

# Detailed Solution for Remote System Upgrade Feature Issue in Stratix III, Stratix IV and Arria II GX

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## Introduction

There is known issue for Remote System Upgrade feature in Stratix III, Stratix IV and Arria II GX devices. The affected device fails to revert back to the factory image when a reconfiguration cycle is initiated to go from factory image to an invalid image. To overcome this issue, a new feature named Reconfig POF Checking has been implemented in the ALTREMOTE\_UPDATE megafunction. This document provides details on how to use the Reconfig POF Checking feature in the ALTREMOTE\_UPDATE megafunction.

## Reconfig POF Checking Feature in ALTREMOTE\_UPDATE Megafunction

Reconfig POF Checking is a new feature that is implemented to the ALTREMOTE\_UPDATE megafunction. This feature is used to check if a valid application image exists in the designated memory address prior to every application configuration. If a valid application image has been identified, the megafunction will proceed with the reconfiguration to load the application image. If an invalid application image has been identified, the megafunction will flag an error signal through POF\_ERROR port and will not proceed with the reconfiguration to load the application image.

[Note] Invalid application image is classified as one of the following:

- Partially programmed application image
- Blank application image
- Application image assigned with a wrong start address

This feature is disabled by default in the ALTREMOTE\_UPDATE megafunction, you can enable the feature in MegaWizard GUI (Figure 1). If the Reconfig POF Checking feature is enabled, the ALTREMOTE\_UPDATE will read and verify the file header of the application image from the designated address as stated in the parameter, prior to the application configuration.

[Note] Each configuration image contains a file header. The factory configuration image and every application configuration image has separate file header.

Figure 1 – Enable Reconfig POF Checking in ALTREMOTE\_UPDATE MegaWizard

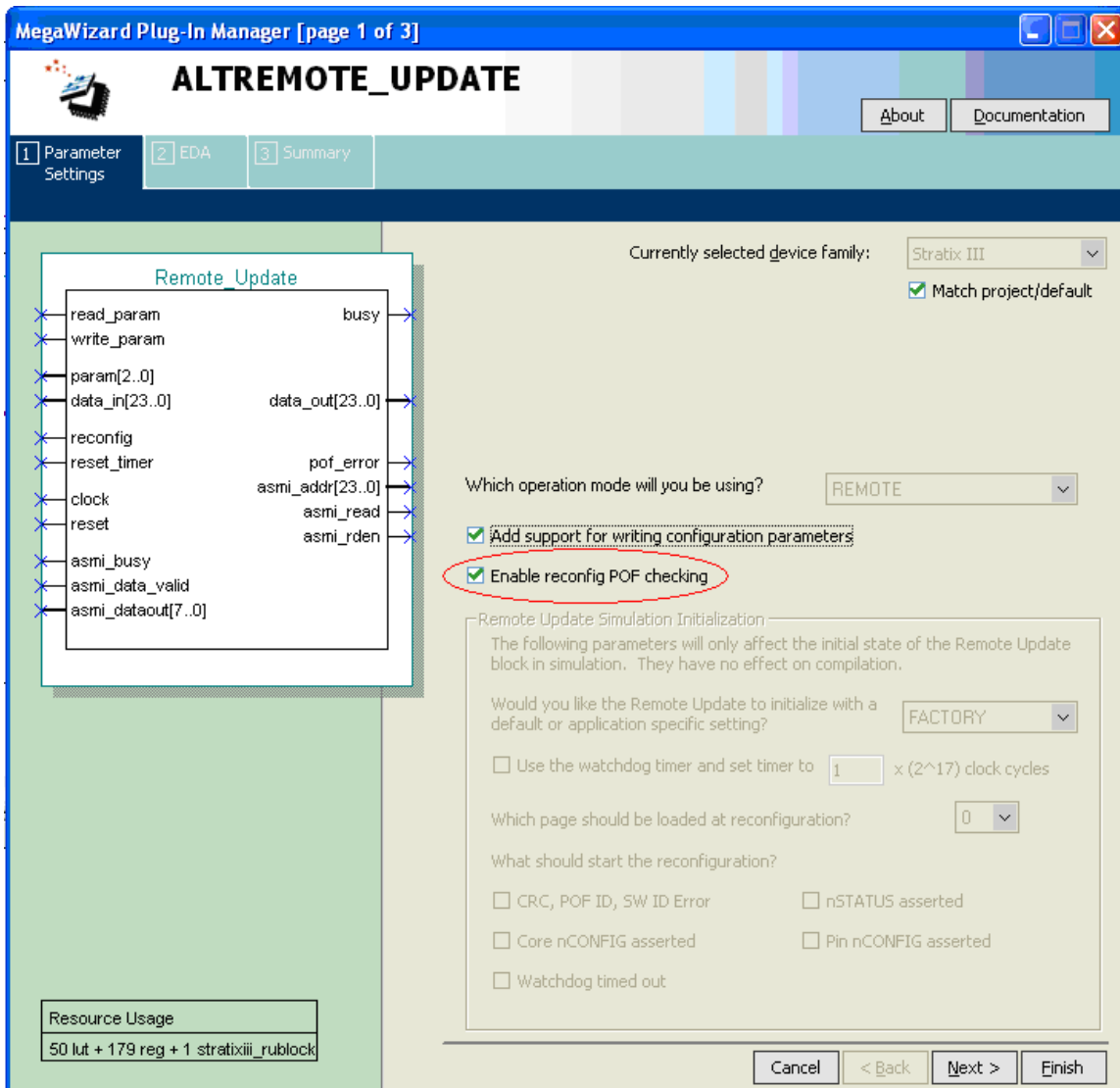


Figure 2 shows the ALTREMOTE\_UPDATE megafunction when Reconfig POF Checking feature is enabled.

Figure 2 - ALTREMOTE\_UPDATE megafunction

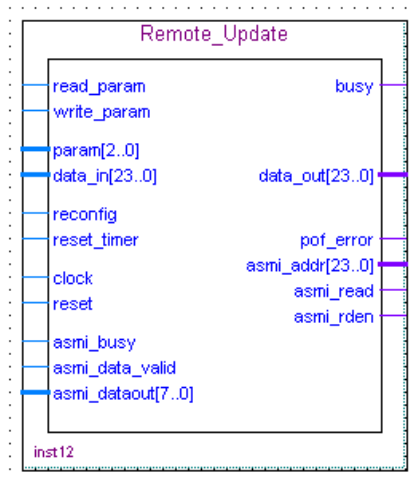


Table-1 shows some additional ports in the ALTREMOTE\_UPDATE to perform Reconfig POF Checking. For more information regarding the rest of the ports which are not included in table 1, please refer to the table 3-1 in the [Remote Update Circuitry \(ALTREMOTE\\_UPDATE\) Megafunction User Guide](#).

Table-1 Additional Ports of ALTREMOTE\_UPDATE Megafunction

Port Name	Input/Output	Description
asmi_busy	Input	Input signal from the busy port of ALTASMI_PARALLEL. High signal indicates the read operation is being executed.
asmi_data_valid	Input	Input signal from the data_valid port of ALTASMI_PARALLEL. High signal indicates the data read from EPCS during read operation is valid
asmi_dataout	Input	Input signal from dataout port of ALTASMI_PARALLEL. Data read from EPCS during read operation.
asmi_addr	Output	Output signal to addr port of ALTASMI_PARALLEL. Indicate which memory address of the application image.
asmi_rden	Output	Output signal to rden port of ALTASMI_PARALLEL. Asserted high when reconfig port is '1'. ALTASMI_PARALLEL will read from memory address that appears in addr port.
asmi_read	Output	Output signal to read port of ALTASMI_PARALLEL. Asserted high when reconfig port is '1'. ALTASMI_PARALLEL will read from memory address that appears in addr port.

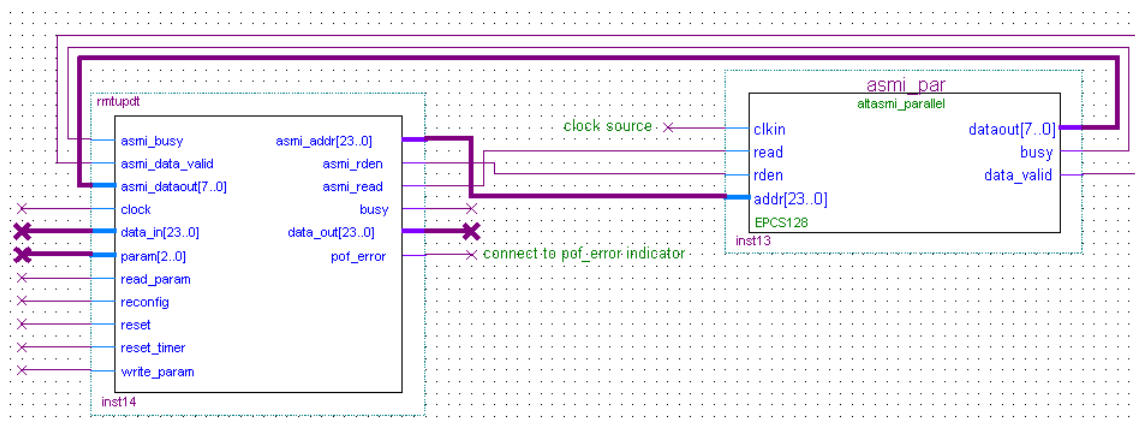
pof_error	Output	High signal to indicate an invalid application image has been identified.
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### **Instantiate ALTREMOTE\_UPDATE Megafunction with ALTASMI\_PARALLEL Megafunction**

If the Reconfig POF Checking feature is enabled, the ALTREMOTE\_UPDATE will read and verify the file header of the application image from the designated address as stated in the parameter, prior to the application configuration. In order for the ALTREMOTE\_UPDATE to read the file header, you need to instantiate ALTASMI\_PARALLEL megafunction in your design so the ALTREMOTE\_UPDATE can issue read operation to the memory device through ASMI interface.

Figure 3 below shows an example on how to interface ALTREMOTE\_UPDATE with ALTASMI\_PARALLEL.

Figure 3 Interface the ALTREMOTE\_UPDATE with ALTASMI\_PARALLEL



If the designated address of the memory device contains a valid application image and the ALTREMOTE\_UPDATE megafunction can successfully verify the file header, the POF\_ERROR signal will remain low. If a memory device is programmed with invalid application image and the Reconfig POF Checking feature fails to verify the correct file header, the POF\_ERROR signal will be asserted high.

### **Clear POF\_ERROR Signal**

When an invalid application image is detected, the POF\_ERROR port will be asserted high to indicate an application image error. Upon application image error, the ALTREMOTE\_UPDATE will not initiate a reconfiguration automatically. It is user's responsibility to reprogram the memory device with a valid application image and trigger the reconfiguration through reconfig port of the ALTREMOTE\_UPDATE to clear the POF\_ERROR signal.