



▶ **Marvell.** Moving Forward Faster

Marvell PXA1826 Web Service

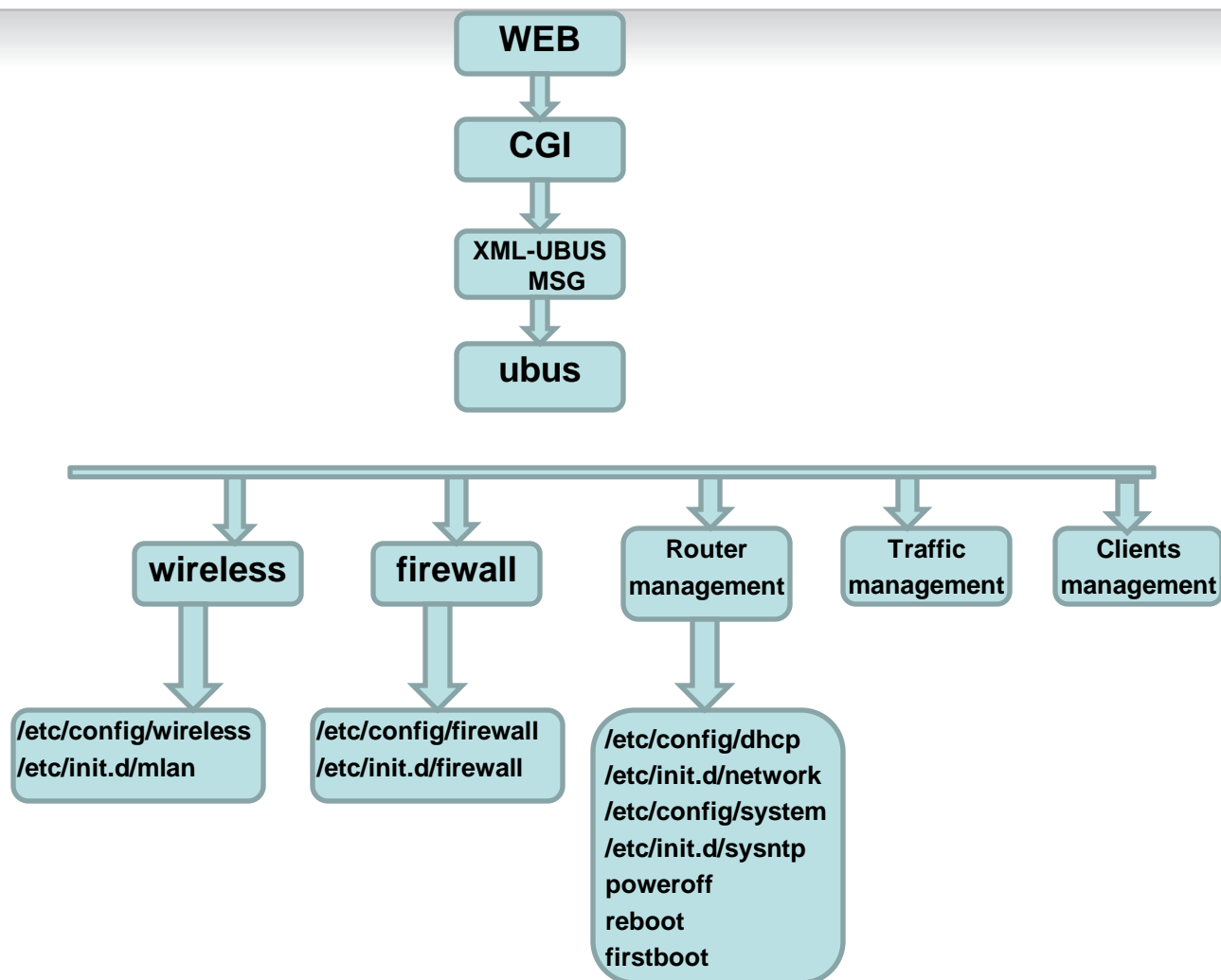
2015



Services

- ▶ **wireless -- Get /Set WIFI settings**
- ▶ **router_firewall**
- ▶ **router: dhcp settings, time settings , reboot, poweroff , restore factory, webdav**
- ▶ **Traffic management: daily, idle-time, certain-time, monthly. common**
- ▶ **Clients management: connected device; block/unblock.**

Work Flow



Traffic Management

- ▶ Get the current used data
- ▶ Set available data
- ▶ Set warning on/off
- ▶ Adjust the used value
- ▶ Set disconnected function when used up
- ▶ Get the daily used value
- ▶ Set idle time settings (on/off, start/end hour).
- ▶ Set the period of time settings. (On/off, start/end date)
- ▶ Get the speed rate at given interval

Get Traffic Statistics from OpenWRT

- ▶ The data which go through one net interface(e.g. etho) can be read from “sys/class/net/if_name/statistics/”

```
root@OpenWrt:/sys/class/net# ls
br-lan  ccinet1  ccinet3  ccinet5  ccinet7  lo      uap0
ccinet0  ccinet2  ccinet4  ccinet6  ip6tnl0  tunl0   usbnet0
root@OpenWrt:/sys/class/net#
```

- ▶ The files under ‘/sys/class/net/**if_name**/statistics’:

```
root@OpenWrt:/sys/devices/virtual/net/ccinet4/statistics# ls
collisions      rx_frame_errors  tx_compressed
multicast       rx_length_errors tx_dropped
rx_bytes        rx_missed_errors tx_errors
rx_compressed   rx_over_errors   tx_fifo_errors
rx_crc_errors   rx_packets       tx_heartbeat_errors
rx_dropped      tx_aborted_errors tx_packets
rx_errors       tx_bytes         tx_window_errors
rx_fifo_errors  tx_carrier_errors
```

- ▶ tx_bytes: transferred bytes
- ▶ rx_packets: received packets
- ▶ tx_packets: transferred packets
- ▶ These files are refreshed by kernel.
- ▶ The wan interface created by Dialer is named as ccinet*. And there may be several net interface (multiple PDP). The traffic module gets the current active net interface created by PDP from dialer module.

Main Structure

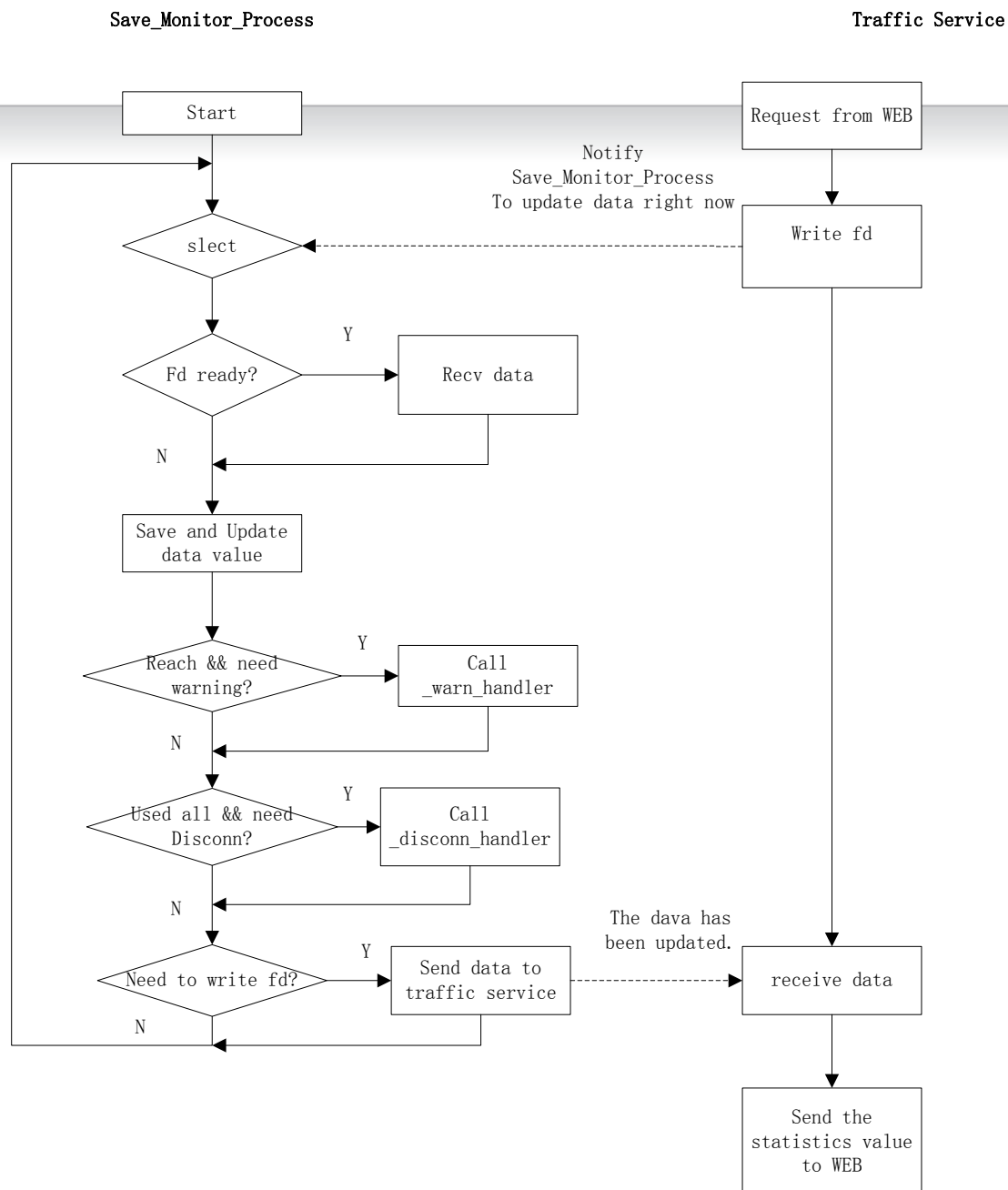
▶ Save_Monito_Process

- ▶ this process is responsible for updating and saving statistics value to UCI file, and deciding whether or not to warn or disconnect the network.
- ▶ do
- ▶ {
- ▶ ...
- ▶ ret = select(maxfdp, &fds, &fds, NULL, &timeout)
- ▶ ...
- ▶ }while(1);
- ▶ The timeout is 30 seconds.
- ▶ This process will run a loop every 30 seconds. So the statistics data value are updated every 30 seconds if no fd is ready.

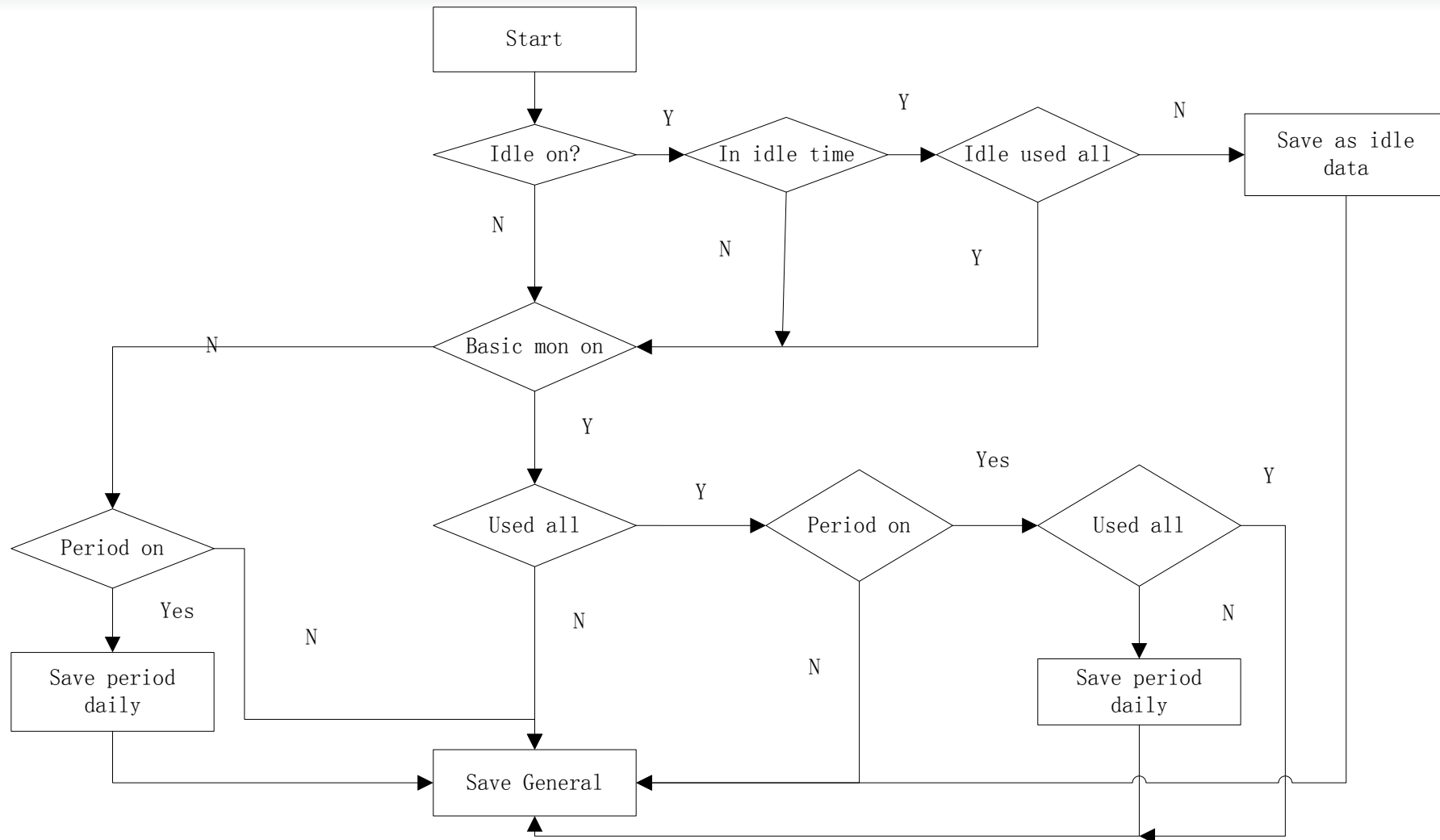
Main Structure

▶ Traffic_Service_Process

- ▶ This process receives request from CGI, collects data, transfers the data to blobmsg format, sends the blobmsg to CGI
- ▶ When the Traffic_Service_Process receives request from CGI, and wants to get the current statistics value, because the Save_Monitor_Process updates the value every 30 seconds, the Traffic_Service_Process needs to invoke the Save_Monitor_Process by writing command to the socket.



Save and Update flow: Idle time→basic month→Period



Crontab Task

- ▶ 1. At the end of this month
- ▶ 2. At the begin,end of one period
- ▶ 3. At the end of the day
- ▶ 4. At the begin,end of the idle time.
- ▶
- ▶ Call ubus method→Traffic_Service_Process→Save_Monitor_Process

Clients Management

▶ WIFI Clients

Watch hostapd service

Up/down/connect/disconnect

▶ USB Clients

Monitor USB in/out event from netlink

After boot, read certain file to get current USB status

USB Clients

● BLOCK/UNBLOCK WIFI CLIENTS

Mac filter

● Traffic per client.

Iptables.

Thank you.