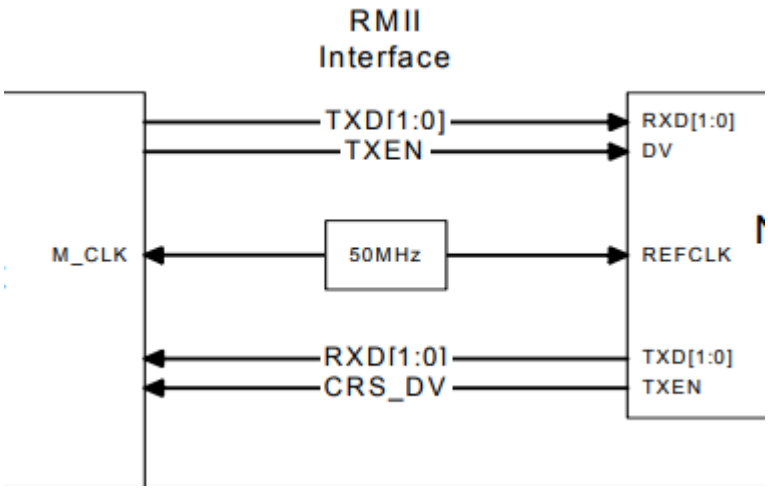
Rockchip RMII MAC To MAC

目录

1. 硬件连接

RMII 直连如下图, 另外 RX_ERR 接地.



2. 软件配置

以 PX30 和 RV1126 为例, RV1126 输出 50M 参考时钟, PX30 配置为时钟输入模式.

1. rv1126 output:

```
diff --git a/arch/arm/boot/dts/rv1126-evb-v10.dtsi b/arch/arm/boot/dts/rv1126-evb-v10.dtsi
index 396ef1516054..a384e657ebac 100644
--- a/arch/arm/boot/dts/rv1126-evb-v10.dtsi
+++ b/arch/arm/boot/dts/rv1126-evb-v10.dtsi
@@ -568,26 +568,21 @@
 };

 &gmac {
-	phy-mode = "rgmii";
-	clock_in_out = "input";
+	phy-mode = "rmii";
+	clock_in_out = "output";

-	snps,reset-gpio = <&gpio3 RK_PA0 GPIO_ACTIVE_LOW>;
-	snps,reset-active-low;
-	/* Reset time is 20ms, 100ms for rtl8211f */
-	snps,reset-delays-us = <0 20000 100000>;
-
-	assigned-clocks = <&cru CLK_GMAC_SRC>, <&cru CLK_GMAC_TX_RX>, <&cru CLK_GMAC_ETHERNET_OUT>;
-	assigned-clock-parents = <&cru CLK_GMAC_SRC_M1>, <&cru RGMII_MODE_CLK>;
-	assigned-clock-rates = <125000000>, <0>, <25000000>;
+	assigned-clocks = <&cru CLK_GMAC_SRC_M1>, <&cru CLK_GMAC_SRC>, <&cru CLK_GMAC_TX_RX>;
+	assigned-clock-rates = <0>, <50000000>;
+	assigned-clock-parents = <&cru CLK_GMAC_RGMII_M1>, <&cru CLK_GMAC_SRC_M1>, <&cru RMII_MODE_CLK>;

 	pinctrl-names = "default";
-	pinctrl-0 = <&rgmiim1_pins &clk_out_ethernetm1_pins>;
-
-	tx_delay = <0x2a>;
-	rx_delay = <0x1a>;
+	pinctrl-0 = <&rmiim1_pins &gmac_clk_m1_drv_level0_pins>;

-	phy-handle = <&phy>;
 	status = "okay";
+	fixed-link {
+		speed = <100>;
+		full-duplex;
+	};
 };

 &i2c0 {
```

2. px30 input:

```
diff --git a/arch/arm64/boot/dts/rockchip/px30-evb-ddr3-v10-linux.dts
b/arch/arm64/boot/dts/rockchip/px30-evb-ddr3-v10-linux.dts
index 7693764a0dbe..6f548808e3ec 100644
--- a/arch/arm64/boot/dts/rockchip/px30-evb-ddr3-v10-linux.dts
+++ b/arch/arm64/boot/dts/rockchip/px30-evb-ddr3-v10-linux.dts
@@ -326,11 +326,17 @@

 &gmac {
         phy-supply = <&vcc_phy>;
-        clock_in_out = "output";
-        snps,reset-gpio = <&gpio2 13 GPIO_ACTIVE_LOW>;
-        snps,reset-active-low;
-        snps,reset-delays-us = <0 50000 50000>;
+        clock_in_out = "input";
+        assigned-clocks = <&cru SCLK_GMAC>;
+        assigned-clock-parents = <&gmac_clkin>;
+        pinctrl-names = "default";
+        pinctrl-0 = <&rmii_pins &mac_refclk>;
         status = "okay";
+
+        fixed-link {
+                speed = <100>;
+                full-duplex;
+        };
 };

 &gpu {
```

```
diff --git a/arch/arm64/configs/px30_linux_defconfig
b/arch/arm64/configs/px30_linux_defconfig
index b73d05c8ad26..486e971c2d90 100644
--- a/arch/arm64/configs/px30_linux_defconfig
+++ b/arch/arm64/configs/px30_linux_defconfig
@@ -136,6 +136,7 @@ CONFIG_STMMAC_ETH=y
 # CONFIG_NET_VENDOR_VIA is not set
 # CONFIG_NET_VENDOR_WIZNET is not set
 CONFIG_ROCKCHIP_PHY=y
+CONFIG_FIXED_PHY=y
 CONFIG_USB_RTL8150=y
 CONFIG_USB_RTL8152=y
 CONFIG_USB_NET_CDC_MBIM=y
```

3. 测试结果

3.1 TCP 测试

3.1.1 RV1126 -> PX30

```
[root@RV1126_RV1109:/]# iperf -c 192.168.1.101 -i 1 -t 10
------------------------------------------------------------
Client connecting to 192.168.1.101, TCP port 5001
TCP window size: 43.8 KByte (default)
------------------------------------------------------------
[  3] local 192.168.1.100 port 48618 connected with 192.168.1.101 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 1.0 sec  11.6 MBytes  97.5 Mbits/sec
[  3]  1.0- 2.0 sec  11.0 MBytes  94.3 Mbits/sec
[  3]  2.0- 3.0 sec  11.1 MBytes  93.3 Mbits/sec
[  3]  3.0- 4.0 sec  11.0 MBytes  93.3 Mbits/sec
[  3]  4.0- 5.0 sec  11.2 MBytes  94.4 Mbits/sec
[  3]  5.0- 6.0 sec  11.0 MBytes  94.3 Mbits/sec
[  3]  6.0- 7.0 sec  11.0 MBytes  94.3 Mbits/sec
[  3]  7.0- 8.0 sec  11.0 MBytes  93.3 Mbits/sec
[  3]  8.0- 9.0 sec  11.1 MBytes  94.3 Mbits/sec
[  3]  9.0-10.0 sec  11.0 MBytes  93.3 Mbits/sec
[  3]  0.0-10.0 sec   111 MBytes  94.2 Mbits/sec
```

3.1.2 PX30 -> RV1126

```
[root@px30_64:/]# iperf -c 192.168.1.100 -i 1 -t 10
------------------------------------------------------------
Client connecting to 192.168.1.100, TCP port 5001
TCP window size: 45.0 KByte (default)
------------------------------------------------------------
[  3] local 192.168.1.101 port 52690 connected with 192.168.1.100 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 1.0 sec  11.5 MBytes  96.5 Mbits/sec
[  3]  1.0- 2.0 sec  11.2 MBytes  94.4 Mbits/sec
[  3]  2.0- 3.0 sec  11.4 MBytes  95.4 Mbits/sec
[  3]  3.0- 4.0 sec  11.1 MBytes  93.3 Mbits/sec
[  3]  4.0- 5.0 sec  11.2 MBytes  94.4 Mbits/sec
[  3]  5.0- 6.0 sec  11.1 MBytes  93.3 Mbits/sec
[  3]  6.0- 7.0 sec  11.4 MBytes  95.4 Mbits/sec
[  3]  7.0- 8.0 sec  11.2 MBytes  94.4 Mbits/sec
[  3]  8.0- 9.0 sec  11.1 MBytes  93.3 Mbits/sec
[  3]  9.0-10.0 sec  11.2 MBytes  94.4 Mbits/sec
[  3]  0.0-10.0 sec   113 MBytes  94.4 Mbits/sec
```

3.2 UDP 测试

3.2.1 RV1126 -> PX30

```
[root@RV1126_RV1109:/]# iperf -c 192.168.1.101 -i 1 -t 10 -u -b 100M
------------------------------------------------------------
Client connecting to 192.168.1.101, UDP port 5001
Sending 1470 byte datagrams, IPG target: 112.15 us (kalman adjust)
UDP buffer size:  160 KByte (default)
------------------------------------------------------------
[  3] local 192.168.1.100 port 48888 connected with 192.168.1.101 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 1.0 sec  11.5 MBytes  96.3 Mbits/sec
[  3]  1.0- 2.0 sec  11.4 MBytes  95.7 Mbits/sec
[  3]  2.0- 3.0 sec  11.4 MBytes  95.9 Mbits/sec
[  3]  3.0- 4.0 sec  11.4 MBytes  95.5 Mbits/sec
[  3]  4.0- 5.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  5.0- 6.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  6.0- 7.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  7.0- 8.0 sec  11.4 MBytes  96.0 Mbits/sec
[  3]  8.0- 9.0 sec  11.4 MBytes  95.7 Mbits/sec
[  3]  9.0-10.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  0.0-10.0 sec   114 MBytes  95.7 Mbits/sec
[  3] Sent 81437 datagrams
[  3] Server Report:
[  3]  0.0-10.0 sec   114 MBytes  95.7 Mbits/sec   0.000 ms    0/81437 (0%)
```

3.2.2 PX30 -> RV1126

```
[root@px30_64:/]# iperf -c 192.168.1.100 -i 1 -t 10 -u -b 100M
------------------------------------------------------------
Client connecting to 192.168.1.100, UDP port 5001
Sending 1470 byte datagrams, IPG target: 112.15 us (kalman adjust)
UDP buffer size:  208 KByte (default)
------------------------------------------------------------
[  3] local 192.168.1.101 port 41144 connected with 192.168.1.100 port 5001
[ ID] Interval       Transfer     Bandwidth
[  3]  0.0- 1.0 sec  11.3 MBytes  95.0 Mbits/sec
[  3]  1.0- 2.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  2.0- 3.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  3.0- 4.0 sec  11.3 MBytes  95.0 Mbits/sec
[  3]  4.0- 5.0 sec  11.4 MBytes  96.0 Mbits/sec
[  3]  5.0- 6.0 sec  11.2 MBytes  94.3 Mbits/sec
[  3]  6.0- 7.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  7.0- 8.0 sec  11.4 MBytes  95.6 Mbits/sec
[  3]  8.0- 9.0 sec  11.4 MBytes  95.7 Mbits/sec
[  3]  0.0-10.0 sec   114 MBytes  95.4 Mbits/sec
[  3] Sent 81133 datagrams
[  3] Server Report:
[  3]  0.0-10.0 sec   114 MBytes  95.4 Mbits/sec   0.000 ms    0/81133 (0%)
```

3.3 PING 测试

3.3.1 RV1126 -> PX30

```
[root@RV1126_RV1109:/]# ping -s 65500 192.168.1.101 -c 100
PING 192.168.1.101 (192.168.1.101) 65500(65528) bytes of data.
65508 bytes from 192.168.1.101: icmp_seq=1 ttl=64 time=12.5 ms
65508 bytes from 192.168.1.101: icmp_seq=2 ttl=64 time=13.1 ms
65508 bytes from 192.168.1.101: icmp_seq=3 ttl=64 time=50.8 ms
65508 bytes from 192.168.1.101: icmp_seq=4 ttl=64 time=12.5 ms
65508 bytes from 192.168.1.101: icmp_seq=5 ttl=64 time=12.6 ms
65508 bytes from 192.168.1.101: icmp_seq=6 ttl=64 time=12.5 ms
.........................................................
65508 bytes from 192.168.1.101: icmp_seq=95 ttl=64 time=12.7 ms
65508 bytes from 192.168.1.101: icmp_seq=96 ttl=64 time=12.5 ms
65508 bytes from 192.168.1.101: icmp_seq=97 ttl=64 time=12.6 ms
65508 bytes from 192.168.1.101: icmp_seq=98 ttl=64 time=14.5 ms
65508 bytes from 192.168.1.101: icmp_seq=99 ttl=64 time=46.6 ms
65508 bytes from 192.168.1.101: icmp_seq=100 ttl=64 time=12.9 ms

--- 192.168.1.101 ping statistics ---
100 packets transmitted, 100 received, 0% packet loss, time 99155ms
rtt min/avg/max/mdev = 12.369/15.634/15.890/0.572 ms
```

3.3.2 PX30 -> RV1126

```
[root@px30_64:/]# ping -s 65500 192.168.1.100 -c 100
PING 192.168.1.100 (192.168.1.100) 65500(65528) bytes of data.
65508 bytes from 192.168.1.100: icmp_seq=1 ttl=64 time=12.8 ms
65508 bytes from 192.168.1.100: icmp_seq=2 ttl=64 time=12.9 ms
65508 bytes from 192.168.1.100: icmp_seq=3 ttl=64 time=12.5 ms
65508 bytes from 192.168.1.100: icmp_seq=4 ttl=64 time=12.8 ms
65508 bytes from 192.168.1.100: icmp_seq=5 ttl=64 time=12.4 ms
65508 bytes from 192.168.1.100: icmp_seq=6 ttl=64 time=13.1 ms
65508 bytes from 192.168.1.100: icmp_seq=7 ttl=64 time=12.3 ms
65508 bytes from 192.168.1.100: icmp_seq=8 ttl=64 time=12.6 ms
.........................................................
65508 bytes from 192.168.1.100: icmp_seq=95 ttl=64 time=12.3 ms
65508 bytes from 192.168.1.100: icmp_seq=96 ttl=64 time=13.0 ms
65508 bytes from 192.168.1.100: icmp_seq=97 ttl=64 time=12.7 ms
65508 bytes from 192.168.1.100: icmp_seq=98 ttl=64 time=12.6 ms
65508 bytes from 192.168.1.100: icmp_seq=99 ttl=64 time=12.8 ms
65508 bytes from 192.168.1.100: icmp_seq=100 ttl=64 time=12.6 ms

--- 192.168.1.100 ping statistics ---
100 packets transmitted, 100 received, 0% packet loss, time 99184ms
rtt min/avg/max/mdev = 12.177/12.748/14.039/0.384 ms

```