

# Ashling Debug Tools for MIPS™ RISC Cores



## Overview



**Opella-XD** is a powerful JTAG debug probe for embedded development on MIPS™ RISC cores. Opella-XD works with Ashling's PathFinder-XD debugger and the open-source GDB based debugger and Eclipse CDT.

**PathFinder-XD** Eclipse based debugger software supports all third party MIPS C/C++ compilers, has target flash programming support for a broad range of devices, multiple user-configurable windows, Embedded Linux debugging support and a built-in script language. PathFinder-XD runs on Linux x86 and Windows™ XP/Vista/7 hosts.

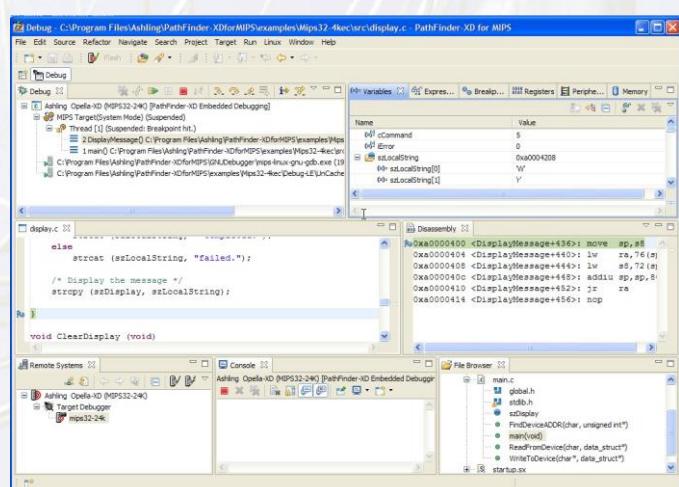
### Opella-XD-MIPS Debug Probe

- Fast, trouble-free "plug-and-play" installation using USB 2.0 High-Speed Interface (480Mb/s)
- Up to 3MB/s download speeds particularly suitable for large, complex projects
- Fully powered by USB interface; no external power-supply needed
- Supports all MIPS™ hardware-debug standards: EJTAG 4.10, 3.10, 2.6x, 2.5x, 2.0x and 1.5x
- Fine-grained adjustment of EJTAG clock frequency from 1KHz to 100MHz.
- Multi-core support with full EJTAG scan-chain configurability
- Hot-plug support; allows connection to a running target without resetting or halting
- 14-way or 20-way IDC target EJTAG connectors
- Detects and automatically configures for the appropriate target voltage from 0.9V to 3.6V
- Fast in-target Flash Programming
- Support for all on-chip hardware breakpoints; unlimited number of software breakpoints
- Configurable Target-Reset and Test-Port-Reset, under full user control
- Built-in diagnostics instantly show status of Target, Debug Probe and USB link
- Universal Hardware-Debug platform for all popular target architectures and compilers

### PathFinder-XD Source Debugger

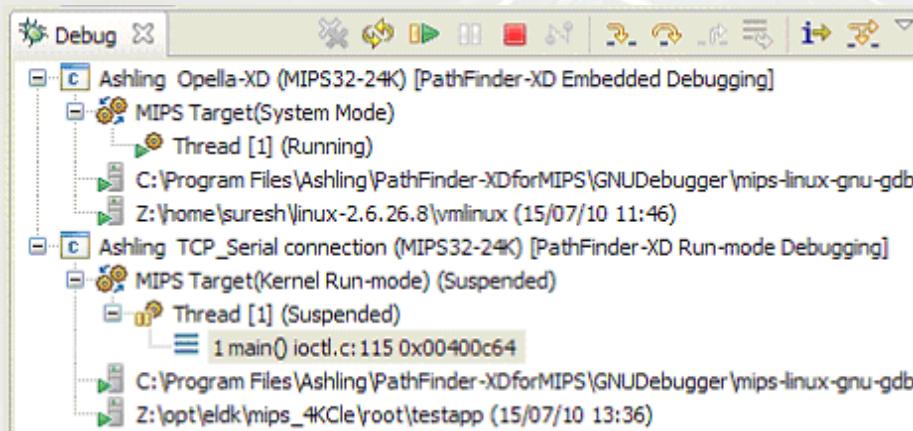
PathFinder-XD Eclipse based source-level debugger for MIPS™ application development runs on Linux x86 and Windows™ XP/Vista/7 hosts.

- C++, C and Assembly source level debug for MIPS™ C/C++ compilers which adhere to the ELF/DWARF binary standards
- Support for hardware (flash/ROM based) and software (RAM based) breakpoints and watchpoints
- Thread aware breakpoints
- Integrated Flash programming (on-chip and external flash) including support for NAND and NOR devices
- The built-in macro language allows automation of debug and software test sequences
- Full target reset control including hard and soft reset



## Embedded Linux Debugging

PathFinder-XD supports Embedded Linux Debugging for kernels (based on v2.6 or later) using stop-mode and run-mode debugging techniques.



### Stop-mode debugging:

Debugging is done via the on-chip debug interface using Opella-XD. When a breakpoint occurs the whole system is halted (i.e. kernel and applications). This mode is especially useful for bringing up the kernel.

### Run-mode debugging:

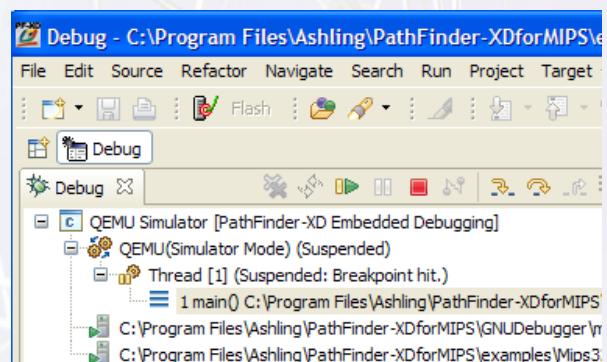
In run-mode debugging the kernel will continue to run when a process is halted. This mode allows non-intrusive debug of processes.

## PathFinder-XD's Linux support includes:

- Multi-process and multi-thread debugging
- Debugging already inserted modules, Debug a module from `init_module()`, Debug a running process, Debug a process from `main()` and Debug shared libraries
- View of active Modules and Processes and easy Browsing of Kernel Structures

## PathFinder-XD Software Simulator Support

- PathFinder-XD is supplied with the popular QEMU simulator ([www.qemu.org](http://www.qemu.org)) which allows you to download and run/test/debug your MIPS™ based application programs without any target hardware
- QEMU is automatically installed by PathFinder-XD's SETUP program
- QEMU configuration and invocation is fully integrated into PathFinder-XD and multiple configurations can be created using the integrated Target Manager



## Broad Device Support

- Opella-XD-MIPS and PathFinder-XD for MIPS supports MIPS32 cores including all members of the M4K, 4KS, 4KE, 4K, 24KE, 24K, 34K, 74K and 1004K families
- In addition, Opella-XD supports devices from the following MIPS™ licensees: AMD, ATI, Broadcom, Cavium, Infineon, Microchip, NEC, NXP, Renesas, RMI, Sigma Designs, STMicroelectronics and Trident. Contact Ashling for latest support information

## Order Codes

Product	Order Code
Opella-XD for MIPS Debug Probe. Includes USB 2.0 cable, documentation and diagnostic software	Opella-XD-MIPS
PathFinder-XD Source-level Debugger for MIPS™	PF-XD-MIPS