VME-based, PowerPC Image Processing Development Systems

The PowerTD Development System platform pairs Datacube VMEbus image processing hardware with the Motorola Computer Group (MCG) PowerPC-based CPUs to offer exceptional performance at a reduced cost. Also included are the highly deterministic LynxOS, Datacube ImageFlow software, and optional DatacubeWit, providing application developers with everything needed to create versatile and powerful image processing applications. The system approach minimizes configuration and setup, thereby simplifying and speeding application development.

Deterministic LynxOS

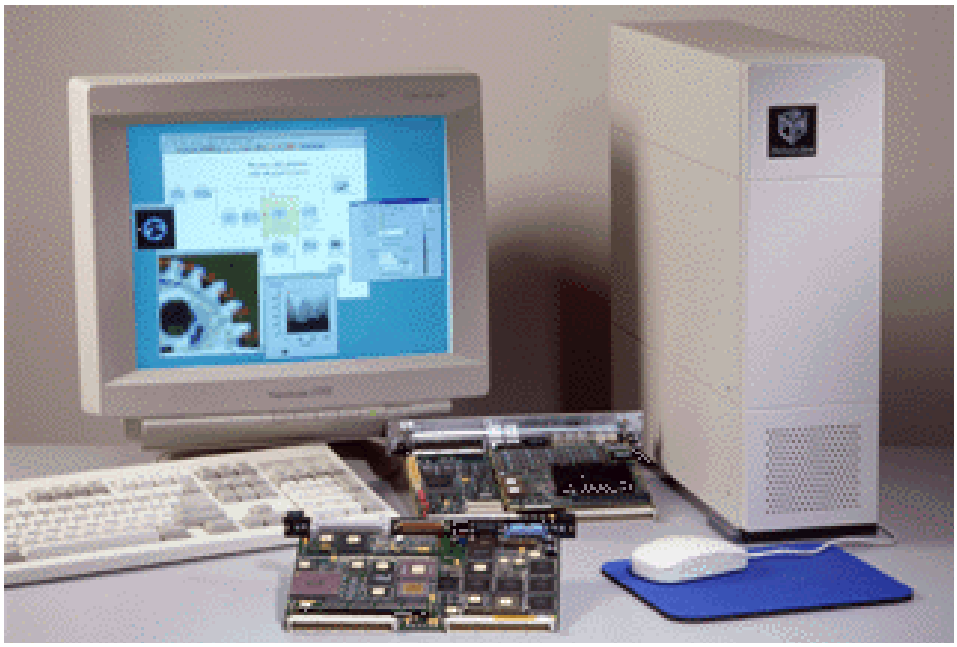
Both PowerTD development workstations and target systems use LynxOS to provide deterministic, high performance operation and seamless migration of application code from development to run-time environments on a variety of industry-standard platforms. LynxOS looks, feels, and behaves like UNIX, yet offers the predictable, deterministic performance of a real-time, embedded kernel.

Datacube Software

ImageFlow, the Datacube library of C-callable image processing functions, delivers optimal performance for even the most demanding real-time applications. DatacubeWit is a visual development tool that allows users to develop image processing applications using high level graphical icons. When decomposed, the icons reveal the supporting ImageFlow code generated by DatacubeWit. DatacubeWit runs remotely on a user-supplied PC running Windows 95 or WindowsNT, communicating with the PowerTD via an Ethernet connection.

Flexible Configuration

PowerTD workstations offer a wide variety of configuration options, including a minimum of 1 GB hard disk space, a high-capacity tape drive, and a CD-ROM drive. Developers may choose from one of three standard chassis sizes — 5-, 12-, or 20-slot — in standing or rack-mount configurations.



PowerTD shown here running the optional DatacubeWit from a remote PC

The PowerTD includes one MaxVideo 250, available in a variety of configurations. This powerful and versatile VME-based board has a phenomenal 7000 MIPs of processing power. It can simultaneously perform multiple processes on large images in parallel, with continuous real-time acquisition, processing, storage, and display operations. All operations can be reconfigured at frame rates. The MaxVideo 250 may be configured for analog, digital, or color image acquisition, and may be outfitted with the Datacube Advanced Pipeline Processor. (The PowerTD System is available with the MaxVideo 200 image processor to support 16 MB VSIMs only.)

MCG PowerPC-based CPUs provide greater CPU speeds at lower costs than their predecessors, the MVME147 and MVME167. The PowerPC 1604 CPU included in Datacube's standard PowerTD workstations comes fully configured with 32 or 16 MB RAM.

Low-Cost Target Systems

PowerTD target systems provide a means of implementing the production phase of a project. Datacube hardware and software are modular, so the developed application moves easily to lower-cost target systems that include only required features.

PowerTD target system configuration options include ROM-based, disk-based, and disk-less (networked) operation. Like all Datacube hardware and software, these systems are built using open standards to allow communication with a variety of industrial machines and virtually any other computer.

- Real-time, deterministic Lynx operating system well-suited for high performance image processing
- Self-standing, fully integrated imaging computer ready for application development
- Open architecture ensures flexibility and easy migration
- Flexible MaxVideo 250 configurations providing 7,000 MIPs of processing power
- Motorola's PowerPC-based CPUs provide greater CPU speeds at lower costs than their predecessors
- 5-, 12-, or 20-slot VME, standing or rack-mount chassis

PowerTD Specifications

Datacube Software

ImageFlow

- Datacube pipeline image processing library of C-callable functions

DatacubeWit (Optional)

- Datacube CAD-like programming environment
- Based on MaxVideo 250/200 data flow model
- Intuitive graphical interface to generate ImageFlow code
- Runs remotely on user-supplied PC running Windows 95 or WindowsNT
- Communicates with PowerTD via Ethernet connection

LynxOS (v2.4)

- Real-time operating system with fast, deterministic task response times
- Source code is compatible with UNIX System V.3 and BSD 4.3, POSIX 1003.1 compliant

PowerTD Development System OS Features

- Bootable LynxOS kernel, shell, utilities, libraries, and object files to customize the LynxOS kernel; C compiler and libraries for software development and device driver sources for all LynxOS drivers and manuals
- Standard UNIX development tools including make tools, gcc compiler, roust linker, GDB "C" source code debugger
- TCP/IP (ethernet) and NFS support
- Supports development of X/Motif-based applications; includes X libraries, X tool kits, a set of common X clients, Motif libraries, Motif tool kit, Motif window manager (mwm)

PowerTD Target System OS Features

- LynxOS kernel boots from ROM, disk, or network
- TCP/IP (ethernet) option
- NFS client/server options
- X and Motif application run-time support options

Hardware

MaxVideo Pipeline Image Processor

- MaxVideo 250 configured with either 7 or 28 MB memory or MaxVideo 200 configured with 36 to 96 MB memory
- Advanced Pipeline Processor (AP)
- 7000 MIPs processing power

Input/Output

- Analog (AS), Digital (AD), or Color (AC) input modules for the MaxVideo 250 or 200
- Video monitor output port from MaxVideo 250 or 200
- Parallel printer port
- Keyboard and mouse serial ports

Chassis

- Accepts VME 6U format cards
- Choice of 5-, 12-, or 20 slot, standing or rack-mount options
- 5-slot (standing): 17.4" H x 5.5" W x 18.4" D. Weight: 39 lbs.*
- 12-slot (standing): 17.3" H x 12.25" W x 20.5" D. Weight: 61 lbs.*
- 20-slot (standing): 10.0" H x 17.1" W x 20.0" D. Weight: 62 lbs.*

* Approximate weights include boards and peripherals. Dimensions are for standing orientation. Rack-mount models fit in standard 19" racks.

Development System Description

- MVME1604 controller with 32 MB RAM
- Storage Options:
  - At minimum, 1 GB internal hard disk drive (external on 20-slot model)
  - High capacity (>200 MB) tape drive
  - Optional external CD-ROM drive (internal on 12-slot model)
- Xdq server supports 800x600 and 1024x768 operation
- Input/Output Devices:
  - Keyboard and mouse
  - Transition board for ethernet, serial, and SCSI ports
  - Optional 17" VGA (multi-band) monitor
- Software:
  - ImageFlow
  - DatacubeWit (Optional)
  - LynxOS Development Software (v2.4)
  - X-windows and Motif

Target System Description

- MVME1604 controller with 16 or 32 MB RAM
- Storage Devices — all optional:
  - 1 GB internal hard drive (external on 20-slot model)
  - High capacity (>200 MB) tape drive
  - External CD-ROM drive (internal on 12-slot model)
- Input/Output Devices — Optional:
  - Keyboard and mouse
  - 17" VGA (multi-band) monitor
  - Transition board for ethernet, serial, and SCSI ports
- Software:
  - LynxOS Target Software (Version 2.4)
  - Optional X-windows and Motif

Electrical Specifications

- Certified to meet the following requirements*:
  - US 1950
  - CSA 950
  - EN 60950
  - EN 50082
  - EN 55022
  - FCC Part 15B

* Certification not complete at date of publication (5/96)

- All: AC Input 90-265V AC, 50-60 MHz
- 5-slot chassis: DC Output 300 Watt — Available for user devices: 17.2A @ +5V, 3.6A @ -12V, 5.7A @ +12V
- 12-slot chassis: DC Output 750 Watt — Available for user devices: 61.5A @ +5V, 3.6A @ -12V, 16.6A @ +12V
- 20-slot chassis: DC Output 1000 Watt — Available for user devices: 137.5A @ +5V, 9.0A @ -12V, 9.6A @ +12V, 4.0A @ +24V

Additional Information

For more information about the products mentioned in this document, please refer to the following Datacube literature:

MaxVideo 250 Data Sheet
DatacubeWiT Data Sheet
ImageFlow Data Sheet

D A T A C U B E

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