Ed. 00

OfficeServ 7100

System Description

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TRADEMARKS

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INTRODUCTION

Purpose

This document introduces product overview, H/W configuration, Specification and functions of OfficeServ 7100, which are required to understand the OfficeServ 7100 system.

Document Content and Organization

This document consists of four Chapters and Abbreviations.

CHAPTER 1. Overview of OfficeServ 7100

Describes the features and the main functions of OfficeServ 7100 over all and introduces system configuration and interface programming.

CHAPTER 2. H/W of OfficeServ 7100

Introduces H/W features, Cabinet composition, boards by functions and configuration of OfficeServ 7100. In addition, this chapter describes various stations, wireless equipment and additional equipment available for OfficeServ 7100.

CHAPTER 3. Specification of OfficeServ 7100

Introduces the detailed standards, such as system capacity, electrical standards, power standards, ring and tone, equipment specification, of OfficeServ 7100.

CHAPTER 4. Functions of OfficeServ 7100

Describes Call, VoIP, Data, Voice Mail(VM), and Web and System management functions provided by OfficeServ.

ABBREVIATION

Describes the acronyms used in this manual.

Conventions

The following types of paragraphs contain special information that must be carefully read and thoroughly understood. Such information may or may not be enclosed in a rectangular box, separating it from the main text, but is always preceded by an icon and/or a bold title.


NOTE

NOTE

Indicates additional information as a reference.

Revision History

EDITION	DATE OF ISSUE	REMARKS
00	07. 2006	First Edition
01	01.2007	Safety, VM and Router etc.

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CHAPTER 1. Overview of OfficeServ 7100

This chapter describes the features and the main functions of OfficeServ 7100 overall and introduces System Structure, Interface and Programming.

1.1 Introduction to System

OfficeServ 7100 is the most proper communication product for offices with 10 to 25 lines and provides the complex function including voice, data and internet functions. OfficeServ 7100, also, provides the data exchange function using data network as well as the voice call function. Users can enjoy various phone functions and applications at the various platforms such as digital phones, IP phones, mobile phones, PCs and servers.

1.1.1 Main Functions

Main functions and features of OfficeServ 7100 are as follows:

Integrated Communication Environment

OfficeServ 7100 provides the data transmission service by using Local Area Network(LAN), Wide Area Network(WAN) modules as well as the voice call function. Users can conveniently communicate by using wireless/wired integration platforms(Telephones, PCs, Wireless Phones and peripherals) function.

Next-generation Platform

OfficeServ 7100 provides a genuine IP solution integrating mail server, Session Initiation Protocol(SIP) server, Voice Mail(VM) functions via IP-based feature server.
The IP-based feature server is a Linux platform that can continuously add the successive feature server module.

High Quality IP Phone Function

OfficeServ 7100 separates the priority of data packets and voice packets from grouping so that it guarantees the following Quality of Service(QoS) in voice call:

- Layer 2 QoS: Priority Processing(802.1p), VLAN(802.1q)
- Layer 3 QoS: Class Based Queuing(CBQ), Real-time Transmission Protocol(RTP) Priority Queuing, On-Demand Bandwidth management for WAN.

WAN and LAN Functions

OfficeServ 7100 supports WAN and is equipped LAN interface modules so that it can exchange data with external Internet and internal Intranet via 100 BASE-T interface without additional data equipment.

Wireless LAN Service

OfficeServ 7100 provides the wireless LAN solution for wireless/wired complex service in office zone. OfficeServ 7100 uses wireless LAN base station so that OfficeServ 7100 can serve wireless/wired voice/data communication and internet access function.
Also, an efficient and convenient working environment can be made at any time or place because sophisticated mobile stations are used for the 7100.

A Variety of Application Solutions

OfficeServ 7100 offers a variety of application solutions such as OfficeServ News, OfficeServ EasySet, Internet Call Center, R-NMS, Integrated Fax Server, and Digital Integrated Recording Systems.


NOTE

Integrated and Application Solution

- 'Integrated' means that OfficeServ 7100 system inter-works with an external solution server and the system and the server operates as one integrated function.
- For detailed information about how to use each application solution, refer to the User's Guide for each application.

1.1.2 System Architecture

OfficeServ 7100 is configured of the main device with a basic cabinet and OfficeServ solution.
The Main device cabinet is a one stage shelf composed of three slots and consists of a control part on the main slot and two subscriber parts on the universal slot. The OfficeServ solution is established in an additional server and uses the solution that is the same as that of OfficeServ7200 and 7400. However, the limited modification concerned with the system structure is allowed.

The service configuration diagram of the OfficeServ 7100 system is shown in the figure below:

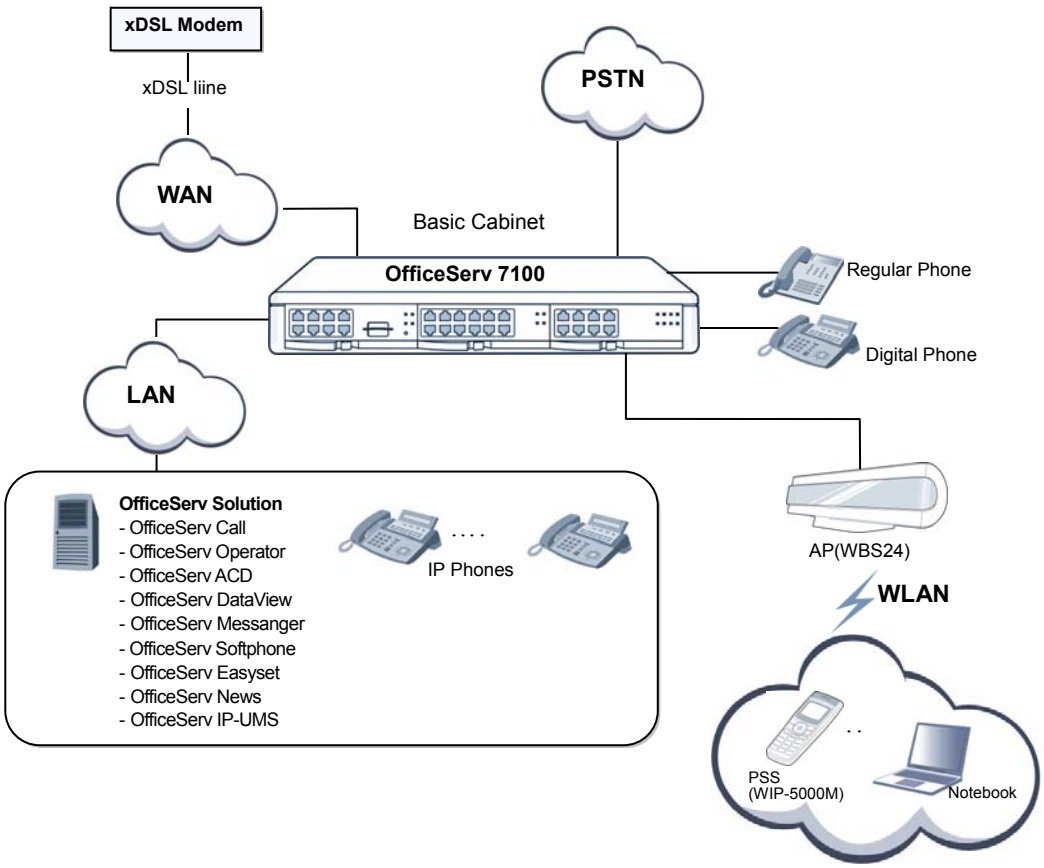

Figure 1.1 Configuration of OfficeServ 7100 Service

Voice Trunk Line Part

The voice trunk line part is configured with digital trunk lines and analog trunk lines. TEPRI/TEPRI2 functions as E1, T1 and Primary Rate Interface(PRI) digital trunk line on a board, sends/receives voices through the trunk line and transmits the data information of 64 kbps per channel. The 8Trunk(8TRK) provides the Caller ID(FSK CID) function within a board in default. If the 4TRM option board is mounted on the UNI board, it operates as a voice trunk board and supports an analog trunk line, and provides the CID & PRS.

Voice Station Part

The voice station part is configured with Digital Line Interface(DLI), which is a digital station, and Subscriber Line Interface(SLI), which is an analog station, and provides voice services. Multiple station boards can be mounted depending on the combination of port numbers and stations. The digital station has the 16DLI2 and 8DLI boards, and the analog station has the 16SLI2 and 8SLI boards. In addition, the 8COMBO hybrid board, which is the combination of analog and digital stations, exists. The UNI board equipped with 4SLM and 4DLM operates as an voice station board.

Data Transmission Part

The data module is configured with 4SWM, which is a LAN interface board. 4SWM is an option board that supports data transmission/reception on internet and can be mounted on the d-board slot of M10(11). 4SWM provides 100 BASE-T interface and performs the Layer 2 switch function of 4 ports.

Voice Application Part

The voice application module consists of the Voice over Internet Protocol(VoIP) that transmits voice to the data network and the Wireless Local Area Network(WLAN) that transmits voice wirelessly. Media Gateway Interface 64channel(MGI))/Media Gateway Interface 64channel(MGI64) board converts voice into data and provides the VoIP function.

Application Solutions
OfficeServ 7100 can establish a common server of Linux platform outside its cabinet and provide the following application software. OfficeServ Solution and OfficeServ Admin are constructed in additional servers.

- SIP server
- OfficeServ Solution(CTI, OfficeServ Operator)
- OfficeServ Admin(Web Management, OfficeServ EasySet and System Manager)

1.2 Interface

This section describes the interfaces between the sub-modules of OfficeServ 7100 and the ones between the VoIP elements.

1.2.1 Interfaces between Sub-modules

Table 1.1 Interface between Sub-Modules

Categories	Types	Interfaces
4SWM Interface	Physical Access	IEEE 802.3 10 BASE-TX, IEEE 802.3u 100 BASE-TX
	Connector Type	RJ-45
PSTN Interface	Physical Access	T1, E1, Foreign Exchange Office(FXO)
	Connector Type	RJ-45
	Access Protocol	T1, E1, Loop Start
ISDN Interface	Physical Access	ISDN PRI, BRI
	Connector Type	RJ-45
	Access Protocol	ISDN PRI, BRI
xDSL/Cable Modem Interface	Physical Access	IEEE 802.3u 100 BASE-TX Ethernet
	Connector Type	RJ-45
	Access Protocol	PPPoE and DHCP
Voice Terminal Interface	Analog Phone	Foreign Exchange Station(FXS)
	Digital Phone	SAMSUNG's Digital Phone
	Wireless LAN AP (Access Point)	802.11b, WBS24(SAMSUNG's Wireless LAN AP)
	Access Protocol	User Agent(UA) to UA

1.2.2 Interfaces between VoIP Components

OfficeServ 7100 provides various VoIP interfaces as follows:

- VoIP Networking
- H.323 VoIP Gateway
- SIP VoIP Gateway
- SIP Server
- System SIP User Agent(UA)
- IP Telephone
- Standard SIP Telephone

In view of signal processing, the interface interworking standards between VoIP components are as follows:

- Proprietary TCP Inter Protocol Communication(IPC)
- SIP UA-to-UA
- UA-to-Server

1.3 Programming

The Man Machine Communication(MMC) program can change the data value used for the system operation program. The MMC program is categorized into three levels, which are technician, operator, and subscriber. Depending on these levels, some MMCs can be programmed by the subscribers while some MMCs cannot.
A password is required for technician level programming or operator level programming; however, a password is not required for subscriber level programming.

Technician-Level Programming

All programs are programmable.
Programming can be made in any stations in the OfficeServ system, but the programming can be made only in a station at the same time.

Operator Level Program

The operator can program only the program specified in ‘Specification of Program 802 Operator Program Range’ by a technician.
Programming can be made in any stations in the tenant group, but the programming can be only made in a station at the same time.

Subscriber Level Program

Only subscriber programs are programmable.

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CHAPTER 2. H/W of OfficeServ 7100

This chapter introduces the hardware features, cabinet configuration, and board functions and configuration of the OfficeServ 7100 system. In addition, this chapter describes terminals, wireless LAN equipment, and additional equipment available in the OfficeServ 7100 system.

2.1 Features of H/W

The H/W of OfficeServ 7100 has the following features:

Reliability

The materials and parts used for the OfficeServ 7100 hardware are robust and satisfy the mechanical and electric features required for communication systems.

- The cabinet of the OfficeServ 7100 complies with the industrial standards and is assembled by robust and stable metal welding.
- The OfficeServ 7100 hardware does not generate poisonous or corrosive gas, which might be harmful for human bodies or affect the system operation.
- The OfficeServ 7100 hardware is made of materials considering the feature of Electro-Magnetic Interference(EMI).
- The OfficeServ SME hardware has a failure-tolerance to protect the system from the damage caused by over-voltage.

Modularity

The OfficeServ 7100 hardware has functional modules.

- Capacity can be expanded or functions can be changed in each module without interrupting the services for the existing subscribers.
- Each module can be easily installed or removed in the plug-in way.

Maintenance

The OfficeServ 7100 hardware is designed to be maintained with ease and safety.

- The specification of 19-inch rack is observed. The rack is designed to maintain sufficient strength.
- The installers or maintainers can connect cable easily because the ports to be connected to outside are placed on the front panel.
- The front of each module has a LED that indicates failures or operation status so that the operator can easily identify system failures.
- The back of the rack has a ground hole to which a wrist strap for preventing static electricity can be connected.
- The OfficeServ 7100 hardware is designed to protect electronic devices from damages caused by external environment while installing or recovering.

Fire Resistance and Heat Processing

The OfficeServ 7100 hardware is made of fire-resistant materials and parts to protect the hardware from fire.
The OfficeServ 7100 hardware is designed not to affect system performance due to heat generated from inside of the system.

- A specific heat-generated part of the hardware is blocked in order not to affect temperature-sensitive components.
- a 60 mm fans for cooling are installed to exhale internal air to outside.
- The parts installed into the modules are located on the basis of heat distribution.

2.2 Cabinet Configuration

OfficeServ 7100 is configured of the main device with a basic cabinet and OfficeServ solution.

The Main device cabinet is a one stage shelf composed of three slots and consists of a control part on the main slot and two subscriber parts on the universal slot.

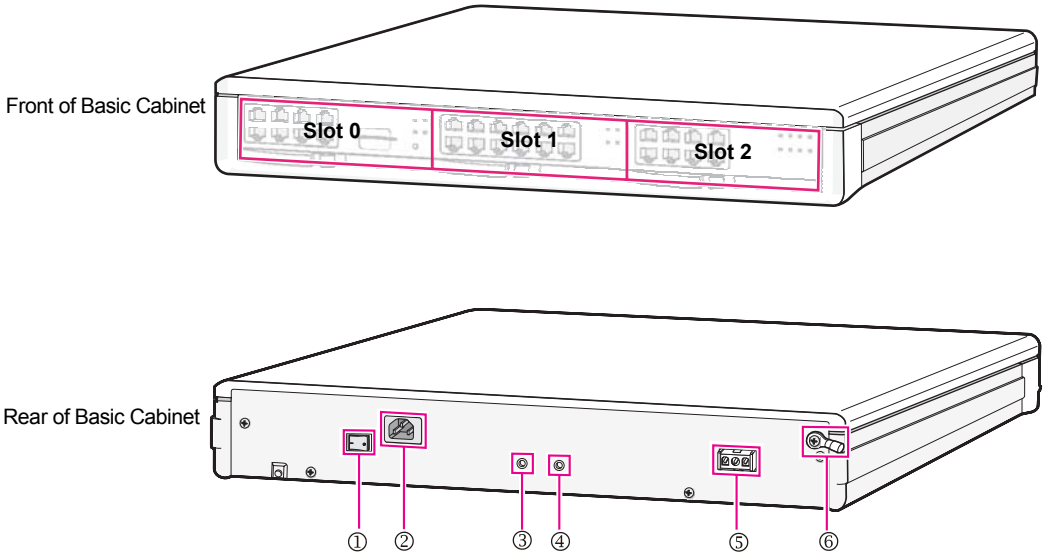

Figure 2.1 Configuration of OfficeServ 7100 Cabinet

Table 2.1 Configuration in the Back side of of OfficeServ 7100

Configuration	Function
① Power Switch	Power on/off the OfficeServ 7100 system.
② Power I/O connector	Connector to connect the power cable
③ AC LED	The LED turns on while applying AC power.
④ DC LED	The LED turns on while the DC power normally comes out.
⑤ Battery Socket	Socket to connect an external battery
⑥ Ground Lug	Lug to ground the system communication

2.2.1 Configuration of Slots

OfficeServ 7100 has three board slots. These boards are equipped with the following boards depending on the configuration of OfficeServ:

Table 2.2 Boards that can be mounted on the slots

Cabinets	Slots	Mountable Boards
control Part	Slot 0	MP10, MP11
Subscriber Part(UNI)	Slot 1 and Slot 2	- OS 7100 Card : UNI board - OS 7200 Card : 8DLI/16DLI2, 8SLI/16SLI2, 8COMBO, 8TRK, TEPRI, LIM, MGI - OS7400 Card : TEPRI2, MGI64


NOTE

Blank Board Function

Blank board is a dummy board that functions as a screen to prevent the system from foreign materials when the Universal Slot is not equipped boards.
If an empty board is generated, use a blank board to vent internal air naturally.

2.3 Boards by Functions

OfficeServ7100 has three slots to mount board. Each slot can mount the boards that can perform the following function depending on the configuration type of OfficeServ 7100.

Table 2.3 Boards by Functions

Functions	Boards
Main Control Part	MP10 MP11
Voice Trunk Line	TEPRI, TEPRI2, 8TRK, 2BRM and 4TRM
Voice Station	8DLI, 16DLI2, 8SLI, 16SLI2, 8COMPO, 4DLM and 4SLM
Data	4SWM, LIM
Voice Application	MGI, MGI64
Power and Fan	PSU and Fan

2.3.1 Control Board (MP10, MP11)

This paragraph describes the configuration and the functions of MP10 and MP11, which are the main control board that controls all functions of the OfficeServ 7100.

MP10(MP11) is a main control part board that controls all functions of OfficeServ 7100 and is mounted on slot 0 of the basic cabinet. It performs the voice switch function, signal processing function and PSS management function. MP10(MP11) carries out the system booting function and data management function.

If 4SWM, which is an option board, is not equipped, MP10(11) is connected to LAN Interface Module(LIM) of the universal slot or an external switch via the LAN interface and starts various applications. If the 4SWM is mounted, LAN interface is connected automatically. MP10(MP11) strengthens the flexibility of the system and by applying the VoIP function and IPC between cabinets raises the reliability by using the HDLC protocol.

Main Functions

The MP10(MP11) board offers the following functions:

- Various application operations via LAN interface
- Convenient installation via MMC card
- Database backup
- Port for Universal Asynchronous Receiver and Transmitter(UART) test
- External/Internal Music On Hold(MOH) and Loud/common bell functions
- Time setting and display function
- Phase Locked Loop(APLL) function for the synchronization with digital subscribers

Option Board

The MP10(MP11) board can mount a MODEM Board, a 4DLM board or a 4SWM board. in option.
The MODEM board has the following functions:

- The MP10(MP11) board has a 2-Wire Full Duplex modem and can commonly use it with OfficeServ 500 system. Be careful of the direction of the Modem board when mounting/demounting the board to the MP10(MP11) board.
- The Modem board operates in OfficeServ 7100 via V.24 interface and uses a modem chip for Central Office, which can perform Pulse Code Modulation(PCM) highway interface. In addition, the Modem board supports V.90 protocol. OfficeServ 7100 controls the Modem board via serial communication using standard AT commands.

Specification

The specification of MP40 sub-control board is as follows:

Table 2.4 Specification of MP10 (MP11) Board

Categories	Names	Standards
CPU	Processor	M82511G(MP10), M82810(MP11)
	System Clock	375 MHz
	Package	484 BGA
SDRAM (Memory for programs and data)	Capacity	128 MB(for MP10), 256 MB(for MP11)
	Width of Data Bus	32 Bit
SRAM (Memory for Data, Backup)	Capacity	2 MB(1 MB * 2 EA)
	Width of Data Bus	16 bit
Flash ROM (For Booting)	Capacity	512 MB
	Width of Data Bus	8 bit
Time Switch	Device	STC9604
	Basic Switch	256 x 256 Channel
	Data Bus Width	8 Bit
RTC	Device	RTC72423
	Time for Backup	48 Hours
Multi-Media (MMC+) (Memory for programs, data and VM/AA)	Capacity	256 MB
	Width of Data Bus	1 Bit
EEPROM Data memory (example: MAC/IP Address)	Capacity	4KB
	Interface	8 Bit

Front View

The front view of the MP10(MP11) main control part is as shown in the figure below.

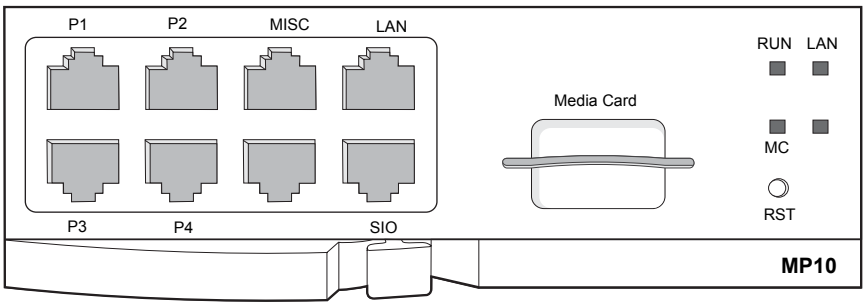

Figure 2.2 Front View of MP10

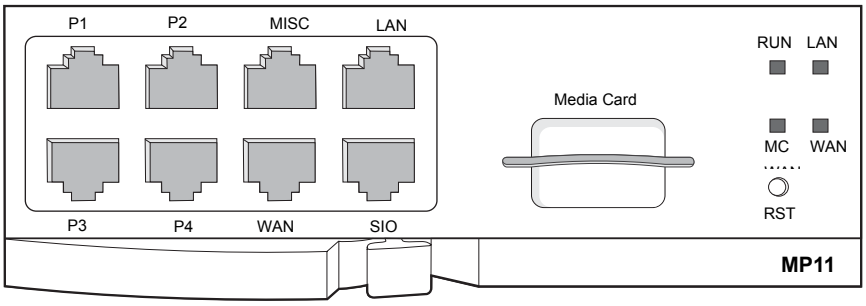

Figure 2.3 Front View of MP11

The components on the front panel of the MP10(MP11) board have the functions below:

Table 2.5 Ports of MP10 (MP11) Board

Ports and LEDs	Functions
P1~P4	Subscriber connection port of 4DLMI/4SWM
MISC	Port to connect Ext PAGING, DRY CONTACT and Ext MOH
LAN	Port to connect 100 BASE-T LAN
WAN	Port to connect 100 BASE-T WAN(only MP11)
SIO	Port connect to serial I/O for development tool
Media Card	Port to insert an MMC+ card, which is a storage media
RUN LED	Status of Main CPU operation - Off: No-power - On(Green): On Booting, Reset - Blink(Green): Normal Operation of Program - Blink(Red): Fan module failed Operation of Program
LAN LED	Status of LAN operation - Off: Link and no-connection of LAN port - On(Green): Link and LAN port connection - Blink(Green): Tx/Rx Data through LAN port.

Table 2.5 Ports of MP10 (MP11) Board (Continued)

Ports and LEDs	Functions
WAN LED	Status of WAN operation (MP11) - Off: Link and no-connection of WAN port - On(Green): Link and WAN port connection - Blink(Green): Tx/Rx
MC LED	Status of MMC+ card operation - Off : Non-mounted MMC card - On(Green) : Mounted MMC card - Blink(Green) : In Tx/Rx of MMC card

2.3.2 Voice Trunk Line Board

This section describes the boards that offer the voice service of trunk lines.
TEPRI(a/2) Cards is only support E1(1) PRI function, but not supports for E1(T1) Digital Trunk function.

2.3.2.1 TEPRIa

The TEPRIa board provides the digital trunk line. A TEPRIa board provides ISDN E1(T1) PRI, and functions as the Q-SIG. This board transmits voice via the trunk line and a channel transmits the voice data of 64 Kbps.

Main Functions

The TEPRI voice trunk line board performs the functions below:

- Selection function for T1/E1/PRI signal process through programming
- Function of a resistance circuit that satisfies both of the T1(100Ω) and E1(120Ω)
- Surge protection over the standard of International Telecommunication Union(ITU)
- Output port protection for line monitors
- Jitter function that satisfies ITU-T I.431 and G.703
- Providing selectable line Codecs(HDB3, AMI)
- Local/remote loop function
- Function for the HDLC or Common Associated Signaling(CAS) through the Common Channel Signaling(CCS)

Specifications

- The specifications of the TEPRIa voice trunk line board are as follows:
- E1 PRI: 30 channels

Front View

The front view of the TEPRIa voice trunk line board is shown in the figure below:

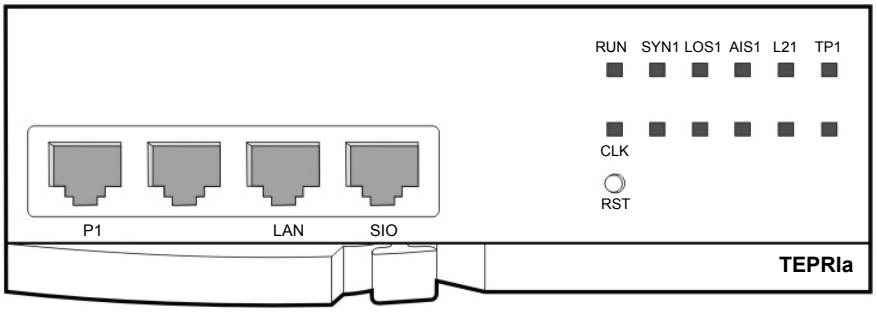

Figure 2.4 Front View of TEPRIa

The components on the front panel of the TEPRIa have the functions below:

Table 2.6 Ports and LEDs of TEPRIa Board

Port, LED	Function Description
P1	Ports to connect T1/E1/PRI cables
LAN	Port connected to Ethernet
SIO	UART port(for test)
TP1	Program type on operating in port1 - On: Port1 operation in PRI - Off: Port1 operation in T1/E1
L21	Layer 2 operation status - On: Normal operation of Layer 2 - Off: Abnormal operation of Layer 2
AIS1	Reception status of alarm bit from the counterparty switch - On: Reception of alarm bit from the counterparty switch - Off: No-reception of alarm bit from the counterparty switch
LOS1	Signal loss status(LOS) from the counterparty switch - On: Weak signal or signal loss from the counterparty switch - Off: Normal signal reception for the counterparty switch
SYN1	Frame synchronization status with the counterparty switch - On: Out of synchronization with the counterparty switch - Off: Synchronization with the counterparty switch
RUN	On(Green): Normal operation in E1(blink at the interval of 200 ms) On(Orange): Normal operation in T1(blink at the interval of 200 ms)
CLK	On when the Reference clock is used as the system clock

2.3.2.2 TEPRI2

TEPRI2 provides the digital trunk line. A TEPRI2 board provides two ports for E1, T1, ISDN and PRI respectively, and functions as the Q-SIG. This board transmits voice via the trunk line and a channel transmits the voice data of 64 Kbps.

Main Functions

The TEPRI2 voice trunk line board performs the functions below:

- Selection function for T1/E1/PRI signal process through programming
- Internal resistance function to enable to satisfy the T1(100Ω) and E1(120Ω) impedances
- Surge protection over the standard of International Telecommunication Union(ITU)
- Output port protection for line monitors
- Jitter function that satisfies ITU-T I.431 and G.703
- Providing selectable line codecs(HDB3, AMI)
- Local/remote loop function
- Function for the HDLC or Common Associated Signaling(CAS) through the Common Channel Signaling(CCS)

Specifications

The specifications of the TEPRI2 voice trunk line board are as follows:

- Two trunk line ports
- E1 PRI: 30 channels(per channel)

Front View

The front view of the TEPRI2 voice board is shown in the figure below:

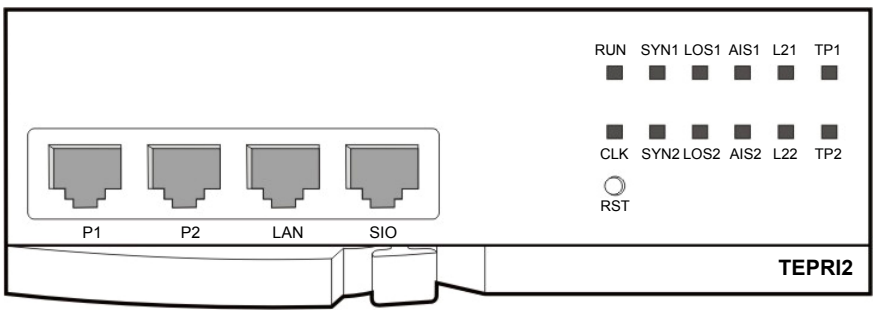

Figure 2.5 Front View of TEPRI2

The components on the front panel of the TEPRI2 have the functions below:

Table 2.7 Ports and LEDs of TEPRI2 Board

Port, LED	Function Description
P1	Port 1 for connecting T1/E1/PRI cables
P2	Port 2 for connecting T1/E1/PRI cables
LAN	Port for connecting to Ethernet
SIO	UART port(for tests)
TP1	Indicating the type of the program operated in Port 1 - On: Port 1 operation in PRI - Off: Port 1 operation in T1/E1
TP2	Indicating the type of the program operated in Port 2 - On: Port 2 operation in PRI - Off: Port 2 operation in T1/E1
L21 L22	Indicating the status of Layer 2 operation - On: Normal - Off: Abnormal
AIS1 AIS2	Indicating the reception of the alarm bit of the counterparty switch - On: Alarm bit received - Off : Alarm bit not received
LOS1 LOS2	Indicating the signal loss(LOS) of the counterparty switch - On: When signals are week or has been damaged - Off: When signals received properly
SYN1 SYN2	Indicating the status of frame synchronization with the counterparty switch - On: No frame synchronized - Off: Frame synchronized
RUN	On(Green): Normal operation in E1(Blink in the cycle of 200 ms) On(Orange): Normal operation in T1(Blink in the cycle of 200 ms)
CLK	On when the reference clock is used as the system clock.

2.3.2.3 8TRK

The 8TRK board provides analog trunk line ports. One board has the CID path. In addition, the board provides voice through trunk lines and transmits the voice data of 64 kbps to each channel.

Main Functions

The 8TRK voice trunk line board performs the functions below:

- Detecting ring reception
- Detecting on/off-hook
- Transmitting dial pulse

- CID function
- Line monitoring function that checks if the line is connected periodically to transmit the voice data can be transmitted.
- Caller information relay path function

Specifications

The 8TRK voice trunk line board has eight trunk line ports.

Front View of 8TRK

The front view of the 8TRK board is shown in the figure below:

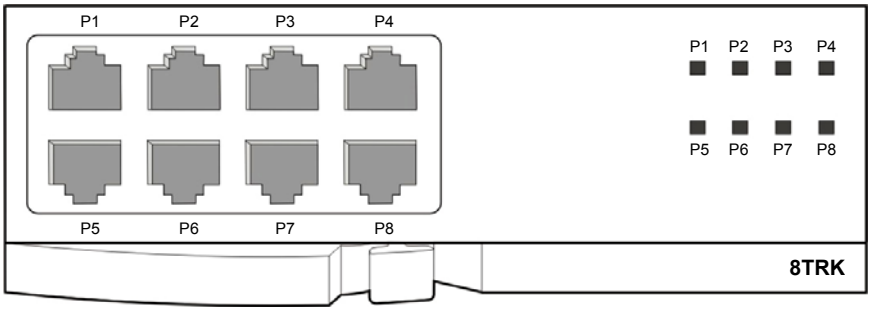

Figure 2.6 Front View of 8TRK

The components on the front panel of the 8TRK have the functions below:

Table 2.8 Ports and LEDs of 8TRK Board

Port, LED	Function Description
P1~P8	Trunk Ports
P1~P8 LED	The status of ports - Off: Not used - On: In use - Blink: On receiving a ring

2.3.3 Voice Station Board

This section describes the board that offers the station voice service.

2.3.3.1 8SLI

The 8SLI(Single Line Interface) board supports 8-port for analog stations. It interworks with regular phones via the station to provide voice communication.

Main Functions

The main functions of the 8SLI voice station board are as follows:

- Generating the ring of 20 Hz
- Detecting Dial Tone Multi Frequency(DTMF)/dial pulse
- Detecting on/off-hook
- Generating a tone

Specifications

The specifications of the 8SLI/16SLI voice station board are as follows:

- 8SLI Board: Eight station ports

8SLI Front View

The front view of the 8SLI board is shown in the figure below:

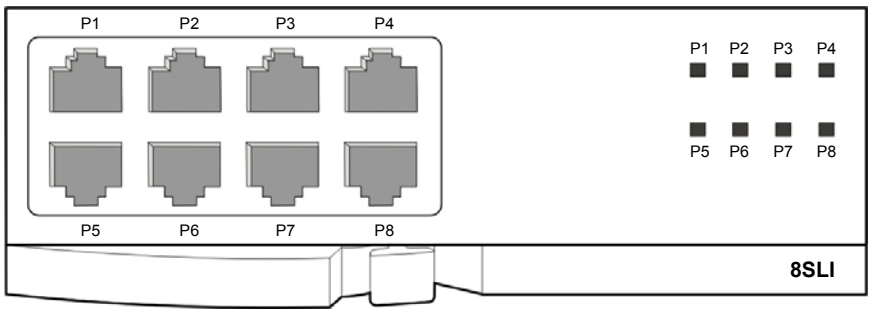

Figure 2.7 Front View of 8SLI

The components on the front panel of the 8SLI have the functions below:

Table 2.9 Ports and LEDs of the 8SLI

Port, LED	Function Description
P1~P8	Station ports of regular phones
P1~P8 LED	The status of Ports - Off: Not used - On: Station in use

2.3.3.2 8DLI

The 8DLI(Digital Line Interface) board supports 8-port for digital stations. It interworks with Samsung digital phones via the station to provide voice communication.

Specifications

The specifications of the 8DLI voice station boards are as follows:

- 8DLI Board: Eight station ports and 2B+D(Two voice channel and one signal channel) provided

Front View of 8DLI

The front view of the 8DLI voice station board is shown in the figure below:

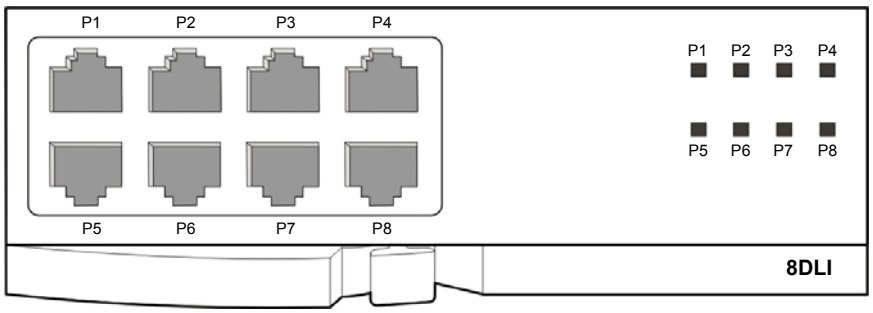

Figure 2.8 Front View of 8DLI

The components on the front panel of the 8DLI have the functions below:

Table 2.10 Ports and LEDs of 8DLI Board

Port, LED	Function Description
P1~P8	Station ports of Samsung digital phones
P1~P8 LED	The status of the ports - Off: Not used - On: Station in use

2.3.3.3 8COMBO

The 8COMBO board supports eight ports of analog stations and eight ports of digital stations simultaneously. It interworks with regular phones or digital phones to provide voice communication.

Main Functions

The main functions of the 8COMBO voice station board are as follows:

- Generating the ring of 20 Hz
- Detecting DTMF/dial pulse
- Detecting on/off-hook
- Generating a tone

Specifications

The specifications of the 8COMBO voice station board are as follows:

- Eight analog station ports
- Eight digital station ports

Front View of 8COMBO

The front view of the 8COMBO voice station board is shown in the figure below:

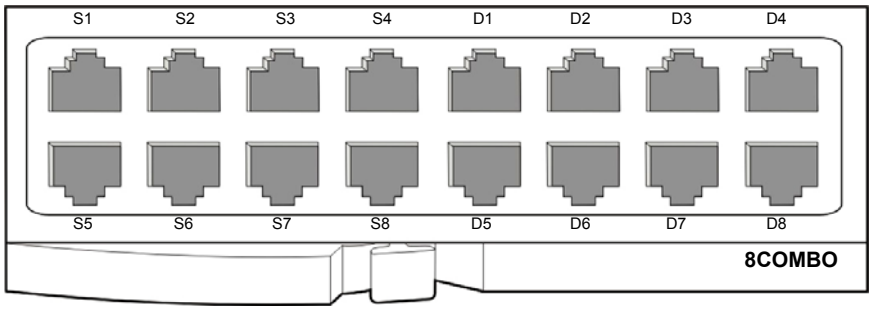

Figure 2.9 Front View of 8COMBO

2.3.3.4 16SLI2/16MWSLI

The 16SLI2 board has 16-port for analog stations. It interworks with regular phones via the station to provide voice communication. 16MWSLI is a board that a message waiting function is added to the functions of 16SLI2.

Main Functions

The main functions of the 16SLI2 board are as follows:

- Generating the ring of 20 Hz
- Detecting Dial Tone Multi Frequency(DTMF)/dial pulse
- Detecting on/off-hook
- Generating a tone
- Power Fail Transfer(PFT)
- Message Waiting(16MWSLI)
- Transmitting Polarity Reverse Signal(PRS)

Specifications

The specifications of the 16SLI2/16MWSLI boards provides 16 station ports.

Front View of 16SLI2/16MWSLI

The front view of the 16SLI2/16MWSLI boards is shown as follows:

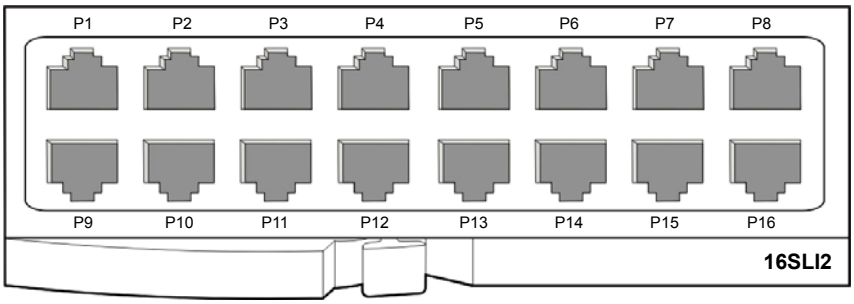

Figure 2.10 Front View of 16SLI2

The components on the front panels of the 16SLI2/16MWSLI boards have the functions below:

Table 2.11 Ports of 16SLI2 Board

Port, LED	Function Description
P1~P16	Station Ports of Regular Phones

2.3.3.5 16DLI2

The 16DLI2 board has 16-port for digital stations. It interworks with Samsung digital phones via the station line to provide voice communication.

Specifications

The specifications of the 16DLI2 voice station board as follows:

- 16 station ports provided
- 1B + D(One voice channel and one signal channel) provided

Front View of 16DLI2

The front view of the 16DLI2 board is shown in the figure below:

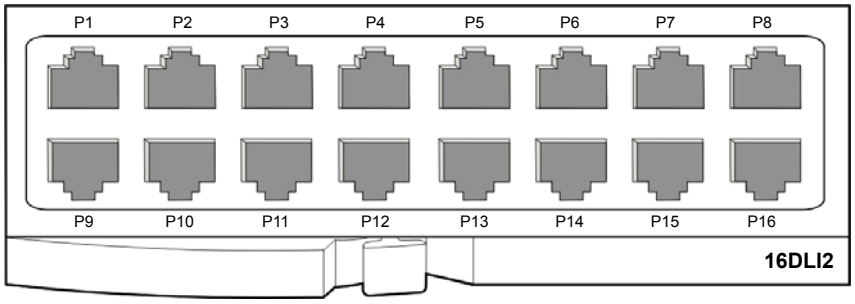

Figure 2.11 Front View of 16DLI2

The components on the front panel of the 16DLI2 have the functions below:

Table 2.12 Ports of 16DLI2 Board

Port, LED	Function Description
P1~P16	Station Ports of Samsung digital phones

2.3.4 Voice Trunk Line/Station Board (UNI)

The UNI board can be used as a voice trunk line board or voice station board depending on the mounted option board. If a 4TRM and 2BRMoption board is mounted in the UNI board, it operates as a voice trunk line board. If 4SLM and 4DLM option boards are mounted, it operates as a voice station board.

Main Functions

The main functions of the UNI board are as follows:

- 3-pair of connector to mount an option module
- Option Module control logic
- -54 V power Control function

Specifications

- Use of a 4TRM option board: four trunk ports
- Use of a 2BRM option board: TW trunk ports
- Use of a 4SLM option board: Four station ports
- Use of a 4DLM option board: Four station ports

Front View

The front view of the UNI board is shown in the figure below:

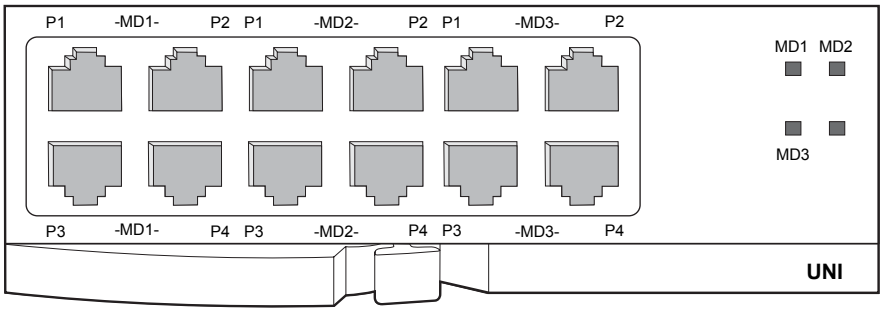

Figure 2.12 Front View of UNI Board

The components on the front panel of the UNI board functions as follows:

Table 2.13 Ports and LEDs of the UNI Board

Port, LED	Function Description
MD1 P1~P4 MD2 P1~P4 MD3 P1~P4	Port support in accordance with the option boards mounted on the position of MD1, MD2 and MD3

MD1 LED MD2 LED MD3 LED	Module mounting status at the MD1 position and subscriber status - Off : No-module mounted - On(Green) : 4DLM module mounted On(Red) : 4TRM or 2BRM module mounted On(Ambor = Green + Red) : 4SLM module mounted

The UNI board mountable option boards are as follows. If a 4TRM option board is mounted on the UNI board, the UNI board operates as a voice trunk line board.

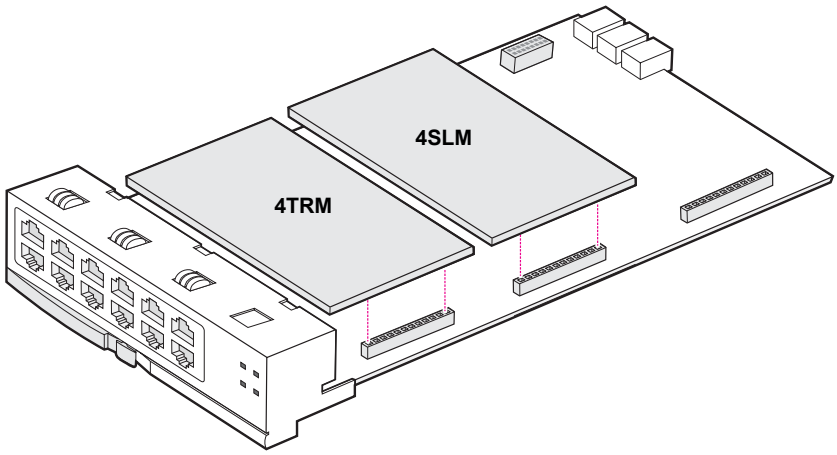

Figure 2.13 Option board of the UNI Board (Voice Trunk Line)

If 4SLM and 4DLM option boards are mounted on the UNI board, the UNI board operates as a voice station board.

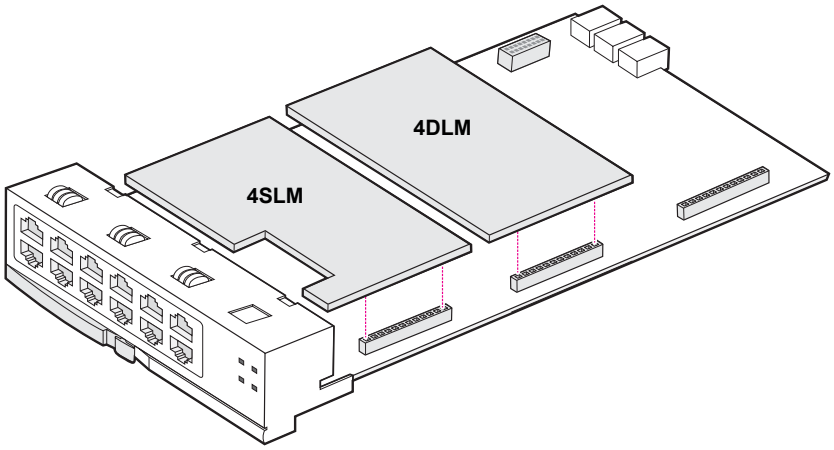

Figure 2.14 Option Boards of the UNI Board (Voice Station)

NOTE

4TRM Module board is only support DTMF dialing, but not supports for Dial Pulse dialing. 8TRK Cards is support DTMF and Dial Pulse dialing.

2.3.5 Data Board (4SWM)

This section describes the data board that receives/transmits data from/to Internet or Internet. 4SWM, which is a data board of OfficeServ 7100, provides 100 BASE-T interface and performs the Layer2 Switch function as the data transmission/reception board to/from Internet.

Main function

The main functions of the 4SWM board are as follows:

- Auto-detection function of 100 BASE-T and Full/Half duplex
- 802.1p and VLAN function to support QoS
- Layer 2 Switch function

Specifications

LIM data board, 4SWM, provides four 100 BASE-T ports.

Front View

The front view of the LIM data board, 4SWM, is shown in the figure below:

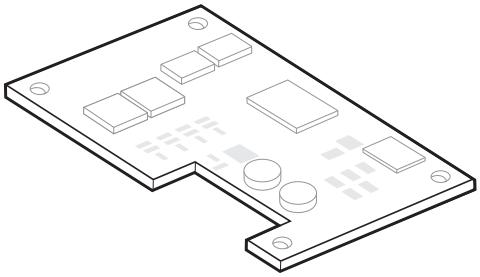

Figure 2.15 4SWM

2.3.6 Voice Application Board

This section describes the interface board that uses Digital Adaptor for Subscriber Loop(DASL) to send/receive voice to/from the phone system and wireless base station as well as the board that converts voice to data, and then sends/receives the data.

2.3.6.1 MGI/MGI64

The MIG/MGI64 boards enables to convert voice to data, and then send/receive the data via the data network. The MGI16 and the MGI64 boards provide up to 16-channel and 64-channel, respectively. In addition, the boards provide voice compression/decompression functions of G.729, G.723 and G.711, and support the VoIP function to enable to execute a client and a server in a board.

Main Functions

The main functions of the MGI16/MGI64 voice application boards are as follows:

- Voice compression/decompression: G.729, G.723, G.726, G.711
- Facsimile relay: MGI16 and MGI64 provide 2-channel and 8-channel, respectively.
- Echo cancellation
- Volume adjustment
- Silence suppression

Front View

The front view of the MGI64 voice application board is shown in the figure below:

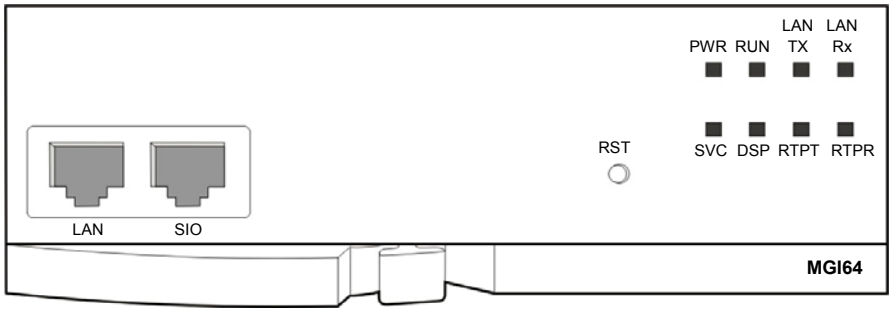

Figure 2.16 Front View of MGI64

The components on the front panels of MGI16 and MGI64 are as follows:

Table 2.14 Ports and LED of MGI Board

Port, LED	Function Description
LAN	Ports for connecting Ethernet
SIO	UART port(for tests)
RST	Button for resetting MGI board
PWR LED	Power supply status - Off: Power supply blocked - On: Power supplied
RUN LED	MGI operation - Off: Power supply blocked - On: On booting - Blink: RAM program in operation
LAN TX LED	Ethernet data transmission status - Off: No data - On or Blink: On data transmission
LAN Rx LED	Ethernet data reception status - Off: No data or no link connected - On or blink: On data reception

Table 2.14 Ports and LED of MGI Board (Continued)

Port, LED	Function Description
SVC LED	Service - LED blinks when the task service of the software is available
DSP LED	VoIP DSP operation - LED blinks when VoIP DSP is operated
RTPT LED	Voice packet transmission - LED turns on when transmitting voice packets
RTPR LED	Voice packet reception - LED turns on when receiving voice packets

2.4 Station Phones

This section describes the types and features of analogue/digital station phones that can be connected to the OfficeServ 7100 system.

2.4.1 Regular Phones

The regular phones used for voice calls are connected to the ports of the 8SLI/16SLI2/8COMBO boards mounted on the Universal slot of the OfficeServ 7100 system.

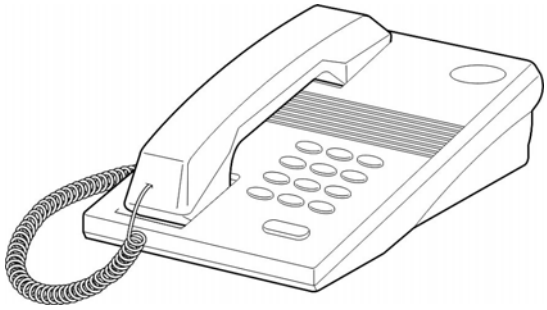

Figure 2.17 Regular Phone

2.4.2 Digital Phones

Digital phones are used for the transmission of voice calls and data, and are connected to the ports of the 8DLI/16DLI2/8COMBO board mounted on the Universal slot of the OfficeServ 7100 system.
If 2B is supported, the digital phones may be used by connecting with devices such as Add On Module(AOM), Keyset Daughter Board(KDB)-D, and KDB-S.

2.4.2.1 DS-5000 Series

DS-5038D/5021D/5014D

The DS-5038D/5021D/5014D phones are two-line LCD digital phones and have 38, 21, or 14 program buttons that allow the subscribers to register their desired functions and make calls by using a handset/speaker phone.
The DS-5021D/5014D phones have the navigation buttons that allow the users to easily use the phone functions(searching phone numbers by recent calling number, recent called number and name, setting call forwarding and an alarm, and searching speed dials) and connect with the KDB-D/S/F devices. For detailed information on the phones, refer to ‘User’s Guide for OfficeServ Digital Phones, DS-5038D/5021D/5014D’.

Figure 2.18 DS-5014D

Figure 2.19 DS-5021D

Figure 2.20 DS-5038D

2.4.3 IP Phone

The IP phones are a new concept of Internet phones that use an IP address to send/receive voice or data. The IP phones use the installed data network lines to make voice communications and do not need telephone lines. The IP phones can be connected with the devices such as a switching hub and are connected with other digital phones through the MP10/MP11 or MGI16/MGI64 board of the OfficeServ 7100.

2.4.4 AOM

The Add On Module (AOM) is the extended module type digital terminal where the program buttons and LEDs in a digital phone are expanded. Desired functions can be specified into the buttons on the AOM. For information on the figure of each AOM or how to connect the AOM, refer to the User's Guide about the AOM.

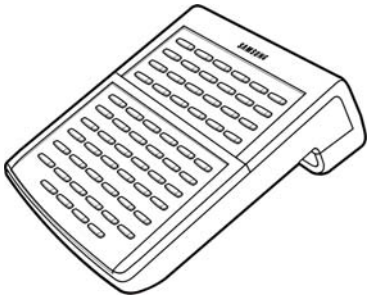

Figure 2.21 DS-5064B

The AOMs available in the OfficeServ 7100 system and phones that can be connected with the AOM are as follows:

Table 2.15 AOM Type

AOM Type	Connectable Phone
DS-5064B AOM	DS-5000 series digital phone
DS-4014 AOM	DS-4000 series digital phone
DS-4064 AOM	
DS-24SE AOM	DS-24SE digital phone
DS-2024E AOM	DS-2000 series digital phone
DS-3020S AOM	DS-3000 series digital phone

2.4.5 Door Phone Interface Module

The Door Phone Interface Module(DPIM) is the module that connects door phones and door open/close devices to the OfficeServ 7100. The line port of the door phone interface device is connected to the DLI port of the OfficeServ 7100 system. The door box port of the door phone interface device is connected tothe line port of the door phone.

Figure 2.22 DPIM

NOTE

Reference

For information on how to connect terminals such as a door phone interface device, refer to ‘OfficeServ 7100 Installation Guide.’

2.5 Wireless LAN Device

This section describes the wireless LAN BTS and mobile stations that can be connected with the OfficeServ 7100 system.

2.5.1 Wireless LAN Base Station (Basic)

Wireless LAN base station(WBS24) of 2.4 GHz consists of wire and wireless processing blocks. The wire processing block has IEEE 802.3 Ethernet interface connected with the LAN. The wireless processing block has the wireless LAN RF interface in the wireless frequency band of 2.4 GHz under the IEEE 802.11b standard.

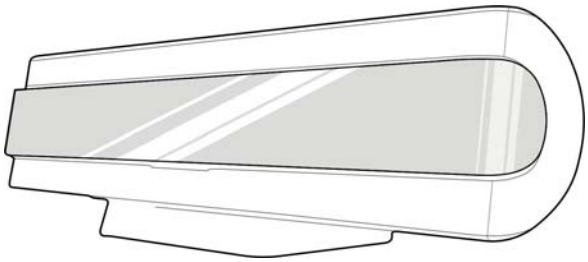

Figure 2.23 WBS24

The wire Ethernet interface is connected to the LAN based on 100 BASE-T and transmits/receives data(e.g., Internet access) other than voices. The wireless processing block transmits/receives voice data for wireless voice calls and accesses the wireless Internet.
The maximum transmission speed on the wireless section is 3 to 4 Mbps. Various people can simultaneously access the wireless Internet using a WBS24.

2.5.2 Mobile Station

Mobile station WIP-5000M(wireless IP-Phone mobile type), which is a local wireless mobile station, uses the wireless LAN of IEEE802.11b to allow the users to make voice calls. The WIP-5000M performs the wireless IP phone function that exchanges as packets that meets the wireless LAN standard by compressing voice(Voice over WLAN). The WIP-5000M supports hand-over when moving between the APs(WBS24s) and can use data terminals such as laptops that enable wireless LAN in the same place.
The WIP-5000M performs the message service functions supported by the OfficeServ 7100 system as well.

Figure 2.24 WIP-5000M

2.6 Additional Devices

This section describes the types and features of devices that can be connected optionally when the OfficeServ 7100 is installed.

2.6.1 On Hold/Background Sound Source

The OfficeServ 7100 is connected with cassettes or radios in addition to the basic tone provided by the system or internal sound source to allow subscribers to listen to melodies other than ones specified to the subscribers. The devices such as the cassettes or radios are called on hold/background sound source.
The on hold/background sound source is mainly used for on hold tone, background music, or announcement and can be used by being connected with the external sound source devices below:

- FM radio
- CD player
- Cassette tape recorder


NOTE

Output Resistance

The speaker output resistance of FM radios, CD players, or cassette recorders are normally 8Ω or 16Ω.

2.6.2 External Broadcasting Units

The OfficeServ 7100 is connected with external broadcasting units such as amplifiers or speakers for consumers instead of internal speakers. These external broadcasting units are embedded in the control board, and are connected via the MISC ports.

2.6.3 Loud Bell

The Loud Bell allows the users to listen to ring signals from outside, and amplifiers or external speakers are used for the Loud Bell.
The Loud Bell is connected via the MISC port of the MP10(MP11) board. Once the secondary call device is connected, a call signal rings from only a specific phone set to MMC 205 Assign Pair Station of Loud Bell.

2.6.4 Common Bell

The Common Bell is a ring that can be specified when a station group is set. Once a station in a group rings, other stations in the group ring. The Common Bell is connected via the MISC port of the MP10(MP11) board

2.6.5 WEB Management

The Web management is the software for the installation/maintenance of the OfficeServ 7100. The functions for controlling the system database are implemented in the form of menus in the Web management; thus, the WEB management is convenient to use when the system data are displayed or changed. In addition, the users can understand and use the system operational commands easily because the commands for maintenance are integrated.

2.6.6 SMDR

The Station Message Detail Recording(SMDR) manages entire calling data such as calls between station subscribers connected with the OfficeServ 7100 as well as local/long distance/international calls. The OfficeServ 7100 provides calling data. Connect the SMDR printer or SMDR computer with the OfficeServ 7100 to use the SMDR data provided by the OfficeServ 7100 system.

- The SMDR printer can display call history received from the OfficeServ 7100, however does not display data other than the call history(i.e., toll data).
- The SMDR computer displays call history received from the OfficeServ 7100 and calculates toll using the SMDR software based on the call history. Accordingly, the SMDR computer allows the users to use data more efficiently than the SMDR printer.

2.6.7 CTI

The Computer Telephony Integration(CTI) is the integrated system of computer and telephony. That is, the CTI interworks computers with PBXs so that the computers make use of the PBXs as computer resources and the PBXs share the computer resources.
The CTI provides the operator with convenience and reduced costs and the customers with enhanced services and reduced call processing time.

Particularly, the CTI call center system configures data on the customers into databases. Based on the databases, the call center can consult with the customers one to one.
The CTI integrates communication, computers, and database based on phones as a basic medium to allow the users to perform marketing using computers such as customer-focused telemarketing.

The OfficeServ 7100 supports the standard Telephony Application Programming Interface(TAPI), which is implemented in a client/server environment and controls third party calls.

CHAPTER 3. Specification of OfficeServ 7100

This chapter describes the capacity of the OfficeServ 7100, various signal specification, power specification, rings and tones, compatible boards and terminals, and equipment specifications.

3.1 System Capacity

Up to 1344 lines can be installed and operated in the OfficeServ 7100 system, and the line ratio of the station and trunk line can be adjusted within the capacity depending on the users' needs. Table 3.1 below shows the maximum line capacity of the OfficeServ 7100:

Table 3.1 OfficeServ 7100 System Capacity

System Configuration	Maximum Line Capacity
Cabinet	- Digital Trunk Line Channel: 60 - Analog Trunk Line Channel: 24 - station Port: 36 - VoIP Channel: 72(8(MP10/11) + 64(MGI64)) - H.323 Trunk Channel: 24 - SIP Trunk Channel: 24 - SPnet Trunk Channel : 64 - Samsung IP Phone Channel: 32 - WIP Phone Channel: 32 - SIP Phone Channel: 32 - ISDN Terminal Channel: 32 - Voice Mail Channel: 4 - DTMF Channel: 8 - CID Generation/Reception Channel: 8 channel - Conference Function: 5-person 6-group - 4SWM internal power: 4

3.1.1 Trunk Line Capacity

The maximum trunk line capacity of the OfficeServ 7100 based on its configuration is shown in the table below:

Table 3.2 Trunk Line Capacity

System Configuration	Analogue	Digital
	LOOP TRK	PRI TRK
Basic cabinet	24	T1: 48 E1: 60

3.1.2 Station (Subscriber) Line Capacity

The maximum station line capacity for regular phones and digital phones in the OfficeServ 7100 based on its configuration is shown in the table below:

Table 3.3 Station Line Capacity

System Configuration	Regular Phones	Digital Phones
Basic cabinet	36	24

3.1.3 Number of Channels

The number of channels of each slot of OfficeServ 7100 and the number of CID receivers and DTMF receivers are as follows:

Table 3.4 Channels by Slots

Category	Slot	Number of Channels
Basic cabinet	Slot 1 and 2	64
CID generation/receiver	Embedded MP10/11	8
DTMF receiver	Embedded MP10/11	8

3.2 Electrical Specification

3.2.1 Signal Specification

The signal processing protocol means the methods for connecting signals between the trunk lines, stations and system, and also means the method of providing the status information.

3.2.1.1 Trunk Line Signaling

Loop Start

In processing loop start signals, the on-hook and the off-hook statuses are controlled by the flow of electric current. The loop is a closed loop trunk circuit or a standard 2500-type set loop.

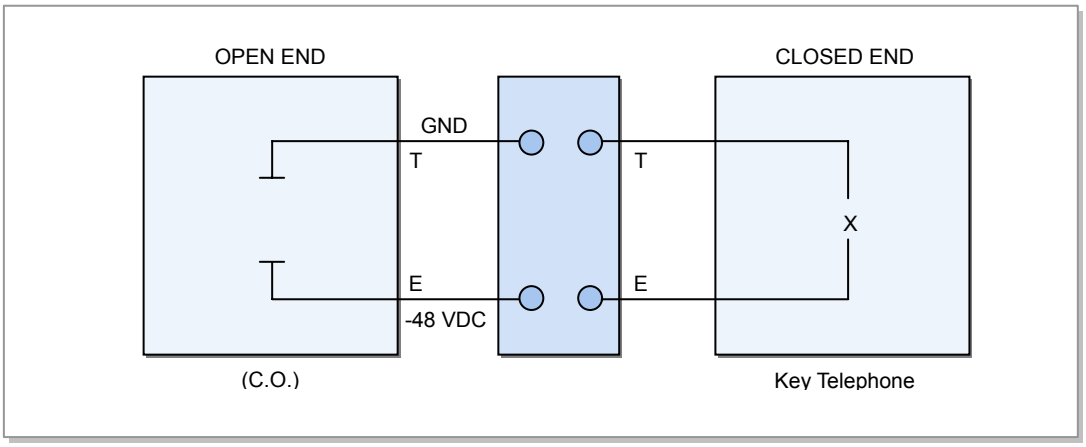

Figure 3.1 Trunk Line Loop Start Signaling

T1 Trunk Line : no support

- The electrical characteristics of the T1 trunk line comply with the ITU G.703 and G.704 standards.

Table 3.5 Electrical Characteristics of the T1 Trunk Line

Categories		Specifications
Transmission speed		1544 kbit/s ±50 ppm
Code		AMI or B8ZS
Pulse type		Regular square wave: When indicating all valid signals, comply with the mask(G.703) regardless of the codes.
Transmission media		A pair of twisted lines
Load resistance		100 Ω
Indicated(pulse) nominal peak voltage		3.00 V
Signal Level	Power at the frequency of 772 kHz	±12~±19 dBm
	Power at the frequency of 1544 kHz	25 dB or higher when the power is less than the power at the frequency of 772 kHz

- The signaling specification and the signaling method of the T1 trunk line should comply with the ITU G.703 and G.704 standards.

E1 Trunk Line : no support

- The electrical characteristics of the E1 trunk line comply with the ITU G.703 and the G.704 standards.

Table 3.6 Electrical Characteristics of the E1 Trunk Line

Categories	Specifications
Transmission speed	2048 kbit/s ±50 ppm
Code	High Density Bipolar of Order 3(HDB3)
Pulse type	Regular square wave: When indicating all valid signals, comply with the mask(G.703) regardless of the codes.
Nominal and pulse	244 ns
Jitter of the I/O terminal	Refer to the G.823
Transmission media	A pair of twisted lines
Load resistance	120 Ω
Indicated(pulse) nominal peak voltage	3.00 V
Blank(non-pulse) peak voltage	0 ±0.300 V

- The signaling specification and the signaling method of the E1 trunk line comply with the ITU G.703 and G.704 standards E1.

Characteristics of the ISDN Interface Transmission

- The electrical characteristics of the ISDN(PRI) interface comply with the ITU I.431 and ETS 300 011 standards

Table 3.7 Electrical Characteristics of the PRI Trunk Line

Categories	Specifications
Transmission speed	2048 kbits/s ±50 ppm
Code	High Density Bipolar of Order 3(HDB3)
Pulse type	Regular square wave: When indicating all valid signals, comply with the mask(I.403) regardless of the codes.
Nominal and pulse	244 ns
Transmission media	A pair of twisted lines
Load resistance	120 Ω
Indicated(pulse) nominal peak voltage	3.00 V
Blank(non-pulse) peak voltage	0 ±0.300 V

- The electrical characteristics of the Digital Line Interface(DLI) are shown in the table below:

Table 3.8 Electrical Characteristics of the DLI Line

Categories	Specifications
Transmission speed	384 kbits/s
Code	Alternate Mark Inversion(AMI)
Pulse type	Typical AMI Waveform

3.2.1.2. LAN Signaling

- The electrical characteristics of the 100 Base-Tx, which comply with the IEEE802.3u standards, are shown in the table below:

Table 3.9 Electrical Characteristics of the LAN Interface (100 Base-Tx)

Categories	Specifications
Transmission speed	100 Mbps
Transmission code	4B/5B+MLT-3 - 4-bit/5-bit converts the data of 4bit into the data of 5bit and encodes the data on the physical layer. Multi Level Transmission-3(MLT-3) encodes transmission data into 3 levels(high, middle, and low).
Access control type	CSMA/CD
Transmission media	UTP CAT5, STP
Number of UTP pairs	2 pairs
Characteristic resistance	100 Ω
Cable thickness	Diameter: 0.51 mm(24 AWG), External diameter: 6 mm

NOTE

Mode Band

The mode band shown in the previous table is a quality indicator of the multimode optical fiber related to the transmission speed. Its unit is generally MHz.Km, and is proportional to the value of the bit rate of the optical signal(the on-off speed) X the maximum transmission distance. The largeness of this value means the high optical signal with high bit rate can be transmitted. Each mode band is standardized also in the use of short wave and long wave laser.

NOTE

Categories of UTP Cable

UTP Cables are classified into Straight-through UTP cable and Crossover UTP cable. The Straight-through UTP cable is used for connecting the LIM module of OfficeServ 7100 system to other modules (MGI).
The Crossover UTP cable is used for connecting only LIM module to LIM module.

3.2.1.3 Station Signaling

Dial Pulse Signaling

- Ratio-10 Pulse Per Second(PPS)
- Make/Break Ratio(M/B ratio)-33 %: 66 %(It can be adjusted by the software.)
- The minimum signaling time between digits-20 msec(It can be adjusted by the software.)
- 4TRM Module board is only support DTMF dialing, but not supports for Dial Pulse dialing. 8TRK Cards is support DTMF and Dial Pulse dialing.

DTMF Push Button Dialing

The DTMF signal processing complies with the ITU standard, which enables the user to send/receive the signals of digital phones through the trunk line and to process the signals of regular phones.

3.2.2 Transmission Characteristics

- Attenuation
  - Attenuation between subscribers: Less than 6 dB
  - Attenuation between the subscriber and local trunk line: Less than 0.5 dB
- Characteristic resistance of the line: 600 Ω
- Weighted noise: Less than -65 dBm
- Crosstalk attenuation: Less than -68 dBm
- Frequency band: 300~3400 Hz
- Insulation resistance: More than 1 MΩ

3.2.3 Line Conditions

- Length for installation:
  - Regular phones: Up to 1 km(When the AWG #24 cable is used)
  - Digital phones: Up to 400 m(When the AWG #24 cable is used)
  - Door phones: Up to 400m(When the AWG #24 cable is used)
  - AOMs: Up to 400m(When the AWG #24 cable is used)
  - Length between 4WLI and to Combo AP: Up to 600 m(When the AWG #24 cable is used)
- Leakage resistance between lines: More than 20 KΩ
- Leakage resistance between grounds: More than 20 KΩ

3.3 Power Specification

3.3.1 OfficeServ 7100 System Power

OfficeServ 7100 operates by AC input power or battery power and supplies the system cabinet with the backup power of -54 V, -5 V, +5 V, +3.3 V, +12 V, or -54 V(Battery).

Table 3.10 I/O Voltage of PSU

Power Supply Devices		Specifications
Power Supply Board(PSU)	Input power	AC 230V
	Input power	- DC -54 V, 1.1 A - DC +5 V, 5 A - DC -5 V, 0.3 A - DC +3.3 V, 5 A - DC +12 V, 0.4 A - DC -54 V, 0.25 A(for backup)

3.4 Rings and Tones

3.4.1 Ring Cycles

The OfficeServ 7100 provides the trunk line rings, station rings, door rings, and alarm rings. The ON/OFF cycle of each ring is shown in the table below:

Table 3.11 System Ring Cycles

Rings	ON/OFF Cycles
Trunk line ring	1000/3000 ms
Station ring	400/200/400/3000 ms
Door ring	400/200/400/200/400/2000 ms
Alarm ring	400/200/400/200/400/200/400/1000 ms


NOTE

Ring ON/OFF Cycle

The ON/OFF cycle can be adjusted by changing the values of the system database

3.4.2 Tones

The output voltage and the frequency of the ring signals in the OfficeServ 7100 are as follows:

- Output voltage: 75 V
- Frequency: 20 Hz

The OfficeServ 7100 provides the users with various tones to notify the users of the status of functional operation and give feedback to the users. The ON/OFF cycles of currently specified tones are shown in the table below:

Table 3.12 Cycles of the System Tones

Tones	ON/OFF Cycles
Dial tone	1000/250 ms
Busy Tone	500/500 ms
Do Not Disturb tone	250/250 ms
Ring Back tone	1000/2000 ms
Call Park tone	Continuous
Confirmation/Caution/Barge-In tone	50/50 ms
Call Back/Hold tone	500/3500 ms
Ring Back tone	1000/2000 ms
Error/Number Unobtainable tone	250/250 ms
Message Camp On tone	Continuous

3.5 Available Terminals

The terminals available to the OfficeServ 7100 are shown in the table below:

Table 3.13 OfficeServ 7100 Compatible Terminals

Types	Terminals
DS-5000 series digital phones	DS5038S/5021D/5014D/5007S/5000S/5064B
ITP-5100 series IP phones	ITP-5121D/5114D/5107S
Wireless LAN devices(WLAN)	WIP-5000M(Mobile Station), WBS24(Access Point Device)
iDCS Series	iDCS28D/18D/14D/64D
Others	DPIM, door phone

Compatible Terminals

All the compatible terminals of the iDCS 500 Premium system are available to the OfficeServ 7100. Since the compatible terminals can be changed depending on system settings, contact the system administrator.

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CHAPTER 4. Functions of OfficeServ 7100

This chapter describes the functions of the OfficeServ 7100 related to calls, VoIP, data, UMS, and web/system management

4.1 Call Functions

The OfficeServ 7100 processes station calls, trunk line calls, application calls, or various signals through the PSTN and VoIP networking.

4.1.1 Dynamic IP Address Allocation

MGI16/MGI64 Configuration

The MGI mounted in the OfficeServ 7100 can be operated by receiving the dynamically allocated IP address from the data server rather than manually setting the IP address.

IP Phone Configuration

The IP phones or Session Initiation Protocol(SIP) phones registered to the OfficeServ 7100 also can be operated by rather receiving the dynamically allocated IP address from the data server than manually setting the IP address.

4.1.2 VM Function

Auto Attendant/Voice Mail

OfficeServ 7100 provides the auto attendant function and the voice mail function by using embedded MGI for the Voice mail service.

4.1.3 Router ALG Interworking

NAT Application Level Gateway (ALG)

When various functions such as the VoIP signal process function and gateway function executed through the IP network in the OfficeServ 7100 are executed in the Network Address Translation(NAT) network, the conversion between the private IP address and public IP address may be required. In this case, the call module and the data module interwork each other, share the information converted between the private IP and public IP and automatically convert addresses for the smooth service. This function is only provided to the OfficeServ 7100 MP11.

VPN ALG

When various functions such as the VoIP signal process function and gateway function executed through the IP network in the OfficeServ 7100 are executed in the Virtual Private Network(VPN), the system should be set to prevent the packet blocking during the IP address conversion due to the tunneling. In this case, the call module and data module interwork each other and share the tunneling conversion information for smooth services. This function is only provided to the OfficeServ 7100 MP11.

4.2 VoIP Function

The VoIP function indicates the smooth signal processing gateway function between the existing phone and SIP standard device based on the standard SIP protocol.

4.2.1 VoIP Network

To communicate with another system through the VoIP networking, the MGI/MGI64I board should be installed in OfficeServ 7100. The VoIP networking function is corresponding to the PRI/Q-SIG networking function.

4.2.2 VoIP Trunk Line Interface

The OfficeServ 7100 provides the VoIP trunk line interface(H.323/SIP). The OfficeServ 7100 controls calls, and individual MGI/MGI64 board connects speech path.

4.2.3 SIP Server Interworking

Telephone Registration

This function enables to register phones connected to Office 7100 to the external SIP server and perform the call processing service with the external standard SIP terminal. OfficeServ supports the registration in two ways: registration of OfficeServ 7100 general directory number and individual registration to register each station connected to OfficeServ.

Basic Call Processing

This function enables to register the phones connected to OfficeServ 7100 to an external SIP server and provides standard SIP terminal and trunk line call service.

Additional Call Processing

OfficeServ 7100 provides the following additional services concerned with the trunk line call service via the phones registered to an external SIP server.

- Hold/Resume
- Consultation Call
- Consultation Transfer
- Blind Transfer
- Call Forward

4.3 Data Functions

The OfficeServ 7100 functions as routers, switches, performs security function, or serves as data network applications or data access interfaces(WAN, LAN, DMZ).

4.3.1 Switches

802.1p Packet Priority

The switch extracts the priority field from the Ethernet frame configured according to the 802.1p specification standard, and discriminatively processes the frame according to the priority of the specified operation standard.
The packets are categorized into emergent packets and non-emergent packet and are processed.

VLAN (802.1Q)

The Virtual Local Area Network(VLAN) groups the related equipment in the work group units according to the LAN operational policy regardless of the location of the user equipment. The VLAN also processes switching for the work groups. The VLAN removes the effects of unnecessary broadcasting packet and configures the stable switching subnet only for the corresponding group by separating and processing the group in the virtual LAN. Accordingly, the switch can provide the differentiated QoS services and the VLAN can be configured based on the switch port and MAC address.

PoE (IEEE 802.3af) Function Supported

Power over Ethernet(PoE) is designed so that no additional power supply to the network equipments used in wireless AP or other wired LAN is necessary. PoE allows the user to send the data and the power simultaneously via one Ethernet cable, which reduces the installation cost in most cases as well as provides the high flexibility in selecting the installation site of the wireless AP and the network equipments.

QoS Function Supported

OfficeServ 7100 provides the function of 802.1p Packet Priority and Level Classification Setup for supporting the Quality of Service(QoS). The 802.1p Packet Priority is the expansion of the standard MAC header in the network packet. This expansion provides the packets with priority by using 3-bit. The packet of the higher priority is treated preferentially and is processed ahead than the packet of the lower priority. The Level Classification Setup function gives the packets the levels of High/Low and processes them according to their levels, which makes the differential services possible.

4.3.2 Router Functions

Static Routing

The OfficeServ 7100 configures the fixed routing table between each network interface to process the static routing. In this case, the routing table cannot be dynamically changed by the routing protocol, and specific routing services will be provided according to the pre-set routing policy.

WAN Interface (Ethernet, PPPoE, DHCP Client)

E0, E1, E2 Ethernet WAN Interface enables the connection to internet by using the Static IP, PPPoE, DHCP client protocol.

Routing Protocol

The OfficeServ 7100 supports the routing information-exchanging protocol to react on the network environmental change and to effectively process the routing.

- Routing Information Protocol version1(RIPv1) and RIPv2
  These protocols are widely used for managing the routing information in the mid-small sized independent network such as a group of LANs.
- Open Shortest Path First version2(OSPFv2)
  This routing protocol is used prior to the RIP in the large-size independent network. A router detects and reports any change in the routing table or the network to other routers. In this way, all routers share the same routing information.

Multicast Routing

- Internet Group Management Protocol(IGMP)
  Internet Group Management Protocol(IGMP) is a protocol that manages the multicast group operating at one Ethernet segment. It controls the segment so that a user can subscribe or secede as a member of the specific multicast group.
- Distance Vector Multicast Routing Protocol(DVMRP)
  Distance Vector Multicast Routing Protocol(DVMRP) is a protocol for supporting the transmission of the multicast data in a network. This protocol sends the multicast data in a format of unicast packet, and the packets are reassembled into multicast data at the destination. DVMRP can be operated in various formats of networks including Ethernet, and even can be operated via the routers that the multicast is not supported with.
- Protocol Independent Multicast-Sparse Mode(PIM-SM)
  PIM-SM is designed in order to route multicast packets into multicast groups and in order to construct the allocation tree efficiently at WAN, by which is optimized in the environment where the data stream occur in many places.

Routing between VLAN Groups

The communication between the VLAN groups through the routing is possible.

HTBQ/ Bandwidth on Demand (BoD)

The queuing process is differentially performed according to the level table where the routing process priority for a data server is defined.

RTP Priority

The RTP(Real-Time Transport Protocol) packet is a VoIP media packet. The queuing process for the RTP packet is prior to that for other data pack, which helps to maintain the tone quality. This function is useful when using the VoIP function in the network where the VoIP packet that should be processed in real time and other packets for the general office work are mixed processed.

IP-ToS Process

This function checks the ToS(Type of Service) field of the IP header and processes it according to priority of the corresponding routing in the data server. This function reproduces the ToS field flowing into the data server, performs the routing process first of all, and heightens the process priority in the next HOP.

4.3.3 Security

NA T/PT (In/Out/Exclusive/Redirect)

The security function supports the conversion function between the private IP address and public IP address in the network where security is required.
The Inbound, Outbound, Exclusive, and Redirect functions are supported.

- In bound: This function performs the forwarding process for the packet coming from the WAN to the IP and port of the LAN specified in the NAT/PT conversion table.
- Outbound: This function converts the IP address of the transmitter into the global IP address according to the NAT/PT conversion table for transmitting the packet from the LAN to the WAN.
  - Exclusive: This function is used for the IP address that is not applied by the NAT/PT conversion.
  - Redirect: When the Domain Name Server(DNS) server IP in the data server management sector is changed, each IP terminal uses the pre-DNS IP and the this function changes the DNS IP by registering the post-DNS IP into the Redirect table

Firewall

- Access filtering
  This function prevents the access to disallowed IP address to control the access for the resource non-disclosed to the outside and to control the external resource for which the membership in the LAN may access.
- DMZ function
  This function is used for connecting the web server and mail server, which are firewall-protected LAN networks but need to be freely accessed from the outside, to the subnet separated from the LAN network where the firewall blocking is not applied. In this way, the access from the outside can be more smoothly with the access control service through the firewall.
- Port Forwarding
  This function is almost the same as the DMZ function but is used for connecting to specific network without the separately divided DMZ port. This function is used for the Extra network services as well as the DMZ function. The Extra network is configured for the party out of the office to access Intranet in the office through Internet. In this network, the user should take care of security on Intranet.

Intrusion Detection System (IDS)

This function monitors the packets on the network and detects the packets, which can damage the network operation, making the network more stably operate. The IDS is divided into various types from a detection type where a specific-type attack is detected to the abnormal traffic detecting type, which are based on the Snort Rule(www.snort.org) defining the intrusion pattern and types. The detected packets are sorted and processed into Close connection/port or service disable/Alarm/log based on the intrusion pattern and the level and processed. In the case of the alarm, The system will notify to the system administrator immediately.

Virtual Private Network (VPN)

- VPN function
  The system provides the private network function by using the Internet that is an open network based on the. The OfficeServ 7100 provides the VPN gateway function based on the IPSecurity(IPSec), which is useful to build the enterprise network with reduced cost and enforced security by using the public network such as Internet rather than the dedicated network.
- VPN Tunnel Mode
  This mode processes the VPN function by configuring the tunnel between the VPN gateway and the gateway in each data module of the OfficeServ 7100. Up to 100 VPN channels are available for one VPN.
- PPTP

  PPTP is a tunneling protocol for using the IP-based network. PPP encapsulates the data by wrapping the data with PPP header. PPTP is a protocol that reconfigures the packets by adding Generic Routing Encapsulation(GRE) header and IP header to this so that the packets can be transmitted via IP inter network.
- L2TP
  L2TP is a protocol that combines PPTP and Layer 2 Forwarding(L2F), which collects the strong points of PPTP and L2F. That is, it encapsulates a user PPP frame, which is a Layer 2 frame, in an additional message called L2TP and then transmits it to the device connected to the public network such as IP, X.25, frame relay, or Asynchronous Transmission Mode(ATM).

4.3.4 Data Applications Functions

DHCP

The OfficeServ 7100 can assign the IP address by operating the DHCP. When using the DHCP server in another subnet, the OfficeServ 7100 supports the DHCP relay function. The IP address of the IP equipment connected to the OfficeServ 7100 is can be easily managed.

SIP Aware ALG (SIP Application Gateway)

This function is used for re-creating packets for the smooth communication by checking the SIP signal process packets according to the NAT/PT table in the data server.
When using the data server of the OfficeServ 7100, the SIP equipment can operate regardless of the packet blocking cased by the firewall or the MAT/PT conversion.

Outside ALG Interface

This function enables the outside application to retrieve or control the information such as the NAT/PT conversion information, firewall blocking information, and the VPN tunnel information processed in the data server. This function supports the control packets, which are used for H.323, VoIP networking, and IP telephone operating in the Call server, to be smoothly serviced without any blocking.

System Management Interface

This function allows the administrator to report and manage the alarm, event, traffic, and logging information including the IDS information of the data server into the system administrator package through the TCP/UDP. Whether to report can be optionally specified based on the management data type.

Management Function (Web/CLI/SNMP/RMON)

- CLI: This function is used for configuring the data server function by using the CLI(Command Line Interface) on the Telnet.
- Web: The user can configure and view the operation of the data server functional block by using the web browser.
- SNMP : SNMP agent collects and stores the device information according to the specification(MIB) installed and determined at each network devices. The SNMP manager existing at the place separated from the agent manages the overall network by collecting the information on SNMP gent distributed at the network.

4.4 Voice Mail Function

The OfficeServ 7100 provides auto answering, voice message, and e-mail transfer by using built-in MGI without additional device.

4.4.1 System Features

Caller ID Compatible

Caller ID Compatible If you subscribe to Central Office based Caller ID, the OS7100 Voice Mail is compatible. The Caller ID data appearing on keysets is also saved in your voice mail box for each message you receive. This can be used for call back or simply to identify the caller.

Flexible Numbering Plan

An organization can assign an extension, a mailbox, or an announcement to any identification number from one to ten digits. All of these resources can share the same identification numbering plan without conflict. For example, an organization can have, in one OS7100 Voice Mail system, an extension numbered 123, a mailbox numbered 123 and an announcement numbered 123. In addition, the OS7100 Voice Mail can distinguish between variable length identification numbers beginning with the same digit, such as extension number 1, or 12, or 1234567890.

Individually Defined Mailboxes and Extensions

Extensions and Mailboxes are separate and independent system resources. A mailbox does not have to be defined in terms of an extension, or an extension in terms of a mailbox, in order for the OS7100 Voice Mail to associate them. An Extension is used for routing callers to the Subscriber. This gives the Subscriber complete control (if authorized) over how, where and when they take their calls. A Mailbox is simply used for taking and controlling messages for the subscriber in the event he/she can not (or do not wish to) speak to their callers.

Keyset Display and Soft Key Support

If you have a display keyset the number of new messages will be displayed on it. The display will also echo many of the options available. You will be able to negotiate through the OS7100 Voice Mail menus using the keyset display and the soft keys below the display to respond to the prompts.

MOH Supply

Music or announcements may be recorded in the OS7100 Voice Mail memory and used by the phone system for Music On Hold. The recorded announcement or music will play in a continuous loop and may be used to provide custom on hold announcements or promotional messages.

Multiple Mailbox Support

The OS7100 Voice Mail can, in principle, support up to 1000 mailboxes, although

obviously having only the 4 or 8 port hardware places practical limits on the system according to the individual system traffic, and type of application.

Operating Mode-Oriented Call Processing

The OS7100 Voice Mail can be configured to automatically change between up to 99 different customer operating modes, based upon the time of day, day of week, or specific calendar date. During an operating mode, every aspect of the call automation application, including port utilization; caller scripts; routing solutions; and call coverage options can be customized to meet the organization's operating requirements. OS7100 Voice Mail' Schedule Table automatically changes to the correct mode without human involvement.

Operating Mode Override

Under exceptional circumstances, such as adverse weather conditions or other organizational emergencies when the office may be inaccessible, the administrator can override the Schedule Table. The administrator calls the OS7100 Voice Mail, enters the administrative password, and selects a new operating mode for any or all ports. The new operating mode can be programmed for the circumstances, or the administrator can simply record a new company greeting which explains the circumstances to callers.

Recordable System Prompts

Although the OS7100 Voice Mail contains all the spoken prompts to provide an operational system, some people may want to add or record some additional prompts. This can easily be done using the built in voice studio. Any prompt in the system can be re recorded.

Schedule Table

The schedule table automatically controls system mode by individual ports, time of day, day of week and calendar date without human intervention. It is capable of scheduling ninety-nine mode changes per day for 366 consecutive days. The administrator can manually override the schedule table at any time from a touchtone telephone, the system console, or from an administration terminal. For Holidays and Calendar of Events, the Schedule Table can be used to schedule holiday and special event caller prompts to better inform and serve callers.

Synchronized Clock

The OS7100 Voice Mail clock is responsible for providing each message with a date and time stamp. This clock is always synchronized with the phone system, as is changing between day and night modes.

4.4.2 Auto Attendant

Alphabetic Directory (Multiple)

Callers who do not know an extension number in the system but do know a name, may enter the first few letters of the person's name and be transferred. This system may even be used internally if an extension number is not known. The OS7100 Voice Mail allows for over 1000 unique directory systems, each one can search on either the first or last name.

Auto Attendant Routing

The Auto Attendant can transfer or route callers based on the digits they enter. Callers may be transferred to station, groups or the system directory to select a subscriber based on their name.

Automatic After Hours Answering

The Main Auto Attendant greeting for the OS7100 Voice Mail changes from the day to the night greeting automatically when the phone system changes from day to night mode. Multiple additional modes may be defined for special applications.

Announce Hold Position

If callers are allowed to hold for a busy extension, the OS7100 Voice Mail is able to intermittently inform the caller of their place in the queue.

Announce Hold Time

If callers are allowed to hold for a busy extension, the OS7100 Voice Mail is able to intermittently inform the caller of the estimated hold time before being answered.

Camp On Support

Each station user on the system may decide if they want the OS7100 Voice Mail to transfer additional calls to them if they are on the phone. Calls transferred to a busy station, if unanswered will be sent to voice mail or any other destination according to the user's needs.

Direct to Mailbox

You may have mailboxes on the OS7100 Voice Mail system that do not have associated stations. This is ideal if you have a small number of employees in your office but numerous employees outside the office that need to keep in contact.

Holidays and Special Events

When your business closes because of a holiday or special event the OS7100 Voice Mail can provide a special appropriate prompting to your callers. You may create specific holiday schedules so that this process becomes automatic.

Incoming Call Overflow

The OS7100 Voice Mail may be programmed to answer any or all lines immediately or answer only the calls that your operator does not pick up. Overflowed calls may be routed to either a mailbox or the main company prompt.

Interruptible Voice Prompts

At any time during an announcement or greeting, callers may dial a selection and the OS7100 Voice Mail will immediately respond. It is not necessary to listen to all the options if you are a 'power user' and know what you are doing.

Multiple Call Handling

The OS7100 Voice Mail Module can answer and process up to 4 calls simultaneously.

Operator Access

Callers may connect with an available operator any time by dialing 0. This is provided that the customer has someone answering the Operator's calls.

Single Digit Call Routing

A menu processor can be configured to recognize single digit routing options, or use the same digit as the leading entry of a multi-digit routing option. For example, in the menu processor, "1" can be used to route a caller to the sales department and "103" to transfer the caller to a subscriber's extension.

4.4.3 Access Manager

The Access Manager empowers the Subscriber with control over how, what, when, and where they wish to speak to their callers. The Subscriber may prevent calls from ringing at their extension, or have the calls transferred to any other extension in the phone system, transferred off-site to any other phone number, or screen the call before answering them. Any of these conditions can be set to be active until a specified time. The OS7100 Voice Mail can even be set with a high priority 'Find Me' instruction that will try to reach the subscriber at multiple locations.

Blocked Personal Greeting

This greeting is played to the caller anytime the subscriber enables the Call Blocking feature in the OS7100 Voice Mail or sets their keyset to Call Forward All/DND.

Busy Personal Greeting

This greeting is played to the caller anytime the subscriber is on the phone and they have their keyset set to Call Forward Busy or Call Forward Busy/No-Answer.

Call Blocking

While a subscriber has call blocking set active, the OS7100 Voice Mail does not attempt to transfer a caller to the subscriber's extension. Instead, it immediately plays the subscriber's Call Blocking Greeting - ifrecorded. If the Call Blocking Greeting is not recorded, OS7100 Voice Mail plays the subscriber's Primary No-Answer Greeting - if recorded. When that greeting is not recorded, OS7100 Voice Mail advises the caller that the called party is not available and offers to the caller additional options. A subscriber sets Call Blocking active through Access Manager Services.

After activating Call Blocking, the subscriber is prompted to indicate how long blocking is to remain active. This feature can be activated for a number of hours, 1 to 9, for the end of the current business day, for the beginning of the next business day, for a day of the coming week, for Monday through Sunday, for a specific date, for hour and minute, or until further notice.

Call Forwarding

Forward All Calls allows a subscriber to have their incoming calls answered by an

associate at another internal extension - it is not used to forward calls to an external telephone number. To have calls connected an external number, the subscriber use the Designated Location Service.
When calls are forwarded to another associate's extension, a caller entering the forwarder's extension number will immediately hear…"Transferring to 'Called Party's Name'. Calls are being forwarded to 'Associate's Name'". If the associate answers the call, the associate will be prompted as to who the call is forwarded from. This feature can be activated for a number of hours, 1 to 9, for the end of the current business day, for the beginning of the next business day, for a day of the coming week, for Monday through Sunday, for a specific date, for hour and minute, or until further notice.

Day / Night Personal Greeting

The Night Personal Greeting works in conjunction with the subscriber's Weekly Availability Schedule. During the defined availability period the OS7100 Voice Mail will automatically play the Primary No-Answer Greeting to callers, unless the subscriber is busy on another call and has recorded a Busy Greeting or Call Blocking is set active, and a Call Blocking Greeting is recorded.
During the time periods a subscriber is not scheduled available to take calls, and does not have Call Blocking activated, OS7100 Voice Mail plays the subscriber's Night Greeting If recorded.

Find Me

When Find Me is set active, the OS7100 Voice Mail attempts to deliver calls to the subscriber's designated location, provided neither Call Blocking, nor Forward All Call, is active. The OS7100 Voice Mail first tries to locate the subscriber at the subscriber's designated location. Then, if necessary, it tries each of the subscriber's Stored Telephone Numbers until all numbers have been called. After each stored telephone number, the OS7100 Voice Mail will prompt the caller that it is continuing to locate the subscriber. If OS7100 Voice Mail cannot locate the subscriber, the subscriber's Call Blocking Greeting is played to the caller. This feature can be activated for a number of hours, 1 to 9, for the end of the current business day, for the beginning of the next business day, for a day of the coming week, for Monday through Sunday, for a specific date, for hour and minute, or until further notice. Calls transferred to a designated location are automatically a confirmed transfer. The subscriber must press a digit to accept the transfer or they can press other digits to, 'Reject', 'Redirect', or record a real time greeting that plays immediately to that caller.

Follow Me (Off Premises Transfer)

Each subscriber may have their calls automatically forwarded to a designated location. We call that location, the subscriber's Designated Location. A Designated Location can be an internal extension or an external telephone number. It can be entered digit-by-digit or the subscriber can enter a Stored Telephone Number Index Digit representing the location of the appropriate number.
Whenever a subscriber sets his designated location to a number other than his extension number, OS7100 Voice Mail prompts, "How long do you want this number to be your

designated location?" This feature can be activated for a number of hours, 1 to 9, for the end of the current business day, for the beginning of the next business day, for a day of the coming week, for Monday through Sunday, for a specific date, hour and minute, or until further notice. Calls transferred to a designated location are automatically a confirmed transfer. The subscriber must press a digit to accept the transfer or they can press other digits to, 'Reject', 'Redirect', or record a real time greeting that plays immediately to that caller.

Hold for Busy Station

The OS7100 Voice Mail may be enabled to allow callers to hold for a busy station. When a caller elects to hold, the OS7100 Voice Mail places the caller in a Hold Queue. If additional callers attempt to reach the busy extension and they choose to hold, they can be informed of their position in the queue and the estimated hold time before being connected. Callers given the option to hold may be limited to insure that system ports are not monopolized. When the limit is reached, callers can be routed to other extensions or applications that have been configured to deal with this condition.

Multiple Personal Greetings (9)

When a subscriber does not answer and accept a call, the OS7100 Voice Mail will answer. OS7100 Voice Mail recognizes five different reasons why a subscriber does not answer a call. We refer to these reasons as 'Call Coverage Conditions'. OS7100 Voice Mail allows a subscriber to assign a different personal greeting to each Call Coverage Condition. A condition should be considered a "socket" into which a personal greeting is plugged. The greeting that gets plugged into each "socket" should offer caller options appropriate for that condition. OS7100 Voice Mail provides each subscriber nine (9) personal greetings, labeled 1 through 9. A subscriber can assign (plug in) any greeting to any Call Coverage Condition. However, when a subscriber first logs on to the OS7100 Voice Mail, personal greetings numbered 1, 2, 3, 4, and 5, are assigned to their respective Call Coverage Conditions (No Answer, Busy, Fwd All/DND, Night and Call Screening). The remaining four personal greetings, labeled 6 through 9 are normally used as alternatives to the greetings assigned to these conditions.

Night Intercept

This feature is used in conjunction with the subscriber's availability schedule. When enabled and the Subscriber is scheduled as unavailable, callers are NOT transferred to the subscriber's extension. Instead, the OS7100 Voice Mail immediately plays the subscriber's Night Greeting if recorded.

Night Personal Greeting

This greeting plays to the caller anytime the subscriber is scheduled as unavailable based on the availability schedule. If the subscriber is scheduled unavailable the caller will here the Night Greeting during a No-Answer Call condition or if Night Intercept is enabled.

Park and Overhead Page

For those users who are frequently away from their desk, the OS7100 Voice Mail provides

a Park and Page capability. When a subscriber does not answer a call, the subscriber's personal greeting can contain an option to be paged. When the caller elects to have the subscriber paged, the OS7100 Voice Mail parks the call and plays a prompt through the overhead paging facility that contains the subscriber's name and a pickup code. The OS7100 Voice Mail waits a programmable period of time for the subscriber to pick-up the call. When the call is not picked up, the OS7100 Voice Mail notifies the caller that the page was not answered and plays the subscriber's Primary or No-Answer greeting.

Personal Customized Options

Each subscriber may have different personal options played to the caller. For example, the caller may wait while the subscriber is paged or the caller may hold until the subscriber is available to take the call. These options must be enabled by the system administrator.

Retrieve Public Caller From Hold

When a subscriber logs on they are notified if a caller is holding, and the OS7100 Voice Mail offers to transfer the caller to the subscriber's designated location. If the caller is identified OS7100 Voice Mail will speak the caller's name. When the subscriber elects to speak with the caller, he simply presses 1 and hangs up. If the subscriber elects not to speak with the caller, OS7100 Voice Mail immediately plays the subscriber's mailbox greeting.

Screened Rejected Personal Greeting

This greeting plays to the caller anytime a subscriber rejects a screened transferred call from the OS7100 Voice Mail. The system administrator can authorize the Call Screening feature per subscriber. Call Screening must be authorized to have a Call Screening Greeting.

Stored Telephone Numbers

A subscriber can store up to five telephone numbers where they can usually be reached, this simplifies the follow me feature as it allows the subscriber to quickly activate commonly used settings.

Weekly Availability Schedule

The Weekly Availability Schedule tells OS7100 Voice Mail the days of the week, and the hours of the day, that a subscriber is normally available to take calls. When the subscriber does not answer a call during those time periods, the appropriate Day or Night greeting is played. This schedule may be set by the Administrator or the Subscriber.

4.4.4 Voice Mail Features

Answer Machine Emulation

This feature allows you to monitor calls being left in your voice mail box through the speaker of your keyset. In function it is very much like screening a call on your home answer machine.

Auto Conversation Record

With the OS7100 Voice Mail card installed in your phone system, you may record all the phone conversations for specific extensions. An optional tone with a programmable delay

may be played to alert callers and employees during the recording process. When calls are recorded, any mailbox settings that would normally effect maximum message duration are ignored.
Note: Call Record utilizes the conference feature. The number of people who can use the CR feature simultaneously, is limited to the number of available conference circuits in the system.
Warning: Before using this feature, make sure that you are not violating any state or federal laws. Some states require that the recorded party be notified. STA is not responsible for any illegal use of this feature.

Auto Forward

The Message Auto Forward allows messages left in one mailbox to be automatically forwarded to another mailbox if the message is not listened to. The delay time before the message is forwarded is programmable between 00:00 (immediately) and 23:59 (1 day).After the message is forwarded it may be deleted or saved in the original mailbox. The forwarded message, when accessed by the receiving subscriber, will play “this message was forwarded from ‘subscriber recorded name’”.

Auto Log In

When calling Voice Mail, the system can correctly identify you as the caller and ask for your password (optional).The benefit of this is that you do not have to identify yourself to the OS7100 Voice Mail, it knows who is calling and what mailbox you want to access.

Auto Message Play

Each subscriber may choose to select messages to play (new or old) or may configure their mailbox to automatically play new messages. This is useful if you are in a situation where keystrokes must be kept to a minimum.

Broadcast

If authorized a Subscriber can broadcast a message to everyone in the system. Any or all of the subscribers can be given this option. By default, no subscribers are authorized.

Call Back

When listening to your voice mail messages you may press one key to automatically call back the person who left you the message, this call back feature may be allowed for internal calls and / or external calls. Long distance may be either allowed or denied and specific area codes may be allowed or denied. For external calls, Caller ID is used and therefore must be received from the phone company.

Call Forward to Voice Mail

Any station on the phone system may be forwarded to the OS7100 Voice Mail voicemail. Forwarding types are Forward All Calls, Forward Only When Busy, Forward Only When No Answer, or Forward When either Busy or No Answer.

Call Record

With the OS7100 Voice Mail card installed in your phone system, you may record conversations in progress. Simply press a button to record the current conversation in your mailbox or any other mailbox. An optional tone with a programmable delay may be played to callers during the recording process. When calls are recorded, any mailbox settings that would normally effect maximum message duration are ignored.
Note: Call Record utilizes the conference feature. The number of people who can use the CR feature simultaneously, is limited to the number of available conference circuits in the system.
Warning: Before using this feature, make sure that you are not violating any state or federal laws. Some states require that the recorded party be notified. STA is not responsible for any illegal use of this feature.

Call Back Request Messages

Messages left by and for subscribers may be flagged as Call Back Requested. The caller can enter a specific number that will allow the subscriber to return the call by pressing one key.

Date and Time Stamp

Each message you receive will be stamped with the time and date of its arrival. This information may be played to the subscriber before each message or may be played only on demand. Each individual subscriber may set this option.

Delivery Imperative

When a message is designated as Delivery Imperative, the OS7100 Voice Mail will take extra steps to deliver it. The recipient's pager will be called and then each of his stored telephone numbers will be tried.

Direct Messaging / Quick Memo

This feature makes it easier to leave messages for others in the office. It allows the user to access mailboxes without dialing the extension number first. Easily leave a message for anyone that has a mailbox.

Distribution Lists

Lists of mailboxes may be set up and given a simple numeric identity. Subscribers may use these lists to easily leave or transfer messages into multiple mailboxes simultaneously. This list can include any number of subscriber mailboxes and other lists. OS7100 Voice Mail does not limit the number of lists that a subscriber can access. When a message is sent to a list, each mailbox on the list receives a copy. OS7100 Voice Mail' unique message management facilities make the process of distributing a copy to each mailbox on the list immediate, even for very large lists.

Extended Prompting

With Extended Prompting set active, OS7100 Voice Mail offers all prompts for the menu the subscriber has accessed. When Extended Prompting is not set active, OS7100 Voice Mail offers only the name of the menu the subscriber is accessing and the prompt… "For

additional options, press 0".

External Number Notification

When you have messages in your mailbox, you may be alerted at your cell phone, home phone or any other phone. The OS7100 Voice Mail will make 3 attempts to contact you. If it encounters a busy signal it will try again in 5 minutes, if it encounters a no answer it will try again in 15 minutes.

Future Delivery

When a subscriber leaves a Self Memo (Reminder), Direct Message (Quick Memo) or any other message for another subscriber, a future delivery date may be specified. This is particularly useful if you use the 'reminder' feature as a virtual 'to do' list. Delivery Scheduling options are: for a number of hours, 1 to 9, for the end of the current business day, based on the subscriber's current availability schedule, for the beginning of the next business day, also based on the subscriber's current availability schedule, for a day of the coming week, for Monday through Sunday or for a specific date, for hour and minute. Also for any message not yet delivered, a subscriber can review, modify and discard future delivery messages sent, but not yet delivered.

Group and Sort Messages Prior to Play

A subscriber can group for playback either new or saved messages. Grouping categories are, Urgent, Callback Request, Reminders, Fax Messages, Messages from a Specific Sender, or
Private Messages.

Individual Mailbox Greeting

Each mailbox has its own associated individual greeting recorded in the subscriber's (mailbox owner's) voice. This may be changed as frequently as you desire. This only gets played if another subscriber transfers a caller using the VT key or you do not have one of your call condition greetings recorded.

Individual Mailbox Name

Each mailbox has its own associated individual name recorded in the mailbox owner's voice.

Individual Mailbox Password

Each mailbox has its own associated individual password selected by the user or system administrator. This provides some security and prevents unauthorized access. The password may be up to 8 digits long.

Maximum Number of Messages

The maximum number of messages a mailbox will hold is 9,999.The maximum number of messages can be set for each mailbox.
Note: This is a software setting. Maximum number of messages is also influenced by the size of the storage media; either Compact Flash or Hard Drive size, number of subscribers,

maximum message length settings, and the length of the actual messages recorded and left on the system.

Message Address Verification

After entering the mailbox number to which a message is being sent, the OS7100 Voice Mail echoes the name of the recipient, confirming the message is going to the intended subscriber. The address verification is also played when the subscriber forwards an existing message.

Message Alert Notification Schedule

The Weekly Notification Schedule tells OS7100 Voice Mail the days of the week, and the hours of the day, that a subscriber wants to be notified of new messages at an alternate phone number. This Schedule may be set by the Administrator or the Subscriber. This schedule is independent from the Pager Notification Schedule.

Message Counter

Whenever you access your mailbox, you are told the number of new and old messages. You may selectively listen to the new or the old messages.

Message Delete

When a message has been heard, you may delete it.

Message Delivery Options

At anytime prior to sending a message, a subscriber can assign any or all of the following delivery options to a message, Urgent Priority, Return Receipt / Certified, Callback Request, Private or Reply Required.

Message Fast Forward

When listening to a message you may fast-forward 5 seconds. This is useful if you are looking for a specific piece of information like a phone number.

Message Forward With Append

Messages received in your mailbox may be forwarded to other mailboxes or lists on the system. A message may be forwarded to another subscriber, or distribution list by entering a destination mailbox. The subscriber may record an introductory comment if desired. The message header is modified to reflect the forwarding party and time. Forwarding multiple copies allows the subscriber to record introductions for each destination mailbox. Forwarded messages may be re-forwarded, with additional introductions, using the same procedure.

Message Pause

At any time while listening to your voice mail messages, you can pause the playback.

Message Play Order

Each mailbox may be set up to play messages in order of oldest first (First In First Out-

FIFO) or newest first (Last In First Out-LIFO).

Message Replay

Messages may be replayed as many times as you like.

Message Reply

When listening to your voice mail messages you may press one key to automatically leave a message for the person who left you a message, this call return feature may always be used for internal calls, and also outside calls if Caller ID is received, and the feature is allowed by the system administrator. A subscriber may reply to a message sent by a public caller. If the public caller requested a return call, OS7100 Voice Mail will play the message envelope and announce, “Callback Requested”. This means the public caller entered his telephone number into the mailbox with touch-tone at the time he left the message.

Message Retention Time by Subscriber

The length of time messages are stored prior to automatic purging may be set for each mailbox. Retention Time can be set from 1 to 9,999 days. Retention Time applies to both new and saved messages. Each time a message is saved, the Retention Time is reset. Only messages that have not been accessed are automatically deleted.

Message Retrieve

Any sent message may be canceled before the recipient has received it. Any message that has been sent but not listened to by the recipient may be retrieved (“pulled back”) into the sender’s mailbox. If the message was independently sent to several subscribers, each copy may be retrieved separately. A message sent to a distribution list may be retrieved up to the time it is first played by any member of the list. Retrieving a message from a distribution list pulls it back from all list members. It may then be edited, updated, rerecorded, deleted, or sent to a different destination. This capability is particularly useful if the sender incorrectly addresses one copy of a message to several subscribers or if a change in events makes the message no longer relevant.

Message Rewind

When listening to a message you may rewind 5 seconds. This is useful if you are looking for a specific piece of information like a phone number.

Message Save

You may save any message. Once saved, it will remain as a ‘saved’ message until it is manually deleted or until the message retention timer expires for unlistened messages.

Message Send

From within your mailbox you may send a message to any other mailbox owner on the system. This makes it easy for any employee who is out of the office to send a message to another internal user.

Message Scan

Message Scan allows a user who is retrieving their messages to 'scan' through them. The first few seconds of each message will be played. This makes it easy to find a specific message.

Message Skip

When listening to new messages, if you a searching for a specific one you can skip over new messages. This saves the message as a new message. It is like picking one thing out of your in-basket without disturbing all the others.

Message Undelete

At some time, everyone discards a message, and immediately wishes they had kept it. The undelete feature of the OS7100 Voice Mail will allow you to retrieve messages that have been deleted. The subscriber is allowed to "Undelete" a message any time before the next Daily Maintenance is performed. By default the system performs Daily Maintenance everyday at 3:00 am. Deleted messages are PERMANENTLY deleted after Daily Maintenance is finished.

Message Waiting Light Indication

An indication on your keyset tells you when you have new messages. Pressing this one button will connect with your voice mail. Additionally, if you have a display keyset, the display will show you the current new message status.

Minimum Password Length

This option is set by the System Administrator. The setting range is from 0 (No Minimum) to 8 Digits. This requires the subscriber to set their password to less then the digit length specified. This is useful for heightening mailbox access security.

Multiple Subscriber Mailboxes Login

Multiple subscribers may simultaneously logon to the same mailbox and access messages. All mailbox functions are available to each subscriber. Message playback is distributed. The first subscriber logged on will hear the first message. The second subscriber will first hear the second message, and can access the first message after subscriber 1 is finished. The mailbox continues to be available to receive new messages, regardless of the number of subscribers logged on. This is useful if you wish to use a mailbox for transcription storage or order taking applications.

Multiple Subscriber Mailboxes

Since Extensions and Mailboxes are separate and independent system resources, a mailbox does not have to be defined in terms of an extension, or an extension in terms of a mailbox, in order for the OS7100 Voice Mail to associate them. A subscriber's mailbox number need not match the subscriber's extension number (though it typically does). A Subscriber could have multiple mailboxes. These mailboxes can be independent of extensions and be useful for isolation different types of messages such as in a departmental mailbox. A subscriber can have multiple extensions within the system. Each extension can be directed to one specific mailbox for taking messages. This is also the case of departmental

messaging where many subscribers share a common mailbox. An extension may also be directed to a different mailbox at different times of the day or days of the week, as in departments with rotating staffs.

Name Addressing

This feature allows a subscriber to address messages to other subscribers by name instead of
by mailbox number, eliminating the need to look up numbers or carry personal directories while traveling.

Net Mailbox (AMIS)

Receives, records and, sends voice messages to mailboxes at off-premise locations. Can send a message to individual mailbox/telephone number, or to a Distribution List. Can send/receive messages to or from any voicemail system that is AMIS (Audio Messaging Interchange Specification) Network compliant.

New / Old Selection

When you access your mailbox you may choose to listen to either new or old messages. This makes it easier to find specific information contained in an old message without having to listen to all the new messages first.

One Touch Access

The OS7100 Voice Mail Voice Mail can be accessed to check messages or perform administration simply by pressing one button on your keyset.

Personal Mailbox Administration

You may change settings for your mailbox any time you like. Personalize the greeting that callers will hear your name, password and notification options.

Private (Confidential) Messages

A message can be marked Private. A private message can not be forwarded to another subscriber. If the recipient of the private message attempts to forward the message he is informed that the message is private and may not be forwarded.

Reply Required

A message marked for delivery as Reply Required cannot be saved or deleted until the recipient performs a voice reply to the message.

Retrieve Public Caller From Mailbox

When a subscriber logs on they are notified if a caller is in their mailbox, and the OS7100 Voice Mail offers to transfer the caller to the subscriber's designated location. If the caller is identified OS7100 Voice Mail will speak the caller's name. If the subscriber elects to speak with the caller, the caller is told that the subscriber is now available and transfers them to the subscriber's designated location. If the subscriber elects not to retrieve the caller, the subscriber can go about listening to other messages while that caller finished

leaving them a message.

Return Receipt (Certified Messages)

A subscriber may request to be notified when the recipient listens to a message. After the message has been delivered and played back by the recipient, a confirmation receipt is placed in the new message queue of the sender's mailbox, it contains the date and time that the message was played.

Self Memo / Reminder

Easily and quickly leave a reminder in your own mailbox. This virtual notepad is available wherever there is a phone, and can be set for immediate or future delivery. This makes them useful for keeping track of your entire workload to schedule or serve as reminders for meetings.

Self Memo / Reminder Categories

If allowed by the system administrator a subscriber may designate the reminders they create as either a Commitment, Follow Up or Task. The individual meaning of these labels may vary from person to person. Their intent is to provide a way of separating reminders into different categories. These categories can be reviewed in the subscriber Workload Manager

Subscriber Workload Manager

This allows a subscriber to group reminders by a Commitment, Follow Up or Task in order to better organize the workload. Their entire workload can be reviewed or a specific group.

Until… Scheduling

The Until… Scheduling method is an easy way to schedule the termination of an OS7100 Voice Mail service relative to the time the service is set active. Most of the services in the OS7100 Voice Mail give subscribers greater control over their communications by providing Until… Scheduling. The subscriber just sets a time for the service to terminate, concurrent with activating it, and does not have to worry about remembering to deactivate the service in the future. The Until… Scheduling options are, a number of hours, 1 to 9, the end of the current business day, based on the subscriber's current availability schedule, for the beginning of the next business day, also based on the sub-scriber's current availability schedule, a day of the coming week, Monday through Sunday, a specific date, hour and minute, or until further notice.

4.4.5 Administration Features

Activity Display

While the OS7100 Voice Mail system is running, a connected administration terminal will show useful statistics about the system. Number of calls, average calls per week, number of times all ports were busy, total messages and space available.

Administrators Mailbox

A subscriber designated as a Mailbox Administrator is given the added functionality when

they log in to be able to record and send a broadcast message.

Auto Delete Subscribers

Unused subscribers are automatically deleted after a programmable period of disuse. This prevents unauthorized users from 'High-Jacking' unused mailboxes.

Automatic Setup

When the OS7100 Voice Mail is first installed, a range of mailboxes matching the system's database is created. This reduces set up time.

Back Up And Restore

The customer database can be saved and restored at a later date. This is useful in a number of maintenance scenarios. Additional hardware is necessary to accomplish this.

Default Operation

The OS7100 Voice Mail is designed to be in operation as soon as it is installed.

Password Security

All administration is under password control to prevent unauthorized access.

Programming - On Site Or Remote

By logging in from a touch tone telephone, the designated system administrator can perform routine activities by using the System Administration Special Menu. These activities include recording custom system prompts, Adding/Deleting/Modifying subscribers, and switching scheduled modes of operation. This makes routine administration easy and convenient. If set up on a customer's LAN with remote access permissions, the Web Services can be accessed from anywhere through an internet connection.

Subscriber Administration

When logging into the System Administrator Menu the System Administrator can access Subscriber Administration. While with in Subscriber Administration you can Add/Delete/Modify Subscribers with in the OS7100 Voice Mail system. If you select to modify a subscriber, you can default their password, record their name, enter their directory name, enable/disable extended prompting, and record their Mailbox Greeting.

Subscriber Database

A database of subscribers can be viewed at the administration terminal.

System Reports

Many useful system reports are available from the administration terminal. These may aid in traffic studies, or detecting misuse.

Voice Prompted Programming

From any touch-tone phone in the world an administrator can record custom prompts, add, delete, or modify mailboxes, and change scheduled modes.

Voice Studio

An included voice studio lets you re-record any prompt in the system and even edit it for better sound.

4.4.6 Voice Form Questionnaire Features

This feature allows the OS7100 Voice Mail to be used to conduct surveys or collect a response to a pre-programmed questionnaire. Answers are collated and stored in a specific mailbox(es), or the answers may be split into many different mailboxes. These mailboxes and messages are administered by subscribers just like any other mailbox and message, the subscriber simply logs in and listens to the message. This is a useful tool any time you need to collect specific information from a caller and do not have an available staff member to take the call directly.The answers are then listened to so that a paper or electronic form could be filled out by the subscriber listening
to the message.

Multiple Response Destinations

Caller responses during a VoiceForm session can be routed to multiple mailboxes. Any part of a caller's response may be distributed among several mailboxes. For example, a VoiceForm session might be designed to process customer orders. Portions of the caller's responses could be sent to an accounting mailbox for credit approval while the rest of the responses are routed to a shipping department mailbox to expedite the order.

Playback Header Prompt

Each response recorded by a caller in a VoiceForm session can be prefaced by a playback header prompt which links the response to the question. This feature helps in transcription of caller responses by providing reference markers within the caller's total response. With playback headers, when a caller skips a question, the transcriber does not lose his place within the composite VoiceForm message.

Team Transcription

OS7100 Voice Mail allows simultaneous multiple user access to VoiceForm messages in a Transcription Mailbox. When multiple access occurs, the OS7100 Voice Mail assigns the user the next new message so that there is no duplication of transcription.
The maximum number of questions - Voice Queries - possible in a single VoiceForm session is not bound by architectural constraints. Voice Queries can be linked to form extended VoiceForm transactions.
VoiceForm is an information collection and distribution facility, which allows an organization to gather specific information efficiently. An organization creates a series of questions, called a script, designed to elicit specific responses from a caller. One question with its response constitutes a Voice Query, and a complete set of questions is a VoiceForm. The responses generated during a dialogue are collected into one or more messages and delivered to designated transcription mailbox(es). The OS7100 Voice Mail manages these messages in the same manner as any other voice message. Designated recipients of these messages may review, save, and forward them with comments using the

complete range of voicemail features. Because VoiceForm Questionnaire is an integral part of the OS7100 Voice Mail' software, callers engaged in a VoiceForm dialogue may be routed to any and all system resources.

4.4.7 E-mail Gate Way Function

Sending Voice mails by using E-mails

This function enables to convert a newly incoming voice mail into a WAV file format that can be replayed in a PC and attach the voice mail to the user's E-mail.

Notifying the arrival of voice mails by using E-mails

This function enables to notify the arrival of a voice mail by using an E-mail.

4.5 Web/System Management

The OfficeServ 7100 system performs the management for Voice Call, Voice Mail and Router/Switch server configuration and the information search function via the embedded Web service function and supports the functions to monitor and collect the operational status of the functional blocks in the system.

4.5.1 Web Management

Database Backup

The user can back up and restore the system database to a MMC card via Web.

System File Upload

User Account Management

The user can view the current status of (Operational status, alarm information, etc) the OfficeServ 7100 in real time. The user can collectively manage each functional block(call server, data server, or feature server) by operating the PCMMC package or connecting web servers of the corresponding server.

Voice Call Management

The configuration information of the OfficeServ 7100 installed in the site can be displayed. The configuration information is as follows:

Voice Mail Management

This function displays various event information such as the information on critical error or warning generated in the OfficeServ 7100. The user can group events by arranging or searching events.

Router/Switch Management

This function displays the access log for the OfficeServ 7100. The user can group each access log by arranging and searching logs.

4.5.2 System Management Function

configuration Management

The following configuration of OfficeServ 7100 installed in a site can be displayed:

- Configuration of OfficeServ 7100 Units
- Information on OfficeServ 7100 Version
- Information on Data Function Setting/Version
- NAT Information
- Feature Server(SIP, UMS and mail) Function Setting/Version Information

Event Management

Various event information such as fatal error, warning generated in OfficeServ 7100 is displayed. Events can be grouped through the arrangement or search function.

Access Log Management

Management access history about OfficeServ 7100 can be displayed. Access logs can be grouped through the arrangement or search function.

Traffic Management

The traffic information(phone usage, data transmission/reception amount, VoIP call processing, mail transmission/reception) generated for a certain time in OfficeServ. This information is useful as the statistical data for a fixed time.

Call Details Record Management

Call Detail Record(CDR) served by OfficeServ 7100 can be stored and displayed.

ABBREVIATION

A

AC	Alternating Current
ALG	Application Level Gateway
AME	Answering Machine Emulation
AOM	Add On Module
AP	Access Point
AS	Autonomous System
ASIC	Application Specific Integrated Circuit
AWG	American Wire Gauge

B

BRI	Basic Rate Interface
BRM	BRI Module
BoD	Bandwidth on Demand

C

CBQ	Class Based Queuing
CDR	Call Detail Record
CID	Caller Identification
CLI	Command Line Interface
CRC	Cyclic Redundancy Code
CSMA/CD	Carrier Sense Multiple Access/Collision Detect
CTI	Computer Telephony Integration

D

DASL	Digital Adaptor for Subscriber Loop
DPIM	Door Phone Interface Module
DC	Direct Current
DHCP	Dynamic Host Configuration Protocol
DID	Direct Inward Dialing
DLI	Digital Line Interface
DMZ	DeMilitarized Zone

DNS	Domain Name Server
DPIM	Door Phone Interface Module
DSL	Digital Subscriber Line
DSP	Digital Signal Processor
DTMF	Dial Tone Multi Frequency
DVMRP	Distance Vector Multicast Routing Protocol

E

EAP	Extensible Authentication Protocol
EMI	Electro-Magnetic Interference

F

FE	Fast Ethernet
FXS	Foreign Exchange Station
FXO	Foreign Exchange Office

G

GK	GateKeeper
GND	Ground

H

HDB3	High Density Bipolar of order 3
HDLC	High-level Data Link Control
HSSI	High Speed Serial Interface

I

IDS	Intrusion Detection System
IGMP	Internet Group Management Protocol
IMAP4	Internet Message Access Protocol version 4
IP	Internet Protocol
IPC	Inter Processor Communication
ISDN	Integrated Services Digital Network
IPSec	Internet Protocol Security
ITU	International Telecommunication Union

K

KDB	Keyset Daughter Board

L

L2TP	Layer 2 Tunneling Protocol
LAN	Local Area Network
LCD	Liquid Crystal Display
LCR	Least Cost Routing
LED	Light Emitting Diode
LIM	LAN Interface Module

M

MP	Main Control Processor
MFM	Multi-Frequency Module
MIS	Miscellaneous
MMC	Man Machine Communication(Code, Command)
MPD	Metering Pulse Detection

N

NAT	Network Address Translation

O

OSPF	Open Shortest Path First

P

PC	Personal Computer
PCM	Pulse Code Modulation
PFT	Power Fail Transfer
PIM-SM	Protocol Independent Multicast-Sparse Mode
PoE	Power over Ethernet
POP3	Post Office Protocol 3
PPP	Point to Point Protocol
PPPoE	PPP over Ethernet
PPS	Pulse Per Second
PPTP	Point to Point Tunneling Protocol
PRI	Primary Rate Interface
PRS	Polarity Reverse Signal
PSTN	Public Switched Telephone Network
PSU	Power Supply Unit

Q

QAM	Quadrature Amplitude Modulation
QoS	Quality of Service

R

RF	Radio Frequency
RCM	R2 Caller identification Module
RTP	Real-time Transmission Protocol
RTPT	Real-time Transmission Protocol Transfer
RTPR	Real-time Transmission Protocol Receiver

S

SIP	Session Initiation Protocol
SLI	Single Line Interface
SLM	SLI Module
SMDR	Station Message Detail Recording
SME	Small Medium Enterprise
STP	Signaling Transfer Point
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SWM	Ethernet Switch Module

T

TAPI	Telephony Application Programming Interface
TEPRI	T1 E1 Primary Rate Interface
ToS	Type of Service
TRK	Trunk
TRM	TRK Module
TTS	Text-To Speech

U

UA	User Agent
UART	Universal Asynchronous Receiver and Transmitter
UDP	User Datagram Protocol
UMS	Unified Messaging Service
UNI	Universal
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair

V

VDSL	Very high bit rate Digital Subscriber Line
VLAN	Virtual Local Area Network
VM	Voice Mail
VMS	Voice Mailing System
VoIP	Voice over Internet Protocol
VPM	Voice Processing Module
VPN	Virtual Private Network

W

WAN	Wide Area Network
WBS	Wireless Base Station
WIM	WAN Interface Module
WIP	Wireless IP Phone
WLAN	Wireless Local Area Network
WLI	Wireless LAN Interface

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OfficeServ 7100

System Description

SAMSUNG ELECTRONICS