



CONVERSANT[®] System
Version 8.0
Computer Telephony Integration

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Preventing Toll Fraud

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An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Your Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you - an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure your:

- Avaya-provided telecommunications systems and their interfaces
- Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- Any other equipment networked to your Avaya products.

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Part 15: Class A Statement. This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

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- Reorient the receiving television or radio antenna where this may be done safely.
- To the extent possible, relocate the receiver with respect to the telephone equipment.
- Where the telephone equipment requires ac power, plug the telephone into a different ac outlet so that the telephone equipment and receiver are on different branch circuits.

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- Answered by the called station
- Answered by the attendant
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all DID calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered
- A busy tone is received
- A reorder tone is received

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Low Voltage Directive 73/23/EEC



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Acknowledgment

This document was written by the CRM Development group of Avaya University.

CONVERSANT System Version 8.0 Computer Telephony Integration

Chapter 1: Overview

Introduction	3
Description of CTI.	3
Principles of operation	4
Functionality	4
Call Center features	5

Chapter 2: Setup and administration

CTI DIP setup.	7
Installing the CentreVu CT Client	7
Installing the CTI DIP	7
Set Up the Configuration File	8
Verify external function files	11
Telephony setup	12
Analog tip/ring connections	12
Line side digital connections	12
CONVERSANT and PBX administration	12
Ethernet administration	13
Administering the tip/ring, LSE1, and LST1 lines	14
CVCT administration	14
CVCT administration of CONVERSANT	14
Administration of the CVCT servers	15
Setup and administration of a Siebel Client	15

Chapter 3: Application development

External functions	17
ctiCallInfo	18
ctiCallState.	20
ctiConfer.	22
ctiDial	23
ctiDiscon.	24
ctiHold	25
ctiNotify	26
ctiPrivData	27
ctiRetrieve	29
ctiTransfer	30
Sample application	31

Glossary	39
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Contents

Chapter 1: Overview

Introduction

This book provides information about the setup, administration, and use of the Computer Telephony Integration (CTI) feature for the CONVERSANT System Version 8.0. It is intended for application developers who are familiar with:

- Script Builder or Voice@Work
- CentreVu Computer Telephony
- ASAI
- DEFINITY PBX operation

Description of CTI

Applications that make function calls to the CTI data integration process (CTI DIP) on CONVERSANT can use a CentreVu Computer Telephony (CVCT) server to control ports on a PBX and to interact with Siebel eBusiness applications that are located on a client connected to the server. CTI is primarily an alternative to the manipulation of a PBX via a direct ASAI connection to the CONVERSANT (for a description of ASAI, see Chapter 3, "Adjunct/Switch Application Interface", in *CONVERSANT System Version 8.0 Communication Development*, 585-313-220).

One of the main benefits of CTI is redundancy. Up to two extra CVCT servers can be connected to a CONVERSANT as backups to the server handling calls. If connection to the primary CVCT server is lost, then connection is made to a second server; if this connection is lost, then the third server is used.

Full CTI support is for:

- DEFINITY 6.3 or later
- CentreVu CT Release 9.1 Version 1 or later
- Private Data Version 6
- TSAPI Version 2

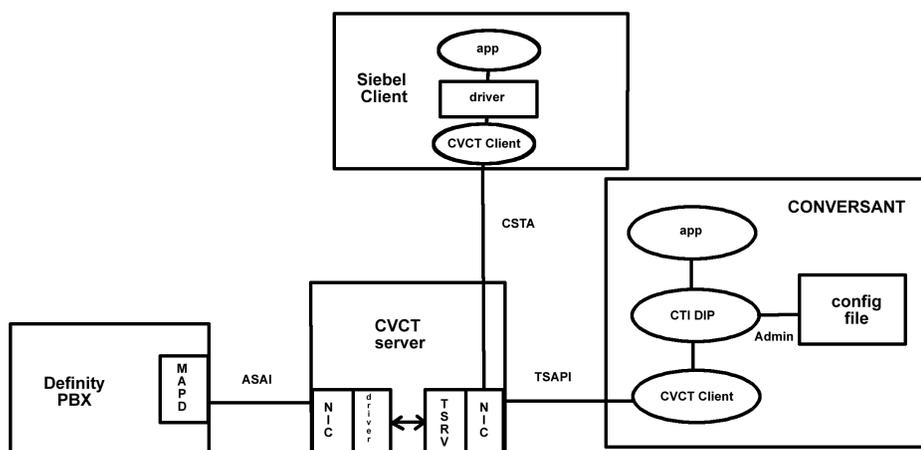
Principles of operation

CTI operation is shown schematically in [CTI connectivity](#) below.

An application on CONVERSANT uses the CTI DIP (administered via a configuration file) to interact with CVCT Client for UnixWare. The CVCT Client sends and receives TSAPI messages over a LAN to a network interface card (NIC) on the CVCT server. This same NIC can be used to communicate with a Siebel eBusiness application residing on a client that uses CVCT Client software and a special driver (CentreVu CT for Siebel Client).

The CVCT server utilizes a telephony server (TSRV) to route messages to the PBX with the aid of a special driver and another NIC. Messages at the Definity PBX are handled by its MAPD circuit card.

CTI connectivity



Functionality

Function calls to the CTI DIP are designed to do the following on the active ports of a CONVERSANT:

- Put calls on hold
- Retrieve calls from hold
- Disconnect calls
- Transfer two calls
- Conference two calls
- Report information to the application about a call (port extension, call ID, ANI, Called Number)
- Report the state of each call to the application
- Provide answer notification to a voice script

- Dial a call
- Get and report private data (UUI and UCID information) to the application

Call Center features

Like ASAI, the CTI provides capabilities for use in DEFINITY call center environments.

- Universal Call ID (UCID) — UCID provides a unique identifier (8-byte binary or 20-character ASCII) for every call in a DEFINITY call center customer environment. UCID allows for uniform data-tracking for all call-related data in a call center, regardless of the system. DEFINITY uses the ASAI interface to pass the UCID to the CVCT Server.
- User-to-User Information element (UUI) — UUI allows the customer to specify additional information to be passed in external function arguments, which can contain up to 96 bytes of information (compare with the 32 bytes available using ASAI).

Chapter 2: Setup and administration

Before CTI can be used, the following must be done:

1. [CTI DIP setup](#)
2. [Telephony setup](#)
3. [CONVERSANT and PBX administration](#)
4. [CVCT administration](#)
5. [Setup and administration of a Siebel Client](#)

CTI DIP setup

Setup of the CTI DIP has the following steps:

1. [Installing the CentreVu CT Client](#)
2. [Installing the CTI DIP](#)
3. [Set Up the Configuration File](#)
4. [Verify external function files](#)

Installing the CentreVu CT Client

To learn how to install the CentreVu CT Client for UnixWare, see Chapter 4, "Installing CVCT TSAPI Client Software," in *CentreVu Computer Telephony Release 9.1, Version 1, Telephony Services and CallVisor PC Installation*.

Installing the CTI DIP

The CTI DIP is installed as the optional feature package **ctidip**. If the package has already been installed, there will be a **/vs/data/cti** directory. If the directory does not exist, install the package as follows:

1. Insert the diskette into the diskette drive.
2. At the UNIX prompt, type **pkgadd -d diskette1** and press **ENTER**.

The screen displays the default, which is to install everything.

3. Press **ENTER** to accept the default.

The installation continues.

4. Remove the diskette from the diskette drive.

For more information about installing packages, see Chapter 7 of *CONVERSANT System Version 8.0 UCS 1000 Maintenance*, 585-313-150.

Set Up the Configuration File

The configuration file, **dialer_cfg.dat**, is in the **/vs/data/cti** directory. It consists of eight required fields which must be in the order listed in the following table. Field values should be on separate lines that do not include comments.

CTI DIP configuration file fields

Field	Description
Debug Flag	This Boolean flag indicates that the CTI DIP is to provide message tracing in addition to error logging. If this setting is turned off, only error logging will be provided. It is recommended that this field be set to off while the CTI DIP is handling a high volume of traffic. 0 denotes the OFF setting, while 1 denotes the ON setting. The default is 0, OFF.
System Status Timer Interval	The value in this field determines how frequently (in seconds) the CTI DIP sends a heartbeat to the switch. This is vital to check if the CVCT server is still in service. Note, however, that system performance may be affected if this value is set to less than 10 seconds. The default value is 10 seconds.
Error Log File	This field contains the path to the log file where the CTI DIP will record error and debugging messages. The default value for the error log file is /vs/data/cti/cdial.log .

CTI DIP configuration file fields

Field	Description
Login Name	<p>This field contains the CVCT login id for the CONVERSANT user application. The CTI DIP uses this login, along with the password to access to the CVCT server.</p> <p>The initial value for the login id is <login name>.</p>
Password	<p>This field contains the CVCT password for the CONVERSANT user application. The CTI DIP uses this login and password to access to the CVCT server.</p> <p>The initial value for the password is <password>.</p>
Advertised Telephony Service for CVCT server #1	<p>This field contains a string that identifies Telephony server #1 and the service on that telephony server that the CTI DIP is instructed to use. The Telephony server name or IP address must be in the /usr/lib/tslibrc file.</p> <p>The initial value for this field is <Tserver1>.</p>

CTI DIP configuration file fields

Field	Description
Advertised Telephony Service for CVCT server #2	This field contains a string that identifies Telephony server #2 and the service on that telephony server that the CTI DIP is instructed to use. The Telephony server name or IP address must be in the /usr/lib/tslibrc file. The initial value for this field is <Tserver2>.
Advertised Telephony Service for CVCT server #3	This field contains a string that identifies Telephony Server #3 and the service on that telephony server that the CTI DIP is instructed to use. The Telephony server name or IP address must be in the /usr/lib/tslibrc file. The initial value for this field is <Tserver3>.

 **CAUTION:**

There can be no empty lines in the file (note that the “#” symbol may be used to turn unused lines into comments).

The following figure shows a sample configuration file.

Sample CTI DIP configuration file

```
#####
# Dialer Client Configuration File
#####
#
# must be located in "/vs/data/cti/dialer_cfg.dat"
#
#####
# Debug Flag, off = 0, on = 1
#
0
#####
# System Status Timer interval (seconds)
#
10
#####
# Error Log File
#
/vs/data/cti/cdial.log
#####
# CVCT server user login name for application
#
joeblow
#####
# CVCT server user password for application
#
125p96
#####
# Advertised telephony service for Tserver #1
#
LUCENT#G3_SWITCH#CSTA#IVRINT15
#####
# Advertised telephony service for Tserver #2
#
LUCENT#G3_SWITCH#CSTA#WILBUR
#####
# Advertised telephony service for Tserver #3
#
LUCENT#G3_SWITCH#CSTA#ROSINANTE
```

Verify external function files

Verify that the following external function files are in the **/vs/bin/ag/lib** directory:

- **ctiCallInfo.t**
- **ctiCallState.t**
- **ctiConfer.t**
- **ctiDial.t**
- **ctiDiscon.t**
- **ctiHold.t**

Setup and administration

- **ctiNotify.t**
- **ctiPrivData.t**
- **ctiTransfer.t**
- **ctiRetrieve.t**

If any of the files are missing, then reinstall the CTI DIP (see [Installing the CTI DIP](#) on page 7).

Telephony setup

You must make digital and/or analog telephony connections to the PBX. They are the same as for ASAI.

Analog tip/ring connections

You must install analog tip/ring circuit cards in the CONVERSANT system with each line connected separately. For information on tip/ring circuit card capabilities for ASAI, see Chapter 2, "Hardware," of *CONVERSANT System Version 8.0 System Description*, 585-313-219.

Note:

Analog connections are not supported on the UCS 1000.

Line side digital connections

Digital connections between the CONVERSANT system and the line side of the switch are made with either line side FXS T1 or line side FXS E1.

This type of connection allows the use of various switch features that are not compatible with an ordinary T1 trunk connected between the CONVERSANT system and switch. These features include call transfer and call progress tone (CPT) detection, either in conjunction with Full CCA or where an E1/T1 interface circuit card is used for communications.

CONVERSANT and PBX administration

You must administer the CONVERSANT and the DEFINITY PBX as follows:

1. Administer the MAPD in DLG mode. See *CallVisor PC LAN over MAPD Installation, Administration, and Maintenance*, 555-230-113.
2. Install and administer the CONVERSANT Ethernet circuit card. See the "Installing or Replacing Circuit Cards" chapter in the maintenance book for your platform. Station administration is the same for either.

Note:

The UCS 1000 has dual, integrated LAN connections on the CPU Complex. Refer to "Installing Base System Software" in *CONVERSANT System Version 8.0 UCS 1000 Maintenance*, 585-313-150, for information on administer the LAN on the UCS 1000.

3. Administer the tip/ring, E1, or T1 telephone lines on the PBX.

Once you have completed these steps, assign telephone numbers (or extensions) to the ports of the CONVERSANT that will use CTI. See Chapter 3, "Voice System Administration," of the *CONVERSANT System Version 8.0 Administration*, 585-313-510, for information on how to assign these services.

**Ethernet
administration**

You must administer the DEFINITY for ASAI connectivity between the DEFINITY and the CVCT server.

Use the DEFINITY `add station` or `change station` commands. See the following table for the appropriate values.

Administration field name and requirements

Field Name	Required or Optional?	Valid Value
Extension:	Required	Whatever fits your dial plan
Type: ¹	Required	ADJLK
Port:	Required	The port that connects to the ASAI line
Name:	Optional	Can be used as an identifier
XID: ¹	Required	y
Fixed TEI: ¹	Required	y
TEI: ¹	Required	3
MIM Support: ¹	Required	n
CRV Length: ²	Required	2

1. To match the built-in administration of the Ethernet circuit cards with the ASAI software, this field must have the value indicated.

2. In some previous releases, the CRV Length field required a value of 1. You must use the value 2 for CONVERSANT System Version 8.0.

Administering the tip/ring, LSE1, and LST1 lines

See Chapter 5, “Switch Interface Administration,” of *CONVERSANT System Version 8.0 Administration*, 585-313-510, to administer tip/ring, LSE1, and LST1 lines. To be certain that you select options that are compatible with the DEFINITY G3 switch (only certain versions), select **DEFINITY** in the PBX defaults screen.

Note:

The UCS 1000 does not support analog connections.

Note:

DEFINITY is the default setting. Consequently, if you are administering a new system, the lines are configured correctly by default.

Place all the lines into service. To do so, see the information on changing maintenance state in Chapter 3, “Voice System Administration,” of *CONVERSANT System Version 8.0 Administration*, 585-313-510.

 **CAUTION:**

Do not proceed until the lines are in the inserv state.

CVCT administration

You must administer the CONVERSANT and the CVCT servers to make the CONVERSANT a CVCT client.

CVCT administration of CONVERSANT

On the CONVERSANT, you must modify the **tslibrc** file located under **/usr/lib/** to include the IP addresses of the CVCT servers.

See the sample file in [Sample tslibrc file](#) on page 15.

Note:

Unlike the **dialer_cfg.dat** file, the **tslibrc** file may contain blank lines.

Sample tslibrc file

```
# /usr/lib/tslibrc

# Blank lines and text beginning with "#" are ignored.

# This is a list of one or more hosts offering Telephony
Services via TCP/IP.
# Either domain name or IP address may be used; default port
number is 450
# The form is: host_name [port_number] For example:

ivrnt15.dr.avaya.com 450 # domain name style
135.9.84.33 450 # dotted-decimal IP address

wilbur.dr.avaya.com 450
135.9.84.195 450

rosinante.dr.avaya.com 450
135.9.84.194 450

# replace the above samples with the actual Telephony Server
address(es) .

# Individual users may override the contents of this file by
setting
# the TSLIBRC environment variable to the pathname of an
alternate
# server list (in this same format) or by creating a ".tslibrc"
file
```

Administration of the CVCT servers

Do the following steps on each CVCT server:

1. Create a new user name for the CONVERSANT.
2. Register the user.
3. Create a device for each port of the CONVERSANT that will use CTI.

See *CentreVu Computer Telephony Release 9.1, Version 1, Telephony Services and CallVisor PC Installation* for details on how to administer the CVCT server.

Setup and administration of a Siebel Client

If a Siebel client will be used, see *CentreVu® CT Integration for SIEBEL® eBusiness Applications (Release 1.1, Version 1.2.205) Client Installation Guide*. That guide will provide information and references regarding the related setup and administration of both the client and the CVCT server.

Chapter 3: Application development

This chapter describes and demonstrates the use of CTI external functions.

Note:

For information about using CTI with Siebel eBusiness applications, see *CONVERSANT Version 8.0 Application Development with Siebel eBusiness*, 585-310-784.

External functions

You must invoke CTI external functions to either change the state of a call or to move information about a call.

There are ten external functions available to Script Builder and Voice@Work:

- [ctiCallInfo](#)
- [ctiCallState](#)
- [ctiConfer](#)
- [ctiDial](#)
- [ctiDiscon](#)
- [ctiHold](#)
- [ctiNotify](#)
- [ctiPrivData](#)
- [ctiRetrieve](#)
- [ctiTransfer](#)

These functions are described in detail on the following pages.

ctiCallInfo

Description

The **ctiCallInfo** external function provides the call ID, ANI, called number, and CONVERSANT port extension associated with an active call at the CONVERSANT.

Output

call ID - Script variable where the call ID will be stored.

(Type: num)

ANI - Script variable where the ANI of the call will be stored.

(Type: char, Size: 16)

Called Number - Script variable where the Called Number or DNIS will be stored.

(Type: char, Size: 16)

Station Extension - Script variable where the CONVERSANT Port extension will be populated.

(Type: char, Size: 7)

skill - Script variable where the skill/split hunt-group number will be stored.

(Type: char, Size: 7)

Return values

The return code indicates whether the CTI DIP can find any call present at the CONVERSANT port.

If successful, the result is > 0.

On failure, the result is <=0.

Usage notes

The **ctiCallInfo** function is often the first external function that is called in a script. It identifies the call ID of the call that has reached the CONVERSANT. This is useful for any controlling function that might be used later in the script, such as placing the call on hold (**ctiHold**). It also identifies the number that was dialed by the caller. If the call was inbound from an ISDN trunk group, it also identifies the DNIS associated with the call. This feature is most useful in scripts that dynamically assign a CONVERSANT script on DNIS.

If there is more than one call present at a CONVERSANT port, **ctiCallInfo** reports the latest call. For example, if one call is on hold while another call is active, **ctiCallInfo** reports only on the most recent call to

arrive at the CONVERSANT port, regardless of whether this call is on hold or not.

Example

```
External Function
  Function Name: ctiCallInfo
  Use Arguments: cust_callid ani calledNum station_id
skill
```

ctiCallState

Description

ctiCallState provides the state of all the calls present at the CONVERSANT port extension.

Output

Call ID of Call #2 - Script variable where the call ID of call #2 will be populated.

(Type: num)

Call ID of Call #3 - Script variable where the call ID of call #2 will be populated.

(Type: num)

State of Call #1 - Script variable where the state of call #1 will be populated. See [States of calls](#)

(Type: num)

State of Call #2 - Script variable where the state of call #2 will be populated. See [States of calls](#)

(Type: num)

State of Call #3 - Script variable where the state of call #2 will be populated. See [States of calls](#)

(Type: num)

Return values

The return code indicates whether the CTI DIP can find a call present at the CONVERSANT port.

If successful, the result is the call ID of call #1.

On failure, the result is -1.

Usage notes

A CONVERSANT port can support up to 3 simultaneous calls. This external function can be used to determine the call ID and associated

state (ALERTING, HELD, ESTABLISHED) of the calls present at the port.
The states are represented by values:

States of calls

Value	State
0	None
1	Delivered
2	Established
3	Held
4	Conferenced
5	Transferred
6	Initiated
7	Originated

Note:

The ordering of the calls is determined by the arrival order.
Call #1 is most likely the first call received by the
CONVERSANT.

Example

```
External Function
  Function Name: ctiCallState
  Use Arguments: call2id call3id call1state call2state
call3state
  Return Field: retcode
```

ctiConfer

Description

ctiConfer requests that two calls present at a CONVERSANT port be conferenced together.

Input

Call ID of held call - Call ID of held call.

(Type: num)

Call ID of active call - Call ID of active call.

(Type: num)

Return values

The return code indicates whether the two calls were conferenced.

If successful, the result is >0.

On failure, the result is <=0.

Usage notes

ctiConfer requires one of the calls involved in the transfer be on hold at the CONVERSANT port prior to execution.

Example

```
External Function
Function Name: ctiConfer
Use Arguments: cust_callid interp_callid
Return Field:  retcode
```

ctiDial

Description

ctiDial requests a call be placed from the CONVERSANT port to a destination.

Input

Phone number - The destination number to be dialed.

(Type: char, Size: 64)

User-user-information - Up to 96 bytes of user-provided data.

(Type: char, Size: 96)

Return values

The return code indicates whether the call was successfully placed.

If successful, the result is >0.

On failure, the result is <=0.

Usage notes

There are no special provisions for this function at this time.

Example

```
External Function
Function Name: ctiDial
Use Arguments: "5552499" UUI
Return Field: retcode
```

ctiDiscon

Description

ctiDiscon requests a call be placed from the CONVERSANT port to disconnect a call.

Input

Call ID - The call ID to be disconnected.

(Type: num)

Return values

The return code indicates whether the call was successfully disconnected.

If successful, the result is >0.

On failure, the result is <=0.

Usage notes

ctiDiscon is best used in conjunction with the **ctiCallState** function to determine the state of a call before it is disconnected.

Also, the CONVERSANT port itself will not detect any dial tone on the line after the call is disconnected. If the script needs to terminate before the call is disconnected, it must explicitly do so after a successful return.

Example

```
External Function
  Function Name: ctiDiscon
  Use Arguments: call2id
  Return Field:  retcode
```

ctiHold

Description

ctiHold requests that a call that is active at the CONVERSANT port be placed on hold.

Input

Call ID - The ID of the call to be placed on hold.

(Type: num)

Output

Error Code - Script variable that is populated with an error code if the operation fails.

(Type: num)

Return values

The return code indicates whether the call was successfully placed on hold.

If successful, the result is >0.

On failure, the result is <=0.

Usage notes

ctiHold is best used in conjunction with the **ctiCallState** function to determine the state of a call before it is placed on hold.

If an error is encountered, the CTI DIP will populate the `Error Code` field. The value will be of type `CSTA_Universal_Failure_t`. Consult CentreVu CT documentation for more details about this error code.

Example

```
External Function
  Function Name: ctiHold
  Use Arguments: cust_callid error
  Return Field: retcode
```

ctiNotify

Description

ctiNotify provides answer notification to a voice script that has launched a call.

Input

None.

Return values

The return code indicates whether a tracked call has been answered.

If successful, the result is the call ID of the established call, which means that the tracked call is answered.

On failure, the result is -1, which means that the CTI DIP found no call at the CONVERSANT port to track.

Usage notes

ctiNotify is most useful in outbound calling when used in conjunction with **ctiDial**. The function is solely dependent on receiving answer supervision on a timely basis from the network. Therefore, if the call is sent over a non-ISDN trunk to a destination, the function may return several seconds after the call is actually connected.

When the **ctiNotify** request is made, a message is sent to the CTI DIP. The CTI DIP checks the status of the calls that are currently at the CONVERSANT port.

If a call is found to be either in the DELIVERED or ORIGINATED state, the CTI DIP:

- Tags this call to receive answer notification.
- Tracks the call that has been tagged.
- When the tracked call is answered, sends the call ID of the answered call to the script.
- If no call is currently in either the DELIVERED or ORIGINATED state, the CTI DIP returns a "-1" to **ctiNotify**. If **ctiNotify** receives a "-1," it tries up to three times to find a call at the CONVERSANT port that is in either the DELIVERED or ORIGINATED state. There is a 500-millisecond pause between attempts.

Example

```
External Function
Function Name: ctiNotify
Return Field:  interp_callid
```

ctiPrivData

Description

ctiPrivData requests that any private data associated with the call at the CONVERSANT port be provided. Currently this function supports User-to-User Information (UUI) and Universal Call ID (UCID).

Output

Private Data - A buffer that the CTI DIP will populate with private data associated with a call.

(Type: char, size: up to 96 characters)

Input

Type - A constant that represents the type of private data that is requested

(Type: num)

0 = UUI

1 = II DIGITS (not currently implemented)

2 = UCID

Call ID - The call ID of the current call at the CONVERSANT port.

(Type: num)

Vendor - The PBX vendor (for example, Lucent).

(Type: char, size: 32)

Return values

The return code indicates whether the CTI DIP successfully processed the message.

If successful, the result is 1.

On failure, the result is ≤ 0 , which indicates that no private data exists.

Usage notes

The information provided by this function is vendor specific. Currently, the only vendor private data that is implemented is per Lucent Technologies.

Universal Call ID (UCID) requires DEFINITY 6.3 or later and CentreVu CT 3.10 Version 2.0 or later.

Example

External Function

Function Name: ctiPrivData

Use Arguments: PDATA 0 CALLID "LUCENT"

Return Field: retcode

ctiRetrieve

Description

ctiRetrieve requests that a held call at the CONVERSANT port be retrieved.

Input

Call ID - Call ID of the held call

(Type: num)

Output

Error Code - Script variable where the error code from the CSTA_UNIVERSAL_FAILURE_CONF event will be populated (only if the operation fails)

(Type: num)

Return values

The return code indicates whether the call was successfully retrieved.

If successful, the result is > 0, which indicates that the CTI DIP received a CSTA_RETRIEVE_CALL_CONF event.

On failure, the result is <=0, which indicates that the call was not successfully retrieved.

Usage notes

This function is typically used only to recover from an error, for example, if the CONVERSANT dials a busy number and the script needs to reconnect to the held party to inform them of the busy party.

Example

```
External Function
  Function Name: ctiRetrieve
  Use Arguments: cust_callid error
  Return Field: retcode
```

ctiTransfer

Description

ctiTransfer requests that two calls present at a CONVERSANT port be connected.

Input

Call ID of held call - Call ID of held call

(Type: num)

Call ID of active call - Call ID of active call

(Type: num)

Return values

The return code indicates whether the transfer occurred.

If successful, the result is >0, which indicates that the CTI DIP received a `CSTA_TRANSFERRED_CALL_CONF` event.

On failure, the result is <=0, which indicates that the transfer failed to occur.

Usage notes

ctiTransfer requires that one of the calls involved in the transfer be on hold at the CONVERSANT port prior to the execution of this function.

Example

```
External Function
Function Name: ctiTransfer
Use Arguments: cust_callid  interp_callid
Return Field:  retcode
```

Sample application

The use of the CTI DIP will now be illustrated by a very simple, sample application, written in Script Builder. Comments are provided to identify what the application is doing.

```
start:
1. Answer Phone
2. External Function
   Function Name: ctiCallInfo
   Use Arguments: cust_callid ani calledNum station_id
skill
   Return Field: retcode

#=====
# IF no CTI info, application cannot service call
# then recall the error message in the log table
# and quit.
#=====

3. Evaluate
   If retcode <= 0
4. Set Field Value
   Field: szDescription = "cannot get info on
ctiCallInfo"
   Field: log_type = "CTICALLINFO_ERROR"
5. External Function
   Function Name: u_datetime
   Use Arguments: date time $UNIX_TIME
6. Modify Table
   Table Name: LOG Operation: Add
   Field: DATE = date
   Field: TIME = time
   Field: CHANNEL = $CHANNEL_NUMBER
   Field: DESCRIPTION = szDescription
   Field: ERRORCODE = log_type

7. Goto QUIT
   End Evaluate

#Answer Phone if getting CTI info...

#=====
#...Initial Customer Greeting
#=====

GREET_CUSTOMER:
8. Announce
   Speak Without Interrupt
   Text: "Welcome to CTI test Call Center "
   Text: "Please wait while we transfer to our agent "
#=====
```

Application development

```
# Hold the current call while waiting to transfer.
#=====

9. External Function
   Function Name: ctiHold
   Use Arguments: cust_callid error
   Return Field:  retcode
#=====
# If no CTI hold failed, then recall the error
# message in the log table
# and quit.
#=====
10. Evaluate
    If retcode  <= 0
11.   Set Field Value
       Field: szDescription = "cannot place call on ctiHold"
       Field: log_type = "CTIHOLD_ERROR"
12.   External Function
       Function Name: u_datetime
       Use Arguments: date time $UNIX_TIME
13.   Modify Table
       Table Name: LOG Operation: Add
       Field: DATE = date
       Field: TIME = time
       Field: CHANNEL = $CHANNEL_NUMBER
       Field: DESCRIPTION = szDescription
       Field: ERRORCODE = log_type

14.   Goto QUIT
       End Evaluate

#=====
# Set UII information
#=====

15. External Action: Concat5
    Destination:  UII
    String1:  "This is CTI UII Information."
    String2:  "Your account number is 23456."
    String3:  ""
    String4:  ""
    String5:  ""
    Max_Destination_Length:  255
    Return Field:  retcode
    End External Action

#=====
# Use ctiDial to pass UII information
#=====

16. External Function
    Function Name: ctiDial
    Use Arguments: "5552499"  UII
    Return Field:  retcode
17. Evaluate
```

```

If retcode <= 0
18.   Set Field Value
      Field: szDescription = "cannot place call on ctiDial"
      Field: log_type = "CTIDIAL_ERROR"
19.   External Function
      Function Name: u_datetime
      Use Arguments: date time $UNIX_TIME
20.   Modify Table
      Table Name: LOG Operation: Add
      Field: DATE = date
      Field: TIME = time
      Field: CHANNEL = $CHANNEL_NUMBER
      Field: DESCRIPTION = szDescription
      Field: ERRORCODE = log_type

21.   Goto QUIT
      End Evaluate

#=====
# Use ctiNotify to get the second callid
#=====

22.   External Function
      Function Name: ctiNotify
      Return Field: interp_callid

#=====
# Decide if the call has been delivered
# If not delivered or originated, then:
# (1) disconnect the second call,
# (2) retrieve the first call and try again
#=====

23.   Evaluate
      If interp_callid < 0
24.     Set Field Value
          Field: szDescription = "cannot get callid on
ctiNotify"
          Field: log_type = "CTINOTIFY_ERROR"
25.     External Function
          Function Name: u_datetime
          Use Arguments: date time $UNIX_TIME
26.     Modify Table
          Table Name: LOG Operation: Add
          Field: DATE = date
          Field: TIME = time
          Field: CHANNEL = $CHANNEL_NUMBER
          Field: DESCRIPTION = szDescription
          Field: ERRORCODE = log_type

#=====
# Use ctiCallState to get the second call id
#=====

27.   External Function

```

Application development

```
Function Name: ctiCallState
Use Arguments: call2id call3id call1state call2state
call3state
Return Field: retcode
28. Evaluate
    If retcode <= 0
29. Set Field Value
    Field: szDescription = "Cannot get call state info"
    Field: log_type = "CTICALLSTATE_ERROR"
30. External Function
    Function Name: u_datetime
    Use Arguments: date time $UNIX_TIME
31. Modify Table
    Table Name: LOG Operation: Add
    Field: DATE = date
    Field: TIME = time
    Field: CHANNEL = $CHANNEL_NUMBER
    Field: DESCRIPTION = szDescription
    Field: ERRORCODE = log_type

32. Goto QUIT
    End Evaluate

    #Disconnect the dialed call first

33. External Function
    Function Name: ctiDiscon
    Use Arguments: call2id
    Return Field: retcode
34. Evaluate
    If retcode <= 0
35. Set Field Value
    Field: szDescription = "Cannot disconnect the call"
    Field: log_type = "CTIDISCONN_ERROR"
36. External Function
    Function Name: u_datetime
    Use Arguments: date time $UNIX_TIME
37. Modify Table
    Table Name: LOG Operation: Add
    Field: DATE = date
    Field: TIME = time
    Field: CHANNEL = $CHANNEL_NUMBER
    Field: DESCRIPTION = szDescription
    Field: ERRORCODE = log_type

38. Goto QUIT
    End Evaluate

    #=====
    # Retrieve the first call
    #=====

39. External Function
    Function Name: ctiRetrieve
    Use Arguments: cust_callid error
```

```

Return Field:  retcode
40.  Evaluate
    If retcode  <= 0
41.      Set Field Value
          Field: szDescription = "cannot retrieve on
ctiretrieve"
          Field: log_type = "CTIRETRIEVE_ERROR"
42.      External Function
          Function Name: u_datetime
          Use Arguments: date  time  $UNIX_TIME
43.      Modify Table
          Table Name: LOG Operation: Add
          Field: DATE = date
          Field: TIME = time
          Field: CHANNEL = $CHANNEL_NUMBER
          Field: DESCRIPTION = szDescription
          Field: ERRORCODE = log_type
44.      Goto QUIT
    End Evaluate
45.      Announce
          Speak With Interrupt
          Text: "Sorry, all agents are busy now. "
          Text: "Please wait while we transfer to the next
available agent."

#=====
# Retrieve the first call as an active call
# Hold the first call again.
#=====

46.      External Function
          Function Name: ctiHold
          Use Arguments: cust_callid  error
          Return Field:  retcode
47.      Evaluate
    If retcode  <= 0
48.      Set Field Value
          Field: szDescription = "cannot place call on
ctiHold"
          Field: log_type = "CTIHOLD2_ERROR"
49.      External Function
          Function Name: u_datetime
          Use Arguments: date  time  $UNIX_TIME
50.      Modify Table
          Table Name: LOG Operation: Add
          Field: DATE = date
          Field: TIME = time
          Field: CHANNEL = $CHANNEL_NUMBER
          Field: DESCRIPTION = szDescription
          Field: ERRORCODE = log_type

51.      Goto QUIT
    End Evaluate
52.      External Function
          Function Name: ctiDial

```

Application development

```
        Use Arguments: "5552499"  UUI
        Return Field:  retcode
53.    Evaluate
      If retcode  <= 0
54.      Set Field Value
        Field: szDescription = "cannot place call on
ctiDial"
        Field: log_type = "CTIDIAL2_ERROR"
55.      External Function
        Function Name: u_datetime
        Use Arguments: date  time  $UNIX_TIME
56.      Modify Table
        Table Name: LOG Operation: Add
        Field: DATE = date
        Field: TIME = time
        Field: CHANNEL = $CHANNEL_NUMBER
        Field: DESCRIPTION = szDescription
        Field: ERRORCODE = log_type

57.      Goto QUIT
      End Evaluate
58.      External Function
        Function Name: sleep
        Use Arguments: 2

#=====
# Use ctiCallState to get second call id
#=====

59.      External Function
        Function Name: ctiCallState
        Use Arguments: interp_callid  call3id  call1state
call2state  call3state
        Return Field:  cust_callid
60.      Evaluate
      If retcode  <= 0
61.      Set Field Value
        Field: szDescription = "Cannot get call state info"
        Field: log_type = "CTICALLSTATE2_ERROR"
62.      External Function
        Function Name: u_datetime
        Use Arguments: date  time  $UNIX_TIME
63.      Modify Table
        Table Name: LOG Operation: Add
        Field: DATE = date
        Field: TIME = time
        Field: CHANNEL = $CHANNEL_NUMBER
        Field: DESCRIPTION = szDescription
        Field: ERRORCODE = log_type

64.      Goto QUIT
      End Evaluate

      End Evaluate
```

```

#=====
# Use ctiTransfer to merge the first and second calls
#=====

65. External Function
    Function Name: ctiTransfer
    Use Arguments: cust_callid  interp_callid
    Return Field:  retcode

66. Evaluate
    If retcode  <= 0

67. Set Field Value
    Field: szDescription = "cannot transfer on
ctiTransfer"
    Field: log_type = "CTITRANSFER_ERROR"

68. External Function
    Function Name: u_datetime
    Use Arguments: date  time  $UNIX_TIME

69. Modify Table
    Table Name: LOG Operation: Add
    Field: DATE = date
    Field: TIME = time
    Field: CHANNEL = $CHANNEL_NUMBER
    Field: DESCRIPTION = szDescription
    Field: ERRORCODE = log_type

70. Goto QUIT
    End Evaluate
QUIT:

#=====
# Use the ctiCallState to get the state of all
# active calls on the current CONVERSANT port
# If any active calls exist, then use ctiDiscon
# to disconnect the call
#=====

71. External Function
    Function Name: ctiCallState
    Use Arguments: CallID2  CallID3  State1  State2  State3
    Return Field:  CallID1

72. Evaluate
    If CallID1  != 0

73. External Function
    Function Name: ctiDiscon
    Use Arguments: CallID1
    Return Field:  RC
    End Evaluate

74. Evaluate
    If CallID2  != 0

75. External Function
    Function Name: ctiDiscon
    Use Arguments: CallID2
    Return Field:  RC
    End Evaluate

76. Evaluate

```

Application development

```
      If CallID3    != 0
77.      External Function
          Function Name: ctiDiscon
          Use Arguments: CallID3
          Return Field:  RC
      End Evaluate
78. Disconnect
79. Quit
```

Glossary

Adjunct/Switch Application Interface (ASAI)	An optional feature that provides an ISDN-based interface with Avaya PBXs and adjunct processors.
CentreVu Computer Telephony (CVCT)	Also <i>CentreVu CT</i> . Avaya's implementation of Computer Telephony Integration with TSAPI.
Computer Telephony Integration (CTI)	The generation, reception, and management of telephone calls with a computer. This functionality within a CONVERSANT enables communication with a CentreVu Computer Telephony server, using the CTI DIP.
Computer Telephony Integration Data Interface Process (CTI DIP)	Software within a CONVERSANT that lets applications communicate with a CVCT server.
data interface process (DIP)	A software process that communicates with interactive voice response (IVR) applications.
DEFINITY	A brand of PBX produced by Avaya.
Local Area Network (LAN)	A data communications network in a limited geographical area. The LAN provides communications between computers and peripherals.
Multi-Application Platform for DEFINITY (MAPD)	A DEFINITY circuit card that handles access to LANs and adjuncts.
Network Interface Card (NIC)	A circuit card that enables communication between a LAN and a workstation.
Private Branch Exchange (PBX)	A private switching system, either manual or automatic, that usually serves an organization such as a business or government agency. It is usually located on the customer premises.
Telephony Server (TSRV)	Also: "T-server". A computer that connects a LAN with a PBX or other telephony device.

Telephony Server Application Programming Interface (TSAPI)

Telephony Server Application Programming Interface (TSAPI) An application programming interface that can monitor and control many aspects of computerized telephony.

Universal Call ID (UCID) UCID provides a unique identifier (8-byte binary or 20-character ASCII) for every call in a DEFINITY call center customer environment. UCID allows for uniform data-tracking for all call-related data in a call center, regardless of the system. DEFINITY uses the ASAI interface to pass the UCID to the CVCT Server.

User-to-User Information element (UUI) UUI allows the customer to specify additional information to be passed in external function arguments, which can contain up to 96 bytes of information (compare with the 32 bytes available using ASAI).

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Document No.: Replace variable w/ doc #

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