Unable to Boot New Desktop System Configured with AMD 3rd Generation Ryzen™ Desktop Processor, and AMD Socket AM4 400-Series Motherboard

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This document provides information on how to resolve a specific boot issue that may be experienced with some 3rd Generation Ryzen™ Desktop Processors when installed on an AMD Socket AM4 400-series motherboard.

The information in this document is organized into the following sections:

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Issue Description

The Socket AM4 platform is designed to be a fully featured, scalable solution with support for multiple processors, with varying capabilities. Since the release of the AMD 400 Series motherboards (X470/B450) in 2018, there have been several BIOS updates made available through our motherboard partners. These updates not only provide improved system performance but also expand support for newer processors (e.g. [3rd Gen AMD Ryzen™ Processor](#)) as they become available.

AMD began introduction of the new 3rd Gen Ryzen™ Desktop Processors in July of 2019. To enable support for these new processors on your AMD X470 or B450 motherboard, an updated BIOS may be required. Without such a BIOS, the system may fail to boot with a 3rd Gen AMD Ryzen™ Processor installed.

This can be resolved by updating the motherboard BIOS to the latest version, which can be easily performed if a processor compatible with the motherboard's current BIOS is installed. For

a list of supported processors for a given BIOS version, please refer to the CPU Support List document available on your motherboard manufacturer's website:

- ASRock: https://www.asrock.com/support/cpu.asp
- ASUS: https://www.asus.com/support/cpu_support
- Biostar: http://www.biostar.com.tw/app/en/support/cpu_support.php
- Gigabyte: https://www.gigabyte.com/us/Support/CPU-Support
- MSI: https://www.msi.com/support/motherboard/cpu-support

On your motherboard manufacturer's website, make the appropriate selections to view the BIOS version required to support your CPU. BIOS download and installation instructions are also found on their website.

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Workarounds

The following workarounds may be feasible for affected users, depending on their individual circumstances, and should be considered before applying the boot kit solution detailed below:

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Update from Retailer

1. If the motherboard was purchased through a computer parts retailer, check with the retailer to see if they can facilitate the BIOS update at their location. There may be a charge for this, or it may be offered at no cost.

2. If you have access to a processor supported on the current installed BIOS, use it to perform the BIOS update, then swap out the processors when the update process is complete.

For a list of supported processors per BIOS version, please refer to the CPU Support List document available on the motherboard manufacturer's website. BIOS download and installation instructions are also found on their website.

If these workarounds are not feasible, please see the sections below for a solution.

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Original Manufacturer Replacement

The Original Design Manufacturer (ODM) of the motherboard will support affected end users with an RMA exchange for a compatible motherboard, upon request. Affected end users are recommended to contact their local representative for the motherboard manufacturer to exchange their motherboard.

USB BIOS Flashback

Select motherboards are designed to support "USB BIOS Flashback," which allows for BIOS updates from a flash drive—even if the current BIOS on the motherboard does not have the software code to boot a new processor. Some motherboards can even update the BIOS when there's no CPU in the socket at all. Such motherboards feature special hardware to enable USB BIOS Flashback, and every manufacturer has a unique procedure to execute USB BIOS Flashback. Customers are encouraged to determine if their motherboard supports USB BIOS Flashback and, if yes, follow the update steps described in the motherboard's support documentation.

Short Term Processor Loan Boot Kit

AMD will offer affected and qualified users (as described below) an AMD Athlon 200GE Processor, including thermal solution, for short-term use ("boot kit") to perform the BIOS update on their motherboard.

This short-term processor loan or boot kit is offered through AMD warranty services and is available only for qualified users that:

1. Have made a valid purchase of a 3rd Gen Ryzen™ Desktop Processor and;
2. Are unable to boot that processor because the user's current X470/B450 BIOS must be upgraded first.

This service is free of charge with the following condition:

Once you have submitted your claim for a processor loan boot kit, AMD will require pictures of your 3rd Gen Ryzen™ Desktop Processor and AMD Socket AM4 400 Series motherboard, which clearly shows the model numbers and unique serial numbers as well as a copy of the purchase invoice(s) to authorize the request. Additionally, a summary or copy of communication with the motherboard manufacturer is requested to indicate why support from the Original Design Manufacturer (ODM) is not suitable.

Once the RMA request is approved, the AMD Athlon 200GE processor will be sent with pre-paid return shipping. The processor is provided as a temporary loan to you for the sole purpose of updating the BIOS and must be returned within 10 business days of receipt. It is not necessary to return the provided thermal solution.

To obtain the boot kit, please carefully follow these instructions:

1. Go to the AMD online warranty claims page: https://www.amd.com/en/support/kb/warranty-information/rma-form

2. Fill in your full contact and product details (3rd Gen Ryzen Processor OPN number and serial number)
3. In the Problem Description field enter "Boot kit Required" (without quotes)

NOTE: The product must be a valid AMD processor with authentic OPN and serial number.