High-Performance, Remote-Presence Software for Embedded Applications

The Avocent EMS allows OEM and ODM customers to implement powerful, remote access and device management functionality on platforms designed to support baseboard service processors. The MergePoint EMS supports the latest industry standards such as IPMI 2.0, DCMI, PMBus and Avocent's widely-adopted, embedded KVM and virtual media technologies. Customers benefit from a mature solution that can be quickly integrated with their platform portfolio, reducing bill of material (BOM) costs and time to market (TTM) while increasing product differentiation.

HIGH-PERFORMANCE, SECURE, ENTERPRISE-GRADE KVM REDIRECTION.

MergePoint EMS supports the Avocent Dambrackas Video Compression® (DVC) algorithm, the industry's most widely-used video compression algorithm. It delivers high-quality, interactive video that is optimized for server management interactions. The DVC algorithm reduces the round-trip latency from keyboard and mouse commands to the video response. It also minimizes the impact on the network through efficient data management and compression. Optional encryption secures session data.

VIRTUAL MEDIA FOR EFFORTLESS REMOTE STORAGE.

Avocent's Virtual Media allows administrators to easily transfer data to and from the managed system from a remotely located drive. This feature is especially useful in enterprise data centers that are typically secured. The remote storage drives are easy to use as they appear to the user as local server drives. This provides the administrator with the ability to perform file transfer, application and OS patches and diagnostic testing from remote media.

EXTENSIBLE AND PORTABLE ARCHITECTURE TO MEET HARDWARE NEEDS.

MergePoint EMS architecture is a modular design that provides various levels of abstraction. This enables portability across platforms and extensibility for OEM-specific functionalities. As shown in Figure 1, the architecture is comprised of multiple layers. The Applications layer handles user space applications such as security, web services, KVM, IPMI, DCMI, IPC and virtual media. The Kernel layer offers OS-level services and is based on Linux 2.6.23. Finally, the Driver layer controls various hardware components, using virtual and physical device drivers, which reduces TTM and BOM costs.

DESIGN FLEXIBILITY AND FAST TIME-TO-REVENUE.

Featuring a highly integrated design, the MergePoint EMS speeds TTM for OEMs and ODMs by being easily incorporated within the latest hardware platforms. For companies that want to support proprietary or advanced features, predefined service offerings and advanced development packages are available. This allows you to create differentiated products without having to access or modify the original firmware.

Hardware Drivers
- I2C
- PMBus
- KCS
- USB
- UART
- Timers
- Fan Tach
- PWM
- A/D
- GPIO
- NC-SI
- vLAN
- LAN
- LPC
- SPI
- Event Hanshake
- PECI
- DVC
- DPT
- Future…

U-Boot

Managed Platform Hardware
Manageability Controller ASICs

Applications
- Web Server / Web UI
- DCMI
- vKVM
- IPMI 2.0
- vMedia
- AIM
- Flash Update
- SECURITY IPMI Authentication

Embedded Linux Kernel 2.6.23

Figure 1: MergePoint EMS Architecture

Key Technical Features

- **High-Performance KVM:** Capture, compress, encrypt and transmit keyboard, video and mouse (KVM) streams

- **Compliant with Industry Standards:**
  - DCMI
  - PMBus
  - IPMI 2.0
  - IPv6

- **Seamless KVM and Virtual Media:** Sessions are maintained during power cycling or when the server is turned off, with no requirement to restart sessions

- **Silicon Independence:** Easy to extend and port to multiple silicon cores including PowerPC®, ARM7/9, StrongARM/XScale, H8S, SH4 and MIPS, with ports for various operating systems including Linux®

- **Powerful, Integrated Console:** Embedded web server simplifies administration

- **Fast Time-to-Revenue:** An off-the-shelf design that includes robust development tools for easy integration and extension

- **Take Advantage of Intelligent Management Designs**
  With its innovative products and services, Avocent OEM services can help reduce your overall engineering and build/BOM costs while accelerating time-to-revenue. You can start with extensible firmware and software then grow by adding appliances and management consoles that are fully integrated. By incorporating Avocent's three-tiered intelligent management design into your business, you are able to differentiate to increase revenues while future-proofing your customers' environments.
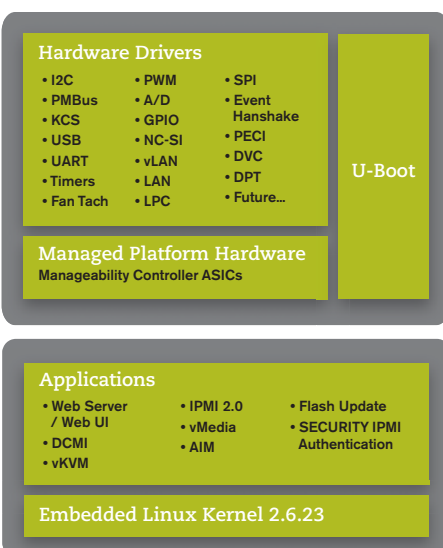
Specifications

KVM

- System-independent video and text console redirection, including keyboard and mouse
- Independent from server's graphics subsystem
- Full remote administration with seamless access from BIOS POST through to OS load
- OS independent - no drivers or OS-agents required
- Up to 30 frames per second
- Fast, hardware-based video capturing and compression
- Multiple resolutions – independent of local video
  - 1600x1200 at 72Hz max
  - 1280x1024 at 72Hz max
  - 1024x768 at 85Hz max
  - 800x600 at 85Hz max
  - 640x480 at 100Hz max
- 15-bit color (configurable down to 7-bit and gray scale for low bandwidth connections)
- Supports buffered or bufferless modes
- Supports four remote users simultaneously

WEB-BASED MANAGEMENT FEATURES

- Embedded Linux Web Server supporting four users concurrently
- Display overall server health and status; peak and cumulative power usage; hardware assets and their configuration; and system events and alerts
- Configure users and privilege levels; IPMI; SNMP; email events and alerts; and to turn on/off event logging and alerting for sensors/components
- Controls server power - power on/off/reset the server
- Runs diagnostics
- Failsafe firmware updates [using Web GUI, TFTP, USB (vMedia), IPMI]
- Download KVM and vMedia client applets for remote users
- Supports IE 6.0 and later, Firefox 2.2 or later
- Supports Telnet and Secure Shell (SSH v2)

IPMI DEVELOPMENT TOOLS

Tablemaker, BMC configuration utilities, SDR generator and editor, FRU/SDR loader, firmware download utility

XEN REQUIREMENTS

Xen Express, Standard, Enterprise or Platinum versions 4.1 or later (only the Enterprise and Platinum versions support resource pool, which is required for XenMotion)

VIRTUAL MEDIA (VMEDIA)

- USB 2.0 compliant w/14x CD-ROM speed
- Allows use of up to four simultaneously mounted remote Floppy, Hard-Disk, CD, DVD, USB Flash drives or IDE image devices
- Optional encryption (AES/RC4) on connections
- Requires Java™ Run Time Environment (JRE) 1.4.2 or higher
- Supported platforms – Windows®, Red Hat® and SUSE®

SECURITY FEATURES

- Supports up to 12 user profiles w/credentials
- Optional per KVM/vMedia session SSL 128 Bit (RC4), AES or DES encryption

SUPPORTED SILICON PLATFORMS

- ASPEED: 1100 (IPMI-only BMC), 2xxx
- Nuvoton: Hermon

SUPPORT FOR IPV6/IPV4

- All EMS applications and services support IPv6
- Supports dual stacks for IPv4 networks

EASY CUSTOMIZATION AND LOCALIZATION

GUI and viewer applets fully customizable

- Change vendor name, product name, logo, splash screen
- Modify web pages to customize for any URLs or references

INDUSTRY STANDARDS SUPPORT

IPMI

- Conforms to IPMI 2.0 and includes latest compliant errata
- PET, PEF (up to 40 filters and four policies) and firmware firewall
- Supports vendor-specific IPMI commands
- IPMI Security/AAA support:
  - Authentication: RAKP-HMAC-SHA1, RAKP-HMAC-MD5
  - Integrity: HMAC-SHA1-96, HMAC-MD5-128, MD5-128
  - Encryption: AES-CBC-128, XRC4-128, XRC4-40
- Command line shell (IPMISH) for scripting management tasks
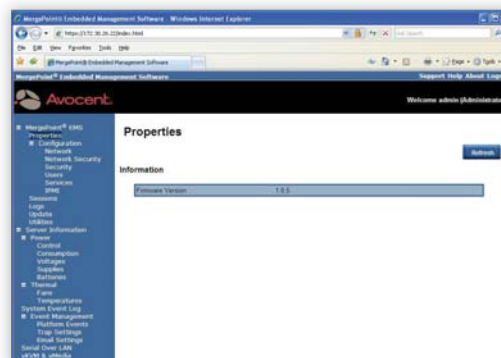- Serial-over-LAN (SOLProxy) for access to BIOS and OS-Console
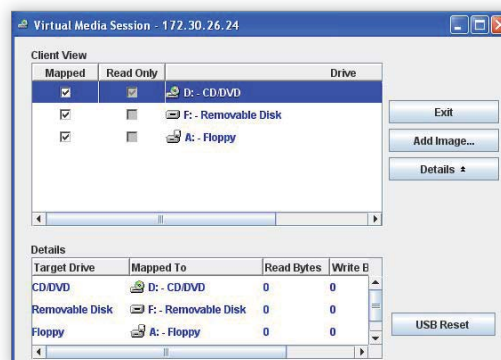

Figure 2: MergePoint EMS Web-Based Management

Figure 3: MergePoint EMS Virtual Media Mapping