



Audio Conferencing API for Linux and Windows Operating Systems

Library Reference

February 2005



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Contents

	Revision History	5
	About This Publication	7
	Purpose	7
	Intended Audience	7
	How to Use This Publication	7
	Related Information	8
1	Function Summary by Category	9
1.1	Auxiliary Functions	9
1.2	Conference Management Functions	9
1.3	Configuration Functions	10
1.4	Device Management Functions	10
2	Function Information	11
2.1	Function Syntax Conventions	11
	dcb_addtoconf() – add one conferee to an existing conference	12
	dcb_close() – close a conference device	17
	dcb_CreateBridge() – establish a conference bridge	19
	dcb_delconf() – delete a previously established conference	24
	dcb_DeleteAllConferences() – delete all established conferences	27
	dcb_DeleteBridge() – delete a conference bridge	30
	dcb_dsprescount() – retrieve the available conferencing resource count	35
	dcb_estconf() – establish a conference	38
	dcb_evtstatus() – get or set the status of a process-wide event	43
	dcb_GetAtiBitsEx() – get active talkers for all conferences on a DSP	47
	dcb_getbrdparm() – retrieve a conference board parameter value	50
	dcb_getcde() – retrieve the attributes of a conferee	53
	dcb_getcnflist() – retrieve a conferee list	57
	dcb_getdigitmsk() – retrieve the digit mask	61
	dcb_gettalkers() – get active talkers and party attributes for a specific conference	65
	dcb_monconf() – add a monitor to a conference	69
	dcb_open() – open a conferencing device	73
	dcb_remfromconf() – remove a conferee from a conference	75
	dcb_setbrdparm() – set conference board device parameters	80
	dcb_setcde() – change the attributes of a conferee	83
	dcb_setdigitmsk() – enable specific digit detection	87
	dcb_unmonconf() – remove a monitor from a conference	92
3	Events	97
4	Data Structures	99
	DCB_CT – conference active talker indicator	100
	DCB_DIGITS – DTMF event format	101

	MS_CDT – conference descriptor element	102
	MS_VOL – volume control	105
	TS_BRIDGECDT – conference bridge descriptor element	106
5	Error Codes	107
	Index	113

Revision History

This revision history summarizes the changes made in each published version of this document.

Document No.	Publication Date	Description of Revisions
05-1843-003	February 2005	dcb_GetAtiBitsEx() and dcb_gettalkers() functions: Described the functions and the active talker feature more accurately (PTR 34210). dcb_getbrdparm() and dcb_setbrdparm() functions: Described the active talker parameters more accurately (PTR 34210), including stating that by default it is enabled for DM3 architecture boards, removing the MSG_ALGORITHM parameter (PTR 34382), which does not apply to DM3, and clarifying the MSG_ACTTALKERNOTIFYINTERVAL parameter, providing default value, units, etc. Also, clarified the MSG_TONECLAMP parameter (PTR 34672). dcb_CreateBridge(), dcb_dsprecount(), and dcb_estconf() functions: . Added details on maximum conference size, maximum number of conference resources, and conference bridging and clarified descriptions. dcb_remfromconf() function: Added note to cdt parameter that the party attributes are ignored. MS_CDT data structure: Added details and clarified description of structure and attributes. Added note that MSPA_PARTYTONECLAMP attribute is used to enable tone clamping on a per-party basis. Added note on using MSPA_MODEXMITONLY to add a music resource to a conference in a background music application, such as a dating chat line application where two callers talk while music plays in the background.
05-1843-002	August 2004	Global changes: Removed references to operating system <code>errno</code> global variable and <code>errno.h</code> from example code and include files lists (PTR 28014). Error Codes chapter: For <code>EDT_SYSTEM</code>, corrected error code description to say “operating system error.” Added <code>E_MSSYSTEM</code> to list of codes. MS_CDT data structure: Use echo cancellation on analog lines, especially with Coach/Pupil (PTR 32072). Enable echo cancellation using dcb_estconf() or dcb_addtoconf(); you cannot use dcb_setcde() to enable or disable echo cancellation (PTR 29542). dcb_setcde() function: Cannot use dcb_setcde() to enable or disable echo cancellation (PTR 29542). dcb_estconf() function: Maximum value for <code>numpty</code> is 24. (PTR 31432)
05-1843-001	September 2002	Initial version of document. Much of the information contained in this document was previously published in the <i>Audio Conferencing Software Reference for Linux</i>, document number 05-0510-004 and the <i>Dialogic Audio Conferencing Software Reference for Windows</i>, document number 05-0512-002.



About This Publication

The following topics provide information about this publication:

- [Purpose](#)
- [Intended Audience](#)
- [How to Use This Publication](#)
- [Related Information](#)

Purpose

This publication provides a reference to all functions, parameters and data structures in the audio conferencing library. These functions and parameters are used to build audio conferencing applications.

This publication is a companion document to the *Audio Conferencing API Programming Guide*, the *Standard Runtime Library API Programming Guide* and the *Standard Runtime Library API Library Reference*.

Intended Audience

This information is intended for:

- Distributors
- System Integrators
- Toolkit Developers
- Independent Software Vendors (ISVs)
- Value Added Resellers (VARs)
- Original Equipment Manufacturers (OEMs)

How to Use This Publication

This document assumes that you are familiar with the Linux* or Windows* operating system and the C programming language.

The information in this publication is organized as follows:

- [Chapter 1, “Function Summary by Category”](#) introduces the various categories of audio conferencing API functions and provides a brief description of each function.

- [Chapter 2, “Function Information”](#) provides an alphabetical reference to all audio conferencing API functions.
- [Chapter 3, “Events”](#) includes an alphabetical reference to events that may be returned by the audio conferencing library.
- [Chapter 4, “Data Structures”](#) provides an alphabetical reference to all data structures used by the audio conferencing library.
- [Chapter 5, “Error Codes”](#) presents a listing of error codes that may be returned by the audio conferencing library.

Related Information

See the following documents and Web sites for more information:

- *Audio Conferencing API Programming Guide*
- *Standard Runtime Library API Library Reference*
- *Standard Runtime Library API Programming Guide*
- *Digital Network Interface Software Reference*
- *MSI/SC Software Reference*
- *Intel ®NetStructure™ on DM3™ Architecture Configuration Guide*
- *System Release Guide*
- *System Release Update*
- <http://developer.intel.com/design/telecom/support/> (for technical support)
- <http://www.intel.com/network/csp/> (for product information)

The audio conferencing library functions provide the necessary building blocks to create conferencing applications with Intel® NetStructure™ on DM3™ architecture boards. These functions can be divided into the following categories:

- [Auxiliary Functions](#) 9
- [Conference Management Functions](#) 9
- [Configuration Functions](#) 10
- [Device Management Functions](#) 10

1.1 Auxiliary Functions

The following functions add flexibility while using the active talker feature and allow your application to get/set the status of audio conferencing API events:

dcb_evtstatus()

gets or sets the status of a process-wide event, not a specific device handle

dcb_GetAtiBitsEx()

gets active talkers for all conferences on a DSP

dcb_gettalkers()

gets active talkers and party attributes for a specific conference

1.2 Conference Management Functions

The following functions are used to manage all conference activities:

dcb_addtoconf()

adds one conferee to an existing conference

dcb_CreateBridge()

creates a conference bridge

dcb_delconf()

deletes an individual conference

dcb_DeleteAllConferences()

deletes all established conferences

dcb_DeleteBridge()

deletes a conference bridge

dcb_estconf()

establishes a conference

dcb_getcde()

retrieves the attributes of a conference (conference descriptor element)

dcb_getcnflist()

gets a list of conferees in a conference

dcb_monconf()

adds a monitor to a conference

dcb_remfromconf()

removes a conferee from a conference

dcb_setcde()

sets the attributes of a conferee

dcb_unmonconf()

removes the monitor from a conference

1.3 Configuration Functions

These functions set the conference board or digital signal processor (DSP) device parameters, check the status of the conference board or DSP device parameter settings, and retrieve or set specific information about DSPs or conferences. The following configuration functions exist in the audio conferencing library:

dcb_dsprescount()

retrieves the free conferencing resource count

dcb_getbrdparm()

gets conference board device parameters

dcb_getdigitmsk()

reads the digit event message mask

dcb_setbrdparm()

changes conference board device parameters

dcb_setdigitmsk()

sets the digit event message mask

1.4 Device Management Functions

These functions are used to open and close conference devices. A conference device can be a board or an individual DSP on a board. Before using any audio conferencing library functions, a conference device must be opened. Each time a device is successfully opened using **dcb_open()**, the function returns a unique device handle.

dcb_open()

opens a conference device

dcb_close()

closes a conference device

This chapter provides an alphabetical reference to the functions in the audio conferencing API.

2.1 Function Syntax Conventions

The audio conferencing functions use the following syntax:

```
int dcb_function(devh, parameter1, ...parameterN)
```

where:

`int`

refers to the data type integer

`dcb_function`

represents the function name. All conferencing functions begin with “dcb”

`devh`

represents the device handle, which is a numerical reference to a conference device. A device handle is obtained when a conference device is opened, it is used for all operations on that device.

`parameter1`

represents the first parameter

`parameterN`

represents the last parameter

dcb_addtoconf()

Name: int dcb_addtoconf(devh, confid, cdt)

Inputs:

int devh	• valid DSP device handle
int confid	• conference identifier
MS_CDT *cdt	• pointer to conference descriptor element

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The **dcb_addtoconf()** function adds one conferee to an existing conference.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	specifies the conference to which the conferee will be added
cdt	points to an MS_CDT data structure that defines the attributes of the added conferee

- Notes:**
1. Only one conferee can be added at a time using this function.
 2. Invoking this function uses one conferencing resource each time a conferee is successfully added to a conference.

When a conferee is added to a conference, the TDM bus time slot number to listen to is returned in the `chan_lts` field of the `MS_CDT` data structure. The `chan_attr` field in the `MS_CDT` structure is redefined in the *msilib.h* file as follows:

```
#define  chan_lts      chan_attr
```

The `chan_lts` value must be used by the application to listen to the conferenced signal.

■ Cautions

This function fails when:

- The device handle specified is invalid.
- Too many parties are specified for a single conference.
- The conference identifier is invalid.
- Conference resources are not available on the DSP.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES      2

main()
{
    int  dspdevh;
    int  tsdevh1, tsdevh2, tsdevh3;
    MS_CDT  cdt[NUM_PARTIES];
    int  confid;
    SC_TSINFO tsinfo;
    long  scts;

    /* Conference board DSP device descriptor */
    /* Time slot device descriptor */
    /* Conference descriptor table */
    /* Conference identifier */
    /* Time slot information structure */
    /* TDM bus time slot */

    /* Open conference board 1, DSP 1 device */
    if ((dspdevh = dcb_open("dcbB1D1",0)) == -1) {
        printf( "Cannot open dcbB1D1: system error/n");
        exit(1);
    }

    /* Assume conference board is connected to a DTI via TDM bus. */

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf( "Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Fill in the time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tarrayp = &scts;

    /* Get the TDM bus transmit time slot of tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1) {
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }
}
```

```
/* Set up CDT structure */
cdt[0].chan_num = (int)scts;          /* TDM bus transmit time slot.... */
cdt[0].chan_sel = MSPN_TS;           /* ...returned from dt_getxmitslot() */
cdt[0].chan_attr = MSPA_NULL;        /* Conferee has no special attributes */

/* Open DTI board 1, time slot 2 */
if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
    printf("Cannot open dtiB1T2: system error/n");
    exit(1);
}

/* Get the TDM bus transmit time slot of tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* TDM bus time slot to be conferenced */
cdt[1].chan_num = (int)scts;          /* TDM bus time slot returned... */
cdt[1].chan_sel = MSPN_TS;           /* ...from dt_getxmitslot() */
cdt[1].chan_attr = MSPA_NULL;        /*Conferee has no special attributes*/

/* Establish a 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Open DTI board 1, time slot 3 */
if ((tsdevh3 = dt_open("dtiB1T3",0)) == -1) {
    printf("Cannot open dtiB1T3: system error/n");
    exit(1);
}

/* Do a listen for tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Fill in the time slot information structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;

/* Get the TDM bus transmit time slot of tsdevh3 */
if (dt_getxmitslot(tsdevh3, &tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Add another conferee to conference */
cdt[0].chan_num = (int)scts;          /* scts is the time slot... */
cdt[0].chan_sel = MSPN_TS;           /* ...returned from getxmitslot() */
cdt[0].chan_attr = MSPA_COACH;
```

```

if (dcb_addtoconf(dspdevh, confid, &cdt) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}
else
    printf("Party added to conference\n");

/* Do a listen for tsdevh3 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh3, &tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Continue processing */

/* Unlisten the time slots */
if (dt_unlisten(tsdevh1) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

if (dt_unlisten(tsdevh3) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Delete the conference */
if (dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

if (dt_close(tsdevh1) == -1) {
    printf("Error closing tsdevh1\n");
    exit(1);
}

if (dt_close(tsdevh2) == -1) {
    printf("Error closing tsdevh2\n");
    exit(1);
}

if (dt_close(tsdevh3) == -1) {
    printf("Error closing tsdevh3\n");
    exit(1);
}

if (dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D1: system error/n");
    exit(1);
}
}

```

■ See Also

- [dcb_delconf\(\)](#)

dcb_addtoconf() — add one conferee to an existing conference



- [dcb_DeleteAllConferences\(\)](#)
- [dcb_estconf\(\)](#)
- [dcb_remfromconf\(\)](#)

`dcb_close()`

Name: `int dcb_close(devh)`

Inputs: `int devh` • valid board or DSP device handle

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Device Management

Mode: synchronous

Platform: DM3

■ Description

The `dcb_close()` function closes the conference device previously opened by `dcb_open()`. The devices are either conference boards or individual DSPs on the conference board. The `dcb_close()` function releases the device handle. Refer to the *Audio Conferencing API Programming Guide* for complete information about device names.

Parameter	Description
<code>devh</code>	specifies the valid device handle obtained when the board or DSP device was opened using <code>dcb_open()</code>

■ Cautions

- This function fails if the device handle is invalid.
- The `dcb_close()` function affects only the link between the calling process or thread and the device. Other processes or threads are unaffected by `dcb_close()`.
- If event notification is active for the device to be closed, call the Standard Runtime Library `sr_dishdlr()` function to disable the event handler prior to calling `dcb_close()`.
- A call to `dcb_close()` does not affect the configuration of the conferencing board.

■ Errors

The `dcb_close()` function does not return errors in the standard return code format. If an error occurred during the `dcb_close()` call, a -1 will be returned, and it indicates a operating system error.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtllib.h"
#include "msilib.h"
#include "dcblib.h"

main()
{
    int dspdevh;          /* DSP device descriptor variable */
    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
        printf("Cannot open DSP dcbB1D2: system error/n");
        exit(1);
    }

    /* Continue Processing */

    /* Done processing - close device */
    if (dcb_close(dspdevh) == -1) {
        printf("Cannot close DSP dcbB1D2: system error/n");
        exit(1);
    }
}
```

■ See Also

- [dcb_open\(\)](#)

dcb_CreateBridge()

Name: int dcb_CreateBridge(hSrlDeviceA, nConferenceIDA, hSrlDeviceB, nConferenceIDB, Bridgecdt, unMode, rfu)

Inputs:

int hSrlDeviceA	• valid DSP device handle of the master conference
int nConferenceIDA	• conference identifier for the master conference
int hSrlDeviceB	• valid DSP device handle of the conference that will be bridged to the master conference
int nConferenceIDB	• conference identifier of the conference that will be bridged to the master conference
TS_BRIDGECDT * Bridgecdt	• pointer to a conference bridge descriptor element
unsigned short unMode	• mode of the function
void *rfu	• void pointer that is reserved for future use

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcbllib.h

Category: Conference Management

Mode: synchronous or asynchronous

Platform: DM3

■ Description

The **dcb_CreateBridge()** function establishes a bridge between two conferences. A bridge is a link between conferences that allows each conferee within the distinct conferences to communicate as though they were part of a single conference. A bridge connects two conferences together by adding a secondary conference to a master conference as though it were an individual NULL conferee. A bridge consumes two conference resources (one in each conference).

Parameter	Description
hSrlDeviceA	specifies the valid device handle for the master conference obtained when the DSP device was opened using dcb_open()
nConferenceIDA	indicates the conference identifier number of the master conference
hSrlDeviceB	specifies the valid DSP device handle used by the conference that will be bridged to the master conference
nConferenceIDB	indicates the conference identifier number of the conference that will be bridged to the master conference

Parameter	Description
Bridgecdt	points to the TS_BRIDGECDT data structure that defines the attributes of the conference bridge
unMode	specifies whether the function should run asynchronously or synchronously. Possible values are as follows: • EV_ASYNC – Function runs in asynchronous mode. Returns -1 to indicate failure to initiate. Returns 0 to indicate success and then generates either the DCBEV_BRIDGEESTABLISHED termination event to indicate successful completion (conference bridge established), or the DCBEV_ERREVT in case of error. The DCBEV_BRIDGEESTABLISHED event will have the TS_BRIDGECDT data structure as its associated data. The nBridgeID element in this structure can be used to identify the bridge. The DCBEV_ERREVT event will have the TS_BRIDGECDT data structure as its associated data. The BridgeID element in this structure can be used to identify the bridge Note: Use the Standard Runtime Library event management functions to handle the termination events. • EV_SYNC – Function runs in synchronous mode. Returns -1 on failure and 0 on success.
rfu	reserved for future use. Set this parameter to NULL.

- Notes:**
1. Conference bridging can be used to effectively expand a conference beyond the maximum size allowed by your particular configuration. Before a conference reaches its maximum size, create a second (master) conference and then connect the two conferences via a bridge.
 2. The total number of conference resources, as well as other conference resource limitations if any exist (such as the maximum conference size), depends upon either your particular board and its media load or the resource configuration of your HMP license. For specific conferencing resource information applicable to a particular board and its media load, see the *Configuration Guide* for DM3 architecture boards; or for HMP, see the release information (*Release Guide* or *Release Notes*).
 3. Each conference bridge that is established consumes one conferencing resource within the master conference and one conferencing resource within the conference that is being bridged to the master conference.
 4. It is possible to bridge together conferences that use the same DSP. In this case, the **hSrlDeviceA** and **hSrlDeviceB** parameters are the same.
 5. The coach/pupil feature does not span conference bridges. Coach and pupil must be in the same conference.
 6. The active talker feature does not span conference bridges; that is, there is no active talker summing across conference bridges and active talkers are reported separately for each conference.

■ Cautions

This function fails when:

- An invalid device handle is specified.

- Conference resources are not available on the DSP.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

void main( )
{
    int dspdevh; /*DSP device handle variable*/
    int tsdevhA1, tsdevhA2; /*time slot device handles*/
    int tsdevhB1, tsdevhB2; /*time slot device handles*/
    MS_CDT cdtA[NUM_PARTIES]; /*conference descriptor table for conference A*/
    MS_CDT cdtB[NUM_PARTIES]; /*conference descriptor table for conference B*/
    SC_TSINFO tsinfo; /*time slot information data structure*/
    int nConferenceIDA; /*Conference ID of conference A*/
    int nConferenceIDB; /*Conference ID of conference B*/
    long scts; /*TDM bus time slot*/
    TS_BRIDGECDT Bridgecdt1; /*Bridge CDT for bridge 1*/

    TS_BRIDGECDT objBridge;
    Bridgecdt1 = &objBridge;

    /*open conference board 1, DSP 2 device*/
    if ((dspdevh = dcb_open("dcbB1D2",0) == -1)) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }

    /*open network board 1, time slot 1*/
    if ((tsdevhA1 = dt_open("dtiB1T1",0) == -1)) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarrayp = &scts;
    if (dt_getxmitslot(tsdevhA1, &tsinfo) == -1) {
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevhA1));
        exit(1);
    }

    /*Set up CDT data structure*/
    cdtA[0].chan_num = (int)scts; /*scts is the time slot....*/
    cdtA[0].chan_sel = MSPN_TS; /*...returned from getxmitslot()*/
    cdtA[0].chan_attr = MSPA_TARIFF;
```

```
/*open board 1, time slot 2*/
if ((tsdevhA2 = dt_open("dtiB1T2",0) == -1)) {
    printf("Cannot open dtiB1T2: system error/n");
    exit(1);
}

if (dt_getxmitslot(tsdevhA2, &tsinfo) == -1) {
    printf("dt_getxmitslot: Error Message = %s", ATDV_ERRMSGP(tsdevhA2));
    exit(1);
}

/*TDM bus time slot to be conferenced*/
cdtA[1].chan_num = (int)scts; /*scts is the time slot...*/
cdtA[1].chan_sel = MSPN_TS; /*...returned from getxmitslot( )*/
cdtA[1].chan_attr = MSPA_PUPIL; /*conferee may be coached later*/

/*establish conference A*/
if (dcb_estconf(dspdevh, cdtA, NUM_PARTIES, MSCA_ND, &nConferenceIDA) == -1) {
    printf("dcb_estconf: Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*open network board 1, time slot 1*/
if ((tsdevhB1 = dt_open("dtiB1T1",0) == -1)) {
    printf("Cannot open dtiB1T1: system error/n");
    exit(1);
}

tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;
}

/*Set up CDT data structure*/
cdtB[0].chan_num = (int)scts; /*scts is the time slot...*/
cdtB[0].chan_sel = MSPN_TS; /*...returned from getxmitslot( )*/
cdtB[0].chan_attr = MSPA_TARIFF;

/*open board 2, time slot 2*/
if ((tsdevhB2 = dt_open("dtiB2T2",0) == -1)) {
    printf("Cannot open dtiB2T2: system error/n");
    exit(1);
}

/*TDM bus time slot to be conferenced*/
cdtB[1].chan_num = (int)scts; /*scts is the time slot...*/
cdtB[1].chan_sel = MSPN_TS; /*...returned from getxmitslot( )*/
cdtB[1].chan_attr = MSPA_PUPIL; /*conferee may be coached later*/

/*establish conference B*/
if (dcb_estconf(dspdevh, cdtB, NUM_PARTIES, MSCA_ND, &nConferenceIDB) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*create bridge between conf A and conf B*/
if (dcb_CreateBridge(dspdevh, nConferenceIDA, dspdevh, nConferenceIDB, Bridgecdt1, EV_ASYNC,
NULL)==-1)
{
    printf("Error occurred during CreateBridge %s \n", ATDV_ERRMSGP(dspdevh));
}
else
{
    printf("dcb_CreateBridge passed\n");
}
```

```

/*
 *Continue Processing
 */

/*delete bridge between conf A and conf B*/
if (dcb_DeleteBridge(dspdevh, nConferenceIDA, dspdevh, nConferenceIDB, Bridgecdt1, EV_ASYNC,
NULL)==-1)
{
    printf("Error occurred during DeleteBridge %s \n", ATDV_ERRMSGP(dspdevh));
}
else
{
    printf("dcb_DeleteBridge passed\n");
}

if (dt_close(tsdevhA1) == -1) {
    printf("Error closing tsdevh1 \n");
    exit(1);
}

if (dt_close(tsdevhA2) == -1) {
    printf("Error closing tsdevh2 \n");
    exit(1);
}

if (dt_close(tsdevhB1) == -1) {
    printf("Error closing tsdevh1 \n");
    exit(1);
}

if (dt_close(tsdevhB2) == -1) {
    printf("Error closing tsdevh2 \n");
    exit(1);
}

/*Delete the conference*/
if (dcb_delconf(dspdevh, nConferenceIDA) == -1)) {
    printf("Cannot delete conference %d. Error message = %s", nConferenceIDA,
    ATDV_ERRMSGP(dspdevh));
    exit(1);
}

if (dcb_delconf(dspdevh, nConferenceIDB) == -1)) {
    printf("Cannot delete conference %d. Error Message = %s", nConferenceIDB,
    ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*done processing--close device*/
if (dcb_close(dspdevh) == -1) {
    printf("Cannot close DSP dcbB1D2: system error/n");
    exit(1);
}
}

```

■ See Also

- [dcb_DeleteBridge\(\)](#)

dcb_delconf()

Name: int dcb_delconf(devh, confid)

Inputs: int devh • valid DSP device handle
int confid • conference identifier

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtllib.h
msilib.h
dcblib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The **dbc_delconf()** function deletes a previously established conference. The conference identifier specifies the conference to be deleted.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	indicates the conference identifier of the conference to be deleted

Notes:

1. Calling this function frees all resources in use by the conference.
2. Call the appropriate **xx_unlisten()** function for each conferee before **dcb_delconf()** is called.

■ Cautions

This function fails when:

- The specified device handle is invalid.
- The conference identifier is invalid.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcbllib.h"

#define NUM_PARTIES      2

main()
{
    int  dspdevh;           /* DSP device descriptor variable */
    int  tsdevh1, tsdevh2;  /* Time slot device descriptors */
    MS_CDT  cdt[NUM_PARTIES]; /* Conference descriptor table */
    int  confid;           /* Conference ID */
    SC_TSINFO tsinfo;      /* Time slot information structure */
    long scts;             /* TDM bus time slot */

    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }

    /* Assume DCB/SC connected to a DTI via TDM bus. */

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Get TDM bus transmit time slot of tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[0].chan_num = (int)scts; /* TDM bus time slot returned */
    cdt[0].chan_sel = MSPN_TS; /* from dt_getxmitslot() */
    cdt[0].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

    /* Open DTI board 1, time slot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }

    /* Get TDM bus transmit time slot of tsdevh2 */
    if (dt_getxmitslot(tsdevh2, &tsinfo) == -1) {
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[1].chan_num = (int)scts; /* TDM bus time slot returned */
    cdt[1].chan_sel = MSPN_TS; /* from dt_getxmitslot() */
    cdt[1].chan_attr = MSPA_TARIFF; /* Conferee receives periodic tariff tone */

    /* Establish a 2 party conference */
    if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1) {
        printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
        exit(1);
    }
}
```

```
/* Do a listen for time slot tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the time slot tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Continue Processing */

/* Unlisten the time slots */
if (dt_unlisten(tsdevh1) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if (dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}
else
    printf("Conference deleted\n");

/* Done processing - close all open devices */
if(dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D2: system error/n");
    exit(1);
}

if(dt_close(tsdevh2) == -1) {
    printf("Cannot close dtiB1T2: system error/n");
    exit(1);
}

if(dt_close(tsdevh1) == -1) {
    printf("Cannot close dtiB1T1: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_addtoconf\(\)](#)
- [dcb_estconf\(\)](#)
- [dcb_remfromconf\(\)](#)

`dcb_DeleteAllConferences( )`

Name: `int dcb_DeleteAllConferences(devh, mode, rfu)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>unsigned short mode</code>	• mode of the function
<code>void* rfu</code>	• void pointer that is reserved for future use

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Conference Management

Mode: synchronous/asynchronous

Platform: DM3

■ Description

The `dcb_DeleteAllConferences( )` function deletes all established conferences. This function is provided for recovery purposes. A typical use would be if an application had to be restarted due to an abnormal termination: rather than downloading the firmware to re-initialize the boards, this function could be called to delete all conferences that might be left active in the firmware.

Parameter	Description
devh	indicates the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
mode	specifies whether the function should run asynchronously or synchronously. Possible values are as follows: • <code>EV_ASYNC</code> – Function runs in asynchronous mode. Returns -1 to indicate failure to initiate. Returns 0 to indicate successful initiation and then generates either the <code>DCBEV_DELALLCONF</code> termination event to indicate successful completion (all conferences deleted), or the <code>DCBEV_ERREVT</code> in case of error. Note: Use the Standard Runtime Library event management functions to handle the termination events. • <code>EV_SYNC</code> – Function runs in synchronous mode. Returns -1 on failure and 0 on success.
rfu	reserved for future use. Set this parameter to <code>NULL</code> .

Note: Calling this function frees all resources in use by all the conferences on the specified DSP device.

■ Cautions

- This function fails when the specified device handle is invalid.
- This function is intended for application program recovery purposes. (The **dcb_delconf()** function is intended for standard conference management purposes and should be used with the appropriate **xx_unlisten()** routing functions.)
- In a multi-threaded or multi-process environment, DCB functions should not be invoked at the same time **dcb_DeleteAllConferences()** is called.
- When this function is executed, it will not perform **xx_unlisten()** operations upon devices listening to conference time slots. It is the application's responsibility to perform unrouting using **xx_unlisten()** functions.

■ Errors

if this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example A

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>

#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

int dspdevh=0;

int DeleteAllConferences(void);

void main(void)
{
    char DeviceName[16];
    sprintf(DeviceName,"dcbB1D1");
    printf("Trying to open device = %s\n",DeviceName);
    if ( (dspdevh = dcb_open(DeviceName, 0)) == -1) {
        printf("Cannot open device %s: system error/n", DeviceName);
        exit(1);
    }
    else {
        printf("Open successfull for %s... dspdevh=0x%x\n",DeviceName,dspdevh);
    }

    /* Establish Conferences and Continue Processing */

    /* Delete all Active Conferences */
    DeleteAllConferences();

    /* Done processing - Close device */
    if ( dcb_close(dspdevh) == -1) {
        printf("Cannot close device %s: system error/n", DeviceName);
        exit(1);
    }
    else {
```

```

        printf("dcb_close successfull ... dspdevh=0x%x\n",dspdevh);
    }
} // main() ends

int DeleteAllConferences()
{
    void *RFU=0;
    if (dcb_DeleteAllConferences(dspdevh, EV_SYNC, RFU) == -1)
    {
        printf("dcb_DeleteAllConferences failed for %s. Error message = %s",
            ATDV_NAMEP(dspdevh), ATDV_ERRMSGP(dspdevh));
        return(-1);
    }
    else
    {
        printf("dcb_DeleteAllConferences successfull for %s... \n",
            ATDV_NAMEP(dspdevh));
    }
    return(0);
} //DeleteAllConferences ends

```

■ See Also

- [dcb_addtoconf\(\)](#)
- [dcb_delconf\(\)](#)
- [dcb_estconf\(\)](#)
- [dcb_remfromconf\(\)](#)

dcb_DeleteBridge()

Name: int dcb_DeleteBridge(hSrlDeviceA, nConferenceIDA, hSrlDeviceB, nConferenceIDB, Bridgecdt, unMode, rfu)

Inputs:

int hSrlDeviceA	• valid DSP device handle of the master conference
int nConferenceIDA	• conference identifier for the master conference
int hSrlDeviceB	• valid DSP device handle of the conference that is bridged to the master conference
int nConferenceIDB	• conference identifier of the conference that is bridged to the master conference
TS_BRIDGECDT *Bridgecdt	• pointer to a conference bridge descriptor element
unsigned short unMode	• mode of the function
void *rfu	• void pointer that is reserved for future use

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtllib.h
msilib.h
dcbllib.h

Category: Conference Management

Mode: Asynchronous or synchronous

Platform: DM3

■ Description

The **dcb_DeleteBridge()** function deletes a bridge that has been established between two conferences, but does not delete the individual conferences. The conferences that were connected via the conference bridge still exist after the bridge has been deleted, you must call the **dcb_delconf()** to delete any remaining conferences.

Parameter	Description
hSrlDeviceA	specifies the valid device handle for the master conference obtained when the DSP device was opened using dcb_open()
nConferenceIDA	indicates the conference identifier number of the master conference
hSrlDeviceB	specifies the valid DSP device handle used by a conference that is bridged to the master conference
nConferenceIDB	indicates the conference identifier number of a conference that is bridged to the master conference
Bridgecdt	points to the TS_BRIDGECDT data structure that defines the attributes of the conference bridge

Parameter	Description
unMode	specifies whether the function should run asynchronously or synchronously. Possible values are as follows: - EV_ASYNC – Function runs in asynchronous mode. Returns -1 to indicate failure to initiate. Returns 0 to indicate successful initiation and then generates either the DCBEV_BRIDGEREMOVED termination event to indicate successful completion (conference bridge deleted), or the DCBEV_ERREVT in case of error. The DCBEV_BRIDGESTABLISHED event will have the TS_BRIDGECDT data structure as its associated data. The BridgeID element in this structure can be used to identify the bridge. The DCBEV_ERREVT event will have the TS_BRIDGECDT data structure as its associated data. The BridgeID element in this structure can be used to identify the bridge Note: Use the Standard Runtime Library event management functions to handle the termination events. - EV_SYNC – Function runs in synchronous mode. Returns -1 on failure and 0 on success.
rfu	reserved for future use. Set this parameter to NULL.

■ Cautions

This function fails when:

- A specified device handle is invalid.
- A conference identifier is invalid.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

void main( )
{
    int dspdevh;          /*DSP device handle variable*/
    int tsdevhA1, tsdevhA2; /*time slot device handles*/
    int tsdevhB1, tsdevhB2; /*time slot device handles*/
    MS_CDT cdtA[NUM_PARTIES]; /*conference descriptor table for conference A*/
    MS_CDT cdtB[NUM_PARTIES]; /*conference descriptore table for conference B*/
```

```
SC_TSINFO tsinfo;           /*time slot information data structure*/
int nConferenceIDA;          /*Conference ID of conference A*/
int nConferenceIDB;          /*Conference ID of conference B*/
long scts;                   /*TDM bus time slot*/
TS_BRIDGECDT Bridgecdt1;     /*Bridge CDT for bridge 1*/

TS_BRIDGECDT objBridge;
Bridgecdt1 = &objBridge;

/*open conference board 1, DSP 2 device*/
if ((dspdevh = dcb_open("dcbB1D2",0) == -1)) {
    printf("Cannot open dcbB1D2: system error/n");
    exit(1);
}

/*open network board 1, time slot 1*/
if ((tsdevhA1 = dt_open("dtiB1T1",0) == -1)) {
    printf("Cannot open dtiB1T1: system error/n");
    exit(1);
}

tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;
if (dt_getxmitslot(tsdevhA1, &tsinfo) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevhA1));
    exit(1);
}

/*Set up CDT data structure*/
cdtA[0].chan_num = (int)scts; /*scts is the time slot...*/
cdtA[0].chan_sel = MSPN_TS; /*...returned from getxmitslot()*/
cdtA[0].chan_attr = MSPA_TARIFF;

/*open board 1, time slot 2*/
if ((tsdevhA2 = dt_open("dtiB1T2",0) == -1)) {
    printf("Cannot open dtiB1T2: system error/n");
    exit(1);
}

if (dt_getxmitslot(tsdevhA2, &tsinfo) == -1) {
    printf("dt_getxmitslot: Error Message = %s", ATDV_ERRMSGP(tsdevhA2));
    exit(1);
}

/*TDM bus time slot to be conferenced*/
cdtA[1].chan_num = (int)scts; /*scts is the time slot...*/
cdtA[1].chan_sel = MSPN_TS; /*...returned from getxmitslot()*/
cdtA[1].chan_attr = MSPA_PUPIL; /*conferee may be coached later*/

/*establish conference A*/
if (dcb_estconf(dspdevh, cdtA, NUM_PARTIES, MSCA_ND, &nConferenceIDA) == -1) {
    printf("dcb_estconf: Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*open network board 1, time slot 1*/
if ((tsdevhB1 = dt_open("dtiB1T1",0) == -1)) {
    printf("Cannot open dtiB1T1: system error/n");
    exit(1);
}

tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;
}
```

```

/*Set up CDT data structure*/
cdtB[0].chan_num = (int)scts; /*scts is the time slot...*/
cdtB[0].chan_sel = MSPN_TS; /*...returned from getxmitslot()*/
cdtB[0].chan_attr = MSPA_TARIFF;

/*open board 2, time slot 2*/
if ((tsdevhB2 = dt_open("dtiB2T2",0) == -1)) {
    printf("Cannot open dtiB2T2: system error/n");
    exit(1);
}

/*TDM bus time slot to be conferenced*/
cdtB[1].chan_num = (int)scts; /*scts is the time slot...*/
cdtB[1].chan_sel = MSPN_TS; /*...returned from getxmitslot()*/
cdtB[1].chan_attr = MSPA_PUPIL; /*conferee may be coached later*/

/*establish conference B*/
if (dcb_estconf(dspdevh, cdtB, NUM_PARTIES, MSCA_ND, &nConferenceIDB) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*create bridge between conf A and conf B*/
if (dcb_CreateBridge(dspdevh, nConferenceIDA, dspdevh, nConferenceIDB, Bridgecdt1, EV_ASYNC,
NULL)==-1)
{
    printf("Error occurred during CreateBridge %s \n", ATDV_ERRMSGP(dspdevh));
}
else
{
    printf("dcb_CreateBridge passed\n");
}

/*
*Continue Processing
*/

/*delete bridge between conf A and conf B*/
if (dcb_DeleteBridge(dspdevh, nConferenceIDA, dspdevh, nConferenceIDB, Bridgecdt1, EV_ASYNC,
NULL)==-1)
{
    printf("Error occurred during DeleteBridge %s \n", ATDV_ERRMSGP(dspdevh));
}
else
{
    printf("dcb_DeleteBridge passed\n");
}

if (dt_close(tsdevhA1) == -1) {
    printf("Error closing tsdevh1 \n");
    exit(1);
}

if (dt_close(tsdevhA2) == -1) {
    printf("Error closing tsdevh2 \n");
    exit(1);
}

if (dt_close(tsdevhB1) == -1) {
    printf("Error closing tsdevh1 \n");
    exit(1);
}

```

```
if (dt_close(tsdevhB2) == -1) {
    printf("Error closing tsdevh2 \n");
    exit(1);
}

/*Delete the conference*/
if (dcb_delconf(dspdevh, nConferenceIDA) == -1) {
    printf("Cannot delete conference %d. Error message = %s", nConferenceIDA,
    ATDV_ERRMSGP(dspdevh));
    exit(1);
}

if (dcb_delconf(dspdevh, nConferenceIDB) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", nConferenceIDB,
    ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*done processing--close device*/
if (dcb_close(dspdevh) == -1) {
    printf("Cannot close DSP dcbB1D2: system error\n");
    exit(1);
}
}
```

■ See Also

- [dcb_CreateBridge\(\)](#)

`dcb_dsprescount()`

Name: `int dcb_dsprescount(devh, valuep)`

Inputs: `int devh` • valid DSP device handle
`int * valuep` • integer pointer to where the free DSP resource count is returned

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Configuration

Mode: synchronous

Platform: DM3

■ Description

The `dcb_dsprescount()` function returns the available conferencing resource count for a specified DSP. The number of conferencing resources available depends on your conferencing board and the Media Load it is configured with.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
valuep	integer pointer to where the free DSP resource count is returned

- Notes:**
1. A monitor is counted as one of the parties in a conference.
 2. The total number of conference resources, as well as other conference resource limitations if any exist (such as the maximum conference size), depends upon either your particular board and its media load or the resource configuration of your HMP license. For specific conferencing resource information applicable to a particular board and its media load, see the *Configuration Guide* for DM3 architecture boards; or for HMP, see the release information (*Release Guide* or *Release Notes*).
 3. Conference bridging can be used to effectively expand a conference beyond the maximum size allowed by your particular configuration. Before a conference reaches its maximum size, create a second (master) conference and then connect the two conferences via a bridge.

Calling any of the following functions will cause the available resource count to change:

`dcb_addtoconf()`

uses one resource every time a conferee is added to a conference

dcb_CreateBridge()

uses two resources for each bridge: one in the master conference and one in the conference that is bridged to the master conference

dcb_delconf()

frees all resources in use by the conference, including the monitor

dcb_DeleteAllConferences()

frees all resources in use by all the conferences on the specified DSP device

dcb_DeleteBridge()

frees one resource in the master conference every time a conference bridge is deleted from the master conference

dcb_estconf()

uses the number of resources as specified by the **numpty** parameter

dcb_monconf()

uses one resource

dcb_remfromconf()

frees one resource

dcb_unmonconf()

frees one resource

■ **Cautions**

This function fails when the device handle specified is invalid.

■ **Errors**

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ **Example**

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

main()
{
    int dspdevh; /* DSP device descriptor */
    int count; /* DSP resource count */
```

```

/* Open conference board 1, DSP 2 */
if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
    printf("Cannot open dcbB1D2: system error/n");
    exit(1);
}

/* Get unused conference-resource count for dspdevh */
if (dcb_dsprescount(dspdevh, &count) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}
else
    printf("Free DSP Resource count = %d\n", count);

if (dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D2: system error/n");
    exit(1);
}
}

```

■ See Also

- [dcb_addtoconf\(\)](#)
- [dcb_estconf\(\)](#)
- [dcb_delconf\(\)](#)
- [dcb_monconf\(\)](#)
- [dcb_remfromconf\(\)](#)
- [dcb_unmonconf\(\)](#)

dcb_estconf()**Name:** int dcb_estconf(devh, cdt, numpty, confattr, confid)

Inputs:

int devh	• valid DSP device handle
MS_CDT *cdt	• pointer to conference descriptor table
int numpty	• initial number of parties in the conference
int confattr	• conference attributes
int *confid	• pointer to the conference identifier

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
mslib.h
dcbllib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ **Description**

The **dcb_estconf()** function establishes a conference between parties. A conference is associated with a DSP and all resources used by the conference are on that DSP. When **dcb_estconf()** returns successfully, **confid** will contain the conference identification number for use in all further modifications to that conference.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
cdt	points to the conference descriptor table. The conference descriptor table is an array of MS_CDT data structures which define the attributes of the conference parties.
numpty	indicates the initial number of parties in the conference. The maximum value is 24, but the maximum conference size may be lower depending upon your board and its media load or the resource configuration of your HMP license (see “Notes” that follow).

Parameter	Description
confattr	indicates a bitmask describing the properties of all parties in the conference. Valid values are as follows: • MSCA_ND – All parties in conference are notified by a tone if another conferee is added or removed from the conference. • MSCA_NULL – Conference has no special attributes. Note: The default MSCA_NULL must be used if the MSCA_ND conference attribute is not specified.
confid	points to the conference identifier number

- Notes:**
1. Calling this function causes **numpty** resources to be used when the conference is successfully established.
 2. This function may be used to initially establish a conference. You must use **dcb_addtoconf()** or **dcb_monconf()** to increase the size of the conference.
 3. The maximum value for the **numpty** parameter is 24. If the maximum conference size is greater than 24 parties, you can use the **dcb_estconf()** function to create a 24-party conference, and then use the **dcb_addtoconf()** function to add parties one at a time.
 4. If the maximum conference size is exceeded, the function generates an **E_MSCNFLMT** error (exceeds conference limit).
 5. The total number of conference resources, as well as other conference resource limitations if any exist (such as the maximum conference size), depends upon either your particular board and its media load or the resource configuration of your HMP license. For specific conferencing resource information applicable to a particular board and its media load, see the *Configuration Guide* for DM3 architecture boards; or for HMP, see the release information (*Release Guide* or *Release Notes*).
 6. Conference bridging can be used to effectively expand a conference beyond the maximum size allowed by your particular configuration. Before a conference reaches its maximum size, create a second (master) conference and then connect the two conferences via a bridge.

For each member of the conference, the TDM bus time slot number to listen to is returned in the `chan_lts` field of the `MS_CDT` data structure. The `chan_attr` field in the `MS_CDT` structure is redefined in the `msilib.h` file as follows:

```
#define chan_lts chan_attr
```

The `chan_lts` value must be used by the application to listen to the conferenced signal.

■ Cautions

This function fails when:

- An invalid device handle is specified.
- Conference resources are not available on the DSP.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

main()
{
    int dspdevh; /* DSP Device handle variable */
    int tsdevh1, tsdevh2; /* Time slot device handles */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    SC_TSINFO tsinfo; /* Time slot information structure */
    int confid; /* Conference identifier */
    long scts; /* TDM bus time slot */

    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2", 0) == -1) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }

    /* Open network board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1", 0) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarrayp = &scts;

    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[0].chan_num = (int)scts ; /* scts is the time slot... */
    cdt[0].chan_sel = MSPN_TS ; /* ...returned from getxmitslot() */
    cdt[0].chan_attr = MSPA_TARIFF;

    /* Open board 1, time slot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2", 0) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }

    if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
        exit(1);
    }
}
```

```

/* SCbus time slot to be conferenced */
cdt[1].chan_num = (int)scts ;      /* scts is the time slot... */
cdt[1].chan_sel = MSPN_TS ;       /* ...returned from getxmitslot() */
cdt[1].chan_attr = MSPA_PUPIL;    /* Conferee may be coached later */

/* Establish conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen() for the tsdevh1 to its conference signal */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen() for the tsdevh2 to its conference signal */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/*
 * Continue processing
 */

/* Unlisten the time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}
if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Done Processing - Close device */
if(dcb_close(dspdevh) == -1) {
    printf("Cannot close DSP dcbB1D2: system error/n");
    exit(1);
}
}

```

■ See Also

- [dcb_addtoconf\(\)](#)
- [dcb_delconf\(\)](#)
- [dcb_monconf\(\)](#)
- [dcb_remfromconf\(\)](#)
- [dcb_unmonconf\(\)](#)

`dcb_evtstatus()`

Name: `int dcb_evtstatus(event, action, status)`

Inputs:

<code>int event</code>	• event identifier
<code>int action</code>	• action to be performed
<code>int *status</code>	• pointer to status of event generation

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Auxiliary

Mode: synchronous

Platform: DM3

■ Description

The **`dcb_evtstatus()`** function gets or sets the status of a process-wide event. Certain features of the audio conferencing software are board-level features in that they are enabled or disabled on a per board basis. Process-wide events are enabled or disabled once for all devices used by that process.

Parameter	Description
event	indicates the specified process-wide event
action	specifies whether the event status is to be set or retrieved. Possible values are as follows: • <code>SET_EVENT</code> • <code>GET_EVENT</code>
status	If the event status is being set, <code>ON</code> or <code>OFF</code> is passed to the function in this parameter. If the event status is being retrieved, this parameter will contain <code>ON</code> or <code>OFF</code> when the function returns.

The **event** parameter must be set to `MSG_RESTBL`. `MSG_RESTBL` controls the Resource Table Update event generation. The resource assignment table is the mapping of resources to conferees. When this event notification is enabled, and the application makes a change to the assignment of resources on a conferencing board, a `DCBEV_CTU` event is generated. The updated resource table will be returned as the event data. Refer to the code example for details.

■ Cautions

dcb_evtstatus() is a process-wide function and does not have a device-handle as one of its parameters. Any event set ON or OFF is set for all devices used by the process, not for any particular device.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define MAX_PTY 32
#define TABLE_SIZE 192

DCB_CT res_table[MAX_PTY]; /* DCB_CT structure array */

void handler()
{
    int size = sr_getevtlen();
    char *datap = (char *)sr_getevtdatap();
    int event_type = (int)sr_getevttype();

    printf("Event occurred on %s : Data size = %d : Data is at 0x%x\n",
        ATDV_NAMEP(sr_getevtdev()), size, datap);

    if (event_type == DCBEV_CTU) {
        memcpy(res_table, datap, TABLE_SIZE);
    }
    else {
        printf("unexpected event generated\n");
    }
}

main()
{
    int bddevh, dspdevh; /* conference board and DSP device descriptors */
    unsigned long atibits; /* Active talker bits */
    int mode = SR_POLLMODE; /* Standard Runtime Library function-call mode */
    unsigned int status; /* conference board feature status */
    unsigned int i, count = 1000; /* Loop counters */

    /* Open conference board device */
    if ((bddevh = dcb_open("dcbB1",0)) == -1) {
        printf("Cannot open dcbB1: system error/n");
        exit(1);
    }
}
```

```

/* Set Standard Runtime Library function call mode */
if (sr_setparm(SRL_DEVICE, SR_MODEID, (void *)&mode) == -1) {
    printf("Error setting sr_setparm()\n");
    exit(1);
}

/* Enable Standard Runtime Library event handler */
if (sr_enbhdr(EV_ANYDEV, EV_ANYEVT, (void *)handler) == -1) {
    printf("Error setting sr_enbhdr()\n");
    exit(1);
}

/* Set Active Talker On */
status = ACTID_ON;

if (dcb_setbrdparm(bddevh, MSG_ACTID, (void *)&status) == -1) {
    printf("Error setting board parameter - %s\n", ATDV_ERRMSGP(bddevh));
    exit(1);
}

/* Done with board-level calls : close device */
if (dcb_close(bddevh) == -1) {
    printf("Cannot close dcbB1: system error/n");
    exit(1);
}

/* Set Resource Assignment Table Update events ON */
status = ON;

if (dcb_evtstatus(MSG_RESTBL, SET_EVENT, &status) == -1) {
    printf("Error enabling system-wide event\n");
    exit(1);
}

/* Open board 1, DSP 1 device */
if ((dspdevh = dcb_open("dcbB1D1",0)) == -1) {
    printf("Cannot open dcbB1D1: system error/n");
    exit(1);
}

/* Establish a conference and continue processing */

/* Wait in a 1000-count loop to get the active talkers */

while (count-- > 0) {
    if (dcb_getatibits(dspdevh, &atibits) == -1) {
        printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
        exit(1);
    }
    printf("ATIBITS = %d\n", atibits);

    for (i=0; i<32; i++){
        if (atibits & (1<<i)){
            printf("confid = %d, TimeSlot = %d, Selector = %d\n",
                res_table[i].confid, res_table[i].chan_num,
                res_table[i].chan_sel);
        }
    } /* End of for() loop */
} /* End of while() loop */

/* Set Resource Table Update events OFF */
status = OFF;

if (dcb_evtstatus(MSG_RESTBL, SET_EVENT, &status) == -1) {
    printf("Error enabling system-wide event\n");
    exit(1);
}

```

```
/* Disable event handler */
if (sr_dishdlr(EV_ANYDEV, DCBEV_CTU, (void *)handler) == -1) {
    printf("Error in sr_dishdlr()\n");
    exit(1);
}

/* Done processing - close DSP device */

if (dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D1: system error\n");
    exit(1);
}
}
```

■ **See Also**

- [**dcb_gettalkers\(\)**](#)

dcb_GetAtiBitsEx()

Name: int dcb_GetAtiBitsEx(devh, numpty, ActiveTalkerInd, rfu)

Inputs:

int devh	• valid DSP device handle
int *numpty	• pointer to number of active talkers
DCB_CT *ActiveTalkerInd	• pointer to an array of active talker indicators
void *rfu	• reserved for future use

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Auxiliary

Mode: synchronous

Platform: DM3

■ Description

The **dcb_GetAtiBitsEx()** function returns active talker indicators for all conferences on a DSP device at the time the function is called (i.e., who the active talkers are at a given moment). The current number of active talkers is returned in **numpty**, with information identifying the active talkers returned in **ActiveTalkerInd**.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
numpty	points to the number of active talkers indicators (elements in ActiveTalkerInd).
ActiveTalkerInd	points to an array of DCB_CT structures where active talker indicators are returned, which identify the active talkers

- Notes:**
1. The developer must allocate and deallocate an array of DCB_CT data structures large enough to store information on the number of active talkers. This function returns information on up to 3 active talkers per conference and is limited to the number of conferencing resources on the DSP. Therefore, it is safe to allocate an array large enough to hold the maximum number of conferencing resources for the DSP. See the **dcb_dsprescount()** function.
 2. Active talker information is associated with the DSP device handle. The information is invalid upon closing the device.

■ Cautions

- The snapshot of information provided by **dcb_GetAtiBitsEx()** is accurate for a split second. This information may not be accurate by the time the application processes it.
- This function fails when the device handle is invalid.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

const int MAX_ACTIVETALKERBITS = 120;

void main(void)
{
    char DeviceName[16];
    char BoardName[16];
    int dspdevh=-1,BoardDevHandle=-1;

    sprintf(BoardName,"dcbB1");
    printf("Trying to open device = %s\n",BoardName);
    if ( (BoardDevHandle = dcb_open(BoardName, 0)) == -1) {
        printf("Cannot open device %s: system error/n", BoardName);
        getchar();
        exit(1);
    }
    else {
        printf("Open successfull for %s ... BoardDevHandle=0x%x\n",BoardName,BoardDevHandle);
    }

    /* Set Active Talker ON */
    int nStatus=ACTID_ON;
    if(dcb_setbrdparm(BoardDevHandle,MSG_ACTID,(void*)&nStatus)==-1) {
        printf("dcb_setbrdparm->MSG_ACTID->Error Setting Board Parm for %s : ERROR = %s\n",
            ATDV_NAMEP(BoardDevHandle),ATDV_ERRMSGP(BoardDevHandle));
        /* process error */
    }
    else {
        printf("SetBoardParm->MSG_ACTID->Success Setting Board Parm for %s\n",
            ATDV_NAMEP(BoardDevHandle));
    }
}
```

```

if ( dcb_close(BoardDevHandle) == -1) {
    printf("Cannot close device %s: system error/n", ATDV_NAMEP(BoardDevHandle));
    /* process error */
    exit(1);
}
else {
    printf("dcb_close successfull for %s... BoardDevHandle=0x%x\n",
        ATDV_NAMEP(BoardDevHandle),BoardDevHandle);
}

sprintf(DeviceName,"dcbB1D1");
printf("Trying to open device = %s\n",DeviceName);
if ( (dspdevh = dcb_open(DeviceName, 0)) == -1) {
    printf("Cannot open device %s: system error/n", DeviceName);
    /* process error */
    exit(1);
}
else {
    printf("Open successfull for %s... dspdevh=0x%x\n",DeviceName,dspdevh);
}

/* Establish Conferences and Continue Processing */

/* GetAtiBitsEx */
int nCount,i=0;
DCB_CT ActiveTalkerIndicators[MAX_ACTIVETALKERBITS];
void * RFU=0;
if(dcb_getatibitsEx(dspdevh, &nCount, ActiveTalkerIndicators, RFU)==-1)
{
    printf("GetAtiBits->dcb_getatibitsEx failed on %s Error = %s\n",
        ATDV_NAMEP(dspdevh),ATDV_ERRMSGP(dspdevh));
    /* process error */
}
else
{
    printf("GetAtiBits->dcb_getatibitsEx Successful on %s Count = %d\n",
        ATDV_NAMEP(dspdevh),nCount);
    for(i=0;i<nCount;i++)
    {
        printf("i = %d ConferenceID = 0x%x ChanNum = %d ChanSel = 0x%x\n",
            i,ActiveTalkerIndicators[i].confid,
            ActiveTalkerIndicators[i].chan_num,
            ActiveTalkerIndicators[i].chan_sel);
    }
}

/* Done processing - Close device */
if ( dcb_close(dspdevh) == -1) {
    printf("Cannot close device %s: system error/n", ATDV_NAMEP(dspdevh));
    /* process error */
    exit(1);
}
else
    printf("dcb_close successfull for %s... dspdevh=0x%x\n",
        ATDV_NAMEP(dspdevh),dspdevh);
} // main() ends

```

■ See Also

- [dcb_evtstatus\(\)](#)
- [dcb_gettalkers\(\)](#)
- [dcb_dsprecount\(\)](#)

dcb_getbrdparm()

Name: int dcb_getbrdparm(devh, param, valuep)

Inputs:

int devh	• valid board device handle
unsigned char param	• device parameter defined name
void * valuep	• pointer to the returned parameter value

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Configuration

Mode: synchronous

Platform: DM3

■ Description

The **dcb_getbrdparm()** function retrieves a conference board parameter value. Each parameter has a symbolic name that is defined in *dcblib.h*. The parameters are disabled by default and must be enabled using the **dcb_setbrdparm()** function.

Parameter	Description
devh	specifies the valid device handle obtained when the board device was opened using dcb_open()
param	indicates the parameter to be examined
valuep	points to the integer or MS_VOL data structure where the value of the parameter specified in param should be returned

The valid values for **param** and **valuep** are shown below:

Note: For MSG_ACTID, MSG_ACTTALKERNOTIFYINTERVAL, and MSG_TONECLAMP, **valuep** points to an integer value. For MSG_VOLDIG, **valuep** points to an MS_VOL data structure.

MSG_ACTID (Active Talker Feature)

Indicates whether the Active Talker feature is enabled or disabled. Possible values are ACTID_ON or ACTID_OFF. ACTID_ON is the default. The active talker feature sums the 3 most active talkers in a conference, so that the conversation doesn't get drowned out when too many people talk at once. The active talker feature also provides data on active talkers through the **dcb_gettalkers()** and **dcb_GetAtiBitsEx()** functions, which can be used by an application program to identify active talkers; for example, to provide a visual display highlighting the active talkers in a conference. Active talkers are determined by their loudness; i.e., the strength of their "non-silence" energy.

MSG_ACTTALKERNOTIFYINTERVAL (Active Talker Notification Interval)

Changes the interval specifying how frequently the Active Talker status is updated. The value is specified in 10 ms units. The default value is 100 (in 10 ms units), which results in a 1-second interval, and the maximum value is 1000, which results in a 10-second interval.

Note: If a low value is used, it can affect system performance due to the more frequent updating of the status (which results in a high quantity of internal notification messages). If a high value is used, it will result in less frequent updating of status, but the non-silence energy of a conferee may not be reported if it occurs between notification updates. For example, if the notification interval is set to 2 seconds and a conferee only says “yes” or “no” quickly in between notifications, that vocalization by the conferee will not be reported.

MSG_TONECLAMP (Tone Clamp Activation)

Enables tone clamping for all parties to reduce the amount of DTMF tones heard in a conference. Tone clamping applies to the transmitted audio going into the conference and does not affect DTMF function. It is meaningful only in the full duplex or the transmit-only mode. Possible values are TONECLAMP_ON or TONECLAMP_OFF. TONECLAMP_OFF is the default. (To enable on a per-party basis, set the MSPA_PARTY_TONECLAMP attribute in the [MS_CDT](#) structure for the party.) Even with tone clamping, DTMF tones may be heard by conferees if the application encourages the user to repeatedly press DTMF tones; for example, press 9 to raise volume.

MSG_VOLDIG (Volume Control Digits)

Defines the volume control status and volume up/down/reset digits as defined in the MS_VOL data structure.

■ Cautions

- The value of the parameter returned by this function is currently an integer or an MS_VOL data structure. **valuep** is the address of the value, but should be cast as a void pointer when passed in the value field.
- This function fails when:
 - The device handle is invalid.
 - The parameter specified is invalid.
 - The DSP device handle is used.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ .Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtllib.h"
#include "msilib.h"
#include "dcblib.h"

main()
{
    int brddevh; /* Board dev descriptor variables */
    int actid_status; /* Active talker status (ON/OFF) */
    MS_VOL volume; /* Volume control structure */

    /* Open DCB board 1 */
    if ((brddevh = dcb_open("dcbB1",0)) == -1) {
        printf( "Cannot open dcbB1: system error/n");
        exit(1);
    }

    /* Retrieve Status (ON/OFF) of the Active Talker Feature */
    if (dcb_getbrdparm(brddevh, MSG_ACTID, (void *)&actid_status) == -1) {
        printf("Error getting board param:0x%x\n ", ATDV_LASTERR(brddevh));
        exit(1);
    }
    printf("Active talker identification is %s\n", (actid_status ? "ON" : "OFF"));

    /* Retrieve Information on Volume Control Feature */
    if (dcb_getbrdparm(brddevh, MSG_VOLDIG, (void *)&volume) == -1) {
        printf("Error getting volume control parameters : 0x%x\n ",
            ATDV_LASTERR(brddevh));
        exit(1);
    }
    printf("Volume Control is %s\n", (volume.vol_control ? "ON" : "OFF"));
    printf("The Up Digit is      %d\n", volume.vol_up);
    printf("The Reset Digit is    %d\n", volume.vol_reset);
    printf("And the Down Digit is %d\n", volume.vol_down);

    /* Continue processing */

    if (dcb_close(brddevh) == -1) {
        printf("Cannot close dcbB1: system error/n");
        exit(1);
    }
}
```

■ See Also

- [dcb_setbrdparm\(\)](#)

dcb_getcde()

Name: int dcb_getcde(devh, confid, cdt)

Inputs:

int devh	• valid DSP device handle
int confid	• conference identifier
MS_CDT *cdt	• pointer to a conference descriptor table element

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The **dcb_getcde()** function retrieves the properties of a conferee in an existing conference.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	indicates the conference identifier number
cdt	points to an MS_CDT data structure that specifies the attributes of the conferee

This function requires that the conferee's chan_num and chan_sel be specified in the MS_CDT data structure. On successful completion, the conferee's attributes will be returned in the chan_attr field.

Note: This function must be invoked multiple times if the attributes of more than one conferee are desired.

■ Cautions

This function fails when:

- The device handle specified is invalid.
- An invalid conference identifier is specified.
- The queried conferee is not in the conference.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function `ATDV_LASTERR()` or `ATDV_ERRMSGP()` to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES    2

main()
{
    int    dspdevh;          /* DSP device handle */
    int    tsdevh1, tsdevh2; /* DTI time slot device handles */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    int    confid;           /* Conference identifier */
    int    attrib;           /* Time slot attribute */
    long   scts1, scts2;     /* TDM bus time slots */

    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare the time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarray = &scts1;

    /* Retrieve the TDM bus transmit time slot for tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up the CDT structure */
    cdt[0].chan_num = (int)scts1;          /* scts is the TDM bus transmit time slot */
    cdt[0].chan_sel = MSPN_TS;             /* returned from dt_getxmitslot(). */
    cdt[0].chan_attr = MSPA_TARIFF;        /* Conferee will receive periodic tariff tone */

    /* Open DTI board 1, tslot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }
}
```

```

/* Prepare the time slot information structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts2;

if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* TDM bus time slot to be conferenced */
cdt[1].chan_num = (int)scts2;      /* scts is the TDM bus transmit time slot */
cdt[1].chan_sel = MSPN_TS;        /* returned from dt_getxmitslot(). */
cdt[1].chan_attr = MSPA_PUPIL;    /* The conferee may be coached later */

/* Establish the two party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen to the conference signal for tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen to the conference signal for tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Now get the attribute of conferee on tsdevh2 */
cdt[0].chan_num = (int)scts2;
cdt[0].chan_sel = MSPN_TS;

if(dcb_getcde(dspdevh, confid, &cdt)==-1){
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}
printf ("%s has conferee attribute 0x%x\n", ATDV_NAMEP(tsdevh2), cdt[0].chan_attr);

/* Finished with conference, so remove listens */

if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

```

```
/* And close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Cannot close tsdevh1: system error/n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Cannot close tsdevh2: system error/n");
    exit(1);
}

if (dcb_close(dspdevh) == -1){
    printf("Cannot close dcbB1D2: system error/n");
    exit(1);
}
}
```

■ **See Also**

- [dcb_setcde\(\)](#)

dcb_getcnflist()

Name: int dcb_getcnflist(devh, confid, numpty, cdt)

Inputs:

int devh	• valid DSP device handle
int confid	• conference identifier
int *numpty	• pointer to the conferee count
MS_CDT *cdt	• pointer to conference descriptor table

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The **dcb_getcnflist()** function retrieves total number of parties within a conference and a conferee list. The list contains specific information about each conferee in that conference, including each conferee's TDM bus transmit time slot number, selector, and conferee attribute description. The list is not returned in any specific order.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	specifies the conference identifier
numpty	points to the conferee count
cdt	points to the conference descriptor table. The conference descriptor table is an array of MS_CDT data structures, which specify the attributes of the conference parties.

Note: The application is responsible for allocating an MS_CDT table with sufficient elements.

When a conference is being monitored, one member of the conference list will be the monitor. chan_num for the monitor will equal 0x7FFF and chan_sel will be MSPN_TS.

If you call this function to get the number of conferees in a conference that contains a conference bridge, the return value will be the total number of conferees in the conference plus one for the conference bridge, or in the case of a master conference, one for each bridge that is connected to the master conference.

■ Cautions

- This function fails when an invalid conference identifier is specified.
- It is the responsibility of the application to allocate enough memory for the conference descriptor table. There must be an MS_CDT element allocated for each conferee description returned by this function. For example, if a conference was started with four conferees, and three conferees were added later, the MS_CDT array must be able to hold seven entries.

Note: Even though **dcb_monconf()** does not use the CDT structure, the array must have an additional structure if the conference is being monitored.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES      2

main()
{
    int  dspdevh;          /* DSP device handle variable */
    int  tsdevh1, tsdevh2; /* DTI TDM bus time slot device handles */
    int  partycnt;         /* Pointer to the number of conferenced parties */
    MS_CDT cdt[32];        /* Conference descriptor table */
    SC_TSINFO tsinfo;
    int  confid;           /* Conference identifier */
    long scts;             /* Returned TDM bus time slot */
    int  i;                /* Loop index */

    /* Open board 1 DSP 1 device */
    if ((dspdevh = dcb_open("dcbB1D1",0)) == -1) {
        printf( "Cannot open dcbB1D1: system error/n");
        exit(1);
    }

    /* Assume the conference board connected to a DTI via TDM bus. */

    /* Open board 1, tslot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf( "Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare the TDM bus time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarray = &scts;
}
```

```

/* Retrieve the TDM bus transmit time slot for tsdevh1 */
if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Set up the CDT structure */
cdt[0].chan_num = (int)scts;          /* scts is the TDM bus time slot */
cdt[0].chan_sel = MSPN_TS;           /* returned from dt_getxmitslot() */
cdt[0].chan_attr = MSPA_NULL;        /* Conferee has no special attributes */

/* Open board 1, tslot 2 */
if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
    printf("Cannot open dtiB1T2: system error/n");
    exit(1);
}

/* Retrieve the TDM bus transmit time slot for tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message = %s" , ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* TDM bus time slot to be conferenced */
cdt[1].chan_num = (int)scts;          /* scts is the SCbus time slot */
cdt[1].chan_sel = MSPN_TS;           /* returned from dt_getxmitslot() */
cdt[1].chan_attr = MSPA_PUPIL;       /* Conferee may be coached later */

/* Establish 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen to the TDM bus listen time slot for tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen to the TDM bus listen time slot for tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Get conferee list */
if (dcb_getcnflist(dspdevh, confid, &partycnt, &cdt[0]) == -1) {
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Display conference information */
printf("Number of parties in conference %d = %d\n", confid, partycnt);

for (i=0; i<partycnt; i++){
    printf("%d : Chan_num = 0x%x", i+1, cdt[i].chan_num);
    printf("      Chan_sel = 0x%x", cdt[i].chan_sel);
    printf("      Chan_att = 0x%x\n", cdt[i].chan_attr);
}

```

```
/* Remove all listens */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d : Error Message = %s", confid, ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Cannot close tsdevh1: system error/n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Cannot close tsdevh2: system error/n");
    exit(1);
}

if (dcb_close(dspdevh) == -1){
    printf("Cannot close dcbB1D1: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_estconf\(\)](#)

`dcb_getdigitmsk()`

Name: `int dcb_getdigitmsk(devh, confid, bitmaskp)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>int confid</code>	• conference identifier
<code>unsigned int * bitmaskp</code>	• pointer to digit bitmask

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Configuration

Mode: synchronous

Platform: DM3

■ Description

The `dcb_getdigitmsk()` function returns the digit mask for a specified conference. The values set in the mask corresponds to the digits which, when received, will cause a DCBEV_DIGIT event to be generated to the application.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	indicates the conference identifier number
bitmask	points to the digit bitmask

Note: If MSG_VOLDIG is enabled to give transparent volume control to the conferees, the digits for volume increase, decrease, and reset will not cause digit events to be generated. As a result, the application will not know if the volume changes.

■ Cautions

This function fails when:

- The device handle specified is invalid
- An invalid conference identifier is specified

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

main()
{
    int dspdevh;          /* DSP device handle */
    int confid;           /* Conference Identifier */
    unsigned int bitmask; /* bitmask variable */
    int tsdevh1, tsdevh2; /* DTI time slot device handles */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    SC_TSINFO tsinfo;
    long scts;            /* TDM bus time slot */

    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare the time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_sarrayp = &scts;

    /* Retrieve the TDM bus transmit time slot for tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up the CDT[0] structure */
    cdt[0].chan_num = (int)scts; /* scts is the TDM bus time slot */
    cdt[0].chan_sel = MSPN_TS; /* returned from dt_getxmitslot() */
    cdt[0].chan_attr = MSPA_TARIFF; /* Party receives periodic tariff tone */

    /* Open DTI board 1, tslot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }
}
```

```

/* Retrieve the TDM bus transmit time slot for tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up the CDT[1] structure */
cdt[1].chan_num = (int)scts;          /* scts is the TDM bus time slot */
cdt[1].chan_sel = MSPN_TS;            /* returned from dt_getxmitslot() */
cdt[1].chan_attr = MSPA_PUPIL;        /* Conferee may be coached later */

/* Establish a two party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for the tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Enable digit detection for digits 1,3 and 5 only */

    if (dcb_setdigitmsk(dspdevh, confid, CBMM_ONE | CBMM_THREE | CBMM_FIVE,
        CBA_SETMSK) == -1) {
        printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
        exit(1);
    }

/* Get the bitmask value for the digit detection event */
if (dcb_getdigitmsk(dspdevh, confid, &bitmask) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*
 *   Display list of digits enabled for detection
 */
if (bitmask & CBMM_ZERO)
    printf("Digit 0 is enabled\n");
if (bitmask & CBMM_ONE)
    printf("Digit 1 is enabled\n");
if (bitmask & CBMM_TWO)
    printf("Digit 2 is enabled\n");
if (bitmask & CBMM_THREE)
    printf("Digit 3 is enabled\n");
if (bitmask & CBMM_FOUR)
    printf("Digit 4 is enabled\n");
if (bitmask & CBMM_FIVE)
    printf("Digit 5 is enabled\n");
if (bitmask & CBMM_SIX)
    printf("Digit 6 is enabled\n");
if (bitmask & CBMM_SEVEN)
    printf("Digit 7 is enabled\n");

```

```
if (bitmask & CBMM_EIGHT)
    printf("Digit 8 is enabled\n");
if (bitmask & CBMM_NINE)
    printf("Digit 9 is enabled\n");
if (bitmask & CBMM_STAR)
    printf("Digit * is enabled\n");
if (bitmask & CBMM_POUND)
    printf("Digit # is enabled\n");
if (bitmask & CBMM_A)
    printf("Digit A is enabled\n");
if (bitmask & CBMM_B)
    printf("Digit B is enabled\n");
if (bitmask & CBMM_C)
    printf("Digit C is enabled\n");
if (bitmask & CBMM_D)
    printf("Digit D is enabled\n");

/* Unlisten the time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Done Processing - Close all open devices */

if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}

if(dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D2: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_setdigitmsk\(\)](#)
- [dcb_setbrdparm\(\)](#)

`dcb_gettalkers()`

Name: `int dcb_gettalkers(devh, confid, numpty, talkers)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>int confid</code>	• conference identifier
<code>int * numpty</code>	• pointer to number of active talkers
<code>MS_CDT * talkers</code>	• pointer to array of talker descriptions (party attributes)

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Auxiliary

Mode: synchronous

Platform: DM3

■ Description

The `dcb_gettalkers()` function retrieves information about the conferees actively talking in the conference specified by the DSP device and the **confid**. The current number of active talkers is returned in **numpty**, with descriptive information on each talker returned in **talkers**. The returned array of `MS_CDT` structures contains the active talker party attributes. The array has **numpty** number of elements. Each `MS_CDT` structure describes one active talker. `chan_num` contains the transmit time slot number of the actively talking conferee. `chan_sel` specifies that the conferee is a TDM bus time slot. For active talker retrieval, `chan_attr` is not used.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
confid	indicates the conference identifier number
numpty	points to number of active talkers
talkers	points to the array of <code>MS_CDT</code> data structures that contain active talker descriptions

- Notes:**
1. Active talker information is associated with the DSP device handle. The information is invalid upon closing the device.
 2. The developer must allocate and deallocate an array of `MS_CDT` data structures large enough to store information on the number of active talkers. This function returns information on up to 3 active talkers per conference and is limited to the number of conferencing resources on the DSP.

Therefore, it is safe to allocate an array large enough to hold the maximum number of conferencing resources for the DSP. See the [dcb_dsprescount\(\)](#) function.

3. The list is not returned in any specific order.

■ Cautions

This function fails when:

- The device handle specified is invalid.
- An invalid conference identifier is specified.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function [ATDV_LASTERR\(\)](#) or [ATDV_ERRMSGP\(\)](#) to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2
#define MAX_PTY 32

main()
{
    int dspdevh; /* DSP device handle */
    int tsdevh1; /* DTI time slot device handle */
    int partycnt; /* The no. of conferenced parties */
    int confid; /* Conference identifier */
    SC_TSINFO tsinfo; /* Time slot information structure */
    MS_CDT cdt[MAX_PTY]; /* Conference descriptor table */
    long scts; /* TDM bus time slot */
    int i; /* Loop index */

    /* Open conference board 1, DSP 1 device */
    if ((dspdevh = dcb_open("dcbB1D1",0)) == -1) {
        printf("Cannot open dcbB1D1: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 device */
    if ((tsdevh1 = dti_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 2 device */
    if ((tsdevh2 = dti_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }
}
```



```
/* Prepare time slot information structure */
tsinfo.sc_numts=1
tsinfo.sc_tsarrayp=&scts;

/* Get conference transmit time slot of tsdevh1 */
if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Set up CDT structure, for tsdevh1 */
cdt[0].chan_num = (int)scts; /* TDM bus time slot returned */
cdt[0].chan_sel = MSPN_TS; /* ...by dt_getxmitslot() */
cdt[0].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

/* Get TDM bus transmit time slot of tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up CDT structure, for tsdevh2 */
cdt[1].chan_num = (int)scts; /* TDM bus time slot returned */
cdt[1].chan_sel = MSPN_TS; /* by dt_getxmitslot() */
cdt[1].chan_attr = MSPA_PUPIL; /* Conferee may be coached later */

/* Establish a 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Prepare time slot information structure */
tsinfo.sc_numts=1
tsinfo.sc_tsarrayp=cdt[0].chan_lts;

/* Listen to the time slot returned by dcb_estconf() */
if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Prepare time slot information structure */
tsinfo.sc_numts=1
tsinfo.sc_tsarrayp=cdt[1].chan_lts;

/* Listen to the time slot returned by dcb_estconf() */
if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Find out who is currently talking */
if ((dcb_gettalkers(dspdevh, confid, &partycnt, &cdt)) == -1) {
    printf ("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Print out the time slot numbers of currently active talkers */
printf ("There are %d currently active talkers\n", partycnt);
for (i=0; i<partycnt; i++){
    printf ("Time slot = %d , Chan_sel = 0x%x\n", cdt[i].chan_num, cdt[i].chan_sel);
}
```

```
/* Remove all time slot listens */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Done processing - close all open devices */
if (dt_close(tsdevh1) == -1) {
    printf("System error closing %s/n", ATDV_NAMEP(tsdevh1));
    exit(1);
}

/* Done processing - close device */
if (dt_close(tsdevh2) == -1) {
    printf("System error closing %s/n", ATDV_NAMEP(tsdevh2));
    exit(1);
}

/* Done processing - close device */
if (dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D1: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_GetAtiBitsEx\(\)](#)
- [dcb_dsprescount\(\)](#)

■ Cautions

This function fails when:

- The device handle specified is invalid.
- The conference is full.
- Conference resources are not available on the DSP.
- The conference identifier is invalid.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function `ATDV_LASTERR()` or `ATDV_ERRMSGP()` to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES    2

main()
{
    int dspdevh;          /* DSP device handle */
    int tsdevh1, tsdevh2; /* DTI time slot device handles */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    int confid;           /* Conference identifier */
    long lts, scts;       /* TDM bus listen/transmit time slots */
    SC_TSINFO tsinfo;     /* Time slot information structure */

    /* Open conference board 1, DSP 3 device */
    if ((dspdevh = dcb_open("dcbB1D3",0) == -1) {
        printf("Cannot open dcbB1D3: system error/n");
        exit(1);
    }

    /* Open DTI board 1, tslot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf( "Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare the TDM bus time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarray = &scts;

    /* Get TDM bus transmit time slot of DTI tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message = %s",ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }
}
```

```

/* Set up CDT structure */
cdt[0].chan_num = (int)scts; /* SBus transmit time slot returned */
cdt[0].chan_sel = MSPN_TS; /* ...from dt_getxmitslot() */
cdt[0].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

/* Open DTI board 1, tslot 2 */
if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
    printf("Cannot open dtiB1T2: system error/n");
    exit(1);
}

/* Get transmit time slot of DTI tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up CDT structure */
cdt[1].chan_num = (int)scts; /* SBus time slot returned */
cdt[1].chan_sel = MSPN_TS; /* from dt_getxmitslot() */
cdt[1].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

/* Open DTI board 1, tslot 3 */
if ((tsdevh1 = dt_open("dtiB1T3",0)) == -1) {
    printf("Cannot open dtiB1T3: system error/n");
    exit(1);
}

/* Establish 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for the tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1){
    printf("Error Message = %s",ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Now monitor the conference on time slot lts */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &lts;

if((dcb_monconf(dspdevh,confid,&lts)) == -1){
    printf("Error Message = %s",ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Assume that a DTI time slot, tsdevh3, is a monitor */
if (dt_listen(tsdevh3,&tsinfo) == -1){
    printf("Error Message = %s",ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

```

```
/* Perform an unlisten() to end monitor listening */
if (dt_unlisten(tsdevh3) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Now remove the monitor from the conference */
if((dcb_unmonconf(dspdevh,confid)) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* 'Unlisten' the TDM bus time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d : Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}

if (dt_close(tsdevh3) == -1){
    printf("Error closing tsdevh3\n");
    exit(1);
}

if (dcb_close(dspdevh) == -1){
    printf("Cannot close dcbB1D3: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_unmonconf\(\)](#)

dcb_open()

Name: int dcb_open(name, rfu)

Inputs: char *name
int rfu

- pointer to device name to open
- reserved for future use

Returns: device handle on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcblib.h

Category: Device Management

Mode: synchronous

Platform: DM3

■ Description

The **dcb_open()** function opens a conference device and returns a unique handle to identify the device. The device may be a conference board or a DSP on the board. All subsequent references to the opened device must be made using the device handle. Refer to the *Audio Conferencing Programming Guide* for complete information about device names.

Parameter	Description
name	points to an ASCIIZ string that contains the name of a valid DSP device or board device
rfu	reserved for future use. Set this parameter to 0.

- Notes:**
1. If a parent process opens a device and enables events, there is no guarantee that the child process will receive a particular event.
 2. No action can be performed on a conference device until it is opened.

■ Cautions

This function fails when:

- The device name is invalid.
- The system has insufficient memory to complete the open.

■ Errors

The **dcb_open()** function does not return errors in the standard return code format. If an error occurred during the **dcb_open()** call, a -1 will be returned. If a call to **dcb_open()** is successful, the return value will be a handle for the opened device.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtllib.h"
#include "msilib.h"
#include "dcblib.h"

main()
{
    int bddevh;

    /* open board 1*/
    if ((bddevh = dcb_open("dcbB1", 0)) == -1) {
        printf("Cannot open device dcbB1: system error/n");
        exit(1);
    }
    else
        printf("Board %s is OPEN\n", ATDV_NAMEP(bddevh));

    /* Done processing - Close device */
    if (dcb_close(bddevh) == -1) {
        printf("Cannot close dcbB1: system error/n");
        exit(1);
    }
}
```

■ See Also

- [dcb_close\(\)](#)

`dcb_remfromconf()`

Name: `int dcb_remfromconf(devh, confid, cdt)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>int confid</code>	• conference identifier
<code>MS_CDT *cdt</code>	• pointer to conference descriptor element

Returns: 0 if success
-1 if failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The `dcb_remfromconf()` function removes a conferee from a conference. The conference identifier is the value previously returned by the `dcb_estconf()` function. In this case, the channel attributes of the `MS_CDT` structure are ignored.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
confid	specifies the conference from which the conferee will be removed
cdt	points to an <code>MS_CDT</code> data structure that specifies the conferee (the attributes of the conferee are ignored)

Notes:

1. Call the appropriate `xx_unlisten()` function before removing the TDM bus time slot member.
2. Calling this function frees one conference resource.

■ Cautions

- An error will be returned if this function is used to attempt removal of the last remaining conferee from a conference. The `dcb_delconf()` function must be used to end a conference.
- This function also fails when:
 - The device handle passed is invalid.
 - The conference identifier is invalid.
 - The conferee to be removed is not part of the specified conference.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 3

main()
{
    int dspdevh; /* Conference descriptor table */
    int confid; /* Conference identifier */
    int tsdevh1, tsdevh2, tsdevh3; /* DTI time slot device handles */
    long scts; /* Transmit time slot */
    SC_TSINFO tsinfo; /* Time slot information structure */

    /* Open conference board 1, DSP 3 device */
    if ((dspdevh = dcb_open("dcbB1D3",0) == -1) {
        printf("Cannot open dcbB1D3: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare TDM bus time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarrayp = &scts;

    /* Get transmit time slot of DTI tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message = %s",ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[0].chan_num = (int)scts; /* SBus time slot returned */
    cdt[0].chan_sel = MSPN_TS; /* ...by dt_getxmitslot() */
    cdt[0].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

    /* Open DTI board 1, time slot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }
}
```

```

/* Get transmit time slot of DTI tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up CDT structure */
cdt[1].chan_num = (int)scts;      /* TDM bus time slot returned */
cdt[1].chan_sel = MSPN_TS;       /* ...from dt_getxmitslot() */
cdt[1].chan_attr = MSPA_TARIFF;  /* Conferee receives periodic tariff tone */

/* Open board 1, tslot 3 */
if ((tsdevh3 = dt_open("dtiB1T3",0)) == -1) {
    printf("Cannot open dtiB1T3: system error/n");
    exit(1);
}

/* Get transmit time slot of DTI tsdevh3 */
if (dt_getxmitslot(tsdevh3, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Set up CDT structure */
cdt[2].chan_num = (int)scts;      /* TDM bus time slot returned */
cdt[2].chan_sel = MSPN_TS;       /* ...from dt_getxmitslot() */
cdt[2].chan_attr = MSPA_TARIFF;  /* Conferee receives periodic tariff tone */

/* Establish 3 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for DTI tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the DTI tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Do a listen for the DTI tsdevh3 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[2].chan_lts;

if (dt_listen(tsdevh3,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Select tsdevh1 as conferee to remove from conference */

```

```
/* Unlisten the listening device tsdevh1 */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Prepare TDM bus time slot information structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;

/* Get transmit time slot of DTI tsdevh1 */
if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Prepare the MS_CDT structure */
cdt[0].chan_num = (int)scts;
cdt[0].chan_sel = MSPN_TS;

/* And remove tsdevh1 from the conference */
if (dcb_remfromconf(dspdevh, confid, &cdt[0]) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Unlisten the remaining listening time slots */
if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

if (dt_unlisten(tsdevh3) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh3));
    exit(1);
}

/* Delete the conference */
if (dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d : Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}
if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}
if (dt_close(tsdevh3) == -1){
    printf("Error closing tsdevh3\n");
    exit(1);
}
if (dcb_close(dspdevh) == -1){
    printf("Cannot close dcbB1D3: system error/n");
    exit(1);
}
}
```

■ See Also

- [dcb_addtoconf\(\)](#)



remove a conferee from a conference — dcb_remfromconf()

- [dcb_delconf\(\)](#)
- [dcb_estconf\(\)](#)

dcb_setbrdparm()

Name: int dcb_setbrdparm(devh, param, valuep)

Inputs:

int devh	• valid board device handle
unsigned char param	• device parameter defined name
void * valuep	• pointer to the parameter value

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtilib.h
msilib.h
dcbllib.h

Category: Configuration

Mode: synchronous

Platform: DM3

■ Description

The **dcb_setbrdparm()** function sets conference board device parameters.

Parameter	Description
devh	specifies the valid device handle obtained when the board device was opened using dcb_open()
param	indicates the parameter whose value is to be set
valuep	the address of the integer or MS_VOL structure containing the values to be assigned to the parameter

The valid values for **param** and **valuep** are shown below:

Note: For MSG_ACTID, MSG_ACTTALKERNOTIFYINTERVAL, and MSG_TONECLAMP, **valuep** points to an integer value. For MSG_VOLDIG, **valuep** points to an MS_VOL data structure.

MSG_ACTID (Active Talker Feature)

Enables or disables the Active Talker feature. Possible values are ACTID_ON or ACTID_OFF. ACTID_ON is the default. The active talker feature sums the 3 most active talkers in a conference, so that the conversation doesn't get drowned out when too many people talk at once. The active talker feature also provides data on active talkers through the **dcb_gettalkers()** and **dcb_GetAtiBitsEx()** functions, which can be used by an application program to identify active talkers; for example, to provide a visual display highlighting the active talkers in a conference. Active talkers are determined by their loudness; i.e., the strength of their "non-silence" energy.

MSG_ACTTALKERNOTIFYINTERVAL (Active Talker Notification Interval)

Changes the interval specifying how frequently the Active Talker status is updated. The value is specified in 10 ms units. The default value is 100 (in 10 ms units), which results in a 1-second interval, and the maximum value is 1000, which results in a 10-second interval.

Note: If a low value is used, it can affect system performance due to the more frequent updating of the status (which results in a high quantity of internal notification messages). If a high value is used, it will result in less frequent updating of status, but the non-silence energy of a conferee may not be reported if it occurs between notification updates. For example, if the notification interval is set to 2 seconds and a conferee only says “yes” or “no” quickly in between notifications, that vocalization by the conferee will not be reported.

MSG_VOLDIG (Volume Control Digits)

Defines the volume control status and volume up/down/reset digits as defined in the `MS_VOL` data structure.

MSG_TONECLAMP (Tone Clamp Activation)

Enables tone clamping for all parties to reduce the amount of DTMF tones heard in a conference. Tone clamping applies to the transmitted audio going into the conference and does not affect DTMF function. It is meaningful only in the full duplex or the transmit-only mode. Possible values are `TONECLAMP_ON` or `TONECLAMP_OFF`. `TONECLAMP_OFF` is the default. (To enable on a per-party basis, set the `MSPA_PARTY_TONECLAMP` attribute in the [MS_CDT](#) structure for the party.) Even with tone clamping, DTMF tones may be heard by conferees if the application encourages the user to repeatedly press DTMF tones; for example, press 9 to raise volume.

■ Cautions

- All parameter values must be integers or `MS_VOL` data structures, but since this routine expects a void pointer to **valuep**, the address must be cast as a void*.
- This function fails when:
 - The device handle is invalid
 - The parameter specified is invalid

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function `ATDV_LASTERR()` or `ATDV_ERRMSGP()` to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in `dtilib.h`, `msilib.h` or `dcblib.h`.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"
```

```
main()
{

    int  bddevh;                /* Board dev descriptor variables */
    int  valuep = ACTID_ON;
    MS_VOL volume               /*volume control */

    /* open DCB board 1 */
    if ( (bddevh = dcb_open("dcbB1", 0)) == -1) {
        printf("Cannot open device dcbB1: system error/n");
        exit(1);
    }

    /* Enable Active talker feature */
    if (dcb_setbrdparm(devh, MSG_ACTID, &valuep) == -1) {
        printf("Error setting board param:0x%x\n ", ATDV_LASTERR(devh));
        exit(1);
    }

    volume.vol_control = ON;
    volume.vol_up       = 2;
    volume.vol_reset    = 5;
    volume.vol_down     = 8;

    if (dcb_setbrdparm(devh, MSG_VOLDIG, (void *)&volume) == -1) {
        printf("Error getting board param:0x%x\n ", ATDV_LASTERR(devh));
        exit(1);
    }

    /*
     * Continue processing
     */

    /* Done processing - Close device */
    if ( dcb_close(bddevh) == -1) {
        printf("Cannot close device dcbB1: system error/n");
        exit(1);
    }
}
```

■ See Also

- [dcb_getbrdparm\(\)](#)

`dcb_setcde()`

Name: `int dcb_setcde(devh, confid, cdt)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>int confid</code>	• conference identifier
<code>MS_CDT *cdt</code>	• pointer to conference descriptor element

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The `dcb_setcde()` function changes the attributes of a conferee in an existing conference.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
confid	specifies the conference identifier number
cdt	points to an <code>MS_CDT</code> data structure that defines the updated attributes of the conferee

■ Cautions

- The `dcb_setcde()` function cannot be used to enable or disable echo cancellation. Once a party belongs to a conference, you cannot enable or disable echo cancellation for that party. If attempted, it has no effect. To enable echo cancellation, use `dcb_estconf()` or `dcb_addtoconf()`
- This function fails when:
 - The device handle specified is invalid.
 - The conference identifier is invalid.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function `ATDV_LASTERR()` or `ATDV_ERRMSGP()` to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

main()
{
    int dspdevh;          /* DSP device handle */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    int confid;           /* Conference identifier */
    int tsdevh1, tsdevh2; /* DTI time slot device handle */
    long scts;            /* TDM bus transmit time slot */
    SC_TSINFO tsinfo;     /* Time slot information structure */

    /* Open conference board 1, DSP 3 device */
    if ((dspdevh = dcb_open("dcbB1D3",0)) == -1) {
        printf("Cannot open dcbB1D3: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarray = &scts;

    /* get transmit time slot of DTI tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[0].chan_num = (int)scts; /* TDM bus time slot returned */
    cdt[0].chan_sel = MSPN_TS; /* by dt_getxmitslot() */
    cdt[0].chan_attr = MSPA_TARIFF; /* Conferee will receive period tariff tones */

    /* Open DTI board 1, time slot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }

    /* Get transmit time slot of DTI tsdevh2 */
    if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
        printf("Error Message = %s", ATDV_ERRMSGP(tsdevh2));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[1].chan_num = (int)scts; /* TDM bus time slot returned */
    cdt[1].chan_sel = MSPN_TS; /* returned from getxmitslot */
    cdt[1].chan_attr = MSPA_PUPIL; /* Conferee may be coached later */
}
```

```

/* Establish a 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message = %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for tsdevh1 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for tsdevh2 */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Now change the attribute of the last added conferee */
/* NOTE : scts still contains the transmit time slot of tsdevh2 */
cdt[0].chan_num = (int)scts;
cdt[0].chan_sel = MSPN_TS;
cdt[0].chan_attr = MSPA_TARIFF;

if((dcb_setcde(dspdevh, confid, &cdt[0])) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Perform 'unlistens' on the listening DTI time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}

```

```
    if (dcb_close(dspdevh) == -1){  
        printf("Cannot close dcbB1D3: system error/n");  
        exit(1);  
    }  
}
```

■ **See Also**

- [dcb_addtoconf\(\)](#)
- [dcb_estconf\(\)](#)
- [dcb_getcde\(\)](#)

`dcb_setdigitmsk()`

Name: `int dcb_setdigitmsk(devh, confid, bitmask, action)`

Inputs:

<code>int devh</code>	• valid DSP device handle
<code>int confid</code>	• conference identifier
<code>unsigned short bitmask</code>	• event bitmask
<code>int action</code>	• change type

Returns: 0 on success
-1 on failure

Includes: `srllib.h`
`dtilib.h`
`msilib.h`
`dcblib.h`

Category: Configuration

Mode: synchronous

Platform: DM3

■ Description

The `dcb_setdigitmsk()` function enables specific digit detection for a conference. The current bitmask is examined by a call to `dcb_getdigitmsk()`.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using <code>dcb_open()</code>
confid	specifies the conference identifier number
bitmask	indicates the DTMF digit detection bitmask
action	specifies how the digit mask is changed. Possible values are: • <code>CBA_ADDMSK</code> – enables messages from the conference specified in bitmask, in addition to previously set events. • <code>CBA_SETMSK</code> – enables notification of events specified in bitmask and disables notification of previously set events. • <code>CBA_SUBMSK</code> – disables messages from the conference specified in bitmask.

Note: If `MSG_VOLDIG` is enabled to give transparent volume control to the conferees, the digits for volume increase, decrease, and reset will not cause digit events to be generated. As a result, the application will not know if the volume changes.

The **bitmask** determines the digits to be detected. Upon detection of a DTMF digit, a `DCBEV_DIGIT` event is generated on a DSP device handle. The `sr_getevtdatap()` function can be used to retrieve the `DCB_DIGITS` data structure.

The possible values for **bitmask** are:

CBMM_ZERO
Detect digit 0

CBMM_ONE
Detect digit 1

CBMM_TWO
Detect digit 2

CBMM_THREE
Detect digit 3

CBMM_FOUR
Detect digit 4

CBMM_FIVE
Detect digit 5

CBMM_SIX
Detect digit 6

CBMM_SEVEN
Detect digit 7

CBMM_EIGHT
Detect digit 8

CBMM_NINE
Detect digit 9

CBMM_STAR
Detect digit *

CBMM_POUND
Detect digit #(octothorpe)

CBMM_A
Detect digit A

CBMM_B
Detect digit B

CBMM_C
Detect digit C

CBMM_D
Detect digit D

CBMM_ALL
Detect ALL digits

For example, to enable notification of the digits specified in the **bitmask** parameter and disable notification of previously set digits:

- specify the digits to enable in the **bitmask** field
- specify the CBA_SETMSK in the **action** field

To enable an additional digit specified in **bitmask** without disabling the currently enabled digits:

- specify the digits in **bitmask**
- specify CBA_ADDMSK in the **action** field

To disable digits in **bitmask** without disabling any other digits:

- specify the digits in **bitmask**
- specify CBA_SUBMSK in the **action** field

To disable all currently enabled digits:

- specify 0 in **bitmask**
- specify CBA_SETMSK in the **action** field

■ Cautions

This function fails when:

- The device handle specified is invalid.
- The action specified is invalid.
- Invalid conference identifier.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtlib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtlib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES 2

main()
{
    int dspdevh;          /* DSP device handle */
    int confid;           /* Conference Identifier */
    unsigned int bitmask; /* Digit bitmask */
    int tsdevh1, tsdevh2; /* DTI time slot device handles */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    long scts;            /* TDM bus transmit time slot */

    /* Open conference board 1, DSP 2 device */
    if ((dspdevh = dcb_open("dcbB1D2",0)) == -1) {
        printf("Cannot open dcbB1D2: system error/n");
        exit(1);
    }
}
```

```
/* Open DTI board 1, time slot 1 */
if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
    printf( "Cannot open dtiB1T1: system error/n");
    exit(1);
}

/* Prepare the time slot information structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;

/* Retrieve the TDM bus transmit time slot for tsdevh1 */
if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Set up the MS_CDT structure */
cdt[0].chan_num = (int)scts;      /* TDM bus time slot returned */
cdt[0].chan_sel = MSPN_TS;       /* by dt_getxmitslot() */
cdt[0].chan_attr = MSPA_TARIFF;  /* Conferee receives periodic tariff tones */

/* Open board 1, tslot 2 */
if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
    printf( "Cannot open dtiB1T2: system error/n");
    exit(1);
}

/* Prepare the time slot information structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &scts;

/* Retrieve the TDM bus transmit time slot for tsdevh2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up the MS_CDT structure */
cdt[1].chan_num = (int)scts;      /* TDM bus time slot returned */
cdt[1].chan_sel = MSPN_TS;       /* by dt_getxmitslot() */
cdt[1].chan_attr = MSPA_TARIFF;  /* Conferee receives periodic tariff tones */

/* Establish a 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == 1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for the DTI tsdevh1 device */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[0].chan_lts;

if (dt_listen(tsdevh1,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the DTI tsdevh2 device */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarrayp = &cdt[1].chan_lts;

if (dt_listen(tsdevh2,&tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}
```

```

/*
 * Enable DTMF detection for digits 1,3,5 only */
*/
if (dcb_setdigitmsk(dspdevh, confid, CBMM_ONE|CBMM_THREE|CBMM_FIVE,
    CBA_SETMSK) == -1) {
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/*
 * Continue processing
 */

/* Perform 'unlistens' on all DTI listening time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d. Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* And close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}

if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}

if(dcb_close(dspdevh) == -1) {
    printf("Cannot close dcbB1D2: system error/n");
    exit(1);
}

```

■ See Also

- [dcb_getdigitmsk\(\)](#)

dcb_unmonconf()

Name: `int dcb_unmonconf(devh, confid)`

Inputs: int devh • valid DSP device handle
int confid • conference identifier

Returns: 0 on success
-1 on failure

Includes: srllib.h
dtlib.h
msilib.h
dcblib.h

Category: Conference Management

Mode: synchronous

Platform: DM3

■ Description

The **dcb_unmonconf()** function removes a monitor from a conference.

Parameter	Description
devh	specifies the valid device handle obtained when the DSP device was opened using dcb_open()
confid	specifies the conference identifier

Notes: 1. Calling this function frees one resource.

2. Call the appropriate `xx_unlisten()` function for each conferee listening to the monitored signal before `dcb_unmonconf()` is called.

■ Cautions

This function fails when:

- The device handle specified is invalid.
- It is called for a non-conference board.
- An invalid conference is specified.
- A monitor does not exist in the conference.

■ Errors

If this function returns -1 to indicate failure, obtain the reason for the error by calling the Standard Runtime Library standard attribute function **ATDV_LASTERR()** or **ATDV_ERRMSGP()** to retrieve either the error code or a pointer to the error description, respectively.

Refer to [Chapter 5, “Error Codes”](#) of this guide for a list of error codes. Error defines can be found in *dtilib.h*, *msilib.h* or *dcblib.h*.

■ Example

```
#include <windows.h> /*include in Windows applications only; exclude in Linux*/
#include <stdio.h>
#include "srllib.h"
#include "dtilib.h"
#include "msilib.h"
#include "dcblib.h"

#define NUM_PARTIES    2

main()
{
    int dspdevh;           /* DSP device handle */
    MS_CDT cdt[NUM_PARTIES]; /* Conference descriptor table */
    int confid;            /* Conference identifier */
    int tsdevh1, tsdevh2, tsdevh3; /* DTI time slot device handles */
    long lts, scts;        /* listen/transmit time slots */
    SC_TSINFO tsinfo;      /* Time slot information structure */

    /* Open conference board 1, DSP 1 device */
    if ((dspdevh = dcb_open("dcbB1D1",0)) == -1) {
        printf("Cannot open dcbB1D1: system error/n");
        exit(1);
    }

    /* Open DTI board 1, time slot 1 */
    if ((tsdevh1 = dt_open("dtiB1T1",0)) == -1) {
        printf("Cannot open dtiB1T1: system error/n");
        exit(1);
    }

    /* Prepare the time slot information structure */
    tsinfo.sc_numts = 1;
    tsinfo.sc_tsarrayp = &scts;

    /* Get transmit time slot of DTI tsdevh1 */
    if (dt_getxmitslot(tsdevh1, &tsinfo) == -1){
        printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
        exit(1);
    }

    /* Set up CDT structure */
    cdt[0].chan_num = (int)scts; /* TDM bus time slot returned */
    cdt[0].chan_sel = MSPN_TS; /* by dt_getxmitslot() */
    cdt[0].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

    /* Open DTI board 1, time slot 2 */
    if ((tsdevh2 = dt_open("dtiB1T2",0)) == -1) {
        printf("Cannot open dtiB1T2: system error/n");
        exit(1);
    }

    /* Open board 1, time slot 3 */
    if ((tsdevh3 = dt_open("dtiB1T3",0)) == -1) {
        printf("Cannot open dtiB1T3: system error/n");
        exit(1);
    }
}
```

```
/* get transmit time slot of DTI TS device 2 */
if (dt_getxmitslot(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Set up CDT structure */
cdt[1].chan_num = (int)scts; /* TDM bus time slot returned */
cdt[1].chan_sel = MSPN_TS; /* by dt_getxmitslot() */
cdt[1].chan_attr = MSPA_NULL; /* Conferee has no special attributes */

/* Establish a 2 party conference */
if (dcb_estconf(dspdevh, cdt, NUM_PARTIES, MSCA_ND, &confid) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Do a listen for the DTI tsdevh1 device */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarray = &cdt[0].chan_lts;

if (dt_listen(tsdevh1, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}

/* Do a listen for the DTI tsdevh2 device */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarray = &cdt[1].chan_lts;

if (dt_listen(tsdevh2, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Now monitor the conference on TDM bus time slot lts */
if ((dcb_monconf(dspdevh, confid, &lts)) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* Prepare a time slot info structure */
tsinfo.sc_numts = 1;
tsinfo.sc_tsarray = &lts;

/* And let a DTI time slot, tsdevh3, monitor the conference */
if (dt_listen(tsdevh3, &tsinfo) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh4));
    exit(1);
}

/* Perform an 'unlisten' for the DTI time slot */
if (dt_unlisten(tsdevh3) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh4));
    exit(1);
}

/* Now remove the monitoring */
if ((dcb_unmonconf(dspdevh, confid)) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(dspdevh));
    exit(1);
}
```

```

/* Perform 'unlistens' for the remaining DTI time slots */
if (dt_unlisten(tsdevh1) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh1));
    exit(1);
}
if (dt_unlisten(tsdevh2) == -1){
    printf("Error Message : %s", ATDV_ERRMSGP(tsdevh2));
    exit(1);
}

/* Delete the conference */
if(dcb_delconf(dspdevh, confid) == -1) {
    printf("Cannot delete conference %d : Error Message = %s", confid,
        ATDV_ERRMSGP(dspdevh));
    exit(1);
}

/* And close all open devices */
if (dt_close(tsdevh1) == -1){
    printf("Error closing tsdevh1\n");
    exit(1);
}
if (dt_close(tsdevh2) == -1){
    printf("Error closing tsdevh2\n");
    exit(1);
}
if (dt_close(tsdevh3) == -1){
    printf("Error closing tsdevh3\n");
    exit(1);
}
if (dcb_close(dspdevh) == -1){
    printf("Cannot close dcbB1D1: system error/n");
    exit(1);
}
}

```

■ See Also

- [dcb_estconf\(\)](#)
- [dcb_monconf\(\)](#)

dcb_unmonconf() — remove a monitor from a conference



This chapter provides information on events that may be generated by the audio conferencing software.

An event indicates that a specific activity has occurred within a conference or conferences. For information on handling conference events, refer to the *Audio Conferencing API Programming Guide*. For details on event management and event handling, see the *Standard Runtime Library API Programming Guide* and *Standard Runtime Library API Library Reference*.

The following events may be generated by functions in the audio conferencing library:

DCBEV_BRIDGEESTABLISHED

Returned by the **dcb_CreateBridge()** function to indicate that a conference bridge has been established.

DCBEV_BRIDGEREMOVED

Generated by the **dcb_DeleteBridge()** to indicate that a conference bridge has been deleted.

DCBEV_CTU

Generated when the conference descriptor table for a conferee has been updated.

DCBEV_DELALLCONF

Returned by the **dcb_DeleteAllConferences()** function to indicate that all active conferences have been successfully deleted.

DCBEV_DIGIT

Returned when a digit detection event occurs.

Note: Any conferee participating in a conference in receive-only mode (MSPA_MODERECVONLY attribute) cannot generate DTMF digits within the conference, therefore any digits dialed by a conferee in receive-only mode will not generate DCBEV_DIGIT events.

DCBEV_ERREVT

Indicates an error has occurred within the application.

This chapter contains information about the data structures used by the audio conferencing API. The following data structures are used:

- [DCB_CT](#) 100
- [DCB_DIGITS](#) 101
- [MS_CDT](#) 102
- [MS_VOL](#) 105
- [TS_BRIDGECDT](#) 106

DCB_CT

```
typedef struct dcb_ct
{
    int confid;
    int chan_num;
    int chan_sel;
} DCB_CT;
```

■ Description

The DCB_CT data structure contains information about active talkers within a conference. Refer to the [dcb_gettalkers\(\)](#), [dcb_GetAtiBitsEx\(\)](#), and [dcb_setbrdparm\(\)](#) functions and to the *Audio Conferencing API Programming Guide* for more information about the active talker feature.

■ Field Descriptions

The fields of the DCB_CT data structure are described as follows:

confid

conference identifier number of the conference being monitored for active talkers

chan_num

denotes the TDM bus transmit time slot number occupied by the active talker

chan_sel

defines the specific meaning of the chan_num field. For the current System Software release, chan_sel must be set to the following value:

- MSPN_TS: – TDM bus time slot

DCB_DIGITS

```
typedef struct dcb_digits
{
    unsigned char    dsp;
    int              confid;
    int              chan_num;
    int              chan_sel;
    int              chan_attr;
    unsigned char    digits[MAX_DCBDIGS+1];
    unsigned char    dig_type;
} DCB_DIGITS;
```

Description

The DCB_DIGITS data structure defines the format of DCBEV_DIGIT events that are generated when a conferee presses a pre-determined DTMF digit. The pre-determined DTMF digits are defined for a conference via the **bitmask** parameter in the [dcb_setdigitmsk\(\)](#) function.

Field Descriptions

The fields of the DCB_DIGITS data structure are described as follows:

dsp

indicates the DSP of the conference that generated the event

confid

specifies the conference identifier of the conference that generated the event

chan_num

denotes the TDM bus transmit time slot number of the conferee that generated the event

chan_sel

defines the specific meaning of the chan_num field. For the current System Software release, chan_sel must be set to the following value:

- MSPN_TS: – TDM bus time slot

chan_attr

describes the properties of the conferee that generated the event. Refer to the chan_attr field of the [MS_CDT](#) data structure for a list of valid conferee properties.

digits[MAX_DCBDIG+1]

denotes an ASCII string of detected DTMF digits

dig_type

indicates the type of digit detected (DTMF)

MS_CDT

```
typedef struct ms_cdt
{
    int chan_num;    /*time slot number*/
    int chan_sel;    /*meaning of time slot number */
    int chan_attr;   /*attribute description*/
} MS_CDT;
```

■ Description

The MS_CDT data structure specifies a conferee and its attributes. The chan_attr field is a bitmask that contains the conferee's properties within the conference.

This data structure is used to define or retrieve a conferee and its attributes. The following functions specify this structure to *define* attributes: addtoconf, estconf, and setcde. The following functions specify this structure to *retrieve* attributes: getcde, getcnflist, and gettalkers. Also, the remfromconf function uses the data structure to specify a conferee to remove from the conference (in this case, the attributes are *ignored*).

■ Field Descriptions

The fields of the MS_CDT data structure are described as follows:

chan_num

denotes the TDM bus transmit time slot number of the device to be included in the conference

chan_sel

defines the specific meaning of the chan_num field. For the current System Software release, chan_sel must be set to the following value:

- MSPN_TS: – TDM bus time slot

chan_attr

a bitmask that specifies the conferee's properties within the conference. The following attributes are described as setting or defining the attribute; however, for functions that retrieve attributes, they would indicate whether the attribute is set. Valid settings are as follows:

- MSPA_BROADCASTEN – Enables the broadcast feature for conferee. This parameter sets one party to talk while all others are muted.
- MSPA_COACH – Establishes conferee as a coach. Coach is heard by the pupil only. (When using the coach/pupil feature on analog lines, make sure to use echo cancellation so that other parties do not hear an echo of the coach.)
- MSPA_ECHOCLEN – Enables echo cancellation for conferee. The echo cancellation feature supplies 128 tap (16 msec) echo cancellation with the audio conferencing interface. The default setting for echo cancellation is disabled. Echo cancellation can only be enabled when establishing the conference with **dcb_estconf()** or when adding a party to the conference with **dcb_addtoconf()**. It cannot be enabled using **dcb_setcde()**, and if attempted, has no effect. Once a party belongs to a conference, you cannot enable or disable echo cancellation for that party. If a conferee/party resides on an analog line, make sure to use echo cancellation so that the other parties do not hear an echo.
- MSPA_MODEFULLDUPLEX – Establishes conferee in full duplex mode, in which conferee may transmit and receive in the conference. Conferee hears everyone except the

coach. This property is equivalent to MSPA_NULL and MSPA_MODENULL. See also “Notes” following the attributes.

- MSPA_MODENULL – Establishes conferee as a NULL party. Conferee has no dedicated transmit or receive slots. A NULL party is often used as a placeholder for establishing a conference for a fixed number of parties. This is equivalent to MSPA_NULL and MSPA_FULLDUPLX. See also “Notes” following the attributes.
- MSPA_MODERECVONLY – Establishes conferee in receive-only mode, in which conferee may only receive in the conference. Any conferee in receive-only mode cannot generate DTMF digits within the conference, therefore any digits dialed by a conferee in receive-only mode will not generate DCBEV_DIGIT events. See also “Notes” following the attributes.
- MSPA_MODEXMITONLY – Establishes conferee in transmit-only mode, in which conferee may only transmit in the conference. See also “Notes” following the attributes.
- MSPA_NOAGC – Disables Automatic Gain Control for a conferee.
- MSPA_NULL – No special attributes for conferee. This is equivalent to MSPA_MODENULL and MSPA_FULLDUPLX.
- MSPA_PARTY_TONECLAMP – Enables DTMF tone clamping for the conferee. (To enable for all conferees, enable the MSG_TONECLAMP parameter with the [dcb_setbrdparm\(\)](#) function.) Even with tone clamping, DTMF tones may be heard by conferees if the application encourages the user to repeatedly press DTMF tones; for example, press 9 to raise volume.
- MSPA_PUPIL – Establishes conferee as a pupil. Pupil hears everyone including the coach. (When using the coach/pupil feature on analog lines, make sure to use echo cancellation so that other parties do not hear an echo of the coach.)
- MSPA_TARIFF – Enables periodic tone transmission to conferee so that conferee hears periodic tone for duration of call.

- Notes:**
1. The MSPA_MODENULL, MSPA_MODERECVONLY, MSPA_MODEXMITONLY and MSPA_MODEFULLDUPLX attributes are mutually exclusive. Furthermore, the attributes cannot be ORed together with any other conference attributes when calling the [dcb_setcde\(\)](#) function. For example, to set a conferee’s attributes as full-duplex with a tariff tone, you must call the [dcb_setcde\(\)](#) function twice: once to set the MSPA_MODEFULLDUPLX attribute and once to set the MSPA_TARIFF attribute.
 2. The [dcb_setcde\(\)](#) function cannot be used to enable or disable echo cancellation. Once a party belongs to a conference, you cannot enable or disable echo cancellation for that party. If attempted, it has no effect. To enable echo cancellation, use [dcb_estconf\(\)](#) or [dcb_addtoconf\(\)](#).
 3. Only one coach and one pupil are allowed in a conference at any time. Specifying more than one of either will cause unexpected results.
 4. If a conferee/party resides on an analog line, make sure to use echo cancellation so that the other parties do not hear an echo. This is especially important when using the coach/pupil feature on analog lines.
 5. The default MSPA_NULL must be used if channel attributes are not specified.
 6. Invalid attribute combinations may lead to unexpected results.
 7. For a background music application, such as a dating chat line where two callers talk while music plays in the background, when the music resource is added to the conference, it should be added in transmit-only mode using MSPA_MODEXMITONLY. (A media load specifically for background music is typically used with these types of applications to achieve the right mix of

resources on the board and to maximize density. For HMP, the desired ratio of resources is determined by the license.)

MS_VOL

```
typedef struct ms_vol
{
    unsigned char vol_control;
    unsigned char vol_up;
    unsigned char vol_reset;
    unsigned char vol_down;
} MS_VOL;
```

■ Description

The MS_VOL data structure defines whether or not volume control is active for a conference and which DTMF digits increase, decrease and reset the volume.

■ Field Descriptions

The fields of the MS_VOL data structure are described as follows:

vol_control

determines whether or not volume control is activated. Possible values are as follows:

- ON
- OFF

vol_up

indicates the DTMF digit used for increasing the volume level.

vol_reset

indicates the DTMF digit used to reset the volume to its default level.

vol_down

indicates the DTMF digit used for decreasing the volume level.

TS_BRIDGECDT

```
typedef struct bridgecdt
{
    MS_CDT cdtA;
    MS_CDT cdtB;
    unsigned int nBridgeID;
} TS_BRIDGECDT;
```

■ Description

The TS_BRIDGECDT data structure defines the two conferences that are included in a conference bridge and provides a unique identifier for the conference bridge. This data structure allows conferencing applications to maintain the timeslots associated with a conference bridge in one location.

The data structure is composed of three elements, two [MS_CDT](#) data structures that are used to transfer the conference bridge party timeslots to the application and an unsigned integer that defines a unique conference bridge identifier for asynchronous mode events.

■ Field Descriptions

The fields of the TS_BRIDGECDT data structure are described as follows:

cdtA

conference descriptor element for the master conference

cdtB

conference descriptor element for the conference that is bridged to the master conference

nBridgeID

denotes the bridge identification number that uniquely identifies a conference bridge. This number is returned to the application by the [dcb_CreateBridge\(\)](#) function.

This chapter lists the error codes that may be returned by the audio conferencing functions.

The values of error codes that may be returned to the application by the conferencing devices are a subset of errors used by the Intel® Dialogic® Digital Network Interface products and the Intel® Dialogic® Modular Station Interface products. Error codes proceeded by EDT_ are taken from the Digital Network Interface library (*dtilib.h*) and error codes proceeded by E_ are taken from the Modular Station Interface library (*msilib.h*).

The following error codes can be generated by the audio conferencing API library:

EDT_ADDRS

Incorrect address.

EDT_BADBRDERR

Board is missing or defective.

EDT_BADCMDERR

Invalid or undefined command to driver.

EDT_BADCNT

Incorrect count of bytes requested.

EDT_BADDEV

Bad device error.

EDT_BADGLOB

Incorrect global parameter number.

EDT_BADPORT

First byte appeared on reserved port.

EDT_BADVAL

Invalid parameter value passed in value pointer.

EDT_CHKSUM

Incorrect checksum.

EDT_DATTO

Data reception timed out.

EDT_DTTSTMOD

In test mode; cannot set board mode.

EDT_FWERR

Firmware returned an error.

EDT_INVBD

Invalid board.

EDT_INVMSG

Invalid message.

EDT_INVTS	Invalid time slot.
EDT_MBFMT	Wrong number of bytes for multiple byte request.
EDT_MBIMM	Received an immediate termination.
EDT_MBINV	First byte appeared on data port.
EDT_MBOVR	Message was too long.
EDT_MBPORT	Received multiple byte data on port other than 0 or 1.
EDT_MBTERM	Terminating byte other than FEH or FFH.
EDT_MBUND	Under the number of bytes for a multibyte request.
EDT_MSGCNT	Count received did not match actual count.
EDT_NOCLK	No clock source present.
EDT_NOIDLEERR	Time slot is not in idle/closed state.
EDT_NOMEMERR	Cannot map or allocate memory in driver.
EDT_NOTDNLD	Not downloaded.
EDT_PARAMERR	Invalid parameter. This error occurs if you execute an audio conferencing library function on a board that does not support that particular function.
EDT_RANGEERR	Bad/overlapping physical memory range.
EDT_SH_BADINDX	Invalid Switching Handler index number.
EDT_SH_BADEXITS	Returned time slot is unsupported in current clock rate.
EDT_SH_BADLCLTS	Invalid local time slot number.
EDT_SH_BADMODE	Invalid bus mode.
EDT_SH_BADTYPE	Invalid local time slot type.

EDT_SH_LCLDSCNCT	Local time slot is already disconnected from TDM bus.
EDT_SH_LCLTSCNCT	Local time slot is already connected to the TDM bus.
EDT_SH_LIBBSY	Switching Handler Library is busy.
EDT_SH_LIBNOTINIT	Switching Handler Library has not been initialized.
EDT_SH_MISSING	Switching Handler is not present.
EDT_SH_NOCLK	Switching Handler Clock fallback failed.
EDT_SIGINS	Insertion signaling not enabled.
EDT_SIGTO	Transmit/receive did not update in time.
EDT_SIZEERR	Message too big or too small.
EDT_SKIPRPLYERR	A required reply was skipped.
EDT_STARTED	Cannot start when already started.
EDT_SYSTEM	Operating system error.
EDT_TMOERR	Timed out waiting for reply from firmware.
EDT_TSASN	Time slot already assigned.
E_MS1PTY	Cannot remove party from one party conference.
E_MSBADCHPARAM	Invalid channel parameter number.
E_MSBADVAL	Invalid parameter value.
E_MSCHASNCNF	Channel is assigned to conference.
E_MSCNFFUL	Conference system is full.
E_MSCNFLMT	Exceeds conference limit.

E_MSGLOBREAD	Cannot read parameter globally.
E_MSINVCB	Invalid control block ID.
E_MSINVCATTR	Invalid conference attribute.
E_MSINVCNF	Invalid conference number.
E_MSINVDSP	Invalid DSP specified.
E_MSINVMT	Invalid multitasking function.
E_MSINVPATTR	Invalid party attribute.
E_MSINVPTYNUM	Invalid party number.
E_MSINVPTYCNT	Invalid number of parties specified.
E_MSINVPTYTYPE	Invalid conference member type.
E_MSINVVAL	Bad global parameter value.
E_MSINVT	Invalid time slot number specified.
E_MSMONEXT	Monitor already exists for this conference.
E_MSNOCNF	No conferencing available on device.
E_MSNOPTS	All time slots going to the DSP are busy.
E_MSNOFEMCH	No DCB/SC daughterboard to support this channel.
E_MSNOFMON	No monitor exists for this conference.
E_MSNOFNCNFCH	Channel is not assigned to specified conference.
E_MSNOTS	No time slot assigned to channel.
E_MSPTYASN	Party already assigned.



E_MSSYSTEM

Operating system error.

E_MSTSASNCNF

Time slot already assigned to a conference.

A

- active talker
 - descriptions, 65
 - indicator bits, 47
 - notification interval, 51

- adding a conferee, 12

- ATI bits, 47

- attributes of a conference, 39

B

- bridge identification number, 106

- broadcast, 102

C

- CBA_ADDMSK, 87

- CBA_SETMSK, 87

- CBA_SUBMSK, 87

- chan_attr, 102

- chan_lts, 12, 39

- chan_num, 100, 102

- chan_sel, 100, 102

- changing the conference resource count, 35

- closing a conferencing device, 17

- coach, 102

- conferee properties, 102

- conference attributes, 83

- Conference bridge, 20, 35, 39

- conference bridge data structure, 106

- conference bridging
 - creating a bridge, 19
 - definition, 19
 - deleting a bridge, 30

- conference device
 - closing, 17
 - definition, 10
 - opening, 73

- conference identifier, 38, 100

- conference resources, 35

- confid, 38, 100

D

- dcb_close, 17

- DCB_CT, 100

- DCB_DIGIT, 87

- DCB_DIGITS, 87, 101

- dcb_open(), 10

- DCBEV_BRIDGEESTABLISHED, 20, 97

- DCBEV_BRIDGEREMOVED, 31, 97

- DCBEV_BRIDGESTABLISHED, 31

- DCBEV_CTU, 43, 97

- DCBEV_DELALLCONF, 97

- DCBEV_DIGIT, 61, 97

- DCBEV_ERREVT, 97

- deleting a single conference, 24

- deleting all conferences, 27

- devh, 11

- device
 - closing, 17
 - device handle, 10, 11, 73
 - opening, 73

- dig_type, 101

- digit bitmask, 87

- digit detection, 87

- digit mask, 61

- DTMF tone clamping per party, 103

E

- echo cancellation, 102

- error codes, 107

- establishing a conference, 38

- event status, 43

F

function syntax conventions, 11

M

master conference, 19, 57, 106

Media load, 20, 35, 39

monitoring a conference, 69

MS_CDT, 53

MS_VOL, 51, 105

MS_VOLDIG, 61

MSG_ACTID, 50, 80

MSG_ACTTALKERNOTIFYINTERVAL, 51, 81

MSG_RESTBL, 43

MSG_TONECLAMP, 51, 81

MSG_VOLDIG, 51, 81, 87

MSPN_TS, 100

N

nBridgeID, 106

O

opening a conference device, 73

P

parameters

board level, 50

symbolic names, 50

per party tone clamping, 103

properties of a conferee, 53, 102

pupil, 103

R

receive-only mode, 103

remove a conference monitor, 92

removing a conferee, 75

S

sr_getevtdatap(), 87

symbolic names, 50

T

tariff tone, 103

TDM bus time slot, 12

tone clamping, 51

tone clamping per party, 103

transmit-only mode, 103

TS_BRIDGECDT, 106

V

volume control, 51, 81, 105