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See Change Log for summary of changes.

GENESYS™

Call Recovery Feature

Technical Reference

Abstract

This content describes how the Call Recovery feature handles call interactions

For the latest version of this document, see the PureConnect Documentation Library at: http://help.genesys.com/cic.

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Introduction to Call Recovery

The Call Recovery feature expands the functionality that the CIC Automated Switchover System provides. To use the Call Recovery feature, implement and configure the CIC Automated Switchover System. For more information, see the *CIC Automated Switchover System Technical Reference* at
https://help.genesys.com/cic/mergedProjects/wh_tr/desktop/pdfs/automated_switchover_system_tr.pdf.

Genesys recognizes the need to ensure that the CIC server functions in a highly reliable, fail-safe way to prevent unplanned down time. Before CIC SU4, the server lost call interactions, including any work in progress, during a switchover. During a switchover, agents could continue to converse with customers. However, the CIC server lost control of the ongoing call interaction.

Starting in CIC 4.0 SU 4, Telephony Services offers a Call Recovery feature. This feature sends data to the backup server automatically for each call interaction created on the primary server. If a switchover occurs, the Call Recovery feature uses the data on the backup server to attempt to regain control of the call interactions.

The following factors limit the success of the Call Recovery feature:

- Severe network events. For example, if the entire network shuts down and the backup computer cannot connect to the Media Servers, the Call Recovery feature does not work.

> **Note:** Temporary network glitches do not affect the Call Recovery feature.

- Interactions in transition. For example, if a call is in the middle of transferring, it's possible that the Call Recovery feature cannot recover it.
- If the call is of a certain type.

You can configure two servers so that the primary computer in a switchover pair performs the primary CIC functions and the other computer maintains backup data. The system can use the backup data to recreate the call interactions in the event of a switchover. If the primary server fails or disconnects, the secondary server takes over.

A third server, called a Media Server, manages the audio resources during typical operations. Audio resources include players, taps, recorders, monitors, and conferences. During a switchover, the backup server attempts to take control of all these resources, except for conferences.

Usually, the transition between the primary and secondary servers occurs quickly and does not disrupt communications between agents or other users of the system.

> **Note:** In SU 4, the Call Recovery feature does not support conferences.

Requirements

CIC 4.0 supports the Call Recovery feature; however, for SU 4, you must install the following ESs:

- SU 4-IC-115140 - Install
- SU 4-IC-115139 - Handlers
- SU 4-IC-112034_IC-112001_IC-111489 - TelephonyServices

In CIC SU 5 and later, including CIC 2016 R1, the functionality that the ESs provided is part of the base product, and you do not need to install any other updates.

Enable the Call Recovery Feature

Use Interaction Administrator to enable the "EnableCallRecovery" parameter on the primary CIC server in a switchover pair to allow the recovery of both calls and SMS generic objects. If you don't enable this parameter before configuring the Call Recovery feature, the Call Recovery feature won't work. For more information about configuring Call Recovery, see Configure the Call Recovery Feature. For more information about Interaction Administrator, see the *Interaction Administrator Help* at https://help.genesys.com/cic/mergedProjects/wh_ia/desktop/interaction_administrator_help.htm.

Note: If you are upgrading from CIC 4.0 SU 3 to SU 4, run Setup Assistant and select **Options Configuration**. Select the CIC server A and CIC server B switchover pair, and Setup Assistant updates the IonNotifier parameter accordingly. CIC versions later than CIC 4.0 SU 4 don't require the IonNotifier parameter.

To enable the Call Recovery feature

1. Open Interaction Administrator.
2. In the tree view pane, click the **Server Parameters** container.
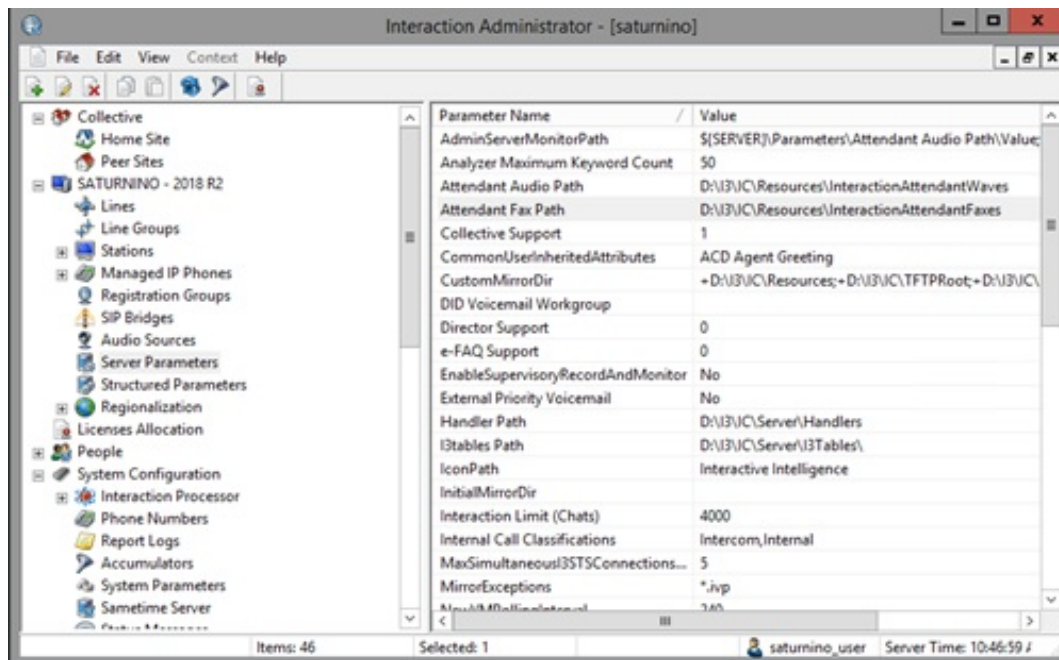
3. Do one of the following:

- If the "EnableCallRecovery" parameter doesn't exist, do the following:

a. Right-click in the list view pane and then click **New**. The **Entry Name** dialog box appears.
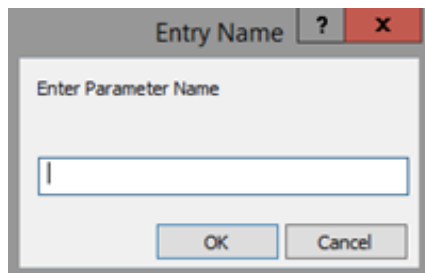
b. In the box, type **EnableCallRecovery** and then click **OK**.

- If the "EnableCallRecovery" parameter exists, in the list view pane, double-click **EnableCallRecovery**.

    The **Parameter Configuration - EnableCallRecovery** dialog box appears.
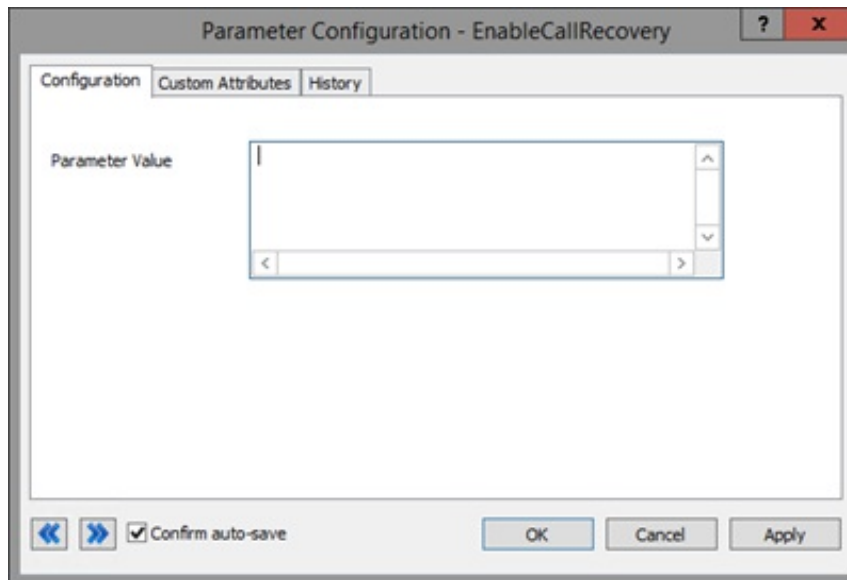
4. In the **Parameter Value** box, type one of the following values:

- True
- Enable
- Yes
- On
- 1
- T

> **Note:** Specifying one of these values turns on the Call Recovery feature. These values are not case-sensitive.

5. Click **OK**. The dialog box closes and "EnableCallRecovery" appears in the parameter list.
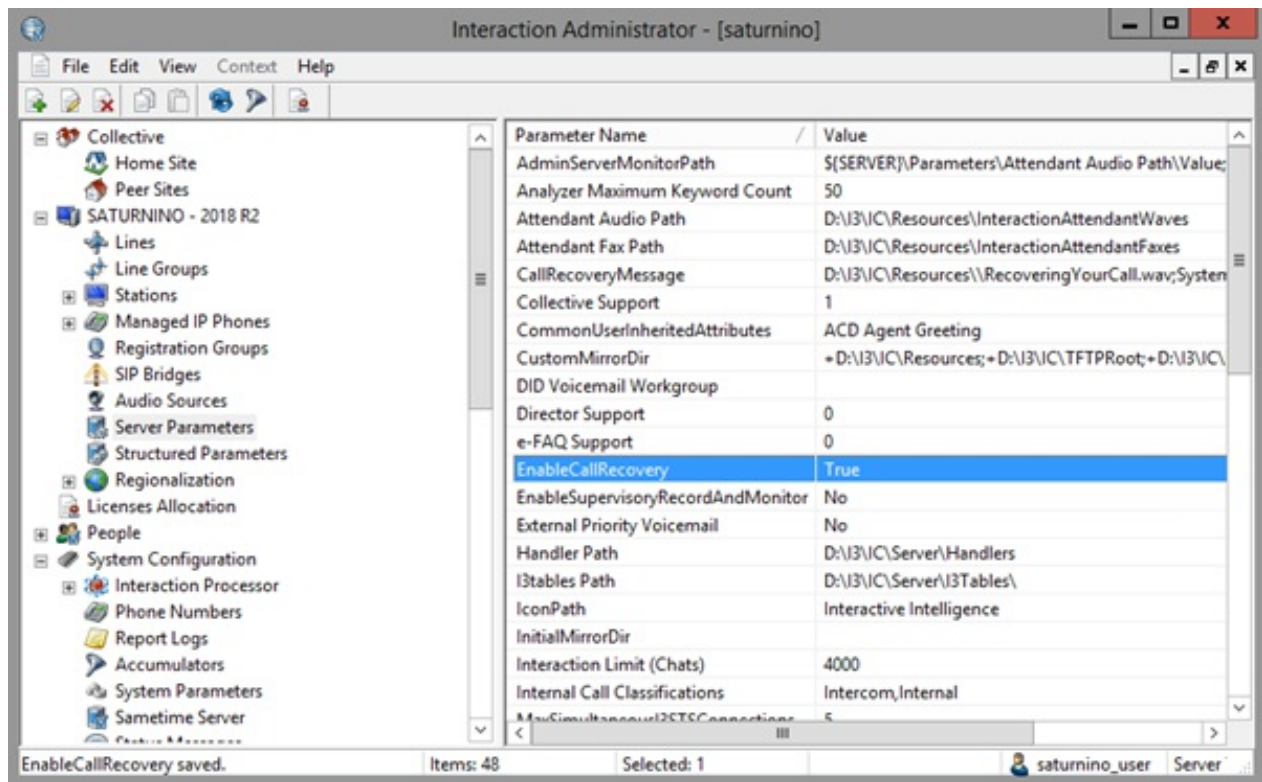
6. This server parameter is not dynamic; therefore, restart the TS server to imply a double switchover so that both the primary and the backup TS servers recognize the new server parameter value.

Note: If you need assistance with activating the Call Recovery feature, contact PureConnect Customer Care.

Note: If you want Interaction Media Sever to keep audio sources alive when it loses the Notifier connection to the CIC server, add the "EnableCallRecovery" property to the Interaction Media Server configuration and set the value to **True**. For more information, see the *Interaction Media Server Technical Reference* at https://help.genesys.com/cic/mergedProjects/wh_tr/desktop/pdfs/media_server_tr.pdf.

Configure the Call Recovery Feature

Use the "CallRecoveryMessage" parameter in Interaction Administrator to configure the CIC server to play one or more call recovery messages to IVR and ACD callers who are in wait or hold mode at the time of a switchover. The audio files can contain a message indicating that something "exceptional" occurred or they can contain music. The Media Server retrieves audio files using HTTP, so place the files in a shared folder that the server can access. For more information about Interaction Administrator, see the *Interaction Administrator Help* at
 https://help.genesys.com/cic/mergedProjects/wh_ia/desktop/interaction_administrator_help.htm. For more information about the Media Server, see the *Interaction Media Server Technical Reference* at
https://help.genesys.com/cic/mergedProjects/wh_tr/desktop/pdfs/media_server_tr.pdf.

To configure the Call Recovery feature

1. Open Interaction Administrator.
2. In the tree view pane, click the **Server Parameters** container.
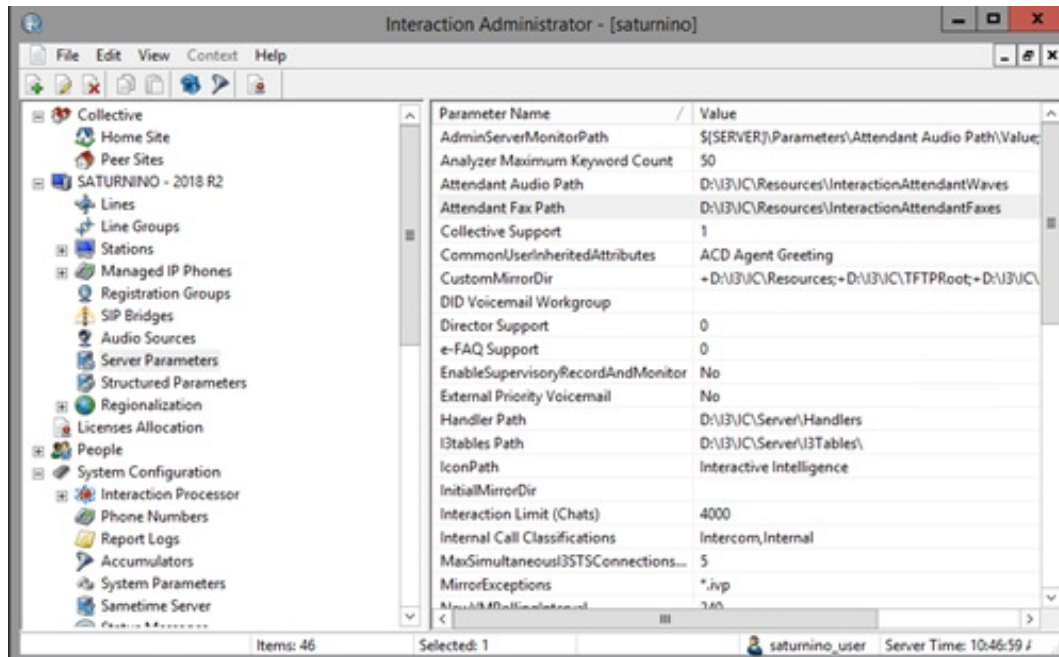
3. Do one of the following:

- If the "CallRecoveryMessage" parameter doesn't exist, do the following:

a. Right-click in the list view pane and then click **New**. The **Entry Name** dialog box appears.
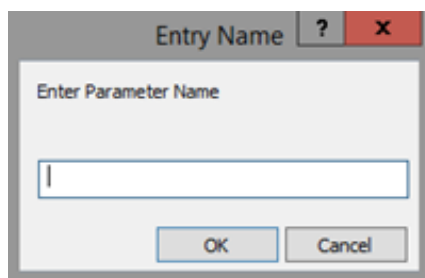
b. In the box, type **CallRecoveryMessage** and then click **OK**.

- If the "CallRecoveryMessage" parameter exists, in the list view, double-click **CallRecoveryMessage**.

    The **Parameter Configuration - CallRecoveryMessage** dialog box appears.
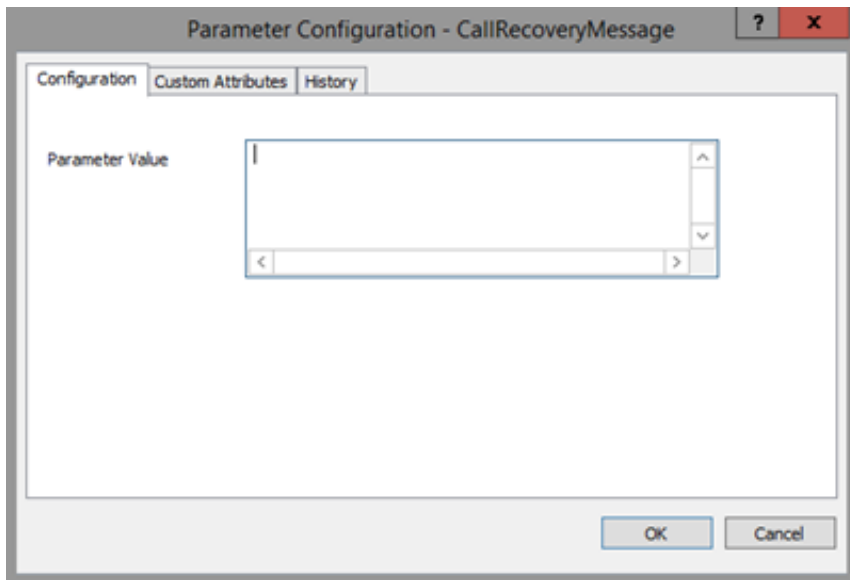
Parameter Value: A list of one or more audio files, separated by a semi-colon (;) or a hard return (press the **Enter** key) for the recovering audio source to play. The audio files play in the order listed until reaching the last file. The last file (and only the last file) plays continuously. If a file does not exist, the CIC server doesn't include it when sending the list of files to the Media Server.

You can include the language placeholder <%LANGUAGE> to play a message in the language of the call. When the Eic_Language attribute flags an incoming call, the system plays the language-specific message. For example, if the language attribute flags the incoming call as fr-FR, the system replaces "%LANGUAGE" with "fr-FR" and plays the French message. If the language attribute doesn't flag the call, the system uses the CIC default language to play the message.

4. In the **Parameter Value** box, type one or more audio files for the recovering audio source to play and, optionally, the language placeholder.

   Example:

   > D:\I3\IC\Resources\RecoveringYourCall.<%LANGUAGE>.wav;NoSuchFileExists.wav;SomeMusic.wav;

   The first audio file (RecoveringYourCall.wav) includes the language placeholder so that the language-specific message plays. The second audio file (NoSuchFileExists.wav) doesn't exist so the CIC server doesn't send it to the Media Server. The last audio file (SomeMusic.wav) contains music that plays continuously until the Call Recovery feature recovers the call fully.

   So, in this example, the Media Server receives the following:

   > 'sourceUr' -> {"http://SharedLocation.com/resources/RecoveringYourCall.en-US.wav?tag=8f5a:12e62910ed15d400", "x-inin-audiosrc:control/loop_begin", "http://SharedLocation.com/resources/SomeMusic.wav?tag=ea9a:12ed24e1f16fb600", "x-inin-audiosrc:control/loop_end"}

5. Click **OK**. The dialog box closes and "CallRecoveryMessage" appears in the parameter list.
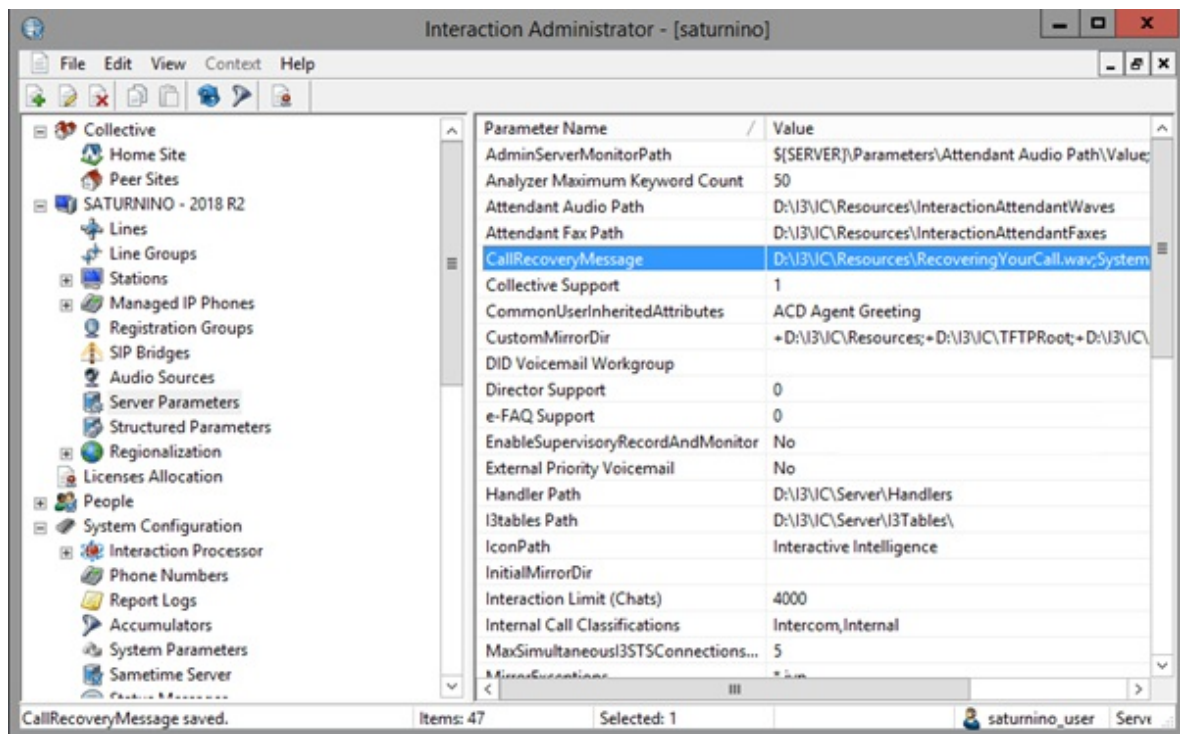
Trace the Results of Call Recovery

If a switchover occurs, you can view a few statistics about the Call Recovery process after it completes. These statistics are in the TS log file on the server that assumed the primary role. You can search the log for the "RecoveryResults" filter. Once completed, the trace looks similar to the following example:

After 60484 ms, 0 calls remaining:

Success: 9628

Failed: 0

Unrecoverable: 361

Total: 9989

Notes:
- "Unrecoverable" is "SIP code 408 transaction does not exist" because as calls end during the recovery process, the system can no longer find them.
- A call has at least 2 connection points (legs). All the statistics count each leg of the call. In the example, Success is 9628, which you can consider as 4,814 recovered calls (9628/2).

Considerations and Limitations

The following information describes the considerations and limitations for the Call Recovery feature.

TLS/SRTP calls not supported

Do not use Call Recovery in an environment that requires TLS/SRTP.

WAN switchover configuration considerations

Consider the following for WAN switchover configuration:
- Genesys tested the recovery feature with latency up to 250 ms without impact.
- There is an increased amount of bandwidth used between the primary CIC server and the backup CIC server. Ensure that you have extra bandwidth on your WAN connection before enabling it.
  - For 1000 calls, you can expect roughly 7.8 Mbps extra traffic.
    - Call attributes associated to calls use even more traffic.

Significant CPU resources required

With the Call Recovery feature enabled, both servers in the switchover pair use significant CPU resources. When a switchover occurs, the system uses even more CPU resources to recover existing calls while incoming calls are processing.

> **Important!**
> Evaluate your CPU resources and current system load before implementing the Call Recovery feature. Insufficient CPU resources can lead to decreased system performance.

Both servers must access all Media Servers and gateways

Allow both servers in a switchover pair to access to all Media Servers and gateways.

Telephony Services (TS) more active on the backup server

Telephony Services (TS) is more active on the backup server with Call Recovery enabled. If you monitored the backup server in the past, you'll notice a dramatic increase in activity on it.

Conference calls not recovered

During a switchover, participants on a conference call can continue to speak to and hear each other; however, the CIC server loses the call interaction. Also, agents lose call controls such as the ability to put the call on hold or mute their handset.

> **Note**: Because the CIC server does not recognize that agents are on the conference call, it can route calls to them even though they are busy.

Supervisors monitoring agents disconnect

During a switchover event, the CIC server disconnects supervisors who are monitoring agents. A coach participating on a call keeps their audio, provided the failure isn't a network failure or other similar event. However, the coach loses control of the call because the coach is in a conference, technically, and the Call Recovery feature does not recover conferences.

Call interaction not recovered during wrap-up

If an agent is specifying a wrap-up code at the end of a call and a switchover occurs, the CIC server loses the call interaction and cannot recover it. The Call Recovery feature disconnects the call automatically, including the telephone connection call.

> **Note:** If the agent isn't specifying a wrap-up code when the switchover occurs, the agent can provide it as usual.

Cisco Series 7960 Users

If you use Cisco Series 7960 phones, set the optional server parameter "Generic Parameter with Replaces" to **True** in Interaction Administrator. By default, this value is **False**, which makes Call Recovery incompatible with your phones. For more information, see the *Interaction Administrator Help* at https://help.genesys.com/cic/mergedProjects/wh_ia/desktop/interaction_administrator_help.htm.

Call Recovery Scenarios

The following table presents several call recovery scenarios to illustrate the difference between previous call behavior and call behavior with the Call Recovery Feature enabled.

Scenario	Without Call Recovery	With Call Recovery
Regular call, no Media Server, not recorded.	Audio path stays up after Switchover. Call control lost after switchover.	Audio path stays up after switchover. Call control maintained after switchover.
Recorded call	Audio path stays up after Switchover. Call control lost after switchover. Recording keeps going; needs rescued.	Audio path stays up after switchover. Call control maintained after switchover. Recording processes normally when call finally ends.
Media Server fails	Audio path goes silent. Call control maintained.	Audio path goes silent. Call control maintained.
Call in ACD queue (wait audio)	Call goes silent after switchover.	Music continues; caller maintains their place in the queue and eventually routes to an agent.
Call in IVR	Call goes silent after switchover. Caller needs to hang up.	Call stays up. Caller transports back to a (possibly unexpected) earlier point in the IVR.
Call on hold or parked	Audio path goes silent. Call control lost and caller in limbo (caller needs to hang up).	Hold music continues. Agent cannot retrieve call. **Note:** If the agent logs onto a CIC client associated with the station, the agent can see and retrieve the call.
Monitor or coach	Audio path stays up after Switchover. Call control lost after switchover.	Caller and agent remain connected; the supervisor is disconnected. Call control is maintained.
Conference	Audio path stays up. Call control lost.	Audio path stays up. Call control lost (no change).
Fax	Faxes in progress during a switchover stop abruptly.	Faxes in progress during a switchover stop abruptly (no change).
Inbound alerting calls	Alerting calls disconnect upon switchover.	Beginning in SU 5, alerting calls recover and process after switchover.
Interaction Analyzer keyword spotting	Audio path stays up after switchover. Keyword spots are lost.	Audio path and call control maintained after switchover. The scores persist and process normally.

Change Log

The following table lists the changes to the *Call Recovery Technical Reference* since its initial release.

Date	Change
17-September-2013	Initial documentation version released.
05-December-2013	• Added Requirements section • Added Call Recovery Scenarios section.
27-March-2014	• Added information about SU5 base product functionality. • Added the inbound alerting calls scenario.
29-May-2014	Corrected version number on front cover.
11-September-2014	• Updated documentation to reflect changes required in the transition from version 4.0 SU 6 to CIC 2015 R1, such as updates to product version numbers, system requirements, installation procedures, references to Interactive Intelligence Product Information site URLs, and copyright and trademark information. • Clarified that in SU 4, inbound alerting calls were terminated, but beginning in SU 5 they were recovered and processed after switchover.
03-August-2015	• Updated title page and copyright information. • Updated the section, Configuration options for the Call Recovery Feature. Retitled it, "Configure the Call Recovery Feature." • Added new information from IC-108607.
12-February-2016	Added the section, "A Note for Cisco Series 7690 Users."
06-April-2016	Added the section, "The EnableCallRecovery Parameter Must be Configured."
19-April-2016	Updated the Call Recovery Scenarios table with more accurate information about calls that are on hold or parked.
14-September-2017	Rebranded to Genesys.
06-April-2018	Updated document format.
27-April-2018	• Modified the "Enable the Call Recovery Feature" and "Configure the Call Recovery Feature" topics to include step-by-step instructions. • Removed "Distributed (WAN) switchover configuration not supported" section. • Added "WAN switchover configuration considerations" section. • Added "Trace the results of Call Recovery" section.
03-May-2019	Reorganized the content only, which included combining some topics and deleting others that just had an introductory sentence such as, "In this section...".