

# EASE-8051

## Overview

**Cadence® IP Factory** delivers custom, synthesizable IP to support specific design requirements.

The **Cadence EASE-8051** is a set of hardware and software solutions designed with all variations of the R8051XC2/T8051 microcontrollers in mind. In-system core debugging is allowed with a user application being executed at the same time.

The **Cadence EASE-8051** features a range of components, including the R8051XC2/T8051 OCDS unit, which is responsible for controlled execution of user programs, as well as reading or writing memories and registers. EDI51-3 software package for Windows PC that works with the debugger environment is supported as well.

Another part of the **Cadence EASE-8051** is an external hardware EDP unit which enables data transmission between the debugger and the debug target through interfaces such as USB, JTAG, and SWORD. USB enables communication with the PC, while JTAG and SWORD establish connection with the CPU. The SWORD interface (Single Wire On-chip Rapid Debugging) implements the same debug functionality as JTAG, but uses just one wire instead of four.

**Cadence SoC Peripheral IP** is silicon proven and has been extensively validated with multiple hardware platforms.

**Cadence IP Factory** offers comprehensive IP solutions that are in volume production, and have been successfully implemented in more than 400 applications.

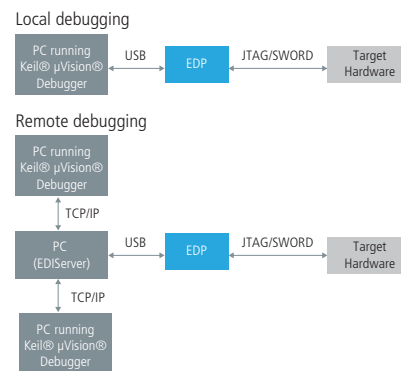


Figure 1: Example System-level Block Diagram

## Key Features

- Compliant with the IEEE 1149.1 (JTAG) standard
- Full read and write access to memory
- Supports program execution control reset, stop, go and step in ANSI C or ASM instruction modes
- Hardware breakpoints (HWBP) to stop program execution from a selected address/address range
- Software breakpoints (SWBP) to stop program execution on code fetch
- Hardware breakpoint units operating as a code fetch breakpoint or as a data memory access breakpoint
- Read and write access to internal processor registers, including the PC
- Real time trace: configurable number of trace buffer frames, data and program trace mode

## Product Details

The **Cadence EASE-8051** is an application-debugging support environment for the R8051XC2/T8051 Microcontrollers which enhances and speeds your time-to-market by providing a convenient and fast environment for debugging all 8051-based applications.

## Configurability

With the additional application transmitting data from the Tasking™ CrossView Debugger to the EDP device over any network via the TCP/IP protocol, there are two possibilities for debugging: the local and the remote one. As far as the local option is concerned, the Tasking CrossView debugger runs on a PC and EDP with hardware target connected to it directly.

In the remote option the Tasking CrossView debugger runs on one PC, while EDP with hardware target is connected to another PC, allowing designers to work on target hardware placed at a different location. A network connection is all you need. In both local and remote debugging the usage of Keil® µVision® IDE is required for the proper functioning of the application-debugging support environment in question.

### EDIk51-3

The EDIk51-3 is the plug-in created for 8051 Series microcontrollers and the Keil µVision Debugger. Thanks to EDIk51-3's compatibility with the Advanced Generic Debugger Interface standard, the original Keil simulation environment can be easily replaced by this plug-in without losing any of the important debug features.

### EDIServer

The EDIServer is an application that transmits data from the debugger to the EDP device. This unit makes enables

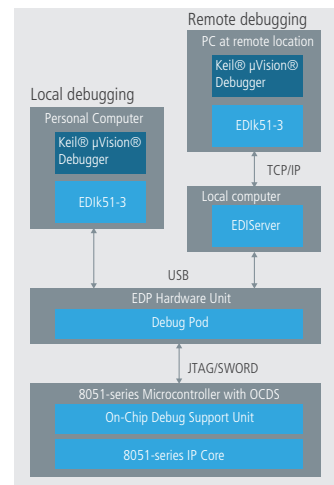


Figure 2: IP-level Block Diagram

communication between the Keil µVision Debugger and the debug pod over the network while using the TCP/IP protocol.

## Debug Pod and 8051 Series Microcontroller with OCDS

The debug pod transfers data between the software on the PC and the target hardware. To communicate with the 8051-series microcontroller the EDP uses JTAG or SWORD interfaces. The USB 2.0 High Speed interface is used as the data exchange channel between the EDP and the PC. Any 8051-series microcontroller is a fully 8051 ISA-compliant IP core. Together with the OCDS unit it simplifies embedded software development directly in the target system, which is either FPGA prototype or final ASIC.

## Cadence IP Factory

**Cadence IP Factory** can deliver various configurations of SoC Peripheral IP to meet your design requirements.

For more information, visit [ip.cadence.com](http://ip.cadence.com)

## Benefits

- Low-risk solutions—silicon proven design
- Ease-of-use—customizable with easy integration
- Supports industry-standard USB and JTAG interfaces

## Related Products

- R8051XC2 IP
- T8051 IP

## Deliverables

- Clean, readable, synthesizable Verilog HDL, VHDL
- Cadence Encounter® RTL Compiler synthesis scripts
- Documentation – user manual
- Sample verification testbench
- JTAG-only or JTAG/SWORD EDP interface
- USB drivers, a full set of cables

## Available Products

- EASE-8051

**cadence**®

Cadence Design Systems enables global electronic design innovation and plays an essential role in the creation of today's electronics. Customers use Cadence software, hardware, IP, and expertise to design and verify today's mobile, cloud, and connectivity applications. [www.cadence.com](http://www.cadence.com)

© 2014 Cadence Design Systems, Inc. All rights reserved worldwide. Cadence, the Cadence logo, and Encounter are registered trademarks of Cadence Design Systems, Inc. in the United States and other countries. All other trademarks are the property of their respective owners. V2.2 06/14