NEC UNIVERGE 3C
Integration Guide

Encore Workforce Optimization Solution
Version 7.0 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 3CIP PBX via the UNIVERGE 3C Web Service. 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.

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 21.

- ANI
- Call ID
- Call Direction
- Call Type
- Consultation Call Flag

- DNIS*
- Extension
- Other Call ID
- Other Party Name+
- Other Party Number+

- Recorded Party Name
- Recorded Party Number
- User Windows Login ID

+This information is not provided for conference calls.
*The DNIS field may include the group number if workgroup calls are recorded.

Supported Recording Features

The following matrix shows the recording features available with this integration. For a description of each feature, refer to "Appendix 1: Glossary" on page 21.

RECORDING FEATURE	AUDIO COLLECTION METHOD	
	STATION-SIDE RTP PACKET CAPTURE (PASSIVE INTERFACE)	SUBSCRIPTION-BASED 3C AUDIO STREAM
Max. Recording Ports per Server^	500	500
Record External Calls	YES	YES
Record Internal Calls	YES	YES
Related Call Lookup	YES	YES
Suspend/Resume on Hold	Yes	Yes
Record Softphones	YES*	YES+

^Small Business Servers are limited to 72 ports.
*Only supported when the station extension is statically mapped to the IP address.
+Spherical Desktop phones are not supported.

Software and Hardware Requirements

SYSTEM	SOFTWARE REQUIREMENTS

NEC UNIVERGE 3C system	• Station-side RTP Packet Capture
	    o UNIVERGE 3C version 8.1.3.6 SP4 or later
	    o One User Access License (UAL)
	• Subscription-based 3C Audio Stream
	    o UNIVERGE 3C version 8.1.3.6 SP4 or later
	    o One User Access License (UAL)
	    o UNIVERGE 3C station license is needed for each softphone created for a corresponding Encore recording port. For example, if Encore has been issued licenses for 120 recording ports (for which 120 softphone stations are to be created in the 3C system), verify 120 station licenses are available in the 3C system.
	    o Additional Media Servers may be required. For details, see Hardware Requirements below for Subscription-based 3C Audio Stream.

Encore system	• All recording methods
	    o Encore 2.3.5 or later
	    o CTGate.exe 8.14.1000 or later
	    o CT3C.dll 1.6.1000 or later
	    o 3cBridge.exe 1.5.5303
	    o Encore.Utility.dll 2.3.5.5303
	    o Log4Dvs.dll 2.3.5.5303
	• Subscription-based 3C Audio Stream
	    o SoftPhone_AudioServer.exe v2.13.1000
	    o SoftPhone_RecordingServer.exe v2.21.1000
	    o SoftPhone_AudioExport.dll v2.3.1.0
	    o SP_3C.dll 1.7.1000
	    o CPServerConfig.exe v3.3.1000

SYSTEM	HARDWARE REQUIREMENTS

NEC UNIVERGE 3C system	• Station-side RTP Packet Capture
	    o Span port on network to route all RTP traffic for recorded stations to Encore server
	    o DHCP IP address reservation or static IP assignment for each station to be recorded
	• Subscription-based 3C Audio Stream
	    o Each concurrent recording uses a 3C Media Server port. A single Media Server allows a maximum of 256 concurrent Barge-Monitor sessions if no ports are used for other purposes. If more concurrent recording ports are needed or if other resources are using the Media Server ports, then additional Media Servers are required.
	    o Each station used as a recording port must be configured to use "LAN Preferred Audio" using PCMU\PCMA codecs (G.711 u-law\G.711 a-law)

Encore system	• No special hardware is required

Considerations When Using Subscription-based 3C Audio Stream

- If a station being monitored is not using PCMU\PCMA codecs (G.711 u-law\G.711 a-law), when the Barge-Monitor begins, the stations call switches to G.711 and may cause a noticeable change in audio quality. It is recommended that all stations that must be recorded should be configured to use PCMU\PCMA only.
- Since all stations being recorded use G.711 while the Barge-Monitor is in effect, special considerations should be made when choosing to record remote stations since bandwidth conserving codecs such as G.729 cannot be used and require much higher bandwidth per station.
- The RTP and RTCP port footprint of the 3C Media Server expands by 2 UDP ports per Media Server system port when using Barge-Monitor on a system. Previously, a 256-port Media Server required a total of 1,024 UDP ports. For Barge-Monitor, the RTP and RTCP port footprint of the Media Server requires 1,536 UDP ports.
- Networking bandwidth requirements for both the 3C Media Server and Encore server should be considered.
    - For each 3C Media Server port involved in a Barge-Monitor session, 400Kbps of bandwidth is required. If a 3C Media Server is using all 256 ports in a Barge-Monitor session, then 102.4Mbps of bandwidth is in use just for the Media Server ports.
    - Each Barge-Monitor audio stream being sent to the Encore recorder uses 80Kbps of bandwidth. If an Encore server is recording the maximum concurrent calls of 500, then approximately 40Mbps of bandwidth is required.
- For a user with **User Centric** enabled, a user can have multiple addresses, but only addresses with **Call Offering** enabled can be recorded

Documentation Overview

This document provides integration information for a specific phone system. It helps a user to understand the features and benefits of the integration as well as what needs to be configured on the phone system. 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 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 UNIVERGE 3C Web Service (installed on the NEC UNIVERGE 3C Manager server) by the UNIVERGE 3C Bridge Windows Service, 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 TCP/IP messages received from the UNIVERGE 3C Bridge Windows Service.
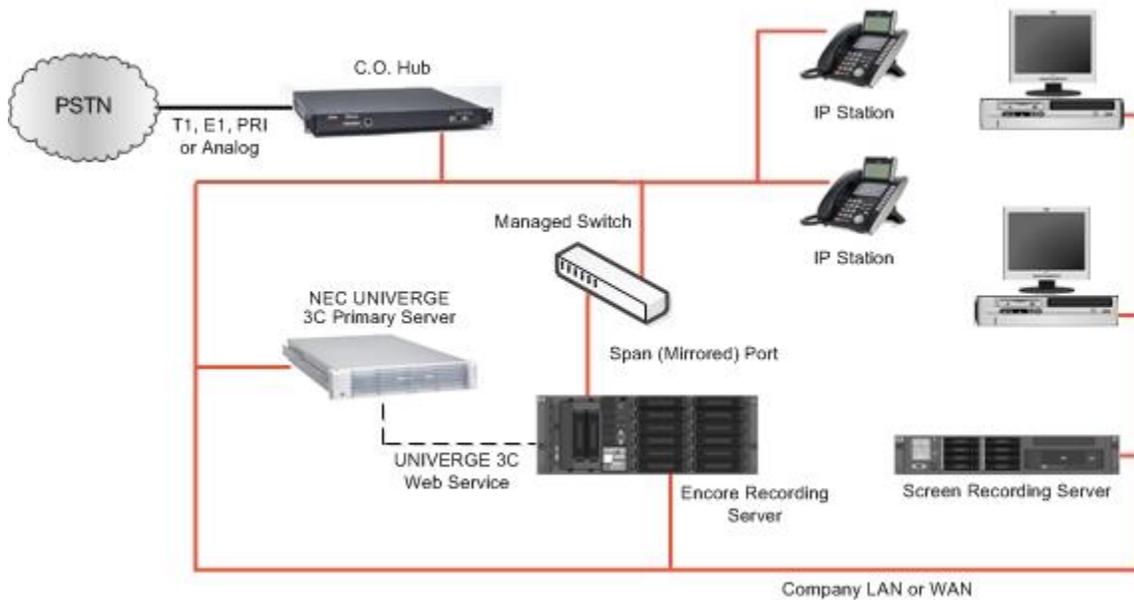
Subscription-based 3C Audio Stream

With the Subscription-based 3C Audio Stream method, Encore registers a virtual IP softphone for each recording port using the 3C Web Service "Create Terminal" request. Then it uses the NEC UNIVERGE 3C Web Services "Start Monitoring" request to receive event reports when a call is active on a monitored station. Based on events received from the UNIVERGE 3C Web Service, the Encore server sends a "Supervise Call" Web Service request to Barge-Monitor the station using a recording port's virtual IP softphone.

Encore then uses the UNIVERGE 3C Web Service to direct the virtual IP softphone's audio stream to the recorder to save as the audio file. Encore stops recording based on events received from the UNIVERGE 3C Web Service.
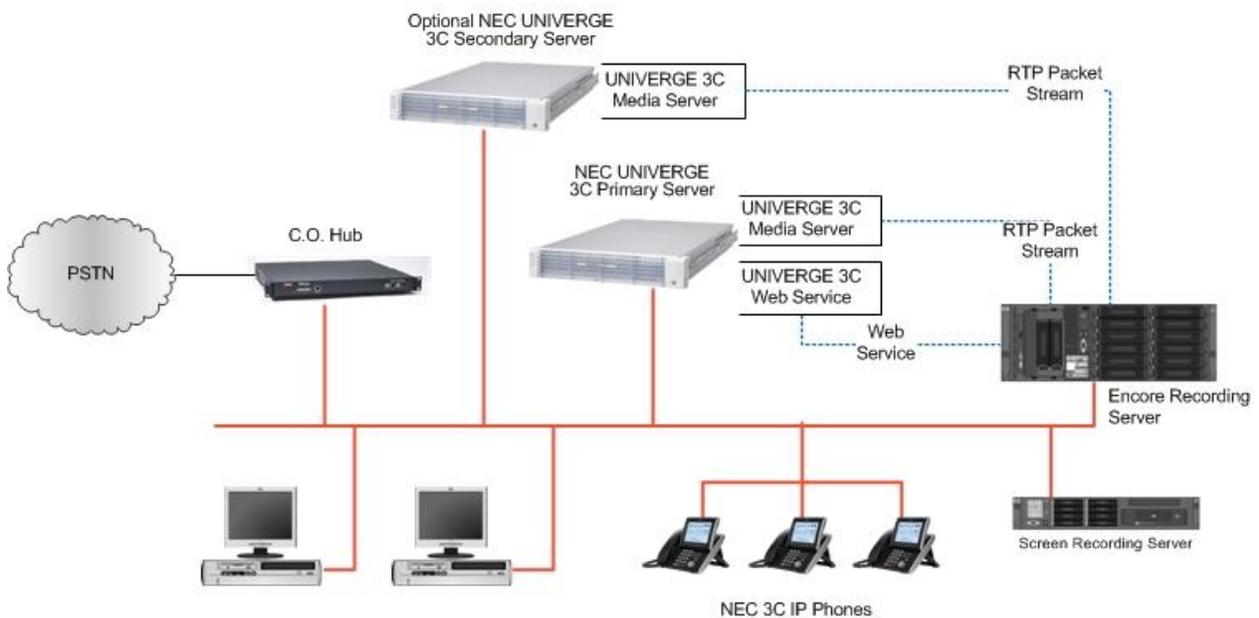
Configure NEC UNIVERGE 3C System

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 3C software and only needs specific configuration assistance.

Station-side RTP Packet Capture

Complete the steps below if using the Station-side RTP Packet Capture audio collection method.

1. In the UNIVERGE 3C Administrator software, create an address group.
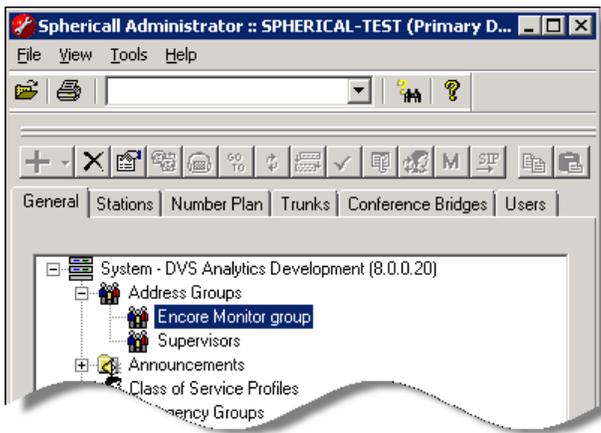
2. Add all recorded phones to this group. An existing group can be used if it includes all phones that need to be recorded. The group should only contain addresses that will be recorded. If a group exists that contains both recorded and non-recorded addresses, then an additional group should be created with only the recorded addresses. Addresses can be members of more than one **Address Group**.
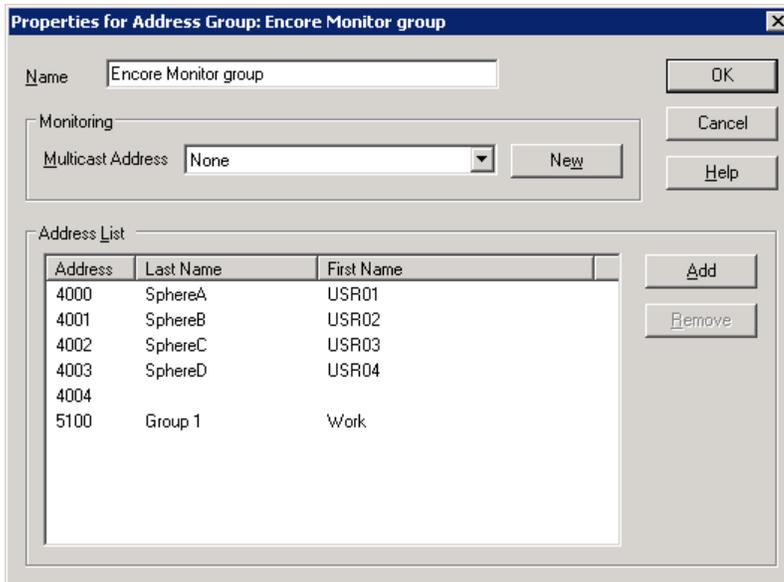
3. If needed, add a multicast address.

4. UNIVERGE 3C is normally configured in the customer network domain. Use an existing account or create a domain user account for Encore in the same domain. Encore uses this account when connecting from the 3C Bridge Web Service (installed on the Encore server).
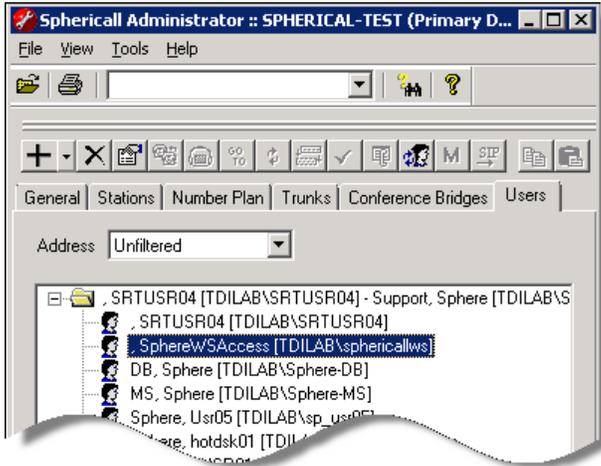
5. Give this user account permission to connect to the web service by selecting the **Web Services Rights** option.
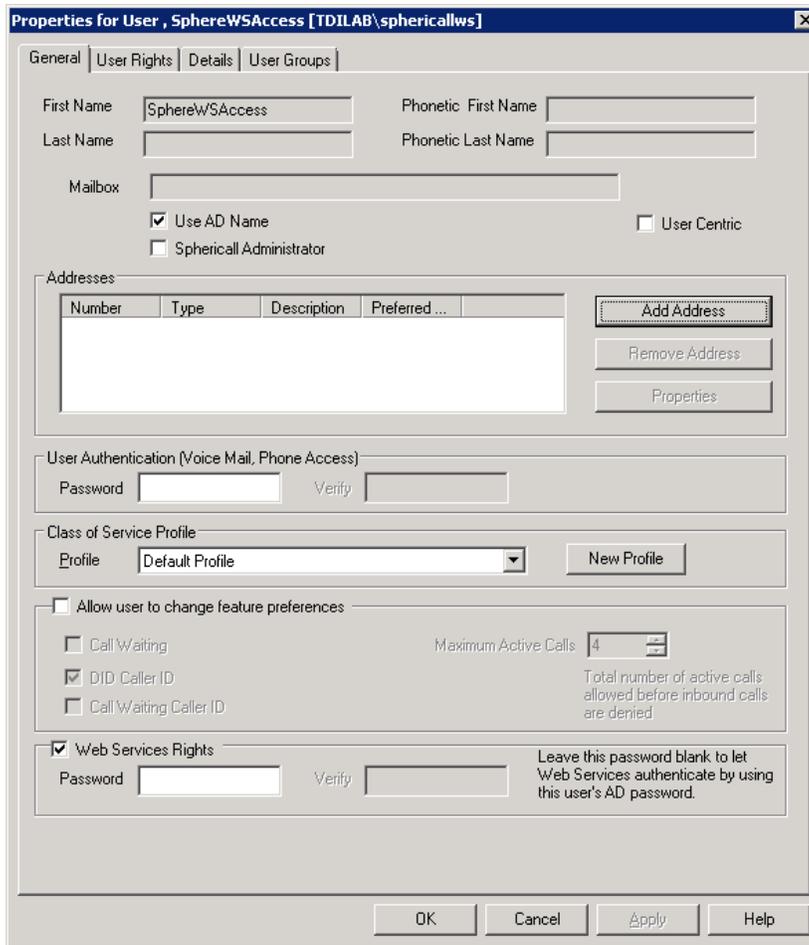
6. Give this account permission to monitor the recorded phones by adding the address group(s) for the recorded phones to the **Line Access Rights** area with the **Monitor** privilege.
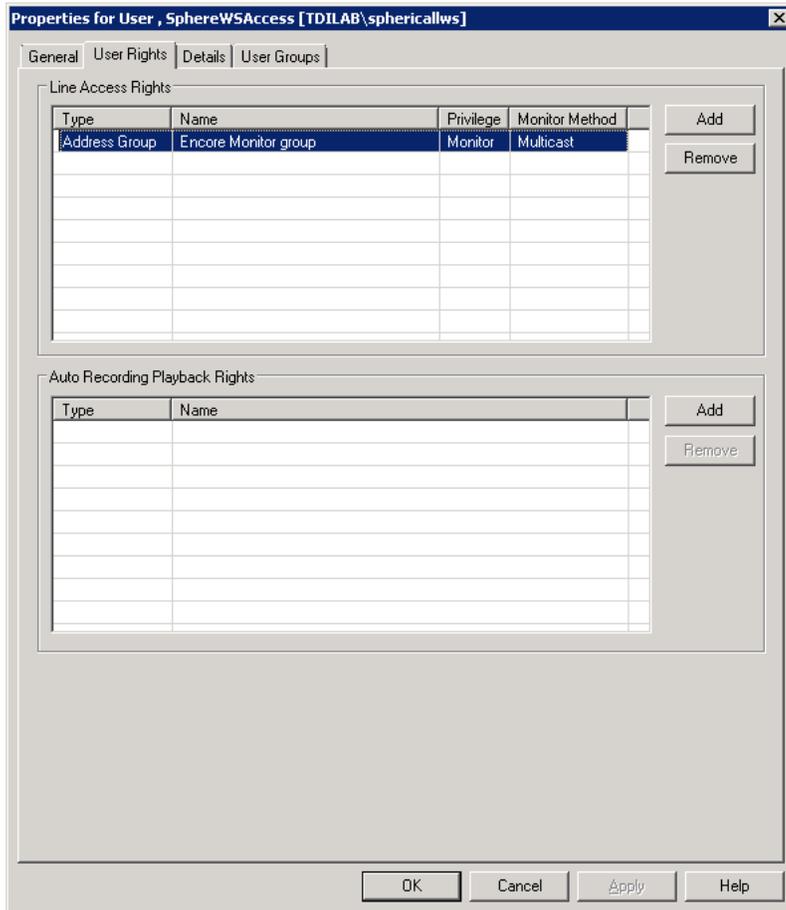
Subscription-based 3C Audio Stream

Complete the steps below if using the Subscription-based 3C Audio Steam audio collection method.

Step 1: Verify the Media Streams settings

On the NEC UNIVERGE 3C system, verify the **Media Streams** settings are configured properly. See the "To verify the Media Streams settings" section in the "Barge-Monitor" chapter of the *UNIVERGE 3C Supplemental Features Guide* for details.

Step 2: Set up the Media Server Barge-Monitor

There is a total of 256 Media Server session ports available on a Media Server. The Media Server must be identified, and the session ports configured for Barge-Monitor in the NEC UNIVERGE 3C system. See the "Media Server Barge-Monitor Address Port(s) Setup" section in the "Barge-Monitor" chapter of the *UNIVERGE 3C Supplemental Features Guide* for details.

Step 3: Create an Address Group

1. In the UNIVERGE 3C Administrator software, create an address group.
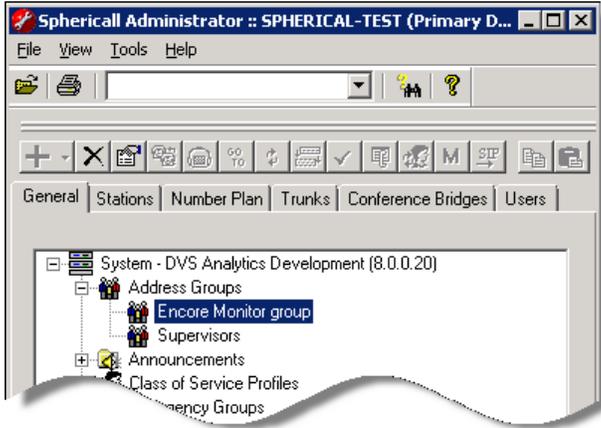
2. Add all recorded stations to this group. The group should only contain addresses that will be recorded. If a group exists that contains both recorded and non-recorded addresses, then an additional group should be created with only the recorded addresses. Addresses can be members of more than one **Address Group**. For User Centric users with multiple addresses, all addresses that need to be recorded must be entered in this address group. Only addresses associated with a station line and have **Call Offering** enabled can be recorded.
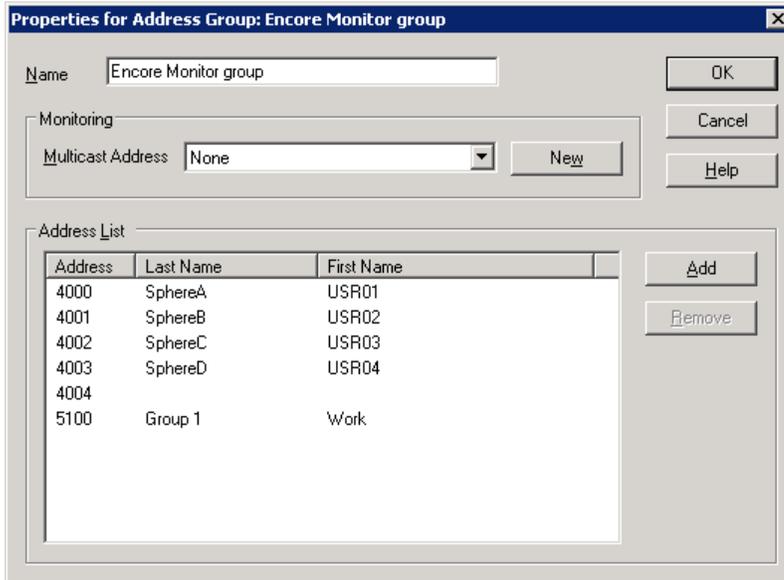
3. If needed, add a multicast address.

Step 4: Create a zone for the recording port stations

1. In the UNIVERGE 3C Administrator software, create a new zone. This zone must contain all of the recording ports used by Encore to initiate the Barge-Monitor. In later steps, this zone will be assigned to the user created for Encore for ease of management.

2. Clear the mark from the **Enable MOH** option and click **OK**.

3. Right-click on the zone you just created and select **View Properties**.

4. Select the **Trusted Zones** tab and click **Add**.

5. Select any zones that contain stations that must be recorded and click **OK**. If a trust relationship between zones is not established, call recording fails.

6. Click **OK** to save the zone.

Step 5: Create a station for each recording port

1. In the UNIVERGE 3C Administrator software, select the **Stations** tab and add a softphone by clicking the down arrow next to the plus sign button and select **Add Softphone**. The following window opens.

2. Click **Add Extension** to add a new extension for the station. On the window that opens, click **New Extension**. The following window opens.

3. Make these changes for the new extension's properties:

   a. In the **Number** field enter an extension number.

   b. In the **First Name** field enter Port*n*, where *n* equals the number of the port.

   c. In the **Last Name** field enter Encore.

   d. Verify the **Allow Transfers from Auto Attendant** and **Search/Display in Client** options are NOT selected.

4. On the **Address Group** tab, ensure that no **Address Groups** are listed.

5. On the **Call Recording** tab, ensure that both **Allow Others to Record Your Calls** and **AutoRecord Your Calls** are NOT selected.

6. Click **OK** to save the extension.

7. Select the extension you just created and click **OK**. The **Properties for Station** window opens.

8. Enter a name in the **Line Name** field, such as **Encore-P1**.

9. Assign the user to the zone you created for the recording ports in the previous step.
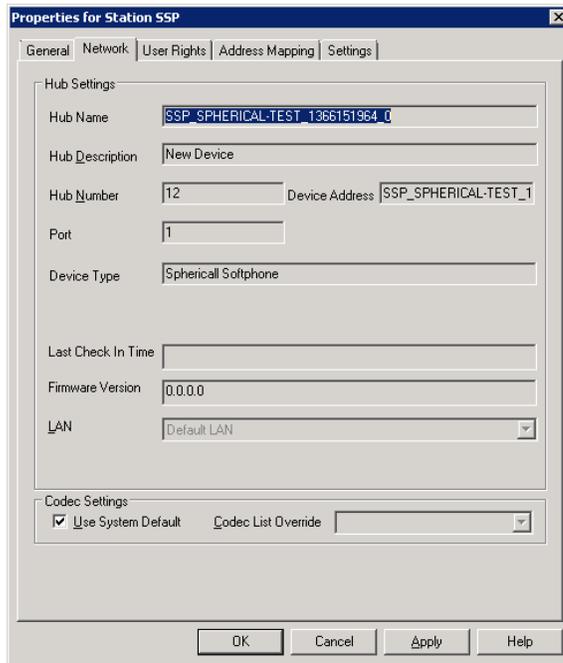
10. Click the **Network** tab review the **Codec Settings** area. If the codec used when the **Use System Default** option is selected includes **G711A** and **G711U**, select it. Otherwise, click the **Codec List Override** option to select a codec that includes **G711A** and **G711U**.

11. Click **OK** to save the softphone.

12. Repeat these steps for each concurrent recording port needed.

Step 6: Create a user for Encore

1. UNIVERGE 3C is normally configured in the customer network domain. Work with the customer's Domain Administrator to create a new domain user account for Encore in the same domain as the 3C; do not use an existing account. Encore uses this account when connecting from the 3C Bridge Web Service (installed on the Encore server). The remaining instructions in this section refer to the **EncoreDVS** account as the domain user account.

2. Complete the fields in the first window of creating a new AD user, like the window shown below and click **Next**.

3. Select a password that meets the customer's password requirements.

4. Set the following options for this account and click **Next**.

   a. User must change password at next logon: Not Selected

   b. User cannot change password: Selected

   c. Password never expires: Selected

   d. Account is disabled: Not Selected

5. If prompted to create an Exchange Mailbox, do **NOT** select the option. Continue to follow the prompts in the remainder of the setup.

6. In the UNIVERGE 3C Administrator software, select the **Users** tab and click the plus sign on the toolbar to open the **Browse AD** window.

7. Browse to the user you just created (**EncoreDVS**), select it and click **OK**. The **Properties** window for the user opens.

8. Select the **Web Services Rights** option.

9. Click the **User Rights** tab and give this account permission to control the recording port stations by adding the zone created for the recording ports to the **Line Access Rights** area with **Full** privilege.
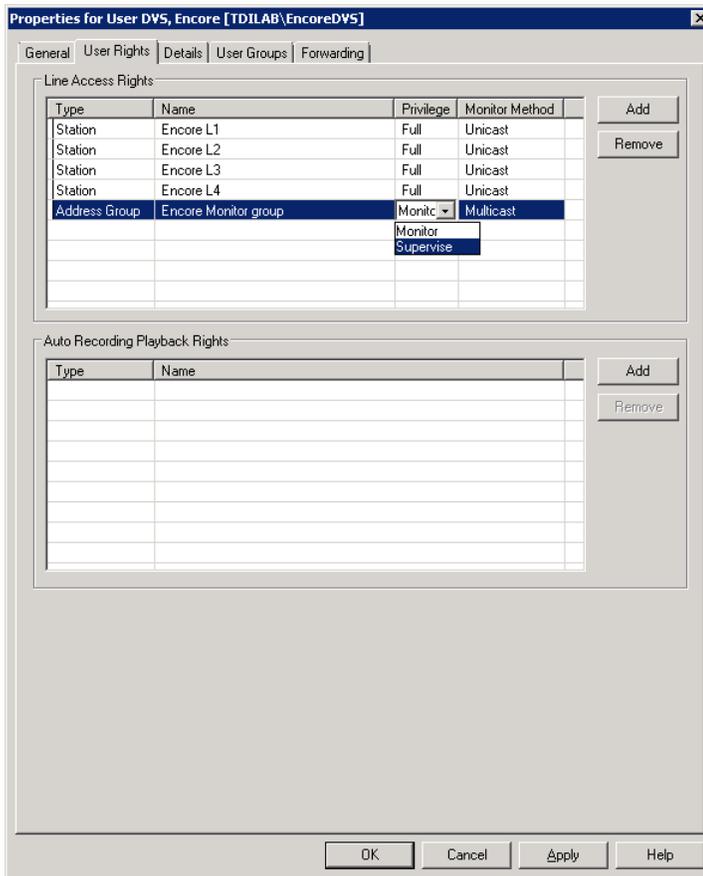
10. Give this account permission to Barge-Monitor recorded stations by adding the address group for the recorded stations to the **Line Access Rights** area with the **Supervise** privilege.

11. Click **OK** to save the user's settings. The user should now appear in the list of users.

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.
- 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.

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 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.

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

Appendix 1: Glossary

3C User Centric feature

This is a feature of the NEC UNIVERGE 3C system and its setting defaults to "On" for new users. This feature means each user can have multiple addresses (extensions) and each address may be associated with a different phone (station) line. One address is set as the user's "preferred address".

Only addresses with "call offering" enabled can be recorded by Encore.

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 customer's number.

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-Monitor

This UNIVERGE 3C Web Service feature is used by Encore to capture audio on monitored stations. It is important to note that only a single Barge-Monitor session is allowed on each call associated with a station. Supervisors must not Barge-Monitor calls on recorded stations because it prevents Encore from opening a Barge-Monitor session on the same recorded station to capture audio. If Encore is recording a call, supervisors are not able to Barge-Monitor the call. For internal calls, both parties may have a Barge-Monitor session open.

call direction

The direction is either incoming (inbound) or outgoing (outbound).

call ID

A unique number used by the database to identify each recording.

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 flag

This 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.

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.

full-time recording

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

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

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

other call ID

An identifier for another call that is related to the current call recording.

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.

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 people being recorded.

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.

softphone calls

These calls are made with a software program for making phone calls over the Internet using a general purpose computer, rather than using dedicated hardware.

station

A phone connected to the PBX.

User Windows Login ID

The login ID used by the user to log into Windows.