.: www.totalrecallvr.com :.

Total Recall VR Manager

User Guide

May, 2022

Guide Issue 19.0

Total Recall VR Manager Release 19.0.0

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, 28.0, May 2022

[4] Prolancer Pty Ltd, Total Recall VR Deployment User Guide, 28.0, May 2022

[5] Prolancer Pty Ltd, Total Recall VR Embedded GUI User Guide, 28.0, May 2022

[6] Prolancer Pty Ltd, Total Recall VR SNMP Agent User Guide, 28.0, May 2022

Table of Contents

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 Guide to display ...	Locate the link named "Guide" on the screen, position the cursor over the link and then depress the appropriate mouse button to follow the link.
Select **Add** to create a new ...	Locate the button or menu item named "Add" on the screen, position the cursor over the button or menu item and then depress the appropriate mouse button to initiate an action.

Enter ***Commission*** ...	Locate the field named "Commission" on the screen, position the cursor over the field and then depress the appropriate mouse button to select the field. Once the cursor appears in the field, enter a value.
Choose ***Country*** ...	Locate the field named "Country" on the screen, position the cursor over the field and then depress the appropriate mouse button to display the available options. Then position the cursor over the desired option and depress the appropriate mouse button to select it.
Tick ***Active User*** ...	Locate the check box named "Active User" on the screen, position the cursor over the check box and depress the appropriate mouse button to place a visual tick in the box.
Un-tick ***Active User*** ...	Locate the check box named "Active User" on the screen, position the cursor over the check box and depress the appropriate mouse button to remove the visual tick in the box.
Enter *$30.95* ...	Enter "$30.95" using the keys on your keyboard.

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 Manager application.

The guide is intended for Total Recall VR end users. It describes how to use the Total Recall VR Manager application. 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, intercoms, 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;
- Logging Air Traffic Control communication;
- 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, radio IDs, 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 a Total Recall VR recorder 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.
- 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 range of PC client applications with value adding functionality.
- APIs and PC applications for integration with other business systems and solutions.

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. What is Total Recall VR Manager

Total Recall VR Manager is a system management application that provides for system configuration, maintenance and status monitoring of Total Recall VR systems. In addition it provides for configuration of Total Recall VR PC applications when the applications are used in workgroup mode.

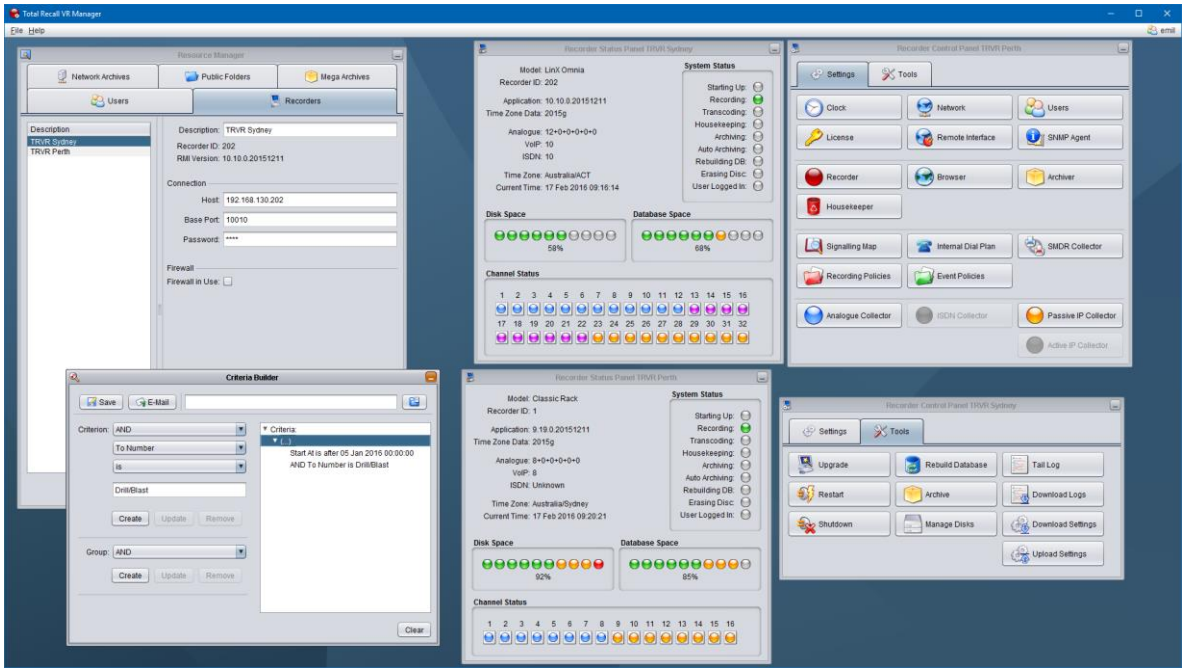


Figure 1: Total Recall VR Manager Screen Shot

Total Recall VR Manager offers:

- User configurable and flexible role based access control for all application features.
- Two working modes: workstation (for use by a single or multiple users on a single PC) and workgroup (for use by multiple users on multiple PCs).
- Configuration management of the configuration of multiple Total Recall VR systems.
- System and channel status monitoring of multiple Total Recall VR systems.
- Comprehensive set of maintenance tools for Total Recall VR systems.

- Configuration management of Total Recall VR PC applications when the applications are used in workgroup mode.
- Advanced natural language search query builder for recording queries that can be shared by users of Total Recall VR PC applications.

Total Recall VR Manager is a Java/Windows based application designed to run on a PC with Windows 7, 8 or 10.

Total Recall VR Manager is a licensed application. You must purchase an Activation License in order to use the application.

3. Start Here

3.1. System Requirements

Total Recall VR Manager is a Java based application designed to run on a PC with Windows 7, 8 or 10.

The application is compatible with Windows XP and Vista, however it has not been tested for correct operation on Windows XP and Vista.

For best experience with Total Recall VR Manager install it on a PC with the following specification:

- 40Mb free hard disk space.
- 8Gb memory (RAM).
- Display hardware that supports the HD resolution (1920x1080).
- 100Mbps Ethernet network interface (NIC) hardware.

The PC must have a working network connection and access to an E-Mail server in order to send e-mail from Total Recall VR Manager.

3.2. Compatibility

Total Recall VR Manager uses cutting edge technology to connect to Total Recall VR systems that run different releases of the Total Recall VR application.

As a result, it is possible to connect Total Recall VR Manager to Total Recall VR systems that run a 9.x.y, 10.x.y or 11.x.y version of the application at the same time. However, the minimum releases of the Total Recall VR application that have support for applications like Total Recall VR Manager are 9.15.0 and 10.7.0 so you will have to upgrade your Total Recall VR systems to at least 9.15.0 or 10.7.0, if possible to do so, in order to use Total Recall VR Manager with your systems.

It is not possible to connect Total Recall VR Manager to Total Recall VR systems that run application version 8.x.y or earlier.

3.3. Application Working Mode

You can use Total Recall VR Manager in one of two working modes: workstation or workgroup.

3.3.1. Workstation Mode

This mode is best when a single or multiple users will use Total Recall VR Manager on a single PC.

In this mode the Total Recall VR Manager configuration (users, Total Recall VR systems …) is local to the PC that runs the application. As a result, Total Recall VR Manager can be used by a single user, or multiple users on the same PC.

The following diagram illustrates workstation mode. In summary, Total Recall VR Manager is installed on a single PC. It uses the configuration database (H2 database) on the same PC. Multiple users, each with their own application account, can use the Total Recall VR Manager on the same PC.

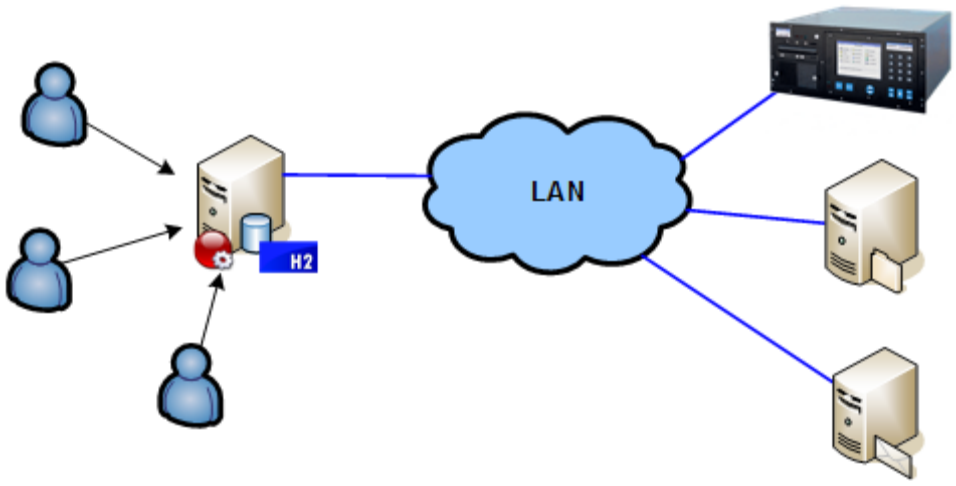


Figure 2: Total Recall VR Manager in Workstation Mode

Of course, you can install Total Recall VR Manager on multiple PCs and use it in workstation mode on each PC. However, each instance is independent from all other instances and must be configured independently of all other instances.

3.3.2. Workgroup Mode

This mode is best when multiple users will use Total Recall VR Manager from different PCs.

In this mode all Total Recall VR Manager instances use the same configuration (users, Total Recall VR systems …). As a result, Total Recall VR Manager can be used by multiple users, each with their own application account, on multiple PCs. You can manage the Total Recall VR Manager configuration from any PC that has an instance of Total Recall VR Manager and the changes will apply to all instances of Total Recall VR Manager on all PCs.

The following diagram illustrates workgroup mode. In summary, Total Recall VR Manager is installed on multiple PCs. Each instance uses the central configuration database (H2 database) which is installed on a separate server. Multiple users, each with their own application account, can use Total Recall VR Manager from different PCs.

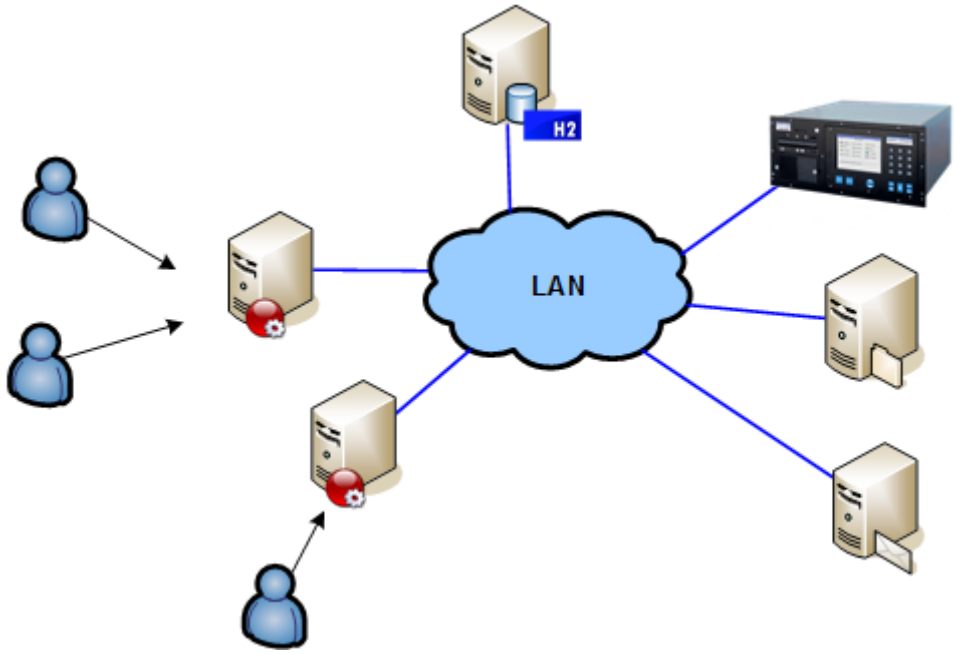


Figure 3: Total Recall VR Manager in Workgroup Mode

3.4. Pre-Installation

Total Recall VR Manager requires 3rd party software and drivers which you may need to install before installing Total Recall VR Manager.

3.4.1. Java SE Runtime Environment

This 3rd party software is mandatory. The application will not run at all without it.

Total Recall VR Monitor is a Java application and as such it requires a Java SE runtime environment to run.

You must install a 32bit, version 8 (tested and recommended), Java SE Runtime Environment on your PC to use Total Recall VR Manager.

You can download a Java SE Runtime Environment installer from http://www.oracle.com/technetwork/java/javase/downloads/index.html.

You may already have a Java SE runtime environment on your PC. Ask your friendly technical staff to help you determine this if you are not sure how to check.

If your PC is running a 64bit version of Windows, then you may already have a 64bit Java SE runtime environment on your PC. If this is the case you must install the 32bit Java SE runtime environment on your PC as well in order to use Total Recall VR Manager. Ask your friendly technical staff to help you if you are not sure what to do.

3.4.2. H2 Database

This 3rd party software is optional. It is required to use the application in the workgroup mode. It is not needed to use the application in the workstation mode.

Total Recall VR Manager uses an H2 database to store its configuration and operating parameters. If you intend to use Total Recall VR Manager in workgroup mode (see section 3.3.2 Workgroup Mode), then you must install a central H2 database which will be shared by all instances of Total Recall VR Manager.

You can download a Windows installation package for an H2 database server from http://www.h2database.com/html/download.html. We have tested the application with version 1.4.200 and we recommend that you use this version.

Once you have installed an H2 database on a server, configure the H2 database service (using the wrapper.conf file in the services directory) and make sure that the H2 database service is running.

This document uses an H2 database server which runs on a machine with IP address 192.168.120.200 and provides service on TCP port 9092 in examples. The same server provides a management service on TCP port 8082.

The H2 database installation instructions are not as clear as they should be when it comes to explaining how to get an H2 database server going. The following is a summary of the steps and can be used as a guide when setting up an H2 database server; however, it does not aim to replace the official H2 database documentation.

Install an H2 database server

1. Download the latest stable Windows installer from http://www.h2database.com/html/download.html. We downloaded a file named 'h2-setup-2019-10-14.exe' for this example.
2. Run the installer file which by default will install the software in "c:\Program Files\H2" on a 32bit system or "c:\Program Files (x86)\H2" on a 64bit system.
3. Step 2 does not install the H2 database service automatically. You must manually install it, after configuring it, as follows.

   The service ensures that the H2 database starts when the machine restarts.
4. The service configuration is in the "c:\Program Files\H2\service\wrapper.conf" file. We modified the following to tailor the service to our environment:

```
1. # Application parameters.  Add parameters as needed starting from 1
2. ## -- Make sure to allow tcpPort on the firewall -- ##
3. wrapper.app.parameter.1=org.h2.tools.Server
4. wrapper.app.parameter.2=-tcp
5. wrapper.app.parameter.3=-tcpPort 9092
6. wrapper.app.parameter.4=-tcpAllowOthers
7. wrapper.app.parameter.5=-web
8. wrapper.app.parameter.6=-webPort 8082
9. wrapper.app.parameter.7=-webAllowOthers
10. wrapper.app.parameter.8=-ifNotExists
11. wrapper.app.parameter.9=-baseDir "c:/worktemp/db"
```

   In summary, we want the service to store database files in the "c:\worktemp\db" directory on the local machine and run on TCP port 9092. Also, we want the service to use TCP port 8082 for web management.
5. With the above changes in place, open a terminal window and change to the "c:\Program Files\H2\service" directory. Then:
   a. Run the *1_install_service.bat* script to install the service on the machine. This adds the "H2 Database Engine Service" to the set of services on the machine.
   b. Run the *2_start_service.bat* script to start the service.
   c. To make sure that the service is running, start a browser using the *3_start_browser.bat* script on the same machine. This should show the login page for the database server management console.
6. Edit the firewall configuration for the machine and make sure that TCP ports 9092 and 8082 (if you are using our configuration from step 4) are not blocked.

How you complete this step depends on the firewall application that you are using. Please consult the documentation for your firewall application.

7. Once the firewall is allowing communication to TCP ports 9092 and 8082 open a browser on a different machine and attempt to access the H2 server web management console using http://192.168.120.200:8082 (if you are using our configuration from step 4) to make sure that remote access to the server is possible.

Note that you do not need to create database users and a database for Total Recall VR Manager once the server is running. The first instance of Total Recall VR Manager that will attempt to use the server will create users and a database which you must then use for all other instances of Total Recall VR Manager.

3.4.3. Remote Interface

This recorder configuration is mandatory. The application will not be able to connect to recorders without it.

In most cases Total Recall VR Manager will connect to one or more Total Recall VR systems.

Total Recall VR Manager uses the Remote Interface provided by Total Recall VR systems to connect and interact with Total Recall VR systems. As a result, you must configure the Remote Interface on each Total Recall VR system that you wish to access from Total Recall VR Manager.

See section 6.5 in the Total Recall VR Embedded GUI User Guide [5] for details on how to configure the Remote Manager Interface on systems with built-in screen.

For example:

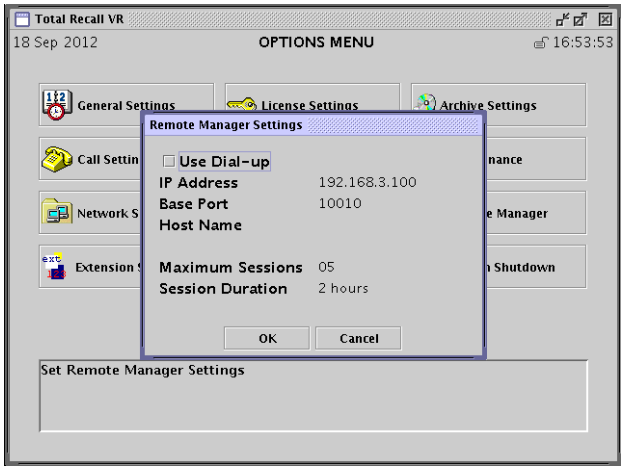


Figure 4: Remote Interface Configuration

If your Total Recall VR system does not have a built-in screen, then use the Total Recall VR Manager application to configure the Remote Interface. See section 8.2.5 in this guide for details on how to configure the Remote Interface on systems without a built-in screen.

For example:

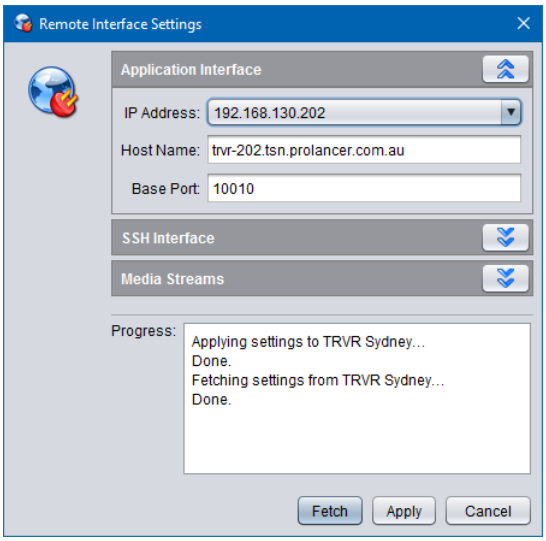


Figure 5: Remote Interface Configuration

3.5. Application Installation

A Total Recall VR Manager installer is available for download from our web site. We do not ship installation media for Total Recall VR Manager.

Please visit http://www.totalrecallvr.com/applications/total-recall-vr-manager to download the installer for Total Recall VR Manager.

The installer is a wizard based installation program which will guide you through the installation steps. To install Total Recall VR Manager on your PC:

Install Total Recall VR Manager

1. Extract the TRVRManager -Setup-x.y.z.yyyymmdd.exe file from the TRVRManager -Setup-x.y.z.yyyymmdd.zip file that you downloaded from our web site.
2. Double-click on the TRVRManager -Setup-x.y.z.yyyymmdd.exe file to launch the installer.
3. Follow the prompts to complete the installation.

3.6. Application Upgrade

To upgrade Total Recall VR Manager:

- If you wish to keep the previous configuration and activation license for the application, then simply follow the installation procedure. Do not uninstall the previous version of the application.
- If you wish to have a clean installation of the application, with new configuration, then first uninstall the previous version of the application and then install the new version. Please make a record of your activation license before you uninstall the old version of the application. You will need the activation license for the new version of the application.

3.7. First Run

Total Recall VR Manager requires an activation license key to run. As a result, when you run Total Recall VR Manager for the first time, it will prompt you to enter an activation token or license as shown on the following screen capture.

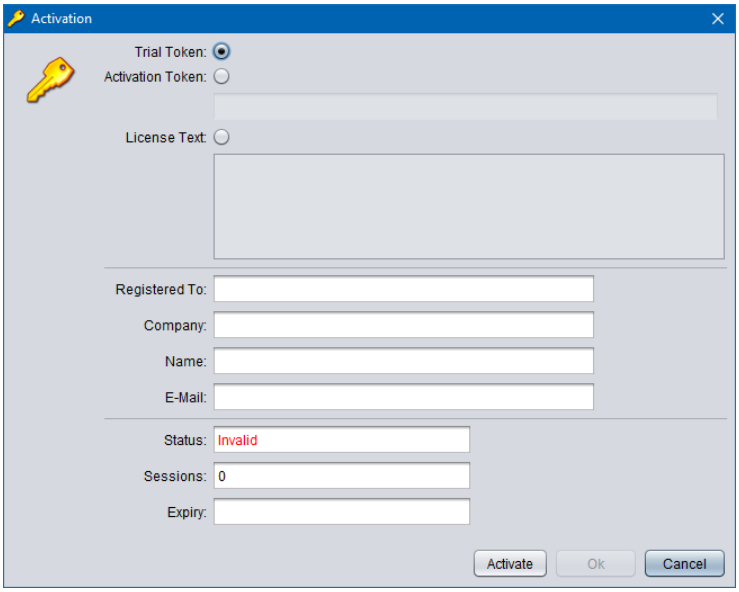


Figure 6: Activation Dialog

You can activate the application in one of the following ways:

1. Activate a 10 day trial of the application by choosing the **Trial Token** option. This mode of activation requires Internet access.

   Note that you will be able to activate one, and only one, trial of the application on a given PC. Once the 10 day trial is complete, it will not be possible to activate another trial for the application on the same PC.

2. Activate the application for either a limited time or perpetually by entering an **Activation Token** that we send you when you purchase a license for the application. This mode of activation requires Internet access.

   Based on the number of licenses that you purchase, and the type of token that we send you, you may be able to activate the application with the token on a single PC or multiple PCs. Please consult the instructions that come with the token for more details.

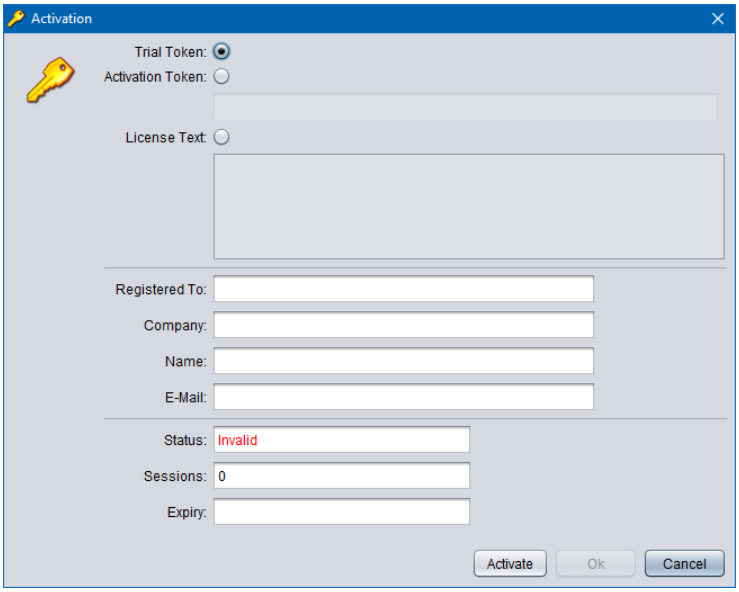
3. Activate the application for a limited time or perpetually by entering a **License Text**. This mode of activation does not requires Internet access.

   This mode of activation, in general, will be used only for existing licenses (activated previously) when lost or misplaced. Please contact us for instructions on how to proceed to recover lost activation licenses. However, it can be used to activate the application on PCs that do not have Internet access.

Instructions for each method of activation follows.

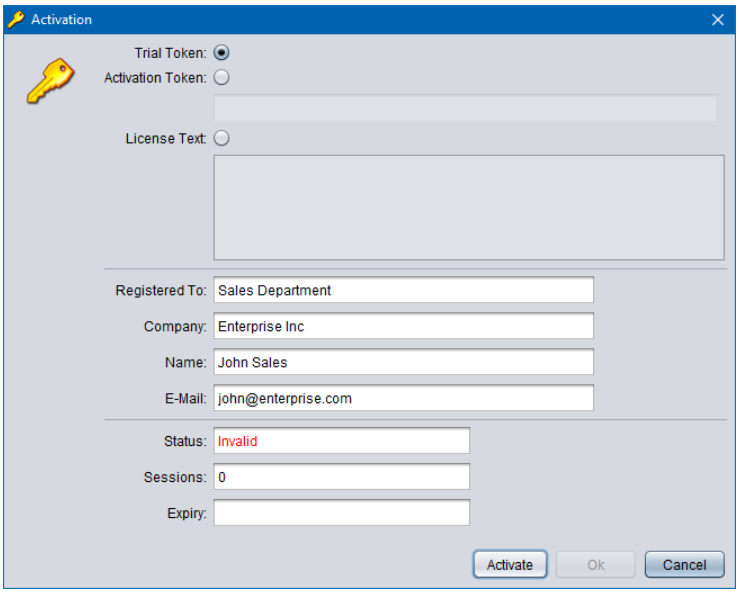
Activation with the Trial Token

1. To activate a 10 day trial of the application select **Trial Token**.

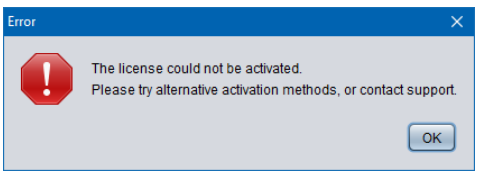


2. Enter ***Registered To***, ***Company***, ***Name*** and ***E-Mail*** as desired. Note that the details that you enter here will be needed to recover the trial activation license in the event that it is lost or misplaced so make a record of them and keep them in a safe place.

   For example:

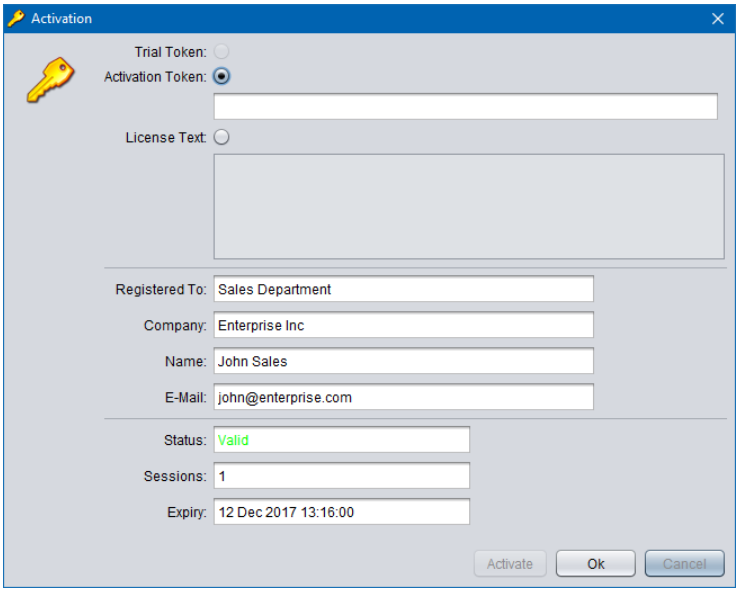


3. Select **Activate** to attempt activation. The application will attempt activation (over the Internet) with the Total Recall VR licensing server. If you receive the following error message, then a trial of the application was previously activated on the PC.



   As a result, the Trial Token cannot be used to activate the application (again).

4. In most cases the activation will be successful. For example:



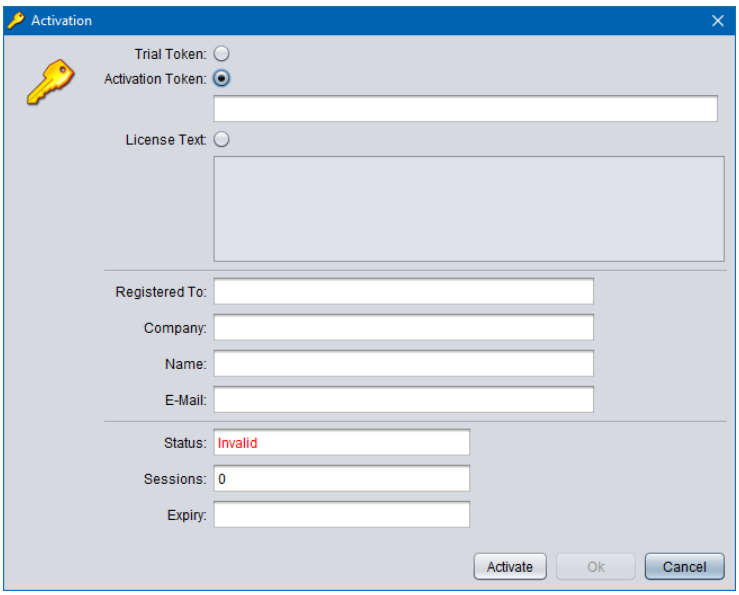
5. Select **Ok** to start the trial of the application. You will not be asked to activate the application again during the trial.

Activation with an Activation Token

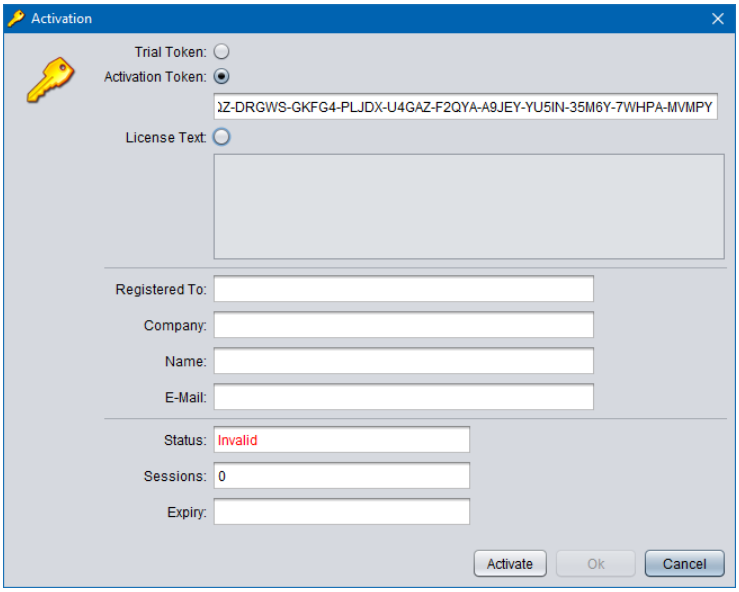
1. If you have received an activation token from us, then you can activate the application with the token. This is an example of an activation token that you will receive:

   `ZU2QL-DSFGK-GHAHA-3NW9B-24RAH-LJQ9A-A9LEH-GTPH5-3G6L4-XJPTX-H5SEA`

2. To activate the application with an activation token select **Activation Token**.

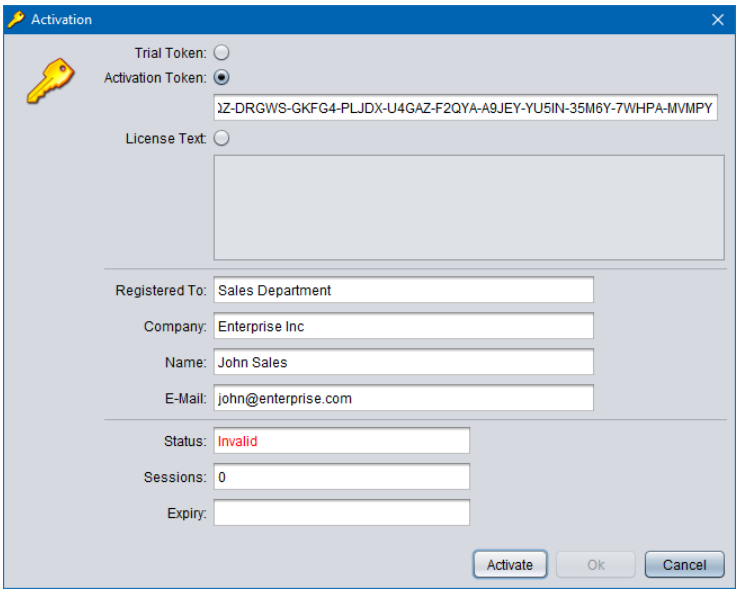


3. Enter the token as you received it from us. For example:

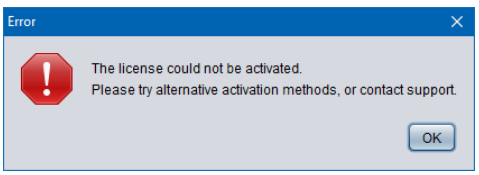


4. Enter ***Registered To***, ***Company***, ***Name*** and ***E-Mail*** as desired. Note that the details that you enter here will be needed to recover the activation license in the event that it is lost or misplaced so make a record of them and keep them in a safe place.

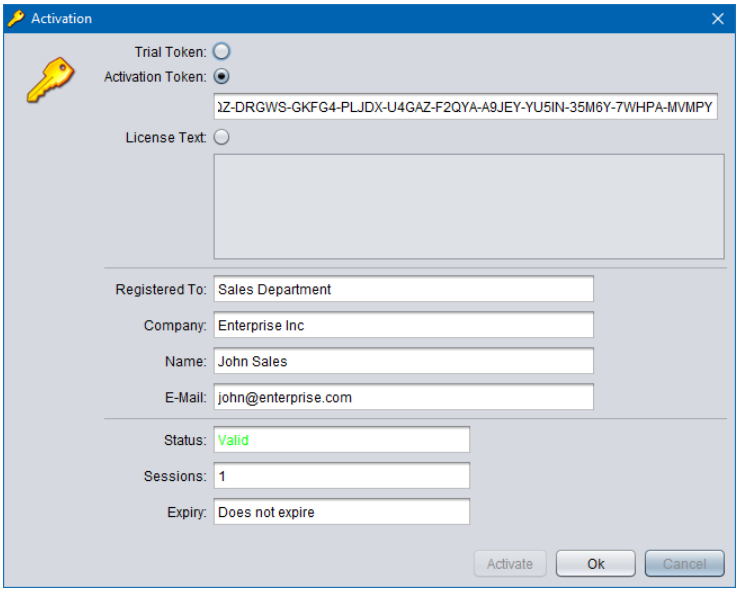
   For example:



5. Select **Activate** to attempt activation. The application will attempt activation (over the Internet) with the Total Recall VR licensing server. If you receive the following error message, then the Activation Token is no longer valid, or it was previously used to activate the application.



6. In most cases the activation will be successful. For example:



7. Select **Ok** to start using the application.

(Re)Activation with License Text

1. We may send you the license text of an activation license if you cannot activate the application over the Internet, or if you have activated the application before and misplaced your activation license for the application on a particular PC. This is an example of license text that you will receive (some lines were removed to save space):

```
# Example Application License (id: 1511837763868)
6729c0c1fc5b9b29b19c4336e2068b75b231474c87cbce079ff39ea741b0
04ec3480fda88ffed82f6dee402293e82e1ece184925ed3510c2189c2b18
4c819332337373235b9e7b8210da6286c2f502de30a0a4140e3a5ddc1102
        :
        :
4abc5a5efd5f38c804a4ee8b45e92495aac362e67cf5c9721a48400c9ee3
8b699a6d3fc266e0d8efabcede2d58427ac92f510576c4250af30d5ad7a2
5cde6395e2493adb54960307e8083ae8
```

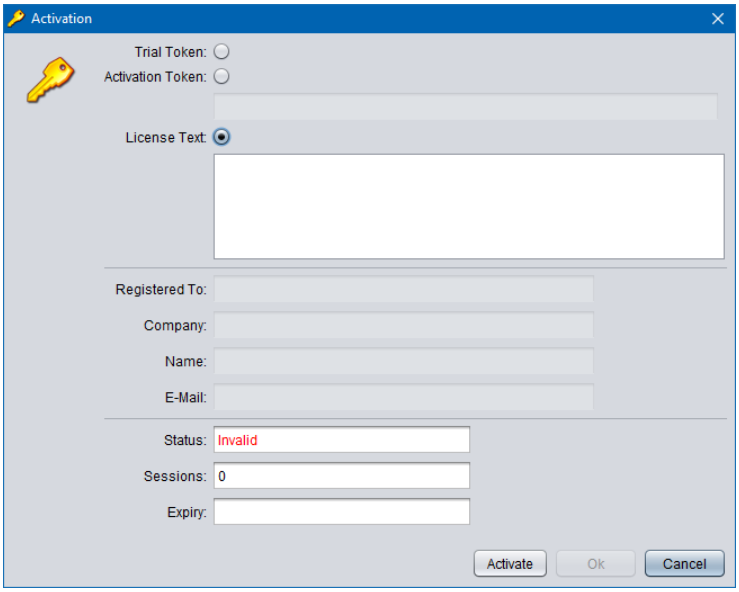
   Note:

   a. The PC does not need Internet access to (re)activate the application with license text.

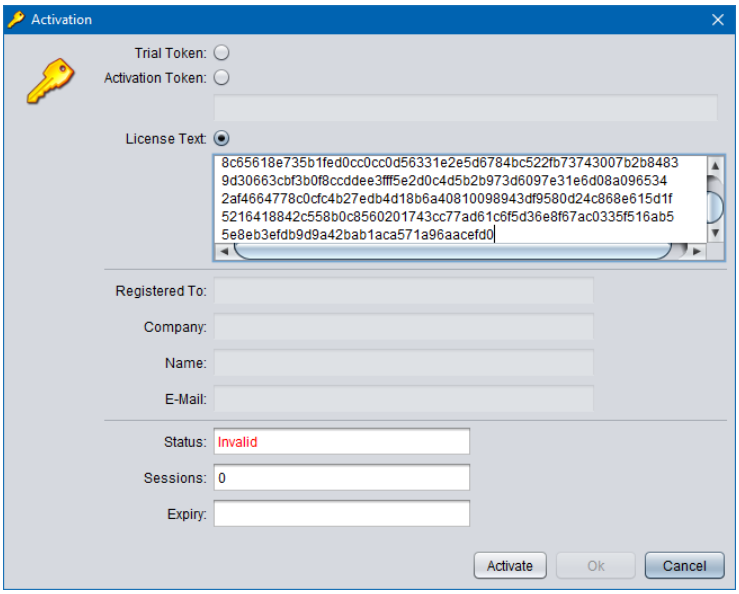
   b. The license text that we will send you is for an existing license which activates the application on the same PC (without hardware modifications) as it was when activated for the first time.

   c. If the activation license is lost due to damaged hard disk, or motherboard and you replace the faulty hardware, then the license text of the original activation license (which we will send you) will no longer be valid as the hardware of the PC changed and you will have to purchase a new license.

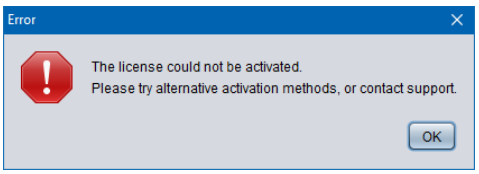
2. To activate the application with a license text select **License Text**.



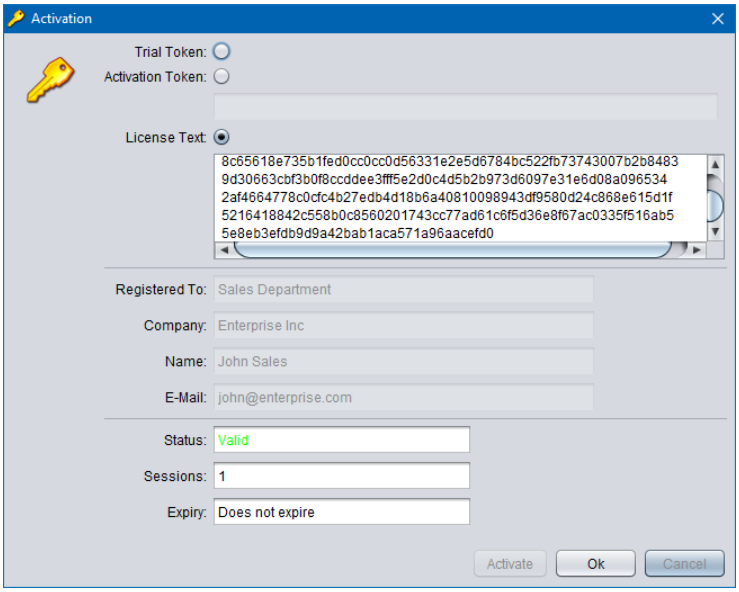
3. Enter the license text as you received it from us. For example:



4. Select **Activate** to attempt activation. If you receive the following error message, then the activation license is no longer valid, or it is for a different application, or it is for a PC with different hardware.



5. In most cases the activation will be successful. For example:

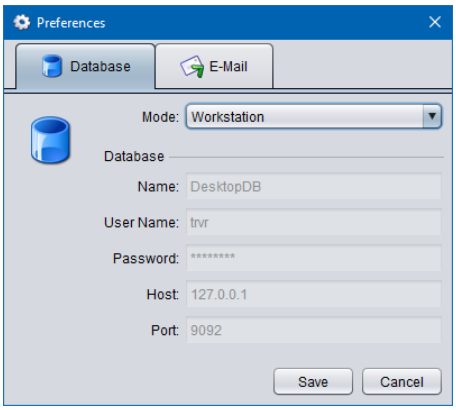


6. Select **Ok** to start using the application.

Once you activate the application (for the first time), it will display the Preference dialog which allows you to configure the application.

Application Configuration

1. The Preferences dialog allows you to configure the application.



2. On the **Database** tab, select ***Mode***. This is the working mode that the application will use. Select one of the following:

    a. *Workstation* if you wish to allow multiple users to use the application but on a single PC – see section 3.3.1 Workstation Mode for more details.

    b. *Workgroup* if you wish to allow multiple users to use the application from multiple PCs – see section 3.3.2 Workgroup Mode for more details.

3. If you select *Workgroup* mode, then enter the details of the central H2 database which contains the configuration for the application:

a. Enter ***Name***. This is the name of the H2 database. All application instances that share the same H2 database must use the same name for the database.

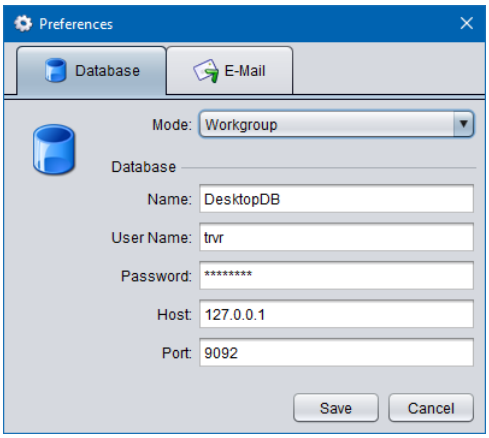
b. Enter ***User Name***. This is the user name that the application will use when connecting to the database. All application instances that share the same H2 database must use the same user name.

c. Enter ***Password***. This is the password that the application will use when connection to the database. All application instances that share the same H2 database must use the same password.

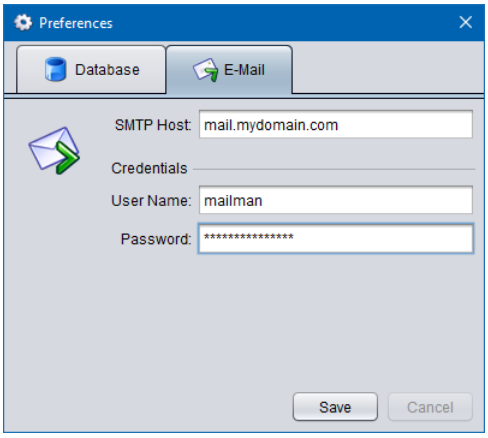
d. Enter ***Host***. This is the IP address, or the host name, of the server which runs the H2 database server.

e. Enter ***Port***. This is the TCP port that is used by the H2 database server to provide database services.

For example:



4. Optionally, and if you wish to enable sending of e-mail from the application, switch to the **E-Mail** tab:

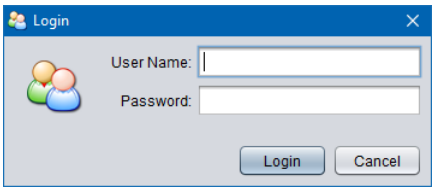


5. To enable sending of e-mail from the application:

a. Enter ***SMTP Host***. This is the IP address, or the host name, of an SMTP e-mail server on your network that the application can use to send e-mail.

b. Optionally, and if your SMTP server requires authentication to send e-mail, enter ***User Name*** and ***Password***.

6. Select **Save** to save the application configuration.
7. The application may take a moment to initialise. When done, it will display the Login dialog:



8. If you are using the application in workstation mode, then use the pre-configured user with application administration rights to log in:
   a. ***User Name***: admin
   b. ***Password***: changeme
9. If you are using the application in workgroup mode, then you can use any user that exists in the central H2 database. However, if this is the first instance of the application, then use the pre-configured user with application administration rights to log in (see the previous step for login details).

Once you login for the first time you should proceed immediately to the Resource Manager where you need to create at least one user (see Users tab) and one recorder connection (see Recorders tab).

4. User Interface

Total Recall VR Manager is collection of applications that work together in a desktop like environment which provides the runtime environment for the applications.

4.1. Desktop

The following screen capture shows the desktop as it appears when all applications are minimised. The applications appear as icons at the bottom edge of the desktop.

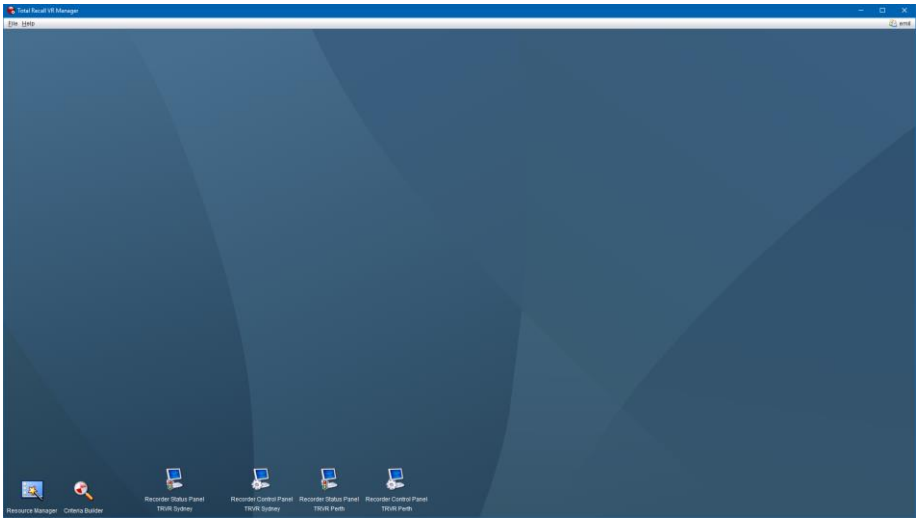


Figure 7: Total Recall VR Manager Desktop

Note that not all icons that you see on the previous screen capture may appear on your instance of the desktop. Section 4.5 Plug and Play explains why. The following screen capture shows a number of applications in use within the desktop.

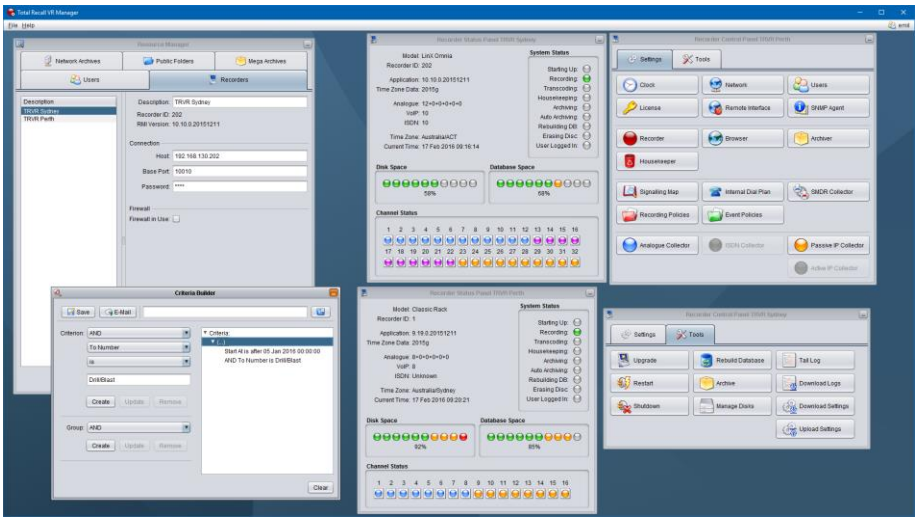
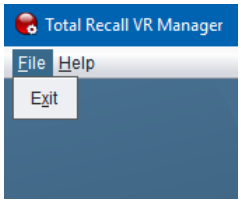


Figure 8: Total Recall VR Manager Desktop with Applications in Use

4.2. Main Menu Bar

The Total Recall VR Manager main menu bar comprises of 3 menus:

4.2.1. File Menu

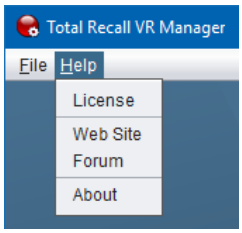


The File menu includes the following options:

1. **Exit**

   It terminates Total Recall VR Manager.

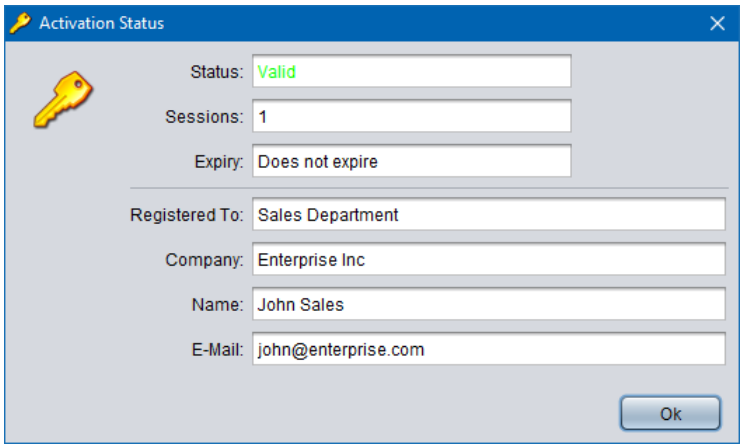
4.2.2. Help Menu



The Help menu includes the following options:

1. **License**

   It displays the Activation Status dialog which shows information on the activation license:



2. **Web Site**

   It starts the default system web browser and loads the front page of the Total Recall VR web site.

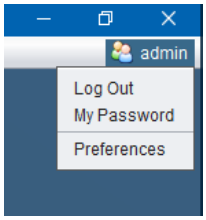
3. **Forum**

   It starts the default system web browser and loads the Forums page of the Total Recall VR web site.

4. **About**

   It display 'about' information about the application including the version number of the application.

4.2.3. User Menu



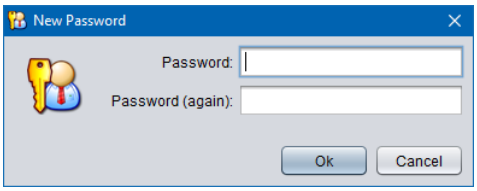
Found in the top right corner of the desktop, and only when a user is logged in, the user menu includes the following options:

1. **Log Out**

   It logs out the current user from the desktop. This will close all applications and show the log in dialog so another user can log in and proceed to use the application.

2. **My Password**

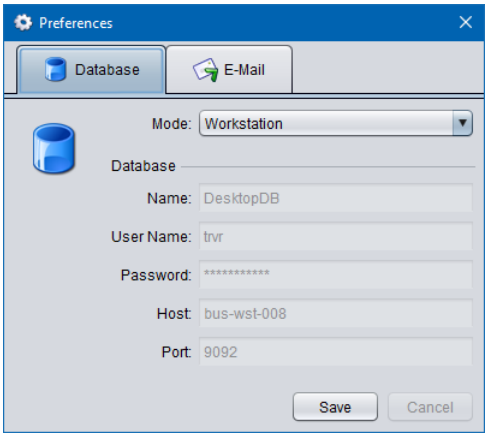
   Displays the My Password dialog which allows the current user to change his/her own password:



3. **Preferences**

   This item appears on the menu only is the current user has application administration rights.

   It displays the Preferences dialog which allows you to configure the application.



4.3. Applications

Total Recall VR Manager comprises of the following applications:

Resource Manager

Resource Manager is an application that provides for configuration of application resources such as users, Total Recall VR systems, location of network drives which contain Total Recall VR network archives, Public Folder archives and Mega archives.

This application appears on the desktop only, if and only if, the current user has administrative privileges for the application.

Criteria Builder

Criteria Builder is an application that provides for the creation, editing and sharing of comprehensive natural language search queries.

The queries that are created by this application can be shared by multiple recording explorer applications and the event player and monitor applications. In addition, the queries can be used as recording filter on the users' profile.

This application is always present on the desktop.

Recorder Control Panel

Recorder Control Panel is an application that provides for remote configuration management of the configuration of Total Recall VR systems. In addition, the application has provisions for performing a comprehensive set of maintenance activities on Total Recall VR systems.

This application appears on the desktop only if the current user has authority to manage recorders.

Recorder Status Panel

Recorder Status Panel is an application that shows the status of Total Recall VR systems as well as the status of recording channels on Total Recall VR

systems in near real-time.

This application appears on the desktop only if the current user has authority to manage recorders.

4.4. Drag and Drop

Drag and drop is a user interface gesture in which you select an object on the screen with a pointing device (mouse for example) and then drop it on top of another object on the screen to invoke a desired action. It is used extensively by Total Recall VR Manager.

Applications share data (recordings, search queries etc.) via drag and drop. So it is important to familiarise yourself with drag and drop (or DnD as it is otherwise known) in GUI environments if you are not already familiar with it.

For example, to load a filter criteria in the Resource Manager you simple select the criteria in the Criteria Builder with your mouse, drag it to the Filter area of Resource Manager and drop it there.

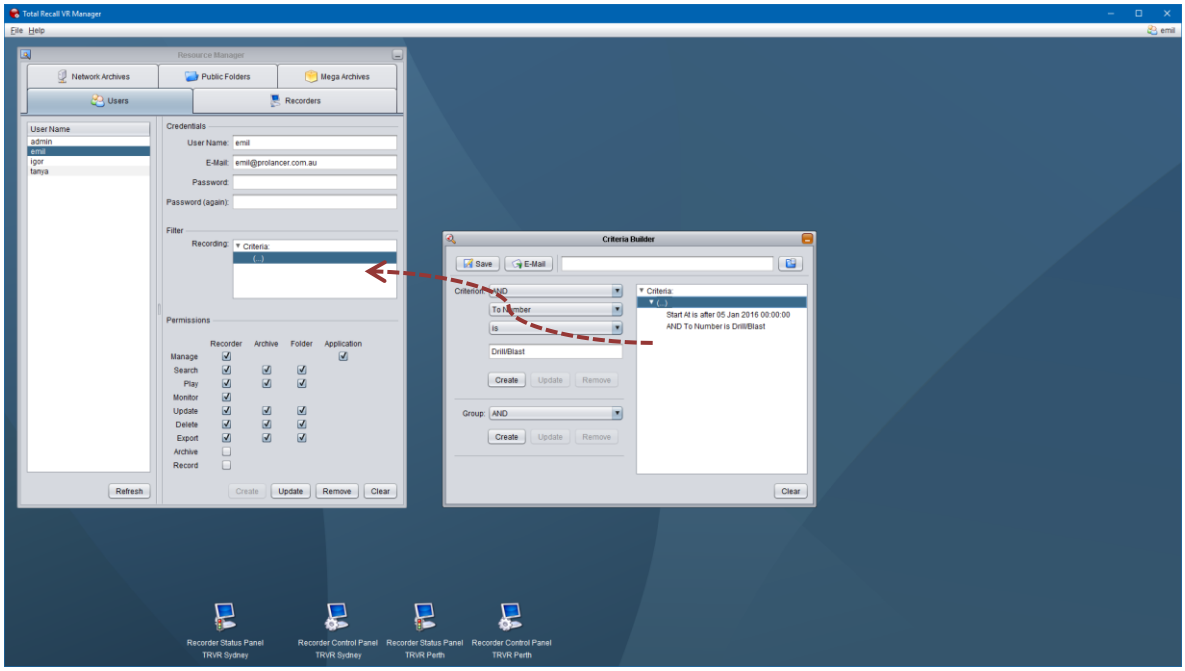


Figure 9: Using DnD to Load Filter Criteria

4.5. Plug and Play

Plug and play is another important feature of Total Recall VR Manager.

Plug and play is a technology that enables Total Recall VR Manager to automatically detect Total Recall VR systems and automatically load and show applications on the desktop. The same technology enables Total Recall VR Manager to hide and unload applications when a network connection to a Total Recall VR system breaks for example.

This technology makes the content of the desktop dynamic. Applications appear on, and disappear from, the desktop as events happen.

For example, here is the content of the desktop when there is network access to Total Recall VR systems:

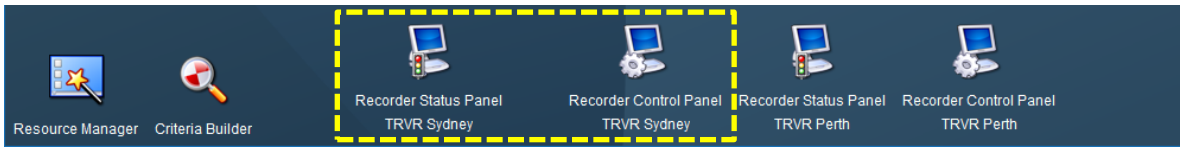


Figure 10: Desktop Icons with Network Access to Total Recall VR Systems

If the network connection to a Total Recall VR system breaks, the desktop will change to the following:

Figure 11: Desktop Icons without Network Access to Total Recall VR Systems

Note how the Recorder Status Panel and Recorder Control Panel disappear from the desktop when the recorder is no longer accessible over the network.

This behaviour is consistent with the behaviour of the Windows desktop, and other popular desktops. For example Windows automatically creates and removes drives for discs and USB devices when attached and detached.

5. Resource Manager

Resource Manager is an application that provides for configuration of application resources.

Use Resource Manager to configure applications resources for Total Recall VR Manager as well as other Total Recall VR PC applications when working in workgroup mode.

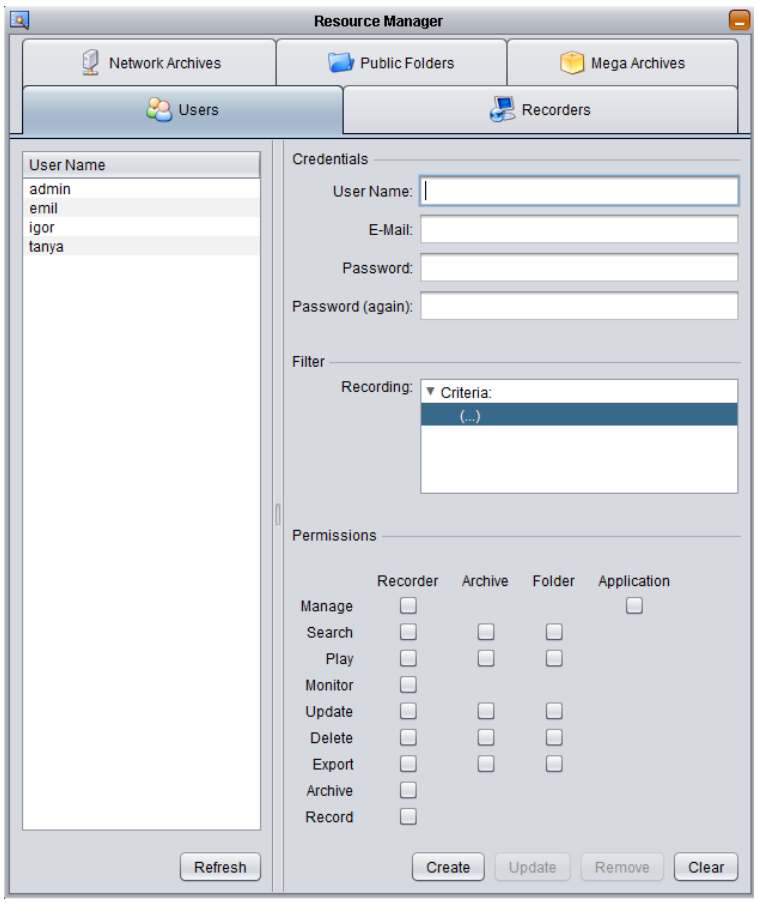


Figure 12: Resource Manager Application

You must use Resource Manager to configure:

- Users - application users including authentication credentials (username and password), permissions and a recording filter.
- Recorders - connections to the Remote Manager Interface provided by Total Recall VR systems to allow application users to access recordings on the systems.
- Network Archives – location and access credentials for network drives which contain Total Recall VR network archives.
- Public Folder – folders on the local machine, or network drives, which users can use as Public Folders.
- Mega Archives – location and access credentials for Total Recall VR mega archives.

Total Recall VR Manager stores all resources in a database. The location of the database depends on the application working mode (see section 3.3 Application Working Mode for more details).

5.1. Users

Total Recall VR Manager uses its own database of users to control access to the application and to features of the applications.

Use the **Users** tab to create, update and remove application users.

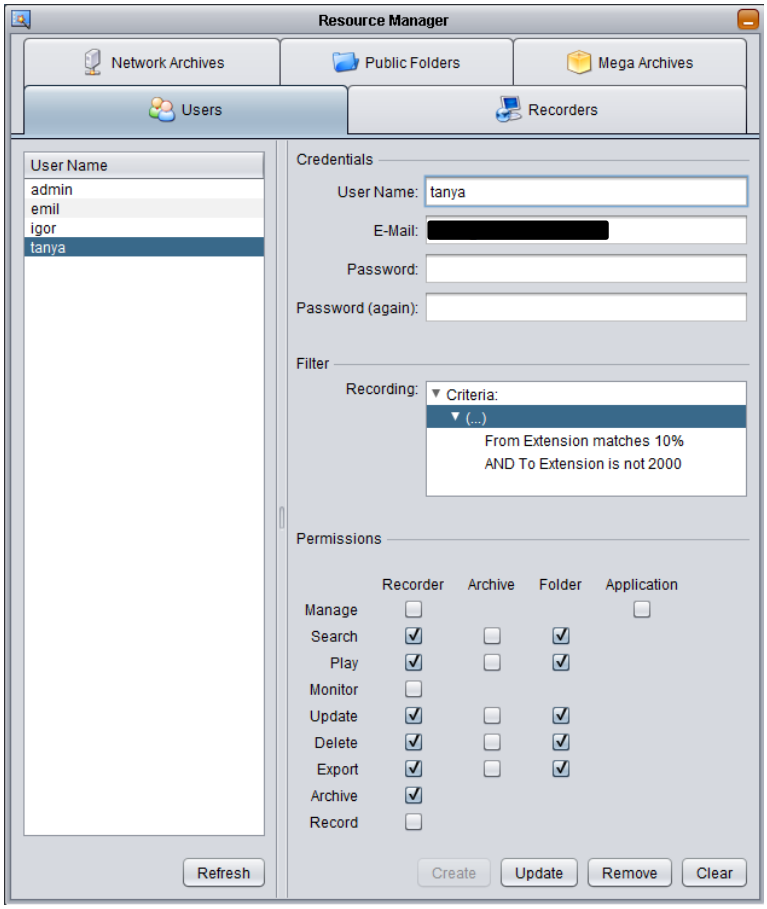


Figure 13: Resource Manager - Users Tab

You must define the following for each user: access credentials, filters and permissions.

5.1.1. Access Credentials

Access credentials comprise of the standard username and password and an optional e-mail address.

The username and password allow access to the application. Both are mandatory and the password must comply with the following rules:

- Minimum 8 and maximum 16 characters.
- Contains at least one alpha and one numeric character.
- Does not contain the same character (alpha or numeric) more than 3 times.

The e-mail address is optional and if present allows the user to send e-mail messages from the application. If you wish to disallow e-mail sending for the user simply leave ***E-Mail*** blank.

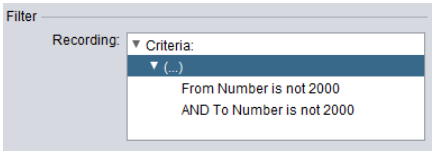
5.1.2. Filters

At this stage there is only one filter that you can specify for a user, a recording filter.

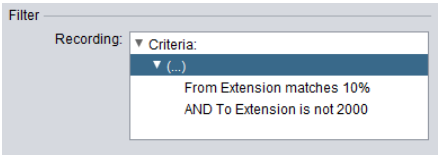
The application uses the recording filter to filter recordings when the user runs standard search queries and when monitoring. The filter criteria are automatically added to each search query that the user runs and to recordings in progress. As a result, the filter is automatically applied to all searches and while monitoring.

Use the Criteria Builder application to create recording filters. When a filter is ready to assign to a user record simply drag and drop the filter from the Criteria Builder window to the ***Recording*** area.

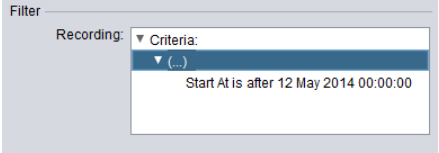
There are no rules on how to structure a filter and you can choose to use exclusion, inclusion or a combined filter. The following is an example of an exclusion filter which will remove all recordings with To Number and From Number set to 2000 from all search results and while monitoring:



The following is an example of a combined filter which will keep recordings with From Extension that starts with the digits ‘10’ and at the same time remove all recordings with To Extension set to 2000 from all search results and while monitoring.



The possibilities are endless and the filters are not limited to the numbers fields. For example you can create a filter that excludes all recordings that were recorded before 12th of May 2014 from all search results as follows:



5.1.3. Permissions

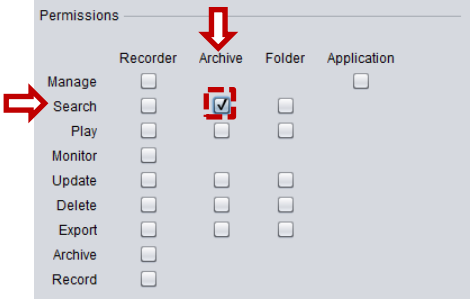
The application uses a set of permissions to control access to various features of the applications.

Unlike other applications, there are no predefined roles (permission sets) and you are free to set a different set of permissions for each user. This has the effect of defining a role for each user while at the same time users with the same set of permissions belong to the same role.

Permissions have two components:

1. Resource – recorder, archive, folder and application; and
2. Operation – manage, search, play etc.

So, to define a permission for a user, simply tick the check box that sits in the cross of a resource and an operation. For example, the following shows how to give a user permission to search archives:



The following table shows the permissions that are used by Total Recall VR Manager. If a permission does not appear in the table, then it is not used by Total Recall VR Manager and if it is set for a user it will have no impact on the user's experience with the application.

Resource	Operation	Explanation
Recorder	Manage	Allows users to manage the configuration of Total Recall VR systems and perform a comprehensive set system maintenance operations on Total Recall VR systems. Users must have this permission in order to access the Recorder Status Panel and the Recorder Control Panel application. Do not give this permission to users unless you are absolutely sure that they should be allowed to edit the configuration on Total Recall VR systems and perform maintenance tasks on Total Recall VR systems.
Application	Manage	Allows users to manage the application configuration and resources. In particular it allows access to the Resource Manager application and the (application) Preferences dialog. Do not give this permission to users unless you are absolutely sure that they should be allowed to edit the application configuration and resources.

5.2. Recorders

Total Recall VR Manager uses its own database of Total Recall VR systems. Each record defines connection details for the Remote Manager Interface provided by Total Recall VR systems.

If you have multiple Total Recall VR systems, then you must assign a different recorder ID to each system before you can configure Total Recall VR Manager to connect to them.

See the Total Recall VR Embedded GUI User Guide [5] on how to assign a recorder ID to your systems.

You must configure the Remote Manager Interface on your Total Recall VR systems before you configure Total Recall VR Manager to connect to them.

See section 3.4.3 Remote Interface for more details.

Use the **Recorders** tab to create, edit and remove connection details to Remote Manager Interfaces provided by Total Recall VR systems.

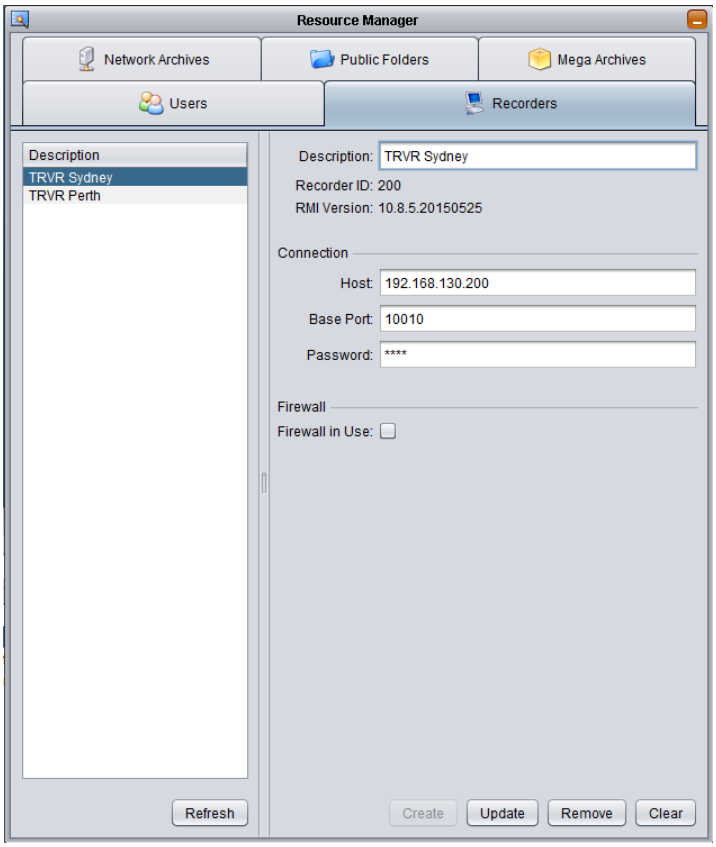
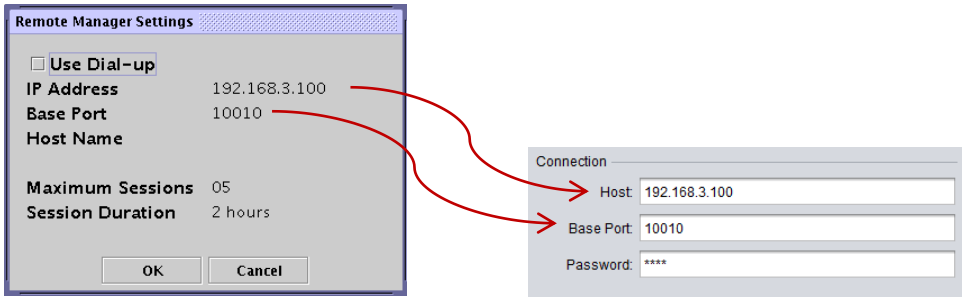


Figure 14: Resource Manager - Recorders Tab

The ***Host*** and ***Base Port*** entries in the **Connection** section must reflect the configuration of the Remote Manager Interface on a Total Recall VR system as shown on the following screen captures:



Password must be set to the password assigned to the Administrator user on the Total Recall VR system. By default this password is '0000' (four zeroes); however, you may have changed it to a different value.

Do not use the password assigned to the non-administrative user on the Total Recall VR system.

If there is a firewall between the networks that connect the PC that runs Total Recall VR Manager and the Total Recall VR system, then tick ***Firewall in Use*** and then change ***Host*** and ***Base Port*** as described in the Total Recall VR Deployment Guide [4].

For more details on connecting to the Remote Manager Interface of a Total Recall VR system on networks that uses firewalls please see section 12 Remote Manager Interface Application Deployment in the Total Recall VR Deployment Guide [4].

The following table shows the ports that Total Recall VR Manager uses when interacting with a Total Recall VR system:

Port	Type	Usage
10010	TCP	This is the default port used by the Remote Manager Interface on Total Recall VR systems. However, it is user configurable and can be set to a different value.
4040	TCP	Used to post audit events to the recorder using the HTTP protocol.

22	TCP	Used to execute remote commands on the Total Recall VR system as well as transfer files from and to the Total Recall VR system. This is the same port used by the SSH and SCP protocols.
10012	TCP	Default port + 2, so it may change if you change the default port (10010) for the Remote Manager Interface. Used instead of TCP port 22 when ***Firewall in Use*** is set in the configuration.

5.3. Network Archives

Total Recall VR Manager does not connect to network drives, however you can use Total Recall VR Manager to configure connection details for network drives that are used to store Total Recall VR network archives in order to allow users of other Total Recall VR PC applications to access the archives on the drives.

Use the **Network Archives** tab to create, edit and remove connection details for network drives that house Total Recall VR network archives.

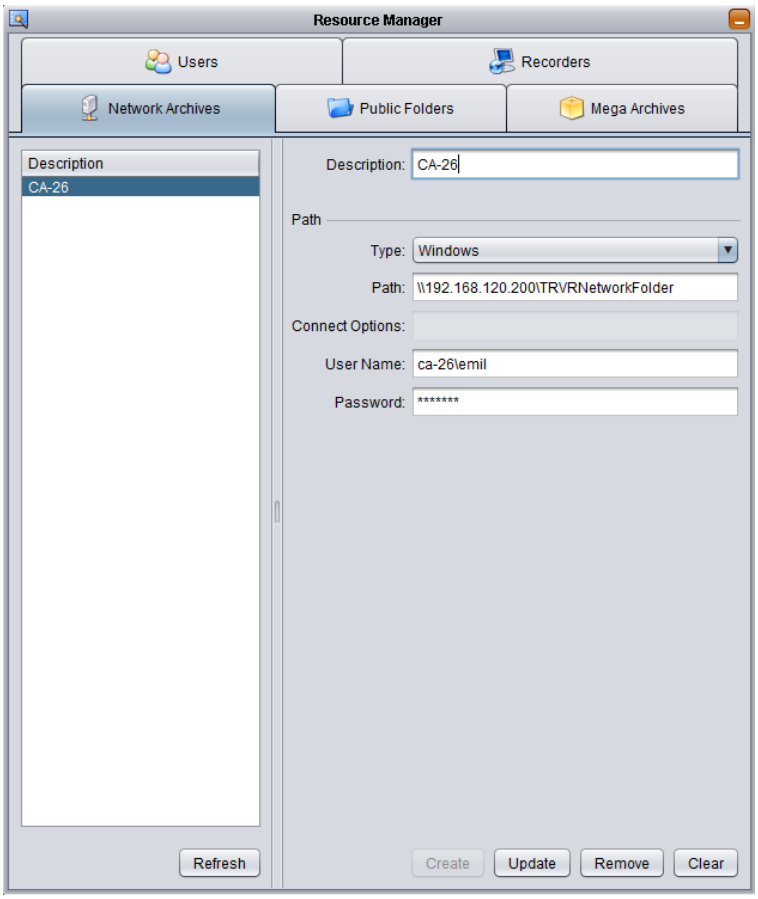
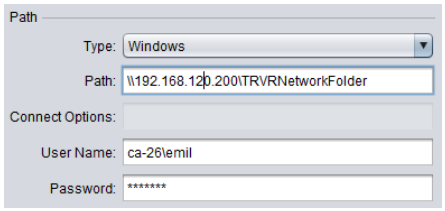
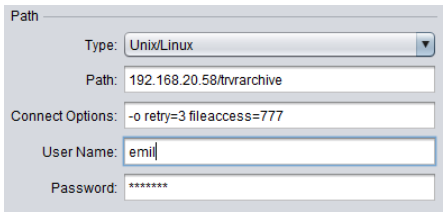


Figure 15: Resource Manager - Network Archives Tab

Total Recall VR PC applications support two types of network drives: Windows and Unix/Linux (via NFS).

The following are example configuration for a Windows and a Unix/Linux network drive:





Connect Options are not applicable when connecting to Windows network drives. However, Total Recall VR PC applications pass the connection options directly to the NFS client when connecting to Linux network drives.

See http://technet.microsoft.com/en-us/library/cc754350.aspx for details on connection options used by the Windows NFS client.

5.4. Public Folders

Total Recall VR Manager cannot access and manage recordings in Public Folder archives. However, you can use Total Recall VR Manager to create Public Folders that users of other Total Recall VR PC applications can use.

Public Folders are ad-hoc archives that users can create while using Total Recall VR PC applications.

Public Folder archives have no restrictions on number of recordings; however, the intended use of this type of archives is to create small collections of recordings from various sources in order to share recordings with multiple users of Total Recall VR PC applications. This is similar to public folders that you may create in other applications to share documents or e-mail messages for example.

The type of public folder that you can create depends on the Total Recall VR Manager working mode – see section 3.3 Application Working Mode.

5.4.1. Workstation Public Folders

If you are using Total Recall VR Manager in workstation mode (see 3.3.1 Workstation Mode) then the Public Folders that you can create can use disk space for its database and recording files on one of the local disks that are attached to the PC that runs Total Recall VR Manager. This can be an internal disk or an external disk (USB, eSATA etc).

If a Public Folder is using a local disk or directory, then it cannot be accessed by instances of Total Recall VR PC applications that run on different PCs. If you wish to allow access to a Public Folders from different PCs, then you must use disk space on a network accessible drive.

In both cases, the Public Folder will store its database and recording files in the same location.

Use the **Public Folders** tab to create, edit and remove Public Folders.

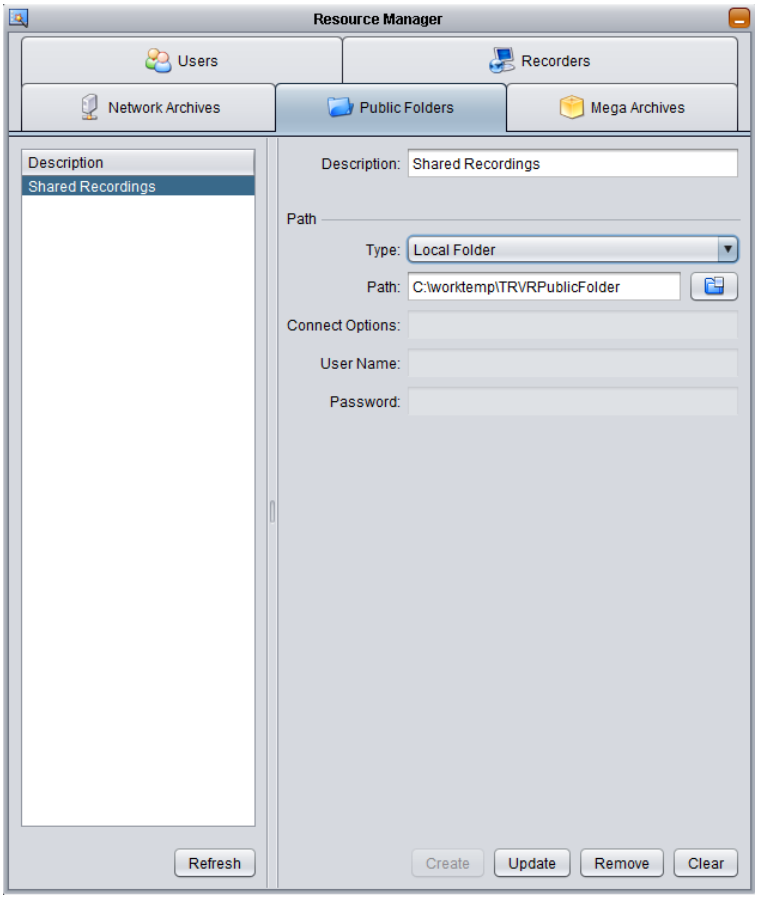
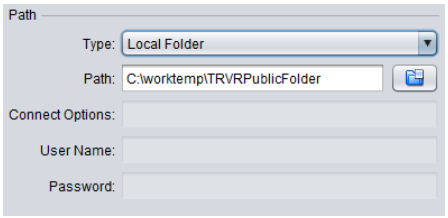
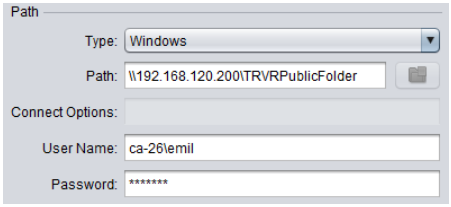


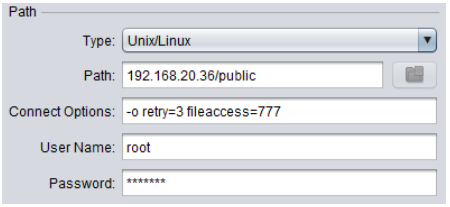
Figure 16: Resource Manager – Workstation Public Folders

The following is an example configuration of a Public Folder that is using disk space on a local drive:



The following are example configuration for Public Folders that use disk space on a network drive:





The ***Connect Options*** are not applicable when using Windows network drives. However, Total Recall VR PC applications pass the connection options directly to the NFS client when connecting to Linux network drives using NFS.

See http://technet.microsoft.com/en-us/library/cc754350.aspx for details on connection options used by the Windows NFS client.

If you decide to remove a Public Folder, then note that the content of the archives remains on disk when you remove the Public Folder record in Resource Manager. You must manually delete the content on disk if you wish to completely delete (destroy) the Public Folder archive.

5.4.2. Workgroup Public Folders

If you are using Total Recall VR Manager in workgroup mode (see 3.3.2 Workgroup Mode) then you must specify disk space for recording files on a network drive and a database for recording metadata on a working H2 database server.

Multiple instances of Total Recall VR PC applications that run on multiple PCs can access workgroup Public Folders.

Use the **Public Folders** tab to create, edit and remove Public Folders.

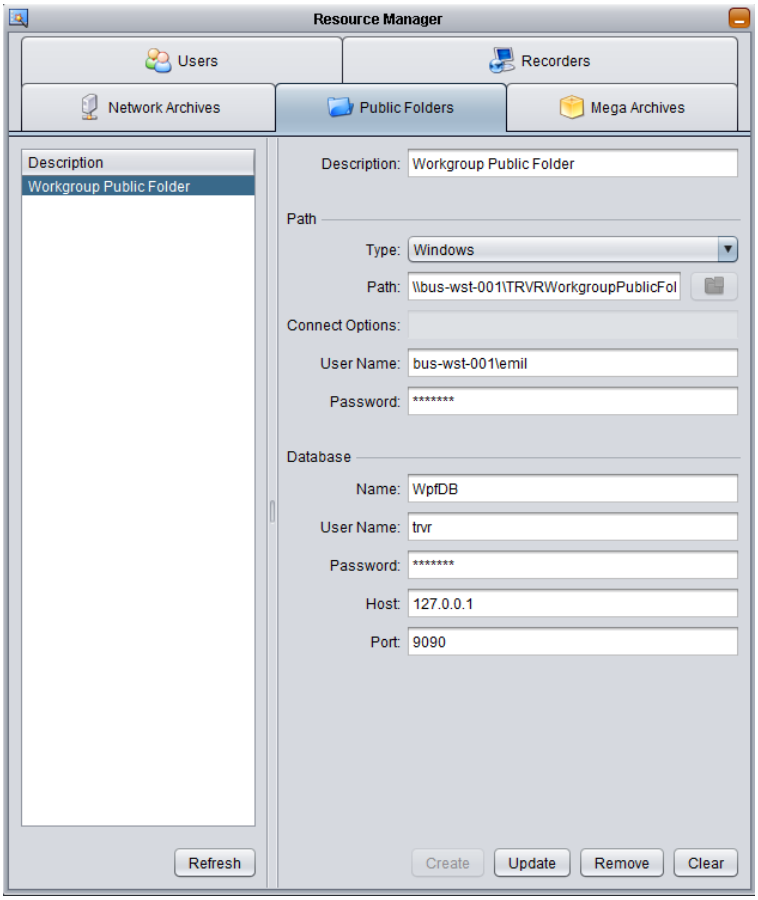
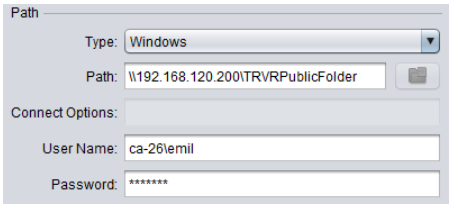
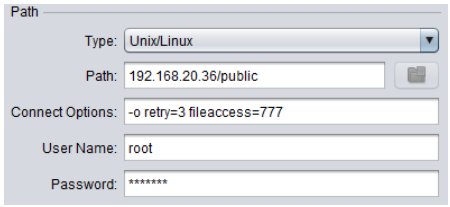


Figure 17: Resource Manager - Workgroup Public Folders

The following are example configuration for Public Folders that use disk space on a Windows and Linux network drive:





The ***Connect Options*** are not applicable when using Windows network drives. However, Total Recall VR PC applications pass the connection options directly to the NFS client when connecting to Linux network drives using NFS.

See http://technet.microsoft.com/en-us/library/cc754350.aspx for details on connection options used by the Windows NFS client.

If you decide to remove a Public Folder, then note that the content of the archives remains on disk and database when you remove the Public Folder record in Resource Manager. You must manually delete the content on disk and the database file if you wish to completely delete (destroy) the Public Folder archive.

5.5. Mega Archives

Total Recall VR Manager cannot access and manage recordings that are stored in Total Recall VR mega archives. However, you can use Total Recall VR Manager to configure mega archives that users of other Total Recall VR PC applications can access.

Mega archives are a new type of archives which unlike all other types of archives are designed to store unlimited number of recordings. Of course, disk space limits apply.

In addition, unlike all other types of archives, Total Recall VR Archiver creates this type of archive. Total Recall VR systems cannot create this type of archive.

Mega archives comprise of a database and disk storage for audio files. To configure a mega archive, you must specify connection details and credentials to a database and the associated disk storage. The disk storage can be available as a local drive on the machine where you are running Total Recall VR Manager, or a network drive.

Use the **Mega Archives** tab to create, edit and remove mega archives.

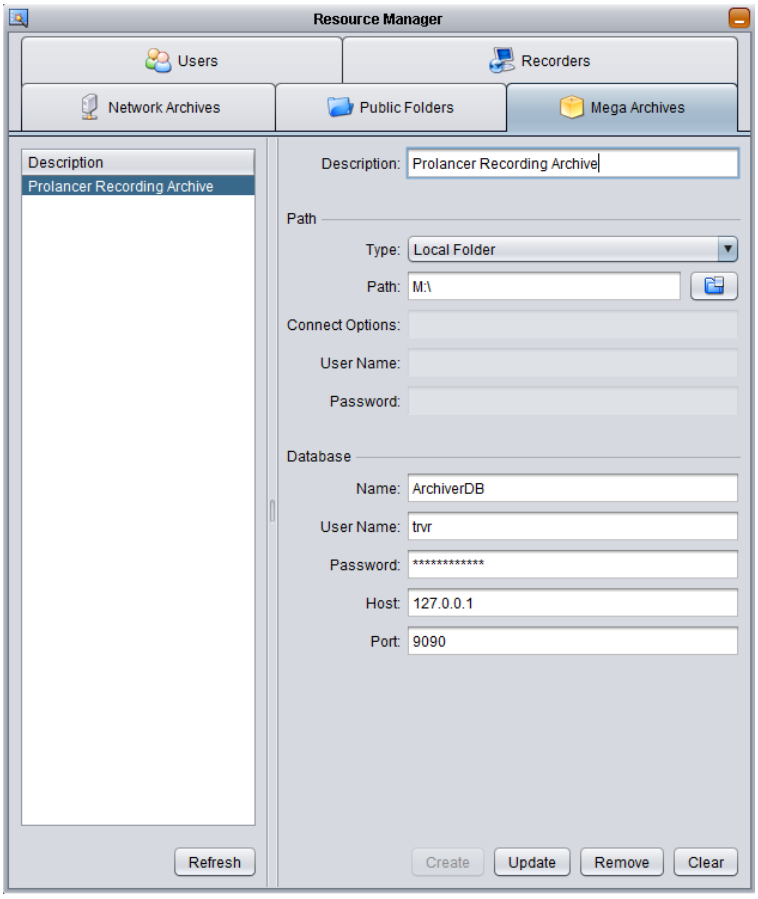
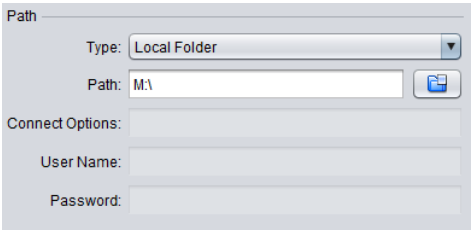
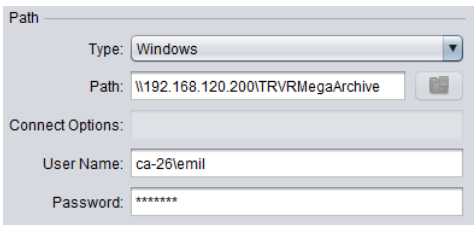


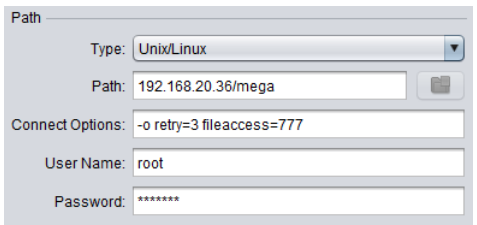
Figure 18: Resource Manager - Mega Archive

The following is an example configuration of a Mega Archive that is using disk space on a locally mapped drive:



The following are example configuration for Mega Archives that use disk space on a network drive:





The ***Connect Options*** are not applicable when using Windows network drives. However, Total Recall VR PC applications pass the connection options directly to the NFS client when connecting to Linux network drives using NFS.

See http://technet.microsoft.com/en-us/library/cc754350.aspx for details on connection options used by the Windows NFS client.

6. Criteria Builder

Criteria Builder is an application that provides for the creation, editing and sharing of comprehensive natural language search queries.

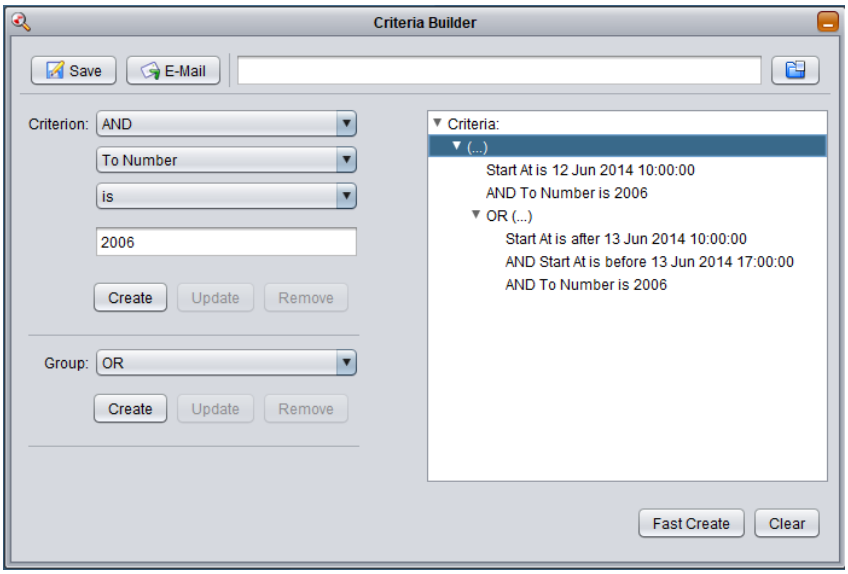


Figure 19: Criteria Builder Application

Use Criteria Builder to create natural language search queries and then share them with user of other Total Recall VR PC applications.

Criteria Builder also allows you to save queries to files as well as send queries via e-mail to other users directly from the application.

Not sure how to create a query? Or struggling to get the right query?

E-mail us the details of the query that you wish to create and we will e-mail you a query file which you can load into Criteria Builder and then use it in the application.

This is a free service.

6.1. Anatomy of Queries

Criteria Builder creates queries which comprise of criteria that may be organised into groups. Criteria and groups may be joined with logical ‘and’ and ‘or’ operators to form complex queries.

The main building blocks of each query are criteria. For example:

- Start At is after 12 Jun 2014 10:00:00
- To Number is 2006
- From Extension matches 10%

You can join criteria together with ‘and’ and ‘or’ to create conjunctions and disjunctions. For example:

- Duration is more than 00:01:00 AND To Number is 2006
- To Number is 1000 OR To Extension matches 10%

Criteria Builder does not impose a limit on the number of criteria that are joined with ‘and’ and ‘or’.

You can organise criteria into groups and then join whole groups with ‘and’ and ‘or’ to create complex conjunctions and disjunctions. For example:

- Duration is more than 00:01:00 AND (To Number is 1000 OR To Extension matches 10%)
- (Start At is after 12 Jun 2014 10:00:00 AND Duration is more than 00:01:00) AND (To Number is 1000 OR To Extension matches 10%)

Criteria Builder does not impose a limit on the number of groups and the level of nesting of groups.

6.2. Criterion Comparators

An integral part of each criterion is a comparator. Criteria Builder supports the following comparator (most are self-explanatory):

Operator	Description
is	Matches values that are same as the one specified.
is not	Matches values that are NOT the same as the one specified.
is less than	Matches values that are less than the one specified.
is more than	Matches values that are more than the one specified.
is before	Matches values that are before the one specified.
is after	Matches values that are after the one specified.
matches	Matches values that match the specified pattern. The pattern comprises of alphanumeric characters and the following wildcard characters:

	% - matches zero or more alphanumeric characters. For example: 10% matches any sequence of characters that start with 10. To match the actual % character use '\%'. _ - matches exactly one character. For example: 10_ matches any sequence of 3 characters that start with 10. To match the actual _ character use '_'.

6.3. Creating Queries

The flexibility of Criteria Builder enables creation of complex queries. Also, queries that result in the same search outcome may take different forms and shapes. Consequently, it is impossible to explain here how you can create every possibly query. Instead we explain how you can create the following example query:

To Number is 2006 AND (

(Start At is after 12 Jun 2014 10:00:00 AND

Start At is before 12 Jun 2014 17:00:00)

OR

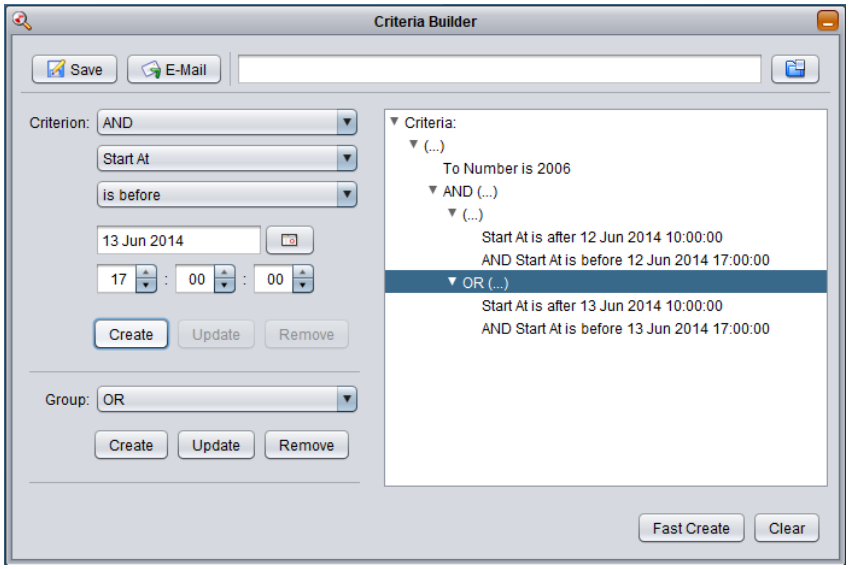
(Start At is after 13 Jun 2014 10:00:00 AND

Start At is before 13 Jun 2014 17:00:00)

)

The query basically identifies all recordings which have To Number set to 2006 and started between the hours of 10am and 5pm on the 12th and 13th of June 2014.

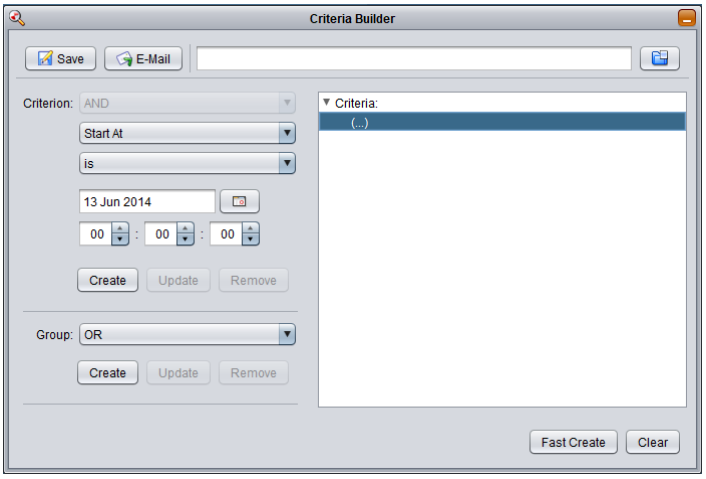
The following screen capture shows the query in Criteria Builder:



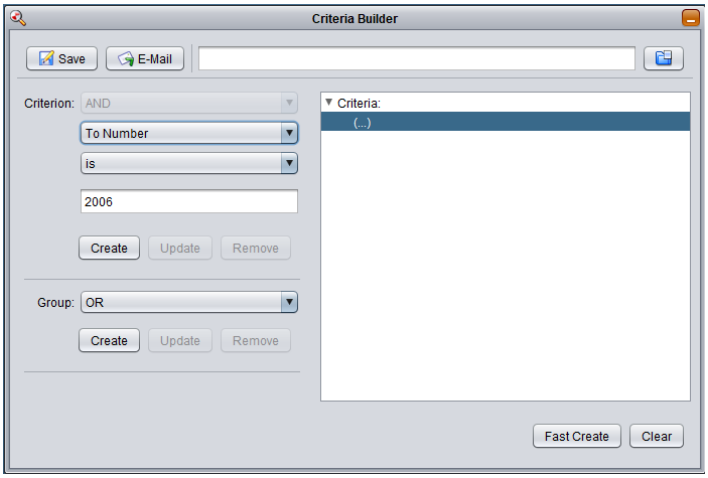
The example query comprises of 5 criteria and 3 groups one of which is used to group two groups.

Example query creation

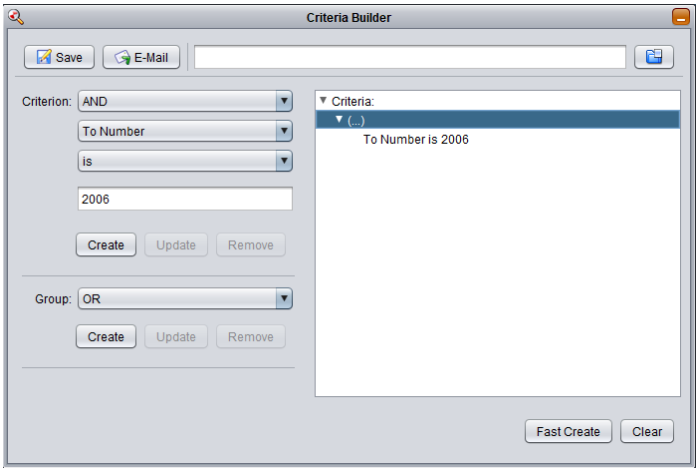
1. New queries start with an empty Criteria tree:



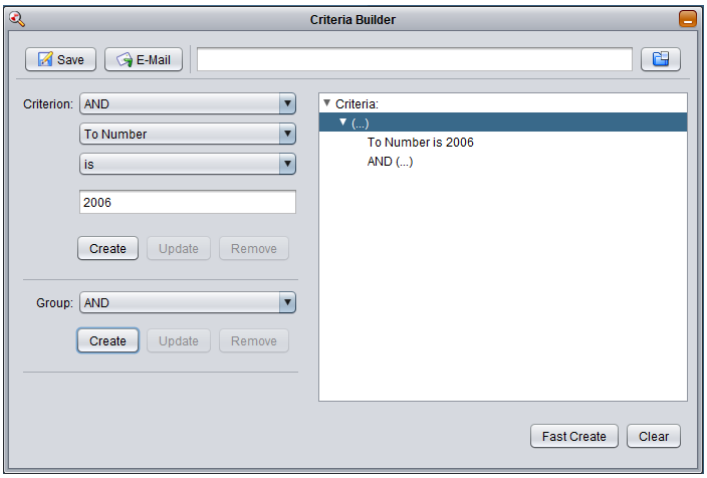
2. To create the first criterion (*To Number is 2006*), first set ***Criterion*** as shown on the following screen capture:



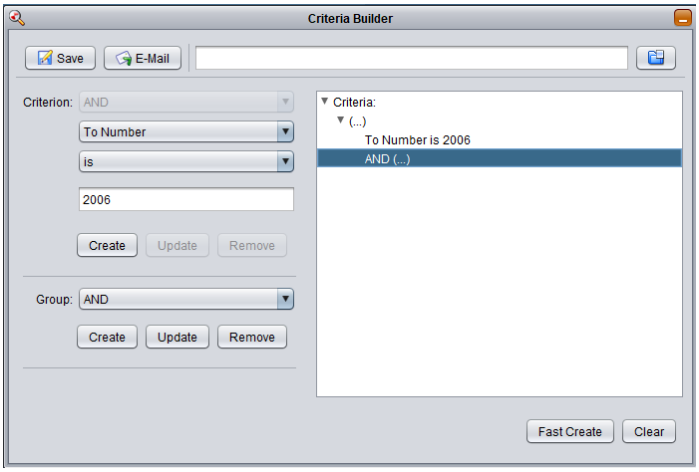
3. Now select **Create** in the **Criterion** area to add the criterion to the Criteria tree:



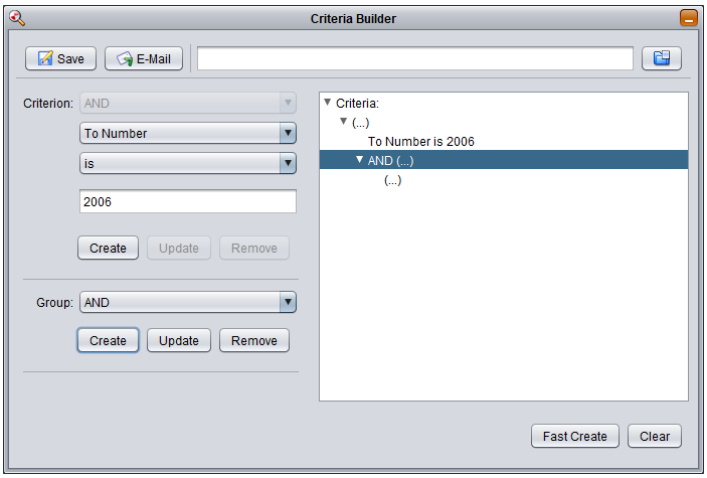
4. Now we need to create the group that will hold the two groups with the Start At criteria. Choose AND for ***Group*** and then select **Create** in the **Group** area to add the group to the Criteria tree:



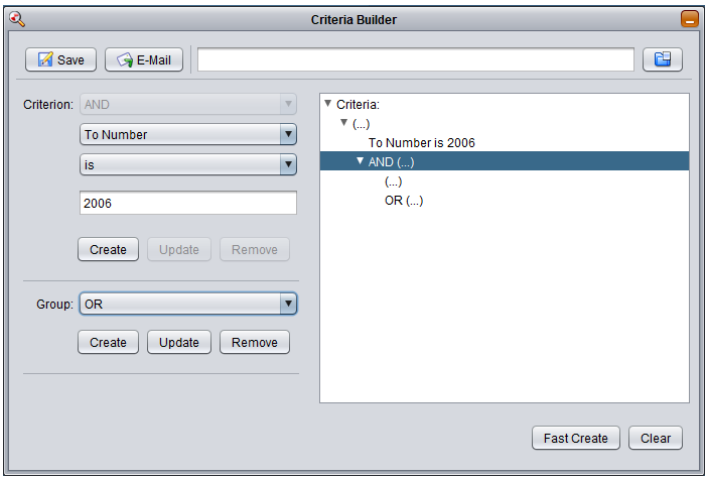
5. The new group comprises of two groups which are joined with “or” in our example query. So we will create the two groups first. To do so, select the group node that we just created on the Criteria tree:



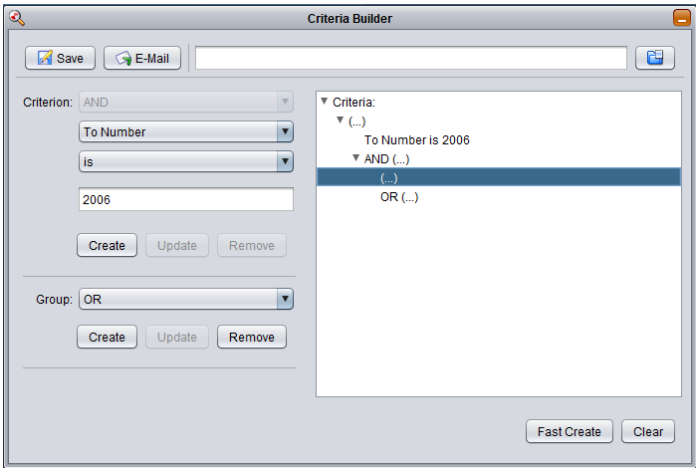
6. Choose AND for ***Group*** and then select **Create** in the **Group** area to add the first group to the Criteria tree:



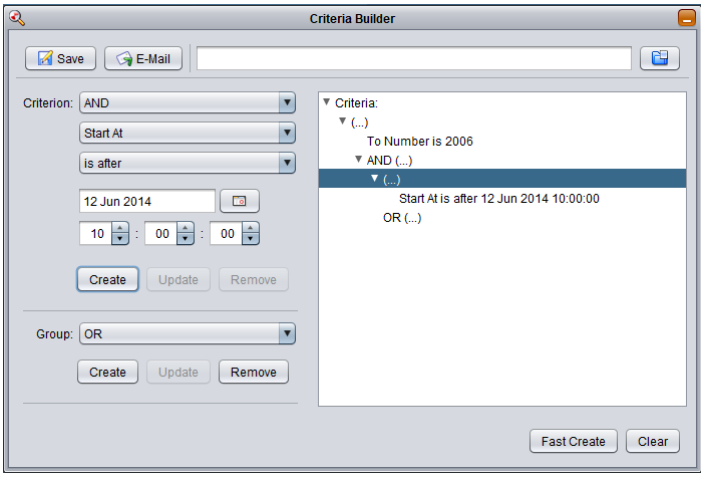
7. Choose OR for ***Group*** and then select **Create** in the **Group** area to add the second group to the Criteria tree:



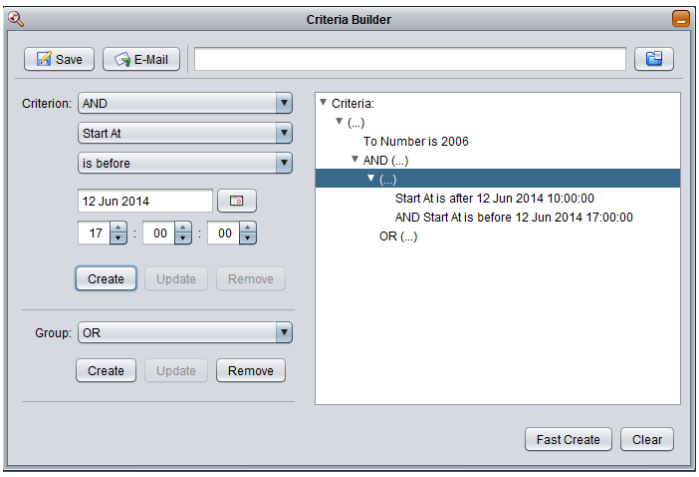
8. Now we will add the criteria for 12th of June. To do so, select the first sub-group in the Criteria tree:



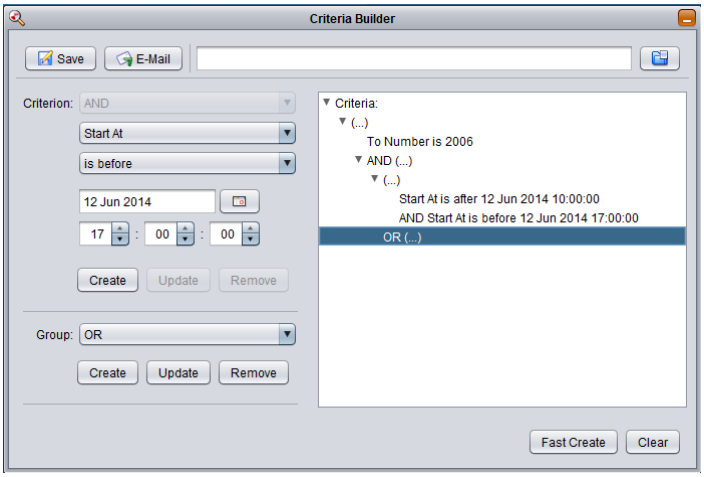
9. To create the first criterion for 12th of June (*Start At is after 12 Jun 2014 10:00:00*), first set ***Criterion*** as shown on the following screen capture, and then select **Create** in the **Criterion** area:



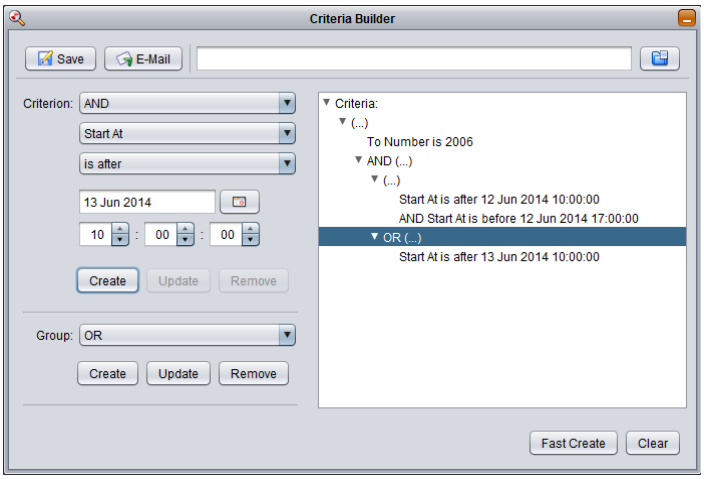
10. To create the second criterion for 12th of June (*Start At is before 12 Jun 2014 17:00:00*), first set ***Criterion*** as shown on the following screen capture, and then select **Create** in the **Criterion** area:



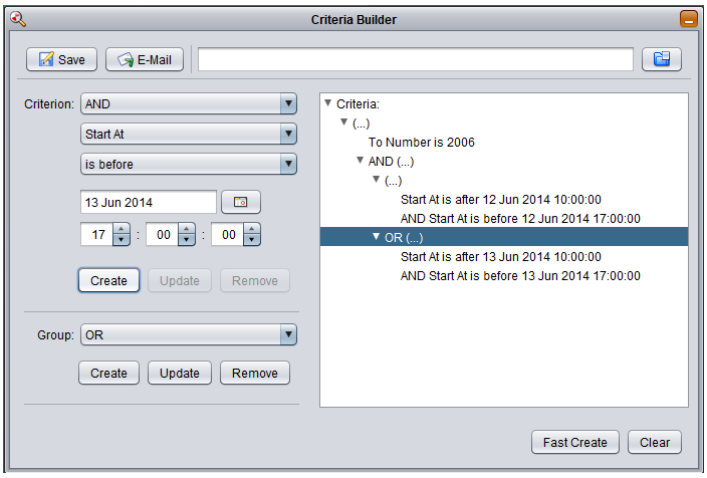
11. Finally we will add the criteria for 13th of June. To do so, select the second sub-group in the Criteria tree first:



12. To create the first criterion for 13th of June (*Start At is after 13 Jun 2014 10:00:00*), first set ***Criterion*** as shown on the following screen capture, and then select **Create** in the **Criterion** area:



13. To create the second criterion for 13th of June (*Start At is before 13 Jun 2014 17:00:00*), first set ***Criterion*** as shown on the following screen capture, and then select **Create** in the **Criterion** area:



14. The query is now complete and you can simply drag to an explorer window and then drop it to initiate a search based on the query.

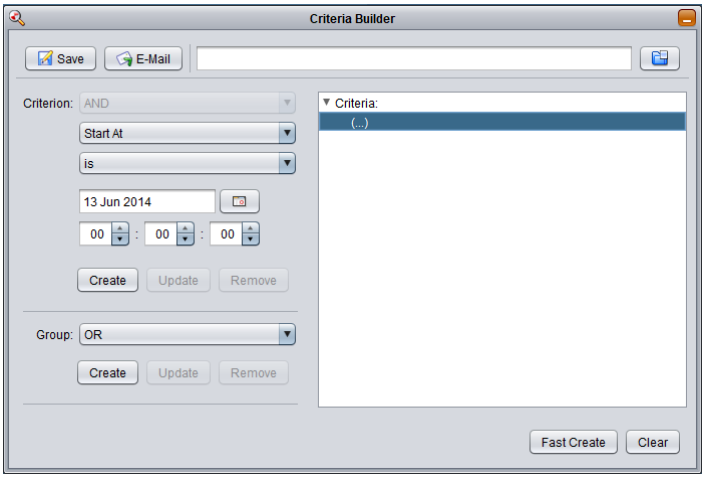
6.4. Fast Queries

The previous sections explains the flexibility of Criteria Builder, however if you find the flexibility a bit overwhelming then it is possible to create simple, but very useful queries using the Quick Query builder.

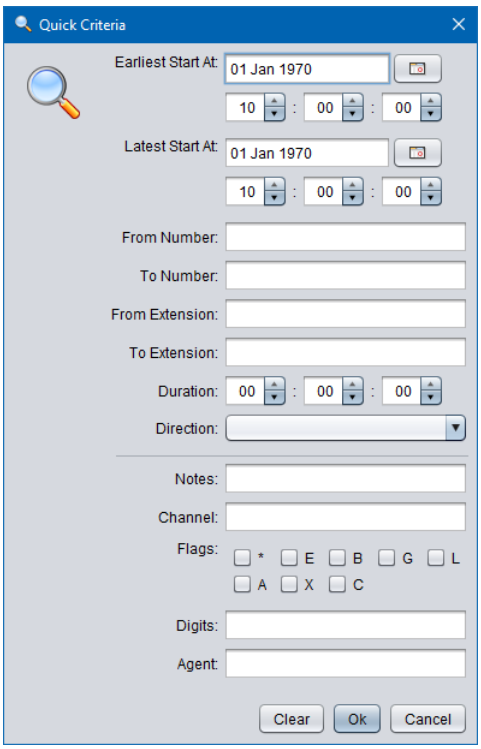
You need specify only values for various search parameters and the Quick Query builder will create a query for you. You can use the query as is or modify it in the Criteria Builder.

Fast query creation

1. Start with an empty Criteria tree (select **Clear** if the Criteria is not empty as shown on the following screen capture):

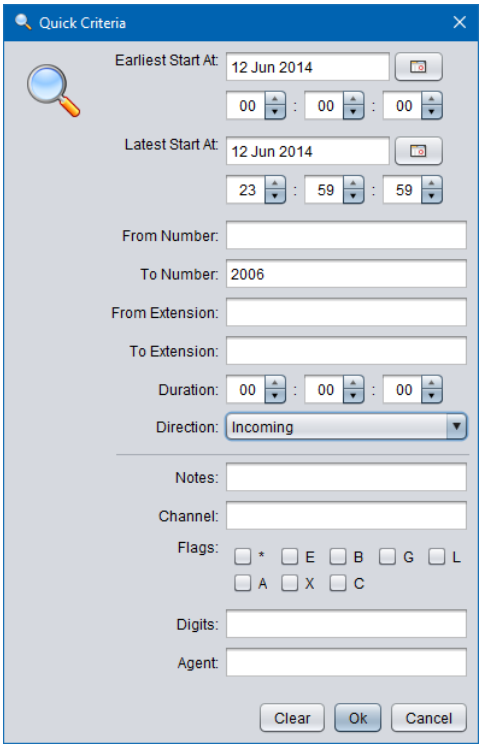


2. Select **Fast Create** to display the Quick Criteria dialog:



3. Enter values for the parameters that you wish to use in the query. Parameters that do not have a value will be ignored.

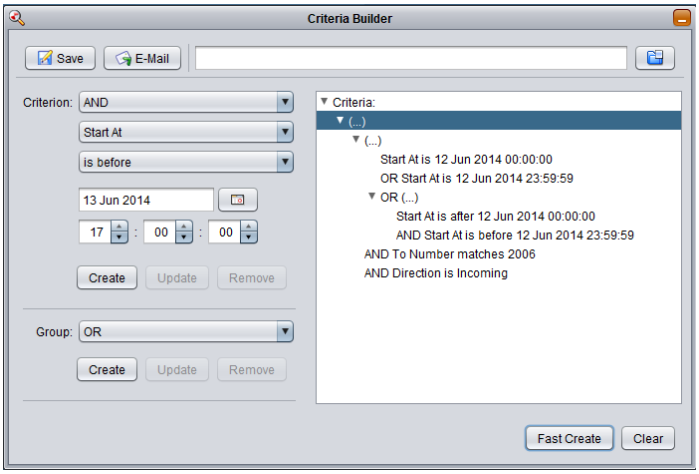
   For example let's assume we wish to find all incoming calls to 2006 on the 12th of June 2014. If so, set values as shown on the following screen capture:



   That is, set:

   - ***Earliest Start At*** to 12 Jun 2014, 00:00:00
   - ***Latest Start At*** to 12 Jun 2014, 23:59:59
   - ***To Number*** to 2006
   - ***Direction*** to Incoming

4. Select **Ok** to load the query into the Criteria Builder:



5. Now you can use the query as is or modify it as desired before using it.

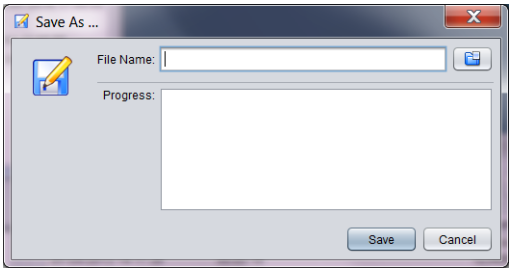
Of course, not all queries can be created with this method. For complex queries please use the Criteria Builder directly as explained in the previous section.

6.5. Saving Queries

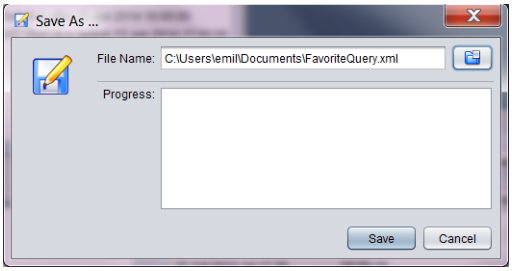
As you create queries you may find that you use some queries often. To save time re-creating the same queries, simply save your favourite queries to files. Then, when you need them, you can simply load them from the file in Criteria Builder.

Saving a query

1. First create a query. Then to save the query:
2. Select **Save** to display the Save As … dialog:

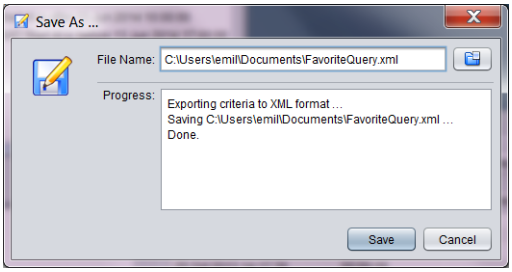


3. Enter ***File Name***.



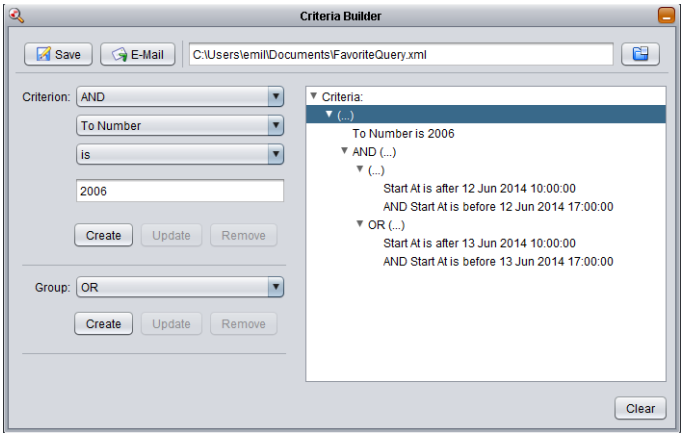
   Alternatively you can select a file name by first selecting to display a File Chooser dialog.

4. Select **Save** to save the query:



5. Optionally, repeat steps 3 and 4 to save the query to another file. Finally select **Cancel** to close the Save As … dialog.

You can quickly recall queries from files with Criteria Builder. Select to display a File Chooser dialog where you can select a query file and load it into Criteria Builder:

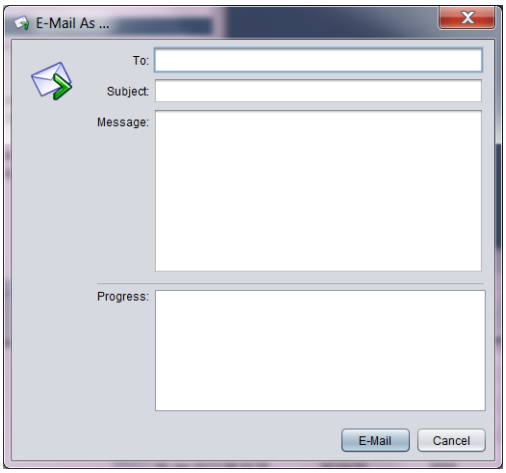


6.6. E-Mailing Queries

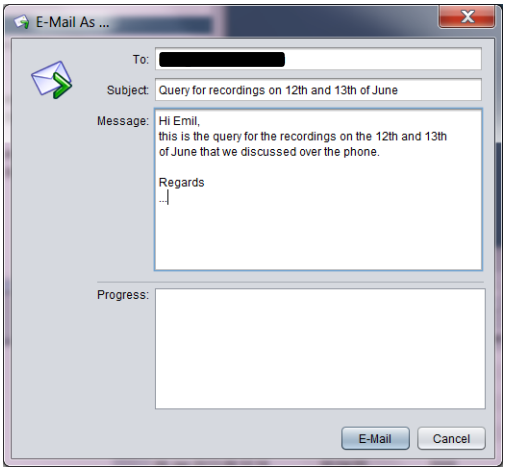
Criteria Builder allows you to e-mail queries directly from the application. Of course, you can save queries to files and then use your favourite e-mail client to e-mail them, however sometime it may be quicker to just e-mail queries directly from Criteria Builder.

E-Mailing a query

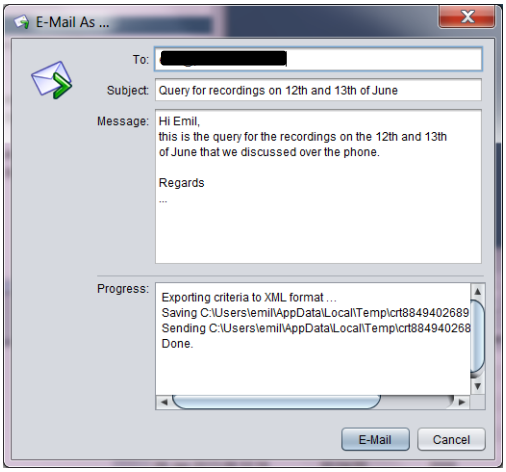
1. First create a query, or load one from a file. Then to e-mail the query:
2. Select **E-Mail** to display the E-Mail As … dialog:



3. Fill in the message details:



4. Enter ***To***. This is the e-mail address of the recipient. You can enter multiple e-mail addresses, however you must separate them with semicolon (;).
5. Enter ***Subject***. This is a free text field.
6. Enter ***Message***. This is a free text field.
7. Select **E-Mail** to send the message.
8. Criteria Builder will attempt to send the e-mail and display progress in the ***Progress*** area:



9. Optionally, repeat steps 3 and 8 to send the query to others. Finally select **Cancel** to close the E-Mail As … dialog.

At the other end, recipients will receive a query file which they can then load into Criteria Builder.

7. Recorder Status Panel

Recorder Status Panel is an application that provides for near real-time system and recording channel status monitoring of Total Recall VR systems.

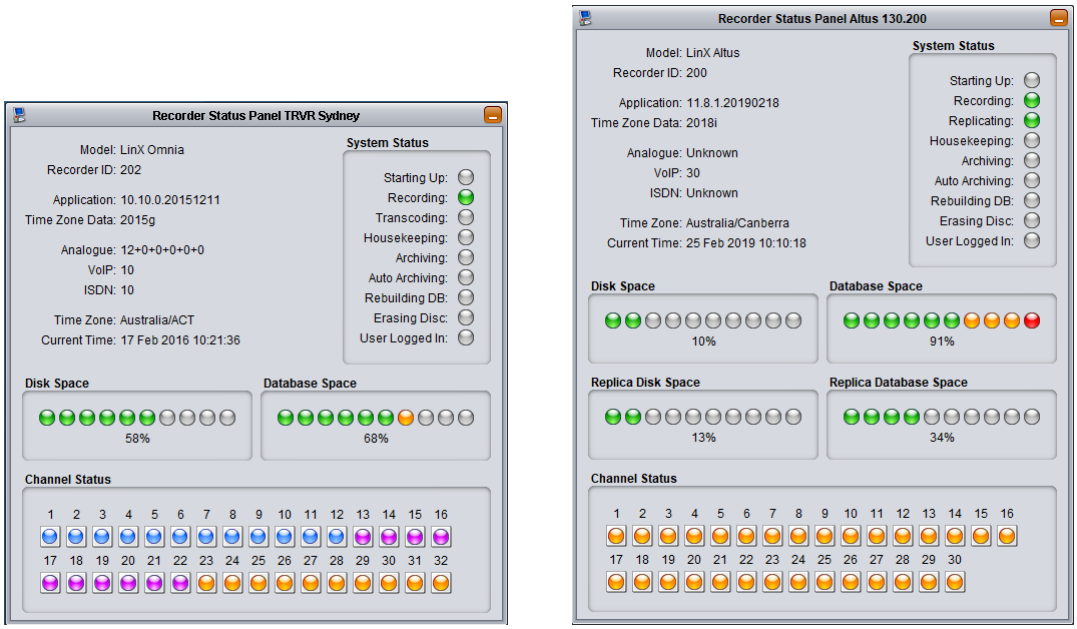


Figure 20: Recorder Status Panel Application

Use Recorder Status Panel to:

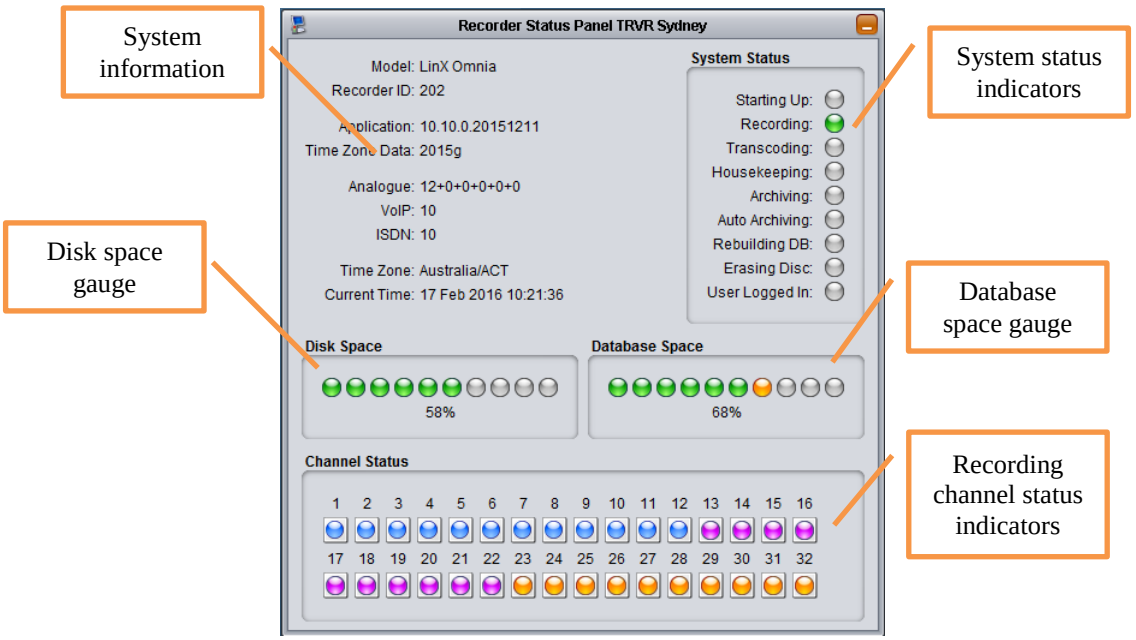
- Determine the current activities on Total Recall VR systems: starting up, recording, archiving …
- Determine the used disk and database space.
- Determine the status of individual recording channels: off, idle, recording …

7.1. User Interface

The user interface of the Recorder Status Panel application comprises of:

- A system information area
- A set of system status indicators
- Gauges for used disk and database space
- Optional gauges for used disk and database space on the replica
- A set of recording channel status indicators

The following screen capture identifies the different components:



7.1.1. System Information

This area of the screen shows basic system information for the Total Recall VR recorder. The information is read only.

7.1.2. System Status Indicators

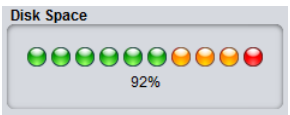
This is a set of indicators which show what activities are taking place on the Total Recall VR system. For example, if the Total Recall VR system is archiving, then the Archiving indicator will light up (green).

The indicators can be in one of the following states:

- Off state. Indicates that the activity is NOT taking place.
- On state. Indicates that the activity is taking place.

7.1.3. Disk Space Gauge

The disk space gauge shows the level of used disk space.

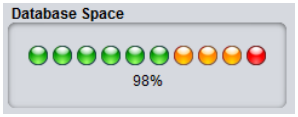


Note that you do not need to take any action when the gauge shows that the disk is almost full (as shown on the previous screen capture). Total Recall VR systems will automatically remove recordings once the disk occupancy reaches 95% or more.

However, you may wish to archive the oldest recordings before the system deletes them.

7.1.4. Database Space Gauge

The database space gauge shows the level of used database space.

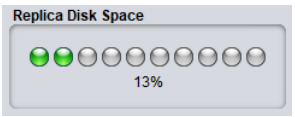


Note that you do not need to take any action when the gauge shows that the database is almost full (as shown on the previous screen capture). Total Recall VR systems will automatically remove recordings once the database occupancy reaches 95% or more.

However, you may wish to archive the oldest recordings before the system deletes them.

7.1.5. Replica Disk Space Gauge

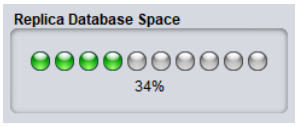
This optional gauge appears on systems which were fitted with the replicator option.



When this gauge shows more than 90%, then it is time to consider to replace the replica disk or add space to it. The system does not delete recordings from the replica and will stop replicating recordings once the replica disk space is full.

7.1.6. Replica Database Space Gauge

This optional gauge appears on systems which were fitted with the replicator option.



When this gauge shows more than 90%, then it is time to consider to replace the replica disk. The system does not delete recordings from the replica and will stop replicating recordings once the replica database is full.

Disk replicas are limited to 2,000,000 individual recordings or the available disk space, whichever occurs first.

7.1.7. Recording Channel Status Indicators

This is a set of indicators that show the activities that are taking place on the recording channels.

The indicators can be in one of the following states:

 - The recording channel is off and it is not being used for recording.

 - The analogue recording channel is idle, i.e. recording in NOT in progress.

 - The IP recording channel is idle, i.e. recording in NOT in progress.

 - The ISDN recording channel is idle, i.e. recording in NOT in progress.

 - Recording is in progress on the analogue recording channel.

 - Recording is in progress on the IP recording channel.

 - Recording is in progress on the ISDN recording channel.

8. Recorder Control Panel

Recorder Control Panel is an application that provides for remote configuration management of the system configuration of Total Recall VR systems. In addition it enables its users to remotely execute a comprehensive set of maintenance activities on Total Recall VR systems.

Figure 21: Recorder Control Panel Application

Use Recorder Control Panel to:

- Manage the configuration of Total Recall VR systems.
- Perform maintenance activities on Total Recall VR systems.

8.1. User Interface

Recorder Control Panel is a tabbed application that comprises of two tabs as shown on the previous figure.

The Settings tab makes provisions for configuration management, while the Tools tab makes provisions for system maintenance.

8.2. Configuration Management

8.2.1. Clock

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

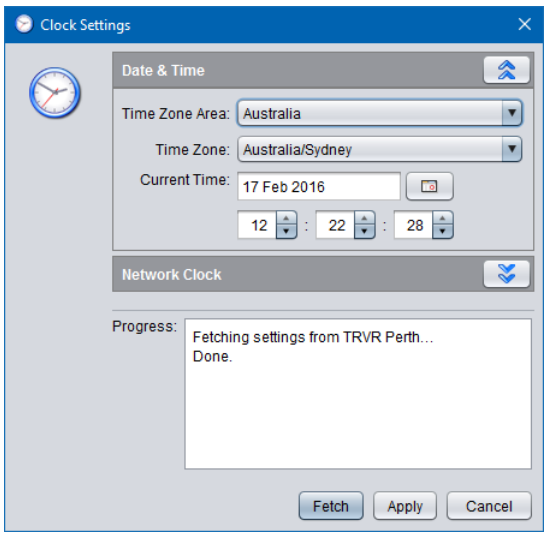
The internal clock uses UTC time. This cannot be changed. As a result, all time stamps are in UTC time.

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

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.

Set Date and Time Manually

1. Select **Clock** on the **Settings** tab to display the Clock Settings dialog with the current clock settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. If the Total Recall VR system does not have any recordings on it, then it will be possible to set ***Time Zone Area*** and ***Time Zone***. Otherwise you will not be able to set ***Time Zone Area*** and ***Time Zone***.
3. Set ***Time Zone Area*** and ***Time Zone*** if required and then set ***Current Time***.

If you change the time zone on the Total Recall VR, then all active Total Recall VR PC applications that connect to the Total Recall VR will automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

4. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

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 8.2.2 Network 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.

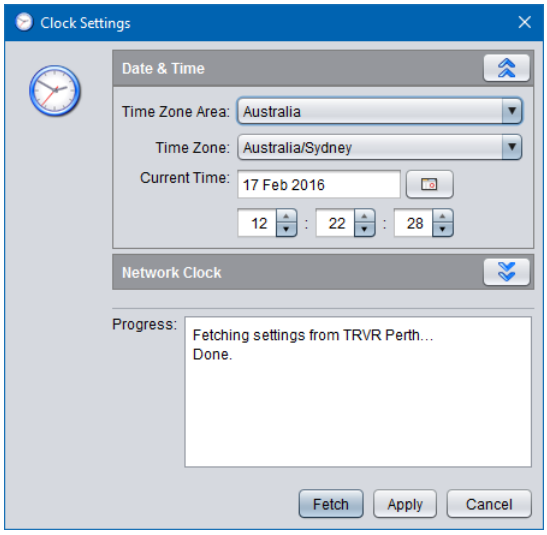
3. Avoid synchronising with ntp.org servers. Their IP addresses change constantly. As a result, Total Recall VR may not be able to connect to an NTP server reliably.

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 primary server. At times when the primary server is not available, Total Recall VR will switch to the secondary server. Then, Total Recall VR will switch to the primary server as soon as the primary server becomes available.

Configure Network Time

1. Select **Clock** on the **Settings** tab to display the Clock Settings dialog with the current clock settings on the recorder:



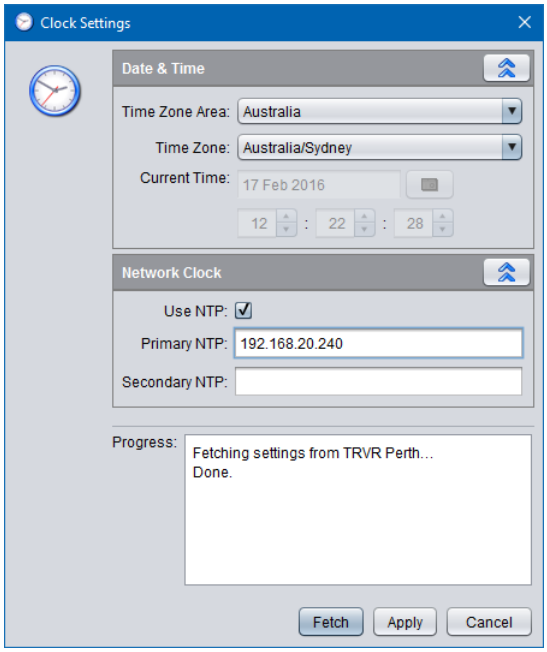
   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. If the Total Recall VR system does not have any recordings on it, then it will be possible to set ***Time Zone Area*** and ***Time Zone***. Otherwise you will not be able to set ***Time Zone Area*** and ***Time Zone***.

3. Set ***Time Zone Area*** and ***Time Zone*** if required.

   If you change the time zone on the Total Recall VR, then all active Total Recall VR PC applications that connect to the Total Recall VR will automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

4. Expand the Network Clock section to show the network clock configuration parameters:



5. Tick ***Use NTP***.
6. Set ***Primary NTP*** to the IP address of the primary NTP server.
7. Optionally, set ***Secondary NTP*** 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 ***Primary NTP*** only and leave ***Secondary NTP*** blank.

8. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The Total Recall VR will synchronise its date and time to that of the primary NTP server immediately when you select **Apply**. 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.

8.2.2. Network

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 IP recording channels (see the Total Recall VR deployment guide [4] for more details).

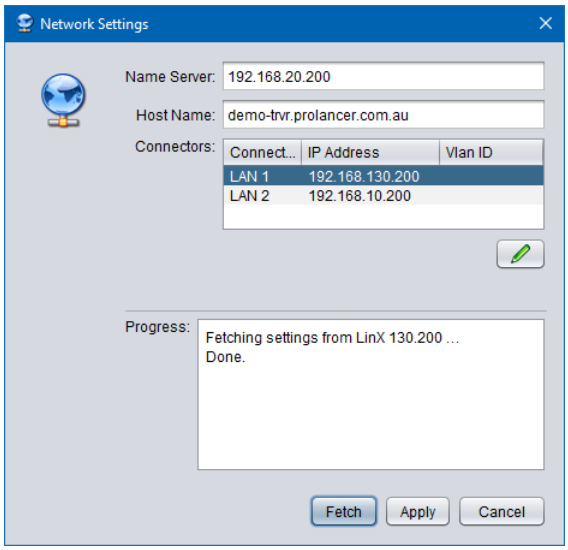
The following table shows the default values of different network related parameters:

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

To change the configuration:

Set the DNS and Hostname

1. Select **Network** on the **Settings** tab to display the Network Settings dialog with the current network settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Set ***Name Server (DNS)*** and ***Host Name*** as desired.

   If you set or change the hostname, then you must manually re-start the Total Recall VR for the changes to take effect.

3. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual

values of the settings are automatically fetched from the recorder after the new values are applied.

The change is immediate. However, hostname changes require a manual re-start of the Total Recall VR system to take effect.

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

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
Gateway	Not set	Not set
VLAN ID	Not set	Not set

Total Recall VR uses what is known as source based routing for IP packets, so the traffic on the LAN 1 interface is separate from the traffic on the LAN 2 interface.

Total Recall VR will not route between the networks that are connected by the LAN 1 and LAN 2 interface. So it cannot be used as a routing device.

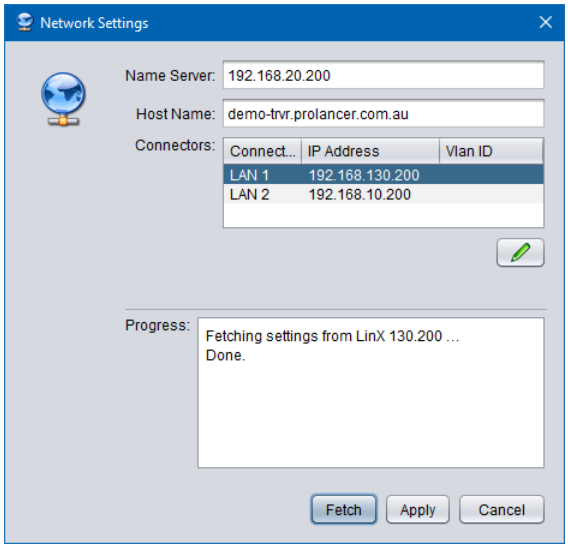
The source based routing strategy allows you to set a separate gateway for each interface. However, the gateway for the LAN 1 interface is also used as a default gateway for the whole system. As a result, packets to services such as DNS, NTP etc. if not on one of the networks connected by the LAN 1 and LAN 2 interface, will be sent via the LAN 1 interface. This is one of the reasons why we recommend to connect the LAN 1 interface to your enterprise network and use the LAN 2 interface for IP traffic recording.

In addition, you can connect both the LAN 1 and LAN 2 interfaces to the same network, and set them to use the same gateway. However, even in this case the enterprise traffic will be completely separate from the voice traffic being recorded.

To change the configuration:

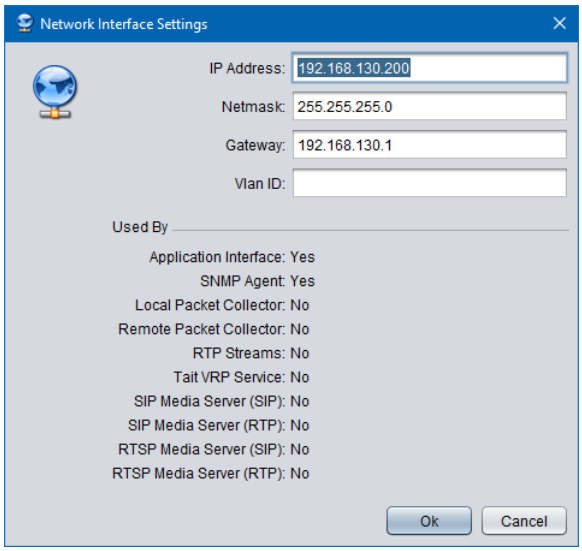
Change the Configuration of a LAN Connector

1. Select **Network** on the **Settings** tab to display the Network Settings dialog with the current network settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Select the record for the LAN connector that you wish to change in the ***Connectors*** table and then select  to display the Network Interface Settings dialog:



3. Set ***IP Address***, ***Netmask***, ***Gateway*** and ***Vlan ID*** as desired.

If you change the IP address of the Total Recall VR that is used by Total Recall VR PC applications, then all active Total Recall VR PC applications that connect to the Total Recall VR will

automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

4. Select **Ok** to return to the Network Settings dialog.
5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The changes are immediate.

You may have to manually update the Total Recall VR connection configuration for Total Recall VR PC applications that work in workstation mode.

8.2.3. Users

Total Recall VR 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 monitoring, searching, playing and archiving.

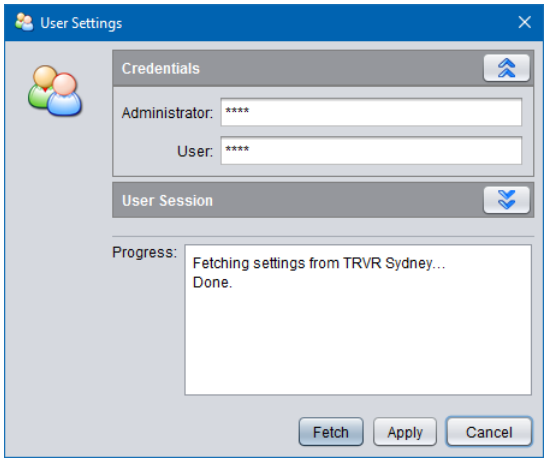
It is not possible to add additional users in any of the roles at this stage.

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

To change the passwords:

Change the Administrator and User Password

1. Select **Users** on the **Settings** tab to display the User Settings dialog with the current user settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Set the ***Administrator*** and ***User*** passwords as desired in the Credentials section.

> If you change the password of the Administrator, then all active Total Recall VR PC applications that connect to the Total Recall VR will automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

3. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The new passwords take effect immediately.

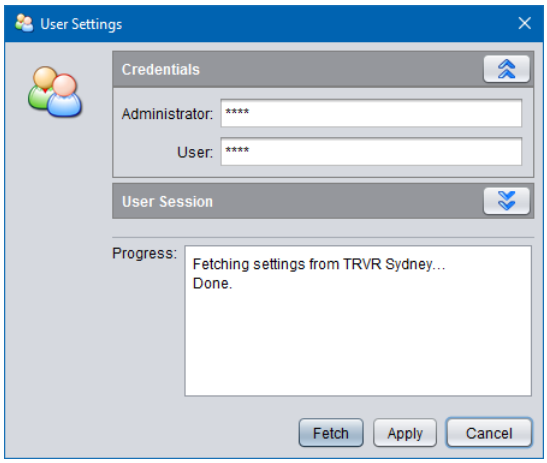
> You may have to manually update the Total Recall VR connection configuration for Total Recall VR PC applications that work in workstation mode.

When a user is logged in, Total Recall VR will automatically end the current user session, lock the control keypad and lock the disc drive when a user session is inactive for a specified period of time. The default period of inactivity is 2 minutes.

To change this behaviour:

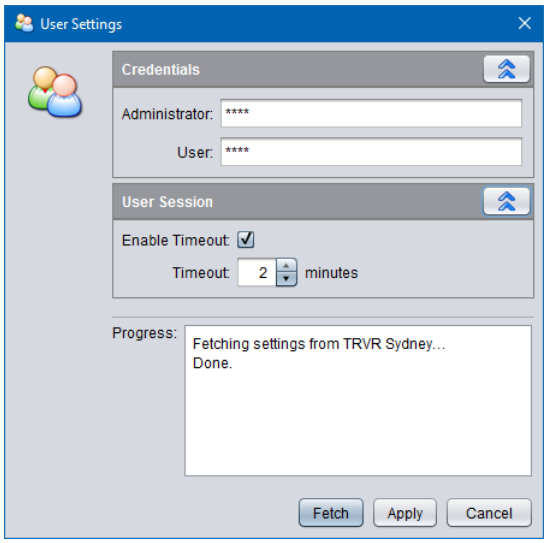
Configure User Session Timeout

1. Select **Users** on the **Settings** tab to display the User Settings dialog with the current user settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the User Session section to show the user sessions parameters:



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

4. If you tick ***Enable Timeout***, then specify the ***Timeout*** which can be between 1 and 10 minutes (inclusive)

5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual

values of the settings are automatically fetched from the recorder after the new values are applied

The new user session parameters take effect immediately. They apply to all current user sessions as well.

8.2.4. License

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 IP 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 key. As a result, the Channel and Feature key 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. Total Recall VR Manager displays this attribute for each of the keys. Time limited keys automatically deactivate features at the expiry date. As a result, the behaviours of the system will automatically change on the expiry date; for example, recording on IP channels will stop or Network Archiving will stop working.

Generally, license keys are applied to Total Recall VR 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 IP recording channels, or when replacing any of the electronic components in the system.

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

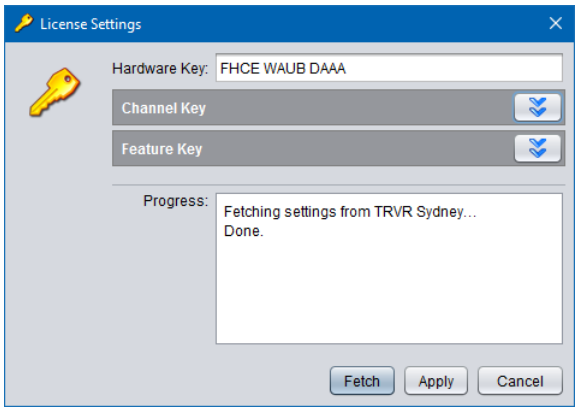
hardware key: motherboard, CPU, disk drive and mid-board.

The new Hardware Key will render the Channel and License key 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 key.

View the Hardware Key

1. Select **License** on the **Settings** tab to display the License Settings dialog with the current license settings on the recorder:



The License Settings dialog shows the Hardware Key as 3 groups of 4 characters. For example: FHCE WAUB 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 previous screen capture.

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

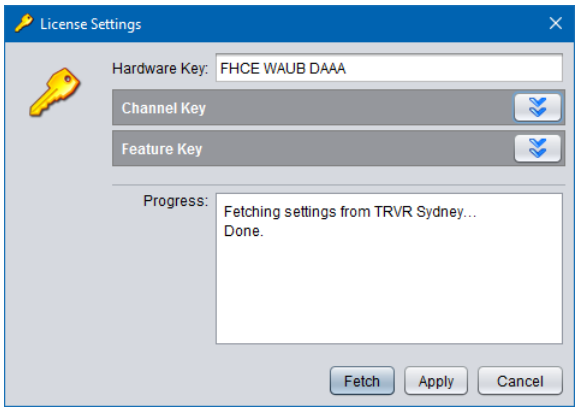
When we give you a Channel or a Feature key, then we will give you six groups of 4 digits each for each of the keys. You must enter each

group of digits exactly as received from us by following one of the subsequent procedures.

You can modify both the Channel and Feature key at the same time, or individually on the License Settings dialog.

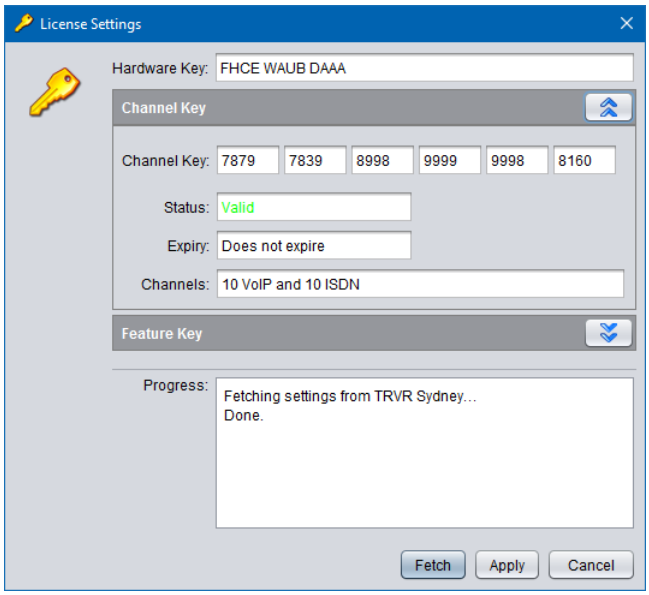
Modify the Channel and/or Feature Key

1. Select **License** on the **Settings** tab to display the License Settings dialog with the current license settings on the recorder:



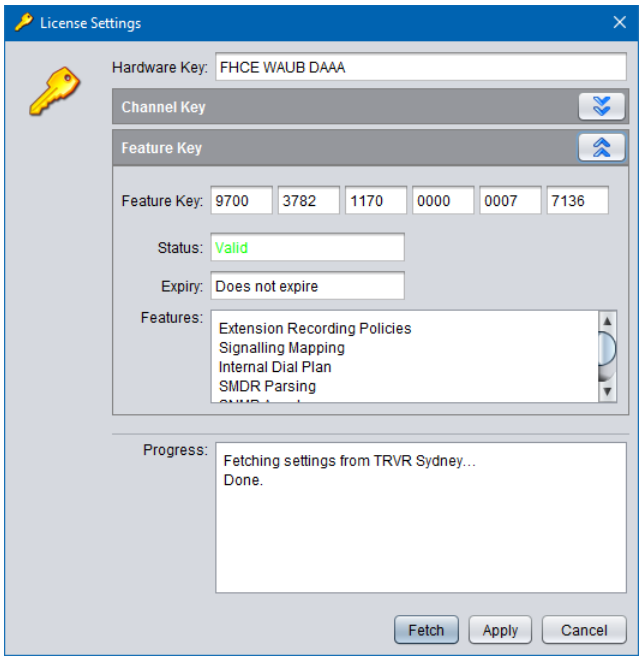
   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Optionally, and to change the Channel Key, expand the Channel Key section to show the key parameters:



3. Enter the segments of the ***Channel Key***.

4. Optionally, and to change the Feature Key, expand the Feature Key section to show the key parameters:



5. Enter the segments of the ***Feature Key***.
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

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

8.2.5. Remote 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 Manager, to manage and control it.

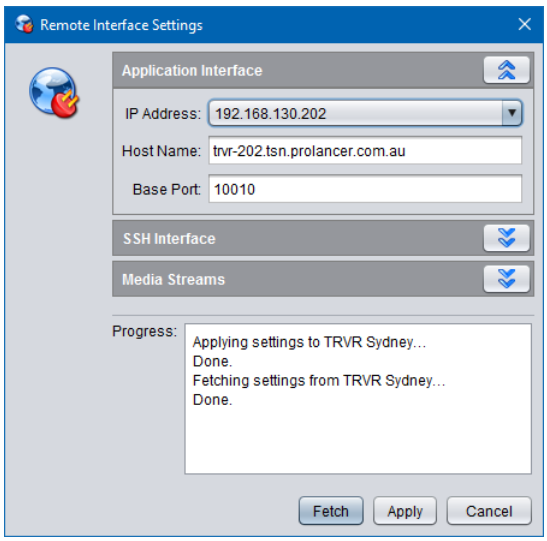
This interface depends on a TCP/IP network to connect Total Recall VR PC applications to Total Recall VR systems. It is recommended to configure the LAN 1 interface for connection to an enterprise LAN.

See section 8.2.2 Network for details on how to configure the network interfaces.

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

Configure the Remote Manager Interface for LAN Access

1. Select **Remote Interface** on the **Settings** tab to display the Remote Interface Settings dialog with the current Remote Manager Interface settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. In the Application Interface section, 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 connections from Total Recall VR PC applications.

   If you change the IP address, then all active Total Recall VR PC applications that connect to the Total Recall VR will automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

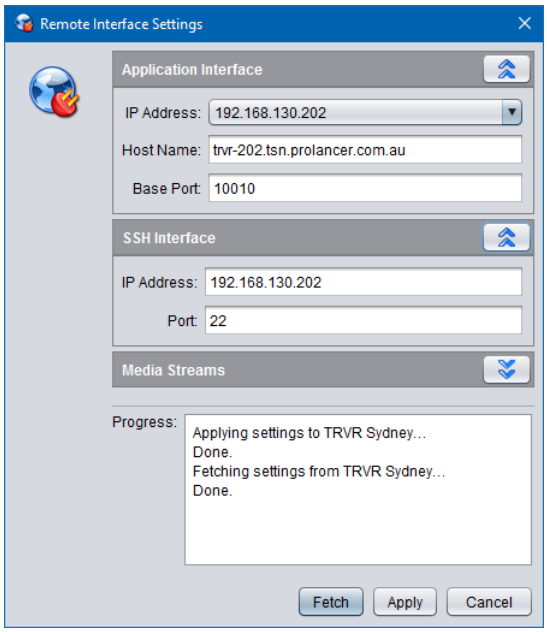
3. Optionally, enter ***Host Name***. This can be different to the hostname that is assigned to the Total Recall VR; however, it must have a DNS mapping to one of the IP addresses that are assigned to the Total Recall VR LAN interfaces.

   If you enter ***Host Name*** the Total Recall VR PC applications can use either the IP address or the host-name to connect to the Total Recall VR system.

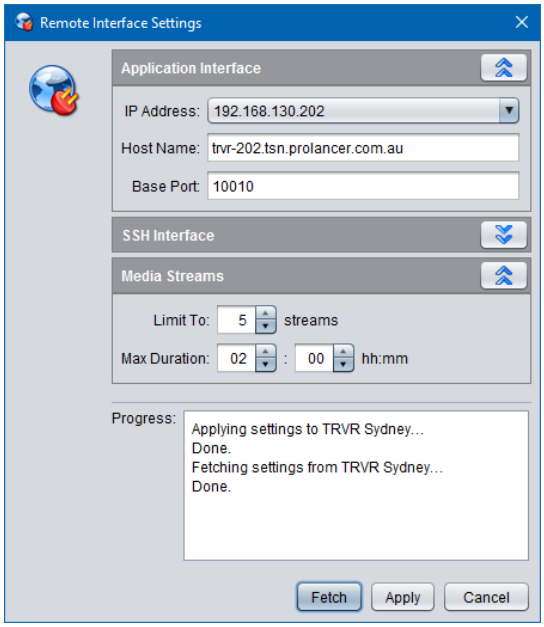
4. Enter ***Base Port***. Total Recall VR PC applications need both the IP address and the base port in order to connect to the Total Recall VR.

> If you change the base port, then all active Total Recall VR PC applications that connect to the Total Recall VR will automatically drop and re-establish the connection to the Total Recall VR when the PC applications work in workgroup mode.

5. Optionally expand the SSH Interface section to view the configuration of the SSH Interface that may be used by Total Recall VR PC applications. You cannot edit the parameters in this section:



6. Expand the Media Streams sections to configure the number of concurrent media streams that the Total Recall VR will support between itself and Total Recall VR PC applications:



7. Set ***Limit To*** to the maximum number (between 0 and 99) of simultaneous media streams that can exist between the Total Recall VR and all connected Total Recall VR PC applications.
8. Set ***Max Duration*** to the maximum duration (between 30 minutes and 2 hours and 30 minutes) of each media stream. Total Recall VR will automatically end media streams which exceed this duration.
9. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The change is immediate.

You may have to manually update the Total Recall VR connection configuration for Total Recall VR PC applications that work in workstation mode.

8.2.6. SNMP Agent

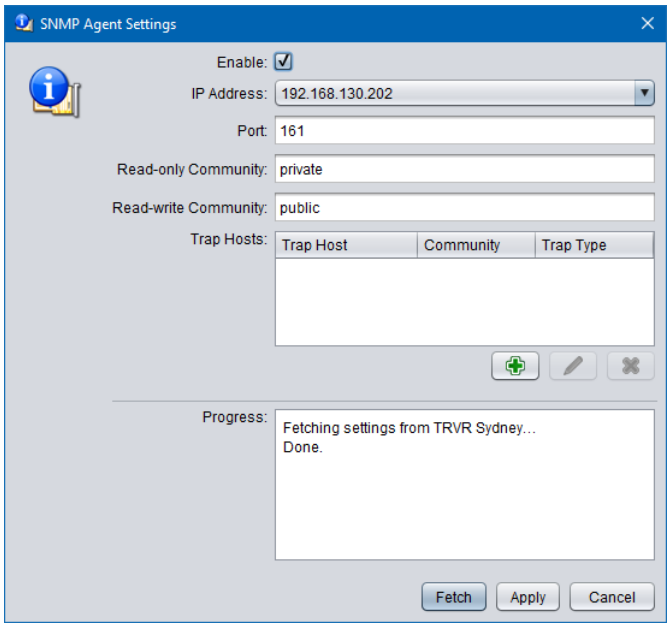
The Total Recall VR SNMP Agent is compatible with SNMPv1, SNMPv2c and SNMPv3. It can generate SNMP v1 and v2c traps and inform messages.

For full details on the Total Recall VR SNMP agent see the Total Recall VR SNMP Agent user guide [6].

The SNMP Agent is disabled by default. To enable it and configure it:

Enable and Configure the SNMP Agent

1. Select **SNMP Agent** on the **Settings** tab to display the SNMP Agent Settings dialog with the current agent settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Tick ***Enable*** to enable the agent.

3. Select ***IP Address***. This will be the IP address that the SNMP Agent will use to communicate with your Network Management System (NMS).

   We also recommend that you use the LAN 1 interface on other Total Recall VR models for SNMP communication. This leaves the LAN 2 interface to the IP recording channels.

4. Enter ***Port***. This is the UDP port that the SNMP Agent will use to communicate with your NMS. By default this is the standard SNMP port, 161.

5. Optionally, enter passwords for the read-only and the read-write communities in ***Read-only Community*** and ***Read-write Community*** respectively.

If you do, then make sure to use the correct password when configuring your NMS to talk to Total Recall VR.

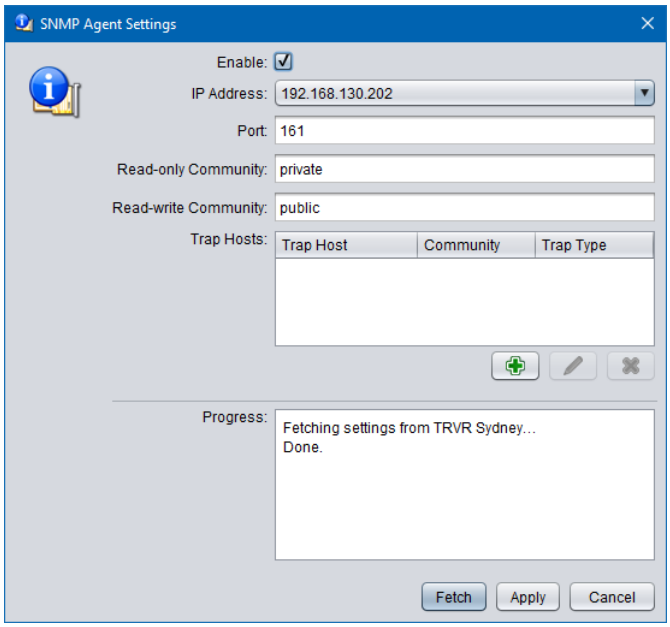
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The SNMP Agent will now respond to your NMS if your NMS forwards SNMP queries to the IP address and port set in step 3 and 4 respectively.

If you wish to receive SNMP events (traps and/or inform messages) from Total Recall VR, then you need to configure one or more trap hosts.

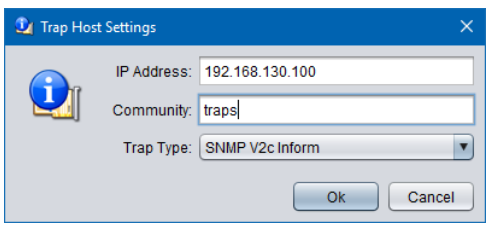
Configure SNMP Trap Hosts

1. Select **SNMP Agent** on the **Settings** tab to display the SNMP Agent Settings dialog with the current agent settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Under the ***Trap Hosts*** table select  to display the Trap Host Settings dialog:



3. Enter ***Trap Host***. The format of the value can be:

   [<transport>:]<ip address>[:<port>]

   For example:

   1. 192.168.3.186

      Specifies a trap host at IP address 192.168.3.186 which expects SNMP communication on port 162 via UDP.

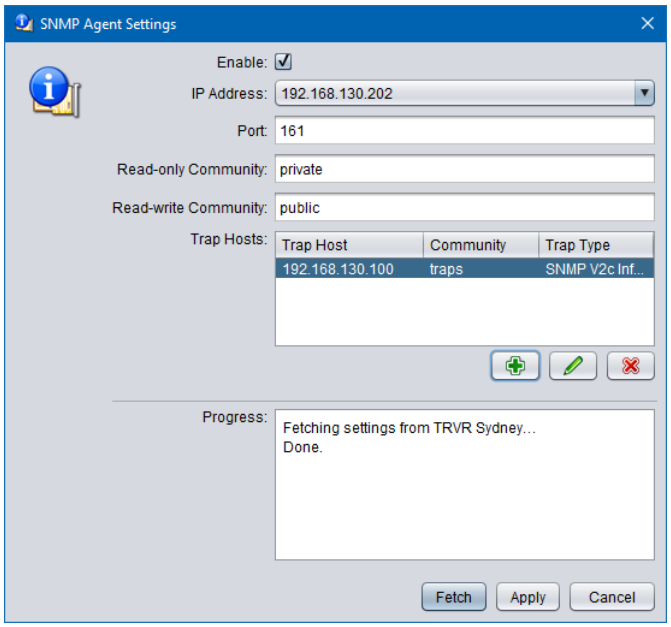
   2. tcp:192.168.3.186

      Specifies a trap host at IP address 192.168.3.186 which expects SNMP communication on port 162 via TCP.

   3. udp:192.168.3.186:162

      Specifies a trap host at IP address 192.168.3.186 which expects SNMP communication on port 162 via UDP.

4. Optionally, enter ***Community*** for SNMP v1 and v2c transactions (tarps).
5. Select ***Trap Type*** based on what is expected by the trap host.
6. Select **Ok** to return to the SNMP Agent Settings dialog where the new trap host will appear in the ***Trap Hosts*** table:



7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

This will also re-start the SNMP agent which will result in events to the trap host(s).

After adding trap hosts, you can select a record in the ***Trap Hosts*** table and then:

1. Select  to change the configuration of the trap host; or

2. Select to remove the trap host.

Do not forget to select **Apply** to apply the changes to the recorder configuration

8.2.7. Recorder

The recorder is a key component of every Total Recall VR and it is responsible for writing media to disk, i.e. creating recording files. It has minimal configuration as explained in this section.

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.

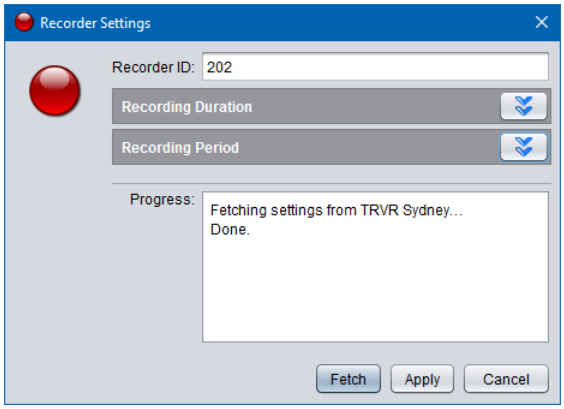
If you have multiple Total Recall VRs, then it is mandatory to assign a different ID to each.

If you do not, you risk data loss and corrupt archives and Total Recall VR PC applications will not allow you to connect to multiple recorders.

To change the ID of a Total Recall VR:

Configure the Recorder ID

1. Select **Recorder** on the **Settings** tab to display the Recorder Settings dialog with the current recorder settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Set ***Recorder ID*** to the new ID (between 1 and 999 inclusive) that you wish to assign to the recorder.
3. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The action may take considerable time to complete if there are recordings on the recorder. Allow 1 minute of processing time for every 1000 recordings on the recorder.

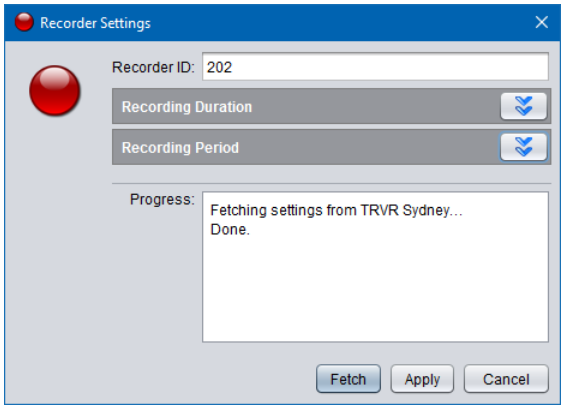
Total Recall VR will not be recording while it is processing the request to change the recorder ID.

The recorder can create recordings of virtually any duration. However, this creates problems with file sizes. To avoid problems with file sizes, the recorder automatically rolls over recordings to another file when recordings reach specified duration.

In addition, the recorder can automatically discard recordings that are shorter than a specified duration. This 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 for example.

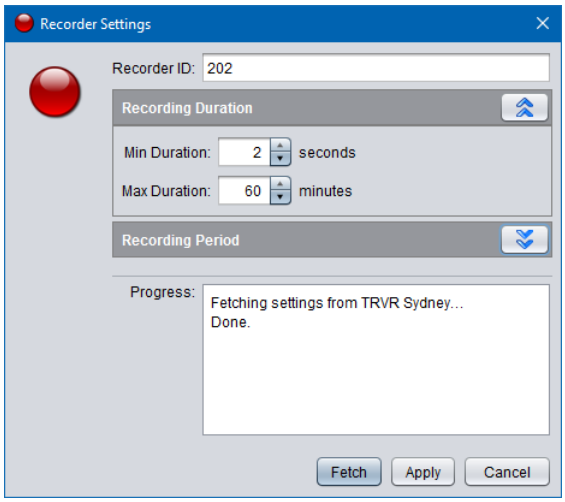
Configure Recording Duration

1. Select **Recorder** on the **Settings** tab to display the Recorder Settings dialog with the current recorder settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the Recording Duration section to show the recording duration parameters:



3. Set ***Min Duration*** to the (minimum) duration (0 to 20 seconds inclusive) that recording files must have in order to be kept. If you set the duration to 0 seconds, the recorder will keep all recordings irrespective of their duration.

4. Set ***Max Duration*** to the (maximum) duration (1 to 150 minutes inclusive) of recording files. The recorder will automatically create a new file for a recording in progress when the current file reaches this duration. Segments of a segmented recording are marked with 'C' flag.

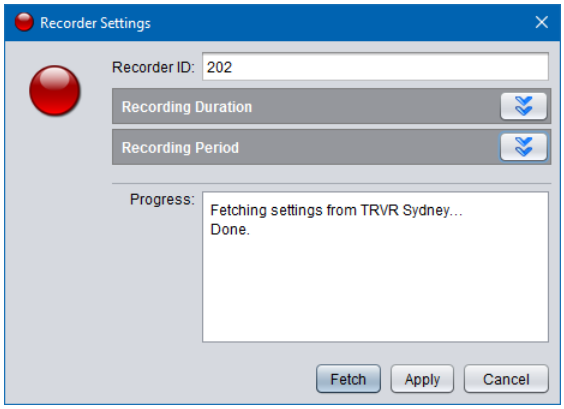
5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The action is immediate and the new values of the parameters will apply to all recordings in progress and all future recordings.

The recorder can be configured to create recordings only during limited period every day.

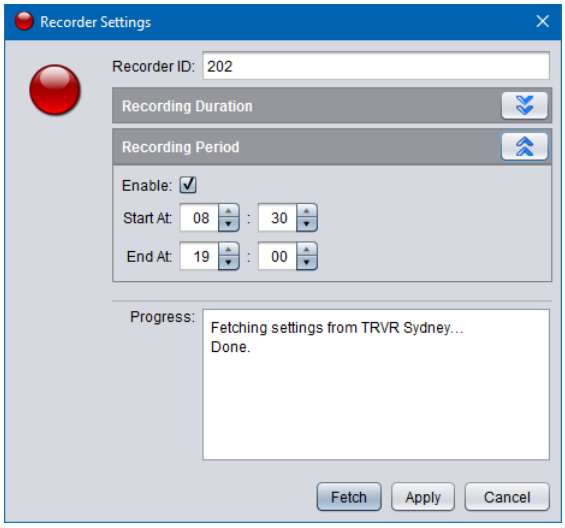
Configure Recording Period

1. Select **Recorder** on the **Settings** tab to display the Recorder Settings dialog with the current recorder settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the Recording Period section to show the recording period parameters:



3. Tick ***Enable*** to enable recording period.

4. Set ***Start At*** and ***End At*** to the start and end time of the period during which the recorder will be recording.

5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The action is immediate and the recorder will continue and/or cease recording based on the current time on the Total Recall VR.

8.2.8. Browser

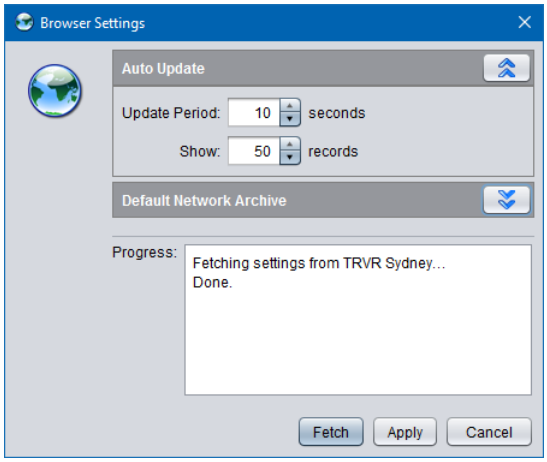
Every Total Recall VR has a built-in recording browser that allows users to search for recordings that are stored on the Total Recall VR itself or on Total Recall VR disc, USB and network archives.

In most cases users will use the browser in a "static" way. That is, users will execute a search and the browser will display the results of the search. The results will remain on the screen until the user executes another search.

However, it is possible to set the browser in auto-update mode. While in this mode, the browser automatically fetches the latest recordings and displays them. This happens on regular intervals as defined by the browser's configuration.

Configure Auto Update Period

1. Select **Browser** on the **Settings** tab to display the Browser Settings dialog with the current browser settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Set ***Update Period*** to the desired update period (between 5 to 60 seconds inclusive).

3. Set ***Show*** to the (maximum) number of records that the browser should display.

4. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

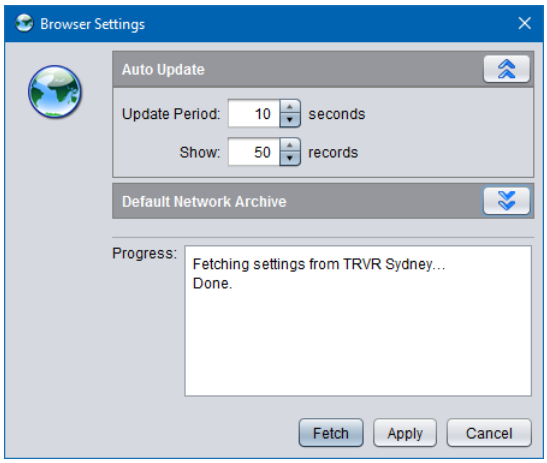
As stated before, the browser that allows users to search for recordings that are stored in Total Recall VR network archives. However, the browser does not have provisions

for the configuration of the location of and access credentials for the network drives used by such archives.

To configure the location of and access credentials for the network drive which contains a Total Recall VR network archive:

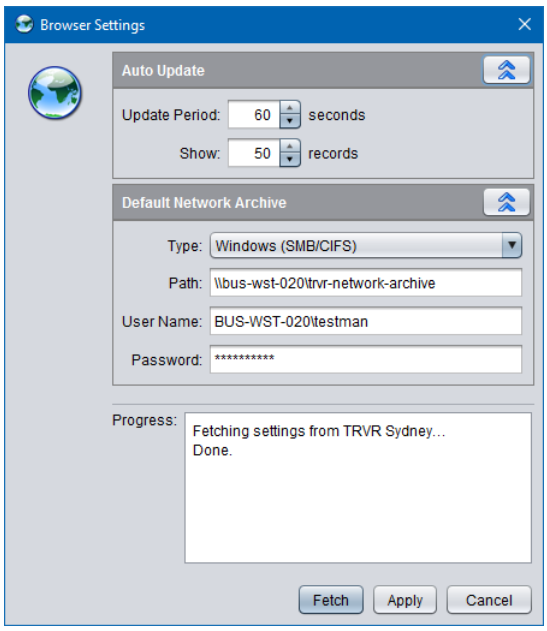
Configure a Network Archive for Searching by Browser

1. Select **Browser** on the **Settings** tab to display the Browser Settings dialog with the current browser settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the Default Network Archive section to show the network archive parameters:



3. Choose the ***Type*** of the network drive that is used for the network archive.

4. Enter ***Path***, the location of the network drive.

5. Enter ***User Name*** and ***Password***, the access credentials for the network drive.
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

Users can now use the browser on the Total Recall VR to search the Total Recall VR network archive.

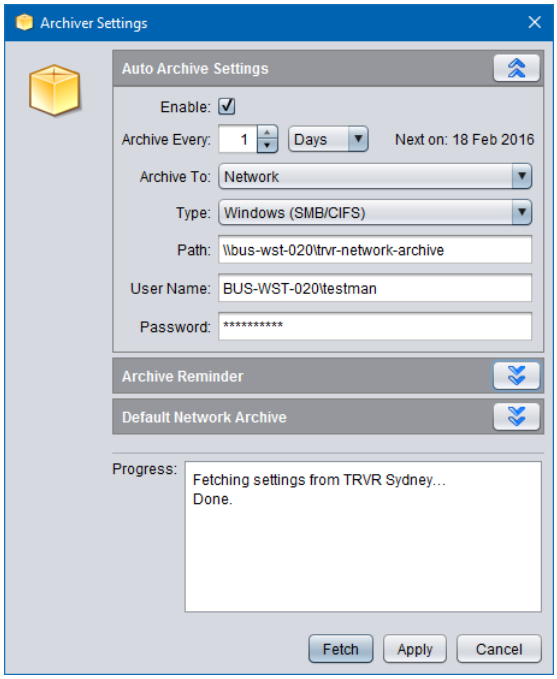
8.2.9. Archiver

Every Total Recall VR has a built-in archiver which is capable of creating Total Recall VR disc, USB and network archives automatically and on demand.

Automatic archiving is disabled by default. To enable and configure automatic archiving:

Configure Automatic Archiving

1. Select **Archiver** on the **Settings** tab to display the Archiver Settings dialog with the current archiver settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Tick ***Enable*** to enable automatic archiving.
3. Select ***Archive Every*** to set the period between automatic archive attempts.

4. Choose ***Archive To*** to configure the type of archive. Choose:
    a. *Disc* - if you wish to archive to a CD, DVD or BD disc. Then enter a CD-R, CD-RW[1],DVD+RW, DVD-R[2], DVD+R[2], BD-R or BD-RE disc into the drive of the Total Recall VR.
    b. *USB* - if you wish to archive to a USB key or disk drive. Then attach a USB key or disk drive to the Total Recall VR.
    c. *Network* - if you wish to archive to a network drive. If you choose this option then enter the details for the network drive.
        i. Choose the ***Type*** of the network drive that is used for the network archive.
        ii. Enter ***Path***, the location of the network drive.
        iii. Enter ***User Name*** and ***Password***, the access credentials for the network drive.
5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

The change is immediate. The system will enable automatic archiving and perform the first archive automatically at the anniversary of the first period.

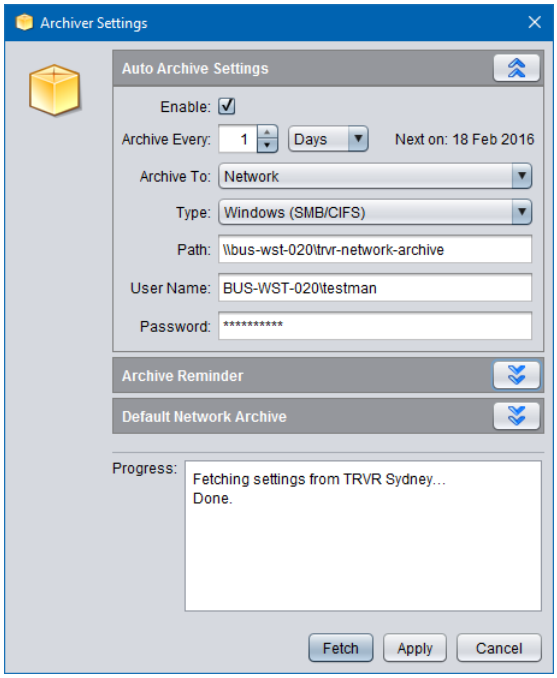
In addition to, or separately from, automatic archiving, you can configure the archiver to display a reminder on the Total Recall VR when it is time to archive. To configure the archive reminder:

Configure Archive Reminder

1. Select **Archiver** on the **Settings** tab to display the Archiver Settings dialog with the current archiver settings on the recorder:

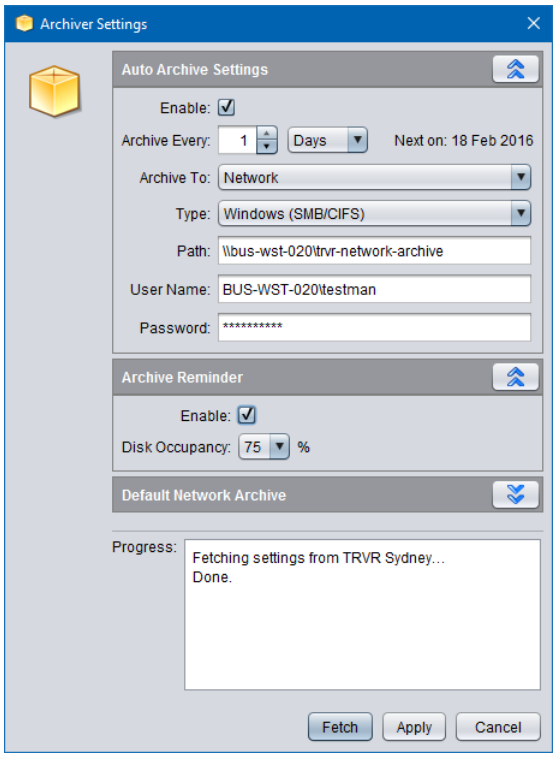
[1] Requires application release 9.9.0 or better on the Total Recall VR system.

[2] Requires application release 9.18.0 or 10.9.0 or better on the Total Recall VR system.



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the Archive Reminder section to show the reminder configuration parameters:



3. Tick ***Enable*** to enable archive reminders.
4. Enter ***Disk Occupancy*** as percentage of used disk space at which you wish the reminder to appear.

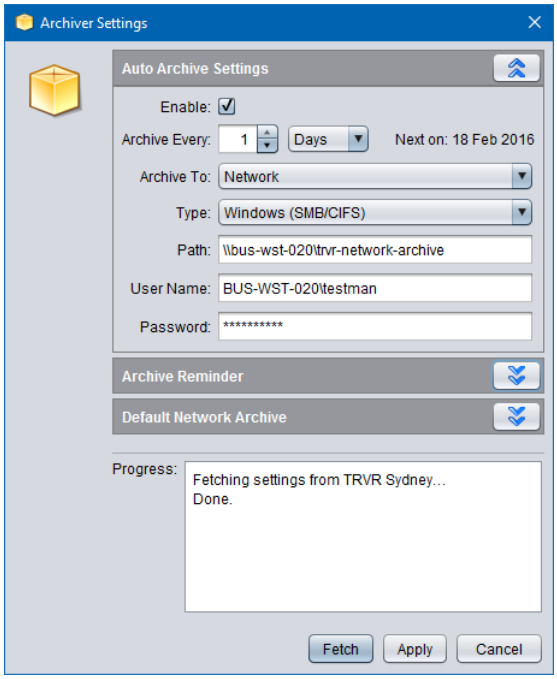
5. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

As stated earlier, thee archiver allows users to archive, on-demand, recordings to Total Recall VR network archives. However, the archiver does not have provisions for the configuration of the location of and access credentials for the network drives used by such archives.

To configure the location of and access credentials for the network drive which contains a Total Recall VR network archive:

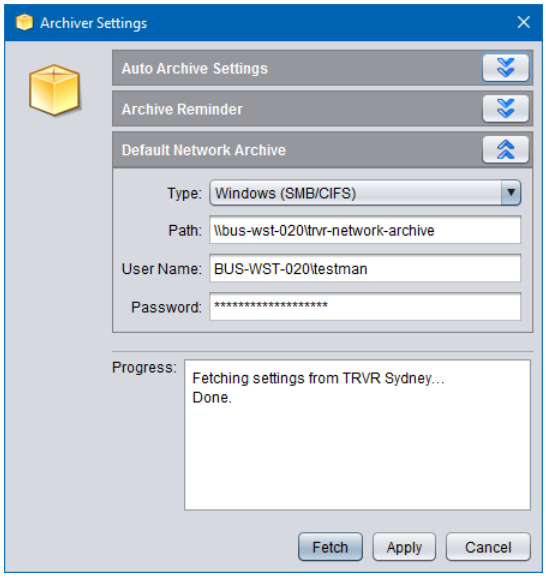
Configure a Network Archive for On-demand Archiving

1. Select **Archiver** on the **Settings** tab to display the Archiver Settings dialog with the current archiver settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the Default Network Archive section to show the network archive parameters:



3. Choose the ***Type*** of the network drive that is used for the network archive.
4. Enter ***Path***, the location of the network drive.
5. Enter ***User Name*** and ***Password***, the access credentials for the network drive.
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

Users can now use the archiver on the Total Recall VR to archive to the Total Recall VR network archive.

8.2.10. Housekeeper

Every Total Recall VR has an in-built housekeeper which ensures that the system has enough free space on its disks and in its database to continue recording endlessly. To achieve its objectives, the house keeper has an auto-cleaning function which it uses to remove recordings from the system when disk and database space is low.

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

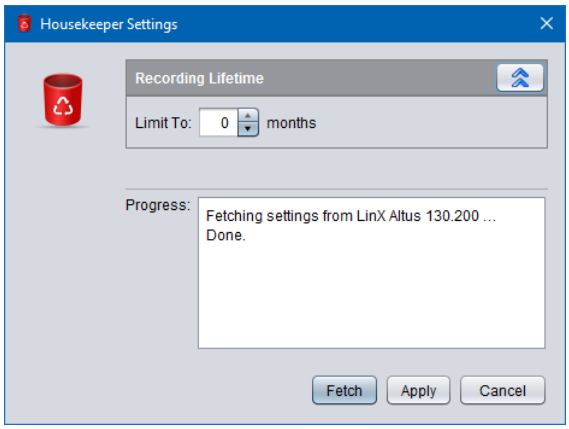
In general, the housekeeper automatically deletes recordings when the number of recordings is more than a defined maximum number, or the disk occupancy reaches 95% whichever occurs first. It removes oldest recordings first until the number of

recordings reduces to a defined low watermark or less, and the disk occupancy is below 88%.

It is possible to limit the life time of recordings. If this is the case, then the auto-cleaning function may never run as the housekeeper purges expired recordings on hourly basis. To configure the life time of recordings:

Configure Recording Life Time

1. Select **Housekeeper** on the **Settings** tab to display the Housekeeper Settings dialog with the current housekeeper settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Set ***Limit To*** in the Recording Lifetime section to desired recording life time as a number (0 to 24 inclusive) of months. Recordings that are older than this life time will be automatically purged by the housekeeper when they expire. Set this parameter to 0 months to keep recordings as long as possible.

3. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

8.2.11. Signalling Map

To understand the purpose of the Signalling Map, it is necessary to explain the concept of Total Recall VR Extensions first.

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 Numbers and the Total Recall VR Mapped Numbers which are somewhat less important than the Total Recall VR Extensions.

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 the 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	<IP address:Tx port> or <IP address:Rx port> which appear in the RTP Endpoint configuration.
RTP Stream	<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	<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 Map configuration.

   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.

As you can see from step 2, the Signalling Map plays an important role in determining Total Recall VR Extensions from raw identifiers.

As explained in step 2, the Signalling Map is basically a collection of mapping rules. Each mapping rule has two parameters:

1. Expression.
2. Replacement value.

The expressions are regular expressions. Total Recall VR compares raw identifiers to the expressions and if it finds a match, then it uses the replacement value as a mapped identifier.

Regular expressions basic syntax reference:
http://docs.oracle.com/javase/tutorial/essential/regex/

For example:

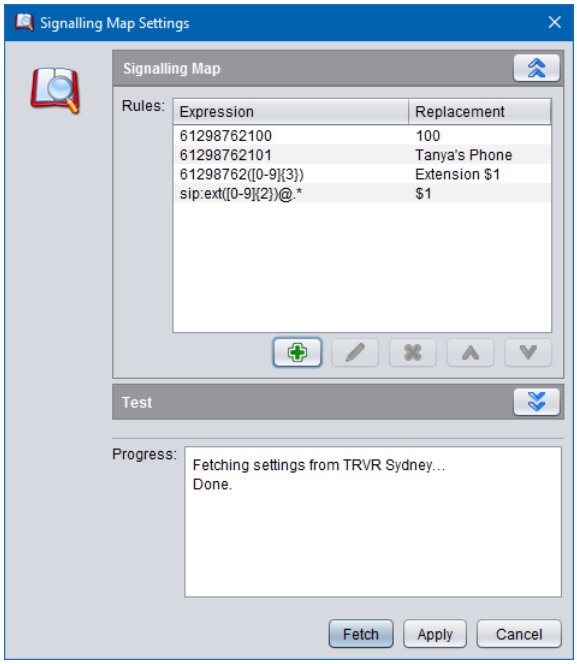
Expression	Replacement Value	Raw Identifier	Mapped Identifier
61298762100	100	61298762100	100
61298762101	Tanya's Phone	61298762101	Tanya's Phone
		61298762102	61298762102
61298762([0-9]{3})	Extension $1	61298762101	Extension 101
		61298762229	Extension 229
		4456789999	4456789999
sip:ext([0-9]{2})@.*	$1	sip:ext76@mysip.com	76
		4456789999	4456789999
		sip:90@mysip.com	sip:90@mysip.com
sip:([^@]*)@.*	$1	sip:igor@sipco.com	igor
		sip:90@mysip.com	90
192.168.130.100:700[0-9]	PA Speaker	192.168.130.100:7000	PA Speaker
		192.168.130.100:7008	PA Speaker

If a raw identifier does not match any of the match expression, then its mapped identifier is the same as the raw identifier.

To create signalling map rules:

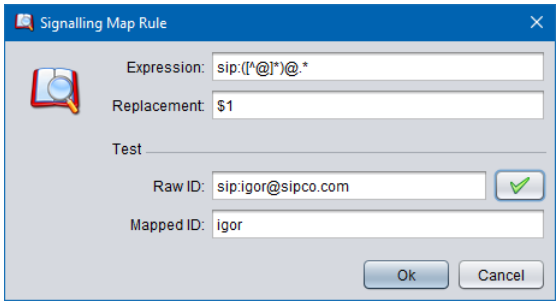
Create a Signalling Map Rule

1. Select **Signalling Map** on the **Settings** tab to display the Signalling Map Settings dialog with the current signalling map entries on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Under the ***Rules*** table select ➕ to display the Signalling Map Rule dialog:



3. Enter ***Expression***.

   This can be a specific raw identifier as collected by Total Recall VR from signalling packets.

   Or, it can be a regular expression which matches a set of raw identifiers as collected by Total Recall VR. For example: sip:([^@]*)@.* will match extensions sip:igor@sipco.com, sip:90@mysip.com ...

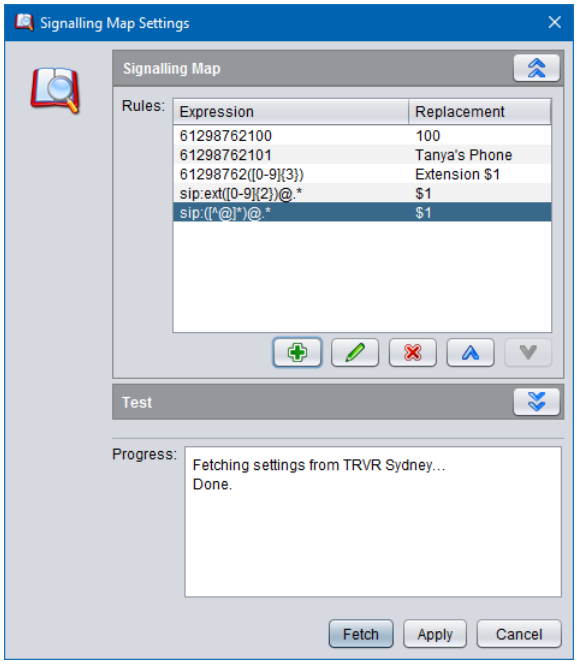
4. Enter ***Replacement***.

5. Optionally, to test this rule:

   a. Enter a ***Raw ID***.

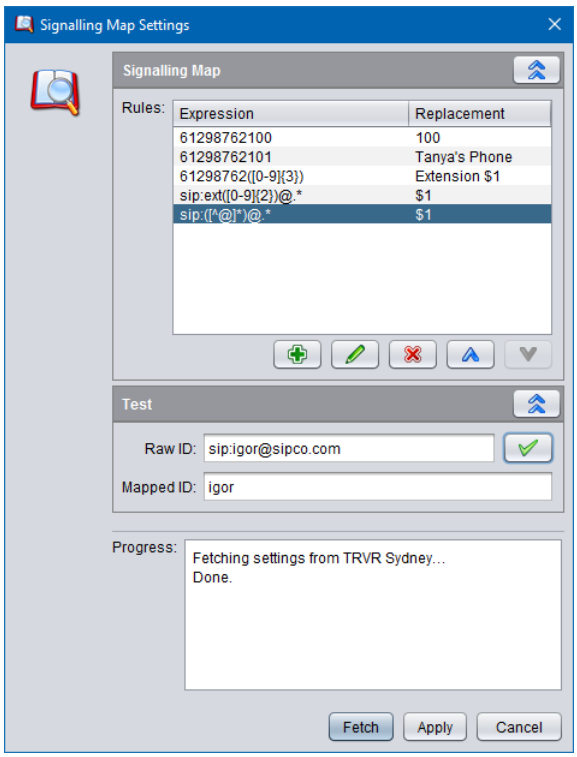
   b. Select ✔ to create the ***Mapped ID*** based on the rule settings.

6. Select **Ok** to return to the Signalling Map Settings dialog where the new rule will appear in the ***Rules*** table:



7. Optionally, and if you wish to test the new rule when used in combination with all other exiting rules:

   a. Expand the Test section:



   b. Enter a ***Raw ID***.

   c. Select ✔ to create the ***Mapped ID*** based on the rule settings.

8. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual

values of the settings are automatically fetched from the recorder after the new values are applied.

After adding rules, you can select a record in the ***Rules*** table and then:

1. Select to change the configuration of the rule; or
2. Select to remove the rule; or
3. Select to move the rule one position up; or
4. Select to move the rule one position down.

Do not forget to select **Apply** to apply the changes to the recorder configuration.

8.2.12. Internal Dial Plan

Section 8.2.11 Signalling Map explains the concept of Total Recall VR Extension and explains how Total Recall VR uses the Internal Dial Plan configuration to convert raw and mapped identifiers to Total Recall VR Extensions.

Internal Dial Plan configuration plays an important role in the process of determining Total Recall VR Extensions. Total Recall VR attempts to match mapped identifiers to 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.

Internal Dial Plan configuration is basically a collection of regular expressions.

Regular expressions basic syntax reference:
http://docs.oracle.com/javase/tutorial/essential/regex/

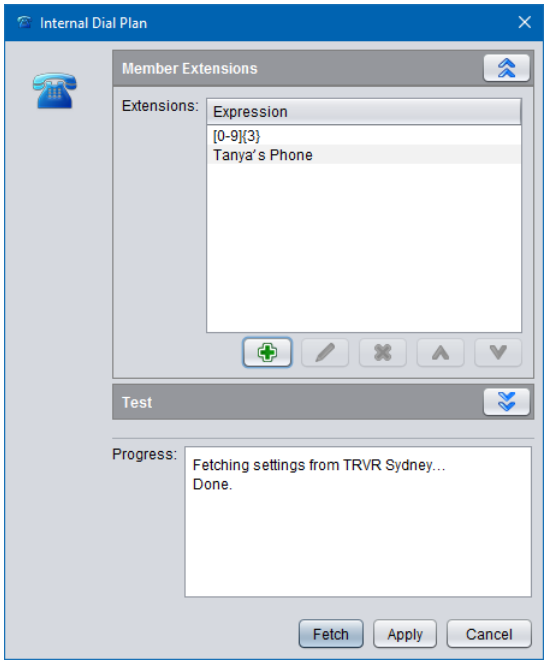
For example:

Expression	Mapped Identifier	Match?
[0-9]{3}	100	yes
	Extension 101	no
Tanya's Phone	Tanya's Phone	yes
	Any other value	no
Extension [0-9]{3}	Extension 101	yes
	Extension 209	yes
	4456789999	no

To create internal dial plan expressions:

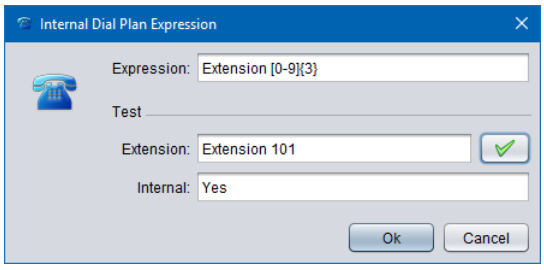
Create an Internal Dial Plan Expression

1. Select **Internal Dial Plan** on the **Settings** tab to display the Internal Dial Plan dialog with the current entries on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Under the ***Extensions*** table select  to display the Internal Dial Plan Expression dialog:



3. Enter ***Expression***.

   This can be a specific Total Recall VR Extension as determined by Total Recall VR.

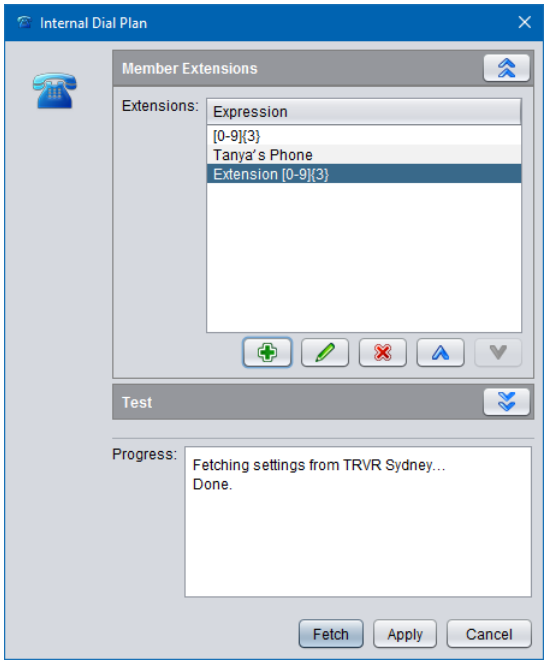
   Or, it can be a regular expression which matches a set of Total Recall VR Extension as determined by Total Recall VR. For example: 21[0-9]{2} will match extensions 2100 to 2199.

4. Optionally, to test this expression:

   a. Enter an ***Extension***.

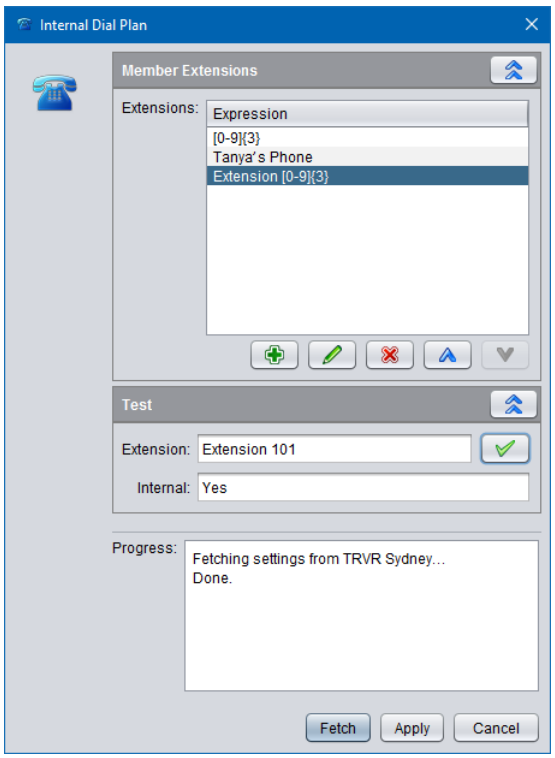
b. Select ✔ to determine if the extension matches the expression.

5. Select **Ok** to return to the Internal Dial Plan dialog where the new expression will appear in the ***Extensions*** table:



6. Optionally, and if you wish to test the new expression when used in combination with all other exiting expression:

a. Expand the Test section:



b. Enter an ***Extension***.

c. Select ✔ to determine if the extension matches one of the rules.

7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding expressions, you can select a record in the ***Extensions*** table and then:

5. Select to change the configuration of the extension expression; or
6. Select to remove the extension expression; or
7. Select to move the extension expression one position up; or
8. Select to move the extension expression one position down.

Do not forget to select **Apply** to apply the changes to the recorder configuration.

8.2.13. SMDR Collector

Total Recall VR is capable of accepting and then extracting information from Station Messaging Detail Records (SMDRs) generated by a number of popular telephone systems.

This is useful when deploying Total Recall VR on trunk lines but wanting to use internal extension numbers while searching for calls.

At this stage Total Recall VR is capable of processing SMDRs from the following telephone systems:

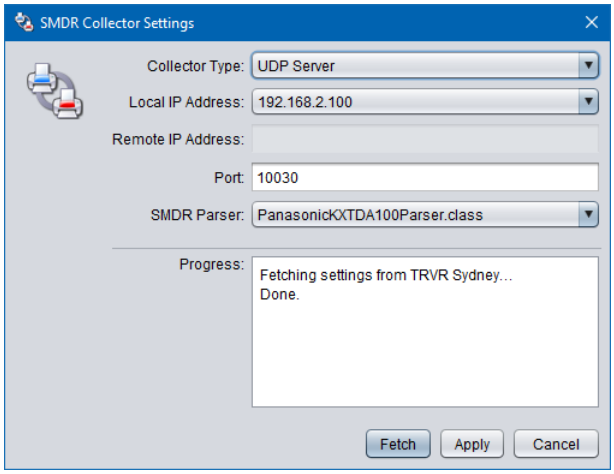
- Avaya IP Office v4.2+
- Panasonic KX-TDA100 and KX-TDA200
- Samsung iDCS-500
- Siemens HiPath 3000/5000
- Asterisk

These days most telephone systems provide an SMDR feed over an Ethernet interface using the TCP or UDP protocol. However, some telephone systems still use a serial (RS232 for example) interface. To integrate Total Recall VR with such telephone systems you need to purchase a serial to IP converter (also known as Serial Device Servers).

To configure the SMDR collector:

Configure the SMDR Collector

1. Select **SMDR Collector** on the **Settings** tab to display the SMDR Collector Settings dialog with the current collector settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Choose ***Collector Type***. Choose:

   a. *UDP Server* – if you wish the collector to accept connections from UDP clients. In this case you must configure the PBX SMDR interface as a UDP client.

   b. *TCP Server* - if you wish the collector to accept connections from TCP clients. In this case you must configure the PBX SMDR interface as a TCP client.

   c. *TCP Client* - if you wish the collector to connect to the PBX as a TCP client. In this case you must configure the PBX SMDR interface as a TCP server.

3. If ***Collector Type*** is *UDP Server* or *TCP Server*, then choose ***Local IP Address***. It is recommended to choose the IP address of the LAN 1 interface which will leave the LAN 2 interface to the IP recording channels.

4. Alternatively, and if ***Collector Type*** is *TCP Client* enter ***Remote IP Address***. This is the IP address assigned to the SMDR interface on the PBX.

5. Enter ***Port***.

   a. If ***Collector Type*** is *UDP Server* or *TCP Server*, then this is a port on the Total Recall VR which will be used by the collector to accept connections from PBXes.

   b. If ***Collector Type*** is *TCP Client*, then this is a port on the PBX that will be used by the collector to connect to the PBX.

6. Choose ***SMDR Parser*** based on the model and type of your PBX.

7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

Once the connection between Total Recall VR and the PBX is active, the collector will start parsing SMDRs and extract information from the SMDRs which it will then add to the database on the Total Recall VR.

8.2.14. Recording Policies

Recording policies control the operation of the recorder and 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.

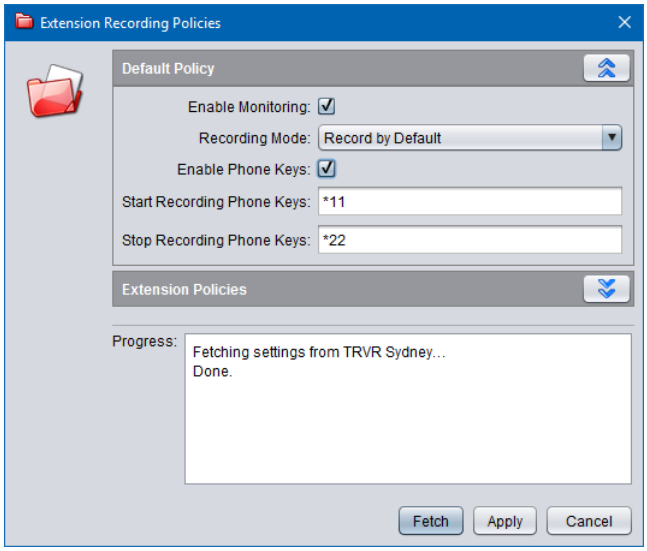
The default global policy is:

- 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. Select **Recording Policies** on the **Settings** tab to display the Extension Recording Policies dialog with the current default policy settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Tick or un-tick ***Enable Monitoring*** to enable or disable monitoring.
3. Choose ***Recording Mode***. Choose:
    a. *Record by Default*: Total Recall VR will automatically record all audio sources and telephone calls and keep recordings unless instructed otherwise during recording.
    b. *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.
    c. *Partial Record by Default*: 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.
    d. *Record by Default - 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.
    e. *Record by Default – No Control, No Notes*: 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. Tick or un-tick ***Enable Phone Keys*** to enable or disable control of recording via DTMF key sequences.

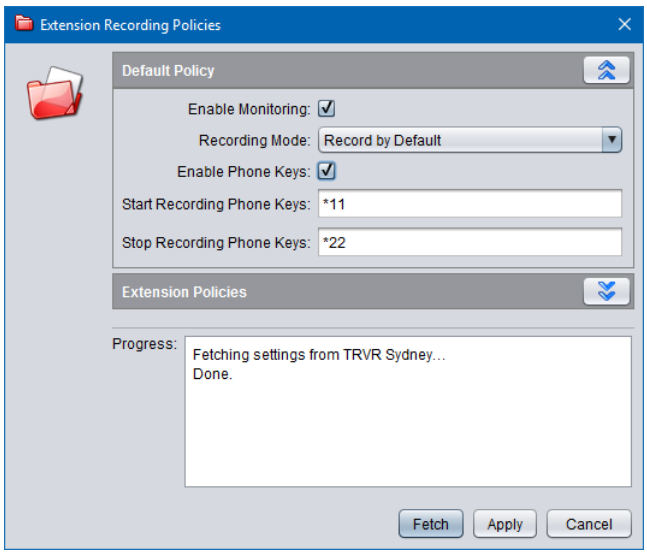
5. If you tick ***Enable Phone Keys***, then set:
   a. ***Start Recording Phone Keys*** to the DTMF key sequence that will start recording. The sequence can be up to 3 digits long.
   b. ***Stop Recording Phone Key*** to the DTMF key sequence that will stop recording. The sequence can be up to 3 digits long.
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

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.

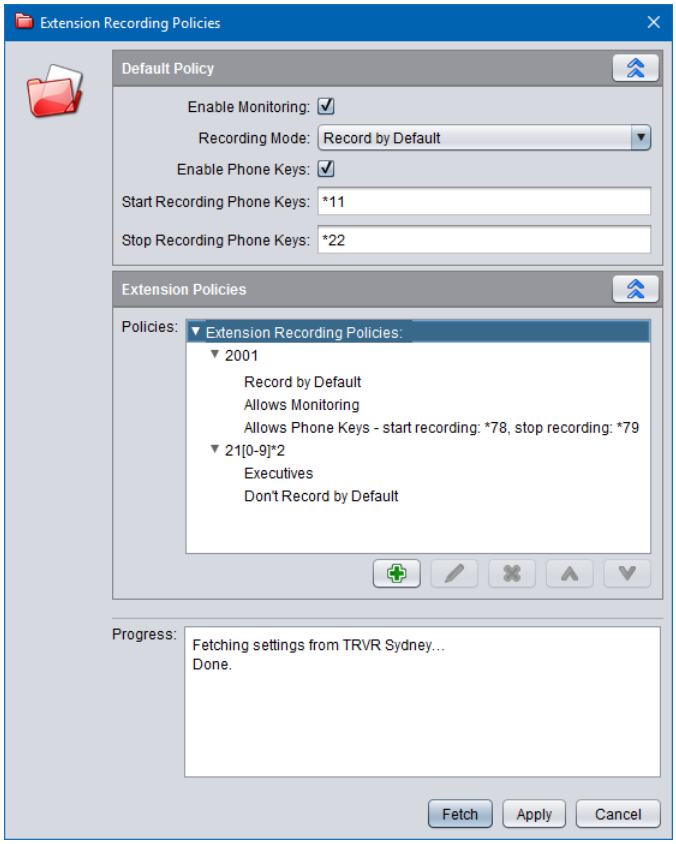
There are no extension based policies by default. To add a new extension based policy:

Add a Recording Policy for an Extension

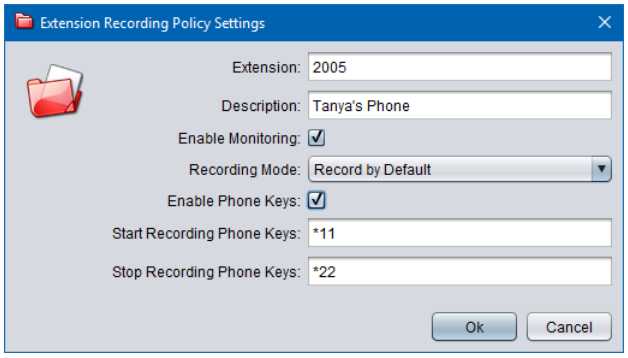
1. Select **Recording Policies** on the **Settings** tab to display the Extension Recording Policies dialog with the current default and extension policy settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.
2. Expand the Extension Policies segment to show the current extension policies:



3. Under the ***Policies*** tree select  to display the Extension Recording Policy Settings dialog:



4. Enter ***Extension***.

   This can be an actual Total Recall VR Extension as determined by Total Recall VR.

   Or, it can be a regular expression which matches a set of Total Recall VR Extension as determined by Total Recall VR. For example: 21[0-9]{2} will match extensions 2100 to 2199.

5. Enter ***Description***. This is free text that will help you identify the policy.

6. Tick or un-tick ***Enable Monitoring*** to enable or disable monitoring.

7. Choose ***Recording Mode***. Choose:

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

b. *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.

c. *Partial Record by Default*: 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.

d. *Record by Default - 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.

e. *Record by Default – No Control, No Notes*: 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.

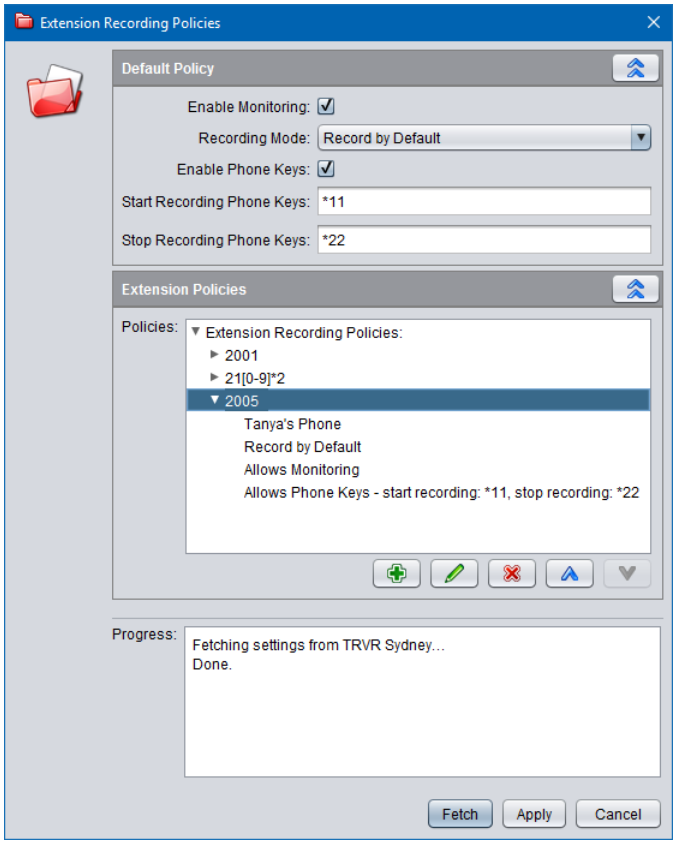
8. Tick or un-tick ***Enable Phone Keys*** to enable or disable control of recording via DTMF key sequences.

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

   a. ***Start Recording Phone Keys*** 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.

10. Select **Ok** to return to the Extension Recording Policies dialog where the new policy will appear on the ***Policies*** tree:



11. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding policies, you can select a record on the ***Policies*** tree and then:

1. Select to change the configuration of the policy; or
2. Select to remove the policy; or
3. Select to move the policy one position up; or
4. Select to move the policy one position down.

Do not forget to select **Apply** to apply the changes to the recorder 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 '*Partial Record by Default*' takes precedence over the settings for the extension policy with Recording Mode set to '*Partial Record by Default*'.

  For example: if extension policy A is set to '*Record by Default*' with monitoring disabled, while extension policy B is set to '*Partial Record by Default*' 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.

8.2.15. Event Policies

Total Recall VR can generate one or all of the following extension specific events in the form of a log entry and an SNMP trap:

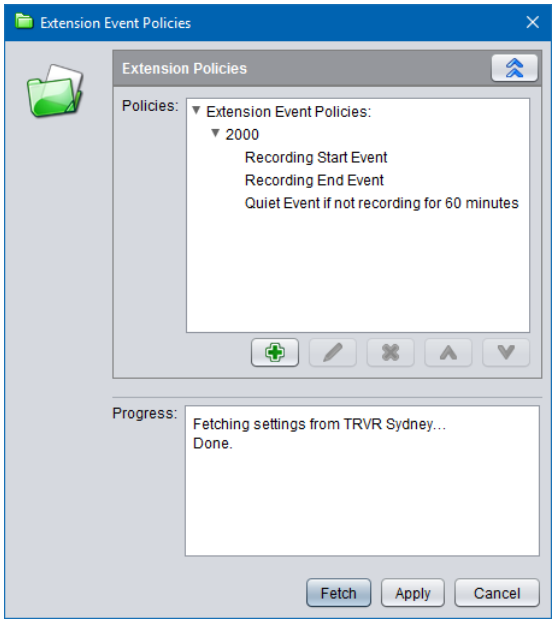
1. Call Start Event – every time when recording starts on a specified extension.
2. Call End Event – every time when recording ends on a specified extension.
3. Quiet Extension – when there is a lack of activity (new recordings) on a specified extension for a specified period of time.

The extension event policies define what events, if any, to generate for specific extensions. By default, Total Recall VR does not generate any extension events.

To enable extension events you must create one or more extension event policies:

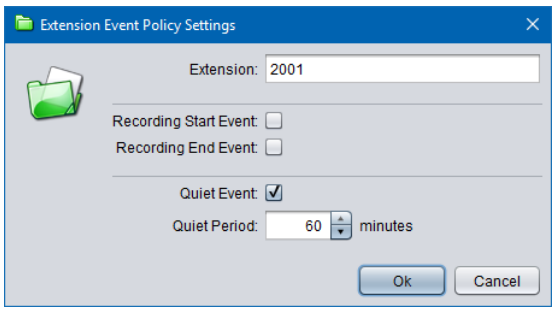
Add an Event Policy for an Extension

1. Select **Event Policies** on the **Settings** tab to display the Extension Event Policies dialog with the current extension policy settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Under the ***Policies*** tree select  to display the Extension Event Policy Settings dialog:



3. Enter ***Extension***.

   This can be an actual Total Recall VR Extension as determined by Total Recall VR.

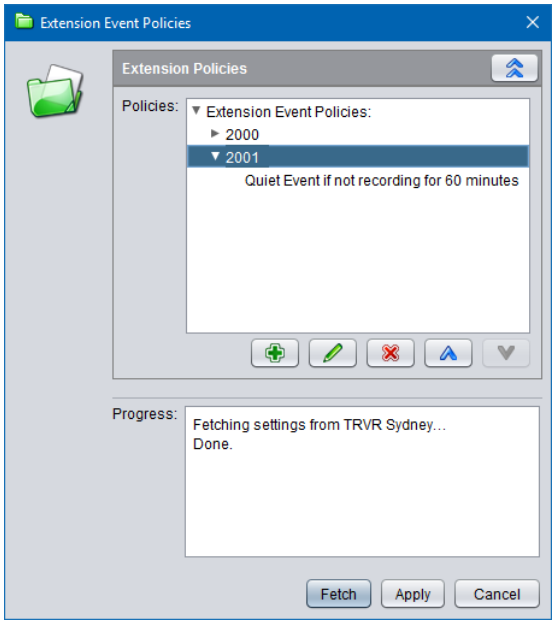
   Or, it can be a regular expression which matches a set of Total Recall VR Extension as determined by Total Recall VR. For example: 21[0-9]{2} will match extensions 2100 to 2199.

4. Optionally, tick ***Recording Start Event*** if you wish to receive an event every time recording start for the specified extension.

5. Optionally, tick ***Recording End Event*** if you wish to receive an event every time recording ends for the specified extension.

6. Optionally, tick ***Quiet Event*** if you wish to receive an event if new recordings are not detected on the specified extension for a specified period of time.

7. If you tick ***Quiet Event***, then enter ***Quiet Period*** (between 1 and 9999 minutes inclusive).
8. Select **Ok** to return to the Extension Event Policies dialog where the new policy will appear on the ***Policies*** tree:



9. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding policies, you can select a record on the ***Policies*** tree and then:

1. Select to change the configuration of the policy; or
2. Select to remove the policy; or
3. Select to move the policy one position up; or
4. Select to move the policy one position down.

Do not forget to select **Apply** to apply the changes to the recorder configuration.

The new or amended policies become active immediately. Events will be sent to SNMP trap hosts, if configured. In addition, extension events appear in the Total Recall VR log.

8.2.16. Analogue Collector

The Analogue Media Collector is capable of capturing audio from different analogue sources and analogue telephone lines.

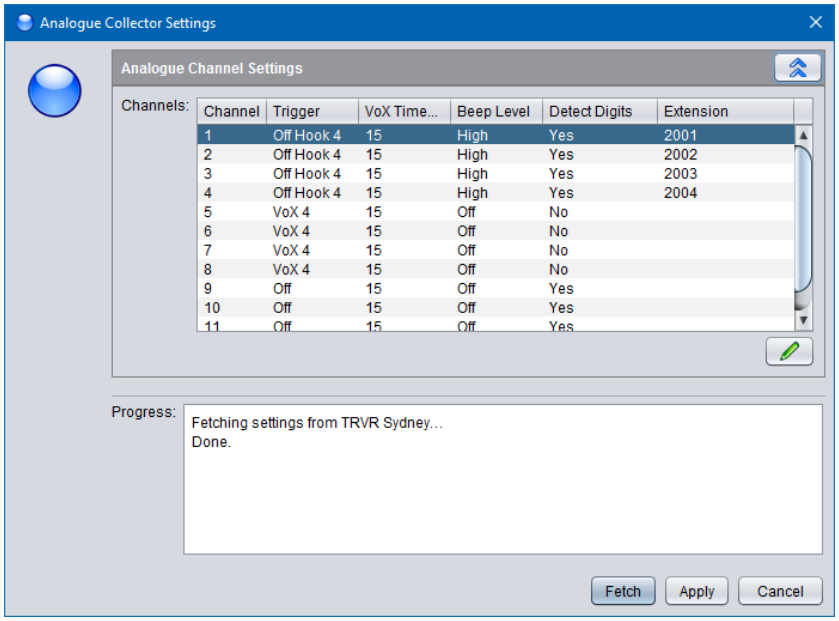
Its configuration comprises of configuration for individual analogue recording channels. The default configuration for all analogue recording channels is:

- Recording trigger: VoX level 4, signal level -32dBm (19.5mV).
- VoX timeout: 15 seconds.
- Beep tone: disabled (off).
- DTMF tone detection: enabled (on).
- Channel extension: none.

To change the configuration of an analogue recording channels:

Configure an Analogue Recording Channel

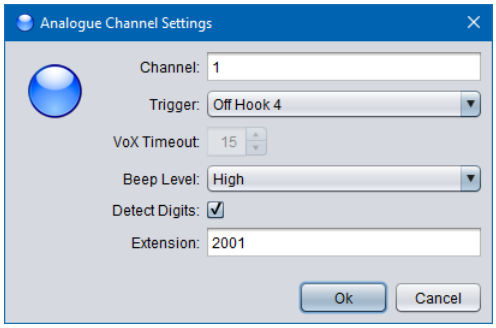
1. Select **Analogue Collector** on the **Settings** tab to display the Analogue Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Select the row of parameters for the channel that you wish to configure. Note, select a single row only.

3. Under the ***Channels*** table select  to display the Analogue Channels Settings dialog:



4. Choose ***Trigger*** to configure the type of event that triggers (start/stop) recording on the analogue recording channel.

   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 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***.

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*.

5. 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.

   If the application version on your Total Recall VR is 10.10.0 or earlier, then all analogue channels will use the same VoX timeout.

   Upgrade to version 10.11.0, if possible, to set VoX timeout on individual analogue channels.

6. To enable the generation of recording beep (pip tone) choose *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.

7. Tick or un-tick ***Detect DTMF*** to enable or disable DTMF tone detection on the channel.

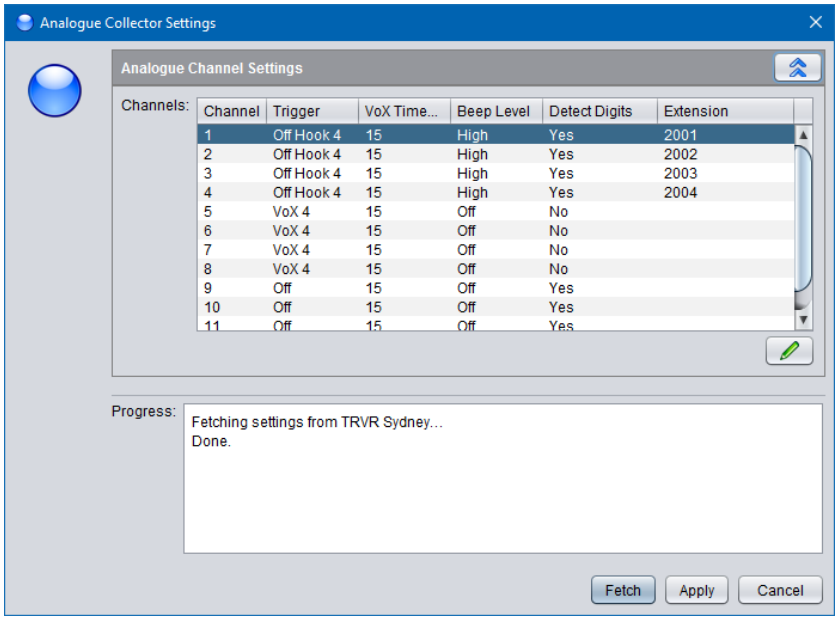
   Total Recall VR detects DTMF tones by default on all recording channels, including the analogue recording channels. However, you may use analogue channels to record analogue signals from sources other than analogue telephone lines. Such sources may not carry DTMF tones, but may contain frequencies that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

8. Optionally, enter ***Extension***.

   The value can be just digits, for example: 2001, or any free text value, for example: Tanya's Phone.

   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.

9. Select **Ok** to return to the Analogue Collector Settings dialog where the new configuration for the channel will appear on the ***Channels*** table:



10. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

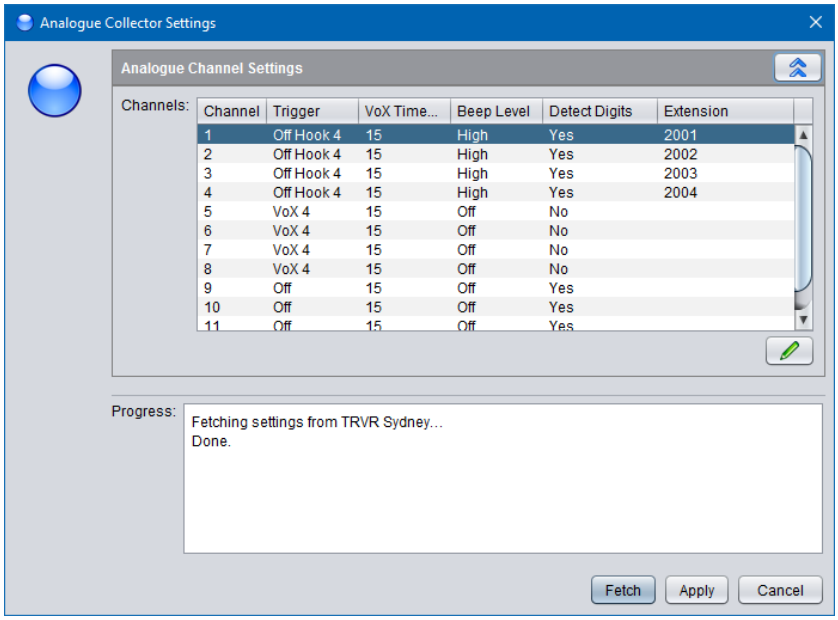
If you change the configuration while recording, then all active recordings on all analogue channels will terminate when you select **Apply** during step 10.

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

To change the configuration of multiple analogue channels at the same time:

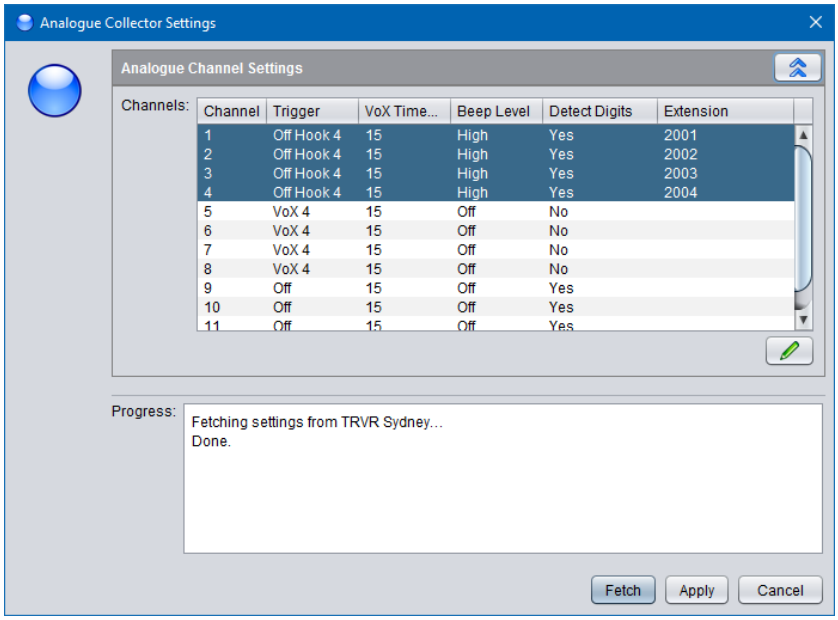
Configure the Configuration of Analogue Recording Channel

1. Select **Analogue Collector** on the **Settings** tab to display the Analogue Collector Settings dialog with the current collector settings on the recorder:

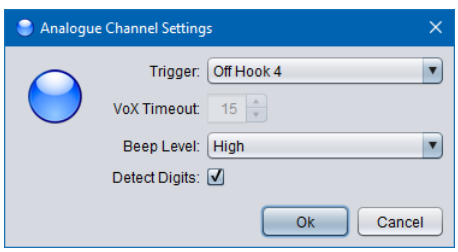


Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Select the rows of parameters for the channels that you wish to configure. For example:



3. Under the ***Channels*** table select  to display the Analogue Channels Settings dialog:



Note that unlike with a single channel configuration, only some of the parameters can be adjusted when configuring multiple channels at the same time.

4. Choose ***Trigger*** to configure the type of event that triggers (start/stop) recording on the analogue recording channels.

   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 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***.

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*.

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

If the application version on your Total Recall VR is 10.10.0 or earlier, then all analogue channels will use the same VoX timeout.

Upgrade to version 10.11.0, if possible, to set VoX timeout on individual analogue channels.

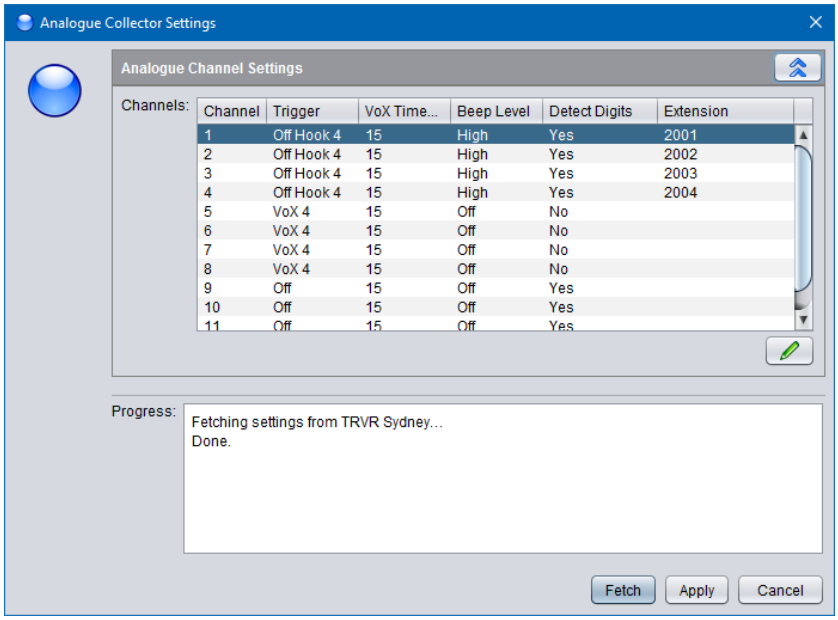
6. To enable the generation of recording beep (pip tone) choose *Low* (quiet, -30dBm), *Medium* (-24dBm) or *High* (loud, -18dBm) as value for ***Beep***, otherwise leave it to its default value *Off*.

   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.

7. Tick or un-tick ***Detect DTMF*** to enable or disable DTMF tone detection on the channels.

   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 signals 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.

8. Select **Ok** to return to the Analogue Collector Settings dialog where the new configuration for the channels will appear on the ***Channels*** table:



9. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all analogue channels will terminate when you select **Apply** during step 9.

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

8.2.17. ISDN Collector

The ISDN Media Collector is capable of capturing audio and signalling on multiple ISDN PRI links via a high-impedance tap (one per ISDN PRI link).

Total Recall VR can tap both E1 and T1 ISDN PRI 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

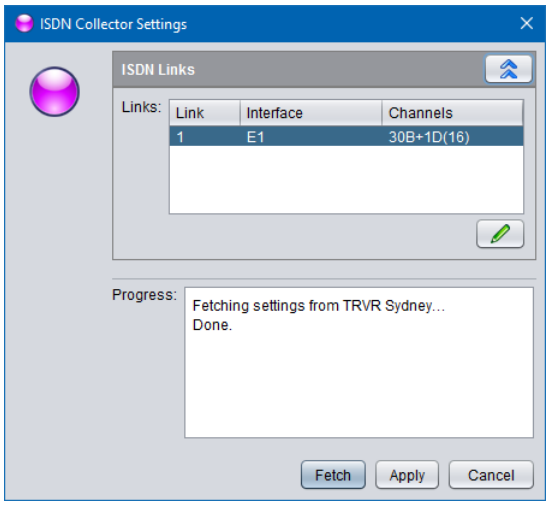
D Channel	16	24
B Channels	30	23
Dial Plan	National	National
Local Dial Plan	National	National
Country Code	Australia	USA

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

To change the configuration for an ISDN link:

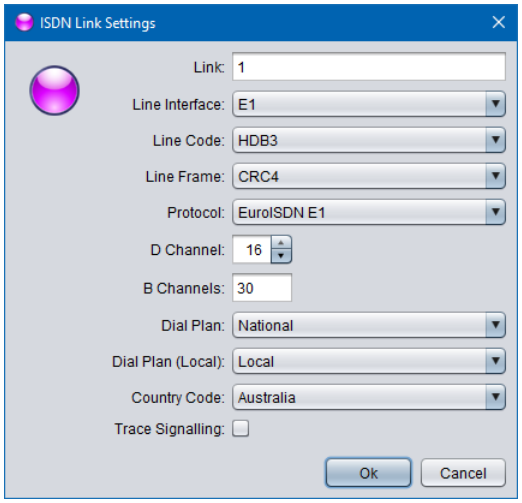
Configure an ISDN Link

1. Select **ISDN Collector** on the **Settings** tab to display the ISDN Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Select the row of parameters for the link that you wish to configure.
3. Under the ***Links*** table select to display the ISDN Link Settings dialog:



4. Select values for various parameters so that they match the configuration for the ISDN link on the PBX.

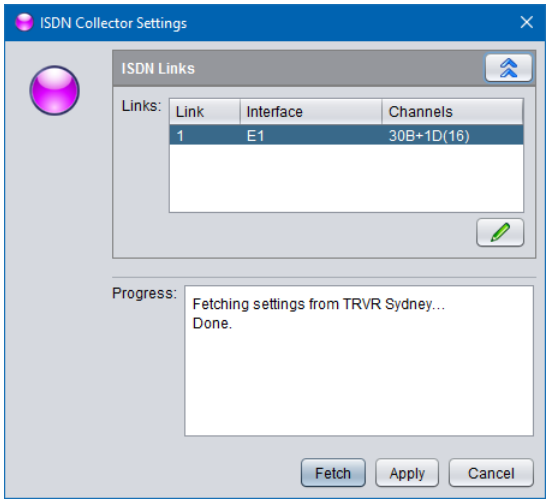
> The link configuration should reflect the configuration for the actual ISDN link on the PBX.

5. Optionally, tick ***Trace Signalling***.

   If you enable tracing of signalling, 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.

   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.

6. Select **Ok** to return to the ISDN Collector Settings dialog where the new configuration for the link will appear on the ***Links*** table:



7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all ISDN recording channels will terminate when you select **Apply** during step 7.

New recordings will start based on the new configuration for the ISDN links and channels.

8.2.18. Passive IP Collector

Total Recall VR uses a software based IP packet collector capable of detecting and collecting SIP, H.323 and RTP packets on IP networks via a SPAN port on an Ethernet switch or an alternative Ethernet link tapping device.

This packet collector does not interact with the packets on the network in any way. It does not add, remove or modify packets. It simply detects and if necessary takes a copy of each packet.

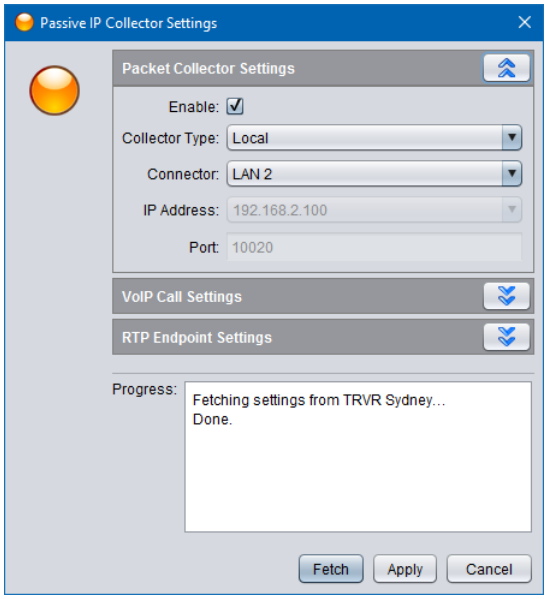
The packet collector can be internal to the Total Recall VR. If so, it uses one of the LAN interfaces (Ethernet interfaces) to detect and collect such packets. By default it is the LAN 2 interface.

Alternately, the packet collector can be remote to the Total Recall VR, i.e. running on a separate device such as the Total Recall VR Traffic Collector. If so, then the packet collector can communicate with the Total Recall VR via a TCP (recommended) or a UDP link over an IP network.

To configure the packet collector:

Configure the Passive IP Packet Collector

1. Select **Passive IP Collector** on the **Settings** tab to display the Passive IP Collector Settings dialog with the current collector settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Tick or un-tick ***Enable*** to enable or disable the collector.
3. Choose ***Collector Type***.
4. If you choose *Local* then choose ***Connector***.

   This is the LAN connector which will be used for by the collector. We recommend that to use LAN 2. This leaves LAN 1 for connection to the enterprise LAN.

5. Alternatively, and if you choose *Remote – UDP* or *Remote – TCP*, then choose ***IP Address*** and enter ***Port***.

   The IP address and port are the IP address and port which Total Recall VR will use to accept connections from remote IP collectors such as the Total Recall VR Traffic Collector.

   We recommend to use the IP address assigned to LAN 2 for the collector. This leaves LAN 1 for connection to the enterprise LAN.

6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 6.

New recordings will start based on the new configuration for the IP

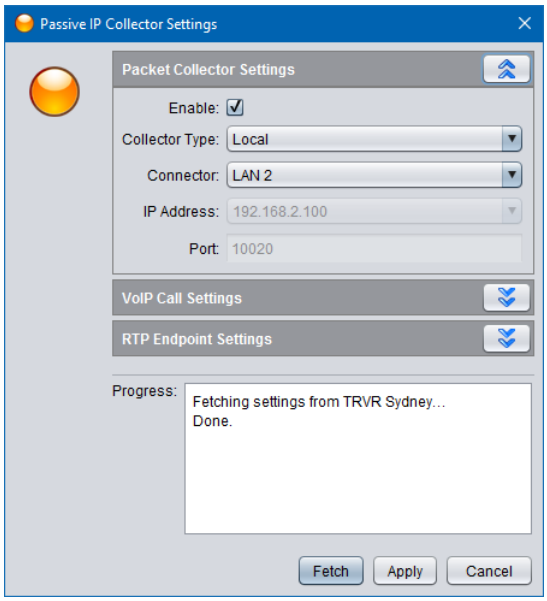
packet collector.

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:

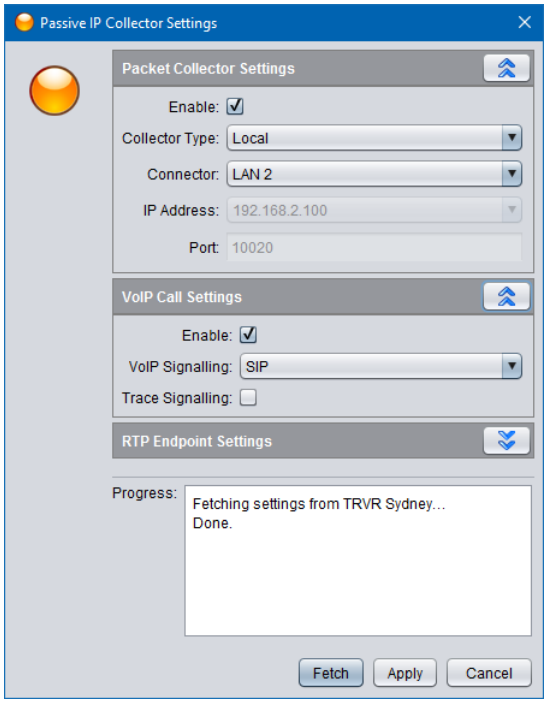
Configure VoIP Call Recording

1. Select **Passive IP Collector** on the **Settings** tab to display the Passive IP Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the VoIP Call Settings section to display the VoIP call settings parameters:



3. Tick or un-tick ***Enable*** to enable or disable VoIP call recording.
4. Choose ***VoIP Signalling***. Choose:
   a. *SIP*: if your network is using SIP signalling.
   b. *H.323*: if your network is using H.323 signalling.
5. Optionally, tick ***Trace Signalling***.

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

   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.
6. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 6.

New recordings will start based on the new configuration for the IP packet collector.

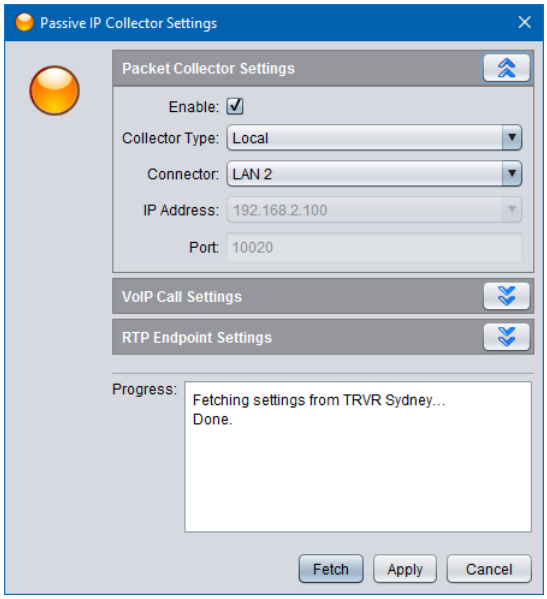
Total Recall VR can record RTP streams that are sent between RoIP and AoIP equipment in passive mode – similar to recording VoIP calls.

By default, Total Recall VR does not record any RTP streams unless they are part of a SIP session or an H.323 call. To record RTP streams that are sent between RoIP devices you must add RTP Endpoints to the configuration.

To add an RTP Endpoint to the configuration:

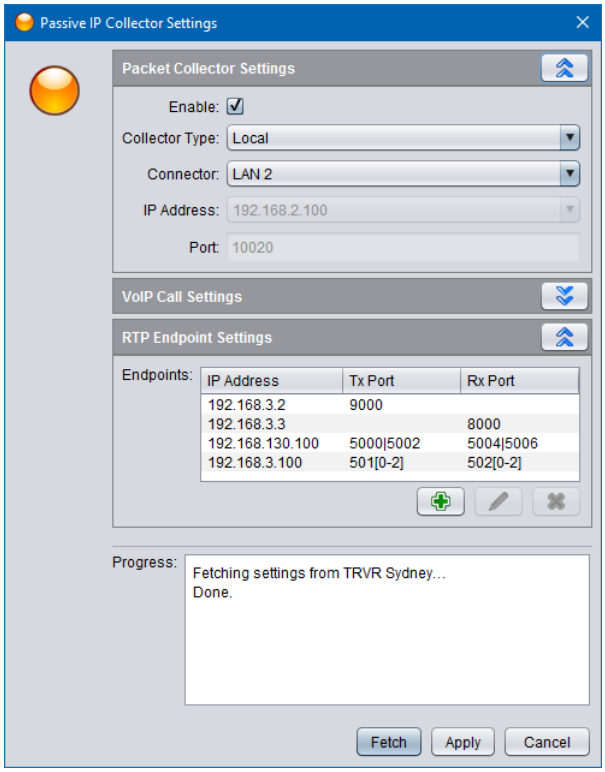
Add an RTP Endpoint

1. Select **Passive IP Collector** on the **Settings** tab to display the Passive IP Collector Settings dialog with the current collector settings on the recorder:

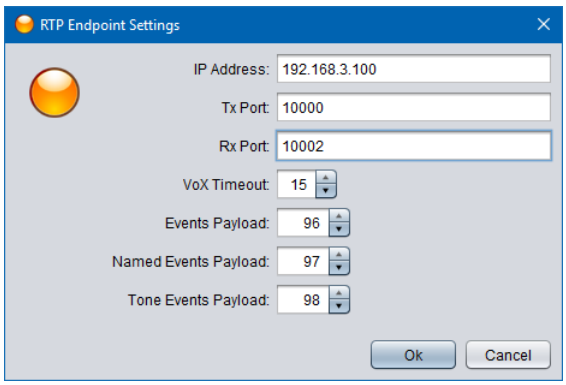


   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the RTP Endpoints Settings section to display the settings parameters for RTP endpoints:



3. Under the ***Endpoints*** table select  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.

   You can enter a regular expression which matches a range of ports. For performance reasons the ranges of UDP ports are limited to maximum of 200 ports. For example:

   - 7000 – Creates an RTP endpoint with one UDP port, 7000.

- 7000|7002 – Creates an RTP endpoint with 2 UDP ports, 7000 and 7002.
- 700[02] – Same as 7000|7002 (se previous bullet point).
- 700[0-2] - Creates an RTP endpoint with 3 UDP ports, 7000, 7001 and 7002.
- 70[1-2][0-9] – The system will reject this range as it specifies more than 200 UDP ports.

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***.

   You can enter a regular expression which matches a range of ports. For performance reasons the ranges of UDP ports are limited to maximum of 200 ports. For example:

   - 7000 – Creates an RTP endpoint with one UDP port, 7000.
   - 7000|7002 – Creates an RTP endpoint with 2 UDP ports, 7000 and 7002.
   - 700[02] – Same as 7000|7002 (se previous bullet point).
   - 700[0-2] - Creates an RTP endpoint with 3 UDP ports, 7000, 7001 and 7002.
   - 70[1-2][0-9] – The system will reject this range as it specifies more than 200 UDP ports.

7. Enter ***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. Enter ***Events Payload*** to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages.

   The value of ***Events Payload*** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages. Use -1, if the stream does not contain packets that carry composite RFC 2833 messages.

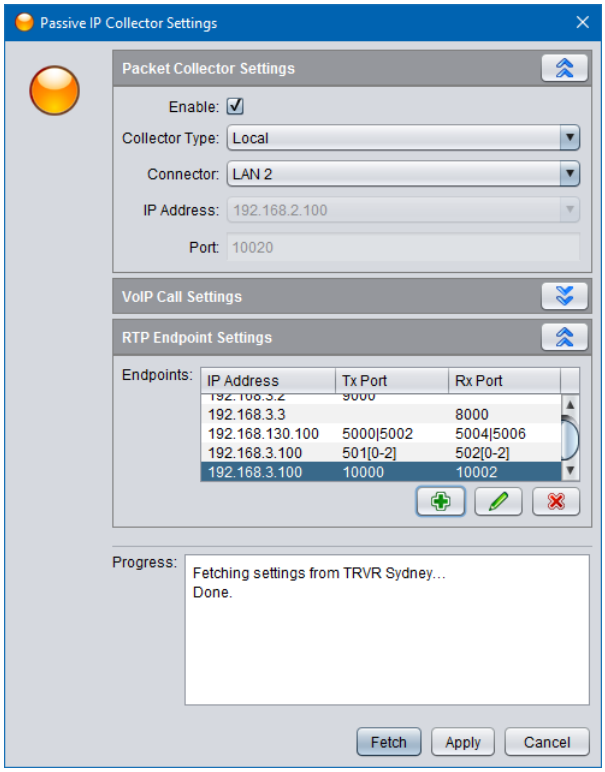
9. Enter ***Named Event Payload*** to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages.

The value of ***Named Event Payload*** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages. Use -1, if the stream does not contain packets that carry named RFC 2833 messages.

10. Enter ***Tone Event Payload*** to collect RFC 2833 tone events that are sent in RFC 2833 messages.

    The value of ***Tone Event Payload*** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages. Use -1, if the stream does not contain packets that carry tone RFC 2833 messages.

11. Select **Ok** to return to the Passive IP Collector Settings dialog where the new RTP Endpoint settings will appear in the ***Endpoints*** table:



12. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding RTP Endpoints, you can select a record in the ***Endpoints*** Table and then:

1. Select to change the configuration of the endpoint; or
2. Select to remove the endpoint.

Do not forget to select **Apply** to apply the changes to the recorder configuration.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 12.

New recordings will start based on the new configuration for the IP packet collector.

8.2.19. Active IP Collector

Total Recall VR has an active IP packet collector that is capable of recording:

- Tait VRP Calls.
- RTP Streams used on RoIP and AoIP networks.
- SIP Sessions.
- RTSP Sessions.

Tait VRP Calls

Total Recall VR has full support for the Tait VRP (Voice Recording Protocol) which is used in Tait DMR and MPT-IP solutions.

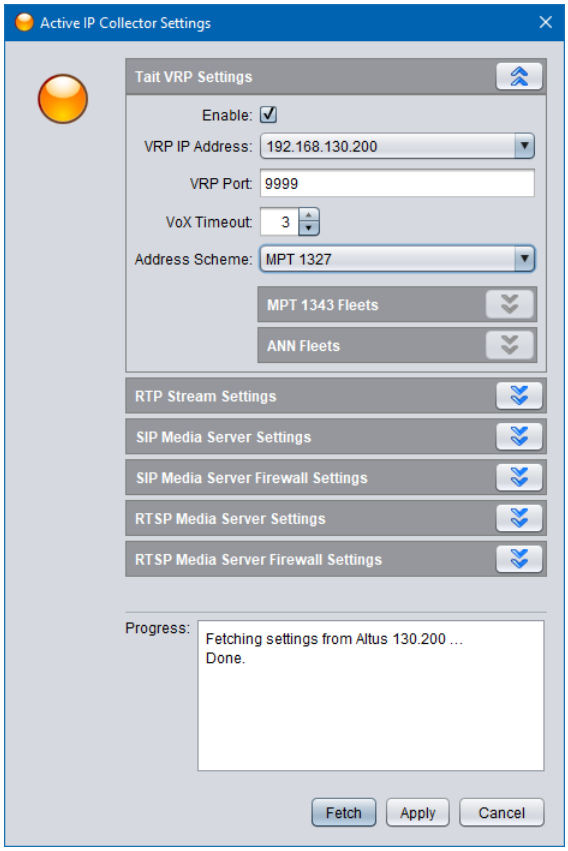
The Tait VRP service is basically a single UDP port (9999 by default) that accepts connections from Tait DMR and MPT-IP systems over a network. Multiple DMR and MPT-IP nodes can send VRP packets to a single Total Recall VR.

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 does not record VRP calls. To enable the VRP service and change its configuration:

Configure the Tait VRP Service

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Tick or un-tick ***Enable*** to enable or disable the service.
3. Choose ***VRP 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 IP recording. This leaves LAN 1 for connection to the enterprise LAN.
4. Enter ***VRP Port***.

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

6. Choose ***Address Scheme***.

   Choose the option that matches the addressing scheme that is used on the network.

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

7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 7.

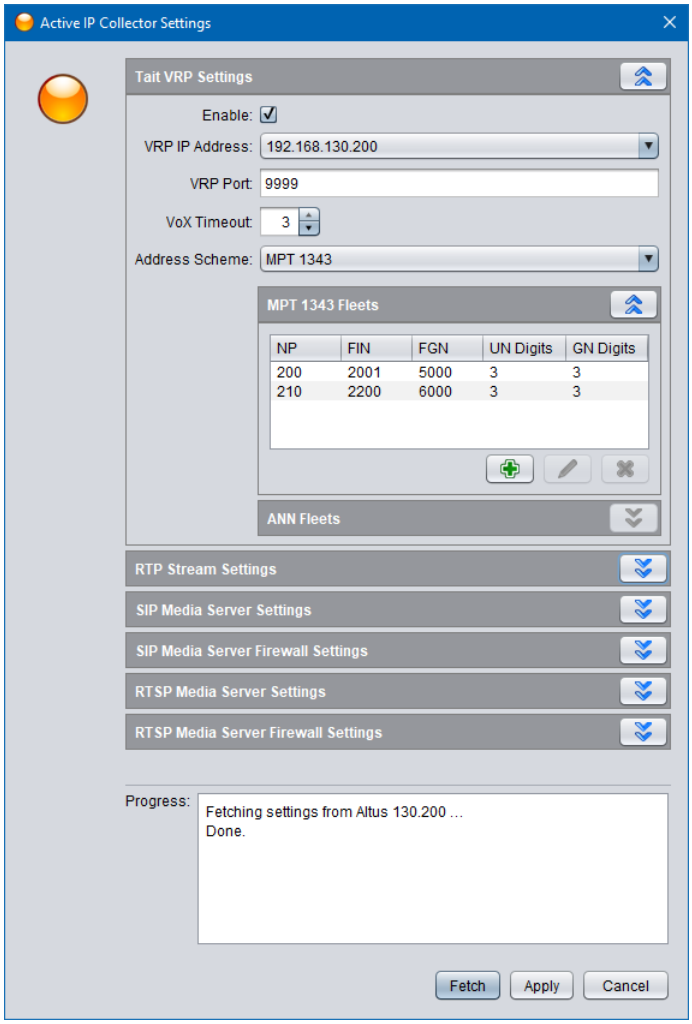
New recordings will start based on the new configuration.

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

To add fleet addressing parameters:

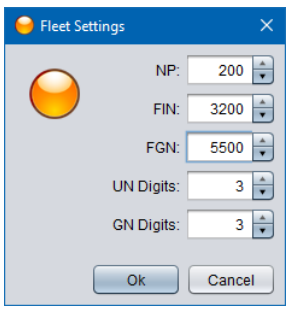
Add a MPT 1343 Fleet

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:



Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Under the ***Fleets*** table select  to display the Fleet Settings dialog:



3. Enter ***NP***.

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

4. Enter ***FIN***.

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

5. Enter ***FGN***.

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

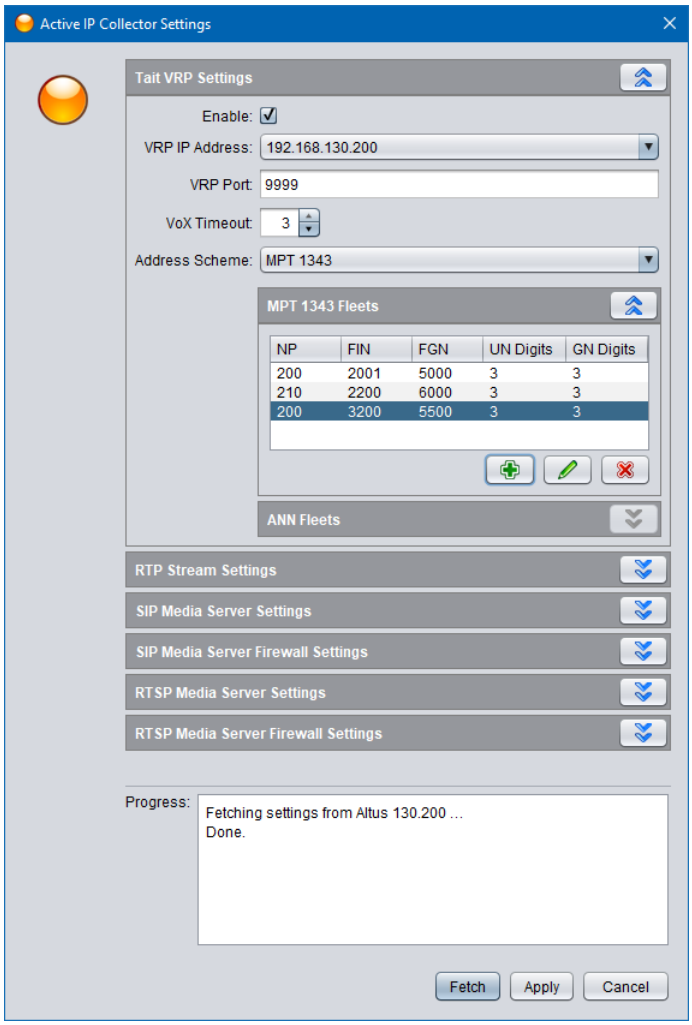
6. Enter ***UN Digits***.

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

7. Enter ***GN Digits***.

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

8. Select **Ok** to return to the Active IP Collector Settings dialog where the new fleet settings will appear in the ***Fleets*** table:



9. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding Fleets, you can select a record in the ***Fleets*** table and then:

1. Select  to change the configuration of the fleet; or

2. Select to remove the fleet.

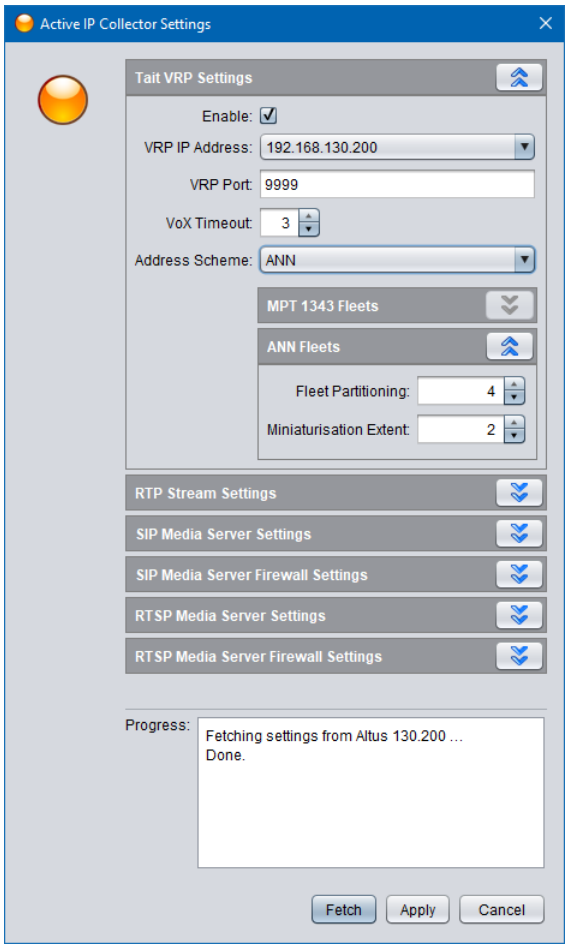
Do not forget to select **Apply** to apply the changes to the recorder configuration.

Similarly if the network is using ANN addresses, then you must configure the fleet addressing parameters.

To configure the fleet addressing parameters:

Configure ANN Fleet Parameters

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Enter ***Fleet Partitioning***.

   This parameter is also known as FPP. Valid values are 0 to 10. However, note that the sum of this parameter and the Miniaturisation Extent parameter cannot exceed 10.

3. Enter ***Miniaturisation Extent***.

This parameter is also known as MEP. Valid values are 0 to 10. However, note that the sum of this parameter and the Fleet Partitioning parameter cannot exceed 10.

4. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied

RTP Streams

Total Recall VR can receive RTP packets on user specified UDP ports on one, or simultaneously on both of its system LAN interfaces. This interface receives RTP packets only. It does not send packets, RTP or any other type, to the network.

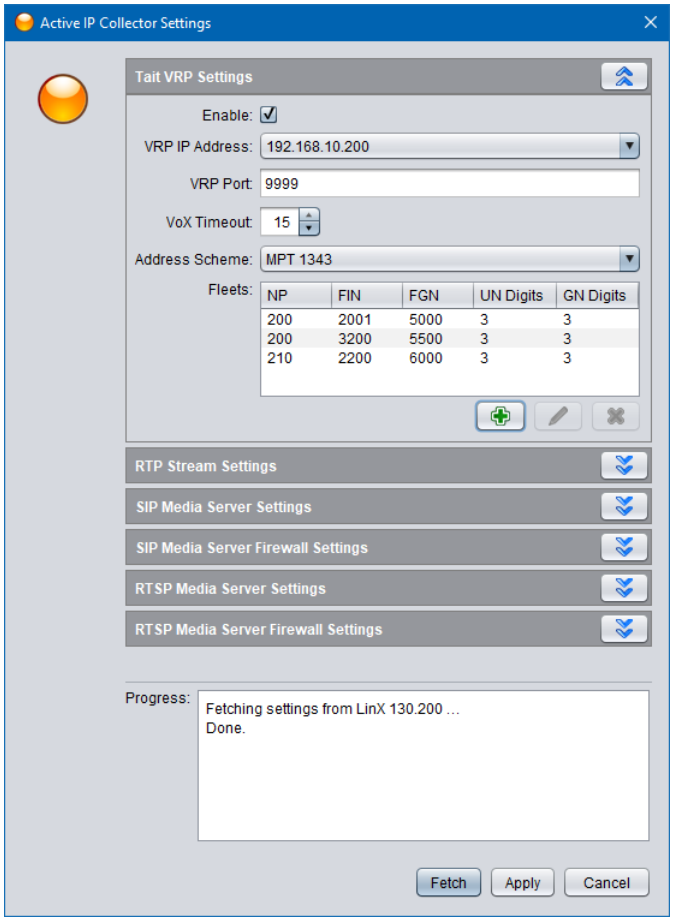
Each RTP Stream can accept RTP packets, with or without supported RTP extensions, on one or multiple UDP ports. Each UDP port will accept RTP packets with different SSRCs, so it is possible to send RTP packets from multiple RTP sources to each of the UDP ports.

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 and AoIP devices you must add RTP Stream services to the configuration.

To add an RTP Stream service to the configuration:

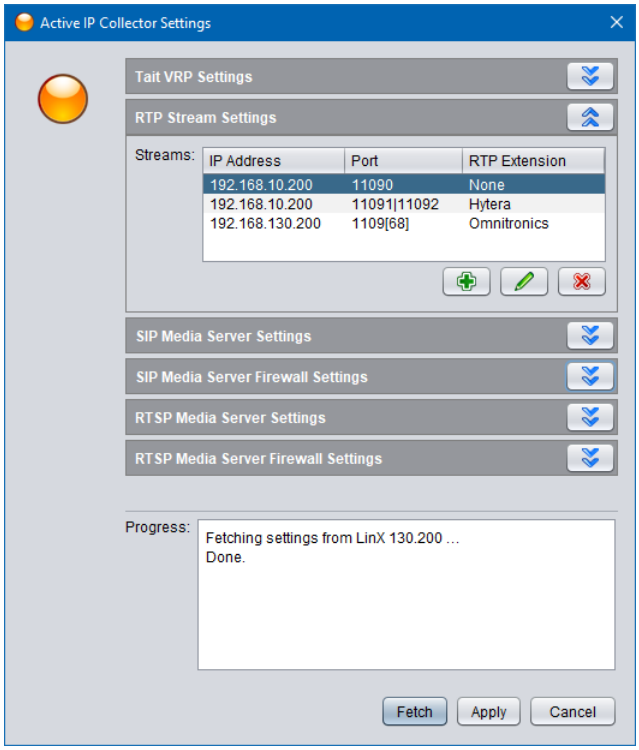
Add a unicast RTP Stream

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:

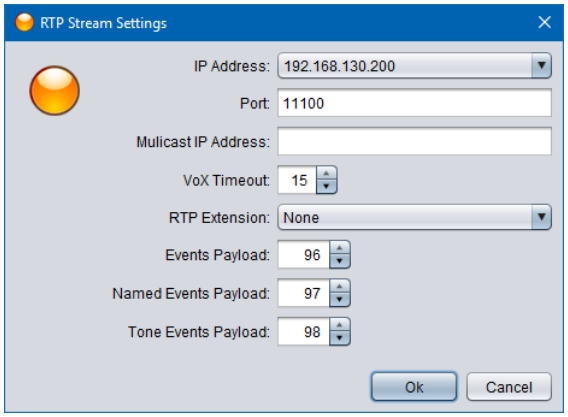


Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the RTP Stream Settings section to show the current set of RTP Streams:



3. Under the ***Streams*** table select  to display the RTP Streams Settings dialog:



4. Choose ***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 IP 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 and AoIP devices.

   You can enter a regular expression which matches a range of ports. For performance reasons the ranges of UDP ports are limited to maximum of 4 ports. For example:

- 7000 – Creates an RTP stream with one UDP port, 7000.
- 7000|7002 – Creates an RTP stream with 2 UDP ports, 7000 and 7002.
- 700[02] – Same as 7000|7002 (see previous bullet point).
- 700[0-2] - Creates an RTP stream with 3 UDP ports, 7000, 7001 and 7002.
- 700[0-9] – The system will reject this range as it specifies more than 4 UDP ports (10 ports actually, 7000 to 7009 inclusive).

6. Leave ***Multicast IP Address*** blank, it is not used for unicast streams.
7. Enter ***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.

   If an RTP stream has multiple UDP ports, then the 'quiet time' (absence of RTP packets) is across all UDP ports; that is, absence of RTP packets across all UDP ports that are part of the RTP stream for the duration of ***VOX Timeout*** will trigger end of recording.
8. Choose ***RTP Extension***. RTP packets can contain a proprietary extension which usually contains important information such as radio IDs for example. Total Recall VR can process the information in some proprietary extensions, however you must specify which extension appears in the RTP packets that will arrive on the UDP ports that are part of the RTP stream. The options are:

   - None – the RTP packets do not contain any extension. Choose this option if the RTP packets do not contain an extension, or they contain an extension that is not supported by Total Recall VR.
   - Hytera – the RTP packets contain the Hytera HDAP extension.
   - Omnironics - the RTP packets contain the Omnironics RTP extension.
9. Enter ***Events Payload*** to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages.

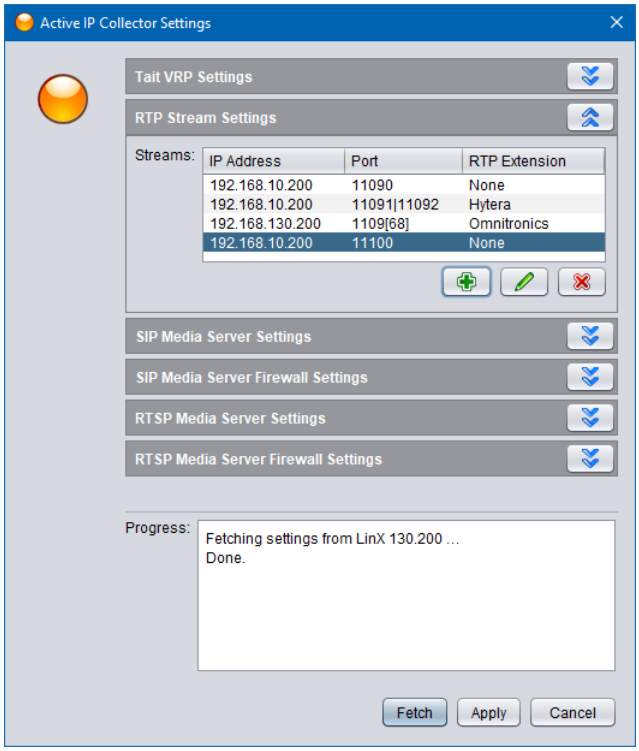
   The value of ***Events Payload*** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages. Use -1, if the stream does not contain packets that carry composite RFC 2833 messages.
10. Enter ***Named Event Payload*** to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages.

    The value of ***Named Event Payload*** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages. Use -1, if the stream does not contain packets that carry named RFC 2833 messages.

11. Enter ***Tone Event Payload*** to collect RFC 2833 tone events that are sent in RFC 2833 messages.

    The value of ***Tone Event Payload*** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages. Use -1, if the stream does not contain packets that carry tone RFC 2833 messages.

12. Select **Ok** to return to the Active IP Collector Settings dialog where the new RTP Stream settings will appear in the ***Streams*** table:

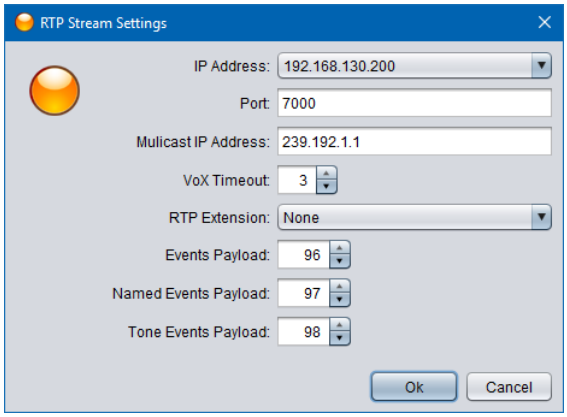


13. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

You can configure RTP Streams which will listen for packets on a multicast (or broadcast) group as well.

Add a multicast RTP Stream

1. Under the ***Streams*** table select to display the RTP Streams Settings dialog:



2. Choose ***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. The system will use the LAN 1 or LAN 2 interface to receive multicast packets based on your selection.

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

3. Enter ***UDP Port***.

   This is the UDP port that is used by the multicast group.

   You can enter a regular expression which matches a range of ports. For performance reasons the ranges of UDP ports are limited to maximum of 4 ports. For example:

   - 7000 – Creates an RTP stream with one UDP port, 7000.
   - 7000|7002 – Creates an RTP stream with 2 UDP ports, 7000 and 7002.
   - 700[02] – Same as 7000|7002 (see previous bullet point).
   - 700[0-2] - Creates an RTP stream with 3 UDP ports, 7000, 7001 and 7002.
   - 700[0-9] – The system will reject this range as it specifies more than 4 UDP ports (10 ports actually, 7000 to 7009 inclusive).

4. Enter ***Multicast IP Address***.

   This is the multicast IP address that is used by the multicast group.

5. Enter ***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.

   If an RTP stream has multiple UDP ports, then the 'quiet time' (absence of RTP packets) is across all UDP ports; that is, absence of RTP packets across all UDP ports that are part of the RTP stream for the duration of ***VOX Timeout*** will trigger end of recording.

6. Choose ***RTP Extension***. RTP packets can contain a proprietary extension which usually contains important information such as radio IDs for example. Total Recall VR can process the information in some proprietary extensions, however you must specify which extension appears in the RTP packets that will arrive on the UDP ports that are part of the RTP stream. The options are:

    - None – the RTP packets do not contain any extension. Choose this option if the RTP packets do not contain an extension, or they contain an extension that is not supported by Total Recall VR.
    - Hytera – the RTP packets contain the Hytera HDAP extension.
    - Omnironics - the RTP packets contain the Omnironics RTP extension.

7. Enter ***Events Payload*** to collect RFC 2833 named and tone events that are sent in composite RFC 2833 messages.

    The value of ***Events Payload*** should match the payload ID that appears in RTP packets that carry composite RFC 2833 messages. Use -1, if the stream does not contain packets that carry composite RFC 2833 messages.

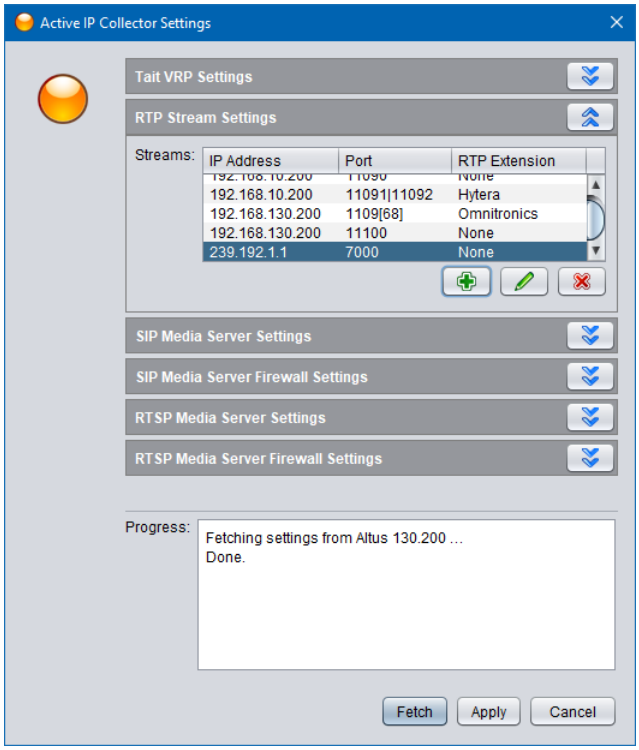
8. Enter ***Named Event Payload*** to collect RFC 2833 named events (for example DTMF digits) that are sent in RFC 2833 messages.

    The value of ***Named Event Payload*** should match the payload ID that appears in RTP packets that carry named RFC 2833 messages. Use -1, if the stream does not contain packets that carry named RFC 2833 messages.

9. Enter ***Tone Event Payload*** to collect RFC 2833 tone events that are sent in RFC 2833 messages.

    The value of ***Tone Event Payload*** should match the payload ID that appears in RTP packets that carry tone RFC 2833 messages. Use -1, if the stream does not contain packets that carry tone RFC 2833 messages.

10. Select **Ok** to return to the Active IP Collector Settings dialog where the new RTP Stream settings will appear in the ***Streams*** table:



11. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

After adding RTP Streams, you can select a record in the ***Streams*** table and then:

1. Select to change the configuration of the stream; or
2. Select to remove the stream.

Do not forget to select **Apply** to apply the changes to the recorder configuration.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 12.

New recordings will start based on the new configuration.

SIP Sessions

Total Recall VR can act as a SIP Media Server and accept SIP session request from other equipment, such as SIP telephone systems, radio consoles, controllers and base stations, for the purpose of recording audio.

This interface is capable of receiving RTP packets during SIP sessions. It does not send RTP packets during SIP sessions.

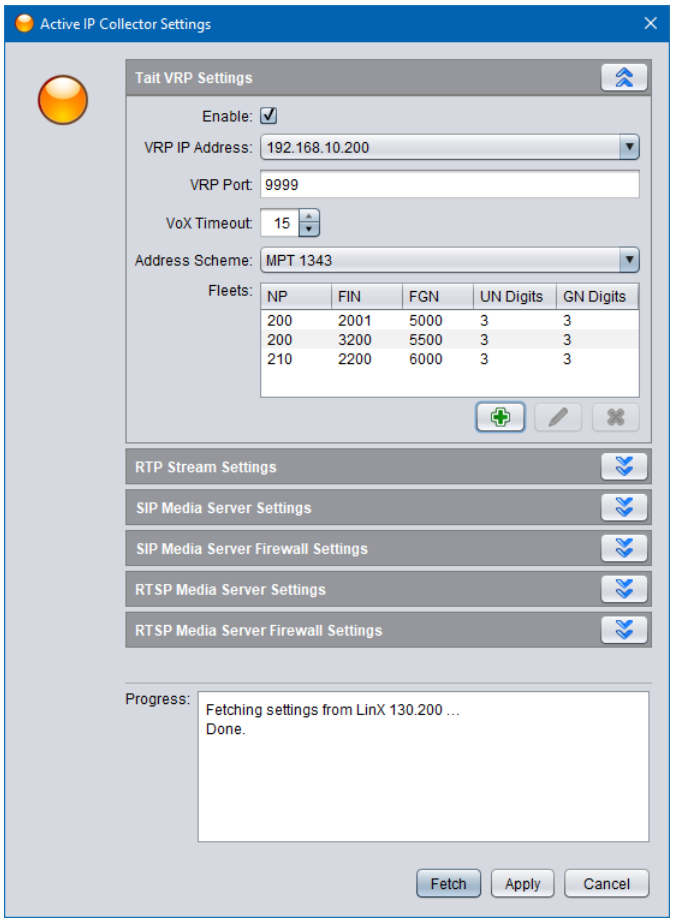
The SIP Media Server provides different SIP recording services. The recording service that will apply to a SIP session depends on the user part of the SIP "To" header that appears in the SIP INVITE message:

SIP "To" Header	Recording Service
recorder.sip@...	Basic SIP session recording service where up to 2 audio RTP streams will be recorded.
recorder.siprec@...	SIPrec recordings service based on RFC7865 and RFC7866 where the recorder acts as an SRS.
recorder.ed137@...	ED137 recording service based on ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, January 2012 (ED-137/4B) and ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, March 2019 (ED-137/4C).
recorder.bib@...	Cisco IP phone based recording based on the built-in-bridge (BiB). Requires Cisco UCM release 8.5 or better.
recorder.acom@...	Zetron Acom recording service based on Zetron SIP Logging Interface Specification 025-9673F Rev F, January 2017.
LoggerChan<xxx>@...	Zetron Acom recording service based on Zetron SIP Logging Interface Specification 025-9673F Rev F, January 2017. It enforces that the SIP "From" header value is "Zchan<xxx>@...".
recorder.max@...	Zetron MAX recording service based on Zetron MAX Voice Logger Interface Control ICD 025-9702A Rev A, January 2017.
Channel<xxx>@...	Zetron MAX recording service based on Zetron MAX Voice Logger Interface Control ICD 025-9702A Rev A, January 2017. It enforces that the SIP "From" header value is "VLG-channel<xxx>@...".
Any other value	Same as recorder.sip@... Basic SIP session recording service where up to 2 audio RTP streams will be recorded.

By default the SIP media server is disabled. To enable and change the configuration of the SIP Media Server:

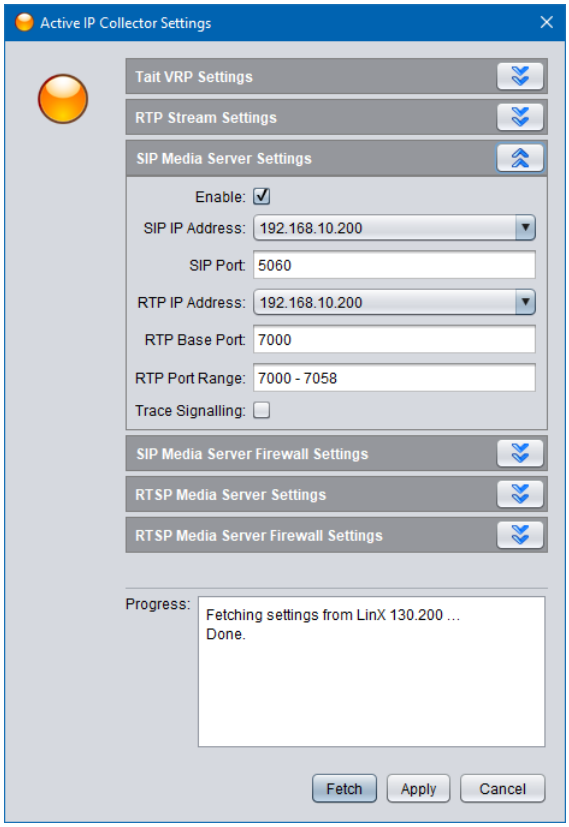
Configure the SIP Media Server

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the SIP Media Server Settings section to show the current settings for the media server:



3. Tick or un-tick ***Enable*** to enable or disable the media server.
4. Choose ***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 IP recording. This leaves LAN 1 for connection to the enterprise LAN.
5. Enter ***SIP Port***.

   This is the TCP and UDP port that Total Recall VR will use to receive SIP packets from other devices on the network.
6. Choose ***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 IP 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 ***Trace Signalling***.

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

   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 **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 9.

New recordings will start based on the new configuration.

If the SIP media server is behind a firewall that uses a NAT (Network Address Translator), then you can configure the SIP media server to accept SIP and RTP traffic from endpoints that are located on the other side of the firewall.

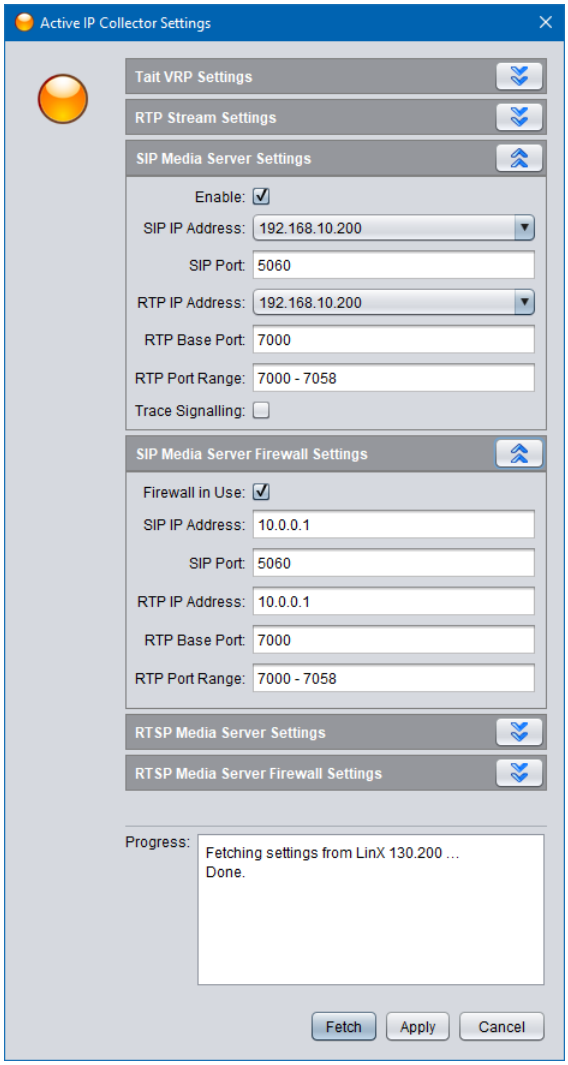
The SIP media server can work only behind a Full Cone NAT, a.k.a. Static NAT and 1-to-1 NAT.

If you wish to record SIP traffic from public endpoints (outside of firewall) as well as private endpoints (inside the firewall), then set the ***SIP Port*** and the ***RTP Port Base*** to the same value in the SIP Media Server Settings and the SIP Media Server Firewall Settings section.

Otherwise, the SIP media server will only record traffic from public endpoints if you tick ***Firewall is in use***.

Configure the SIP Media Server for operation behind a Firewall

1. Expand the SIP Media Server Firewall Settings section to show the current firewall settings for the media server:



2. Tick or un-tick ***Firewall in Use*** to enable or disable operation behind a firewall.

3. Enter ***SIP IP Address***.

   This a public IP address of the firewall.

4. Enter ***SIP Port***.

   This is the TCP and/or UDP port on the public side of the firewall which will be used to receive SIP packets. This port needs to forward SIP packets to the SIP media server.

5. Enter ***RTP IP Address***.

   This a public IP address of the firewall.

6. Enter ***RTP Base Port***.

This is the starting UDP port on the public side of the firewall that will be used to receive RTP packets. The set of UDP ports must forward RTP packets to the SIP media serve. The actual number of UDP ports that Total Recall VR will use depends on the number of licensed IP 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***.

7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 7.

New recordings will start based on the new configuration.

RTSP Sessions

Total Recall VR can act as an RTSP Media Server and accept RTSP session request from other equipment for the purpose of recording audio. When combined with the SIP Media Server, Total Recall VR can record audio conversations in ED-137 networks which are common in the air traffic control environments.

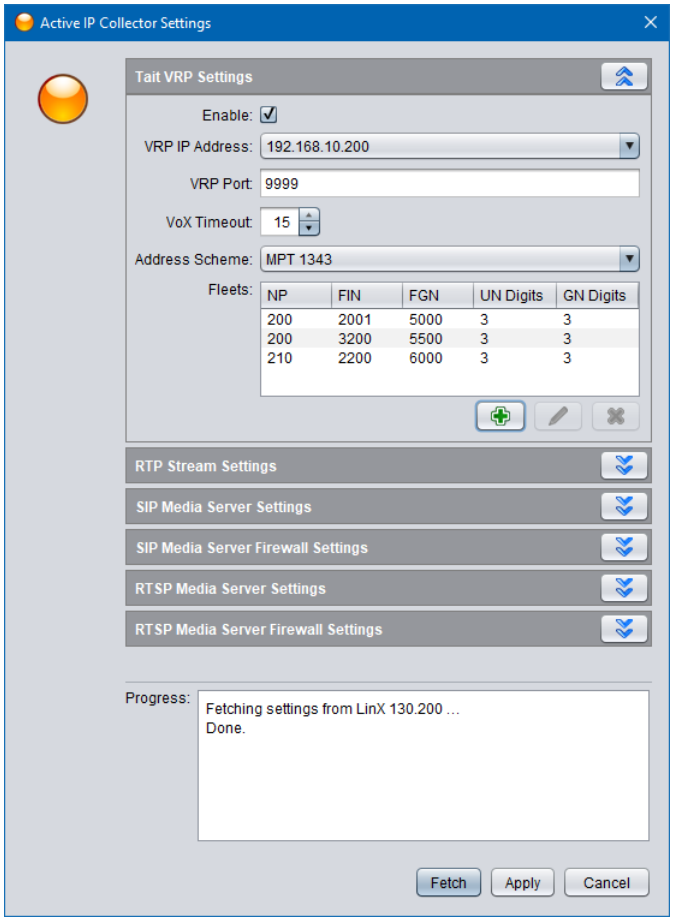
This interface is capable of receiving RTP packets during RTSP sessions on independent UDP ports or interleaved with the RTSP messages on the RTSP (TCP) port. It does not send RTP packets during RTSP sessions (see ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, January 2012 (ED-137/4B) and ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, March 2019 (ED-137/4C)).

In addition to RTP packets, this interface is capable of receiving session metadata in the first RECORD message and subsequent SET_PARAMETER messages. The metadata can be in the Total Recall VR proprietary format or the ED-137 format (see ED-137 Interoperability Standard for VoIP ATM Components, Part 3: Recording).

By default the RTSP media server is disabled. To enable and change the configuration of the RTSP Media Server:

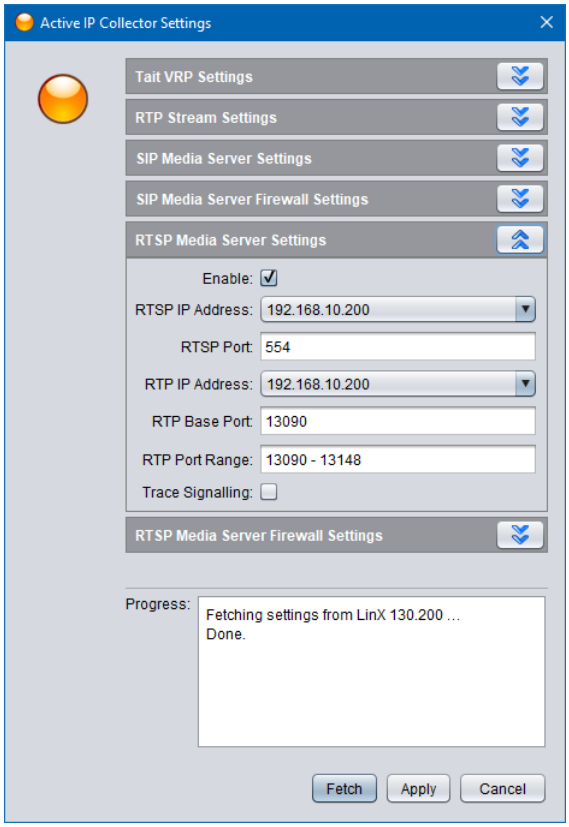
Configure the RTSP Media Server

1. Select **Active IP Collector** on the **Settings** tab to display the Active IP Collector Settings dialog with the current collector settings on the recorder:



   Note that the values of the settings on the recorder may change at any time. Select **Fetch** at any time to fetch the current values of the settings from the recorder. ***Progress*** shows the status of the operation.

2. Expand the RTSP Media Server Settings section to show the current settings for the media server:



3. Tick or un-tick ***Enable*** to enable or disable the media server.
4. Choose ***RTSP 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 IP recording. This leaves LAN 1 for connection to the enterprise LAN.
5. Enter ***RTSP Port***.

   This is the TCP port that Total Recall VR will use to receive RTSP packets (and interleaved RTP packets) from other devices on the network.
6. Choose ***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 IP 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 ***Trace Signalling***.

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

   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 **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 9.

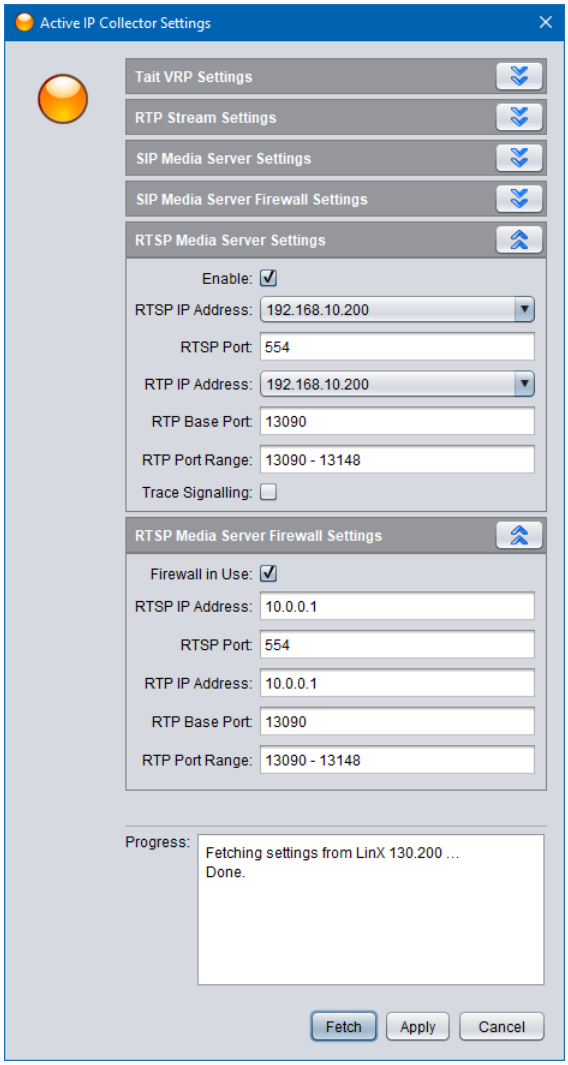
New recordings will start based on the new configuration.

If the RTSP media server is behind a firewall that uses a NAT (Network Address Translator), then you can configure the RTSP media server to accept RTSP and RTP traffic from endpoints that are located on the other side of the firewall.

The RTSP media server can work only behind a Full Cone NAT, a.k.a. Static NAT and 1-to-1 NAT.

Configure the RTSP Media Server for operation behind a Firewall

1. Expand the RTSP Media Server Firewall Settings section to show the current firewall settings for the media server:



2. Tick or un-tick ***Firewall in Use*** to enable or disable operation behind a firewall.
3. Enter ***RTSP IP Address***.

   This a public IP address of the firewall.
4. Enter ***RTSP Port***.

   This is the TCP port on the public side of the firewall which will be used to receive RTSP and interleaved RTP packets. This port needs to forward RTSP and interleaved RTP packets to the RTSP media server.
5. Enter ***RTP IP Address***.

   This a public IP address of the firewall.
6. Enter ***RTP Base Port***.

   This is the starting UDP port on the public side of the firewall that will be used to receive RTP packets. The set of UDP ports must forward RTP packets to the SIP media serve. The actual number of UDP ports that Total Recall VR will use depends on the number of licensed IP 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***.

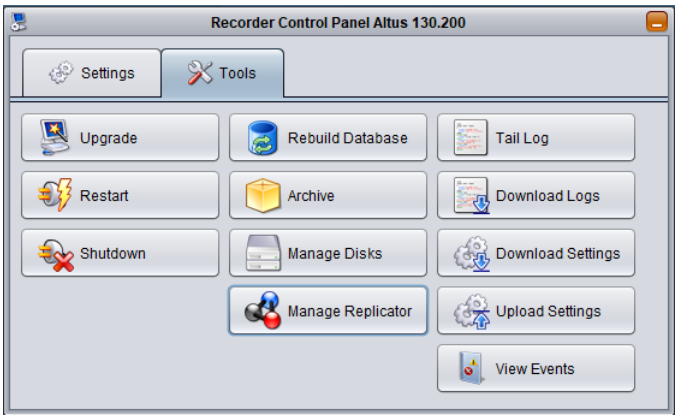
7. Select **Apply** to apply the new values of the settings to the recorder. ***Progress*** will show the status of the apply operation. Note how the actual values of the settings are automatically fetched from the recorder after the new values are applied.

If you change the configuration while recording, then all active recordings on all IP recording channels will terminate when you select **Apply** during step 7.

New recordings will start based on the new configuration.

8.3. System Maintenance

Recorder Control Panel enables users to remotely perform a number of maintenance activities on Total Recall VR systems. The tools for different activities are on the Tools tab:



8.3.1. Upgrade

Recorder Control Panel can upload and install an updated version of the Total Recall VR application to Total Recall VR systems.

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.

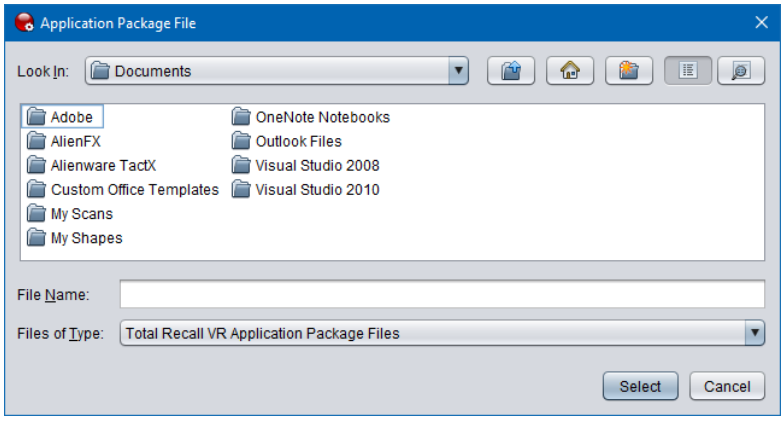
You can download images (ISO files) for upgrade discs from our web site. Go to http://www.totalrecallvr.com/downloads.

If your PC does not have a disc drive, then you can simply unpack the content of the ISO file to a directory on your PC and then use the files from that directory during the upgrade process.

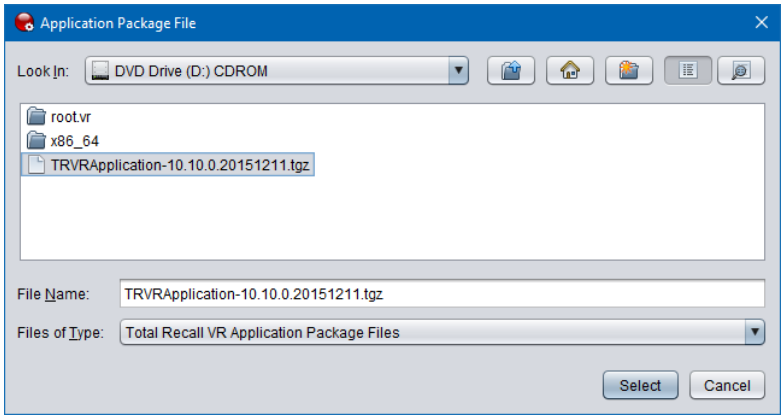
Once you have the disc, to upgrade the application:

Upgrade the Application on a Total Recall VR

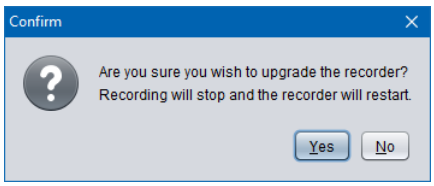
1. Select **Upgrade** on the **Tools** tab to display the Total Recall VR application package file chooser dialog:



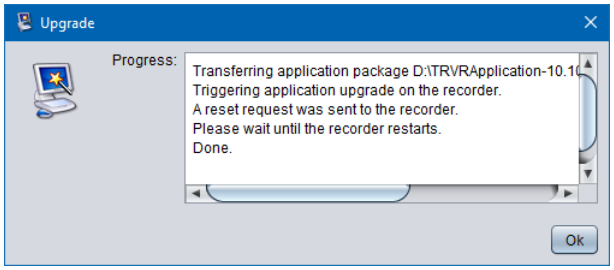
2. Select a Total Recall VR application package (.tgz file) which is located on the upgrade disc:



3. Select **Select.** Recorder Control Panel will ask you to confirm the upgrade:



4. Select **Yes** to initiate the upgrade.
5. Recorder Control Panel will transfer the package to the recorder, upgrade the recorder and restart it.



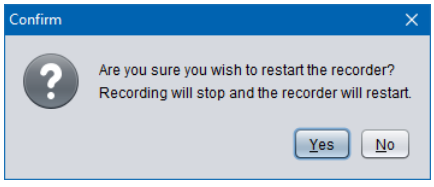
The Total Recall VR system will be running the new version when it restart.

8.3.2. Restart

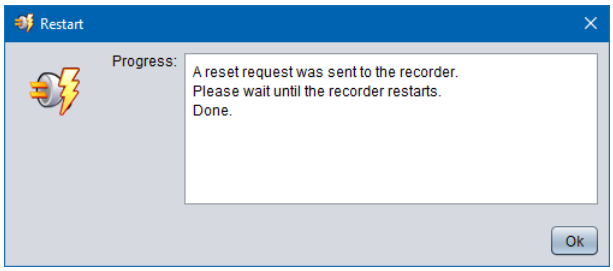
Recorder Control Panel can remotely restart Total Recall VR systems.

Restart a Total Recall VR

1. Select **Restart** on the **Tools** tab.
2. Recorder Control Panel will ask you to confirm:



3. Select **Yes** to restart the recorder.
4. Recorder Control Panel will restart the recorder:



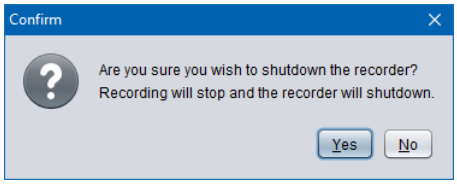
8.3.3. Shutdown

You will need to physically power up Total Recall VR after you shut it down.

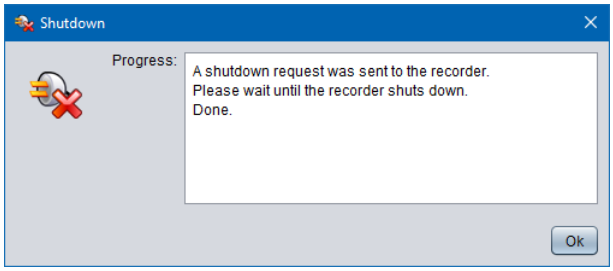
Recorder Control Panel can remotely shutdown Total Recall VR systems.

Shutdown a Total Recall VR

1. Select **Shutdown** on the **Tools** tab.
2. Recorder Control Panel will ask you to confirm:



3. Select **Yes** to shutdown the recorder.
4. Recorder Control Panel will shutdown the recorder:



8.3.4. Rebuild Database

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.

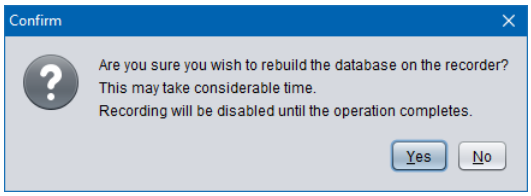
DO NOT interrupt the rebuilding of the database. Doing so may result in an irreversible damage to the database and recordings.

Total Recall VR automatically rebuilds its database when it starts after what is known as a “dirty shutdown”.

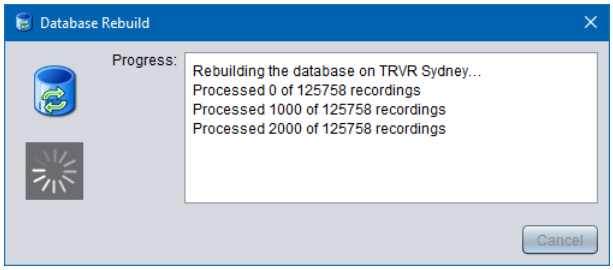
However, it is possible to trigger the process manually from Recorder Control Panel as well:

Rebuild the Database

1. Select **Rebuild Database** on the **Tools** tab to initiate the process.
2. Recorder Control Panel will ask you to confirm:



3. Select **Yes** to rebuild the database. Recorder Control Panel will start the process and show progress:



4. Eventual the operation will complete and normal operation will re-start.

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 browser screens screen. Files that cannot be read at all will be removed (deleted) during the rebuild process.

8.3.5. Archive

Recorder Control Panel trigger on-demand archiving on Total Recall VR systems.

If you plan to archive remotely, then make sure to either:

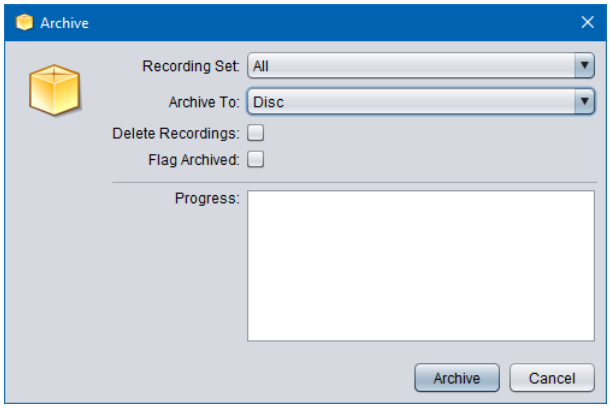
- Load a CD, DVD or BD disc in the disc drive of the Total Recall VR system; or
- Attach a USB key or disk drive to the system; or
- Configure a default network archive as explained in section 8.2.9 Archiver.

This utility is available only for Total Recall VR systems with application version 9.20.0 and 10.11.0, or better.

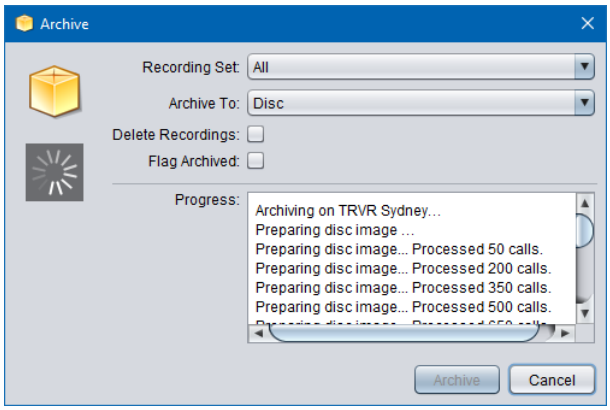
To start an on-demand archive session on a Total Recall VR from Recorder Control Panel:

Archive On-Demand

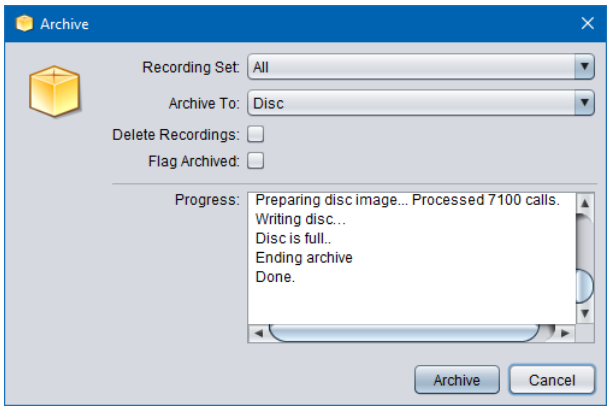
1. Select **Archive** on the **Tools** tab to display the



2. Choose ***Recording Set***. Choose:
    - *All* – to archive all recordings that exist on the system.
    - *Not Archived* – to archive all recordings that have not been archived to date.
    - *Tagged* – to archive all recordings that are tagged (* tag).
3. Choose ***Archive To***. Choose:
    - *Disc* - if you wish to archive to a CD, DVD or BD disc. A CD-R, CD-RW, DVD+RW, DVD-R, DVD+R, BD-R or BD-RE disc should be in the disc drive of the Total Recall VR.
    - *USB* - if you wish to archive to a USB key or disk drive. A USB key or disk drive should be attached to the system.
    - *Network* – if you wish to archive to a network drive. See section 8.2.9 Archiver for information on how to configure the network share.
4. Optionally, tick ***Delete Recordings*** to archive and then delete the archived recordings. By default, Total Recall VR does not delete the recordings after archiving them.
5. Optionally, tick ***Flag Archived*** to mark recordings as archived which will exclude the recordings from subsequent auto-archive sessions.
6. Select **Archive** to start the process. Recorder Control Panel will show progress:



7. Eventual the operation will complete. You can cancel the archive at any time however there may be set of records that will be written to the archive before you select **Cancel**.



The archive is now ready to use with Total Recall VR PC applications.

If you are archiving to disc, and if multiple discs are needed to complete the full archive, then this utility will create the first disc only and end the archive at that point.

8.3.6. Manage Disks

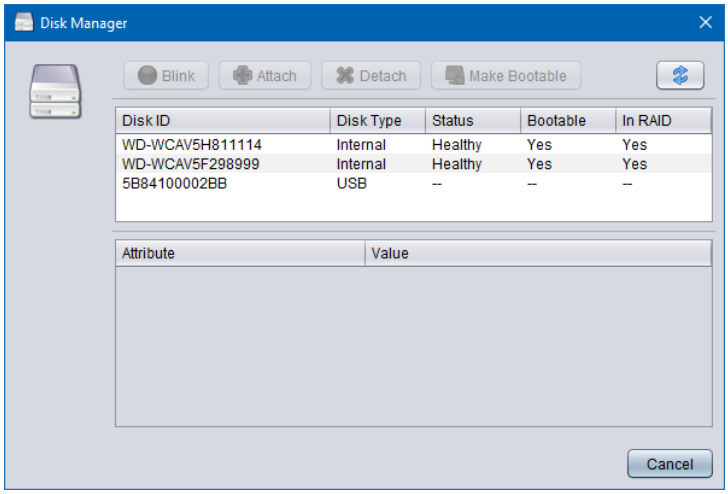
Recorder Control Panel provides a set of disk maintenance utilities which can be used to view the health status of the system disks. In addition, and on system with RAID disks, you can use the utilities to replace disks while the system is recording.

This utility is available only for Total Recall VR systems with application version 10.6.0, or better.

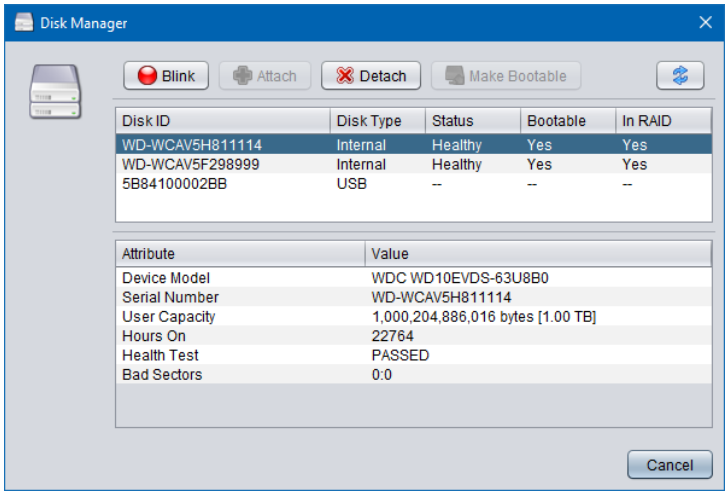
To view the operating status health of the system disks:

Display System Disk Status

1. Select **Manage Disks** on the **Tools** tab to display the Disk Manager dialog:



2. Select a disk in the table to view the status of the disk:



The disk information shows a set of operational parameters for the disk:

- Hours On: the actual number of working hours for the disk.
- Health Test: whether the disk has passed or failed a comprehensive health test. Disks that have failed the health test should be replaced immediately.
- 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:

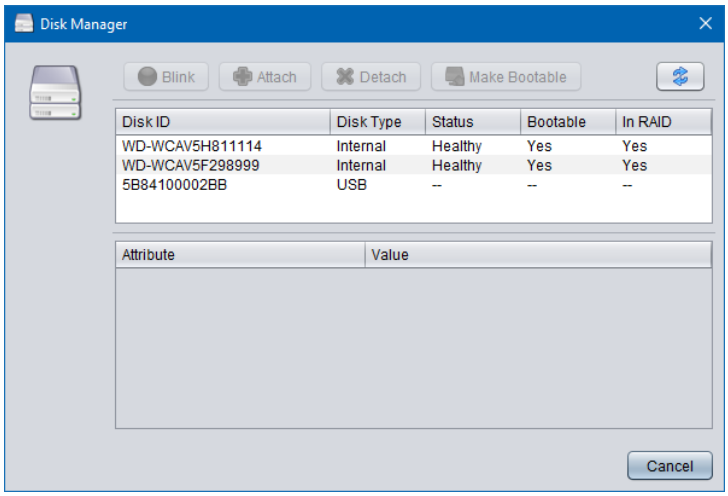
Replace a Disk (on a system with RAID disks)

1. You can perform this procedure while the system is fully operational. There is no need to stop recording.

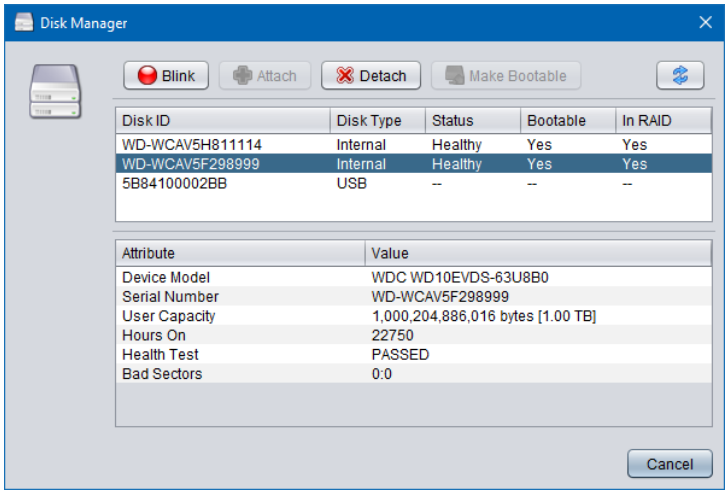
   However, you and only you, can decide when the best time to perform disk maintenance activities on the system is.

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. Select **Manage Disks** on the **Tools** tab to display the Disk Manager dialog:



4. Select a disk in the table to view the status of the disk:



5. Select **Blink**.

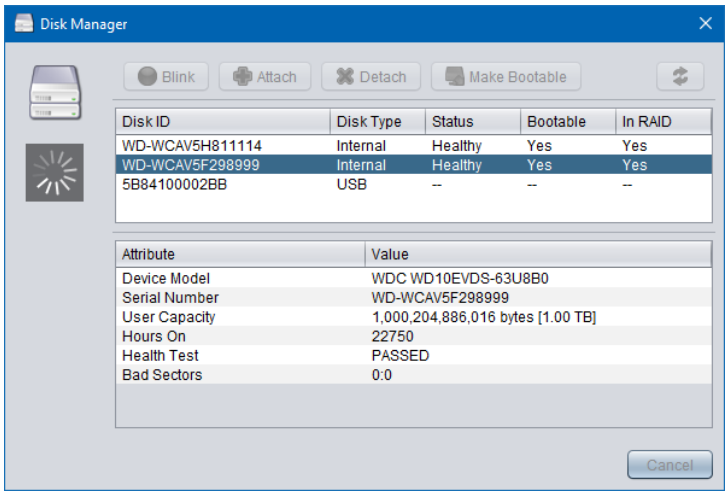
This will light the disk LED for about 30 seconds which will help you identify the physical location of the disk. Make sure you mark the disk in some way so you can remove the correct disk during subsequent steps.

If you cannot blink the disk that you are trying to replace, then blink the other disk.

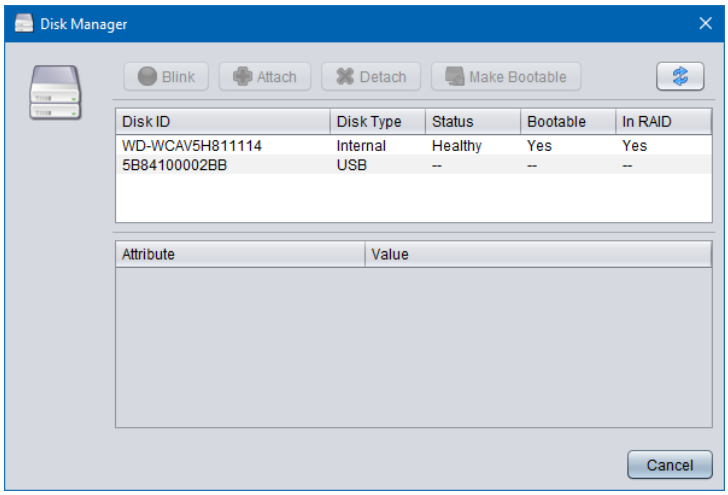
Either way, you will be able to physically identify the disk that you wish to replace.

6. Select **Detach**.

   The system will remove the disk from the RAID and detach it from the SCSI bus to prepare the disk for physical removal. This activity can take up to one minute to complete, so be patient.



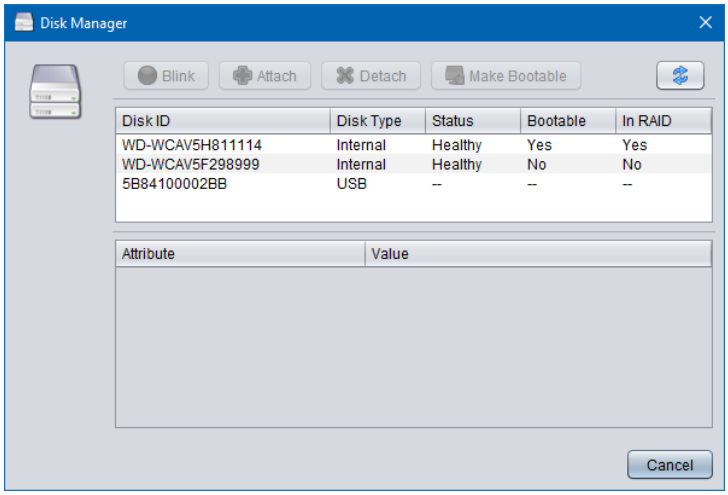
When done the disk will no longer appear in the table of disks:



7. At this point you can physically replace the non-working disk.

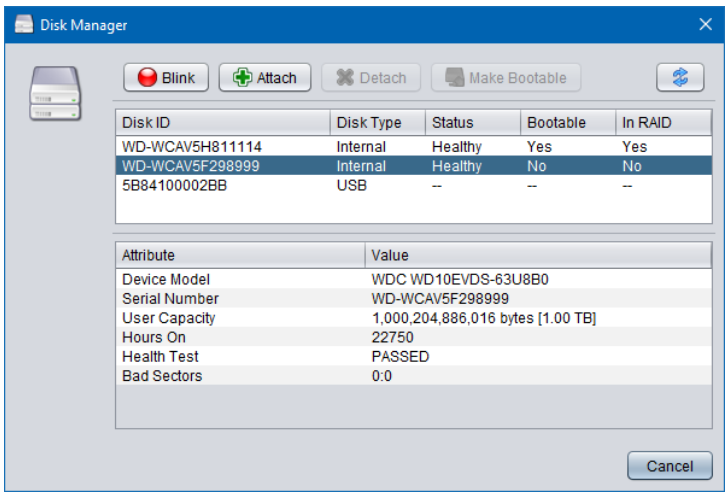
   MAKE SURE TO REMOVE THE CORRECT DISK. IF YOU REMOVE THE ACTIVE DISK BY ACCIDENT THE SYSTEM WILL STOP WORKING AND CANNOT BE RECOVERED FROM THE DISKS.

8. Select to load the new disk in the table of disks. This will take few moments to complete and the system should include the new disk in the table:

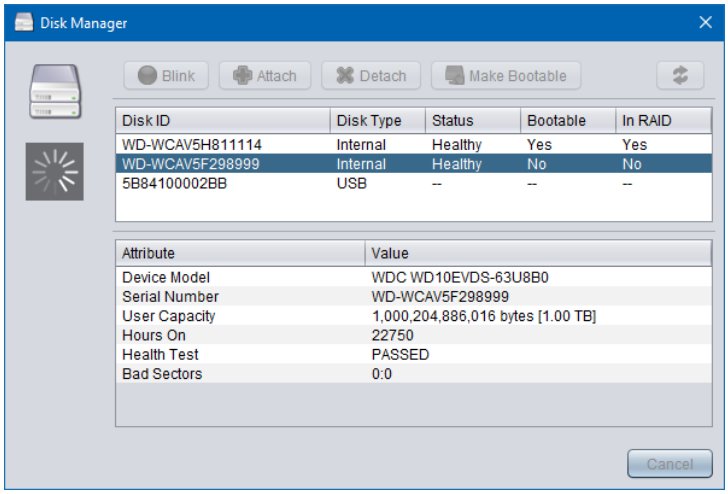


Note the In RAID status (No) for the new disk. That is, the system recognises the disk, however the new disk is not part of the RAID yet and it is not being used.

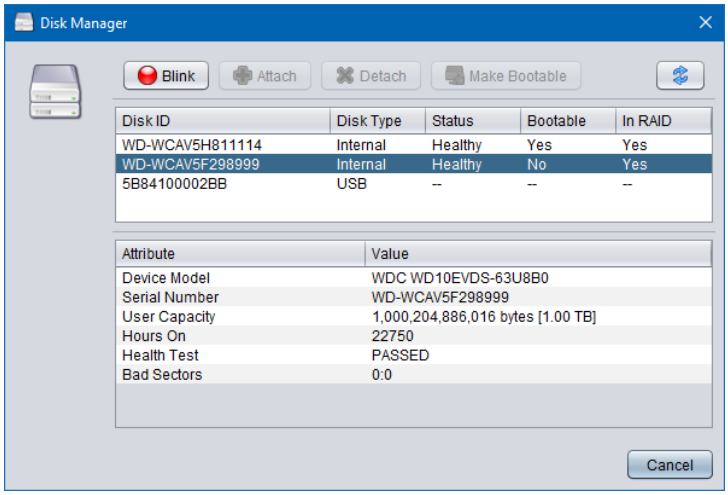
9. Select the new disk in the table:



10. Select **Attach.** The system will proceed to add the new disk to the RAID:



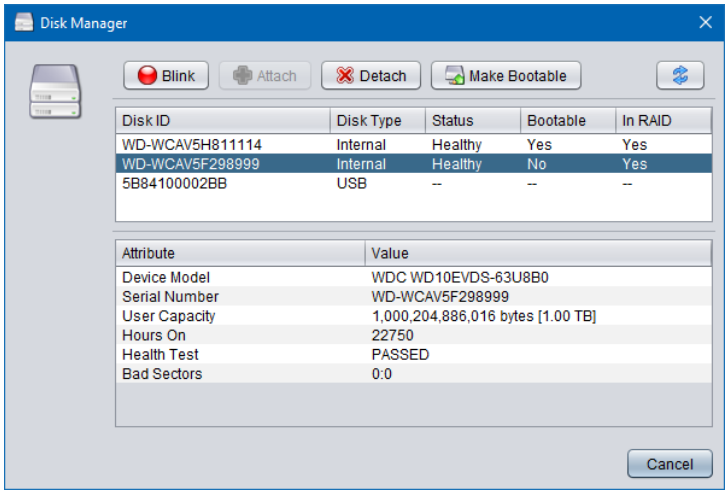
11. Eventually the system will show the disk as a member of the RAID:



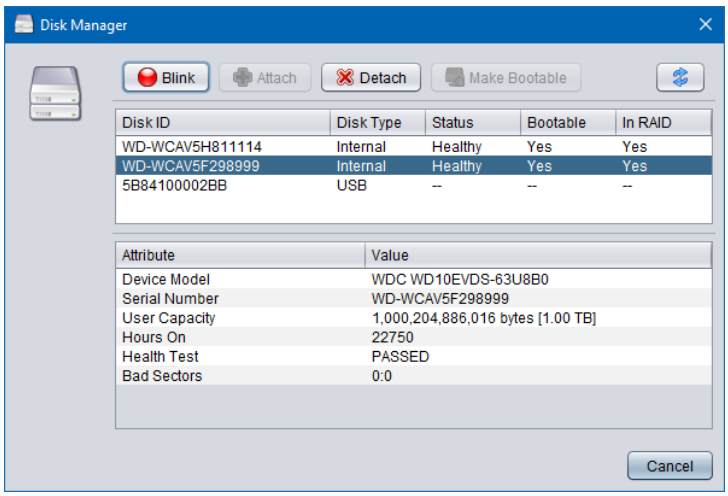
12. At this point you should wait for the RAID to synchronise all disks that are members of the RAID. This may take as long as 3 hours on a system with 1TB disks.

    Note that all disk operations (**Attach**, **Detach** and **Make Bootable**) will be disabled while the RAID is synchronising the disks and you will not be able to proceed with the following steps until the RAID has completed synchronising the disks.

13. When the RAID has completed synchronising the disks, it may show the new disk as not bootable (No in the Bootable column):



If so, select the disk (as shown on the previous screen capture) and select **Make Bootable** to initialise the bootloader on the disk:



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.

8.3.7. Manage Replicator

Use the replicator maintenance utility to control the operation of the real-time recording and metadata replicator on recorders that are fitted with the replicator option.

At this stage the replicator is capable of replicating recording and metadata to a local removable 2.5” hard disk or solid state disk (SSD). In order to use a hard disk or SSD as a replica disk you must prepare it as follows:

Prepare a disk for replication

1. Select a disk drive with a SATA interface and maximum capacity of 2TB. Drives with capacity of more than 2TB are not supported.
2. Configure the drive with an MBR partition table. Drives with a GPT partition tables are not supported.
3. Label the drive with label TRVRARCHIVE (all capital letters). Drives with other labels, or no label at all, are not supported.
4. Create a single partition on the drive.
5. Format the partition with the NTFS or FAT32 file system. Drives with the FAT32 file system perform better. You must complete a full format of the drive. Drives that are formatted with the quick format option will not work

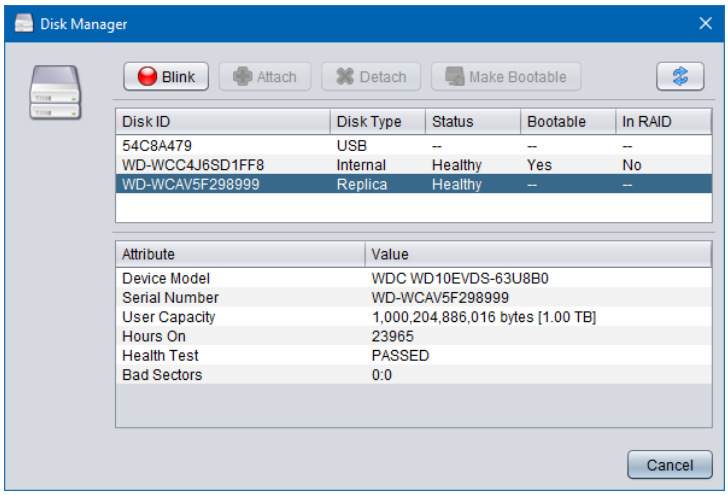
Once the drive is ready, attach the drive to the caddy that was supplied with the replicator option and insert it in the correct disk slot of the replicator option.

You can do this while the system is powered on and recording.

To start replication:

Start Replication

1. Make sure that the system is recognising the disk as a replica disk. To do this select **Manage Disks** to display the list of disks that are attached to the system:

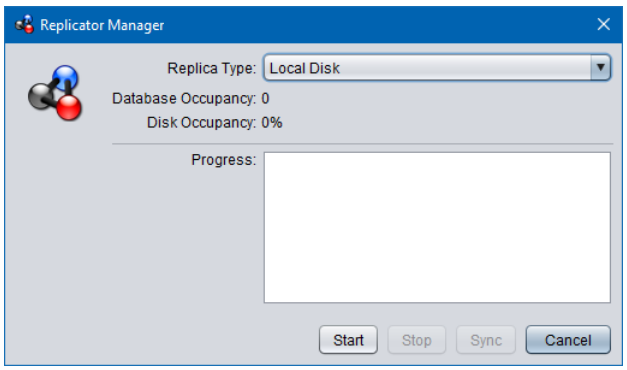


2. If the ***Replica*** disk type is not shown in the table, then select to re-build the disk information. This will take a moment to complete and the system should include the new disk in the table.

   If the disk does not appear in the table, then there is something wrong with the disk and you will need to replace it with a new one.

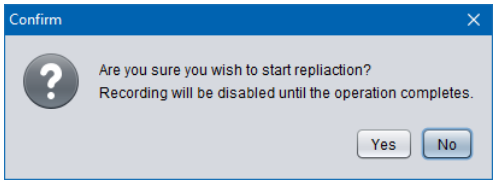
   Do not proceed to the next step until the system detects the replica disk. You will not be able to start replication without the disk

3. Select **Manage Replicator** to show the replicator utility:

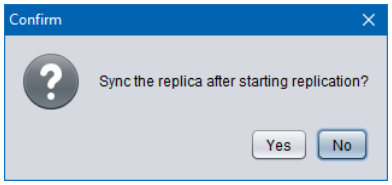


4. Select **Start**.

5. To start replication the system must pause recording. Select **Yes** if it is convenient to pause recording and continue to start replication:



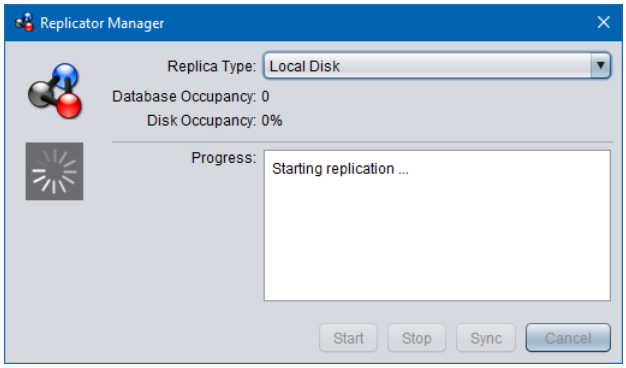
6. The system will give you an option to synchronise the replica with the recorder immediately after starting replication:



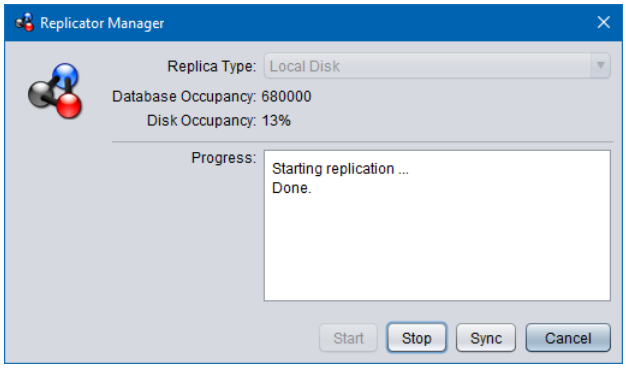
   If your system does not have any recordings on it then select **No** to skip the sync. If your system has recordings on it you can select:

   - **No** to skip the sync which means that the recordings that are already on the system will not be replicated. However, you can sync the replica at any time while the replica is active.
   - **Yes** to copy all recordings and metadata to the replica as soon as replication starts. Note that this may take considerable time to complete if you have a large number of recordings. Allow 10 minutes per 10,000 recordings. Recording will be paused until the sync operation completes.

7. The system will attempt to start replication and show progress:



8. If replication starts without problems, then the status of the replica will be displayed:



While the replicator is active, you can sync the replica with the recorder at any time. This is usually not necessary, however the option to sync is available.

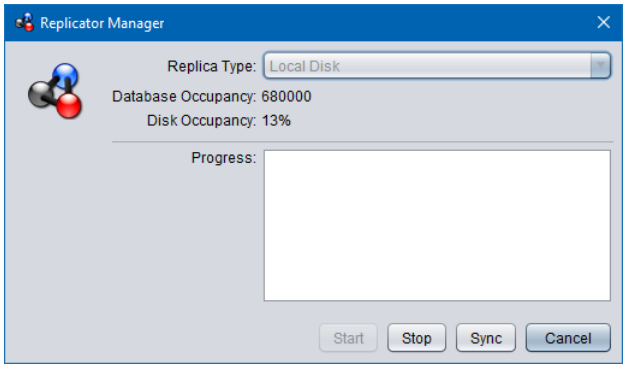
Note that the replica can have different number of recordings than the number of recordings on the system. This is due to the fact that the recordings on the system are subject to the self-cleaning mechanism which removes recordings when the system disk or database is full while the replica is not subject to the same, that is the system does not remove recordings and metadata from the replica.

Disk replicas are limited to 2,000,000 individual recordings or the available disk space, whichever occurs first.

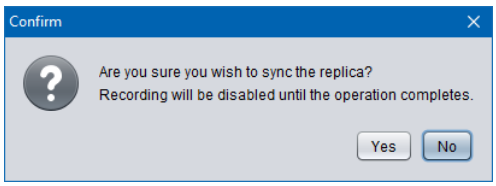
To sync the replica:

Sync Replica

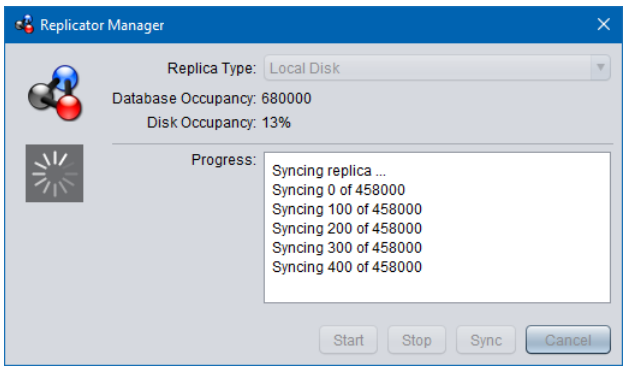
1. Select **Manage Replicator** to show the replicator utility:



2. Select **Sync**.
3. To sync the replica the system must pause recording. Select **Yes** if it is convenient to pause recording and continue to sync the replica:

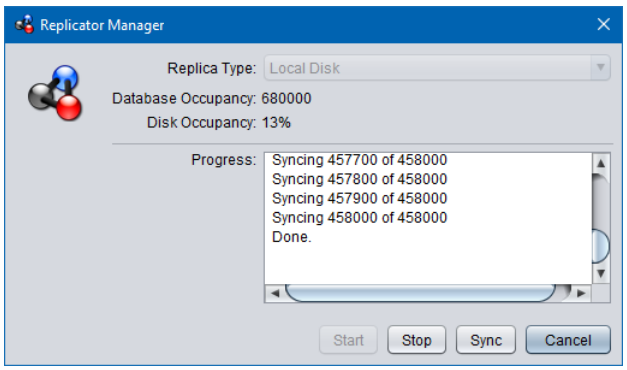


4. The system will attempt to sync the replica and show progress:



Based on the number of recordings on the system, this make take considerable time (hours) to complete, so be patient. Allow 10 minutes per 10,000 recordings.

5. When the sync process is complete the system will display the new status of the replica:



Finally, it is possible to stop replication at any time.

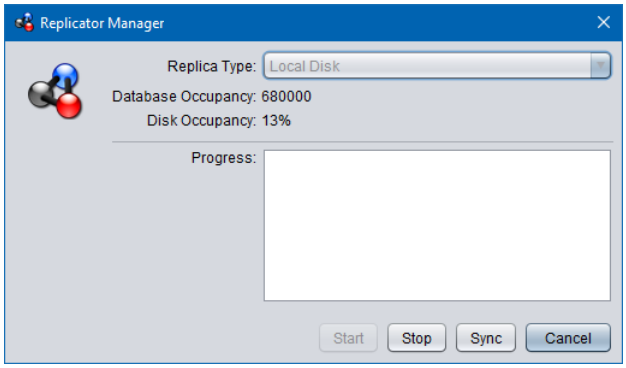
You must stop replication in order to remove the replica disk from the system.

DO NOT remove the replica disk from the system while replication is active. If you do, you will damage the replica disk and the system while all data on the replica disk will be lost.

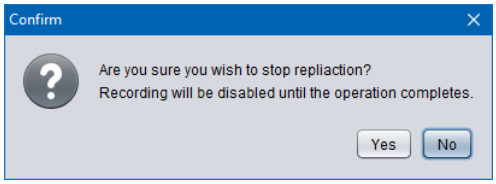
To stop replication:

Stop Replica

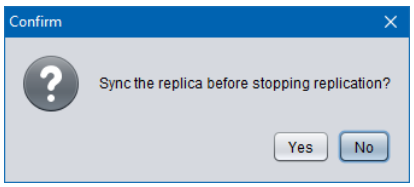
1. Select **Manage Replicator** to show the replicator utility:



2. Select **Stop**.
3. To stop replication the system must pause recording. Select **Yes** if it is convenient to pause recording and continue to stop replication:



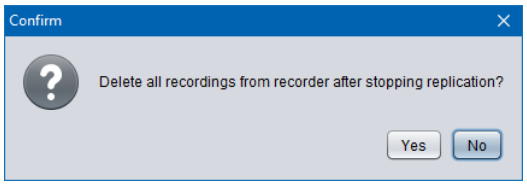
4. The system will give you an option to synchronise the replica with the recorder just before stopping replication:



Select:

- **No** to skip the sync.
- **Yes** to copy missing recordings and metadata to the replica before replication stops. Note that this may take considerable time to complete if you have a large number of recordings. Allow 10 minutes per 10,000 recordings. Recording will be paused until the sync operation completes.

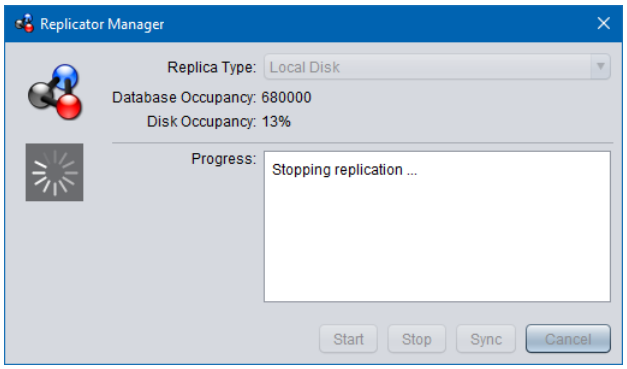
5. The system will give you an option to delete all recordings and metadata from the system immediately after stopping replication:



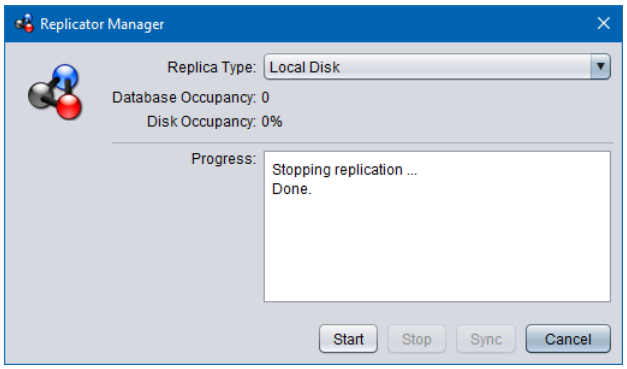
Select:

- **No** to leave the recordings on the system.
- **Yes** to delete all recordings from the system. Note, this does not delete recordings from the replica disk

6. The system will attempt to stop replication and show progress:



7. If replication stops without problems, then the status of the replica will be displayed:



Once replication has ceased, you can remove the replica disk from the system. Use the portable enclosure with USB 3.0 interface for a 2.5” disk drive or SSD that came

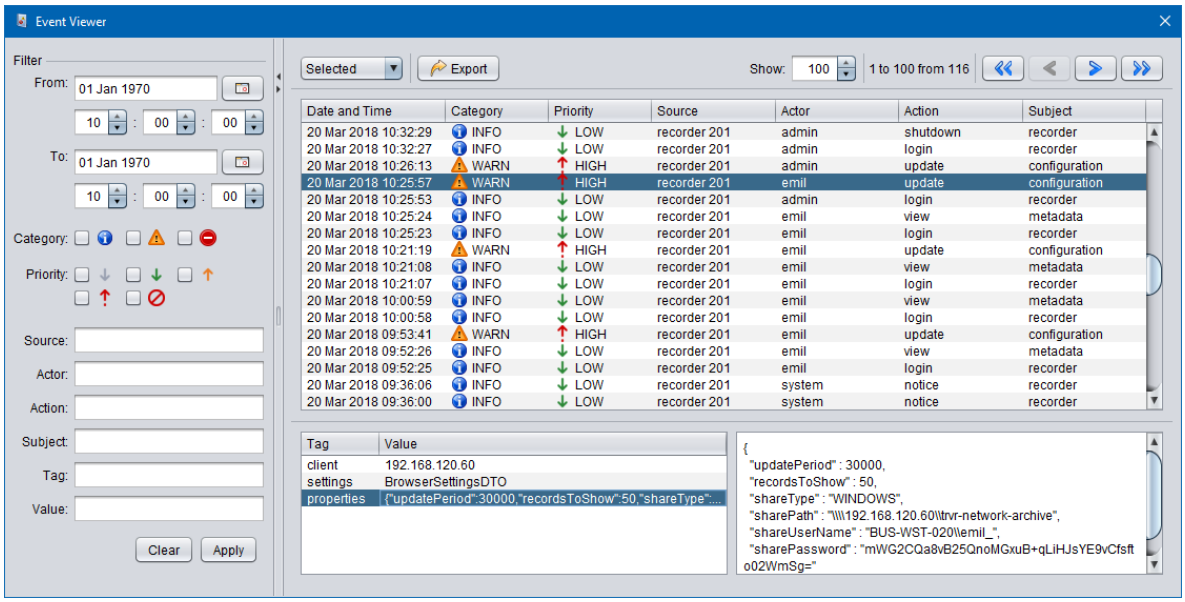
with the replicator option to connect the replica disk to a PC that is running Total Recall VR PC applications in order to explore the recordings on the replica disk.

8.3.8. View Events

Recorder Control Panel provides access to the audit event log on Total Recall VR recorder. The audit event log contains system and user audit events that capture “who did what and when”.

This is useful when there is a need to check user and system activity and produce reports of activity.

The access to the events is via the Event Viewer:



The Event Viewer display the following information for each audit event:

- **Date and Time**

  This is the date and the time when the action took place.

- **Category**

  The category of the action can be one be: informational, warning or an error.

- **Priority**

  The priority of the action can be one of: none, low, medium, high, critical and fatal.

- **Source**

  Identifies the recorder where the action took place.

- **Actor**

  Identifies the user that performed the action.

- **Action**

  Describes that action that took place.

- **Subject**

  Identifies the subject of the action.

- **Tag/Value**

  Set of data that is relevant to the action that took place.

The Event Viewer allows you to filter events that it displays. To filter events simply fill in the **Filter** fields and select **Apply**. Alternatively, to clear the filter, simply select **Clear**.

Finally, Event Viewer allow you to export batches of audit events in the following formats:

1. CSV (comma separated values) format which is suitable to use in reporting tools such as Microsoft Excel.
2. XML format which is suitable for ingestion into other business systems.
3. PDF (unsigned and signed) format which is suitable for direct reporting. The signed PDF format is a tamper proof by definition which makes it suitable for use in legal proceedings.

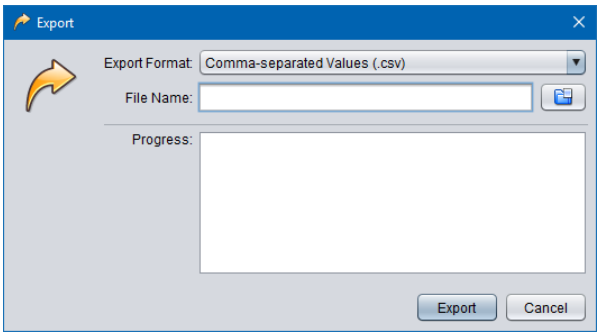
To export the metadata of recordings in any of the supported formats first identify the recordings that you wish to export:

- You may have to set the context (Selected, Found or All) of the export action.
- Optionally, you may have to select records in the events table.

Once you have identified the records that you wish to export:

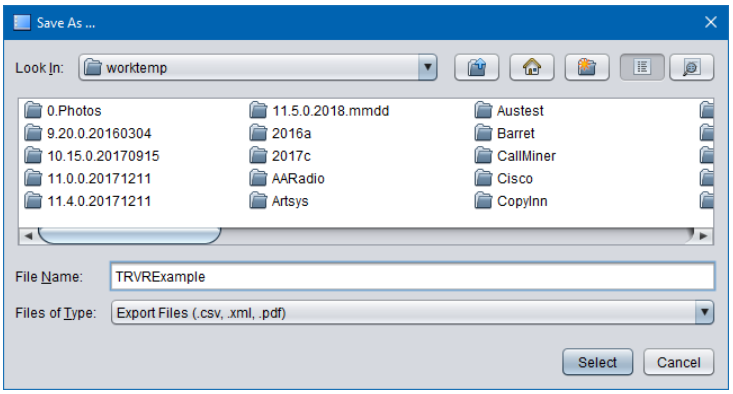
Export a batch of audit events

1. Select **Export** to display the Export dialog.

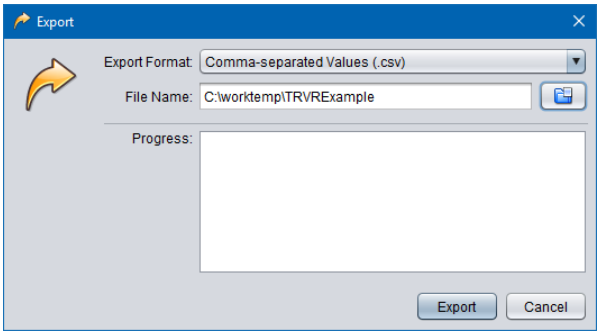


2. Select ***Export Format***.
3. Enter ***File Name***. This is the location and name of the file that will contain the audit event data in the chosen format.

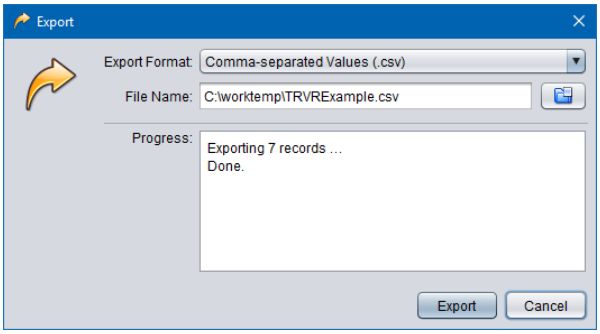
   Alternatively select to display a dialog which lets you choose a location and enter a name for the file.



   Select **Select** to return to the Export dialog.

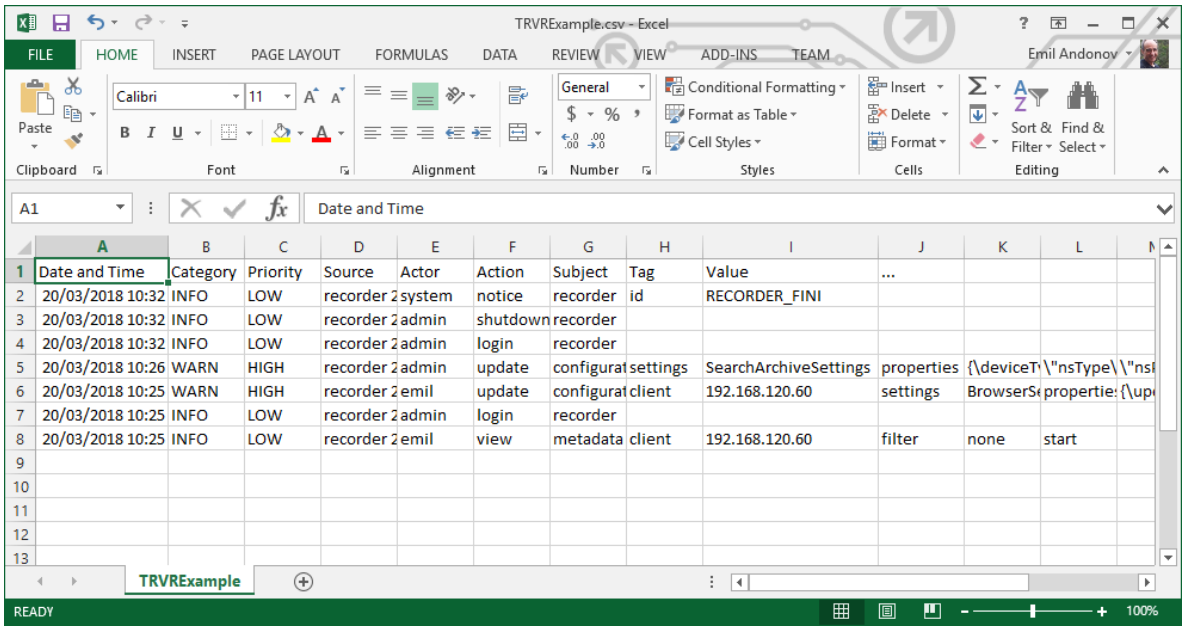


4. Select **Export** to export the audit event data.
5. Event Viewer will start exporting the data and show progress in ***Progress***:



6. Select **Cancel** to close the Export dialog.

If you chose to export to the CSV format, then you can open the CSV file with a reporting tool that supports the CSV format such as Microsoft Excel:



Alternatively, if you chose to export in the PDF format, you can view the PDF files with a PDF reader such as Acrobat Reader.

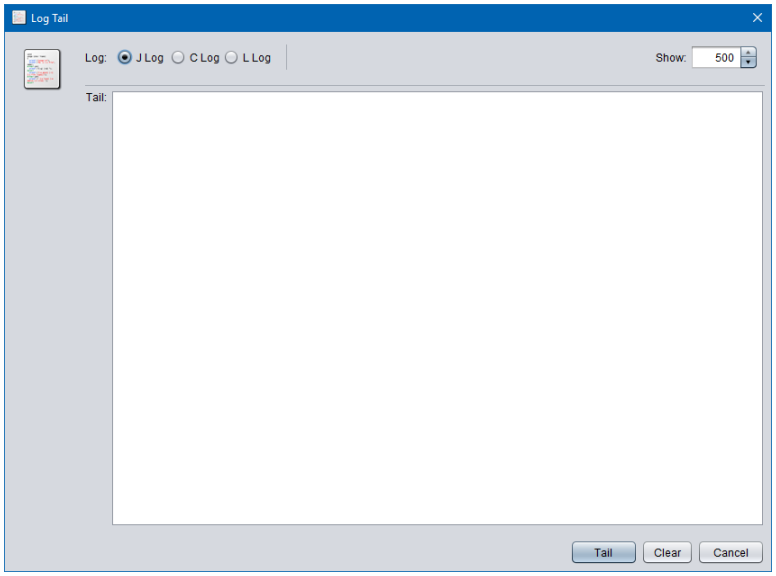
8.3.9. Tail Log

Recorder Control Panel can display information written to the Total Recall VR operating logs in near real time by displaying information that is written to the logs as it is written to the logs.

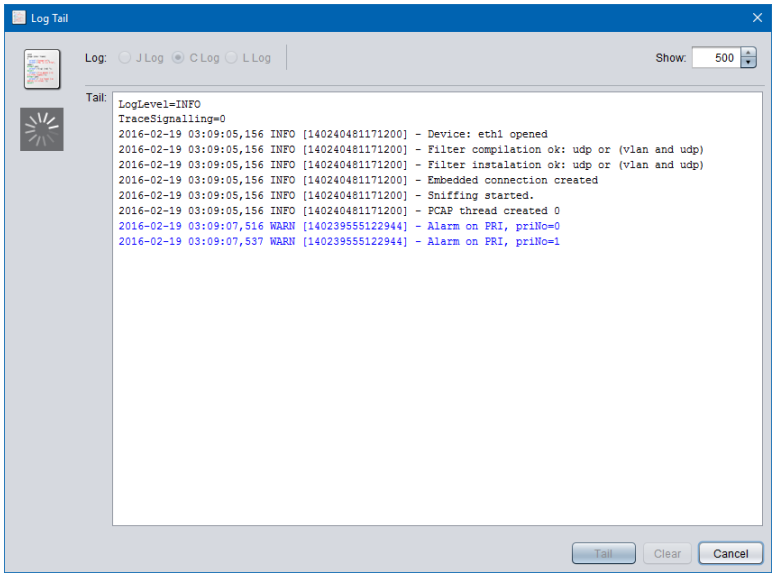
This is useful when diagnosing problems with Total Recall VR systems.

Tail an Operating Log on a Total Recall VR

1. Select **Tail Log** on the **Tools** tab to display the Log Tail dialog:



2. Select ***Log***. Select:
   a. *J Log*: to tail the Java application log.
   b. *C Log*: to tail the native application log.
   c. *L Log*; to tail the operating system log.
3. Select **Tail** to start receiving information as it is written in the log:



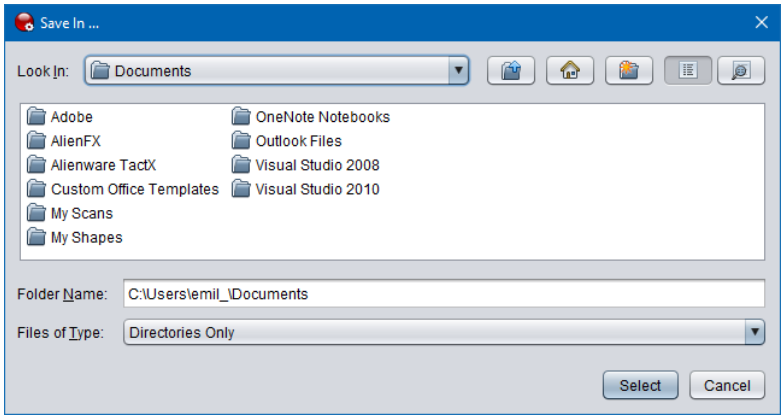
4. Select **Cancel** to stop tailing the log.

8.3.10.Download Logs

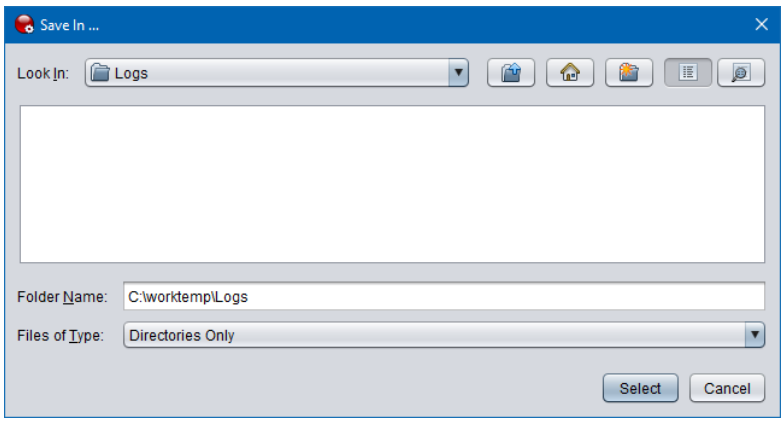
If you need to examine information in the Total Recall VR operating logs, then you can download a copy of the operating logs to your PC and then use your favourite text editor to examine the information.

Download Total Recall VR Operating Logs

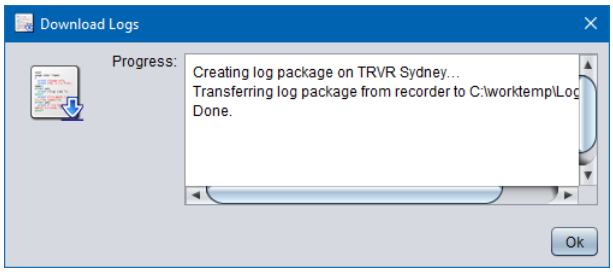
1. Select **Download Logs** on the **Tools** tab to display the directory chooser dialog:



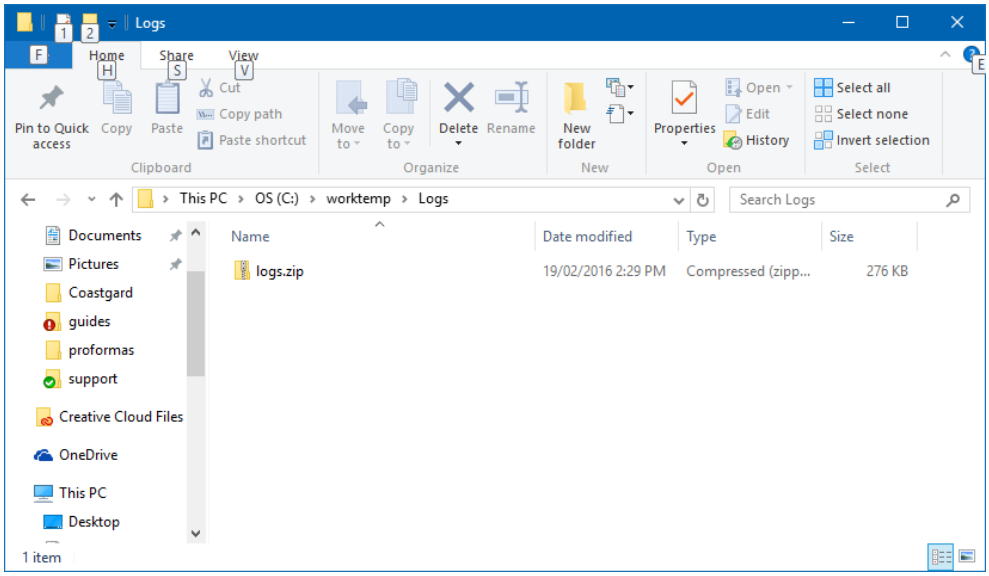
2. Select a folder on your PC where you wish to place the log files:



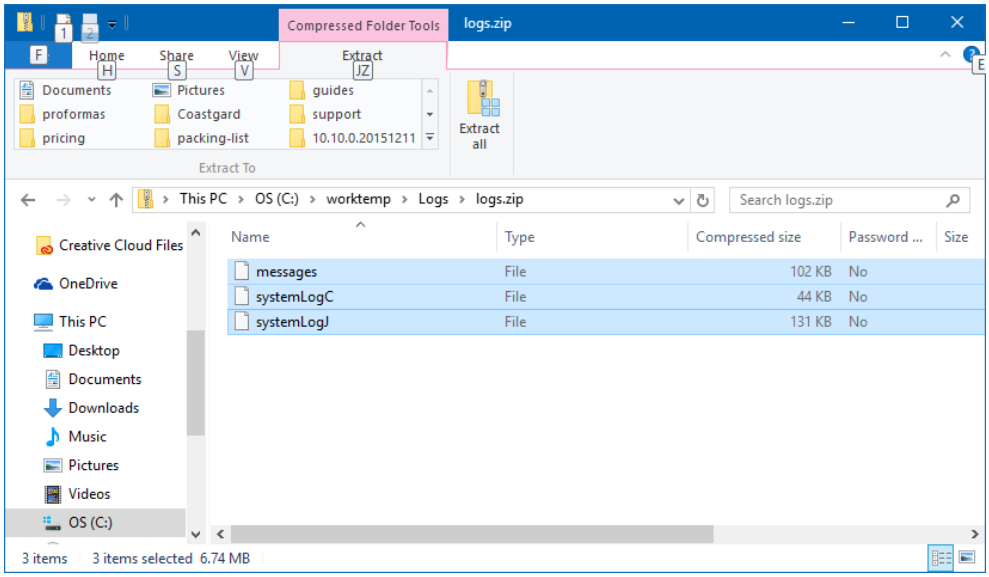
3. Select **Select** to download the logs to the specified folder. Recorder Control Panel will download a single ZIP file in the folder. The file contains all Total Recall VR operating logs:



4. Using Windows Explorer, navigate to the folder:



5. Extract the logs from the ZIP file:



Now you can use your favourite text editor to view the information in the log files.

8.3.11.Download Settings

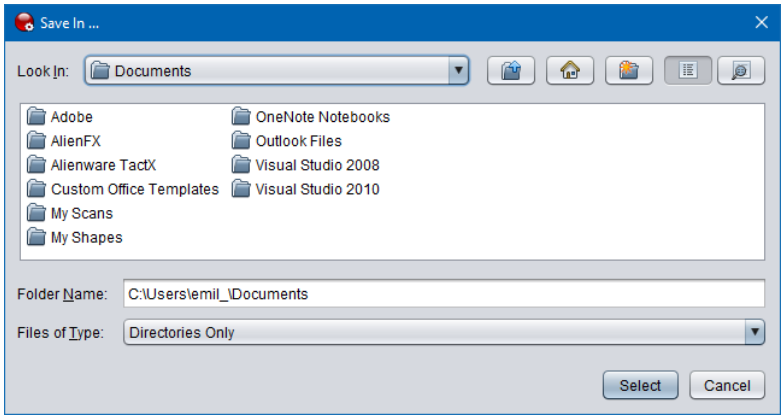
A backup of the Total Recall VR operating configuration should be kept in a safe place at all times. It can be used to restore the Total Recall VR application configuration to a known state if it is “corrupted” in any way.

Recorder Control Panel can create a backup file with configuration of a Total Recall VR. In addition, it can restore the configuration to a Total Recall VR from a backup file that it creates.

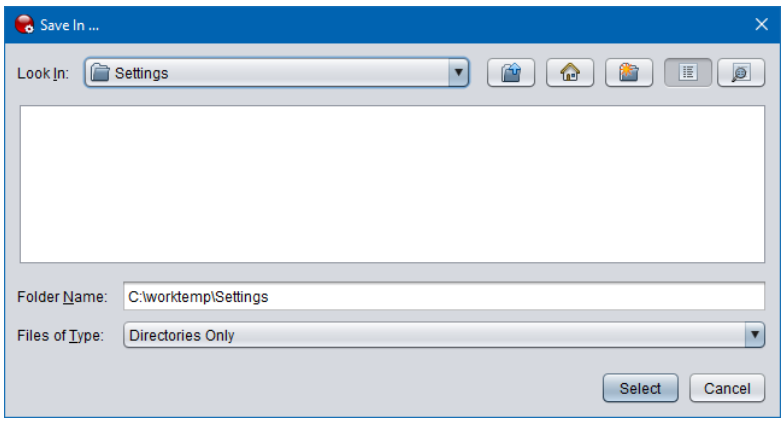
To create a backup of the operating configuration of a Total Recall VR:

Download Total Recall VR Operating Configuration

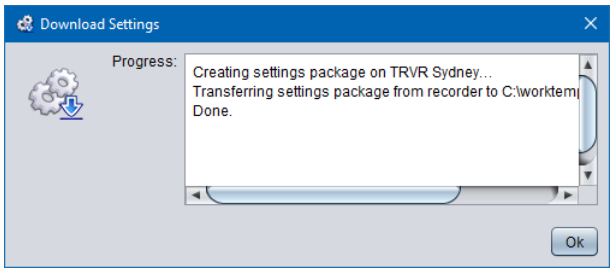
1. Select **Download Settings** on the **Tools** tab to display the directory chooser dialog:



2. Select a folder on your PC where you wish to place the settings files:



3. Select **Select** to download the settings to the specified folder. Recorder Control Panel will download a single file (settings.trs) in the folder. The file contains all Total Recall VR settings:



Keep the settings file in a safe location. You can use this file to restore the settings on the Total Recall VR at a later date.

8.3.12. Upload Settings

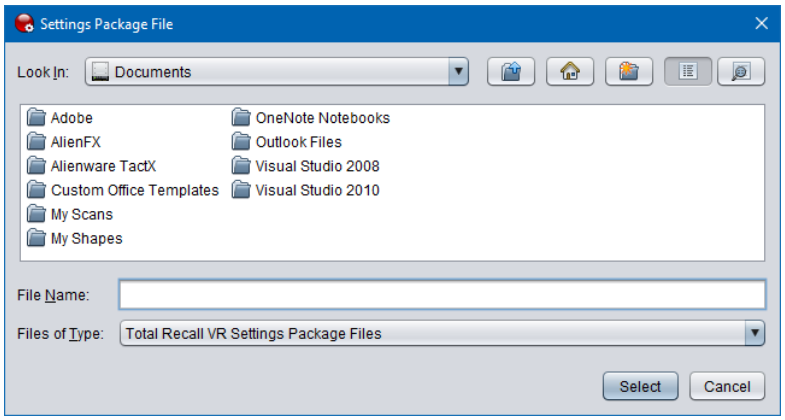
DO NOT restore application configuration from one Total Recall VR to another.

If you have created a backup of the Total Recall VR operating configuration as explained in the previous section, then you can use the settings file to restore the operating configuration on the Total Recall VR.

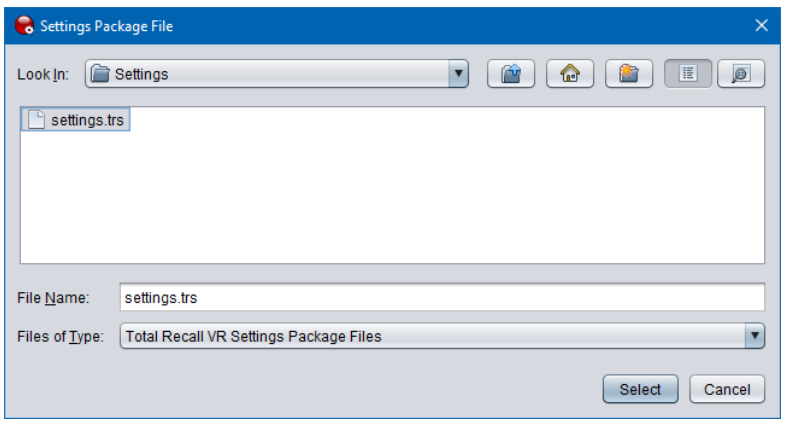
To restore the operating configuration of a Total Recall VR:

Restore Total Recall VR Operating Configuration

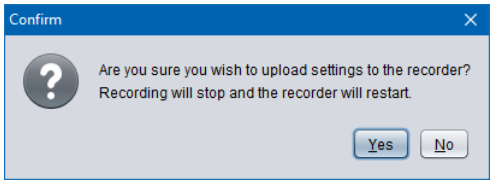
1. Select **Upload Settings** on the **Tools** tab to display the Total Recall VR settings archive file chooser dialog:



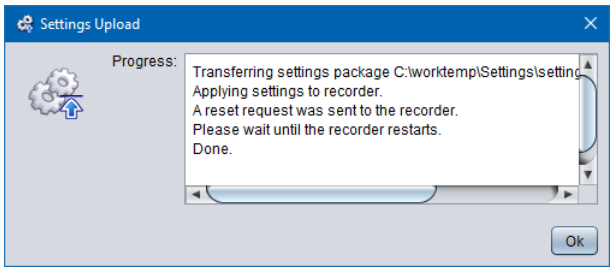
2. Select a settings archive file:



3. Select **Select** to start the process. Total Recall VR. Recorder will ask you to confirm:



4. Select **Yes** to restore the settings on the Total Recall VR. Recorder Control Panel will upload the settings file to the recorder, apply the settings and restart the recorder:



Total Recall VR will be using the new settings when it start up.

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