STREAMASTER 5000 MULTIMEDIA PLATFORM OVERVIEW

Motorola’s Streamaster is a multimedia broadband information, entertainment and communications center. It is one of a new breed of advanced TV set-top systems targeted at telecommunication carriers that wishes to enhance revenues and fend off competition by delivering convergent voice, video and data services.

Flexible Architecture

Unlike traditional “hard-coded” rivals in the marketplace, Streamaster is unique in its software programmable architecture that allows service providers to remotely re-configure and upgrade it over the network. The Streamaster combines Motorola’s award winning PowerPC microprocessor (handling the real-time operating system and communications protocols) with the innovative NUON media processor (managing MPEG1/MPEG2 video, Dolby Digital & Spatializer audio, 2-D, and 3-D graphics). New competitive services may be enabled remotely through software downloads, maximizing revenue and ROI while staying one step ahead of obsolescence.

Basic Services

Streamaster functionality starts with basic services such as broadcast TV, including basic and premium programming and conditional access controlled pay-per view. The Streamaster has been heralded as providing some of the best digital video quality in the industry (even at lower bit-rates)—a real plus when customers expect “digital” quality from even basic service. Broadband connectivity enables high-speed data services including Web browsing, e-mail, and instant messaging, providing the Internet connectivity that consumers have come to expect. The internal modem of the Streamaster may be shared with other devices in the home, turning the platform into a video capable residential gateway.

Enhanced Services

Telecommunication carriers can enhance their revenue with Streamaster while reducing “churn” among customers by providing a range of additional services. Consumer demand has been proven for true video-on-demand, with user control of the viewing schedule and VCR-like functionality. On-line games, including broadband multi-player gaming has strong marketplace appeal. Music services including on-demand MP3 playback and Karaoke can change purchasing patterns from one-time-buy to subscription, resulting in recurring revenue. Interactive TV programming with support for targeted advertising and TV-
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based e-commerce generates additional revenue by permitting impulse shopping in the living room. On-screen caller ID, voice mail and call forwarding are strong contenders for the title of “most demanded” by early adopters. These services and others (as they are created) can typically be turned on and off remotely, via the uniquely upgradeable Streamaster architecture.

Streamaster’s flexibility extends to hardware based options: hard-drive based personal video recording; enhanced DVD; NTSC/PAL analog tuners; video-telephony; multiple TV support, etc.

Industry Standards

The Streamaster has been architected for compliance with a range of open industry standards, to ease the addition of revenue enhancing services. A stable and field tested POSIX-compliant embedded real time operating system is at the platform’s heart and includes a full-featured Web browser extended for TV functionality. Streamaster is network agnostic—with modular network interface modules (NIMs) from multiple alliance vendors that can be interchanged to support ATM, ADSL, VDSL, Ethernet and other broadband network standards as they emerge.

And of course, Streamaster is built and backed by Motorola, one of the largest technology suppliers in the world, and the number one provider of set-top systems (cable, satellite and xDSL), with over 10 million digital set-tops deployed globally. We know the market, the required service offerings and have the necessary end-to-end solution alliances to help you succeed in this emerging market.

Features and Specifications

Key Hardware Features

- PowerPC™ MPC860SAR
- NUON™ Media Processor
- Scorpion Multi-plane Graphics & Video Controller
- Sphinx Transport Demultiplexer
- Memory Subsystem
- 32, 64, or 128 MB SDRAM
- 16MB Dual Port Shared Memory (between PowerPC & NUON)
- 8 KB NVRAM
- 2 MB Boot Flash (expandable to 8 MB)
- Optional Flash disk sub-system

Video Subsystem

- MPEG2 Transport Demultiplexer
- MPEG Audio/Video Decoder
- PAL/NTSC/SECAM support
- Macrovision 7.1 Support
- Teletext support
- High Performance 2-D Graphics
- Four layer graphics architecture: one video plane, two graphics planes and a hardware cursor
- Video scaling for video in graphics
- High performance Bit-BLT128 Level alpha blending
- 128 Level alpha blending
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- Flicker filter, diagonal edge detection and square pixel conversion for optimized viewing of computer graphics on a television
- 3 color modes (16CLUT, 256CLUT, & 32,768 color RGB)

**I/O Features**
- RF In/Out
- S-Video Output
- Analog Audio L/R Inputs/Outputs
- IR Remote and Keyboard
- EIDE Interface
- Support for ATM-25, xDSL
- 10 Base T Ethernet

**Front Panel I/O**
- Smartcard Slot
- IR receiver photo detector
- Dual audio ¼” microphone inputs
- Multidigit, multi-icon programmable LED display
- 2 x Interactive Control Ports
- Power Standby Push Button
- Power-on LED

**Key Software Features**
- Streamaster Real Time Operating System, STB enhanced version of Microware OS-9
- Application-Level Software
  - Graphical shell program (*grshell*)
  - Player program (*player*)
  - Serial terminal program (*softerm*)
- Environment-Level Software
  - Integrated Applications Development Environment

**Networking Support**
- Network Physical Layers
  - ADSL
  - VDSL
  - ATM25
  - Ethernet 10BaseT

**Communications Protocols**
- Ethernet/IEEE 802.3 CS/CDMA
- RTSP
- UART
- SNMP
- ATM UNI3.1 and ILMI (w/UNI4.0 Multicast)
- FTP
- Ethernet 10BaseT
- NTP
- Internet Protocols
- Telnet
- TCP and UDP over IP
- IGMP
- HTTP
- DHCP
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Options
- Optional Hardware
  - 8-288 MB Disk Flash (Field Upgradable) for Boot or Back-up
  - Analog TV Tuner
  - Hard Disk Drive
  - USB
  - 2 x SCART Video Connector
  - DVD
  - S/PDIF
- Optional Software
  - Streamaster Edition – Spyglass Device Mosaic 4.X (DM)
  - Web browser
  - E-mail client
  - Java runtime environment (JRE)
  - Stallone – Streamaster All-in-One User Interface
- General Specifications
  - Power Supply 100 – 220V, 50 – 60 Hz
  - Chassis: H, 65.612mm (2.6") W, 352.6mm (13.9") D, 267.15mm (10.5")

Streamaster 5000 Rear Panel
Streamaster 5000 Hardware Architecture

- Ethernet I/F
- IDE Drv
- Pluggable NIM I/F
- Network Interface Module
- DVD Drive
- Sphinx MPEG Transport
- DVD I/F
- Audio In
- Tuner
- Front Panel
- Smartcard I/F
- SDRAM 32MB
- Boot FLASH 2MB
- FLASH DISK 8MB-(opt)
- Dual Port Memory 16 MB
- Video Out
- Audio Out
- 2MB FLASH
- 8 MB SDRAM

PowerPC™ MPC860

NOUN™ MEDIA ENGINE
Streamaster 5000 Software Architecture

Applications Layer
- GUI
- Graphical Shell
- Pjava Applications
- System Utilities
- Test Programs
- Applications

Environment Layer
- GUI (Graphical User Interface)
- Java (Applications)
- PJava (System Utilities)
- Code Verifier
- Network Daemons

OS Layer
- Kernel & I/O Manager
- Random Block File Manager
- Serial File Manager
- Universal Disk File Mgr
- CD/DVD
- RAM Disk
- HD (IDE)
- Flash (FPC)
- UART
- PS/2
- Printer
- Non-Vol RAM Mgr

Stacked Protocols
- TCP/UDP
- IP
- PPP
- CLIP / ATM
- Bridging
- ATM UNI
- SAR (SCC)
- ATM (IDT)
- xDSL
- Ethernet
- USB (MS2)
- kDA (SCC)