



Integrated Device Technology, Inc.

## DEVICE DRIVERS CONTAINED IN IDT/SIM™ FOR IDT ORION™ and RISCONTROLLER™ FAMILIES

TECHNICAL  
NOTE  
TN-24

### INTRODUCTION

This technical note describes the various device drivers currently available from IDT in IDT/sim and IDT/kit™.

Of course, these software tools are constantly being enhanced, and additional drivers implemented. For current information, IDT recommends you work with your local sales representative.

In addition, many third-party companies provide additional software support, including real-time operating systems, network protocol support, and device drivers. Information on these products is available through the Advantage-IDT program.

### Device Drivers Listing

All drivers listed below can currently be found in IDT/sim 5.1 source code. Overall, support for 9 different devices is currently available.

In addition to shortening development time for systems using the specific devices listed here, these functions can also be used as templates for systems requiring identical functions, but using different peripheral devices to implement them.

Finally, note that this listing does NOT include a listing of devices for which initialization-only functions are available in IDT/sim. Examples of these include start-up routines for the CPUs themselves, initialization of external DRAM controller devices (such as the one found on the '381 board), and memory sizing routines. While these functions tend to be system-specific, firmware engineers can use the source code provided with IDT/sim as a template for these functions.

#### 8251:

Serial I/O device driver.

Source code in: SIM3000/drivers/drv\_8251

#### 8254:

Programmable interval timer driver: Contains code to install the driver (call to install\_new\_dev() - SIM function), as well as the driver itself. Since this device does not transfer any data, there are no read/write functions. As such it is not the most representative driver - However it is an i-o device present on the original R3000A evaluation board, the 7RS382.

Source code in: SIM3000/drivers/drv\_8254

#### 8530:

SCC Driver. (Serial Communications Controller). This driver implements the standard asynchronous UART functions contained in the 8530/85C30.

Source code in: SIM4000/drivers/drv\_8530 and SIM3000/drivers/drv\_8530

#### Centronics Driver.

Parallel port driver for old IBM/PC centronics interface. The driver works with the hardware implementation of Centronics found in the 79S385A evaluation system, which uses a parallel register/FIFO structure to receive data.

Source code in: SIM3000/drivers/drv\_centron

#### SCSI Driver.

Source code in: SIM4000/drivers/scsi & SIM3000/drivers/scsi

#### PC Backplane ISA I/O 16-bit Driver.

This driver was implemented to support the use of the '341 board in a PC/AT. There is a support program called pcio15.exe, which allows the PC/AT to act as a terminal for the '341 board.

Source code can be found in: COMMON/c\_asm: pcio16asm.S pcio16asm.s pcio16drv.c

**68681/2681:**

DUART driver. A function called timer\_start() sets tty1 (for all R3000 based boards except '381) to 9600 baud. A function called timer\_stop() calculates elapsed time based on baud rate. It changes the baud rate of the unit in io->icb\_di->dev\_unit. This also has timer\_start and timer\_stop that are subsets of those in the c\_asm dir.

Source code can be found in: COMMON/c\_asm/s68681cons.c

Code can also be found in SIM3000/drivers/drv\_68681

**SONIC:**

Ethernet Controller. Implements UDP protocol. Source code for this function is found in SIM4000/net/netinet/udp\*. Ethernet address resolution protocol code is found in SIM4000/net/netinet/if\_ether.c

The driver supports the "ping" command using the "ICMP" protocol; source code for this is found in SIM4000/net/netinet/\*icmp\*

TFTP routines in SIM4000/net/cmdsi/tftplib.c

Source code can be found in SIM4000/net/drivers

Support functions are in SIM4000/net/net

**uPD72001 (NEC):**

Serial (DUART) I/O controller. This Duart is contained in the 79S460 evaluation system for the R4600.

Source code is found in SIM4000/mpsccons.c