Omnitronics IPR400

Step by Step Guide

September, 2019

Author(s):

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Related Documents:

[1] Omnitronics Pty Ltd, IPR400 4-Channel VoIP Interface Product Manual, 3.01, March 2015

[2] Prolancer Pty Ltd, Total Recall VR Overview User Guide, 25.0, September 2019

[3] Prolancer Pty Ltd, Total Recall VR Deployment User Guide, 25.0, September 2019

[4] Prolancer Pty Ltd, Total Recall VR Manager User Guide, 16.0, September 2019

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 explains, via examples, how to record communication with a Total Recall VR recorder between radios, telephones and console operators that are part of radio networks which use the IPR400 product from the Omnitronics Radio over IP series of products.

The examples are also applicable to deployments which use the IPR100 and IPR100+ products.

2.2. What is Omnitornics IPR400

The IPR400 is a full featured, flexible four port Radio-over-IP (RoIP) gateway. It is designed to provide RoIP extensions for analogue radio equipment and facilitate interoperability between disparate radio systems such as UHF, VHF, HF and Trunk systems.

The IPR product supports up to four IP channels that can be mapped to multiple radio channels. This provides the means to link together groups of radios and IP channels in myriad combinations, making the device ideal for connecting repeater sites and accessing those sites from dispatch consoles.

> For in-depth information on IPR400 see the IPR400 product manual [1].

2.3. What is Total Recall VR

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

Total Recall VR is the ideal solution for:

- Recording business telephone conversations;

- Recording agent calls in contact centres;

- Logging emergency response communication;

- Logging business operations communication;

- Logging radio broadcasts;

- Logging public announcements;

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

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

> For additional information on Total Recall VR see the Total Recall VR overview guide [2].

3. Solution Example – Conference RTP Recording

> The examples described in this section require a Total Recall VR system with application release 11.3.0 or better.

3.1. Background

Please note the following:

3.1.1. Linking Radio and VoIP Channels

The IPR400 is cable of linking connected radios with or without VoIP functionality. This is explained in detail in section "Linking Radio and VoIP Channels" in the IPR product manual [1].

> If you link radios without VoIP groups, then Total Recall VR will not be able to record the communication between the radios as the IPR400 will not transmit audio over the IP network.

3.1.2. Communicating via Conferencing

The IPR400 is capable of using a multicast-like distribution of RTP packets by configuring a conference. This is explained in detail in section "Communicating via Conferencing" in the IPR product manual [1].

Total Recall VR is capable of participating in a conference with IPR devices described in the examples that appear in this section.

3.1.3. Active RTP Recording

The examples presented in this section use "active RTP recording". The Total Recall VR deployment guide [3] has in-depth explanation of active RTP recording and we strongly recommend that you familiarise yourself with the concept in order to understand the details of the examples. Briefly:

In active mode Total Recall VR accepts RTP packets on user configurable UDP ports, also known as UDP services. RoIP equipment can send RTP packets to the UDP services for the purpose of recording.

This interface receives RTP packets only. It does not send packets to the network.
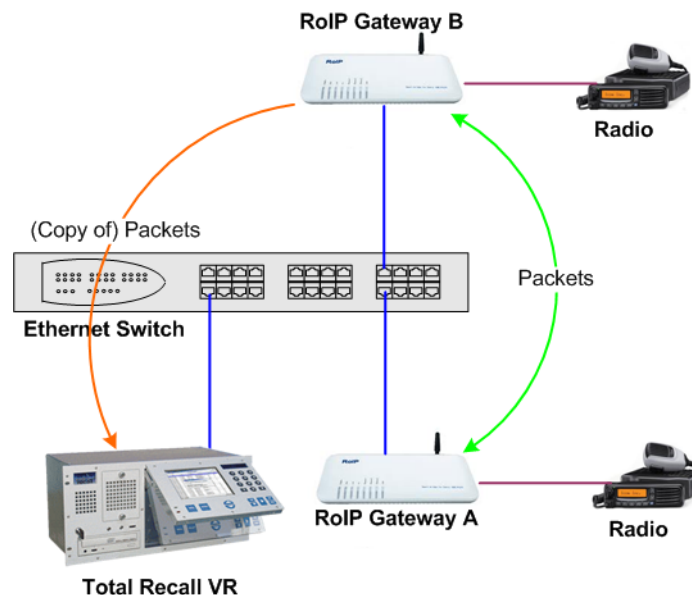
3.2. Example Dispatch System

This section shows how to record radio communication in a radio system that uses direct RTP and/or SIP connections between the IPR400s and the rest of the radio system equipment. However, the IPR400s are configured to send copy of the RTP traffic to a Total Recall VR.

The following diagram show the example system:

We assume that the IPR400s and the RediTalk console have been configured properly and are working as expected. This configuration is beyond the scope of this document.

In addition we assume that the IPR400s and the console(s) are on a separate network (as it is a good practice to separate VoIP/RoIP traffic from the enterprise data traffic).

The following is an extract of the additional IPR400 configuration that is relevant to configuration of Total Recall VR:

IPR400 configuration:

Configuration Page	Setting	Value
Network	Static IP Address	192.168.130.2
	Netmask	255.255.255.0
Linking	Radio 1/ VoIP 1	Checked
	Radio 2/ VoIP 2	Checked
	Radio 3/ VoIP 3	Checked
	Radio 4/ VoIP 4	Checked
VoIP/RTP Channel 1	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	25004
VoIP/RTP Channel 2	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	25006
VoIP/RTP Channel 3	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	25008

VoIP/RTP Channel 4	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	25010

Configuration Page	Setting	Value
Network	Static IP Address	192.168.130.3
	Netmask	255.255.255.0
Linking	Radio 1/ VoIP 1	Checked
	Radio 2/ VoIP 2	Checked
	Radio 3/ VoIP 3	Checked
	Radio 4/ VoIP 4	Checked
VoIP/RTP Channel 1	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	35004
VoIP/RTP Channel 2	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	35006
VoIP/RTP Channel 3	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	35008
VoIP/RTP Channel 4	Enable Conferencing	Checked
	Conference Mode	Bridge Server
	Enable IP Address	192.168.130.200
	Transmit Port	35010

The configuration of the console remains unchanged.

3.3. Total Recall VR Interface Requirements

The example system uses an IP network to transmit audio. As a result, we need a Total Recall VR with IP recording channels (8 channels to be exact, however the minimum is 10 recording IP channels).

Any of the following Total Recall VR models can be used when equipped with IP recording channels:

- Total Recall VR LinX Altus (http://totalrecallvr.com/products/total-recall-vr-linx-altus)

- Total Recall VR LinX Neos (http://totalrecallvr.com/products/total-recall-vr-linx-neos)

- Total Recall VR LinX Omnia (http://totalrecallvr.com/products/total-recall-vr-linx-omnia)

- Total Recall VR Virtualis (http://www.totalrecallvr.com/products/total-recall-vr-linx-virtualis)

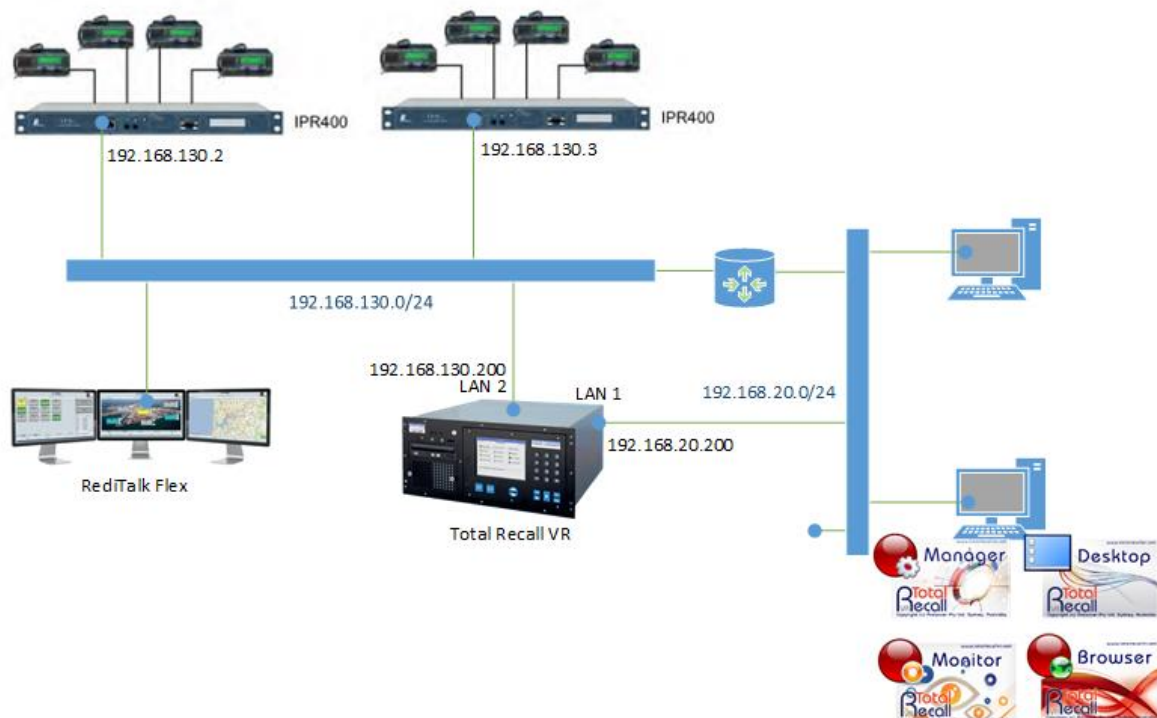- Total Recall VR Essence (http://totalrecallvr.com/products/total-recall-vr-linx-essence)

Total Recall VR can record both in active and passive mode on its IP recording channels. In this case we will use the active mode.

In active mode Total Recall VR accepts RTP packets on user configurable UDP ports, also known as UDP services. RoIP equipment can send RTP packets to the UDP services for the purpose of recording.

This interface receives RTP packets only. It does not send packets to the network.

3.4. Total Recall VR Deployment

The following figure shows how we will connect Total Recall VR to the rest of the system.

As we are recording in active mode, it is necessary to assign a valid static IP address to the LAN 2 interface of the Total Recall VR so that the Total Recall VR can receive RoIP traffic from the rest of the equipment on the network.

We also show the deployment of Total Recall VR PC applications on one of the PCs, however the configuration of the applications is beyond the scope of this document.
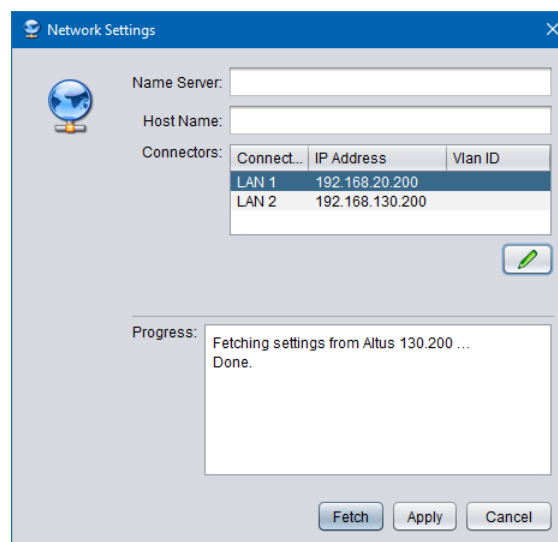
3.5. Total Recall VR Configuration

> You can use the Total Recall VR Manager [4] PC application to complete the configuration described in this section.

3.5.1. Network Settings

The following screen capture shows the network configuration on the Total Recall VR:


In summary:

1. We assigned a free IP address (assuming 192.168.20.200 is free) to the LAN 1 interface so we can connect the Total Recall VR to the enterprise data network.

2. We assigned a free IP address (assuming 192.168.130.200 is free) to the LAN 2 interface so we can connect the Total Recall VR to the RoIP network.

You may have to configure a valid gateway as well when assigning IP addresses to the network interfaces.

3.5.2. RTP Streams

It is necessary to configure the RTP Streams (which are part of the Active IP Collector configuration) on the Total Recall VR as shown on the following screen capture:
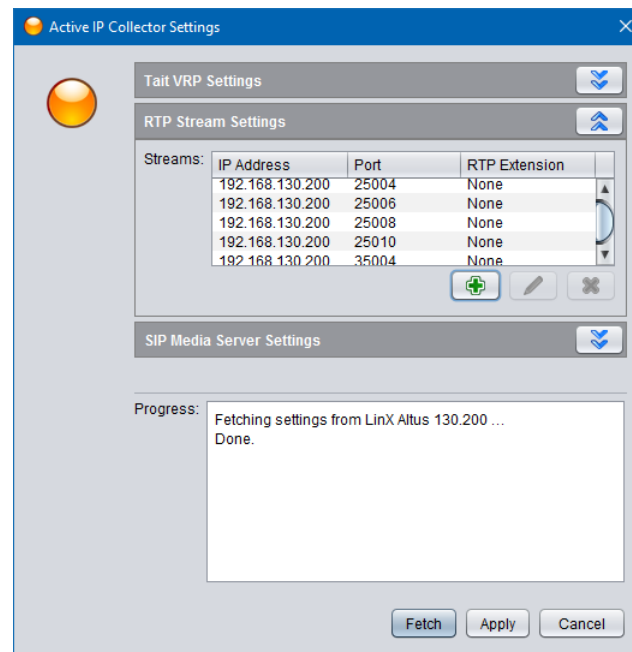
Basically, there is one RTP Stream for each VoIP/RTP Channel on the IPR400s, or total of 8 RTP Stream.

Each RTP Stream has additional configuration which is shown on the following screen capture:
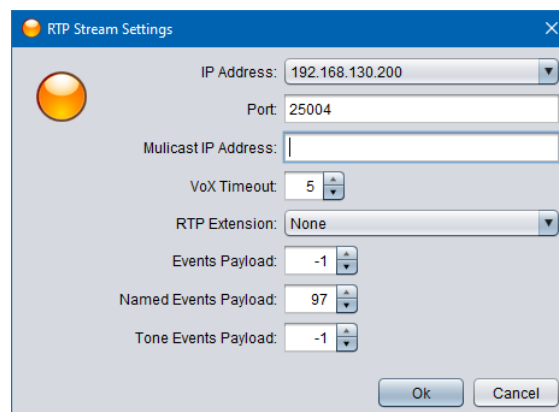
Note:

1. You should adjust VoX Timeout based on the time between overs. Here we use 5 seconds, however a value of 2 seconds may be more appropriate if there are only short pauses between overs.
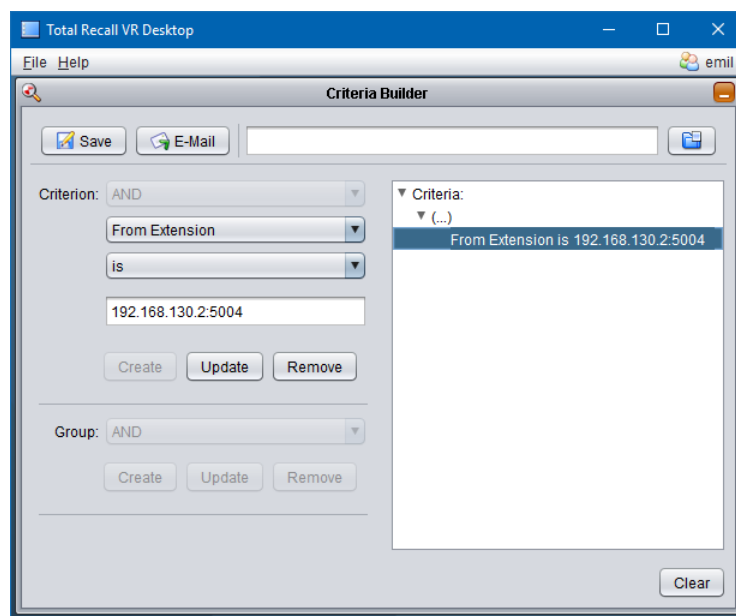
2. Named Event Payload must be set to 97.

3. You can leave Events Payload and Tone Event Payload to the default values or set them to -1 as shown on the screen capture.

3.5.3. Signalling Mapping

You can use the Signalling Map Settings to create user friendly names for each of the radio channels. If so, users can use the user friendly names to search for recordings.
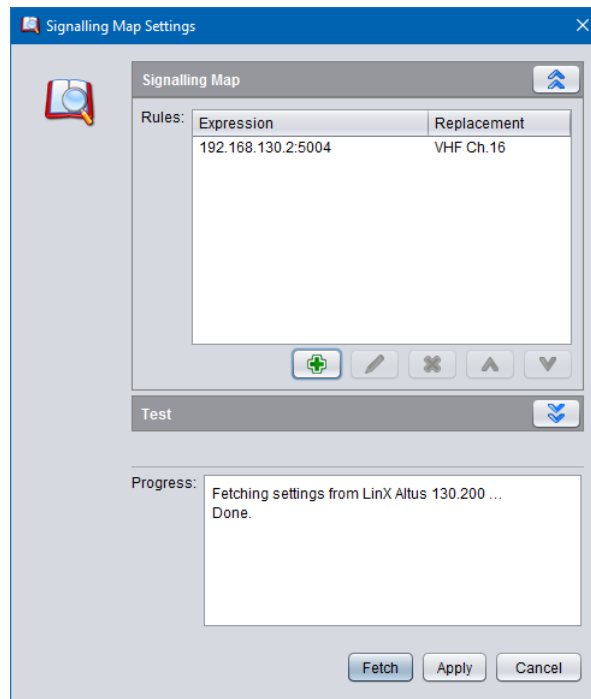
Without Signalling Map Settings, Total Recall VR creates the "To" and "From" identifiers for recordings in the format <IP address>:<port #>. For example, if an RTP packet has source IP address 192.168.130.2 and UDP port 5004 and destination IP address 192.168.130.200 and UDP port 25004, then Total Recall VR will use 192.168.130.2:5004 as a "From" identifier and 192.168.130:25004 as a "To" identifier.

Then, when users wish to search for a recording related to the radio that is connected to the 1st channel on the IPR400 with IP address 192.168.130.2, they need to use values such as 192.168.130.2:5004 in the search criteria. This is not very user friendly. Here as what a search criteria would look like:

Likely, we can change that and let users use values like "VHF Ch.16" instead. To do this we need to add mapping entries to the Signalling Map Settings.

The following screen capture is an example that shows how to map the IDs for the radio connected to the 1st channel on the IPR400 with IP address 192.168.130.2 to more user friendly value:

With this configurations users can use "VHF Ch.16" as values for search parameters when searching for recording. For example:

I think we can all agree that it is easier for users to remember "VHF Ch.16" rather than "192.168.130.2:5004".

4. Solution Example – Multicast RTP Recording

⚠ The examples described in this section require a Total Recall VR system with application release 11.3.0 or better.

4.1. Background

Please note the following:

4.1.1. Linking Radio and VoIP Channels

The IPR400 is cable of linking connected radios with or without VoIP functionality. This is explained in detail in section "Linking Radio and VoIP Channels" in the IPR product manual [1].

⚠ If you link radios without VoIP groups, then Total Recall VR will not be able to record the communication between the radios as the IPR400 will not transmit audio over the IP network.

4.1.2. Communicating via Multicasting

The IPR400 is capable of using multicasting in order to send RTP packets to multiple IPR400 devices. This is explained in detail in section "Communicating via Multicasting" in the IPR product manual [1].

Total Recall VR is capable of receiving multicast RTP packets from IPR devices described in the examples that appear in this section.

4.1.3. Active RTP Recording

The examples presented in this section use "active RTP recording". The Total Recall VR deployment guide [3] has in-depth explanation of active RTP recording and we strongly recommend that you familiarise yourself with the concept in order to understand the details of the examples. Briefly:

In active mode Total Recall VR accepts RTP packets on user configurable UDP ports, also known as UDP services. RoIP equipment can send RTP packets to the UDP services for the purpose of recording.

This interface receives RTP packets only. It does not send packets to the network.
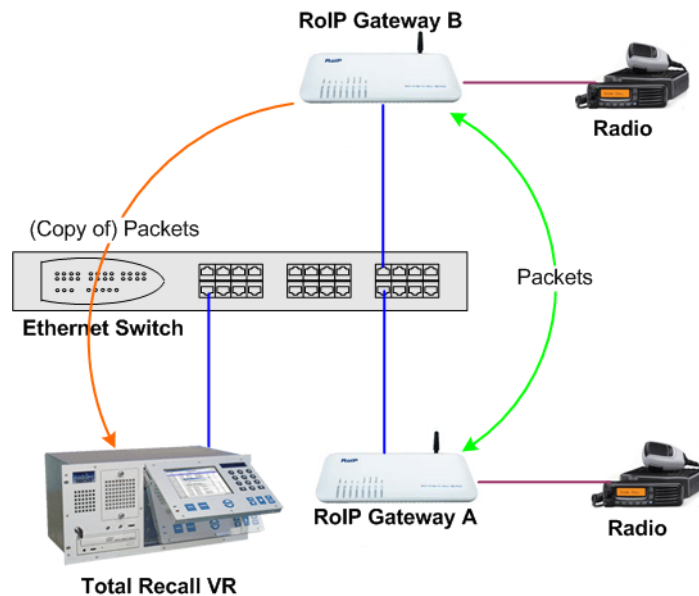
4.2. Example Multicast System

This section shows how to record communication in a radio system that uses IPRs that communicate via multicasting.

In particular, we will use the application example that is described in detail in section "Communicating via Multicasting" in the IPR400 product manual [1], however we limit our example solution to only 2 IPR400 devices. The following diagram show the example system.
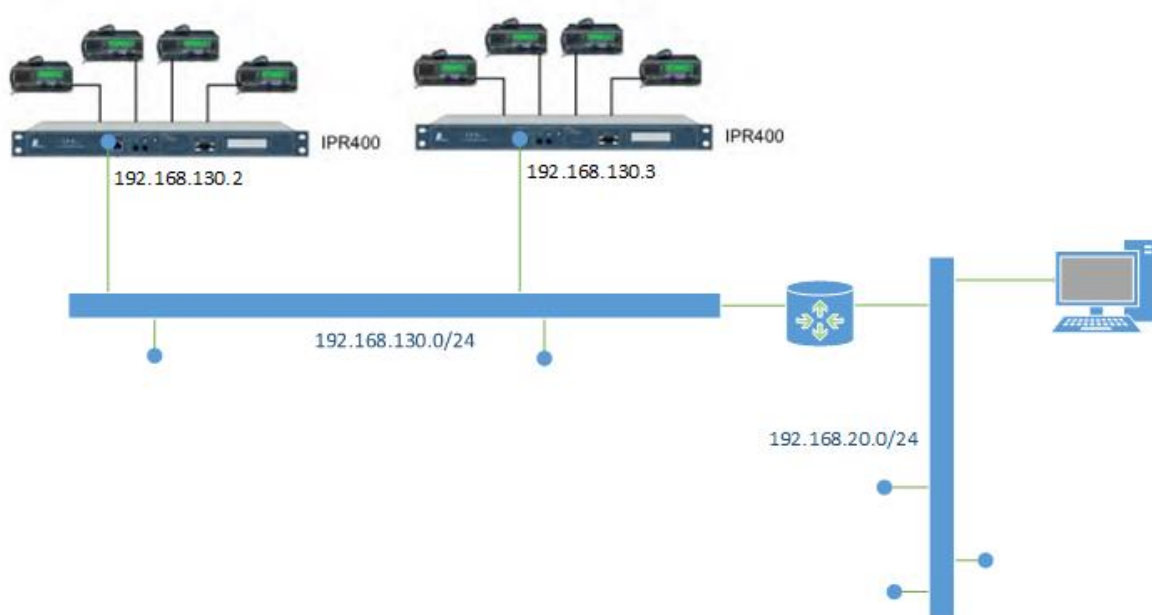
In addition we assume that the IPRs are on a separate network (as it is a good practice to separate RoIP traffic from the enterprise data traffic).

We assume that the IPR400s and the RediTalk console have been configured properly and are working as expected. This configuration is beyond the scope of this document.

In addition we assume that the IPR400s and the console(s) are on a separate network (as it is a good practice to separate VoIP/RoIP traffic from the enterprise data traffic).

The following is an extract of the additional IPR400 configuration that is relevant to configuration of Total Recall VR:

IPR400 configuration:

Configuration Page	Setting	Value
Network	Static IP Address	192.168.130.2
	Netmask	255.255.255.0
Linking	Radio 1/ VoIP 1	Checked
	Radio 2/ VoIP 2	Checked
	Radio 3/ VoIP 3	Checked
	Radio 4/ VoIP 4	Checked
VoIP/RTP Channel 1	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5004
	RTP Transmit Port Number	25004
VoIP/RTP Channel 2	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5006
	RTP Transmit Port Number	25006
VoIP/RTP Channel 3	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5008
	RTP Transmit Port Number	25008
VoIP/RTP Channel 4	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5010
	RTP Transmit Port Number	25010

Configuration Page	Setting	Value
Network	Static IP Address	192.168.130.3
	Netmask	255.255.255.0
Linking	Radio 1/ VoIP 1	Checked
	Radio 2/ VoIP 2	Checked
	Radio 3/ VoIP 3	Checked
	Radio 4/ VoIP 4	Checked
VoIP/RTP Channel 1	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5012
	RTP Transmit Port Number	25012
VoIP/RTP Channel 2	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1

	RTP Receive Port Number	5014
	RTP Transmit Port Number	25014
VoIP/RTP Channel 3	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5016
	RTP Transmit Port Number	25016
VoIP/RTP Channel 4	VoIP Group Enable	Checked
	Remote IP Address	239.0.0.1
	RTP Receive Port Number	5018
	RTP Transmit Port Number	25018

4.3. Total Recall VR Interface Requirements

The example system uses an IP network to transmit audio. As a result, we need a Total Recall VR with IP recording channels (4 channels to be exact, however the minimum is 10 recording IP channels).

Any of the following Total Recall VR models can be used when equipped with IP recording channels:

- Total Recall VR LinX Altus (http://totalrecallvr.com/products/total-recall-vr-linx-altus)

- Total Recall VR LinX Neos (http://totalrecallvr.com/products/total-recall-vr-linx-neos)

- Total Recall VR LinX Omnia (http://totalrecallvr.com/products/total-recall-vr-linx-omnia)

- Total Recall VR Virtualis (http://www.totalrecallvr.com/products/total-recall-vr-linx-virtualis)

- Total Recall VR Essence (http://totalrecallvr.com/products/total-recall-vr-linx-essence)
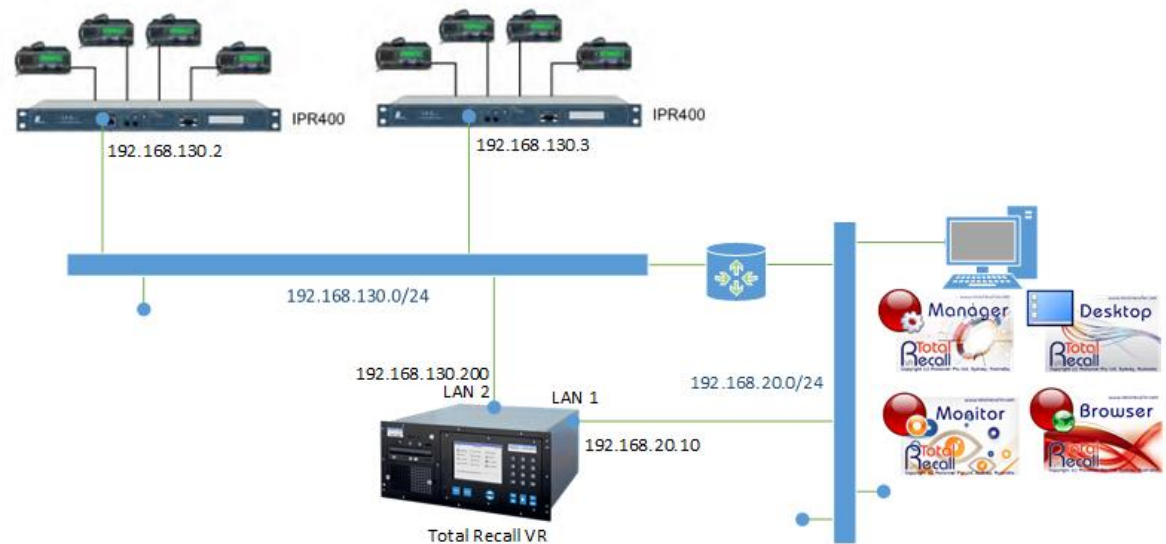

Total Recall VR can record both in active and passive mode on its IP recording channels. In this case we will use the active mode.

In active mode Total Recall VR accepts RTP packets on user configurable UDP ports, also known as UDP services. RoIP equipment can send RTP packets to the UDP services for the purpose of recording.

This interface receives RTP packets only. It does not send packets to the network.

4.4. Total Recall VR Deployment

The following figure shows how we will connect Total Recall VR to the rest of the system.

As we are recording in active mode, it is necessary to assign a valid static IP address to the LAN 2 interface of the Total Recall VR so that the Total Recall VR can receive RoIP traffic from the rest of the equipment on the network.

We also show the deployment of Total Recall VR PC applications on one of the PCs, however the configuration of the applications is beyond the scope of this document.
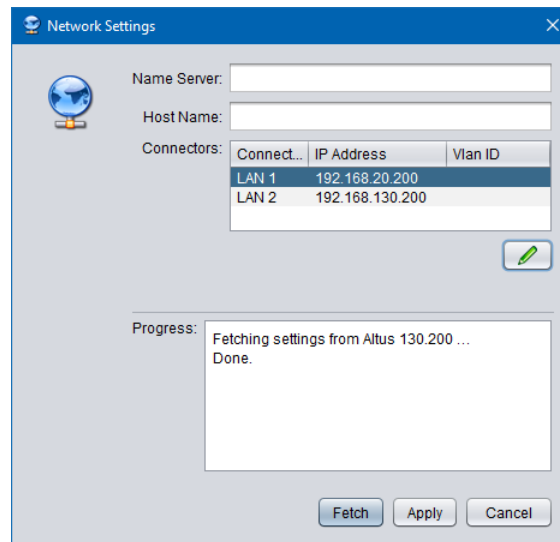
4.5.   Total Recall VR Configuration

> You can use the Total Recall VR Manager [4] PC application to complete the configuration described in this section.

4.5.1. Network Settings

The following screen capture shows the network configuration on the Total Recall VR:

In summary:

1. We assigned a free IP address (assuming 192.168.20.10 is free) to the LAN 1 interface so we can connect the Total Recall VR to the enterprise data network.

2. We assigned a free IP address (assuming 192.168.130.200 is free) to the LAN 2 interface so we can connect the Total Recall VR to the RoIP network.

You may have to configure a valid gateway as well when assigning IP addresses to the network interfaces.

4.5.2. RTP Streams

It is necessary to configure the RTP Streams (which are part of the Active IP Collector configuration) on the Total Recall VR as shown on the following screen capture:
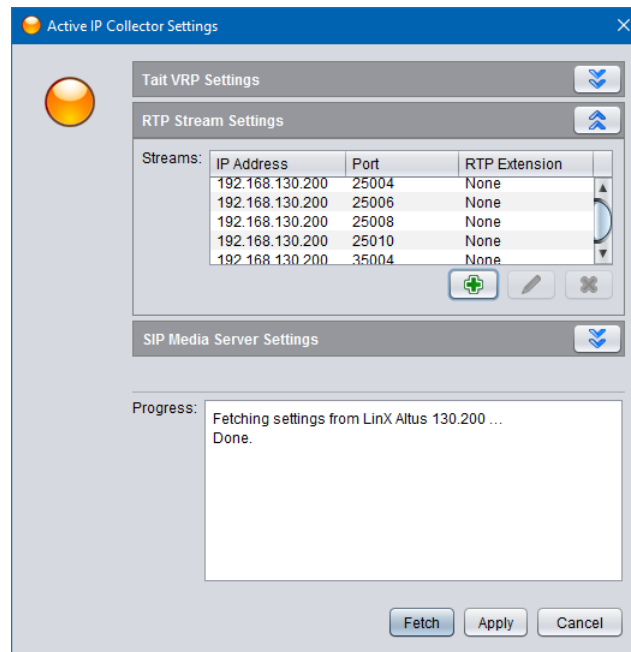
Basically, there is one RTP Stream for each VoIP/RTP Channel on the IPRs, or total of 8 RTP Stream.

Each RTP Stream has additional configuration which is shown on the following screen capture:
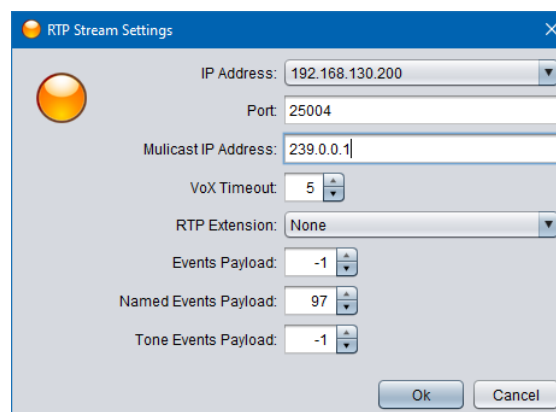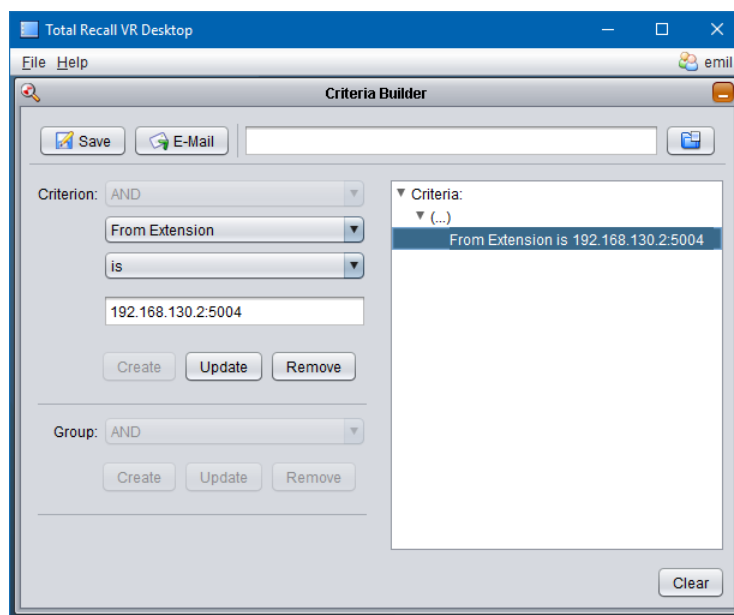
Note:

1. You should adjust VoX Timeout based on the time between overs. Here we use 5 seconds, however a value of 2 seconds may be more appropriate if there are only short pauses between overs.

2. Named Event Payload must be set to 97.

3. You can leave Events Payload and Tone Event Payload to the default values or set them to -1 as shown on the screen capture.

4.5.3. Signalling Mapping

You can use the Signalling Map Settings to create user friendly names for each of the radio channels. If so, users can use the user friendly names to search for recordings.
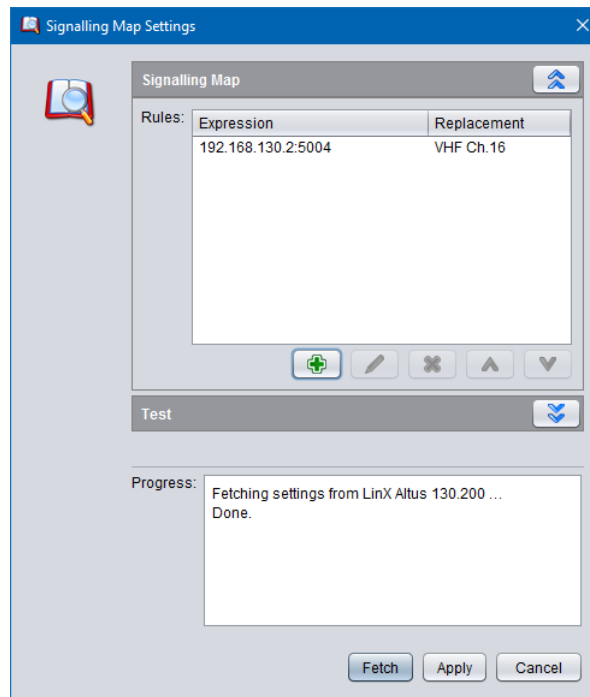
Without Signalling Map Settings, Total Recall VR creates the "To" and "From" identifiers for recordings in the format <IP address>:<port #>. For example, if an RTP packet has source IP address 192.168.130.2 and UDP port 5004 and destination IP address 239.0.0.1 and UDP port 25004, then Total Recall VR will use 192.168.130.2:5004 as a "From" identifier and 239.0.0.1:25004 as a "To" identifier.

Then, when users wish to search for a recording related to the radio that is connected to the 1st channel on the IPR400 with IP address 192.168.130.2, they need to use values such as 192.168.130.2:5004 in the search criteria. This is not very user friendly. Here as what a search criteria would look like:
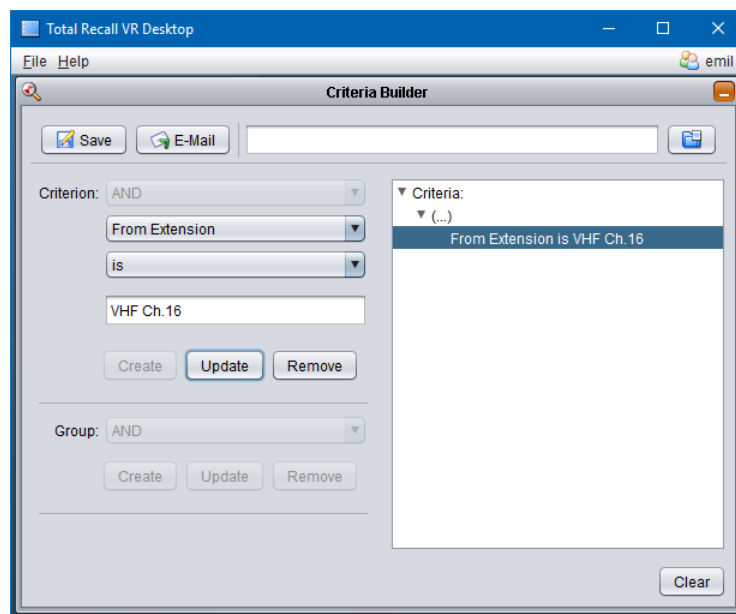

Likely, we can change that and let users use values like "VHF Ch.16" instead. To do this we need to add mapping entries to the Signalling Map Settings.

The following screen capture is an example that shows how to map the IDs for the radio connected to the 1st channel on the IPR400 with IP address 192.168.130.2 to more user friendly value:

With this configurations users can use "VHF Ch.16" as values for search parameters when searching for recording. For example:

I think we can all agree that it is easier for users to remember "VHF Ch.16" rather than "192.168.130.2:5004".

5. Solution Example – Passive RTP Recording

5.1. Background

Please note the following:

5.1.1. Linking Radio and VoIP Channels

The IPR400 is cable of linking connected radios with or without VoIP functionality. This is explained in detail in section "Linking Radio and VoIP Channels" in the IPR product manual [1].

> ⚠️ If you link radios without VoIP groups, then Total Recall VR will not be able to record the communication between the radios as the IPR400 will not transmit audio over the IP network.

5.1.2. Passive IP Recording

The examples presented in this section use "passive IP recording". The Total Recall VR deployment guide [3] has in-depth explanation of passive IP recording and we strongly recommend that you familiarise yourself with the concept in order to understand the details of the examples. Briefly:

Passive recording is completely transparent to the communication systems being recorded and the way they are used. The recorder connects to IP network via what is known as a "high-impedance tap" in order to capture conversations. There is no need to modify communication systems equipment in any way.

Total Recall VR uses a software based IP packet collector which is capable of detecting, extracting and then processing SIP, H.323 and RTP packets when connected to an Ethernet link. The packet collector does not interact with the packets on the Ethernet link in any way. It does not add, remove or modify packets. It simply detects and takes a copy of each packet for further processing.

Total Recall VR must be deployed in such a way so that all SIP, H.323 and RTP packets are presented to the LAN interface that is used by the IP packet collector. There are a number of ways to present packets to the packet collector:

1. Ethernet hub.

2. Aggregating Ethernet tap.

3. SPAN port on an Ethernet switch.

SPAN ports are by far the cheapest way to connect a Total Recall VR to an IP network for the purpose of recording. Even if the current switch on-site does not support it, myriad other switches which cost few hundred dollars do.

SPAN ports are used for port mirroring where the packets that appear on one switch port are blindly presented to another port (the SPAN port) bypassing the standard Ethernet switch logic which decides which ports to send packets to.

If you connect a SPAN port to the LAN interface that is used by the IP packet collector on a Total Recall VR, then the Total Recall VR will be able to record the IP communication.
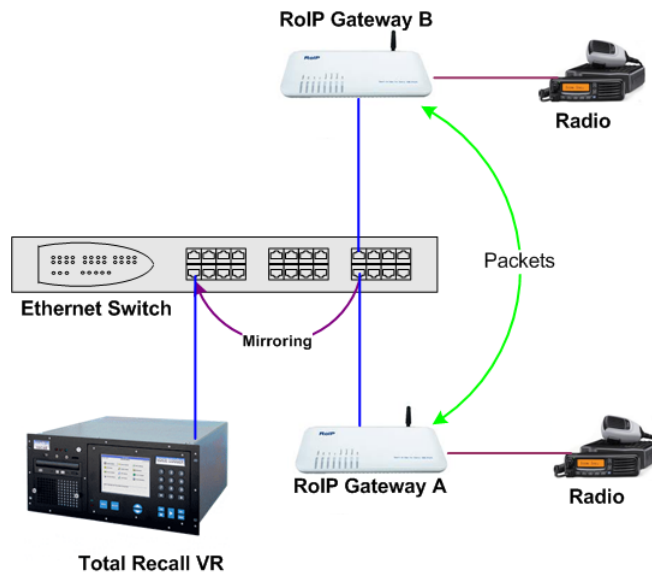
5.2.   Example Dispatch System

This section shows how to record radio communication in a radio system that uses direct RTP connection between the IPR400s and the rest of the radio system equipment.

In particular, we will use the application example that is described in detail in section "Communicating with a DX64 Radio Dispatch System" in the IPR400 product manual [1]. The following diagram (reproduction of figure 77 in [1]) show the example system.
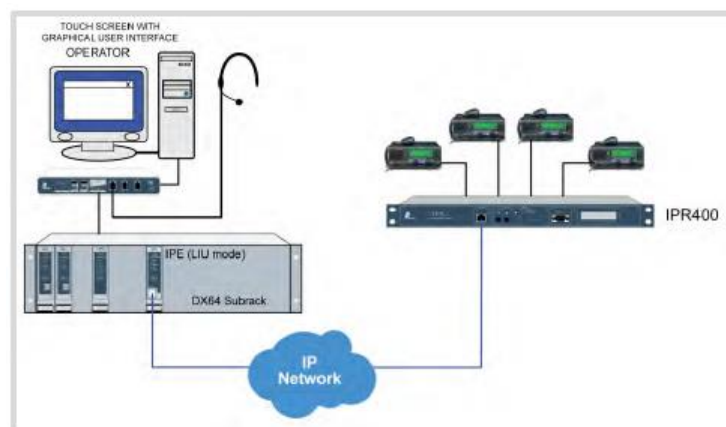
Section "Communicating with a DX64 Radio Dispatch System" shows detailed configuration of the IPR400 and the IPE card. The following is an extract of the configuration that is relevant to configuration of Total Recall VR:

IPR400 configuration:

Configuration Page	Setting	Value
Network	Static IP Address	192.168.10.201
	Netmask	255.255.255.0
Linking	Radio 1/ VoIP 1	Checked
	Radio 2/ VoIP 2	Checked
	Radio 3/ VoIP 3	Checked
	Radio 4/ VoIP 4	Checked
VoIP/RTP Channel 1	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.3
	RTP Receive Port Number	5004
	RTP Transmit Port Number	5004
VoIP/RTP Channel 2	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.3
	RTP Receive Port Number	5006
	RTP Transmit Port Number	5006
VoIP/RTP Channel 3	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.3
	RTP Receive Port Number	5008
	RTP Transmit Port Number	5008
VoIP/RTP Channel 4	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.3
	RTP Receive Port Number	5010
	RTP Transmit Port Number	5010

IPE card configuration:

Configuration Page	Setting	Value
Network	Static IP Address	192.168.10.3
	Netmask	255.255.255.0
VoIP/RTP Channel 1	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.201
	RTP Receive Port Number	5004
	RTP Transmit Port Number	5004
VoIP/RTP Channel 2	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.201
	RTP Receive Port Number	5006
	RTP Transmit Port Number	5006
VoIP/RTP Channel 3	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.201
	RTP Receive Port Number	5008
	RTP Transmit Port Number	5008
VoIP/RTP Channel 4	VoIP Group Enable	Checked
	Remote IP Address	192.168.10.201
	RTP Receive Port Number	5010

	RTP Transmit Port Number	5010

5.3. Total Recall VR Interface Requirements

The example system uses an IP network to transmit audio. As a result, we need a Total Recall VR with IP recording channels (4 channels to be exact, however the minimum is 10 recording IP channels).

Any of the following Total Recall VR models can be used when equipped with IP recording channels:

- Total Recall VR LinX Altus (http://totalrecallvr.com/products/total-recall-vr-linx-altus)

- Total Recall VR LinX Neos (http://totalrecallvr.com/products/total-recall-vr-linx-neos)

- Total Recall VR LinX Omnia (http://totalrecallvr.com/products/total-recall-vr-linx-omnia)

- Total Recall VR Essence (http://totalrecallvr.com/products/total-recall-vr-linx-essence)

- Total Recall VR Evolution (http://totalrecallvr.com/products/total-recall-vr-linx-evolution)

Total Recall VR can record both in active and passive mode on its IP recording channels. In this case we will use the passive mode.

In passive mode, Total Recall VR uses a software based IP 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.

5.4. Total Recall VR Deployment

The following figure shows how we will connect Total Recall VR to the rest of the system.
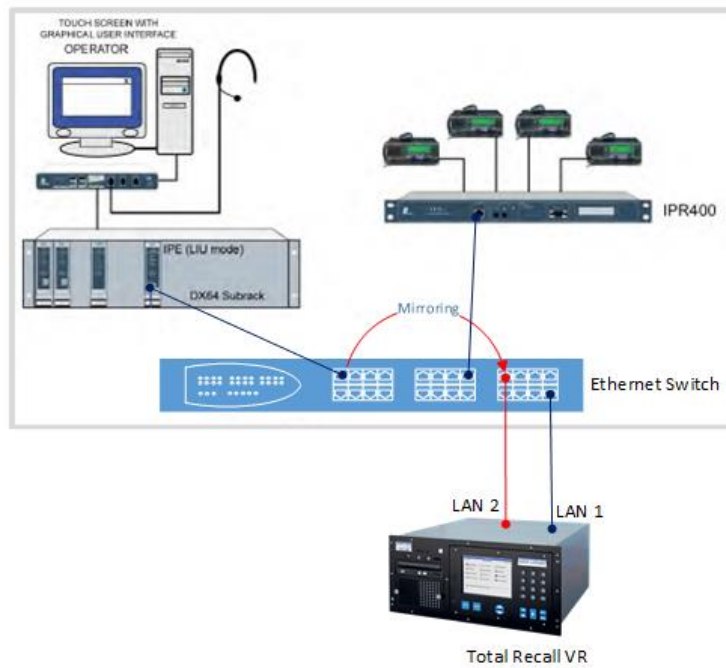
As we are recording in passive mode, we are using an Ethernet switch with SPAN port capability. The switch must be configured to SPAN the port connected to the IPE card to the port connected to the LAN 2 interface on the Total Recall VR.

> In this example you can SPAN the port connected to the IPR400 to the port connected to the LAN 2 interface on the Total Recall VR as well.

For example, this will work as well:
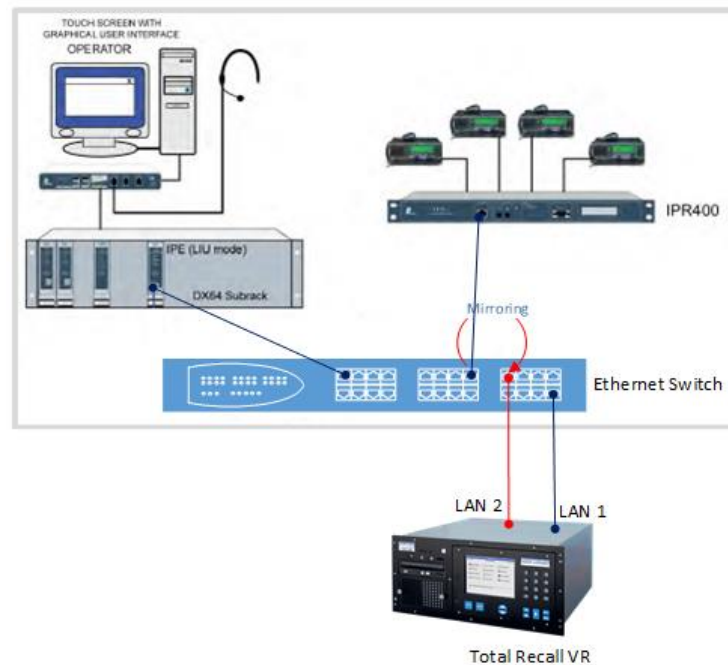
Note that we also connect the LAN 1 port of the Total Recall VR to the same switch. This allows us to add the Total Recall VR to the network and use Total Recall VR PC applications to access the Total Recall VR remotely via the LAN 1 interface while the LAN 2 interface is used to record radio communication.

But wait, this is a simplistic scenario. A scenario with multiple IPR400s and/or IPE cards is more likely. What do I do then?

Well, in all cases it is important to SPAN all traffic that needs to be recorder to the port on the Ethernet switch that is connected to the LAN 2 interface of Total Recall VR.

For example, if all IPR400s (or IPE cards) are connected to same Ethernet switch then you can SPAN multiple ports (not all Ethernet switches can do this):
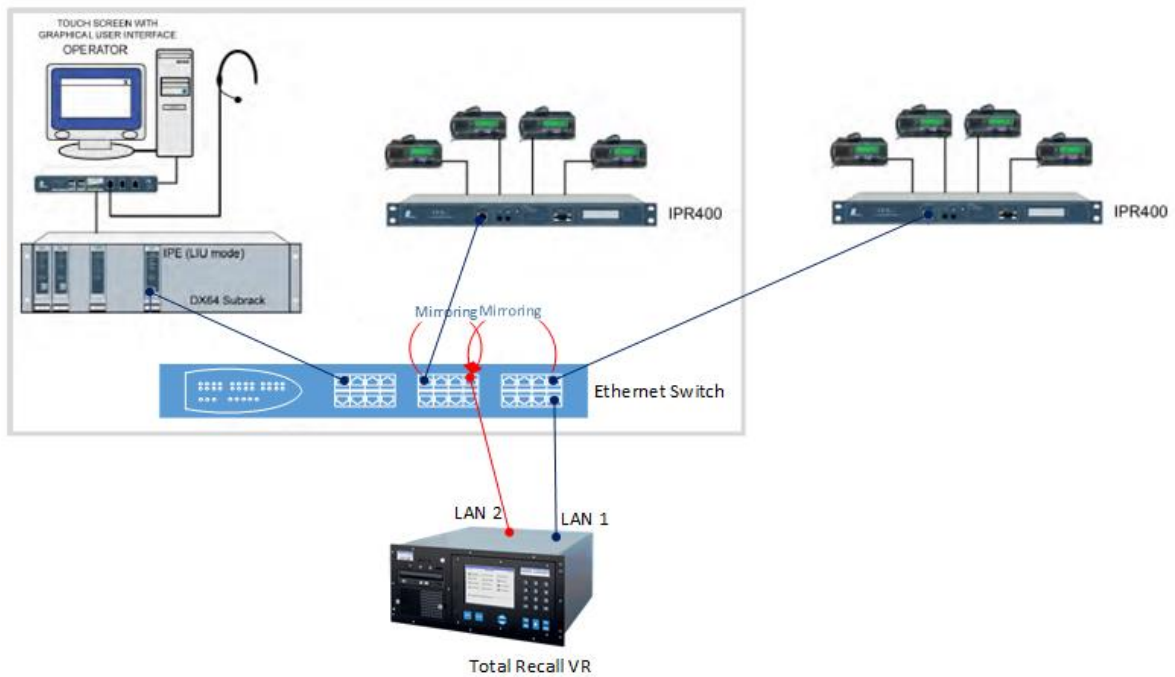
Or you may have to alternate means of tapping Ethernet links such as an aggregating Ethernet tap or the Total Recall VR Traffic Collector. For example:
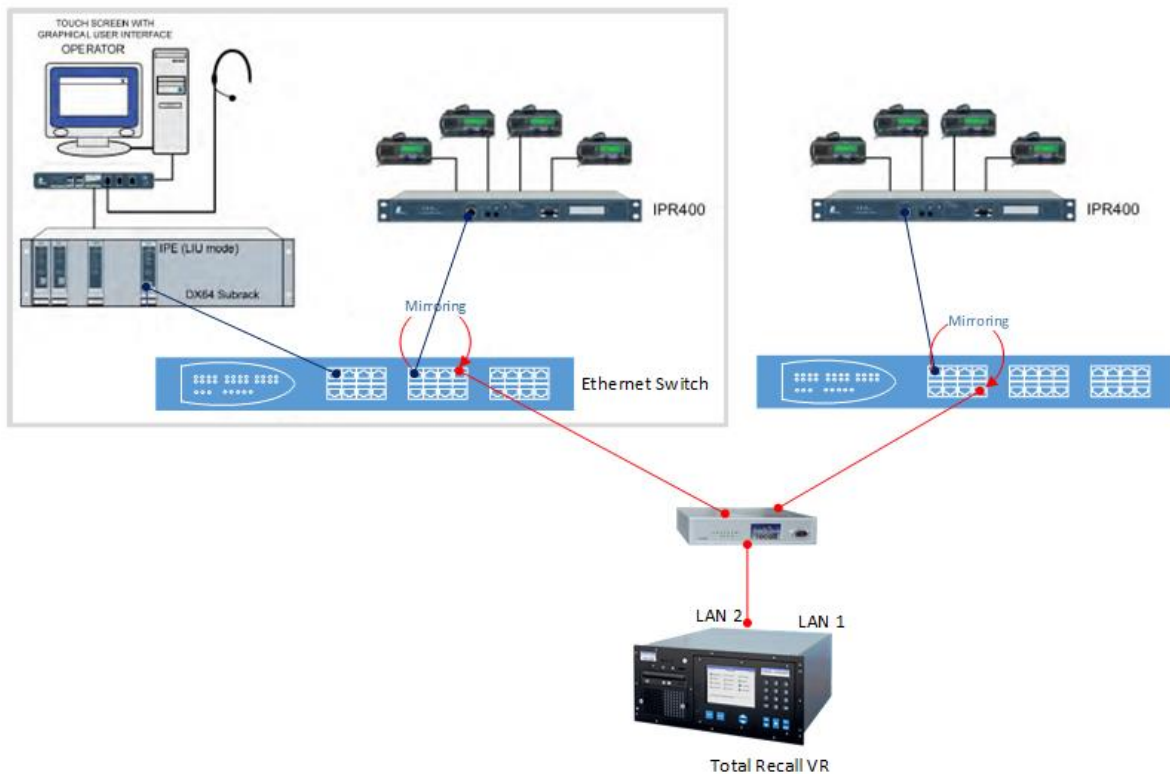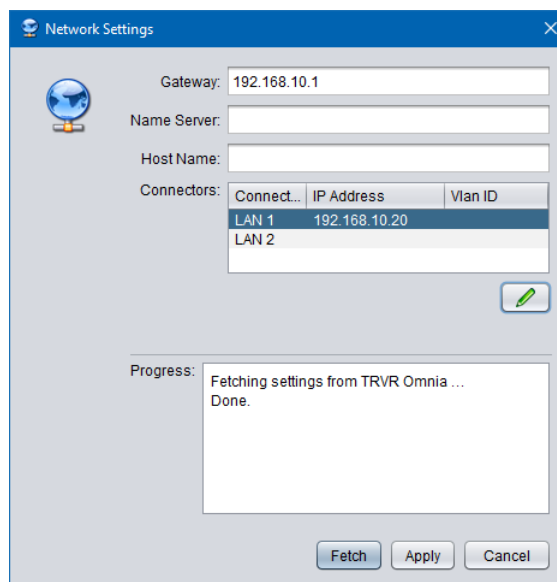
5.5. Total Recall VR Configuration

> You can use the Total Recall VR Manager [4] PC application to complete the configuration described in this section.

5.5.1. Network Settings

The following screen capture shows the network configuration on the Total Recall VR:
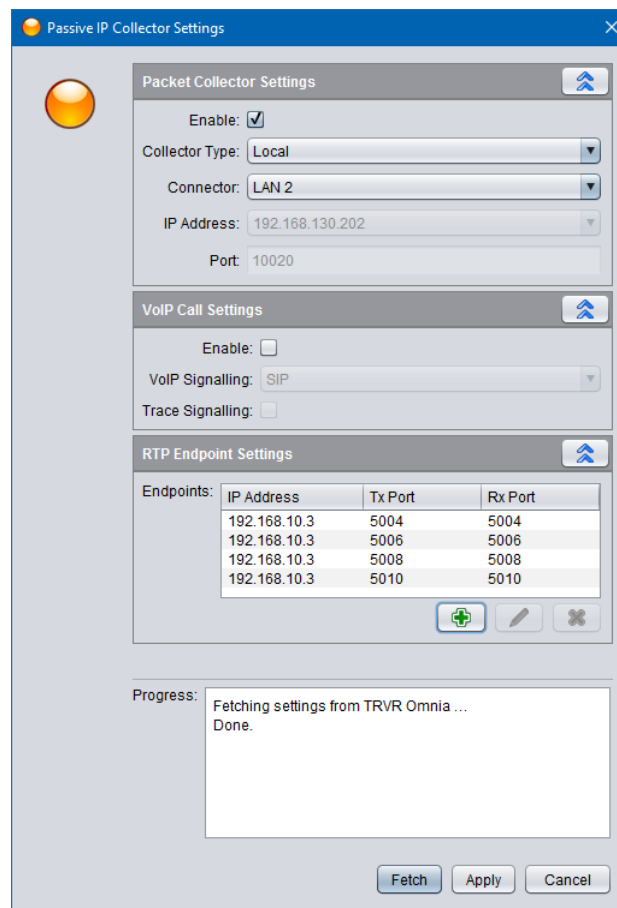
In summary:

1. We assigned a free IP address (assuming 192.168.10.20 is free) to the LAN 1 interface so we can connect the Total Recall VR to the same network as the rest of the equipment.

2. We do not assign an IP address to the LAN 2 interface as we will use this interface to record communication.

5.5.2. Passive IP Collector

It is necessary to configure the passive IP connector on the Total Recall VR as shown on the following screen capture:

In summary:

1. We enabled the IP packet collector and configured it to collect packets on the LAN 2 interface.

2. We disabled VoIP call recording.

3. We created an RTP Endpoint for each of the VoIP/RTP Channels on the IPE card.

    However, you can create RTP Endpoints for all the VoIP/RTP Channels on the IPR400 instead. Or, you can create RTP Endpoints for channel 1 and 2 on the IPE card and channel 3 and 4 on the IPR gateway. There are many possible combinations that will work as well.

Each of the RTP Endpoints have additional settings which are shown on the following screen capture:
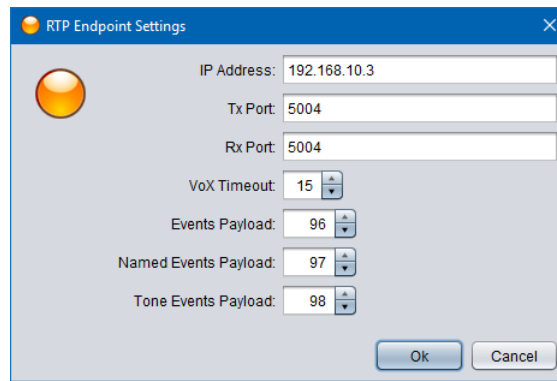
Note:

1. You should adjust VoX Timeout based on the time between overs. Here we use 15 seconds, however a value of 2 seconds may be more appropriate if there are only short pauses between overs.

2. Named Event Payload must be set to 97.

Finally, the RTP Endpoint configuration is very flexible. For example, the same configuration is possible with a single entry that uses regular expressions for Tx Port and Rx Port. For more details consult the Total Recall VR documentation.

5.5.3. Signalling Mapping

You can use the Signalling Map Settings to create user friendly names for each of the radio channels. If so, users can use the user friendly names to search for recordings.

Without Signalling Map Settings, Total Recall VR creates the "To" and "From" identifiers for recordings in the format <IP address>:<port #>. For example, if an RTP packet has source IP address 192.168.10.3 and UDP port 5004 and destination IP address 192.168.10.201 and UDP port 5004, then Total Recall VR will use 192.168.10.3:5004 as a "From" identifier and 192.168.10.201:5004 as a "To" identifier.

Then, when a user wishes to search for a recording from the console to radio 1, they need to use values such as 192.168.10.3:5004 in the search criteria. This is not very user friendly. Here as what a search criteria would look like:
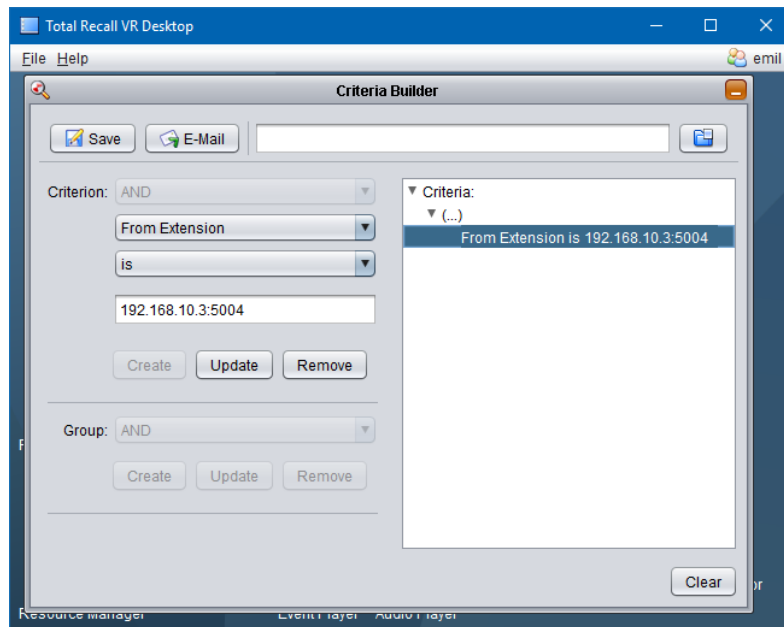
Likely, we can change that and let users use values like "Console Channel 1" instead. To do this we need to add mapping entries to the Signalling Map Settings.

The following screen capture is an example that shows how to map the IDs for the console channel 1 and IPR400 radio 1 to more user friendly values:
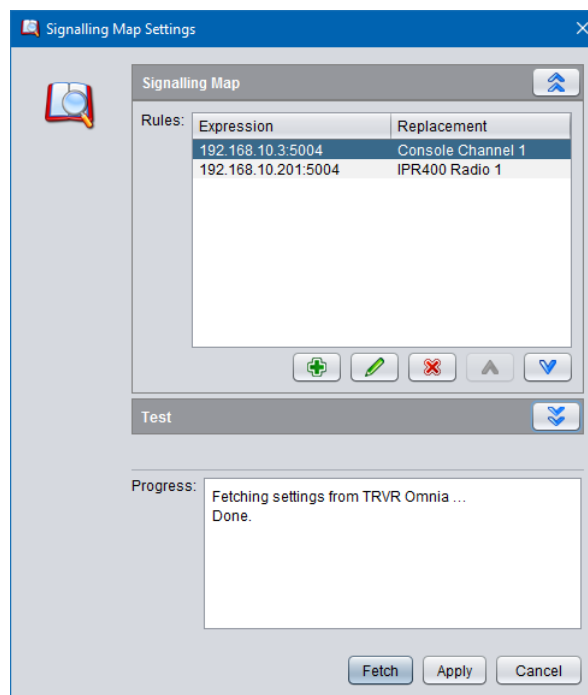
With this configurations users can use "Console Channel 1" and "IPR400 Radio 1" as values for search parameters when searching for recording. For example:
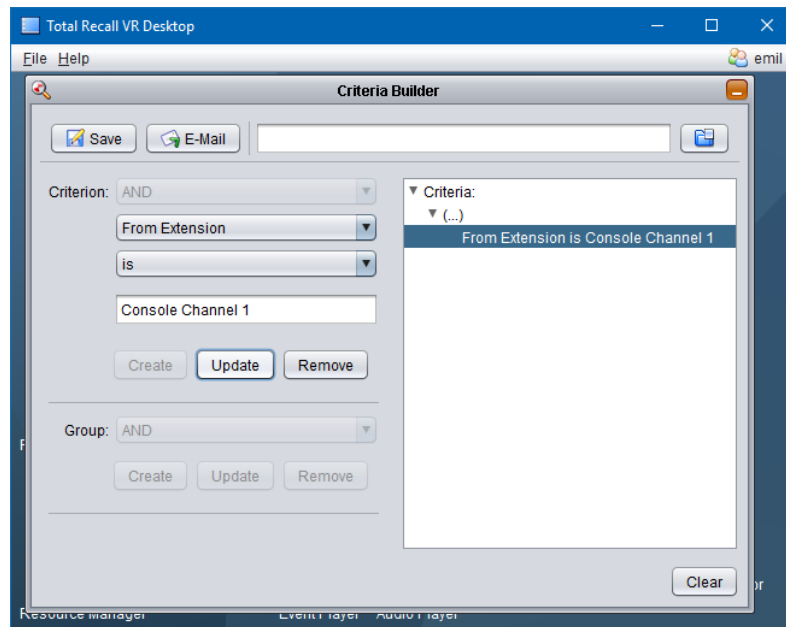
I think we can all agree that it is easier for users to remember "Console Channel 1" rather than "192.168.10.3:5004".

[End of Document]