

How to load overlays from a SPI flash

version	1.1.1
scope	Example. This code is provided as example code for a user to base their code on.
description	How to load overlays from a SPI flash
boards	Unless otherwise specified, this example runs on the SliceKIT Core Board, but can easily be run on any XMOS device by using a different XN file.

An overlay is a block of code and data that is loaded on demand at runtime. Each overlay has a predetermined region of memory that it is copied to called an overlay region. Several overlays may be associated with the same overlay region, but only one of these overlay can be loaded at any one time.

Overlays reduce the amount of memory needed to run your application since it is no longer necessary to reserve space for all your code and data - instead the tools only need to reserve space for the largest overlay that can be loaded into each overlay region.

Specify the `-foverlay=flash` option when building your application to link against the flash overlay runtime. To use this runtime the application must be booted from flash. The runtime loads overlays from the same flash device or flash devices used for boot.

Include the following file:

```
#include <overlay_flash.h>
```

Declare a movable pointer to the SPI ports.

```
fl_SPIPorts spi_ports = {
    PORT_SPI_MISO,
    PORT_SPI_SS,
    PORT_SPI_CLK,
    PORT_SPI_MOSI,
    XS1_CLKBLK_1
};

fl_SPIPorts * movable spi_ports_ptr = &spi_ports;
```

Call `overlay_flash_init` to initialize the flash overlay runtime:

```
overlay_flash_init(move(spi_ports_ptr), 100, 8);
```

The SPI clock frequency in MHz is specified as a ratio using the last two arguments of `overlay_flash_init`. In this case the clock frequency is set to 12.5 MHz (i.e. $100 / 8$).



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