol support
<*>   H.323 protocol support
<*>   IRC protocol support
<*>   NetBIOS name service protocol support
<*>   PPtP protocol support
<*>   SANE protocol support (EXPERIMENTAL)
<*>   SIP protocol support
<*>   TFTP protocol support
<*>   Connection tracking netlink interface
-*- Netfilter Xtables support (required for ip_tables)
<*>   "CLASSIFY" target support
<*>   "CONNMARK" target support
<*>   "MARK" target support
< >   "NFLOG" target support
<*>   "NFQUEUE" target Support
< >   "RATEEST" target support
< >   "TCPMSS" target support
< >   "cluster" match support
<*>   "comment" match support
<*>   "connbytes" per-connection counter match support
<*>   "connlimit" match support"
<*>   "connmark" connection mark match support
<*>   "conntrack" connection tracking match support
< >   "dccp" protocol match support
< >   "dscp" and "tos" match support
< >   "esp" match support
<*>   "hashlimit" match support
<*>   "helper" match support
-*-   "hl" hoplimit/TTL match support
v(+)
```

配置项大于一页, go on!



```
<*>    "pkttype" packet type match support
<*>    "quota" match support
< >    "rateest" match support
< >    "realm" match support
< >    "recent" match support
< >    "sctp" protocol match support (EXPERIMENTAL)
<*>    "state" match support
<*>    "statistic" match support
<*>    "string" match support
< >    "tcpmss" match support
<*>    "time" match support
<*>    "u32" match support
< >    "osf" Passive OS fingerprint match
```

4.　进入 IP: Netfilter Configuration --->



```
<*> IPv4 connection tracking support (required for NAT)
[*]   proc/sysctl compatibility with old connection tracking
< > IP Userspace queueing via NETLINK (OBSOLETE)
<*> IP tables support (required for filtering/masq/NAT)
<*>   "addrtype" address type match support
<*>   "ah" match support
<*>   "ecn" match support
<*>   "ttl" match support
<*>   Packet filtering
<*>     REJECT target support
<*>   LOG target support
< >   ULOG target support
<*>   Full NAT
<*>     MASQUERADE target support
<*>     NETMAP target support
<*>     REDIRECT target support
< >     Basic SNMP-ALG support
< >   Packet mangling
< >   "TTL" target support
< >   raw table support (required for NOTRACK/TRACE)
<*> ARP tables support
<*>   ARP packet filtering
<*>   ARP payload mangling
```

配置完成．保存．退出 make menuconfig.