Ausarbeitung eines Konzepts für Ergonomische Arbeitsplätze einer Montagelinie

Studienarbeit im Rahmen des AWP
"Problemlösungen in der Praxis"

Vorgelegt von:

Felix Dick
Matrikelnummer: 22111369

Betreuer:
Dipl.sc.pol.Univ., M.Sys.Eng. Roman Tizki

Deggendorf, den June 19, 2025

Contents

1 Startup with ANDI-tool and Loopback

This chapter introduces the initial setup and basic testing procedures.

1.1 Introduction to the ANDI-tool

Placeholder for text...

1.2 Loopback Test Procedure

1. Step 1: Connect the hardware.
2. Step 2: Configure the software.
3. Step 3: Run the test and observe results.

Example of citing a source [1].

2 Build up a communication path over MediaGateway - simple connection and VLAN

This section details the establishment of a communication path.

2.1 Simple Connection Setup

Placeholder for text...

2.2 VLAN Configuration

Placeholder for text...
A figure example:

Figure 1: Network diagram of the MediaGateway setup.

3 Integration into a network structure

This chapter covers the integration of the setup into a larger network.

3.1 Network Architecture Overview

Placeholder for text...

3.2 Integration Steps and Challenges

Placeholder for for text...

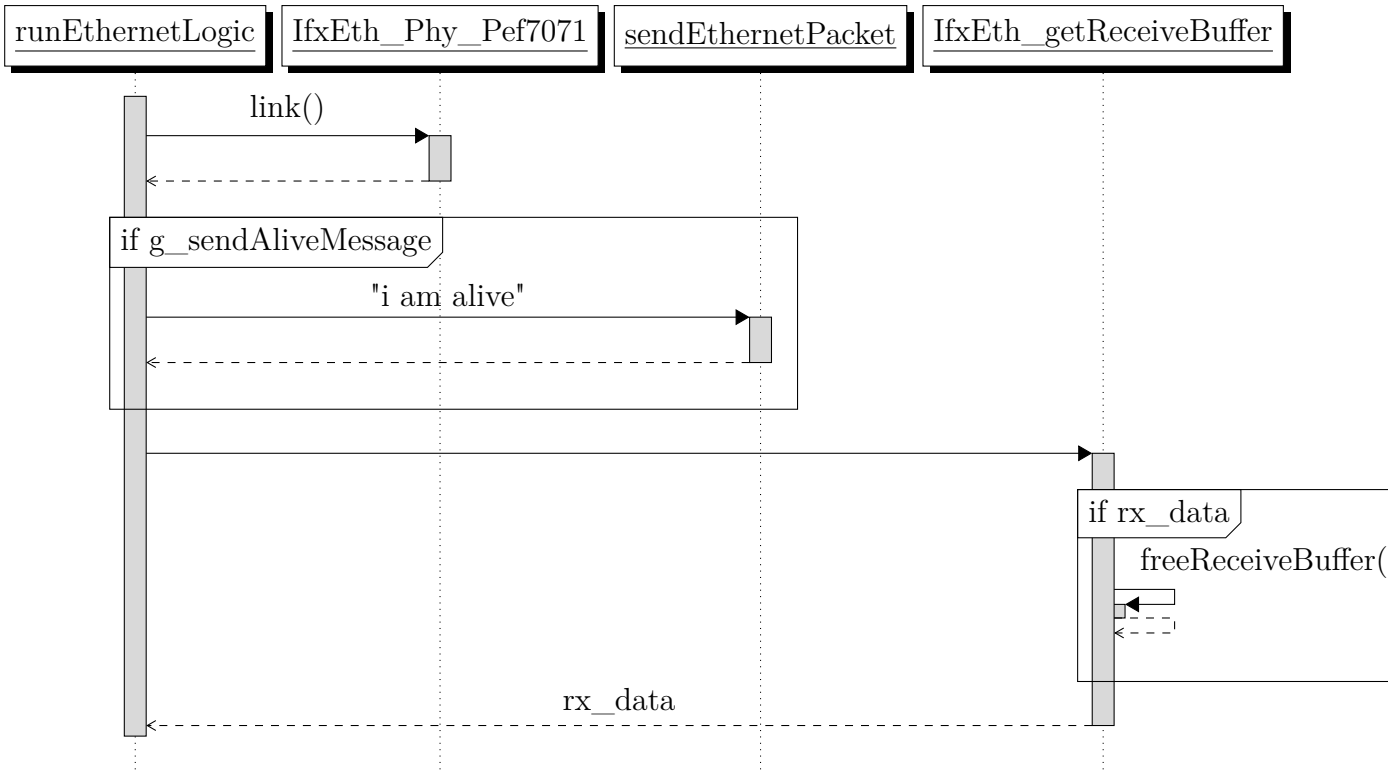

Figure 2: Ethernet Rx/Tx Logic

4 CAN-Ethernet-Gateway on Infineon AURIX TC297

This chapter focuses on the implementation of a CAN-Ethernet gateway.

4.1 Hardware Overview: Infineon AURIX TC297

Placeholder for text...

4.2 Software Implementation

Placeholder for text...

4.2.1 C Code Example

Here is an example of how to include a C code snippet.

```c
#include <stdio.h>

// Define CAN message structure
typedef struct {
    unsigned int id;
    unsigned char data[8];
    unsigned char dlc; // Data Length Code
} CAN_Message;

/*
 * @brief Sends a CAN message.
 * @param msg Pointer to the CAN_Message to be sent.
 */
```

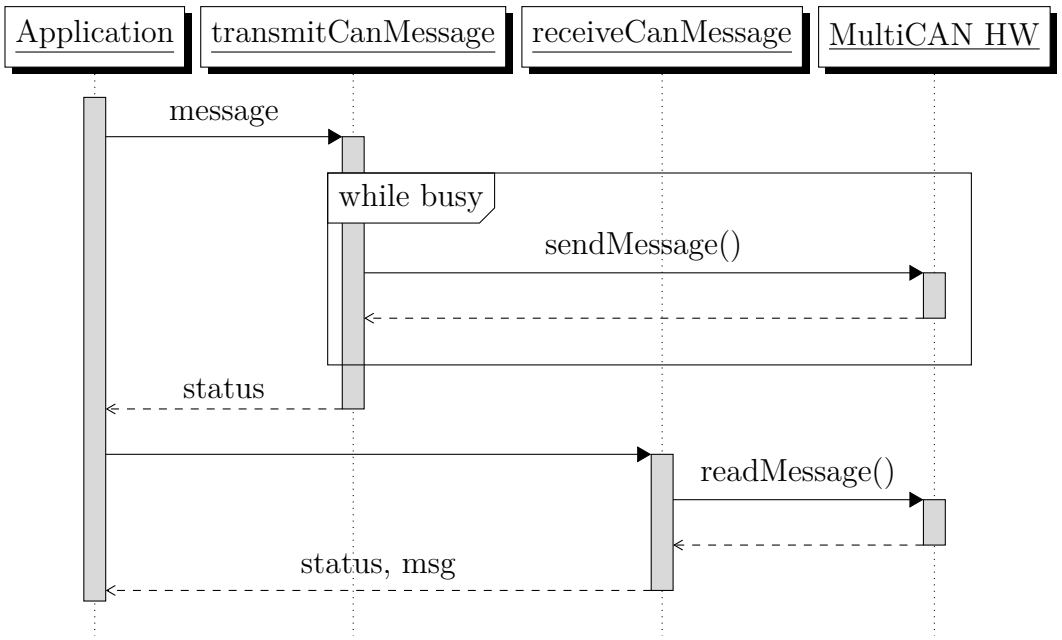

Figure 3: CAN Rx/Tx Logic

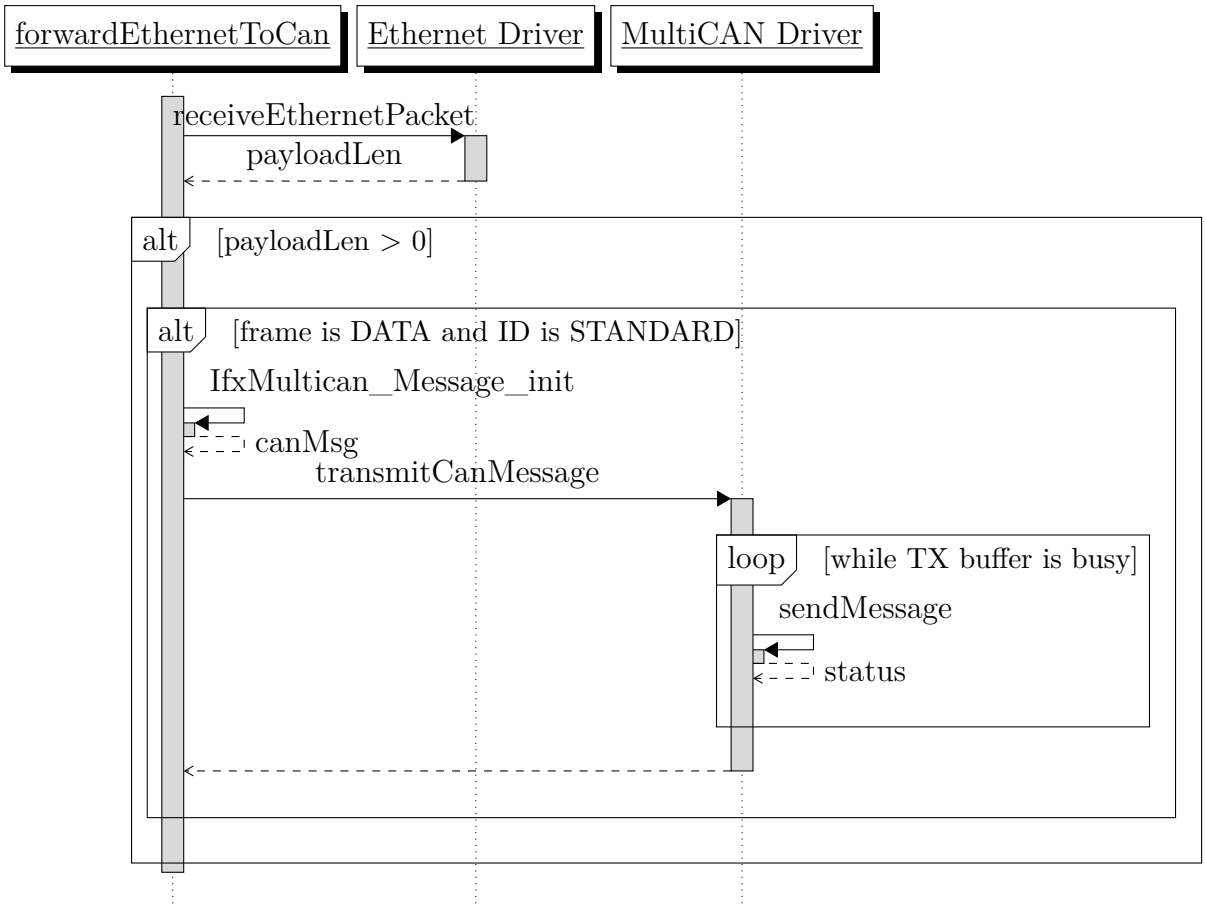

Figure 4: Ethernet to CAN Message Forwarding

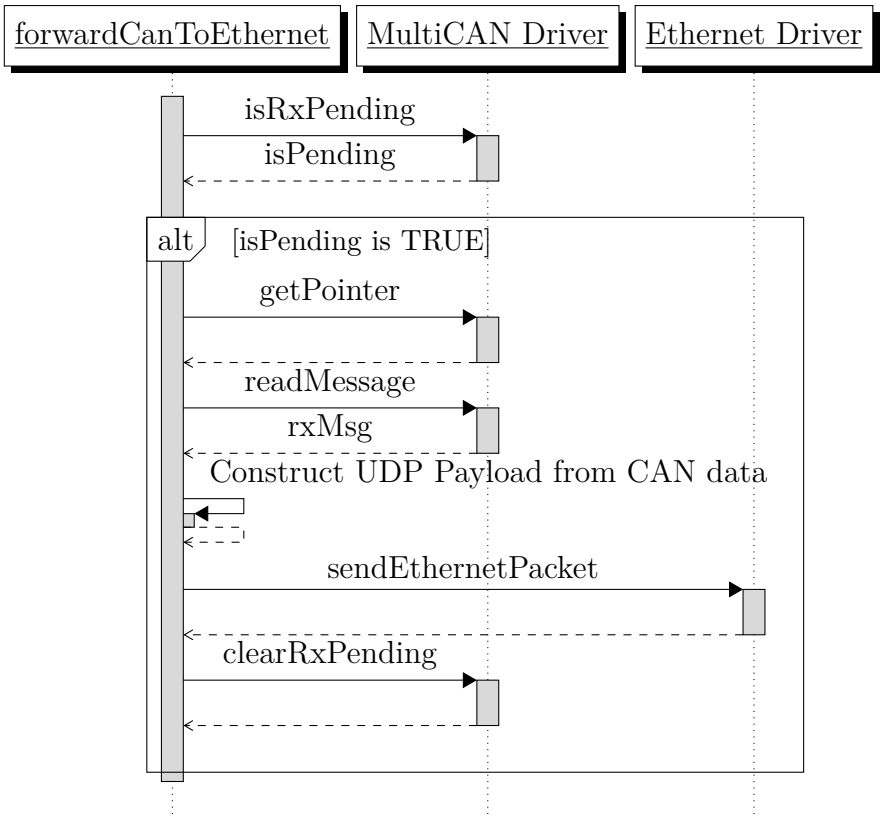

Figure 5: CAN to Ethernet Message Forwarding

```c
void send_can_message(const CAN_Message* msg) {
    // Placeholder for actual hardware driver call
    printf("Sending CAN message with ID: 0x%X\n", msg->id);
    // ... implementation details for hardware registers ...
}

int main() {
    CAN_Message my_message;
    my_message.id = 0x123;
    my_message.dlc = 8;
    for (int i = 0; i < my_message.dlc; ++i) {
        my_message.data[i] = i;
    }

    send_can_message(&my_message);

    return 0;
}
```

Listing 1: Example of a simple CAN message sending function.

References

[1] J. Doe, *Advanced Networking Protocols*. New York, NY: Tech Publishing, 2023.