

# Choosing the right recording technology

Detailed comparison of recording methods in Cisco Unified Communications systems

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## Introduction

As more and more complex networks are deployed and the demand for voice recording is higher than ever, choosing the most appropriate recording technology can be big headache for network engineers and solution architects and can also save significant amount of money if the right vendor and the right solution have been chosen.

TC&C, the developer of the award-winning voice, video and telepresence recording platform - Carin, would like to help network engineers, IT managers and decision makers fully understand the pros and cons of the each recording method and clearly highlight the issues regarding each solution.



This guide discusses the following recording methods available for Cisco Unified Communications systems:

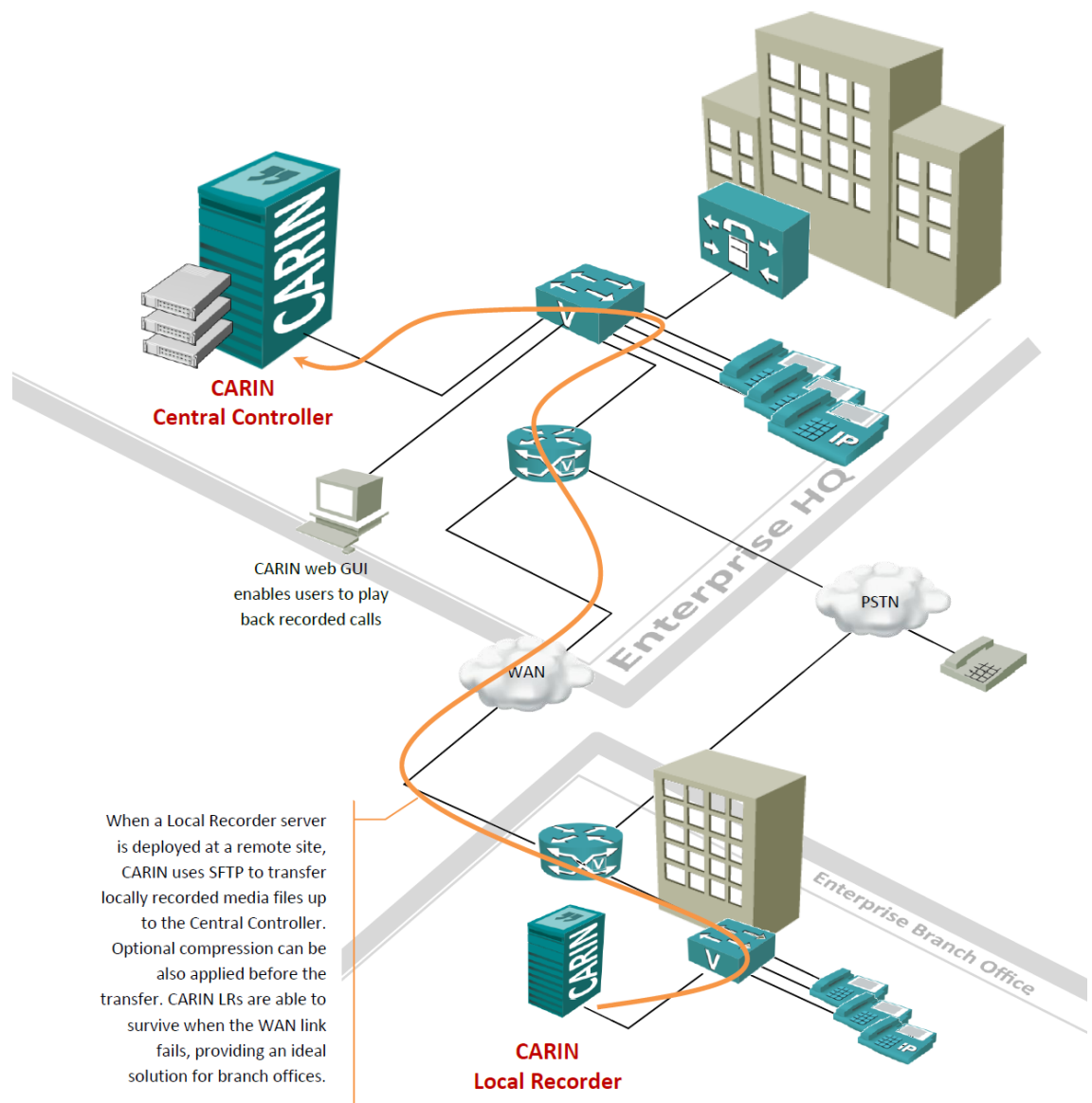
- Passive, extension side recording (SIP and/or SCCP)
- Passive, trunk side recording (SIP)
- Native, extension side RTP forking
- Active, conference based (JTAPI)
- Dial-in recorder



## Passive, extension side recording

The Passive recording method is deployed by connecting the recorder a monitor port on a switch (in Cisco terminology it is called SPAN/RSPAN port). The monitor port receives all of the traffic for each of the extensions that need to be recorded. The recorder captures all the traffic, including the RTP media streams and the SCCP or SIP signaling messages.

In a Carin system, multiple recording servers can be deployed in order to support multi-site networks and/or high volume systems with or without redundancy.





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#### Advantages

- There is no connection to the CUCM server(s), so there is no extra capacity requirement at all.
- In case of CUCM failure, the recording system is not affected, the recording can work continuously even in SRST (Survivable Remote Site Telephony) mode (if a local recording server is deployed at the remote side).
- Because of the passive approach, the flow of the call is not affected at all.
- Can be easily deployed and maintained.
- Using Carin multi-site deployment architecture, the system can be adapted very well to fit a wide array of use cases.
- If high-volume traffic should be recorded, the system can be scaled easily.
- All types of calls can be recorded.
- Monitor port technology is widely used approach. In most cases it can be easily configured and used.
- Recording of encrypted calls can be supported by implementing a JTAPI module, which is responsible for querying the SRTP (secure RTP) security keys for each call from the CUCM while capturing the SRTP media streams in a passive way. The call detail record information is extracted from JTAPI, since the SCCP signaling messages are also encrypted.
- Silent monitoring can be supported natively by the recorder.
- Video and TelePresence calls can also be recorded.

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#### Disadvantages

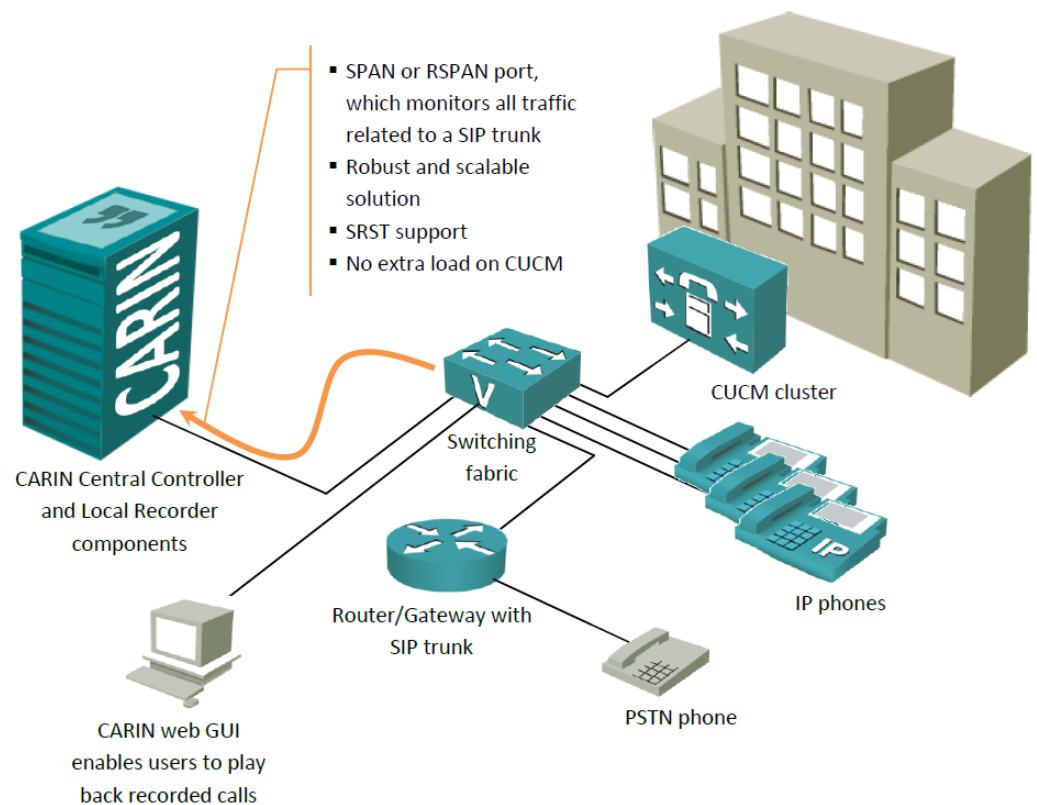
- In complex switching infrastructure, the monitor port configuration can be a headache.
  - In a multi-site network, branches where a few calls have to be recorded, requires dedicated recording server.
  - Automatic announcement of the recording cannot be done by the recorder itself. An external IVR should be involved.
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## Passive, trunk side recording

The Passive Recording method is deployed by connecting the recorder to a monitor port on a switch (in Cisco terminology it is called SPAN/RSPAN ports), The monitor port receives all of the traffic for each trunk that needs to be recorded. The recorder captures all of the traffic including the RTP media streams and the SIP signaling messages.

In a Carin system, multiple recording servers can be deployed in order to support multi-site networks and/or high volume systems with or without redundancy.



### Advantages

- There is no connection to the CUCM server(s), so there is no extra capacity requirement at all.
- In case of CUCM failure, the recording system is not affected, the recording can work continuously even in SRST (Survivable Remote Site Telephony) mode (if a local recording server is deployed at the remote side).
- Because of the passive approach, the flow of the call is not affected at all.
- Can be easily deployed and maintained.



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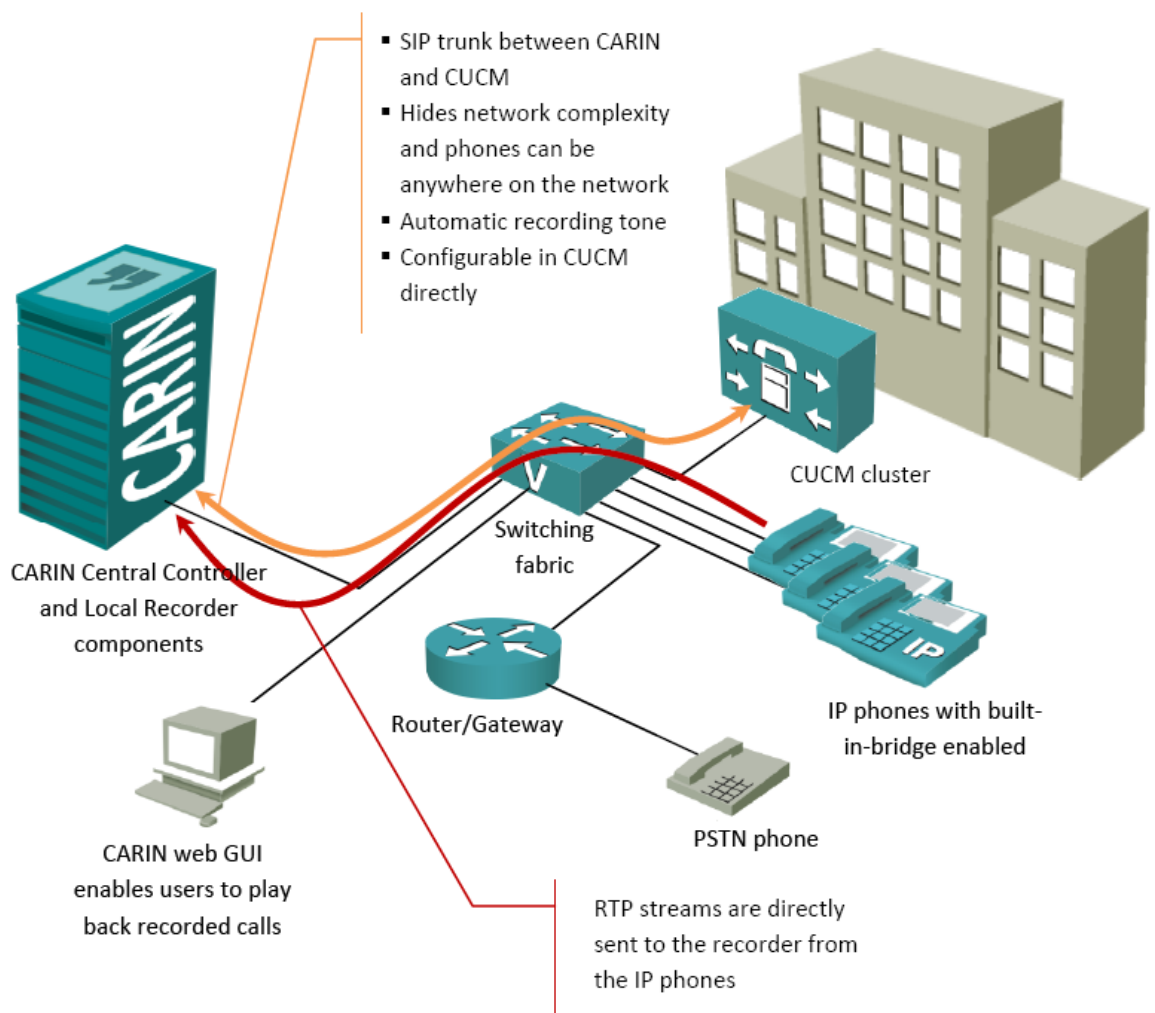
	<ul style="list-style-type: none"><li>▪ Using Carin multi-site deployment architecture, the system can be adapted very well to fit a wide array of use cases.</li><li>▪ If high-volume traffic should be recorded, the system can be scaled easily.</li><li>▪ Monitor port technology is widely used approach. In most cases it can be easily configured and used.</li><li>▪ Silent monitoring can be supported natively by the recorder.</li><li>▪ Mobile phones can be recorded if the calls are routed through a SIP mobile adapter (makes sense for transferred or forwarded calls only).</li></ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"><li>▪ Encrypted calls cannot be recorded.</li><li>▪ Internal calls between IP phones cannot be recorded.</li><li>▪ Only SIP trunks are supported by Carin. (MGCP and H.323 are not supported)</li><li>▪ Automatic announcement of the recording cannot be done by the recorder itself. An external IVR should be involved.</li><li>▪ Since SIP Trunks only support voice calls - only voice calls can be recorded using this method.</li></ul>

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## Native, extension side RTP forking

This recording method utilizes special features of the Cisco Communication Manager introduced in version 6.0. It integrates call recording and silent monitoring features into CUCM. If an extension is configured for recording (the configuration is available in the CUCM), the CUCM instructs the phone to send the RTP streams related to a given call, directly to the recording server utilizing the built-in bridge of the phone. The recording system is connected to the CUCM via a SIP trunk to capture the signaling messages. Additional call detail information is obtained by using a JTAPI interface.



### Advantages

- In a multi-site network, branches where few calls have to be recorded, the deployment of a recorder does not require a dedicated recording server for each remote site.
- Theoretically this recorder eliminates the complexity of the switching infrastructure compared to the passive recording



	<p>method, because the RTP streams are sent directly to the recording server automatically.</p> <ul style="list-style-type: none"><li>▪ Can be easily scaled by adding new recorders to the system if more capacity is required.</li><li>▪ Does not require extra DSP resources from the network compared to the active (conference based) method.</li><li>▪ Recording tone can be added by the phone.</li></ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"><li>▪ Requires additional bandwidth on the network to the recording server(s).</li><li>▪ Since the recording functionality is controlled by the CUCM, in case of a WAN link failure, the recording will not work at all in the branch offices (if the CUCM is in the central site). Cisco SRST (Survivable Remote Site Telephony) does not support native recording.</li><li>▪ Requires at least CUCM version 6.0.</li><li>▪ Requires 3rd generation Cisco IP phones (7906G, 7911G, 7921G with Aug 2008 maintenance update, 7925G, 7931G, 7941G, 7941G-GE, 7942G, 7945G, 7961G, 7961G-GE, 7962G, 7965G, 7970G, 7971G-GE, 7975G, and IP Communicator 7.0(1)).</li><li>▪ Requires extra capacity from the CUCM server(s) (each recording session adds 2 calls to BHCC).</li><li>▪ Does not support encrypted calls (will be available in CUCM 8.0).</li><li>▪ Only voice calls are supported.</li></ul>





## Active, conference based (JTAPI)

An active recorder utilizes CTI by joining each caller via a conference bridge and records the conference call. Cisco UCM supports TAPI and JTAPI for CTI (Cisco ICM has another, powerful CTI server, called CTI OS). Because of the major limitations of this recording method, we do not recommend using this solution, unless there is no other way to record the calls.

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### Advantages

- In a multi-site network, branches where few calls have to be recorded, the deployment of an active recorder does not require dedicated recording server on the remote site.
- An active recorder eliminates the complexity of the switching infrastructure compared to the passive recording method, because the conference calls are set up automatically by the CUCM itself.
- Can be easily scaled by adding new active recorders to the system if more capacity is required.
- Recording of encrypted calls can be supported (not supported by Carin).
- Recording tone can be played in by the recorder (not supported by Carin).
- Silent monitoring can be supported (not supported by Carin).
- Traditional on-demand recording, which only records from when a user initiates the recording, can be supported.
- Automatic announcement of the recording can be done by the recorder.

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### Disadvantages

- In a multi-site environment, active recording is not a preferred method, because each call will have an additional call leg (RTP stream) to the conferencing resource, depending on the IP telephony infrastructure, this can also add overhead on the WAN as well.
  - The IP telephony system has to support the increased conference resource requirement (e.g. by adding additional DSP resources).
  - Since every call is put into a conference by TAPI/JTAPI, in case of WAN link failure, the recording will not work at all in the branch office (if the CUCM is in the central site). Cisco SRST (Survivable Remote Site Telephony) does not support active recording.
  - Using TAPI/JTAPI will generate extra load on the CUCM
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server(s).

- The installation and ongoing maintenance requires extra tasks on CUCM (configuring CTI ports, JTAPI user, media resources, etc.).
  - The user experience will change quite dramatically, because every call will be a conference call actually (there is no support in CUCM to secretly set up a conference in the background). Most annoying issues:
  - Calling or called party numbers are hidden, “To Conference” is displayed on the phones.
  - Call logs will include the automatic conference set up call legs for each call.
  - Because of documented CUCM bugs/caveats/features, certain complex call scenarios cannot be fully recorded (e.g. the consultancy part of a call transfer cannot be recorded).
  - In Cisco UCC environment the historical call logs will be changed/deferred.
  - Only voice calls are supported.
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## Dial-in recorder

The dial-in recording method is designed to support special recording requirements, where the call which has to be recorded, is outside of the enterprise telephony system. The users are manually conferencing in to a publicly available IVR, which can authenticate the callers and offer recording capabilities. The mentioned IVR is connected to the CUCM via a standard SIP trunk.

<b>Advantages</b>	<ul style="list-style-type: none"><li>▪ Any phone call can be recorded; even mobile phone calls are supported.</li><li>▪ Call playback on any phone device.</li><li>▪ Supports silent monitoring.</li></ul>
<b>Disadvantages</b>	<ul style="list-style-type: none"><li>▪ No support for automatic recording, the conference has to be manually set up on the phone device by the user.</li><li>▪ In order to record multiple people – the recording port must be conferenced in manually by the user Only voice calls are supported.</li></ul>



## Carin recording methods comparison

Feature	Passive, extension side	Passive, trunk side	Native, extension side RTP forking	Active, conference based (JTAPI)	Dial-in recorder
Recording internal calls	Yes	No	Yes	Yes	Yes
Recording inbound/outbound calls	Yes	Yes	Yes	Yes	Yes
Automatic call recording	Yes	Yes	Yes	Yes	No
On demand call recording	Yes	Yes	Yes	Yes	Yes
Recording only a part of the call	No	No	No	Yes	No
Recording encrypted calls	Yes	No	No	No	No
User experience is effected	No	No	No	Yes	Yes
Extra load on the CUCM	No	No	Yes	Yes	Yes
Extra DSP resource requirement	No	No	No	Yes	No
Recording announcement	No	No	No	Yes	Yes
SRST support	Yes	Yes	No	No	Yes
Video call support	Yes	No	No	No	No
TelePresence support	Yes	No	No	No	No
Recording mobile phones	No	Yes	No	No	Yes
Silent monitoring support	Yes	Yes	Yes	No	Yes
Recorders can be placed anywhere on the network	No	No	Yes	Yes	Yes
Cisco UCM requirement	CUCM 3.x or above	CUCM 4.x or above	CUCM 6.x or above	CUCM 3.x or above	CUCM 5.x or above



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