

Avaya IP Office TAPI and ACCS Integration Guide

Encore Workforce Optimization Solution
Version 7.0 or later

November 8, 2018

encore

**For Dealer
and Customer
Use Only**

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Introduction

The Encore system integrates with the Avaya IP Office using TAPI and optionally with the Avaya Contact Center Select using the CCT web services. This integration allows the Encore system to successfully perform the following functions:

- Audio Collection – Capture the audio that needs to be recorded.
- Recording Control – Receive the necessary events that signal when the Encore must start and stop recording.
- Data Capture – Receive data associated with the call.

The Encore system can record calls on an Avaya system without the TAPI integration but the recording controls and data capture are limited; configuration for this integration is not covered in this document.

Supported Data Capture

The following is a list of the supported data elements that can be collected with each recording. Not every element is applicable for each call. For a description of each data element, refer to “[Appendix 1: Glossary](#)” on page 15.

- ANI
- Call Direction
- Call ID
- Call Origin
- Consultation Call
- Device Name
- DNIS
- Extension
- Other Call ID
- Other Party Name
- Other Party Number
- Recorded Party Number
- Third Call ID

The Avaya Contact Center Select (ACCS) does not provide recording control but does capture additional call meta-data:

- ACD Number
- Skillset
- Agent Login ID
- Recorded Party Name

Supported Recording Features

The following matrix should be used to determine which audio collection is best for your business needs. If you find that more than one collection method will work for you, talk to your Encore representative about which method is more cost-effective. For a description of each feature, refer to “[Appendix 1: Glossary](#)” on page 15.

RECORDING FEATURE	AUDIO COLLECTION METHOD	
	STATION-SIDE TDM	STATION-SIDE RTP PACKET CAPTURE (PASSIVE)
Max. Recording Ports per Server ¹	192	500
Record External Calls	YES	YES
Record Internal Calls	YES	YES
Record Encrypted Calls	N/A	
Related Call Lookup ²	YES	YES
Suspend/Resume on Hold	YES	YES
ACCS Data Collection	YES	YES
Hot Desking	YES	YES

1. Small Business Servers are limited to 72 ports.

2. Cannot relate calls across IP Office Nodes.

Software and Hardware Requirements

SYSTEM	SOFTWARE REQUIREMENTS
Avaya system	<ul style="list-style-type: none"> • All audio collection methods <ul style="list-style-type: none"> ○ IP Office Server Edition Release 9.1 or later or IP Office 500V2 Release 9.1 or later ○ CTI Link Pro License • Station-side RTP Packet Capture <ul style="list-style-type: none"> ○ VoIPphones must use the G.711MU, G.711A and G.729 codec types
Encore system	<ul style="list-style-type: none"> • If using the optional ACCS: <ul style="list-style-type: none"> ○ ACCSBridge.exe 2.3.8.10192 or later ○ Encore.Utility.dll 2.3.8.10192 or later ○ Nortel.CCT.dll 9.0.0.11 or later ○ Nortel.CCT.WCF.dll 9.0.0.3 or later

SYSTEM	HARDWARE REQUIREMENTS
Avaya system	<ul style="list-style-type: none"> • Station-side TDM <ul style="list-style-type: none"> ○ Phone models supported by AudioCodes board: 9504, 9508 and 14xx, 2400, 5400 and 6400 series ○ Must allow Encore to tap at the punchdown block • Station-side RTP Packet Capture <ul style="list-style-type: none"> ○ Span port on network to route all RTP traffic for recorded stations to Encore server ○ DHCP IP address reservation or static IP assignment for each base phone to be recorded
Encore system	<ul style="list-style-type: none"> • Station-side TDM <ul style="list-style-type: none"> ○ AudioCodes NGX PCIe card

Important Notes

Due to an Avaya TSP limitation, please consider these important notes regarding this integration:

- If the IP Office PBX is rebooted, the Encore server must also be rebooted in order for it to continue to receive TAPI events.
- Since the IP Office PBX requires a reboot after a new phone with a base extension is added to it, Encore must also be rebooted after the IP Office PBX completes its reboot.
- If a user extension(s) is added to the IP Office PBX, CT Gateway must be restarted in order for it to get events for the new extension(s).

Compliance Testing

As of December 2016, Encore has been compliance tested and is approved to operate with the following Avaya equipment and software.

EQUIPMENT/SOFTWARE	RELEASE/VERSION
MAIN SITE	
Avaya IP Office Server Edition (Primary) in Virtual Environment	10.0.0.1.0
Avaya 9608, 9611G & 9641G IP Deskphone (H.323)	6.6302
DVSAalytics Encore on Windows 2008 Server R2 Standard	6.0.5 SP1
<ul style="list-style-type: none"> • Encore Web Interface • Database • Avaya IP Office TAPI2 Driver (tspi2w_64.tsp) 	1.0.0.43

EQUIPMENT/SOFTWARE	RELEASE/VERSION
REMOTE SITE	
Avaya IP Office on IP500V2 (Expansion)	10.0.0.1.0
Avaya 9620C IP Deskphone (H.323)	3.270B
Avaya 9611G & 9641G IP Deskphone (H.323)	6.6302
DVSAalytics Encore on Windows 2008 Server R2 Standard <ul style="list-style-type: none"> Avaya IP Office TAPI2 Driver (tspi2w_64.tsp) 	6.0.5 SP1 1.0.0.43

As of December 2016, Encore has been compliance tested and is approved to operate with the following Avaya equipment and software.

EQUIPMENT/SOFTWARE	RELEASE/VERSION
Avaya Contact Center Select	7.0.0.1
Avaya Aura® Media Server	7.7.0.269
Avaya IP Office Server Edition (Primary) in Virtual Environment	10.0.0.1.0
Avaya IP Office on IP500V2 (Expansion)	10.0.0.1.0
Avaya Agent Desktop on Windows 10 Pro	7.0
Avaya 9620C IP Deskphone (H.323)	3.270B
Avaya 9608, 9611G & 9641G IP Deskphone (H.323)	6.6302
DVSAalytics Encore on Windows 2008 Server R2 Standard <ul style="list-style-type: none"> Encore Web Interface Database Avaya IP Office TAPI2 Driver (tspi2w_64.tsp) Avaya CCT SDK (Nortel.CCT.dll & Nortel.CCT.WCF.dll) 	6.0.5 SP1 1.0.0.43 7.0

Documentation Overview

This document provides integration information for a specific phone system. It helps a user to understand the features and benefits of a particular integration as well as what needs to be configured on the phone system. Configuration steps necessary to enable this integration on the Encore system are covered in the *Encore Installer's Guide* and the *Avaya IP Office TAPI and ACCS Installation Addendum*.

Conventions used in this guide include:

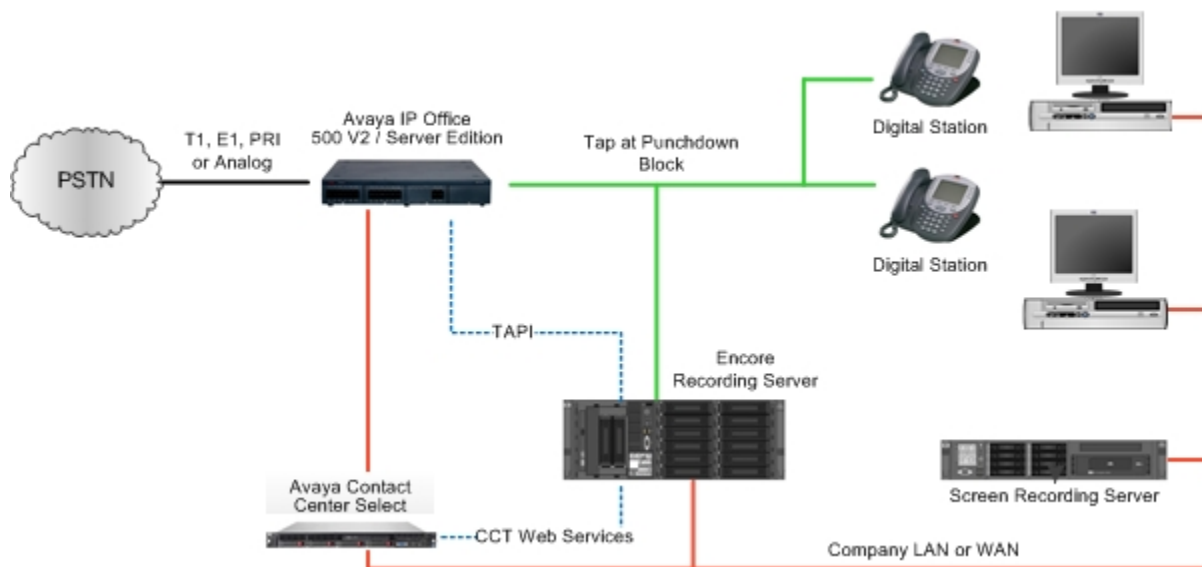
1. Computer commands needed to complete a task appear like this: **Sample** (in black)
2. Keyboard strokes that need to be entered appear like this: [Sample]

Overview

This section provides an overview of each audio collection method. For simplicity sake, the diagrams only display a single Encore server but there can be multiple Encore servers depending on the number of stations to be recorded.

Station-side TDM

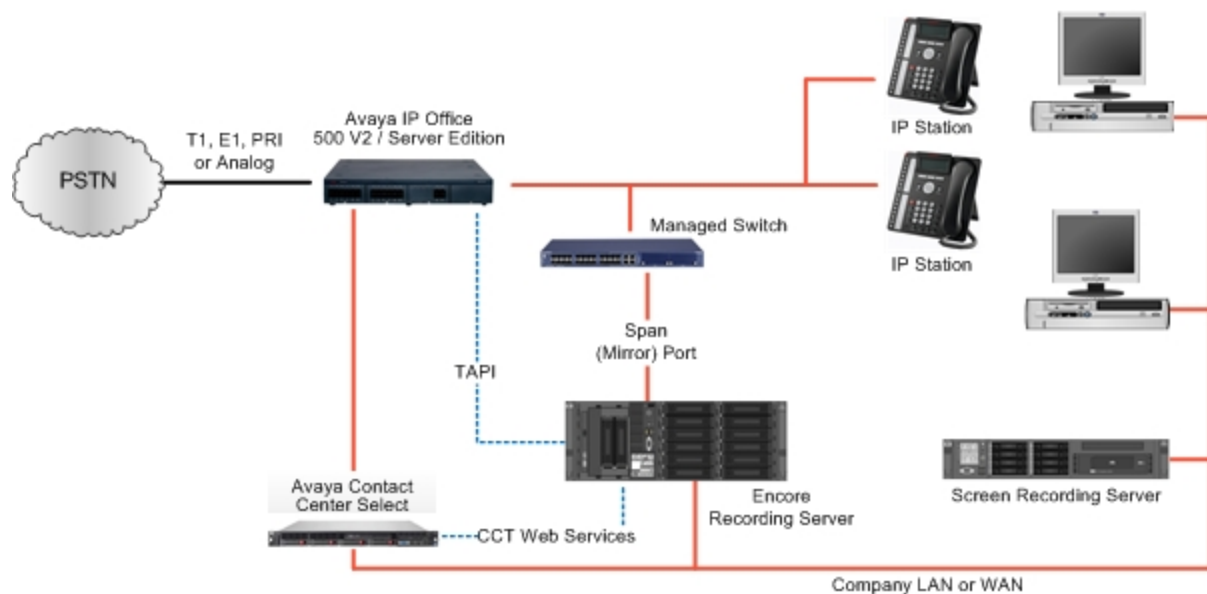
The Station-side TDM method uses a passive tap on the phones connected to the Avaya IP Office to collect audio. These may be analog or digital phone sets. This passive tap is connected to the recording boards in the Encore server. Based on events received from the TAPI interface, the Encore server starts and stops recording, collects the audio on the recording boards, and collects the data associated with the call. Additional data may be collected if the optional Avaya Contact Center Select (ACCS) server is used.



Station-side RTP Packet Capture

The Station-side RTP Packet Capture method uses a span port to collect the RTP audio packets directly from the network segment that includes the VoIP traffic. Based on events received from the TAPI interface, the Encore server collects the RTP packets for a specific IP or MAC address and converts the RTP data to an audio recording file. Encore collects data associated with the call from the TAPI messages.

Additional data may be collected if the optional Avaya Contact Center Select (ACCS) server is used.



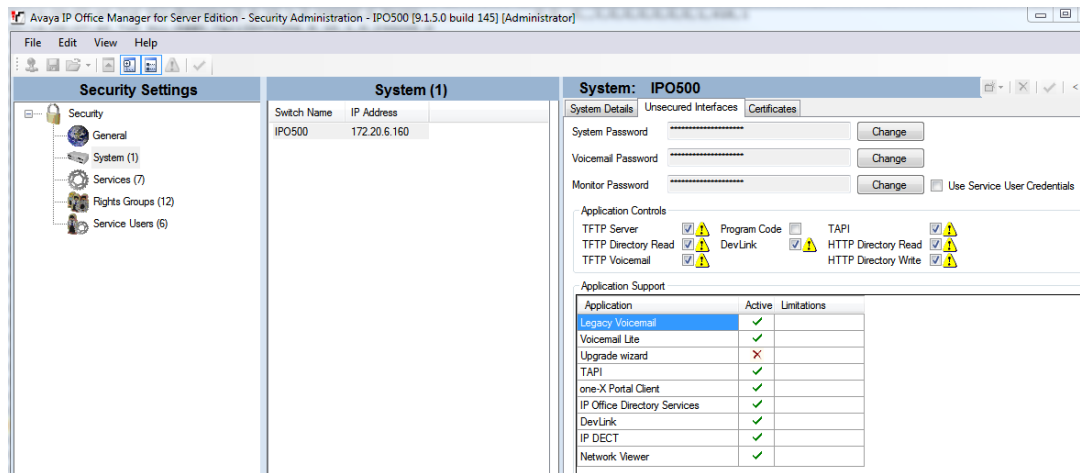
Configure Avaya IP Office TAPI and optional ACCS

The steps to configure the Avaya IP Office switch to integrate using TAPI are included in this section. Steps to configure the optional ACCS are also included. It is assumed the reader has a working knowledge of the Avaya IP Office Manager software and only needs specific assistance.

Verify License and Select TAPI Support Setting

1. Verify the CTI Link Pro license is installed on the switch.
2. Select the TAPI support setting:
 - a. Start IP Office Manager.
 - b. Select **File | Advanced | Security Settings**.

- c. Select the Primary IP Office system and click **OK**.
- d. Enter a user name and password of a user account with security configuration access.
- e. Click **System** and select the **Unsecured Interfaces** tab.



- f. In the list of **Application Controls**, select the **TAPI** option.
- g. The TAPI software installation also uses the **TFTP Directory Read** option to obtain a list of users from the IP Office system. If not enabled the installation displays “Failed to retrieve user list from IP Office”. However, the user details can still be entered manually. If you enable **TFTP Directory Read** to simplify TAPI installation you should disable the option afterwards unless it is also specifically required by the TAPI application being supported.
- h. Click **OK**.
- i. Click the **Save** button on the toolbar to save the updated security settings.

NOTE Make a note of the **System Password** used in the **Unsecured Interfaces** tab (see the screenshot in Step 2e above). Provide this password to the Encore installer. The installer will need it when installing the TAPI Service Provider on the Encore server.

NOTE When the IP Office switch is rebooted, the Encore server must also be rebooted. This is a limitation of the IP Office TSP.

Required Configuration for Users on Avaya IP Office

Follow the requirements below when adding users to the Avaya IP Office server to ensure Encore is able to record them in your environment.

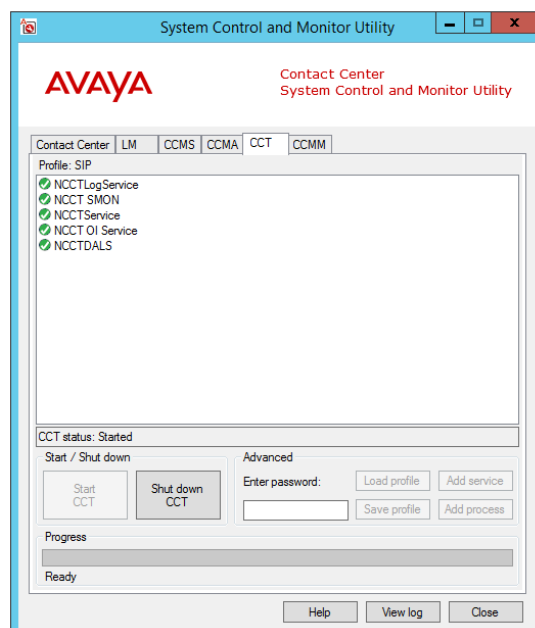
1. Verify the **Exclude from directory** option is NOT selected for any users that need to be recorded.

2. If your site uses secondary or expansion systems, follow one of the configurations below based on your environment:
 - a. **Add recorded users to one server** – If possible, the recorded users must be added to one server, typically the Primary server. Please provide the Encore Installer with the IP address of this system so it can be entered into the Avaya TAPI Service Provider that is loaded on the Encore server.
 - b. **Add recorded users to secondary or expansion system(s)** – If the customer requires that recorded users are added on the secondary or expansion system(s) then additional Encore systems will be required because the Avaya TAPI service provider, installed on the Encore server, can only be registered to one Avaya system.

Configure ACCS (optional)

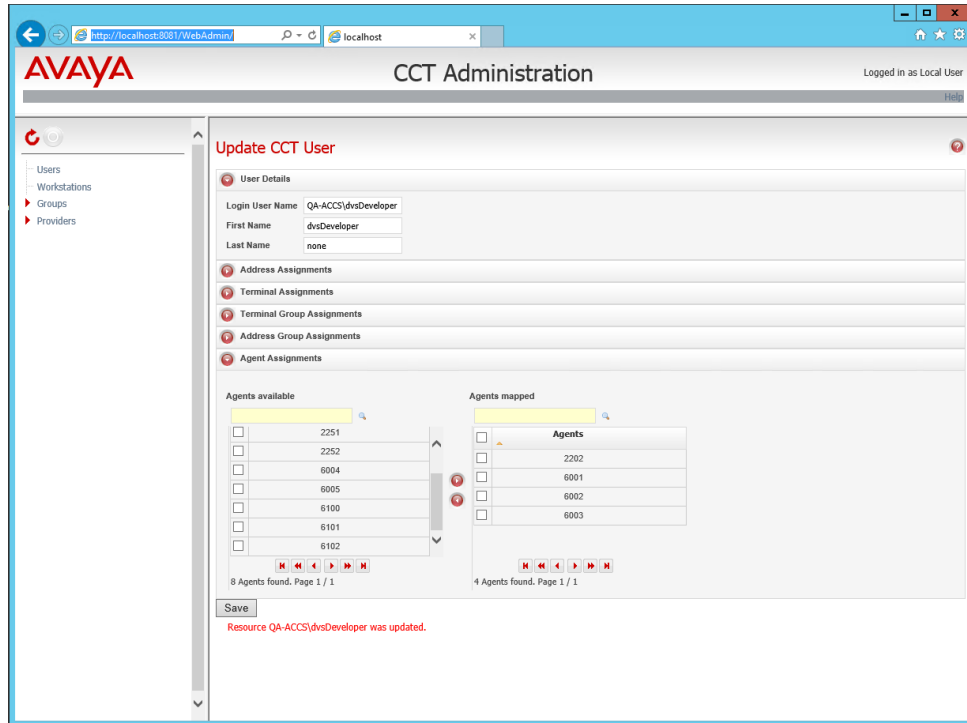
Complete the steps below to configure Avaya Contact Center Select (ACCS) for the IP Office TAPI integration.

1. Verify ACCS has the required license for the Avaya Communication Control Toolkit (CTT).
2. Verify the Contact Center services are started:
 - a. Log on to the ACCS server.
 - b. On the **Apps** screen, in the **Avaya** section, select **System Control and Monitor Utility**.
 - c. Select the **CCT** tab and verify that the Communication Control Toolkit services are running.



3. Set up a CCT user account for Encore. Encore requires this account to monitor all recorded agents.
 - a. Log on to the ACCS server.

- b. Add the Windows user account using the **Local Users and Groups** found in **Computer Management**. Set the **Password never expires** option.
- c. Use the **CCTAdmin** to administer the account using **http://localhost:8081/WebAdmin/**
- d. Right-click **Users** on the left and select **Add new user**.



- e. In the **User Details** section, enter the **Login User Name** using the **Domain\Username** format, where the Domain is the hostname of the ACCS server.
- f. Enter values for the **First Name** and **Last Name** fields.
- g. Expand the **Agent Assignments** section and under the **Agents available** list select all agents that are to be recorded and move them to the right so they appear in the **Agents mapped** list.
- h. Click **Save**.

NOTE If new recorded agents are added to the ACCS, you must return to this user and move those agents into the **Agents mapped** list and save the user.

Obtain Required Information

The following information must be obtained and provided to your dealer or DVSAalytics installer in order to set up the IP Office TAPI integration with Encore.

- List of base extensions that need to be recorded.
- The **System password** used when installing the TAPI service provider on the Encore server (see [Step 2e](#) on page 9).
- The IP address of the Primary IP Office server.
- If the ACCS server is used:
 - IP address or FQDN of the ACCS server.
 - Domain name, username and password of the user created for the CCT web services connection.

Call Handling Scenarios

This section explains how different calls are displayed in Encore. The samples in this section are from a station-side recording system and it is assumed that all stations involved in the calls are configured to be recorded.

Certain situations affect how recordings are created and how they can be located using the Related Call Lookup feature:

- **Hold** – When a call is put on hold, the recording is suspended. When the call is retrieved, the audio is appended to the recording to create one audio recording.
- **Consultation Call** – If an agent is on a call and then places a consultation call, the first call is put on hold and the recording is suspended. Assuming the called party is also using a recorded phone, the consultation call is recorded as two separate recordings – one for each extension. When the agent hangs up the consultation call and retrieves the caller, the two recordings end and the first recording resumes; the second portion of the recording is appended to the first portion. All three recordings have different Segment IDs (SID) and share the same Related ID (RID).
- **Blind Transfer** – When a call is blind transferred (also called an unannounced transfer), the first recording ends after the agent presses the transfer button and hangs up the handset. The second recording begins when the second agent answers the transferred call. The second recording ends when the second agent hangs up the call. Separate SIDs are associated with each recording and they usually share the same RID. If the call is transferred to an ACD queue or Hunt Group, it may not be possible to show the relationship between the recordings and the same RID may not be associated with both recordings.
- **Conference Call** – When an agent decides to bring a third party into a current call, the agent usually puts the caller on hold to first consult with the third party. The first recording of the agent and the outside caller suspends during the consultation call. Assuming the third party is using a recorded phone, the consultation call creates two recordings – one for the agent and another for the third party. After the consultation call ends and the three parties are joined into

the conference, the first recording resumes and it ends when the agent hangs up. The recording of the third party continues until the third party hangs up.

- Internal Call – If both extensions are monitored by Encore, two recordings are created – one for each extension. The party who initiates the call is treated as the agent for data collection purposes.

NOTE Encore cannot relate calls across IP Office Nodes. For example, with an internal call where one party is using an IP phone attached to the IP Office Server Edition and the other party is using a digital phone attached to an IP Office 500v2 secondary server, the calls will not be related.

External Inbound Call

Recordings: 1 | SID: 1 | RID: 1

Extension 5002 receives an external inbound call with SID 1 and hangs up when the call is complete. This call creates one recording and one RID even though no other calls are associated with it.

External Inbound Call with Supervised Transfer

Recordings: 3 | SID: 3 | RID: 1

1. Extension 5002 receives an external inbound call. Recording 1 begins with SID 1.
2. The agent presses the transfer button which puts the caller on hold and suspends Recording 1. The agent then makes a consultation call to extension 5025. Recording 2 for extension 5002 begins with SID 2 and Recording 3 begins for extension 5025 with SID 3. When extension 5002 hangs up to complete the transfer, Recordings 1 and 2 end.
3. Now the caller is transferred to the agent at extension 5025. Recording 3 continues.
4. When the agent at extension 5025 hangs up, Recording 3 ends.

The same RID is associated with all recordings to show they are related.

External Inbound Call to ACD

Recordings: 1 | SID: 1 | RID: 1

Extension 5002 answers an external ACD call. A recording with SID 1 begins and, when the call ends, the recording stops. The ACD number, Skillset, Recorded Party Name, and Agent Login ID are associated with the recording.

External Outbound Call

Recordings: 1 | SID: 1 | RID: 1

Extension 5002 makes an external outbound call with SID 1 and hangs up when the call is complete. This call creates one recording and one RID even though no other calls are associated with it. The Call Direction for the recording shows as Outgoing. The dialed number is stored in the DNIS and Other Party Number fields.

Internal Call

Recordings: 2 | SID: 2 | RID: 1

Extension 5002 makes an internal call to extension 5009 (both extensions are monitored by Encore). A recording is created for each monitored extension and each recording is assigned a different SID. Both recordings are assigned the same RID to show they are related to each other.

External Inbound Call with Blind or Unannounced Transfer

Recordings: 2 | SID: 2 | RID: 1

1. Extension 5002 receives an external inbound call which starts Recording 1 with SID 1.
2. The agent transfers the caller to extension 5009 without consulting the agent at extension 5009. Recording 1 ends when 5002 hangs up his phone.
3. Recording 2 with SID 2 begins when 5009 answers the call. It ends when the agent hangs up her phone.

The same RID is associated with each recording to show they are related.

Consultation Call

Recordings: 3 | SID: 3 | RID: 1

1. Extension 5002 receives an external inbound call which starts Recording 1 with SID 1.
2. The agent puts the caller on hold, suspending Recording 1, and makes a consultation call to extension 5025 which starts Recording 2 with SID 2 to record extension 5002. This also starts Recording 3 with SID 3 to record extension 5025 in the consultation call.
3. When the agent at 5002 hangs up the consultation call, Recording 2 ends. When the agent at 5025 hangs up, Recording 3 ends.
4. The agent at extension 5002 then retrieves the original call and Recording 1 with SID 1 resumes.
5. When extension 5002 hangs up with the caller, Recording 1 ends.

The same RID is associated with all recordings to show they are related.

Conference Call

Recordings: 3 | SID: 3 | RID: 1

1. Extension 5010 receives an external inbound call which starts Recording 1 with SID 1.
2. The agent at extension 5010 puts the caller on hold and makes a consultation call to bring a supervisor at extension 5008 into the call. This suspends Recording 1. Recording 2 with SID 2 begins to record extension 5010 on the consultation call and starts Recording 3 with SID 3 to record the supervisor at extension 5008.
3. When the agent at extension 5010 joins the caller and the supervisor at extension 5008 into a three-party conference, Recording 2 ends. Recording 1 resumes and appends the audio to the first portion of the recording. Recording 3 continues.
4. When the supervisor at extension 5008 hangs up the call, Recording 3 ends.
5. When the agent at extension 5010 hangs up the call, Recording 1 ends.

The same RID is associated with all recordings to show they are related.

Appendix 1: Glossary

abandoned call

An incoming call which is answered by the ACD but terminated by the caller before it is answered by an agent.

ACD

Automatic Call Distributor. An application that answers calls and directs them to a predetermined queue, or line, of waiting calls. In most cases, the ACD ensures that the first call in is the first call answered. It also determines which agent receives a call based on predetermined criteria such as idle time or availability and generates reports on call volume and distribution.

ACD number

This is the equivalent of the Control Directory Number (CDN) where the call originated.

agent

A person who handles phone calls. Other variations include operator, attendant, representative, customer service representative (CSR), telemarketer, phone sales representative (TSR), and so on.

agent login ID

Usually the same number as the agent's extension.

ANI

Automatic Number Identification. For inbound calls, this is the customer's number (may not be supported by the trunk).

automated attendant

A voice processing system that answers calls with a recording and then enables callers to press touch-tone buttons to navigate through a menu system to a person, department, or voice mail.

call ID

A unique ID for the call, allocated by the PBX.

call origin

One of the following origins is provided by the TAPI stream:

- Conference – The call originated from a conference call.
- External Incoming – The call originated as an incoming call on an external line. If an internal call is between two extensions that are logged into two different PBX Nodes, the Call Origin may show as External Incoming for the party receiving the call.
- Internal Incoming – The call originated as an incoming call at a station internal to the same switching environment.
- Outgoing – The call originated from this station as an outgoing call.

call record

An entry in a database that holds the data associated with a call.

device name

The base extension of the physical device that was recorded.

digital recording

A method of recording that converts analog sound into a series of pulses that are translated into binary code, which is read by computers.

DNIS

Dialed Number Identification Service. For inbound calls, this is the number the customer dialed (may not be supported by the trunk).

encrypted calls

Calls that have the audio RTP packets encrypted. This prevents 3rd party applications, such as the Encore system, from using the RTP packets for recording.

extension

This is an agent's user extension. See "[user extension](#)" on page 18 for more information.

external calls

In these calls, the calling or called parties are outside the PBX.

full-time recording

This method uses the Recording Engine to record all conversations for the defined endpoints.

hold duration capture

The sum of all hold durations that occurred during the recording.

Hot Desking (Extension Roaming)

Hot Desking allows a number of users the non-exclusive use of the same extension (phone). Users log in with their own identity (extension directory number) so they can receive calls and can access their own voicemail and other facilities. For example, sales personnel who visit the office infrequently can be provided with telephony and voicemail services without being permanently assigned a physical extension. When finished, they simply log off to make the extension (phone) available to others or if users log on at another phone, they are automatically logged off the original extension.

With Hot Desking, the extension directory number is equivalent to the user's login identifier and it can be used to identify the user. It cannot be used to identify the phone in which the user was logged into.

inbound

Calls which are received/answered by a recorded party.

internal calls

In these calls, the calling and called parties are extensions on the PBX.

other call ID

This identifier allows the Encore server to relate the "customer-agent" call to the "agent-supervisor" consultation call.

other party name

Name of the other party on the line with the person being recorded, may be blank if this is an external call. If a call is transferred from Phone A on PBX Node 1 to Phone B on PBX Node 2, the Other Party Name for Phone B could be Phone A instead of the caller.

other party number

Number of the other party on the line with the person being recorded; if external and incoming call, this is an ANI. If a call is transferred from Phone A on PBX Node 1 to Phone B on PBX Node 2, the Other Party Number for Phone B could be Phone A instead of the caller.

outbound

Calls which are placed by a recorded party.

pause/resume on hold

A method that pauses the recording of audio and screen when a call is placed on hold, and resumes recording when the hold is taken off.

PBX (PABX)

Private (Automated) Branch Exchange. The phone system to which the office phones are connected.

recorded party name

Agent's name. This is not provided in the IP Office TAPI integration; instead, this is acquired using ACCS after the agent logs into the ACD.

recorded party number

The agent's extension that is logged into the monitored phone.

recording

The audio recording, screen recording, and database record associated with a single phone call or conversation.

related call lookup

A customer's experience in a call center may include multiple recordings even though the customer was on one, continuous call. This feature shows recordings that are related to the selected recording.

scheduled recording

This method uses the ESO Engine 2 to only record the defined endpoints according to the recording schedule. For instance, Encore may only record 50% of the calls on the defined endpoints instead of 100% as is automatically done for full-time recording.

station

A phone connected to the PBX.

skillset

A skillset is a group of abilities necessary to answer a specific type of contact. Encore captures the skillset of the call that was delivered to the agent.

trunk

The connection between the phone company and the PBX that carries incoming calls.

user extension

In order for agents to receive calls, they log into their phones with their user extensions. A user extension may or may not be the same number as a phone's base extension.