

RX62N

R20AN0103EJ0100

Rev.1.00

Implementation of DNS client on M3S-T4-Tiny

Apr 04, 2011

Introduction

This document explains implementation of DNS (Domain Name System) client on M3S-T4-Tiny. DNS client is the program getting IP address which corresponds domain name (etc: www.renesas.com) from DNS server.

This document has sample program which works on Renesas Starter Kit+ for RX62N (Hereafter, it is abbreviated as RSK).

function	product	website
TCP/IP	M3S-T4-Tiny	http://www.renesas.com/mw/t4

Target Device

RX62N

1. Confirm sample program working

1.1 Hardware setup

Please connect PC and RSK to same network. And the network needs some DNS server.

1.2 Software setup

1.2.1 RSK IP address setup

The sample program uses fixed IP address (192.168.0.3). The sample program needs network which has some DNS server. DNS server IP address can be set to "r_dns.h".

1.3 Execute sample program

Sample program is built at High-performance Embedded Workshop. "Ether.hws" is project file and user will double click this file to edit project. Sample program has already setup to work on RSK with E1 emulator. Please continue according to the display of the screen. When E1 completes connection to RSK, please set breakpoint to CloseTimer() function at "main_t4_sample.c" line 103. Please push "GO" button to execute sample program.

When sample program breaks, please confirm "name_table" structure including IP address and domain name from DNS server.

2. Specification of sample program

2.1 Data structure

[The structure of DNS data]

```
#define NAME_SIZE 256
typedef struct _name_table
{
    char name[NAME_SIZE];
    unsigned char ipaddr[4];
}DNS;
```

2.2 API reference

2.2.1 R_resolve_name

Description

The application calls this function once after calling tcpudp_open(). This function is terminated with status completed process or abnormal termination (timeout, check parameter error). This function may need several seconds until process termination. This function timeout in time which set as DNS_TIMEOUT macro in r_dns.h.

This function asks IP address to DNS server with first parameter and stores result of DNS process to second parameter.

This function needs 558 byte static work memory.

Usage

```
#include "r_dns.h"
int R_resolve_name(char *name, NAME_TABLE *table);
```

Parameters

name	input	pointer to Domain name string to resolve
table	output	pointer to result of DNS process to store

Return Value

0	normal terminations
-1	abnormal terminations

Remark

none

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Revision Record

Rev.	Date	Description	
		Page	Summary
1.00	Apr.04.11	—	First edition issued

General Precautions in the Handling of MPU/MCU Products

The following usage notes are applicable to all MPU/MCU products from Renesas. For detailed usage notes on the products covered by this manual, refer to the relevant sections of the manual. If the descriptions under General Precautions in the Handling of MPU/MCU Products and in the body of the manual differ from each other, the description in the body of the manual takes precedence.

1. Handling of Unused Pins

Handle unused pins in accord with the directions given under Handling of Unused Pins in the manual.

- The input pins of CMOS products are generally in the high-impedance state. In operation with an unused pin in the open-circuit state, extra electromagnetic noise is induced in the vicinity of LSI, an associated shoot-through current flows internally, and malfunctions occur due to the false recognition of the pin state as an input signal become possible. Unused pins should be handled as described under Handling of Unused Pins in the manual.

2. Processing at Power-on

The state of the product is undefined at the moment when power is supplied.

- The states of internal circuits in the LSI are indeterminate and the states of register settings and pins are undefined at the moment when power is supplied.

In a finished product where the reset signal is applied to the external reset pin, the states of pins are not guaranteed from the moment when power is supplied until the reset process is completed.

In a similar way, the states of pins in a product that is reset by an on-chip power-on reset function are not guaranteed from the moment when power is supplied until the power reaches the level at which resetting has been specified.

3. Prohibition of Access to Reserved Addresses

Access to reserved addresses is prohibited.

- The reserved addresses are provided for the possible future expansion of functions. Do not access these addresses; the correct operation of LSI is not guaranteed if they are accessed.

4. Clock Signals

After applying a reset, only release the reset line after the operating clock signal has become stable.

When switching the clock signal during program execution, wait until the target clock signal has stabilized.

- When the clock signal is generated with an external resonator (or from an external oscillator) during a reset, ensure that the reset line is only released after full stabilization of the clock signal. Moreover, when switching to a clock signal produced with an external resonator (or by an external oscillator) while program execution is in progress, wait until the target clock signal is stable.

5. Differences between Products

Before changing from one product to another, i.e. to one with a different type number, confirm that the change will not lead to problems.

- The characteristics of MPU/MCU in the same group but having different type numbers may differ because of the differences in internal memory capacity and layout pattern. When changing to products of different type numbers, implement a system-evaluation test for each of the products.

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