NAME

mgsimdev-rtc − Real time clock pseudo-device in MGSim

DESCRIPTION

The real−time clock allows programs running on the platform to sample real time (outside of the simulation environment) and signal asynchronous events to the programs at configurable time periods.

An I/O device of this type can be specified in MGSim using the device type **RTC**.

CONFIGURATION

RTCMeatSpaceUpdateInterval

Mimimal real−time interval at which the RTC will check the time and trigger events. This defines the clock's resolution.

Note: a higher resolution will degrade the simulation speed.

PROTOCOL

Reading the time

When queried explicitly using *I/O read* requsts, words 6−9 provide a broken−down description of the current time and date, analogous to **struct tm** in C.

The format is as follows:

Word	Bits	Description
6,8	0−5	Seconds (0−59)
6,8	6−11	Minutes (0−59)
6,8	12−16	Hours (0−23)
6,8	17−21	Day in month (0−30)
6,8	22−25	Month in year (0−11)
6,8	26−31	Number of years since 1970 (0−63)
7,9	0−3	Day of week (Sunday = 0)
7,9	4−12	Day of year (0−365)
7,9	13	Whether summer time is in effect
7,9	14−31	Offset from UTC in seconds (0−86399)

Notifications

The RTC pseudo−device can also be configured to signal (notify) the system at specified real time intervals. This is set using word 1 (delay) and word 2 (which notification channel to use).

If the I/O bus is busy it is possible that the notification cannot be sent for an entire period. In this case, the value of word 3 determines whether intermediate notifications are skipped or whether they accumulate, to be delivered eventually.

INTERFACE

The RTC device presents itself to the I/O bus as a single device. It must be accessed using 32−bit I/O operations. Its device address space is as follows:

32−bit word	Mode	Description
0	R	Clock resolution in microseconds of real time

1	R/W	Notification delay (in microseconds, set to 0 to disable notifications)
2	R/W	Notification channel to use for notifications
3	R/W	Boolean: whether to deliver all events
4	R	Microseconds part of the current Greenwich time since Jan 1, 1970
5	R	Seconds part of the current Greenwich time since Jan 1, 1970
6	R	Packed UTC time/date (part 1, see below)
7	R	Packed UTC time/date (part 2, see below)
8	R	Packed local time/date (part 1, see below)
9	R	Packed local time/date (part 2, see below)

To change the notification channel number, it is recommended to first disable notifications (set the delay to 0), so as to cancel any pending notification to the old channel number.

SEE ALSO

mgsim(1), mgsimdoc(7)

BUGS

Report bugs & suggest improvements to *microgrids@svp−home.org*.

AUTHOR

MGSim was created by Mike Lankamp. MGSim is now under stewardship of the Microgrid project. This manual page was written by Raphael 'kena' Poss.

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