Total Recall VR Embedded GUI

User Guide

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Related Documents:

[1] Prolancer Pty Ltd, Total Recall VR web site. Available from:
http://www.totalrecallvr.com/.

[2] Prolancer Pty Ltd, Prolancer web site. Available from:
http://www.prolancer.com.au/.

[3] Prolancer Pty Ltd, Total Recall VR Overview User Guide, 16.0, May 2017

[4] Prolancer Pty Ltd, Total Recall VR Deployment User Guide, 16.0, May 2017

[5] Prolancer Pty Ltd, Total Recall VR LinX Omnia Quick Start Guide, 16.0, May 2017

[6] Prolancer Pty Ltd, Total Recall VR LinX Altus Quick Start Guide, 16.0, May 2017

[7] Prolancer Pty Ltd, Total Recall VR LinX Neos Quick Start Guide, 16.0, May 2017

[8] Prolancer Pty Ltd, Total Recall VR LinX Essence GUI Quick Start Guide, 16.0, May 2017

[9] Prolancer Pty Ltd, Total Recall VR LinX Evolution GUI Quick Start Guide, 16.0, May 2017

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1.   Preface

1.1.   Conventions

Our guides use several conventions to highlight certain words and phrases and draw attention to specific pieces of information.

1.1.1. Notes & Warnings

We use the following visual styles to draw attention to information that might otherwise be overlooked:

Notes are tips, shortcuts or alternative approaches to the task at hand. Ignoring a note should have no negative consequences, but you might miss out on a trick that makes your life easier.

Important boxes detail things that are easily missed: configuration changes that only apply to the current session, or services that need restarting before an update will apply. Ignoring the information will not cause data loss, but may cause irritation and frustration.

Warnings should not be ignored. Ignoring warnings will most likely cause data loss.

1.1.2. Typographic Conventions

We use typographic conventions to call attention to specific words and phrases. These conventions, and the circumstances they apply to, are as follows.

Example	Meaning
Select **Add** to create a new ...	Locate the button or menu item named "Add" on the screen; navigate to it using the [Up] and [Down] keys and then press the [Select] key to initiate the action.
Press [Select] …	Locate the key named "Select" on the control keypad and then press it.
Enter *Commission* ...	Locate the field named "Commission" on the screen; navigate to it using the [Up] and [Down] keys and then enter

	a value.
Choose **Country** ...	Locate the field named "Country" on the screen; navigate to it using the [Up] and [Down] keys and then repeatedly press the [Select] key to select the desired option.
Tick **Active User** ...	Locate the check box named "Active User" on the screen; navigate to it using the [Up] and [Down] keys and then press the [Select] key to place a visual tick in the box.
Un-tick **Active User** ...	Locate the check box named "Active User" on the screen; navigate to it using the [Up] and [Down] keys and then press the [Select] key to remove the visual tick in the box.
Enter *3** ...	Enter "3*" using the keys on the numeric keypad.

1.1.3. Procedures

We use numbered sequence of steps to define procedures for performing certain tasks. For example:

Procedure Title

1. This is the first step of the procedure.

2. This is the second step of the procedure.

   a. This is the first sub-step of step 2.

   b. This is the second sub-step of step 2.

3. This is step three.

1.2. We Need Feedback

If you find a typographical error in this guide, or if you have thought of a way to make this guide better, we would love to hear from you.

Please submit your feedback using the feedback form on our web site: http://www.prolancer.com.au/contact/feedback.

If you have a suggestion for improving the guide, then try to be as specific as possible when describing your suggestion. Otherwise, if you have found an error, please include the section number and some of the surrounding text so we can find it easily.

2. Introduction

2.1. About This Guide

This guide describes the Total Recall VR embedded graphical user interface (embedded GUI) which is available on the following Total Recall VR models:

- Total Recall VR LinX Omnia;

- Total Recall VR LinX Altus;

- Total Recall VR LinX Neos;

- Total Recall VR LinX Essence (GUI edition); and

- Total Recall VR LinX Evolution (GUI edition).

The guide is intended for Total Recall VR end users. It describes how to use the embedded GUI to monitor recordings in progress, search for and replay recordings, create archives and other functions that end users can perform. In addition, it helps systems and network administrators configure Total Recall VR through the embedded GUI.

Please keep a copy of this guide handy for quick reference.

2.2. What is Total Recall VR?

Total Recall VR is a professional audio logging and call recording system which is self-contained, fully featured and cost-effective. Enterprises and governments worldwide use it to create electronic records of many forms of audio communication including telephone, 2-way radio, broadcast radio, public address, room microphones and much more.

Total Recall VR is the ideal solution for:

- Recording business telephone conversations;

- Recording agent calls in contact centres;

- Logging emergency response communication;

- Logging business operations communication;

- Logging radio broadcasts;

- Logging public announcements;

- Creating audio records of meetings, legal proceedings, public enquiries and similar events; and

- Creating compliance records to meet duty of care and legal requirements.

Total Recall VR captures all audio in digital format and stores it in a proprietary, secure and tamper proof file format in its on-board hard drive storage. The file format preserves the originality of the audio that it stores and has a number of built-in mechanisms that aid quick and reliable detection of tampering. However, for ease of access, Total Recall VR client applications can generate copies of recordings in a number of popular and everyday formats such as Microsoft's Wave (.wav) and MPEG Layer-3 (.mp3).

Storing audio by itself does not help when looking for one recording in a store that can hold hundreds of thousands of recordings. That is why, in addition to audio, Total Recall VR captures and then stores information related to each recording and audio source in its database such as start time, end time and duration of recordings, calling and called numbers on telephone calls, DTMF digits during calls, user configurable notes and much more. This information is the backbone of a powerful search capability which can pin point a single recording in a set of hundreds of thousands of recordings which reside either on the on-board hard drives of a Total Recall VR or in one of many types of off-system archives of recordings.

In addition to the audio recorder and the on-board storage, each Total Recall VR system comes with a built-in media player with comprehensive player controls (start, stop, fast-forward, rewind …). The player can play audio stored in files directly on the system or stream audio to a remote client application which then outputs the sound to the PC speakers of the PC that it runs on.

While audio recording, storage and re-play are the main functions of Total Recall VR, every Total Recall VR offers many more advanced, professional-grade features. For example:

- Ability to capture audio from different types of audio sources (analogue, VoIP, RoIP, AoIP and ISDN), at the same time – hybrid recording.

- Live and real-time monitoring (listening) of recordings in progress on the system itself or on a remote PC with the aid of a PC client application.

- Feature-rich archiver which can create searchable archives of recordings on CD, DVD or BD discs, USB keys or drives and network drives, either automatically or on-demand.

- Automated self-cleaning mechanism that removes obsolete recordings automatically and on regular intervals to keep the system operating endlessly.

- Automated transcoder which compresses audio to free space on the on-board hard drives.

- SNMP agent capable of generating SNMP alarms (traps).

- SMDR integration for a number of popular PBXes.

- Fully internationalised user interface; all menus and software available in multiple languages.

- Role based access control.

- On-board LCD display and control keypad on selected models.

- A number of PC client applications with unrestricted use license.

When audio records are critical to your operations, Total Recall VR delivers. It is professional, reliable and fully self-contained solution for audio logging and call recording that comes at an affordable price.

> The Total Recall VR Overview [3] guide contains a comprehensive description and overview of Total Recall VR.

2.3. Total Recall VR Concepts

2.3.1. Extensions

Total Recall VR Extensions are a Total Recall VR concept and should not be confused with PBX extension numbers which are used for desk phones (or mobile devices) within an enterprise.

Total Recall VR Extensions are one of the three different identifiers that can be assigned to the source and the destination of recordings, irrespective of whether the recordings are of a telephone call or another audio source (such as radio program for example).

The other two identifiers are the Total Recall VR Raw and the Total Recall VR Mapped Numbers which do not have the same effect as the Total Recall VR Extensions to the availability of various features.

> As identifiers, Total Recall VR Extensions are fundamental to most Total Recall VR features and if not present for a recording, then most features will not work at all for that recording.
>
> For example, it will not be possible to find recordings by using the 'Extension' search criteria.

Total Recall VR can classify calling and called numbers (or PBX extensions) as Total Recall VR Extensions when recording calls. As a matter of fact in most deployments PBX extensions map directly to Total Recall VR Extensions.

However, depending on Total Recall VR configuration, Total Recall VR Extensions can be any free text identifiers. For example, Total Recall VR Extension "Tanya's Desk Phone" can represent actual PBX extension 100, while "Tanya's Softphone" can represent (the human form of) PBX extension 200 (which the PBX may know as "sip:ext200@myenterprise.com").

Total Recall VR Extensions may (and should) be used on deployments where Total Recall VR is used to record audio sources other than telephone calls. For example Total Recall VR Extensions "2Day FM" can be assigned to recordings created on an analogue recording channel which is used to log the radio program from a radio station called 2Day FM.

Total Recall VR uses information that it extracts from call signalling and its configuration to determine Total Recall VR Extensions for recordings. Here is a summary of the steps used by Total Recall VR to determine Total Recall VR Extensions for recordings:

1. Total Recall VR starts with Raw identifiers which it collects from call signalling or determines from its configuration. The following table shows the Raw identifiers for various recording scenarios:

When recording …	Raw identifiers are …
Analogue telephone call (outgoing)	Dialled DTMF digits and the 'Extension' value, which appears in the configuration for each analogue recording channel.
Analogue telephone call (incoming)	Incoming CLI digits and the 'Extension' value, which appears in the configuration for each analogue recording channel.
SIP call	Values in the 'From' and 'To' header fields in the 200 response to the INVITE message.
H.323 call	Values in the 'Calling Party Number' and 'Called Party Number' information elements, if present, which appear in the SETUP message. The previous will be replaced with the first alias that appear in the 'sourceAddress' and 'destinationAddress' elements, if present, which appear in the 'User to User' information element of the SETUP message.
RTP Endpoint (passive)	<IP address:Tx port> or <IP address:Rx port> which appear in the RTP Endpoint configuration.
RTP Stream (active)	<From IP address:From UDP port> which appear in the RTP packets and <IP address: UDP port> which appear in the RTP Stream configuration.
RTP Stream Pair (active)	<Tx From IP address:From UDP port>;<Rx From IP address:From UDP port> which appear in the RTP packets and <Tx IP address: UDP port>;<Rx IP address: UDP port> which appear in the RTP

	Stream configuration.
VRP call	MPT 1327 address or MPT 1343 number.

2. Total Recall VR then converts the Raw identifiers to Total Recall VR Mapped identifiers by applying identifier conversion rules, which are specified in the Signalling Mapping configuration, to each of the Raw identifiers.

   The mapping rules are regular expressions which specify how to convert Raw identifiers to Mapped identifiers. For example, a mapping rule can convert the Raw identifier "sip:ext200@myenterprise.com" to Mapped identifier "Extension 200".

3. Finally, Total Recall VR attempts to match Mapped identifiers to matching rules that are present in the Internal Dial Plan configuration and if, and only if, it finds a rule that matches a Mapped identifier, then it classifies that identifier as a Total Recall VR Extension.

   Continuing from the previous example, if the Internal Dial Plan configuration has an entry that matches the Mapped identifier "Extension 200", then, and only then, the identifier "Extension 200" will be classified as a Total Recall VR Extension.

2.3.2. Recording Policies

Recording policies control the operation of the recorder. Policies determine the method of recording which can be:

- Record by default - Total Recall VR will automatically record all audio sources and telephone calls and keep recordings unless instructed otherwise during recording.

- Don't record by default - Total Recall VR will automatically record all audio sources and telephone calls, but at the end of the recording it automatically discards recordings unless instructed otherwise during recording.

- Record partial calls – Total Recall VR will record only parts of all audio sources and telephone calls, as instructed during recording, and keep all parts concatenated in a single recording.

In addition to the method of recording, policies specify whether real-time monitoring is allowed or not while recording is in progress.

Policies can be one of two types:

- Global – a single system wide policy which applies to recordings from all audio sources and telephone calls on all recording channels.

- Extension – apply only to recordings from audio sources and telephone calls which have been assigned Total Recall VR Extension identifiers. These policies have precedence over the global policy.

Recording policies are useful in a number of ways. For example, policies can be used to:

1. Selectively record (or not) telephone calls to specific telephones.

2. Decide in real-time, while recording, whether to keep a recording of important conversations.

3. Control access to real-time monitoring (listen in) during recording.

4. Allow remote client applications to control (start, stop …) recording.

> Total Recall VR Recording Policies depend on Total Recall VR Extension identifiers.
>
> If Total Recall VR cannot determine Extension identifiers, then the recording policies will not work.

3.   On-board Controls

The following Total Recall VR models feature a built in colour LCD screen and control keypad:

- Total Recall VR LinX Omnia;

- Total Recall VR LinX Altus; and

- Total Recall VR LinX Neos.

The following Total Recall VR models come with a standalone colour LCD screen and control keypad:

- Total Recall VR LinX Essence (GUI edition); and

- Total Recall VR LinX Evolution (GUI edition).

3.1.   Colour LCD Screen

The colour LCD screen is the main display which shows the various screens that are part of the embedded GUI.

The screen has a built in mechanism that extends the life of the screen. The LCD backlight turns off automatically after 5 minutes of inactivity on the control keypad. Total Recall VR continues to operate normally while the LCD backlight is off.

> Press any key on the control keypad to turn the LCD backlight on at any time.

3.2.   Control Keypad

The control keypad is a simple and yet powerful input keyboard that is purpose built for the Total Recall VR embedded GUI. All Total Recall VR control keypads have the same keys; however, they come in different shapes and sizes.

The following figure shows the keypad available on the LinX Omnia, Altus and Neos models:

Figure 1: Control Keypad on LinX Omnia. Altus and Neos Models

LinX Essence and Evolution models are supplied with a standalone keypad with USB interface as shown on the subsequent figure.

Figure 2: Control Keypad on LinX Essence and Evolution Models

Total Recall VR plays a short "beep" on every key press to acknowledge that it has detected the key press. Every Total Recall VR model provides a volume control button which controls the volume of the "beep".

3.3. Key Functions

Each key on the control keypad has a primary function which may change depending on the current context of the embedded GUI. The primary function is the logical function of the key based on the current context of the GUI. For example, the **[▶]** key starts playing the selected recording on the Search Screen while the [■] key stops it.

Some keys have a secondary function as well. For example, the [■] key locks the user interface when a recording is not playing.

The following table has a complete summary of key functions:

Key	Context	Function
[Menu]	A main screen	Navigates (cycles) between the three main screens: Logging, Search and Options Menu.
	Dialog window	Automatically moves the cursor to either the **OK** or **Cancel** button, saving keystrokes. Note that it does not actually activate the function that is attached to the button. The [Select] key does this.
[Select]	Button	Activates the function attached to the button.
	Check box	Toggles the state of the check box.
	Input filed	Cycles through the set of pre-defined values if the input field has a set of pre-defined values.
	Recording on the Logging Screen	Toggles (start/stop) live real-time monitoring of a recording in progress
	Recording on the Search Screen.	Starts replay. Same as pressing the **[▶]** key.
[▲]	Recording list	Moves the screen cursor to the recording before the current one.
	Dialogs	Moves the screen cursor to the previous GUI control or button.
[▼]	Recording list	Moves the screen cursor to the recording after the current one.
	Dialogs	Moves the screen cursor to the next GUI control or button.
[▸]	Recording on the Search Screen.	Starts re-play.
	Active re-paly.	Pauses re-play.
[▸▸]	Active re-play.	Fast forwards.
	Recording on the Search Screen.	Shows the next group of 1000 recordings that are younger (start time) than the group already on the display.
[▸▸ ▸]	Active re-play.	Double speed fast forward.
[◂◂]	Active re-play.	Rewinds.
	Recording on the Search Screen.	Shows the next group of 1000 recordings that are older (start time) than the group already on the display.
[■]	Active re-play.	Stops re-play.

	A main screen	Locks the user interface and logs out the current user.
[0] to [9]	Entry field	Inputs the digit specified on the key.
[*]	Entry field	Inputs *.
	Recording on the Logging or Search Screen.	Tags or un-tags the recording.
[#]	Input field	Inputs # or clears (deletes) the current value.
	Active re-play.	Activates the "sticky play" mode.
	Recording on the Logging or Search Screen.	Locks and un-locks the recording.

3.4. Using the Control Keypad

The embedded GUI features a cursor (much like a mouse cursor). The [▲] and [▼] keys move the cursor from one item (button, control etc.) on the GUI to another.

When the cursor is positioned on an interactive item (such as a button or a check box), the item becomes highlighted. Various methods are used to indicate that GUI items are currently highlighted.
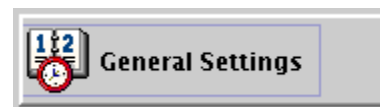
Buttons

Buttons (for example, the **OK** and **Cancel** buttons in a dialog) 'pop up' when they are highlighted, and the button text is shown surrounded by a border. For example:

Standard screen button: Highlighted screen button:

Use the [Select] key to initiate the action that is attached to the button.

Lists

Records in lists are shown highlighted when selected. Press the [Select] key to initiate the action associated with the selected record.

Check Boxes

Check box text is shown with a border around it when selected.

Press the [Select] key to place a check in the check box (referred to in this guide as 'checking' the check box).

Data fields associated with check boxes cannot be populated or edited unless the check box is checked.

Data Entry Fields

Data fields are shown highlighted when selected and can be edited.

Depending on the data filed:

- Use the [Select] key to cycle through available values for data fields with pre-populated options.

- Use the numeric keypad to enter values for input data fields. If you enter the wrong value, simply enter another value and it will overwrite the existing value. Some data fields will clear the current value on the first key press.
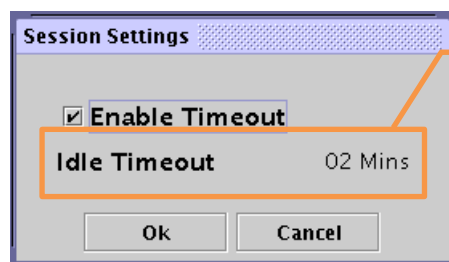
3.5. Data Entry

A quick look at the control keypad makes it obvious that data entry is limited to numbers and the '*' and '#' characters. As a result, the embedded GUI uses a number of strategies that make it possible to enter different types of values in data entry fields.

Data entry fields with pre-defined values

There are two options to select one of the pre-defined values when the screen cursor is on a filed which only accepts pre-defined values.

The first is simply to keep pressing the [Select] key and cycle through the available values until the desired value is shown.

The second is to simply enter the digits that represent the desired value with the numeric keys. For example, it is possible to set the *Session Timeout* in the Session Settings dialog to 2 minutes by pressing the [0] key followed by the [2] key.

Example data entry field that uses pre-defined values.

Data entry fields with no pre-defined value

To enter a value in a filed which does not have a set of pre-defined values simply enter the value using the numeric keys on the control keypad.

Example data entry field that does not use pre-defined values.

All such fields limit the number of characters that represent a value. As a result, when the limit is reached, the filed simply discards the left-most character and uses the last entry as the right-most character. If you keep pressing digit keys, you will see the value "rotate" from right to left.

For example, the filed shown on the previous dialog accepts values that are 4 characters long. So to enter '4885', simply press the following keys in sequence: [4], [8], [8] and [5].

To enter a 2 digit value, say '28' you must use 0 as prefix. The key sequence then is: [0], [0], [2] and [8].

However, some of the fields automatically clear the value on the first key press. If this is the case, then to enter '28' the key sequence reduces to just: [2] and [8].

4. Main Screens

The Total Recall VR embedded GUI has 3 main screens:

1. Logging Screen,

2. Search Screen and

3. Options Menu Screen.

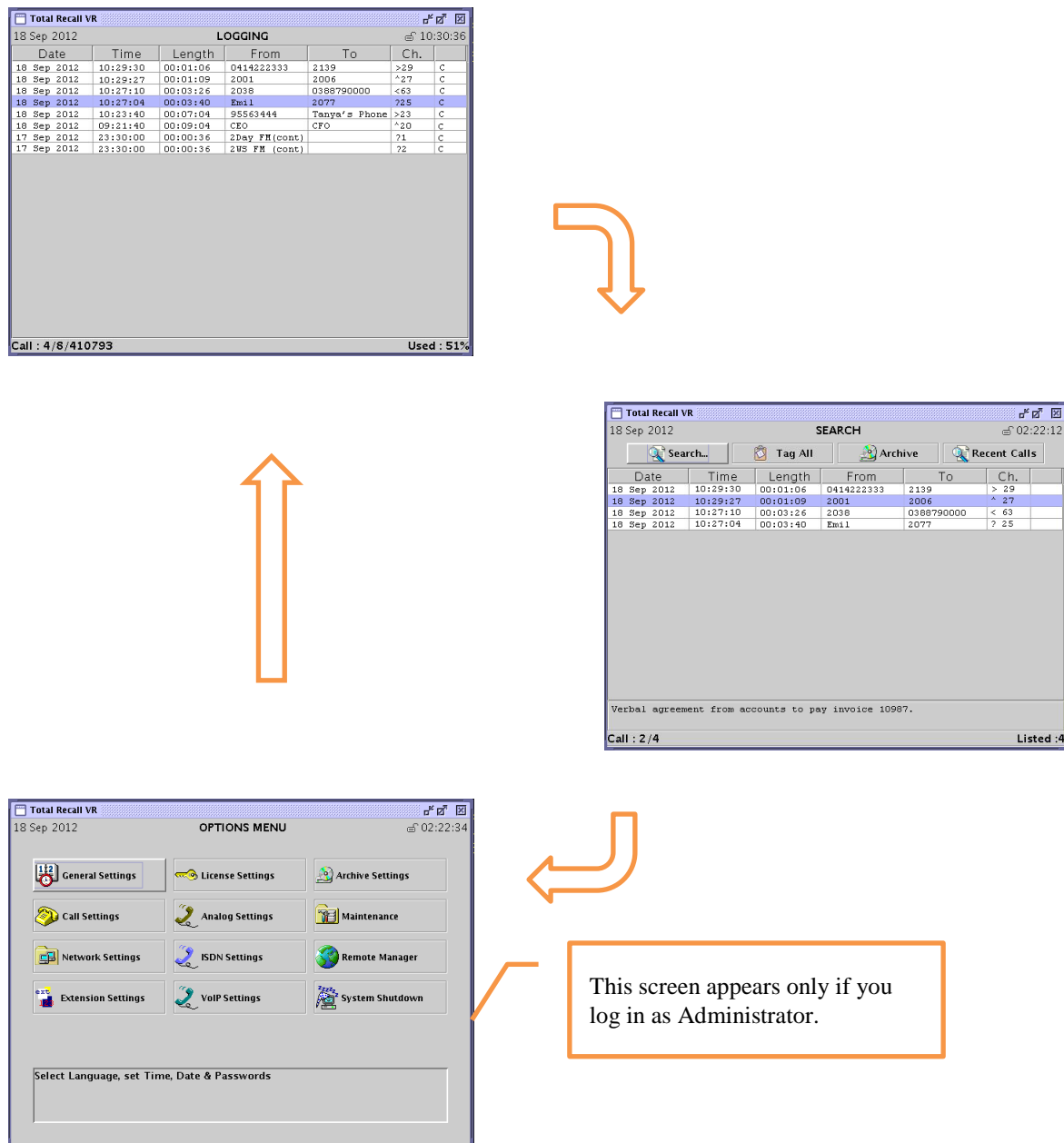Use the [Menu] key to switch from one screen to another as shown on the subsequent figure.

Figure 3: Embedded GUI Main Screen Flow

Access to the Options Menu Screen is restricted to Administrator users. This screen is NOT shown to the standard Users.

4.1. Logging Screen

Total Recall VR shows the Logging Screen by default. By default, this screen displays recordings in progress, in reverse start time order (latest, or most recent, on top), as shown on the subsequent figure.
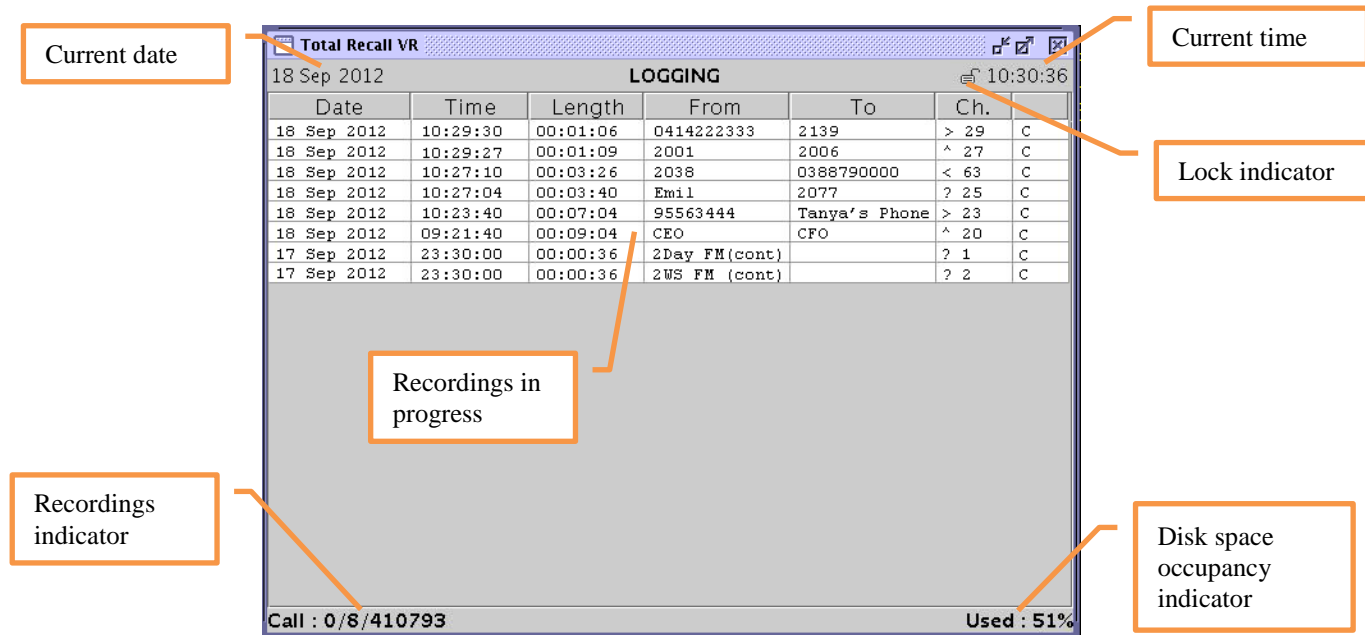

Current date

Current time

Lock indicator

Recordings in progress

Recordings indicator

Disk space occupancy indicator

Figure 4: Logging Screen with Recordings in Progress

Starting from the top and moving towards the bottom of the screen:

- Total Recall VR displays the current system date and time at the top of the Logging Screen. This is the time and date that the system uses to time stamp recordings.

- The screen lock indicator also appears on the top of the screen. It appears as one of following icons:

  - ☞ : indicating that a user session is in progress and the system is accepting input and commands from the control keypad.

  - ☖ : indicating that the screen and keypad are locked and the system is NOT accepting input and commands from the control keypad.

- The table of recordings in progress takes the majority of the space on the screen. This table can contains as many as 120 rows. However, due to limits in screen space, not all rows are shown. Use the [▲] and [▼] keys to scroll through the table. The columns of the table are:

  - **Date**: the date when the recording started.

  - **Time**: the time when the recording started. Total Recall VR uses time stamps with millisecond resolution; however, the time values in this column do not show the millisecond part.

  - **Length**: the current duration of the recorded content. Similar to Time values, Total Recall VR uses millisecond resolution to track duration;

however, the duration values in this column do not show the millisecond part.

- o **From**: a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the source of the audio that is being recorded.

- o **To**: a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the destination of the audio that is being recorded.

- o **Ch**.: the identifier of the Total Recall VR recording channel that is used for recording. The channel identifier can have one of the following characters as a prefix:

    - **?**: indicates that the recording could not be classified.

    - <: indicates that the recording has been classified as 'incoming'. For example, if the recording is of a telephone call, then the call is an incoming call.

    - >: indicates that the recording has been classified as 'outgoing'. For example, if the recording is of an RTP stream, then the stream is a stream that is generated by an RTP source.

    - ^: indicates that the recording has been classified as 'internal'. For example, if the recording is of a telephone call, then the call is an internal call.

- o The last column shows a combination of the following indicators:

    - C: indicates that recording is in progress.

    - M: indicates that real-time live monitoring is in progress.

    - L: indicates that the recording has been locked.

    - E: indicates that recording of an emergency call or communication is in progress.

    - B: indicates that recording of a broadcast call or communication is in progress.

    - G: indicates that the recording is of a group call or communication.

    - *: indicates that the recording has been tagged.

- The recordings indicator appears at the bottom left hand corner of the screen. It shows 3 numbers which are separated by a '/':

    - o The first number is the number of the current row in the table of active recordings when navigating through the table with the [▲] and [▼] keys.

    - o The second number is the total number of recordings in progress.

    - o The third and last number is the total number of completed recordings that exist on the system.

- The disk space occupancy indicator appears on the bottom right hand corner of the screen. It shows the actual used disk space as precent of total available disk space.

As stated earlier, the table of recordings can contain as many as 120 rows, each showing the details of a recording in progress. However, not all 120 rows can appear on the screen at the same time due to limits in screen space. Also, new rows appear and existing rows disappear from the table as new recordings start and current recordings complete.

Use the [▲] and [▼] keys to move the screen cursor to a particular row of the table. The table will highlight the row which has the cursor. At the same time the first number of the recordings indicator (bottom left hand corner of the screen) will change to show the number of the current row in the table. The following figure shows a snapshot of the screen where the screen cursor is on the 4th row of the table.
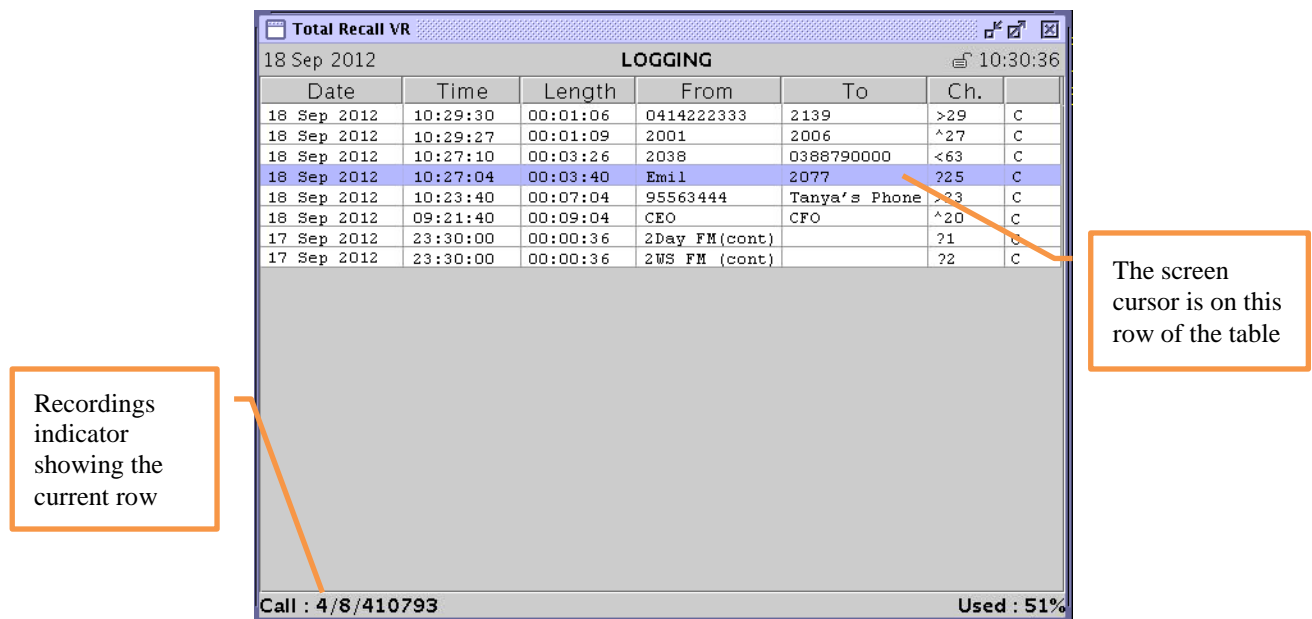

Figure 5: Screen Cursor Position on Logging Screen

The position of the screen cursor is important because it identifies the recording in progress for real-time monitoring.

4.2. Search Screen

The Search Screen makes provisions for searching, playing and archiving recordings.

By default this screen shows the result of the last search, in reverse start time order (latest on top) as shown on the subsequent figure.
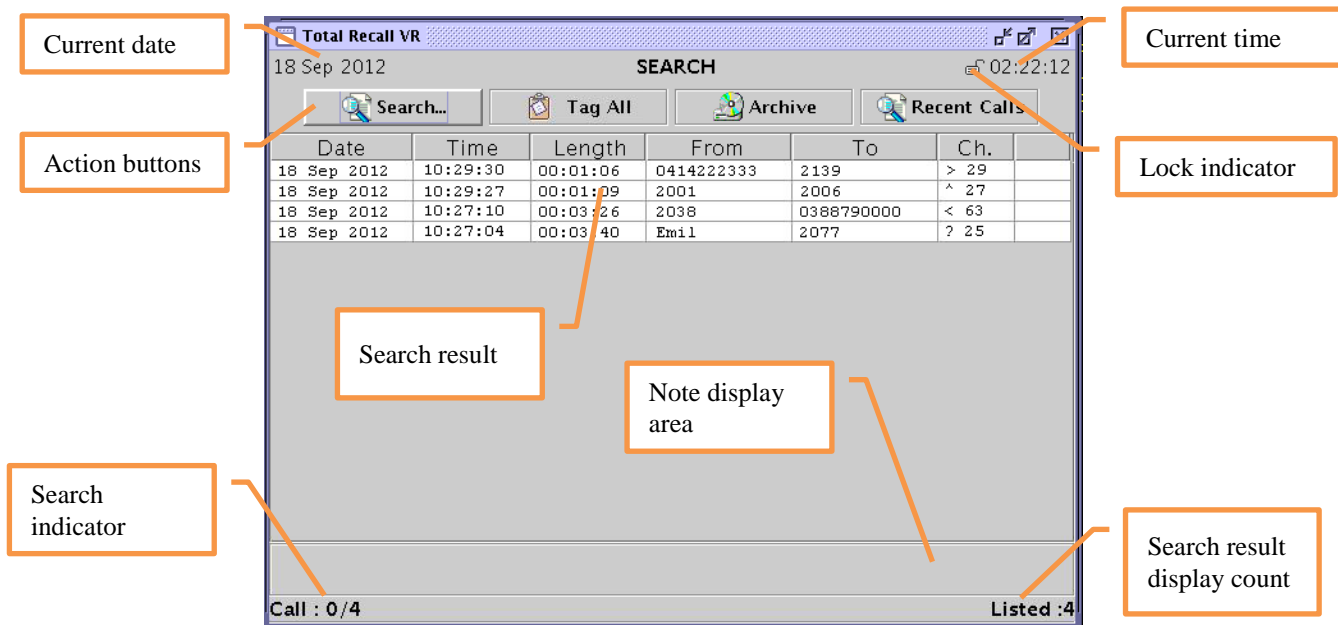
Figure 6: Search Screen Showing Search Results

Starting from the top and moving towards the bottom of the screen:

- Total Recall VR displays the current system date and time at the top of the Search Screen. This is the time and date that the system uses to time stamp recordings.

- The screen lock indicator also appears on the top of the screen. It appears as one of following icons:

  o 🔓 : indicating that a user session is in progress and the system is accepting input and commands from the control keypad.

  o 🔒 : indicating that the screen and keypad is locked and the system is NOT accepting input and commands from the control keypad.

- A set of action buttons appear at the top of the screen:

  o **Search**: initiates a search.

  o **Tag All** (or **Untag All**): tags (or un-tags) all recordings that were identified by the last search.

  o **Archive**: initiates archiving.

  o **Recent Calls**: toggles periodic auto-update of the search result table. When on, the search results table will automatically update on regular intervals to show recently completed recordings.

- The search result table takes the majority of the space on the screen. This table can contain as many as 1000 rows. However, due to limits in screen space, not all rows are visible. Use the [▲] and [▼] keys to scroll through the table. The columns of the table are:

  o **Date**: the date when the recording started.

- o **Time**: the time when the recording started. Total Recall VR uses time stamps with millisecond resolution; however, the time values in this column do not show the millisecond part.

- o **Length**: the final duration of the recorded content. Similar to Time values, Total Recall VR uses millisecond resolution to track duration; however, the duration values in this column do not show the millisecond part.

- o **From**: a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the source of the audio that is being recorded.

- o **To**: a Total Recall VR Extension if available, or a Total Recall VR Mapped Number if not, that identifies the destination of the audio that is being recorded.

- o **Ch**.: the identifier of the Total Recall VR recording channel that was used for recording. The channel identifier can have one of the following characters as a prefix:

  - ▪ **?**: indicates that the recording could not be classified.

  - ▪ **<**: indicates that the recording was classified as 'incoming'. For example, if the recording is of a telephone call, then the call was an incoming call.

  - ▪ **>**: indicates that the recording was classified as 'outgoing. For example, if the recording is of an RTP stream, then the stream was generated by an RTP source.

  - ▪ **^**: indicates that the recording was classified as 'internal. For example, if the recording is of a telephone call, then the call was an internal call.

- o The last column can show a combination of the following indicators:

  - ▪ *: indicates that the recording is tagged.

  - ▪ A: indicates that the recording has been archived at least once previously.

  - ▪ L: indicates that the recording has been locked.

  - ▪ E: indicates that the recording is of an emergency call or communication.

  - ▪ B: indicates that the recording is of a broadcast call or communication.

  - ▪ G: indicates that the recording is of a group call or communication.

  - ▪ X: indicates that the recording is corrupt, damaged.

- • The note display area appears at the bottom of the screen. It shows the full text of notes, if any, that are associated with recordings.

- The search indicator appears at the bottom left hand corner of the screen. It shows 2 numbers which are separated by a '/':

  o The first number is the number of the current row in the table of search results when browsing through the table with the [▲] and [▼] keys.

  o The second number is the total number of recordings that matched the last search criteria.

- The search result display count appears on the bottom right hand corner of the screen. It shows the number of recordings that are actually displayed in the search result table.

As stated earlier, the search result table can contain as many as 1000 rows, each showing the details of a recording. However, not all 1000 rows can appear on the screen at the same time due to limits in screen space.

Use the [▲] and [▼] keys to move the screen cursor to a particular row of the table. The table will highlight the row which has the cursor. At the same time the first number of the search indicator (bottom left hand corner of the screen) will change to show the number of the current row in the table.

The following figure shows a snapshot of the screen where the screen cursor is on the 2nd row of the table.
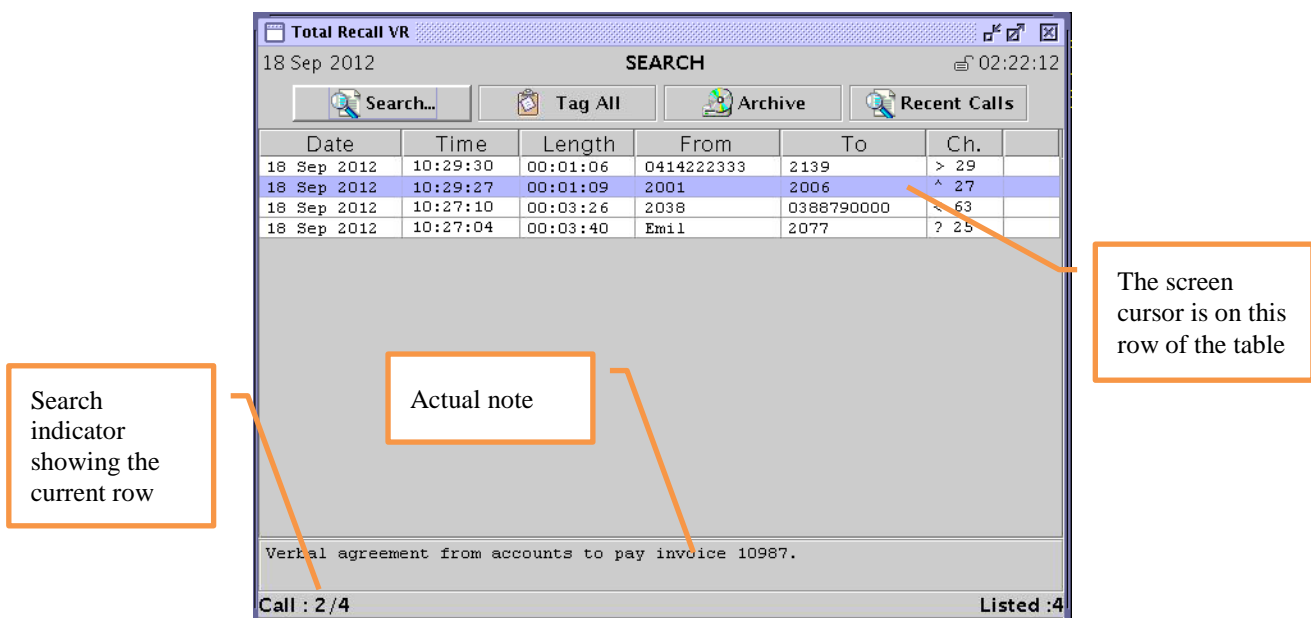

Figure 7: Screen Cursor Position on Search Screen

If the search result has more than 1000 recordings, then only 1000 recordings are displayed at a time. Press the **[◀◀]** key, when re-play is not in progress, to display older recordings. Similarly, press the **[▶▶]** key, when re-play is not in progress, to show younger recordings.

4.3. Options Menu Screen

The Options Menu Screen makes provisions for system configuration and maintenance.

Configuration and maintenance activities are organised in groups, each represented by its own button on this screen.
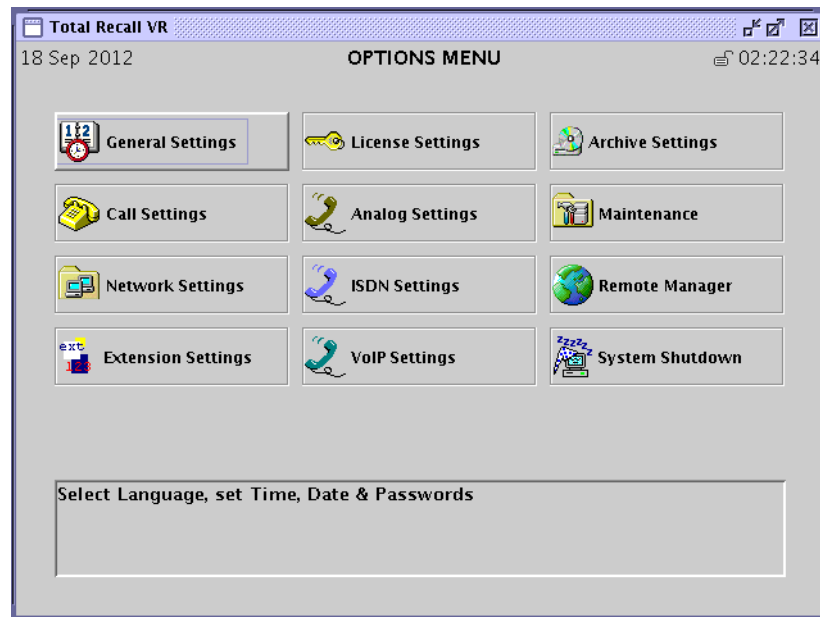

Figure 8: Options Menu Screen

You must log in as Administrator in order to gain access to this screen. Total Recall VR will not display this screen if you log in as User.

If the User and the Administrator have the same password, Total Recall VR assumes that you log in as the Administrator. By default, both the User and the Administrator have the same password: **0000**.

Buttons on this screen may be disabled (greyed out) if configuration or maintenance activity groups do not apply to your system, as shown on the subsequent figure.
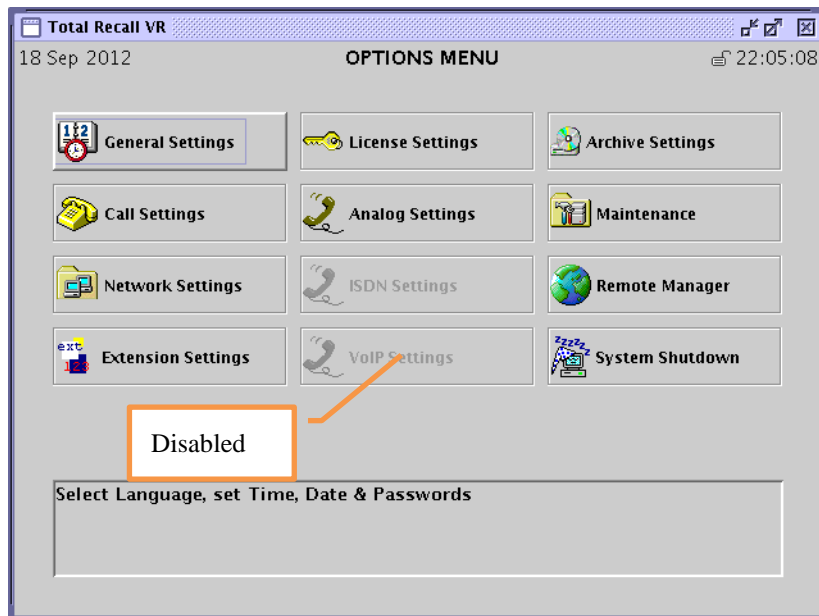
Figure 9: Disabled Options on the Options Menu Screen

Use the [▲] and [▼] keys to move the screen cursor to a particular button on the screen. Then use the [Select] key to access the configuration and maintenance activities associated with the button.

5.   Access Control

5.1.   Roles

The embedded GUI has a role based access control mechanism. Two roles exist and one user in each role. The roles are:

1. Administrator – the user in this role is allowed to access all functions of the system.

2. User – the user in this role is restricted to functions provided by the Logging and Search Screens.

> ⚠ It is not possible to add additional users in any of the roles at this stage.

Total Recall VR decides which user is accessing the system by comparing the password presented at start of a user session with the Administrator and User passwords stored in its configuration. By default, both the User and the Administrator password are the same: 0000.

> ⚠ If the User and the Administrator have the same password, Total Recall VR assumes that you log in as the Administrator.

5.2.   User Sessions

User sessions are periods of time during which a user interacts with a Total Recall VR through the embedded GUI.

> ℹ If you are trying to access a Total Recall VR and the LCD screen is blank and dark, press any key on the control keypad to turn the LCD backlight on.
>
> Total Recall VR turns the backlight of the LCD screen off automatically after 5 minutes of inactivity on the control keypad to extend the life of the LCD screen.

Users must enter a password to start a session with a Total Recall VR through the embedded GUI.

Start a Session with a Total Recall VR

1. Press any key on the keypad. This will turn the LCD backlight on, if it is off, and display the Enter Password dialog.
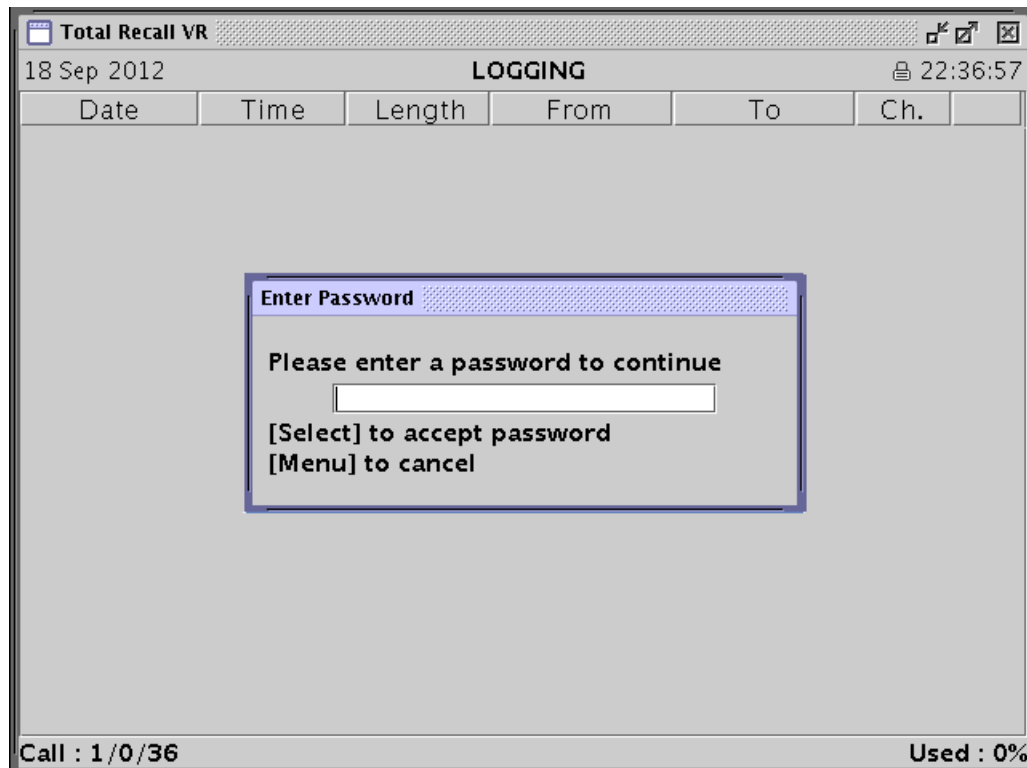
2. Enter the Administrator or the User password and then press the [Select] key. By default both passwords are 0000 and by default you will log in as Administrator.

User sessions automatically expire after a configurable time period. By default, this period is 2 minutes of inactivity.

Total Recall VR configuration specifies the timeout period for user sessions. In addition, the same configuration specifies whether sessions time out or not.

Press the [■] key, while not re-playing a recording, to end a user session at any time and on any screen of the embedded GUI.

5.3.   Password Recovery

If the Administrator password is lost, then it is not possible to recover it from the system via the embedded GUI or any other means.

⚠️ Keep a record of the administrator and user password in a safe place.

However, it is possible to start a one-time password recovery user session with Total Recall VR if the administrator password is lost.

⚠️ Use this session to set a new Administrator, and if required User, password.

To start a one-time password recovery user session with Total Recall VR:

Start a One-time Password Recovery User Session

1. Press any key on the keypad. This will turn the LCD backlight on, if it is off, and display the Enter Password dialog. Press the [▲] key. This will display the Forgotten Password dialog.
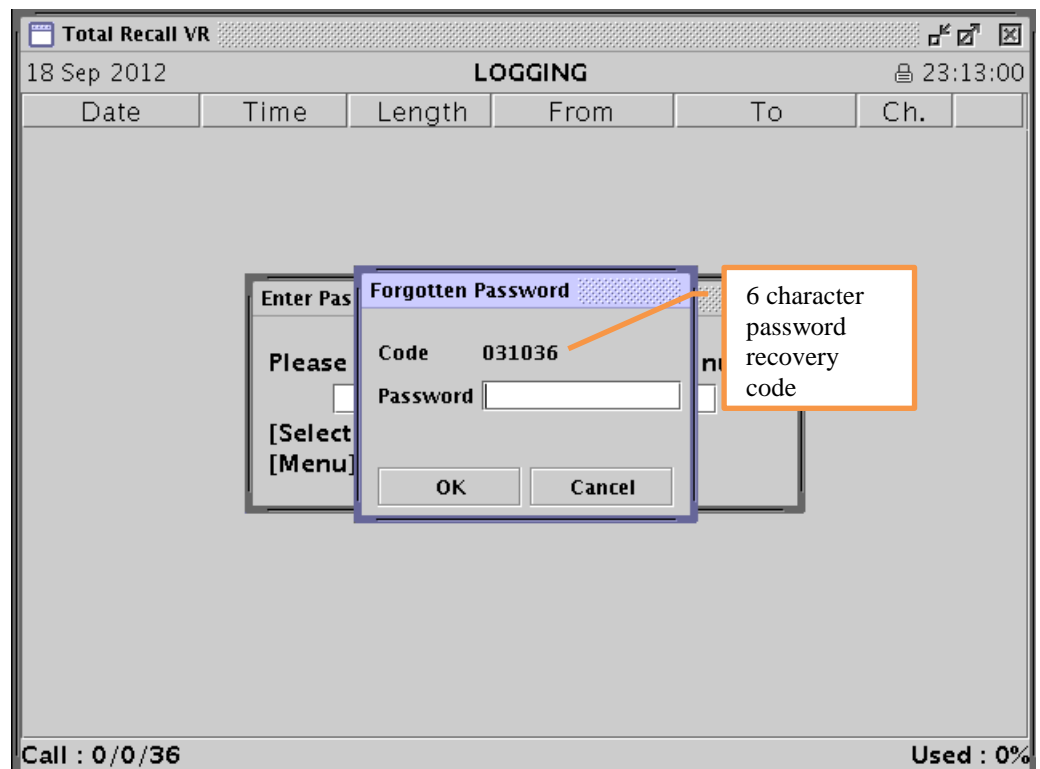
2. This dialog displays a 6 character password recovery code. Note the 6 character code down and e-mail it to us along with the serial number of the unit.

   LEAVE THE DIALOG ON THE SCREEN until you receive a *Password* from us. The 6 character code is unique every time you display the dialog while the *Password* that we will send you is only valid for the code that you send us.

3. When you receive a *Password* from us simply start entering it. Do this even if the LCD display is off. The first key that you press will activate the LCD backlight.

4. When done entering the *Password* select **OK** to start a user session.

5. IMMEDIATELY go to the Options Menu Screen and change the administrator, and if required the user, password.
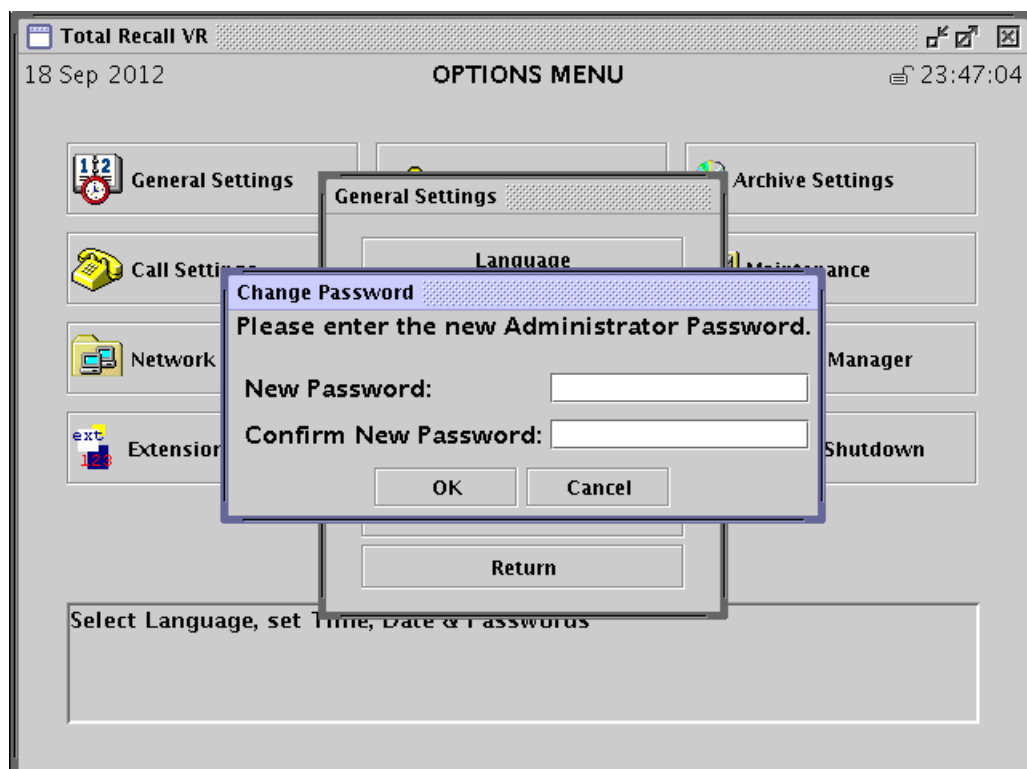
5.4. Configuration

Total Recall VR configuration for access control comprises of passwords for the two users and user session parameters.

5.4.1. Administrator Password

The default administrator password is 0000. To change the password:

Change the Administrator Password

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **Administrator Password** to display the Change Password dialog.
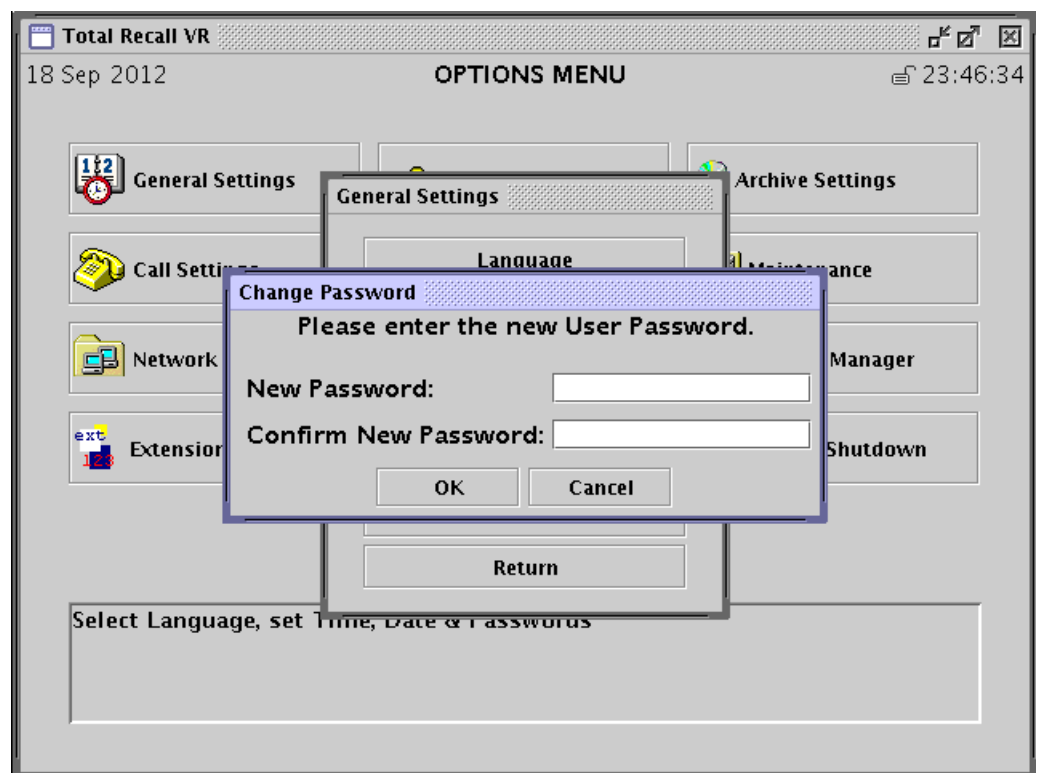
2. Enter *New Password*.

3. Enter the same password as *Confirm New Password*.

4. Select **OK** to record the new password in the system configuration.

5.4.2. User Password

The default user password is 0000. To change the password:

Change the User Password

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **User Password** to display the Change Password dialog.

2. Enter *New Password*.

3. Enter the same password as *Confirm New Password*.

4. Select **OK** to record the new password in the system configuration.

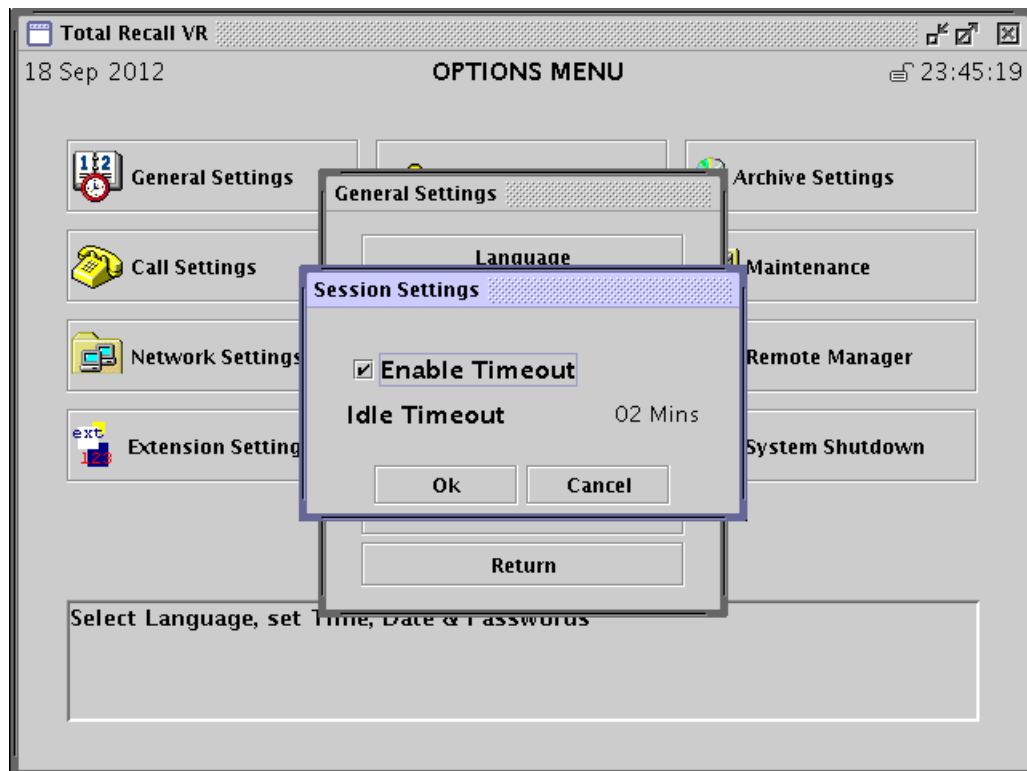### 5.4.3. User Session Parameters

The user session parameters define what happens to user sessions after a period of inactivity. A period of inactivity is a continuous period of time during which a user does not press any key on the control keypad while a user session is in progress.

By default, user sessions "expire" after a period of inactivity of 2 minutes. The system will automatically end the current user session, lock the control keypad and lock the DVD drive door when a user session "expires".

User session parameters define the inactivity period as well as whether user sessions "expire" or not.

Change User Session Parameters

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **User Session** to display the Session Settings dialog.

2. Tick or un-tick *Enable Timeout* to enable or disable session timeout.

3. If you tick *Enable Timeout*, then select an *Idle Timeout* which can be between 1 and 10 minutes (inclusive).

4. Select **OK** to record the new user session parameters in the system configuration.

The new user session parameters take effect immediately. They apply to the current user session as well.
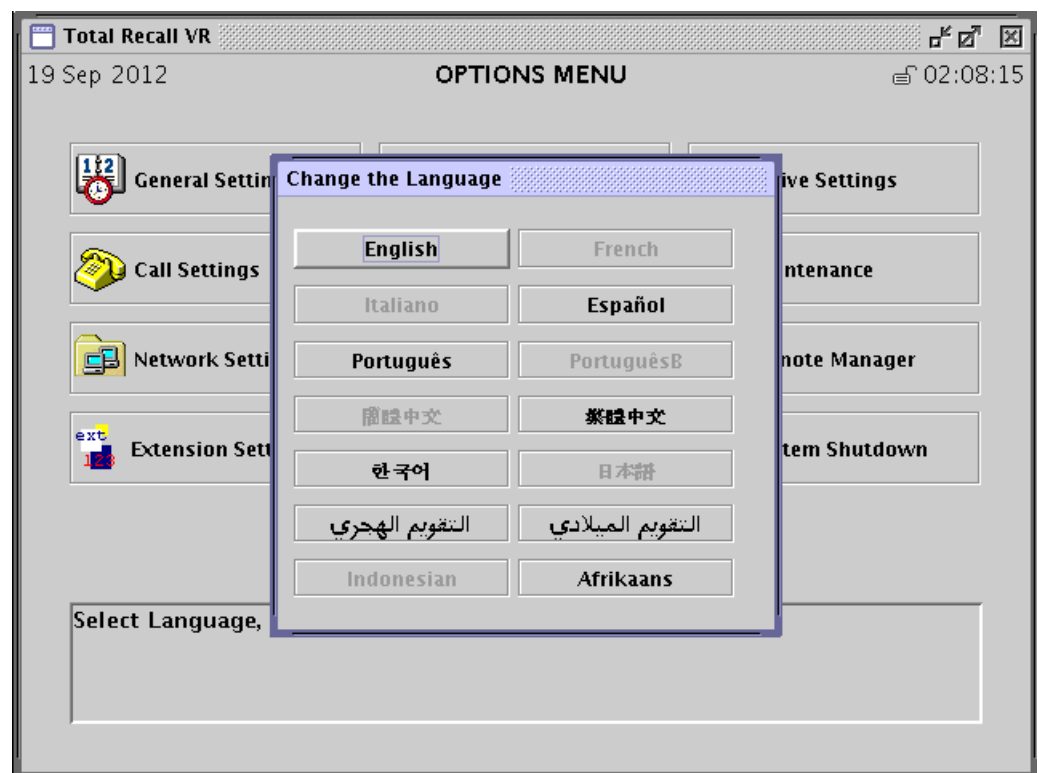
6. Initial Configuration

For best results with Total Recall VR, we recommended that you use the embedded GUI to check and modify some of the system configuration as described in this section BEFORE starting to record.

6.1. Display Language

The embedded GUI uses the English language as the default display language. If you are not comfortable with English, then it is possible to change the default display language to another display language which is supported by the embedded GUI.

Change the Display Language

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **Language** to display the Change Language dialog.

2. Navigate to the button showing the name of the desired language and press the [Select] key.

The embedded GUI will start using the new language as a display language immediately.

6.2. Network Configuration

In most cases Total Recall VR will connect to an enterprise network (a.k.a. enterprise LAN).

It is recommended to configure the LAN 1 interface for connection to an enterprise network. This leaves the LAN 2 interface to the VoIP channels (see the Total Recall VR

deployment guide [4] for more details) which is used to record VoIP calls and RTP, RoIP and AoIP streams.

The following table shows the default configuration of the two LAN interfaces.

| Parameter	Default Value for LAN 1	Default Value for LAN 2
IP Address	192.168.1.100	192.168.2.100
Netmask	255.255.255.0	255.255.255.0
VLAN ID	Not set	Not set

To change the configuration of the LAN 1 or LAN 2 interface:

Change the Configuration of a LAN Interface

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Network Settings** to display the Network Settings dialog.
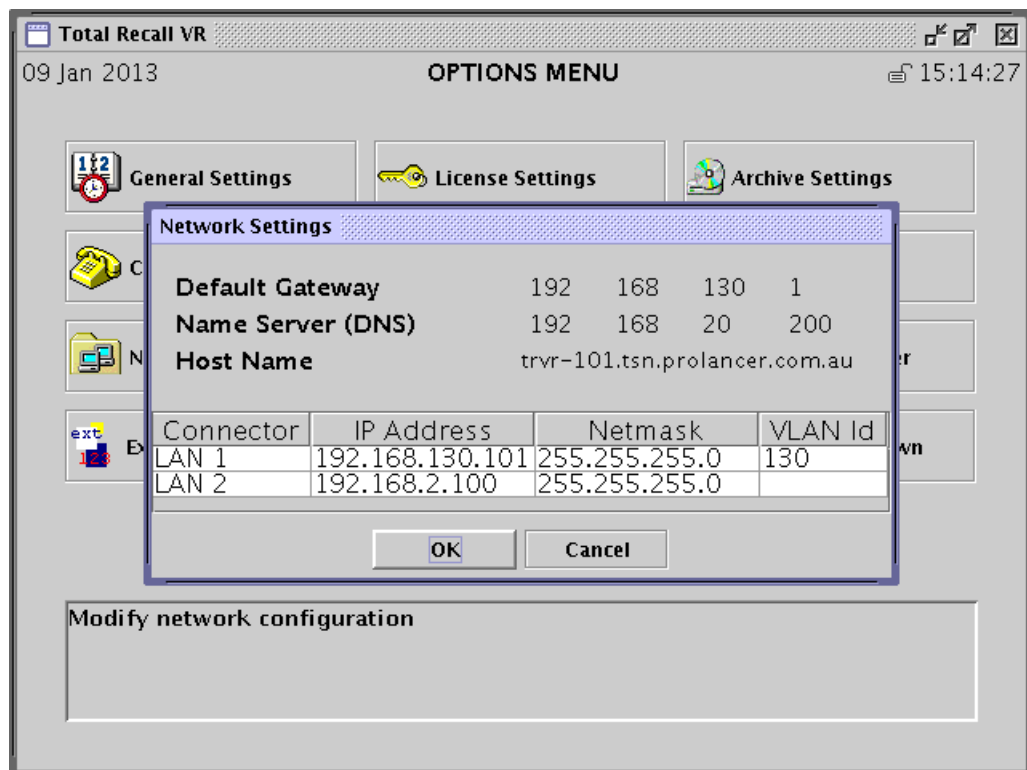
2. This dialog shows a table which lists both the LAN 1 and LAN 2 interface. Navigate to the row that contains the details of the interface that you wish to change and press the [Select] key to display the Network Device Settings dialog.
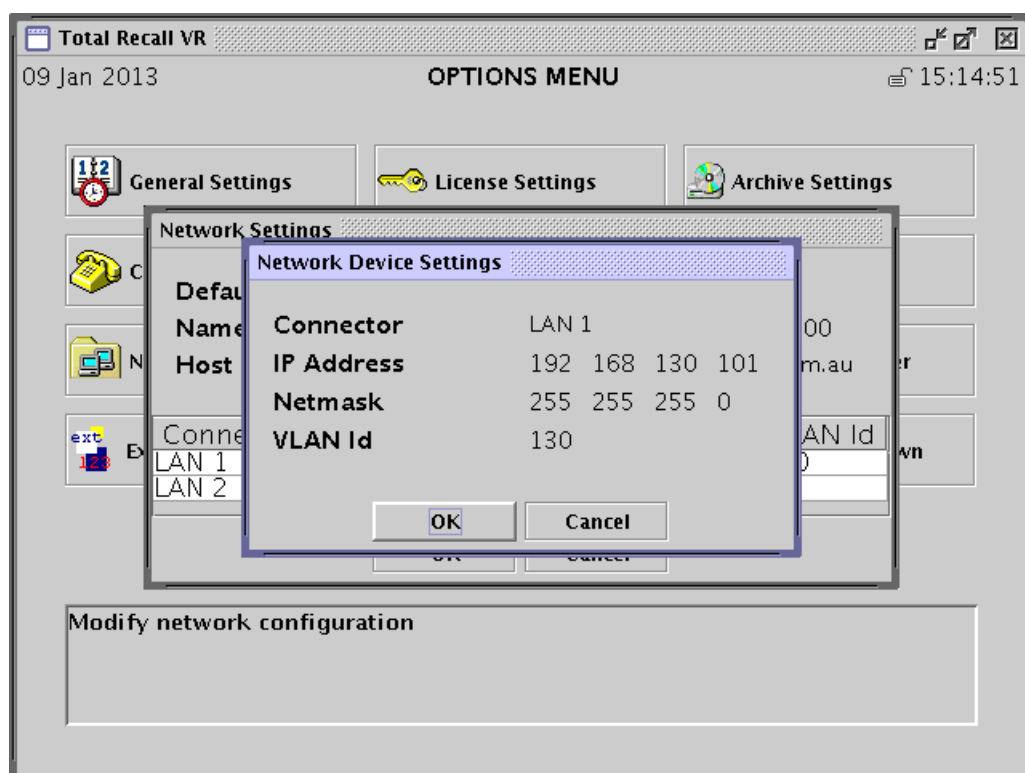
3. Modify the interface configuration as desired.

4. To clear a value, for example remove *VLAN Id*, press the [#] key. Alternatively, ether 0 as a value.

5. Select **OK** to record the new parameters in the system configuration.

The change is immediate. The system will apply the new configuration to the LAN interface immediately.

The Network Settings dialog makes provisions to configure other network parameters such as the default gateway and a name server (DNS). Use Total Recall VR Remote Manager to set the hostname.
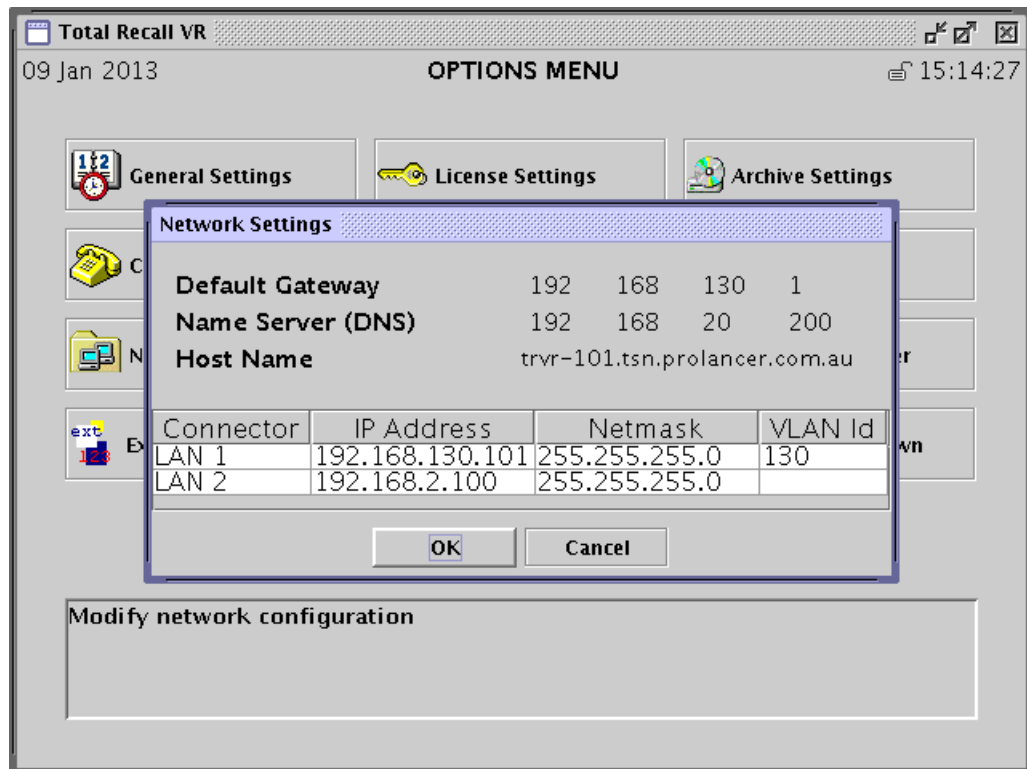
The following table shows the default configuration.

Parameter	Default Value
Default Gateway	Not set
Name Server (DNS)	Not set
Hostname	Not set

To set a default gateway and a DNS:

Set Default Gateway and Name Server (DNS)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Network Settings** to display the Network Settings dialog.

2. Modify *Default Gateway* and *Name Server (DNS)* as desired. Note that you do not need to set both.

3. To clear a value, for example remove *Name Server (DNS)*, press the [#] key in all fields of the IP address. Alternatively, ether 0 as a value for each field of the IP addresses.

4. Select **OK** to record the new parameters in the system configuration.

The change is immediate. The system will apply the new configuration to the networking layer immediately.

6.3. System Time & Date

Total Recall VR has an internal system clock which it uses to time stamp recordings.

The internal system clock uses UTC time. This cannot be changed.

However, configuration tells Total Recall VR which time zone to use when time stamping recordings as well as when displaying the system time and recording time stamps. By default Total Recall VR uses the Australian Eastern Standard time zone (Sydney, Australia).

Change the System Date and Time

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **Date & Time** to display the Date and Time dialog.
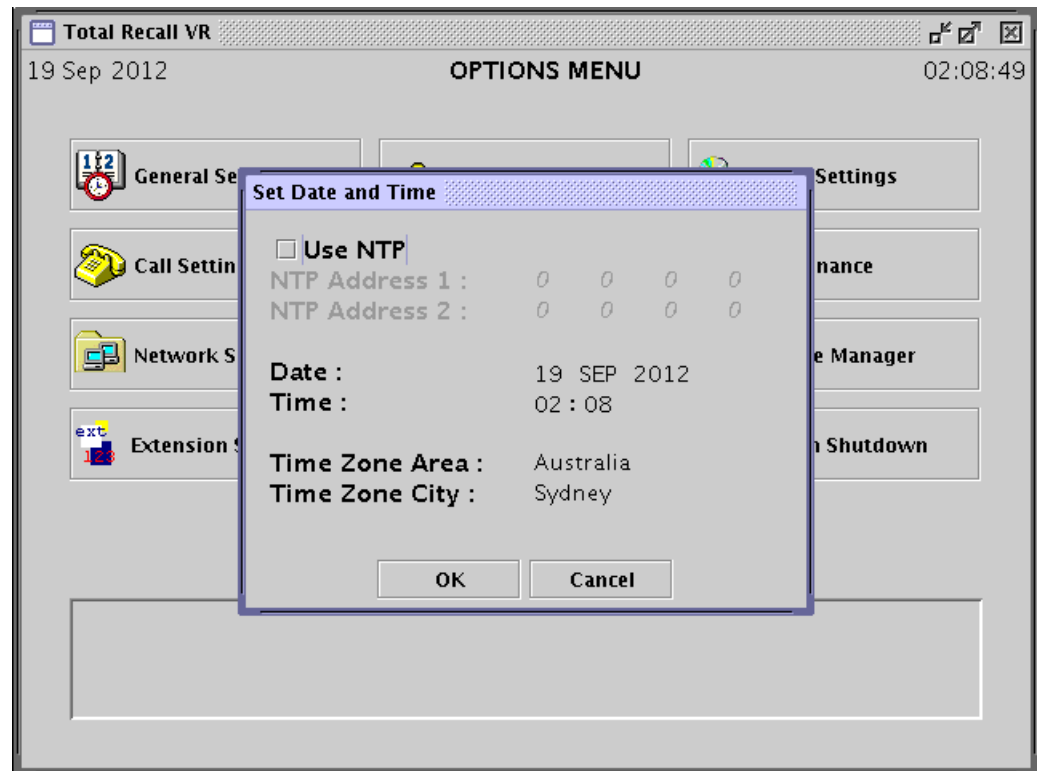
2. Set *Date*, *Time*, *Time Zone Area* and *Time Zone City* as desired.

3. Select **OK** to set the system date and time to the new values.

The change is immediate. The system will change its date and time immediately.

> ⚠ You can change the time zone only if there are no recordings on the system. It is important to set the time zone before you start recording.

As an alternative, Total Recall VR can connect and continually synchronise its internal clock to a single, or a pair of, NTP clock sources.

> ⚠ To connect and continually synchronise the system clock to an NTP source:
>
> 1. Make sure that Total Recall VR has a working network connection. See section 6.2 Network Configuration for details on how to

configure the network interfaces.

2. Make sure that Total Recall VR can access the NTP server(s) over the network. This may require configuration of the network infrastructure such as routers and firewalls.

3. Avoid synchronising with ntp.org servers. Their IP addresses change constantly. As a result, Total Recall VR may not be able to connect to an NTP server reliably.

4. Make sure the NTP servers provide UTC time.

When the configuration specifies two NTP servers, Total Recall VR will synchronise its time with the 1st server. At times when the 1st server is not available, Total Recall VR will switch to the 2nd server. Total Recall VR will switch to the 1st server as soon as the 1st server becomes available.

Synchronise with NTP Source

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **Date & Time** to display the Date and Time dialog.
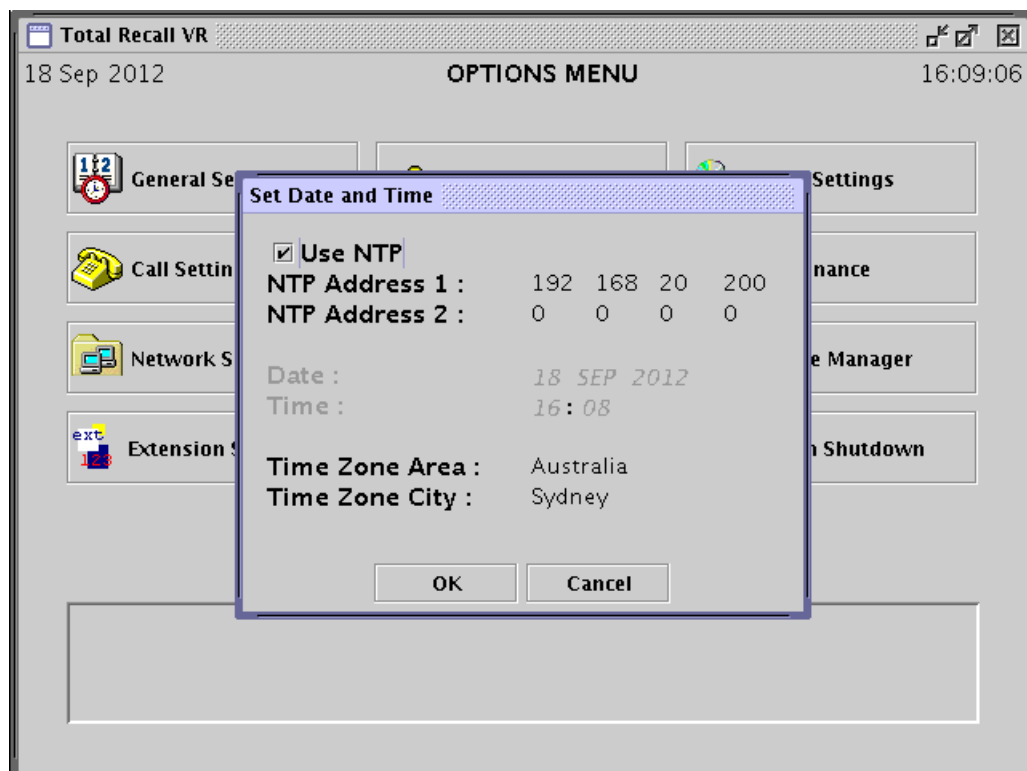
2. Tick *Use NTP*.

3. Set *NTP Address 1* to the IP address of the primary NTP server.

4. Optionally, set *NTP Address 2* to the IP address of a secondary NTP server.

> ⚠️ DO NOT use the same IP address for both NTP servers. If you only have one NTP server, set *NTP Address 1* only and leave *NTP Address 2* to 0.0.0.0.

5. To clear a value, for example remove *NTP Address 2*, press the [#] key in all fields of the IP address. Alternatively, ether 0 as a value for each field of the IP address.

6. Set *Time Zone Area* and *Time Zone City* as desired.

7. Select **OK** to start the NTP client which will connect to the 1st NTP server for the first time.

   If you get an error, then there is a networking problem between the Total Recall VR and the 1st NTP server. You must correct the problem before attempting the configuration again.

The change is immediate. The system will synchronise its date and time to that of the 1st NTP server immediately. This may result in a substantial one-off time shift. Then, the system will continue to synchronise its time with the NTP servers on regular basis which may result in minute time shifts that do not affect the operation of Total Recall VR.

6.4. License Keys

Total Recall VR uses license keys to control access to certain features of the system. The following keys exist:

1. Channel Key. It controls the number of VoIP and ISDN recording channels. Analogue channels do not require a license key because they use a physical hardware which must be installed in the system in order to activate analogue recording channels.

2. Feature Key. It controls access to the following features:

   a. Extension Policies,

   b. Signalling Mapping,

   c. Internal Dial Plan,

   d. SMDR Parsing,

   e. SNMP Alarms,

   f. Network Archiving and

   g. RoD Agents.

A third key, known as Hardware Key, which is unique to every Total Recall VR system, is used to generate the Channel and Feature keys. As a result, the Channel and Feature keys are also unique and cannot be transferred from one Total Recall VR to another.

Both the Channel and Feature key can be either perpetual or time limited. The embedded GUI displays this attribute for each of the keys. Time limited keys automatically deactivate features on the expiry date. As a result, the behaviours of the system will

automatically change on the expiry date; for example, VoIP calls will no longer be recorded or Network Archiving will simply stop working.

Generally, license keys are applied to systems in the factory. However, there are cases when users need to enter new license keys. For example, when changing the number of ISDN or VoIP recording channels, or when replacing electronic components in the system after malfunction.

> The Hardware Key is calculated by Total Recall VR from identifiers associated with various electronic components in the system. If you replace any of the following, then the system will have a new hardware key: motherboard, CPU, disk drive and mid-board.
>
> The new Hardware Key will render any existing Channel and License keys invalid.

All changes to the license keys start with the Hardware Key. It is not possible to manually change the hardware key; however, it is required to generate new Channel and Feature keys.

View the Hardware Key

1. Navigate to the Options Menu Screen using the [Menu] key. Select **License Settings** and then select **Hardware Key** to display the Hardware Key dialog.
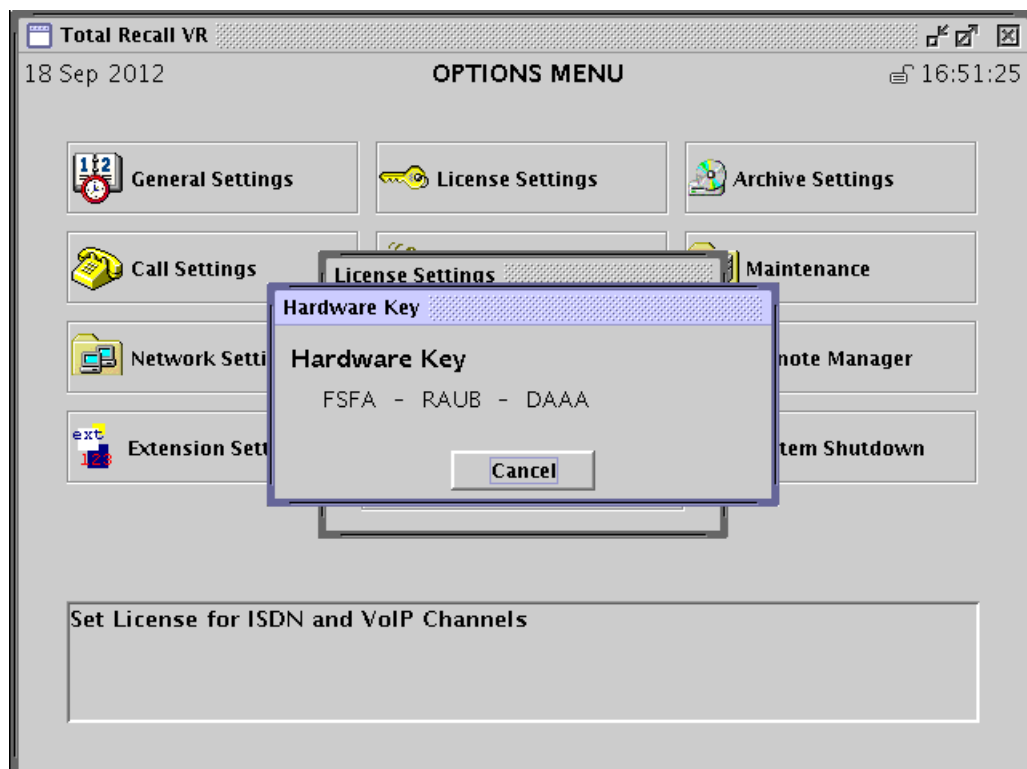
The Hardware Key dialog shows the unique Hardware Key as 3 groups of 4 characters. For example: FSFA-RAUB-DAAA on the previous screen capture.

> If we ask you to tell us the Hardware Key of your system, then we expect to receive the 3 groups of 4 characters as shown on the Hardware Key dialog on your system from you.

The Channel and Feature license keys comprise of 6 groups of 4 digit numbers. For example: 4885-4895-2552-5555-5558-1828.

> When we give you a Channel or a Feature license key, then we will give you 6 groups of 4 digits each for each of the keys. You must enter each group of digits exactly as received from us using the embedded GUI and by following one of the subsequent procedures.

Modify the Channel Key

1. Navigate to the Options Menu Screen using the [Menu] key. Select **License Settings** and then select **Channel License Key** to display the Channel Key dialog.
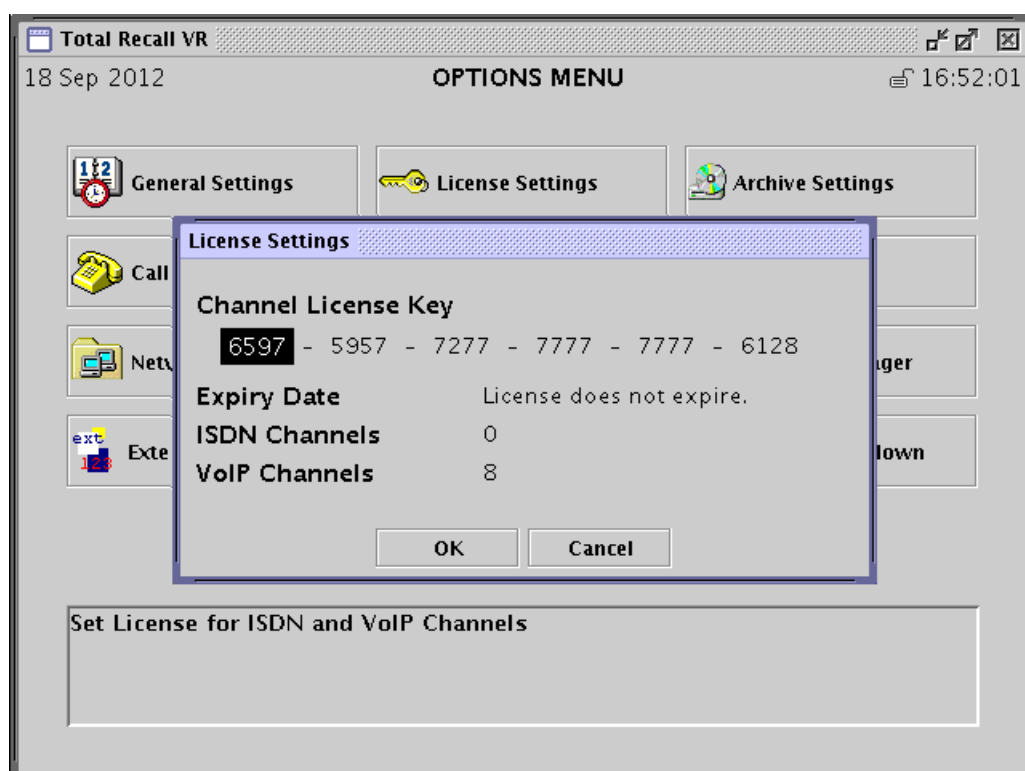
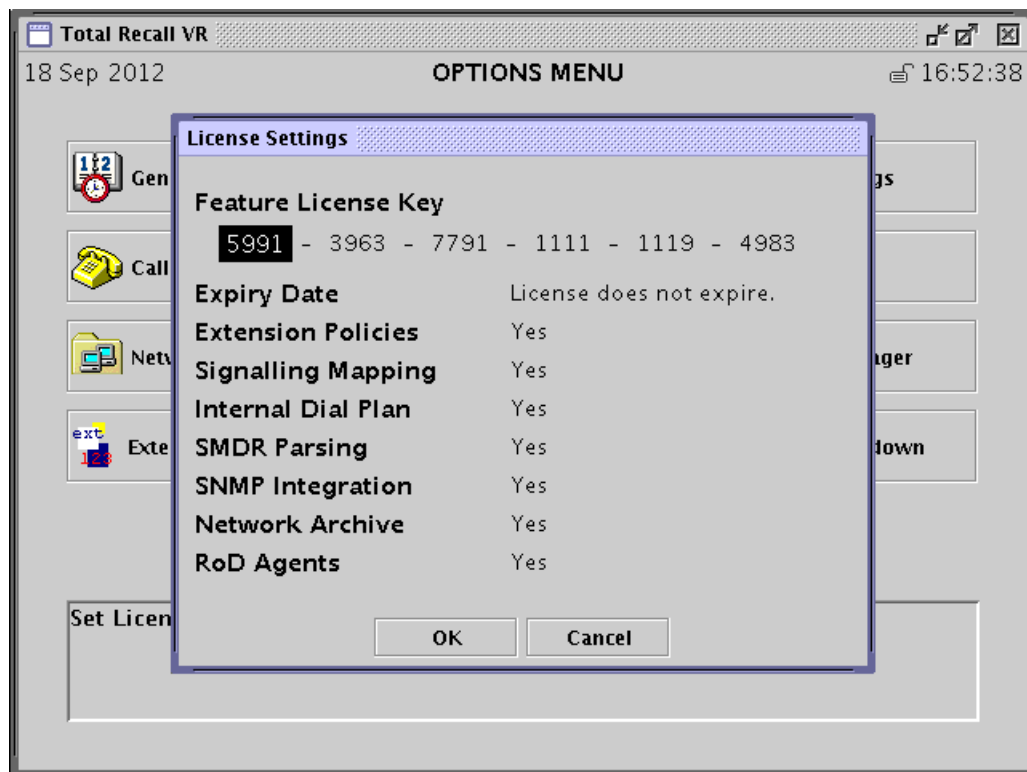2. Enter each of the 6 groups of 4 digits individually.

   Use the [▲] and [▼] keys to move between the entry fields for each of the 4 digit groups. If you make a mistake, simply type the 4 digit group from the beginning.

3. Select **OK** to record the license key in the system configuration. Note that this step will close the Channel Key dialog. Repeat step 1 to display it again and to view the license information.

The change is immediate. The system will validate the key and if valid it will activate/deactivate recording channels according to the information stored in the key.

Modify the Feature Key

1. Navigate to the Options Menu Screen using the [Menu] key. Select **License Settings** and then select **Feature License Key** to display the Feature Key dialog.

2. Enter each of the 6 groups of 4 digits individually.

   Use the [▲] and [▼] keys to move between the entry fields for each of the 4 digit groups. If you make a mistake, simply type the 4 digit group from the beginning.

3. Select **OK** to record the license key in the system configuration. Note that this step will close the Channel Key dialog. Repeat step 1 to display it again and to view the license information.

The change is immediate. The system will validate the key and if valid it will activate/deactivate features according to the information stored in the key.

6.5. Remote Manager Interface

Total Recall VR provides a Java RMI based interface (a.k.a. Remote Manager Interface) that allows client applications, such as Total Recall VR Remote Manager, RoD Client and Supervisor Client, to manage and control it.

This interface depends on a TCP/IP network to connect clients and Total Recall VR systems. It is recommended to configure the LAN 1 interface for connection to an enterprise LAN.

See section 6.2 Network Configuration for details on how to configure the network interfaces.

Make sure that Total Recall VR has a working network interface: LAN 1 or LAN 2, before attempting the following Remote Manager Interface configuration.

To configure the Remote Manager Interface to accept client connections over an enterprise LAN:

Configure the Remote Manager Interface for LAN Access

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Remote Manager** to display the Remote Manager Settings dialog.
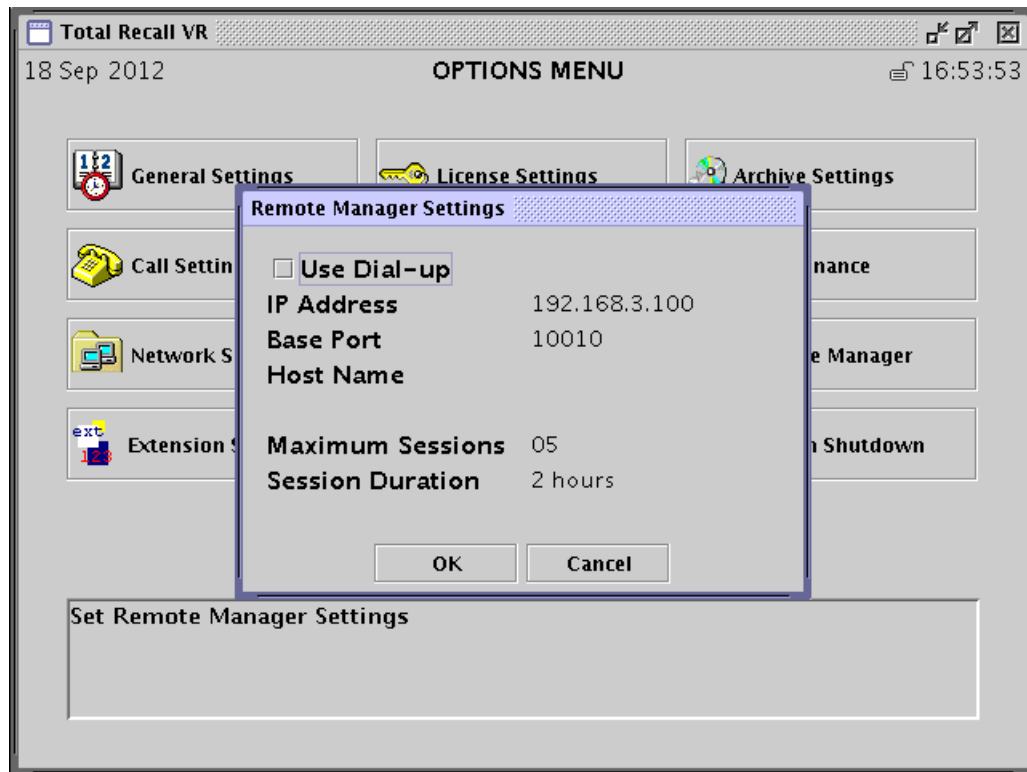
2. Select *IP Address*. Choose the IP address that is assigned to the LAN 1 or LAN 2 interface depending on which network you wish to use for client connections.

3. Enter *Base Port*. Clients need both the IP address and the base port in order to connect to the Total Recall VR.

4. Set *Maximum Sessions* to the maximum number (between 0 and 99) of clients that are allowed to connect at the same time.

   Each client connection requires system resources. The more clients connect at the same time, the less system resources can be dedicated to recording.

5. Set *Session Duration* to the maximum duration (between 30 minutes and 2 hours and 30 minutes in 30 minute increments) of each session. Total Recall VR will automatically end active sessions after this period forcing clients to re-connect if they wish to continue to interact with it.

6. Select **OK** to restart the interface which will start accepting connections from clients on the specified IP address and port.

The change is immediate. The system will close all active connections from clients, re-start itself and start accepting connections from clients on the specified IP address and port.

6.6. Recorder ID

Every Total Recall VR can be assigned an ID which is a number between 1 and 999 inclusive. The default value of the ID is 1.

> If you have only one Total Recall VR, then you can leave the ID set to its default value. You may skip this section.

Total Recall VR uses its ID as a watermark when creating recordings and archives of recordings.
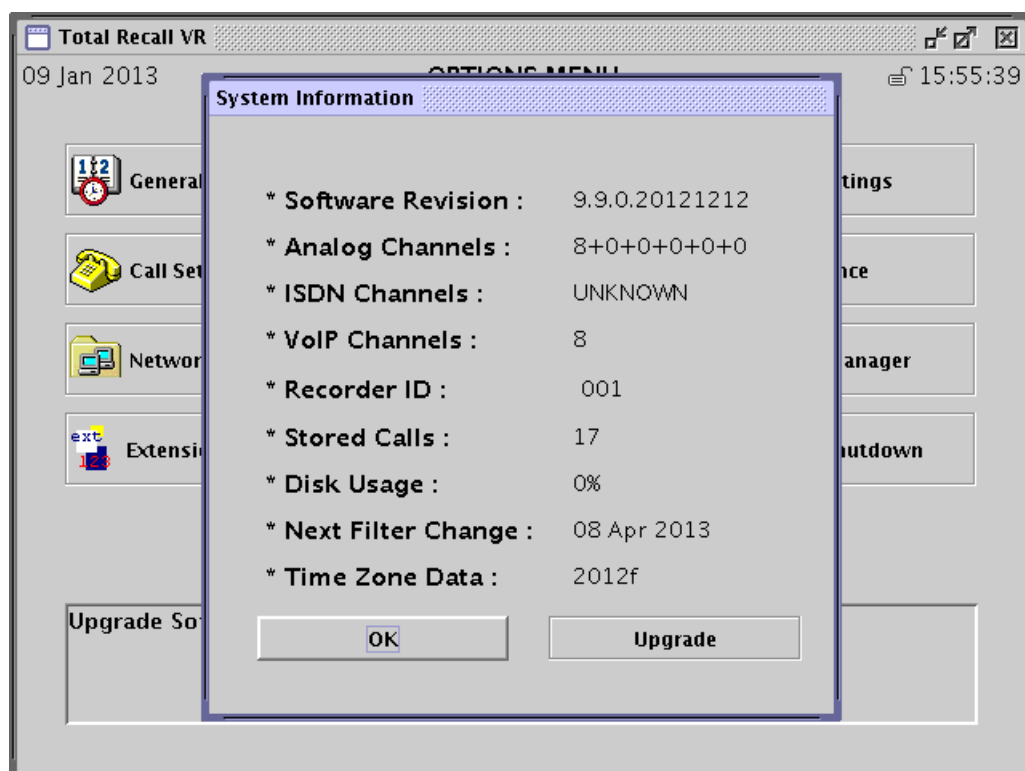
> If you have multiple Total Recall VRs, then it is mandatory to assign a different ID to each.
>
> You risk data loss and corrupt archives if you do not.

To change the ID of a Total Recall VR:

Change the Recorder ID

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **System Information** to display the System Information dialog.

2. Set *Recorder ID* to a value between 1 and 999 (inclusive).

3. Select **OK** to record the ID in the system configuration.

The change is immediate. Total Recall VR will start using the new ID immediately.

7. Recording

The main and most powerful feature of every Total Recall VR is the audio recorder.

Unlike most audio and telephony recording devices on the market, the recorder is a hybrid channel recorder and as such it is capable of simultaneously recording on multiple recording channels, which can be of different type (analogue, VoIP or ISDN).

The embedded GUI makes provisions for displaying recordings in progress and management of the recorder configuration.

7.1. Recording Storage

Every Total Recall VR system comes with on-board hard drive storage for recordings. The hard drive storage has enough space to store the maximum audio hours as shown in the following table:

Encoding	Audio Hours
HQVQ	380,000
AMBE	1,140,000
SPEEX	240,000
G.711	60,000

In addition Total Recall VR comes with a database for storing additional information for each of the recordings. The database has enough space to store the maximum number of records as shown in the following table:

Model	Maximum Records	Low Watermark
LinX Omnia	700,000	600,000
LinX Altus	600,000	500,000
LinX Neos	600,000	500,000
LinX Essence	600,000	500,000
LinX Essence GUI	500,000	400,000
LinX Evolution	900,000	700,000
LinX Evolution GUI	700,000	600,000

To put the limits in perspective, the on-board storage on LinX Neos systems can store 600,000 individual recordings of 38 minutes duration each, or 300,000 recordings of 76 minutes duration when using the *HQVQ, 8000Hz, 7.9Kbps, mono* audio format.

The store has a built-in auto cleaning mechanism which ensures that the system has enough free space in it to continue recording endlessly.

A working archiving strategy must be implemented to avoid losing recordings as a result of auto-cleaning.

In general, the auto-cleaning function automatically deletes recordings when the number of recordings reaches more than the maximum records (see previous table) or the disk occupancy reaches 95% whichever occurs first. It removes oldest first recordings until the number of recordings reduces to the low watermark (see previous table) or less, and the disk occupancy is below 88%.

It is possible to specify the maximum life time of recordings. If this is the case, then the auto-cleaning function may never run as expired recordings are purged from the system on hourly basis.

7.2. Recording Interface

Total Recall VR has three different types of audio recording channels:

1. Analogue recording channels, which are capable of capturing audio from different analogue sources and analogue telephone lines.

2. VoIP recording channels, which can operate in passive and active mode.

    a. In passive mode VoIP recording channels are capable of detecting and capturing SIP, H.323 and RTP packets on IP networks via a SPAN port on an Ethernet switch or an alternative Ethernet link tapping device.

    b. In active mode VoIP recording channels are capable of processing SIP sessions (calls) as well as receiving raw RTP streams directly on one or both of the system LAN interfaces.

3. ISDN recording channels, which are capable of capturing and processing signalling and audio on ISDN PRI telephone links.

The Total Recall VR deployment guide [4] contains detailed information and specification for each type of channel.

7.3. How to …

Total Recall VR starts recording as soon as it is deployed and its recording channels are activated.

> The Total Recall VR deployment guide [4] contains details on how to deploy a Total Recall VR in various recording scenarios.

Recordings that are in progress automatically appear on the Logging screen as shown on the subsequent screen capture.

Total Recall VR							
18 Sep 2012			LOGGING			10:30:36	
Date	Time	Length	From	To	Ch.		
18 Sep 2012	10:29:30	00:01:06	0414222333	2139	>29	C	
18 Sep 2012	10:29:27	00:01:09	2001	2006	^27	C	
18 Sep 2012	10:27:10	00:03:26	2038	0388790000	<63	C	
18 Sep 2012	10:27:04	00:03:40	Emil	2077	?25	C	
18 Sep 2012	10:23:40	00:07:04	95563444	Tanya's Phone	>23	C	
18 Sep 2012	09:21:40	00:09:04	CEO	CFO	^20	C	
17 Sep 2012	23:30:00	00:00:36	2Day FM(cont)		?1	C	
17 Sep 2012	23:30:00	00:00:36	2WS FM (cont)		?2	C	

Call : 4/8/410793   Used : 51%

Figure 10: Logging Screen Showing Recordings in Progress

You can use [*] key to tag and un-tag recordings while in progress. To tag or un-tag recordings in progress, use the [▲] and [▼] key to navigate to the row that shows data of the recording that you wish to tag, or un-tag if it is already tagged and then press the [*] key.

Additionally, you can use the [#] to lock and un-lock recordings. Locked recordings cannot be deleted from the system. To lock and un-lock recordings in progress, use the [▲] and [▼] key to navigate to the row that shows data of the recording that you wish to lock, or un-lock if it is already locked, and then press the [#] key.

When complete, recordings are removed from this screen. This screen is empty at times when there are no recordings in progress.

Section 4.1 Logging Screen describes the structure and the information that appears on this screen in great detail.

7.4. Configuration

The audio recorder has comprehensive configuration options. The embedded GUI makes provision for the management of most including:

1. Analogue Settings: analogue recording channel configuration.

2. ISDN Settings: ISDN recording channel configuration.

3. VoIP Settings: VoIP recording channel configuration.

4. Call Settings: general recorder configuration.

5. Extension Settings: global recording policy and extensions recording policies (basic configuration only, some limitations apply)

However, management of some configuration is only possible with the Total Recall VR Remote Manager application. This includes:

1. Extension Settings: extension recording policies (advanced configuration).

2. Signalling Mapping: signalling mapping rules.

3. Internal Dial Plan: internal dial plan rules.

4. PBX Integration: SMDR processing configuration.

Total Recall VR uses the Signalling Mapping and Internal Dial Plan configuration to classify numbers, which it detects in signalling messages when recording telephone calls, as Total Recall VR Extensions (see section 2.3.1 Extensions).

> Use Total Recall VR Remote Manager to configure Signalling Mapping, Internal Dial Plan and Extension Settings (advanced recording policies).

7.4.1. Analogue Settings

Total Recall VR may be equipped with analogue recording channels, which are capable of capturing audio from different analogue sources and analogue telephone lines.

The default configuration for all analogue recording channels is:

- Recording trigger: VOX level 4, signal level -32dBm (19.5mV).

- Beep tone: disabled (off).

- DTMF tone detection: enabled (on).

- VoX timeout: 15 sceonds.

- Channel extension: not set.

To change the configuration of the analogue recording channels:

Configure Analogue Recording Channels

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Analog Settings** to display the Channel Settings dialog.
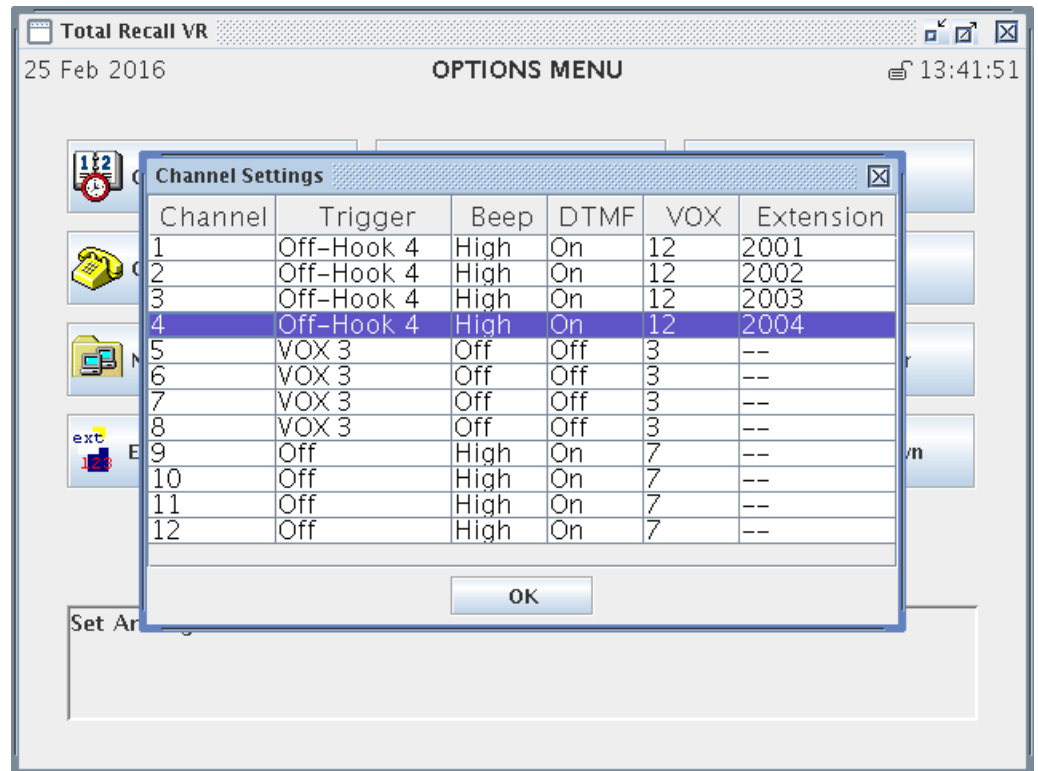
2. Use the [▲] and [▼] key to navigate to the row that shows data for the channel that you wish to change. Press the [Select] key to display the Channel Configuration dialog.
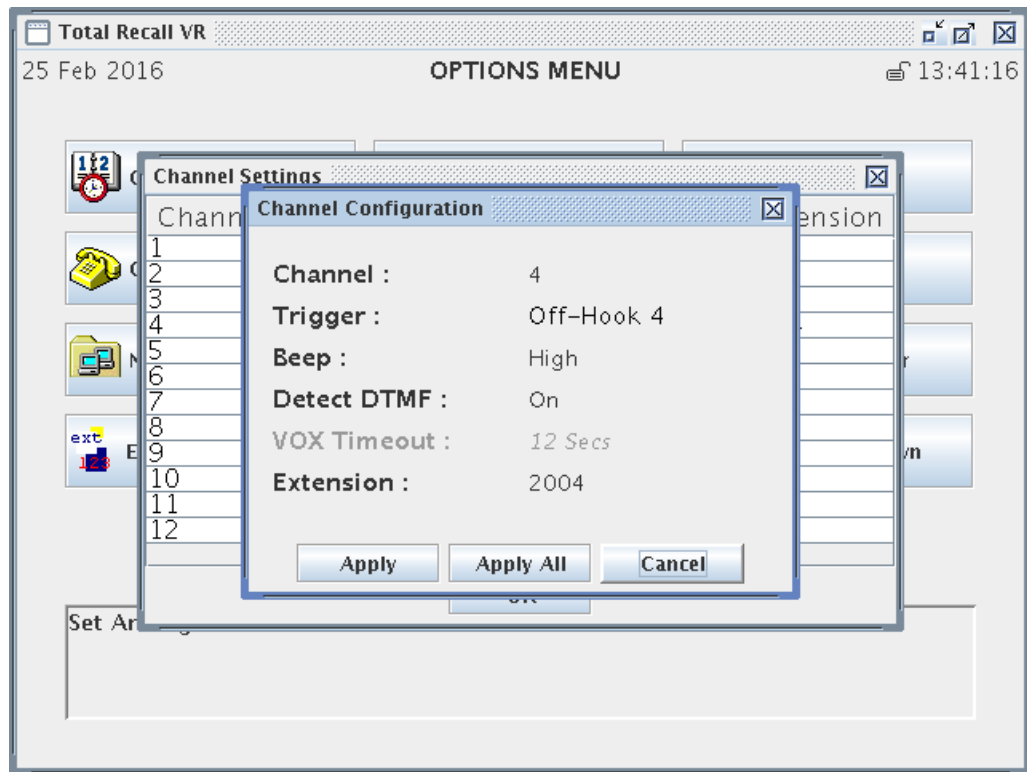
3. To define the type of event that triggers (start/stop) recording on the analogue recording channel, select **Trigger**.

   Select an Off-Hook level if you wish to use DC voltage change as a recording trigger. When a telephone line is connected to the channel, typical on-hook voltage is above 42V and off-hook voltage is below 15V. Recording starts when the DC voltage on the line that is connected to the recording channel becomes lower than the one set by the Off-Hook level. It stops when the DC voltage on the line becomes higher than the set Off-Hook level.

Trigger	DC Voltage
Off-Hook 1	5V
Off-Hook 2	10V
Off-Hook 3	16.5V
Off-Hook 4	20V
Off-Hook 5	25V
Off-Hook 6	30V

   Select a VOX level if you wish to use the signal level as a recording trigger. Recording starts when the level of the signal on the line that is connected to the recording channel is above the level set by the VOX level. It stops when the signal level is below the VOX level, but after a user configurable grace period: see **VOX Timeout** below.

Trigger	Signal Level
VOX 1	-20dBm (77.5mV)
VOX 2	-24dBm (48.9mV)
VOX 3	-28dBm (30.8mV)
VOX 4	-32dBm (19.5mV)
VOX 5	-36dBm (12.3mV)
VOX 6	-40dBm (7.75mV)

Select Manual if you wish to allow third party applications to control recording over the Total Recall VR Remote Manager Interface on the channel.

Finally, if you do not connect a signal or telephone line to the recording channel, then select Off.

4. To enable the generation of recording beep (pip tone) select Low (quiet, -30dBm), Medium (-24dBm) or High (loud, -18dBm) as value for *Beep*, otherwise leave it to its default value Off.

If enabled, Total Recall VR will generate a short beep tone every 15 seconds on the line. The tone will be heard by all parties that are connected by the line.

5. Optionally, select Off for *Detect DTMF* to disable DTMF tone detection on the channel.

Total Recall VR detects DTMF tones by default on all recording channels, including the analogue recording channels. However, you may use analogue channels to record analogue signal from sources other than analogue telephone lines. Such sources may not carry DTMF tones, but may contain frequencies that resemble DTMF tones which Total Recall VR will (incorrectly) interpret as DTMF tones.

6. If *Trigger* is set to a VoX level, then enter *VoX Timeout*.

This parameter defines the period of 'quiet time' (absence of signal at level above the level set for the analogue channel) during recording which must pass before Total Recall VR stops recording on the channel.

7. Optionally, enter *Extension*.

The value that you enter with the control keypad can be a combination of digits only. For example: 2001. Use Total Recall VR Remote Manager to enter any free text value. For example: Tanya's Phone.

To clear the value, press the [#] key.

Total Recall VR uses this value as a "suggested" Total Recall VR Extension identifier for source of recordings that are captured on the channel. Any number information in the call signalling will override this value when recording calls on analogue telephone lines.

8. Select **Apply** to record the new settings in the configuration. Note that this does not actually apply the new configuration to the recording channel.

    Optionally, select **Apply All** to record the same settings for all analogue recording channels.

9. Repeat steps 2 to 7 for other recording channels.

10. Select **OK** when viewing the Channel Settings dialog to actually apply the new configuration to analogue recording channels.

If you change the configuration while recording, then all active recordings on all analogue channels will terminate when you select **OK** on the Channel Settings dialog.

New recordings will start based on the new configuration for the analogue channels.

7.4.2. ISDN Settings

Total Recall VR may be equipped with ISDN recording channels, which are capable of capturing signalling and audio on ISDN PRI links.

Use a Channel (license) Key to activate ISDN recording channels, see section 6.4 License Keys.

Unlike analogue channels, it is not possible to configure ISDN recording channels individually. Instead the configuration captures the configuration of the ISDN PRI links that are tapped by Total Recall VR.

ISDN recording channels DO NOT map to B channels on ISDN PRI links. They are allocated dynamically to calls on all ISDN PRI links on first-come, first-served basis.

Total Recall VR can tap both E1 and T1 links. The default configuration for each type of link is:

	E1 Link	T1 Link
Line Frame	CRC4	ESF
Line Code	HDB3	B8ZS
Protocol	EuroISDN E1	National ISDN 2
D Channel	16	24
B Channels	30	23
Dial Plan	National	National
Local Dial Plan	National	National
Country Code	Australia	USA

The configuration for each ISDN link should reflect the configuration for that link on the PBX.

To change the configuration of the ISDN links and recording channels:

Configure ISDN Links

1. Navigate to the Options Menu Screen using the [Menu] key. Select **ISDN Settings** to display the ISDN Provider Settings dialog.
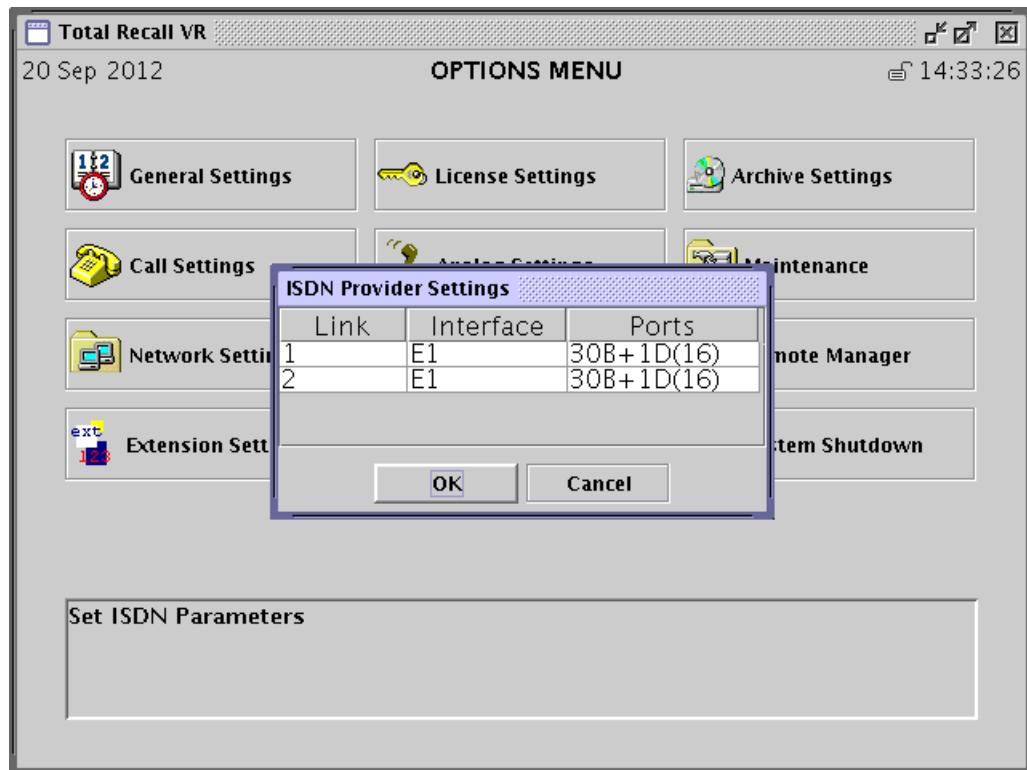
2. Use the [▲] and [▼] keys to navigate to the row that shows data for the link that you wish to change. Press the [Select] key to display the ISDN Span Settings dialog.
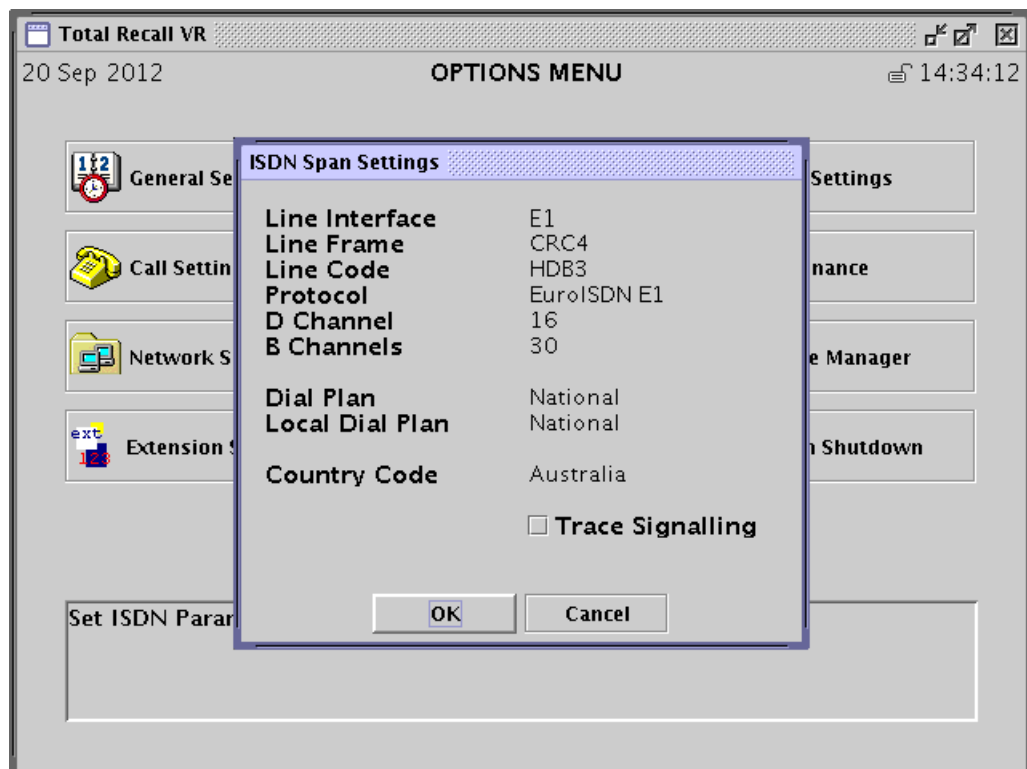
3. Select values for various parameters so that they match the configuration for the ISDN link on the PBX.

4. Optionally, tick *Signalling Tracing*.

If you enable signalling tracing, then Total Recall VR will write all ISDN signalling messages that it detects on the link in the log. You can examine the logs and view the content of the messages with Total Recall VR Remote Manager.

This feature is only intended for troubleshooting. DO NOT leave it on during normal operation. It will severely reduce the recording capacity of the system.

5. Select **OK** to record the new settings in the configuration. Note that this does not actually apply the new configuration to the link and recording channels.

6. Repeat steps 2 to 4 for other links.

7. Select **OK** when viewing the ISDN Provider Settings dialog to actually apply the new configuration to the links which will also re-configure the ISDN recording channels.

> If you change the configuration while recording, then all active recordings on all ISDN recording channels will terminate when you select **OK** on the ISDN Provider Settings dialog.
>
> New recordings will start based on the new configuration for the ISDN links and channels.

7.4.3. VoIP Settings

Total Recall VR may be equipped with VoIP recording channels, which can operate in passive and active mode.

In passive mode VoIP recording channels are capable of detecting and capturing SIP, H.323 and RTP packets on IP networks via a SPAN port on an Ethernet switch or an alternative Ethernet link tapping device.

In active mode VoIP recording channels are capable of processing SIP sessions (calls) as well as receiving raw RTP streams directly on one or both of the system LAN interfaces.

> Use a Channel (license) Key to activate VoIP recording channels, see section 6.4 License Keys.

Unlike analogue channels, it is not possible to configure VoIP recording channels individually. Instead the configuration captures the configuration of VoIP packet collector and the UDP port service which are an integral part of every Total Recall VR.

> VoIP recording channels are virtual (ephemeral) channels. They are allocated dynamically to SIP sessions, H.323 calls and RTP streams on first-come, first-served basis.
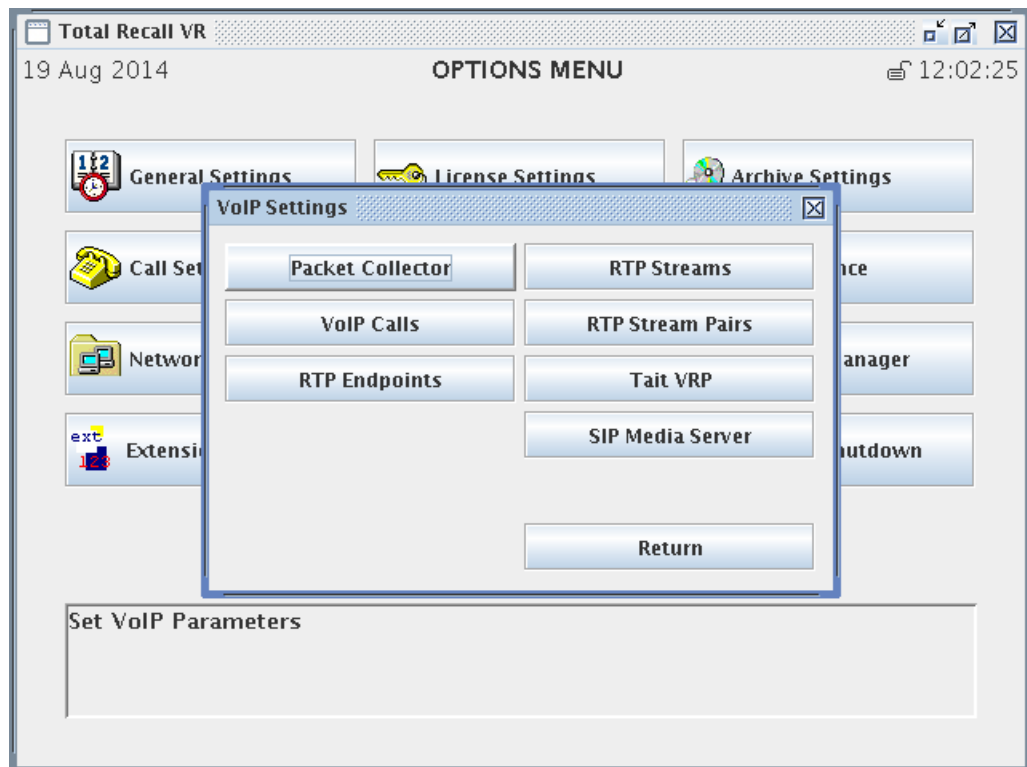
7.4.3.1. Packet Collector Settings

The VoIP packet collector is a passive packet detection and collection engine that by default attaches to the LAN 2 interface. As a result it detects and collects all SIP, H.323 and RTP packets that appear on the LAN 2 interface.

Each Total Recall VR has one internal VoIP packet collector that can collect SIP, H.323 and RTP packets on one LAN interface that is specified in its configuration.

To change the configuration of the VoIP packet collector:

Configure the Local VoIP Packet Collector

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

2. Select **Packet Collector** to display the Packet Collector Settings dialog:
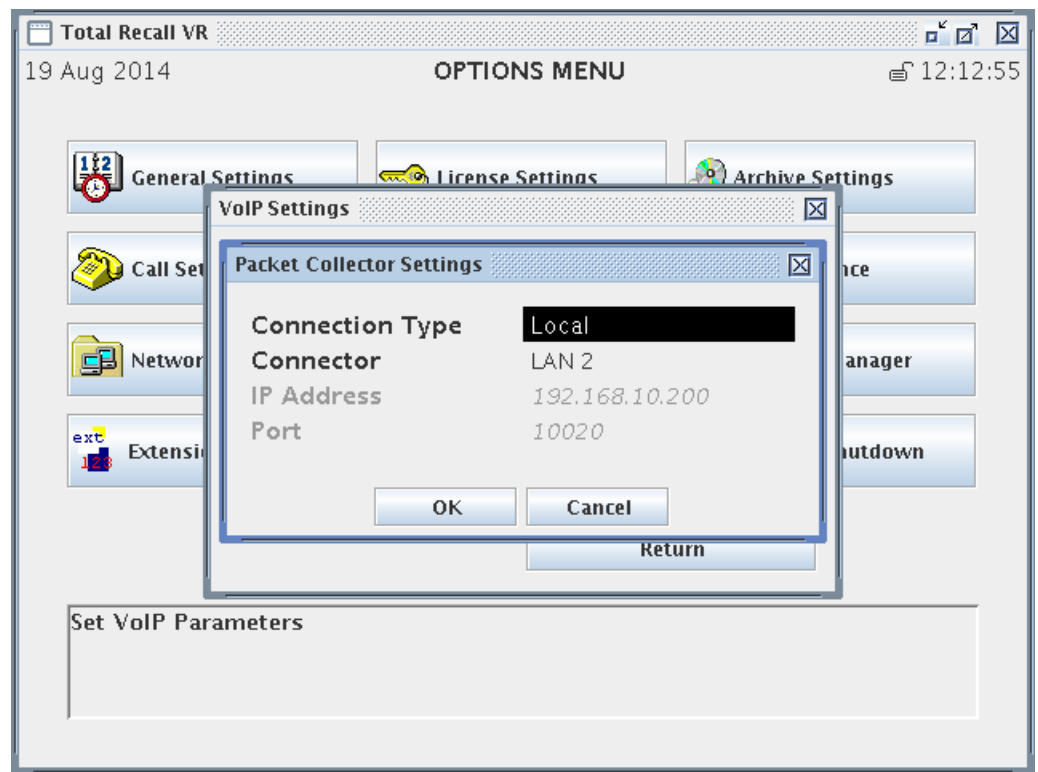
3. Select *Connector Type*. Choose:

   - None: if you wish to disable the VoIP packet collector.

   - Local: if you wish to enable and use the local VoIP packet collector.

4. Select *Connector*. This is the LAN connector which will be used for VoIP call recording.

   We recommend you use LAN 2 for VoIP call recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Select **OK** to apply the new configuration to the VoIP packet collector which will also re-configure the VoIP recording channels.

> If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK** on the Packet Collector Settings dialog.
>
> New recordings will start based on the new configuration for the VoIP packet collector and channels.

If you are using a Total Recall VR Traffic Collector, then you must configure Total Recall VR to accept packets from the Traffic Collector instead of using the internal VoIP packet collector.

Traffic Collectors can send packets that they collect from networks using the TCP of UDP protocol. TCP is the recommended protocol as it guarantees the delivery of packets.

Configure the Remote VoIP Packet Collector

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
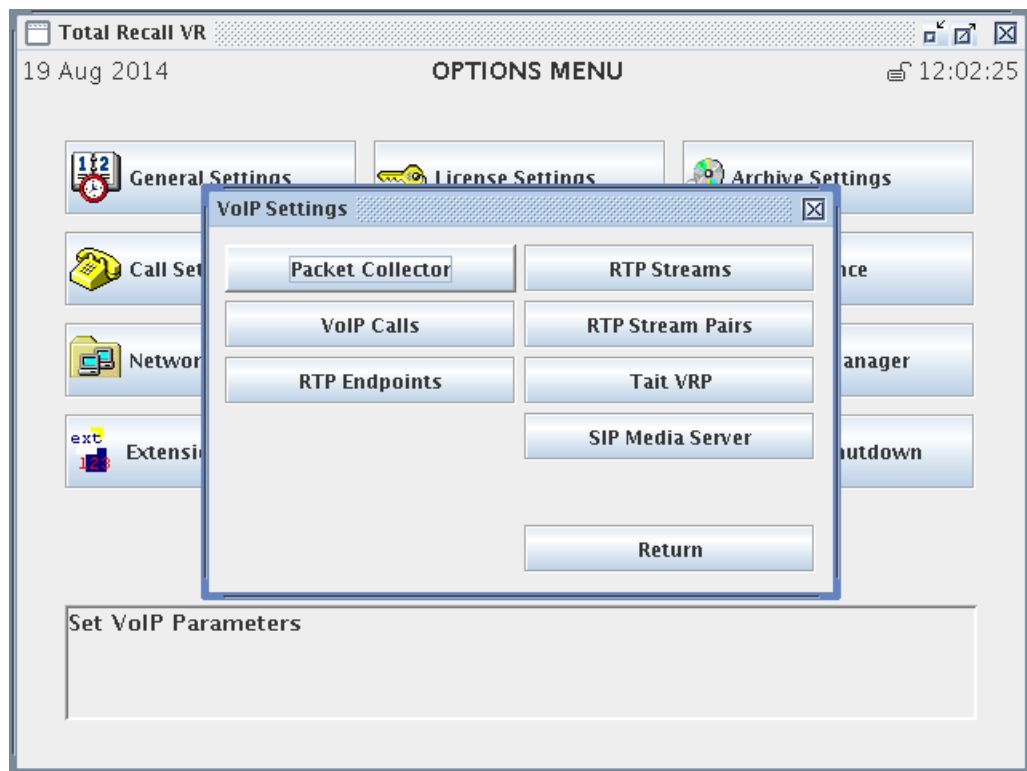
2. Select **Packet Collector** to display the Packet Collector Settings dialog:
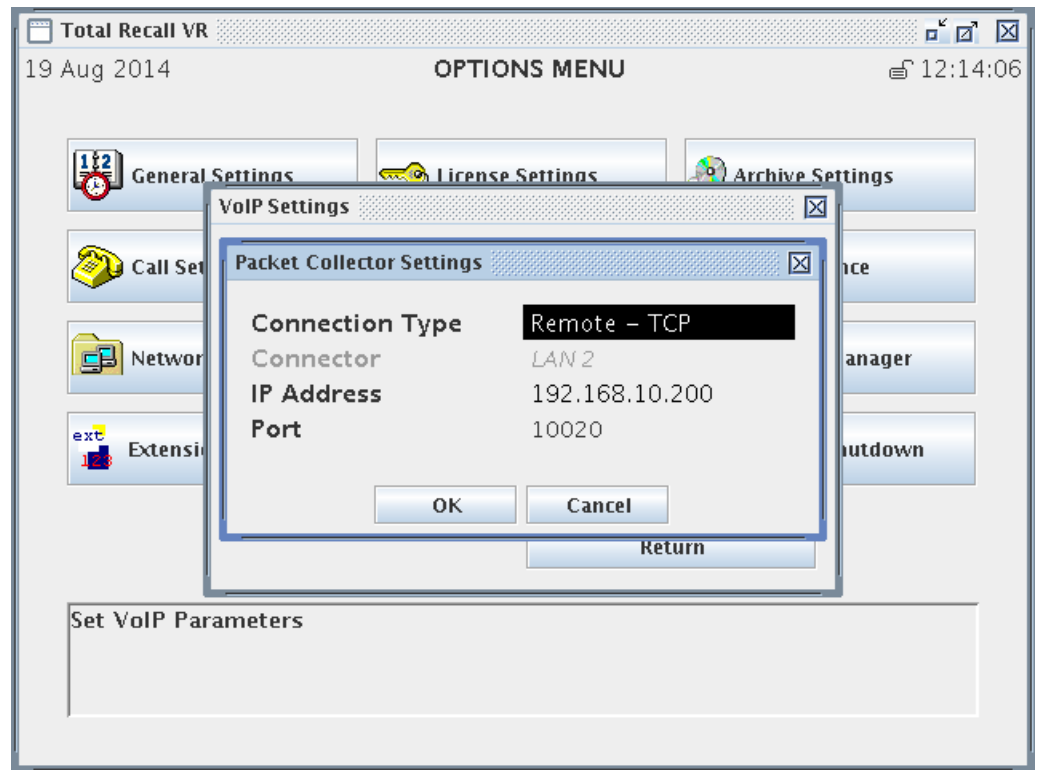
3. Select *Connector Type*. Choose:

   • None: if you wish to disable the packet collector.

   • Remote – TCP: (recommended) to use the TCP protocol for packet delivery.

   • Remote – UDP: to use the UDP protocol for packet delivery.

4. Select *IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

   We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter *Port*.

   This is the TCP or UDP port that Total Recall VR will use to accept connections from Traffic Collectors.

6. Select **OK** to apply the new configuration to the VoIP packet collector which will also re-configure the VoIP recording channels.

> ⚠ If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK** on the Packet Collector Settings dialog.

New recordings will start based on the new configuration for the
VoIP packet collector and channels.

7.4.3.2. VoIP Calls Settings

By default, the VoIP packet collector detects SIP sessions on the network that is
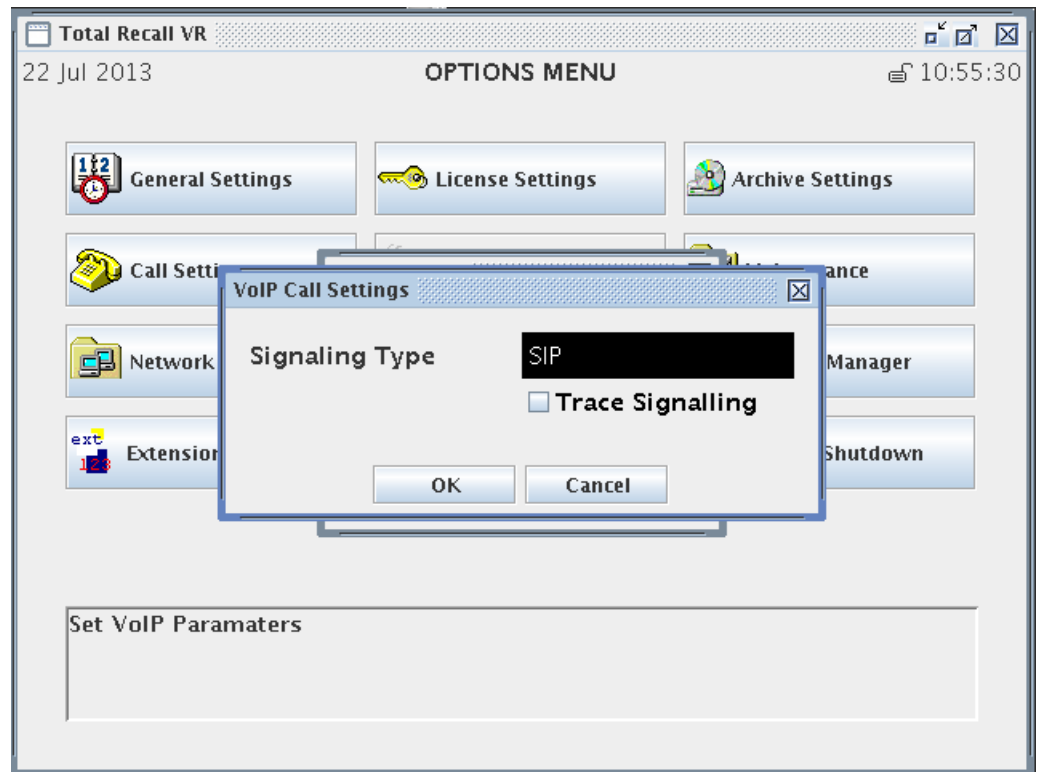connected to the LAN 2 interface. It ignores all H.323 calls.

To change the configuration for VoIP call recording:

Configure VoIP Call Recording

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP
   Settings** to display the VoIP Settings sub-menu.
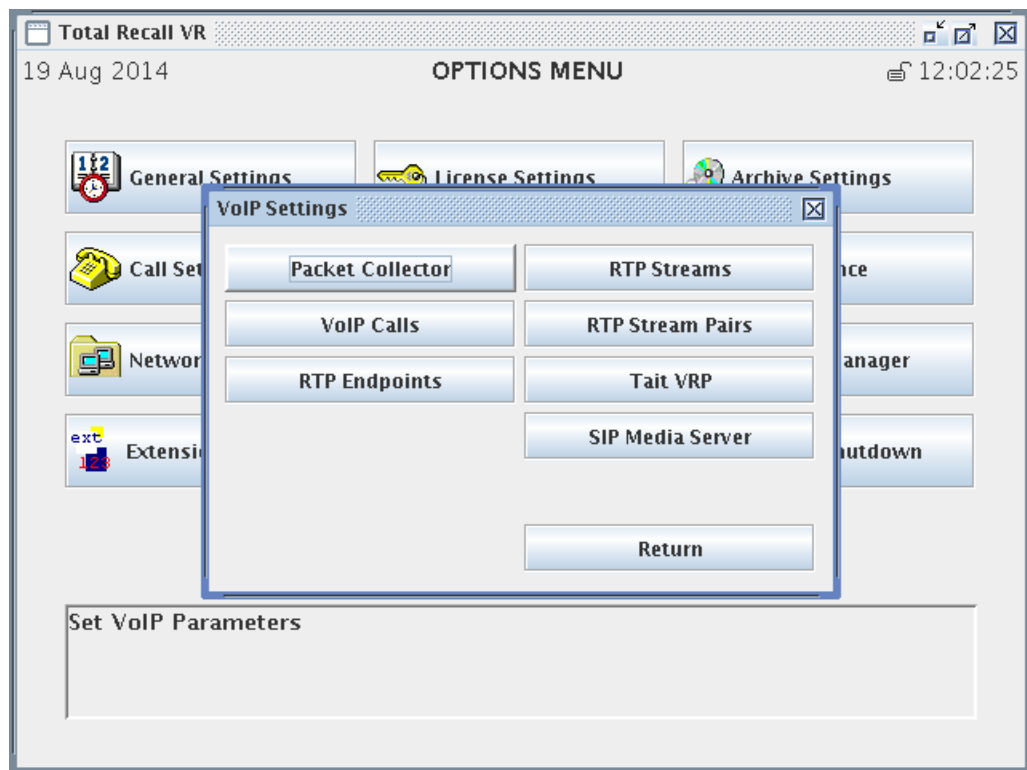
2. Select **VoIP Calls** to display the VoIP Calls Settings dialog:

3. Select *Signalling Type*. Choose:

   - Unsupported: if you wish to disable VoIP call recording.

   - SIP: if your network is using SIP signalling.

   - H.323: if your network is using H.323 signalling.

4. Optionally, tick *Signalling Tracing*.

   If you enable signalling tracing, then Total Recall VR will write all SIP and H.323 signalling messages that it receives in its logs. You can examine the logs and view the content of the messages with Total Recall VR Remote Manager.

   This feature is only intended for troubleshooting. DO NOT leave it on during normal operation. It will severely reduce the recording capacity of the system.

5. Select **OK** to apply the new configuration to the VoIP packet collector which will also re-configure the VoIP recording channels.

> If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK** on the VoIP Call Settings dialog.
>
> New recordings will start based on the new configuration.

7.4.3.3. RTP Endpoint Settings

Total Recall VR can record RTP streams that are sent between RoIP and AoIP equipment in passive mode – similar to recording VoIP calls.

By default, Total Recall VR does not record any RTP streams unless they are part of a SIP session. To record RTP streams that are sent between RoIP devices you must add RTP Endpoints to the configuration.

> Total Recall VR will collect RTP packets in passive mode if you add RTP Endpoints to the configuration.
>
> If you wish to record RTP streams in active mode using UDP port services, then add RTP Streams and/or RTP Stream Pairs to the configuration.

To add an RTP Endpoint to the configuration:

Add RTP Endpoint(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
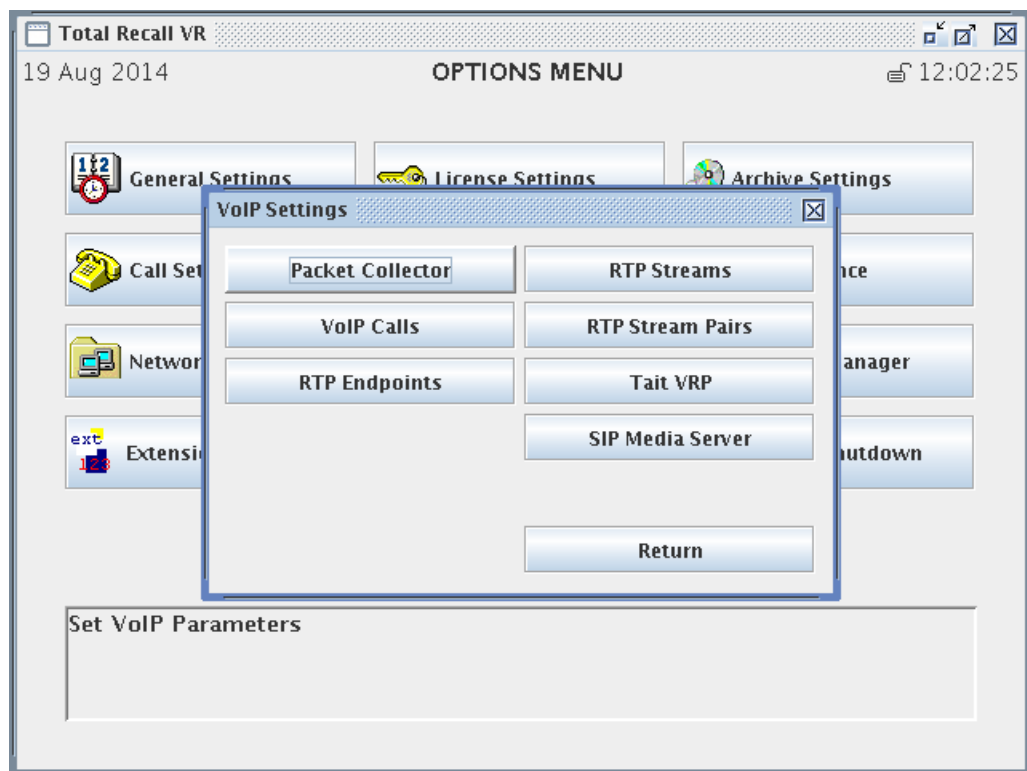
2. Select **RTP Endpoints** to display the table of RTP Endpoint Settings:
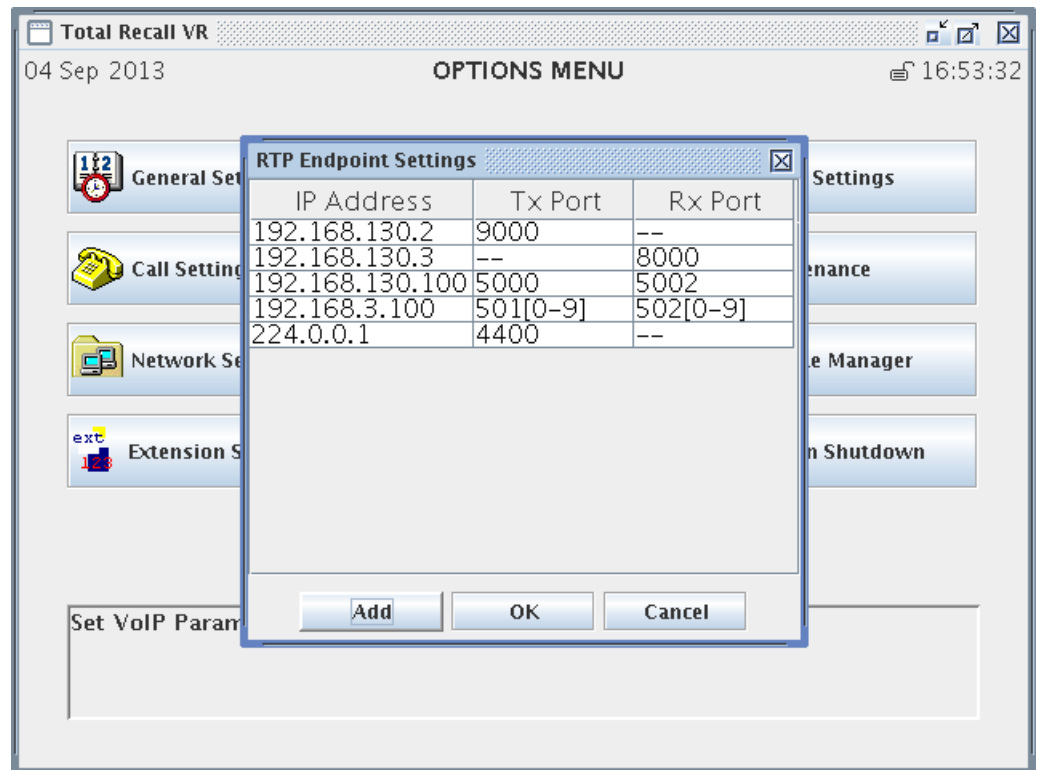
3. Select **Add** to display the RTP Endpoint Settings dialog:
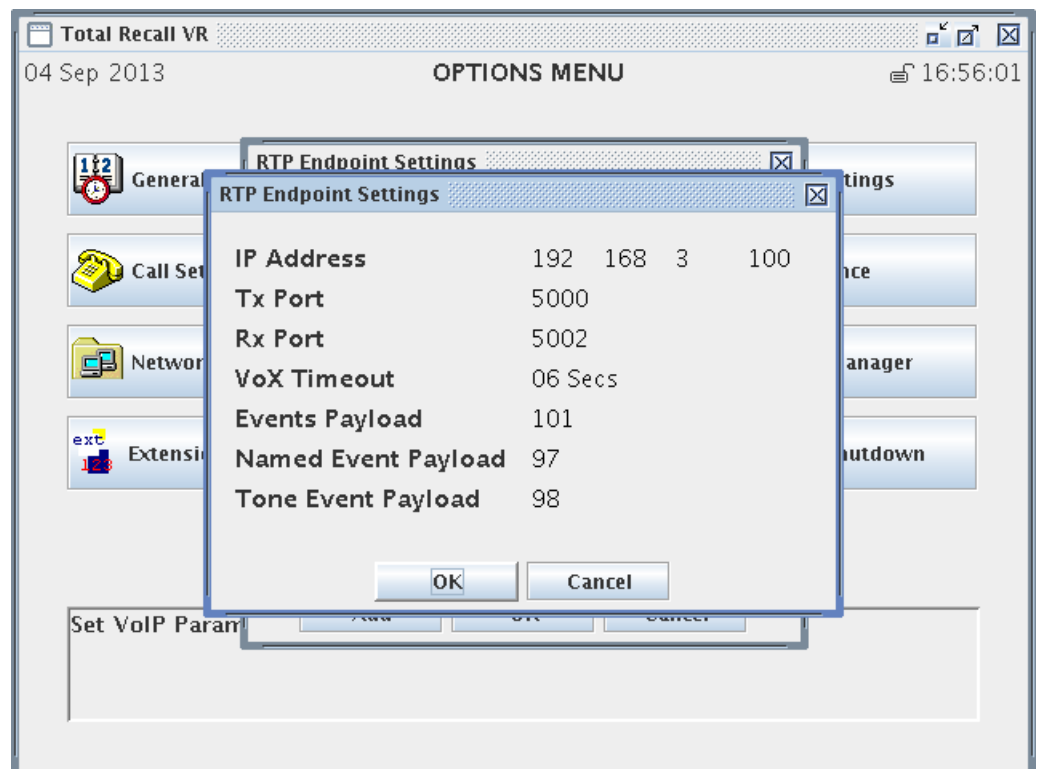
4. Enter *IP Address*.

   This is the IP address of the RoIP device where RTP stream originate and/or terminate.

5. Optionally, if you wish to record the RTP streams that originate from this RoIP device, enter *Tx Port*.

   Note: you must enter *Tx Port* or *Rx Port*, or both. If you enter only *Tx Port*, then Total Recall VR will record all RTP streams that are sent by the RoIP device with the specified IP address on the specified Tx port.

   Use the Remote Manager application to enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that originate from this RoIP device on ports 7000 to 7009 inclusive.

6. Optionally, if you wish to record the RTP streams that terminate at this RoIP device, enter *Rx Port*.

   Note: you must enter *Tx Port* or *Rx Port*, or both. If you enter only *Rx Port*, then Total Recall VR will record all RTP streams that are received by the RoIP device with the specified IP address on the specified Rx port.

   If you wish to record multicast RTP streams, then enter *Rx Port* and leave *Tx Port* blank. For example, to record a multicast stream sent to IP address 224.0.0.1 and port 4400, enter 224.0.0.1 for *IP Address* and 4400 for *Rx Port*.

   Use the Remote Manager application to enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that terminate at this RoIP device on ports 7000 to 7009 inclusive.

7. Select *VOX Timeout*.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording RTP streams.

8. Optionally, enter *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

   The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

   Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

9. Optionally, enter *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

10. Optionally, enter *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

11. Select **OK** to return to the table of RTP Endpoint Settings where you must select **OK** to apply the settings.
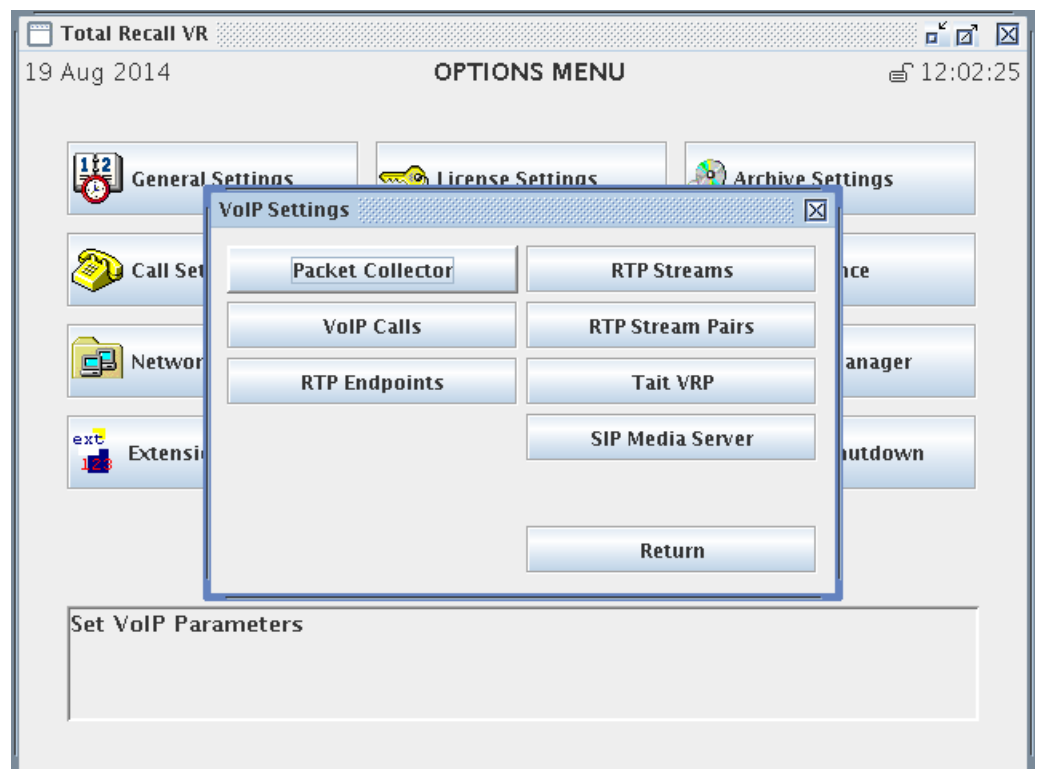
> ⚠️ If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
>
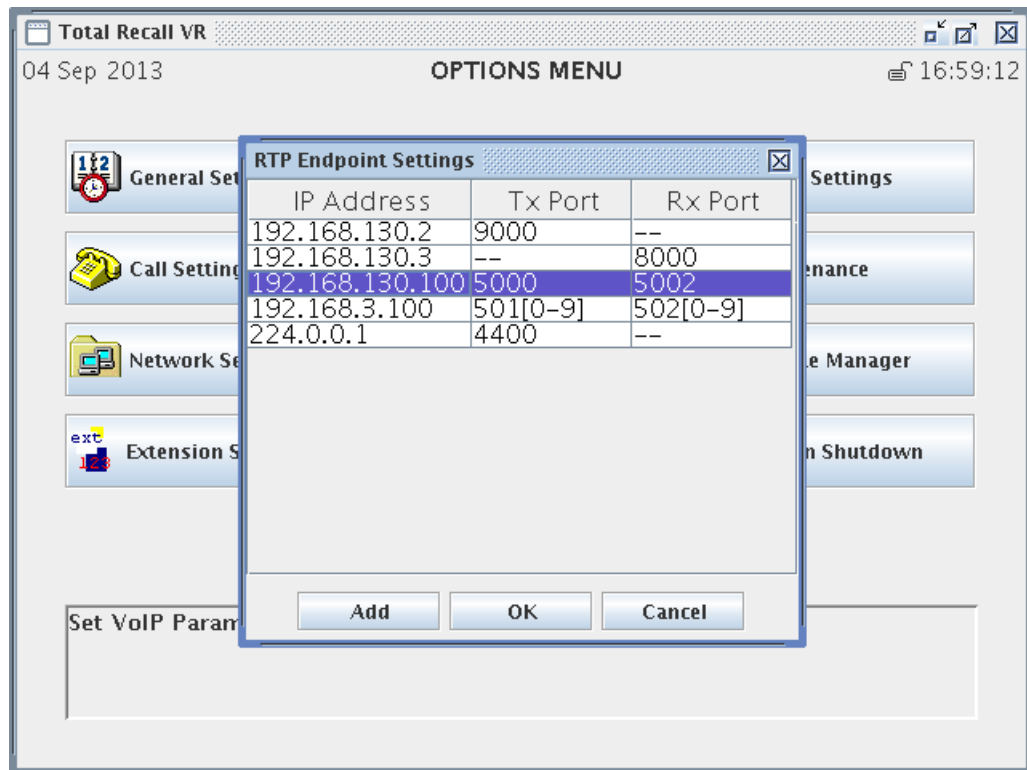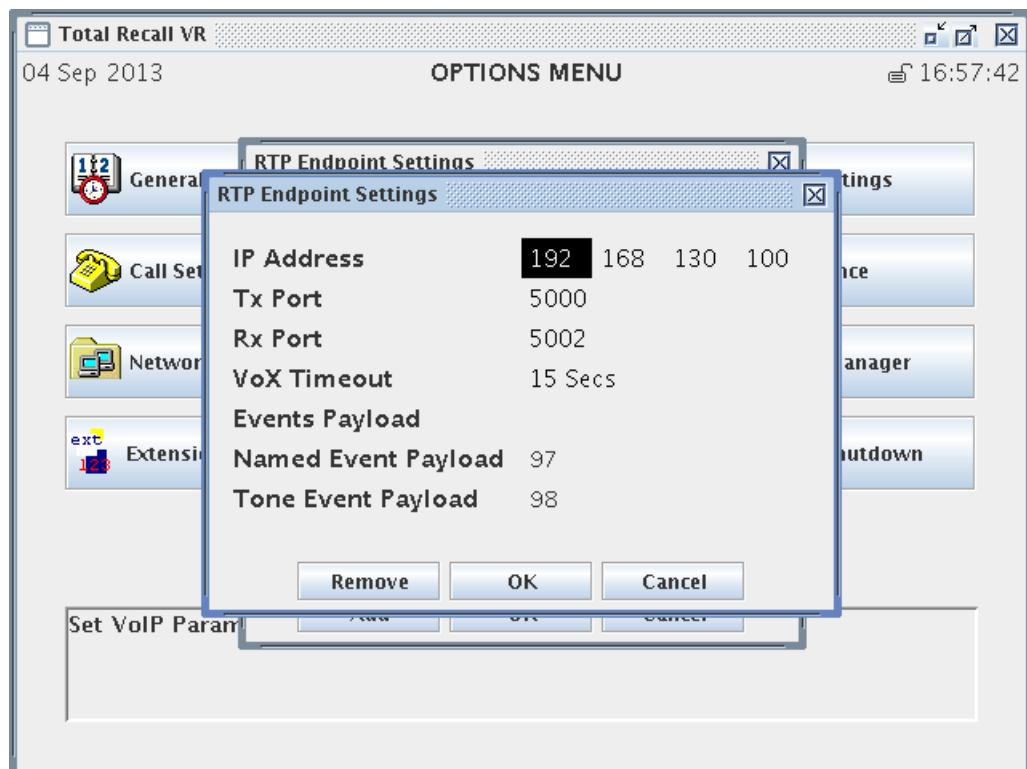> New recordings will start based on the new configuration.

To change the configuration for an RTP endpoint, or remove it from the list:

Manage RTP Endpoints(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

2. Select **RTP Endpoints** to display the table of RTP Endpoint Settings:

3. Use the [▲] and [▼] keys to navigate to the record that you wish to change or remove, then press the [Select] key to display the RTP Endpoint Settings dialog:

4. If you wish to remove the record, use the [▲] and [▼] keys to navigate to the **Remove** button and then select **Remove**. Otherwise:

5. Change *IP Address*.

This is the IP address of the RoIP device where RTP stream originate and/or terminate.

6. Optionally, if you wish to record the RTP streams that originate from this RoIP device, change *Tx Port*.

    Note: you must enter a Tx or an Rx port, or both. If you enter only a Tx port, then Total Recall VR will record all RTP streams that are sent by the RoIP device with the specified IP address on the specified Tx port.

    If you wish to record multicast RTP streams, then enter only a Tx port and leave the Rx port blank. For example, to record a multicast stream sent to IP address 224.0.0.1 and port 4400, enter 224.0.0.1 as *IP Address* and 4400 as *Tx Port*.

    Use the Remote Manager application to enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that originate from this RoIP device on ports 7000 to 7009 inclusive.

7. Optionally, if you wish to record the RTP streams that terminate at this RoIP device, change *Rx Port*.

    Note: you must enter a Tx or an Rx port, or both. If you enter only an Rx port, then Total Recall VR will record all RTP streams that are received by the RoIP device with the specified IP address on the specified Rx port.

    Use the Remote Manager application to enter a regular expression which matches a range of ports. For example, 700[0-9] which will instruct Total Recall VR to record all RTP streams that terminate at this RoIP device on ports 7000 to 7009 inclusive.

8. Select *VOX Timeout*.

    This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

9. Optionally, change *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

    The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

    Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

10. Optionally, change *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

    The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

11. Optionally, change *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

12. Select **OK** to return to the table of RTP Endpoint Settings where you must select **OK** to apply the settings.

> ⚠️ If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
>
> New recordings will start based on the new configuration.

7.4.3.4. RTP Stream Service Settings

Total Recall VR can record RTP streams that are sent by RoIP and AoIP equipment directly to Total Recall VR by exposing UDP ports on one of its LAN interfaces.

By default, Total Recall VR does not record any RTP streams that are sent directly to it. To record RTP streams that are sent directly to Total Recall VR by RoIP devices you must add RTP Streams service to the configuration.

> ℹ️ Total Recall VR will accept RTP packets in active mode if you add RTP Stream services to the configuration.
>
> If you wish to record RTP streams in passive mode using the VoIP packet collector, then add RTP Endpoints to the configuration.

> ℹ️ RTP Stream services accept RTP packets on a single UDP port. If the RoIP endpoint send RTP packets to two UDP ports (one for the TX and another for the Rx stream), then consider using RTP Stream Pair services instead.
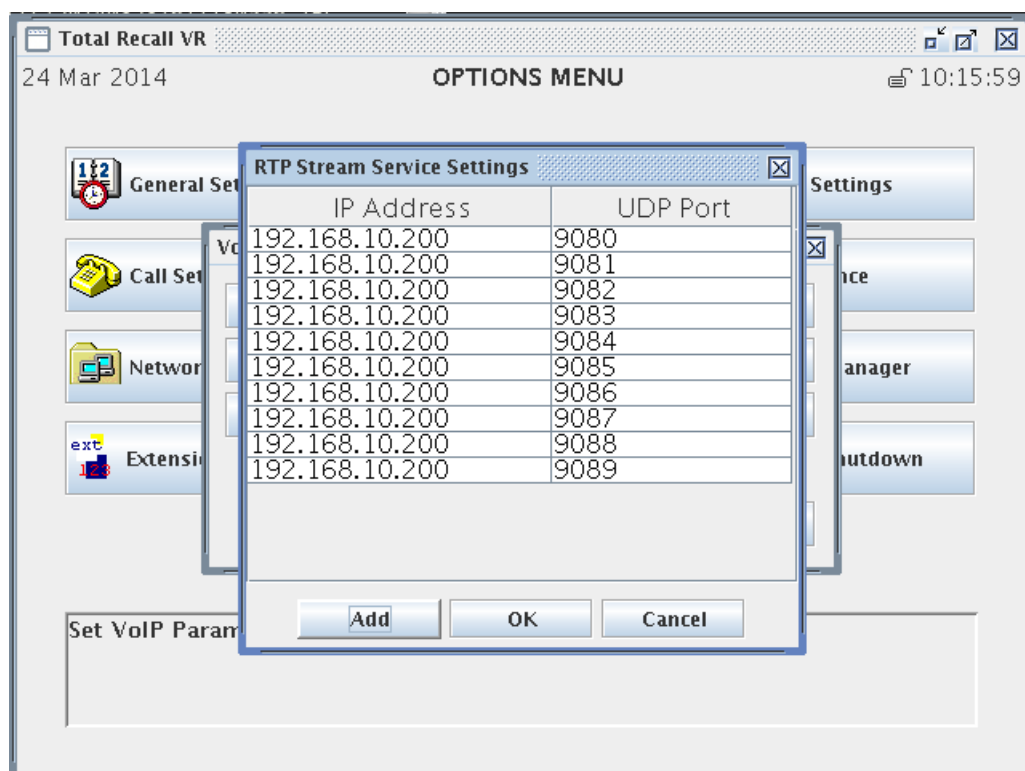
To add an RTP Stream service to the configuration:
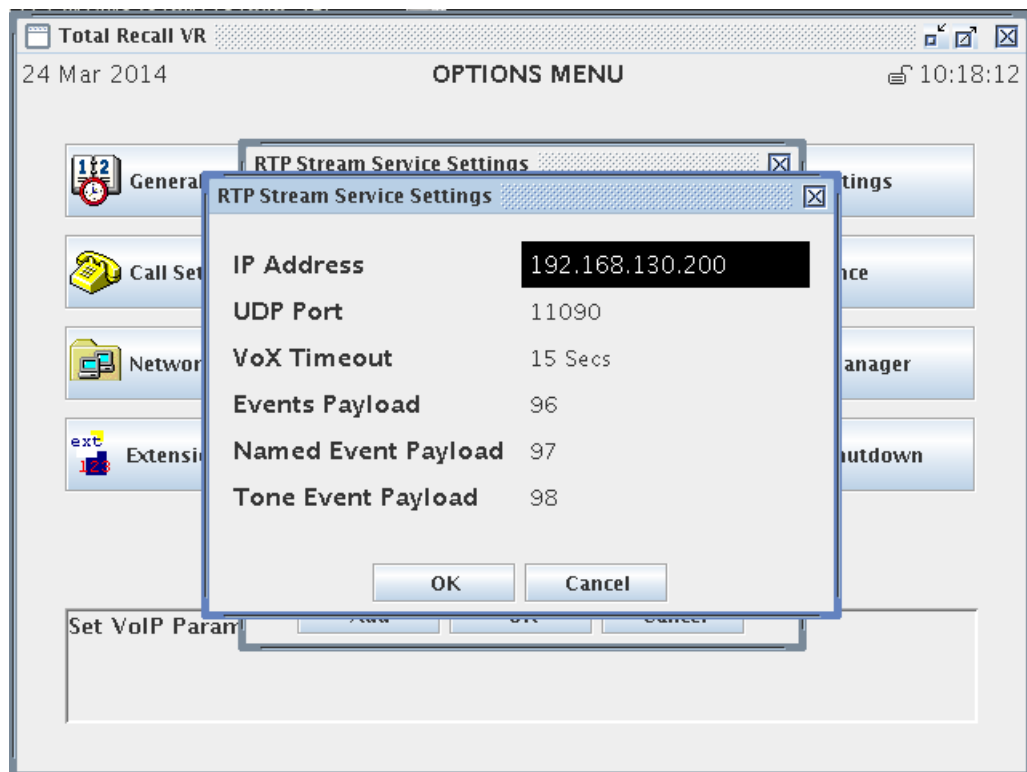
Add RTP Stream Service(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
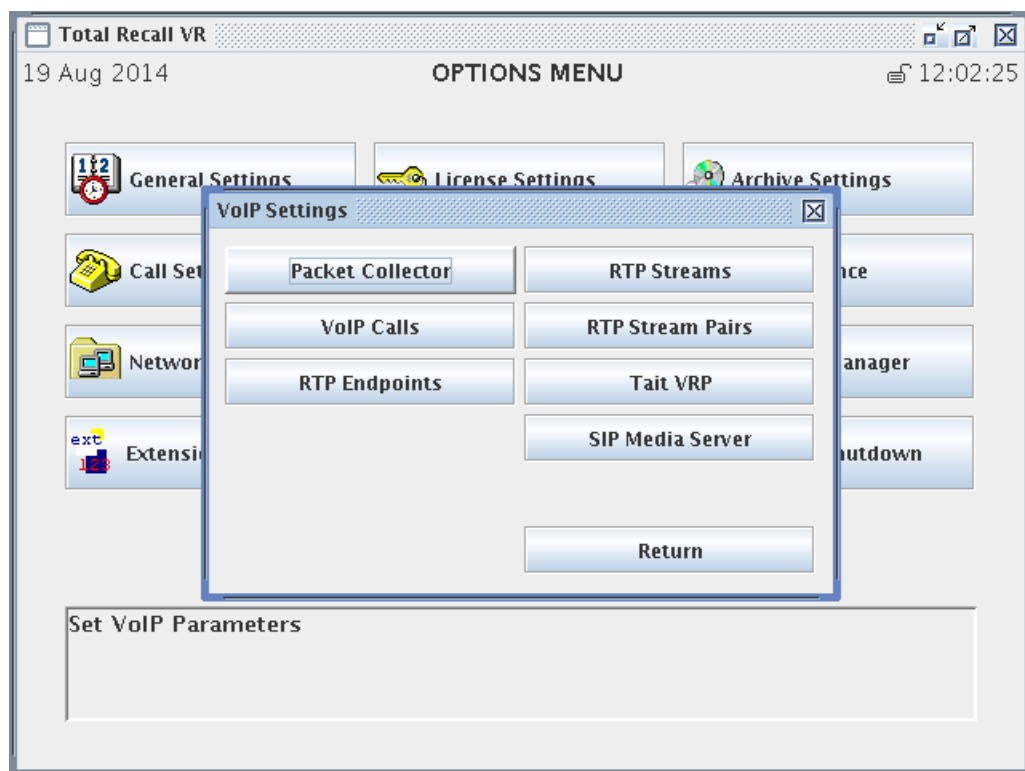
2. Select **RTP Streams** to display the table of RTP Stream Services Settings:

3. Select **Add** to display the RTP Stream Service Settings dialog:

4. Select *IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

   We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter *UDP Port*.

   This is the UDP port that Total Recall VR will use to receive RTP packets from RoIP devices.

6. Select *VOX Timeout*.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording RTP streams.

7. Optionally, enter *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

   The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

   Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

8. Optionally, enter *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

9. Optionally, enter *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

10. Select **OK** to return to the table of RTP Streams Settings where you must select **OK** to apply the settings.

If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

Once you add an RTP Stream service to the configuration, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the IP address and port that are specified in the configuration of the RTP Stream service.
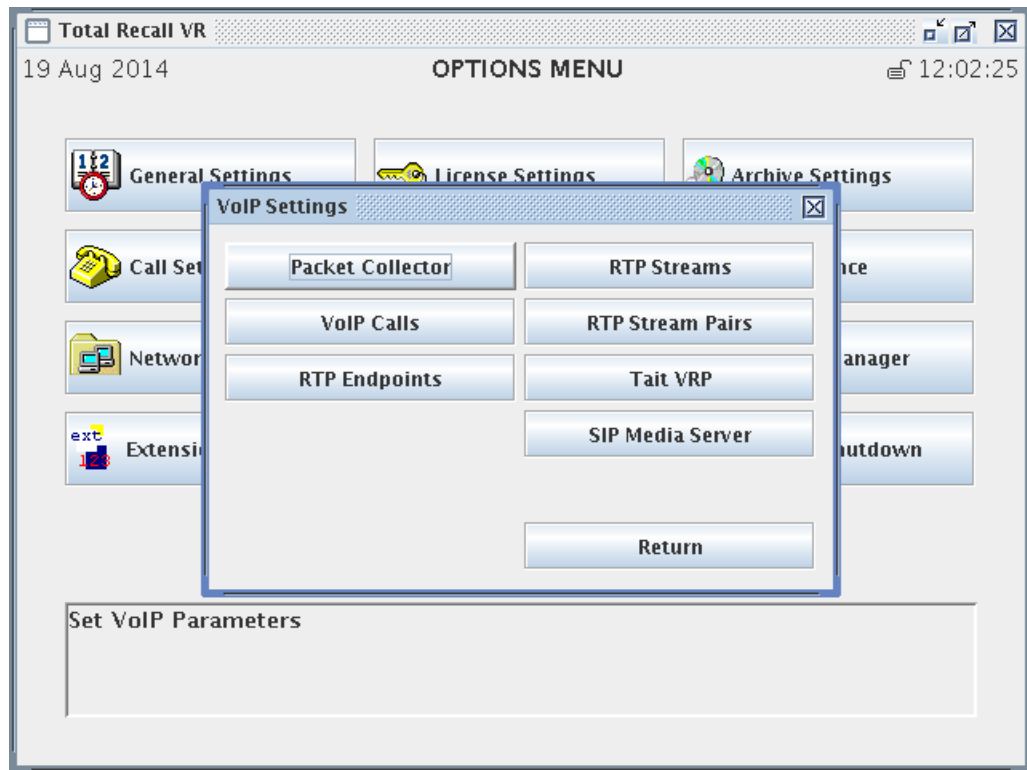
You must configure the RoIP endpoint to send RTP packets to the RTP Stream service as well.
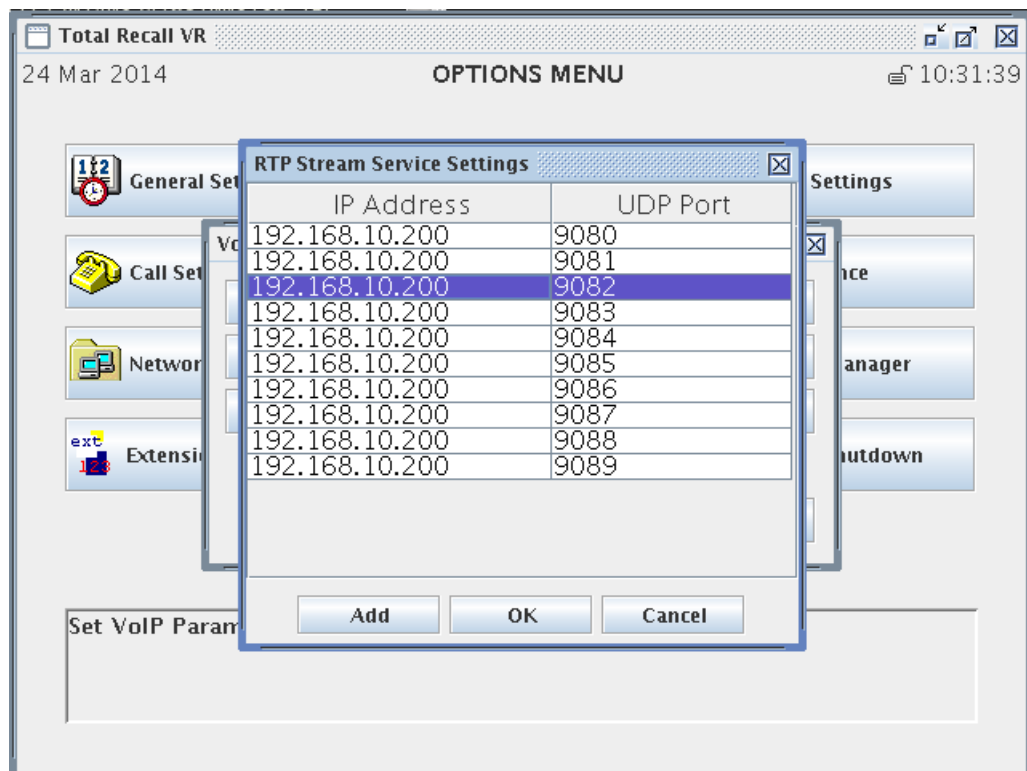
To change the configuration for an RTP Stream service, or remove it from the list:
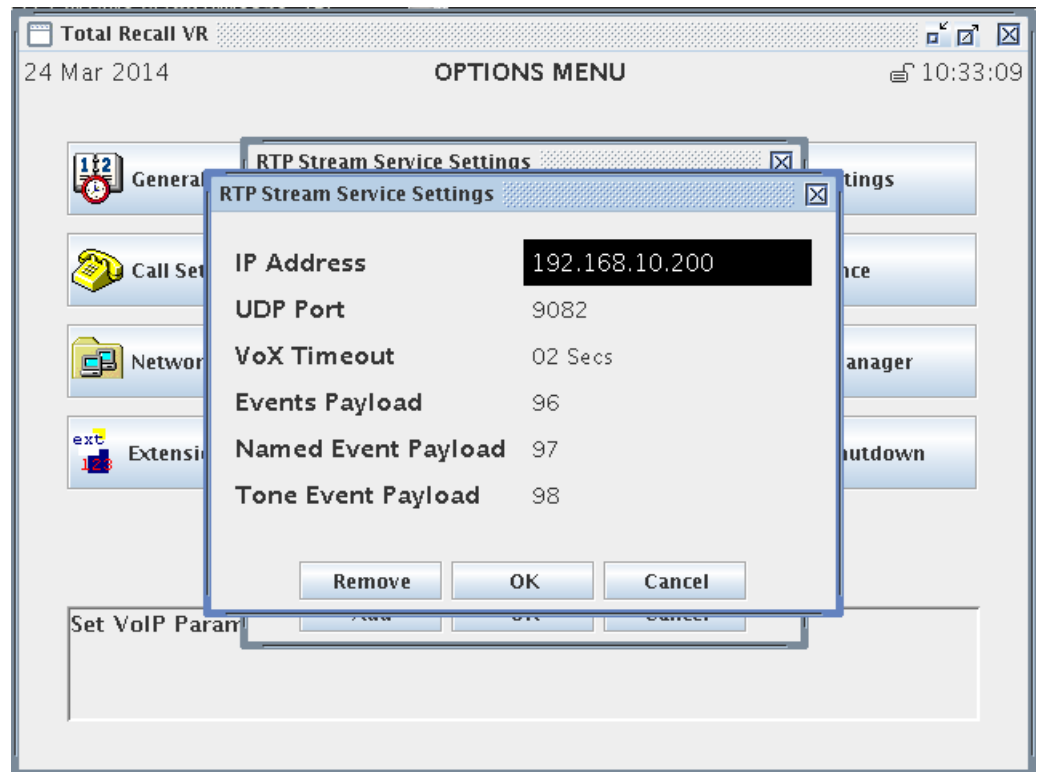
Manage RTP Stream Service(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

2. Select **RTP Streams** to display the table of RTP Stream Service Settings:

3. Use the [▲] and [▼] keys to navigate to the record that you wish to change or remove, then press the [Select] key to display the RTP Stream Service Settings dialog:

4. If you wish to remove the record, use the [▲] and [▼] keys to navigate to the **Remove** button and then select **Remove**. Otherwise:

5. Change *IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

6. Change *UDP Port*.

   This is the UDP port that Total Recall VR will use to receive RTP packets from RoIP devices.

7. Select *VOX Timeout*.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

8. Optionally, change *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

   The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

   Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

9. Optionally, change *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

10. Optionally, change *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

11. Select **OK** to return to the table of RTP Endpoint Settings where you must select **OK** to apply the settings.

> If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
>
> New recordings will start based on the new configuration.

Once you update an RTP Stream service, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the updated IP address and port that are specified in the configuration of the RTP Stream service.

> You must change the configuration of the RoIP endpoint to send RTP packets to the RTP Stream service as well.

7.4.3.5. RTP Stream Pair Service Settings

Total Recall VR can record RTP streams that are sent by RoIP and AoIP equipment directly to Total Recall VR by exposing UDP port services.

By default, Total Recall VR does not record any RTP streams that are sent directly to it. To record RTP streams that are sent directly to Total Recall VR by RoIP devices you must add RTP Streams Pair services to the configuration.

> Total Recall VR will accept RTP packets in active mode if you add RTP Stream Pair services to the configuration.

> If you wish to record RTP streams in passive mode using the VoIP packet collector, then add RTP Endpoints to the configuration.

> RTP Stream Pair services accept RTP packets on two UDP ports and mix the audio in the packets before passing it upstream to the recorder. If a RoIP endpoint sends RTP packets to a single UDP port, then consider using RTP Stream services instead.
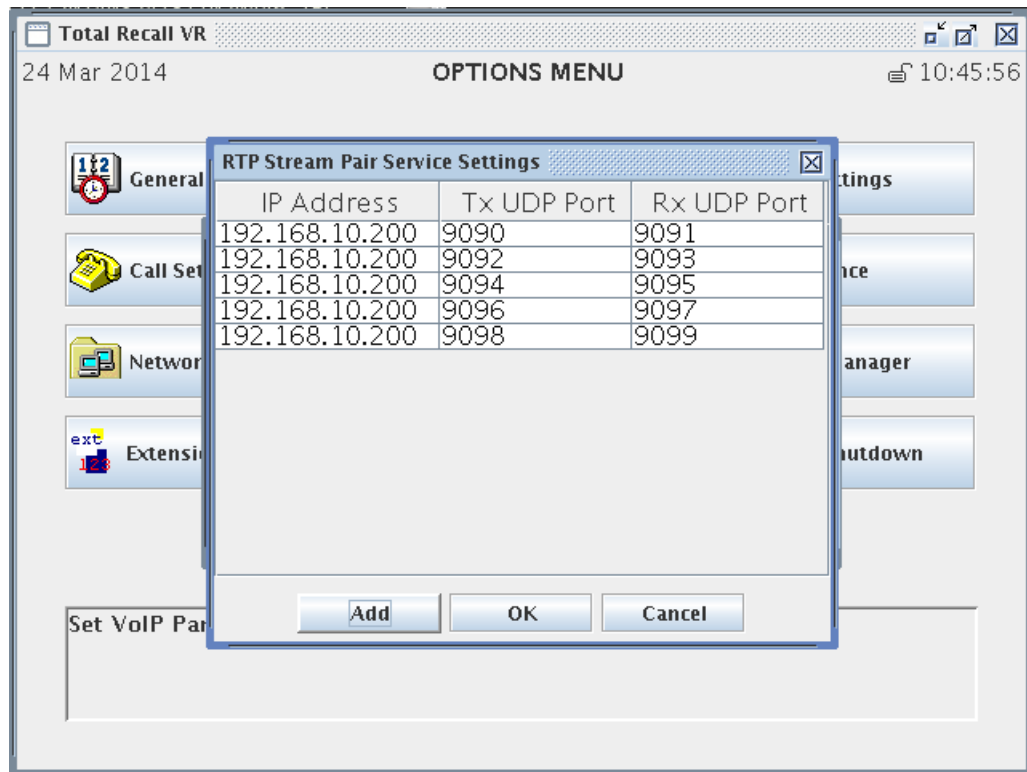
To add an RTP Stream Pair service to the configuration:

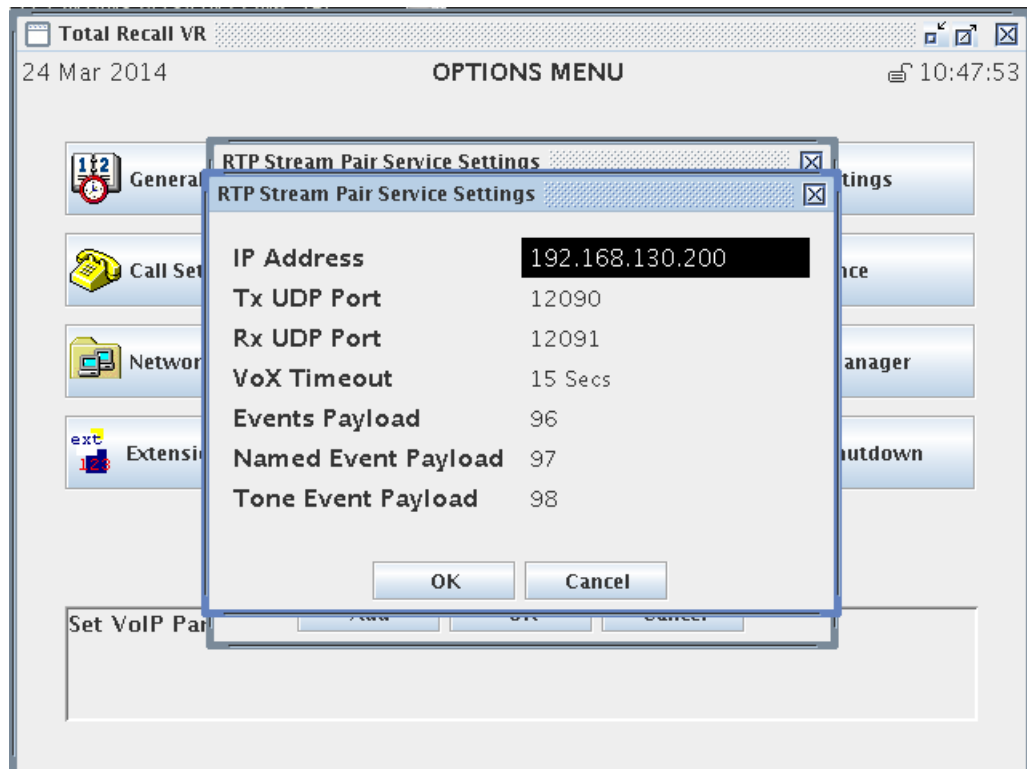### Add RTP Stream Pair Service(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
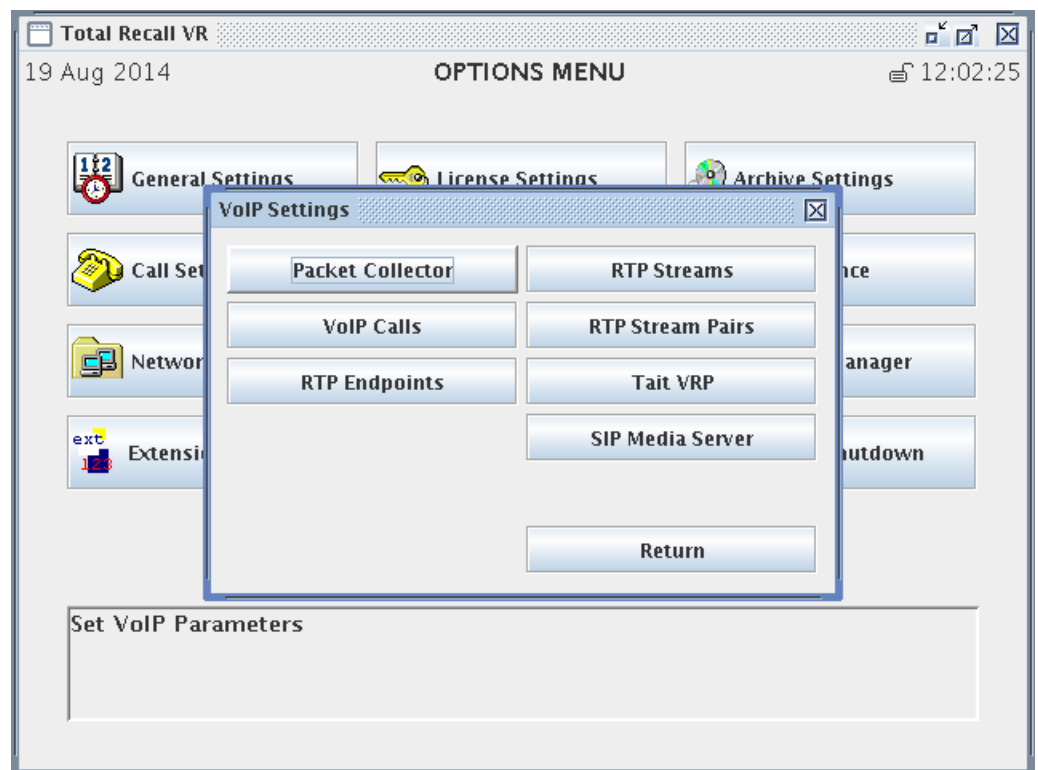
2. Select **RTP Stream Pairs** to display the table of RTP Stream Pair Services Settings:

3. Select **Add** to display the RTP Stream Pair Service Settings dialog:

4. Select *IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter *Tx UDP Port*.

   This is the first UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

6. Enter *Rx UDP Port*.

   This is the second UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

7. Select *VOX Timeout*.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording RTP streams.

8. Optionally, enter *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

   The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

   Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

9. Optionally, enter *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

   The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

10. Optionally, enter *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

    The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

11. Select **OK** to return to the table of RTP Stream Pair Settings where you must select **OK** to apply the settings.

If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

Once you add an RTP Stream Pair service to the configuration, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the IP address and pair of ports that are specified in the configuration of the RTP Stream Pair service.
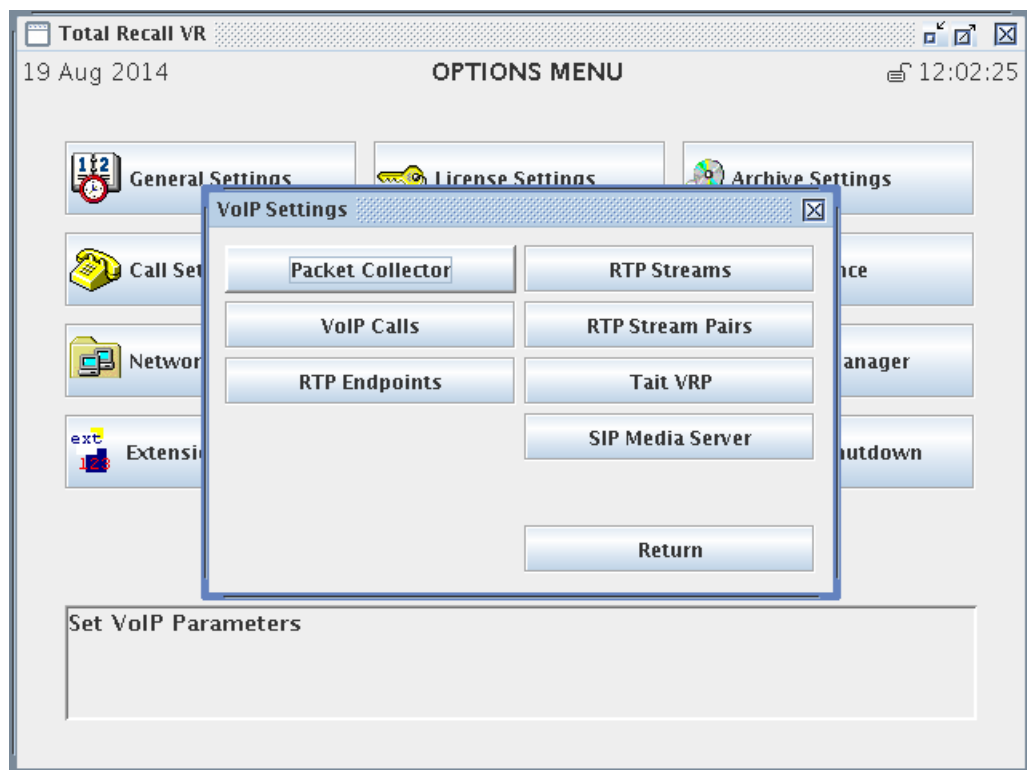
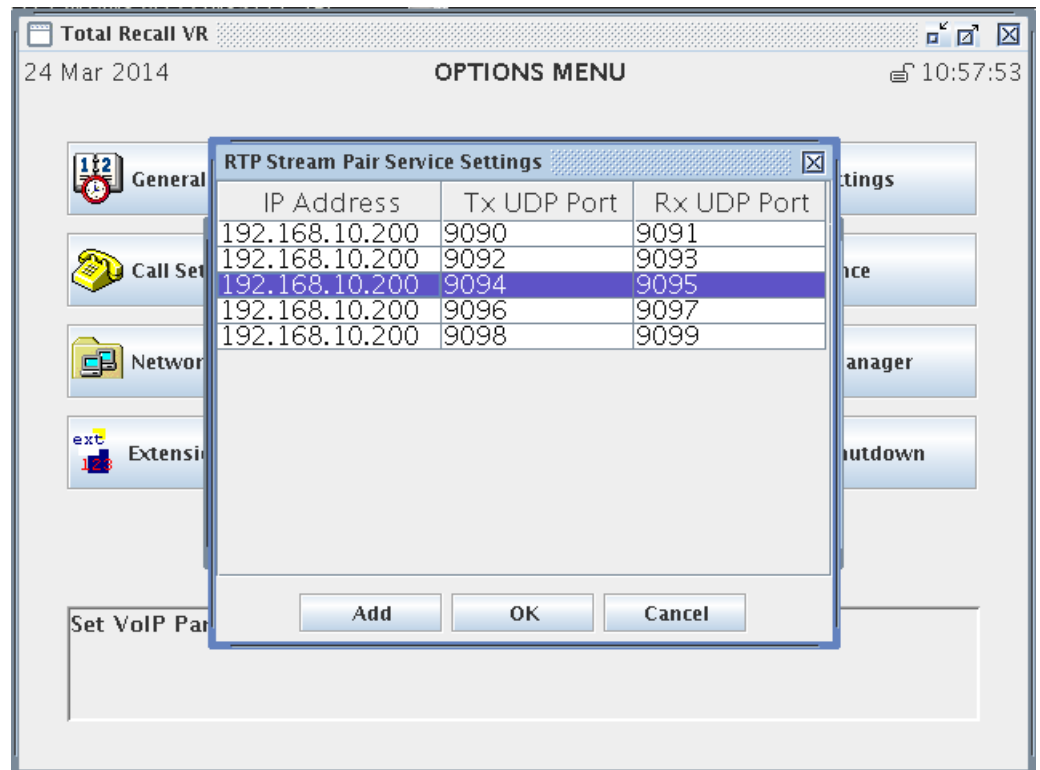> You must configure the RoIP endpoint to send RTP packets to the RTP Stream Pair service as well.

To change the configuration for an RTP Stream Pair service, or remove it from the list:
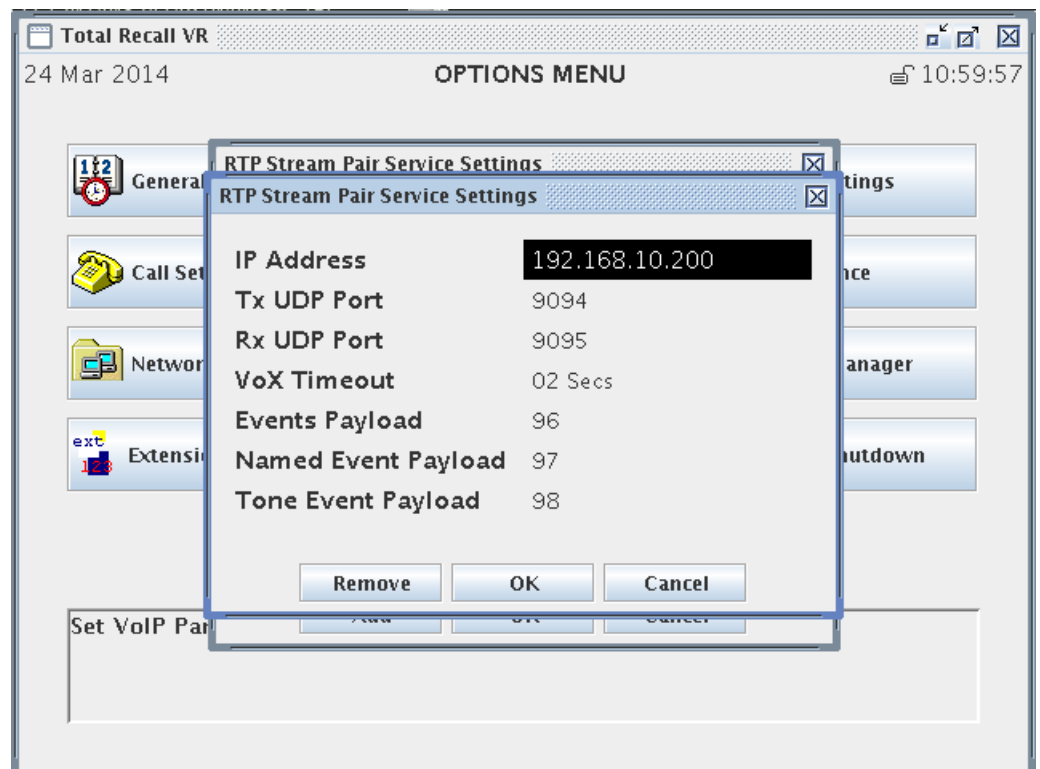
Manage RTP Stream Pair Service(s)

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

2. Select **RTP Stream Pairs** to display the table of RTP Stream Pair Service Settings:

3. Use the [▲] and [▼] keys to navigate to the record that you wish to change or remove, then press the [Select] key to display the RTP Stream Pair Service Settings dialog:

4. If you wish to remove the record, use the [▲] and [▼] keys to navigate to the **Remove** button and then select **Remove**. Otherwise:

5. Change *IP Address*.

This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

6. Change *Tx UDP Port*.

   This is the first UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

7. Change *Rx UDP Port*.

   This is the second UDP port in the pair of UDP ports that Total Recall VR will use to receive RTP packets from RoIP devices.

8. Select *VOX Timeout*.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording the RTP stream.

9. Optionally, change *Events Payload* if you wish to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages. Otherwise leave this field blank.

   The value of *Events Payload* should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages.

   Note: In most cases *Events Payload* will be blank as RFC 2833 messages that carry multiple named and/or tone events are rarely implemented.

10. Optionally, change *Named Event Payload* if you wish to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages. Otherwise leave this field blank.

    The value of *Named Event Payload* should match the payload ID that appears in RTP packets that carry named RFC 2833 messages.

11. Optionally, change *Tone Event Payload* if you wish to collect RFC 2833 tone events that are sent in RFC 2833 messages. Otherwise leave this field blank.

    The value of *Tone Event Payload* should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages.

12. Select **OK** to return to the table of RTP Stream Pair Settings where you must select **OK** to apply the settings.

If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.

Once you update an RTP Stream Pair service, Total Recall VR is ready to accept RTP packets from RoIP endpoints on the updated IP address and ports that are specified in the configuration of the RTP Stream Pair service.

> You must change the configuration of the RoIP endpoint to send RTP packets to the RTP Stream Pair service as well.
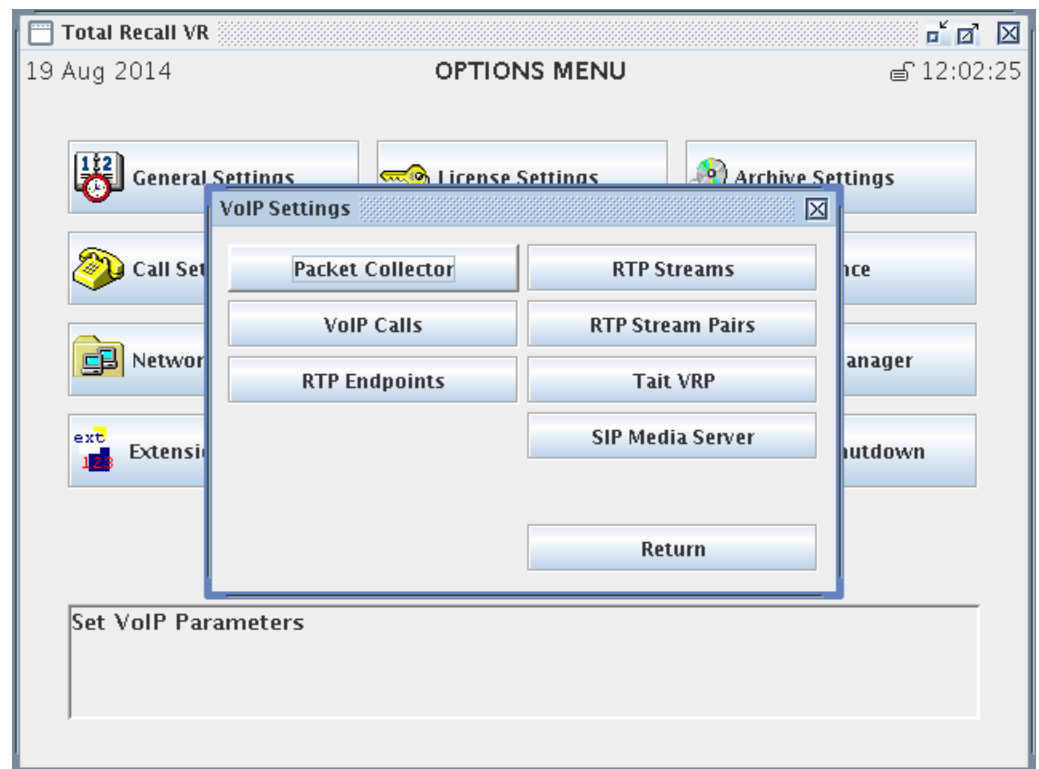
7.4.3.6. Tait VRP Service

Tait VRP is a protocol used in Tait DMR and MPT networks to transport audio from calls on the networks to voice recorders. VRP is based on RTP.

Total Recall VR can record audio in Tait DMR and MPT networks by accepting VRP packets on one of its LAN interfaces and a single UDP port.
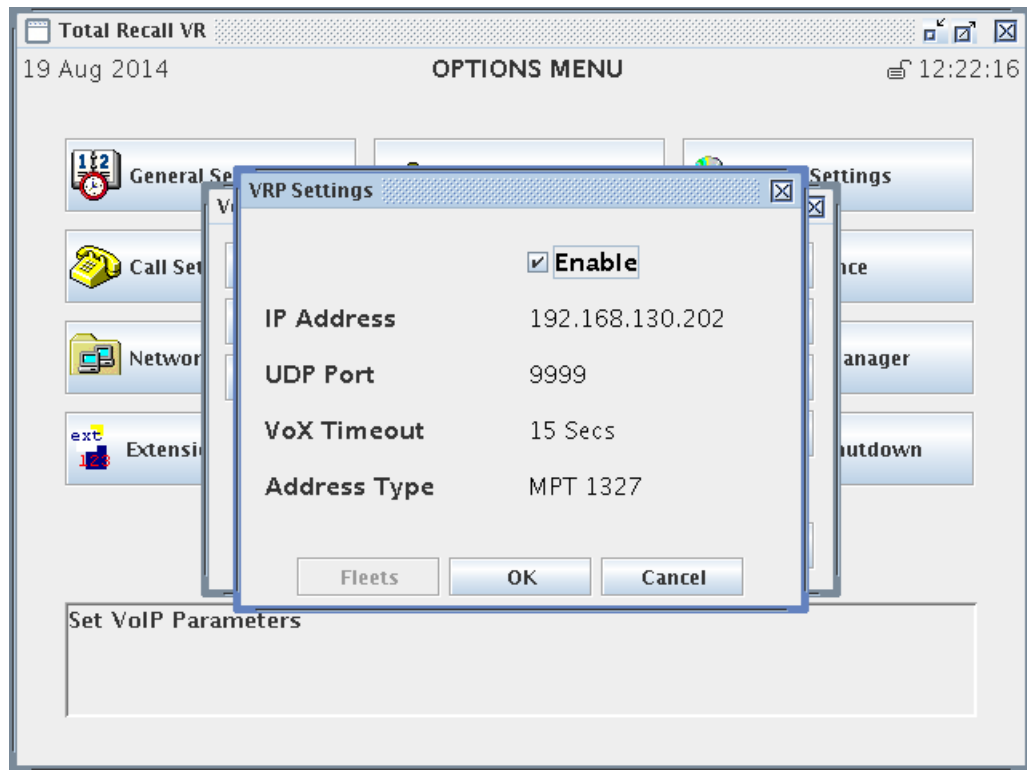
By default Total Recall VR accepts VRP packets on the IP address that is assigned to the LAN 2 interface and UDP port 9999. To change the configuration of the VRP service:

Configure the VRP Service

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

2. Select **Tait VRP** to display the VRP Service Settings:

3. Tick *Enable* to enable recording of Tait VRP calls.

4. Select *IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

   We recommend you use the IP address assigned to the LAN 2 interface for VoIP recording. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter *UDP Port*.

   This is the UDP port that Total Recall VR will use to receive VRP packets from other devices on the network.

6. Select *VOX Timeout*.

   NOTE: The VRP specification says that calls start and call end VRP packets are sent to the recorder to specify when calls start and end. However, not all Tait networks use the call start and end packets. This parameter is relevant only to networks where call start and call end packets are not present.

   This parameter defines the period of 'quiet time' (absence of RTP packets) during recording which must pass before Total Recall VR stops recording VRP streams.

7. Select *Address Type*.

   There are two options: MPT 1327 or MPT 1343. Choose the option that matches the addressing scheme that is used on the network.

If you select MPT 1343 then you will be able to specify fleet numbering parameters as well.

8. Select **OK** to apply the settings.

> ⚠ If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
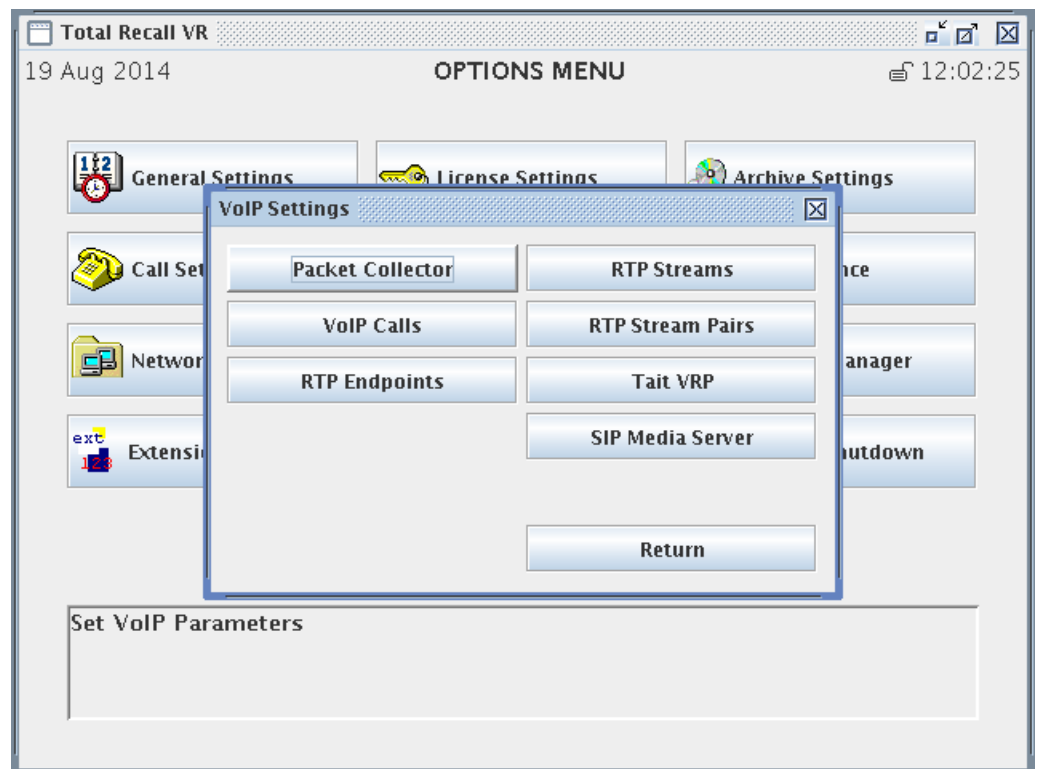>
> New recordings will start based on the new configuration.

If the network is using MPT 1343 addresses, then you must add fleet addressing parameters to the configuration.
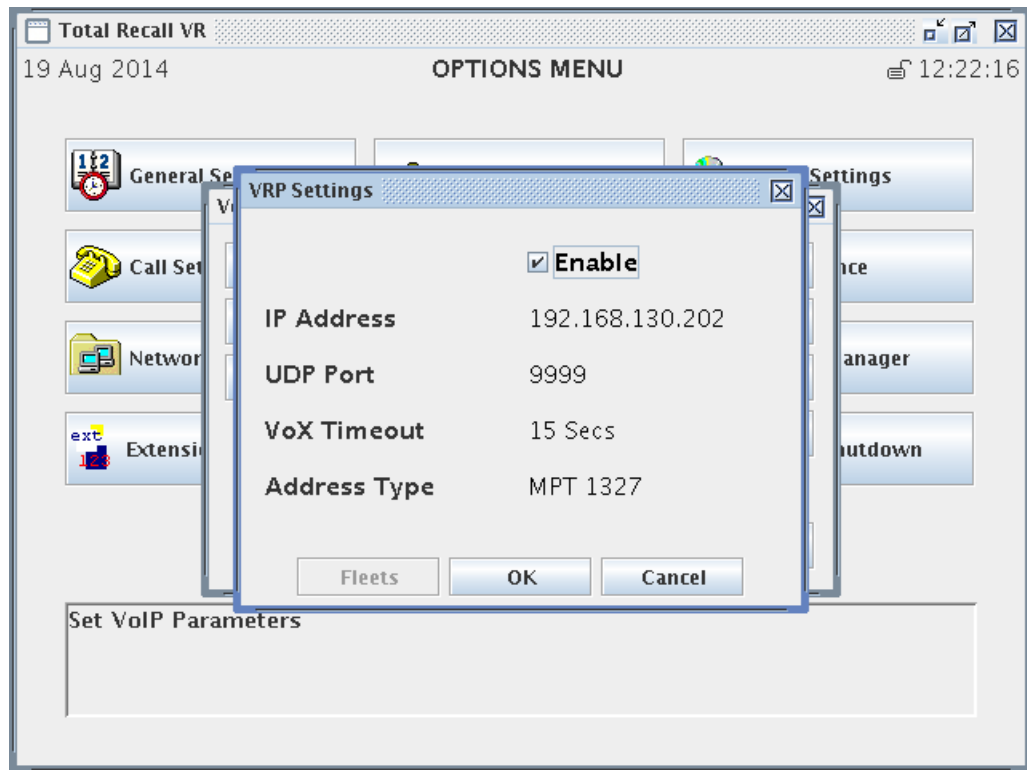
To add fleet addressing parameters:

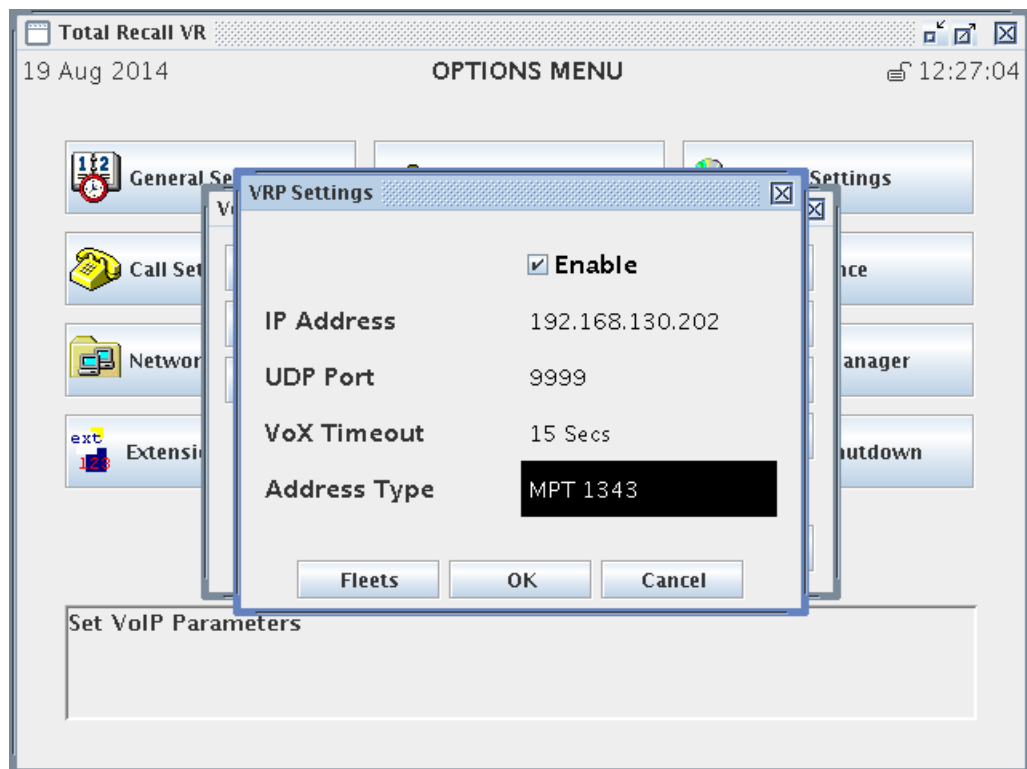### *Add Fleet Addressing Parameters*

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
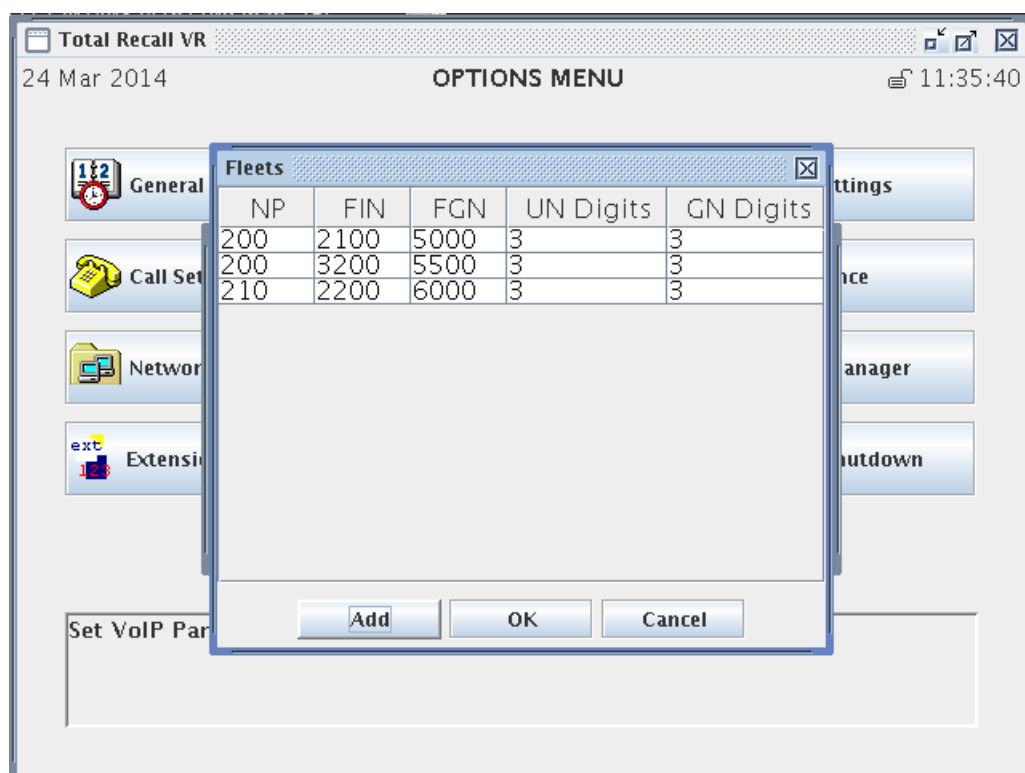

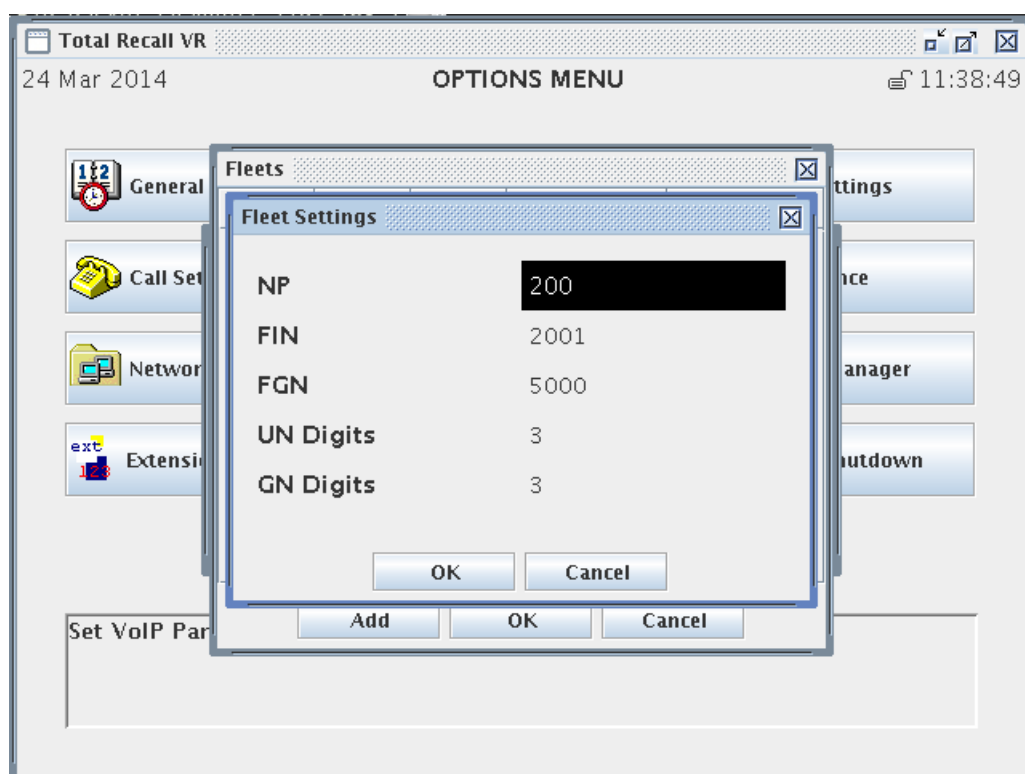2. Select **Tait VRP** to display the VRP Service Settings:

3. Select MPT 1343 for *Address Type* to enable the **Fleets** button:

4. Select **Fleets** to display the table of Fleet settings:

5. Select **Add** to display the Fleet Settings dialog:

6. Enter *NP*.

   This is the Number Prefix. Valid values are 200 to 327 inclusive.

7. Enter *FIN*.

This is the Fleet Individual Number. Valid values are 2001 to 4999 inclusive.

8. Enter *FGN*.

   This is the Fleet Group Number. Valid values are 5000 to 6050 inclusive.

9. Enter *UN Digits*.

   This is the number of digits used for Unit Numbers. Valid values are 2 and 3 (digits).

10. Enter *GN Digits*.

    This is the number of digits used for Group Numbers. Valid values are 2 and 3 (digits).

11. Select **OK** to return to the table of Fleet Settings where you must select **OK** to return to the VRP Settings dialog where you must select **OK** to apply the settings.


If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.

New recordings will start based on the new configuration.
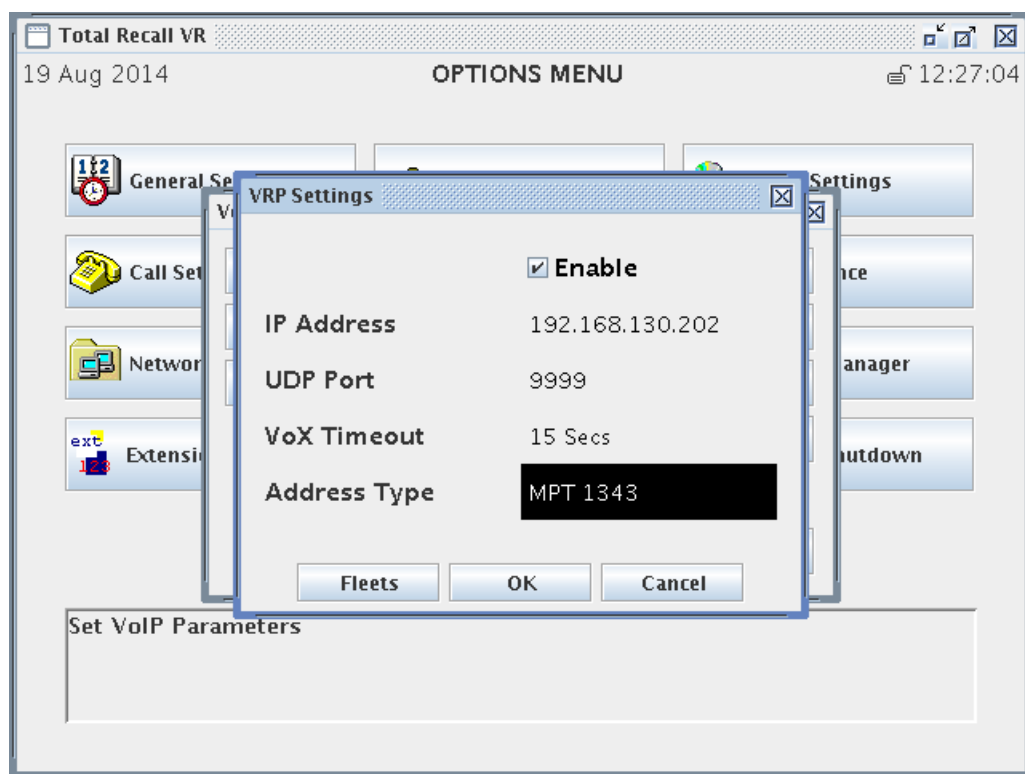

To change the Fleet addressing parameters, or remove a fleet from the list:
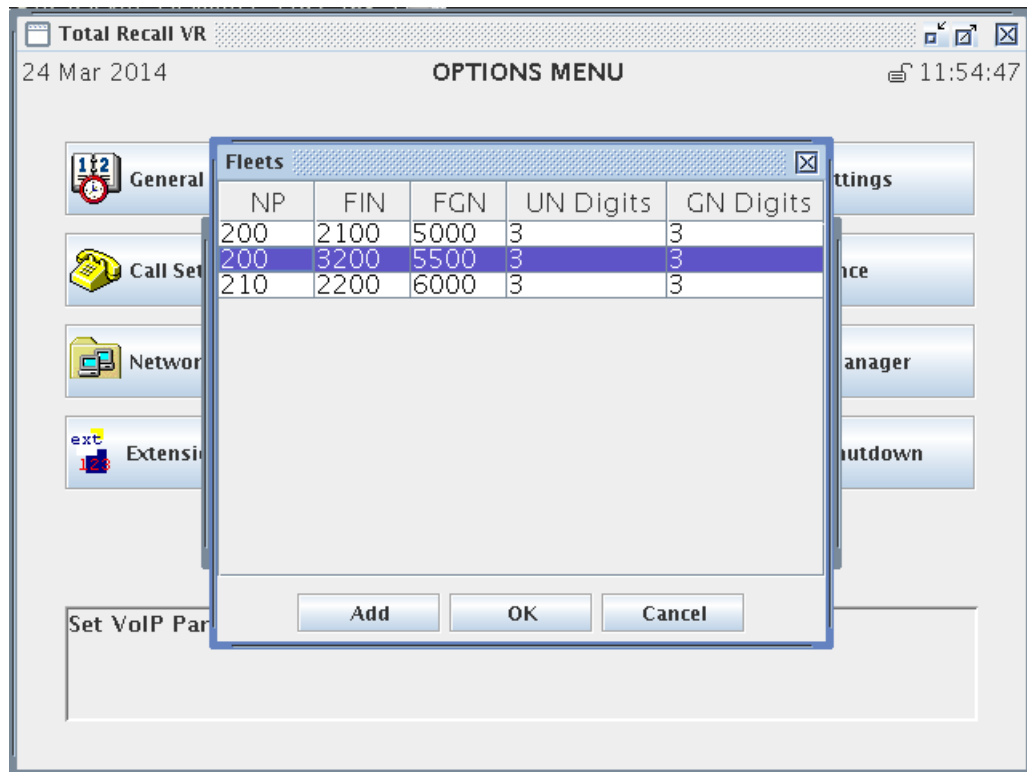
Manage Fleet Addressing Parameters

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.
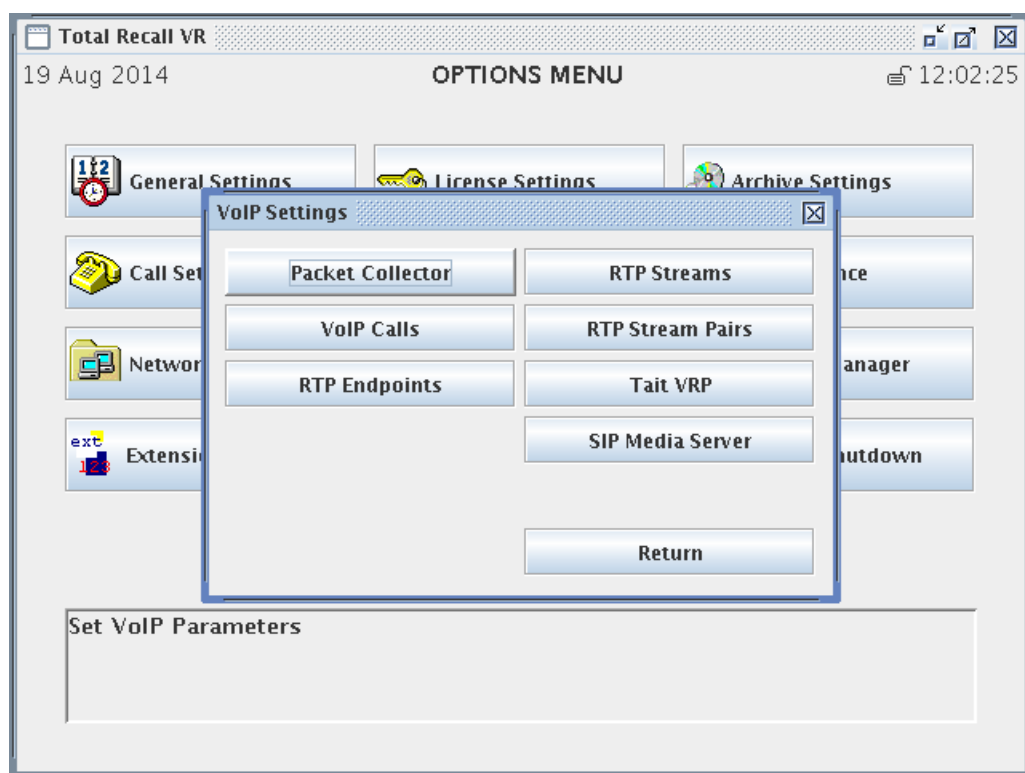
2. Select **Tait VRP** to display the VRP Service Settings:

3. Select **Fleets** to display the table of Fleet settings:

4. Use the [▲] and [▼] keys to navigate to the record that you wish to change or remove, then press the [Select] key to display the Fleet Settings dialog:
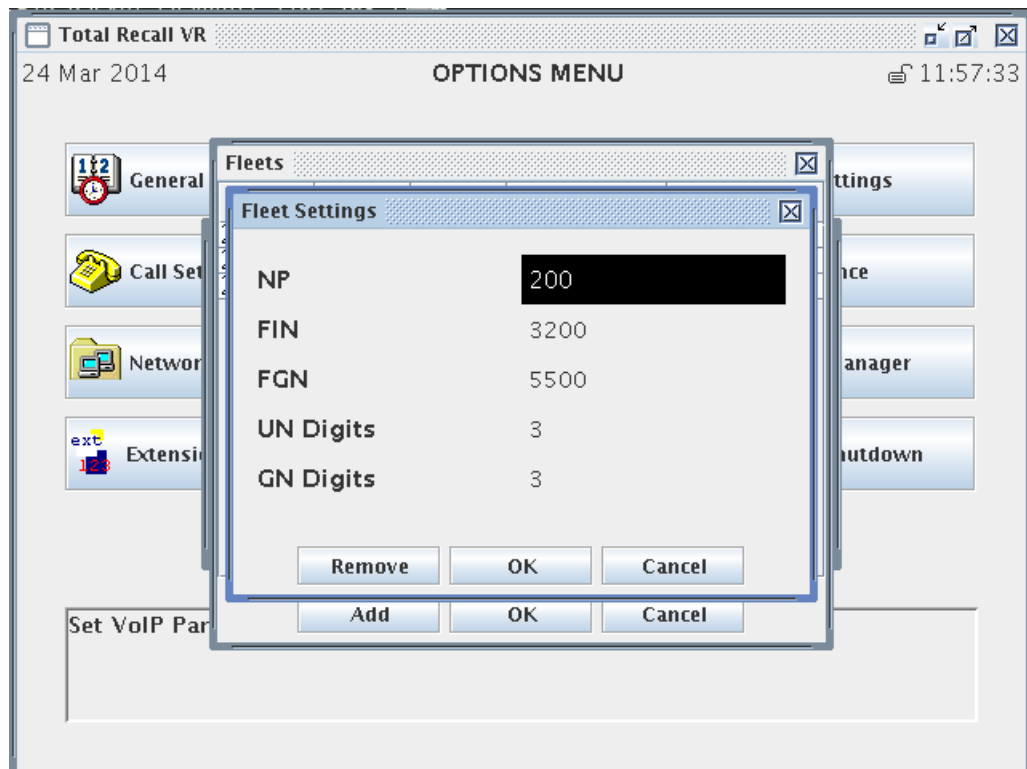
5. If you wish to remove the record, use the [▲] and [▼] keys to navigate to the **Remove** button and then select **Remove**. Otherwise:

6. Change *NP*.

This is the Number Prefix. Valid values are 200 to 327 inclusive.

7. Change *FIN*.

   This is the Fleet Individual Number. Valid values are 2001 to 4999 inclusive.

8. Change *FGN*.

   This is the Fleet Group Number. Valid values are 5000 to 6050 inclusive.

9. Change *UN Digits*.

   This is the number of digits used for Unit Numbers. Valid values are 2 and 3 (digits).

10. Change *GN Digits*.

    This is the number of digits used for Group Numbers. Valid values are 2 and 3 (digits).

11. Select **OK** to return to the table of Fleet Settings where you must select **OK** to return to the VRP Settings dialog where you must select **OK** to apply the settings.

> ⚠️ If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
>
> New recordings will start based on the new configuration.

7.4.3.7. SIP Media Server Settings

The SIP Media Server provides a recording service on SIP networks. SIP endpoints can use the recording service by simply establishing a SIP session with Total Recall VR.

By default the SIP media server accepts SIP packets on UDP port 5060 on the IP address that is assigned to the LAN 2 interface. In addition it uses UDP port 7000 as the base port for RTP packets. The actual number of UDP ports that it uses to receive RTP packets depends on the number of licensed VoIP recording channels.

To change the configuration of the SIP Media Server:

Configure the SIP Media Server

1. Navigate to the Options Menu Screen using the [Menu] key. Select **VoIP Settings** to display the VoIP Settings sub-menu.

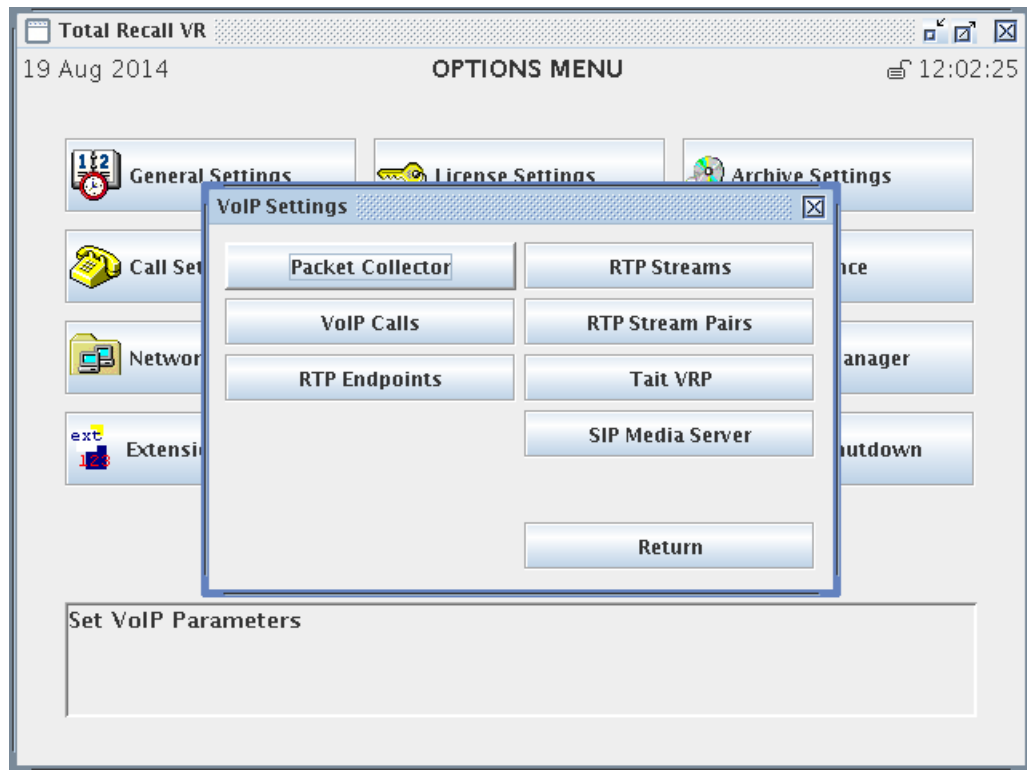2. Select **SIP Media Server** to display the SIP Media Server Settings:
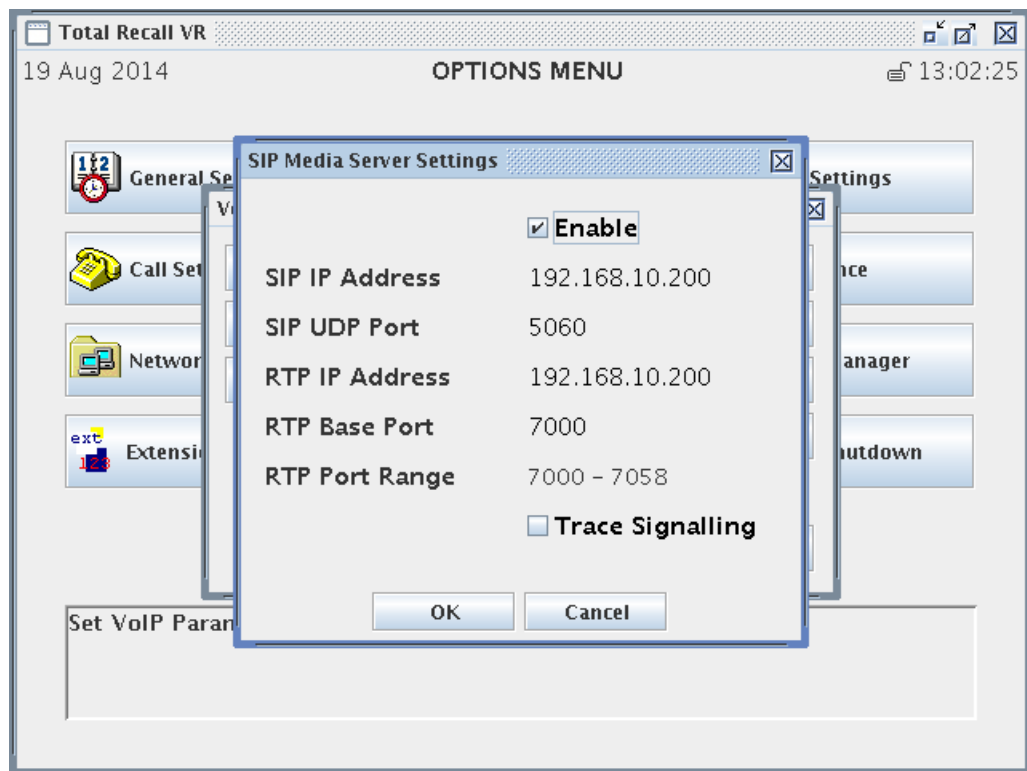
3. Tick *Enable* to enable the SIP media server.

4. Select *SIP IP Address*.

   This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

We recommend you use the IP address assigned to the LAN 2 interface for the SIP service. This leaves LAN 1 for connection to the enterprise LAN.

5. Enter *SIP UDP Port*.

    This is the UDP port that Total Recall VR will use to receive SIP packets from other devices on the network.

6. Select *RTP IP Address*.

    This is either the IP address that is assigned to the LAN 1 interface or the IP address assigned to the LAN 2 interface.

    We recommend you use the IP address assigned to the LAN 2 interface for the RTP services. This leaves LAN 1 for connection to the enterprise LAN.

7. Enter *RTP Base Port*.

    This is the starting UDP port that Total Recall VR will use to receive RTP packets from other devices on the network. The actual number of UDP ports that Total Recall VR will use depends on the number of licensed VoIP recording channels.

    RTP Port Range displays the range of UDP ports that Total Recall VR will use as you change the value of *RTP Base Port*.

8. Optionally, tick *Signalling Tracing*.

    If you enable signalling tracing, then Total Recall VR will write all SIP signalling messages that it receives in its logs. You can examine the logs and view the content of the messages with Total Recall VR Remote Manager.

    This feature is only intended for troubleshooting. DO NOT leave it on during normal operation. It will severely reduce the recording capacity of the system.

9. Select **OK** to apply the settings.

> If you change the configuration while recording, then all active recordings on all VoIP recording channels will terminate when you select **OK**.
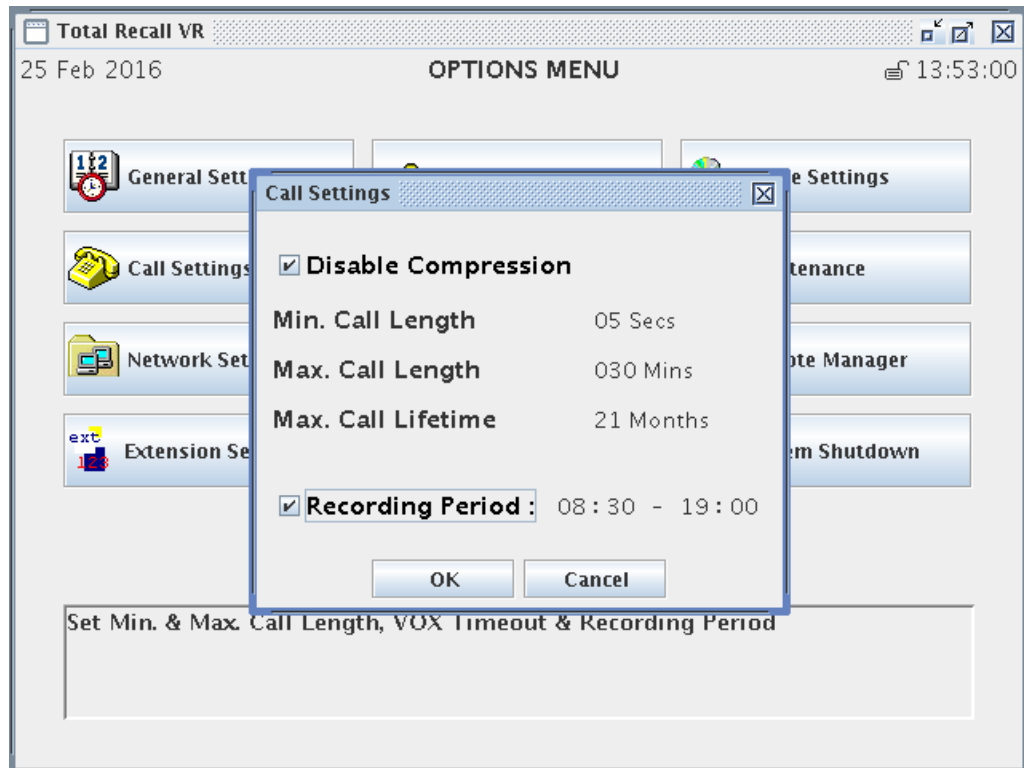>
> New recordings will start based on the new configuration.

7.4.4. Call Settings

This is a group of general recording configuration parameters.

Update Call Settings

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Call Settings** to display the Call Settings dialog.

2. Tick *Disable Compression* if you wish to disable compression of VoIP and ISDN call recordings.

   Total Recall VR automatically compresses recordings of VoIP and ISDN calls to the *SPEEX Q8, 8000Hz, 15Kbps, mono* format. This flag, if selected, instruct Total Recall VR to keep recordings of VoIP and ISDN calls in the *G.711 A-law, 8000Hz, 64Kbps, mono* or *G.711 μ-law, 8000Hz, 64Kbps, mono* format.

   This setting has no effect on recordings created on analogue recording channels which are automatically compressed to the *HQVQ, 8000Hz, 7.9Kbps, mono* format.

3. Select *Min. Call Length*.

   Total Recall VR automatically discards recordings that are shorter than the duration specified by this parameter. A special value, Ignore, instruct Total Recall VR to keep all recordings irrespective of their length.

   This parameter is useful if you wish to eliminate short phantom recordings which are created by noise on the line when recording analogue sources and using VOX (signal level) as a recording trigger.

4. Select *Max. Call Length*.

Total Recall VR can create recordings of virtually any duration. However, this creates problems with file sizes. To avoid problems with file sizes, Total Recall VR automatically rolls over recordings to another file when recordings reach the duration specified by this parameter.

Recordings that are rolled over are market with "(cont)".

5. Select *Max. Call Lifetime*.

Total Recall VR automatically discards (deletes) old recordings when the disk becomes full to free space for new recordings. This ensures continuous operation.

This parameter, when set to value other than Ignore, tells Total Recall VR the age of recordings that can be safely removed from the system even if the disk is not full.

6. Optionally, tick *Recording Period* if you wish to record only between certain times. Set the start and stop time as well.

7. Select **OK** to save and apply the settings.

If an analogue recording channel has *Trigger* set to a VOX level:

1. The interval between calls must exceed the value of *VOX Timeout*. If a new call starts within the timeout on the same channel, then Total Recall VR assumes it is the continuation of the current recording which is in progress. The audio of both calls will appear in the same recording.

2. If a call is put on hold without music on hold, then recording will terminate after the period specified by *VOX Timeout*. Total Recall VR will start a new recording when the call recommences.

7.4.5. Signalling Mapping

Use Total Recall VR Remote Manager.

7.4.6. Internal Dial Plan

> Use Total Recall VR Remote Manager.

7.4.7. PBX Interface

> Use Total Recall VR Remote Manager.

7.4.8. Extension Settings

Recording policies control the operation of the recorder and determine the method of recording.

As section 2.3.2 Recording Policies explains, policies can be one of two types:

- Global – a single system wide policy which applies to recordings from all audio sources and telephone calls on all recording channels.

- Extension – apply only to recordings from audio sources and telephone calls which have been assigned Total Recall VR Extension identifiers. These policies have precedence over the global policy.
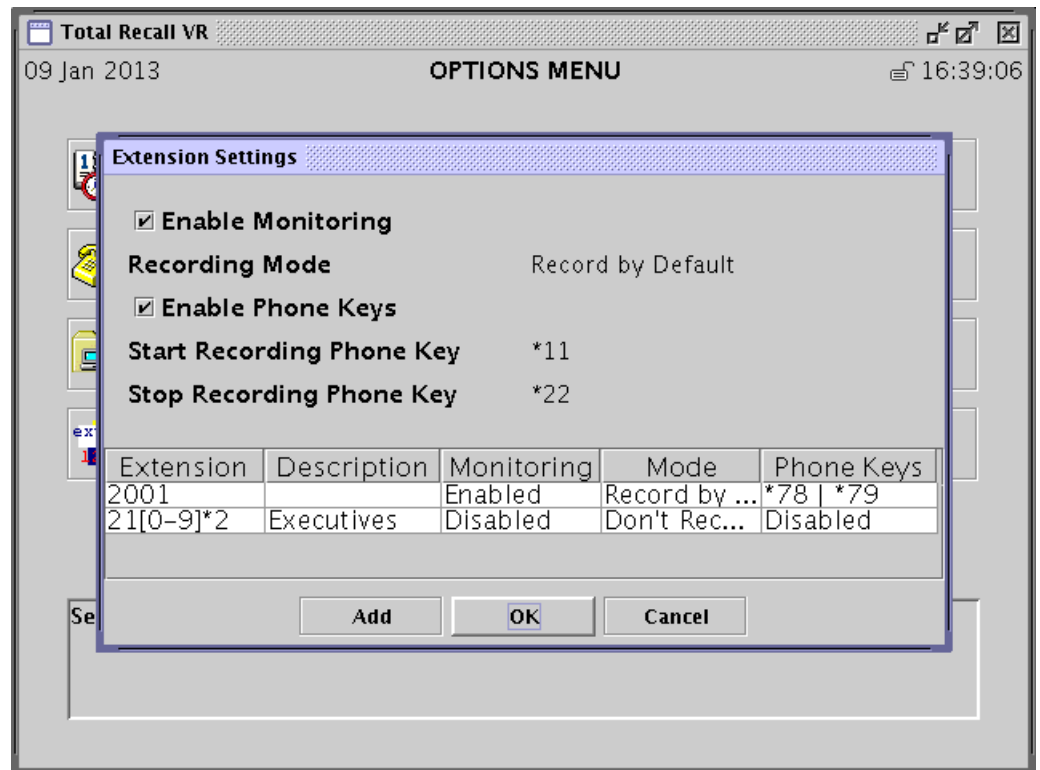
The default global policy is:

- All audio sources and telephone calls are recorded and recordings are kept unless instructed otherwise during recording.

- Real time monitoring of recordings in progress is allowed.

- The use of DTMF key sequences to control recording is disallowed when recording telephone calls.

To change the default global recording policy:

Change the Global Recording Policy

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Extension Settings** to display the Extension Settings dialog.

2. To enable or disable real-time monitoring of recordings in progress, tick or un-tick **Enable Monitoring**.

3. Select **Recording Mode**.

The value of **Recording Mode** determines the method of recording which can be:

- Record by Default: Total Recall VR will automatically record all audio sources and telephone calls and keep recordings unless instructed otherwise during recording.

- Don't Record by Default: Total Recall VR will automatically record all audio sources and telephone calls, but at the end of the recording it automatically discards recordings unless instructed otherwise during recording.

- Add Notes Only: Total Recall VR will automatically record all audio sources and telephone calls. Parties on calls cannot use DTMF key sequences to instruct Total Recall VR to discard or keep recordings - recordings are always kept. Same applies to applications which use the Remote Manager Interface to control recording. However, such applications can add notes to recordings in progress.

- Record Partial Calls: Total Recall VR will record only parts of all audio sources and telephone calls, as instructed during recording, and keep all parts concatenated in a single recording.

- Disallowed: Total Recall VR will automatically record all audio sources and telephone calls. Parties on calls cannot use DTMF key sequences to instruct Total Recall VR to discard or keep recordings -

recordings are always kept. Same applies to applications which use the Remote Manager Interface to control recording. In addition, applications cannot add notes to recordings in progress.
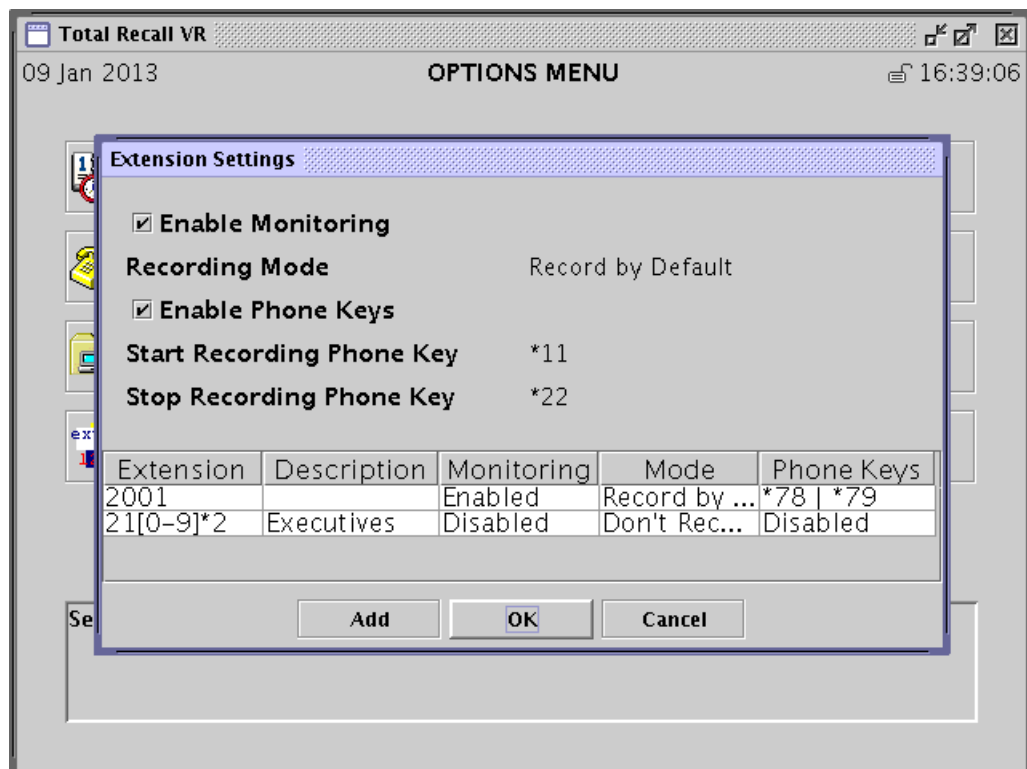
4. To enable or disable control of recording via DTMF key sequences, tick or un-tick *Enable Phone Keys*.

5. If you tick *Enable Phone Keys*, then set:

    a. *Start Recording Phone Key* to the DTMF key sequence that will start recording. The sequence can be up to 3 digits long.

    b. *Stop Recording Phone Key* to the DTMF key sequence that will stop recording. The sequence can be up to 3 digits long.

6. Select **OK** to store the policy in the system's configuration.

The change is immediate. Total Recall VR will start using the new default policy from the next recording. All recordings that are already in progress will not be affected; the previous default policy applies to them.
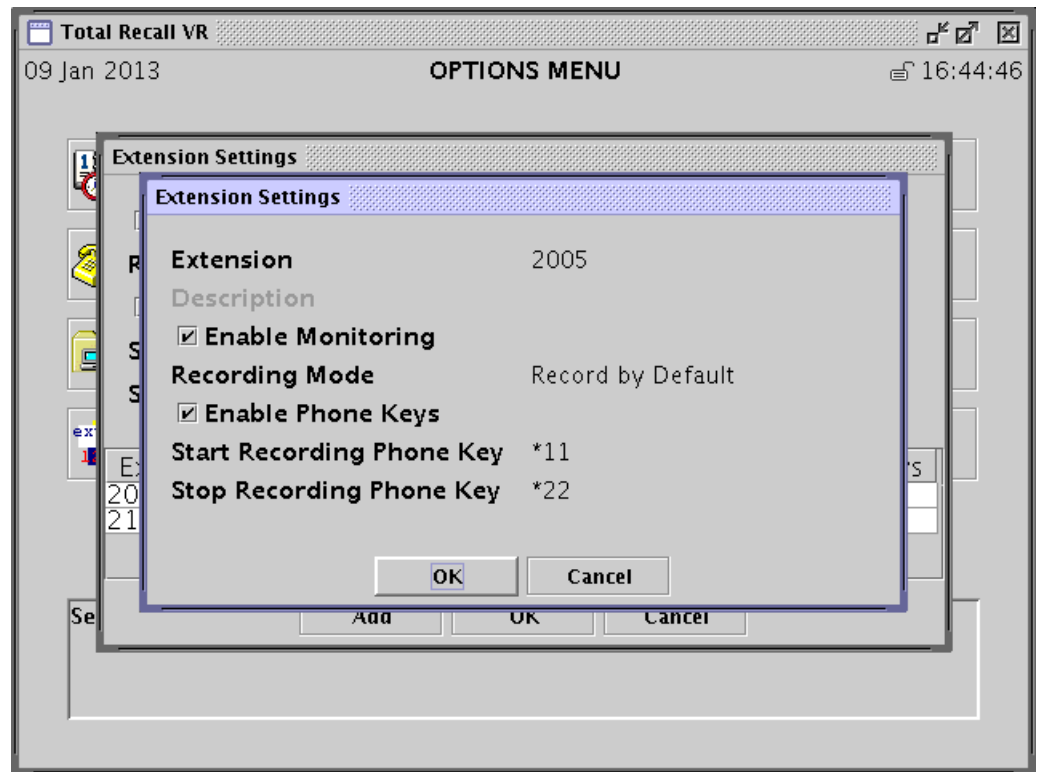
There are no extension based policies by default. To add a new extension based policy:

Add a Recording Policy for an Extension

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Extension Settings** to display the Extension Settings dialog.

2. Select **Add** to display the Extension Settings dialog for an extension policy.

3. Enter *Extension*. This MUST be a Total Recall VR Extension as determined by Total Recall VR. Section 2.3.1 Extensions describes the process in detail.

    Use Total Recall VR Remote Manager to enter a regular expression which will match a number of extensions.

4. To enable or disable real-time monitoring of recordings in progress, tick or un-tick *Enable Monitoring*.

5. Select *Recording Mode*.

6. To enable or disable control of recording via DTMF key sequences, tick or un-tick *Enable Phone Keys*.

7. If you tick *Enable Phone Keys*, then set:

    a. *Start Recording Phone Key* to the DTMF key sequence that will start recording. The sequence can be up to 3 digits long.

    b. *Stop Recording Phone Key* to the DTMF key sequence that will stop recording. The sequence can be up to 3 digits long.

8. Select **OK** to add the policy to existing set of extension recording policies.

9. Repeat steps 2 to 8 to add additional extension recording policies.

10. Select **OK** to store the new policies in the system's configuration.

The change is immediate. Total Recall VR will start using the new extension recording policies from the next recording. All recordings that are already in progress will not be affected; the previous default or extension policies apply to them.

To edit or remove an existing extension recording policy:

Manage a Recording Policy for an Extension

1. Navigate to the Options Menu Screen using the [Menu] key. Select
   Extension Settings to display the Extension Settings dialog. Use the [▲]
   and [▼] keys to navigate to the policy that you wish to manage.
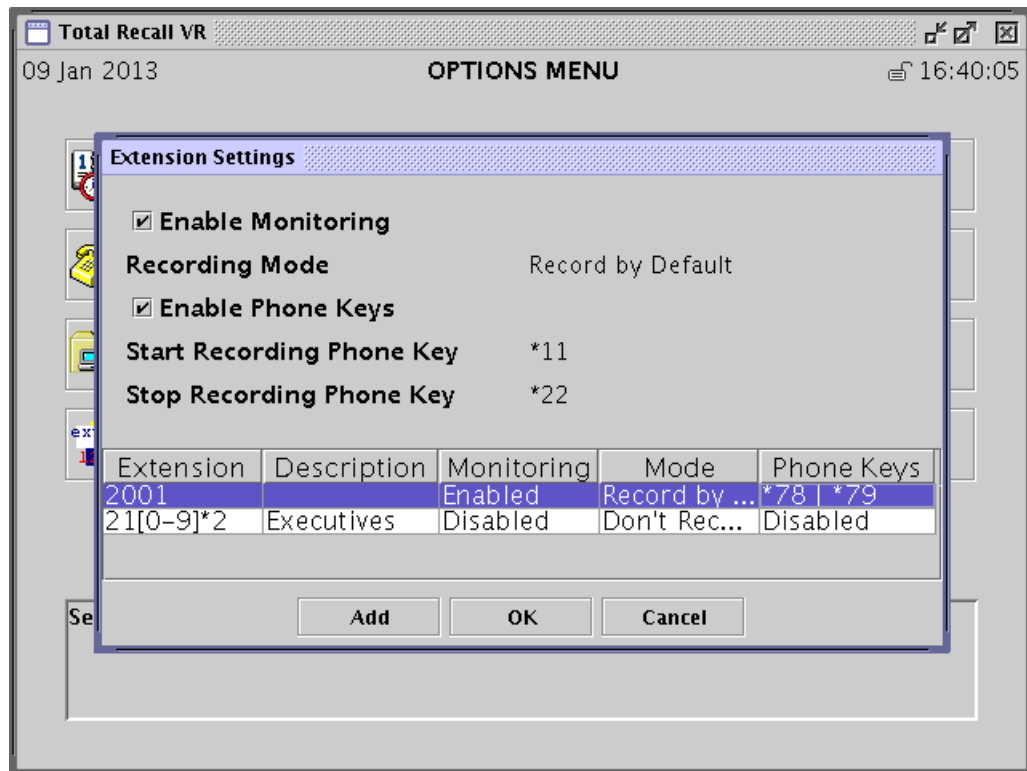
2. Press the [Select] key to the Extension Settings dialog for an extension
   policy.
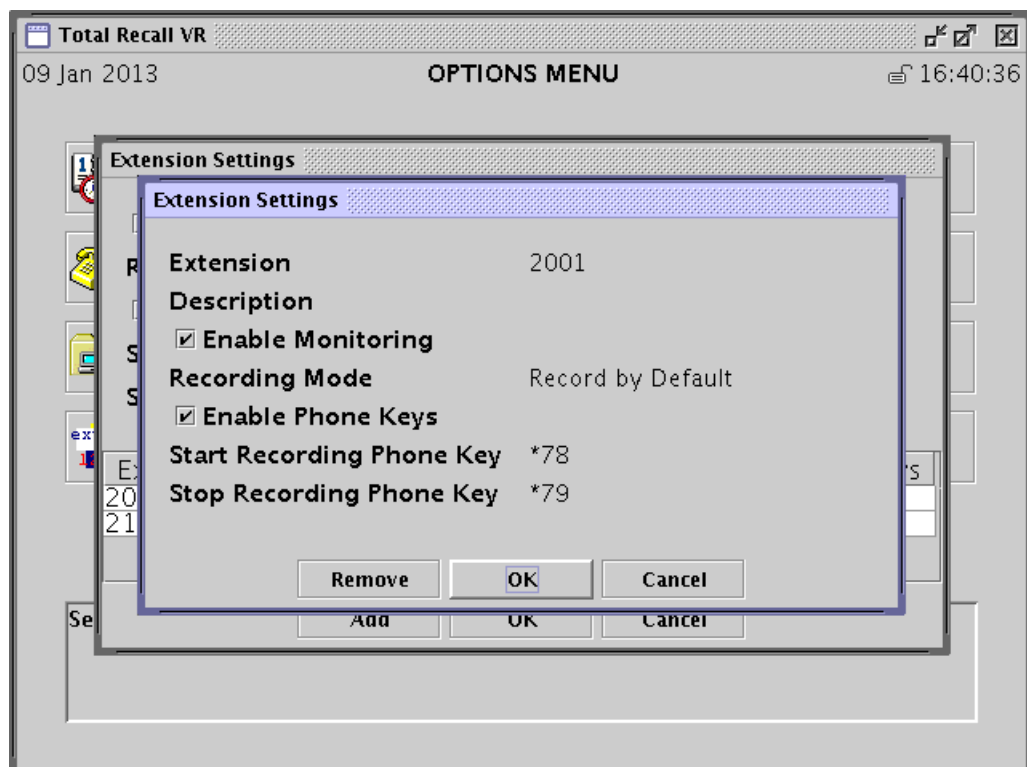
3. Update the parameters as desired and select **OK**.

4. Or, simply select **Remove**, to remove the policy from the current set of extension recording policies.

5. Repeat steps 2 to 4 to manage additional extension recording policies.

6. Select **OK** to store the updates in the system's configuration.

The change is immediate. Total Recall VR will start using the updated extension recording policies from the next recording. All recordings that are already in progress will not be affected; the previous default or extension policies (even if removed) apply to them.

Note that Total Recall VR can assign two Total Recall VR Extensions to a recording; one as an identifier for the source of the recording (the calling party on a call for example) and another as an identifier for the destination of the recording (the called party on a call for example).

Conflicts between extension policies are likely in such cases. Total Recall VR deals with conflicting extension recording policies as follows:

- The settings of the policy with *Recording Mode* set to OTHER THAN 'Record Partial Calls' takes precedence over the settings for the extension policy with *Recording Mode* set to 'Record Partial Calls'.

  For example: if extension policy A is set to 'Record by Default' with monitoring disabled, while extension policy B is set to 'Record Partial Calls' with monitoring enabled, then policy A will apply to the recording – everything will be recorded and monitoring will not be allowed.

- If *Recording Mode* is identical, then the policy which allows monitoring takes precedence.

  For example: if extension policy A is set to 'Record by Default' with monitoring disabled, while extension policy B is set to 'Record by Default' with monitoring enabled, then policy B will apply to the recording - everything will be recorded and monitoring will be allowed.

If anyone in your organisation specifically does not want any of their calls to be monitored, they must be made aware of how Total Recall VR deals with conflicting extension recording policies.

8. Monitoring

Total Recall VR is capable of playing audio that it records while recording and in real-time (as it happens).

8.1. Built-in Monitoring Interface

The following Total Recall VR models come with a built-in real-time monitoring interface:

- LinX Omnia;

- LinX Altus; and

- Linx Neos.

The built-in real-time monitoring interface comprises of:

- Built in audio amplifier and 2W speaker.

- Headphone jack. This is a standard three conductor, 3.5mm, stereo audio jack for connection of headphones or external speaker.

- Line output jack. This is a standard three conductor, 3.5mm, stereo audio jack for connection of an external recorder or a line input of a PC or amplifier.

- Volume control thumb wheel.

For further information on the monitoring interface see the quick start guide for each of afore listed models.

8.2. External Monitoring Interface

The following Total Recall VR models come with an external real-time monitoring interface:

- LinX Essence (GUI Edition); and

- LinX Evolution (GUI edition).

The external real-time monitoring interface comprises of optional speakers, or headphones, that are connected to the LINE OUT output that is available on the processing unit.

> Speakers and/or headphones are not supplied with your Total Recall VR. We recommend you invest in a quality stereo speakers or headphones.
>
> Any speakers or headphones that work with your PC will work with your Total Recall VR.

As an alternative, you can use the mono speaker that is part of the colour LCD screen which is supplied as part of your Total Recall VR.

For further information on the monitoring interface and how to use the mono speaker that is part of the LCD screen see the quick start guide for each of afore listed models.
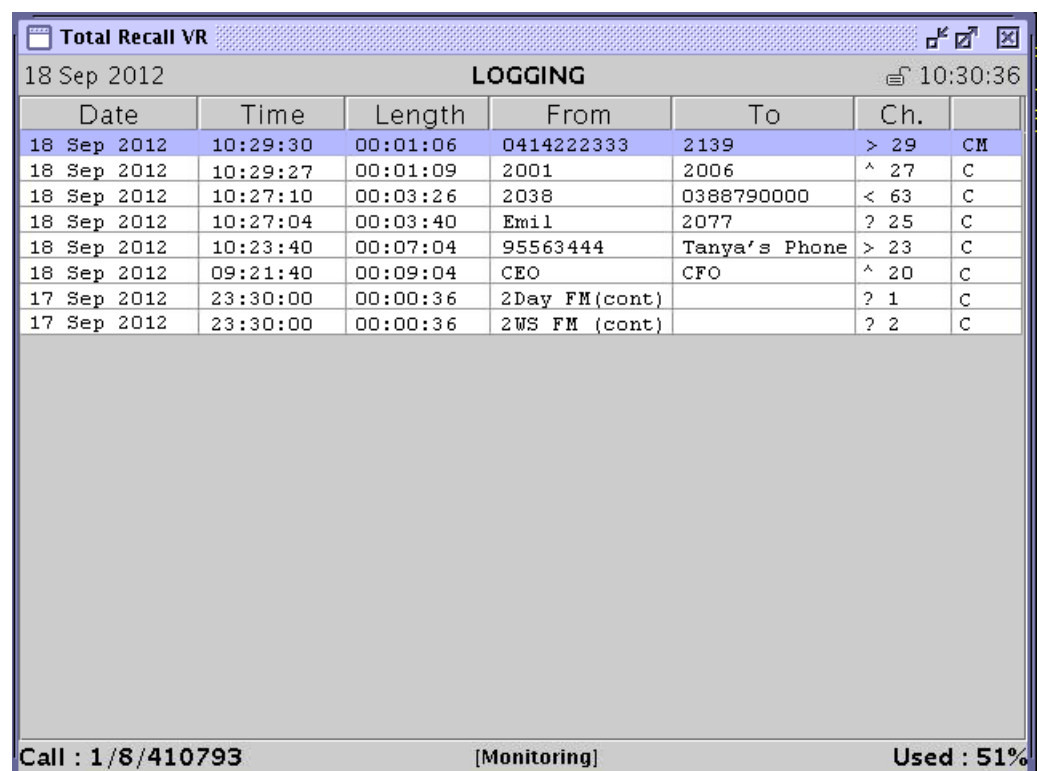
8.3. How to …

To monitor recordings in progress, in real time, first navigate to the Logging Screen with the [Menu] key. Then, to listen to the audio as it is being recorded:

Monitor Recording in Progress

1. Navigate to the row that shows the details of the recording that you wish to listen to. Use the [▲] and [▼] keys to navigate to the correct row.

2. Press the [Select] key to start monitoring.

   The following will happen when you start monitoring:

   - The row that shows the details of the recording will move to top of the table from its sort position according to start time and it will remain highlight.

   - "[Monitoring]" will appear at the centre bottom of the Logging screen.

   - Audio will be heard from the built-in speaker, or head phones if connected.

Date	Time	Length	From	To	Ch.	
18 Sep 2012	10:29:30	00:01:06	0414222333	2139	> 29	CM
18 Sep 2012	10:29:27	00:01:09	2001	2006	^ 27	C
18 Sep 2012	10:27:10	00:03:26	2038	0388790000	< 63	C
18 Sep 2012	10:27:04	00:03:40	Emil	2077	? 25	C
18 Sep 2012	10:23:40	00:07:04	95563444	Tanya's Phone	> 23	C
18 Sep 2012	09:21:40	00:09:04	CEO	CFO	^ 20	C
17 Sep 2012	23:30:00	00:00:36	2Day FM(cont)		? 1	C
17 Sep 2012	23:30:00	00:00:36	2WS FM (cont)		? 2	C

Total Recall VR — 18 Sep 2012 — LOGGING — 10:30:36

Call : 1/8/410793   [Monitoring]   Used : 51%

3. Press the [Select] key to stop monitoring.

Monitoring automatically stops when you try and navigate with the [▲] and [▼] keys while monitoring is in progress as well.

The following will happen when you stop monitoring:

- The row that shows the details of the recording will move from the top of the table to its sort position according to its start time.

  It may be hard to track where in the table the row moves to when there are lots of recordings on the screen and you stop monitoring. If you are looking for the same recording after you stop monitoring, then remember that recordings are shown sorted on the Logging screen. The recordings are sorted in start time reverse order – most recent start time at the top of the table

- "[Monitoring]" will disappear from the centre bottom of the Logging screen.

- Audio will cease.

4. Repeat steps 2 to 3 to monitor other recordings in progress.

Total Recall VR remembers the channel number of the recording channel when you start monitoring, but not stop it while recording is in progress. And if a new recording starts on the same channel, Total Recall VR automatically start monitoring the new recording.

This is not useful for recordings on VoIP and ISDN recording channels as these recording channels are allocated dynamically to recordings. However, it may prove very useful for recordings on analogue channels where one-to-one mapping exists between audio sources and recording channels.

For example, if you start monitoring a recording in progress that is using analogue recording channel 1, and not stop it while it is in progress, then monitoring continues when the next recording starts on analogue recording channel 1.

8.4. Configuration

8.4.1. Monitoring

Total Recall VR does not have any configuration specific to monitoring.

However, the global recording policy and extension recording policies specify whether monitoring is allowed or not, globally or for specific extensions.

Section 7.4.8 Extension Settings contains details on how to configure the global recording policy and extension specific recording policies.

9. Searching

Total Recall VR stores additional information for each recording along with the recording.

This information includes:

1. Start and end date and time of recordings.

2. Duration of recordings.

3. Total Recall VR Raw, Mapped and Extension identifiers for the source and destination of recordings (for example calling and called numbers for recordings of calls) – see section 2.3.1 Extensions for further details on these identifiers.

4. DTMF digits that are detected while recording.

5. Free-text notes.

6. Classification of telephone calls (incoming, outgoing, internal or unknown).

7. Flags which indicate whether recordings have been archived in the past or tagged for future operations.

8. Recording channel number.

9. Agent name.

This information is the backbone of a comprehensive search function which can locate individual recordings based on a number of criteria such as:

- Date and time of recording.

- Total Recall VR Raw, Mapped and Extension identifiers.

- Duration of recording.

- Call classification.

- DTMF digits.

- Keyword(s) in notes.

- Flags: archived and tagged recordings.

The embedded GUI makes provisions for searching for recordings that reside on the system itself, recordings that are stored on an archive disc (CD, DVD or BD), recordings that are stored on a USB key or disk drive, or recordings that are stored in a pre-defined network archive.

When using the embedded GUI, search criteria are limited to the following parameters:

- Start date and time of recording.

- Total Recall VR Raw, Mapped and Extension identifiers.

- Call classification.

- Recording channel number.

- Flags: tagged recordings.

Use Total Recall VR Remote Manager if you wish to use an extended set of search parameters to define search criteria.

9.1. How to …

To locate recordings that have completed first navigate to the Search Screen with the [Menu] key. Then, to find recordings that reside on the system:
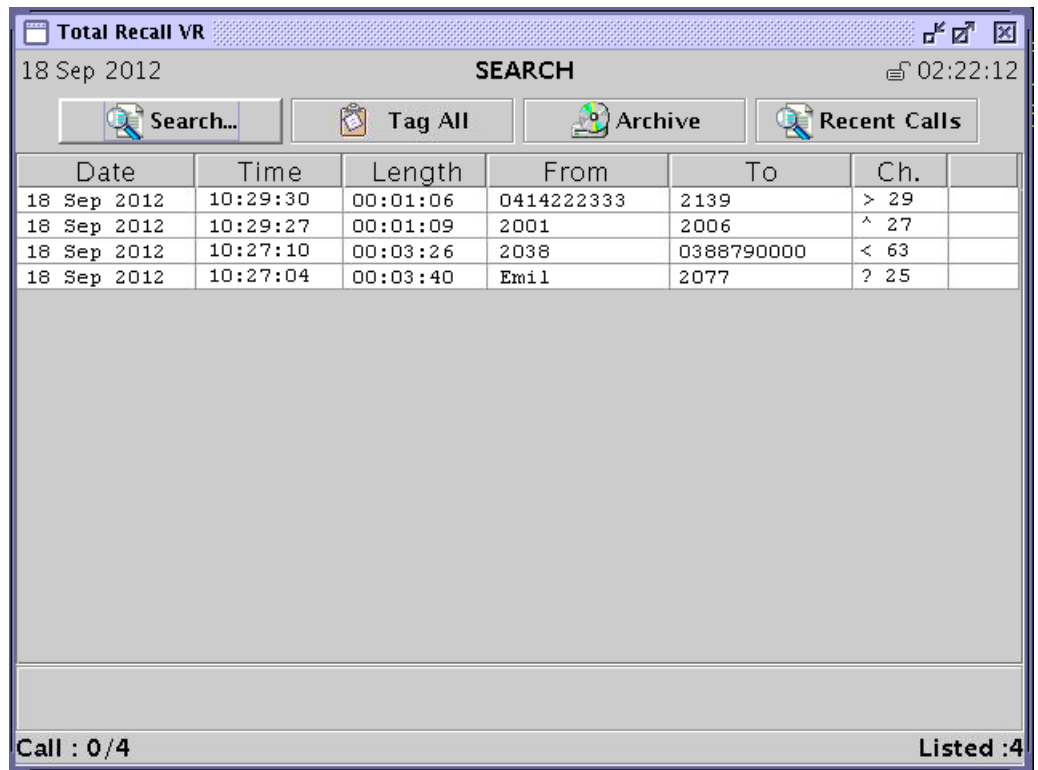
Search for Recordings

1. Select **Search …** to display the Search Criterion dialog.
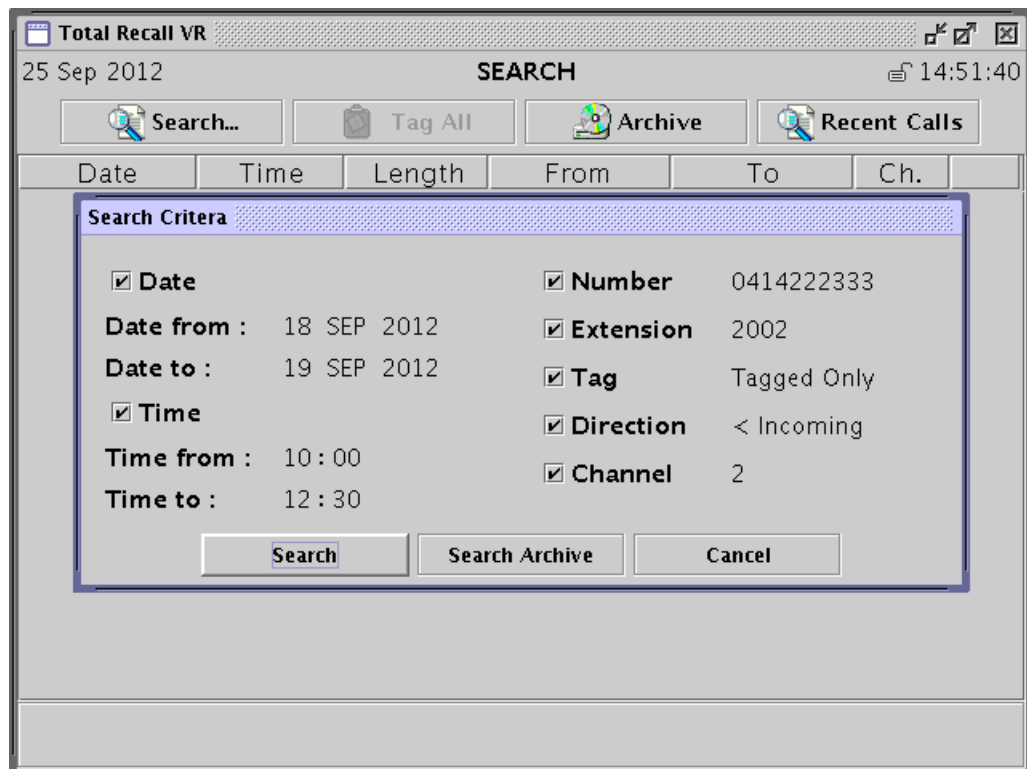
2. Tick and enter values for *Date*, *Time*, *Number* etc., in any combination, to include parameters in the criterion that will be used in the search. Only recordings that match the criterion will be selected by the search.

   If you do not include any of the parameters in the criterion, then the criterion will match all recordings.

3. Select **Search** to search recordings that reside on the system itself. The search will identify all recordings that match the search criterion and display them. For example:

The table will be empty if no recordings match the search criterion.

Note that the recordings are displayed sorted in reverse order of start time, i.e. latest recording on top.

4. If the search results in 1000 recordings or less, then all recordings will be shown. However, due to screen space limits, only 25 or so will be visible. Use the [▲] and [▼] keys to view rows that are not visible.

    If you locate recordings that are important to you, then you can tag them by pressing the [*] key when the screen cursor is on the rows that represent the recordings. Later, you can use the *Tag* parameter to create a criterion that identifies the recordings that you tag. To remove a tag, simply press the [*] key again.

    In addition, you can use the [#] key to lock recordings when the screen cursor is on the rows that represent the recording that you wish to lock. Locked recordings cannot be deleted from the system. To remove a lock, simply press the [#] key again.

    As you navigate the table, notes associated with recordings will be shown in the notes area of the screen. For example:
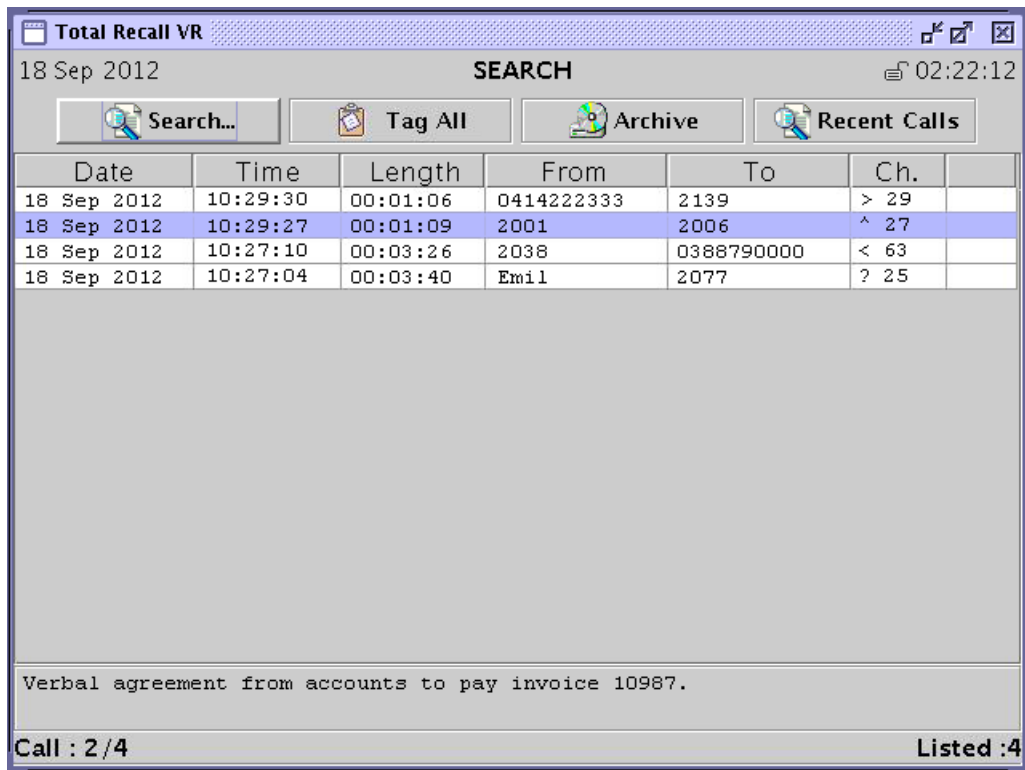
5. If the search results in more than 1000 recordings, then the screen will display recordings in groups of 1000. Press the **[◀◀]** key when re-play is not in progress to display older recordings. Similarly, press the **[▶▶]** key when re-play is not in progress to show younger recordings.

6. To perform another search, start from step 1.

Search for recordings in an archive is similar, except you need to specify the type of the archive that you wish to search:

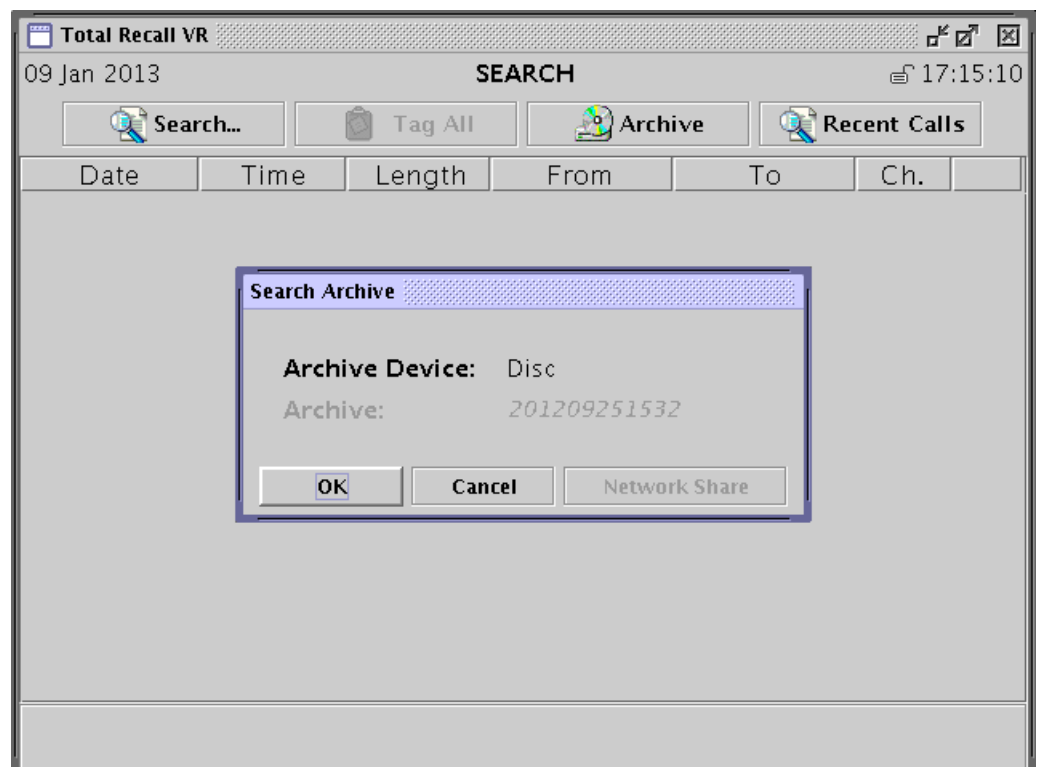### *Search for Recordings in an Archive*

1. Select **Search …** to display the Search Criterion dialog.
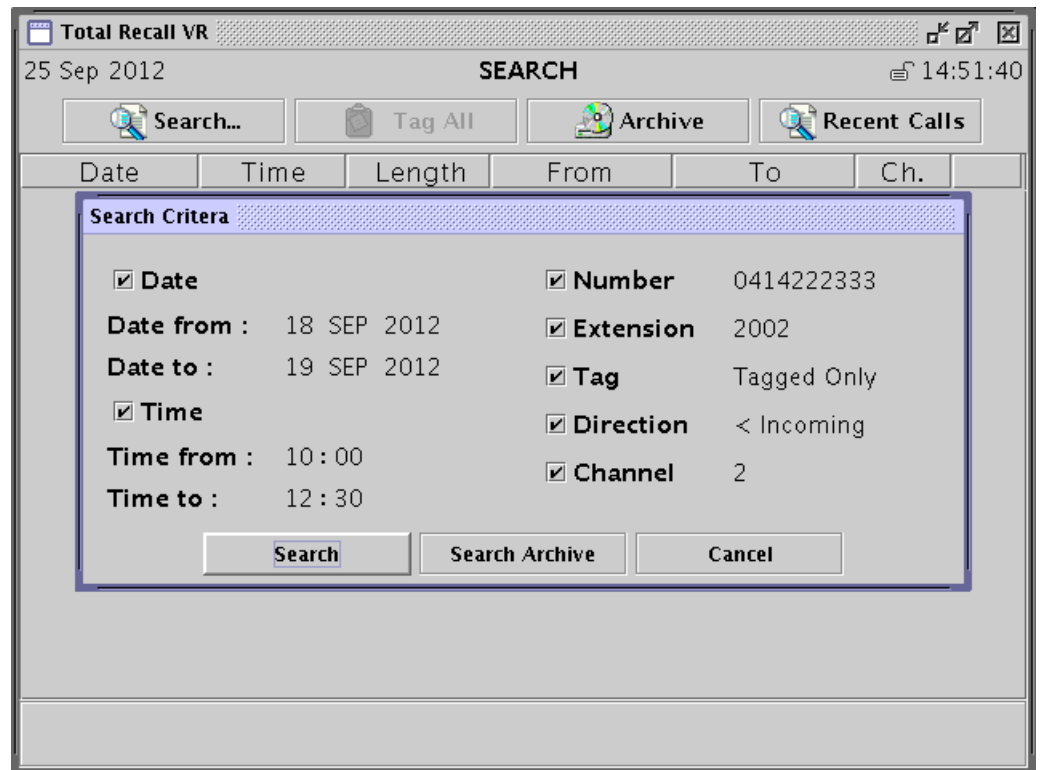
2. Tick and enter values for *Date*, *Time*, *Number* etc., in any combination, to include parameters in the criterion that will be used in the search. Only recordings that match the criterion will be selected by the search.
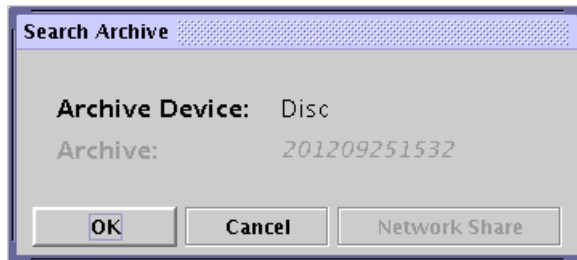
   If you do not include any of the parameters in the criterion, then the criterion will match all recordings.

3. Select **Search Archive** to display the Search Archive dialog.

4. Select *Archive Device*:

    a. Select Disc if you wish to search for recordings that are stored in a Total Recall VR archive that is located on a CD, DVD or BD disc.

    Enter a CD, DVD or BD disc into the system drive.

    b. Skip to step 5 or, select USB if you wish to search for recordings that are stored in a Total Recall VR archive that is located on a USB key.
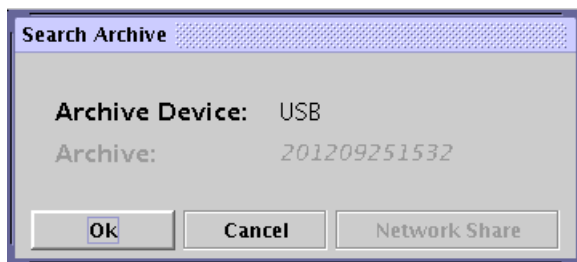
    Attach a USB key to the system. Note that the system will take few seconds to recognise the USB key and prepare to access it.

    c. Skip to step 5 or, select Network Share if you wish to search for recordings that are stored in a Total Recall VR archive that is located on a network drive.
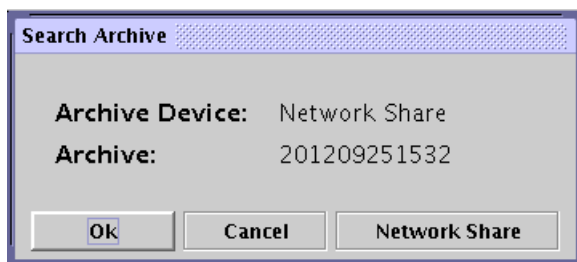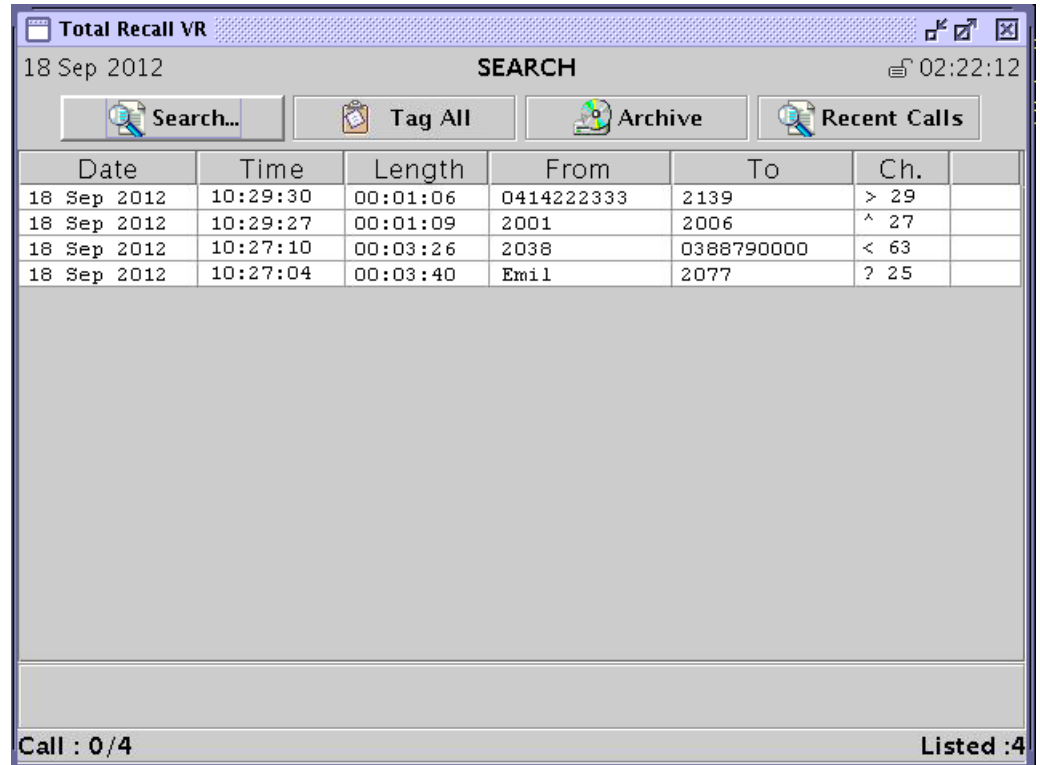
    d. Select *Archive*. This should be the Total Recall VR archive that you wish to search.

    e. Optionally, select **Network Share** if you wish to see the details of the network drive that contains the archives. For example:
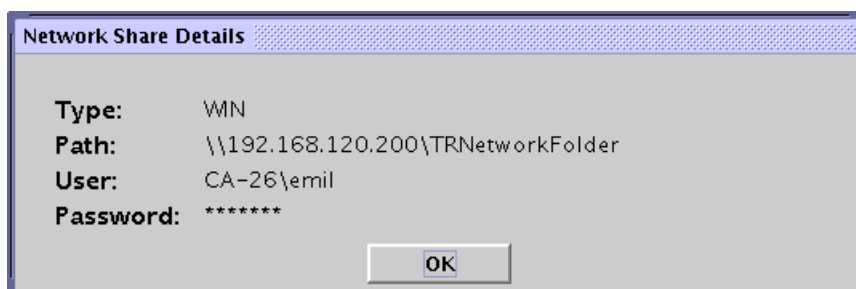
The embedded GUI does not make provisions for the configuration of network drives. You must use Total Recall VR Remote Manager to configure network drives.

5. Select **OK** to search the archive. The search will identify all recordings that match the search criterion and display them. For example:

Date	Time	Length	From	To	Ch.	
18 Sep 2012	10:29:30	00:01:06	0414222333	2139	> 29	
18 Sep 2012	10:29:27	00:01:09	2001	2006	^ 27	
18 Sep 2012	10:27:10	00:03:26	2038	0388790000	< 63	
18 Sep 2012	10:27:04	00:03:40	Emil	2077	? 25	

The table will be empty if no recordings match the search criterion.

Note that the recordings are displayed sorted in reverse order of start time, i.e. latest recording on top.

6. If the search results in 1000 recordings or less, then all recordings will be shown. However, due to screen space limits, only 25 or so will be visible. Use the [▲] and [▼] keys to view rows that are not shown.

If you are searching a USB archive, or a network archive, and if you locate recordings that are important to you, then you can tag them by pressing the [*] key when the screen cursor is on the rows that represent the recordings. Later, you can use the *Tag* parameter to create a criterion that identifies the recordings that you tag.

It is not possible to tag recordings that reside in archives which are located on CD, DVD or BD discs.

As you navigate the table, notes associated with recordings will be shown in the notes area of the screen. For example:
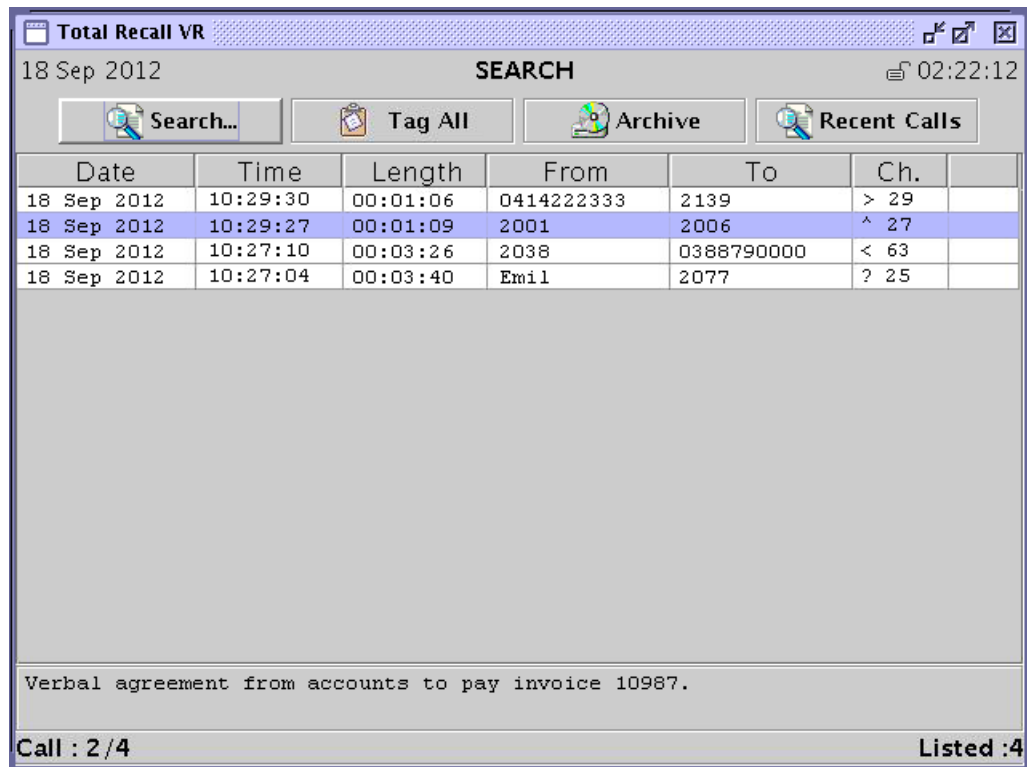
7. If the search results in more than 1000 recordings, then the screen will display recordings in groups of 1000. Press the **[◀◀]** key when re-play is not in progress to display older recordings. Similarly, press the **[▶▶]** key when re-play is not in progress to show younger recordings.

8. To perform another search, start from step 1.

The Search screen is generally static. It shows the results of the last search. However, in some circumstances it is useful to automatically display recordings as they complete, i.e. dynamically update the content of the Search screen with most recent recordings as recordings complete.

To display recordings as they complete on the Search screen simply select **Recent Calls**. The **Recent Calls** button will start flashing to indicate that the Search screen is in auto-update mode.

Figure 11: Flashing Recent Calls Button

Pressing any key will bring the Search screen back to its normal operating mode (static display).

9.2. Search Criteria Parameters

As the previous section explains, the embedded GUI displays the Search Criterion Dialog to allow users to define search criteria.

To add parameters to the criterion:

1. Tick the check box associated with the parameters that should be part of the criterion.

2. Enter values for each parameter that will be part of the criterion.

The parameters are combined to form a conjunction (joined with 'and') when constructing the criterion. For example, the settings shown on the subsequent capture of the Search Criterion Dialog will result in a search criterion which will identify all recordings which have call classification set to "Incoming" AND a source or destination Total Recall VR Extension identifier set to "2002".

Figure 12: Example Search Criterion

The individual parameters are:

Date

Use the *Date from* and the *Date to* parameter to identify recordings that started between the specified dates (inclusive).

Time

Use the *Time from* and the *Time to* parameter to identify recordings that started between the specified times (inclusive).

Number

Use the *Number* parameter to identify recordings that *contain* the specified sequence of digits present in the Total Recall VR Mapped identifiers.

Extension

Use the *Extension* parameter to identify recordings with Total Recall VR Extension identifiers that match the specified value exactly.

Tag

Use the *Tag* parameter to identify recordings with the have the tagged flag set.

Direction

Use the *Direction* parameter to identify recordings of telephone calls which were classified as specified by the value of the parameter.

Channel

Use the *Channel* parameter to identify recordings that were created on the specified recording channel. This is mainly useful for recordings on analogue channels as one-to-one mapping exists between analogue channels and recording channels.

9.3. Configuration

9.3.1. Search

Total Recall VR does not have any search specific configuration.

Use Total Recall VR Remote Manager to configure the network drive that contains Total Recall VR archives that users can access from the embedded GUI.

9.3.2. Recent Calls

The recent calls parameters define the behaviour of the Search screen when it is in auto-update mode.

By default, the Search screen will update every 15 seconds and it will show the 50 most recent recordings.

Change Recent Calls Parameters

1. Navigate to the Options Menu Screen using the [Menu] key. Select **General Settings** and then select **Recent Calls** to display the Recent Calls Settings dialog.
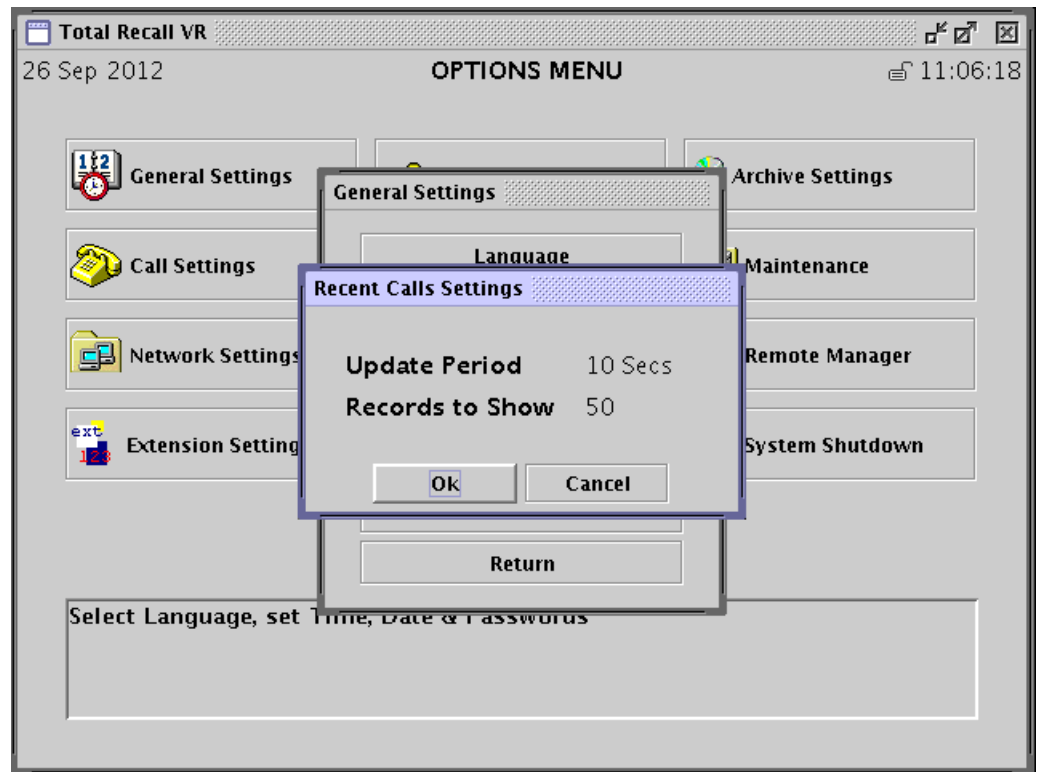
2. Select *Update Period*. The Search screen will automatically update every number of seconds as specified by this parameter.

3. Enter *Records to Show*. This is the maximum number (up to 999) of recordings that the Search screen will show while it is in auto-update mode.

5. Select **OK** to record the parameters in the system configuration.

The new parameters take effect immediately.

10. Playing

Control-rich audio player is a standard Total Recall VR feature. Controls include: start, stop, pause, fast-forward, double speed fast-forward and rewind.

The audio player is purpose built for playing audio which is stored in **Total Recall VR (*.trc)** files in one of the following media formats:

- HQVQ, 8000Hz, 7.9Kbps, mono.

- G.711 A-law, 8000Hz, 64Kbps, mono.

- G.711 μ-law, 8000Hz, 64Kbps, mono.

- SPEEX Q8, 8000Hz, 15Kbps, mono.

- AMBE, 8000Hz, 2450bps, mono & stereo.

The embedded GUI makes provisions for paying recordings that reside on the system itself and recordings that are stored in archives that are located on CD, DVD or BD discs, USB keys and disk drives and network drives.

10.1. Built-in Player Interface

The following Total Recall VR models come with a built-in player interface:

- LinX Omnia;

- LinX Altus; and

- Linx Neos.

The built-in real-time monitoring interface comprises of:

- Player keys on the control keypad.

- Built in audio amplifier and 2W speaker.

- Headphone jack. This is a standard three conductor, 3.5mm, stereo audio jack for connection of headphones or external speaker.

- Line output jack. This is a standard three conductor, 3.5mm, stereo audio jack for connection of an external recorder or a line input of a PC or amplifier.

- Volume control thumb wheel.

For further information on the player interface see the quick start guide for each of afore listed models.

10.2. External Player Interface

The following Total Recall VR models come with an external player interface:

- LinX Essence (GUI Edition); and

- LinX Evolution (GUI edition).

The external real-time monitoring interface comprises of optional speakers or headphones that are connected to the LINE OUT output that is available on the processing unit and player controls on the control keypad.

Speakers and/or headphones are not supplied with your Total Recall VR. We recommend you invest in a quality stereo speakers or headphones.

Any speakers or headphones that work with your PC will work with your Total Recall VR.

As an alternative, you can use the mono speaker that is part of the colour LCD screen which is supplied as part of your Total Recall VR.

For further information on the monitoring interface and how to use the mono speaker that is part of the LCD screen see the quick start guide for each of afore listed models.
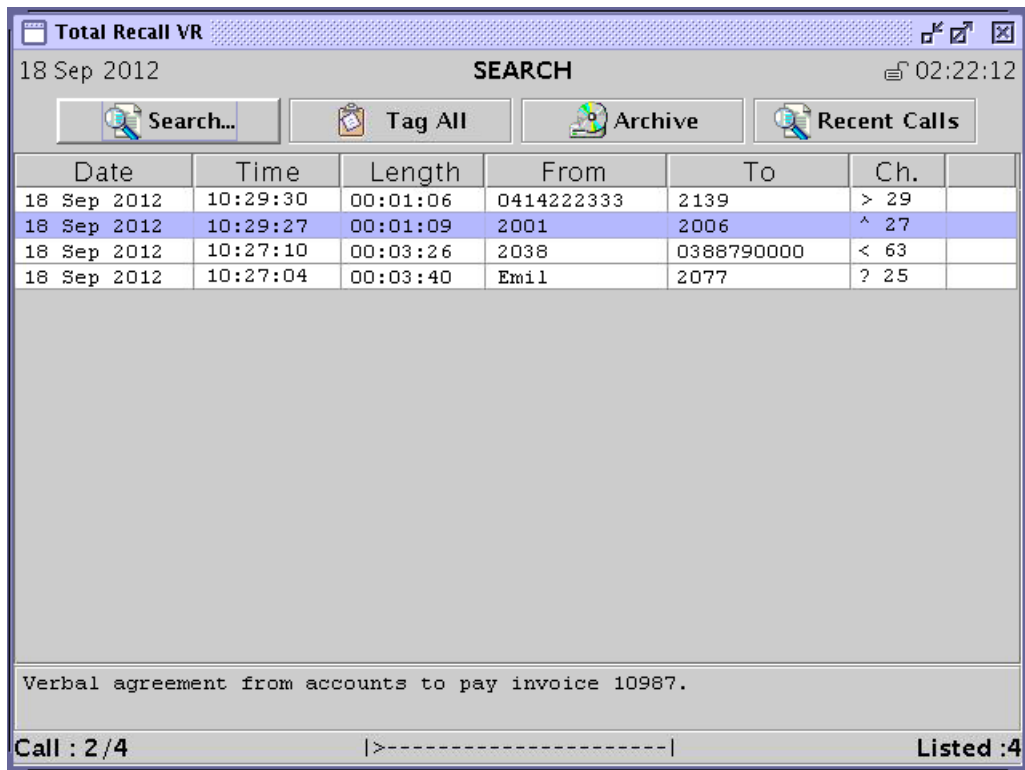
10.3. How to …

To play a recording, first navigate to the Search Screen using the [Menu] key and search for it. Section 9 Searching explains searching in detail.

Once you have located the recording:

Playing a Recording

1. Use the [▲] and [▼] keys to position the screen cursor on the recording that you wish to play.

2. Press the [▶], or the [Select], key to start playing.

The following will happen when you start playing:

- The play indicator "[----->------]" will appear in the centre bottom of the Search screen.

- Audio will be heard from the built-in speaker, or phones if connected.

3. While playing is in progress you can use the [⏩], [⏩ ▶] and [⏪] keys to fast forward, fast forward at double speed and rewind respectively.

4. In additions, while playing is in progress you can use the [▶] key to pause and re-start playing.

5. Press the [■] key to stop playing.

   Play automatically stops when you try and navigate with the [▲] and [▼] keys while play is in progress.

   Also, play automatically stops when you press the [Select] key while play is in progress.

   The following will happen when you stop playing:

   - The play indicator "[----->------]" will disappear from the centre bottom of the Search screen.

   - Audio will cease.

6. Repeat steps 2 to 4 to play other recordings.

You can use the [#] key while playing is in progress to activate "sticky play". When "sticky play" is active, Total Recall VR will automatically continue playing the next

recording in the list when the play of the current recording ends. The play indicator changes to "#---->------#" to indicate that "sticky play" is active.

Sticky play is useful if you wish to play a set of recordings in a sequence. To do so, first search for the recordings. Then start playing the first one. While the first one is playing, press the [#] key to activate "sticky play". Total Recall VR will play all recordings by automatically starting to play the next recording as it finishes playing the current one. Press the [■] key to stop playing at any time.

10.4. Configuration

10.4.1.Playing

Total Recall VR does not have any player specific configuration.

> Use Total Recall VR Remote Manager to configure the network drive that contains Total Recall VR archives that users can access from the embedded GUI.

11. Archiving

Archiving is possibly the most comprehensive feature that is available on every Total Recall VR.

Every Total Recall VR has an on-board archiving device that is capable of creating searchable archives of recordings on CD, DVD and BD discs. The following table shows the type of discs that you can use:

Type	As of Release	Note
CD-R	10.0.0	The disc drive tray will open and close at the end of the archive session.
CD-RW	10.0.0	The disc drive tray will open and close at the end of the archive session.
DVD-R	10.9.0	The disc drive tray DOES NOT open and close at the end of the archive session.
DVD+R	10.9.0	The disc drive tray DOES NOT open and close at the end of the archive session.
DVD+RW	10.0.0	The disc drive tray DOES NOT open and close at the end of the archive session.
BD-R	10.0.0	The disc drive tray DOES NOT open and close at the end of the archive session.
BD-RE	10.0.0	The disc drive tray DOES NOT open and close at the end of the archive session.

DO NOT use CD-R and CD-RW discs with Total Recall VR LinX Altus systems that are fitted with a slim BluRay disc drive (which is part of the RAID option for Total Recall VR LinX Altus).

The archive operation will fail as at the end of the archive operation the disk tray will open and fail to close.

The following table shows the maximum audio capacity of disc archives:

Encoding	CD	DVD	BD
HQVQ	150 audio hours	1,100 audio hours	6,700 audio hours
AMBE	450 audio hours	3,300 audio hours	20,100 audio hours

| SPEEX | 75 audio hours | 550 audio hours | 3,350 audio hours |
| G.711 | 20 audio hours | 160 audio hours | 800 audio hours |

In addition to the on-board archiving device, Total Recall VR can create searchable archives on a USB key or disk drive. The maximum audio capacity of such archives depends on the free space on the USB key or disk drive.

> The USB key and disk drive must be formatted with a FAT32 file system.
>
> This is usually the case with USB keys, however USB disk drives use other file formats such as NTFS and must be reformatted.

Finally, Total Recall VR can create searchable archives on Linux^{TM} and Windows^{TM} network drives. Each of these archives can contain as many as 250,000 recordings, if disk space allows it. Multiple archives can reside on the same network drive.

The embedded GUI makes provisions for on-demand archiving of user defined sets of recordings to discs, USB keys/disks and network drives.

In addition, it makes provisions for automatic archiving to discs, USB keys and network drives. This function automatically archives all recordings that have not been archived on regular intervals.

> It is highly recommended to archive on regular basis either manually or automatically.
>
> If you depend on automatic archiving, make sure to replace CD, DVD and BD discs and make space on USB and network disks as they become full.

11.1. Archives

Total Recall VR creates searchable archives which contain recordings as well as additional data for each recoding that exist in the archive.

By default, Total Recall VR appends to existing archives if instructed to archive to a disc or drive that has an existing archive. If a recording already exists in an archive, then Total Recall VR will not archive it again during subsequent session that involve the recording and the archive that contains it.

Total Recall VR appends to existing archives on CD, DVD and BD discs by adding sessions. Each session updates the disc directory, writes recordings and additional data and is closed with an 'end of session' marker. Archiving to disc should be done thoughtfully, as each session marker uses approximately 10 MB of disc space. Therefore, to minimise wasted space, it is advisable to archive as many recordings as possible each time you archive, rather than archiving smaller numbers of recordings more often.

Always use clean and preferably new discs for Total Recall VR archives. Discs that have other than Total Recall VR archive sessions on them may fail to work as expected.

Total Recall VR opens and closes the drive tray when archiving to CD media. Use DVD or BD media if this is causing a problem for you (for example when Total Recall VR is located in a constrained space).

Further, Total Recall VR has a built-in NFS and SAMBA clients to access NFS and Windows network drives. Each network drive can contain more than one archive, each with up to 250,000 records. The name of each archive is the date and time when it was created in the following format: yyyymmddhhmm (that is a 4 digit year, followed by two digit month, day of month, hour of day and minute).

Finally, Total Recall VR uses a directory named 'trvr-archive' as its archive on USB keys/disks. As a result, USB keys can contain other directories and files in addition to the Total Recall VR archive.

Total Recall VR can archive to one USB key or disk drive at a time.

If you connect multiple USB keys/disk drives, then Total Recall VR will write archives to the key/drive that you connected FIRST.

To write archives to a specific key/drive, first disconnect all USB keys/drives and then connect the one that Total Recall VR should write to.

11.2. How to …

As stated earlier, the embedded GUI makes provisions for on-demand and automatic archiving.

To archive a user defined set of recordings on-demand, first navigate to the Search Screen using the [Menu] key.

Then, to create a new archive, or append to an existing one:

Archive On-Demand

1. Optionally, perform a search that identifies the recordings that you wish to archive. Section 9 Searching explains searching in detail.

   You can skip this step if you wish to archive all recordings.

2. Optionally, and if you perform a search, then you can further refine the set by tagging recordings that you wish to archive.

   To tag recordings:

   a. Use the [▲] and [▼] keys to position the screen cursor on the recording that you wish.

   b. Press the [*] key to tag it.

   You can skip this step if you wish to archive either all recordings or the recordings that were identified by the search during step 1.

3. Select **Archive** to display the Manual Archive dialog.
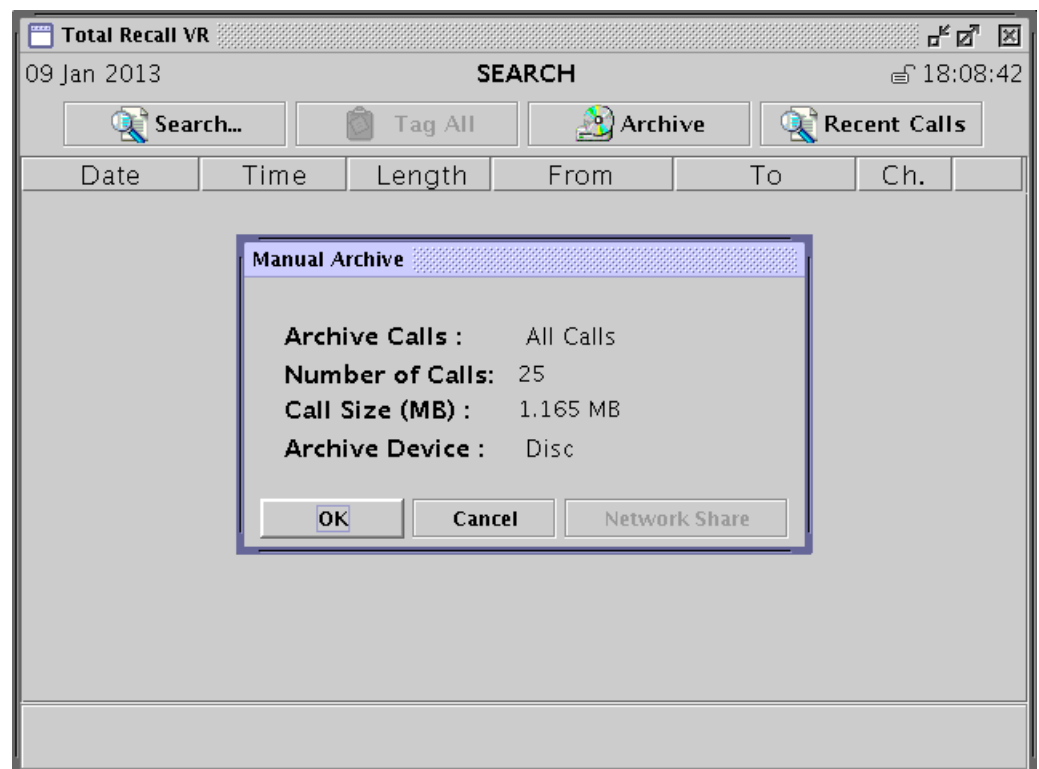
4. Select *Archive Calls*. Note how *Number of Calls* and *Call Size (MB)* change to indicate the actual number of recordings that will be archived and the total disk space (in megabytes) that they will take when placed in the archive as you change the value for this parameter.

Choose:

- All Calls – to archive all recordings that exist on the system.

- Found Calls – to archive all recordings that were identified by the last search. This option will not be available if you skip step 1.

- Unarchived Calls – to archive all recordings that have not been archived to date.

- Tagged Calls – to archive all recordings that are tagged. Note that this will archive all recordings that exist on the system and are tagged. This may be more recordings than you actually tag during step 2 as there may be recordings which were tagged previously.

5. Select *Archive Device*. Choose:

- Disc - if you wish to archive to a CD, DVD or BD disc. Then insert a CD-R, CD-RW, DVD+RW, DVD-R[1], DVD+R[1], BD-R or BD-RE disc into the system drive.

- USB - if you wish to archive to a USB key or disk drive. Then attach a USB key or a disk drive to the system.

- Network Share – if you wish to archive to a network drive. Optionally, select **Network Share** to view the details of the network drive that contains the archives. For example:
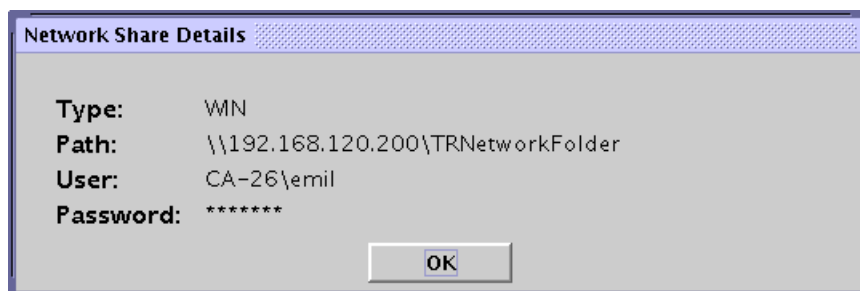
The embedded GUI does not make provisions for the configuration of network drives. You must use Total Recall VR Remote Manager to configure network drives.

6. Select **OK** to display the Archive Option dialog if you are logged in as Administrator. This dialog is not shown to Users.

---

[1] Requires application release 10.9.0 or better.
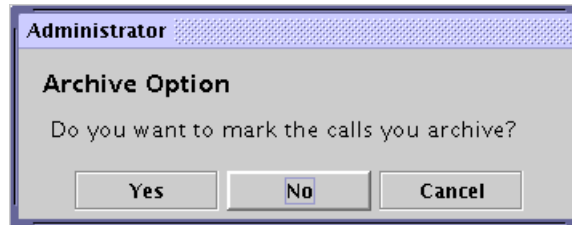
This dialog gives the option to mark recordings as archived if they are successfully stored in the archive. Recordings that are marked as archived are not included in subsequent auto-archive sessions, so in effect you have the option of deciding to include or exclude recordings from subsequent auto-archive sessions.
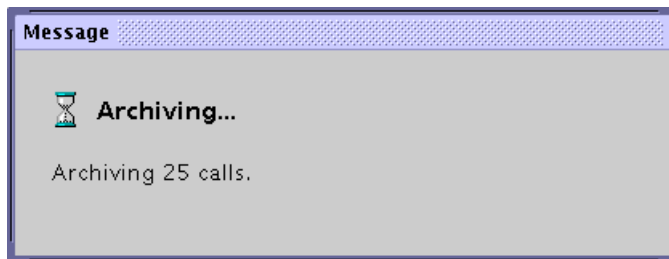
Select:

- **No** – (default) to include recordings in subsequent auto-archive sessions. Archiving will begin immediately after you select **No**.

- **Yes** – to exclude recordings from subsequent auto-archive sessions. Archiving will begin immediately after you select **Yes** and all recordings that are successfully stored in the archive will be marked as archived which will exclude them from subsequent auto-archive sessions.

- **Cancel** – to cancel the archiving operation.

7. If you select **Yes** or **No**, then a follow up Archive Option dialog will display if you are logged in as Administrator. This dialog is not shown to Users.
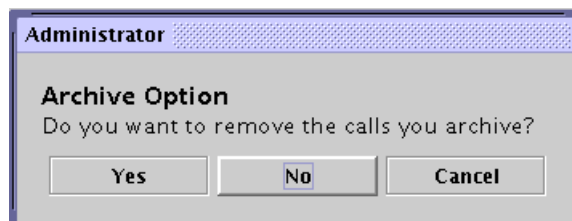
This dialog gives you the option to delete the recordings that are successfully stored in the archive after the archiving operation completes. Select:

- **No** – (default) to leave the recording on the system after archiving. Archiving will begin immediately after you select **No**.

- **Yes** – to delete the recordings after archiving. Archiving will begin immediately after you select **Yes** and all recordings that are successfully stored in the archive will be removed (deleted) from the system.

- **Cancel** – to cancel the archiving operation.

8. If you select **Yes** or **No** archiving will commence and a dialog will show the progress. For example:

If you selected to archive to a CD, DVD or BD disc, and the archive is large enough so it spans multiple discs, then the system will prompt you to insert new discs when needed. It is possible to end the archive process when prompted for a new disc.

9. When complete, the dialog will show an **Ok** button. Select it to return to the Search screen.

Unlike on-demand archiving, automatic archiving is a "set and forget" operation. Well mostly – you must make sure to replace full discs and make space on USB and network disks as they become full.

> If you depend on automatic archiving, make sure to replace CD, DVD and BD discs and make space on USB and network disks as they become full.

To start automatic archiving simply configure Total Recall VR as described in section 11.3.2 Auto Archiving.

11.3. Configuration

11.3.1. On-demand Archiving

Total Recall VR does not have any configuration that is specific to on-demand archiving.

> Use Total Recall VR Remote Manager to configure the network drive that contains Total Recall VR archives that users can access from the embedded GUI.

11.3.2. Auto Archiving

By default, automatic archiving is disabled.

You can change the configuration to:

- Just remind you that it is time to archive when the occupancy of the disks reaches a pre-defined level. In this case the system will display a dialog on the screen and start emitting a "beep" sound at regular intervals to alert you.

- Automatically archive recordings, which have not been archived, at regular intervals.

The two options can be combined.

Change Auto Archiving Parameters

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Archive Settings** to display the Archive Settings dialog.
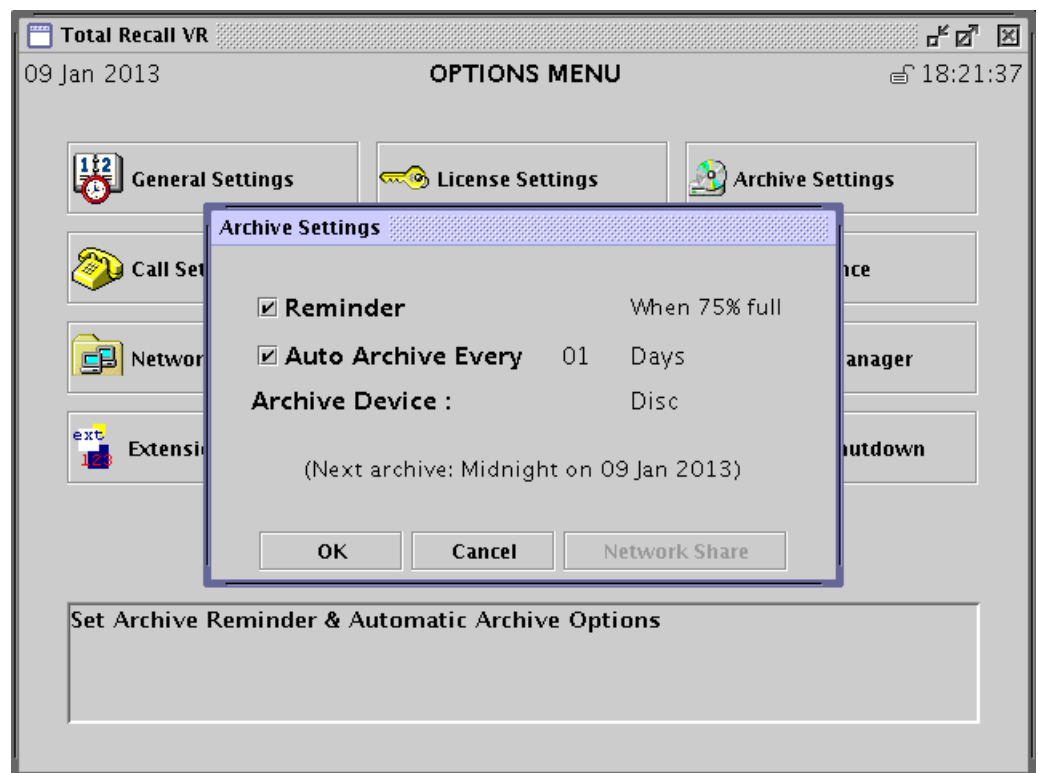
2. Optionally tick *Reminder*, and select a level, if you wish to enable visual and audible reminder to archive when the occupancy of the system disks reaches the specified level.

    This does not activate auto archiving. You need to manually archive when the reminder activates.

3. Tick *Auto Archive Every*, and select a period, to enable automatic archiving at every period.

4. Select *Archive Device*. Choose:

- Disc - if you wish to archive to a CD, DVD or BD disc. Then enter a CD-R, CD-RW, DVD+RW, DVD-R^2, DVD+R^2, BD-R or BD-RE disc into the system drive.

- USB - if you wish to archive to a USB key or disk drive. Then attach a USB key or a disk drive to the system.

- Network Share – if you wish to archive to a network drive. Optionally, select **Network Share** to view the details of the network drive that contains the archives. For example:
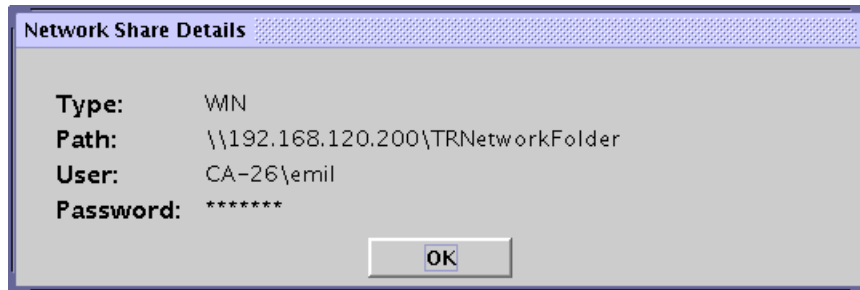
The embedded GUI does not make provisions for the configuration of network drives. You must use Total Recall VR Remote Manager to configure network drives.

5. The dialog will display information on when the next automatic archive will occur just above the row of buttons.

6. Select **OK** to record the configuration.

The change is immediate. The system will enable automatic archiving and perform the first archive automatically at the anniversary of the first period.

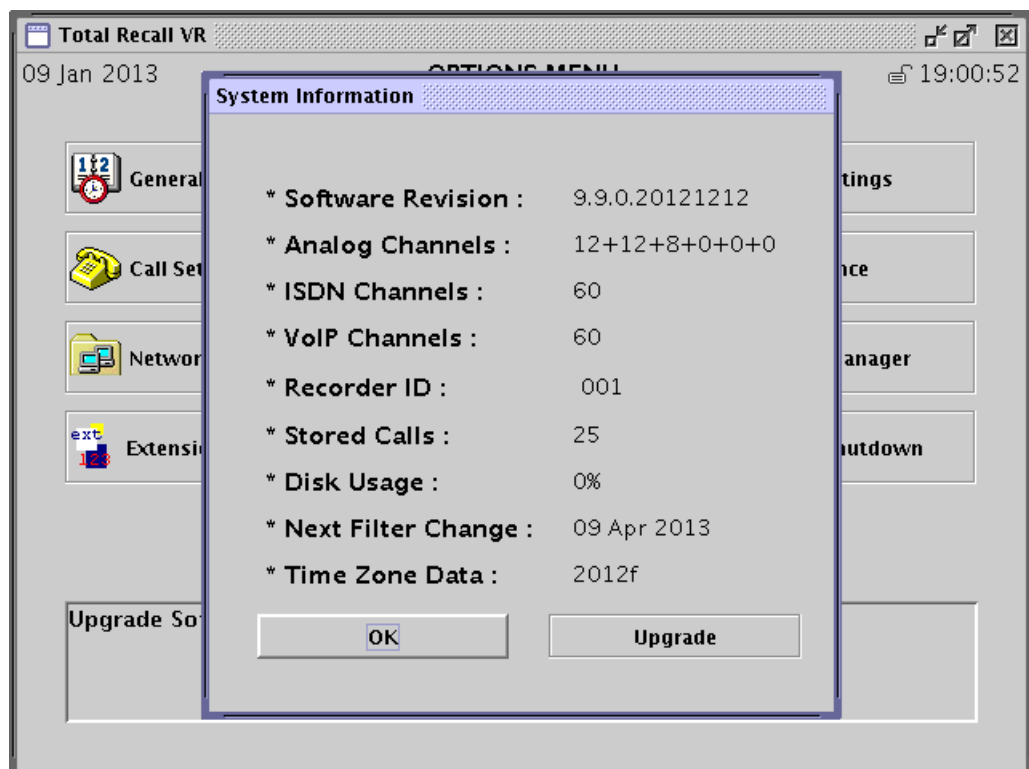^{2} Requires application release 10.9.0 or better.

12. System Maintenance

12.1. System Information

To view the current system information:

View System Information

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **System Information** to display the System Information dialog.

2. The dialog displays:

- *Software Revision* - the current version of the Total Recall VR application.

- *Analog Channels* - the analogue recording channel count and configuration.

- *ISDN Channels* – the ISDN recording channel count.

- *VoIP Channels* – the VoIP recording channel count.

- *Recorder ID* - the current ID of the system. This is the only parameter that you can modify - see section 6.6 Recorder ID.

- *Stored Calls* - the total number of recordings that are stored on the system disks.

- *Disk Usage* – system disk occupancy, in precent.

- *Next Filter Change* – the date when you should replace the system filter.

- *Time Zone Data* – the version of the time zone data file that is currently on the system.

3. Select **OK** to return to the Options Menu screen.

12.2. Application Upgrade

⚠ Upgrades affect operating system and application files only.

However, it is strongly recommended that you archive all recordings before attempting an upgrade.

We release regular updates of the Total Recall VR application to add new features and correct problems with existing features. In addition, we update time zone definition files with every software update. This ensures that Total Recall VR has the correct dates for day-light saving changes for various time zones around the world.

To upgrade the application on a Total Recall VR you must first obtain, or create, an upgrade disc with the new version of the application.
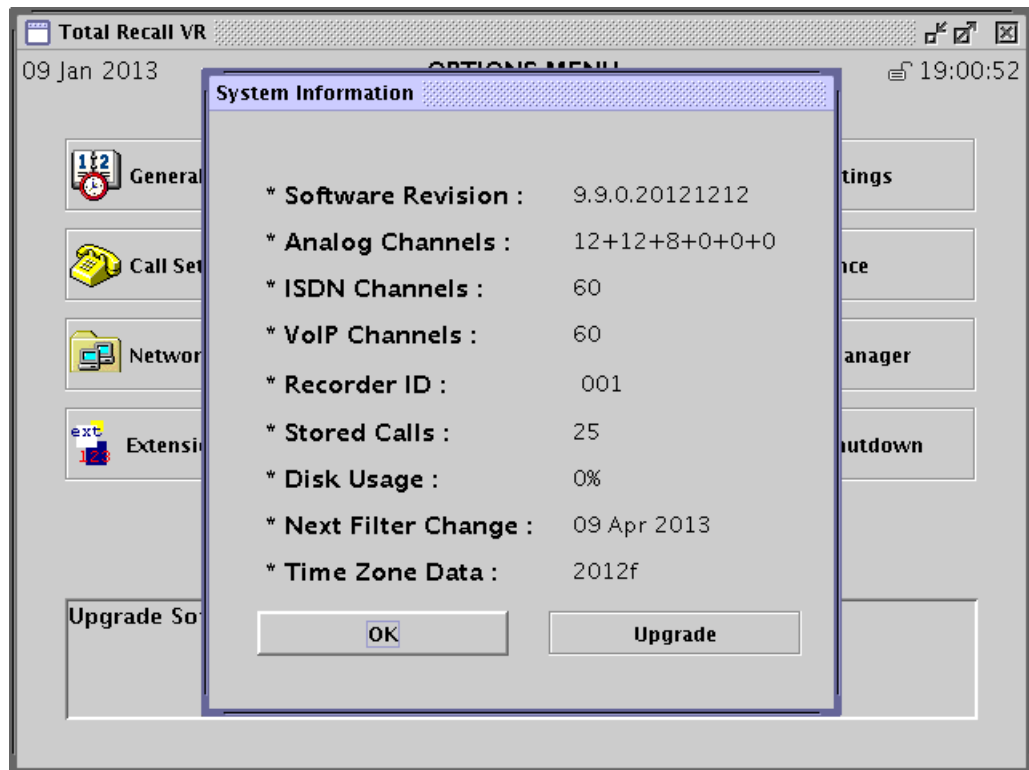
ℹ You can download images (ISO files) for upgrade discs from our web site. Go to http://www.totalrecallvr.com/downloads.
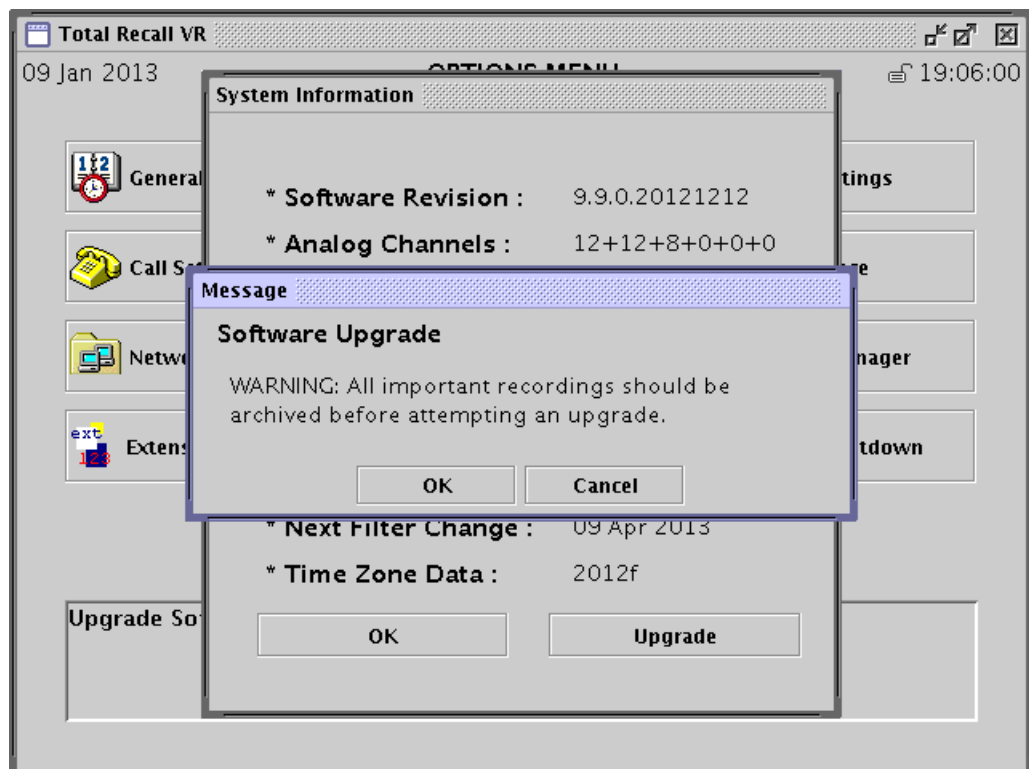
Once you have the disc, to upgrade the application:

Upgrade Application

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **System Information** to display the System Information dialog.

2. Select **Upgrade** to initiate the upgrade process.

3. Insert the upgrade disc in the disc drive and select **OK** to upgrade the system.

4. Follow the on screen instructions to complete the upgrade.

Total Recall VR will automatically restart at the end of the upgrade process. This is intentional. The new application version will be running when it starts again.

12.3. Backup & Restore Settings

> ⚠️ DO NOT restore application configuration from one Total Recall VR to another.

A backup disc of the Total Recall VR application configuration should be kept in a safe place at all times. The disc can be used to restore the Total Recall VR application configuration to a known state if it is "corrupted" in any way.

To create a backup disc:

Create Application Configuration Backup Disc

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Save Settings to Disc** to start the backup process.
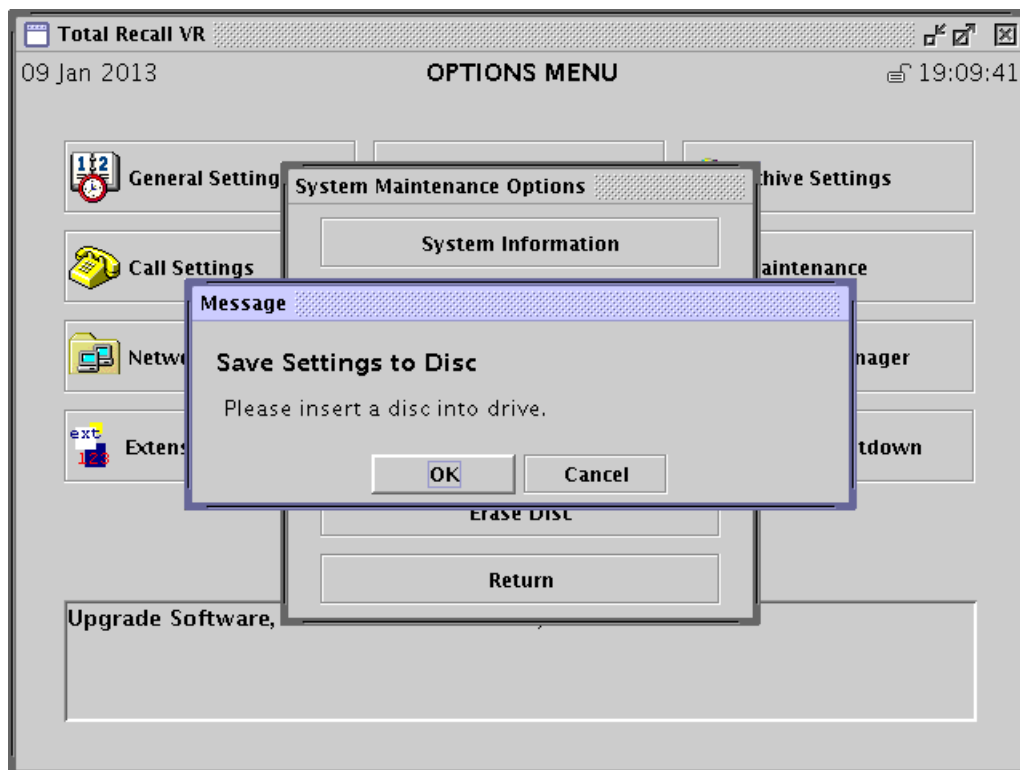
2. Insert a blank CD-R disc in the system drive. You can use a CD-RW, DVD+RW, DVD-R[3], DVD+R[3], BD-R or BD-RE disc as well.

3. Select **OK** to write the current system configuration to the disc.

---

[3] Requires application release 10.9.0 or better.

4. When complete, store the disc in a safe place.

When you must restore the configuration to a known state:

Restore Application Configuration from Backup Disc

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Load Settings to Disc** to start the restore process.
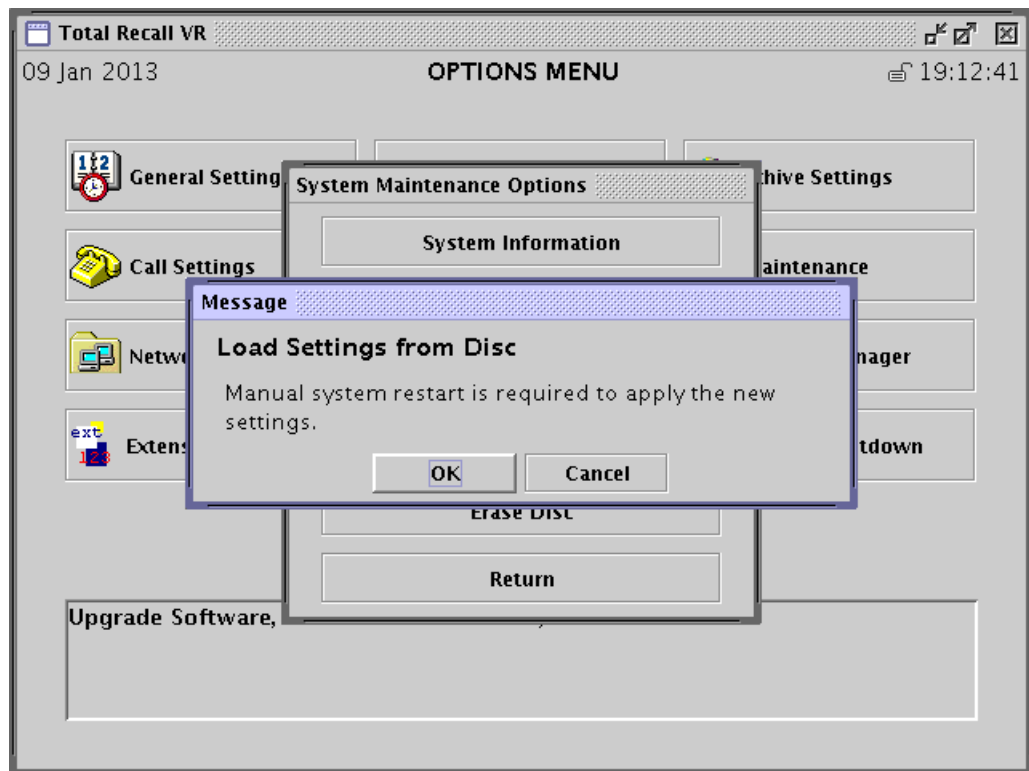
2. Insert a backup disc with Total Recall VR settings in the system drive.

3. Select **OK** to restore the settings.

Total Recall VR will automatically restart when at the end of the restore process. This is intentional.

12.4. Disk Maintenance

The disk maintenance utilities provide an easy way to view the health status of the system disks. In addition, and on systems with RAID disks, you can use the utilities to replace disks while the system is recording.

To view the operating status health of the system disks:

Display system disk status

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Disk Maintenance** to display the System Disks dialog:
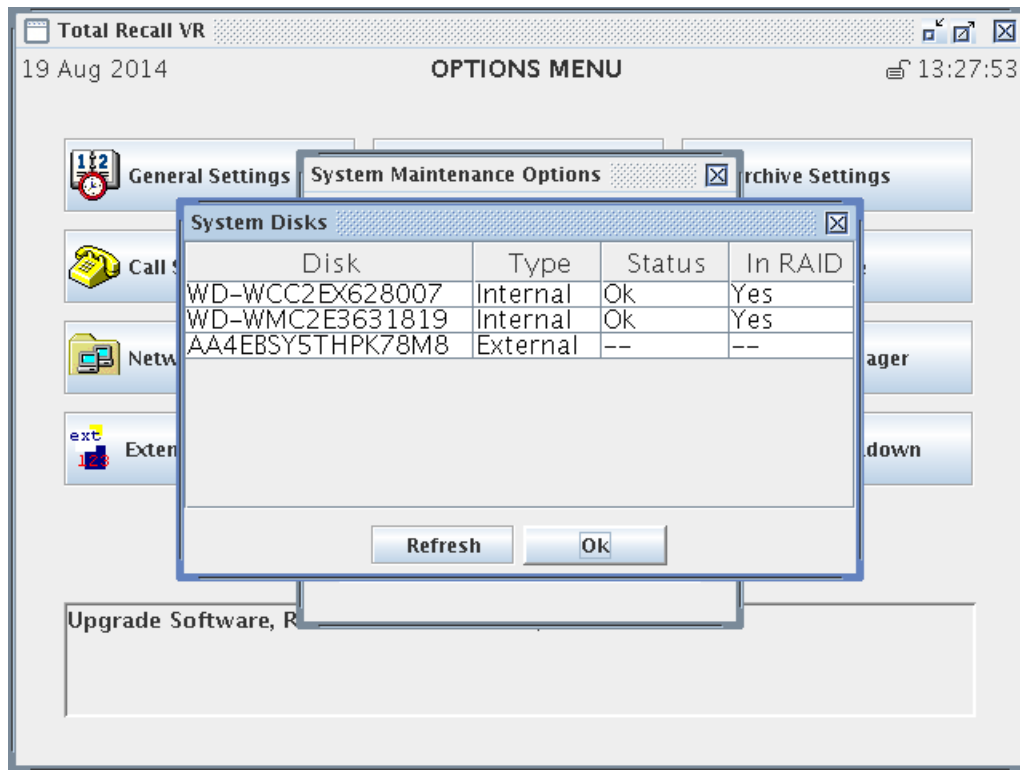
2. This dialog shows a table of all disks that are attached to the system including the internal system disks and USB disks.

3. You can display additional information on each of the internal disks as well.

   a. Use the [▲] and [▼] keys to navigate to a row first.
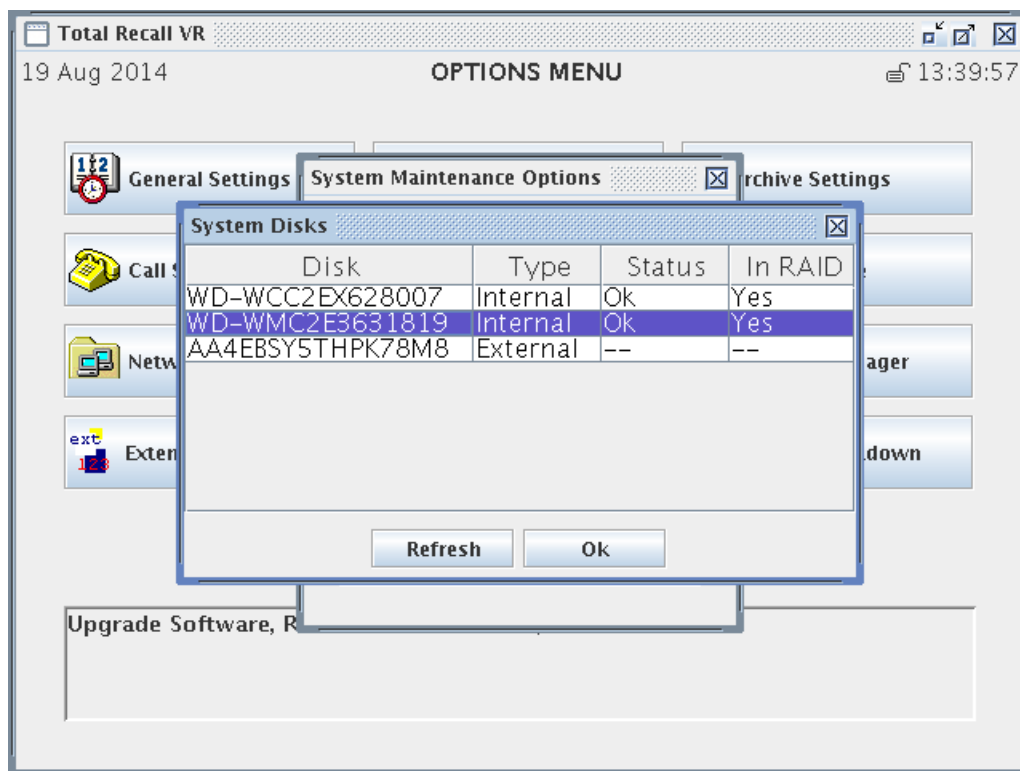
   b. Press [Select] to display the disk information dialog:
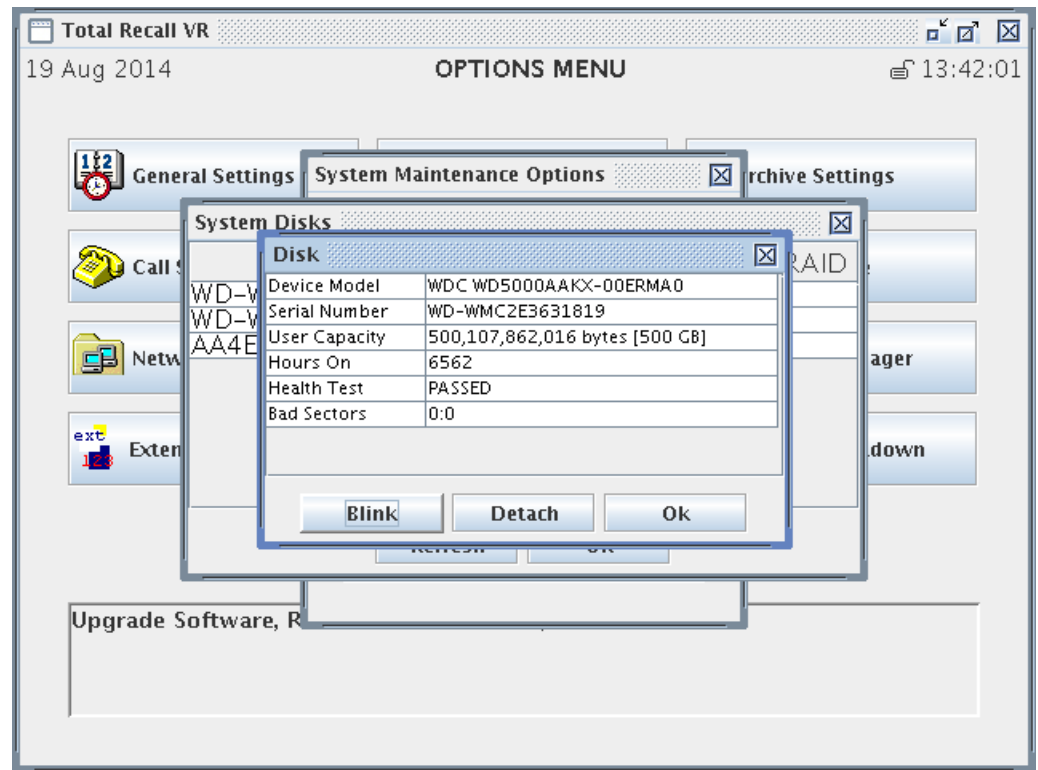
c. The disk information shows a set of operational parameters for the disk:

i. Hours On: the actual number of working hours for the disk.

ii. Health Test: whether the disk has passed or failed a comprehensive health test. Disks that have failed the health test should be replaced immediately.

iii. Bad Sectors: two numbers separated by a ':'. The first number is pending bad sectors while the second number is marked bad sectors. If any of the numbers are increasing then the disk should be replaced immediately.

When a disk is failing, or it is more than 4 years of age, it should be replaced.

> Exercise extreme caution when replacing disks. If you remove a disk from the RAID, then only one disk will be operational. Then, if you physically remove the active disk from the system, the system will stop working and it cannot be recovered from the disks.
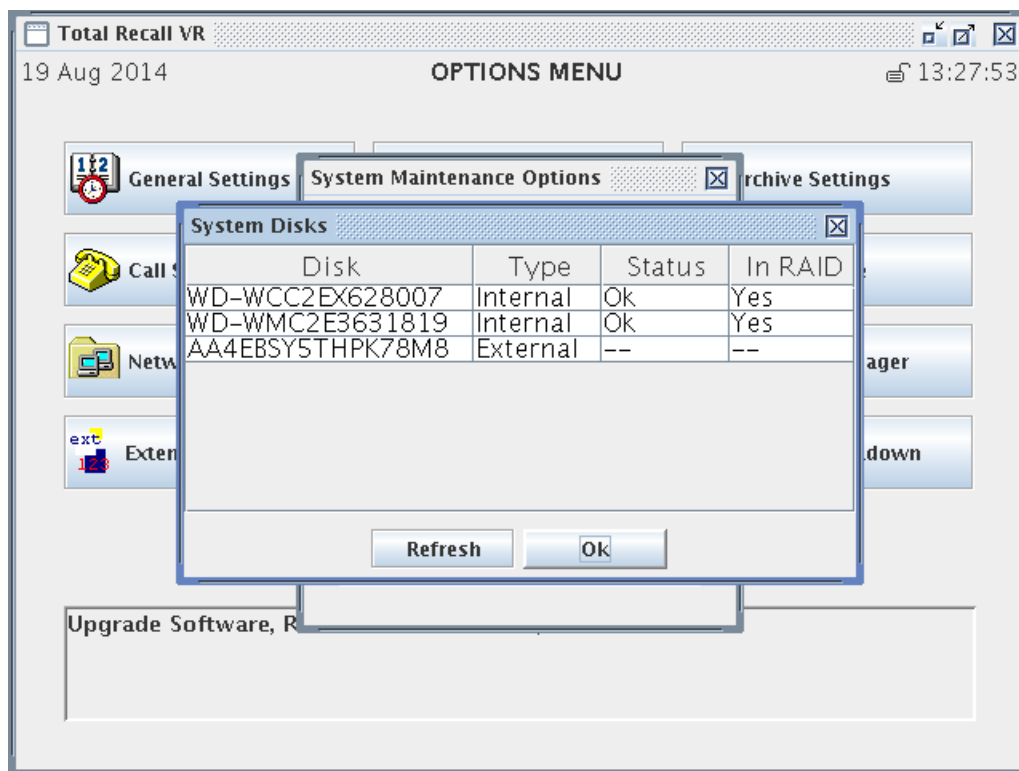
To replace a disk:

Replace a disk

1. You can perform this procedure while the system is fully operational. There is no need to stop recording.

   However, you and only you can decide when the best time to perform disk maintenance activities on the system is.

2. Make sure that you have a new disk with the same capacity as the one that you are going to replace. We recommend that you use the same brand and model of disk.

3. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Disk Maintenance** to display the System Disks dialog:

4. Use the [▲] and [▼] keys to navigate to the row that shows the data of the disk that you wish to replace.
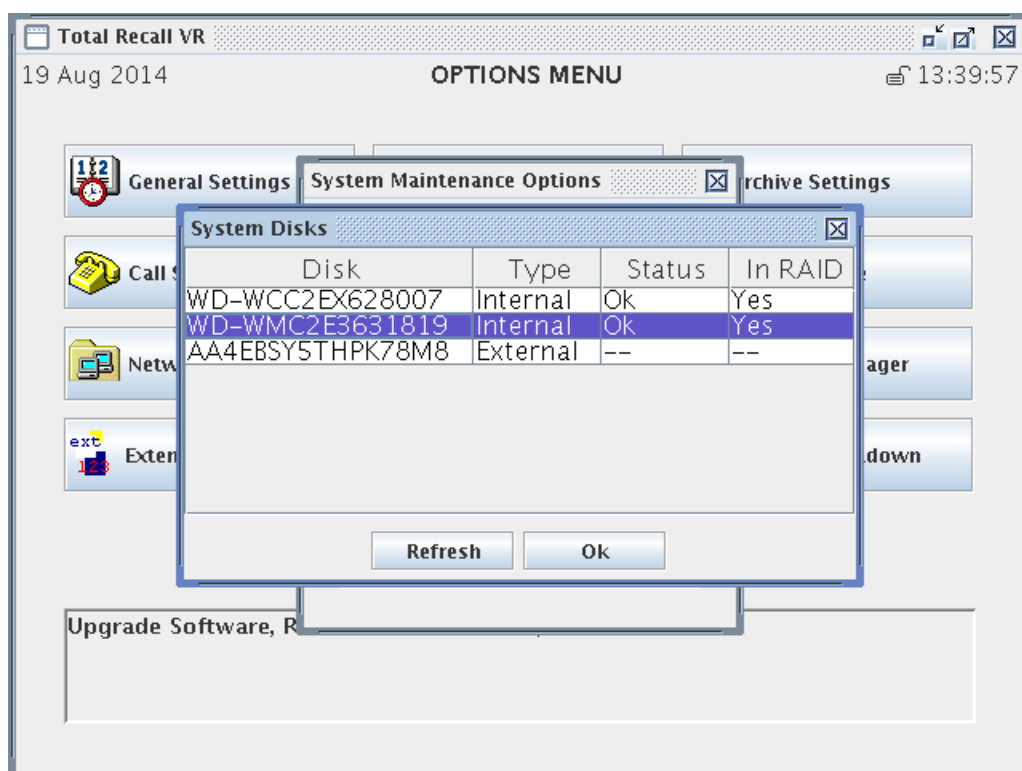
5. Press [Select] to display the disk information dialog:
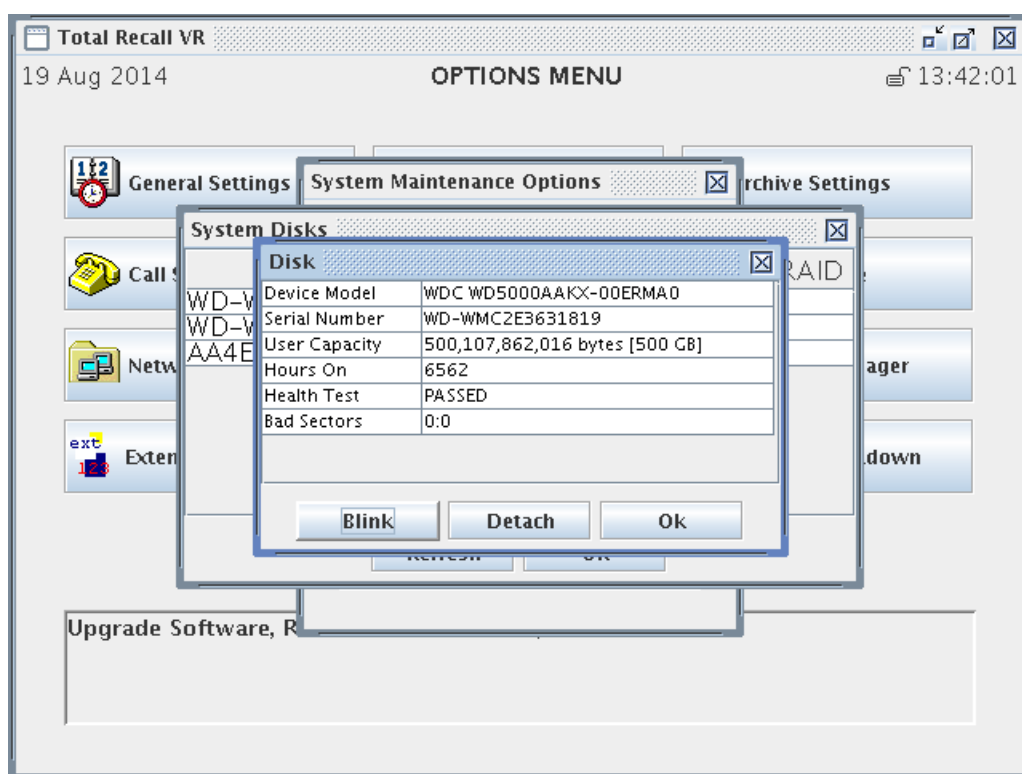

6. Select **Blink**.

    This will light the disk LED for about 30 seconds which will help you to identify the physical location of the disk. Make sure you mark the disk in some way so you can remove the correct disk during subsequent steps.

If you cannot blink the disk that you are trying to replace, then blink the other disk.

Either way, you will be able to physically identify the disk that you wish to replace.

7. Select **Detach**.

8. The system will remove the disk from the RAID and detach it from the SCASI bus to prepare the disk for physical removal. This activity can take up to one minute to complete, so be patient.

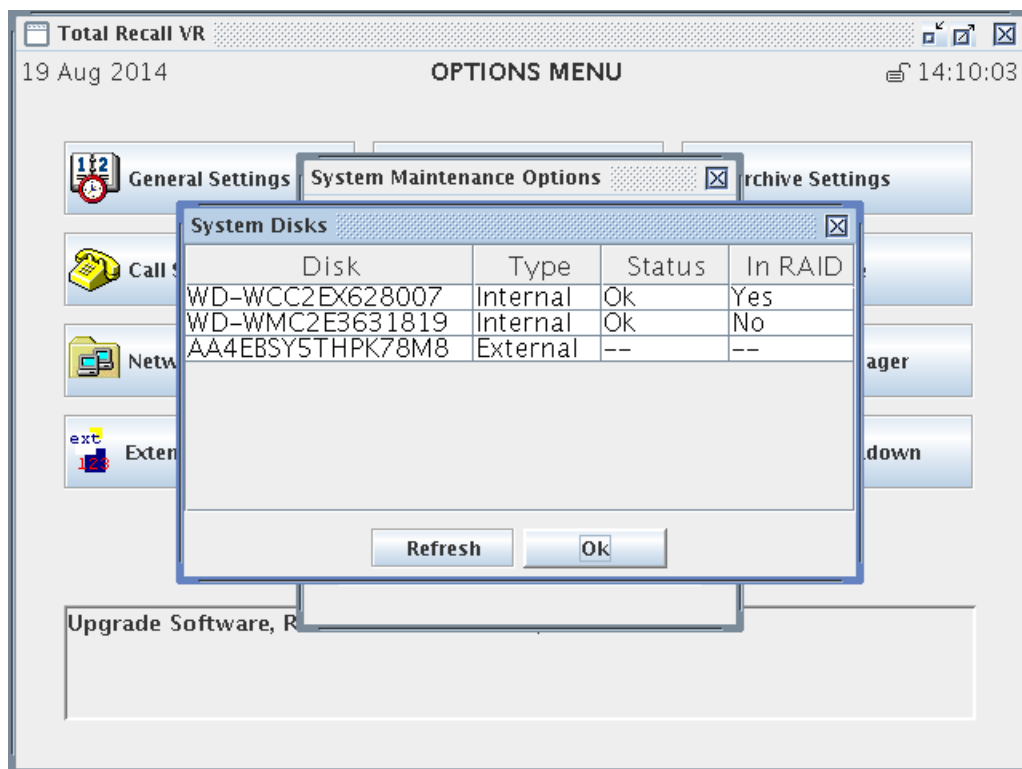When done the system will display the System Disks table, however, this time one disk will be missing:
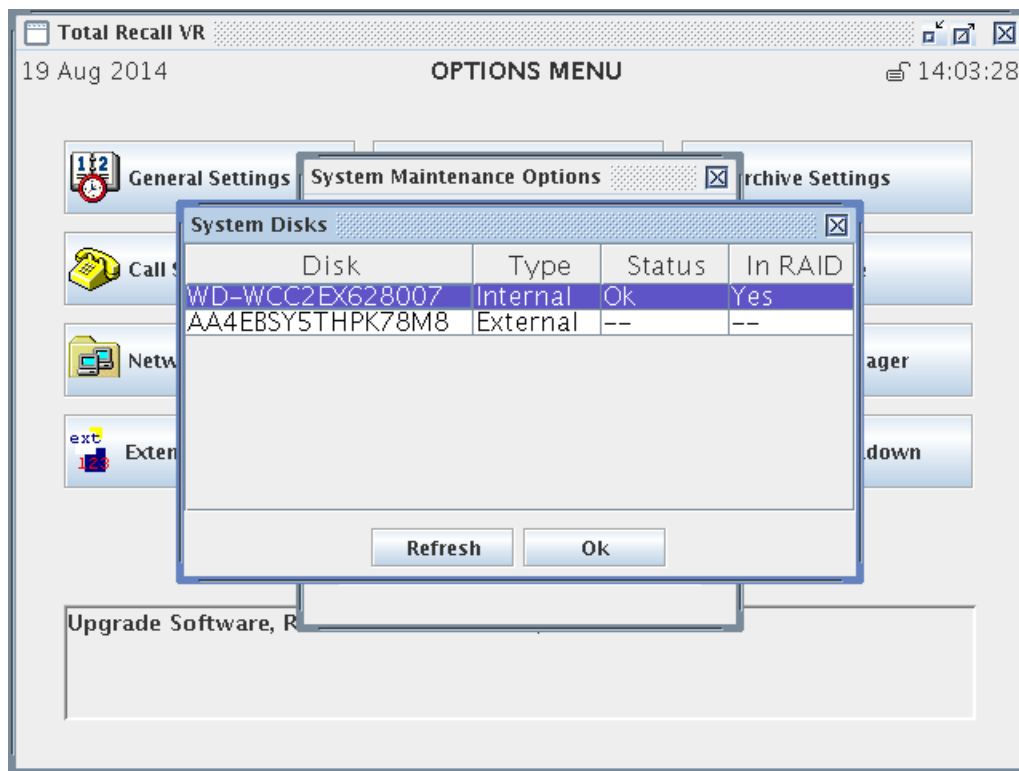
9. At this point you can physically replace the non-working disk.

   MAKE SURE TO REMOVE THE CORRECT DISK. IF YOU REMOVE THE ACTIVE DISK BY ACCIDENT THE SYSTEM WILL STOP WORKING AND CANNOT BE RECOVERED FROM THE DISKS.

10. Once the new disk is in the system navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Disk Maintenance** to display the System Disks dialog:
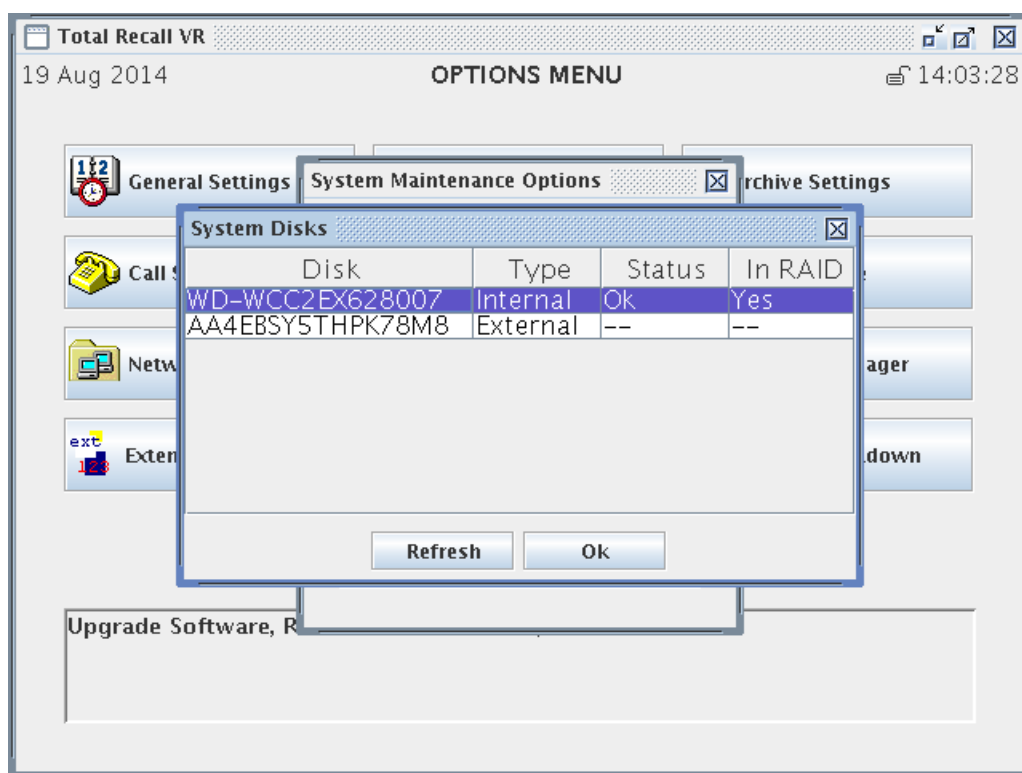
11. Select **Refresh** to re-build the disk information. This will take a moment to complete and the system should include the new disk in the table:

12. Use the [▲] and [▼] keys to navigate to the row that shows the data of the new disk:
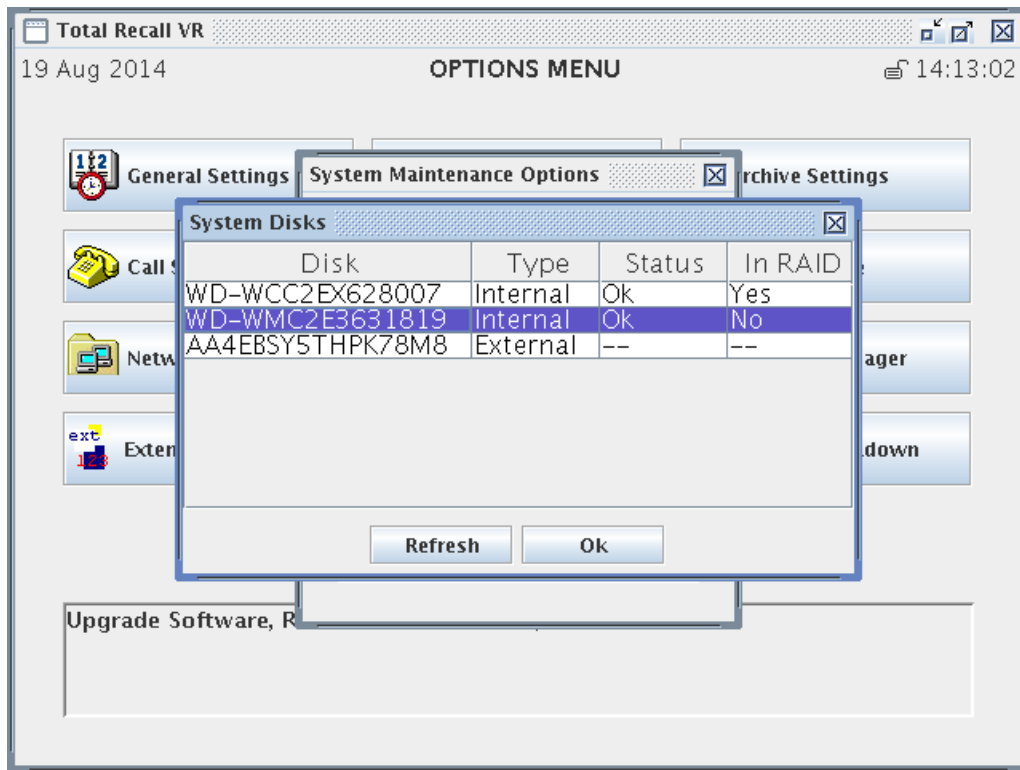
13. Press [Select] to show the to display the disk information dialog:
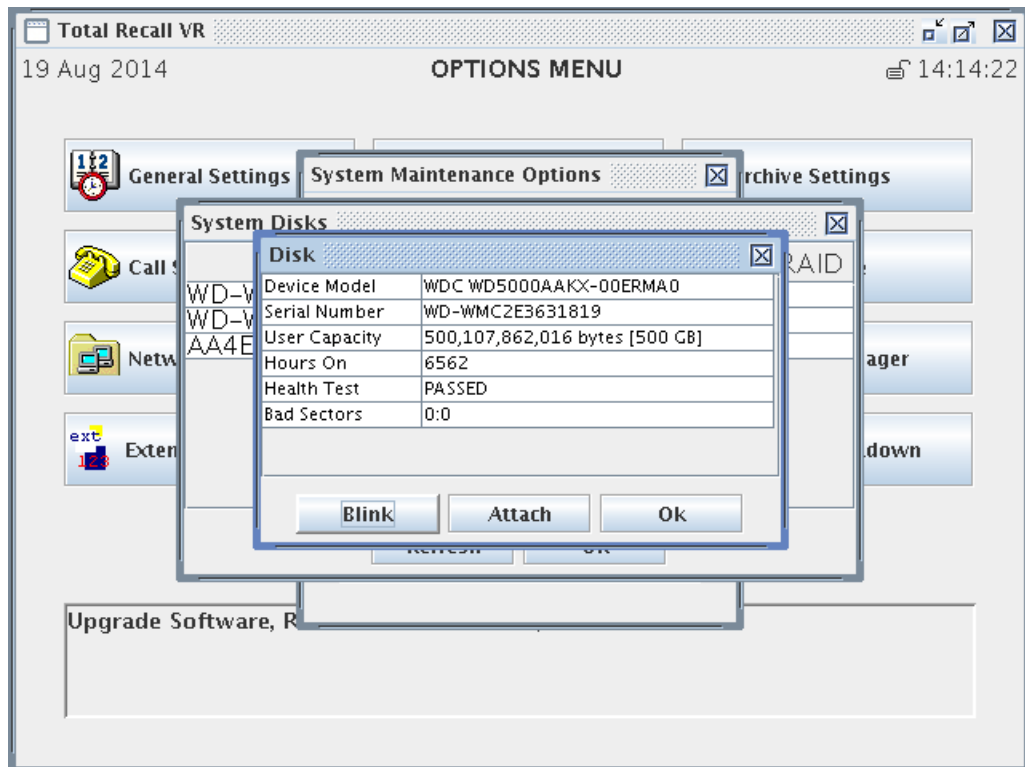
14. Select **Attach**.

15. The system will add the new disk to the RAID and display the table of systems disks which should show the disk as a RAID member:

16. Select **Ok**.

You can proceed to replace the other disk now if required.

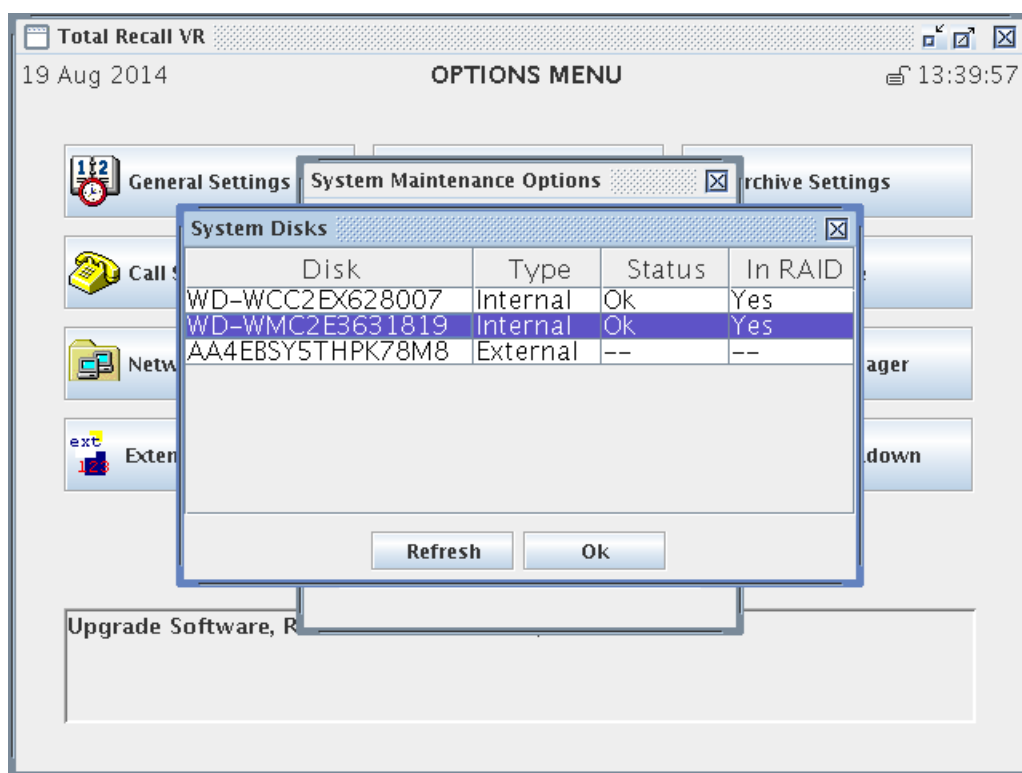**HOWEVER, PLEASE WAIT AT LEAST 3 HOURS BEFORE REPLACING THE DISK. THIS WILL GIVE THE SYSTEM ENOUGH TIME TO SYNCHRONIZE BOTH DISKS THUS ELIMINATING THE CHANCE THAT YOU WILL END UP WITH NON-WORKING SYSTEM.**

12.5. System Shutdown

> ⚠ Never turn power off unless instructed on the screen to do so. Shut down Total Recall VR using the following procedure.
>
> You risk data loss if you simply turn power off while Total Recall VR is operational and recording.

You must shut down Total Recall VR before turning power off:

Shutdown Total Recall VR

1. Navigate to the Options Menu Screen using the [Menu] key.
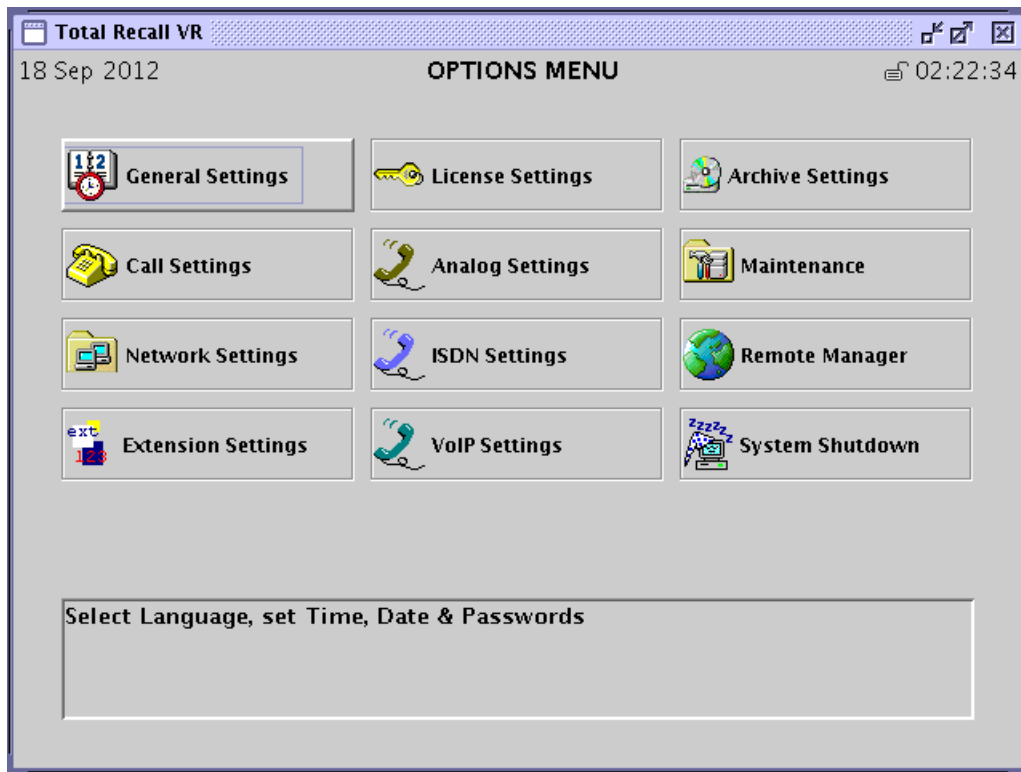
2. Select **System Shutdown**. Total Recall VR will ask you to confirm the shutdown.

3. Total Recall VR will ask you to confirm. Select **OK** to shut down the system. DO NOT TURN POWR OFF UNTILL THE SHUTDOWN COMPLETES.

Total Recall VR will stop all recording and perform an orderly shutdown.

If your model is a LinX Altus or Neos, then you must use the power on/off key to turn power off at the end of the shutdown sequence. All other Total Recall VR models power down automatically at the end of the shutdown sequence.
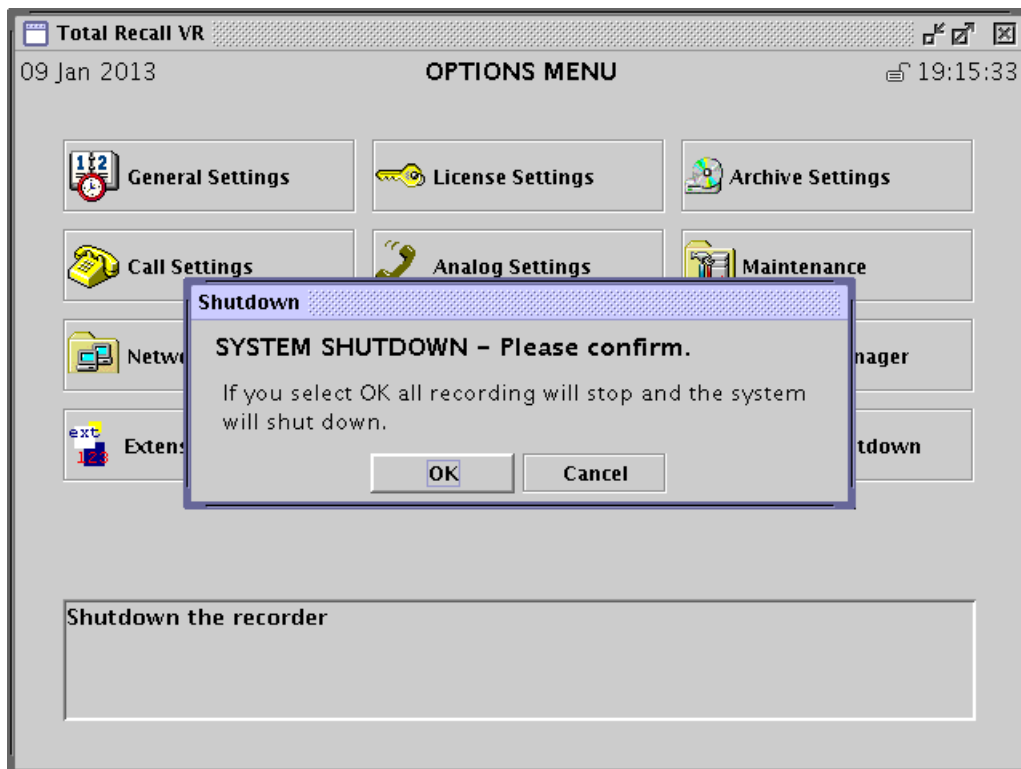
12.6. Database Rebuild

Database rebuild is a process which Total Recall VR uses to reconstruct the database of additional information about recordings from information stored in the recording files. This may be necessary when the database is damaged.

The process may take few hours to complete if there are a large number of recordings on the system.

Total Recall VR DOES NOT record while rebuilding the database.

DO NOT interrupt the rebuilding of the database. Doing so may result in an irreversible damage to the database and recordings.

Total Recall VR automatically rebuilds its database when it starts after what is known as "dirty shutdown". A "dirty shutdown" is any system shutdown other than the one described in section 12.5 System Shutdown.

However, it is possible to trigger the process manually as well:

Rebuild the Database

1. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Rebuild Database** to initiate the rebuilding process.
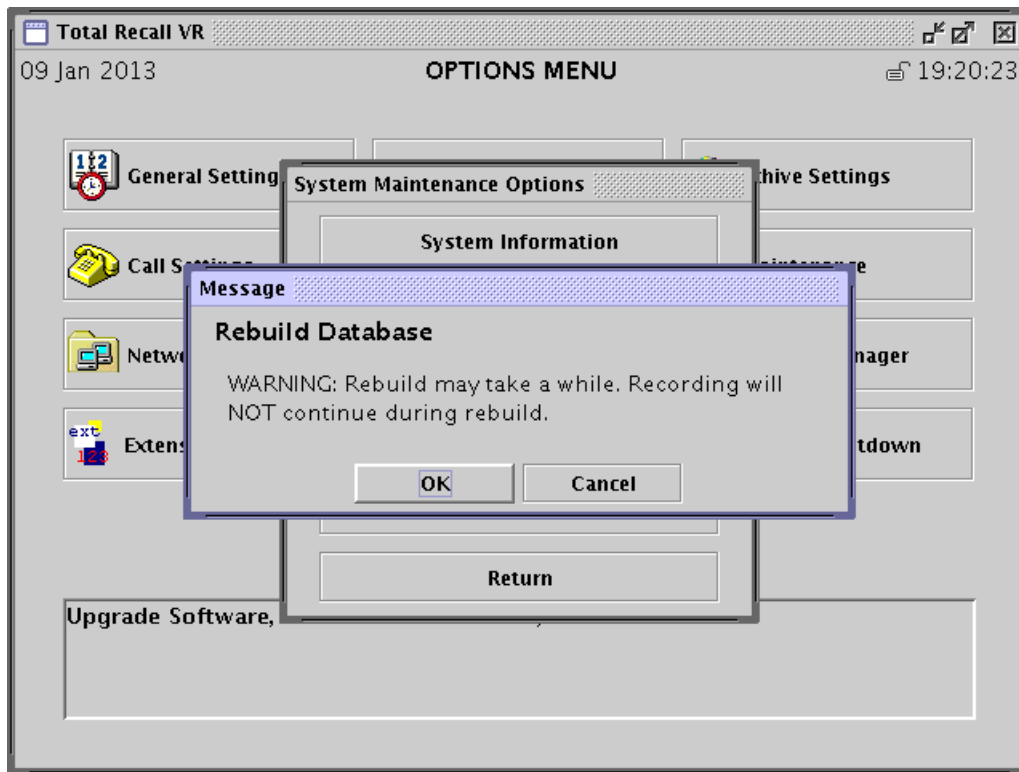
2. Total Recall VR will ask you to confirm. Select **OK** to start the database rebuild process.

3. Total Recall VR will immediately stop recording and start to rebuild the database. Progress will be shown on the screen.

The rebuild process checks the integrity of the recording files as well. Files that can be read but fail the integrity check are marked as "damaged". Damaged recordings show with the "X" flag on the Search screen. Files that cannot be read at all will be removed (deleted) during the rebuild process.

12.7. Erase CD-RW, DVD+RW and BD-RE Disc

Total Recall VR can erase a CD-RW, DVD+RW or a BD-RE disc when one is placed in the system drive.

> ⚠️ For security reasons, Total Recall VR destroys all data on the discs when erasing discs. It will not be possible to recover any data from erased discs after the operation.

The erase operation may take considerable time to complete. The following table shows the time for different types of discs:

Disc Type	Erase Time
CD-RW	5-10 minutes
DVD+RW	20-30 minutes
BD-RE	60-80 minutes

Total Recall VR may not be able to erase all brands of discs, in particular CD-RW discs as the erase operation for CD-RW discs largely depends on the firmware of the disc drive.

> If you are getting errors when erasing CD-RW discs, try a different brand of disc.

To erase a disc:

Erase a CD-RW, DVD+RW or a BD-RE Disc

1. Insert a disc in the system drive.

2. Navigate to the Options Menu Screen using the [Menu] key. Select **Maintenance** and then select **Erase Disc**.

3. Total Recall VR ask you to confirm:
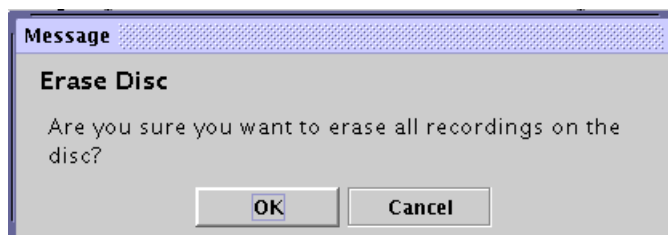
4. Select **OK** to erase the disc.

12.8. Deleting Recordings

Total Recall VR is a secure recording system and has been designed so it is not possible to manually delete recordings.

However, Total Recall VR has an in-built auto-cleaning function which ensures that the system has enough free space on its disks to continue recording endlessly.

⚠️ A working archiving strategy must be implemented to avoid losing recordings as a result of auto-cleaning.

In general, the auto-cleaning function automatically deletes recordings when the number of recordings reaches more than the maximum records (see table in section 7.1 Recording Storage) or the disk occupancy reaches 95% whichever occurs first. It removes oldest first recordings until the number of recordings reduces to the low watermark (see table in section 7.1 Recording Storage) or less, and the disk occupancy is below 88%.

It is possible to specify the maximum life time of recordings - see section 7.4.4 Call Settings. If this is the case, then the auto-cleaning function may never run as expired recordings are purged from the system on hourly basis.

In addition to the automatic deletion during normal operation, Total Recall VR automatically purges recording files which it cannot read during database rebuild – see section 12.6 Database Rebuild.

Finally, recordings can optimally be deleted when creating archives – see section 11 Archiving.

12.9. Cleaning the Air Filter

As with most computing devices, Total Recall VR has a fan that provides air flow through the system to keep it at operating temperature. However, unlike most computing devices, the air that enters the system is kept clean by a filter.

Every 3 months or so the embedded GUI will display a message and start generating an audible beep to alert you to the fact that it is time to check and clean the filter.

For example:

Select **OK** to dismiss the dialog. However, at this point in time the filter should be replaced or washed in warm soapy water, and then rinsed thoroughly and allowed to dry completely prior to being added back to the system.

> New filters are available from us or your local Total Recall VR supplier.

13. Glossary

Our guides use certain terms and abbreviations.

13.1.1. Terms

Extensions

Extensions are a Total Recall VR concept that helps identify the source and the destination of recordings. Extensions can be numbers or any free format text. For example calling and called numbers can be classified as extensions if they match an entry in the Internal Dial Plan.

Extension Mapping

Extension mapping is a process used by the Total Recall VR to convert raw identifies of sources and destinations of recordings to user friendly identifiers. For example, when recording VoIP calls the 'From' and 'To' identifiers may be rather cryptic, say 'ext122@sip.myenterprise.com'. The extension mapping process can convert this identifier to '122' or 'Extension 122'.

Internal Dial Plan

Internal Dial Plan is Total Recall VR configuration which helps it determine which extensions are internal to the enterprise.

Recording Channel

Total Recall VR uses recording channels to capture audio on analogue, VoIP or ISDN sources. The number of recording channels can be different to the number source channels. For example, a Total Recall VR can have 20 ISDN channels while connected to an ISDN PRI link which has 30 B channels.

Remote Manager

A powerful Java^{TM} based client application for Total Recall VR systems. It installs on Windows^{TM} PCs and can be used to securely configure and manage multiple Total Recall VR systems over a TCP/IP network. In addition, it can be used to monitor recordings in progress in real time as well as search for and then play past recordings.

RoD Client

A small Java^{TM} based taskbar application for Total Recall VR systems. It installs on Windows^{TM} PCs and allows users to control in real-time which calls are recorded. In addition, enables users to add notes to recordings of calls while calls are being recorded.

Supervisor Client

A small Java^{TM} based client application for Total Recall VR systems, It installs on Windows^{TM} PCs and allows users to manually control (start, stop, …) recording on analogue channels. In addition, it can be used to monitor recordings in progress in real time as well as add notes to recordings in progress.

Total Recall VR

The system that is the subject of this manual.

13.1.2.Abbreviations

> Most definitions courtesy of "[Wikipedia, the free encyclopaedia](#)".

CLI: Calling Line Identification

A telephony intelligent network service that transmits the caller's telephone number and in some places the caller's name to the called party's telephone equipment during the ringing signal or when the call is being set up but before the call is answered.

D/A: Digital to Analogue

A digital-to-analogue converter (DAC or D-to-A) is a device for converting a digital (usually binary) code to an analogue signal (current, voltage or electric charge).

DSP: Digital Signal Processor

A specialized microprocessor designed specifically for digital signal processing, generally in real-time computing.

DTMF: Dual-Tone Multi-Frequency

Used for telephone signalling over the line in the voice-frequency band to the call switching centre. The version of DTMF used for telephone tone dialling is known by the trademarked term Touch-Tone, and is standardised by ITU-T Recommendation Q.23. Other multi-frequency systems are used for signalling internal to the telephone network.

IP: Internet Protocol

A data-oriented protocol used for communicating data across a packet-switched internetwork.

IP is a network layer protocol in the internet protocol suite and is encapsulated in a data link layer protocol (e.g., Ethernet). As a lower layer protocol, IP provides the service of communicable unique global addressing amongst computers.

ISDN: Integrated Services Digital Network

A circuit-switched telephone network system, designed to allow digital transmission of voice and data over ordinary telephone copper wires, resulting in better quality and higher speeds than that available with the PSTN system.

LAN: Local Area Network

A computer network covering a small geographic area, like a home, office, or group of buildings.

LCD: Liquid Crystal Display

A thin, flat display device made up of any number of colour or monochrome pixels arrayed in front of a light source or reflector.

NTP: Network Time Protocol

A protocol for synchronizing the clocks of computer systems over packet-switched, variable-latency data networks. NTP uses UDP port 123 as its transport layer. It is designed particularly to resist the effects of variable latency (Jitter).

PBX: Private Branch Exchange

Also called Private Business eXchange, or PABX (Private Automatic Branch eXchange), a PBX is a telephone exchange that serves a particular business or office, as opposed to one a common carrier or telephone company operates for many businesses or for the general public.

RTP: Real-time Transport Protocol

The Real-time Transport Protocol (or RTP) defines a standardized packet format for delivering audio and video over the Internet.

SMDR: Station Message Detail Record

SMDR is a record containing information about recent system usage, including the identities of sources (points of origin), the identities of destinations (endpoints), and the duration of each call.

SIP: Session Initiation Protocol

An application-layer control (signalling) protocol for creating, modifying, and terminating sessions with one or more participants. These sessions include Internet telephone calls, multimedia distribution, and multimedia conferences.

TCP: Transmission Control Protocol

One of the core protocols of the Internet protocol suite, often simply referred to as TCP/IP. Using TCP, applications on networked hosts can create connections to one another, over which they can exchange streams of data using Stream Sockets.

TRVR: Total Recall VR

A professional voice logging and call recording system.

UDP: User Datagram Protocol

UDP is one of the core protocols of the Internet protocol suite. Using UDP, programs on networked computers can send short messages sometimes known as datagrams (using Datagram Sockets) to one another. UDP is sometimes called the Universal Datagram Protocol.

VLAN: Virtual LAN

A method of creating independent logical networks within a physical network.

VoIP: Voice over Internet Protocol

Also called IP Telephony, Internet telephony, Broadband telephony, Broadband Phone and Voice over Broadband, VoIP is the routing of voice conversations over the Internet or through any other IP-based network.

VOX: Voice Operated Switch

A switch that operates when sound over a certain threshold is detected.

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