[Arm] SYStem.Up / SYStem.Attach returns "debug port fail"

2025-10-07 - **Comments (5)** - **Arm**

The error message "debug port fail" is returned when the TDO response is different from the expected one. Please follow the steps described below. If the error persists, then submit a support ticket and include the results of your diagnosis.

The same diagnosis also applies for the error messages "debug port time-out" and "subcore communication time-out".

Start-up script / CPU selection

- Check first if there is a start-up script available for the used chip/board. If yes, use this script. Search also for a script under https://www.lauterbach.com/scripts.html

- If you don't find a start-up script, submit a support ticket to verify if a script is available. If a start-up script exists, read the prerequisites at the start of the script or readme.txt (if available).

- Please check also if the used CPU selection is correct. If you do not find a CPU selection for the used chip, check if the processor is supported by TRACE32 using the search on the Lauterbach website or submit a support ticket.

Next things to check

- If the "debug port fail" error occurred after a **SYStem.Up** command, test if **SYStem.Mode Attach** then **Break** delivers the same error.

  ```
  SYStem.Mode Attach
  Break
  ```

  If you don't get an error, then the **SYStem.Up** issue is probably related to reset options.

- The target might be in an unrecoverable state. Re-power the target and retry.

- In SMP setups, test if the connection works after assigning only the first core (**CORE.ASSIGN 1**).

  ```
  CORE.ASSIGN 1
  SYStem.Up
  ```

  Note

  For some chips, the first core is not the boot core. This is especially valid for big.LITTLE systems. Try to connect using the second core (**CORE.ASSIGN 2**). If connection is possible with the used core, then the other cores have to be activated by the target code.

- Try to connect with a low JTAG frequency (e.g. test with **SYStem.JtagClock 100Khz**) then optimize the JTAG clock if connection with low frequency is possible.

  ```
  SYStem.JtagClock 100Khz
  SYStem.Up
  ```

- Check if the correct debug port is selected (JTAG / SWD / cJTAG) using the command **SYStem.CONFIG DEBUGPORTTYPE**

Detect the Daisy Chain (JTAG/cJTAG only)

Execute **SYStem.DETECT DaisyChain** in Down mode and check the **AREA** window.

```
SYStem.Mode Down
SYStem.DETECT DaisyChain
```

If the detection fails, please re-power the target and retry with **SYStem.Option EnRest OFF**.

```
SYStem.Mode Down
SYStem.Option EnRest OFF
SYStem.DETECT DaisyChain
```
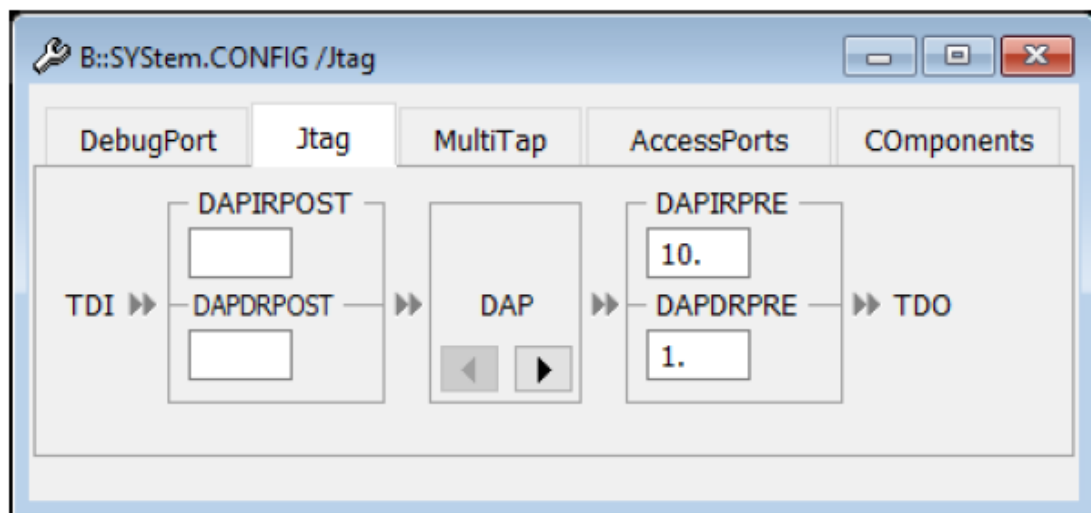
Success:

If the daisy chain can be correctly detected, then the PRE- / POST-settings are printed in the **AREA** window:
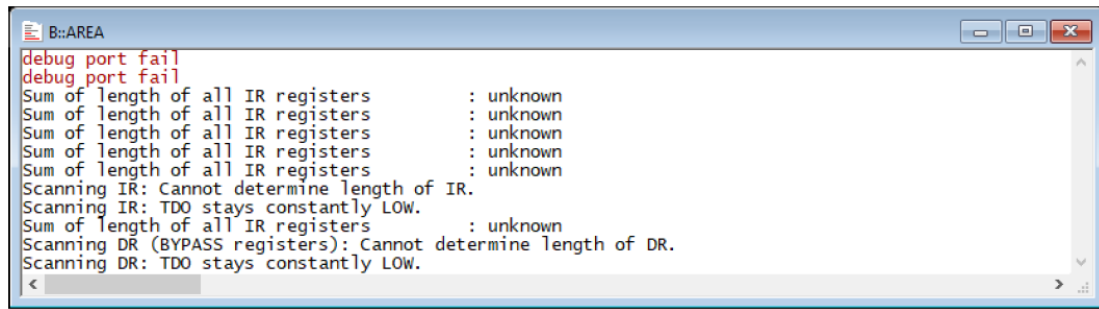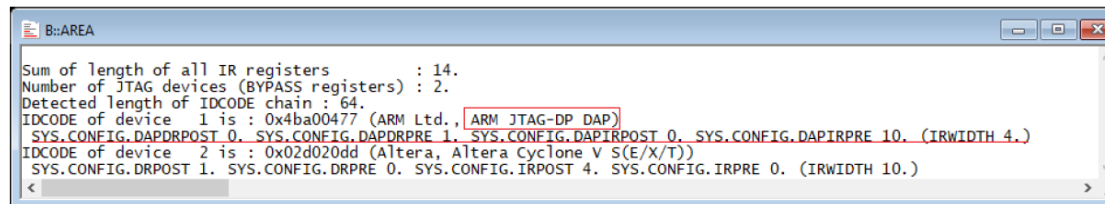

The detection should discover here a device called "ARM JTAG-DP DAP".

Check in this case if the DAP PRE- and POST-settings under **SYStem.CONFIG /JTAG** are correct:

Failure

In case the daisy chain cannot be detected, then an error is returned and/or the message "TDO stays constantly LOW/HIGH" is printed to the **AREA** window:

```
B::AREA
debug port fail
debug port fail
Sum of length of all IR registers          : unknown
Sum of length of all IR registers          : unknown
Sum of length of all IR registers          : unknown
Sum of length of all IR registers          : unknown
Sum of length of all IR registers          : unknown
Scanning IR: Cannot determine length of IR.
Scanning IR: TDO stays constantly LOW.
Sum of length of all IR registers          : unknown
Scanning DR (BYPASS registers): Cannot determine length of DR.
Scanning DR: TDO stays constantly LOW.
```

If the DAP PRE- and POST-settings are correct and the problem persists, go to "**Try to access the DAP**".

Check list:

- Are the jumper/switch settings correct? Check the target schematics and documentation

- Verify the physical connection by checking the target schematics: are the debug signals correctly connected to the debug header?

- Verify the signal levels.

  - nTRST should not be connected to GND. If the signal is pulled down, it must be ensured that the debugger has a connection to TRST and can pull it up. Especially with connectors that allow two connections: nTRST and nTRST pulldown (MIPI20D, MIPI34, MIPI60), it is possible, if adapters are used, that only one (the wrong) signal is connected.

  - Serial resistors for TMS/TDI/TCK should be avoided. A 22 or 47 Ohm serial resistor (only) for TDO is OK.

- Verify if JTAG signals are multiplexed. Check in this case if the correct mode is selected.

- Verify if the correct target power supply is used

  - check the voltage properties of the power supply and the target

  - cross-check with a different power supply. The used target power supply might be defective.

- Check if there is a watchdog that needs to be deactivated (refer to chip/target documentation).

- If nothing of these helps, make a scope plot of the signals TDI/TDO/TMS/TCK when doing a **SYStem.Up** / **SYStem.Mode Attach**.

  - If you don't see any activity on one of these signals, then you need to check the target schematics.

  - Signal reflections, e.g. caused by stubs, could cause a wrong detection (multi-clocks) of the TCK signal on the chip side.

Try to access the DAP

Continue with this step only if the JTAG detection is successful.

- Set the correct CPU selection

- Execute the script [access_dap.cmx](#) with the following command: `DODECRYPT "debug_port_fail" access_dap.cmx`

- Check the **AREA** window (menu View > Message Area)

If accessing the DAP is successful, continue with "**Try to access the core base**".

## Try to access the core debug base

Continue with this step only if the JTAG detection is successful and the DAP can be successfully accessed.

Re-power the target and execute the following commands in a script:

```
SYStem.Down
SYStem.Option.EnReset OFF
SYStem.Mode Prepare
IF ADDRESS.OFFSET(COREBASE())!=0
(
  PRIVATE &lsr
  IF (Data.Long(COREBASE()+0xFB4)&0x3)==0x3
    Data.Set (COREBASE()+0xFB0) %Long 0xC5ACCE55
  Data.dump (COREBASE()+0xF00)++0xFF
)
ELSE
  PRINT %ERROR "It seems the core base is not configured, see
SYStem.CONFIG.COREDEBUG.Base"
```

Success:

Data.dump window displays data
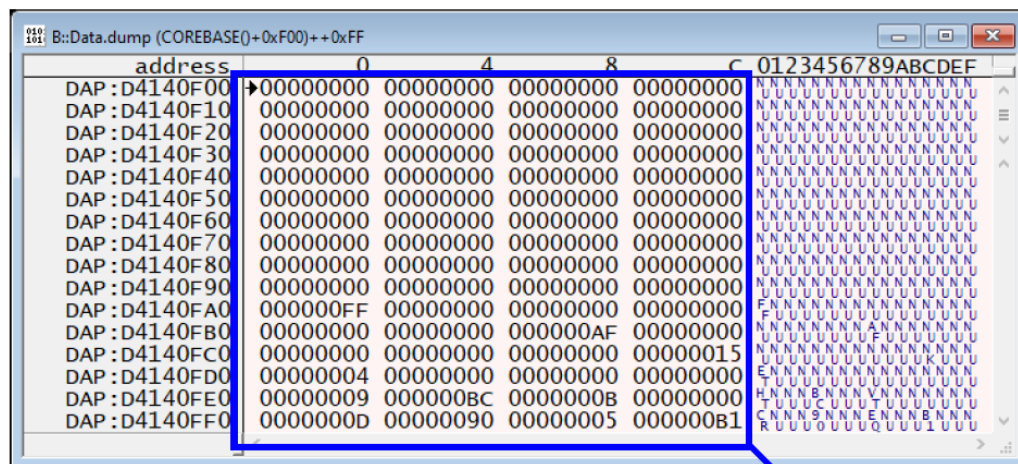
ID-Registers:
At least some values should be available.
Only ????????: access fail

Failure:

Error returned or **Data.dump** window displays ???????

Check list:

- Core might be kept in reset, has no power, no clock, or is secured.

- Core might be in power saving (sleep) mode.

- A watchdog might be enabled and accessing the target after booting is not possible. Check the target documentation.

- If the CoreSight settings are done in a script using the **SYStem.CONFIG** commands, then the core base address might be wrong. Check processor documentation if available.

- Tags
- [Arm](#)

Attachments

- [access_dap.cmx (1.43 KB)](#)

Comments (5)

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CA **Charanteja Abbavathini**

2 years ago

Hi, I am trying to debug qnx bsp on zcu102 board after executing the .cmx files i see some ?? for one of the dap address. when the .cmx file was executed it showed dap can be successfully accessed. but when i try to connect debugger to cpu it gives me the same debug port failed.

Ahmed Regaieg

2 years ago

Hello Mr. Charanteja, Thank you for reaching out. In response to your inquiry regarding this issue, we will be sending you a private message. Please keep an eye on your inbox. Best regards, Ahmed

y **yusheng**

6 months ago

Success to access the DAP，but fail to access the core debug base.，debug port fail happen in line "IF (Data.Long(COREBASE()+0xFB4)&0x3)==0x3"，why?

y **yusheng**

6 months ago

Success to access the DAP，but fail to access the core debug base.，debug port fail happen in line "IF (Data.Long(COREBASE()+0xFB4)&0x3)==0x3"，why?

y **yusheng**

6 months ago

Data.dump window displays data. Most of values are available, but FA0 8 bytes are ???????? ????????