



## Correcting Linker Errors in Digi ESP

## 1 Document History

Date	Version	Change Description	
1/25/10	V1.0	Initial Entry	
1/29/10	V2.0	Enter comments and corrections	

2 Table of Contents

Contents

1 Document History ..... 2

2 Table of Contents ..... 3

3 Introduction ..... 4

    3.1 Problem Solved ..... 4

    3.2 Audience ..... 4

    3.3 Scope ..... 4

4 Problem Statement ..... 4

5 Conclusion ..... 5

## 3 Introduction

### 3.1 Problem Solved

You've built a project using Digi's ESP IDE product. You find that when you get to the linker stage of the build, that you get errors about region CODE\_RAM being full. What do you do next? This paper discussed the steps for remediating this issue.

### 3.2 Audience

This paper is written for an engineer familiar with the Digi NET+OS and Digi ESP build environments along with solid knowledge of your hardware product. This paper contains no background information but instead goes directly to solution information.

### 3.3 Scope

This paper deals solely with the remediation of linker problems when building NET+OS applications using the Digi ESP IDE.

## 4 Problem Statement

Digi produces and ships a large family of modules and chips for the addressing of many technological problems. These different products have a wide array of capabilities and capacities. Two of the primary capacity-constrained areas are RAM and FLASH. For the actual FLASH and RAM capacities of the Digi product you are using, you should check your documentation.

The make files used to build NET+OS applications make certain assumptions about the amount of FLASH and RAM that your application will utilize. For many customers these assumptions (defaults) will suffice. For other customers and their applications, these assumptions may not hold. In those cases, you made need to make some adjustments to files used to build your NET+OS application.

When building your application within the Digi ESP IDE environment, you may encounter the following error message:

```
...../arm-elf/bin/ld: region CODE_RAM is full.....
```

This error message indicates that the amount of RAM space that is allocated for your application is insufficient to hold your application. Should you want to see this error, you can do the following: in Digi ESP, create a NET+OS project and when asked for the services to include, click on all services. Then build the application. If the platform you select is the Digi connectme module, you will probably see the error listed above.

## Correcting Linker Errors in Digi ESP

Now that we have described the error, how do you go about addressing this issue? Unfortunately, there is no automated method for correcting this problem through Digi ESP. Instead the solution involves a text editor.

In your project workspace, go to directory <your project>\bsp\7\_4\<your platform>.

Look for file customize.ldr. Open file customize.ldr, with your text editor,.

Search for MAX\_CODE\_SIZE. For the Digi ConnectME module, the default MAX\_CODE\_SIZE value is 2 MB.

It is very possible that your application (uncompressed) has exceeded this size (2MB).

Using your text editor, increase this value (MAX\_CODE\_SIZE). You'll be the best judge of the size you'll need. You might want to start small, by increasing MAX\_CODE\_SIZE from 2M to 3M.

Save the changes you made to customize.ldr and rebuild your application. If this does not correct the build error, you may need to increase MAX\_CODE\_SIZE further.

Digi recommends increasing in reasonable increments until you get to the size that will accommodate your application. Also remember that ultimately you are constrained by the physical amount of RAM contained on your module. This should address your issue.

## 5 Conclusion

Build issues, especially within an IDE environment, can be difficult to resolve. Hopefully, with the information contained in this paper, you will be able to address such issues and not allow them to stall your product development.