S32G Linux GMAC Driver User's Manual

Contents

Chapter 1

Revision History

Revision	Change Description
0.1	Initial version for preEAR (VDK)

Table 1.1: Revision History

Chapter 2

Introduction

The Linux GMAC driver is, in general, an OS-specific SW component responsible for the complex GMAC management. The driver runs within the target host OS environment and connects the GMAC with networking stack. It provides access to physical Ethernet interface via exposing logical interface to the OS, and the OS together with user's applications can use the Ethernet connectivity via standard OS-provided interfaces (i.e. network sockets).

Chapter 3

Building Procedure

The driver can be embedded to the Linux kernel or it can be build as standalone kernel module.

3.1 Updating source files

Merge (add non existing and replace existing files) following folder with the provided one:

- drivers/net/ethernet/stmicro/stmmac

3.2 Enable the following kernel configs

1. Call "bitbake -c menuconfig linux-s32"
2. Edit config:
   CONFIG_STMMAC_ETH=<mode>
   CONFIG_STMMAC_PLATFORM=<mode>
   CONFIG_DWMAC_S32CC=<mode>
   where <mode> is 'm' in case of loadable module or 'y' if the driver should be built-in inside the kernel.

3.3 Modify DTS file

Add the entry to the device tree located at: arch/arm64/boot/dts/freescale/s32-gen1.dtsi

```
gmac0: ethernet@4033c000 {
        compatible = "fsl,s32cc-dwmac", "fsl,dwc-eqos";
        reg = <0x0 0x4033c000 0x0 0x2000>;
        interrupt-parent = <&gic>;
        interrupts = <0 57 4>;
        interrupt-names = "macirq";
        clocks = <&sysclk>, <&sysclk>;
        clock-names = "stmmaceth", "pclk";
        phy-mode = "gmii";
        phy-handle = <&phy1>;
        mdio0 {
                compatible = "snps,dwmac-mdio";
                #address-cells = <1>;
                #size-cells = <0>;
                phy1: ethernet-phy@1 {
                        reg = <1>;
                };
        };
};
```

3.4 Rebuild the BSP.

After kernel boot, the driver should get started already (if the driver was built-in) or it has to be loaded manually ("modprobe dwmac-s32cc"). To check that the network interface was created call "ifconfig -a" ."eth0" should be available.

Chapter 4

Usage

Standard Linux tools can be used to configure the driver.