

AMIDiag

→ products and strategy

4/8/2002

Product Goals

- For IA and IPF platforms, provide**
- extensive system information**
 - comprehensive low level hardware test routines**
 - burn-in capability**
 - trouble ticket / report generation**

Product Goals

- **Function under multiple Operating Systems**
- **Keep Pace with the ever-changing technology landscape**
- **Readily Customized to meet customer needs**
- **Leveraging AMI's BIOS, hardware design and manufacturing capabilities**

Product Goals

- Award winning hardware diagnostic software
- Component & Device level testing
- Manufacturing test support
- Easy User Interface
- Interactive and batch mode
- Script driven simple testing

AMI Diagnostic products

→ High-level diagnostics

AMIDiag for Windows

→ Low-level diagnostics

AMIDiag for DOS

AMIDiag for EFI

→ BIOS-level diagnostics

AMIDiag for EFI

AMI Diagnostic products

→ AMIDiag Suite 2.00

AMIDiag 6.20 for DOS

AMIDiag 2.00 for Windows

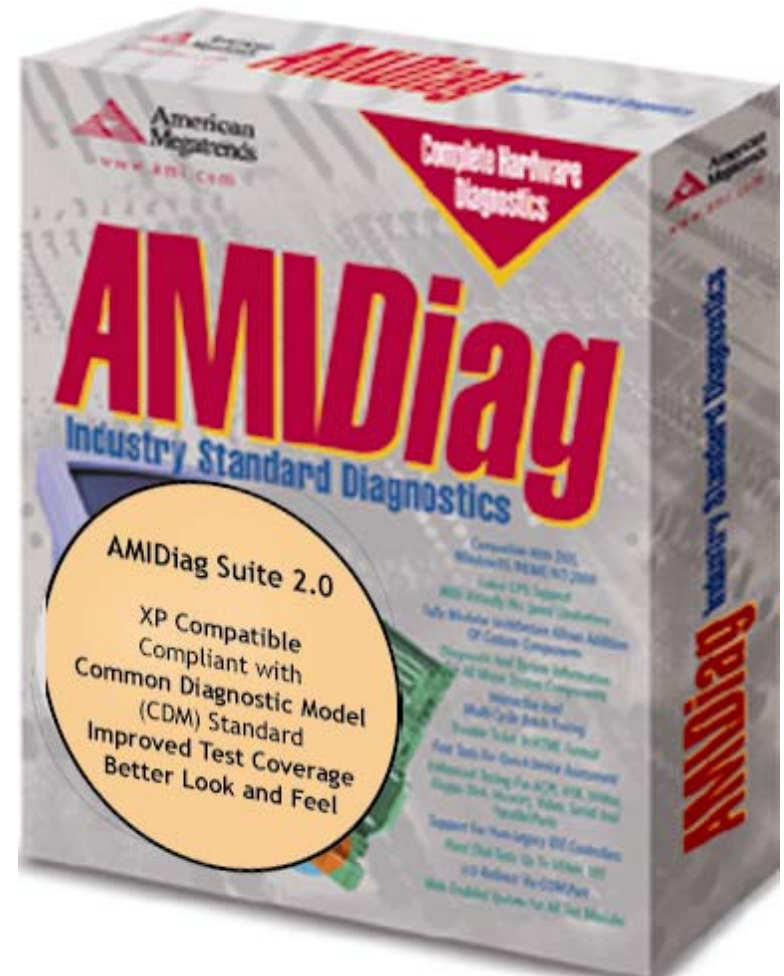
→ AMIDiag 8.00 for EFI (both 32 and 64 bits)

→ AMIDIAG 6.01 for DOS (japanese version)

→ PC Defender and PC Defender /N

AMI Diagnostic products

→ Windows and DOS based utilities to perform extensive hardware diagnostics. Can be loaded from floppy, hard disk, CD, hidden partition or PXE servers.



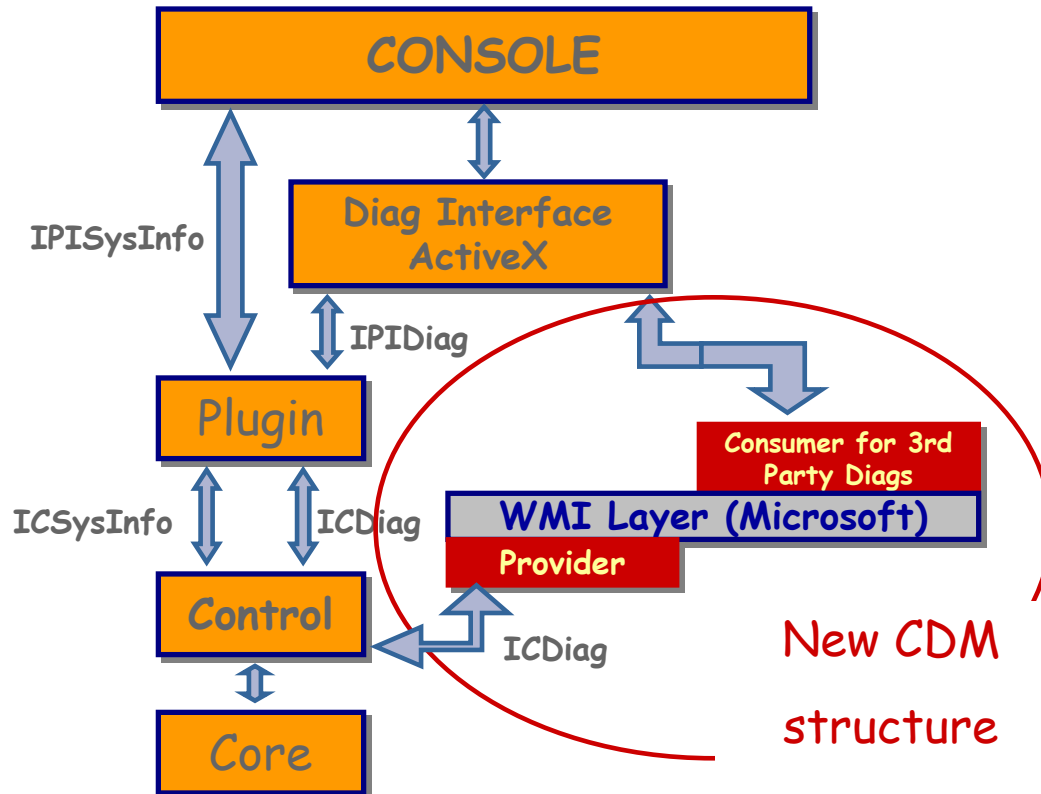
AMIDdiag 2.00 for Windows

- Windows XP Support
- CDM compatibility (CIM providers)
- Improved Test Coverage
- Improved System Information using WMI
- New Architecture ActiveX based
- Detailed Activity Log
- Batch Execution and Scripting

AMIDdiag 2.00 for Windows

- Two new, improved Console:
 - Application ActiveX based
 - MMC snap-in
- Multilanguage capable
 - (translation available on OEM request)
- Custom console easy to implement with the availability of ActiveX controls

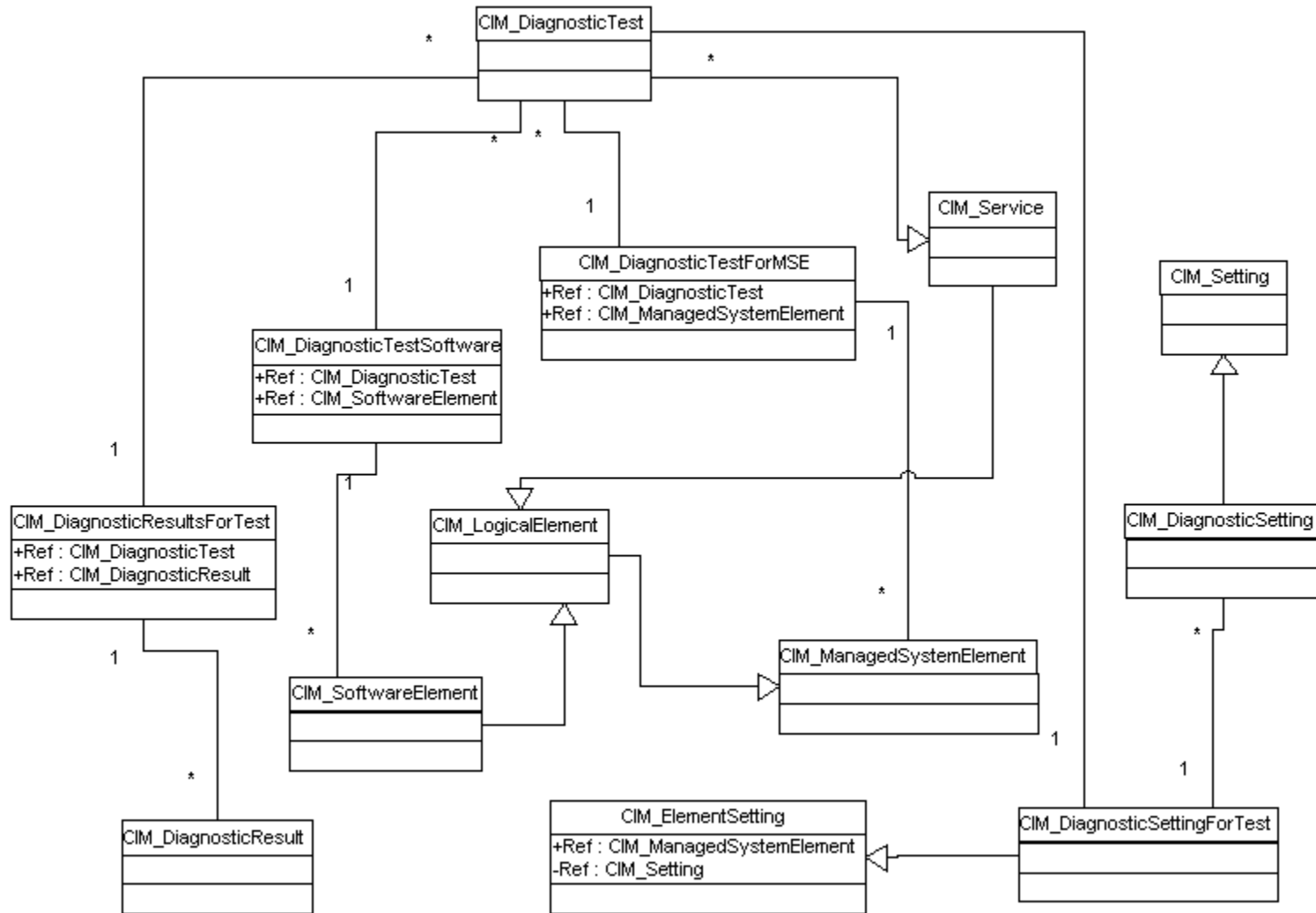
AMIDiag 2.00 for Windows



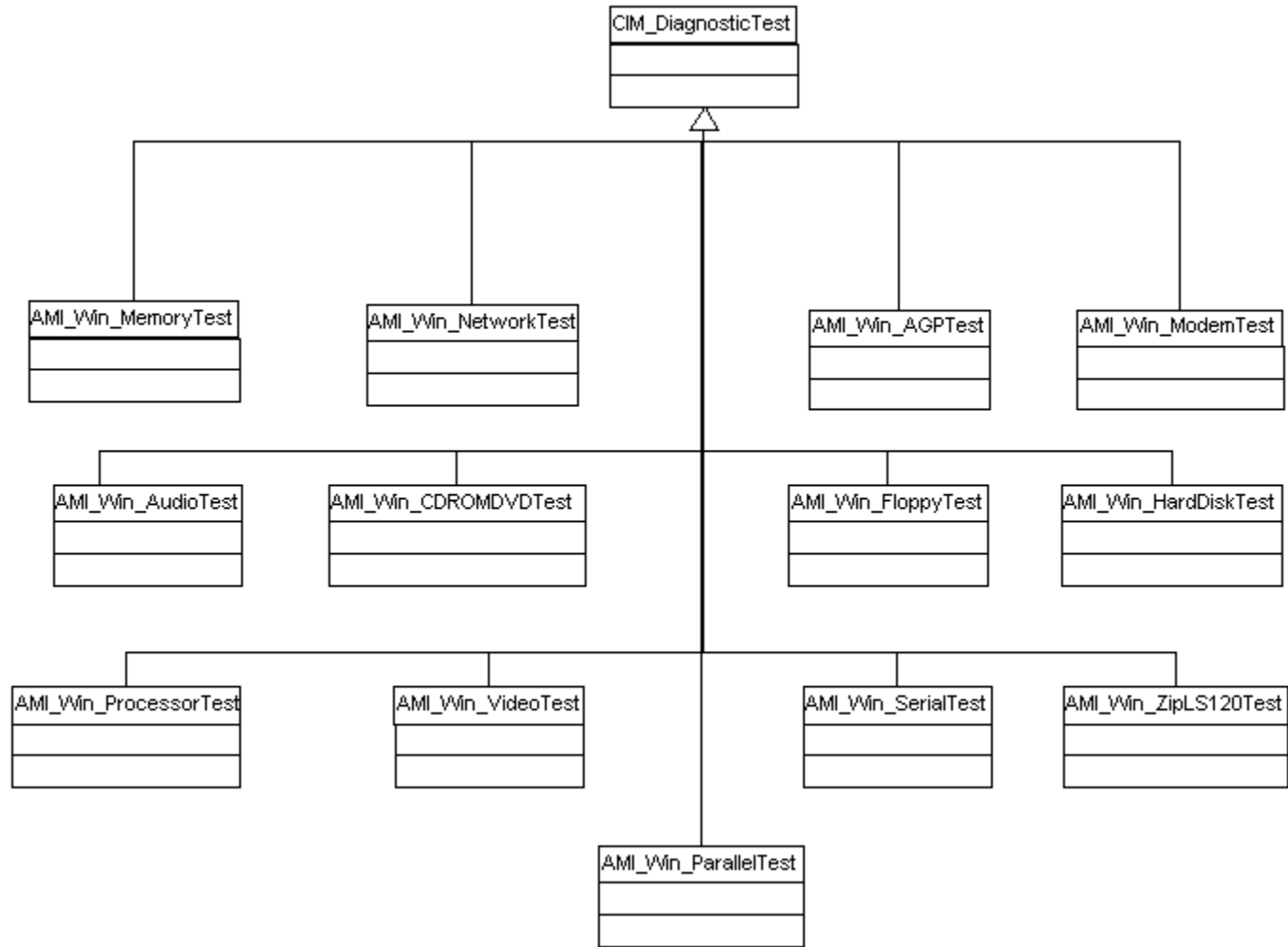
AMIDdiag 2.00 for Windows - CDM

- Diagnostic modules as CIM providers
- Usage of third party components CDM compatible

AMIDiag 2.00 for Windows - CDM



AMIDiag 2.00 for Windows - CDM



AMIDdiag 2.00 for Windows

- **Extended Memory Tests**
- **Reorganized Drive info and Tests**
- **Network Snapshot**
- **New Interactive Video Tests**
- **AVI Test**
- **New non-interactive Video and Sound Tests**
- **Additional System Information gathered via WMI**

AMIDdiag 2.00 for Windows

→ Detailed Activity Log features:

Event Services

Log Writer

Detailed logging from all modules

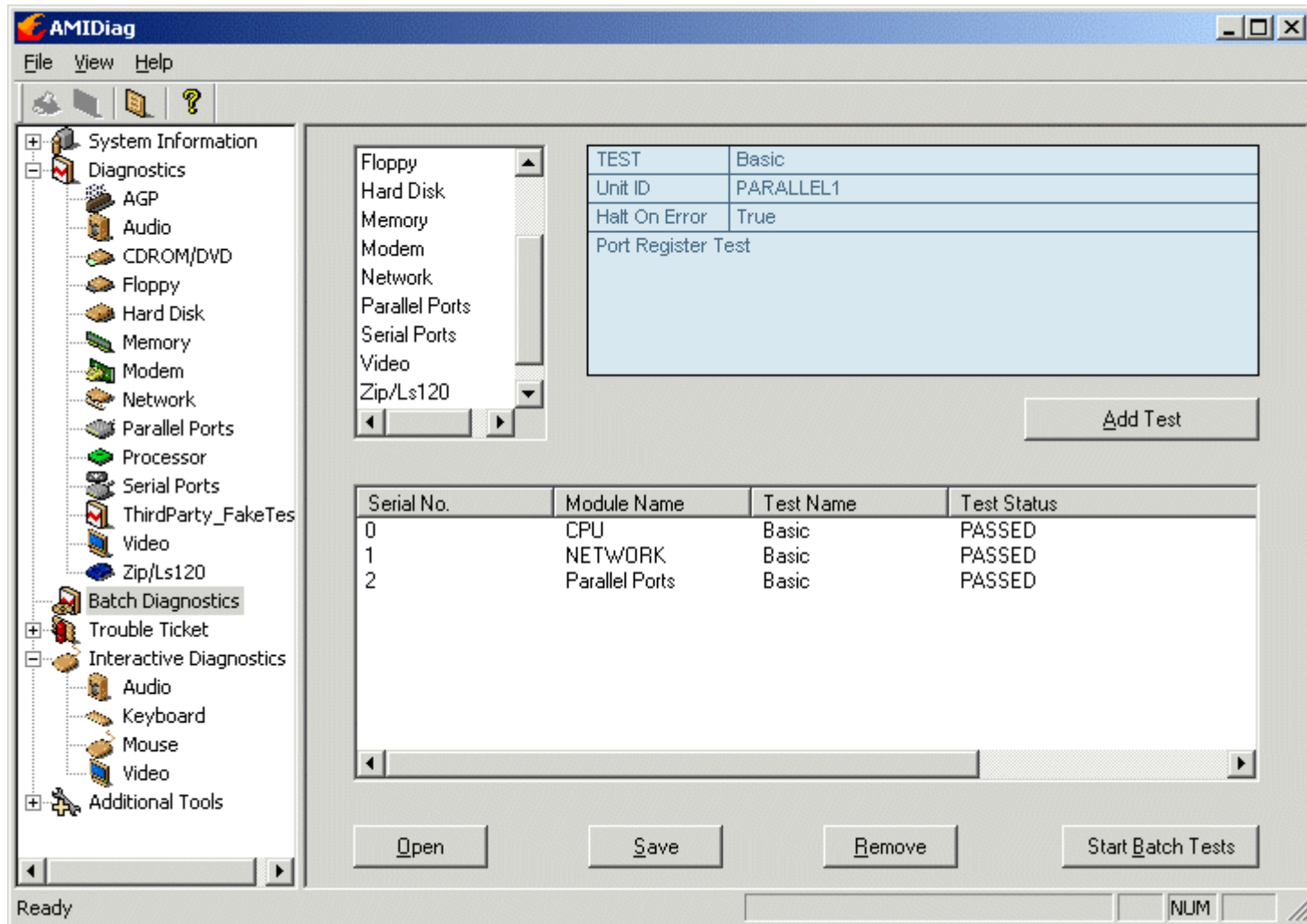
Database query components

Unique Tray Icon Application for all modules

Report Tools

Log Viewer

AMIDiag 2.00 for Windows



AMIDdiag for Windows

→ Support for all Microsoft Operating Systems

Windows 95/98/ME/NT/2000/XP

→ Diagnostics for Major Components

→ System Information for Major Components

→ Interactive Diagnostics

AMIDdiag for Windows

- **Trouble Ticket**
- **Customizable Components with Documentation**
- **Expandable via Adding New CDM providers or COM Controls**

AMIDdiag for Windows - System Diagnostics

→ Two Levels of Diagnostics:

Basic

Extended

→ Interactive Diagnostics

AMIDdiag for Windows - System Diagnostics

→ Non-interactive

Processor

Memory

Floppy Drives

LS 120 & Zip

Video

AGP

IDE & SCSI Hard Disk

IDE & SCSI CD/DVD

Serial Ports

Parallel Ports

Sound

Modem

Network

AMIDdiag for Windows - System Diagnostics

→ Interactive Diagnostics

Video:

- Includes Resolution Test, Visual Quality Test, and 3D Video Test

Audio:

- Includes Volume Test, Speaker Test, Wave File Test, and Frequency Synthesis Test

Mouse:

- Speed Test and Double-click Speed Test

Keyboard

AMIDiag for Windows - System Information

Processor

BIOS

Motherboard

Memory

Floppy Drives

Keyboard

Mouse

Serial and Parallel Ports

IDE and SCSI CD/DVD

IDE and SCSI Hard Drives

PCI

USB

ACPI

Video

Modem

Multimedia

Misc SCSI

AMIDdiag for Windows - System Information

Device Drivers
Logical Drives
Network Resources
Operating System
Processes
Printer
System Files
Internet

AMIDdiag for Windows - Trouble Ticket

- Reports System Inventory Including Diagnostic Results
- HTML Format & XML/XSL Format
- HTML generated from XML/XSL transformation

Data in XML, formatting in XSL (stylesheet)
Allows for Easy Trouble Ticket Customization
Based on a Components with a Standard Interfaces
WinDiag SDK Provides Detailed Step-by-step Guides

AMIDdiag for Windows

→ Expandable via Adding New COM Controls (ver. 1.00 compatibility)

Design is Based on ATL COM Components
Components Can Easily Be Added or Removed
Based on a Components with a Standard Interfaces

- Allows for Easy Customization
- WinDiag SDK Provides Detailed Step-by-step Guides
- WinDiag SDK Provides Wizards for Developing COM Objects
- Each Module Can Contain System Information, Diagnostic and Trouble Ticket Information is Automatically Added

AMIDdiag for DOS

- Easy user interface with test progress reporting
- Manufacturing test support
- Component and Device level diagnostics
- Script driven for ease of testing
- Single and multi-cycle batch testing
- System information (MIF file creation)

AMIDdiag for DOS

- Customizable report generation (file, serial or parallel port)
- Modular design with Plug-in kit (APIs) for third party test addition
- Support for External Programs
- Network HeartBeat support
- Configuration Summary to file
- Input/Output Redirection via COM port (VT100 interface)

AMIDiag for DOS

- Quick Test Mode
- Allow running from RAM drive when booting from floppy or CD

AMIDdiag for DOS - test coverage

- CPU
- Multiprocessor
- Memory
- System Board
- SMBus
- Floppy disk drive
- LS120 and ZIP
- Network
- Modem
- Sound
- IDE devices (HDD, CD, DVD, TAPE)
- Video
- Keyboard
- Mouse
- USB controller and devices
- CardBus
- SMBIOS/DMI
- APM
- ACPI
- Serial and Parallel ports
- SCSI devices (HDD, CD, DVD, TAPE)

AMIDdiag for DOS - System Information

- Creates MIF File
- System Board
- CPU stepping and Microcode level (P6)
- L2 Cache info
- BIOS Information (System, Video, PnP, PCI and DMI)
- Keyboard info
- Multiprocessor configuration and MP Table data
- SCSI & IDE Devices (Disk, Tape, CD, DVD, LS120 and Zip)
- Power Management
- ACPI support
- Sound Cards

AMIDdiag for DOS - System Information

- Modems
- EISA, ISA, & PCI
- Plug and Play (ISA PnP and On Board devices)
- Display Details
- Complete DMI Information and Event Log
- SDRAM details (SPD)
- CardBus controller info
- USB devices details
- Network configuration
- Devices Drivers
- Software interrupts

AMIDdiag for DOS - System Information

- DOS Environment
- List AUTOEXEC.BAT and CONFIG.SYS
- XMS and EMS Environment
- Physical and Logical Drives
- System Configuration
- Memory Information
- Hardware IRQ's
- DMA Assignments
- I/O Port List

AMIDdiag 6.20 for DOS

→ Support for new CPUs:

Intel:

- Xeon MP, new flavors of Pentium 4 and Xeon

AMD:

- Athlon MP, Athlon XP and Athlon 4

→ Hyper-Threading support

→ IDE 48 bit LBA support

→ CD-RW test

PC Defender

- Graphical User Interface with Mouse support
- End User oriented
- Easy OEM Customization
- Test Modules from AMIDiag
- Configuration report and history
- Basic and Advanced Test
- Scripting support

PC Defender

- Non destructive tests only
- Minimal memory footprint
- Test Wizard for a problem oriented approach
- System Report with configuration and test results

PC Defender /N

- PXE standard support
- Pre-OS diagnostic package
- Centralized storage of Test log and system reports
- No usage of local mass storage devices

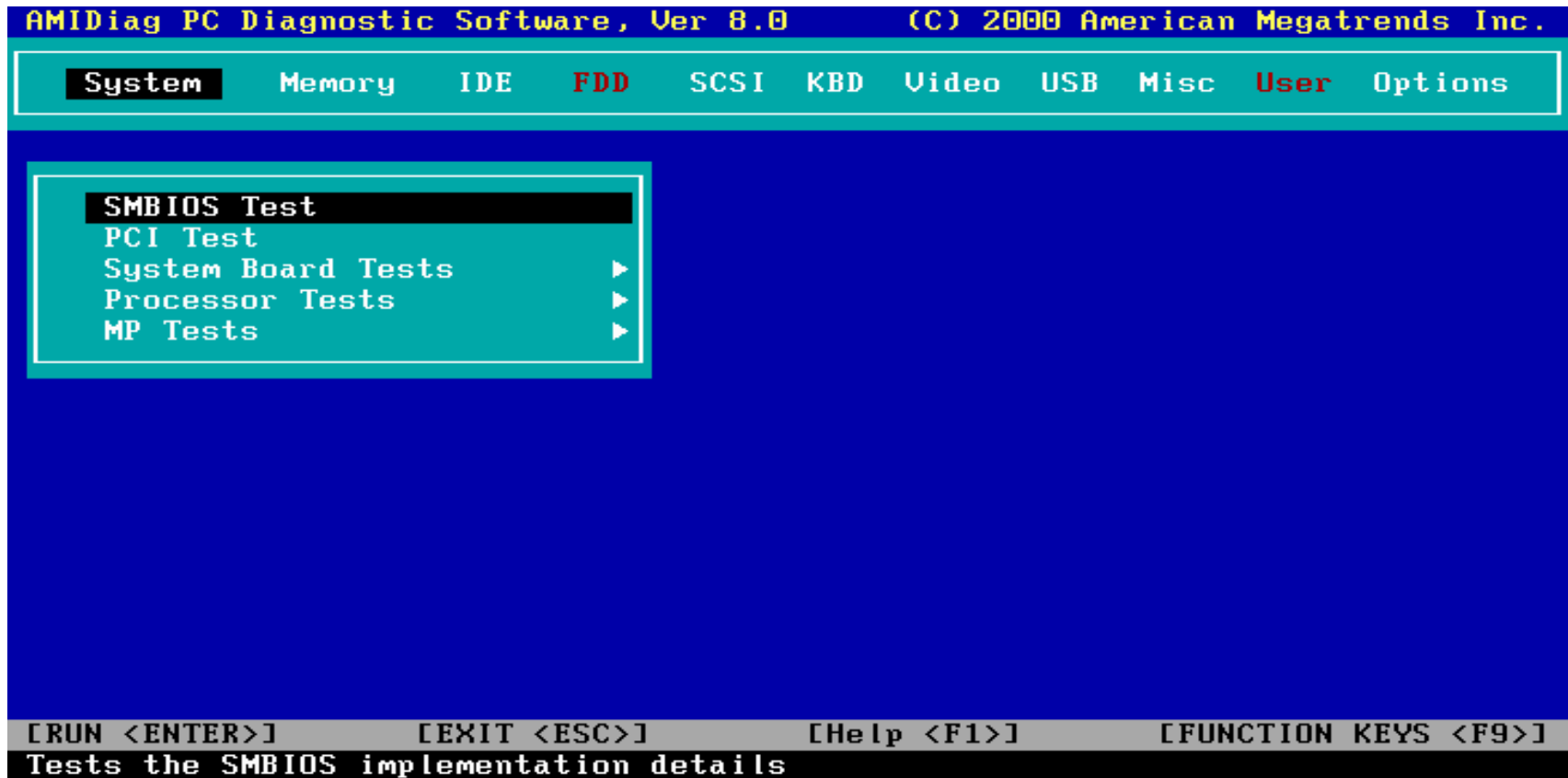
AMIDdiag for EFI

- First OS independent diagnostic product
- Based on the EFI specs
- Native 32-bit and 64-bit code
- IPF architecture support
- Increased modularity
- Communication between modules through proprietary protocols
- Same functionality of the DOS version

AMIDdiag for EFI

- Usage of standard device drivers (MP, ACPI, SPT)
- Running from firmware, an EFI partition or from a removable device (Floppy, ZIP, CDROM)
- Component and Device level testing
- Network Heartbeat
- System Information
- Log file and report generation

AMIDiag for EFI



AMIDdiag for EFI - engine

- Text User Interface
- Comprehensive Test flow control
- High level of configuration
- Test progress reporting
- Interactive and batch (script) execution modes
- Script and condensed script execution
- Single and multi cycle script execution
- Quick test mode

AMIDdiag for EFI - engine

- Extensive set of engine parameters
- Save and Restore of engine parameters
- Help engine control sensitive
- Support for custom modules (SDK)
- Support for external programs
- Logging of test result to file, serial or parallel port
- Customizable Log file

AMIDiag for EFI

AMIDiag PC Diagnostic Software, Ver 8.0 (C) 2000 American Megatrends Inc.

System **Memory** IDE **FDD** SCSI RBD Video USB Misc **User** Options

EDIT	Batch Parameters	
Bat	Cycle Mode	: All
Exe	Cycle Number	: 1
Int	Test Mode	: PASSBOUND
Qui	Time Limit Hrs	: 1
Tes	Time Limit Min	: 0
CON	Number of Passes	: 1
	Break All on Error	: NO
	Cycle Test Mode	: PASSBOUND
	Cycle TLimit Hrs	: 1
	Cycle TLimit Min	: 0
	Passes in Cycle	: 1
	Test Order	: Default
	Wait on Error	: NO
	Break Test on Error	: NO
	Interactive	: NO
	Quick Test	: NO

[RUN This] [Help <F1>] [FUNCTION KEYS <F9>]

AMIDiag for EFI

AMIDiag PC Diagnostic Software, Ver 8.0 (C) 2000 American Megatrends Inc.

System Memory IDE FDD **SCSI** KBD Video USB Misc **User** Options

<F1> - Help
<F2> - Edit Batch Parameters
<F3> - Load Batch Parameters
<F4> - Save Batch Parameters
<F5> - Select/Deselect Current Test
<F6> - Select/Deselect All Tests in Menu
<F7> - Select/Deselect All Tests
<F8> - Select/Deselect All Quick Tests
<F9> - List Function Keys
<F10> - Run Selected Test

OK

[RUN <ENTER>] [EXIT <ESC>] [Help <F1>] [FUNCTION KEYS <F9>]
View System Information.

AMIDdiag for EFI - other features

- Module level parameters
- Centralized management of module parameters
- Easy parameter definition using user interface or text editor
- Save and Restore of module parameters

AMIDdiag for EFI - test coverage

- CPU
- Multiprocessor
- Memory
- System Board
- PCI Bus
- SMBIOS / DMI tables
- USB controller and devices
- IDE devices (HDD, CD, DVD, TAPE)
- SCSI devices (HDD, CD, DVD, TAPE)
- Floppy disk drive
- LS120 and ZIP
- Video
- Keyboard
- Mouse
- Serial and Parallel ports

AMIDdiag for EFI - test coverage

→ Network*

→ ACPI*

→ APM*

→ Modem*

→ CardBUS*

→ SMBUS*

→ Sound*

→ i740*

→ Plug and Play*

* under testing

AMIDiag for EFI

AMIDiag PC Diagnostic Software, Ver 8.0 (C) 2000 American Megatrends Inc.

System **Memory** IDE FDD SCSI KBD Video USB Misc **User** Options

Parity Test 0.10

Total mem = 4100MB, Max addr = 6144MB

Scale: 16384 KB = 1 char

Address = 00000001 7FFFF000
Percent Tested = 100

TEST PASSED

- Return to Main Menu
- Browse Current Test Errors
- Browse All Test Errors
- Erase Error List
- Browse Current Test Status

Code Param1 Param2 Param3

Select <Arr> Help <F1> Exit <ESC>

This is the Parity Test

AMIDdiag for EFI - System information

- Menu driven information access
- Customizable Report file
- Easy addition of custom information
- MIF file generation

AMIDiag for EFI

```
System Information Software, Ver 8.0      (C)2000 American Megatrends Inc.
-----
Hardware          Setup          Environment      Storage          Options
-----
-----System Board-----
Intel Itanium Processor
  Processor        - Intel Itanium Processor
  Model            - 00h
  Stepping         - 01h
  P6 Patch Level   - N/A
  Speed            - 670 MHz
  Coprocessor      -
Memory below 1 Mb
  Total RAM below 1 Mb - 640 KB
Memory above 1 Mb
  Total RAM above 1 Mb - 4197376 KB
Standard BIOS
  BIOS Manufacturer - Unknown
  Release Date      - 09/28/00
-----
[MENU <ESC>] [SCROLL WINDOW <ARROW KEYS>] [NEXT <N>] [PREVIOUS <P>]
```

AMIDdiag for EFI

System Information Software, Ver 8.0 (C)2000 American Megatrends Inc.

Hardware Setup Environment Storage Options

Start Addr.	End Addr.	Size	Prog. Name	Prog. Type
0	FFF	1000		BS_data
1000	77FFF	77000		available
78000	78FFF	1000		BS_code
79000	7AFFF	2000		BS_data
7B000	7EFFF	4000		RT_data
7F000	87FFF	9000		RT_code
88000	9FFFF	18000		BS_data
C0000	FFFFF	40000		RT_code
100000	7FD03FFF	7FC04000		available
7FD04000	7FEABFFF	1A8000		RT_code
7FEAC000	7FEADFFF	2000		available
7FEAE000	7FEB5FFF	8000		ACPI_recl
7FEB6000	7FF3FFFF	8A000		RT_code
7FF40000	7FF79FFF	3A000		PAL_code
7FF7A000	7FF7FFFF	6000		available

[MENU <ESC>] [SCROLL <ARROW>] [TOGGLE DISPLAY <TAB>] [NEXT <N>] [PREVIOUS <P>]

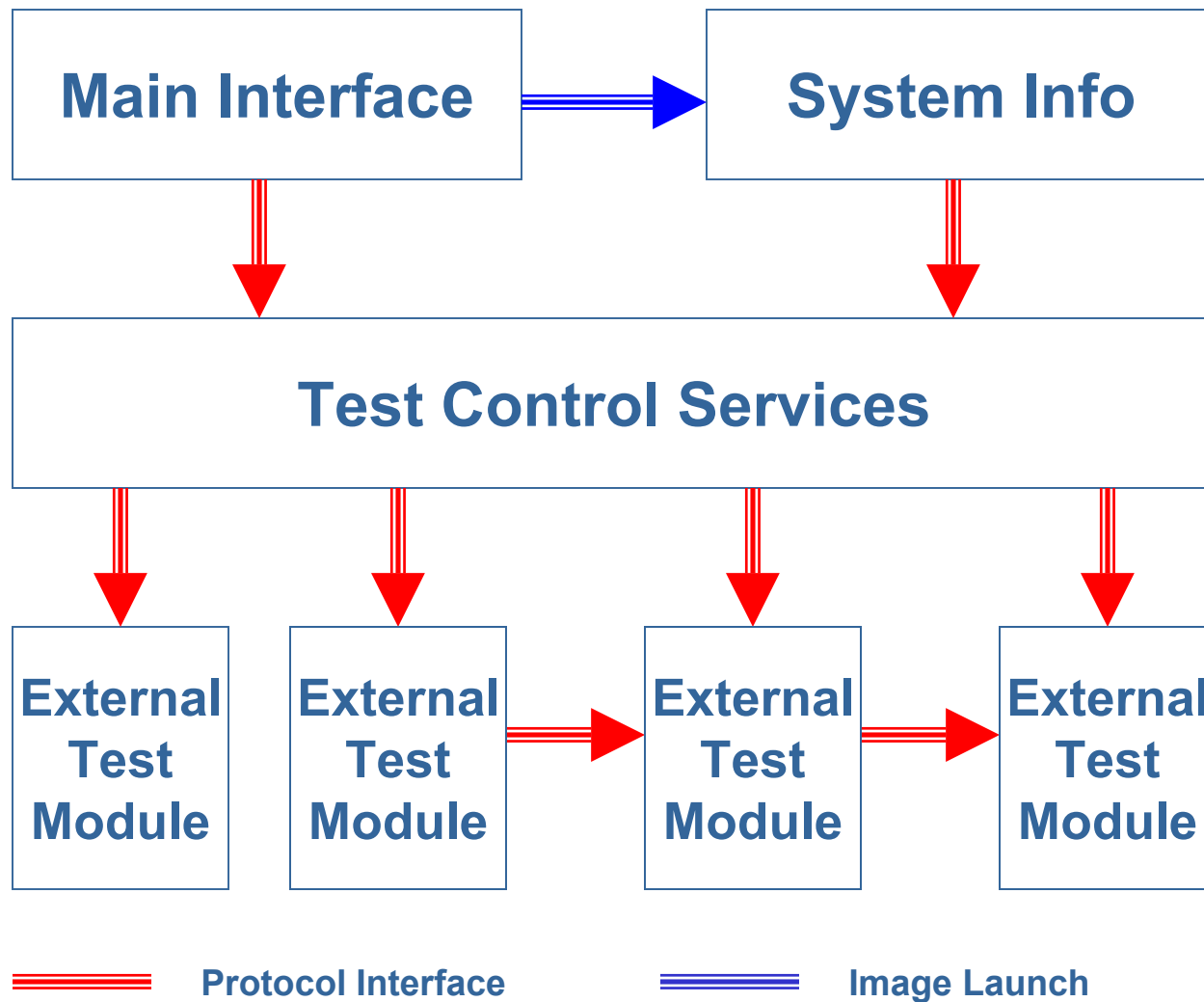
AMIDdiag for EFI - Architecture

- Modular design allows addition of new test very easy:
- Engine program implements all display, logging, and test control functions
 - Well defined and documented API helps rapid development of new test functions for new technologies (SDK)
 - New test routines are added to the menu via external configuration files
 - External user program interface makes it easy for adding third party test routines as well

AMIDdiag for EFI - Architecture

- Separation of UI and test control for future improvement and customization
- Protocol Interface simplifies communication between modules
- Common functionality provided by protocol functions to provide a uniform user interface (display and logging)
- EFI Event support
- “Heartbeat” provided through common driver interface

AMIDdiag for EFI



AMIDdiag for EFI

→ EFI advantages:

- Sharing of common source code for 32-bit and 64-bit development
- Easily add diagnostics to firmware
- Unified hardware drivers provided by EFI Toolkit
- Comprehensive EFI Libraries provided by EFI Toolkit, i.e.:
 - EFI Memory Map vs. INT 15h/E820h
 - Simple PCI configuration space access, no ASM code needed
 - No size dependant memory allocation (`_fmalloc()`, `_halloc()`, etc.)

AMIDdiag for EFI

→ Why using EFI is Better!

Versus MS-DOS*:

- Removes memory limitations
- Hardware abstraction provided by standard drivers, i.e.: MP, ACPI, SPT
- Memory allocation is more powerful
- Networking protocol stack built-in to firmware

Windows*/Linux*/Other:

- Direct hardware access without specialized drivers
- Single threaded execution

*Other names and brands are the property of their respective owners

AMI Diagnostic markets

- OEM bundling
- Manufacturing
- Technical Support Personnel
- Corporate, MIS
- End User
- Repair technicians
- Design engineers
- On line services
- IHVs bundle test
- Engineering support for CDM compatible module development

AMI Diagnostic products

- **AMI Technology support advantages**
 - **Best system level engineering resources in the world**
 - **Advanced technology from our BIOS division**
 - **Detailed hardware testing knowledge from our hardware division**
 - **Company quality procedure: American Megatrends has adopted a common company wise "Software Development Procedure" which addresses all software quality issues.**
- **Experience with serving the customized needs of other tier one OEM's**

AMI Diagnostics

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