Archivist™ Digital Voice Logger
System Overview

ELETECH

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Introduction

A voice logger is a device used to record and archive voice communications. There are many purposes for which telephone or radio conversations need to be recorded. For the most obvious example, telephone calls to the emergency services are usually recorded to ensure prompt and accurate response. In other situations, voice loggers are used to document corporate business transactions such as stock trading. They are also used widely in law firms to archive calls for billing or content purposes. The most common use of voice loggers, however, is probably in call centers to train and monitor the skills of employees.

In recent years, voice loggers have evolved from analog to digital, offering higher reliability and greater capacity at lower cost. The advance of voice technology has open the doors to many applications where voice loggers can truely be a invaluable business tool.

Built with cutting edge voice compression technology, Archivist voice loggers can record and archive thousands of hours' worth of audio onto a tiny little disk or tape, while maintaining the true fidelity of the speech. In addition to the high voice compression ratio, the built-in automatic gain control (AGC) function enables Archivist voice loggers to tolerate changing telephone line conditions.

Once recorded, voice conversations become "objects" which can be stored and manipulated in many different ways. Archivist voice loggers use hard disk for initial storage of voice records. For backup purpose, several options such as Magneto Optical (MO) disk, Digital Audio Tape (DAT) and DVD-RAM are offered to meet different needs. The system can be set up to perform backup automatically at preset intervals. And special information such as backup date/time is written on the media for archival purpose.

When it comes time to search and access voice records, Archivist voice loggers offer flexible search options. Voice records can be searched by specific channel number(s), a range of date/time, and the dialed phone number if the call is outbound. Thousands of voice records can be searched quickly and the voice record(s), if found, can be accessed and played instantly.

In a network environment, voice records can also be searched and accessed from a remote terminal. Such arrangement allows expansion of the system to a very large scale. However, the remote terminal must be equipped with the Netplay sound card in order to play voice records.

Archivist voice loggers are built with industrial grade components for the highest reliability and the lowest maintenance. Self testing and diagnostic procedures are built into the software, allowing service personnel to trouble shoot and possible repair the system remotely. This time saving feature greatly reduces system down time and is a key benefit offered by the system.

Thousands of channels have been installed and operated worldwide since the introduction of Archivist voice loggers several years ago. Changes and improvements are constantly being made to the system based on customer feedback. As a company manufacturing digital voice products since 1983, Eletech is committed to the highest standard of product quality, support and service to meet growing customer demand.

System Features

● **All-in-one case design**
All Archivist systems are housed in compact, industrial strength metal cases with built-in color LCD displays except the VLR-106. The innovated case design facilitates system installation, maintenance and service.

● **Windows 2000/NT OS platform**
Archivist software runs under Windows 2000/NT with user friendly interface.

● **Multiple storage devices support**
Up to two hard disks can be used either in series or in parallel. When used in series, the disk capacities are added together. When used in parallel (by way of NT Server or mirror card), data will be written to both hard disks to protect the system from data loss due to hard disk failures.

● **MO disk or DAT tape for backup**
Choose MO disk for faster access, or DAT tape for bigger capacity and lower cost.

● **Multiple backup devices support**
Two MO drives can be used in series for combined capacity or in parallel (by way of mirror card) for redundancy. Two DAT drives can also be used, but only in series for combined capacity.

● **Live channel monitoring**
The Archivist allows live channel monitoring with no detectable clicking sound or volume drop.

● **Records with date and time stamps**
Every record is saved with date, time, length, channel, and dialed digits (if any). All but length can be used as search keys to retrieve records.

● **Selective secondary backup**
Any individual record can be selected, along with notes attachment, for a secondary backup to devices such as a floppy disk and etc.

● **Flexible working hours**
Up to three different working hour ranges can be configured for the system. The system will not record when the time is out of range.

● **Channel grouping for greater flexibility**
Under certain circumstances, it may be desirable to partition the channels into different groups. The Archivist allows for such grouping with separate names, passwords, and backup devices.

● **Automatic self-testing on a regular basis**
As an intelligent recording system, the Archivist is capable of automatic self-testing on a regular basis. If any problem/abnormality is found, the system will generate an alarm.

● **Voice activation or loop start**
The Archivist can be connected to a variety of communications circuits such as telephone lines, extension lines, ring-down direct lines and radio channels. In order to adapt to different electrical interfaces, each channel can be configured as voice activation (VOX) or loop start on an individual basis.

● **Channel energy analysis**
The Archivist can perform energy analysis on each channel and help determine whether the problem comes from the system itself or from the communications circuits that it is connected to. This unique feature helps the service technician to trouble-shoot the system quickly and easily without using bulky test equipment.

● **Networking capability (optional)**
Two or more Archivist systems can be connected to a local area network and allow any system on the LAN to retrieve and replay voice records of other system(s) remotely. Such access is also possible for a PC if it is equipped with a Netplay sound card and Archivist software.

# *System Architecture A – Single Unit Type*
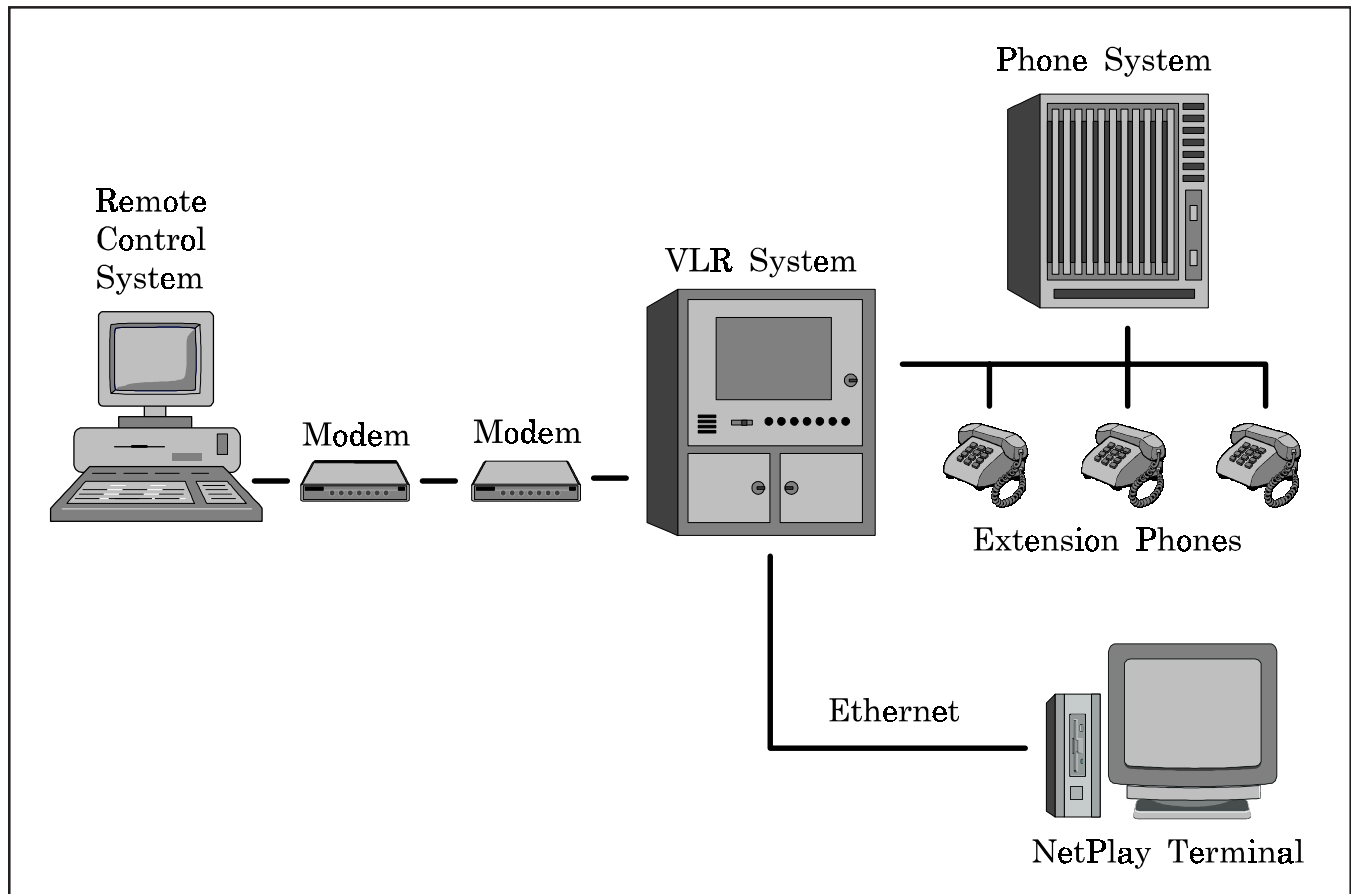
The single unit type system is suitable for applications requiring less than 64 channels. A single main unit is used in this type of system.

The optional Remote Control Terminal allows system administrator to monitor system operation and upgrade system software remotely.

An optional NetPlay Terminal can be used to access and replay voice records stored on the main unit's hard drive and MO drive.

System Architecture B - Peer-to-peer Network Type
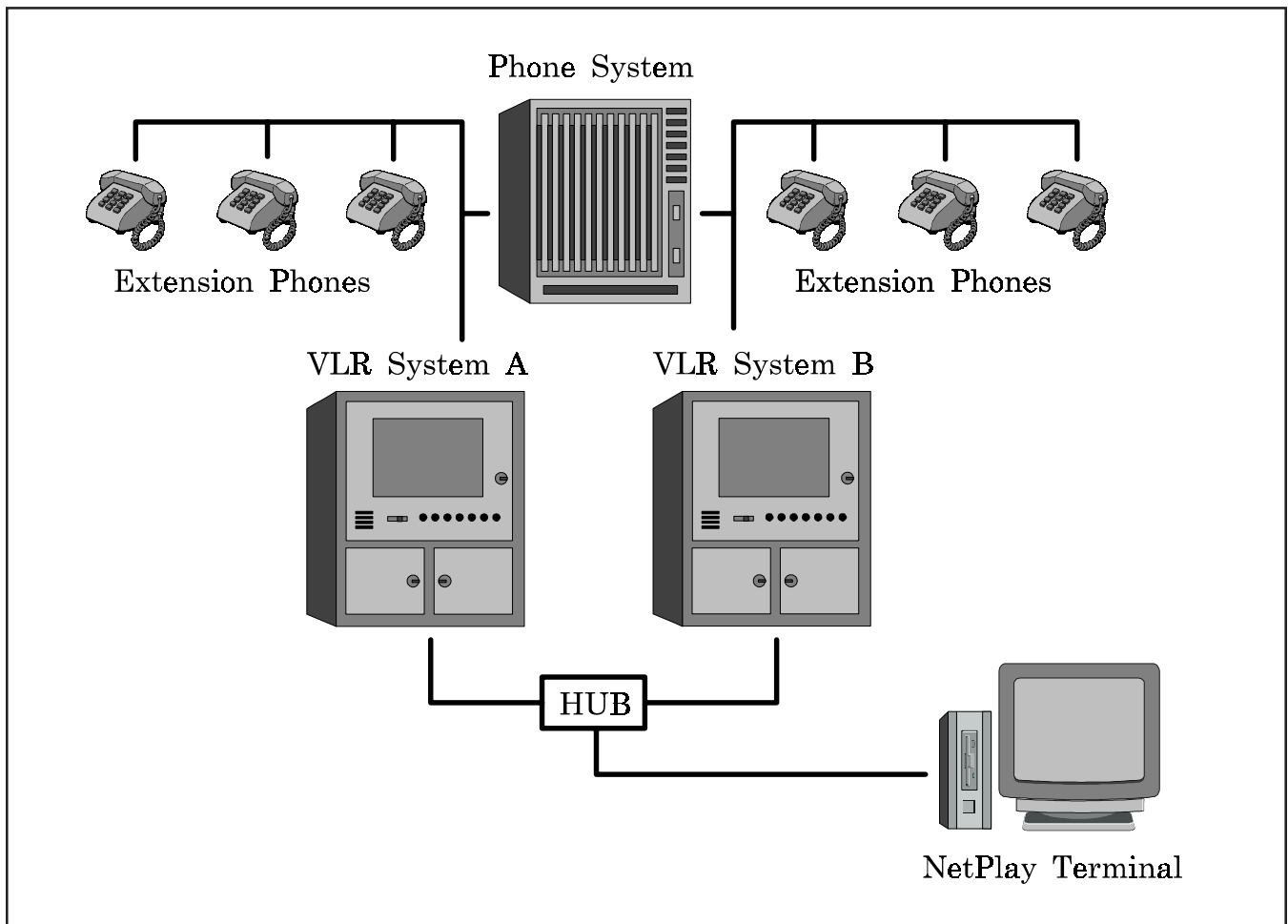
The network type system is suitable for applications requiring more than 64 channels. Two VLR units, peer-to-peer networked, can access each other's voice records.
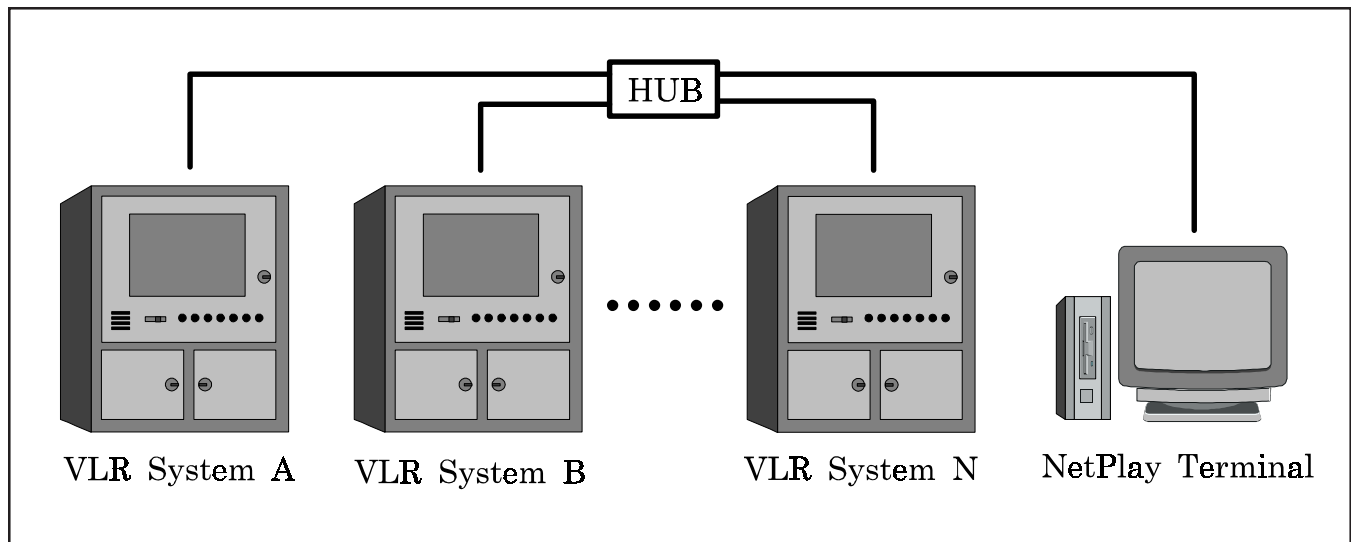
If a main unit is to be monitored by the Remote Control Terminal, it must have its own modem.

An optional NetPlay Terminal can be used to access and replay voice records stored on any main unit's hard drive and MO drive.

A network hub may be necessary if the distance between the two main units is too far.

System Architecture C – Windows NT Network Type

The Windows NT network type is suitable for applications requiring more than 128 channels.

If a main unit is to be monitored by the Remote Control Terminal, it must have its own modem, as shown in System Architecture A & B.

The optional NetPlay Terminal can be used to access and replay voice records stored on any main unit's hard drive and MO drive.

System Equipment List

VLR-164
- VLR-164 system case (20 ISA slots)
- Archivist software Windows NT/2000 version
- Industrial CPU card with Ethernet support
- CPU: Intel Celeron class or higher
- RAM: 64MB SDRAM or more
- Storage device: Hard drive
- Backup device: MO drive
  DAT drive (DDS2 ro DDS3)
  Removable hard drive
  DVD-RAM
- Display: 12.1″ TFT LCD

VLR-132
- VLR-132 system case (9 ISA slots)
- Archivist software Windows NT/2000 version
- Industrial CPU card with Ethernet support
- CPU: Intel Celeron class or higher
- RAM: 64MB SDRAM or more
- Storage device: Hard drive
- Backup device: MO drive
  DAT drive (DDS2 ro DDS3)
  Removable hard drive
  DVD-RAM
- Display: 9.4″ DSTN LCD

VLR-116
- VLR-116 system case (5 ISA slots)
- Archivist software Windows NT/2000 version
- Industrial CPU card with Ethernet support
- CPU: Intel Celeron class or higher
- RAM: 64MB SDRAM or more
- Storage device: Hard drive
- Backup device: MO drive
  DAT drive (DDS2 ro DDS3)
  Removable hard drive
  DVD-RAM
- Display: 9.4″ DSTN LCD

System Equipment List

VLR-106
- Book PC 1000 series
- Archivist software Windows NT/2000 version
- B59 mainboard with VGA support
- CPU: Intel Pentium class
- RAM: 64MB SDRAM or more
- Storage device: Hard drive
- Backup device: External (optional)
- Display: External (optional)
- Replay speaker

NP-100
- Book PC 1000 series
- Netplay software Windows 98/NT/2000 version
- B59 mainboard with VGA support
- CPU: Intel Pentium class
- RAM: 64MB SDRAM or more
- Storage device: Hard drive
- Display: External (optional)
- Netplay sound card and replay speaker

Operation Overview

Main Menu

 Replay Channel

 Alarm Channel

 Record Channel (standby)

 Record Channel (recording)

 Record Channel (sleeping)

 Channel Not Used/Installed

Backup Device Usage Rate - shows percentage full on backup media.

Recording - indicates the system is in the recording mode.

Record Data Operation

First Page, Page Up, Page Down, End Page - Each page contains up to 500 records. If there are more than one page of data, use these commands to access different pages.

Replay Commands

  Pause/resume.

  Stop.

  Play.

  Move to the previous record.

  Move to the next record.

Sequential Play - Play every record from the current one to the last.

Save As - Save the current record as a new record.

Delete - Delete the current record.

Annotate - Add or modify the annotation of the current record.

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Operation Overview

Record Data Search

Record data can be searched by channel, time period and/or dialed digits. Dialed digits include the phone number (if the call is outbound) and any touch tone keys pressed during the phone conversation. All search keys need not be specified. Unspecified search keys are "don't care".

Monitor

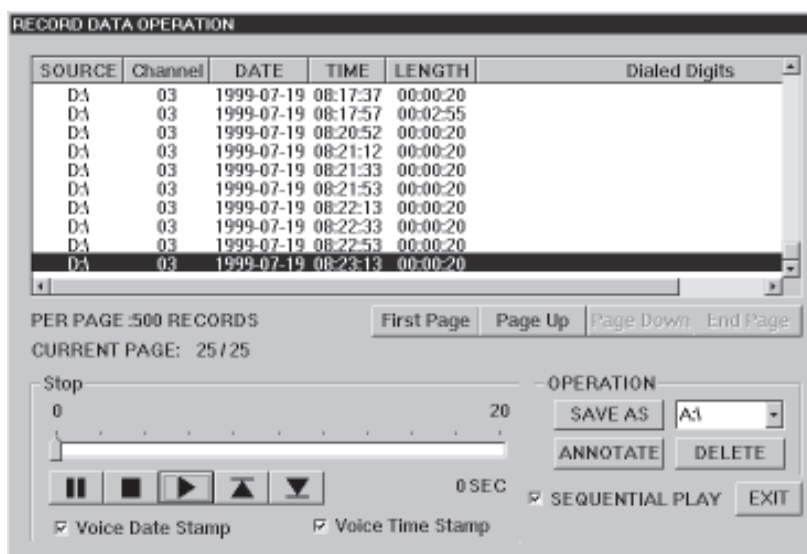### Line Check
Line Check is usually used by service technicians to examine line energy condition. End users and system managers do not need to understand the meaning of the data. However, system managers may be requested to perform Line Check and gather data to help diagnose system faults when service technicians are not present.

Line Monitor
Line Monitor can be used to monitor live phone conversation as it is happening. Using Line Monitor does not affect the normal recording operation of the system, and is not detectable by the persons being monitored. The monitored conversation is played through the Replay Channel. The "*" sign next to the channel number indicates that the channel is currently recording.

System Configuration

Notify
There are two methods to notify the system manager when an alarming situation arises: the Speaker Notification and the Phone Notification.

The Speaker Notification plays the notification message via the replay speaker once every 10 seconds until the problem is taken care of.

The Phone Notification uses the optional Alarm Channel to dial out and play a message to notify the system manager. It will keep notifying at preset intervals until the problem is taken care of.

Both notification methods can be turned on or off independently.

Channel
Except channel one, each channel can be independently configured as Replay, Alarm, Record or No Use.

A user name and phone number can be assigned to a channel for identification purpose.

Choose the Local Phone Start Method if the channel is connected to an analog phone line. Choose the Energy Start Method if the channel is connected to a digital phone line.

Click on List User Data to display a list of all channels with user name and phone number.

Operation
For work hours, either full time or up to three work hour ranges can be specified. Each work hour range can be independently turned on or off.

Any record shorter than the Minimum Record Length will not be saved.

Any record longer than the Maximum Record Length will be cut to the Maximum Record Length and the remainder saved as a new record.

Backup
The system offers two schemes of automatic backup at regular intervals. The first one is Daily Backup which happens once a day at preset time. The other one is Periodic Backup which takes place several times a days at preset intervals.

Disk Information
This command displays the status of a HDD & backup disk including the following information:

Operation Overview

- The reference name of the disk.

- Date and time of the first usage.

- How many times this disk has been re-used.

- Date and time of the oldest record on this disk.

- Date and time of the newest record on this disk.

Group
You can add, modify or delete a group. A group is a number of channels that share a same group password. People within the same group can access one another's records.

Engineer Configuration

Voice Card
This command displays the number of cards in the system, the IRQ setting and memory location used by the cards.

Storage Device
All channels in the system share the same storage device(s). If there are more than one storage devices, they will be used serially, i.e. when the first device becomes full, the next device will be used automatically.

Only hard drive partitions are considered storage devices by the system. Click on a storage device to display its usage information.

Backup Device
All channels in the system share the same backup device(s). If there are two backup devices, they will be used serially, i.e. when one device becomes full, the other one will be used automatically.

Record & Play
The following parameters can be configured:

Record Gain sets the recording level.

Record Mode is either 8 or 16 Kbps.

Start Threshold sets the minimum sound level to start recording when energy start method is used.

Detect Dial Out Number - If detected and saved, the dial out number can used as a search key to find the record later.

Stop Threshold sets the minimum sound level to stop recording when energy start method is used. However, the recording will not stop until the sound level drops below the threshold for longer than the time specified in Stop Delay.

Play Gain sets the replay level.

Dialing
The Dialing menu is used solely by the Alarm Channel which is the only channel in the system that can dial a number to make a call.

In order to set up an Alarm Channel, a special version of the voice board (with a low impedence channel) must be used.

Electrical Specifications

Voice Compression	4:1 or 8:1, u-law PCM
Telephone Input Impedence	> 20 Kohms
Automatic Gain Control	-40 dbm ~ +9 dbm
Record Activation Method	Loop voltage activation Voice activation Forced activation
Frequency Response	300 ~ 3.4KHz
Record Input Source	Analog telephone line Digital telephone handset Analog audio signal
Crosstalk	> 50dB
Outbound Dialing Detection	Tone & pulse
Power Supply	90 ~ 130/180 ~ 240 VAC (47 ~ 63 Hz)
Alarm Channel Impedence	600 Ohms

Questions & Answers

What is Archivist system's basic structure? How does it connect to the phone system?

Archivist system is based on computer main unit with the addition of multi-line voice communication cards. The system can be easily expanded by adding more cards until the maximum capacity is reached. One channel must be reserved for replay purpose, and the rest can all be used for recording.

The system is usually connected in paralle to the station side of the phone system. Installation can be done with minimum or no interruption to the phone operation.

Will the system affect the voice level on the phone?

No. The system does not affect the voice level at all. People on the phone will not notice any difference whether the system is recording or not.

What is the capacity of the system hard disk? What if the capacity is not enough?

Standard equipment is a 20GB hard disk with two partitions. Partition C: (about 2 GB) is used to store the operating system and Archivist application program. Partition D: (the rest of the hard disk) is used to store voice records. If more hard disk space is needed, either a bigger hard disk can be used or two hard disks can be used serially for combined capacity.

How much voice data can be stored in a 1 GB disk space?

Voice data is always compressed and stored as voice record. 1 GB can store about 130 hours worth of voice records. About 2500 hours can be stored on a 20GB hard disk. When the hard disk is full, the old records will be replaced by new ones. If a system has 30 recording channels and each generates 4 hours voice records per day, it can retain voice records of the last 20 days on a 20 GB hard disk for instant access.

Data backup is necessary when the hard disk can not retain voice records for the desired period. Backup media such as MO disk and DAT tape can be recorded over and over again.

How to distinguish between digital and analog telephones and how to connect them to the Archivist system?

Digital telephones usually look more complicated and offer more functions than analog telephones. Business telephones are more likely to be digital, and household telephones are usually analog. Analog telephones can be easily connected to the system via parallel connection. Digital telephones can not be connected to the system directly. They must be connected either through a special D/A converter (significant cost increase), or by extracting the analog audio signal from the handset (more complicated wiring).

Questions & Answers

How is recording started and stopped?

Recording is started automatically by the detection of loop voltage or voice energy, and stopped automatically by the lack of loop voltage or voice energy. Loop voltage activation is usually used by analog telephones and voice energy activation is usually used by digital telephones and radio communication.

How many customers are currently using Archivist systems?

Please refer to our Customer List. Our customers include companies in stock brokerage, transportation, telecommunication, broadcast and utilities. More than 1,200 systems have been sold worldwide, and more than 25,000 channels are in use.

What happens when the backup device is full?

The system speaker will play a warning message when the backup device is full, asking the system manager to replace the backup media. If the system is equipped with the optional alarm channel, the system will automatically call and inform the system manager about the situation.

What is the voice record format? Can voice records be played on other PCs?

Our voice record format is proprietary and not compatible with standard PC sound systems. However, voice records can be played and re-recorded to a regular cassette tape via the output jack on the system.

How to access and replay voice records over the LAN?

The optional Netplay sound card can be purchased and installed into network terminals, allowing it to access voice records stored in Archivist systems on the same LAN. Both Windows 98 and Windows NT platforms are supported.

What if there is a power outage or the system is turned off by mistake?

We recommend that UPS (Uninterruptable Power Supply) be used to protect the system from power outages. The UPS should provide enough time to properly shut down the system until the power is restored. If the system has not been properly shut down when the power is lost, the "Rebuild.exe" program must be executed to rebuild index when the power is restored.

How reliable is the system?

Reliability has always been the most important design issue of Archivist systems. From CPU board, power supply to cooling fan, only high reliability, industrial grade components are used to build the systems. Track record shows that Archivist systems are indeed very reliable in the field. The adoption of Windows NT and Windows 2000 as the operating system provides even further assurance of reliable system operation.