



# ASTFplugin

Version 1.0

## FAQs

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**Issue 01**



## ASTFplugin FAQs

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The product version is 1.0.

See also: [Proprietary notice](#) | [Product and document information](#) | [Useful resources](#)

### Start reading

If you prefer, you can skip to [the start of the content](#).

### Intended audience

This document is written for software developers who are using ASTFplugin to capture ASTF trace from a Fast Models system.

### Inclusive language commitment

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# 1. How to trace a workload running in a multi-core Linux environment

I want to trace an application's workload running in a guest multi-core Linux environment but Linux OS migrates applications between cores. What should I do?

## Answer

When using the `HLT` method of toggling trace with `ToggleMTIPlugin`, ASTF tracing in Fast Models is per core. So, you must enable the `enable_trace_special_hlt_imm16` and `trace_special_hlt_imm16` parameters of all the cores.

## Related information

- [How to use ToggleMTIPlugin](#)

## 2. Architectural limitations of ASTFplugin

What are the architectural limitations of ASTFplugin in the Fast Models 11.23 release?

### **Answer**

ASTF v0.11 supports up to Armv9.3-A. The plug-in is not guaranteed to work for architecture versions later than that.

### 3. Does ASTF trace generation have a maximum trace file size?

Answer: No, it runs until your disk space is full and is killed by your OS.

## 4. Minimum and maximum trace length

How much trace data should I capture?

### **Answer**

A minimum trace log size of around 100M instructions is recommended to account for cache warming. A maximum of 10B instructions is recommended for efficient post-processing and analysis.

## 5. How to distinguish between multiple programs in trace logs

If I generate traces for multiple programs, how do I distinguish between them in the trace logs?

### Answer

If the guest Linux kernel is configured with 'CONFIG\_PID\_IN\_CONTEXTIDR' enabled, PID information is included in the `context` section of the trace logs, for example:

```
5 context : CPU in EL0, non-secure, thread-mode PID: 29193
```



PID information is only recorded if there is a PID change on a core.

---



## 6. Can ASTFplugin trace process and thread IDs?

ASTFplugin supports recording PID/TID information through the `CONTEXTIDR_EL1` register, if the guest supports it. However that requires an additional pass for full PID/TID information. Is there a way to collect PID/TID information that doesn't require a re-run?

### Answer

It is possible to do this with some additional post-processing. ASTFplugin traces PIDs using the `CONTEXTIDR_EL1` register and includes them in the trace, if they are available, in the first run. To fully match up the PIDs and TIDs in the trace, you then need to generate a PID-TID map from the OS and use the `trpidannotate` tool to amend the trace with the appropriate TID information.

### Related information

- [ASTF tools](#)

## 7. How to distinguish between different clusters and cores

How does the plug-in distinguish between different clusters and cores?

### **Answer**

The plug-in has no concept of the cluster and core topology of the model. It simply queries whether each component can execute code. If it can, the plug-in attaches itself to the trace sources of the component that it needs to generate the ASTF streams. If not, it ignores that component. The resulting file names that include the clusters and cores are generated by the model and accepted by the plug-in.

## 8. Why do files seem to be missing?

I sometimes find that files seem to be missing. For example, in a model with two CPUs, I want to record two blocks. Files `cpu0.0000.astf` and `cpu1.0000.astf` record the first block and `cpu0.0001.astf` records the second block. Why is `cpu1.0001.astf` missing?

### Answer

If a CPU is inactive while the plug-in is recording, the plug-in omits generating the associated file. Otherwise, the file would only contain the ASTF header and nothing else. So if a file is missing, it might be because that CPU was not active while the plug-in was recording.

## 9. Running counter

Why does the running counter for my files sometimes start with 0000 and sometimes with 0001?

### Answer

When you request the plug-in to stop recording, it increments the running counter to ensure the next block's ASTF files have a different filename to those of the current block.

By default, the plug-in starts recording after it has initialised. However, if you request the plug-in to stop recording immediately, it increments the running counter and produces no `cpu*.0000.astf` files, because none of the CPUs had the chance to execute code. If you then request the plug-in to continue recording, the next block's stream files will have the 0001 counter value in their names.

### Related information

- [Why do files seem to be missing?](#)

## 10. Why do I see messages about missing trace sources

Why do I see messages like `trace source SVE_LOADS/SVE_STORES not detected -> omitting registration?`

### Answer

The plug-in is not feature-aware and therefore does not know if a CPU supports SVE. As a result, it always tries to register `SVE_LOADS` and `SVE_STORES` trace sources. If a CPU supports SVE and this message appears, then see [Why do I see messages about SVE\_LOADS/SVE\_STORES?]. Otherwise, you can safely ignore them.

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# Product and document information

Read the information in these sections to understand the release status of the product and documentation, and the conventions used in Arm documents.

## Product status

All products and services provided by Arm require deliverables to be prepared and made available at different levels of completeness. The information in this document indicates the appropriate level of completeness for the associated deliverables.

### Product completeness status

The information in this document is Final, that is for a developed product.

## Revision history

These sections can help you understand how the document has changed over time.

### Document release information

The Document history table gives the issue number and the released date for each released issue of this document.

#### Document history

Issue	Date	Confidentiality	Change
0100-01	16 September 2024	Non-Confidential	Update for v11.27
0100-00	13 September 2023	Non-Confidential	Initial release

### Change history

For technical changes to this documentation, see the [Fast Models Release Notes](#).



# Conventions

The following subsections describe conventions used in Arm documents.

## Glossary

The Arm Glossary is a list of terms used in Arm documentation, together with definitions for those terms. The Arm Glossary does not contain terms that are industry standard unless the Arm meaning differs from the generally accepted meaning.

See the Arm Glossary for more information: [developer.arm.com/glossary](https://developer.arm.com/glossary).

## Typographic conventions

Arm documentation uses typographical conventions to convey specific meaning.

Convention	Use
<i>italic</i>	Citations.
<b>bold</b>	Interface elements, such as menu names.  Terms in descriptive lists, where appropriate.
monospace	Text that you can enter at the keyboard, such as commands, file and program names, and source code.
monospace <u>underline</u>	A permitted abbreviation for a command or option. You can enter the underlined text instead of the full command or option name.
<and>	Encloses replaceable terms for assembler syntax where they appear in code or code fragments.  For example: <div>MRC p15, 0, &lt;Rd&gt;, &lt;CRn&gt;, &lt;CRm&gt;, &lt;Opcode_2&gt;</div>
SMALL CAPITALS	Terms that have specific technical meanings as defined in the <i>Arm® Glossary</i> . For example, <b>IMPLEMENTATION DEFINED</b> , <b>IMPLEMENTATION SPECIFIC</b> , <b>UNKNOWN</b> , and <b>UNPREDICTABLE</b> .



We recommend the following. If you do not follow these recommendations your system might not work.



Your system requires the following. If you do not follow these requirements your system will not work.



You are at risk of causing permanent damage to your system or your equipment, or harming yourself.

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This information is important and needs your attention.

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A useful tip that might make it easier, better or faster to perform a task.

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A reminder of something important that relates to the information you are reading.

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# Useful resources

This document contains information that is specific to this product. See the following resources for other useful information.

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- Non-Confidential documents are available at [developer.arm.com/documentation](https://developer.arm.com/documentation). Each document link in the following tables goes to the online version of the document.
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Arm product resources	Document ID	Confidentiality
<a href="#">Fast Models Reference Guide</a>	100964	Non-Confidential