

# 1

## **Functional Overview**

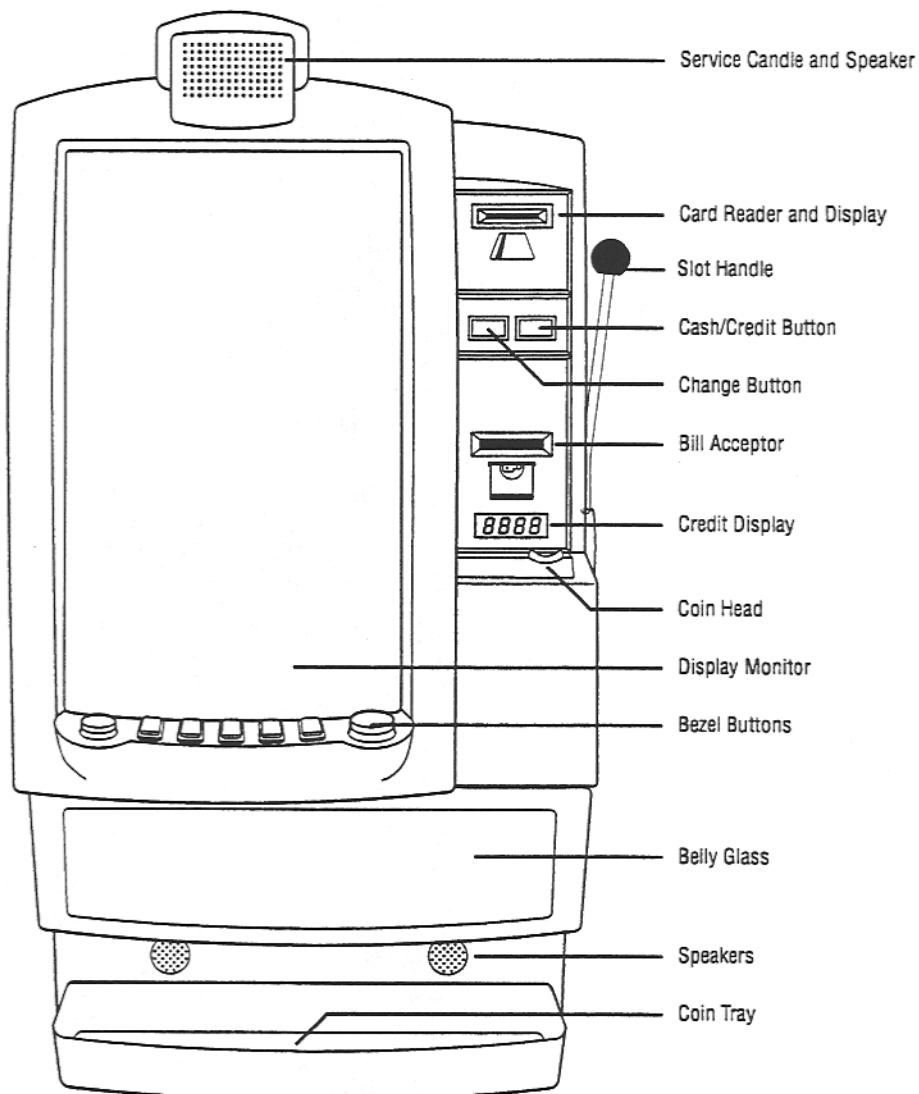
This chapter provides a functional overview of Silicon Gaming's slot machine to familiarize you with the following:

- ◆ **Product hardware**
- ◆ **System software**
- ◆ **Applications comprising the wagering experience**
- ◆ **Hardware security**

## Introduction

The Silicon Gaming slot machine, shown in Figure 1-1, is designed to enhance the wagering experience by providing an entertaining mix of games and bonusing features supported by interactive animation, video, and sound.

Figure 1-1 Silicon Gaming Slot Machine



The slot machine's integrated platform of gaming hardware and multimedia hardware and software includes configuration, accounting, maintenance, and security features for casino operators and technicians.

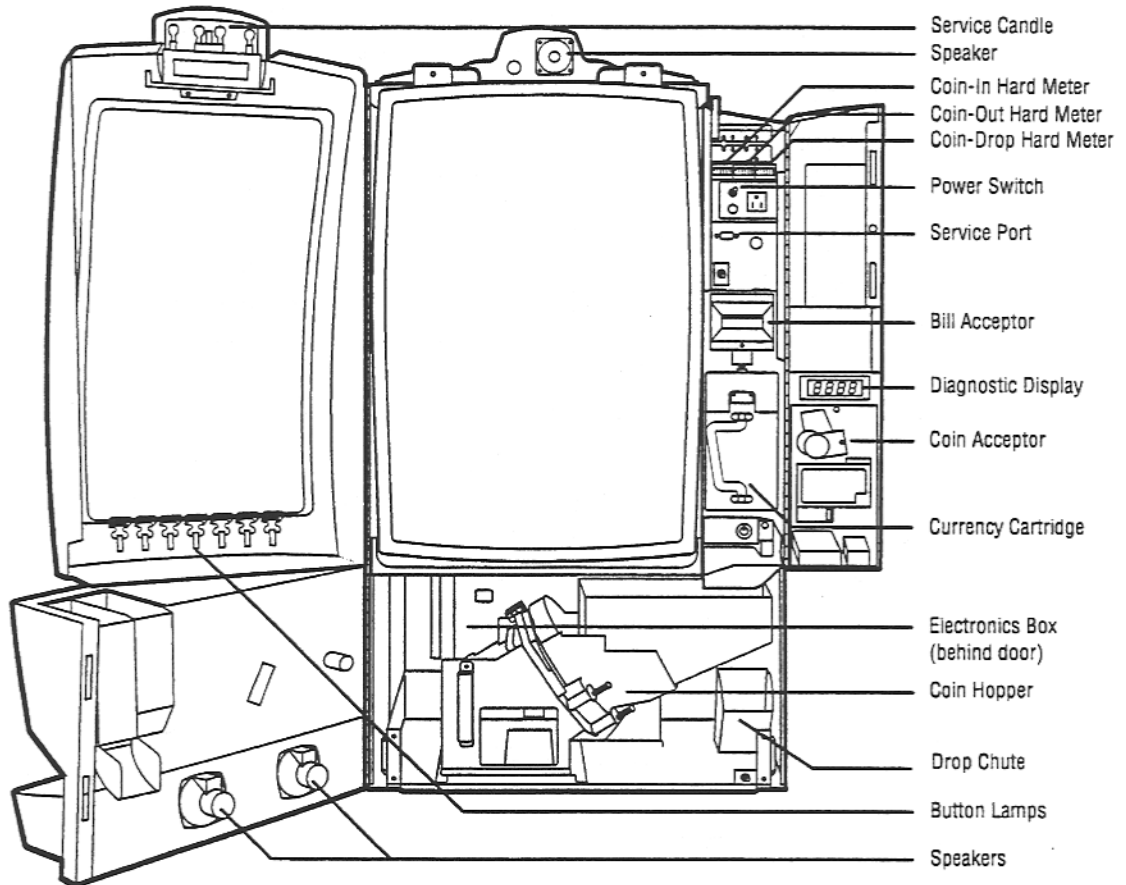
Throughout this book, the platform is viewed as a *system* and machine functionality is described in this chapter under the subject headings listed below.

- ◆ System Hardware
- ◆ System Software

- ◆ Machine States
- ◆ Hardware Security
- ◆ ServicePoint

The slot machine comprises gaming and multimedia hardware components under software control. Games that run on the slot machine are designed to rely on the same basic hardware so that future software products can be easily added to the Silicon Gaming platform. Figure 1-2 is a view of the inside of the slot machine, showing the location of major hardware components.

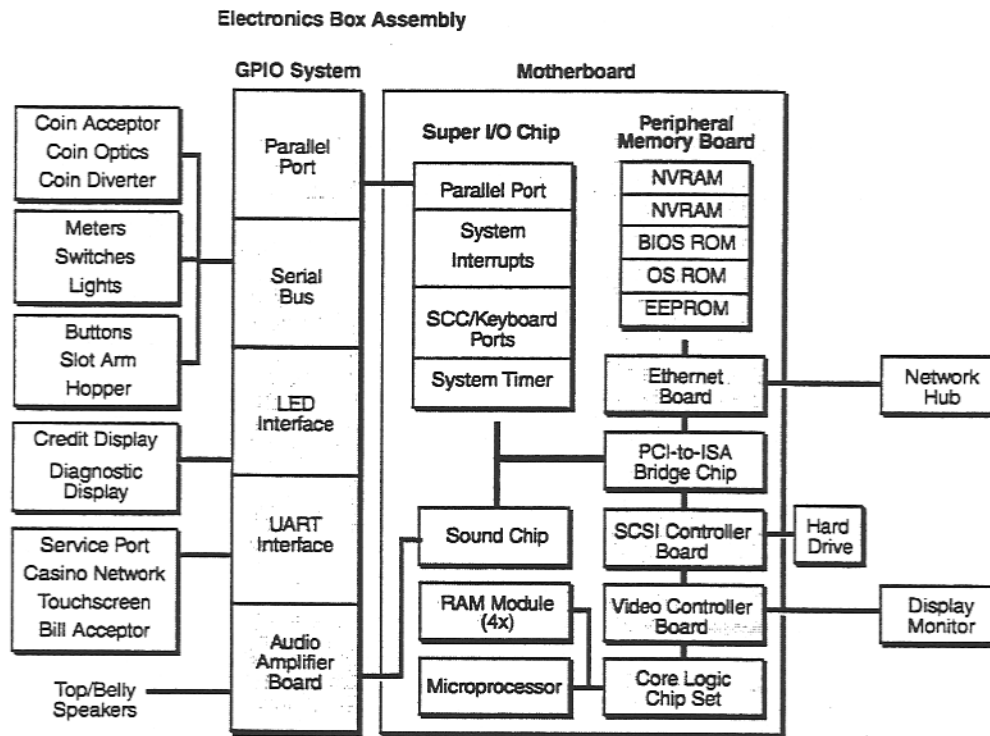
Figure 1-2 Internal View of Slot Machine



## System Hardware

The slot machine's system hardware is based on an Intel Pentium motherboard. The Pentium microprocessor controls the execution of instructions and routing of data through the system, monitoring user events and handling system interrupts. A block diagram of the system hardware is shown in Figure 1-3.

Figure 1-3 System Hardware Architecture



**Note:** Depending on the GPIO system, the audio amplifier may be located behind the display monitor or on the GPIO backplane board.

### Display Hardware

Display hardware includes the display monitor, touchscreen, monitor bezel, and video subsystem.

#### Display Monitor

The display monitor is a 26" Philips cathode ray tube (CRT) with a 16:9 aspect ratio, mounted, in portrait mode, onto the monitor bezel. The electronics chassis is manufactured by Neotec. The display monitor is connected to the video controller and power supply with cables in the machine's wiring harness. In the event that service is required, the display monitor can be replaced in the casino environment.

### **Touchscreen**

The Microtouch touchscreen has a user interface that players use to select items on the screen (also known as hotspots). The touchscreen is a capacitive-type system that attaches to the display monitor. The touchscreen panel is taped to the faceplate of the display monitor and connects to the touchscreen controller mounted in the display monitor chassis. The touchscreen controller connects to the system wiring harness through an eight-pin connector that provides power and an RS-232 serial interface to the GPIO system.

### **Monitor Bezel**

The monitor bezel frames the monitor and provides mounting points for mechanical buttons. The bezel is hinged for access to the top speaker and the mechanical buttons. The currency column door must be open prior to opening the bezel.

### **Video Subsystem**

The video subsystem comprises the Diamond Multimedia Systems Stealth 64 video controller, a custom 16:9 CRT display, and software used to compress/decompress video data and graphic elements. Video data and graphic elements are used by game applications to construct scenes on the display.

Display resolution is 856 horizontal lines x 480 vertical lines, rotated 90 degrees. The video system is capable of displaying full-color still images at up to 60 fps (frames per second). The rate that movies in this format are updated is variable; for example, at 30 fps, each frame is displayed twice, at 15 fps, each frame is displayed four times, and so on.

Data is stored on the hard disk in a compressed format. Applications initiate requests to retrieve data from storage to video. The hard disk is accessed on the PCI bus by the CPU. Large amounts of data are streamed (sent in continuous small amounts) through the PCI bus to the video controller, where it is decoded and placed into the frame buffer for display.

### **Wagering and Monitoring Hardware**

Wagering and monitoring hardware includes coin and bill acceptors and receptacles, meters and monitoring hardware, the merchandising window, and the slot arm.

### **Currency Column and Currency Column Door**

The currency column is on the right side of the machine and contains the hard meters, power switch, power fuse, bill acceptor, and currency cartridge.

The currency column door, also referred to as the bolster door, is a hinged door that covers the currency column. It contains user input devices such as the coin acceptor and card reader/card display. It also contains an illuminated merchandising window. Each of these components is a separate, modular assembly.

A sensor in the currency column alerts the system when the door is open. If the machine is on, a banner is displayed on the screen indicating the door-open condition.

## Coin Acceptor

The coin detection system verifies whether an inserted coin is a valid token or coin. It is implemented using a Coin Mechanisms Inc., Model CC-16/CC-16WB Coin Comparator or Intelligent Controller's IC-16/IC-16WB Smart Mark token comparator, a photo-optic array in the coin path, and a detection algorithm implemented in the coin interface on the GPIO system. The coin acceptor hardware varies depending on the denomination of the slot machine, as shown in Table 1-1.

Table 1-1 Coin Acceptor Hardware

Part	Denomination
Coin head	Varies for each denomination
Coin comparator	CC-16WB for \$5 tokens; IC-16/IC-16WB for \$1, \$2 and \$5 Smart Mark tokens; CC-16 for all others
Optics PCB	Varies for each denomination
Chassis (mainplate)	CC-16WB for \$5 tokens; CC-16 for all others

## Bill Acceptor

The Mars bill acceptor assembly can be configured to accept various currency denominations. Table 1-2 lists the visual cues that the illuminated bill acceptor bezel provides to the player.

Table 1-2 Bill Acceptor Indicators

Indicator	Description
Constant green glow	The bill acceptor is ready to accept currency.
Flashing red glow	The bill acceptor is performing a self-calibration.
Constant red glow	The bill acceptor is malfunctioning.
No glow	The bill acceptor is disabled.

**Note:** Bill denominations lower than the credit value are rejected. For example, on a \$5 credit machine, \$1 and \$2 bills are returned to the player. The number of rejected bills is also recorded by the system and can be viewed in the MMS.

The system registers the proper credits to the hard coin-in meter and the bill is recorded in the MMS bill acceptor statistics.

## Electromechanical Meters


The slot machine provides soft (in Safe RAM) and hard (electromechanical) meters to record cash events. The hard meters are located inside the currency column.

The standard slot machine is configured with up to six nonresettable, six-digit hard meters. The functions, labels, and number of meters installed on the machine depend on regulatory requirements.

Table 1-3 provides an example of the information the meters might record.

Table 1-3 Hard Meter Information

Meter	Information
Coin In	Total number of coins/tokens/credits wagered.
Coin Out	Number of credits won, excluding those indicated in the Jackpot meter.
Total Drop	Total number of credits diverted to the bill or coin drop.
Jackpot	Number of credits paid from jackpots, comprising hand pays and excluding payments recorded on the Coin Out meter. There is no multiplier.
Games	Total number of game propositions played on the machine.
Spare	Reserved for future use.

 **Note:** Soft meters can be viewed from the MMS Accounting pages or by using the service port.

### Currency Cartridge

The currency cartridge stores approximately 600 bills received from the bill acceptor. The currency cartridge is front-loadable. Individual sensors indicate when the lock is disengaged and when the cartridge is removed. These events are recorded by the system and can be viewed in the MMS.

### Service Port


The service port inside the currency column is an RS-232 interface through a DB-9 connector that is used for obtaining machine and game accounting information. The interface requires a computing device that is running terminal emulation software and is connected to the port with a null-modem serial cable. The service port is enabled or disabled via the MMS and performs the following functions:

- ◆ Display machine and game accounting data
- ◆ Display machine and enabled game IDs
- ◆ Display machine configuration
- ◆ Display recent events
- ◆ Display or change file directories
- ◆ Display bill acceptor country specification
- ◆ Verify bill validator firmware
- ◆ Authenticate all enabled games
- ◆ Perform RSA checks on data or control files
- ◆ Reset period meters
- ◆ Place the machine in or out of service

### Merchandising Window and Disclaimers

On the currency column, a back-lit merchandising window visually communicates to the player the credit denomination and the bill denominations that are accepted. All required card reader information is included if player tracking is installed.

Operational disclaimers are displayed on the merchandising window, including the general disclaimer "Malfunction voids all pays and plays."

 *Note:* Game-specific disclaimers are provided within each of the game applications.

### **Slot Arm**

The Suzo pull arm is on the right side of the slot machine. Through two microswitches, the system senses the handle activation to initiate game play.

### **Coin Hopper**

The Asahi Seiko coin hopper dispenses coins when the player wins an award or cashes out. The bowl accommodates up to

- ◆ 4,500 nickel tokens or coins
- ◆ 3,000 quarter tokens or coins
- ◆ 700 dollar tokens or coins

The hopper interface connects to the GPIO system, and the hopper motor receives power from the 110 Vac power source. Machines with ticket printers have no coin hopper.

### **Drop Chute**

The drop chute routes money to a container (the drop box) located in the machine stand. A drop condition occurs when the hopper is full and can no longer accept coins. The GPIO sends an activation signal to the solenoid of the coin diverter. The coin diverter then routes coins to the drop box.


The drop condition continues until enough money is paid from the hopper to cancel the hopper-full condition. A probe on the hopper indicates when this condition occurs. At this point, another signal is sent to the solenoid, the diverter is deactivated, and the hopper can once again accept coins.

### **Coin Tray**

The coin tray is the pan that collects the coins dispensed from the machine. The coin tray accommodates up to 400 dollar tokens or 1,870 quarters.

## **Electronics Box Components**

The electronics box is a lockable enclosure located in the lower cavity of the machine. The electronics box includes a door sensor that alerts the system when it is open.

 *Important:* Slot machines that are connected to a Wide Area Progressive System have a tamper-proof seal that prevents you from opening the door to the electronics box. Do not break the seal unless you are an authorized Silicon Gaming field engineer.



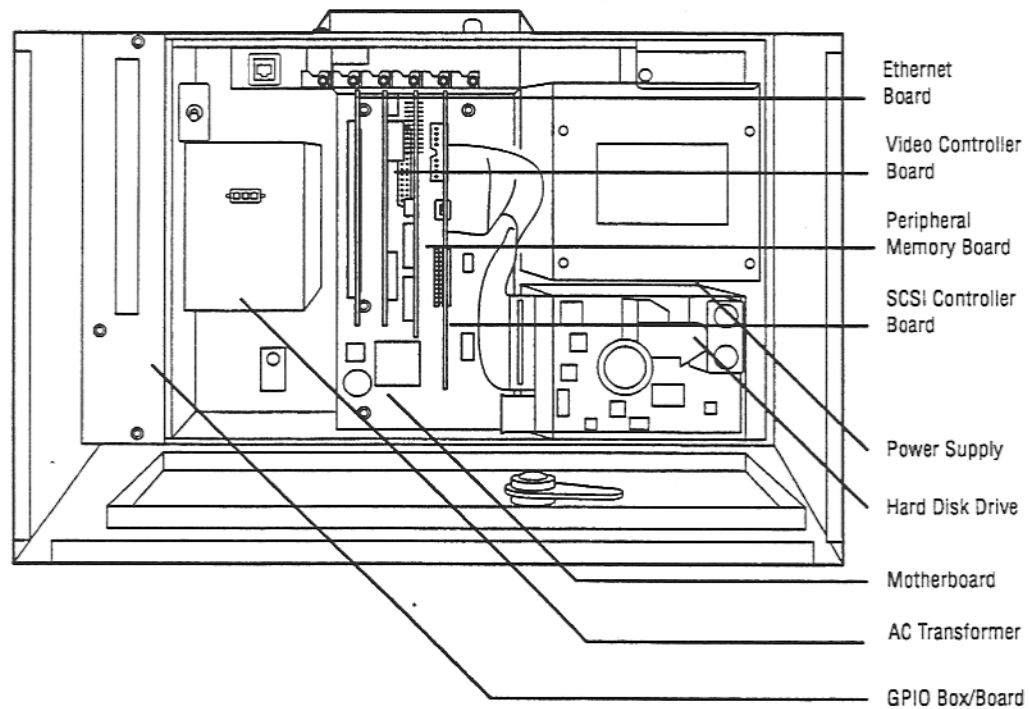
The electronics box houses components listed in Table 1-4 and in greater detail in the sections that follow. The location of the electronics box components are shown in Figure 1-4. A block diagram of the electronics assembly is shown in Figure 1-3 on page 1-4.

Table 1-4 Electronics Box Components

Component	See
Motherboard	"Motherboard" on page 1-10.
Peripheral Memory Board	"Peripheral Memory Board" on page 1-10.
GPIO Box	"General Purpose Input/Output (GPIO) System" on page 1-11.
Video Controller	"Video Subsystem" on page 1-5.
SCSI Controller and Hard Disk	"SCSI Controller and Hard Disk" on page 1-12.
Software Update Support (SWUS) Module	"Software Update Support (SWUS) Module" on page 1-12.
Transformer, Circuit Breakers, and Power Supply	"Power System Components" on page 1-12.
Ethernet Board	"Ethernet Board" on page 1-14.

**Caution:** The locations of the video controller board and SCSI controller board are different, depending on whether the slot machine is configured with a Thor or Tucson motherboard. See "Replacing a Circuit Board" on page 11-13.

Figure 1-4 Electronics Box Components - Thor Motherboard Installed



## Motherboard

The slot machine uses either an Intel Pentium Thor or Tucson motherboard. The motherboard contains the microprocessor and main system memory that hardware devices communicate with via the following bus interfaces:

- ◆ PCI (peripheral connection interface) bus for connecting to the
  - ◆ video controller
  - ◆ peripheral memory board
  - ◆ SCSI disk controller
- ◆ ISA (industry standard architecture) bus for connecting to the
  - ◆ GPIO system (via a parallel connector)
  - ◆ Ethernet board
  - ◆ on-board sound chip

The Thor motherboard is based on Intel's Triton-I chip set, which includes the 82437FX/82438FX PCI bridge chips, the PIIX ISA bridge chip, the 87306 chip that provides the serial ports, timers and interrupts, and the IEEE 1284 parallel port interface to the GPIO system. The Tucson motherboard is based on Intel's Triton-II chip set, which includes the 82439HX PCI bridge chip, the PIIX3 ISA bridge chip, and the 87306B super I/O chip that provides the serial ports, timers and interrupts, and the IEEE 1284 parallel port interface to the GPIO system.

 *Note:* The original manufacturer's BIOS is removed from the motherboard. The motherboard uses the Silicon Gaming BIOS on the peripheral memory board.

## Microprocessor

An Intel Pentium microprocessor on the motherboard, running at 133 MHz or higher, controls the execution of software instructions, routing of data through the system, monitoring user events, and handling system interrupts. The microprocessor is also referred to as the central processing unit (CPU).

## Main Memory (RAM)

Main system memory is where the majority of programs and graphics elements needed by a game are loaded during run-time. Four 16-MB single inline memory modules (SIMMs) on the motherboard provide a total of 64 MB of random access memory (RAM).

## Peripheral Memory Board


The peripheral memory board stores the boot code, motherboard basic input/output system (BIOS), operating system (OS), drivers, authentication software, system configuration, statistics, and game state information. Data on the peripheral memory board remains after the system is powered off using the various memory modules:

- ◆ ROM (read-only memory)
- ◆ NVRAM (nonvolatile RAM)
- ◆ EEPROM (electrically erasable programmable ROM)

## ROMs

ROMs are memory chips that permanently store instructions and data. Their contents are created at the time of manufacture and cannot be altered. There are two ROM modules in the system: the BIOS ROM and OS ROM. BIOS ROM Stores all system BIOS code used during the boot process. When the system is powered on, this code is the first to execute and must be present to initialize the motherboard. OS ROM stores the operating system, related drivers, and the authentication software. The code contained in this ROM, in conjunction with the game software stored on the hard disk, makes the games run.

The ROMs are located on two 32-pin byte-wide ROM sockets. The sockets can be populated with 128 KB, 256 KB, or 512 KB EPROM (electrically programmable ROM), OTP (one-time programmable) memory, or flash memory. The production version of the board is loaded with two 512 KB EPROMs.

 **Note:** The Thor and Tuscon motherboards use different BIOS ROMs.

## NVRAM

NVRAM is battery-backed RAM that maintains its contents when there is no power supplied to the system. According to the manufacturer, the guaranteed life expectancy of the batteries is ten years from when they are first powered on. NVRAM stores critical information about game play, such as credits, statistics, error logs, diagnostic results, and soft-meter data. Safe RAM is structured as two 128 KB NVRAM modules. Data is mirrored between the two modules to provide redundancy in case of failure.

The NVRAM modules are located on two 32-pin byte-wide sockets. The sockets can be populated with either 2 KB, 8 KB, 32 KB, or 128 KB versions of the Dallas NVRAM. The production version of the board is loaded with two 128 KB NVRAMs.

## Configuration EEPROM

The configuration EEPROM stores information such as machine configuration settings. EEPROM modules provide rewritable storage for data that is not changed often.

The configuration EEPROM is located on a single 32-pin byte-wide EEPROM socket. The socket can be populated with 2 KB, 8 KB, 32 KB, or 128 KB EEPROM. The production version of the board is loaded with a 128 KB EEPROM.

## General Purpose Input/Output (GPIO) System

The system software interfaces with mechanical input/output devices, such as buttons, lights, and currency acceptors/dispensers through the GPIO system. The GPIO system is located in the GPIO box as part of the electronics box assembly. It connects to the motherboard through a parallel interface. In addition, the GPIO system implements an electrostatic discharge (ESD) isolation barrier for protection against ESD that might damage the slot machine's integrated circuits. A machine may contain either a GPIO I system or a GPIO II system. For more information, see "Replacing a GPIO Board" on page 11-4.

### SCSI Controller and Hard Disk

The storage subsystem comprises a SCSI-2 controller on the PCI bus that is connected to a 2 or 4 GB SCSI hard disk. The write-protected hard disk stores system, program, and game data files. All files on the disk are security-encrypted during the manufacturing process and authenticated before loading.

### Software Update Support (SWUS) Module

The SWUS allows you to update the software on the hard disk without removing the disk from the slot machine.

### Power System Components

The power system has a power panel that comprises the machine AC power on/off toggle switch, a power fuse, and a convenience AC outlet. Five 3-pin Molex connections on the side of the AC box provide switched and unswitched AC voltage.


<b>Transformer</b>	An AC step-down transformer converts currents and voltages in the machine circuits.
<b>Circuit Breakers</b>	The transformer contains two circuit breakers.
<b>Power Supply</b>	A 250-watt power supply is also provided.

### Audio System

The audio system includes a top speaker, lower speaker(s), an audio amplifier board, and an audio subsystem. You use the MMS to set the audio volume.

#### Speakers

The top 3" diameter Aura Systems audio speaker is integrated with the service candle assembly. Two lower 3" diameter Aura Systems audio speakers are mounted to the back wall of the coin tray, in the belly door. They are connected by wires to the audio subsystem.

 *Note:* Machines that have a ticket printer have only one speaker in the belly door.

#### Audio Amplifier

All speakers are driven by an audio amplifier. The audio amplifier is located in the display cavity behind the monitor (in machines with GPIO I systems) or on the GPIO backplane board (in machines with GPIO II systems). For information about the GPIO system, see "General Purpose Input/Output (GPIO) System" on page 1-11.

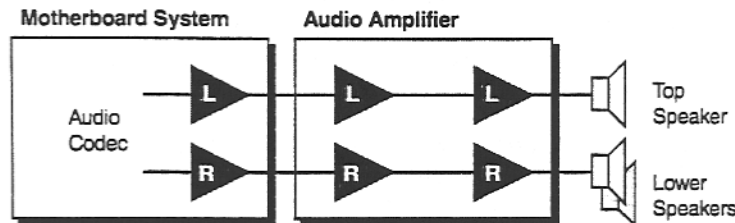
#### Audio Subsystem

The hardware components of the audio subsystem are shown in Figure 1-5 on page 1-13. Audio data is moved in streams from main memory across the ISA bus to the sound chip on the motherboard. The sound chip includes an encoder/decoder (codec) to convert sound samples from memory to line-level analog audio signals. This line-level audio is passed over a coaxial cable to the audio amplifier that drives

the machine speakers. Left-channel audio provides sound to the speaker located in the service candle, while right-channel audio provides sound to the speakers located in the belly door.

Currently, the system uses 16-bit monophonic audio samples at a 22.05 kHz rate.

Figure 1-5 Audio Subsystem Hardware



### Networking Hardware

Networking hardware includes an Acres or Hubble translator board, which interfaces with a network board. SGI provides an electrical interface for a card reader, keypad, and display.

### Casino Network Subsystem

Information from the slot machine is transmitted to SGI's Hubble translator board using Acres' C3 protocol. The Hubble board, located in the top cap area of the machine, transmits that data to the casino network using the various casino slot accounting and player tracking protocols. The slot machine is compatible with the casino network systems listed in Table 1-5.

Table 1-5 Casino Network Support

Manufacturer	Player Tracking		Network Interface Board
	System	Protocol	
CDS	Oasis	SAS 2.82	Sentinel II
CDS	Missouri	SAS 2.82	Lockout
Bally	SDS	ESS	MasterCom 220 or MasterCom 220+
IGT	SmartSystem	SAS 2.82	PT95A
IGT	Caesar's	SAS 3.05 (EFT)	PT95A
GSI	SmartSystem	SAS 2.82	SMIB
MGM	Proprietary	SAS 2.82	UIB
Acres	Rio	2.82	DCN
Mikohn	Casino Link	SAS 2.82	PTM

### Card Reader, Keypad, and Display (All Optional)

The slot machine supports most player tracking network hardware and includes the electrical interface needed for the keypad, display module, and card reader. For more information, see "Casino Network Subsystem" on page 1-13.

## Ethernet Board

The optional Ethernet board provides the interface to a wide area progressive system network. It connects to the network using an unshielded twisted-pair (UTP) 10Base-T cable that is routed from the machine stand, through the cable drop, to the UTP connector located on top of the electronics box.


The Ethernet board is a 16-bit SMC EtherCard Elite16 Ultra, located in the electronics box. It provides an interface to a carousel hub at the casino. This interface allows the machine to connect to the local area controller located at the casino. The SMC board is installed in one of the motherboard's ISA slots.

The board supports IEEE 802.3 and ISO/IEC 8802-3 standards for Ethernet communications. Connectors are provided for RJ-45, BNC, and AUI cables. For connection to the wide area progressive system, only the RJ-45 connector is used.

The cable is routed from the RJ-45 connector at the top of the electronics box through the cable drop located underneath the hopper drawer. The cable goes through the slot stand and connects to the carousel hub where a bank of machines is installed. For more information on the progressive network, refer to the wide area progress system documentation available from Silicon Gaming.

## Buttons, Lamps, and Displays

The following are descriptions of buttons, lamps, and displays.

 **Note:** Lamps for service candles, bezel buttons, the *Change* button and the *Cash/Credit* button are all 14-volt AC lamps.

### Mechanical Buttons

There are seven mechanical buttons located at the bottom of the machine bezel, each corresponding to a dynamic screen button on the display. The buttons are connected to the GPIO system with cables in the wiring harness. When active, buttons are lit to identify the available button controls.

### Change Button


The *Change* button is used by the player to request help. When selected, it illuminates and activates the service candle. The candle can be set to flash at an increasing rate, signaling to the casino operations staff the need for player assistance and how long the player has been waiting.

### Cash/Credit Button

The *Cash/Credit* button allows the player to select either the cash mode or credit mode. When the machine is in cash mode, the button lamp is off and all winnings are paid out of the hopper and into the coin tray. When the machine is in credit mode, the button lamp is on and all winnings are accumulated to the credit meter. When the player has credits and the *Cash/Credit* button is pressed, the machine is placed in cash mode and the credit balance is paid to the player from the hopper. The hopper payout can be stopped by depressing the *Cash/Credit* button anytime the hopper is paying out.

**Service Candle**

The service candle conveys the nature of a service call and how long the player has been waiting. The service candle contains four addressable incandescent lamps in the following order: blue, green, red, and white. For information on service conditions, see "Service Candle Meanings" on page 6-3.

 *Note:* An eight-pin Molex connector provides power, lamp drive, and line-level audio to the service candle.

**Belly Glass**

The belly glass is a back-lit glass panel used to either brand the machine or the casino property. The lighting comprises a 15-watt, 18" fluorescent lamp, plus its ballast and starter.

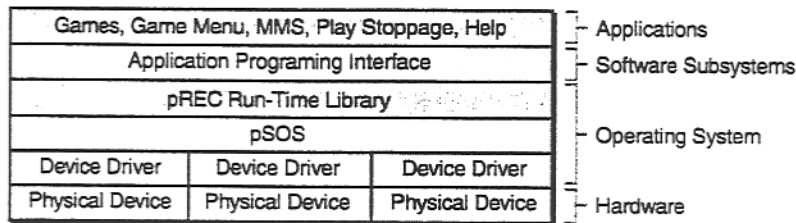
**Credit Display and Diagnostic Display**

A four-digit, seven-segment LED credit display indicates the number of credits the player has available to wager. A four-digit, seven-segment LED diagnostic display inside the currency column door shows the tilt code representing the current state of the slot machine. For tilt code information, see "Using the Diagnostics Display" on page 8-6.

**System Software**

The system software architecture comprises the components shown in Figure 1-6. This architecture provides hierarchical layers of accessibility for software applications to communicate with the system hardware. The primary system software components are briefly described in this section.

Figure 1-6 System Software Architecture



**Applications**

Applications are software programs running on the slot machine that are used by the operator or player. These applications provide user interfaces to facilitate game play and manage machine operations.

**Machine Management System**

The Machine Management System (MMS) application provides a graphical user interface to perform support functions on the slot machine. This includes player conflict resolution, accounting, configuration, and machine diagnostics. As shown in

Figure 1-7 and described in Table 1-6, these functions are organized in the MMS as multiple-page sections. Elements of the MMS user interface are described in Figure 1-8 on page 1-17 and Figure 1-9 on page 1-18. For information on launching the MMS, refer to "MMS Keyswitch" on page 1-20.

Figure 1-7 MMS Online Pages

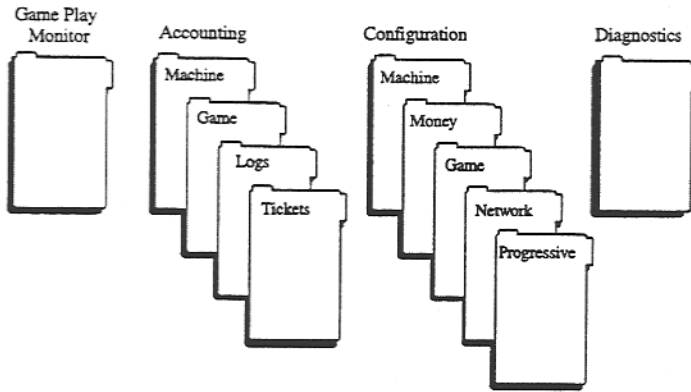


Table 1-6 MMS Operating Modes/Online Pages

Section	Description	See
Game Play Monitor	Typically used in conflict resolution by the slot attendant/service technician, the <b>Game Play Monitor</b> page reports recent game play, cash-out history, and log of events.	Chapter 6
Accounting	Typically used by accounting and audit staff for routine data collection, the accounting pages ( <b>Machine</b> , <b>Game</b> , <b>Logs</b> , and <b>Tickets</b> ) report financial performance information and other statistics.	Chapter 5
Configuration	Typically used by technical staff, the configuration pages ( <b>Machine</b> , <b>Money</b> , <b>Games</b> , <b>Network</b> , and <b>Progressive</b> ), are used to set up and customize the configuration of the slot machine by setting machine, game, and network options to support casino requirements.	Chapter 4
Diagnostics	Typically used by technical staff, the <b>Diagnostics</b> page options allow the service technician to perform system integrity checks and low-level hardware diagnostics and to calibrate hardware components.	Chapter 8


 **Note:** The **Configuration** and **Diagnostics** sections are only accessible when the MMS is invoked and a machine door is open.



Figure 1-8 MMS User Interface Description

**Configuration** Time: 10:26:38a  
Date: 8-21-98  
Loc: 556560

Machine Money Games Network Progressive

**Game Menu** Edit

**Play Stoppage** Current Settings  
Entertainment  Enable

**Tournament** Access not authorized

**Game Play Options** Edit Options and Enable up to 4 Games

Edit	Enabled	GameID	Type	Hold
<input type="radio"/> Big Win 4X4CM	<input checked="" type="checkbox"/>	803-0013-001	Reel	9.00%
<input type="radio"/> Big Win 4X4CM	<input type="checkbox"/>	803-0013-002	Reel	11.01%
<input type="radio"/> U.S. Mint 3ch	<input checked="" type="checkbox"/>	803-0011-001	Reel	14.84%
<input type="radio"/> U.S. Mint 2ch	<input type="checkbox"/>	803-0011-002	Reel	12.17%
<input type="radio"/> Fort Knox 3cm	<input type="checkbox"/>	803-0002-001	Reel	6.47%
<input type="radio"/> Fort Knox 3x 3cm	<input checked="" type="checkbox"/>	803-0002-003	Reel	7.09%

**Game Menu Options**

Machine 'Help' Available  Enable

Play Machine 'Help' Automatically  Enable

Play Machine 'Help' Every 'n' Cycles 10

Change Icon Positions

Play Icons In Random Order  Enable

Game Idle Time To Return To Game Menu 05:00

Auto Launch Game After Idle Time  Enable

Auto Launch Idle Time Amount 10:00

Auto Launch Return To Game Menu Time Amount 01:00

Auto Launch Random Game  Enable

Featured Game Mode  Enable

Select Featured Game Big Win 4X4CM

Calibrate Screen Take Machine Out of Service Next Page

**Game Play Monitor**

**Accounting**

**Configuration**

**Diagnostics**

Page Tabs: Touch a tab to access a particular page in a section.

Section Tabs: Touch a tab to access a particular section in the MMS.

Scroll Bar: Touch the up or down arrows to scroll through list boxes.

Checkbox: Touch to enable or disable the option.

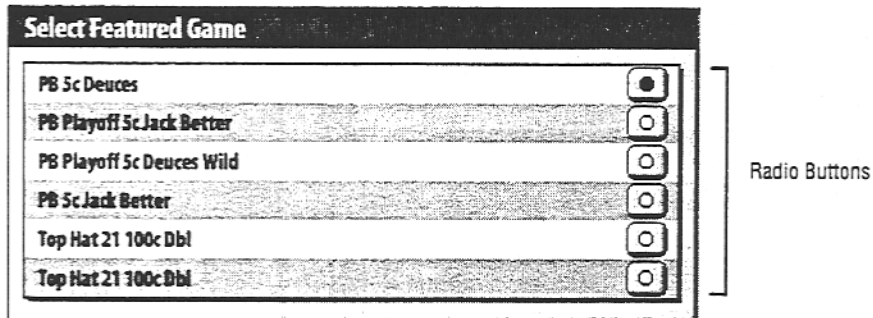
Button: Touch to initiate some type of action or bring up another window to edit the field.

Field Text: Describes the option or field.

Mechanical Buttons: Describe the actions of the buttons indicated.

If only one of two or more options can be selected, radio buttons, like those in Figure 1-9 on page 1-18, are displayed.

Figure 1-9 Radio Buttons Example




## Games

Games are applications that the player interacts with during the wagering experience. The slot machine may be enabled with up to six games of various types, themes, percentaging, and bonus versions from a set of installed games. Games can be enabled from the MMS following a full SafeClear. The slot machine may also be configured as a single-game unit that can only have one game enabled.

## Game Menu

The Game Menu application is responsible for determining which player application to launch, based on the player's selection. To select an item (a game or online help) from the Game Menu, the player touches one of the icon animations on the touchscreen. The slot machine may also be configured from the MMS to launch a game automatically after a period of inactivity.

 *Note:* The Game Menu is only available on multigame systems. Single-game systems default to the play field for the game that is installed.

## Stoppage Entertainment

Stoppage entertainment is invoked when there is an interruption in the gaming experience. This application comprises short animation or video segments that entertain the player until the machine can be returned to play. It also communicates information about why a game was interrupted. Stoppage entertainment is accompanied by the lighting of the service candle to alert casino personnel of the interruption.

## Help

Each game is accompanied by online help and instructional support. If the player requests help while in a game, text-based assistance is provided, describing the rules of play, game controls, general disclaimers for the game, and so on.


Online help for the Game Menu is also available. When a help topic is selected, a segment that can include voice-over audio, text, and animation is played.

## Machine States

The machine states (operating modes) of the slot machine are described in Table 1-7.

Table 1-7 Machine States

State	Description
Boot	Triggered by a reset (including power failure) of the machine.
Normal	When the Game Menu, Help, or game is invoked or displayed.
Play Stoppage	Triggered in the normal state by stoppage events such as jackpots, hand pays, empty hoppers, machine malfunctions, or door-open conditions. Entertainment is presented to the player until the event is cleared, unless it is a door-open condition.
MMS	Triggered by turning the MMS keyswitch during normal state or play stoppage. Depending on whether the slot attendant has opened a machine door, the appropriate MMS mode is presented.
Out of Service	Initiated by casino personnel via the MMS. When in this mode, the slot machine displays a message indicating it is out of service. Stoppage entertainment or a single video image may be displayed, depending on the MMS machine configuration setting.
Background Out of Service	Initiated by the casino network while the machine is in a game or when the Game Menu is displayed. A plaque is displayed on the screen indicating the out-of-service condition. In this state, the player can complete the proposition, perform a cashout, and navigate the game or Game Menu, but cannot initiate a new proposition or insert coins or bills. This state remains in effect following a boot or power down until the casino network clears the condition.
WAPS Link Down	For machines running on a wide area progressive system, this state indicates that machine communication with the network is down. A small plaque is displayed on the screen indicating the link-down condition. In this state, the player can complete the proposition, perform a cashout, and navigate the game or Game Menu, but cannot initiate a new proposition or insert coins or bills. This state remains in effect following a boot or power down until network communication is reestablished.
Tilt	Triggered by a tilt event (such as a program error, RAM corruption, runaway hopper, or component failure). The diagnostic display indicates a tilt code.

 **Note:** The various game states that occur when the machine is in the normal operating mode and playing a game are described in Chapter 4, "Operation."

## Hardware Security

The slot machine restricts access to the internal components and MMS software using mechanical key locks. Sensors detect when doors are opened or unlocked and alert the system software to initiate the appropriate response.

### Door Locks

The slot machine is shipped with a 5/8" cam-type keyless lock securing the electronics box door. When the slot machine is installed, the service technician must remove this lock and install casino locks to secure the items listed below:

- ◆ Currency column door
- ◆ Currency cartridge
- ◆ Belly door
- ◆ Electronics box door
- ◆ Drop box door (if applicable)

For more information, see "Installing Door Locks" on page 3-7.


## MMS Keyswitch

The MMS keyswitch, located on the side of the machine cabinet, is used to invoke the MMS and to clear tilts and handpay stoppages. For the procedures, refer to the following table:

Event	Procedure
Invoke the MMS	"Invoking the MMS" on page 2-23
Clear tilts	"Clearing Tilts" on page 6-3
Clear handpay stoppages	"Clearing Jackpot/HandPay Messages" on page 6-4

## Security Sensors

Mechanical sensors detect when machine doors are opened or unlocked. The system records all sensor trigger events. Each sensor is a dry contact switch integrated with a mechanical assembly. Sensors are mounted to each of the following components:

- ◆ Currency column door
- ◆ Belly door
- ◆ Electronics box door
- ◆ Currency cartridge
  - ◆  *Note:* The currency cartridge integrates a currency cartridge lock sensor and a cartridge removal sensor. Currency cartridge removal is sensed by a mechanical microswitch located behind the cartridge.
- ◆ Drop box door (This is a sensor installed by the casino or by Silicon Gaming, depending on regulatory requirements.)

When the system software detects an open door, a door-open event is sent to the system. Then, depending on the state of the system when the door was opened, the system performs one of the following actions:

- ◆ If a door is opened when the Game Menu or a game is displayed, a banner is displayed indicating which door is open.
- ◆ If a door is opened while the MMS is running, access is provided to the Configuration and Diagnostic pages.

## ServicePoint

The ServicePoint is a portable computer used by Silicon Gaming's field service personnel. The ServicePoint runs a suite of Silicon Gaming field support applications and contains the game library and the full release version of system software from Silicon Gaming. The ServicePoint includes the Media Builder software used to install or update software on the slot machine. The ServicePoint includes a DC power cable, SCSI cable, and cable adapters to connect it to the slot machine hard disk (or via the SWUS). A power cord plugs the ServicePoint into the machine's 120 Vac outlet.

SGI field service personnel can refer to the *ServicePoint User's Guide* for further information.