AT&T

Conversant VIS
Call Classification Analysis

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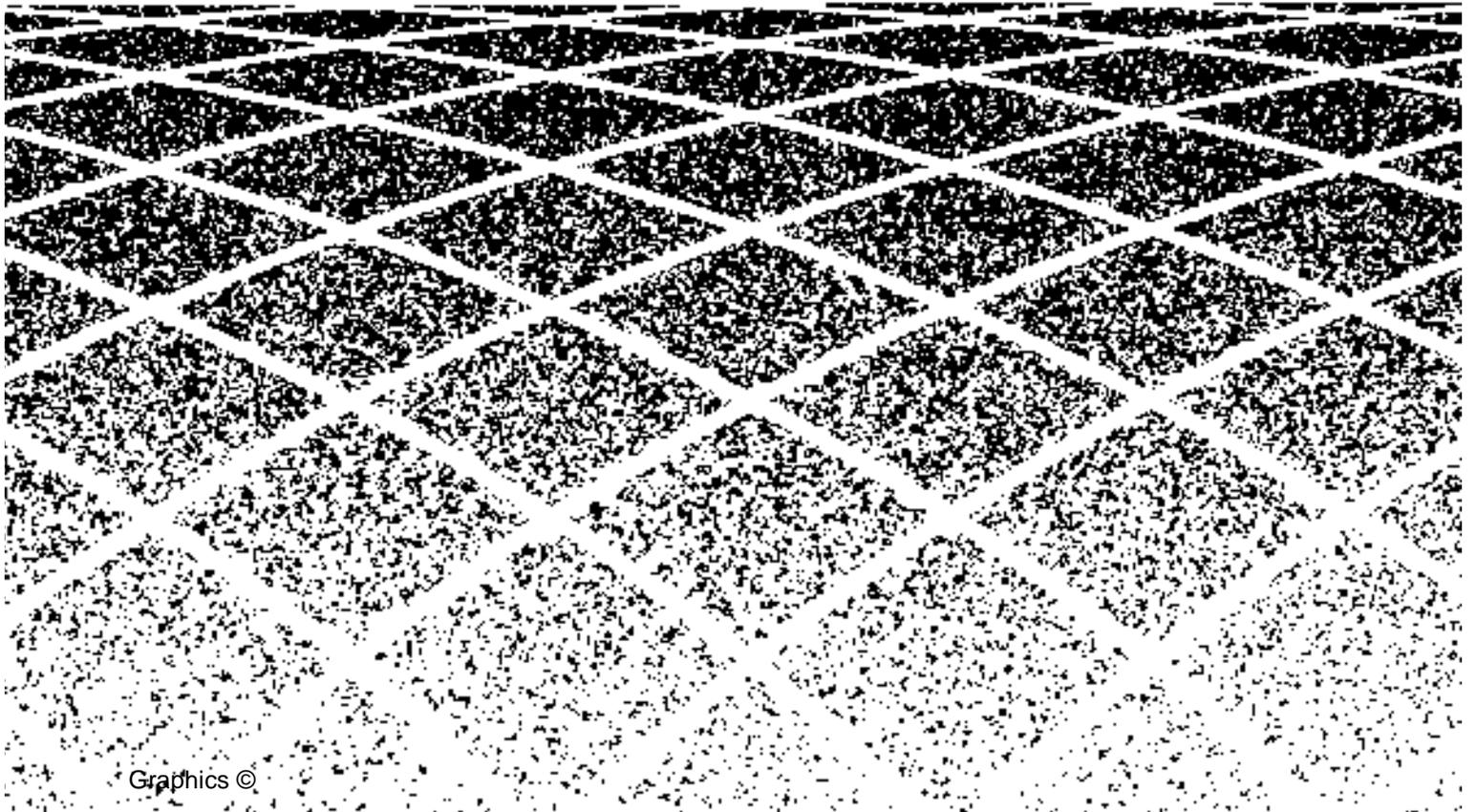
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Overview of Full CCA

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Overview Full Call Classification Analysis

Call classification allows application developers to classify the disposition of originated and transferred calls. The possible dispositions include busy, answered, ring-no answer, and reorder, among others. There are several types of call classification analysis. A basic level of call classification, referred to as "Intelligent," is available with the Version 4.0 software. Intelligent call classification is needed to make call transfers and call bridges, as described in the discussion of Transfer Call, Call Bridge, and Make Call in Chapter 4, "Defining the Transaction," of CONVERSANT VIS Script Builder , 585-350-704. An enhanced level of call classification, called Full CCA, is available as an optional package and is described in this book.

⇒ NOTE:
The term CCA, when used alone in this book or in on-line screens, should be taken to mean Full CCA.

Intelligent call classification on Tip/Ring (TR) cards recognizes the following precise call progress tones:

- Busy
- Fast busy (re-order)
- Ring-no answer

Intelligent call classification on T1 or PRI lines also provides answer supervision. PRI lines may return additional information (refer to Chapter 5, "Using Full CCA Script Instructions"). Intelligent call classification provides a rudimentary voice energy detector for identifying answered calls.

> **NOTE:**
> Intelligent call classification is not available on Line Side T1 (LST1) because there is no answer supervision or tone detection.

> **NOTE:**
> Refer to the LATA Switching Systems Generic Requirements Section 6.4, Issue 2, July 1987 (document number TR-TSY-000506) for detailed information on the standard signals which CCA detects. In addition, refer to the LATA Switching Systems Generic Requirements Feature Specific Document (FSD-20-06-0500) in this book for information on Special Information Tones. You may order sections of the LATA Switching Systems Generic Requirements book through Bell Core by calling (908) 699-5800.

Full CCA provides the following advantages over intelligent call classification:

- Better answer detection using a more sophisticated voice energy detector

- Detection of busy and audible ring tones generated by older or faulty equipment that does not conform to the precise tone plan standards

- Detection of Special Information Tones (SITs) that indicate why an originated call failed. This feature allows for reliable call classification over the long-distance network.

- Detection of modem tones

- Call classification on T1, LST1, and PRI lines equivalent to that available on TR lines

Applications that were created with earlier versions of VIS software and that use Intelligent CCA are compatible with the VIS Version 4.0 software. The only exception to this is applications generated using Script Builder that rely on the $TRANSFER_RESULT field (see the discussion of upgrading applications for Full_CCA Transfer in the CONVERSANT VIS Script Builder , 585-350-704, Chapter 4, "Defining the Transaction").

Intelligent call classification or Full CCA can be activated when a call is dialed out during a flash transfer, a call bridge (internal transfer), or a make call (call originate), as defined in Script Builder.

CCA Limitations

There are three caveats of which you should be aware before using CCA:

■ The CCA feature is designed to be used in North America. It is not guaranteed to work in other parts of the world.

■ Even in North America, CCA should not be expected to be 100% accurate. Various conditions, such as noisy lines and substandard central office call progress tones, can cause a small percentage of errors.

Testing experience indicates that this percentage is less than 2%, excluding voice energy detection errors. When voice energy detection is used, the expected percentage of errors is approximately 4%.

However, answer can be detected with nearly 100% accuracy when answer supervision is used on T1 and PRI lines.

■ Private Branch Exchange (PBX) tones may not be recognized using the CCA feature. Consequently, you should not attempt to use the CCA feature to determine call dispositions on the PBX.

Full CCA runs on the signal processor (SP) card. A single SP card can handle six concurrent instances of CCA. If the script tries to use Full CCA and finds that the maximum CCA instances are running, an error code is returned to the script.

Installing Full CCA Software

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What's this Chapter

> **NOTE:**
> This chapter is a supplement to the CONVERSANT VIS Version 4.0 Software Installation , 585-350-111.

This chapter contains information on installing the Full Call Classification Analysis (CCA) software.

Full CCA Hardware

A signal processor (SP) card must be installed in the Voice Information System (VIS) before the Full CCA software is installed. The SP must be dedicated to call classification and connected to the TDM bus. One SP can classify six channels simultaneously. However, one SP can handle up to twenty-four channels, depending on the application. Refer to the Voice Processing Hardware Installation book specific to your platform for information on installing an SP card.

Installing Full CCA Software

If you are installing the Full CCA feature package as part of the initial software load, refer to Chapter 3, "Installing the Optional Feature Software," of CONVERSANT VIS Version 4.0 Software Installation , 585-350-111.

If you are installing the Full CCA feature package on a running system, follow the procedures to stop the VIS, then load the software.

⇒ NOTE:
The Full CCA package takes approximately 450,000 bytes in both the root and /usr directories. Make sure there is enough space before beginning the installation.

Stopping the VIS

1. From the CONVERSANT VIS Version 4.0 screen, highlight "Voice System Administration," then press (ENTER).

2. From the Voice System Administration screen, highlight "Configuration Management," then press (ENTER).

3. From the Configuration Management screen, highlight "System Control," then press (ENTER).

4. From the System Control screen, highlight "Stop Voice System," then press (ENTER).

5. Press (CANCEL) until you are out of the menu screens and the system prompt is displayed.

Loading the Full CCA Software

1. Insert the first disk of the Full CCA feature package set into the floppy disk drive.

2. At the prompt, type installpkg , then press (ENTER).

3. Follow the instructions displayed on the screen as to when to insert the subsequent disks.

4. When the installation is complete, you may either restart the VIS, or continue with other tasks.

⇒ NOTE:
Full CCA functionality must be assigned to the SP dedicated to call classification. Refer to Chapter 3, "Administering Full CCA".

Removing the Full CCA Software

Before you remove the Full CCA software, make sure that any cards with Full CCA functionality assigned have been changed to another protocol (refer to Chapter 3, "Configuration Management," of CONVERSANT VIS Version 4.0 Operations , 585-350-703).

1. Stop the VIS using the procedure given earlier in this chapter.

   At the prompt, type removepkg , then press (ENTER).

2. The numbered list of installed packages is displayed.

3. Type the number associated with the Full CCA software package, then press (ENTER).

4. When the prompt is returned, the Full CCA software package has been removed.

Administering Full CCA

<div style="text-align: right; font-size: 4em;">3</div>

What's this Chapter

> **NOTE:**
> This chapter is a supplement to the CONVERSANT VIS Version 4.0 Operations, 585-350-703.

This chapter contains procedures for the following:

- Assigning Full Call Classification Analysis (CCA) functionality to a signal processor (SP) card

- Displaying the Call Classification Report

Assigning Full CCA Functionality to an SP card

Make sure the SP card is in the Manoos state before beginning this procedure. For more information on changing the state of a card, refer to Chapter 3, "Configuration Management," of CONVERSANT VIS Version 4.0 Operations , 585-350-703.

1. From the Voice System Administration screen, highlight "Configuration Management," then press [ENTER].

2. From the Configuration Management screen, highlight "Voice Equipment," then press [ENTER] to open the Voice Equipment screen.

3. Press [CHG-KEYS] to display the alternate set of function keys.

   Use the [ASSIGN] key to assign functions to SP cards as well as to change the current functions assigned to SP cards.

4. From the Voice Equipment screen, press [ASSIGN] to display the Assign form screen.

5. At the Assign screen, highlight "Functions to SP Cards," then press [ENTER] to display the Assign Functions to SP Cards form screen (Figure 3-1).

Assign Functions to SP Cards

Function : CCA

Card Number(s) : 1

| HELP | CHOICES | SAVE | PREV-FRM | NEXT-FRM | CANCEL | CMD-MENU | CHG-KEYS |

Figure 3-1.   **Assign Functions to SP Cards**

Assignments made in the Assign Functions to SP Cards screen overwrite any other assignments currently in effect on the specified cards. Take care when making assignments and re-assignments.

6. In the "Function" field, enter "CCA" to assign Full CCA functionality to an SP.

7. In the "Card No(s)" field, specify the SP card to which you wish to assign Full CCA functionality.

   Figure 3-1 has "CCA" assigned to card "1."

8. Press ⌊SAVE⌋ to save the values you entered.

9. Press ⌊CANCEL⌋ twice to return the Voice Equipment screen.

Displaying the Call Classification Report

From the Voice System Administration screen, highlight "Reports Administration," then press ⌊ENTER⌋ to open the Reports Administration screen. From the Reports Administration screen, highlight "System Reports," then press ENTER to open the System Reports screen (Figure 3-2).

```
╔═══════════════════════════════════╗
║        System Reports             ║
╠═══════════════════════════════════╣
║                                   ║
║  Call Classification Report   ▓   ║
║  Call Data Detail Report      ▓   ║
║  Call Data Summary Report     ▓   ║
║  Event Log Report             ▓   ║
║  Traffic Report                   ║
║                                   ║
╚═══════════════════════════════════╝
```

| HELP | | | PREV-FRM | NEXT-FRM | CANCEL | CMD-MENU | CHG-KEYS |

Figure 3-2.   System Reports Screen

The System Reports screen lists five types of reports for call data information:

- Call Classification Report

- Call Data Detail Report

- Call Data Summary Report

- Message Log Report

- Traffic Report

The Call Classification Report is the only report discussed in this chapter. For information on the other reports or for the generic Call Classification Report, refer to Chapter 4, "Reports Administration," of CONVERSANT VIS Version 4.0 Operations , 585-350-703.

Call Classification Report

In this chapter and in the Call Classification Report, the term attempt refers to any Transfer call attempt, Call Bridge attempt, or Make Call attempt, as they are defined using Script Builder.

The Call Classification Report screen provides information for each extension or number dialed, the total number of origination and transfer attempts, and the number of attempt outcomes for a specified date. Data is presented in individual columns with headings. Information is maintained in the VIS for approximately 365 days.

From the System Reports screen, highlight "Call Classification Report," then press ENTER to open the Call Classification Report screen.   The Call Classification Report screen contains no report information until you press DISPLAY. Figure 3-3 shows an example of the Call Classification Report screen with report data information displayed.

Call Classification Report								
			Attempts					
Dialed Number	Total	Failed	Unclass	Class	Answer	Busy	Ring	Other
6148653219	2807	0	2807	0	0	0	0	0
30259234434	2100	0	302	1798	1613	100	80	5
Total Percent	4907	0	3109	1798	1613	100	80	5

OPTIONS	DISPLAY				PRINT	FRM-MGMT	CHG-KEYS

Figure 3-3. Call Classification Report Screen

The report displayed is based on the last set of options saved to the VIS. Refer to the information under "Call Classification Options" later in this chapter for more information about how to establish option settings.

Information displayed in the Call Classification Report screen includes:

■ Dialed Number — Phone number from the attempt. Phone numbers have a 16-digit maximum; however, only 12 digits are displayed in the report. Longer numbers are truncated and indicated by an asterisk (*).

■ Total — Total attempts to the "Dialed Number" . This number is the sum of Failed, Unclass, and Class attempts.

■ Failed — Number of attempts that failed. Corresponds to call dispositions equal to "1," "2," "3," "4," "E," or "p" (refer to "Full CCA Call Dispositions" later in this chapter for more information).

■ Unclass — Counts the number of blind attempts. Corresponds to call dispositions equal to "X."

■ Class — Number of classified transfer attempts.   These are either Full CCA or Intelligent attempts. Corresponds to call dispositions not equal to "1," "2," "3," "4," "E," "p," or "X."

■ Answer — Number of classified attempts that resulted in an answer detect signal. Corresponds to call dispositions equal to "A."

■ Busy — Number of classified attempts that resulted in a busy signal. Corresponds to call dispositions equal to "B."

- Ring — Number of classified attempts that resulted in ring no answer. Corresponds to call dispositions equal to "N."

- Other — Counts all classified attempts that resulted in other than an answer detect signal, busy signal, or ring no answer. Corresponds to call dispositions "F," "H," "T," or a recognized SIT.

For information on the Call Dispositions, refer to the list at the end of this chapter.

Call Classification Options

With the (OPTIONS) key in the Call Classification Report screen, you can specify the date(s) for which you want call classification report information. Press (OPTIONS) to open the Options for Call Classification Report screen (Figure 3-4).

```
┌─────────────────────────────────────────────────────────┐
│                                                         │
│    Options for Call Classification Report               │
│                                                         │
├─────────────────────────────────────────────────────────┤
│                                                         │
│                                                         │
│                    Today:  ──                           │
│                     OR                                  │
│    Start Date (mm/dd/yy):  07 / 01 / 92                  │
│     End Date (mm/dd/yy):   07 / 31 / 92                  │
│                                                         │
└─────────────────────────────────────────────────────────┘
```

Enter 'yes' to obtain today's data.   Otherwise, enter 'no'.

HELP	CHOICES	SAVE	PREV-FRM	NEXT-FRM	CANCEL	CMD-MENU	CHG-KEYS

Figure 3-4.   Options for Call Classification Report Screen

Today

The "Today" field allows you to specify if you wish to obtain a report for the current day. Enter "y" for yes, "n" for no, or press (CHOICES) to make a selection from a menu screen.

If you have answered the "Today" field with "yes", press (SAVE) to close the screen and save the information to memory. If you answer "no" for this field, you must move to the next field and specify start and end dates.

Start and End Dates

Start and end dates limit the call classification report to a range of days. Figure 3-4 uses the start date of "07/01/91" and an end date of "07/31/91." This means that the VIS will provide call classifications report information on calls made in the month of July, 1991. You can specify a range up to the last 365 days, including the current date. If only one date is specified, either start or end date, you will receive a report only for that day.

To enter start and end dates, use the format "mm/dd/yy" for "month," "day," and "year." If the year (yy) is not specified, the current year is used.

The end date must be greater than or equal to the start date (that is, you can not specify an end date of 04/10/90 and have a start date of 04/11/92). In addition, future start and end dates are invalid and will be rejected by the VIS.

After you have completed the Options for Call Classification Report screen, press ⌂SAVE⌂ to close the form and save the information to memory. The VIS returns to the previously displayed call classification report. You must press ⌂DISPLAY⌂ to see the new call classification report specified by your options.

Call Classification Print Option

To obtain a complete print out of the call classification report, use the ⌂PRINT⌂ function key. From the Call Classification Report screen, press ⌂PRINT⌂. The version that is printed is based on the current set of options specified for call classification. Make sure the VIS has all the proper printer connections. For information on establishing printer operations, refer to Appendix A, "FACE Features," of CONVERSANT VIS Version 4.0 Operations , 585-350-703.

Database Information for ORACLE Users

To get more detailed information on call attempts (blind, Intelligent, and Full CCA), you may query the CCA tables in the ORACLE database. You also may use ORACLE tools to generate custom report (refer to Appendix C, "Database Environment," of CONVERSANT VIS Version 4.0 Operations , 585-350-703, for a list of orderable ORACLE documentation). Figure 3-5 and Figure 3-6 show the schema for the CCA and CCASUM tables:

START_TIME (date)	PHONE_NUM char(16)	RESULT_CODE char(1)

Figure 3-5.   CCA Table Schema

START_TIME (date)	END_TIME (date)	PHONE_NUM char(16)	SUM_TOT (number)	RESULT_CODE char(1)

Figure 3-6.   CCASUM Table Schema

The CCA table keeps the CCA records for the current date.   A call classification record is created each time an attempt is made to originate or transfer a call using Script Builder actions. Every night, the information in this table is summarized and stored in the CCASUM table. The information is deleted from the CCA table after seven days. That is, records in the CCA table older than seven days are removed. Refer to Appendix D, "Information for Advanced Users," of CONVERSANT VIS Version 4.0 Operations , 585-350-703, for information on changing the length of time records are stored.

The **result_code** field stores the call disposition as a printable ASCII value. These values are the same call dispositions returned to the Script Builder-level code. However, for compatibility with older scripts, "E" is accepted still and counted as a failed attempt and the new codes ("1", "2", "3", and "4") are the new representations of "E" (refer to "Full CCA Call Dispositions" next in this chapter for more information).

Full CCA Call Dispositions

The following list gives the call dispositions available at the Script Builder level:

- "X"   Blind transfer success
- "A"   Answer detected
- "B"   Busy
- "N"   Ring, no answer
- "F"   Fast busy
- "H"   High and dry
- "T"   Modem tone
- "v"   ISDN vacant code
- "1"   Internal error
- "2"   Timeout
- "3"   Invalid dial string
- "4"   Resource busy
- "R"   Reorder, intraLATA (Special Information Tone [SIT])
- "r"   Reorder, interLATA (SIT)
- "K"   No circuit, intraLATA (SIT)
- "k"   No circuit, interLATA (SIT)
- "V"   Vacant code (SIT)
- "I"   Intercept (SIT)
- "O"   Ineffective other (SIT)
- "d"   Domestic other (SIT)
- "o"   International other (SIT)
- "c"   International no circuit (SIT)
- "f"   Foreign fail (SIT)
- "U"   Unknown Special Information Tone (SIT).

⇒ NOTE:
Modem tone detection is listed for TR and Line Side T1 (LST1) calls only. With T1 and PRI lines, answer supervision normally is detected first, precluding modem tone detection. For these lines, a call disposition of "A" is returned.

Using Full CCA with Script Builder

4

What's this Chapter

> ⇒ **NOTE:**
> This chapter is a supplement to the CONVERSANT VIS Script Builder, 585-350-704.

Full Call Classification Analysis (CCA) can be activated when a call is dialed out during a flash transfer, a call bridge (internal transfer), or a make call (call originate). These translate to three actions available in Script Builder. Information for using Full CCA with the actions Transfer Call, Call Bridge, and Make Call is included in Chapter 4, "Defining the Transaction," of CONVERSANT VIS Script Builder, 585-350-704.

Using Full CCA Script Instructions

5

What's this Chapter

> **NOTE:**
> This chapter is a supplement to the CONVERSANT VIS Version 4.0 Application Development , 585-350-208. For more information on script instructions, refer to Chapter 4, "Script Instructions," and Appendix A, "Summary of Script Instructions."

This chapter contains the following information:

- ■ **setcca** script instruction for Full CCA

- ■ Changes to the existing **tic** script instruction for Full CCA

For information about invoking Full CCA through the CONVERSANT Script Builder, refer to Chapter 4, "Defining the Transaction," of CONVERSANT VIS Script Builder , 585-350-704.

> **NOTE:**
> Using these instructions will not populate the database used in generating the Call Classification Report. To use this report, you must use the Script Builder actions Make Call, Transfer Call, and Call Bridge.

Setting Full CCA Parameters Using 'setcca'

The **setcca** script instruction allows application developers to set Full CCA parameters for at the script level. The parameters that can be set are:

- **mode**   Either Intelligent or Full CCA.

- **nrings**   Number of rings to wait for answer. This parameter can be between 1-10 rings.

- **ansdet**   Answer detection. 0 = no, 1 = yes. The default is -1 (yes for TR and LST1 lines, no for T1 and PRI). By default, answer detection is turned on for TR and LST1 lines and off for T1 and PRI lines because TR and LST1 lines do not have answer supervision while T1 and PRI lines do. Answer supervision is more reliable in detecting answer than voice energy detection.

If you use Full CCA as the mode, do not use the **tic'W'** or **tic'w'** instruction.

The instruction format is:

   setcca(type.mode, type.nrings, type.ansdet)

In the following example, the call classification parameters are set to Full CCA, ten rings, and answer detection is enabled for TR and LST1 lines and disabled for T1 and PRI lines.

   setcca(im.1,im.10,im.-1)

For a complete example using both the setcca and tic instructions, refer to the end of this chapter.

Changes to 'tic' Instruction for Full CCA

When an outbound application uses Full CCA, be aware that if Full CCA determines that the outbound call cannot be completed because of a ring-no answer, the transaction should hang up the call using a tic'h' as soon as possible. If the call is not hung up immediately, the called party could answer (their phone still is ringing). The application will be unaware of this and will hang up on the called party as soon as the application completes. This not only annoys the called party but also could result in the calling party being billed for a failed call.

Full CCA Call Dispositions

Table 5-1 lists the possible return values for the tic('D'), and tic('O') instructions when Full_CCA is turned on via the setcca instruction. Note that the set of possible return values depends on the type of channel, T1, PRI, TR, LST1.

Table 5-1.   Call Dispositions for tic('D') and tic('O')

Call Dispositions for tic('D') and tic('O')

Meaning	TSM Level		Available On:			
	r.0	r.1	TR	T1	PRI	LST1
Answer Detected (e.g. Voice Energy Detected)	'A'	0	•	*	*	•
Answer Supervision from Switch	'P'	0		•	•	
Busy	'B'	0	•	•	•	•
Fast Busy	'F'	0	•	•	•	•
Ring No Answer	'N'	0	•	•	•	•
High and Dry	'H'	0	•	•	•	•
Modem Tone	'T'	0	•	•	•	•
Audible Ringing	'R'	0	•	•	•	•
Dialtone Detected†	'D'	0†	•	•	•	•
Stutter Dialtone Detected	'S'	0	•	•	•	•
ISDN Vacant Code	'v'	†			•	
Provisioning or Protocol Error	'p'	†			•	
Internal hardware or software error or Dialing error	-1	0	•	•	•	•
Timeout (no call progress tones detected within the timeout period)	-2	0	•	•	•	•
Illegal Dial String passed	-3	0†	•	•	•	•
CCA resource used up	-4	0	•	•	•	•
Reorder, intraLATA SIT	's'	'R'	•	•	•	•
Reorder, intraLATA SIT	's'	'r'	•	•	•	•
No ckt, intraLATA SIT	's'	'K'	•	•	•	•
No ckt, intraLATA SIT	's'	'k'	•	•	•	•
Vacant code SIT	's'	'V'	•	•	•	•
Intercept SIT	's'	'I'	•	•	•	•
Ineffective other SIT	's'	'O'	•	•	•	•

Meaning	TSM Level		Available On:			
	r.0	r.1	TR	T1	PRI	LST1
Domestic other SIT	's'	'd'	•	•	•	•
International other SIT	's'	'o'	•	•	•	•
International no ckt SIT	's'	'c'	•	•	•	•
Foreign fail SIT	's'	'f'	•	•	•	•
Unknown SIT	's'	'U'	•	•	•	•

* By default, answer detection is disabled on T1 and PRI channels. However it can be enabled using the setcca script instruction.

† The disposition of calls on PRI channels is based not only on Full CCA but also on information provided by the switch. When this particular disposition is provided by the switch, more specific information (the ISDN cause value) is available in register 1 (r.1). Refer to Table 5-2 for the list of ISDN Cause Values. If this disposition is provided by Full CCA, register 1 will always contain zero.

‡ For touch tone, any string with a character other than ,2,3,4,5,6,7, 8,9,0,#,*,(,), or - is invalid. For dial pulse, any string with a character other than 1,2,3,4, 5,6,7,8,9,0,(,), or - is invalid.

You should be aware of the following issues when using these dispositions:

■ Fast busy ('F') represents any temporary error condition not explicitly listed; for example, congestion or circuit busy, as well as fast busy. A blind success (0) means that the call was dialed successfully but that the system does not know if the call was answered.

■ Stutter dialtone ('S') is generated by some switches in response to a flash. When this disposition is returned to the script, it means that dialing can proceed. For these switches, any other call disposition when the switch is flashing indicates an error.

■ A timeout (-2) means any type of timeout including a timeout on a tic instruction or on the classifier (the SP).

■ When V, P, or F is returned for outdials on PRI channels, more information (the ISDN cause values) on the call dispositions for PRI channels is available in Register 1 (r.1). Table 5-2 lists the ISDN cause values.

■ When Register r.0 is set to 's', the Special Information Tone (SIT) is in r.1. The SIT types are listed in Table 5-3.

5-5

ISDN Cause Values

Table 5-2 lists the ISDN Cause Values returned in r.1 for a given call disposition returned in r.0 of the tic instruction when an outdial is For the call dispositions not listed in Table 5-2, no additional information is available in r.1.

Table 5-2.   ISDN Cause Values

Call Disposition Value (r.0)	ISDN Value(r.1)	Meaning
Vacant Code ('v')	1	Unassigned number
Provisioning or Protocol Error('p')	22	Number changed
	6	Channel Unacceptable
	18	No user response
	30	Status enquiry
	31	Normal uns[ecified
	50	Facility not subscribed
	52	Outgoing calls barred
	54	Incoming calls barred
	58	Bearer not available
	63	Service not available
	65	Bearer not implemented
	66	Channel not implemented
	69	Facility not implemented
	81	Invalid call reference
	82	Nonexistent channel
	88	Incompatible destination
	96	Info element missing
	97	Nonexistent message type
	98	Incompatible message
	100	Invalid info element
	102	Recovery on timer
	127	Internetworking unspecified
Disconnection Detected ('D')	16	Normal clearing
Busy ('B')	17	User busy

Call Disposition Value (r.0)	ISDN Value(r.1)	Meaning
	2	No route
	21	Call rejected
	29	Facility rejected
	34	No circuit
Fast Busy ('F')	38	Network out-of-order
	41	Temporary failure
	42	Switching congestion
	43	Access info discarded
	44	Circuit not available
	45	Pre-empted
Illegal Dial String (-3)	28	Invalid number

You should be aware of the following issues when using these ISDN values:

■ Disconnection Detected ('D') indicates disconnection. It is comparable to dial tone detection on analog lines.

■ Busy ('B') is comparable to busy, although there may be no audible busy tone.

■ Fast Busy ('F') is comparable to fast busy, although there may be no audible fast busy tone.

Special Information Tones

The special information tones (SITs) provided in Table 5-3 are returned to the
script in Register r.1.

Table 5-3.   Special Information Tones

TIC Return	
Value (r.1)	**Disposition**
R	Reorder, intraLATA
r	Reorder, interLATA
K	No circuit, intraLATA
k	No circuit, interLATA
V	Vacant code
I	Intercept
O	Ineffective other
D	Domestic other
o	International other
c	International no circuit
f	International foreign failure
U	Unknown SIT type

Script Excerpt Using setcca and tic for Full CCA

The following example is an excerpt from a script showing how a developer might use the **setcca** and **tic** instructions in an application.

```
setcca(im.1,im.10,im.-1)
nextcall:
dbase( .... )    /* get number to dial from DIP */

tic('O', r.3)    /* call number in register 3 */

jmp(r.0 == im.'N', noAns)    /* no answer after 10 rings */
jmp(r.0 == im.'B', busy)
jmp(r.0 == im.'F', retry)
jmp(r.0 == im.'A', answer)
jmp(r.0 == im.'s', SIT)
jmp(r.0 == im.-4, noResource)

noAns:
tic('h')    /* put line on-hook to stop ringing */

busy:
dbase ( .... )    /* report result to controlling DIP */
goto (nextcall)

SIT:
jmp(r.1 == im.'R', retry)
jmp(r.1 == im.'r', retry)
jmp(r.1 == im.'K', retry)
jmp(r.1 == im.'k', retry)
dbase ( .... )    /* report result to controlling DIP */

answer:
talk( "Hello, you may be the winner of a free trip to Hawaii")
dbase ( .... )    /* report result to controlling DIP */
goto (nextcall)
```

Full CCA Summary Script Instructions

6

Summary of Commands

This chapter contains a summary of the scripts instruction specific to the Full CCA feature.

SETCCA

Synopsis

setcca — Sets type of CCA at script level

Command Format

setcca(*type.mode, type.nrings, type.ansdet*)

Description

The **setcca** script instruction allows application developers to set Full CCA parameters for at the script level. The parameters that can be set are:

- **mode**—Either Intelligent or Full CCA.

- **nrings**—Number of rings to wait for answer. This parameter can be between 1-10 rings.

- **ansdet**—Answer detection. 0 = no, 1 = yes. The default is -1 (yes for TR and LST1 lines, no for T1 and PRI). By default, answer detection is turned on for TR and LST1 lines and off for T1 and PRI lines because TR and LST1 lines do not have answer supervision while T1 and PRI lines do. Answer supervision is more reliable in detecting answer than voice energy detection.

⇒ NOTE:
If you use Full CCA as the mode, do not use the **tic'W'** or **tic'w'** instruction.

The instruction format is:

setcca(*type.mode, type.nrings, type.ansdet*)

Example

In the following example, the call classification parameters are set to Full CCA, ten rings, and answer detection is enabled for TR and LST1 lines and disabled for T1 and PRI lines.

```
setcca(im.1,im.10,im.-1)
```

The following example is an excerpt from a script showing how a developer might use the **setcca** and **tic** instructions in a Full CCA application.

```
setcca(im.1,im.10,im.-1)
nextcall:
dbase( .... )    /* get number to dial from DIP */

tic('O', r.3)   /* call number in register 3 */

jmp(r.0 == im.'N', noAns)    /* no answer after 10 rings */
jmp(r.0 == im.'B', busy)
jmp(r.0 == im.'F', retry)
jmp(r.0 == im.'A', answer)
jmp(r.0 == im.'s', SIT)
jmp(r.0 == im.-4, noResource)

noAns:
tic('h')    /* put line on-hook to stop ringing */

busy:
dbase ( .... )   /* report result to controlling DIP */
goto (nextcall)

SIT:
jmp(r.1 == im.'R', retry)
jmp(r.1 == im.'r', retry)
jmp(r.1 == im.'K', retry)
jmp(r.1 == im.'k', retry)
dbase ( .... )    /* report result to controlling DIP */

answer:
talk( "Hello, you may be the winner of a free trip to Hawaii")
dbase ( .... )    /* report result to controlling DIP */
goto (nextcall)
```

6-3

TIC

Synopsis

tic—controls a telephone channel

Command Format

tic

Description

⟹ **NOTE:**
The following information supplements information in the Appendix A, "Summary of Script Instructions," of CONVERSANT VIS Version 4.0 Application Development , 585-350-208 . For a full explanation of the tic instruction, refer to that book.

When an outbound application uses Full CCA, be aware that if Full CCA determines that the outbound call cannot be completed because of a ring-no answer, the transaction should hang up the call using tic'h' as soon as possible. If the call is not hung up immediately, the called party could answer (their phone still is ringing). The application will be unaware of this and will hang up on the called party as soon as the application completes. This not only annoys the called party but also could result in the calling party being billed for a failed call.

Full CCA Call Dispositions

Table 6-1 lists the possible return values for the tic('D'), and tic('O') instructions when Full_CCA is turned on via the setcca instruction. Note that the set of possible return values depends on the type of channel, T1, PRI, TR, LST1.

Table 6-**1.   Call Dispositions for tic('D') and tic('O')**

Call Dispositions for tic('D') and tic('O')

Meaning	TSM Level		Available On:			
	r.0	r.1	TR	T1	PRI	LST1
Answer Detected (e.g. Voice Energy Detected)	'A'	0	•	*	*	•
Answer Supervision from Switch	'P'	0		•	•	
Busy	'B'	0	•	•	•	•
Fast Busy	'F'	0	•	•	•	•
Ring No Answer	'N'	0	•	•	•	•
High and Dry	'H'	0	•	•	•	•
Modem Tone	'T'	0	•	•	•	•
Audible Ringing	'R'	0	•	•	•	•
Dialtone Detected†	'D'	0†	•	•	•	•
Stutter Dialtone Detected	'S'	0	•	•	•	•
ISDN Vacant Code	'v'	†			•	
Provisioning or Protocol Error	'p'	†			•	
Internal hardware or software error or Dialing error	-1	0	•	•	•	•
Timeout (no call progress tones detected within the timeout period)	-2	0	•	•	•	•
Illegal Dial String passed	-3	0†	•	•	•	•
CCA resource used up	-4	0	•	•	•	•
Reorder, intraLATA SIT	's'	'R'	•	•	•	•
Reorder, intraLATA SIT	's'	'r'	•	•	•	•
No ckt, intraLATA SIT	's'	'K'	•	•	•	•
No ckt, intraLATA SIT	's'	'k'	•	•	•	•
Vacant code SIT	's'	'V'	•	•	•	•
Intercept SIT	's'	'I'	•	•	•	•
Ineffective other SIT	's'	'O'	•	•	•	•

Meaning	TSM Level		Available On:			
	r.0	r.1	TR	T1	PRI	LST1
Domestic other SIT	's'	'd'	•	•	•	•
International other SIT	's'	'o'	•	•	•	•
International no ckt SIT	's'	'c'	•	•	•	•
Foreign fail SIT	's'	'f'	•	•	•	•
Unknown SIT	's'	'U'	•	•	•	•

* By default, answer detection is disabled on T1 and PRI channels. However it can be enabled using the setcca script instruction.

† The disposition of calls on PRI channels is based not only on Full CCA but also on information provided by the switch. When this particular disposition is provided by the switch, more specific information (the ISDN cause value) is available in register 1 (r.1). Refer to Table 6-2 for the list of ISDN Cause Values. If this disposition is provided by Full CCA, register 1 will always contain zero.

‡ For touch tone, any string with a character other than ,2,3,4,5,6,7, 8,9,0,#,*,(,) or - is invalid. For dial pulse, any string with a character other than 1,2,3,4, 5,6,7,8,9,0,(,) or - is invalid.

You should be aware of the following issues when using these dispositions:

■ Fast busy ('F') represents any temporary error condition not explicitly listed; for example, congestion or circuit busy, as well as fast busy. A blind success (0) means that the call was dialed successfully but that the system does not know if the call was answered.

■ Stutter dialtone ('S') is generated by some switches in response to a flash. When this disposition is returned to the script, it means that dialing can proceed. For these switches, any other call disposition when the switch is flashing indicates an error.

■ A timeout (-2) means any type of timeout including a timeout on a tic instruction or on the classifier (the SP).

■ When V, P, or F is returned for outdials on PRI channels, more information (the ISDN cause values) on the call dispositions for PRI channels is available in Register 1 (r.1). Table 6-2 lists the ISDN cause values.

■ When Register r.0 is set to 's', the Special Information Tone (SIT) is in r.1. The SIT types are listed in Table 6-3.

ISDN Cause Values

Table 6-2 lists the ISDN Cause Values returned in r.1 for a given call disposition returned in r.0 of the tic instruction when an outdial is For the call dispositions not listed in Table 6-2, no additional information is available in r.1.

Table 6-2.   ISDN Cause Values

Call Disposition Value (r.0)	ISDN Value(r.1)	Meaning
Vacant Code ('v')	1	Unassigned number
Provisioning or Protocol Error('p')	22	Number changed
	6	Channel Unacceptable
	18	No user response
	30	Status enquiry
	31	Normal uns[ecified
	50	Facility not subscribed
	52	Outgoing calls barred
	54	Incoming calls barred
	58	Bearer not available
	63	Service not available
	65	Bearer not implemented
	66	Channel not implemented
	69	Facility not implemented
	81	Invalid call reference
	82	Nonexistent channel
	88	Incompatible destination
	96	Info element missing
	97	Nonexistent message type
	98	Incompatible message
	100	Invalid info element
	102	Recovery on timer
	127	Internetworking unspecified
Disconnection Detected ('D')	16	Normal clearing
Busy ('B')	17	User busy

Call Disposition Value (r.0)	ISDN Value(r.1)	Meaning
	2	No route
	21	Call rejected
	29	Facility rejected
	34	No circuit
Fast Busy ('F')	38	Network out-of-order
	41	Temporary failure
	42	Switching congestion
	43	Access info discarded
	44	Circuit not available
	45	Pre-empted
Illegal Dial String (-3)	28	Invalid number

You should be aware of the following issues when using these ISDN values:

■ Disconnection Detected ('D') indicates disconnection. It is comparable to dial tone detection on analog lines.

■ Busy ('B') is comparable to busy, although there may be no audible busy tone.

■ Fast Busy ('F') is comparable to fast busy, although there may be no audible fast busy tone.

Special Information Tones

The special information tones (SITs) provided in Table 6-3 are returned to the script in Register r.1.

Table 6-3.   Special Information Tones

Value (r.1)	Disposition
R	Reorder, intraLATA
r	Reorder, interLATA
K	No circuit, intraLATA
k	No circuit, interLATA
V	Vacant code
I	Intercept
O	Ineffective other
D	Domestic other
o	International other
c	International no circuit
f	International foreign failure
U	Unknown SIT type

Example

The script excerpt shown on earlier in this chapter includes examples of the tic instruction as used with Full CCA.