SEGA SATURN
HARDWARE SPECIFICATIONS

PROCESSORS (8)
- Two Hitachi SH2 32-bit RISC @ 28.6MHz, 50 MIPS
- One Hitachi SH1 32-bit RISC
- VDP 1 32-bit video display processor
- VDP 2 32-bit video display processor
- Saturn Control Unit (SCU)
- Motorola 68EC000 sound processor
- Yamaha FH1 DSP sound processor

MEMORY
- 2 Megabytes (16 megabits) RAM
- 1.54 Megabytes (12 megabits) VRAM (Video RAM)
- 540 Kilobytes (4 megabits) Audio RAM
- 540 Kilobytes (4 megabits) CD-ROM Cache

VIDEO
- VDP 1 32-bit video display processor
  - -- sprite, polygon, and geometry engine
  - -- dual 256KB frame buffers for rotation and scaling effects
  - -- Texture Mapping
  - -- Goraud Shading
  - -- 512KBB cache for textures
- VDP 2 32-bit background and scroll plane video display processor
  - -- background engine
  - -- 5 simultaneous scrolling backgrounds
  - -- 2 simultaneous rotating playfields
- 200,000 Texture Mapped Polygons/Second
- up to 60 frames per second animation
- 24-bit true color graphics
- 16.8 Million Available Colors
- 320x224 and 720x576 Resolution

AUDIO

- Yamaha FH1 24-bit Digital Signal Processor @ 22.6MHz
- Motorola 68EC000 sound processor @ 11.3MHz
- 32 PCM (Pulse Code Modulation) Channels
- 8 FM (Frequency Modulation) Channels
- 44.1 KHz Sampling Rate

STORAGE

- CD-ROM (2X)
- 320 Kilobytes/Second Transfer Speed
- Audio CD Compatible
- CD+G Compatible
- CD+EG Compatible
- CD Single (8 cm CD) Compatible
- Optional - Video CD, Photo CD, EBook, Digital Karaoke
- Optional - 512KB Memory Cartridges for game save

INPUT/OUTPUT

- High speed serial communications port
- Internal 32-bit Expansion port
- Internal Multi AV Port for Video CD (MPEG) adapter
- Composite Video/Stereo (Standard)
- NTSC RF (Optional)
- S-Video Compatible (Optional)
- RGB Compatible (Optional)
- HDTV Compatible
- Analog Control Pad (x2)

SEGA SATURN ARCHITECTURE DESCRIPTION

A Bus
This data bus connects the CD-ROM and cartridge expansion to the central bus controller unit (SCU).

B Bus
This 16-bit bus runs at 28 MHz and connects the video and sound subsystems to the central bus controller unit (SCU).

VDP 1
The first Video Digital Processor (VDP) acts as the sprite processor. Because of the way the Sega Saturn handles 3D, not only does this chip calculate all of the sprites, but it also maps sprites into geometry. It relies on dual 256K frame buffers that handle rotation, and pulls data from a 512K texture RAM cache.

VDP2
The second VDP works as the background processor. This chip can generate up to five simultaneously active backgrounds, and can also rotate two playfields at once. It is also possible to have three normal scrolls at the same time as a field of rotation.

SCSP
This is the Sega Saturn's incredible sound processor. Easily the most potent peice of hardware inside the machine, it boasts 32 voices, FM synthesis, PCM synthesis, and 2 CPU interfaces. It features a full compliment of hardware, including a 16-bit 68EC000 at 11.3 MHz and a Yamaha FH1 processor for an overall frequency of 22.58 MHz. Other features include Direct Memory Access (DMA) for file transfer, a 16 channel digital mixer, and a 128 step digital signal processor.

Boot ROM
A massive 512K is taken up with the system's ROM. The Sega Saturn allows six different languages to be selected, viewing of CD+G discs, and a music CD option that allows the vocals to be removed from CD tracks.

SH2 CPU
The Sega Saturn contains two Hitachi SH2 RISC CPUs running at 28.6 MHz and 25 MIPS each. The SH2 is only two cm. square but it includes many important components that provide the chip with its power. By connecting both CPUs to the RAM, the SH2 can exchange data with memory directly, which reduces wait times. The SH2 also contains a 4K data cache that speeds up processing, and it has the ability to do involved mathematical functions cush as multiplication and division in the CPU core.