

NEC UNIVERGE SV9100/SV8100 Integration Guide

Encore Workforce Optimization Solution
Version 9.0 or later

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**For Dealer
and Customer
Use Only**

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Introduction

The Encore system integrates with the NEC UNIVERGE SV9100 system via the NEC CTI Driver TSP or the NEC UNIVERGE SV8100 system via the NEC Infrontia TAPI TSP software. 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 NEC system without the TAPI Application Server 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 13.

- ANI
- Call Direction
- Call Type
- DNIS
- Extension
- Other Party Name
- Other Party Number
- Recorded Party Name
- Recorded Party Number
- Trunk

NOTE

If an ACD call or a department group call is recorded, the ACD Group Number or Department Group Number may be assigned to the DNIS.

Supported Recording Features

The following matrix should be used to determine which audio collection is best for your business needs. For example, if you need to record encrypted calls, you must use the Trunk-side TDM methods. 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 13. **Note:** Where supported, G.711 Wav recording is the default recording format.

RECORDING FEATURE	AUDIO COLLECTION METHOD			
	STATION-SIDE TDM	TRUNK-SIDE TDM	STATION-SIDE RTP PACKET CAPTURE	TRUNK-SIDE SIP PACKET CAPTURE
Max. Recording Ports per Server ¹	192	288	500	500
Record External Calls	YES	YES	YES	YES
Record Internal Calls	YES		YES	
Record Encrypted Calls		YES		YES ²
Hold Duration Capture	YES	YES	YES	
Suspend/Resume on Hold	YES	YES	YES	
G.711 Wav Recording	NO ⁴	NO ⁴	Stereo ³	NO ⁴

1. *Small Business Servers are limited to 72 ports.*
2. *If the encryption occurs at the station, Encore can record the encrypted calls. If the encryption occurs at the trunk, Encore cannot record encrypted calls.*
3. **G.711 Wav Recording in stereo** stores recorded audio at 16000 bytes/sec.
4. **Vox mono audio storage only.** Encore stores recorded audio using ADPCM 4000 bytes/sec.

Software and Hardware Requirements

SYSTEM	SV9100 INTEGRATION SOFTWARE REQUIREMENTS
NEC UNIVERGE SV9100 system	<ul style="list-style-type: none"> • All audio collection methods <ul style="list-style-type: none"> ○ NEC UNIVERGE SV9100 3.0 or later ○ 3rd Party CTI Client license ○ SV9100 3rd Party CTI Driver 3.0.0 or later for Windows Server 2016 installations. This needs to be given to the DVSAalytics installer prior to the installation of Encore and is available from NEC NTAC.
Encore system	<ul style="list-style-type: none"> • All audio collection methods <ul style="list-style-type: none"> ○ SV9100 3rd Party CTI Driver ○ Only a single TAPI connection is supported. If the customer has another application that communicates with TAPI, such as the NEC Desktop Shared Services application, then CT Gateway must be installed on the same machine with the other application so both applications can share the same connection.

SYSTEM	SV8100 INTEGRATION SOFTWARE REQUIREMENTS
NEC UNIVERGE SV8100 system	<ul style="list-style-type: none"> • All audio collection methods <ul style="list-style-type: none"> ○ NEC UNIVERGE SV8100 5.0 or later ○ NEC requires the Infrontia 3rd Party TSP to be version 9.0.2 or later. The TSP version typically corresponds to the PBX's software version, so the 8100 should be on version 9.0.2 or later. ○ Third-party CTI license ○ Infrontia 3rd Party 64-bit TSP that matches the version of the software loaded on the SV8100. This needs to be given to the DVSAalytics installer prior to the installation of Encore.
Encore system	<ul style="list-style-type: none"> • All audio collection methods <ul style="list-style-type: none"> ○ NEC Infrontia TSP software ○ NEC requires the Infrontia 3rd Party TSP to be version 9.0.2 or later. See information above regarding the PBX requirements. ○ Only a single TAPI connection is supported. If the customer has another application that communicates with TAPI, such as the NEC Desktop Shared Services application, then CT Gateway must be installed on the same machine with the other application so both applications can share the same connection.

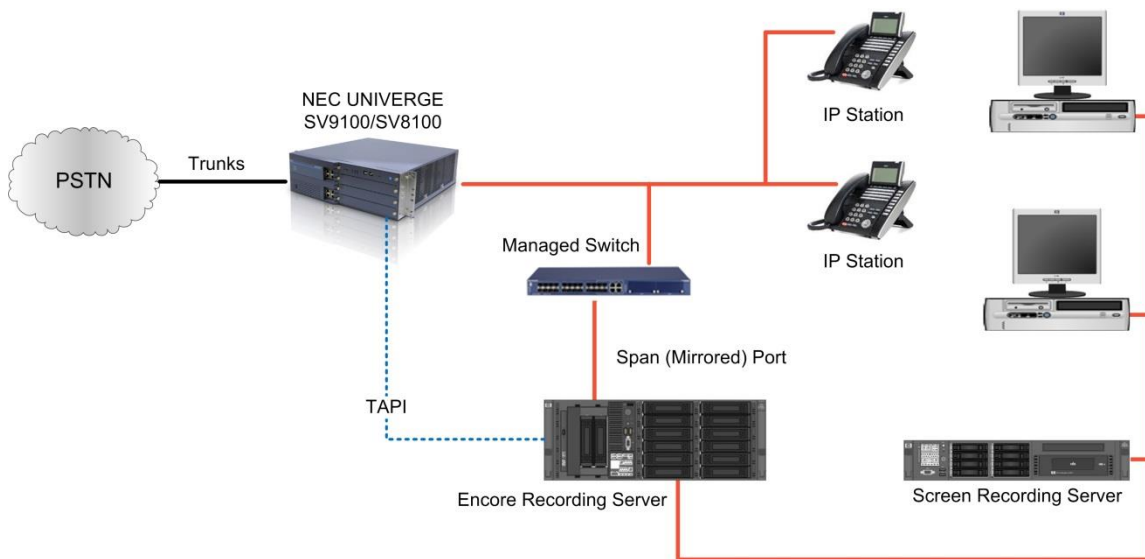
SYSTEM	HARDWARE REQUIREMENTS
NEC UNIVERGE SV9100/SV8100 system	<ul style="list-style-type: none"> • Station-side TDM <ul style="list-style-type: none"> ○ Must allow Encore to tap at the punchdown block • Trunk-side TDM <ul style="list-style-type: none"> ○ Must allow Encore to tap at the trunk • Station-side 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 station to be recorded • Trunk-side SIP Packet Capture <ul style="list-style-type: none"> ○ This depends on the customer's environment; see the Note in the "Trunk-side SIP Packet Capture" section on page 8
Encore system	<ul style="list-style-type: none"> • Station-side TDM <ul style="list-style-type: none"> ○ AudioCodes NGX PCIe card • Trunk-side TDM <ul style="list-style-type: none"> ○ AudioCodes DP PCIe card

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 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 address and converts the RTP data to an audio recording file. Encore collects data associated with the call from the TAPI messages.



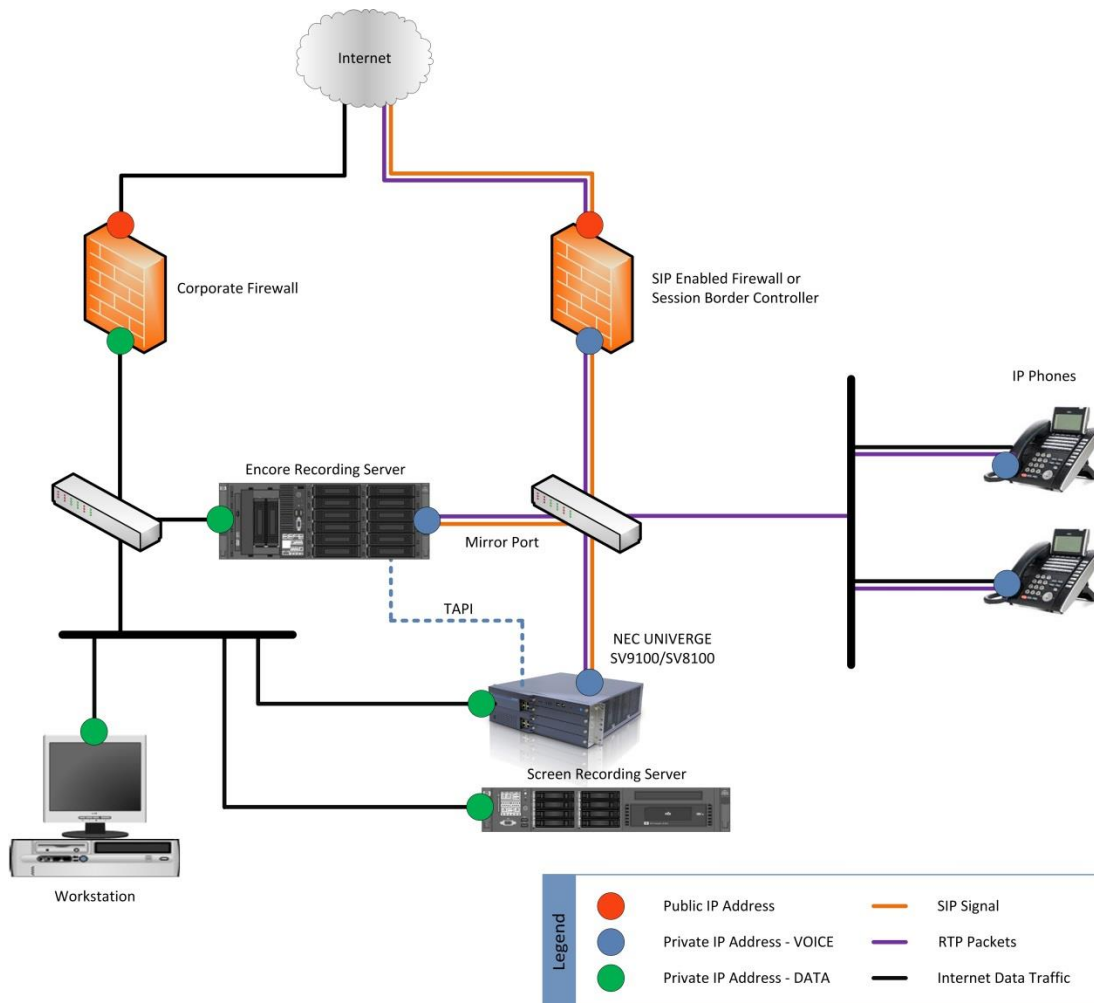
Trunk-side SIP Packet Capture

The Trunk-side SIP Packet Capture method uses a span port to collect the SIP and RTP audio packets directly from the network segment that includes SIP trunk traffic. Based on events received from SIP signaling, the Encore server collects the RTP packets for a specific SIP trunk call and converts the RTP data to an audio recording file. Encore collects data associated with the call from the TAPI messages when the call is terminated to a station of interest, or from the SIP signaling when the call is terminated elsewhere on the PBX.

NOTE

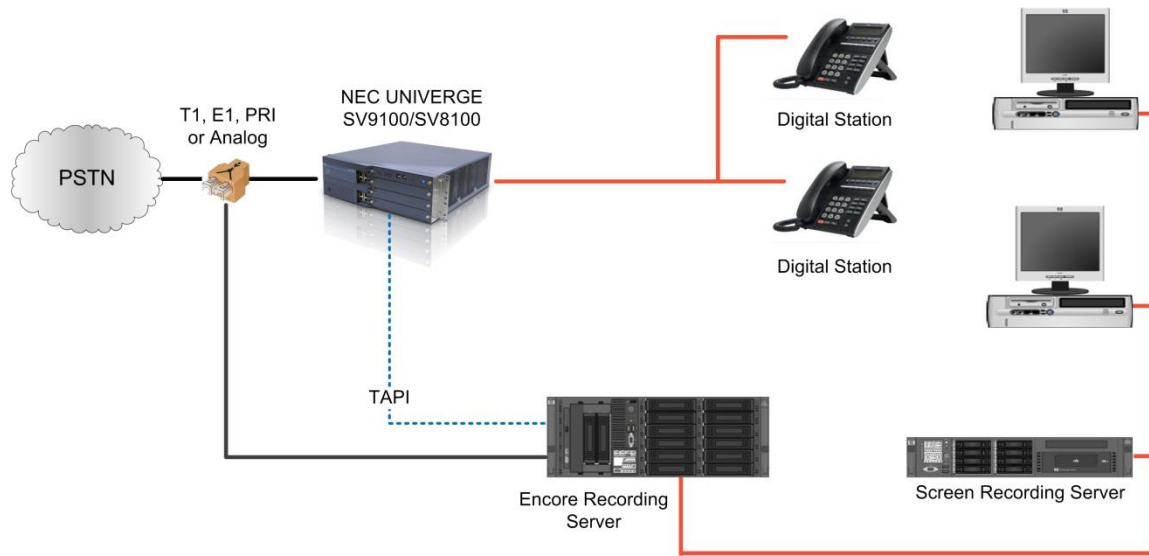
When recording SIP trunks, DVSAanalytics prefers that all SIP trunk traffic goes through a Session Border Controller (SBC), such as a Cisco CUBE, Ingate SIParator, etc. The SBC's LAN-side port must terminate to a network switch that can provide a SPAN/mirror port to the Encore server.

If an SBC cannot be provided, then the SIP trunk provider must be able to guarantee that a single IP Address will be used for all SIP and RTP media packets for both inbound and outbound calls. The LAN-side port of the device used for SIP trunk traffic must terminate to a network switch that can provide a SPAN/mirror port to the Encore server.



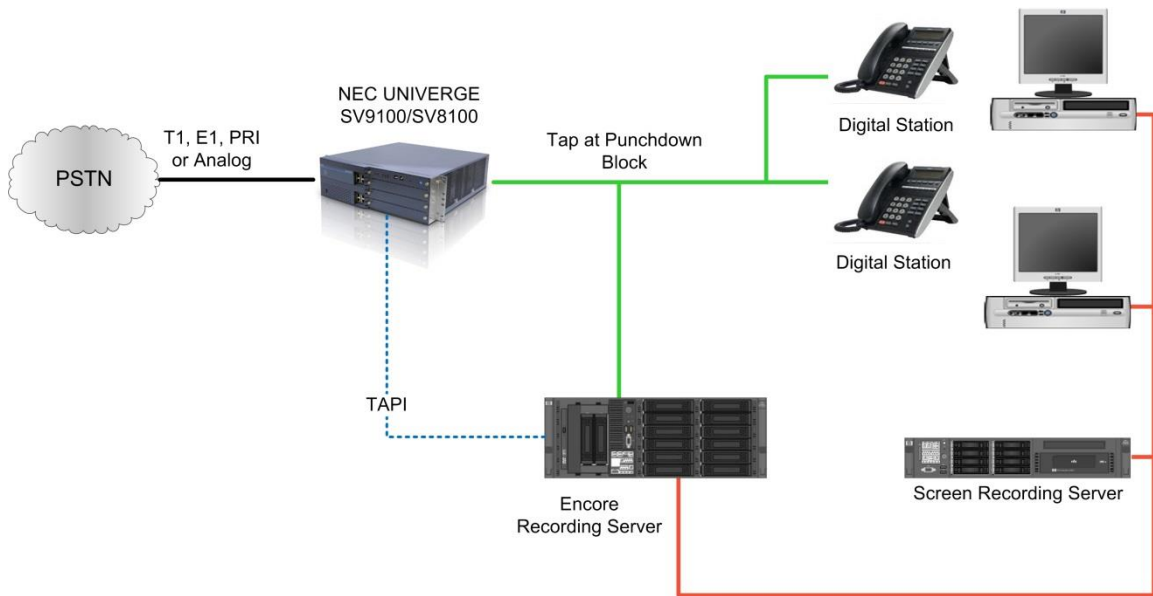
Trunk-side TDM

The Trunk-side TDM method uses a passive tap on the telephony trunks that connect the NEC UNIVERGE SV9100/SV8100 PBX to the PSTN. The trunks can be T1, E1, or Analog. This passive tap is connected to the recording boards in the Encore server. The audio is collected via the passive tap. Based on events received from the recording boards or from events received from the TAPI interface, call recordings can be started or stopped, and the data associated with the call record.



Station-side TDM

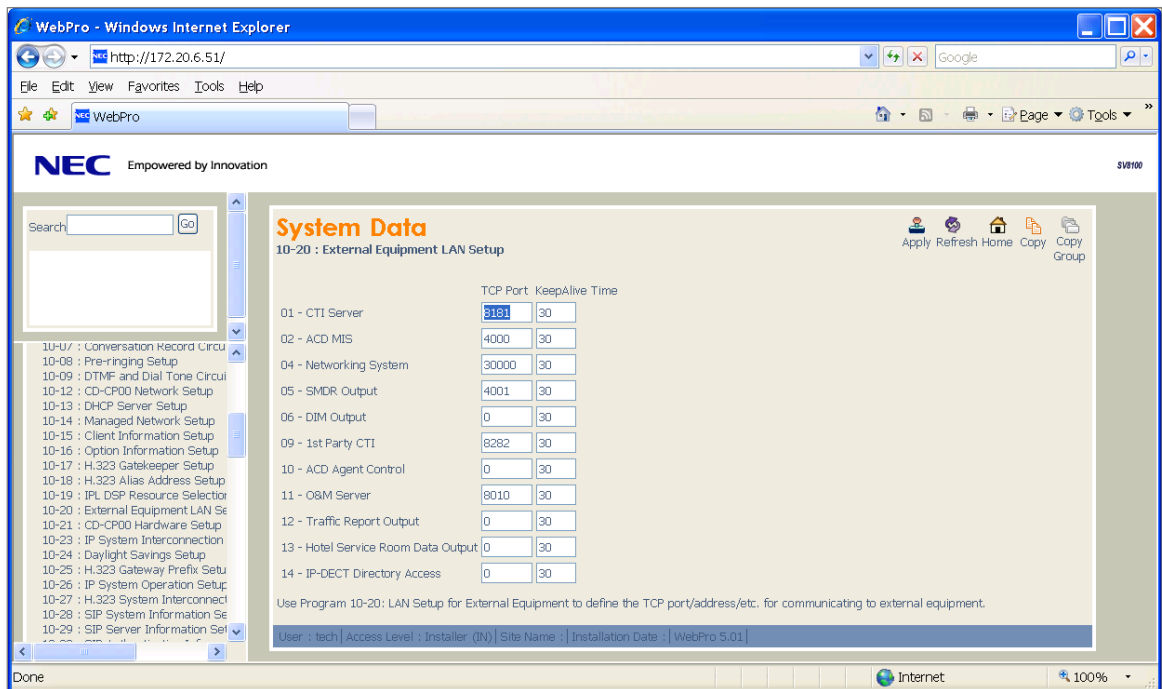
The Station-side TDM method uses a passive tap on the phones connected to the NEC UNIVERGE SV9100/SV8100 to collect audio. These may be analog or digital phone sets. This passive tap is connected to the recording boards in the Encore server. Based on events received from the TAPI interface, the Encore server collects the audio on the recording boards and the data associated with the call from the TAPI messages.



Configure NEC UNIVERGE SV9100/SV8100

The steps to configure the NEC system are included in this section. It is assumed that the reader has a working knowledge of the NEC UNIVERGE SV9100/SV8100 software and only needs specific configuration assistance.

1. Enable the CTI feature in the UNIVERGE SV9100/SV8100 with Third-Party CTI License.
2. Enable the TCP port in SV9100/SV8100 programming (Program 10-20-01: Device 1 Port Number).



NOTE

Any configuration or software changes on the SV9100/SV8100 system will require a reboot of the Encore recording server to ensure proper TAPI communication.

Call Handling Scenarios

This section explains how different calls are displayed in Encore. The descriptions 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:

- **Hold** – When a call is put on hold, the recording is stopped. When the call is retrieved, a new recording is created.
- **Consultation Call** – If an agent is on a call and then places an internal consultation call, the first call is put on hold and the recording is stopped. The consultation call is recorded as two separate recordings—one for each extension. When each extension hangs up the consultation call, their respective recordings stop. When the agent retrieves the first call, a new recording is created.
- **Blind Transfer** – When a call is blind transferred (also called an unannounced transfer), the first recording ends when the first agent puts the call on hold to initiate the transfer. The second recording begins when the second agent answers the transferred call. The second recording ends when the second agent hangs up the call.
- **Supervised Transfer** – If the agent brings the caller on the line before transferring him, a new recording starts. It stops when the agent transfers the caller. The caller and the third party are now on the call, and a new recording starts. This recording ends when the third party hangs up.
- **Conference Call** – When an agent decides to bring a third party into a current call (where the call to the third party is internal), the agent usually puts the caller on hold to first consult with the third party. When the agent puts the caller on hold, the first recording stops. The consultation call creates two recordings, one for the agent and another for the third party. When the consultation call ends, both recordings stop.
- **Internal Call** – If both extensions are monitored by Encore, two recordings are created – one for each extension.

If the customer is using a trunk-side recording system, internal calls are not recorded. So, any example above where a call is made to an internal party would not be recorded by Encore.

Consider a conference call as an example. The first recording starts when the agent answers the call. When the agent presses the conference button to make a consultation call, the first recording stops. The second recording starts immediately and it records the hold music that the caller is hearing since internal calls cannot be recorded. When the third party joins the agent and the caller, the second recording continues and it records the conversation.

If one of the agents hang up the call and the caller continues with the other party, the second recording stops and a third recording starts.

Lastly, during a conference call if the third party hangs up before the agent that originally answered the call, the recording does not indicate that it was a conference call. This occurs because the original start command from the first recording overwrites any information that indicates the call was a conference.

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.

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.

ANI

Automatic Number Identification. For inbound calls, this is the phone number from which the customer is calling (may not be supported by the trunk). For outbound calls, this is the dialed number. For a recording of a “Barge-In” call, the ANI will be incorrect.

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.

Barge-In

This NEC UNIVERGE SV9100/SV8100 feature permits an extension user to break into another extension user’s established call, including Conference calls. This sets up a conference-type conversation between the intruding extension and the parties on the initial call. With Barge-In, an extension user can get a message through to a busy co-worker right away.

There are two Barge-In modes: Monitor Mode (Silent Monitor) and Speech Mode. With Monitor Mode, the caller barging in can listen to another user conversation but cannot participate. With Speech Mode, the caller barging in can listen and join another user conversation.

call direction

The direction is either incoming (inbound) or outgoing (outbound). Field is blank if the Call Type is Conference.

call record

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

call type

The call type is either internal, external, or conference.

consultation call

A call that is made while the customer (original call) is on hold. In the database, the **Consultation Call** field shows **Yes** when the recording is a consultation call.

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 or the agent's extension number (may not be supported by the trunk). For a recording of a "Barge-In" call, the DNIS will be incorrect.

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

The number associated with a person's station. Extension and station are sometimes used interchangeably.

external calls

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

hold duration capture

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

Hot Desk

Each Hot Desk user has a user identifier (which is the user's directory number) and a pin number to log into the system. When logging into a phone that is Hot Desk enabled, the user takes complete control of the set (including line keys, soft keys, etc.) The set now has a new prime directory number—the user's directory number. The registration directory number is unavailable as long as the user is logged into the phone. When the user logs out of the phone, the registration directory number (with line keys, soft keys, etc.) is restored, and the user directory number becomes unavailable.

inbound

Calls which are received/answered by a recorded party.

Internal calls

Calls made between extensions on the same PBX.

other party name

Name of the other party on the line with the person being recorded. Field is blank if the Call Type is Conference.

other party number

Number of the other party on the line with the person being recorded; if external and incoming call, this is the ANI. Field is blank if the Call Type is Conference. Field includes the dialed number for an outbound call.

outbound

Calls which are initialed/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

Name of person being recorded. An external audio recording only includes the recorded party name after the recorded party receives or makes an internal call or outbound call. If the first call handled by the recorded party is an external call, the recording does not include the recorded party name.

recorded party number

Number of person being recorded.

recording

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

station

A phone connected to the PBX.

Telephony Application Programming Interface (TAPI)

A telephony software interface included in Microsoft Windows operating system that supports the incorporation of telephony control by other applications.

trunk

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

trunk ID

The trunk of a call. If the call is an internal call, then this field is blank. Captured for all inbound/outbound calls.