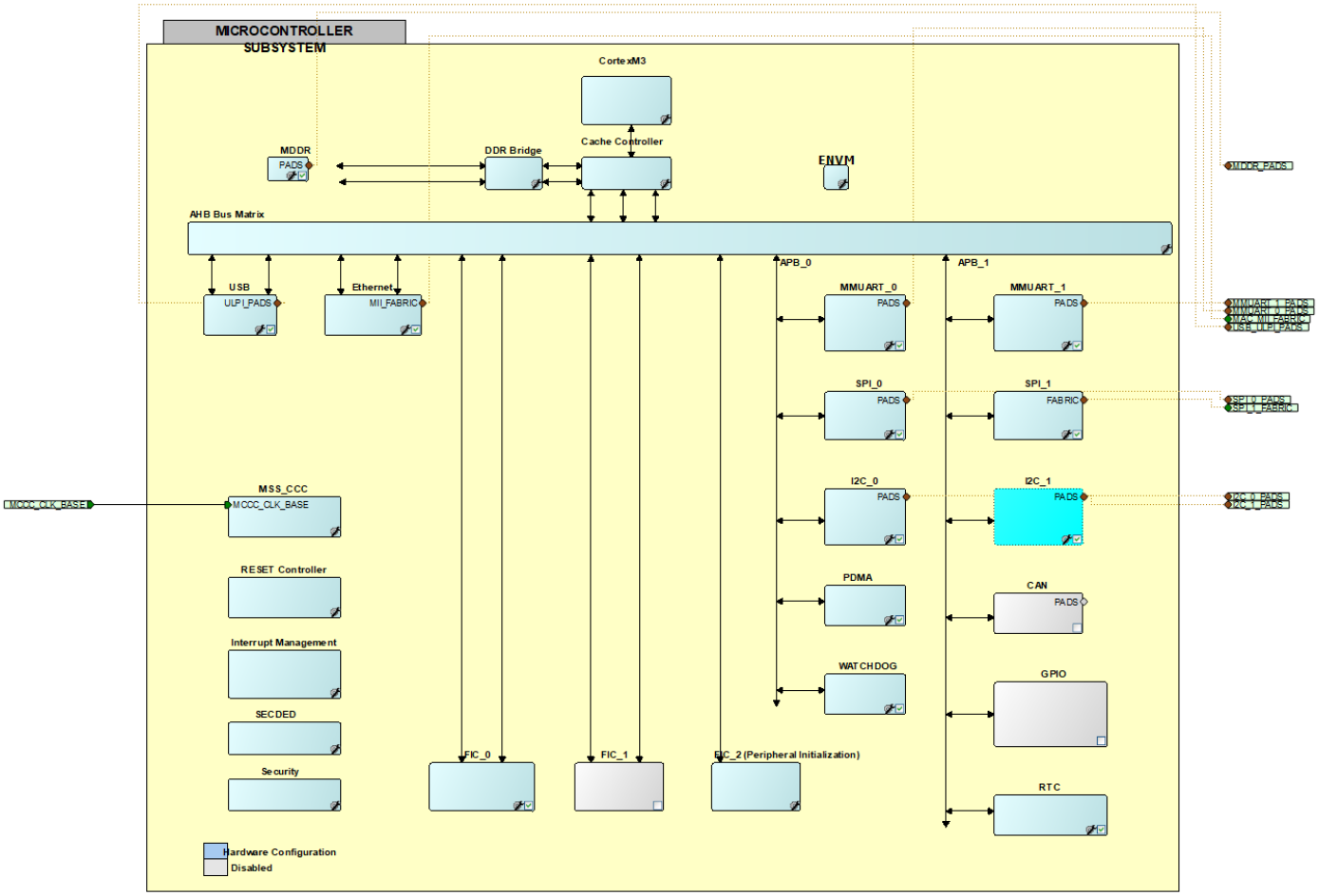
Introduction (Ask a Question)

The Microcontroller Sub-System (MSS) component Configurator provides a graphical block diagram of the SmartFusion® 2 Microcontroller Subsystem. User can enable or disable and configure each MSS sub-block as per the application requirements, as shown in the following figure.

Figure 1. MSS Component Configurator



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1. Peripherals (Ask a Question)

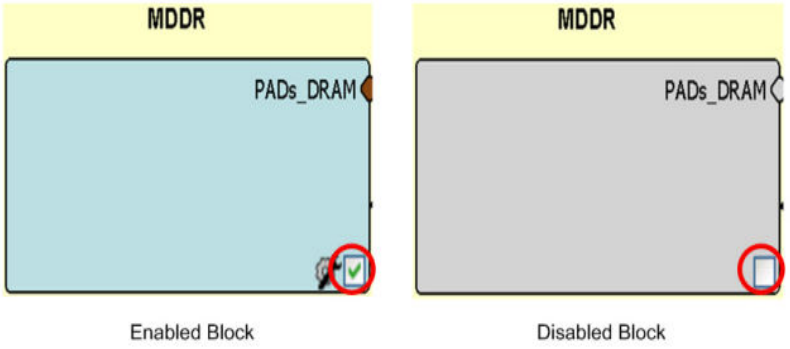
This section provides the detailed information about how to enable/disable and configure MSS sub-blocks.

1.1 Enabling or Disabling MSS Sub-blocks (Ask a Question)

Certain peripherals in the MSS can be enabled or disabled. This is indicated checkbox in the lower right corner of the Canvas, as shown in the following figure.

- Click the checkbox icon to enable or disable the sub-block.
- You can also use the shortcut (right-click) menu to enable or disable a block. To do so, right-click the block and choose **Disable**.

Figure 1-1. Enabled and Disabled Blocks



1.1.1 Disable or Enable a Sub-block (Ask a Question)

Following are the scenarios on how to disable or enable a sub-block:

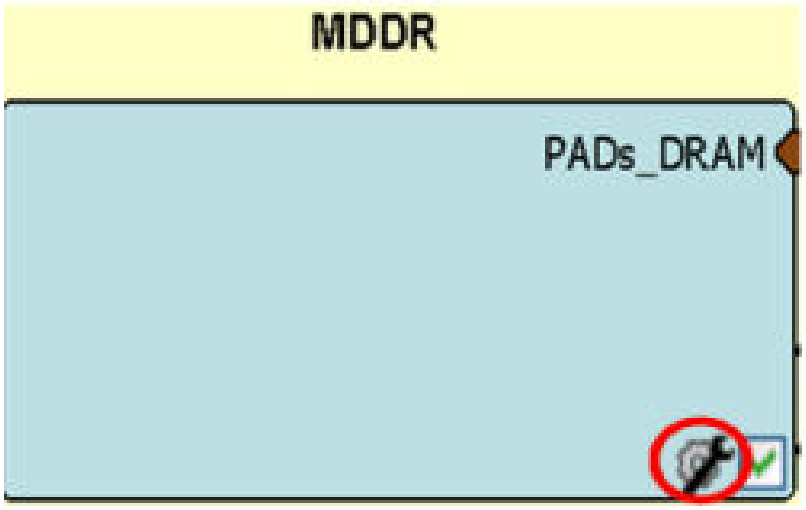
- Disabling a sub-block causes it to be held in reset, when the Microcontroller Sub-System is powered up. This minimizes any activity that may occur in the sub-block after startup and reduces power consumption.
- In the case of digital peripherals such as USB, Ethernet MAC, MMUART, I2C, SPI, CAN, and GPIO it is important to disable peripherals that are not used by the application as they share chip level general purpose I/O resources with other peripherals as well as the FPGA fabric. Leaving a peripheral enabled may prevent you from using other peripherals and lower the total number of general purpose I/Os available to the FPGA fabric.

1.2 Configuring Sub-blocks (Ask a Question)

MSS peripherals that have configurable options have a wrench icon in the lower right corner of the instance item in the Canvas, as shown in the following figure.

- Click the wrench icon or double-click the instance to configure the peripheral.

Figure 1-2. Wrench Icon on the MSS Canvas



- You can also use the shortcut (right-click) menu to configure the sub-block. To do so, right-click the sub-block and choose **Configure**.

2. MSS Configuration Guidelines (Ask a Question)

Although the MSS configurator allows you to configure all sub-blocks out of order, Microchip recommends that you configure the various sub-blocks in a particular order as the configuration of some sub-blocks depends on others.

Configure the MSS sub-blocks in the following order:

1. External Memory Configuration (MDDR sub-block)
2. Fabric Interface Controller (FIC32_0 and FIC32_1 sub-blocks)
3. MSS digital peripherals in the following order to minimize I/O sharing conflicts:
   - Disable all peripherals that are not being used
   - Configure USB and Ethernet MAC
   - Configure MMUART, I2C, SPI, and CAN peripherals
   - Configure GPIO's
4. Clocks (CCC sub-block)
5. Resets (RESET sub-blocks)
6. All other blocks

For example, re-configuring the Fabric Controller Interfaces (FIC32) impacts how the MSS clocks (CCC) are configured:

- Using the CAN will require that the MSS clock (M3_CLK) be a multiple of 8 MHz
- Using the USB requires that the MSS clock (M3_CLK) be greater than 30.1 MHz
- Configuring the GPIO's first may prevent you from using an entire digital peripheral

Note: For more information about MSS clock configuration requirements, see Configuring the MSS Clock Sub-system. For more information on configuring the MSS sub-blocks, see their documentation.

3. Revision History (Ask a Question)

The revision history describes the changes that were implemented in the document. The changes are listed by revision, starting with the most current publication.

Revision	Date	Description
A	11/2024	The following is the list of changes made in revision A of the document: • Migrated the document to the Microchip template. • Updated the document number to DS50003786 from UG0344.

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ISBN: 979-8-3371-0138-5

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