# VLAN-400sd

## 4-Channel Voice Logger with Network Access

User's Manual

Third Edition

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# 1. Introduction

## 1.1 System Summary

The VLAN-400sd is a state-of-the-art 4-channel voice logger built upon a Linux based embedded hardware platform. It is capable of recording phone calls and storing them internally without the need for a host computer. Compared to other network based voice loggers that must upload data to a host computer in real-time due to lack of internal storage, the VLAN-400sd provides much more reliable operation.

The record data stored inside the VLAN-400sd can be searched and reviewed from a remote PC via the network, using just a browser program such as the Internet Explorer. System configuration and management are also done in the same manner, requiring no proprietary software.

Instead of storing the records into the internal memory, the system can be configured to store the records into a USB drive plugged into the unit. The USB drive can then be taken away by the user if privacy is needed.

Optionally the records can also be uploaded to a server for centralized data management. The upload can be automated to take place immediately after each call, or at specific times of the day on a regular basis. This feature allows a large number of VLAN-400sd units to be integrated into and managed upon one centralized system.
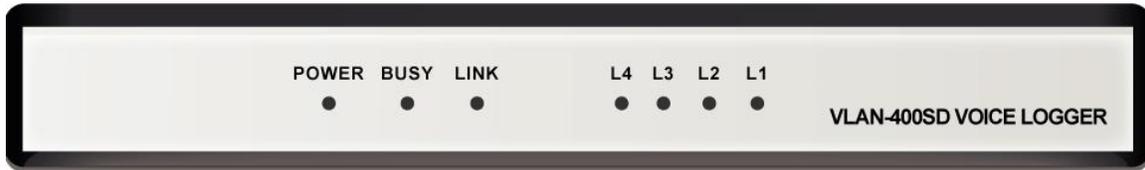
## 1.2  Package Contents

| QUANTITY | ITEM DESCRIPTION |
|:---:|---|
| 1 | VLAN-400SD |
| 4 | RJ-11 Telephone Cord |
| 4 | RJ-11 Y-splitter Connector |
| 1 | RJ-45 Network Cable |
| 1 | Power Adapter |
| 1 | Installation CD |

If any item is missing or broken upon opening of the package, please contact your dealer.

## 1.1 Panel Descriptions

### Front Panel



| Indicator | Color | Status | Indicating |
|---|---|---|---|
| **POWER** | Green | - Solid<br>- Off | - Power On<br>- Power Off |
| **BUSY** | Red | - Flashing<br>- Off | - Writing data – do not turn off power.<br>- Not writing data |
| **LINK** | Green | - Solid<br>- Flashing<br>- Off | - Ethernet link established<br>- Ethernet data activity<br>- Ethernet link not established |
| **L1 ~ L4** | Red | - On<br>- Off | - Channel is recording<br>- Channel is not recording |

### Rear Panel



**LINE1~LINE4**: RJ-11 jacks for connecting analog phone lines or audio signal (center two wires).

**RESET:** This button can be used to reset all settings (including IP address, user name, password and etc.) to the factory default, in case the user name and/or password are forgotton. With the power turned on, press down the button and do not release it until Power, Busy and Link indicators are all turned on (in about 7 seconds). The factory default settings are:

IP address: 192.168.1.100
User Name: vlansd
Password: 1234

**USB**: For connecting an external USB drive (32GB or less) which must be formatted with the FAT or FAT32 file system. The system can be configured to use either the internal flash memory or the external USB drive for data storage, but not both at the same time.
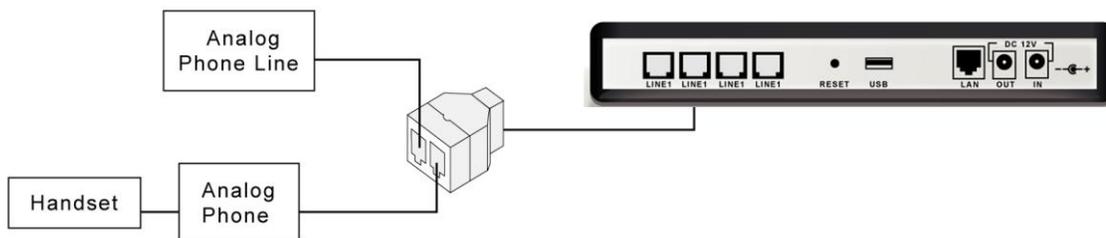
**LAN**: RJ-45 Ethernet jack for connecting to the network.

**DC 12V**: Connect the power supply to the IN jack.

# *2. Installation*

## 2.1 Connecting With Analog Phone Lines

Connect analog phone lines as shown in the diagram below.



Analog phone lines use standard signaling and allow the detection of the handset status (lifted up or hung up). The handset status can be used to automate the recording process – start recording when the handset is lifted up, stop recording when the handset is hung up. This is called the Local Phone Start Mode which is the preferred start mode for analog phone lines.

When an analog phone system is in place there are two ways to connect the logger: the trunk side (where lines come into the phone system) and the station side (where lines go out to the stations). Both have pros and cons as described below.

### Trunk Side Recording

Pros
  - One logger channel can record multiple stations.

Cons
  - Unable to record station to station calls.
  - Files will be associated with the trunk line instead of the station, making it hard to identify and retrieve files for a particular station.
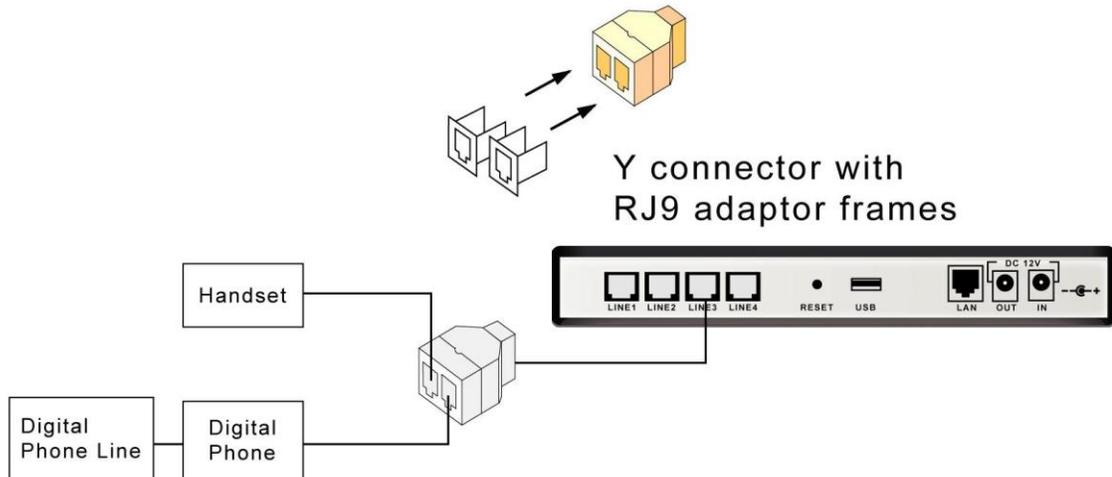
### Station Side Recording

Pros
  - Able to record station to station calls.
  - Easy to identify and retrieve files for a particular station.

Cons
  - One logger channel required for each station.

## 2.2  Connecting With Digital Phone Lines

Connect digital phone lines as shown in the diagram below.



Disconnect the handset from the phone and reconnect it according to the diagram above.

Handset status cannot be detected on digital phone lines since they do not use standard telephone signaling. Therefore the VOX Start Mode must be used instead of the Local Phone Start Mode. The VOX Start Mode detects loudness level on the line and uses it to automate the recording process: start recording when the sound is loud (someone talking), stop recording when the sound is weak (no talking) over a certain period of time. Sometimes, when there are long periods of silence in the conversation, the call may be recorded into multiple files.

## 2.3  Connecting With A PC

In order to allow the user to retrieve and review record data, the logger must be connected with a PC in one of the following two ways.

### Direct connection

Direct connection is rarely used because it requires the PC to be physically close to the logger. If multiple loggers are to be connected to the same PC, a separate Ethernet port is required for each logger.
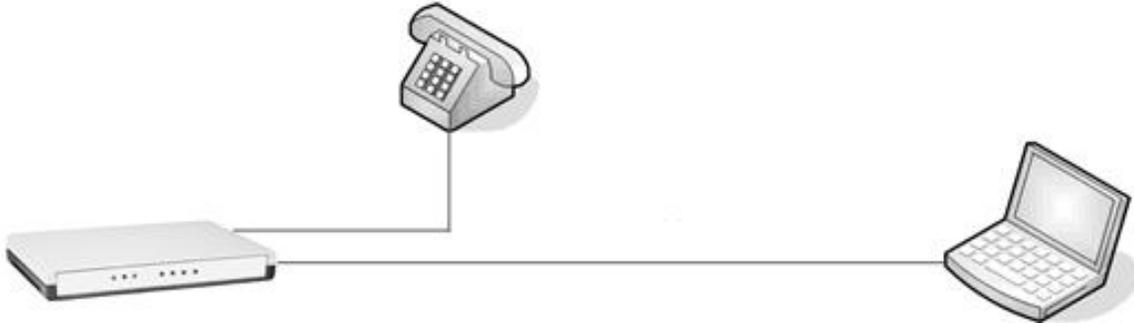


### Network connection

The PC and the logger are connected via a hub, a router or over the Internet. This allows the same PC to access multiple loggers, and the same logger to be accessible to multiple PC's.
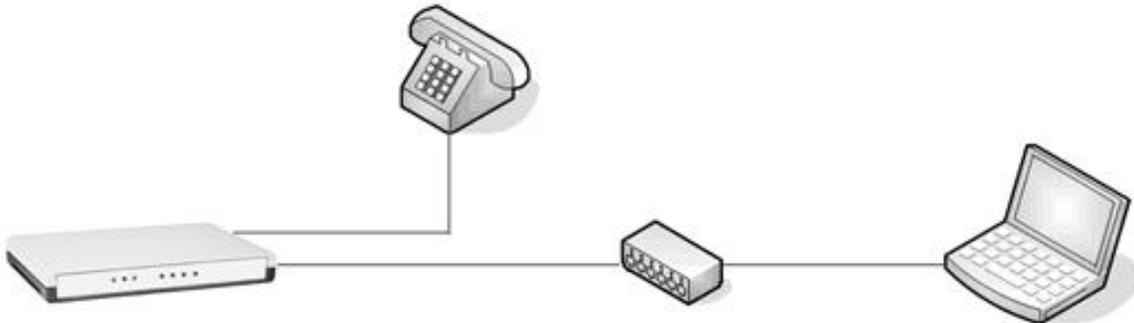
## 2.4  Configuring the IP Address

In order for the logger and the PC to communicate with each other, their IP addresses must be in the same subnet. If the logger's default subnet address (specified in the Default Parameters section in this manual) is not the same as the host computer's, then one of them (usually the logger's) needs to be changed.

The ETM program found on the installation CD can be used to change the logger's IP address. The logger's new IP address must be in the same subnet as the host computer, and not conflict with any other devices on the network.

To find out the subnet address of the PC, open the Command Prompt in Windows Accessories. Type "ipconfig" and press the Enter key. The IP address of the PC will be displayed. The subnet address usually consists of the first three octets. For example, if the IP address is "192.168.1.5" then the subnet address is "192.168.1". In this case the logger could use an address like "192.168.1.88" if it's not already used by another device on the same network.

Note that the logger's new IP address must not conflict with (i.e. not to be exactly the same as) any other devices on the same network. If you are not sure what IP address to use, please consult with your IT personnel.

When installing multiple loggers, do not connect all loggers to the network at once. Always add one logger to the network at a time in order to avoid address conflict, since all loggers come with the same default IP address.

It is recommended to put a label with the IP address info on the logger for identification purposes. This is especially helpful when multiple loggers are installed on the same network.

Before configuring the IP address, the ETM program must be installed first. Just double click "setup.exe" on the installation CD and follow the instructions on the screen.  Afterwards a short cut to ETM will be created on the desktop.

After the ETM program has been installed, follow these steps to configure the IP address:

1. Run the ETM program. A window similar to the following will appear. Note that the display may include loggers already installed, but the new one can be easily identified by its default IP address of 192.168.1.100.



Note that it may be necessary to disable the (Windows' built-in and/or any other installed) firewall in order for ETM to find the new logger. Windows' built-in firewall can be disabled by opening the Security Center in the Control Panel. To disable other installed firewall, please refer to its manual. The firewall should be re-enabled after changing the IP address.

2. Click and highlight the target device. Then click the "Config IP" button. The following window will appear. Change the IP address, enter username and password then click OK. By default, username is "vlansd" and password is "1234". Do not use the IP address shown below – it's just an example.



Note that the IP address will fail to change if incorrect username or password is entered.

## 2.5  Factory Default Settings

The following are the default settings of a logger which is either brand new or has just been manually reset by pressing the reset button. For your own record, you may write the configured values on the space to the right.

IP Address: 192.168.1.100          _____

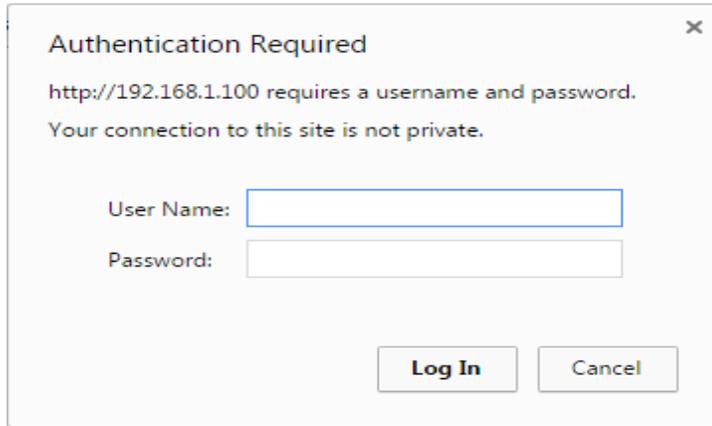Subnet Mask: 255.255.255.0          _____

User Name: vlansd          _____

Password: 1234          _____

# 3. Operation

## 3.1 Device Login

1. Always use the Chrome web browser. Do not use IE or Firefox.

2. Go to the logger's IP address (e.g http://192.168.1.100) and enter **User name (**default: vlansd) and **Password** (default: 1234). Then click **OK**.



3. A screen similar to the following will appear. It displays various messages as the system undergoes initialization which ends when "VLan-400SD Ready" is shown. The system will then automatically go to the Record Search screen (or the last screen of your previous visit).

## 3.2  Record Search



Search keys are described below. If more than one search keys are enabled, then a record must match all search keys in order to be found.

**Time Period**
Check the checkbox to enable. The search will be confined to the specified date/time period.

**Channel**
Select one or more by checking the checkbox(es).

**Agent Name**
Name of the agent. See Record Settings for more info.

**Phone Number**
Phone number of the agent. See Record Settings for more info.

**Caller ID**
Caller ID of inbound calls. The string may be partial.

**DTMF**
Touch tone(s) detected during the call, such as the phone number of an outbound call. The string may be partial. Note that touch tone detection may be disabled if desired – see Record Settings for more info.

**Ring**
Number of rings before the call is answered – equal to, more than or less than. This key is useful only when the Start Method is set to Local Phone.

**Record Length**
Length of the record in seconds – equal to, more than or less than.

Click OK to start searching. If no records are found then a "No Data Found" dialog box will appear. Otherwise, a screen similar to the following will appear.

| Device Name | Agent Name | Phone Number | Rings | Start Time | Stop Time | Record Length | Caller ID | DTMF |
|---|---|---|---|---|---|---|---|---|
| Ch1 | | | 0 | 2018/05/11 12:17:14 | 2018/05/11 12:21:34 | 260 | | |
| Ch1 | | | 0 | 2018/05/11 11:50:57 | 2018/05/11 11:51:03 | 6 | | |
| Ch1 | | | 0 | 2018/05/11 10:52:11 | 2018/05/11 10:54:16 | 125 | | |
| Ch4 | | | 0 | 2018/05/10 15:49:34 | 2018/05/10 15:53:05 | 211 | | |
| Ch1 | | | 0 | 2018/05/10 15:41:09 | 2018/05/10 15:41:24 | 15 | | |
| Ch1 | | | 0 | 2018/05/10 15:39:51 | 2018/05/10 15:40:59 | 68 | | |
| Ch1 | Channel1 | | 0 | 2018/05/10 15:32:15 | 2018/05/10 15:32:48 | 33 | | 16 |

Page:1/1    Total Records:7                    Mark Play Pause Stop Repeat Time Elapsed

First Page    Page UP    Page Down    Last Page
New Search

START MARK    END MARK    PLAY MARK    TIME

The results are listed in 'pages', and in reverse chronological order (newest first).

Each page contains up to 50 records by default. If there are more than 50 records, the last page will be displayed. To go to another page, click **Page Up**, **Page Down**, **First Page** or **Last Page**. To start a new search, click the **New Search** button.

To play a record, simply double click any part of the record except the Start Time field. As the record is being played, the pointer on the progress bar moves to indicate the current playback position. Also, the PLAY button changes into the PAUSE button.

Page:1/1    Total Records:7                    Mark Play Pause Stop Repeat Time Elapsed

First Page    Page UP    Page Down    Last Page
New Search

00:14
01:08

START MARK    END MARK    PLAY MARK    TIME

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Sometimes it is desired to play a particular section only. To do this you will need to play the record and mark the section by clicking the Start Mark and the End Mark respectively at the proper point. You may also drag these marks to the desired places directly. Then click the Play Mark button to play the section once, or the two-arrow button to play it repeatedly.
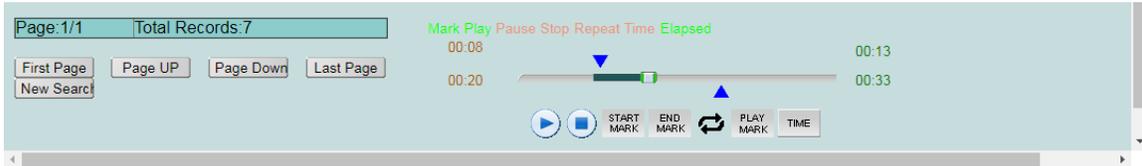


To toggle between relative and absolute time during playback, click the Time button.

## Copying a Record

Use this function to copy a record from the logger to the PC for whatever purposes it may serve. To copy a record, move the cursor over the record's Start Time field. After the cursor changes to a "hand", right-click and select "Save link as". In the dialog box that follows, select the drive and the folder to save.
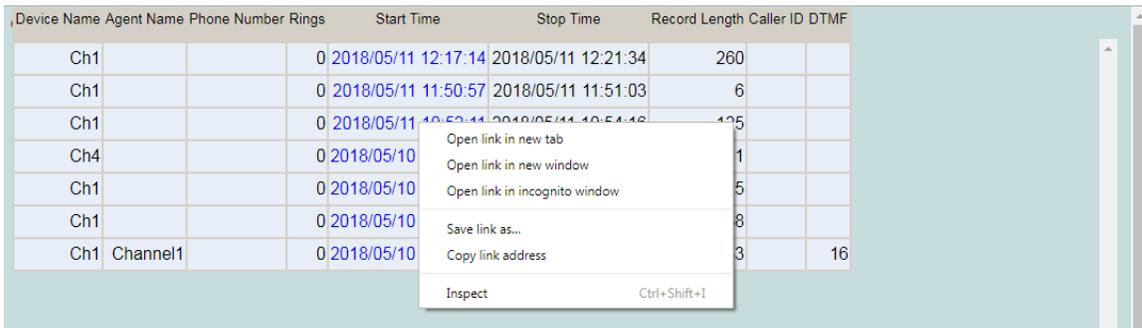


Although this function allows one to copy individual records to the PC, it is not meant to be an archiving function. In many cases the system's internal memory is big enough to store several months' worth of records, and the need for archiving may be eliminated. But, if needed, records can be sent to a remote server via the network for centralized archiving and management. Please refer to Storage Settings for more info.

## 3.3 Channel Settings



**Channel**

Select the channel for configuration. Each channel must be configured individually.

**Agent Name (optional)**

The name of the agent to be associated with this channel.

**Phone Number (optional)**

The phone/extension number to be associated with this channel.

**Max. Record Length**

The maximum length per record. If a call lasted longer than this value, it will be recorded into more than one records. The default value is 1800 seconds (30 minutes), and the maximum value is 3600 seconds (1 hour).

**Min. Record Length**

Calls shorter than this length will not be recorded. Note that if the call exceeds this length then the entire call is recorded, not just the portion of the call after this length.

**Recording Controlled by DTMF**

If this function is disabled then every record will be saved. If this function is enabled then each record can be selectively saved or discarded by pressing a string of touch tones during or at the end of the call. It is recommended that the touch tone string contains at least three touch tones to prevent accidental, unintentional operation.



The touch tone string can be used to either save or discard the record. If most records are to be discarded then choose "Keep Record" - a record will be saved if and only if the touch tone string is pressed. If most records are to be saved then choose "Delete Record" - a record will be discarded if and only if the touch tone string is pressed.

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**Work Hours**

Always – Channel will always be enabled.

Never – Channel will always be disabled.

Customize – Specify up to four time periods expressed in the 24-hour time format (HH:MM:SS).

Select "Customize" to access the following dialog menu.

| Set Work Hours | | | | | |
|---|---|---|---|---|---|
| Hour | Minute | - | Hour | Minute | Add |
| Choose Work Days | | | | | |
| ☐ Sunday ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday | | | | | |
| OK | | | | | |

Select the work days and click "Add". Enter the time period in the appropriate fields. Up to 4 different work periods can be added. To delete an entry, click its "Delete" button.

| Set Work Hours | | | | | |
|---|---|---|---|---|---|
| Hour | Minute | - | Hour | Minute | Add |
| 8 | 0 | | 12 | 00 | Delete |
| 13 | 0 | | 17 | 30 | Delete |
| 18 | 03 | | 22 | 00 | Delete |
| Choose Work Days | | | | | |
| ☐ Sunday ☑ Monday ☑ Tuesday ☑ Wednesday ☑ Thursday ☑ Friday ☐ Saturday | | | | | |
| OK | | | | | |

## 3.4 Record Settings



### Channel

Select the channel for configuration. Each channel must be configured  individually.

### Start Mode

Specifies how recording should be triggered. The choices are:

**Local Phone**

This mode detects the handset status. Recording starts when the handset is lifted up (off hook) and stops when the handset is hung up (on hook). This mode can be used only when the logger is connected with analog phone lines.

**VOX**

This mode starts/stops recording based on the presence/absence of sound. Recording starts when the sound exceeds the threshold level (called the VOX level), and stops when the sound drops below the threshold level for longer than a certain period (called the Record Stop Delay). Under this mode a phone call will be recorded into several records if there are silent periods longer than the Stop Delay during the call.



*- Record Stop Delay*

If the Stop Delay is too short, phone calls are more likely to be broken into multiple records. If the Stop Delay is too long, consecutive phone calls are more likely to be saved as one record if they occur within a short interval. Typically a value between 3 and 5 seconds works the best.

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*- VOX Level*

The default value is 500. If the level is set too low, the system becomes too sensitive and may generate bogus recordings. If the level is set too high, the system is more likely to stop recording prematurely. Start with the default value and make adjustments if necessary.

## Digital Audio Parameters

**AGC Control**
AGC (Automatic Gain Control) is recommended to be enabled for better recording results, as the system automatically adjusts the record gain to suit different line conditions.

**Record Gain**
Record Gain helps to compensate for weak signals on the line. A higher value means a stronger boost. This setting is defeated if AGC Control is enabled.

**Energy Value**
A real-time display of the current energy level on the selected channel.

**Codec**
The type of audio coding/decoding to use. The default is IMA.

IMA (32K): lower sound quality but uses less memory (4KB per second)
uLaw (64K): higher sound quality but uses more memory (8KB per second)

## DTMF Detect
If enabled, the system will decode and store all touch tones occurred in the call, such as the caller ID in inbound calls and the dialed number in outbound calls.

## Line Settings
These settings are area/country specific. Please do not make any changes unless instructed by factory tech support. The factory default values for the United States are:

Disconnect Voltage: 2 Volts
Off Hook Voltage: 21 Volts
Ring Voltage: 5 Volts
Hook Debounce: 200 ms
Ring Debounce: 100 ms
Ring Interval: 4000 ms

## 3.5 Storage Settings

The system has 8GB of internal flash memory for data storage. It can also be configured to use an external USB drive instead.

No matter how much storage there is, it will eventually be filled up with data if nothing ever gets deleted. To prevent that from happening the system automatically recycles the storage by deleting a certain amount of the oldest data when the recycle threshold is reached. On the Storage Settings page you can set the recycle threshold and the deletion size.

It is possible to set up a storage server and configure the logger to send records to it over the network automatically on a regular basis. Such a storage server can serve multiple loggers for centralized data management and archiving. An optional software program called VLan Server must be installed on the storage server (see Appendix: VLan Server).

| Local Storage Device | | | | |
|---|---|---|---|---|
| Storage Media | ⦿ Internal | ○ USB Drive | Format Key | Format |
| Storage Capacity | 7572MB | | | |
| Current Free Space | 7259MB (95.87%) | | | |
| Recycle When Less Than | 1200 MB | | | |
| Per Deletion | 200 MB | | | |

| Send To Server | |
|---|---|
| Send Time | Disable ▼ |

OK

### Local Storage Device

**Storage Media - Internal**
Records will be stored in the internal flash memory.

**Storage Media - USB Drive**
Records will be stored in the external USB drive. Maximum capacity supported is 32GB.

When switching between the two storage medium, always click the OK button in order for the change to take effect.

**Format / Format Key**
The Format function provides a way to quickly delete all records by re-formatting the internal flash memory. Just enter rfvtgb as the Format Key and click the Format button. Note that re-formatting is always done on the internal flash memory even if USB drive is selected as the storage media.

**Storage Capacity**
The storage capacity of the selected storage media.

**Current Free Space**
Amount of current free space.

**Recycle When Less Than**
Storage recycling starts when the free space drops below this threshold level. The system deletes the oldest records in order to make room for new records.

**Per Deletion**
The amount of data to be deleted per recycling. A smaller value causes the recycling to occur more frequently, but it also allows the system to keep more old data.

## Send To Server

In addition to storing records locally, the system can also be configured to send records to a remote server for centralized data management. When Send Time is enabled, a screen similar to the following will appear.
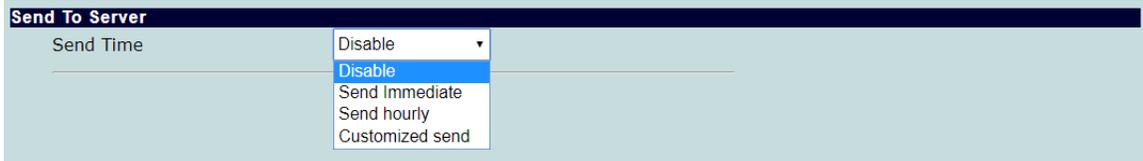


**Send Time**

*Disable*
Don't send.

*Send Immediately*
Send immediately after a call is recorded. Enter the IP address and the port number of the server.

*Send Hourly*
Send at the hour (24 times a day). Enter the IP address and the port number of the server.

*Customized Send*
Send at a specific time of day, once a day.
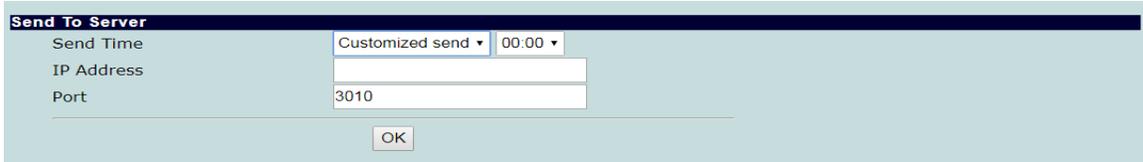


To avoid network congestion, select a time when the expected network traffic is the lightest.

## 3.6  Network Settings



### Device Name

Enter a unique name for your own reference. This name can be used to identify the unit in a system with multiple loggers.

### Administration

#### User Name

The default user name is "vlansd". Change it here when needed.

#### Password

The default password is "1234". Change it here when needed.

If you should lose the user name and/or the password, you can reset them to the default values by pressing the Reset button on the back panel for more than 7 seconds with power turned on. Please note that all other system settings will also be reset to factory default.

## LAN

**DHCP Client**
Enable DHCP Client if you want the router to assign an IP address for the logger. It is not recommended to enable this option.

**IP Address**
The default value is "192.168.1.100". The IP address should have been configured properly during the installation process, but changes can be made here if necessary.

**Subnet Mask**
The default subnet mask is "255.255.255.0" which should work well in most cases.

**Gateway**
The gateway address should be set to the same as the router's. This setting is not needed if the logger is connected to the PC directly.

**DNS Server**
Assign a known DNS server in your network (for NTP name server). If you don't know, enter "168.95.1.1". This setting is not needed if the logger is connected to the PC directly.

## Internet Service

**HTTP Server/Port**
Port number for HTTP. The default value (80) works in most cases.

**Send Status To Server**
If enabled, the logger will send the current recording status to a remote server which is usually the same server that the logger is configured to send records to. You must  enter the server's IP address and port number (default is 3500).

## SyncTime with PC
Click the button to synchronize the logger's internal clock with the PC.

## NTP (Network Time Protocol)
NTP is a protocol used to synchronize clocks over the Internet. If NTP Server is enabled, the logger will automatically synchronize its clock with a NTP server once every 4 hours. Be sure to configure the DNS server if the NTP server you enter is a domain name instead of an IP address.

**NTP Server**
Enable and select a NTP server from the list, or you can enter the IP address of a NTP server not on the list. To get an updated list of NTP servers, visit http://www.pool.ntp.org/en/.

**Time Zone**
Select the time zone for your location.

## Update Software
From time to time new software versions may become available for fixing bugs and/or adding new functions. You should enter here the server information (IP address and port number) obtained from your dealer. When it's time to update, just click the Update button.

**Server**
The IP address of the server where the update is available.  Default value is 220.130.185.195.

**Port**

The port number used by the server for updating software. Default value is 4030.

After changes are made in Network Settings, the system will prompt the user to restart.

192.168.1.100 says

Reboot the system, make the setting effect.

OK    Cancel

Click OK to restart the system so that the changes can take effect. The system will reboot and, after the countdown on the screen is finished, resume operation.
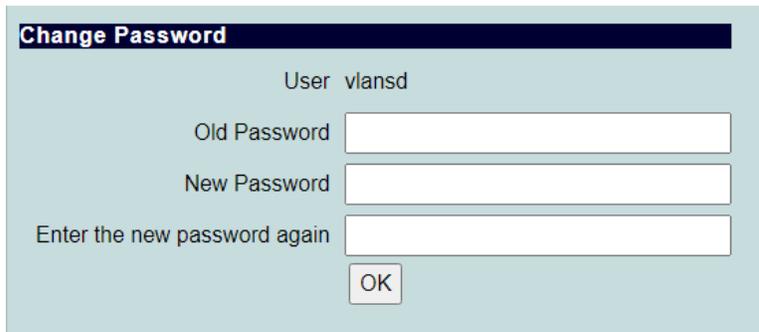
**Change Password**

| | |
|---|---|
| User | vlansd |
| Old Password | |
| New Password | |
| Enter the new password again | |
| | OK |

**User Rights**

| User | Password | Channel Authority |
|---|---|---|
| | | ☐ Channel1 ☐ Channel2 ☐ Channel3 ☐ Channel4 |
| | | ☐ Channel1 ☐ Channel2 ☐ Channel3 ☐ Channel4 |
| | | ☐ Channel1 ☐ Channel2 ☐ Channel3 ☐ Channel4 |
| | | ☐ Channel1 ☐ Channel2 ☐ Channel3 ☐ Channel4 |

OK

| Agent | Phone Number | Status | Line Status | Rings | Start Time | Length | Caller ID | DTMF |
|---|---|---|---|---|---|---|---|---|
| Front_Desk | 101 | Stop | | 0 | 2018/05/11 12:17:14 | 4:20 | | |
| Sales | 102 | Idle | Disconnected | 0 | | | | |
| Service | 103 | Idle | Disconnected | 0 | | | | |
| Accounting | 104 | Idle | Disconnected | 0 | 2018/05/10 15:41:24 | | | |

## 3.7 Change Password



### Old Password

Enter the old password.

### New Password

Enter the new password.

### Enter the new password again

Enter the new password again.

Click OK to make the change.

## 3.8  User Rights



In addition to the system administrator, up to 4 users can be set up with limited channel access. Simply enter the name and password for each user, and select the channel(s) allowed for access.

## 3.9 Channel Status

| Agent | Phone Number | Status | Line Status | Rings | Start Time | Length | Caller ID | DTMF |
|---|---|---|---|---|---|---|---|---|
| Front_Desk | 101 | Stop | | 0 | 2021/03/05 13:34:58 | 0:14 | | 3336394 |
| Sales | 102 | Idle | Disconnected | 0 | | | | |
| Service | 103 | Idle | Disconnected | 0 | | | | |
| Accounting | 104 | Idle | Disconnected | 0 | | | | |

### Status

Idle: Channel has not recorded any calls yet.

Recording: Channel is recording.

Stop: Channel has stopped recording - details of the last call shown in the following columns.

### Rings

The number of incoming rings of the last call. Zero means the call is outbound.

### Start Time

The starting time of the last call.

### Length

The length of the last call.

### Caller ID

The caller ID of the last call. Blank means the call is outbound.

### DTMF

The DTMF tones detected during the call.