



*Embedded Performance, Inc.*

***EPI*** OpenDebug™  
Development Tool Environments  
for ARM®, MIPS® and Intel XScale®  
SOCs

**December 2004**

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**Virtual.One.Stop™ Development Environments**

# EPI Supported Processor Families

- EPI provides OpenDebug™ interface software to support preferred tools for our semiconductor and IP partners:

## ARM Products

<i>ARM 7xx, 9xx</i>	<i>NetSilicon NET+ARM</i>
<i>Altera EXPA-x</i>	<i>NS7xxx, 9xxx</i>
<i>Atmel AT7x, AT91x</i>	<i>Oki Semi ML67xxx</i>
<i>Cirrus Logic EP7x, EP9x</i>	<i>Philips 7xx, 9xx</i>
<i>Conexant CS2x, CX9x</i>	<i>Qualcomm MSMxxx</i>
<i>GlobespanVirata Helium</i>	<i>Samsung S3Cxxx</i>
<i>Faraday FA526</i>	<i>Sharp LH7xxxx</i>
<i>Freescale i.MXxx</i>	<i>ST Micro STn8800</i>
<i>Intel XScale –</i>	<i>Texas Instruments</i>
<i>IOP3xx</i>	<i>TMS &amp; OMAP</i>
<i>IXC11xx</i>	<i>Triscend TA7Sxx</i>
<i>IXP4xx, 2xxx</i>	<i>Winbond W90N740</i>
<i>PXA2xx</i>	<i>Zeevo TC2000</i>

## MIPS Products

*Analog Devices (Lexra)*  
*Atheros AR500x*  
*ATI Xilleon 2xx*  
*Brecis MSPxxxx*  
*Broadcom BCMxxxx*  
*Multiple product lines*  
*Cavium CN2xx*  
*IDT RC32xxx*  
*Ishoni Networks (Lexra)*  
*LSI Logic EZ4xxx*  
*Micronas MDE95xx (Lex.)*  
*MIPS cores 4Kx, 4KEx, 5Kx*  
*Philips PRxxxx*  
*PMC-Sierra MSPxxxx*  
*Texas Inst TNETC, D, V*

[www.epitools.com/pdf/Supported\\_Products\\_Guide.pdf](http://www.epitools.com/pdf/Supported_Products_Guide.pdf)

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# MAJIC<sup>®</sup> Development Environment

## Intelligent JTAG Interface for On-chip Debug Logic



10/100BaseT  
Host or  
Network  
Interface

MAJIC-LT  
MAJIC-LX  
MAJIC-MT  
MAJIC-PLUS  
Intelligent JTAG Probes

### Development Toolkit Host

IDE

Compiler

Linker/Loader/Lib

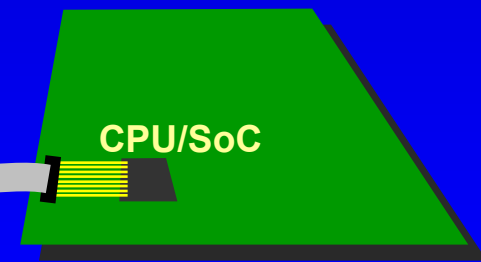
Assembler

Debugger

MAJIC OpenDebug<sup>™</sup>  
Software Interface



JTAG  
Target Interface Cable



CPU/SoC

Target System

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# MAJIC Intelligent JTAG Debug Probe Lineup

## MAJIC-LT



**JTAG**  
Run-Control  
Single Tap  
anywhere  
on JTAG  
scan chain

**GDB support**

## MAJIC-LX



**JTAG**  
Run-Control  
Single Tap  
anywhere  
on JTAG  
scan chain

**OpenDebug  
support**

## MAJIC-MT



**Multi ...**  
- Tap  
- Processor  
- **Debug Session**  
- Context/Thread  
- Architecture  
On-Chip Trace

**OpenDebug  
support**

## MAJIC-PLUS



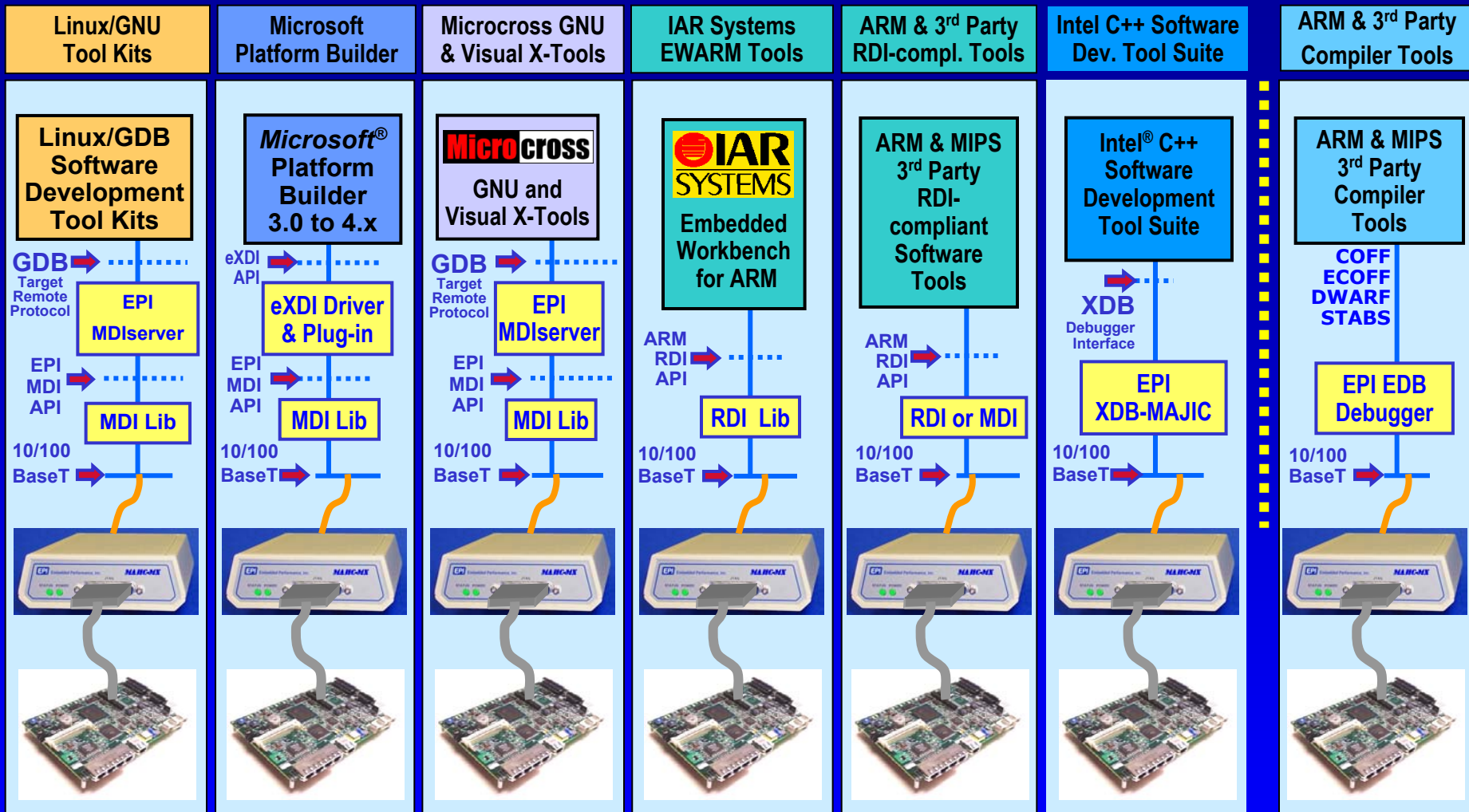
**Multi ...**  
- Processor  
- Session Debug  
- Context  
- Architecture  
On-Chip Trace or  
ETM Trace or  
EJTAG PCTrace

**OpenDebug  
support**

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# EPI Development Environments for ARM/Intel XScale/MIPS SoCs



ARM	✓	✓	✓	✓	✓	✓
XScale	✓	✓	✓	✓	✓	✓
MIPS	✓	✓	✓			✓

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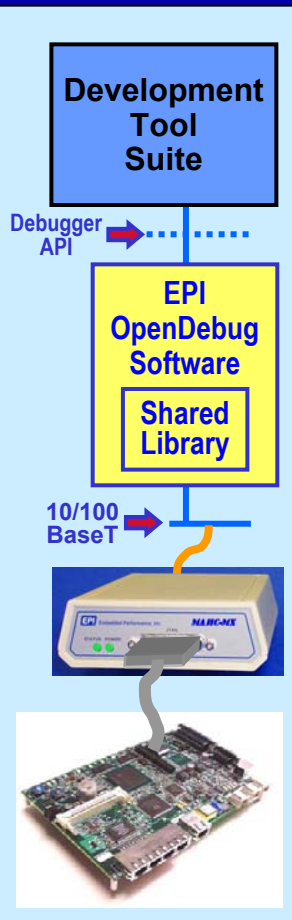


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**Virtual.One.Stop™ Development Environments**

# Intelligent JTAG Probe Adds Power & Flexibility

## Development Tool Environment



## Features

- ◆ **Non-intrusive JTAG interface**
- ◆ **Built-in memory testing**
- ◆ **Fast upload of trace data**
- ◆ **Fast program download**
- ◆ **Rom-less booting**
- ◆ **Interactive debug mode**
- ◆ **Non-intrusive connection**
- ◆ **Industrial strength scripting language**
- ◆ **Watchdog & OS timer support**

## Benefits

- No target I/O ports or memory used**
- Board bring-up/test convenience**
- Debug efficiency/convenience**
- Faster debug/edit cycle**
- Bring-up target with empty flash**
- Debug while processor is running**
- Connect to running target w/o reset**
- Target initialization, build automated test suites**
- On-stop & idle mode scripts control target during debug**

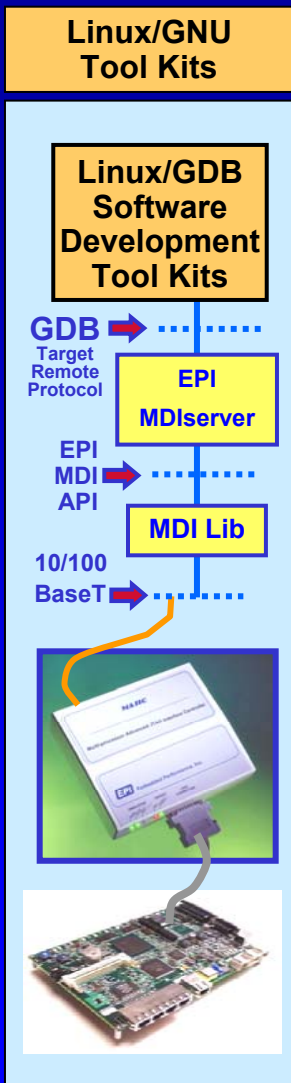
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# Intelligent JTAG Probe Adds Power & Flexibility



## Features

- ◆ MMU Translate & Dump utility
- ◆ Pre-configured flash utility
- ◆ Cleanly partitioned code
- ◆ Multi-core, multi-session debug
- ◆ User Register Definition files
- ◆ Hardware Emulator support
- ◆ One JTAG probe supports multiple cores/targets
- ◆ Support Services contract for Updates & Tech Support

## Benefits

- Displays virtual-physical mapping
- Program target flash at CPU speed
- Easy to add target specific conditions
- Debug multiple processors through single JTAG probe
- Familiar register names and bit fields in Register Window
- Validate JTAG debug before tape-out
- Lower cost for multiple programs (maintain current Support Services)
- Firmware and software updates for new processor types & new features

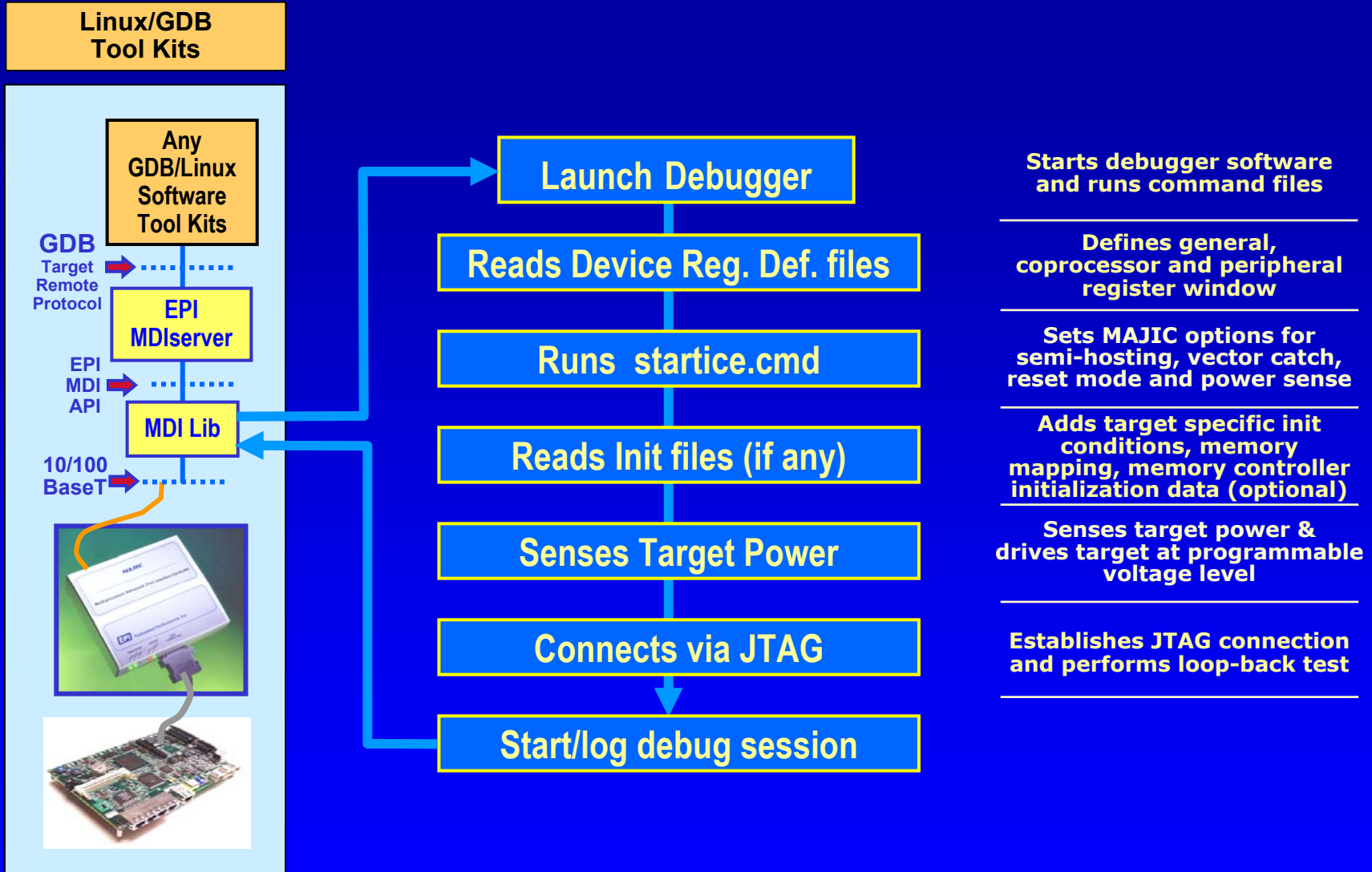
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# Pre-configured Startup, Device and Target Files



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# EPI Supports Industry Standard Software Tools for with EPI OpenDebug™ Interfaces

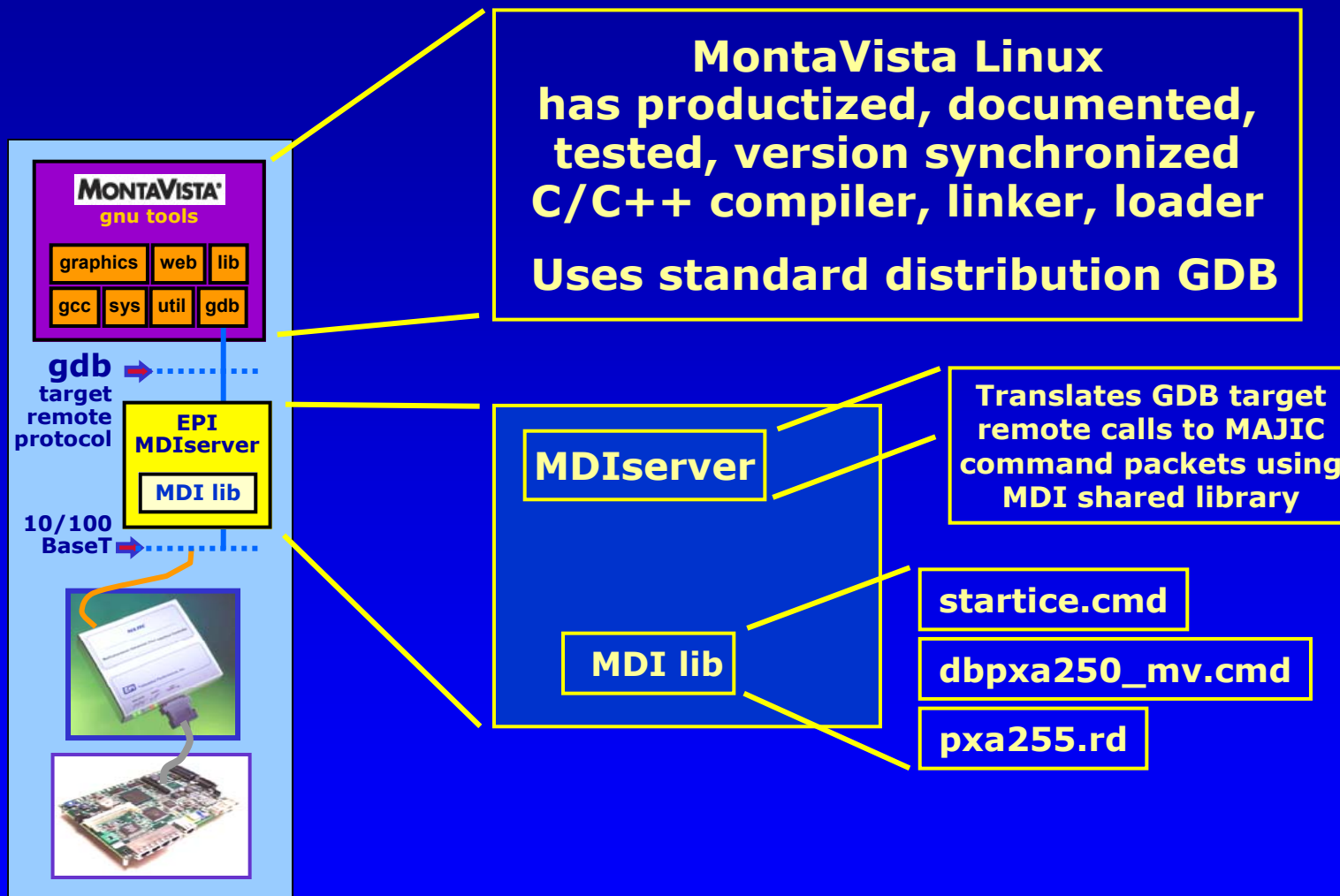
<b><u>OpenDebug Interface Software:</u></b>	<b><u>ARM/XScale Interface</u></b>	<b><u>MIPS Interface</u></b>
<b>ARM ADW/ADS</b>	<b>RDI 1.5.1</b>	<b>MDI 1.0</b>
<b>ATI Mentor XRAY Debugger</b>	<b>RDI 1.5.1</b>	<b>MDI 1.0</b>
<b>Green Hills MULTI</b>	<b>RDI 1.5.1</b>	<b>MDI 1.0</b>
<b>GNU GDB</b>	<b>MDIserver &amp; MDI</b>	<b>MDIserver &amp; MDI</b>
<b>IAR EWARM</b>	<b>RDI 1.5.1</b>	—
<b>Intel C++ SDT</b>	<b>XDB-JTAG</b>	—
<b>ARC/Metaware SeeCode</b>	<b>RDI 1.5.1</b>	<b>MDI 1.0</b>
<b>Metrowerks CodeWarrior</b>	<b>RDI 1.5.1</b>	<b>MDI 1.0</b>
<b>Microsoft Platform Builder</b>	<b>eXDI &amp; MDI</b>	<b>eXDI &amp; MDI</b>
<b>MontaVista Linux Professional</b>	<b>MDIserver &amp; MDI</b>	<b>MDIserver &amp; MDI</b>
<b>TimeSys Linux</b>	<b>MDIserver &amp; MDI</b>	<b>MDIserver &amp; MDI</b>
<b>µC Linux</b>	<b>MDIserver &amp; MDI</b>	<b>MDIserver &amp; MDI</b>

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## Tools-to-Targets Integration for MontaVista Linux

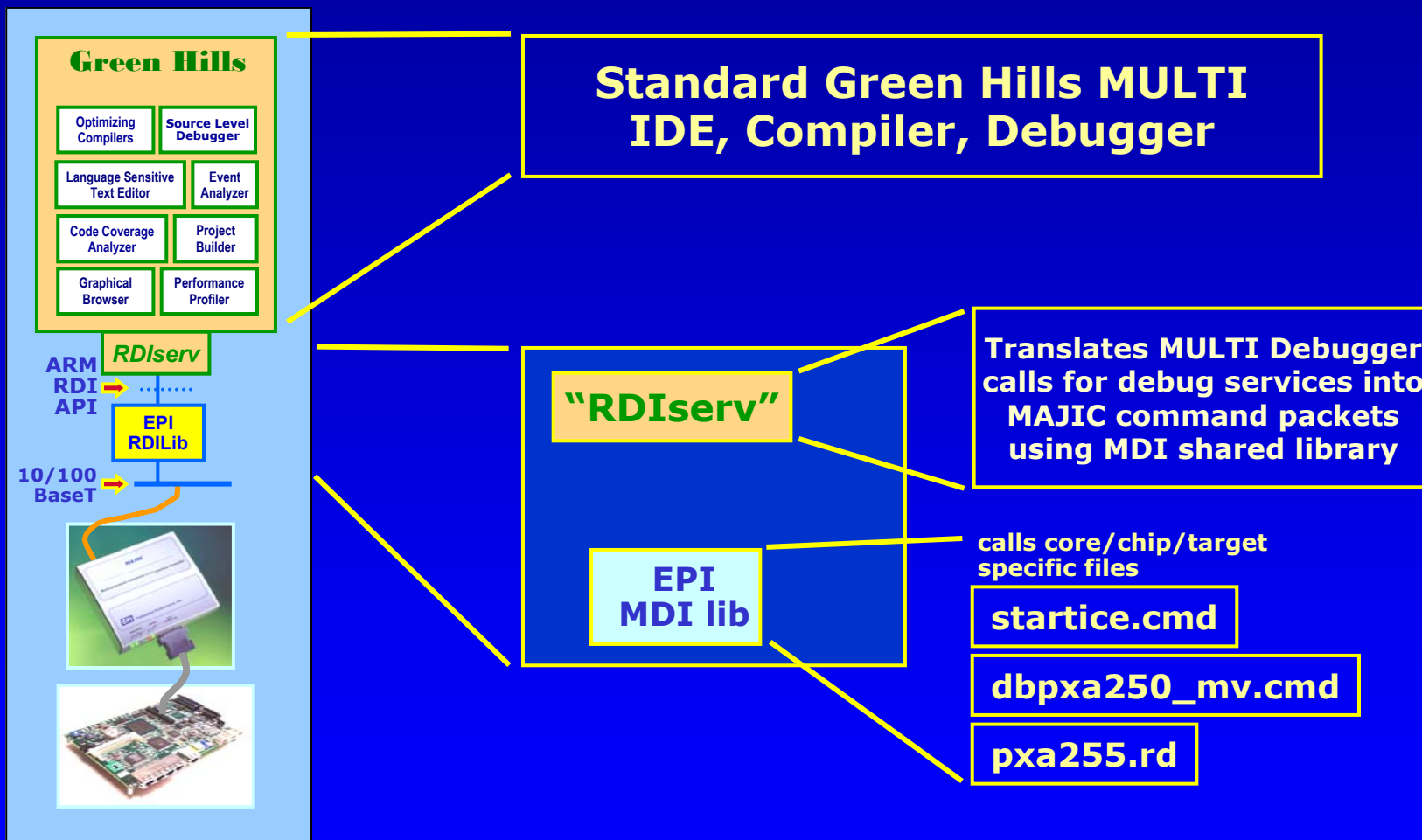


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# EPI Virtual.One.Stop™ Development Environment

## Tools-to-Targets Integration for Green Hills MULTI



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