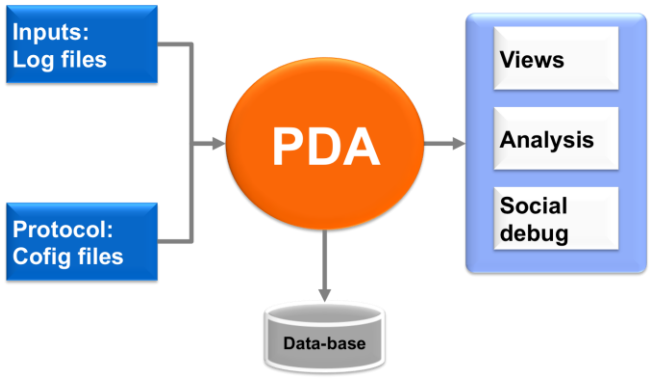
Protocol Debug Analyzer Tool

About Arrow Devices

Arrow Devices provides Design & Verification Products and Services for ASIC/SOC development to corporations globally. We are experts in **high-speed interfaces** (USB 2/3, DDR2/3, MIPI standards) as well as popular system buses (AXI, AHB, PLB). We leverage our strong skill set to deliver high quality intellectual property solutions.

Introduction

Communication protocols have become more complex over the past few years. Today, RTL design and verification engineers have to sift through gigabytes of data in the form of log files and waveform dumps in order to analyze and debug a design. Arrow Devices' **Protocol Debug Analyzer (PDA) Tool** bridges this gap by providing protocol aware debug and analysis assistance. The PDA debug tool can be used with developers' existing verification environment and configured for any protocol. It enables significant reduction in debug time thus resulting in a faster time to market for your IP.



Protocol Debug Analyzer Tool

Product Description

Arrow Devices' Protocol Debug Analyzer Tool (PDA) helps reduce debug time by simplifying the debug process. As a result, design engineers have observed upto 50% reduction in debug time by using the tool.
The PDA tool assists a developer in navigating through the entire design debug process, i.e.

- ✓ *Symptom identification:* Finding out what went wrong (eg a CRC error)
- ✓ *Diagnosis:* Analyzing the reason behind what went wrong
- ✓ *Scenario Isolation OR hypothesis formulation:* Identifying the exact sequence of events that is unique to the issue under consideration
- ✓ *Scenario conformation OR hypothesis testing:* Cross checking that the identified sequence actually resulted in the issue

The PDA tool helps across all the above steps. It does this by extracting relevant debug information from simulations, and providing the design engineer with a set of protocol relevant ***Data Views*** and ***Analysis Tools.***

Data Views:

Data Views provide ability to quickly relate traffic and events across protocol abstraction levels (link, transport, application layers etc). You can analyze traffic and events using a browser-line intuitive and user-friendly interface. You also have the option to observe time synchronization across views**.**

Arrow PDA Tool will:

- Reduce debug time
- Reduce project schedule risk
- Reduce verification costs
- Shorten time-to-market
- Enable focus on primary business

Benefits:

- Protocol specific debug information
- Increases debug productivity
- Enables structured debug drill-down
- Enables sharing of debug information

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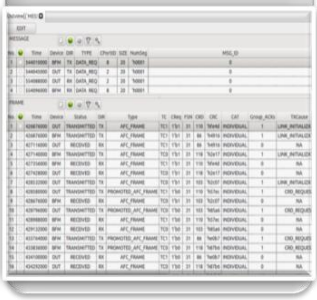
List view

- Makes debug easier by presenting traffic information as spread-sheet like rows columns
- Each row is a transfer, transaction, packet or symbol



Hierarchical view

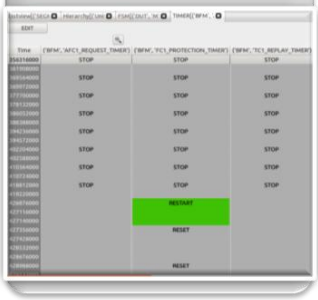
- Makes debug easier by providing an easy visualisation of traffic connected across different protocol abstractions
- Each displayed block shows a transfer, how it was broken up into packets and how did those packets get acknowledged

State-machine view

- Makes debug easier by presenting state machine states and transitions along with conditions that caused state transition
- Each column is state machine with states, transition and state change conditions listed in time order

Timer view

- Makes debug easier by presenting timer states (active, paused, time-out)
- Each column is a timer with timer state and events listed in time order
- Shows timer events (start/re-start, stop/ pause)

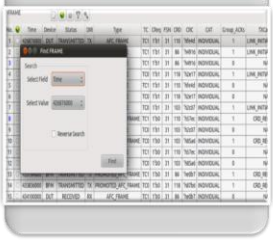


Analysis Tools:

The PDA tool assists in protocol aware analysis. This allows design and verification engineers to quickly identify bugs, issues and other scenarios of interest. For example, with *Transaction Diff* feature, engineers can compare a failing case with a passing case and quickly identify differences that will help in finding the root cause. With Scripting Interface, users can create their own logic (script) to analyze the PDA data. Ex: calculation of data bandwidth, checks to ensure data is in accordance with protocol etc.

Search

- Find events and transaction with specific parameter values
- Works on all views

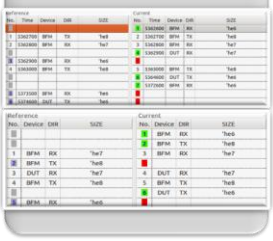


Filter

- Excel like column based filtering
- Logical expression based advanced filtering

Transaction Diff

- Compare traffic/ state traces
- Quickly identify differences between passing/ failing simulations



Scripting Interface

- Alternative to access PDA database and its features
- Create scripts to analyze PDA data

Social Debug:

The PDA tool aims to share and preserve debug knowledge within large teams. The tool can automatically identify typical debug steps and share these with others attempting to debug similar issues.

Please contact us if you want to know more about the PDA tool by writing to contact@arrowdevices.com.