TotalRecallVR

Total Recall VR Overview

User Guide

November, 2021
Guide Issue 27.1
Total Recall VR Release 11.11.0

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Related Documents:

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

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

[3] Prolancer Pty Ltd, Total Recall VR LinX Omnia Quick Start Guide, 27.0, March 2021

[4] Prolancer Pty Ltd, Total Recall VR LinX Essence Quick Start Guide, 27.0, March 2021

[5] Prolancer Pty Ltd, Total Recall VR LinX Essence GUI Quick Start Guide, 27.0, March 2021

[6] Prolancer Pty Ltd, Total Recall VR LinX Altus Quick Start Guide, 27.0, March 2021

[7] Prolancer Pty Ltd, Total Recall VR LinX Neos Quick Start Guide, 27.0, March 2021

[8] Prolancer Pty Ltd, Total Recall VR LinX Virtualis Quick Start Guide, 27.0, March 2021

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1. Preface

1.1. Conventions

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

1.1.1. Notes & Warnings

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

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

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

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

1.2. 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.   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.

3.   Hardware Configurations

Total Recall VR comes in a range of hardware configurations. As it is built specifically for the purpose of audio logging and call recording on top of our LinX technology, all hardware configurations are highly reliable and tolerant to faults.

> Total Recall VR is designed and built for maximum up time and 24/7 uninterrupted operation.

3.1.   LinX Omnia

> Please see the Total Recall VR LinX Omnia Quick Start Guide [3] for comprehensive description of this product.

Total Recall VR LinX Omnia is a professional and standalone voice logging and call recording system with very high analogue, VoIP and digital (ISDN) recording channel density suitable for hybrid analogue, VoIP, RoIP, AoIP and ISDN audio logging and call recording applications.

It is a professional hybrid call recording solution with no compromise on features and affordable price. Built specifically for the purpose of hybrid audio logging and call recording and running on a Linux^{TM} platform that utilises hot-swap RAID storage and dual power supply, it is highly reliable and tolerant to system and storage faults and capable of 24/7 uninterrupted operation.

Compliance:

- FCC Title 4 Part 15, Subparts A & B

- EN55022:2006 + A1:2007

- CISPR 22:2008

Recording Channel Capacity

This model is capable of recording audio from different analogue audio sources as well as recording telephone calls on analogue, VoIP and ISDN networks, including:

- Calls on analogue telephone lines via a high impedance (Hi-Z) analogue line tap.

- Audio from any line level analogue audio source.

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

- ISDN (Q.931) calls on ISDN PRI links via a high impedance (Hi-Z) link tap.

The maximum recording channel capacity of this model is:

- 60 analogue recording channels (see section 5.1 Analogue Recording Channels); or

- 60 IP recording channels (see section 5.2 IP recording channels); or

- 60 ISDN recording channels (see section 5.3 ISDN Recording Channels); or

- 60 VoIP and ISDN recording channels in any combination; or

- 60 analogue plus 60 VoIP and ISDN recording channels in any combination.

Analogue recording channels are sold in groups of 4 while VoIP and ISDN recording channels are sold in groups of 10.

If a system is not at its maximum analogue recording channel capacity (60), then the number of analogue recording channels can be increased by adding additional analogue channel cards to the system, or by replacing existing analogue channel cards with larger capacity analogue channel cards.

> This model can accommodate up to 5 analogue channel cards. Each analogue channel card can have 4, 8 or 12 analogue recording channels.

This model can tap up to 4 ISDN PRI (E1 or T1) links using a purpose built high-impedance link tap. If the system is not at its maximum ISDN link tapping capacity (4), then the number of links being tapped can be increased by adding additional ISDN link tap cards, or by replacing existing tap cards with larger capacity tap cards.

> This model can accommodate up to 4 ISDN tap cards. Each ISDN tap card can tap a single ISDN PRI link (E1 or T1).

The number of ISDN recording channels does not need to be the same as the number of ISDN PRI B channels. For example, it is possible to tap a full 30B ISDN PRI link while using 10 ISDN recording channels. If this is the case, then the system will be able to record up to 10 calls at the same time.

Unlike analogue recording channels, the number of VoIP and ISDN recording channels can be increased with a new channel license key which activates a larger number of VoIP and ISDN recording channels while the system is operational.

Enclosure

This model comes in a standard 5RU rack-mount enclosure that is made of zinc passivized steel and powder coated face. The dimensions of the enclosure are: 220 x 450 x 420mm (H x W x D).

Systems of this model have maximum weight of 35Kg when fitted with 6 analogue channel cards and cards to tap 4 ISDN PRI links. Most systems do not exceed 18Kg.

Hardware Components

From hardware perspective this model comprises of:

- Intel Core^{TM} i5/i7 based industrial motherboard.

- Colour LCD display, 135x100mm.

- Control panel comprising of a numeric keys, player control keys and menu and record navigation keys.

- Dual hot-swap AV-GP (1 million hours MTBF) hard drives in RAID-1 configuration for on-board recording storage.

- Single BluRay archive device capable of creating archives on CD, DVD and BD discs.

- Built in audio amplifier and 2W speaker.

- Dual hot-swap 460W power supply.

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Solid state hard drive (SSD) for improved performance.

- AMBE decoder.

- Double audio storage.

3.2. LinX Altus

> Please see the Total Recall VR LinX Altus Quick Start Guide [6] for comprehensive description of this product.

Total Recall VR LinX Altus is an ideal, professional solution for high-density VoIP, RoIP and AoIP and analogue audio logging and call recording applications. It offers plethora of professional voice logging and call recording functions and features in a compact rack mountable enclosure.

Compliance:

- FCC Title 4 Part 15, Subparts A & B

- EN55022:2006 + A1:2007

- CISPR 22:2008

- EN61000-3-2:2006 and EN61000-3-3:2008

- EN62233:2008

- EN55024:1998 + A1:2001 + A2:2003

Recording Channel Capacity

This model is capable of recording audio from different analogue audio sources as well as recording telephone calls on analogue and VoIP networks, including:

- Calls on analogue telephone lines via a high impedance (Hi-Z) analogue line tap.

- Audio from any line level analogue audio source.

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 72 analogue recording channels (see section 5.1 Analogue Recording Channels); or

- 30 IP recording channels (see section 5.2 IP recording channels); or

- 72 analogue and 30 IP recording channels.

A processor upgrade option is available to boost the channel capacity of this model as follows:

- 72 analogue recording channels (see section 5.1 Analogue Recording Channels); or

- 90 IP recording channels (see section 5.2 IP recording channels); or

- 72 analogue and 90 IP recording channels.

Analogue recording channels are sold in groups of 4 while IP recording channels are sold in groups of 10.

If a system is not at its maximum analogue recording channel capacity (72), then the number of analogue recording channels can be increased by adding additional analogue channel cards to the system, or by replacing existing analogue channel cards with larger capacity analogue channel cards.

This model can accommodate up to 6 analogue channel cards. Each analogue channel card can have 4, 8 or 12 analogue recording channels.

Unlike analogue recording channels, the number of IP recording channels can be increased with a new channel license key which activates a larger number of IP recording channels while the system is operational.

Enclosure

This model comes in a standard 5RU rack-mount enclosure that is made of zinc passivized steel and powder coated face. The dimensions of the enclosure are: 220 x 480 x 230mm (H x W x D).

Systems of this model have maximum weight of 14Kg when fitted with 6 analogue channel cards and hot-swap power supply. The weight of most units does not exceed 11.5 Kg.

Hardware Components

From hardware perspective this model comprises of:

- Intel Atom^{TM} D525 based industrial motherboard.

- Colour LCD display, 135x100mm.

- Control panel comprising of a numeric keys, player control keys and menu and record navigation keys.

- Single AV-GP (1 million hours MTBF) hard drive for on-board recording storage.

- Single BluRay archive device capable of creating archives on CD, DVD and BD discs.

- Built in audio amplifier and 2W speaker.

- Single auto sensing 180W universal power supply.

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Processor upgrade option to record on up to 72 analogue and 90 IP recording channels.

- Mobile hard drive for shock sensitive environments.

- Solid state hard drive (SSD) for improved performance.

- Dual hot swap hard drives or solid state drives, in RAID-1 configuration for improved reliability.

- Dual hot-swap power supply for improved reliability.

- 12VDC, 24VDC and 48VDC power supply for mobile deployment.

- AMBE decoder.

- Double audio storage.

3.3. LinX Neos

> Please see the Total Recall VR LinX Neos Quick Start Guide [7] for comprehensive description of this product.

Total Recall VR LinX Neos is an ideal professional solution for small to medium capacity VoIP and analogue audio logging and call recording applications. It offers all of the application features that are available with its larger capacity cousins, but in a compact stand-alone enclosure.

Compliance (pending):

- FCC Title 4 Part 15, Subparts A & B (Class A)

- ICES-003 Issue 5 Class A

- EN55022:2010 + AC:2011

- EN61000-3-2:2014 and EN61000-3-3:2013

- EN62233:2008

- EN55024:2010

Recording Channel Capacity

This model is capable of recording audio from different analogue audio sources as well as recording telephone calls on analogue and VoIP networks, including:

- Calls on analogue telephone lines via a high impedance (Hi-Z) analogue line tap.

- Audio from any line level analogue audio source.

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 24 analogue recording channels (see section 5.1 Analogue Recording Channels); or

- 30 IP recording channels (see section 5.2 IP recording channels); or

- 24 analogue and 30 IP recording channels.

Analogue recording channels are sold in groups of 4 while IP recording channels are sold in groups of 10.

If a system is not at its maximum analogue recording channel capacity (24), then the number of analogue recording channels can be increased by adding additional analogue channel cards to the system, or by replacing existing analogue channel cards with larger capacity analogue channel cards.

> This model can accommodate up to 2 analogue channel cards. Each analogue channel card can have 4, 8 or 12 analogue recording channels.

Unlike analogue recording channels, the number of IP recording channels can be increased with a new channel license key which activates a larger number of IP recording channels while the system is operational.

Enclosure

This model comes in an industrial strength desktop enclosure that is made of zinc passivized and powder coated steel. The dimensions of the enclosure are: 265 x 365 x 365mm (H x W x D).

Systems of this model have maximum weight of 12Kg when fitted with 2 analogue channel cards. The weight of most units does not exceed 11Kg.

Hardware Components

From hardware perspective this model comprises of:

- Intel Atom^{TM} D525 based industrial motherboard.

- 7" wide screen colour LCD display.

- Control panel comprising of a numeric keys, player control keys and menu and record navigation keys.

- Single AV-GP (1 million hours MTBF) hard drive for on-board recording storage.

- Single BluRay archive device capable of creating archives on CD, DVD and BD discs.

- Built in audio amplifier and 2W speaker.

- Single auto sensing 180W universal power supply.

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Mobile hard drive for shock sensitive environments.

- Solid state hard drive (SSD) for improved performance.

- Dual hot swap hard drives or solid state drives, in RAID-1 configuration for improved reliability.

- AMBE decoder.

- Double audio storage.

3.4. LinX Essence

> Please see the Total Recall VR LinX Essence Quick Start Guide [4] for comprehensive description of this product.

Total Recall VR LinX Essence is a compact, embedded, professional solution for medium capacity VoIP, RoIP and AoIP audio logging and call recording applications. It offers a plethora of professional call recording functions and features in a small (Tiny Box) form factor modular appliance.

This model does not have a GUI interface. Configuration and control is via a PC application – see section 6.1 Total Recall VR Desktop. If you are looking for a system with a GUI interface, then please consider the LinX Essence GUI product – see section 3.5.

Compliance:

- FCC Title 4 Part 15, Subparts A & B

- EN55022:2006 + A1:2007 + A2:2010

- EN55024:2010

- EN61000-3-2:2006 + A1:2009 + A2:2009

- EN61000-3-3:2008

Recording Channel Capacity

This model is capable of recording:

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 60 IP recording channels (see section 5.2 IP recording channels)

IP recording channels are sold in groups of 10. The number of IP recording channels can be increased with a new channel license key which activates a larger number of IP recording channels while the system is operational.

Enclosure

This model comes in a small form factor (Tiny Box) enclosure that is made of powder coated steel. The dimensions of the enclosure are: 40 x 175 x 110mm (H x W x D).

Systems of this model have maximum weight of 1.0Kg.

Hardware Components

From hardware perspective this model comprises of:

- Intel Atom^{TM} J1900 based SBC.

- Single mobile hard drive for on-board recording storage;

- Single 12V/5A power supply with lockable DC plug.

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Solid state hard drive (SSD) for improved performance.

- External Blu-Ray archive device capable of creating archives on CD, DVD and BD discs.

- AMBE decoder.

- Double audio storage.

3.5. LinX Essence GUI

> Please see the Total Recall VR LinX Essence GUI Quick Start Guide [5] for comprehensive description of this product.

Total Recall VR LinX Essence GUI is a compact stand-alone professional solution for medium capacity VoIP, RoIP and AoIP audio logging and call recording applications. It offers a plethora of professional call recording functions and features in a small (Tiny Box) form factor modular appliance.

This model has a GUI interface for configuration and control. Configuration and control is also possible via a PC application - see section 6.1 Total Recall VR Desktop. If you are looking for a system without a GUI interface, then please consider the LinX Essence product – see section 3.4.

Compliance:

- FCC Title 4 Part 15, Subparts A & B

- EN55022:2006 + A1:2007 + A2:2010

- EN55024:2010

- EN61000-3-2:2006 + A1:2009 + A2:2009

- EN61000-3-3:2008

Recording Channel Capacity

This model is capable of recording:

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 60 IP recording channels (see section 5.2 IP recording channels)

IP recording channels are sold in groups of 10. The number of IP recording channels can be increased with a new channel license key which activates a larger number of IP recording channels while the system is operational.

Enclosure

This model comprises of a processing unit in a small form factor (Tiny Box) enclosure that is made of powder coated steel. The dimensions of the enclosure are: 220 x 66.1 x 147mm (H x W x D).

In addition, it comprises of a 10.1" colour LCD monitor. The dimensions of the monitor are: 253.5 x 162.5 x 35mm (H x W x D).

Finally, it comprises of a custom control keypad. The dimensions of the keypad are: 40 x 175 x 110mm (H x W x D).

Systems of this model have maximum weight of 4 Kg (all components).

Hardware Components

From hardware perspective this model comprises of:

- Processing unit:

- o Intel Atom^{TM} J1900 based SBC.

- o Single mobile hard drive for on-board recording storage.

- o Single 12V/5A power supply with lockable DC plug.

- Colour LCD screen:

    - o 10.1" wide screen colour LCD monitor.

    - o Single 12V/1A power supply.

- Control keypad

    - o Custom 24 key keypad with USB interface.

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Solid state hard drive (SSD) for improved performance.

- External Blu-Ray archive device capable of creating archives on CD, DVD and BD discs.

- AMBE decoder.

- Double audio storage.

3.6. LinX Virtualis

Please see the Total Recall VR LinX Virtualis Quick Start Guide [8] for comprehensive description of this product.

Total Recall VR Virtualis is a virtual machine (VM) image that can be run as a virtual guest on top of a virtualisation product such as Oracle's VirtulBox or a VMware Workstation.

The image contains a full installation of the Total Recall VR operating system (TRVROS) and the Total Recall VR application that have been customised to run in a virtual environment.

This model does not have a GUI interface. Configuration and control is via a PC application – see section 6.1 Total Recall VR Desktop.

Recording Channel Capacity

This model is capable of recording:

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 10 to 150 IP recording channels (see section 5.2 IP recording channels)

IP recording channels are sold in groups of 10. The number of IP recording channels can be increased with a new channel license key which activates a larger number of IP recording channels while the system is operational.

3.7. LinX Edge

Built on the popular Dell PowerEdge server platforms, this model is suitable for VoIP, RoIP, and AoIP audio logging and call recording applications.

The Dell PowerEdge is an ultra-compact, rack-mount server that is ideal for space constrained applications. When combined with Total Recall VR LinX technology, this model is capable of recording:

- SIP sessions (calls) via SPAN ports.

- SIP sessions (calls) via UDP/TCP ports.

- SIPrec sessions via UDP/TCP ports.

- Cisco BiB sessions via UDP/TCP ports.

- H.323 calls via SPAN ports.

- Unicast and multicast RTP streams via SPAN ports.

- Unicast and multicast RTP streams via UDP ports.

- RTSP sessions via UDP/TCP ports.

- ATC recording via ED-137/4B and ED-137/4C.

- RoIP (analogue, MPT-IP and DMR networks) recording via Tait VRP.

- RoIP (DMR networks) recording via Hytera HDAP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Omnitronics RTP.

- RoIP (analogue, DMR, P25, NXDN ... networks) recording via Zetron SIP logging interface.

The maximum recording channel capacity of this model is:

- 10 to 150 IP recording channels (see section 5.2 IP recording channels)

The previous list details the standard hardware configuration for this model. However, the following hardware options are available on request:

- Solid state hard drive (SSD) for improved performance.

- Double audio storage.

3.8. LinX Custom

A custom Total Recall VR is based on a hardware platform of your choice and the Total Recall VR LinX technology. The result is a feature rich, professional and standalone voice logging and call recording system that fits with your standard hardware environment.

Now you can design your own Total Recall VR, or simply select one of the custom hardware platforms that others have already built. Total Recall VR Custom is now available in a range of custom hardware platforms:

4.   System Features

Total Recall VR is fully featured professional audio logging and call recording system. Audio recording, digital storage and re-play are the main features of Total Recall VR. However, every Total Recall VR comes with many more system features.

All Total Recall VR models run the same operating system and system software which makes all system features available on all Total Recall VR models. However, not all system features are available on all hardware configurations due to enclosure and internal hardware limits. For example, it is not possible to add ISDN recording channels to the Total Recall VR Classic models.

> All Total Recall VR systems have all system features; however, some system features may not be accessible on some hardware platforms due to enclosure and internal hardware limits.

For more information on hardware platform limits see section "4.14 Hardware Platform Limits".

In addition to enclosure and internal hardware limits, some features require a valid feature license key. License keys are coupled to specific hardware configuration and as a result each key is valid for only one hardware configuration.

> Total Recall VR systems require a valid feature license key to activate some system features.

For more information on which system features require a valid license key see section "4.15 Licensed Features".

The following sections describe the Total Recall VR system features.

4.1.   File Formats

Total Recall VR and client applications support a number of audio file formats including one proprietary secure and tamper proof format (.trc), two proprietary raw sample formats (.alaw and .ulaw) and the most popular standard file formats (.wav, .au, .aifc and .spx):

Total Recall VR Call (.trc)

This is a proprietary Total Recall VR file format. It is capable of storing multiple time synchronised streams of digital samples of audio and video. The audio and video streams can be mixed with multiple digital data streams.

The most important aspect of this file format is the multiple built in mechanisms which aid detection of tampering with any of the audio, video and digital data streams.

We provide a Windows™ based client application (see section 6 Client Applications) which can read and play information stored in this file format. There are no other 3rd party applications that can access the information in this file format.

Total Recall VR Raw (.alaw and .ulaw)

This is a proprietary Total Recall VR file format. It stores raw G.711 a-law (in .alaw files) or u-law (in .ulaw files) samples without any format or metadata.

We provide a Windows™ based client application (see section 6 Client Applications) which can read and play information stored in this file format. However, many 3rd party applications are able to read this file format with small configuration.

Standard audio file formats (.wav, .mp3, .aifc, .au and .spx)

Many popular audio players, including a number of free audio players support a number of standard audio file formats including:

- .wav – Microsoft Wave file format

- .mp3 - MPEG Audio Layer-3 file format

- .aifc – Apple AIIF-C file format

- .au – Sun Java/Web file format

- .spx – Ogg Speex file format

Total Recall VR client applications (see section 6 Client Applications) can export audio to files in the file formats that appear on the prior list.

4.2.   Media Encoding Formats

Total Recall VR supports a number of audio encoding formats including one proprietary encoding format:

HQVQ, 8000Hz, 7.9Kbps, mono

This is a proprietary audio encoding format. Total Recall VR supports this encoding format on analogue recording channels only.

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

G.711 is an ITU-T standard for audio encoding. It is primarily used in telephony.

G.711 is a very commonly used audio encoder. It uses a sampling rate of 8,000 samples per second, with the tolerance on that rate 50 parts per million (ppm). Non-uniform (logarithmic) quantization with 8 bits is used to represent each sample, resulting in a 64Kbits bit rate. There are two slightly different versions; µ-law, which is used primarily in North America, and A-law, which is in use in most other countries outside North America.

Total Recall VR supports this encoding format on VoIP and ISDN recording channels only.

SPEEX Q8, 8000Hz, 15Kbps, mono

SPEEX is a patent-free audio compression format designed for speech and also a free software speech codec that may be used on VoIP applications and podcasts. It is based on the CELP speech coding algorithm. SPEEX claims to be free of any patent restrictions and is licensed under the revised (3-clause) BSD license.

Total Recall VR uses this audio encoding format to compress audio from *G.711 A-law, 8000Hz, 64Kbps, mono* and *G.711 µ-law, 8000Hz, 64Kbps, mono* in order to increase utilisation of its hard disks.

AMBE, 8000Hz, 2450bps, mono & stereo

AMBE is a patented audio compression format used in DMR and P-25 radio systems. Its use requires a license and as a result a fee is payable to activate support for AMBE on Total Recall VR systems that need it.

Total Recall VR supports this encoding format on VoIP channels when recording in DMR and P-25 environments.

MPEG Audio Layer-3 (MP3), 8000Hz, 24Kbps, mono

MPEG-1 or MPEG-2 Audio Layer-3, more commonly referred to as MP3, is a patented encoding format for digital audio which uses a form of lossy data compression. It is a common audio format for consumer audio storage, as well as a de facto standard of digital audio compression for the transfer and playback of music on digital audio players.

Total Recall VR client applications (in particular Remote Manager) are capable of exporting audio from other supported audio encoding format to this audio format.

PCM (raw) signed 16 bit, 8000Hz, 128Kbps, mono

Pulse-code modulation (PCM) is a method used to digitally represent sampled analogue signals. It is the standard form for digital audio in computers and various BluRay, DVD and Compact Disc formats, as well as other uses such as digital telephone systems. A PCM stream is a digital representation of an analogue signal, in which the magnitude of the analogue signal is sampled regularly at uniform intervals, with each sample being quantized to the nearest value within a range of digital steps.

Total Recall VR client applications (in particular Remote Manager) are capable of exporting audio from other supported audio encoding format to this audio format.

4.3. Recording Storage

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

Encoding	Encoding Rate	Audio Hours
HQVQ	7.9Kbps	380,000
AMBE	2.4Kbps	1,140,000

SPEEX	15Kbps	240,000
G.711	64Kbps	60,000

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

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

To put the limits in perspective, the on-board storage on LinX Essence systems can store 600,000 individual recordings each of 38 minutes, or 300,000 recordings of 74 minutes when using the *HQVQ, 8000Hz, 7.9Kbps, mono* audio format.

Total Recall VR has a built-in auto cleaning function which ensures that the system has enough free space in it to continue recording endlessly.

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

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

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

4.4. Search

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

This information includes:

1. Start and end date and time of recordings.

2. Duration of recordings.

3. Total Recall VR Raw, Mapped and Extension identifiers for the source and destination of recordings (for example calling and called numbers for recordings of calls.

4. DTMF digits that are detected while recording.

5. Free-text notes.

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

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

8. Recording channel number.

9. Agent name.

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

- Date and time of recording.

- Total Recall VR Raw, Mapped and Extension identifiers.

- Duration of recording.

- Call classification.

- DTMF digits.

- Keyword(s) in notes.

- Flags: archived and tagged recordings.

The search function can locate recordings that reside on the system itself, recordings that are stored on archive discs (CD, DVD or BD), recordings stored in archives which are located on USB keys (or disk drives) or recordings stored in archives which are located on network drives.

4.5. Audio Recorder

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

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

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

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

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

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

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

Policies can be one of two types:

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

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

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

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

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

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

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

In addition to the recording policies the recorder supports manual control or recording (start and stop) from 3rd party applications built on top of the Total Recall VR Java™ RMI API.

4.6.   Real-Time Monitor

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

It can play audio as it is being recorded to the built-in system speaker, head-phones output or audio output. In addition, it can stream audio, in real-time, to a remote client applications (Remote Manager and Supervisor Client for example) over a TCP/IP network.

4.7.   Audio Player

Control-rich audio player is a standard Total Recall VR feature.

Controls include: start, stop, pause, fast-forward, double speed fast-forward and rewind.

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

- HQVQ, 8000Hz, 7.9Kbps, mono

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

- G.711 μ-law, 8000Hz, 64Kbps, mono

- SPEEX Q8, 8000Hz, 15Kbps, mono

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

The *Total Recall VR (.trc)* file can be located on a Total Recall VR system or in different types of archives.

It can play audio to the built-in system speaker, head-phones output or audio output. In addition, it can stream the audio, in real-time, to a remote client application (Remote Manager for example) over a TCP/IP network.

4.8. Recording Archives

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

Every Total Recall VR has an on-board archiving device that is capable of creating searchable archives of recordings on CD, DVD and BD discs.

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

Encoding	CD	DVD	BD
HQVQ	150 audio hours	1,100 audio hours	6,700 audio hours
AMBE	450 audio hours	3,300 audio hours	20,100 audio hours
SPEEX	75 audio hours	550 audio hours	3,350 audio hours
G.711	20 audio hours	160 audio hours	800 audio hours

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

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

Users can create archives on-demand. However, it is possible to activate automatic archiving which will automatically archive all recordings that have not been archived on regular intervals.

4.9. Network Time

Total Recall VR has full support for the Network Time Protocol (NTP). It can synchronize its system clock with a NTP server over a TCP/IP network.

4.10. DNS Client

Total Recall VR has a built-in DNS client. It can interact with a single DNS over a TCP/IP network.

4.11. VLAN Support

Total Recall VR has full support for VLANs (802.1Q) on all network interfaces. Different VLAN ID can be assigned to each of the two network interfaces when available.

In addition, Total Recall VR has full support for capturing VoIP packets (SIP, H.323 and RTP) on networks that use 802.1Q and 802.1ad VLANs. There is no configuration for this feature. Instead, Total Recall VR automatically detects the presence of 802.1Q tags, or 802.1ad double tags, and continues to process VoIP packets accordingly.

4.12. SMDR Integration

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 the Total Recall VR on trunk lines but wanting to use internal extension numbers while searching for calls.

At this stage Total Recall VR "understands" 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 an RS232 interface. To integrate Total Recall VR with such telephone systems you need to purchase an RS232 to IP converter (also known as Serial Device Servers).

4.13. SNMP Agent

Total Recall VR has a built-in SNMP Agent which can interface the system with third party SNMP-based monitoring applications.

The SNMP Agent is capable of sending SNMP v1 and v2c trap and SNMP v2c inform notifications to multiple SNMP Traphosts.

4.14. Hardware Platform Limits

All Total Recall VR systems have all system features; however, some system features may not be accessible on some hardware platforms due to enclosure and internal hardware limits.

Summary of platform limits:

- Total Recall VR LinX Omnia

  o Maximum 5 DSP cards with 12 analogue recording channels each (i.e maximum of 60 analogue recording channels).

  o Maximum 60 IP recording channels.

  o Maximum 60 ISDN recording channels.

  o Maximum 60 recording channels when using both VoIP and ISDN recording channels, in any combination.

  o Maximum 4 connected ISDN E1 or T1 links.

- Total Recall VR LinX Altus

  o Maximum 6 DSP cards with 12 analogue recording channels each (i.e. maximum 72 analogue recording channels).

  o Maximum 30 IP recording channels.

  o Does not support ISDN recording channels.

- Total Recall VR LinX Neos

  o Maximum 2 DSP cards with 12 analogue recording channels each (i.e. maximum 24 analogue recording channels).

  o Maximum 30 IP recording channels.

  o Does not support ISDN recording channels.

- Total Recall VR LinX Essence and Essence GUI

  o Maximum 60 IP recording channels.

  o Does not support analogue recording channels.

  o Does not support ISDN recording channels.

- Total Recall VR LinX Virtualis

  o 10-150 IP recording channels (based on available CPU and RAM resources).

  o Does not support analogue recording channels.

  o Does not support ISDN recording channels.

4.15. Licensed Features

At this stage it is our policy to ship all systems with all licensed features enabled at no additional cost.

We reserve the right to change this policy at any time and without notice.

~~The Total Recall VR application and client applications require a valid feature license key to enable the following features:~~

- ~~Extension Policies;~~
- ~~Signalling Mapping;~~
- ~~Internal Dial Plan;~~
- ~~SMDR Parsing;~~
- ~~SNMP Alarms;~~
- ~~Network Archive;~~
- ~~RoD Agents.~~

5.   Recording Channels

5.1.   Analogue Recording Channels

Total Recall VR uses purpose built hardware (analogue channel cards) to capture audio from different types of analogue sources and analogue telephone lines.

Recording trigger:

- Off-hook - 6 off-hook voltage levels: 30V, 25V, 20V, 15V, 10V and 5V.

    The off-hook trigger is a DC voltage change trigger. Typical on-hook voltage is above 42V and off-hook voltage is below 15V. Analogue recording channels start recording when they detect voltage that is lower than the one set by the Off-Hook level and stop recording when they detect voltage that is higher than the one set by the Off-Hook level.

- VOX - 6 signal levels: -20dBm (77.5mV), -24dBm (48.9mV), -28dBm (30.8mV), -32dBm (19.5mV), -36dBm (12.3mV) and -40dBm (7.75mV).

    The VOX trigger is a signal level trigger. Analogue recording channels start recording when they detect signal above the level set by the VOX level and stop recording when they detect signal below the VOX level, but after a user configurable grace period of seconds.

- Manual – manual on/off recording control.

    The manual trigger allows third party applications to control recording over the Remote Manager Interface (see section 7 Java^{TM} RMI API).

- Off – recording trigger disabled, no recording possible on channel.

    This is the recommended setting for all analogue channels that are NOT connected to an analogue audio source or an analogue telephone line. As an alternative, use this setting to temporarily or permanently disable recording on the channel.

Specification:

- RJ11C/RJ12/RJ14 (6P6C) connector – 2 channels per connector.

- Interface based on the CPC5710N chip, PC357N photo-coupler and the P2769 pick-off transformer providing high-impedance input and high (>40dB) common mode rejection ratio.

- Caller ID detection: FSKR and DTMF.

- Digit detection: DTMF. Channel (on, off) selectable.

- Ring detection.

- Automatic gain control.

- Encoding method: HQVQ, 8000Hz, 7.9Kbps, mono.

- Beep tone: 1.4KHz, channel and level (off, -30dBm, -24dBm, -18dBm) selectable.

Approvals:

- AS/NZS 60950.1:2003 INCL AMDT 1 Safety of information technology equipment

- IEC 60950-1 Information technology equipment – Safety

- EN 60950-1 Information technology equipment – Safety

- AS/ACIF S002:2005 Analogue interworking and non-interference requirements for Customer Equipment for connection to the Public Switched Telephone Network

- TBR 21 Terminal Equipment (TE); Attachment requirements for pan-European approval for connection to the analogue Public Switched Telephone Networks (PSTNs) of TE (excluding TE supporting the voice telephony service) in which network addressing, if provided, is by means of Dual Tone Multi Frequency (DTMF) signalling

- PTC 200:2006 Requirements for Connection of Customer Equipment to Analogue Lines

- ANSI/TIA-968-A:2007 Technical Requirements for Connection of Terminal Equipment to the Telephone Network

- TIA-1096-A Connector Requirements for Connection of Terminal Equipment to the Telephone Network

5.2. IP recording channels

Total Recall VR has two types of IP recording channels: passive and active.

5.2.1. Passive IP recording channels

Total Recall VR uses a software based VoIP packet collector capable of detecting and collecting SIP, H.323 and RTP packets on IP networks. The packet collector uses one of the system LAN interfaces (Ethernet interfaces) to detect and collect such packets.

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

Recording trigger:

- SIP session (call).

- H.323 call.

- Unicast RTP stream.

- Multicast RTP stream.

Specification:

- RJ45 (8P8C) connector.

- SIP over UDP or TCP (RFC 3261, RFC 2976, RFC 2833).

- SDP (RFC 3264).

- H.323 over UDP or TCP (ITU-T H.323, ITU-T H.225, ITU-T H.245).

- RTP (RFC 3550).

- Encoding method: G.711 (A or μ-law), 8000Hz, 64Kbps, mono.

To achieve best results with this interface observe the following:

1. Configure end-points and the telephone system to use the G.711 (A or μ-law) codec during calls.

2. Disable silence suppression.

3. If SDP messages do not specify the 'ptime' parameter, then make sure each RTP packet carries exactly 20ms of audio (or 160 audio signal samples).

4. Make sure all endpoints and the telephone system use the same 'ptime'.

5. Disable SIP encryption.

6. Disable RTP encryption.

5.2.2. Active IP recording channels

Total Recall VR is capable of recording SIP sessions (calls) and raw unicast and multicast RTP streams in active mode.

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.

Recording trigger:

- SIP session (call).

- SIPrec session (call).

- Cisco BiB session.

- ED-137 session.

Specification:

- RJ45 (8P8C) connector.

- SIP over UDP/TCP (RFC 3261, RFC 2976, RFC 2833).

- SIPrec over UDP/TCP (RFC 7865, RFC 7866)

- SDP (RFC 3264).

- RTP (RFC 3550).

- ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, January 2012 (ED-137/4B)

- ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, March 2019 (ED-137/4C)

- Cisco UCM version 8.5 or better.

- Zetron SIP Logging Interface Specification 025-9673F Rev F, January 2017 and Zetron MAX Voice Logger Interface Control ICD 025-9702A Rev A, January 2017

- Encoding method: G.711 (A or µ-law), 8000Hz, 64Kbps, mono.

To achieve best results with this interface observe the following:

1. Configure all end-points, the telephone system and radio equipment to use the G.711 (A or µ-law) codec during calls.

2. If SDP messages do not specify the 'ptime' parameter, then make sure each RTP packet carries exactly 20ms of audio (or 160 audio signal samples).

3. Make sure all endpoints and the telephone system use the same 'ptime'.

4. Disable SIP encryption.

5. Disable RTP encryption.

Raw RTP Streams

Total Recall VR is capable of receiving 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, on the network.

It is possible to record a single RTP stream, for example all Tx RTP packets from a RoIP endpoint, or all the Rx packets. In this case Total Recall VR stores each RTP stream as a separate recording.

In addition, it is possible to record a pair of RTP streams, for example the Tx and Rx RTP streams from and to a RoIP endpoint. In this case, Total Recall VR will mix the audio that it receives and store it as a single recording.

Recording trigger:

- Unicast or multicast RTP stream.

  Recording starts when the first RTP packet arrives. Recording stops when no RTP packets arrive for a user specified time (VoX like function).

- Tait VRP call.

Specification:

- RJ45 (8P8C) connector.

- RTP (RFC 3550).

- Tait VRP.

- Omnitronics RoIP.

- Hytera RoIP.

- Encoding method:

  o G.711 (A or μ-law), 8000Hz, 64Kbps, mono.

  o AMBE, 8000Hz, 2450bps, mono (Tait VRP only).

RTSP Sessions

Total Recall VR is capable of recording RTSP 1.0 sessions in active mode. It has full support for both interleaved RTP streams (RTP over TCP) and independent RTP streams (RTP over UDP). In addition, clients can send metadata for the session being recorded 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.

Recording trigger:

- RTSP session.

Specification:

- RJ45 (8P8C) connector.

- RTSP (RFC 2326)

- RTP (RFC 3550).

- ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, January 2012 (ED-137/4B)

- ED-137 Interoperability Standard for VoIP ATM Components, Volume 4: Recording, March 2019 (ED-137/4C)

- Encoding method:

  o G.711 (A or μ-law), 8000Hz, 64Kbps, mono.

5.3. ISDN Recording Channels

Total Recall VR uses purpose built hardware, a high-impedance, ISDN PRI link (E1 or T1) tapping card to capture signalling and audio on ISDN PRI links.

This interface does not interact with the calls and audio on the links in any way.

Recording trigger:

- Q.931 calls on the D channel.

Specification:

- RJ45 (8P8C) connectors.

- ISDN protocols: ITU-T Q.931, National ISDN 1 and 2, Nortel DMS 100, AT&T 4ESS, Lucent 5ESS, Euro ISDN.

- Encoding method: G.711 (A or μ-law), 8000Hz, 64Kbps, mono.

Approvals:

- AS/NZS 60950.1:2003 INCL AMDT 1 Safety of information technology equipment

- IEC 60950-1 Information technology equipment – Safety

- AS/ACIF S016:2001 Requirements for Customer Equipment for connection to hierarchical digital interfaces

- TIA-968-A Technical Requirements for Connection of Terminal Equipment to the Telephone Network

- TIA-1096-A Connector Requirements for Connection of Terminal Equipment to the Telephone Network

6. Client Applications

6.1. Total Recall VR Desktop

Total Recall VR Desktop is an all-in-one Total Recall VR PC application that combines the features and functions of the following Total Recall VR applications into one desktop like application:

- Total Recall VR Manager

- Total Recall VR Monitor

- Total Recall VR Browser

- Total Recall VR Audio Player

- Total Recall VR Event Player

A single copy of the Total Recall VR Desktop application can be used instead of individual copies of all of the above listed Total Recall VR PC applications.
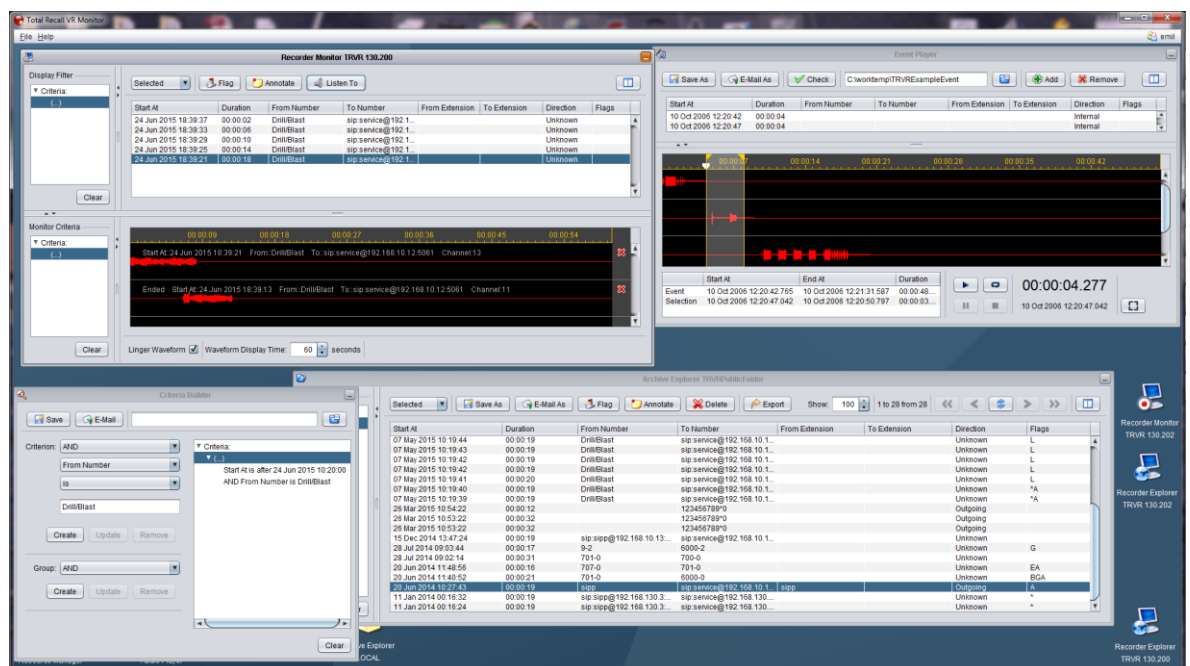
Total Recall VR Desktop is a Java/Windows based application designed to run on a PC with Windows 7, 8 or 10.

> Total Recall VR Desktop is a licensed application. You must purchase an Activation Key in order to use the application.

> Total Recall VR Desktop requires an AMBE decoder license to play recordings that are stored in the AMBE audio format.
>
> You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.
>
> NOTE: Multiple AMBE decoder licenses are needed to monitor multiple recordings that use the AMBE audio format and are in progress at the same.

6.2. Total Recall VR Monitor

Total Recall VR Monitor is a powerful real-time recording monitor and browser application that provides for multi-channel monitoring of recordings in progress and instant recall and browsing of recordings that are stored in different types of Total Recall VR archives and on Total Recall VR systems. It has a powerful monitoring, instant recall, search and exporting functions as we well as an integrated version of the Audio Player and the Event Player applications.
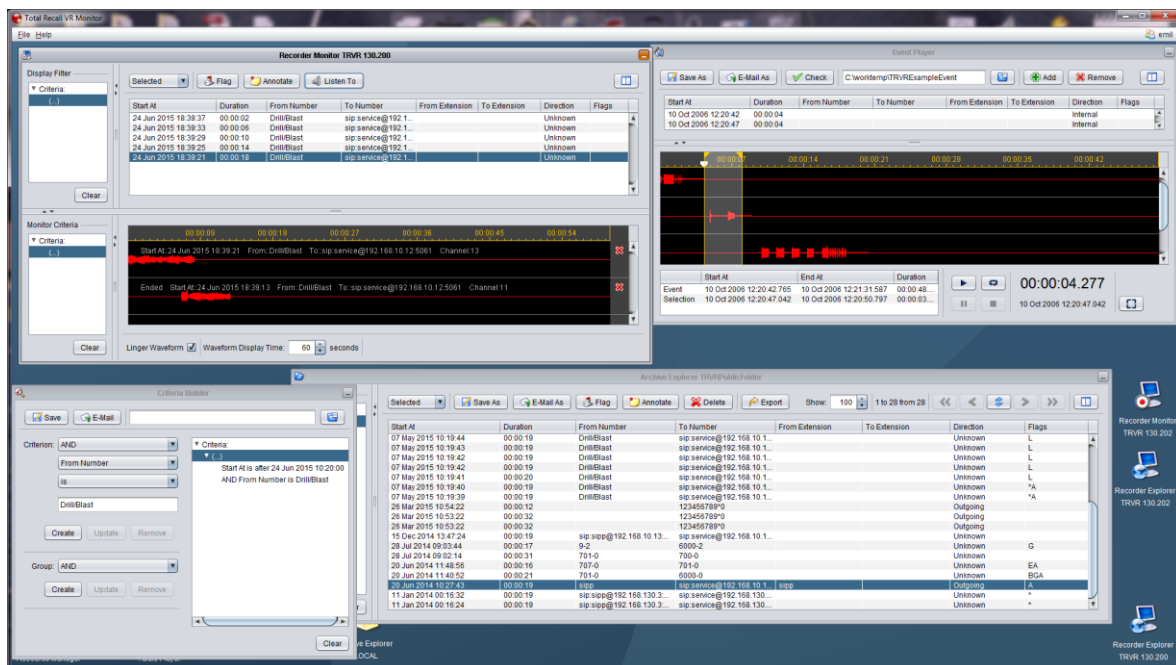
Total Recall VR Monitor offers:

- User configurable and flexible role based access control for all application features and recordings.

- 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).

- Multi-channel real time monitoring of recordings in progress on multiple Total Recall VR systems simultaneously.

- Real-time metadata and waveform display of recordings in progress and recordings being monitored.

- Auto-monitoring criteria to automatically initiate monitoring of recordings that match the criteria.

- Waveform lingering with visual indication of audio on multiple channels.

- Browsing of recordings in Total Recall VR archives that are stored on discs, USB devices and network drives.

- Browsing of recordings that are stored in Total Recall VR mega archives.

- Browsing of recordings that are stored on Total Recall VR systems with automatic fetching of latest recordings.

- Creation and management of Public Folder archives with unlimited number of records and role base shared access from multiple PCs by multiple users.

- Automatic detection (plug and play) of archives on discs, USB devices and network drives.

- Recording management: delete, annotate, tag, lock, etc.

- Ability to 'lock' recordings to prevent deletion.

- Advanced natural language search query builder that provides for saving of queries to files, recall of queries from files and sharing of queries via e-mail.

- Flexible (selected, found, all, etc.) batch export of recording metadata to CSV format for use in reporting tools.

- Flexible (selected, found, all, etc.) batch export of recordings to standard audio file formats (wav, mp3, aifc, au and spx) that are compatible with popular audio player applications such as Windows Media Player.

- Integrated e-mail client for fast sharing of recordings in any supported file and audio format and search queries.

- Integrated audio player with built-in visual waveform and integrity check for recordings that are stored in the TRC file format.

- Integrated event creator and player with built-in visual waveform.

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

> Total Recall VR Monitor is a licensed application. You must purchase an Activation Key in order to use the application.

> Total Recall VR Monitor requires an AMBE decoder license to play recordings that are stored in the AMBE audio format. Multiple AMBE decoder licenses are needed to monitor multiple recordings that use the AMBE audio format and are in progress at the same
>
> You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.

6.3. Total Recall VR Browser

Total Recall VR Browser is a powerful browser application that provides for browsing of recordings that are stored in different types of Total Recall VR archives and on Total Recall VR systems. It has a powerful search and exporting functions as we well as an integrated version of the Total Recall VR Audio Player application.
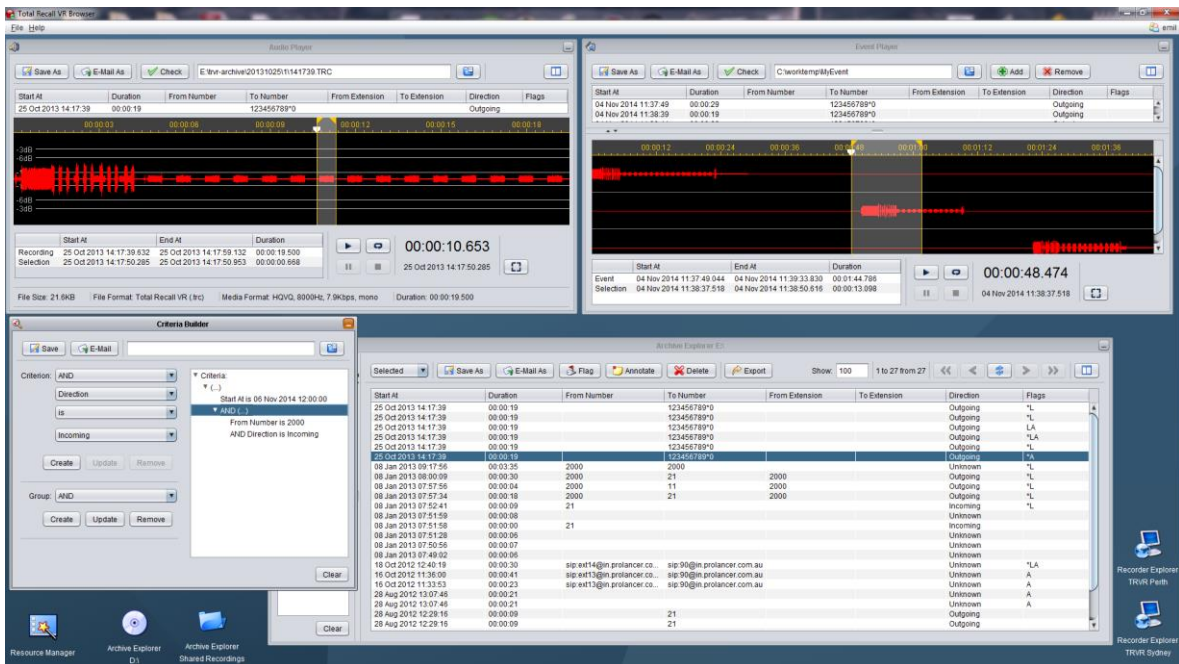
Total Recall VR Browser offers:

- User configurable and very flexible role based access control for all application features and recordings.

- 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).

- Browsing of recordings in Total Recall VR archives that are stored on discs, USB devices and network drives.

- Browsing of recordings that are stored in Total Recall VR mega archives.

- Browsing of recordings that are stored on Total Recall VR systems.

- Creation and management of Public Folder archives with unlimited number of records and role base shared access from multiple PCs by multiple users.

- Automatic detection (plug and play) of archives on discs, USB devices and network drives.

- Recording management: delete, annotate, tag, lock, etc.

- Ability to 'lock' recordings to prevent deletion.

- Advanced natural language search query builder that provides for saving of queries to files, recall of queries from files and sharing of queries via e-mail.

- Flexible (selected, found, all, etc.) batch export of recording metadata to CSV format for use in reporting tools.

- Flexible (selected, found, all, etc.) batch export of recordings to standard audio file formats (wav, mp3, aifc, au and spx) that are compatible with popular audio player applications such as Windows Media Player.

- Integrated e-mail client for fast sharing of recordings in any supported file and audio format and search queries.

- Integrated audio player with built-in visual waveform and integrity check for recordings that are stored in the (.trc) file format.

- Integrated event creator and player with built-in visual waveform.

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

> Total Recall VR Browser is a licensed application. You must purchase an Activation Key in order to use the application.

> ⚠️ Total Recall VR Browser requires an AMBE decoder license to play recordings that are stored in the AMBE audio format.
>
> You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.

6.4. 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.
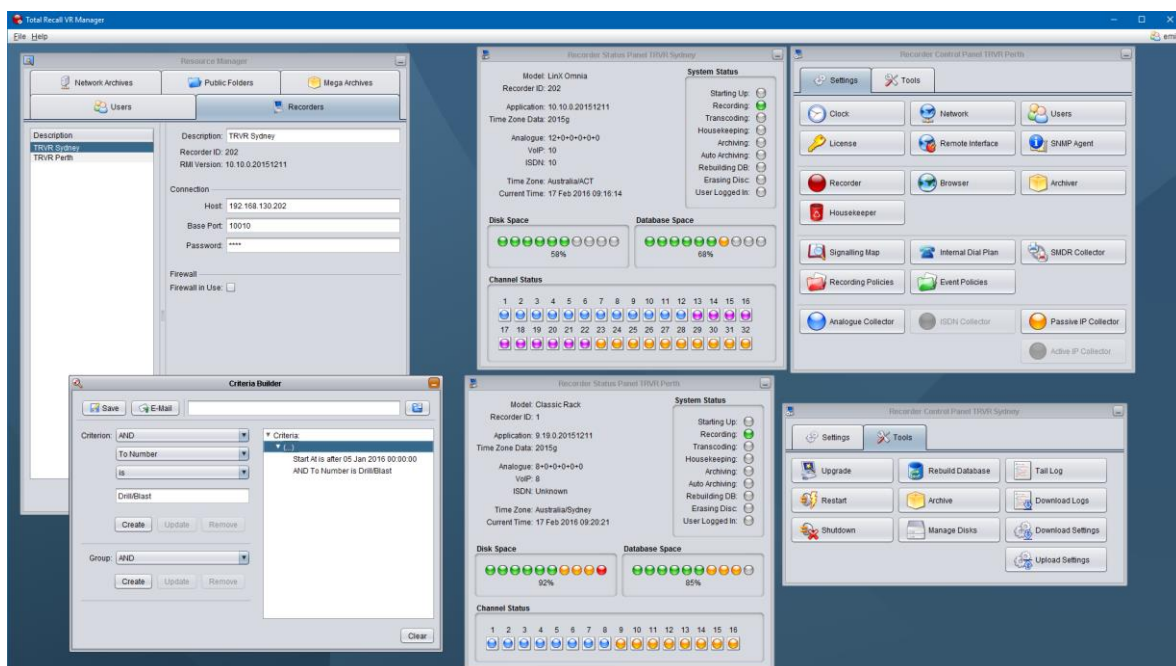
Total Recall VR Manager offers:

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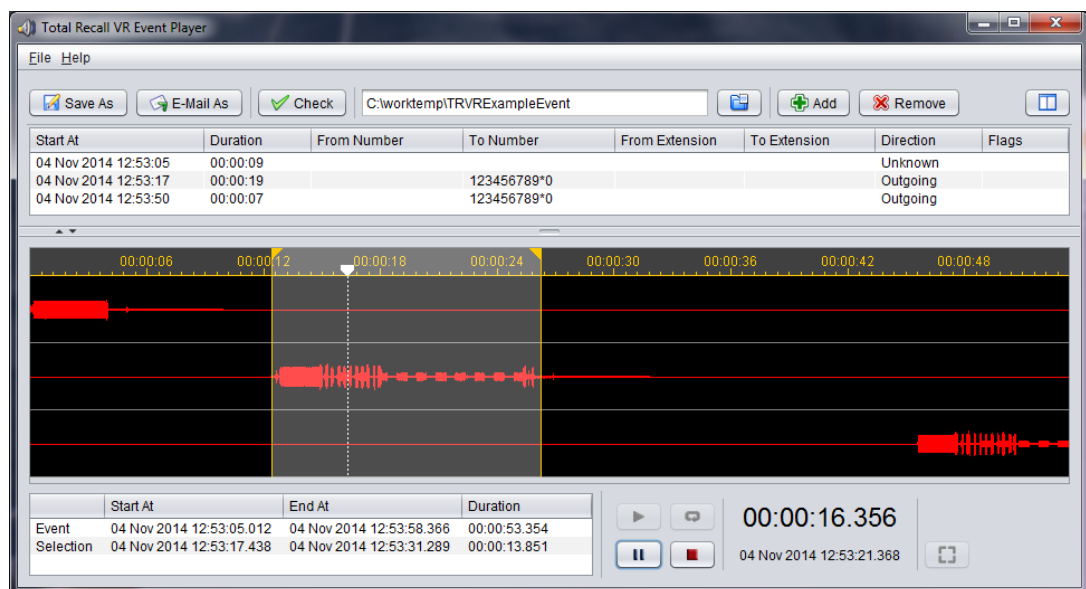
Total Recall VR Manager is a Java/Windows based application designed to run on a PC with Windows 7, 8 or 10.

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

6.5. Total Recall VR Event Player

Total Recall VR Event Player is a powerful audio player application designed to play the mix of the audio from multiple recordings ordered in time. This enable users to recreate events that comprise of one or more recordings and listen to the audio of the events as it happened in time.

Total Recall VR Event Player offers:

- Player that supports playing of the mix of the audio from multiple recordings ordered in time, as they happened.

- Export of complete event audio to standard audio file formats (.wav, .mp3, .aifc, .au and .spx) that are compatible with popular audio player applications such as Windows Media Player.

- Integrated e-mail client for fast sharing of event audio in any supported file and audio format.

- Integrity check for recordings (segments) that are part of the event.

- Visual waveform of event segments.

- Metadata display for event segments.

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

Total Recall VR Event Player is a licensed application. You must purchase an Activation Key in order to use the application.

Total Recall VR Event Player requires an AMBE decoder license to play recordings that use the AMBE audio format.

You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.

6.6. Total Recall VR Audio Player

Total Recall VR Audio Player is a powerful audio player application designed to support play of, and conversion between, all Total Recall VR audio file and encoding formats.
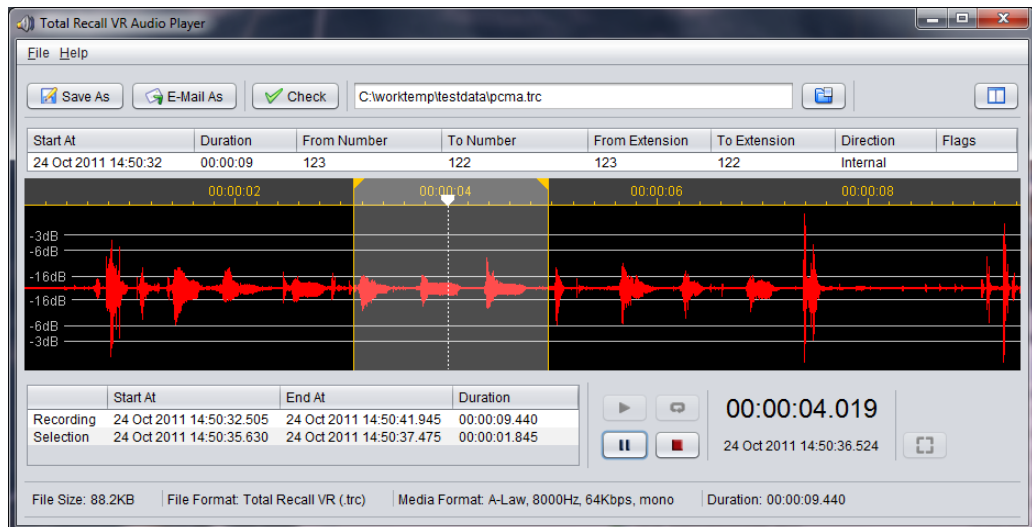
Total Recall VR Audio Player offers:

- Player for all Total Recall VR file and audio formats.

- File and audio converter that supports all Total Recall VR file and audio formats.

- Export to standard audio file formats (wav, mp3, aifc, au and spx) that are compatible with popular audio player applications such as Windows Media Player.

- Integrated e-mail client for fast sharing of recordings in any supported file and audio format.

- Integrity check for recordings stored in the (.trc) file format.

- Visual waveform.

- Recording metadata display for recordings stored in (.trc) files.

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

> Total Recall VR Audio Player is a licensed application. You must purchase an Activation Key in order to use the application.

> ⚠️ Total Recall VR Audio Player requires an AMBE decoder license to play recordings that use AMBE audio format.
>
> You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.
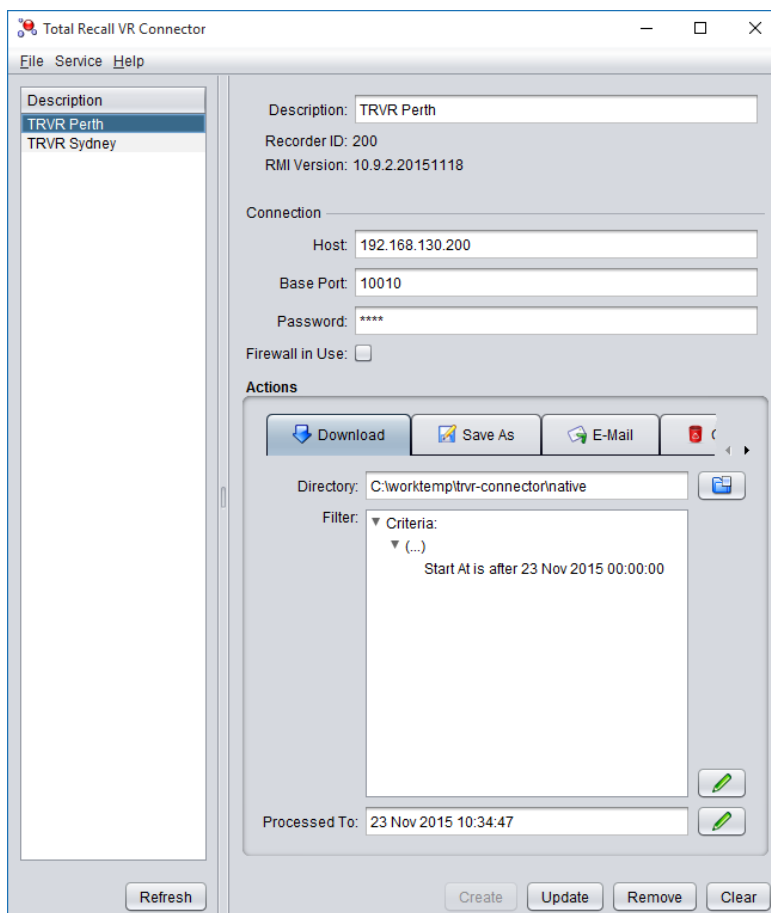
6.7. Total Recall VR Connector

Total Recall VR Connector is a combination of a Windows service and a GUI application.

The service enables easy integration of Total Recall VR with business systems and cloud recording solutions where Total Recall VR is used as an audio capture device to create recordings that are subsequently consumed by other business systems and cloud recording solutions.

The service downloads recordings from multiple Total Recall VR systems in near real-time and delivers the recordings, and optionally the metadata for the recordings, to other business systems and cloud recording solutions in a user specified format.

The GUI application provides for configuration and control of the service.

Total Recall VR Connector offers:

- Windows service operating mode.

- Continuous near real-time fetching (downloading) of recordings, in their native format, from one or multiple Total Recall VR systems.

- Export of recordings from the native format to a number of popular audio file formats such as the mp3 and wav formats.

- Export or recording metadata to CSV and XML formats.

- Export of recordings and metadata to the CallMiner Eureka speech analytics platform and applications.

- Delivery of recordings in native or exported format to remote systems via e-mail.

- Automatic removal of downloaded and/or exported recordings.

Total Recall VR Connector is a Java/Windows based application designed to run on a PC with Windows 7, 8, or 10 or a server with Windows Server 2010 or 2012.

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

Total Recall VR Connector requires an AMBE decoder license to export recordings that are stored in the AMBE audio format.
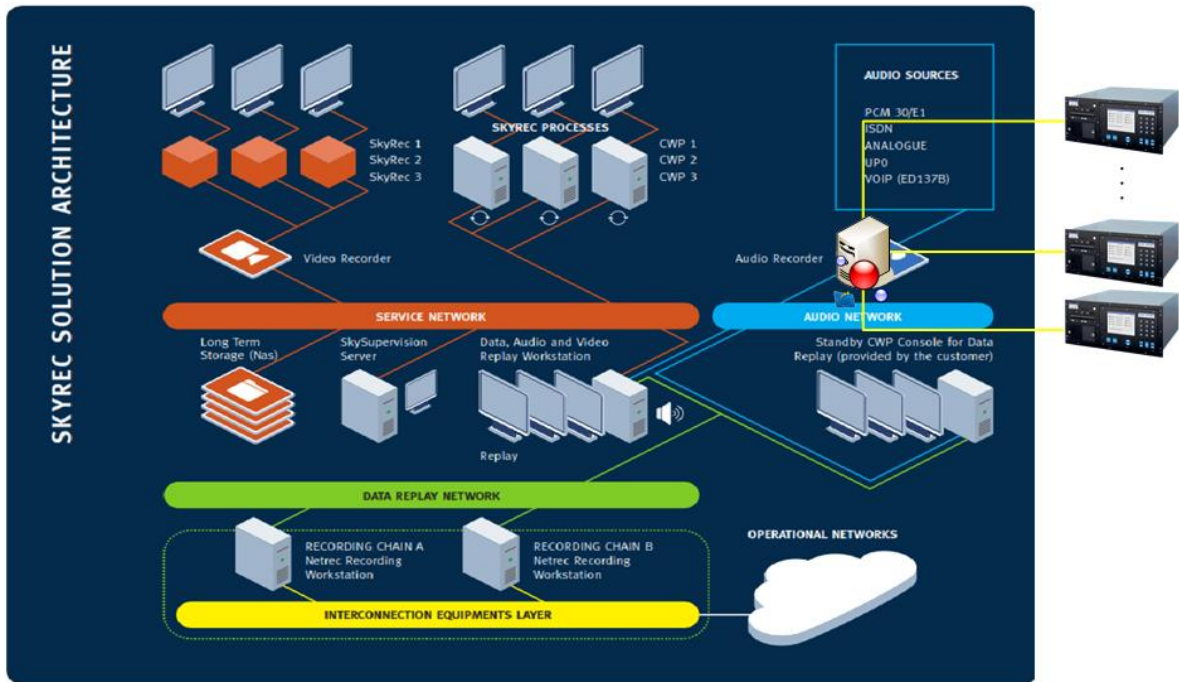
You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.
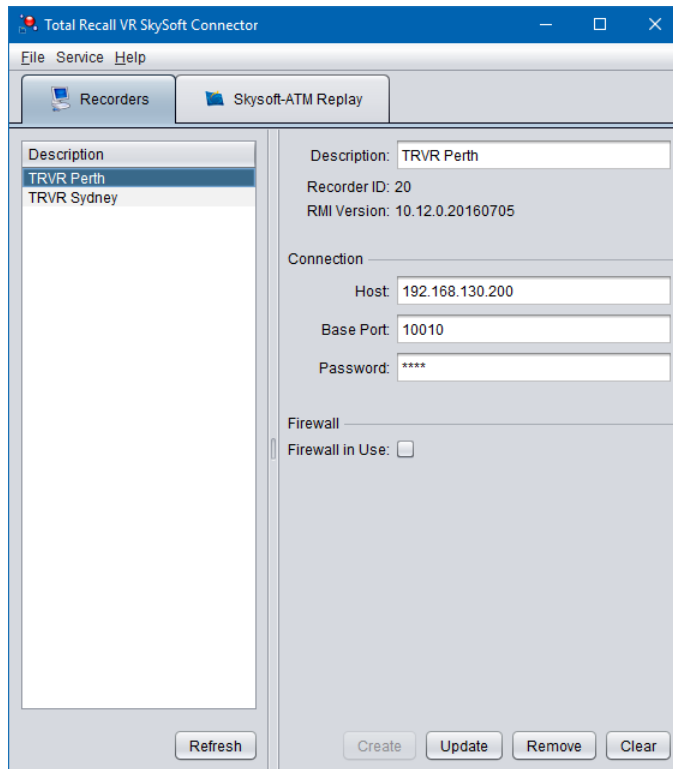
6.8. Total Recall VR Connector for SkySoft-ATM

Total Recall VR Connector for SkySoft-ATM (connector) is a combination of a Windows service and a GUI application.

The service enables easy integration of Total Recall VR with the SkyRec solution, via the SkySoft-Audio API 01.00.00, where Total Recall VR provides audio recording services to other components of the SkyRec solution.

The subsequent diagram shows how the connector fits in the SkyRec solution architecture.

The GUI application provides for configuration and control of the service.

Total Recall VR Connector for SkySoft-ATM is a licensed application. You must purchase an Activation Key in order to use the application.

Total Recall VR Connector for SkySoft-ATM may require an AMBE decoder license to export recordings that are stored in the AMBE audio format.

You can purchase a USB based AMBE decoder from us, order code TRVR-AMBE and TRVR-AMBE-3.

6.9. Total Recall VR Archiver

Total Recall VR Archiver is a combination of a Windows service and a GUI application.

The service can be used for near real-time continuous archiving of recordings from one or multiple Total Recall VR systems to a single Total Recall VR mega archive.

The GUI application provides for configuration and control of the service.
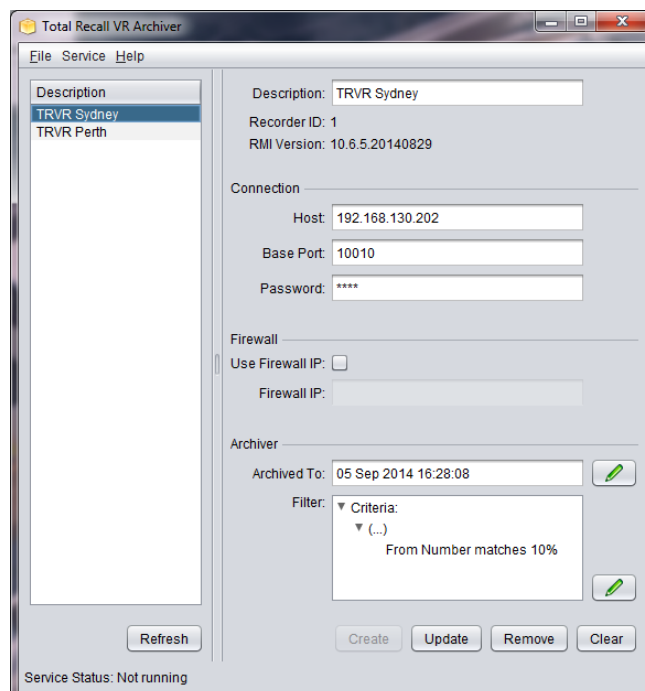
Total Recall VR Archiver offers:

- Continuous near real-time archiving of recordings from one or multiple Total Recall VR systems to a single Total Recall VR mega archive.

- Mega archives with unlimited number of recordings (subject to disk space limits).

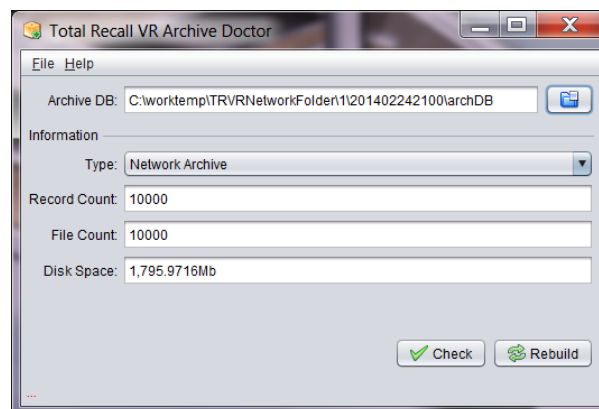- Windows service operating mode.

Total Recall VR Archiver is a Java/Windows based application designed to run on a PC with Windows 7, 8 or 10 or a server with Windows Server 2010 or 2012.

> Total Recall VR Archiver is a licensed application. You must purchase an Activation Key in order to use the application.

6.10. Total Recall VR Archive Doctor

Total Recall VR Archive Doctor is a utility application designed to check the integrity and repair Total Recall VR archives. It supports all types of Total Recall VR archives: disc, network share and USB. In addition, it supports the new Public Folder archives.

Total Recall VR Archive Doctor offers:

- Integrity check of data stored in archive databases.

- Integrity check of recordings stored in archives in the (.trc) file format.

- Rebuild of any type of archive to any type of archive.

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

Total Recall VR Archive Doctor is a licensed application. You must purchase an Activation Key in order to use the application.

7. Java^{TM} RMI API

The Total Recall VR Java^{TM} RMI API is a collection of Java^{TM} Remote Method Invocation (RMI) interfaces that can be used to develop applications which interact with a single, or multiple Total Recall VR systems.

The API provides for:

- Performing system wide operations such as login, logout, query system time, system shutdown and restart, access logs, etc.

- Managing the configuration of Total Recall VR systems.

- Ad-hoc archiving of recordings.

- Access to metadata of recordings.

- Real-time monitoring of audio being recorded.

- Playing of recordings that have completed.

- Manual recording control on analogue channels.

- Transfer of files (including audio files) to and from a Total Recall VR system.

- Simplified interface for application that focus on call centre agents.

> The Total Recall VR API is provided under the Prolancer API license. You can download a copy of this license from:
>
> http://www.totalrecallvr.com/sites/totalrecallvr.com/files/TRVR_ApiLicense.pdf

8. Accessories

8.1. Audio Mixer

Total Recall VR Audio Mixer is a low noise 2-channel audio mixer that can combine two audio sources into one.

You can use Total Recall VR Audio Mixer to:

- Combine (mix) a stereo audio signals into a mono signal.

- Combine (mix) the transmit (Tx) and receive (Rx) audio signal of a 2-way radio, repeater or base station.

- Combine (mix) any two line level audio signals into a single line level signal.

Specification:

- 3.5mm TS and RJ12 connector for each input

- Signal level control (gain) for each input

- Redundant line-level output

- 3.5mm TS and RJ12 connector for each output

- 9-15VDC power source centre negative

- Maximum output signal level: +16dBu (with 15VDC power supply)

- Minimum input signal level: -30dBu

- Input impedance: 100Kohm

- Frequency response: 20Hz-20KHz

- Total harmonic distortion: < .005%

Total Recall VR Audio Mixer requires a DC power pack that can produce between 9VDC and 15VDC. This power pack is NOT supplied with the Audio Mixer.

8.2. Logger Patch

The Total Recall VR Logger Patch enables recording from digital telephone handsets where there is no-side tone or the level of the microphone is too low to trigger recording.

The Logger Patch is simply connected to the telephone handset curly cord and then wired to an analogue port on a Total Recall VR voice logging recorder.

Some phone handsets have different microphone and earpiece outputs to the RJ22 (4P4C) plug. Normally the centre two wires on the handset jack are the earpiece circuit and the outer two wires are the microphone. If your telephone does not use standard

connections, there is a splitter included in the pack to reverse the input connections to the Logger Patch.

The Logger Patch requires a 5VDC to 12VDC power pack to power the amplifier which will give up to 20dB gain on the microphone and 10dB gain on the earpiece. This power pack is NOT supplied with the Logger Patch.

8.3. AMBE Decoder

Total Recall VR AMBE decoder is a USB device that provides a single channel AMBE decoder license.

The decoder, when installed in a Total Recall VR system, enables Total Recall VR to monitor and play recordings that are encoded in the AMBE format. Once installed in a Total Recall VR system, the device becomes an integral part of the system and cannot be removed or shared with other Total Recall VR systems.

Similarly, when attached to a PC, the device enables Total Recall VR applications (see section 6 Client Applications for details) to play recordings that are encode in AMBE format. The same device can be used on multiple PCs, but not at the same time.

9. Product Support

Total Recall VR products are backed by a world-wide network of specialists with advanced technical training.

In addition, our direct support service is a fast-response support channel that is staffed with experienced and technical support engineers. The service helps customers of all sizes and technical abilities to successfully utilise Total Recall VR products and features.

Our support plans offer customers and resellers the flexibility to choose the support level that meet their specific needs and budgets.

	Standard	Bronze	Silver	Gold
Public forums	✔	✔	✔	✔
Articles and tutorials	✔	✔	✔	✔
User guides	✔	✔	✔	✔
Administrator guides	✔	✔	✔	✔
Basic support (web form)	✔	✔	✔	✔
Private forums and FAQ		✔	✔	✔
Standard support (tickets)		✔	✔	✔
Access to software updates		✔	✔	✔
One-to-one support (direct e-mail/telephone)			✔	✔
Remote training (1 hour session per month)			✔	✔
Emergency software updates				✔
Best practice guides				✔
RFP response help				✔
System design office				✔

All support plan fees are payable on monthly basis, unless you elect to pay us for multiple months, and support will be provided during the calendar month when your payment appears on our account. There are no long term contracts.

Check our web site for current fees for different support levels:

http://www.totalrecallvr.com/services/total-recall-vr-product-support

[End of Document]