



DEFINITY®

Enterprise Communications Server

Release 6

Administration and Feature Description

Multimedia Module

555-230-524
Comcode 108215757
Issue 4
May 1998

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Part 68: Answer-Supervision Signaling. Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 Rules. This equipment returns answer-supervision signals to the public switched network when:

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

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

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

Canadian Department of Communications (DOC)

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- Electromagnetic Compatibility (89/336/EEC)
- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

Comments

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Acknowledgment

This document was prepared by Product Documentation Development, Lucent Technologies, Denver, CO.

This chapter contains multimedia features available on DEFINITY ECS. The multimedia administration forms are located at the end of each section.

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Multimedia Applications Server Interface

The Multimedia Applications Server Interface (MASI) defines a protocol and a set of operations that are used to extend DEFINITY feature functionality to a Multimedia Communications Exchange (MMCX) system. MASI architecture fits the client/server model, where the DEFINITY functions as a server for MMCX clients. Examples of DEFINITY features supported by MASI include Call Detail Recording (CDR), AUDIX/INTUITY voice mail integration, and AAR/ARS.

MMCX can make use of both MASI features, and MMCX autonomous features. Autonomous features are those that MMCX provides, even if MASI is not enabled. This document does not discuss them unless there is a consideration for MASI administration.

Some autonomous MMCX features:

- Basic Call (Place/Drop)
- Call Coverage
- Conference
- Transfer

DEFINITY/MASI features:

- Basic Call (Place/Drop) — DEFINITY tracks the status of all calls placed to or from a MASI terminal.
- Call Detail Recording — DEFINITY tracks calls to and from MASI terminals and can produce call records that indicate if a call uses MASI.
- Call Coverage — DEFINITY tracks MMCX calls that are sent to coverage. A DEFINITY coverage path can contain both MASI terminals and DEFINITY stations.
- Conference — DEFINITY tracks conference calls that involve MASI terminals, if a DEFINITY station originates the conference. Conferences that involve MASI terminals and DEFINITY stations are voice-only. If the DEFINITY station originates the call, the caller can use the consultative form of conference or transfer.
- World Class Routing (AAR or ARS) — Calls from MASI terminals can take advantage of DEFINITY ECS World Class Routing capabilities.
- Voice messaging access to AUDIX/INTUITY — MMCX users can take advantage of AUDIX voice messaging, and receive message waiting indication.
- MMCX trunking — By assigning DEFINITY trunk access codes to interfaces from the MMCX to other MMCXs or the PSTN, DEFINITY ECS can monitor traffic over those interfaces.

Before you start

CAUTION:

*DEFINITY ECS offers a wide range of features, and MMCX users may want to take advantage of this. In some cases, these features will operate as expected. However, some features are not supported for use over the MASI link, and their behavior is unpredictable. You may cause harm to your system by attempting to use these features. The *Interactions* section contains a list of features, and lists those features that are absolutely not supported for use with MASI. If you administer features on the **DO NOT ADMINISTER** list, Lucent Technologies cannot be responsible for the result.*

For purposes of administration, there are feature buttons and groups of users that you must not administer with MASI terminal extensions. There are also features that you simply cannot administer for a MASI terminal, because the software does not allow it.

About this document

The following document describes the Multimedia Applications Server Interface, and provides instructions on how to set it up, including administration and monitoring. It also includes a section on troubleshooting.

You need to use both the DEFINITY system administration terminal (SAT) and the MMCX administration terminal to administer MASI. This document describes what you need to do at the DEFINITY SAT. It also occasionally mentions administration that you must do at the MMCX administration terminal. For more detailed MMCX information, see the *MMCX Technical Reference*.

List of terms

This is a list of terms that are specific to MASI, or that have meanings in the context of MASI that are not standard.

- **chgmasi** — The command you use to administer MASI at the MMCX administration terminal.
- **Interserver** — Connections between MMCX terminals on different MMCX servers/nodes.
- **MASI domain** — A MASI domain consists of a DEFINITY and one or more MASI nodes that share the same dial plan. That is, the extension numbers on the MMCX are known to the DEFINITY, and fit in the DEFINITY dial plan.

- **MASI interworking** — MASI interworking refers to the completion of a voice connection within DEFINITY, involving at least one MASI terminal and a MASI path.
- **MASI link** — The connection between the MMCX and the DEFINITY ECS.
- **MASI node** — A single MMCX server. You may connect more than one MASI node to a DEFINITY. Each node has a separate number. This node number needs to be consistent whenever referring to a specific MMCX server.
- **MASI non-interworking** — MASI non-interworking refers to the completion of a call by MMCX, not involving a MASI path.
- **MASI path** — The ISDN B-channels between MMCX and DEFINITY in a MASI environment. Paths are used for voice and data connections between DEFINITY and MMCX.
- **MASI signaling link** — ISDN D-channel used to transport a new ISO protocol called the MASI protocol between the DEFINITY ECS and the MMCX.
- **MASI terminal** — The DEFINITY representation of MMCX terminals in a MASI environment.
- **MMCX interface** — PRI interface for connecting an MMCX server to other public, private or WAN switching systems or equipment that is part of the public network. Similar to a DEFINITY trunk group. These may include non-MASI trunks connecting the DEFINITY ECS and the MMCX.
- **MMCX trunk** — The DEFINITY representation of trunk or network facilities terminating on MMCX. For purposes of MASI, they are called “interfaces.”

Planning for MASI

Before you start to administer MASI, you should make a plan for how to do it. Among the configurations on the following pages, there is probably one that matches the configuration of your system fairly closely. You might want to either write on these pages, or draw up your own configuration. It may help you if you have already determined trunk group and signaling group numbers, unused extensions, and so on. The following are things you need to consider:

- Establish the dial plan on the MMCX to agree with that of the DEFINITY ECS. If you use Universal Dial Plan and MMCX, you may need to make adjustments for the MMCX dial plan.
- Find unused extensions and trunk group numbers. You need:
 - one trunk group number for each ISDN-PRI connection to the MMCX

- one signaling group number for each MASI node and an unused DEFINITY extension for the signaling group
- one unused DEFINITY extension for the Near-End Path Termination number for all MASI Paths to this ECS. You can use the same number for all MASI nodes in the domain.
- two unused MMCX extensions for the nearpath and tscnum arguments to the **chgmasi** command. This is the command you use to administer MASI on the MMCX.

MASI configurations

There are several ways to set up combinations of MASI nodes and DEFINITY servers. The following figures depict several possible configurations.

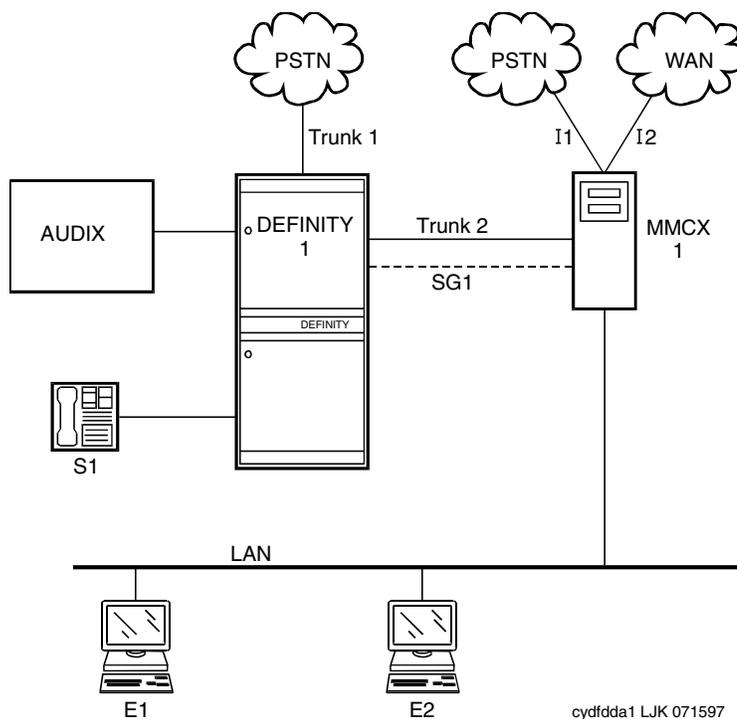


Figure 11-1. MASI domain of one DEFINITY ECS and one MMCX

The parts of this drawing, for MASI, are as follows:

- Trunk 1 — This is any type of trunk connection to the public network.

- Trunk 2 — This is the link between the DEFINITY ECS and the MMCX, and requires a TN464C or later DS1 circuit pack. You administer this link as an ISDN-PRI trunk group, a MASI path and an NCA-TSC.
- I1 and I2 — These are MMCX interfaces to destinations other than DEFINITY. Administer as MASI trunks.
- E1 and E2 — Endpoints (terminals) belonging to the MMCX. Administer as MASI terminals.
- MMCX — Determine a node number for each MMCX server. This can be any number from 1–15. Once established, DEFINITY informs the MMCX of its node number.
- S1 — DEFINITY station.

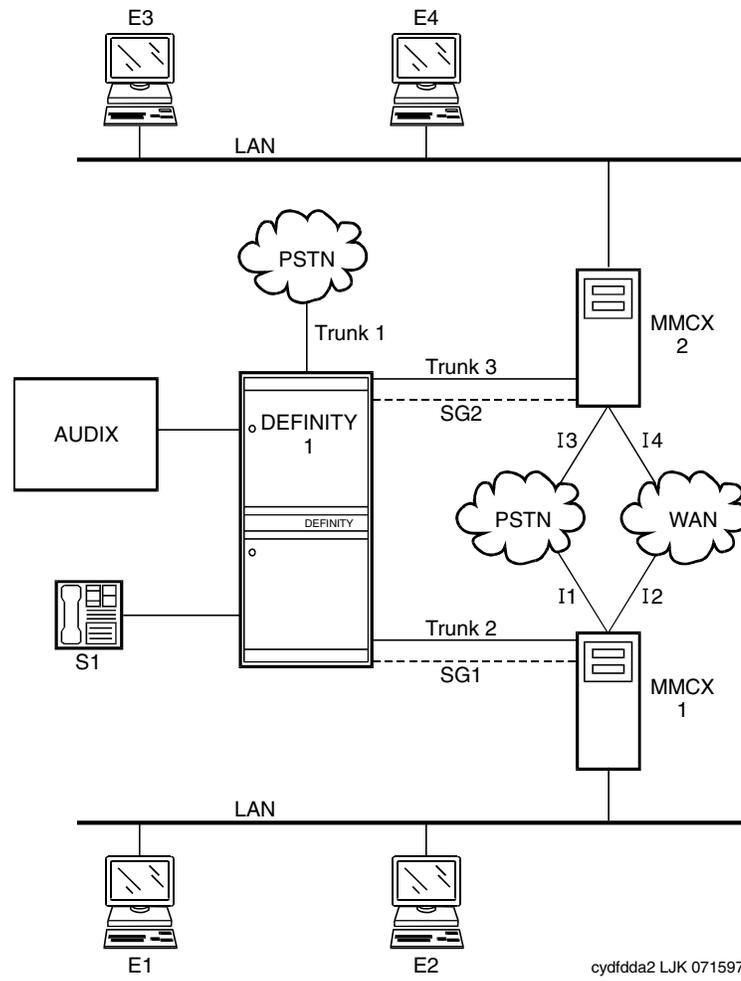


Figure 11-2. MASI domain of one DEFINITY and two (or more) MMCXs

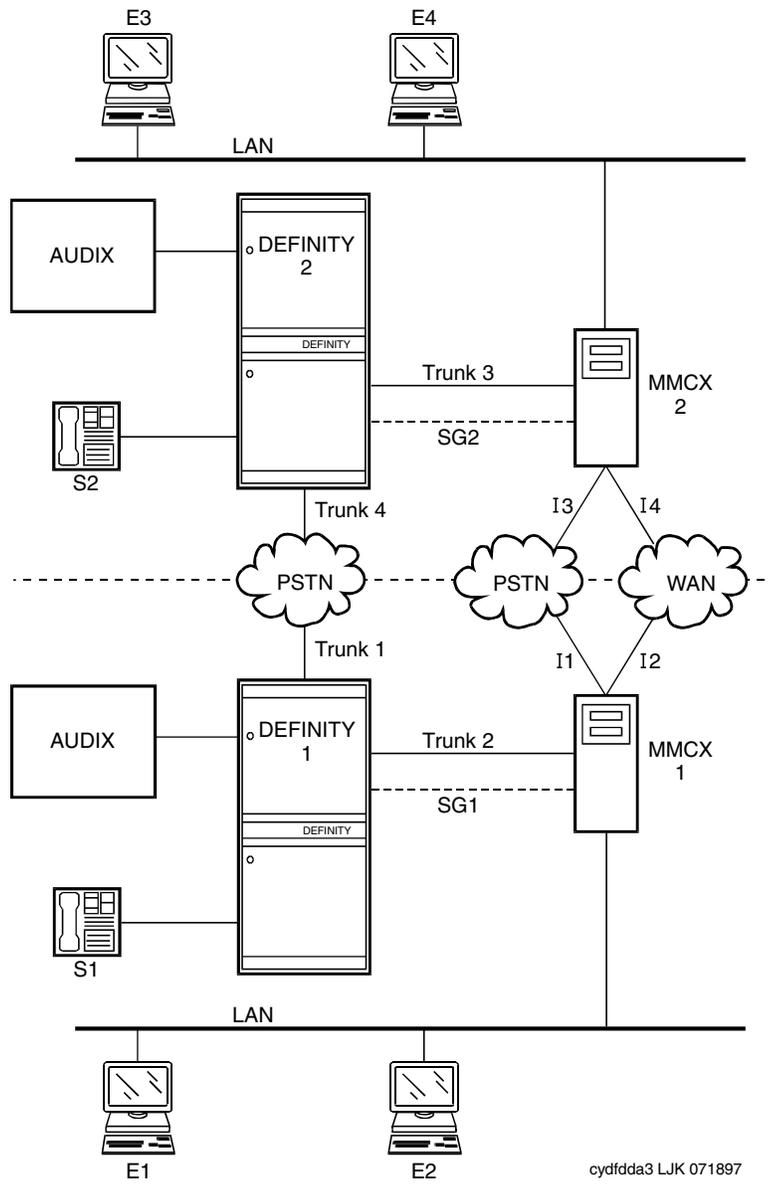


Figure 11-3. Two separate MASI domains

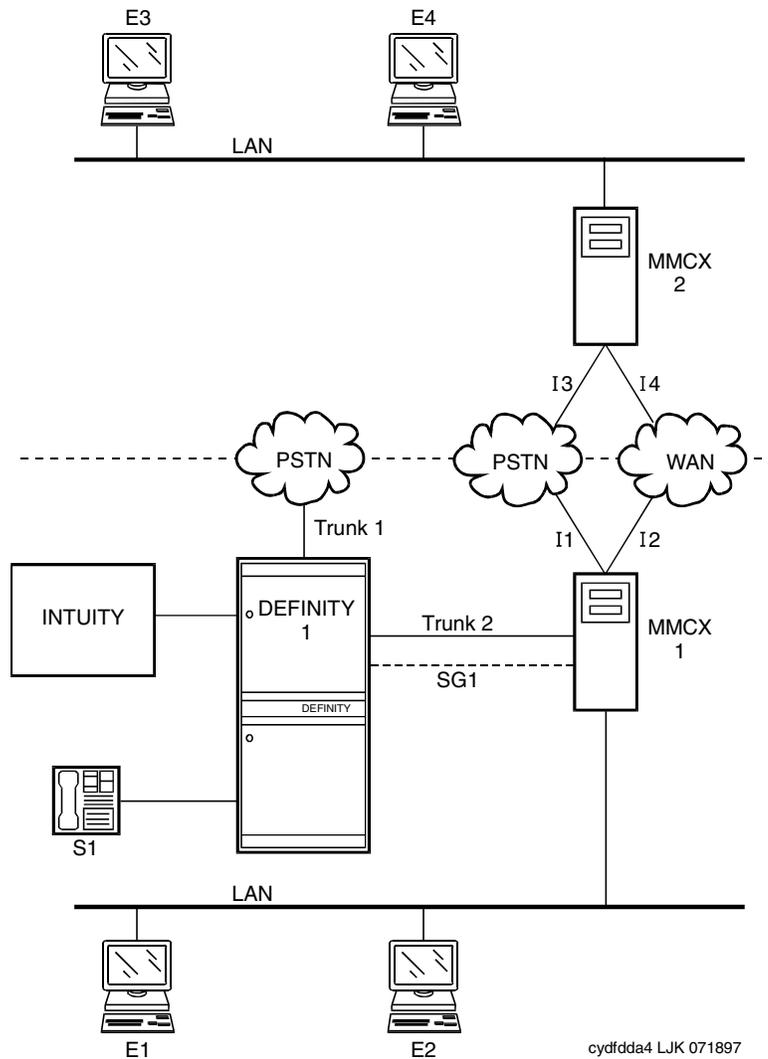


Figure 11-4. One MASI domain, and one non-MASI MMCX

The MASI node must be directly connected to the DEFINITY ECS for MASI features to work. In this configuration, terminals that belong to MMCX 2 (E3 and E4), do not take advantage of MASI capabilities.

How to administer MASI

This section discusses the administration required to make MASI work. You perform most of this administration from the DEFINITY SAT. However, there are a few things you must do at the MMCX administration terminal. This section sometimes refers to the **chgmasi** command. This is the command you use to administer MASI parameters on the MMCX. For more information about using the chgmasi command, refer to your *MMCX Technical Reference*.

Step 1 — Establish customer options (Lucent Technologies)

A Lucent Technologies representative must activate MASI using the System-Parameters Customer-Options form. The representative should also verify that ISDN-PRI (R6r and later configurations) or ISDN-PRI over PACCON (R6vs/si/csi and later configurations), and AAR/ARS are enabled. The value of the G3 Version field must be V5 or higher. The actual software load must be R6.1 or higher.

On the MMCX, MASI must be enabled using the **chgmasi** command.

Step 2 — Establish maintenance parameters and alarming options (Lucent Technologies)

Ensure that the Maintenance-Related System Parameters form, Packet Bus Activated field = y.

Using the **set options** command (Lucent Technologies init or inads logins only), set MASI alarming options. For more information, see *DEFINITY ECS Maintenance* for the appropriate model.

Step 3 — Establish the physical connection

Establish the physical connection between the DEFINITY ECS and the MMCX. For more information about installing the cables, see *Installation for Adjuncts and Peripherals*.

Step 4 — Administer circuit pack

Using the DS1 Circuit Pack form, verify that the DS1 circuit pack you use to establish the MASI link is administered as follows:

- Bit Rate = 1.544
- Line Coding = b8zs
- Line Compensation = 1
- Signaling Mode = isdn-pri
- Interface = network

- Country Protocol = 1
- Protocol Version = a

Step 5 — Administer a signaling group

For each MASI node, you need to establish a unique signaling group. Use the command **add signaling-group xxx** to access the Signaling Group form.

Page 1 of 5

SIGNALING GROUP

Group Number: _ Associated Signaling? y Max number of NCA TSC: __
 Primary D-Channel: _____ Max number of CA TSC: __
 Trunk Group for Channel Selection: __ Trunk Group for NCA TSC: __

Screen 11-1. Signaling Group Form (Page 1 of 5)

For each link, establish a Non-Call Associated Temporary Signaling Connection (NCA-TSC) with the following attributes:

- **Associated Signaling** — MASI requires Facility Associated Signaling, so this field must be set to y.
- **Primary D-channel** — Enter a 6- to 7-character port number associated with the DS1 Interface circuit pack port. The port address of the PRI that carries D-channel signaling.

The entry breaks down as follows:

Characters	Meaning	Value
1-2	Cabinet Number	1 – 44 (R5r and later configurations) 1 – 3 (R5si and later configurationsi)
		1 (R5vs and later configurations)
3	Carrier	A – E
4-5	Slot Number	01 – 20
6-7	Port	16 or 24

The port number is used to assign the primary D-channel in the Signaling Group. For 24-channel facilities, the 24th port is assigned as the D-channel. For 32-channel facilities, the 16th port is assigned as the D-channel.

- **Max Number of NCA TSC** — For MASI, this must be 1.
- **Max number of CA TSC** — Leave the default of 0.
- **Trunk Group For NCA TSC** — This can be left blank.
- **Trunk Group for Channel Selection** — This can be left blank.

ADMINISTERED NCA TSC ASSIGNMENT Page 2 of 5

Service/Feature: _____ As-needed Inactivity Time-out (min): __

TSC Index	Local Ext.	Enabled	Established	Dest. Digits	Appl.	Mach. ID
1:	_____	-	_____	_____	_____	_____
2:	_____	-	_____	_____	_____	_____
3:	_____	-	_____	_____	_____	_____
4:	_____	-	_____	_____	_____	_____
5:	_____	-	_____	_____	_____	_____
6:	_____	-	_____	_____	_____	_____
7:	_____	-	_____	_____	_____	_____
8:	_____	-	_____	_____	_____	_____
9:	_____	-	_____	_____	_____	_____
10:	_____	-	_____	_____	_____	_____
11:	_____	-	_____	_____	_____	_____
12:	_____	-	_____	_____	_____	_____
13:	_____	-	_____	_____	_____	_____
14:	_____	-	_____	_____	_____	_____
15:	_____	-	_____	_____	_____	_____
16:	_____	-	_____	_____	_____	_____

Screen 11-2. Administered NCA TSC Assignment page of the Signaling Group form

- **Service/Feature** — Leave blank.
- **As-needed Inactivity Time-out (min)** — This field only applies to as-needed NCA-TSCs. Since MASI requires a permanent connection, leave blank.
- **TSC Index** — This display-only field specifies the administered NCA-TSCs assigned.
- **Local Ext** — Enter a valid, unassigned DEFINITY ECS extension. This extension does not need a port assignment and does not need to correspond to any other administration.
- **Enabled** — Enter **y** to enable the administered NCA-TSC. You may want to wait to enable this link until all other administration is in place. If this is **y**, DEFINITY ECS attempts to establish the connection as soon as you submit the form. This may cause your system to alarm, if other administration is not finished.
- **Establish** — Used to indicate the strategy for establishing this administered NCA-TSC. Enter **permanent** for MASI.

- **Dest. Digits** — A valid MMCX extension. This must correspond to the value of the *tscnum* argument to the **chgmasi** command.

⇒ **NOTE:**

These digits are sent as entered to the destination MMCX; no routing or other digit manipulation is performed.

- **Appl.** — Specifies the application this administered NCA-TSC is going to be used for. Enter **masi**.
- **Machine ID** — Used to indicate the MASI node to which this administered NCA-TSC is connected. This number should be the same as the MASI node number found on other forms.

How to list TSCs or determine status of the TSC

To determine which TSCs are designated for MASI, use the **list masi tsc** command.

MASI TEMPORARY SIGNALING CONNECTIONS (TSC)							
Sig. Grp	Primary D-Chan	TSC Index	Local Ext.	Enabled	Established	Dest. Digits	Mach. ID
xxx	xxxxxxx	xxx	xxxxx	x	xxxxxxx	xxxxxxxxxxxxxxxx	xx
xxx	xxxxxxx	xxx	xxxxx	x	xxxxxxx	xxxxxxxxxxxxxxxx	xx
xxx	xxxxxxx	xxx	xxxxx	x	xxxxxxx	xxxxxxxxxxxxxxxx	xx

Screen 11-3. MASI Temporary Signaling Connections (TSC) Display

This command displays the following:

- **Sig Grp** — The number of the signaling group to which this TSC belongs
- **Primary D-Channel** — Port location of the Primary D-channel
- **TSC Index** — The number of the MASI TSC within the signaling group
- **Local Ext.** — DEFINITY extension associated with the TSC
- **Enabled** — Indicates the state of the connection - enabled (y/n)
- **Established** — Value of established flag (as-needed/permanent)
- **Dest. Digits** — The MMCX extension that indicates the TSC destination
- **Mach. ID** — MASI node number

Once you establish and enable the signaling group, you need to verify that it is active. Use the command **status signaling-group signaling-group#** or

status tsc-administered signaling-group# [/tsc-index] [print] to determine if the link is active.

Step 6 — Administer ISDN-PRI trunk group

Use the command **add trunk-group xxx** to access the Trunk Groups form. For a more detailed description of the ISDN-PRI trunk group, see [“ISDN-PRI trunk group”](#) on page 7-221.

Establish an ISDN-PRI trunk group with the following attributes:

Page 1

- Group Type = isdn-pri
- TAC = valid TAC that conforms to your existing dial plan
- Direction = two-way
- Service Type = tie
- CDR Reports = n

You must also administer the PRI link from the MMCX to the ECS, using the MMCX administration terminal. See the *MMCX Technical Reference* for information on the **addpri** command.

Step 7 — Administer MASI Path Parameters

Use the **change masi path-parameters** command to access the MASI Path Parameters form.

MASI PATH PARAMETERS

Near-End Path Extension: _____

MASI Node	Trunk Group	Far-End Path Termination Number
1	—	_____
2	—	_____
3	—	_____
4	—	_____
5	—	_____
6	—	_____
7	—	_____
8	—	_____
9	—	_____
10	—	_____
11	—	_____
12	—	_____
13	—	_____
14	—	_____
15	—	_____

Screen 11-4. MASI Path Parameters form

Establish a MASI Path with the following attributes:

- **Near-End Path Extension** — An unassigned DEFINITY extension. When using the **chgmasi** command to administer the MMCX, this is the farpath extension. See the *MMCX Technical Reference* for more information.
- **MASI Node** — The node number for the MMCX. For each MMCX/MASI node, this number must be the same everywhere it occurs (signaling group, masi trunk group, and masi terminal forms).
- **Trunk Group** — This is the DEFINITY trunk group number for the ISDN-PRI trunk that will be used to establish call paths.
- **Far-End Path Termination Number** — This is an unassigned MMCX extension. When using the **chgmasi** command to administer the MMCX, this is the nearpath extension. See the *MMCX Technical Reference* for more information.

Step 8 — Administer MASI trunk groups

You use the MASI trunk group form to define MMCX interfaces that interconnect MASI nodes, or that connect MMCX nodes to another private switch or central office. Examples of MMCX interfaces include:

- PRI trunks linking MMCX servers
- PRI trunks linking MMCX to the PSTN
- PRI trunks from MMCX to DEFINITY that are used for purposes other than MASI
- LAN interfaces linking MMCX servers

Use the command **add masi trunk-group xxx (or 'next')** to access the MASI Trunk Group form. The trunk group number must not be assigned, and you cannot exceed the maximum total trunks for your system. Valid values for xxx are unused DEFINITY trunk group numbers between 1–96 for R6vs/si/csi and later configurations, and 1–120 for R6r and later configurations.

```

MASI TRUNK GROUP
Group Number: 15                               CDR Reports? y
Group Name: INCOMING CALL_____ COR: 1_      TN: 1      TAC: 915_
MASI Node Number: __ Remote Group Number: _

```

Screen 11-5. MASI Trunk Group Form

- **Group Number** — This field displays the MASI trunk group number. This is the number assigned when executing the **add masi trunk-group** command.
- **CDR Reports** — Valid entries are “y,” “n,” and “r.” Default is “y.”
 - If you enter “y,” CDR records will be generated by completed outgoing calls terminated on this trunk group. If incoming calls are being recorded (the Record Outgoing Calls Only field on the CDR System Parameters form is set to “n”), then a single CDR record will be generated for answered calls with the call duration.
 - If you enter “n,” no CDR records will be generated by calls originated by or terminated on this trunk group.
- **Group Name** — Enter a unique name that identifies the trunk group. Up to 27 characters can be used; default is “INCOMING CALL.”
- **COR** — Enter a class of restriction (COR) number (0–95) that reflects the desired restriction; default is “1.”
- **TN** — This field displays the Tenant Partition number. For R6 and later configurations, all MASI trunks are associated with Tenant 1.
- **TAC** — Enter the trunk access code (TAC) that identifies the trunk group on CDR reports. You must assign a different TAC to each MMCX interface. Valid entries conform to the dial plan (1–4 digits, * and # are valid first digits).
- **MASI Node Number** — The node number assigned to this MMCX machine.
- **Remote Group Number** — This is the number of the remote trunk group. For ISDN-PRI interfaces, valid values are any number 1–8; for LAN or WAN calling interfaces, the value must be 9. The combination of

MASI Node Number and Remote Group Number must be unique. Remote group number corresponds to the group number on the MASI node.

How to view a list of all MASI trunk groups

To view a list of all the MASI trunks administered on the ECS, use the command **list masi trunk-group**.

```
MASI TRUNK GROUP
```

Group Number	TAC	Group Name	Node Number	Remote Grp No.	CDR	COR	TN
xxx	xxxx	xx	xx	x	x	xx	xxx

Screen 11-6. List masi trunk-group output

How to determine the status of MASI trunk groups

To determine the status of a specific MASI trunk, use the command **status masi trunk-group xxx**, where xxx is the trunk group number. This command provides descriptive information about the trunk, and the number of currently active trunk calls.

```
MASI TRUNK GROUP STATUS
```

Group Number: xxx	Number of Active MMCX Trunk Calls: xxx
MASI Node Number: xx	
Remote Group Number: xxx	

Screen 11-7. Status masi trunk-group output

Step 9 — Administer MASI terminals

Use the **add masi terminal xxxxx** or **next** command to administer each MASI terminal as a MASI terminal. You use available extensions on the ECS, so they need to conform to DEFINITY ECS dial plan. The extension must match the DEFINITY dial plan, and for the add command, the extension must not already be in use. The extension of the MASI terminal must match the number of the MASI terminal.

DEFINITY users dial the MASI Terminal Extension to reach MMCX users.

⇒ NOTE:

Anytime you add a terminal or other extension to the MMCX, you must administer a corresponding MASI terminal on DEFINITY. If you do not, you will not be able to dial this extension from DEFINITY.

```

MASI TERMINAL

Extension: 1000                                BCC: 0
                                                MASI Node Number: __ TN: 1__
                                                COR: 1_

Name: _____

TERMINAL OPTIONS

Send Display Info? y

```

Screen 11-8. MASI Terminal Form — page 1

- **Extension** — This field displays the extension that you entered on the command line.
- **BCC** — This field displays the bearer capability class of the terminal, and identifies the type of traffic the terminal supports. For MASI, this is always 0, for voice or voice-grade data.
- **MASI Node Number** — The number of the node on which this terminal resides.
- **TN** — The tenant partition in which this terminal resides. At present, all MASI terminals must reside within tenant 1. This field is display-only, and always 1.
- **COR** — The class of restriction associated with this terminal.
- **Name** — The name associated with the terminal. This can be any alphanumeric string up to 27 characters.
- **Send Display Info** — Indicates whether DEFINITY should forward display information associated with a call. Set to y.

```

MASI TERMINAL

FEATURE OPTIONS
  LWC Reception: none___

  CDR Privacy? n

AUDIX Name: _____
    
```

Screen 11-9. MASI Terminal form — page 2

- **LWC Reception** — This field indicates whether the terminal can receive Leave Word Calling messages. Valid values are none, audix, and spe (for R6r and later configurations) or mas-spe (for R6vs/si/csi and later configurations). SPE-based LWC is not supported for MASI terminals. However, if DEFINITY AUDIX is used without a Data Control Link, you must administer MASI terminals to receive SPE-based LWC messages. For such cases, the LWC feature is used by AUDIX to activate and deactivate message waiting lamps on MASI terminals.
- **CDR Privacy** — Indicates whether CDR Privacy is supported for this terminal. See [“Call Detail Recording”](#) on page 4-167 for more information.
- **AUDIX Name** — This field only appears on R6r and later configurations. This field contains the name of the AUDIX adjunct for LWC messages. If LWC reception field is set to audix, this field must contain a name. The name must match a machine name on the Adjunct Names form.

```

MASI TERMINAL

SITE DATA
  Room: _____
  Jack: _____
  Cable: _____
  Floor: _____
  Building: _____

BUTTON ASSIGNMENTS
1: call-appr
    
```

Screen 11-10. MASI Terminal Form — page 3


```

MASI TERMINALS

Ext      Name                               Node
                               Number CDR COR TN
xxxxxx  xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx xx    x  xx  xxx
    
```

Screen 11-12. List MASI Terminal output

To view the active or idle status of a specific MASI terminal, use the command **status masi terminal (extension)**.

```

GENERAL STATUS

TYPE: MASI           Service State: active
Extension: 54001
MASI Node Number: 14
    
```

Screen 11-13. Status masi terminal command

To determine which extension you assigned as the MASI Near-End Path Termination extension, use the command **list extension-type**. This command displays the extension number and type (attendant, masi-terminal, etc.), as well as other information about the extension.

EXTENSION TYPE						
Ext	Type	Name	COR	TN	COS	Cv1/ Cv2
---	---	---	---	---	---	---
1234	masi-terminal		1	1	1	
4077	term-masi-path-call					

Screen 11-14. List extension type

Step 10 — Administer features

AAR/ARS

1. AAR/ARS is an optional feature on DEFINITY, and you need to purchase this option to use it with MMCX. To verify that this feature is enabled, use the command **display system-parameters customer-options**. If it is not enabled, call your Lucent Technologies representative.
2. The MMCX dial plan must use the same feature access codes as the DEFINITY ECS. If this is not already the case, modify the MMCX dial plan using the **chgdg** command. See the *MMCX Technical Reference* for more information.
3. Include this feature access code in the **chgmasi** command.

CDR

1. To get call detail records for calls over MMCX interfaces, set CDR Reports = y on the MASI Trunk Group form.
2. To get call records for calls over the ISDN-PRI trunk group, set CDR Reports = y on the ISDN-PRI Trunk Group form.
3. To track calls between a MASI terminal and other MASI terminals or DEFINITY stations, enter the MASI terminal extension on the Intraswitch CDR form.
4. Enter n in the Record Non-Call Assoc TSC field on the CDR System Parameters form.

⇒ NOTE:

If you use the same PRI trunks for MASI and non-MASI calls, it is strongly recommended that you do not enable CDR for these calls. Establish a separate trunk group for non-MASI calls and set CDR Reports = n.

Coverage

To establish coverage from a MASI terminal to AUDIX:

1. Use the MMCX user interface to enter the AUDIX hunt group extension as the coverage point. You cannot use DEFINITY coverage administration for MASI terminals.
2. If AUDIX ports are not administered on DEFINITY, do so.
3. Set up the MASI terminal as an AUDIX subscriber. Enter the MASI terminal extension in the extension field on the Subscriber Administration form.

To establish coverage from a MASI terminal to another MMCX terminal or DEFINITY station:

1. Use the MMCX user interface to enter the desired extension as the coverage point for the MASI terminal. You cannot use DEFINITY coverage administration for MASI terminals.

Step 11 — Verify administration

Make test calls from DEFINITY to MMCX, ensure that you can indeed place and receive calls.

Call an unattended MASI terminal. Verify that the call goes to AUDX. Retrieve the call from the MASI terminal. Verify that all works as expected.

MASI command permissions

If you are the super-user for your system, you can restrict other administrative logins from changing MASI administration. To do this, use the **change permissions (login-ID)** command. Enter y in the Additional Restrictions field, then move to the Restricted Object List page of the form.

You may restrict the following MASI-related objects:

- masi-path-parameters
- masi-terminal
- masi-trunk-group
- masi-tsc

Detailed description of features

AAR/ARS

MMCX can take advantage of advanced routing features for voice-only calls to the PSTN or a DEFINITY system private network. Users must enter the AAR/ARS access code before the rest of the dialed digits. MASI will route the call over the DEFINITY private network (AAR) or the public network (ARS), based on the digits supplied by the MMCX user.

Routing patterns must contain only trunk groups that actually terminate on the DEFINITY ECS. Calls from one MMCX to another do not use AAR/ARS. Authorization codes are not supported.

Call Detail Recording

Using the MASI link, DEFINITY is able to track call detail information for calls made using MMCX terminals and interfaces. CDR records all calls originating from or terminating at a MASI terminal. MASI CDR does not record ineffective call attempts when all MASI paths are busy.

The Resource Flag value of 8 indicates a MASI call. This field appears in unformatted, int-isdn, expanded and customized CDR formats. For formats other than these, you can determine that a call involves a MASI terminal or trunk by the TAC, dialed number or calling number fields.

The following are the CDR capabilities of MASI. Administration information is under the heading [“How to administer MASI”](#) on page 11-10.

- Incoming/Outgoing Trunk Call Splitting
Call splitting does not produce separate records for MMCX calls that are transferred or conferenced.
- Intraswitch CDR
You can administer intraswitch CDR to monitor MASI terminals. To do this, simply add the MASI terminal extension on the Intraswitch CDR form. DEFINITY then monitors calls from MASI terminals to other MASI terminals, and calls between MASI terminals and DEFINITY stations.
- CDR Privacy
You can administer a MASI terminal for CDR Privacy.
- Account Code Dialing and Forced Entry of Account Codes
This is not supported for MASI terminals. Therefore, make sure the COR you assign does not force entry of account codes.
- Trunk CDR
You can get call detail records for all incoming and outgoing calls made over MMCX interfaces.

Call redirection / Voice-messaging access

MMCX users can enter a DEFINITY extension, including an AUDIX hunt group, Callmaster agent, attendant console or voice terminal as their coverage point.

If AUDIX is established as the MASI terminal's coverage point, the MASI terminal receives message waiting indication, and dials the AUDIX hunt group extension to retrieve messages. Once connected to AUDIX, operation for the MMCX user is the same as for a DEFINITY station user, including use of # to identify the extension, if desired.

⇒ NOTE:

It is not possible to determine the call coverage status of a MASI terminal.

DEFINITY tracks calls to MASI terminals that follow the autonomous coverage path from the MASI terminal. MMCX calls redirected to DEFINITY stations contain display information.

MASI terminals that dial AUDIX directly, or that place calls to MASI terminals that cover to AUDIX, do not receive ringback if all AUDIX ports are busy. Instead, these callers see a message that the called party is busy, and the call drops.

Transfer

MASI terminals cannot transfer calls to DEFINITY stations, and cannot transfer a call to another MASI terminal if the call involves a DEFINITY station.

Conferencing

Conferences can involve both MASI terminals and DEFINITY stations, and either one may initiate the conference. DEFINITY stations participate in such conferences in voice-only mode. If an MMCX user initiates a conference that involves DEFINITY stations, the conference will drop when the initiator drops from the call. If a DEFINITY station initiates the conference, that station may drop without affecting the other conferees.

Status tracking - terminals and trunks

DEFINITY tracks the active/idle status of all MASI terminals, and monitors traffic over MMCX interfaces.

Trunk groups

For MASI purposes, there are two kinds of trunk groups: the ISDN-PRI trunk groups that serve as paths for establishing calls between DEFINITY stations or trunks and MASI terminals or interfaces, and the remote trunks that are

interfaces from the MMCX to other entities. Each MASI remote trunk group appears to DEFINITY as a single unit, with no concept of members within the group.

 **NOTE:**

You cannot test, busy out, or release MASI remote trunk groups, since you cannot dial a MASI remote trunk TAC from DEFINITY. The TAC merely identifies the trunk to DEFINITY for status and CDR.

You cannot administer MASI trunks as part of DEFINITY route patterns.

Interactions & Unsupported Features

We can generalize feature interactions to some extent. For example, since there are no buttons available to a MASI terminal, any feature that requires a button is also not available. MASI cannot support features that require the user to dial a trunk access code for a MASI remote trunk, or a feature access code other than AAR/ARS. The MMCX dial plan may contain only those feature access codes that are supported.

 **CAUTION:**

DO NOT ADMINISTER the following features! The following features are not supported for use over the MASI link, and Lucent Technologies cannot responsible for the results if you attempt to administer them.

Unsupported Call Center features

- ASAI — You must not administer a MASI terminal in an ASAI domain. MASI terminals and MMCX trunks are not monitored by ASAI. It may be possible for a MASI terminal to place a call to a DEFINITY station that is part of an ASAI domain. ASAI will not be blocked from controlling this call, but there may be unpredictable results. The same is true for calls originating from an ASAI domain terminating at MASI terminals, and for ASAI-monitored hunt groups that contain MASI terminals.
- Automatic Call Distribution — You must not include a MASI terminal extension as part of an ACD hunt group. You must not mix MASI administration with anything related to ACD, including Outbound Call Management and PASTE.
- Call Vectoring — You must not include MASI terminal extensions in any step of a vector.

Unsupported Basic features

- Bridged Call Appearances — You must not administer a bridged appearance that involves a MASI terminal.
- Call Coverage — You must not administer a MASI terminal in a DEFINITY station's coverage path.

- Call Forwarding — You must not forward a DEFINITY station to a MASI terminal.
- Call Pickup — You must not administer a MASI terminal as part of a pickup group.
- Intercom — You must not administer MASI terminals as members of any type of intercom group.
- Manual Message Waiting — You must not administer a manual message waiting button (man-msg-wt) with a MASI terminal as the referenced extension.
- Manual Signaling — You must not administer a manual signaling button (signal) with a MASI terminal as the referenced extension.
- Night Service — You must not administer a MASI terminal as a night service destination.
- Pull transfer — MASI terminals cannot perform a pull transfer operation. You must not administer this feature on an ECS where MASI is active. This applies only in Italy.
- Station Hunting — You must not administer a MASI terminal as part of a station hunting path.
- Terminating Extension Groups — You must not administer a MASI terminal as part of a TEG.

Other interactions

The following section describes feature behaviors that may not be as expected, but that are not likely to be destructive.

Attendant features

- Dial Access to the Attendant — MASI terminals will be able to dial the attendant access code, if it is administered in the MMCX dial plan.
- Attendant Direct Extension Selection — Attendants are able to access MASI terminals via DXS buttons and busy lamp indicates status of the MASI terminal.
- Emergency Access to the Attendant — MASI terminals have emergency access using the attendant access code, if it is administered in the MMCX dial plan. However, off-hook alerting is not administrable.
- Attendant Intrusion — Attendants are able to activate intrusion towards MASI terminals.
- Attendant Override — Attendants are not able to activate override towards MASI terminals.
- Attendant Recall — MASI terminals cannot activate attendant recall.

- Attendant Remote Trunk Group Select — Attendants cannot use this feature to select MASI remote trunks.
- Attendant Return Call — Operates normally if a MASI terminal is the called party.
- Attendant Serial Call — Serial calls are denied if the calling party is an MMCX interface.
- Attendant Straightforward Outward Completion — The attendant is able to complete calls to DEFINITY trunks for MASI terminals.
- Attendant Through Dialing — The attendant can use Through Dialing to pass dial tone to MASI terminals.
- Attendant Timers — Attendant timers work the same no matter what kind of terminal is involved.
- Attendant Trunk Group Busy/Warning Indicators — You cannot administer Busy/Warning indicators for MASI trunks because they are not standard DEFINITY trunks. However, you can administer these indicators for the trunk group administered for MASI paths.
- Attendant Trunk Identification — The attendant is not able to identify the trunk name via button pushes.

Basic features

- Abbreviated Dialing — A DEFINITY station can enter an MMCX extension in an AD list. However, MASI terminals cannot use AD.
- Administered Connections — MASI terminals must not be the originator nor the destination of an administered connection.
- Automatic Callback — Automatic callback does not work towards a MASI terminal.
- Automatic Circuit Assurance — You must not administer a MASI terminal as an ACA referral destination. You cannot administer ACA for MASI remote trunks.
- Busy Verification of Terminals and Trunks — You cannot use Busy Verification for MASI terminals or remote trunks.
- Call Detail Recording — CDR Account Code Dialing and Forced Entry of Account Codes are not supported for MASI terminals. See Call Detail Recording in Detailed Description for more information.
- Call Park — The attendant can park calls at the extension of a MASI terminal, but users can only retrieve these calls from a DEFINITY station, since MASI terminals cannot dial the Answer Back FAC.
- Data Call Setup — DEFINITY users cannot place data calls to MASI terminals.
- Facility Busy Indication — You can use FBI to track the status of MASI terminals. The FBI button and indicator lamp must be on a DEFINITY station. You cannot use FBI to track MMCX interfaces.

- Facility Test Calls — DEFINITY users cannot make test calls to MMCX interfaces.
- Go to Cover — MASI terminals cannot activate this feature.
- Leave Word Calling — The only valid LWC destination for a MASI terminal is AUDIX. You cannot administer SPE-based LWC. MASI terminals cannot send LWC messages to DEFINITY stations or MASI terminals.
- Loudspeaker paging — You can administer a MASI terminal as a code calling extension.
- Malicious Call Trace — MASI terminals cannot initiate malicious call trace.
- Message Retrieval — MMCX users can only retrieve messages through AUDIX.
- Music on Hold — Music on hold will only be available if a DEFINITY station has placed the call on hold.
- Override — Executive override does not work towards MASI terminals.
- Priority Calling — Priority calling is not supported for calls to or from MASI terminals.
- Ringback Queueing — Ringback Queueing is not supported for MASI terminals.
- Send All Calls — MMCX has an autonomous SAC function. See Call Redirection for more information.
- Tenant Partitioning — All MASI terminals exist in tenant 1, and you cannot change the tenant number.
- Time of Day coverage — As with all coverage, DEFINITY does not control coverage of the MASI terminal.
- Transfer out of AUDIX — A MASI terminal cannot use *T to transfer from AUDIX to another MASI terminal.

Hospitality features

- Do Not Disturb — MASI terminals cannot activate Do Not Disturb.

Multimedia features

- Multimedia Call Handling — DEFINITY MMCH users are not able to make H.320 calls to MASI terminals over the MASI link. Calls between MMCX terminals and MMCH terminals are voice only.

Troubleshooting

Verify proper operation using the following commands and follow normal escalation procedures to resolve any failures detected by the demand test.

1. Verify the DS1 trunk using the **test board <board location> long** command.
2. Verify the ISDN Signaling Group using the **test signaling-group <group number>** command. Also verify proper administration.
3. Verify the temporary signaling connection using the **test tsc-administered <group number>** command. Also verify proper administration.

Common error conditions

If the cable from the ECS to the MMCX becomes disconnected, you should see alarms raised against ISDN-SGRP and UDS1-BD. In particular, you should observe ISDN-SGRP errors such as 769, 1793, and 257. To resolve, reconnect the cable and follow normal test procedures.

If the far-end path termination number is incorrect, you should observe MASI-PTH error 513. To resolve, correct administration using the MASI Path Parameters form.

If the Layer 3 TSC is not administered properly or is out of service, you should observe errors (but no alarms) raised against TSC-ADM. Verify the signaling group administration and follow normal escalation procedures for TSC-ADM. *What do these errors look like? Is this meant for anyone other than techs?*

If the TSC fails to come up even through Layer 2 Signaling Group and below pass tests, you may run **test tsc-administered <group number>** to force a switch heartbeat test, or simply wait 5–10 minutes for the link to recover. This situation may happen if the switch is rebooted or if the MASI interface is administered before the MMCX is properly administered.

You may want to use busy port and release port commands to unlock things if features are not working.

Multimedia Call Handling

Functional description of MMCH

Multimedia Call Handling (MMCH) enables you to control voice, video, and data transmissions using your voice terminal and PC. You can conduct video conferences and route calls like a standard voice call. You can also share PC applications so that you and your colleagues can collaborate while working from remote sites. MMCH enhances your voice terminal's capabilities to place or receive multimedia calls by taking advantage of DEFINITY ECS's powerful call-handling and routing features.

Operations in Basic or Enhanced modes

There are two distinct levels of functionality: Basic and Enhanced. The Basic mode of operation treats a standard-protocol H.320 multimedia call as a data call. If the call is redirected, it is converted to a voice call. As a voice call, certain features are enabled, such as coverage, voice mail, and multiparty video conferencing. The Enhanced mode of operation allows a multifunction voice terminal to control a multimedia call like a standard voice call. Spontaneous video conferencing, call forwarding, call coverage, hold, transfer and park, along with many routing features, are available to multimedia calls. Both modes of operation allow data collaboration between multiple parties using the T.120 standard protocol.

Definitions: MMCH features and components

Multimedia call

A multimedia call, for MMCH, is one that conforms to the H.320 and T.120 suite of protocol standards. These standards allow video-conferencing packages from different vendors to communicate with one another. The capabilities of the individual multimedia-endpoint package can vary, however.

- An H.320 call can contain voice, video and data.
- The bandwidth for MMCH calls is limited to 2 B-channels.

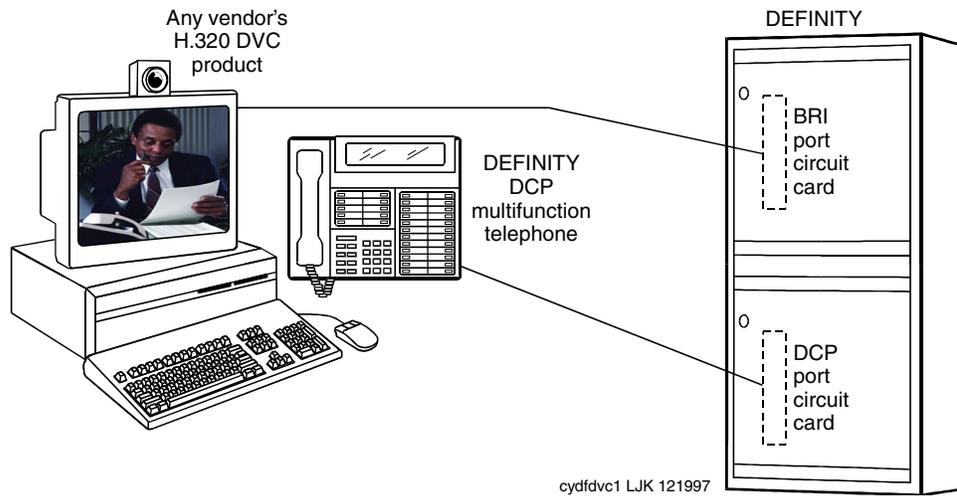


Figure 11-5. MMCH multimedia complex

Basic multimedia complex

A Basic multimedia complex consists of a BRI-connected multimedia-equipped PC and a non-BRI-connected multifunction voice terminal administered in Basic mode. With a Basic multimedia complex, users place voice calls at the multifunction voice terminal and multimedia calls from the multimedia equipped PC. Voice calls will be answered at the multifunction voice terminal and multimedia calls will alert first at the PC and, if unanswered, will next alert at the voice station. A Basic multimedia complex provides a loose integration of the voice station and H.320 DVC system.

Enhanced multimedia complex

An Enhanced multimedia complex consists of a BRI-connected multimedia-equipped PC and a non-BRI-connected multifunction voice terminal administered in Enhanced mode. The Enhanced multimedia complex acts as though the PC were directly connected to the multifunction voice terminal. Thus, voice call control, multimedia call control and call status are enabled at the voice terminal. An Enhanced multimedia complex provides a tight integration of the voice station and H.320 DVC system.

Multimedia endpoint

The multimedia endpoint is a user's PC that has been equipped with an H.320 multimedia package. The PC is physically connected to the DEFINTY ECS with a BRI line.

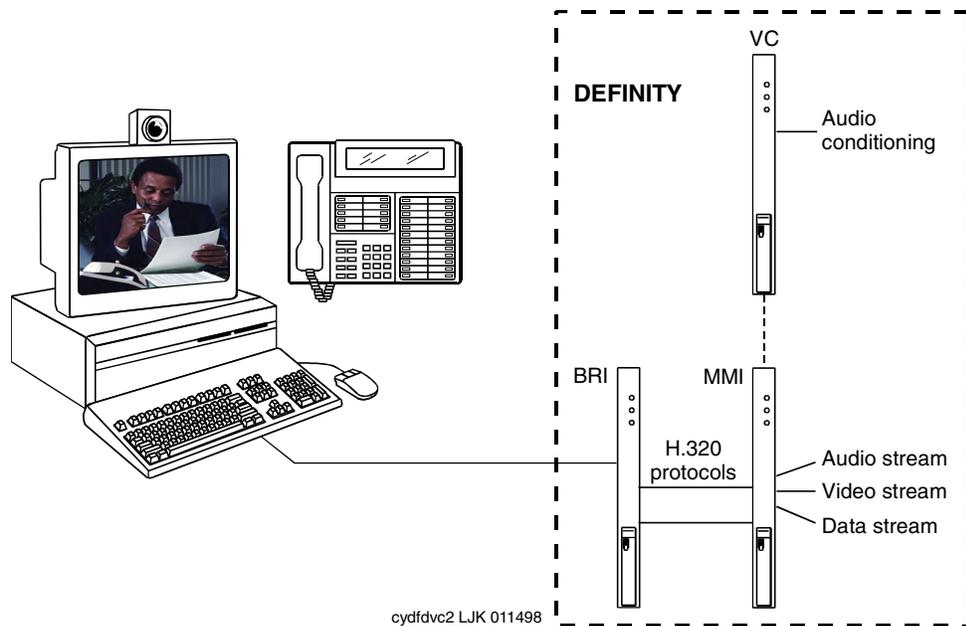


Figure 11-6. Enhanced MMCH service link

Enhanced mode service link

The service link is the combined hardware and software multimedia connection between the user's multimedia endpoint and the DEFINITY ECS which terminates the H.320 protocol. The service link provides video, data, and, optionally, voice streams to augment the capabilities of the voice terminal and PC. A service link only applies to an Enhanced multimedia complex, never to a Basic multimedia complex. The service link is administered on the station form and can be either "permanent" or "as-needed." For detailed information see [11-50](#).

Feature Description

MMCH's two levels of functionality for a multimedia complex, Basic and Enhanced mode, are enabled either by switch administration (see "[System Level Administration](#)" on page 11-42) or by an mm-basic feature button or FAC (see [11-52](#)).

Basic Mode Operation

In Basic Mode:

- All voice-only calls originate at the voice station.

- All multimedia calls originate with the H.320 DVC system.
- All incoming voice calls attempt to alert at the voice station and receive all standard voice call treatment.
- All incoming H.320 multimedia calls attempt to alert on the H.320 DVC system initially. If answered, a 2-way video call will result. The Basic multimedia complex voice station will not be involved in the call in any way.

If the H.320 multimedia call is not answered at the H.320 DVC system and the Basic multimedia complex voice station has the H.320 field administered to “y”, the call will:

- timeout at the DVC system
 - alert at the associated voice station set as a voice-only call
 - receive all standard voice call treatment.
- Call control depends on what type of call is being originated.
 - Video is received and controlled at the PC.
 - Voice is received and controlled at the telephone set.
 - The voice station of a Basic multimedia complex must manually add their multimedia endpoint to a multimedia conference. There is limited support for multimedia feature interactions. A specific set of voice features work for multimedia calls.
 - Service Links are not used by Basic mode complexes.
 - A single number may be used to reach the Basic multimedia complex for voice or H.320 multimedia calls.

See “Basic Mode MM complex” on page 11-61.

Enhanced Mode Operation

The Enhanced multimedia complex provides a much more tightly coupled integration of the complex voice station and H.320 DVC system. In Enhanced Mode:

- Both multimedia and voice calls must originate at the telephone set.
- Voice and multimedia calls can be controlled at the telephone set.
- Conferencing is spontaneous and established just like a voice-only conference call.
- There is extensive support for multimedia feature interaction. Most voice features work the same for multimedia calls.
- Service Links can be either “permanent” or “as-needed.”

See “Enhanced Mode MM complex” on page 11-75.

Physical Installation

The physical components necessary to utilize MMCH capabilities include:

- DEFINITY ECS software (see [“Administration commands”](#) on page 11-42).
- H.320 DVC systems that are BRI connected to the DEFINITY ECS.
- Non-BRI multifunction voice terminals.
- DEFINITY TN787 MultiMedia Interface (MMI) and TN788 Voice Conditioner (VC) boards.
- A T.120 Enhanced Services Module (ESM) server (necessary only if you plan to do T.210 data collaboration). Connectivity of the ESM requires an additional TN787 along with a TN2207 DS1 circuit pack.

Dual Port Desktop

Both Basic and Enhanced multimedia complexes are dual-port desktops that consist of:

- a BRI-connected multimedia-equipped PC that supports the H.320 protocol
- a non-BRI-connected multifunction telephone set.

The PC and the multifunction voice terminal are individually wired to the DEFINITY ECS. These two pieces of equipment can be administratively associated to form a Basic or ENHANCED multimedia complex (see [“Planning & administration for MMCH”](#) on page 11-38).

MMCH works with any H.320 system that is fully H.320 compliant and operates at the 2B or 128K rate.

NOTE:

If you intend to share applications among users or whiteboard capabilities, the endpoint software you choose must also support the T.120 protocol.

The following endpoint-software packages have been tested:

- PictureTel PCS 50 & PCS 100, Release 1.6T
- Proshare 2.0a, 2.1
- Zydacron Z250 Ver. 2.02, Z350 Ver. 1.2 (With Netmeeting 2.0)

MMI & VC hardware

The MMCH feature requires the use of two additional circuit packs:

- Multi Media Interface (MMI) TN787J.
- Voice Conditioner (VC) TN788B.

The TN787 and TN788 are service circuit packs. The TN787 supports simultaneous operation of 16 2B H.320 calls. The TN788 supports the voice processing for 4 H.320 endpoints.

- These service circuit packs may be located in any Port Network.
- These packs do not require any translations as part of their implementation.
- The MMI and VC circuit packs are resource circuit packs akin to the Tone Detector circuit packs.
- These circuit packs require no switch administration and may be located in multiple port networks.
- Specific provisioning guidelines for the number and placement of these packs can be found by calling the Lucent Technical Support Center (TSC) at (303) 850 - 8187.

T.120 Data Collaboration Server

The Expansion Services Module (ESM) provides T.120 data collaboration capability on a MMCH multipoint H.320 video conference.

- Each person in the conference who wants to participate in the data collaboration session, must have a personal computer with an H.320 video application that supports the T.120 protocol.
- The DEFINITY ECS must have an ESM installed.

ESM Installation

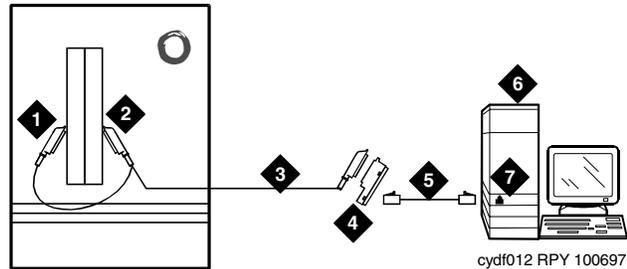


Figure Notes

- | | |
|--|---|
| 1. Port B Y-cable connector to a TN787 multimedia interface (MMI) circuit pack | 5. D8W cord connected to 356A adapter S/B port 8 |
| 2. Port A Y-cable connector to a TN2207 PRI circuit pack | 6. Expansion service module (ESM) |
| 3. 25-pair Y-cable | 7. Port B on compatible primary rate interface (PRI) card |
| 4. 356A adapter | |

Figure 11-7. Typical Multimedia Call handling ESM Connections

Use the following procedure and [Figure 11-7](#) to connect to the ESM equipment:

1. Install the TN2207 primary rate interface (PRI) circuit pack and the TN787 multimedia interface (MMI) circuit pack in the DEFINITY System port carrier.

➡ NOTE:

These two circuit packs should be co-located in the cabinet since they must be connected by a Y-cable on the back plane of the DEFINITY ECS.

2. Record the circuit pack locations.
3. Connect the ESM Y-cable as shown.
4. Administer the DS1 form and the signaling-group form for the ESM (see [“ESM T.120 Server Administration”](#) on page 11-54).
5. Configure the ESM adjunct.

System Capacities

The following capacity information provides a starting point for understanding the current MMCH physical system limitations.

Table 11-1. MMCH System Capacities

	R6.3 si	R6.3 r
TN787 MMI boards	5	13
TN788 VC boards	20	52
Max Simultaneous 3 MMpty calls	26	69
Max Simultaneous Conversion calls	80	208
Nominal Dual-Port Desktops		
■ Basic mode office environment	675	2000
■ Enhanced mode office environment	225	675
■ Enhanced mode Call Center	32	83

Planning & administration for MMCH

The following are some of the tasks you perform in planning and administering MMCH.

Planning the system

This is a list of questions to help you use DEFINITY ECS for multimedia.

- How many MMCH users are you going to have?
- How many multimedia calls do you expect to have at any given time?

With the information above you can determine how many Voice Conditioner (VC) and Multimedia Interface (MMI) circuit packs you need.

- Will users need data collaboration capabilities? If so, you need to install the Expansion Service Module (ESM).
- Which stations, hunt groups or vectors need early answer?
- Do you have ISDN-PRI trunks? It is possible to use separate DS1 trunks for data, but ISDN-PRI trunks are recommended.

Installation checklist

1. Purchase MMCH right-to-use.
2. Lucent Technologies — enable MMCH on Customer-Options form.
3. Administer default multimedia outgoing trunk parameter selection on the System-Parameters Features form.
4. Administer MMCH related feature access code on the Feature Access Code form.
5. Install and administer hardware:
 - Install MMIs, VCs and ESM.
 - Administer ESM to ECS connection — DS1 Circuit Pack form, Signaling Group form.
 - Establish maintenance parameters — Maintenance Related System Parameters form.
6. Administer multimedia complexes:
 - Administer data modules — Data Module form
 - Administer stations as part of a multimedia complex, assign associated data module extension, multimedia mode, service link mode and appropriate multimedia buttons — Station forms
7. Administer early answer and H.320 flag for stations, the early answer flag for hunt groups, and the multimedia flag for vectors as appropriate.
8. Train end users.
9. Monitor traffic and performance.

Multimedia Forms

Table 11-2. Required forms

Form	Field	Page
System-Parameters Customer-Options	■ Multimedia Call Handling (Basic)	<u>11-42</u>
	■ Multimedia Call Handling (Enhanced)	
System-Parameters Features	■ Default Multimedia Outgoing Trunk Parameter Selection (p.2)	<u>11-43</u>
Maintenance-Related System Parameters	■ Packet Bus Activated = y	<u>11-46</u>
	■ Minimum Maintenance Thresholds MMIs, VCs	
Data Module (type = 7500 or WCBRI)	■ Multimedia (p. 1) = y	<u>11-47</u>
	■ XID (p. 2) = n	
	■ MIM Support (p. 2) = n	
Station	■ MM Complex Data Ext (p. 1)	<u>11-48</u>
	■ H.320 Conversion (p. 2)	
	■ Multimedia Early Answer (p. 2)	
	■ Multimedia Mode (p.2)	
	■ Service Link Mode (p.2)	
	■ Feature Buttons (p.3) (optional)	
Hunt Group	■ MM Early Answer (optional)	<u>11-57</u>
Call Vector	■ Multimedia (optional)	<u>11-58</u>

Continued on next page

Table 11-2. Required forms

Feature Access Codes	<ul style="list-style-type: none">■ Basic Mode Activation (p.5)■ Enhanced Mode Activation (p.5)■ Multimedia Call Access Code (p.5)■ Multimedia Data Conference Activation & Deactivation (p.5)■ Multimedia Multi-Address Access Code (p.5)■ Multimedia Parameter Access Code (p.5)	<u>11-44</u>
DS1 Circuit Pack (ESM Only)	<ul style="list-style-type: none">■ Bit Rate=2.048■ Line Coding=hdb3■ Signaling Mode=isdn-pri■ Connect=pbx■ Interface=network■ Country Protocol=1■ CRC=y■ MMI Cabling Board	<u>11-54</u>
Signaling group (ESM Only)	<ul style="list-style-type: none">■ Primary D-Channel	<u>11-56</u>

Administration commands

System Level Administration

System-Parameters Customer-Options form:

To enable the MMCH release 6.3 feature, you must change the System-Parameters Customer-Options form. There are two MMCH related fields on page 2 of this form.

- The “Multimedia Call Handling (Basic)” field must be set to ‘y’ to allow MMCH Basic mode operation.
- The “Multimedia Call Handling (Enhanced)” field must be set to ‘y’ to allow MMCH Enhanced mode operations.

```

change system-parameters customer-options                               Page  2 of  4
                                OPTIONAL FEATURES

                                ISDN-BRI Trunks? n  Restrict Call Forward Off Net? y
                                ISDN-PRI? y          Secondary Data Module? y
                                ISDN-PRI over PACCON? y      SoftLock? n
                                Malicious Call Trace? n      Station and Trunk MSP? n
                                Mode Code Interface? n       Tenant Partitioning? n
                                Multifrequency Signaling? y   Terminal Trans. Init. (TTI)? n
Multimedia Appl. Server Interface (MASI)? n                 Time of Day Routing? n
                                Multimedia Call Handling (Basic)? y      Uniform Dialing Plan? y
                                Multimedia Call Handling (Enhanced)? y  Usage Allocation Enhancements? y
                                Personal Station Access (PSA)? n

                                                                Wideband Switching? n
                                                                Wireless? n

                                Processor and System MSP? n
                                Private Networking? y

                                (NOTE: You must logoff & login to effect the permission changes.)

```

Screen 11-15. System-Parameters Customer-Options Form (Page 2 of 4)

System-Parameters Features form:

The default bandwidth for MMCH calls is defined on the System-Parameters Features form shown below.

⇒ NOTE:

Originating a multimedia call with the mm-call button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form.

- This default parameter will be either 2x56 or 2x64.
- The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

```

change system-parameters features                               Page  2 of  8
      FEATURE-RELATED SYSTEM PARAMETERS
LEAVE WORD CALLING PARAMETERS
Maximum Number of Messages Per Station (when MSA not in service): 10
Stations with System-wide Retrieval Permission (enter extension)
  1:          3:          5:          7:          9:
  2:          4:          6:          8:         10:
WARNING!  SEE USER DOCUMENTATION BEFORE CHANGING TTI STATE
          Terminal Translation Initialization (TTI) Enabled? n

          Prohibit Bridging Onto Calls With Data Privacy? n
          Enhanced Abbreviated Dial Length (3 or 4): 3
          Call Forward Override? n
          External Coverage Treatment for Transferred Incoming Calls? n
          Coverage Of Calls Redirected Off-Net Enabled? n
          Default Multimedia Outgoing Trunk Parameter Selection: 2x64
WIRELESS PARAMETERS
Radio Controllers with Download Server Permission (enter board location)
  1:          2:          3:          4:          5:

```

Screen 11-16. System-Parameters Features Form (Page 2 of 8)

MMCH Feature Access Codes (FACs)

The following MMCH specific feature access codes can be administered in the feature-access-codes form.

⇒ NOTE:

These FACs only work if MMCH has been enabled via the System-Parameters Customer-Options form.

```
change feature-access-codes                                     Page 6 of 6
                                                                FEATURE ACCESS CODE (FAC)
                                                                Multimedia Features
                                                                Basic Mode Activation: *01
                                                                Enhanced Mode Activation: *02
                                                                Multimedia Call Access Code: *03
Multimedia Data Conference Activation: *04 Deactivation: #04
Multimedia Multi-Address Access Code: *05
                                                                Multimedia Parameter Access Code: *06
```

Screen 11-17. Feature-Access-Codes Form (Page 6 of 6)

- **Basic Mode Activation:** If you enter this FAC when your system is an Enhanced multimedia complex, it will revert to a Basic multimedia complex. If you enter this FAC when your system is a Basic mode station it will do nothing.
- **Enhanced Mode Activation:** If you enter this FAC when your system is a Basic multimedia complex, it will become an Enhanced multimedia complex. If you enter this FAC when your system is an Enhanced mode station it will do nothing.
- **Multimedia Call Access Code:** If you enter this FAC from any voice station, it indicates to the DEFINITY ECS that you are making an Enhanced multimedia mode call. If you originate a multimedia call with the multimedia call access code, it will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form.
- **Multimedia Data Conference Activation:** If you enter this FAC from any voice station that is participating in a multimedia call, it will alert the DEFINITY ECS that you want to enable data collaboration with the other parties on the call. If you enter this FAC a second time, it will give denial treatment (since a collaboration session is already active). This FAC only applies to voice stations on a DEFINITY ECS switch equipped with an ESM adjunct.

The Multimedia Data Conference Activation FAC must be entered after your system is active on a multimedia call. To enter the FAC:

1. Select TRANSFER
2. Receive a dialtone
3. Dial the Multimedia Data Conference Activation FAC
4. Receive a confirmation tone
5. Re-select the call appearance for the held-multimedia call.

- **Multimedia Data Conference Deactivation:** If you enter this FAC from the voice terminal that enabled data collaboration on a multimedia mode call, it will deactivate the data session and revert to a voice and video call. If you enter this deactivation FAC while participating in a data-collaboration multimedia call that *you did not initiate*, you will get denial treatment.

The Multimedia Data Conference Deactivation FAC must be entered after you are active on a multimedia call. To enter the FAC:

1. Select TRANSFER
2. Receive a dialtone
3. Dial the FAC
4. Receive a confirmation tone
5. Re-select the call appearance for the held multimedia call.

- **Multimedia Multi-Address Access Code:** The multimedia multi-address access code is similar to the multimedia call access code. It allows origination of a multimedia call from a voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. For example, ISDN-BRI provided by a Central Office is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of addresses must be entered.

Originating a multimedia call with the multimedia multi-address access code will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form.

- **Multimedia Parameter Access Code:** This FAC can be entered by any voice station to indicate to the DEFINITY ECS that you want to initiate a multimedia mode call with a specific bearer capability. This FAC would be followed by a 1 or 2 to indicate the following parameter selections respectively: 2x64 (unrestricted initial system default), 2x56 (restricted).

Maintenance-Related System Parameters

```

- -
change system-parameters maintenance                               Page  2 of  3
                MAINTENANCE-RELATED SYSTEM PARAMETERS

MINIMUM MAINTENANCE THRESHOLDS ( Before Notification )
    TTRs: 4          CPTRs: 1          Call Classifier Ports: 0
    MMIs: 0          VCs: 0

TERMINATING TRUNK TRANSMISSION TEST ( Extension )
    Test Type 100:          Test Type 102:          Test Type 105:

ISDN MAINTENANCE
    ISDN-PRI Test Call Extension:          ISDN-BRI Service SPID:

DS1 MAINTENANCE
    DS0 Loop-Around Test Call Extension:

LOSS PLAN ( Leave Blank if no Extra Loss is Required )
    Minimum Number of Parties in a Conference Before Adding Extra Loss:

SPE OPTIONAL BOARDS
    Disk? y          Packet Intf1? y          Packet Intf2? n          Packet Intf3? n

```

Screen 11-18. Maintenance-Related System Parameters Form (Page 2 of 3)

Multimedia Complex/Station

Use the following administration commands to add, change, duplicate, or remove stations and data modules.

Action	Objects	Qualifier
add	station data module	xxxxx (extension) or 'next' xxxxx (extension) or 'next'
change	station data module	xxxxx (extension) xxxxx (extension)
duplicate	station data module	xxxxx (extension) xxxxx (extension)
remove	station data module	xxxxx (extension) xxxxx (extension)

Data module form

The H.320 DVC system should contain a BRI interface. You must connect this BRI interface to a port on a TN556 BRI circuit pack and administer it as a BRI data module.

- You may administer the data endpoint type as 7500 (recommended) or WCBRI.
- The fields for multimedia are the same on either form.
- The administration for a Basic mode and an Enhanced mode data module are exactly the same.

```

Page 1 of 2

Data Extension: 65001      DATA MODULE
                          Name: _____
Type: 7500                COS: 1_      Multimedia? y
Port: _____          COR: 1_      MM Complex Voice Ext: 67434

ABBREVIATED DIALING
List1: _____
SPECIAL DIALING OPTION: hot-line
HOT LINE DESTINATION
Abbreviated Dialing Dial Code (From above list): _
CIRCUIT SWITCHED DATA ATTRIBUTES (used for modem pooling)
Default Duplex: full      Default Mode: async      Default Speed: 1200_
DATA MODULE CAPABILITIES
Default ITC: restricted      Default Data Application? M2_A

```

Screen 11-19. Data Module Form (Page 1 of 2)

```

Page 2 of 2

DATA MODULE
BRI LINK/MAINTENANCE PARAMETERS
XID? n      Fixed TEI? n      TEI: ___
MIM Support? n

```

Screen 11-20. Data Module Form (Page 2 of 2)

- **Type** — Set the data module type to 7500 or WCBRI.
- **Multimedia** — This field appears on the data module form only if MM is set to yes on the System-Parameters Customer Options form. Enter Y to enable this data module to be multimedia compliant.
- **MM Complex Voice Ext:** (display only) — This field contains the number of the associated telephone in the complex. This is a display-only field, and is blank until you enter the data module

extension in the Station form MM Complex Data Ext field. Once you have done that, these two extensions are associated as two parts of a multimedia complex.

- **XID and MIM Support** — These fields must be set to n.

Station form

After you have administered the BRI data module, use the Station form to associate it with a voice station to form a multimedia complex. This is a one-to-one relationship: you can administer only one station and one data endpoint per multimedia complex. Neither the voice station, nor the data endpoint can be a member of another multimedia complex.

NOTE:

A BRI station cannot be part of a multimedia complex.

Station form, page 1

```

change station 67434                                     Page 1 of 5
                                                    STATION
Extension: 67434           Lock Messages? n           BCC: 0
Type: 7434D               Security Code:              TN: 1
Port: 01C1103            Coverage Path 1:          COR: 1
Name: jud's phone        Coverage Path 2:          COS: 1
                        Hunt-to Station:
STATION OPTIONS
  Data Module? n           Personalized Ringing Pattern: 1
  Display Module? y       Message Lamp Ext: 67434
  Display Language: english
                        Coverage Module? n
                        MM Complex Data Ext: 65001

```

Screen 11-21. Station Form (Page 1 of 5)

- **MM Complex Data Ext:** — This is the extension assigned to the data module of the multimedia complex. This field must be filled out to create either a Basic or an Enhanced multimedia complex. Other users can dial this extension to place either a voice or a multimedia call to this complex. It is interchangeable with the voice station extension for reaching the multimedia complex directly.

Station form, page 2

```

change station 67434                                     Page 2 of 5
                                                    STATION
FEATURE OPTIONS
  LWC Reception: msa-spe                               Auto Select Any Idle Appearance? n
  LWC Activation? y                                   Coverage Msg Retrieval? y
  CDR Privacy? n                                       Auto Answer: none
  Redirect Notification? y                               Data Restriction? n
  Per Button Ring Control? n                           Idle Appearance Preference? n
  Bridged Call Alerting? n
  Active Station Ringing: single                       Restrict Last Appearance? y

  H.320 Conversion? y
  Service Link Mode: as-needed Per Station CPN - Send Calling Number?
  Multimedia Mode: enhanced                               Multimedia Early Answer? n

                                                    Display Client Redirection? n
                                                    Select Last Used Appearance? n

```

Screen 11-22. Station Form (Page 2 of 5)

- H.320 Conversion** — This field is optional for non-multimedia complex voice stations and for Basic multimedia complex voice stations. It is mandatory for Enhanced multimedia complex voice stations. Because the system can only handle a limited number of conversion calls, you may need to limit the number of telephones with H.320 conversion. Enhanced multimedia complexes must have this flag set to **y**.

For non-multimedia complex voice stations, setting this field to **y** allows H.320 calls to convert to voice and alert at the standalone voice station. If the call is unanswered at the voice station, the call will follow standard voice treatment. Any subsequent station that is reached in the routing of this call, that is, coverage points, forwarded destinations, call pickup members, and so forth, do not need to have the H.320 field enabled. The H.320 field is only needed at the *first* station that may receive the H.320 call.

For Basic multimedia complex voice stations, setting this field to **y** allows H.320 calls to convert to voice and alert at the Basic multimedia complex voice station *after* an attempt has been made to offer the call to the H.320 DVC system. If the call is unanswered at the H.320 DVC system, the call will alert at the voice station after 5 seconds or after the administered number of rings as specified in the voice station's coverage path. If the call is unanswered at the voice station, the call will follow standard voice treatment. Any subsequent station that is reached in the routing of this call, that is, coverage points, forwarded destinations, call pickup members, and so forth, do not need to have the H.320 field enabled. The H.320 field is only needed at the *first* station that may receive the H.320 call.

- **Service Link Mode** — The service link is the combined hardware and software multimedia connection between an Enhanced mode complex's H.320 DVC system and the DEFINITY ECS which terminates the H.320 protocol. A service link is never used by a Basic mode complex H.320 DVC system. Connecting a service link will take several seconds. When the service link is connected, it uses MMI, VC and system timeslot resources. When the service link is disconnected it does not tie up any resources. The Service Link Mode can be administered as either 'as-needed' or 'permanent' as described below:
 - As-Needed - Most non-call center multimedia users will be administered with this service link mode. The as-needed mode provides the Enhanced multimedia complex with a connected service link whenever a multimedia call is answered by the station and for a period of 10 seconds after the last multimedia call on the station has been disconnected. Having the service link stay connected for 10 seconds allows a user to disconnect a multimedia call and then make another multimedia call without having to wait for the service link to disconnect and re-establish.
 - Permanent - Multimedia call center agents and other users who are constantly making or receiving multimedia calls may want to be administered with this service link mode. The permanent mode service link will be connected during the station's first multimedia call and will remain in a connected state until the user disconnects from their PC's multimedia application or the DEFINITY ECS switch restarts. This provides a multimedia user with a much quicker video cut-through when answering a multimedia call from another permanent mode station or a multimedia call that has been early answered.
- **Multimedia Mode** — There are two multimedia modes, Basic and Enhanced, as described below:
 - Basic — A Basic multimedia complex consists of a BRI-connected multimedia-equipped PC and a non-BRI-connected multifunction telephone set. When in Basic mode, users place voice calls at the multifunction telephone and multimedia calls from the multimedia equipped PC. Voice calls will be answered at the multifunction telephone and multimedia calls will alert first at the PC and if unanswered will next alert at the voice station if it is administered with H.320 = y. A Basic mode complex has limited multimedia feature capability as described in "Basic Mode Operation" on page 11-33).
 - Enhanced — An Enhanced multimedia complex consists of a BRI-connected multimedia-equipped PC and a non-BRI-connected multifunction telephone. The Enhanced mode station acts as though the PC were directly connected to the multifunction telephone; the service link provides the actual connection between DEFINITY ECS and the PC. Thus, voice and multimedia calls are originated and received at the telephone set.

Voice and multimedia call status are also displayed at the telephone set. An Enhanced mode station allows multimedia calls to take full advantage of most call control features as described in “Enhanced Mode Operation” on page 11-34.

- **Multimedia Early Answer** — This field lets you set this phone for early answer of multimedia calls. The system will answer the incoming multimedia call on behalf of the station and proceed to establish the H.320 protocol. After audio path has been established to the caller, the call will then alert at the voice station. The station may then answer by going off-hook and will have immediate audio path. No hourglass tone will be heard by the answering party (see “Hourglass Tone” on page 11-66).

Example: An administrative assistant who does not have a multimedia PC, but may get multimedia mode calls from forwarding or coverage, may want to set the H.320 flag to **y** and the early answer flag to **y** on their voice station. This allows any multimedia call to be presented to the station with immediate voice path rather than hourglass tone. The answered call could then be transferred as voice to voice mail or transferred as multimedia to a user equipped with a multimedia endpoint.

Multimedia Buttons

There are six new multimedia specific buttons that may be added to a voice station. Most of them may be placed on any voice station, whether it is part of a Basic multimedia complex, an Enhanced multimedia complex or not part of any multimedia complex. Two feature buttons, mm-basic and mm-pcaudio, may only be placed on stations which are part of an Enhanced multimedia complex.

All of the multimedia specific feature buttons have a corresponding feature access code except mm-pcaudio and mm-cfwd.

- The mm-pcaudio feature can only be used with a station form button.
- The mm-cfwd button may be replaced by the standard *“call forward”* FAC followed by the *“multimedia call”* FAC.

Station form, page 3

```

change station 67434                                     Page 3 of 5
                                                         STATION
SITE DATA
  Room:                                                    Headset? n
  Jack:                                                    Speaker? n
  Cable:                                                  Mounting: d
  Floor:                                                  Cord Length: 0
  Building:                                               Set Color:

ABBREVIATED DIALING
  List1:                                                    List2:
                                                         List3:

BUTTON ASSIGNMENTS
  1: call-appr                                           6: mm-pcaudio
  2: call-appr                                           7: mm-datacnf
  3: call-appr                                           8: mm-cfwd
  4: mm-call                                             9: mm-multnbr
  5: mm-basic                                           10:

```

Screen 11-23. Station Form (Page 3 of 5)

- **mm-call** — This button may exist on any voice station. Most multimedia enabled users will want an mm-call button. This button (or it's corresponding FAC) must be used to indicate that the user is placing a multimedia mode call. To place a multimedia mode call the user would go off-hook, select an idle call appearance, and press the mm-call button followed by the destination extension digits. If the user has a speakerphone they can simply press the mm-call button, which preselects an idle call appearance, followed by the destination extension digits.

The mm-call button lamp lights when you press this button during call origination. The lamp also lights to indicate that the selected call appearance is a multimedia mode call.

- **mm-basic** — This button is only allowed on the voice station of a multimedia complex. The mm-basic button toggles your station between Basic and Enhanced modes. If you press the mm-basic button when you are an Enhanced multimedia complex, you will revert to a Basic multimedia complex and the button status lamp will be lit. If you press this button when you are a Basic mode station it will switch you to an Enhanced mode station and the button status lamp will not be lit. This button can NOT be used to change the station's multimedia mode when the station has an active multimedia call appearance.

Toggling between Basic and Enhanced mode changes the station's administered Multimedia mode. When in Basic mode this field on the station form will show `basic`. When in Enhanced mode this field on the

station form will show enhanced. The current station Multimedia mode will be saved to translation when a **save translation** command is executed.

- **mm-pcaudio** — This button only works for an Enhanced multimedia complex voice station. When originating or receiving a multimedia call, the audio path is connected to the voice station's handset or speakerphone device. The mm-pcaudio button allows a user to switch the audio portion of any call to their PC's audio input/output device (if available). To switch the audio path to the PC while active on a call, the user presses the mm-pcaudio button (if off-hook you may now hang up the handset). The mm-pcaudio button's status lamp will light up when the button is pushed to move the audio path to the PC and remain lit while the audio path is at the PC device.

 **NOTE:**

If you are on a voice only call, the voice path will switch to the PC device but you will get muted or loopback video depending on the multimedia endpoint software.

A user may simply go off-hook on their voice station or press the speakerphone button to move the audio path of a multimedia call from the PC back to the voice station. Pressing the mm-pcaudio button while the status lamp is lit and the voice station's handset is on-hook will disconnect the user from the active call.

- **mm-datacnf** — Pressing the mm-datacnf button from any voice station that is participating in a multimedia call will light the status lamp and alert the DEFINITY ECS that you want to enable T.120 data collaboration with the other parties on the call. The button status lamp will also light for other participants in the multimedia call who have mm-datacnf buttons.

Pressing this button from the voice station that enabled data collaboration on a multimedia mode call will deactivate the data session and revert to a voice and video call. If you are participating on a multimedia call with data collaboration, but did not initiate the data collaboration, and you press this button, the status lamp led will flash momentarily and the T.120 data services will not be terminated, (only the station that activated the collaboration session can deactivate it). This button only works for stations connected to a DEFINITY ECS equipped with an ESM adjunct.

- **mm-cfwd** — The mm-cfwd button allows a user to indicate that multimedia mode calls will be forwarded off of the DEFINITY ECS switch as multimedia mode calls to a specific forwarded-to destination. If voice call forwarding is active and multimedia call forwarding is not active then multimedia calls going off of the DEFINITY ECS switch will be forwarded as voice only calls.

The mm-cfwd button status lamp will be lit to indicate that multimedia call forwarding is activated. Pressing the mm-cfwd button when the lamp is lit will deactivate multimedia call forwarding.

Note - pressing the mm-cfwd button is the same as dialing the regular call-fwd FAC followed by the mm-call button or FAC followed by the desired forwarded-to extension digits.

- **mm-multinbr** — The mm-multinbr call button is similar to the mm-call button. It allows origination of a multimedia call from any voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. An example of this is Central Office provided ISDN-BRI. This type of BRI line is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of address must be entered.

Originating a multimedia call with the mm-multinbr button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

ESM T.120 Server Administration

DS1 form, page 1

```
change ds1 1c09                                     Page 1 of 1
                                                    DS1 CIRCUIT PACK
Location: 01C09                                     Name:
Bit Rate: 2.048                                     Line Coding: hdb3
Signaling Mode: isdn-pri                           Interface: network
Connect: pbx                                        Country Protocol: 1
                                                    CRC? y
Idle Code: 11111111                                DCP/Analog Bearer Capability: 3.1kHz
MMI Cabling Board: 01C10                           MMI Interface: ESM
Slip Detection? n                                   Near-end CSU Type: other
```

Screen 11-24. DS1 Form (Page 1 of 1)

From the system administration terminal:

1. Enter **list configuration all**, and a list of the installed carriers, circuit packs, and ports appears.
2. Record the location (board number) of the MMI board cabled to the Tn2207 slot and verify that all other required circuit packs (refer to "ESM Installation") are present.
3. Enter **add DS1 xxxxx**, (where xxxxx is the location of the TN2207 PRI circuit pack recorded in step 2), and the DS1 circuit pack administration form appears.
4. Set the `Name:` field to **ESM DS1**
5. Set the `Bit Rate:` field to **2.048**
The TN2207 DS1 must have a bit rate of 2.048, even if all other DS1 boards in the system are operating at 1.544. Verify the 24/32 channel switch on the circuit pack is in the 32 channel position.
6. Set the `Line Coding:` field to **hdb3**
7. Set the `Signaling Mode:` field to **isdn-pri**
8. Set the `Connect:` field to **pbx**
9. Set the `Interface:` field to **network**
10. Set the `Country Protocol:` field to **1**
11. Set the `CRC?:` field to **y**
12. The `Idle Code` default is 11111111.
13. The `DCP/Analog Bearer Capability` default is 3.1 kHz.
14. Set the `MMI Cabling Board:` field to **xxxxx** (where xxxxx is the location of the TN787 MMI circuit pack recorded in step 2). This must be the slot for port B of the Y-cable.
15. The `MMI Interface:` field **ESM** appears.

Signaling-Group form, page 1

```
change signaling-group 6                               Page 1 of 5
                                                    SIGNALING GROUP

Group Number: 6
Associated Signaling? y                               Max number of NCA TSC: 0
Primary D-Channel: 01C0916                           Max number of CA TSC: 0
Trunk Group for NCA TSC:                               Trunk Group for NCA TSC:
Trunk Group for Channel Selection:
Supplementary Service Protocol: a
```

Screen 11-25. Signaling-Group Form (Page 1 of 5)

1. Enter **add signaling-group next** and the signaling-group form appears.
2. Change Associated Signaling: field to **y**.
3. Change Primary D-Channel Port: field to **xxxx16** (where xxxx is the address of the TN2207 PRI circuit pack, for example: 1B0516).
4. The Max Number of NCA TSC: default is 0.
5. The Max Number of GA TSC: default is 0.
6. Trunk Group for NCA TSC: ____ (leave blank)
7. Trunk Group for Channel Selection: ____ (leave blank)
8. Logoff the terminal and then log back on the terminal to view your changes.

Troubleshooting. To determine ESM link status enter the following commands from the system administration terminal:

1. **Status esm**
2. **Status signaling-group**
3. **List MMI**

NOTE:

When you move ESM circuit packs, you **MUST** remove the DS1 and signaling group translations. You cannot use the **change circuit pack** command.

Hunt Group Form

(See [11-72](#) for Hunting with Basic Complex or [11-73](#) for Hunting with Enhanced Mode Complex.)

```
change hunt-group 101                                     Page 1 of 3
                                                           HUNT GROUP
Group Number: 101                                         ACD? y
Group Name: hu 101                                       Queue? y
Group Extension: 52001                                    Vector? y
Group Type: ucd-mia
  TN: 1
  COR: 1
Security Code:
ISDN Caller Display:
MM Early Answer? n
Queue Length: 5
Calls Warning Threshold: 2   Port:
Time Warning Threshold: 15   Port:
```

Screen 11-26. Hunt Group Form (Page 1)

- **MM Early Answer** — This field is to be used when the hunt group will expect to receive H.320 multimedia calls and the members of the hunt group are voice extensions. The voice members of the hunt group should all have the H.320 field on each of their station forms set to “y”. The MM Early Answer field lets you set this hunt group for early answer of multimedia calls. The system will answer the incoming multimedia call on behalf of the agent and proceed to establish the H.320 protocol. After audio path has been established, the call will then alert at the agent’s voice station. The station may then answer by going off-hook and will have immediate audio path. No hourglass tone will be heard by the answering party. This is especially important for AUDIX hunt groups, because otherwise the caller may miss all or a portion of the AUDIX greeting.

The MM Early Answer field has no effect on voice calls.

The MM Early Answer field has no effect if the hunt group members are data extensions.

Call Vector Form

```

change vector 10                                     Page 1 of 3
                                     CALL VECTOR

Number: 10                                           Name                               Multimedia? y   Lock? n
    Basic? y   EAS? n   G3V4 Enhanced? y   ANI/II-Digits? y   ASAI Routing? n
    Prompting? n   LAI? n   G3V4 Adv Route? y           CINFO? n           BSR? n

01 route-to      number 69999                with cov n if unconditionally
02
03
04
05
06
07
08
09
10

```

Screen 11-27. Call Vector Form (Page 1 of 3)

Multimedia — Very often, calls are routed to hunt groups or skills via a vector. The existing VDNs and vectors which exist for routing voice calls can be used to route multimedia calls.

In order to use a vector for multimedia calls that will terminate to voice stations, you must set the Multimedia field on the vector form to **y**. This field has no effect on voice calls routing through the vector. This field will cause multimedia calls routed through the vector to receive early answer treatment prior to processing the vector steps. This provides a talk path to the caller for announcements or immediate conversation with an agent.

⇒ NOTE:

Vectors which have the Multimedia field set to “y” must eventually route to hunt groups, skills or numbers which are voice extensions. A vector with the multimedia field set to “y” should never be set up to route to a hunt group or number which is a data extension.

When a vector is used to route video (56K/64K) calls to a hunt group comprised of data extensions, the vector *must* have the multimedia field set to **n**.

STATION			
Ext	Data Ext	Data Ext Name	MM Data Ext
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____
xxxxxx	_____	_____	_____

Screen 11-29. Duplicate Station Form (Page 2)

Detailed feature operation descriptions follow.

Basic Mode MM complex

1-number access. 1-number access permits originating users to make voice or multimedia calls to a Basic multimedia complex by dialing the same number for either type of call. The number may be the voice station extension or the data module extension. If the incoming call is a voice call, DEFINITY ECS directs it to the telephone. If the incoming call is 56K or 64K data call, DEFINITY ECS recognizes it as such and sends it to the multimedia endpoint. Likewise, if a voice call is addressed to the data extension, the system recognizes this and directs the call to the voice station.

Calls originating on the same switch as the Basic mode complex destination may always use 1-number access for voice or video. In order to take advantage of 1-number access for calls originating from a remote location, the incoming calls must arrive over ISDN-PRI trunks. If the system is setup with separate data non-PRI digital facilities multimedia calls must be made to the data extension.

AVD (Alternate voice/data) trunk groups cannot be used to provide 1-number access with MMCH. If the AVD trunk group has a BCC of 0, all calls arriving over the AVD trunk to the Basic mode complex will be assumed to be voice calls. If the AVD trunk group has a BCC of 1 or 4, all calls arriving over the AVD trunk to the Basic mode complex will be assumed to be multimedia calls.

Originating voice calls. All voice calls are originated at the voice station.

Originating multimedia calls. For a Basic mode complex, multimedia calls are normally originated at the user's multimedia equipped PC. These multimedia calls use the associated station's COR/COS.

The voice station of a Basic multimedia complex may also use the "mm-call" button or FAC, and the "mm-multinbr" button or FAC to originate multimedia calls. When these methods are used, a multimedia call is originated from the voice station. In order for the Basic multimedia complex to receive video, the user must make a call from the H.320 DVC system to the voice station of the complex or must make a multimedia call from the voice station to the H.320 DVC. This allows the station to spontaneously add themselves or other parties to a multimedia conference.

1. **H.320 DVC system GUI.** The normal way for a Basic multimedia complex endpoint to originate a multimedia call is through the vendor provided user interface. Generally, digits to dial are entered, speed is selected and the call originates from the DVC system. The voice station is not involved in such as origination.

Any voice station may use the following mechanisms to originate a multimedia call from the voice station. For stations that are not part of a multimedia complex, video cannot be provided. For voice stations that are part of a Basic multimedia complex, video is not provided until a multimedia call is made from the complex's H.320 DVC system to the

voice station or a multimedia call is made from the voice station to the H.320 DVC system. Video is automatically included for Enhanced multimedia complexes (see 11-34).

2. **mm-call (Multimedia Call) button.** If the station has an mm-call button administered, the user goes off-hook and selects the mm-call button. The user may select the mm-call button and then go off-hook. If the user has a speakerphone on the station, the user may originate the call simply by selecting the mm-call button. The speakerphone will automatically be placed off-hook and dialtone will be heard. Upon selection of the mm-call button, the mm-call status lamp (green led) should become solid.

The user now dials the destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, station busy indicators, etc. Originating a multimedia call with the mm-call button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

For calls with a bandwidth of 2B, use of the mm-call button to originate will cause the same destination address to be used for both channels of the 2B call. See the section below on the mm-multinbr button/FAC for information on originating a 2B call where the destination has a different address for each B-channel.



NOTE:

The mm-call feature button is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a multimedia call.

3. **Multimedia Call feature Access Code.** For stations that do not have an administered mm-call button, the Multimedia call feature access code may be used instead. The user goes off-hook on the station, waits for dialtone, then dials the MM-call FAC, receives dialtone again and then dials the call normally. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, station busy indicators, etc.

Originating a multimedia call with the mm-call button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

For calls with a bandwidth of 2B, use of the mm-call button to originate will cause the same destination address to be used for both channels of the 2B call. See the section below on the mm-multinbr button/FAC for information on originating a 2B call where the destination has a different address for each B-channel.

 **NOTE:**

The mm-call feature access code is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a multimedia call.

4. **mm-multinbr (Multimedia Multi-number) button.** The mm-multinbr button is similar to the mm-call button. It allows origination of a multimedia call from a voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. An example of this is Central Office provided ISDN-BRI. This type of BRI line is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of addresses must be entered.

The user goes off-hook and selects the mm-multinbr button. The user may select the mm-multinbr button and then go off-hook. If the user has a speakerphone on the station, the user may originate the call simply by selecting the mm-multinbr button. The speakerphone will automatically be placed off-hook and dialtone will be heard. Upon selection of the mm-multinbr button, the mm-multinbr and mm-call (if present) status lamp (green led) should light steadily. The user now dials the first destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. The system will provide dialtone after the first address has been completed. The user now dials the second destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. After the 2nd address has been collected the mm-multinbr status lamp will go off.

Originating a multimedia call with the mm-multinbr button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

 **NOTE:**

The mm-multinbr feature button is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

5. **Multimedia Multi-number Call feature Access Code.** For stations that do not have an administered mm-multinbr button, the Multimedia Multi-number call feature access code may be used instead. It allows origination of a multimedia call from a voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. An example of this is Central Office provided ISDN-BRI. This type of BRI line is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of addresses must be entered.

The user goes off-hook and dials the MM-multinbr feature access code. Upon dialing of the MM-multinbr FAC, the mm-call (if present) status lamp (green led) should become solid. The user now dials the first destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. The system will provide dialtone after the first address has been completed. The user now dials the second destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc.

Originating a multimedia call with the MM-multinbr FAC will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

 **NOTE:**

The mm-multinbr FAC is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

6. **Multimedia parameter selection feature access code.** This FAC is used to originate a multimedia call that wishes to use a different bearer and bandwidth than the system default. For example, if the system has a default multimedia parameter of 2x64 and the user wishes to make a call to a destination that is known to only have 56K digital facilities, the MM parameter selection FAC can be used to select a bearer and bandwidth of 2x56 for this specific call.

The MM parameter selection FAC may be used in conjunction with the mm-multinbr button or FAC to make a single or dual address multimedia call at the desired bearer and bandwidth. The user goes off-hook and dials the MM-parameter selection feature access code. Dialtone is returned. The user enters a single digit, 1 or 2, where 1 = 2x64, 2 = 2x56. All other digits will produce reorder. Dialtone is returned. Upon dialing of the MM-parameter selection FAC, the mm-call (if present) status lamp (green led) should become solid. The user may indicate a dual-address call at this point with the mm-multinbr button or FAC. The user now dials one or two sets of destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc.

 **NOTE:**

The mm-parameter selection FAC is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

7. Dialing sequences that include TACs, AAR, ARS, Authorization codes, CDR account codes, FRLs
 1. Single address with TAC

- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** TAC, **Dial** destination digits
2. Dual address with TAC
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** TAC, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** TAC, **Dial** 2nd dest. digits
3. Single address with AAR/ARS
- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** destination digits
4. Dual address with AAR/ARS
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 2nd dest. digits
5. Single address with AAR/ARS and authorization code
- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS FAC, **Dial** destination digits, **Hear** stutter dialtone
 - **Dial** authorization code
6. Dual address with AAR/ARS and authorization code
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS FAC, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** AAR/ARS FAC, **Dial** 2nd dest. digits, **Hear** stutter dialtone
 - **Dial** authorization code
7. Single address with TAC or AAR/ARS and CDR account code
- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** CDR FAC, **Hear** dialtone
 - **Dial** CDR account code, **Hear** dialtone
 - **Dial** TAC or AAR/ARS, **Dial** destination digits
8. Dual address with TAC or AAR/ARS and CDR account code
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** CDR FAC, **Hear** dialtone
 - **Dial** CDR account code, **Hear** dialtone
 - **Dial** TAC or AAR/ARS, **Dial** 1st dest. digits

- **Dial** TAC or AAR/ARS, **Dial** 2nd dest. digits

Receiving voice calls. Any voice calls directed to the voice or data extension of a Basic multimedia complex will ring at the voice station.

Receiving multimedia calls. Any data calls directed to the voice or data extension of a Basic multimedia complex will ring at the multimedia equipped PC if it is available. You may answer the multimedia call at the PC and voice and video will connect to the PC. If the data endpoint is unavailable, the system verifies that the telephone of the complex is administered with the H.320 field set to **y**. If so, the system converts the call to voice and sends it to the telephone of the multimedia complex, where the call then alerts.

Hourglass Tone. When a voice station answers a converted multimedia call, the answering party may hear different things depending on the nature of the originator. If the origination is directly from an H.320 DVC system or if the originator is an Enhanced mode complex on a remote switch, an immediate audio path will not exist between the two parties. This is because the H.320 protocol must be established after the call is answered. It takes several seconds for the H.320 protocol to establish an audio path. During this interval the answering party will hear special ringback. When the audio path exists the special ringback will be removed and replaced with a short incoming call tone indicating that audio now exists. The combination of special ringback followed by incoming call tone is referred to as "hourglass tone." Hourglass tone is an indication to the answering party that they should wait for the H.320 call to establish audio.

Early Answer. The answering party may administer their station to avoid hearing hourglass tone. With the station form Early Answer field set to **y**, the system answers the incoming multimedia call on behalf of the station and establishes the H.320 protocol. After audio path has been established, the call will then alert at the voice station of the Basic complex destination. The station may then answer by going off-hook and will have immediate audio path. No hourglass tone will be heard by the answering party.

If the H.320 field is not set to **y** for the telephone of a Basic multimedia complex, H.320 calls alert at the multimedia endpoint until the caller drops. If an H.320 call is directed to a telephone with H.320 set to **n**, the system denies the call.

You can assign H.320 conversion to any voice station.

Authorization. Multimedia complexes require the same types of authorization (COR/COS) as standard telephones. If a call is addressed to the voice extension, the system checks the COR/COS of the telephone, whether the call is voice-only or multimedia. If a call is addressed to the data extension, the system checks the COR/COS of the data endpoint. If the call is subsequently redirected to the voice station, the system does a second COR/COS check for the authorization of the voice station. Calls originated from the PC use the COR/COS of the voice station.

Adjunct Switch Applications Interface . ASAI is not expected to support call-association for data calls. Therefore Lucent Technologies does not recommend that you use ASAI for multimedia.

Administered Connections. Basic Multimedia endpoints may serve as the origination point or destination of an administered connection.

Administration without Hardware. You cannot use AWOH to administer a data module or the data endpoint in a multimedia complex. However, you can use AWOH to administer the telephone.

Authorization and Barrier Codes. Basic Mode multimedia users or off-premises PC users may not be able to respond to prompts for authorization or barrier codes. Multimedia endpoints do not recognize the prompts.

An on-premises user might be able to use Remote Access and enter the entire digit string at once before launching the call, but it would be better to eliminate the need for such codes for multimedia users who need to call off premises.

Bridged Appearances. Voice users can bridge onto a call if the user has a bridged appearance of a voice member of the call.

Call redirection. Calls directed to either member of the Basic multimedia complex are subject to redirection (coverage, forwarding). DEFINITY ECS converts calls to voice before sending them to coverage. Calls redirected through call forwarding maintain multimedia status if forwarded from the data endpoint.

Conferencing . A multimedia conference can consist of multimedia and voice-only conferees. All multimedia conferees are added to a multimedia conference by a voice-terminal user on the switch, who acts as the controller of the multimedia conference. When the controller is a Basic complex voice station, the controller must remain on the conference until all parties have joined. Once all endpoints are on the conference, the voice-terminal user may put the call on hold or drop, if the user wishes.

Video conferees can see only their local video and one other party. If more than two people are involved in a video conference, the person who is speaking is the one whose video appears to other conferees. The speaker's video shows the previous speaker. This changes dynamically as the speaker changes.

Creating a multi-party video conference

All multimedia conferences must be controlled by a voice phone. Multimedia conferees may be added by calling the voice phone or by having the voice phone make a multimedia call to other DVC endpoints. The controller can then conference together individual parties to create a multimedia conference.

To set up a multimedia conference:

1. Determine who is going to be the conference controller.
2. At the appointed time, the conference controller calls his or her telephone from the multimedia endpoint by dialing the 1-number extension. Once this call is established, the controller conferences in other calls as if this were a voice conference. The controller continues to add conferees in this manner until all conferees have joined, or until the number of conferees reaches the administered limit.
3. The conference controller may also add voice or multimedia parties to the conference spontaneously. The controller hits CONFERENCE, makes a voice or multimedia call to a new party. To make a multimedia call, the controller must originate a call using the mm-call button or FAC or the mm-multinbr button or FAC. After the new party begins alerting, the controller may hit CONFERENCE to add the party to the existing conference on hold.

Coverage. Multimedia calls to a Basic mode complex are subject to the same coverage criteria as voice calls and follow the coverage path administered for the voice station of the Basic multimedia mode complex.

If a plain voice station or a Basic mode complex is the covering party, the answering voice station will receive audio only. If all voice stations in the coverage path have the station form Early Answer field set to **n** and the originator of the multimedia call was not a local Enhanced mode complex, the answering station will hear hourglass tone.

If an Enhanced mode complex is the covering party, the answering voice station will receive voice and video. If all voice stations in the coverage path have the station form Early Answer field set to **n** and the originator of the multimedia call was not a local Enhanced mode complex, the answering station will hear hourglass tone.

Coverage: Multimedia calls and off-net call coverage. If the principal station's coverage path include a remote coverage point, the multimedia call will cover off-switch as voice only. If the call is unanswered off-switch and proceeds to the next coverage point on-switch, the multimedia nature of the call is preserved.

Coverage: Multimedia calls and coverage to voice mail. Voice mail systems such as AUDIX are typically the last point in a coverage path and are usually implemented as a hunt group. In order to guarantee that the originator of an H.320 multimedia call hears the voice mail greeting, the hunt group that defines the list of voice mail ports should have the Early Answer field on the hunt group set to **y**. This field will have no effect on voice calls to the voice mail system.

Call Detail Recording. Each channel of a 2-channel call generates a separate CDR record.

Data Collaboration

Once you have established a multi-point video conference, multi-point T.120 data collaboration may be enabled for that call. This will allow all video parties on the current conference to collaborate.

T.120 Data conferencing is made possible through the Expansion Services Module (ESM) which is an adjunct to the DEFINITY ECS. Up to six parties may participate in a single data conference, and up to 24 parties may use ESM facilities for data collaboration at any given time.

Adding data sharing to a video conference

1. Set up a multimedia conference.
2. Once a multimedia call is active, any voice station in the conference, can initiate data collaboration by pressing the mm-datacnf button. Or, to use the feature access code to initiate a data conference, press the Transfer button. A second line-appearance becomes active and you hear dial tone. Dial the multimedia data conference feature access code. Confirmation tone is heard and the system automatically reselects the held call appearance of the multimedia conference. The DEFINITY ECS will select a data rate which is acceptable to all H.320 DVC systems in the current call.

If the system does not have sufficient ESM resources available for all parties currently in the call, activation of T.120 data sharing will be denied. The mm-datacnf status lamp will flash denial or the mm-datacnf FAC will produce reorder.

3. Each H.320 DVC system in the conference call is joined to the data conference. On many DVC systems, the provided GUI may prompt the user with a dialog box, requesting the user to select a specific conference to join. With DEFINITY MMCH, there should only be one conference available to select.
4. The user must now use the PC's GUI to begin application sharing. The method for beginning application sharing or file transfer is different for each H.320 multimedia application. One of the H.320 DVC systems activates data sharing from the H.320 DVC vendor provided GUI. See your H.320 DVC system documentation for details.
5. The same H.320 DVC system as in step 4, opens an application, whiteboard, etc. to share and the image of the application is displayed on all H.320 DVC systems in the conference.

For details on how multiple users may control the shared application, see the vendor provided documentation for your specific H.320 DVC system.

6. To end the data collaboration session and retain the voice/video conference, the station that selected the mm-datacnf button or FAC may press the mm-datacnf button or hit transfer and dial the mm-datacnf deactivation FAC.

 **NOTE:**

As of this writing, many endpoints do not respond correctly to ending the data collaboration session and retaining voice/video. Some H.320 DVC systems drop the entire call. It is recommended that once T.120 data sharing has been enabled for a conference, that it remain active for the duration of the conference call. When all endpoints have dropped from the call, the T.120 resources will be released.

Joining a multimedia conference after T.120 data sharing has been enabled.

If a multimedia conference with T.120 data sharing is already active and it is desired to conference in a new video endpoint, the new video endpoint can be conferenced into the existing call. The new endpoint will be allowed into the data conference if there exists sufficient ESM resources for the new endpoint. The new endpoint will get voice/video and data sharing if the new endpoint supports the MLP data rate chosen by the system when T.120 data collaboration was activated. If the endpoint does not support the pre-existing MLP data rate, the new endpoint will only receive voice and video.

Single switch data collaboration. When all parties involved in data collaboration conference are located on the same physical DEFINITY ECS, there is no restriction on the type of user. The parties may be any combination of Enhanced multimedia complexes, Basic multimedia complexes or stand-alone H.320 DVC systems.

Multi- switch data collaboration. When all parties involved in data collaboration conference are **not** located on the same physical DEFINITY ECS, the parties located on the DEFINITY ECS hosting the data conference (i.e. the switch that activated mm-dataconf) may be any combination of Enhanced multimedia complexes, Basic multimedia complexes or stand-alone H.320 DVC systems. All parties on remote switches must not be Enhanced multimedia complexes: they must be Basic multimedia complexes or stand-alone H.320 DVC systems. Prior to originating or receiving a multimedia mode call, the mm-basic feature button or feature access code can be used to dynamically change an Enhanced mode complex into a Basic mode complex and back again.

Forwarding of voice/multimedia calls. In Basic mode you can forward calls from either the voice terminal or the multimedia endpoint. To forward a call from the multimedia endpoint:

1. At the PC's multimedia application, enter the call-forwarding feature access code (FAC)
2. Enter the forward-to number in the dialed number field on the endpoint software
3. Click the Dial button (or equivalent)

 **NOTE:**

The PC multimedia software will probably respond with a message that the call failed, since it does not recognize the FAC. In fact, DEFINITY ECS *does receive* the message, and forwards all multimedia calls addressed to the 1-number.

If a call is forwarded from the voice terminal, the call converts to voice first. If using the multimedia endpoint to forward, the calls arrive at the forwarded-to extension as a data call. Such calls continue to ring until answered or abandoned, rather than follow a coverage path.

Users can forward calls from the multimedia endpoint using the call forward FAC. You can also assign a call-forward button at the voice station to forward calls for the data endpoint. If a Basic multimedia complex has console permissions, that user can forward calls for others by dialing the FAC, the data extension, and then the forwarded-to number.

Call Park. A voice-terminal user can park any active call, voice or multimedia, and unpark the call from another telephone. Users cannot park or unpark calls using multimedia endpoints.

Call Pickup. Members of a pickup group can answer an H.320 call using a telephone after the call has been converted to voice. This is true for standard or directed call pickup.

Consult. After a call is converted to voice, consult may be used when transferring or conferencing the call.

COR/COS. The Class of Restriction and Class of Service for H.320 calls originated from a 1-number complex are the same as those of the telephone in the complex.

Data Call Setup. Basic complex multimedia endpoints are BRI data endpoints, and may use data call-setup procedures as provided by the software vendor.

Data Hotline. If endpoint software allows users to select the dial function without entering a number, the endpoint can be used for hotline dialing.

Dial Access to Attendant. Access to Attendant is blocked for a data call from a Basic mode multimedia endpoint.

Data Trunk Groups. Data trunk groups may be used to carry H.320 calls of a fixed (administered) bearer capability.

Hold. The voice station and multimedia endpoint of a Basic complex are each independent devices with respect to call control. When a Basic multimedia complex voice station executes hold only the voice station is held. If the user has conferenced their multimedia endpoint into a multimedia conference,

activating hold will *not* disconnect the multimedia endpoint from the conference, it will only disconnect the Basic multimedia complex voice station. Executing hold with an Enhanced mode complex will fully disconnect voice and video from the current active call.

Hunt Groups using Basic Mode complexes. Since Basic mode complexes may receive point to point multimedia calls at the DVC system and voice calls to the station simultaneously, the voice station extension may be placed in any normal voice hunt group or ACD skill and the data extension may be placed in a simple hunt group made up of only data extensions.

Basic mode complex data extensions or stand-alone data extensions may be used to create simple data hunt groups. Data extensions are not allowed in ACD hunt groups. It is recommended that you do not mix voice and data stations in a hunt group.

If you want multimedia calls to hunt to multimedia endpoints (i.e. 2B point to point data hunting), put the data extension in the hunt group. If you place the voice extension in a hunt group, only voice calls hunt to that extension. Multimedia calls to a hunt group with a Basic mode voice station as the hunt group member will *not* be offered to the DVC system of the Basic mode complex. If either the voice or data extension of a Basic mode complex is busy, the entire complex is considered busy for hunting purposes.

In order to guarantee that all members of a voice hunt group or skill can receive voice or multimedia calls, all members should have the H.320 field on the station form set to "y". Simple voice stations and Basic complex mode voice stations will receive voice only. Enhanced mode stations will receive voice and video.

The MM Early Answer field (on the Hunt Group form) tells the system to answer the incoming multimedia call and establish audio before it reaches the first member of the hunt group. Thus, when the talk path is established, the caller is able to speak with an agent immediately. This is not necessary for hunt groups comprised of data extensions.

Hunting, Other considerations. Agents that are part of a Basic mode complex may dial a feature access code to remove themselves from availability (and to indicate that they are available again) from both the multimedia endpoint and the telephone independently. This allows the voice member or the data member to be individually made unavailable. To make the data extension unavailable, the agent must dial the FAC from the DVC system.

CMS measurements may indicate unusually slow ASA, because of the time required for the system to establish early-answer before offering the call to an agent.

Hunting Call association (routing). Typically incoming voice calls consist of 2 B-channel calls to the same address, to provide greater bandwidth and better video resolution. DEFINITY ECS attempts to correctly pair up incoming calls and offer them as a unit to a single agent. MMCH uses call association to route both calls to the extension that answered the first call, regardless of how the call was routed internally.

Two 56K/64K data calls with the same calling party number to the same destination number are considered to be associated. The system makes every attempt to route both calls of a 2-channel call to the same answering party. If the first call terminates at a member of a hunt group, the second call does not have to hunt, but goes directly to the same member. In order for 2B multimedia calls to be correctly given to a single agent, incoming calls to the hunt group must have ANI information. The ANI information may be in the form of ISDN calling party number or DCS calling party number. Multimedia calls made on the same switch as the hunt group are easily associated. If multimedia calls into a hunt group have incorrect ANI information (i.e. all calls from switch X to switch Y include the LDN for switch X), then as the volume of calls increases, the number of mis-associated calls will increase. If multimedia calls into a hunt group have no ANI information, the switch will never associate pairs of calls and all calls will be treated independently and routed to separate agents. This is not a recommended configuration.

Hunting with Multimedia vectors. Very often, calls are routed to hunt groups or skills via a vector. The existing VDNs and vectors which exist for routing voice calls can be used to route multimedia calls.

In order to use a vector for multimedia calls that will terminate to voice stations, you must set the Multimedia field on the vector form to **y**. This field has no effect on voice calls routing through the vector. This field will cause multimedia calls routed through the vector to receive early answer treatment prior to processing the vector steps. This provides a talk path to the caller for announcements or immediate conversation with an agent.

⇒ NOTE:

Vectors which have the Multimedia field set to y must eventually route to hunt groups, skills or numbers which are voice extensions. A vector with the multimedia field set to y should never be set up to route to a hunt group or number which is a data extension.

When a vector is used to route video (56K/64K) calls to a hunt group comprised of data extensions, the vector *must* have the multimedia field set to **n**.

Intercept Treatment. H.320 calls that receive intercept treatment are treated like other data calls. H.320 calls cannot be directed to an attendant for service because the attendant cannot have H.320 conversion service.

ISDN Trunk Groups. Lucent Technologies highly recommends that you use ISDN trunks for multimedia calls. ISDN PRI trunks allow complete 1-number access for an Enhanced multimedia complex. ANI provided over PRI trunks allows correct routing of multiple bearer channels to the correct destination device. ISDN also provides the bearer capability on a call by call basis which can be used to distinguish voice calls from multimedia calls.

Malicious Call Trace. If a malicious call terminates at a Basic multimedia complex endpoint, the user can dial the feature access code from the telephone to activate malicious call trace, followed by the extension of the multimedia endpoint. If the user does not dial the multimedia extension, MCT traces any call held on the telephone.

Message Waiting. Message Waiting indication is handled at the telephone. Because H.320 calls are converted to voice before going to coverage, all messages are voice only.

Night Service. Incoming Basic mode data calls follow established night-service processing for data calls.

Remote Access. The switch does not prevent Basic multimedia complexes from attempting to use remote access. However, these Basic mode endpoints will most likely not be able to dial the necessary codes.

Station Hunting . Basic mode data calls to endpoints that have an extension administered in the hunt-to-station field hunt based on established hunting criteria. The call is converted to voice before station hunting.

Tenant Partitioning. Permission to make multimedia calls or add parties of any type to a conference is subject to standard tenant-partitioning restrictions.

Terminating Extension Groups. Basic mode data calls to a TEG are converted to voice and can terminate only at a voice endpoint. Effectively, DEFINITY ECS treats the multimedia-complex extension as a voice-only endpoint.

Telephone Display. Display information for calls to or from a Basic multimedia complex contains the 1-number.

Enhanced Mode MM complex

The Enhanced multimedia complex provides a much greater unified and integrated interface for control of voice and multimedia calls. The multifunction voice station is used to control all calls, whether voice or multimedia. The H.320 desktop video system is used to present the video stream, data stream and (optionally) audio stream to the user. The H.320 desktop video system is *not* used for call control. The Enhanced multimedia complex allows the multifunction voice station to handle voice or multimedia calls in an almost identical manner. Each call appearance on the voice station may represent a voice or multimedia call, allowing multiple voice or multimedia calls to be present simultaneously on the station. The user may manage the separate call appearances without regard to the voice or multimedia nature of the specific call. The standard HOLD/TRANSFER/CONFERENCE/DROP actions may be applied to any call without regard to the voice or multimedia nature of the call.

1-number access

1-number access permits originating users to make voice or multimedia calls to an Enhanced multimedia complex by dialing the same number for either type of call. The number may be the voice station extension or the data module extension. If the incoming call is a voice call, DEFINITY ECS alerts the station of an incoming voice call. If the incoming call is 56K or 64K data call, DEFINITY ECS recognizes it as a multimedia call and inserts resources to terminate the H.320 protocol and then alerts the voice station with a multimedia call.

Calls originating on the same switch as the Enhanced mode complex destination may always use 1-number access for voice or video. In order to take advantage of 1-number access for calls originating from a remote location, the incoming calls must arrive over ISDN-PRI trunks. If the system is setup with separate non-PRI digital facilities for data, multimedia calls must be made to the data extension of the Enhanced mode complex.

AVD (Alternate voice/data) trunk groups cannot be used to provide 1-number access with MMCH. If the AVD trunk group has a BCC of 0, all calls arriving over the AVD trunk to the Basic mode complex will be assumed to be voice calls. If the AVD trunk group has a BCC of 1 or 4, all calls arriving over the AVD trunk to the Basic mode complex will be assumed to be multimedia calls.

ORIGINATION

The basic call sequence from an Enhanced mode complex is to originate a multimedia call and alert the destination. When the destination answers the call, the originating station's H.320 desktop video system will be alerted (that is, called by the switch to establish the service link). If the H.320 desktop video system is not configured for auto-answer, the user must answer the H.320 calls via the DVC GUI. If the H.320 DVC is configured for auto-answer, no action is needed via the DVC GUI. It is recommended, but not required, that Enhanced

mode complexes place their desktop video system into an auto-answer mode of operation. If the far-end is providing a video signal, the 2-way video will be observed. If the destination is not providing a video signal (call was answered by a simple voice station), then loopback video will be provided at the Enhanced mode complex originator. The audio signal will exist at the handset of the voice station. The audio signal may be moved to the H.320 DVC system via activation of a mm-pcaudio button on the voice station. See the section below on mm-pcaudio.

Hourglass tone. The originating party may hear different things when the incoming multimedia call is answered depending on the nature of the answering party. If the call is being answered directly by an H.320 DVC system or if the answering party is an Enhanced mode complex on a remote switch, an immediate audio path will not exist between the two parties. This is because the H.320 protocol must be established after the call is answered. It takes several seconds for the H.320 protocol to establish an audio path. During this interval the originating party will hear special ringback. When the audio path exists the special ringback will be removed and replaced with a short incoming call tone indicating that audio path now exists. The combination of special ringback followed by incoming call tone is referred to as "hourglass tone." Hourglass tone is an indication to the originating party that they should wait for the H.320 call to establish audio.

- originating voice calls

Voice calls are originated from the voice station of an Enhanced mode complex in the normal manner as for any voice station.

- originating multimedia calls

Multimedia calls from an Enhanced multimedia complex are originated from the VOICE STATION, NOT the H.320 desktop video system. All multimedia originations require the user to indicate the multimedia nature of the call prior to providing any address digits. There are several different ways to originate a multimedia call from the voice station.

1. **mm-call (Multimedia Call) button.** If the station has an mm-call button administered, the user goes off-hook and selects the mm-call button. The user may select the mm-call button and then go off-hook. If the user has a speakerphone on the station, the user may originate the call simply by selecting the mm-call button. The speakerphone will automatically be placed off-hook and dialtone will be heard. Upon selection of the mm-call button, the mm-call status lamp (green led) will light steadily, indicating a multimedia call.

The user now dials the destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, station busy indicators, etc. Originating a multimedia call with the mm-call button will originate a call according to the Default Multimedia Parameters selected on the System Parameters

Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

For calls with a bandwidth of 2B, use of the mm-call button to originate will cause the same destination address to be used for both channels of the 2B call. See the section below on the mm-multinbr button/FAC for information on originating a 2B call where the destination has a different address for each B-channel.

 **NOTE:**

The mm-call feature button is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a multimedia call.

2. **Multimedia Call feature Access Code.** For stations that do not have an administered mm-call button, the Multimedia call feature access code may be used instead. The user goes off-hook on the station, waits for dialtone, then dials the MM-call FAC, receives dialtone again and then dials the call normally. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, station busy indicators, etc.

Originating a multimedia call with the mm-call button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

For calls with a bandwidth of 2B, use of the mm-call button to originate will cause the same destination address to be used for both channels of the 2B call. See the section below on the mm-multinbr button/FAC for information on originating a 2B call where the destination has a different address for each B-channel.

 **NOTE:**

The mm-call feature access code is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a multimedia call.

3. **mm-multinbr (Multimedia Multi-number) button.** The mm-multinbr button is similar to the mm-call button. It allows origination of a multimedia call from a voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. An example of this is Central Office provided ISDN-BRI. This type of BRI line is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of addresses must be entered.

The user goes off-hook and selects the mm-multinbr button. The user may select the mm-multinbr button and then go off-hook. If the user has a speakerphone on the station, the user may originate the call simply

by selecting the mm-multinbr button. The speakerphone will automatically be placed off-hook and dialtone will be heard. Upon selection of the mm-multinbr button, the mm-multinbr and mm-call (if present) status lamp (green led) should become solid. The user now dials the first destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. The system will provide dialtone after the first address has been completed. The user now dials the second destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. After the 2nd address has been collected the mm-multinbr status lamp will go off.

Originating a multimedia call with the mm-multinbr button will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

 **NOTE:**

The mm-multinbr feature button is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

4. **Multimedia Multi-number Call feature Access Code.** For stations that do not have an administered mm-multinbr button, the Multimedia Multi-number call feature access code may be used instead. It allows origination of a multimedia call from a voice station. It is used when the destination being dialed requires a different address for each of the 2 B-channels. An example of this is Central Office provided ISDN-BRI. This type of BRI line is provisioned with separate listed directory numbers for each B-channel. In order to make a 2B multimedia call to such a device, two sets of addresses must be entered.

The user goes off-hook and dials the MM-multinbr feature access code. Upon dialing of the MM-multinbr FAC, the mm-call (if present) status lamp (green led) should become solid. The user now dials the first destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc. The system will provide dialtone after the first address has been completed. The user now dials the second destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc.

Originating a multimedia call with the MM-multinbr FAC will originate a call according to the Default Multimedia Parameters selected on the System Parameters Features form. This default parameter will be either 2x56 or 2x64. The bearer capability of the multimedia calls will either be 56K or 64K and the bandwidth will be 2B channels.

 **NOTE:**

The mm-multinbr FAC is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

5. **Multimedia parameter selection feature access code.** This FAC is used to originate a multimedia call that wishes to use a different bearer and bandwidth than the system default. For example, if the system has a default multimedia parameter of 2x64 and the user wishes to make a call to a destination that is known to only have 56K digital facilities, the MM parameter selection FAC can be used to select a bearer and bandwidth of 2x56 for this specific call.

The MM parameter selection FAC may be used in conjunction with the mm-multinbr button or FAC to make a single or dual address multimedia call at the desired bearer and bandwidth. The user goes off-hook and dials the MM-parameter selection feature access code. Dialtone is returned. The user enters a single digit, 1 or 2, where 1 = 2x64, 2 = 2x56. All other digits will produce reorder. Dialtone is returned. Upon dialing of the MM-parameter selection FAC, the mm-call (if present) status lamp (green led) should become solid. The user may indicate a dual-address call at this point with the mm-multinbr button or FAC. The user now dials one or two sets of destination address digits. The destination address may be provided by dialing digits, using abbreviated dial entries, last number dialed, etc.

 **NOTE:**

The mm-parameter selection FAC is generally used by stations that are part of an Enhanced multimedia complex, but may be used by any station to originate a dual address multimedia call.

6. Dialing sequences that include TACs, AAR, ARS, Authorization codes, CDR account codes, FRLS
 1. Single address with TAC
 - **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** TAC, **Dial** destination digits
 2. Dual address with TAC
 - **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** TAC, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** TAC, **Dial** 2nd dest. digits
 3. Single address with AAR/ARS
 - **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** destination digits
 4. Dual address with AAR/ARS

- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 2nd dest. digits
5. Single address with AAR/ARS and authorization code
- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS FAC, **Dial** destination digits, **Hear** stutter dialtone
 - **Dial** authorization code
6. Dual address with AAR/ARS and authorization code
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 1st dest. digits, **Hear** dialtone
 - **Dial** AAR/ARS, **Dial** 2nd dest. digits, **Hear** stutter dialtone
 - **Dial** authorization code
7. Single address with TAC or AAR/ARS and CDR account code
- **Dial** mm-call button or FAC, **Hear** dialtone
 - **Dial** CDR FAC, **Hear** dialtone
 - **Dial** CDR account code, **Hear** dialtone
 - **Dial** TAC or AAR/ARS, **Dial** destination digits
8. Dual address with TAC or AAR/ARS and CDR account code
- **Dial** mm-multinbr button or FAC, **Hear** dialtone
 - **Dial** CDR FAC, **Hear** dialtone
 - **Dial** CDR account code, **Hear** dialtone
 - **Dial** TAC or AAR/ARS, **Dial** 1st dest. digits
 - **Dial** TAC or AAR/ARS, **Dial** 2nd dest. digits

Answering

The user actions required to answer voice or multimedia calls at an Enhanced multimedia complex are identical if the H.320 DVC system is configured for auto-answer. If the H.320 DVC system is not configured for auto-answer an additional step is required. See answering multimedia calls below. It is recommended, but not required, that Enhanced mode complexes place their desktop video system into an auto-answer mode of operation.

Answering voice calls

Incoming voice calls will alert at the voice station of the Enhanced multimedia complex in the normal manner. Standard alerting and call appearance flashing will occur. They are answered in the normal manner by selecting the alerting call appearance and going off-hook on the voice station.

Answering multimedia calls

Incoming multimedia calls will alert at the voice station of the Enhanced multimedia complex in the same manner as voice calls with one addition. If the alerting station has an administered mm-call button and the alerting call appearance is the selected call appearance (i.e. the red led is lit, on the alerting call appearance), then the mm-call button status lamp will go on indicating that the call on the selected call appearance is a multimedia call.

The incoming multimedia call is answered in the normal manner by selecting the alerting call appearance and going off-hook on the voice station. If the H.320 DVC system for the answering party is configured for auto-answer, no other action is needed to complete the multimedia call. If the H.320 DVC system for the answering party is not configured for auto-answer, the H.320 DVC system will alert and must also be answered by the user. It is recommended, but not required, that Enhanced mode complexes place their desktop video system into an auto-answer mode of operation.

If the originating party is providing a video signal, then a complete 2-way multimedia call will exist. If the originating party is not providing a video signal, the answering party will receive loopback video. The audio signal will exist at the handset of the voice station. The audio signal may be moved to the H.320 DVC system via activation of a mm-pcaudio button on the voice station. (See the section below on mm-pcaudio [11-85](#). [11-53](#).)

Hourglass Tone. The answering party may hear different things when the incoming multimedia call is answered depending on the nature of the originator. If the origination is directly from an H.320 DVC system or if the originator is an Enhanced mode complex on a remote switch, an immediate audio path will not exist between the two parties. This is because the H.320 protocol must be established after the call is answered. It takes several seconds for the H.320 protocol to establish an audio path. During this interval the answering party will hear special ringback. When the audio path exists the special ringback will be removed and replaced with a short "incoming call tone" indicating that audio now exists. The combination of special ringback followed by incoming call tone is referred to as "hourglass tone." Hourglass tone is an indication to the answering party that they should wait for the H.320 call to establish audio.

Early Answer. The answering party may administer their station in such a way as to avoid hearing hourglass tone. If the station form has set the Early Answer field to **y**, then the system will answer the incoming multimedia call on behalf of the station and proceed to establish the H.320 protocol. After audio path has been established, the call will then alert at the voice station of the Enhanced mode complex destination. The station may then answer by going off-hook and will have immediate audio path. No hourglass tone will be heard by the answering party.

- multiple call appearance operation

With an Enhanced mode complex all calls to or from the complex are controlled via the voice station. Each voice or multimedia call has its own call appearance which may be selected without regard for the nature of the call using the specific call appearance. This allows a multifunction station to control multiple voice or multimedia calls in exactly the same way they would control multiple voice calls.

As an example, a user may originate a simple voice call on the first call appearance. A multimedia call may then arrive on the second call appearance. The user activates HOLD on the first call appearance and selects the second call appearance to answer the multimedia call. The user may then activate HOLD on the second call appearance and reselect the first call appearance or select a third call appearance and originate another call.

- creating a multi-party video conference

An Enhanced multimedia complex can create a spontaneous video conference in the same way that a spontaneous voice conference is created. Given an active call, the user activates the CONFERENCE button. This puts the current call on HOLD and activates a new call appearance. The user makes a multimedia call according to the instructions for originating a multimedia call and then selects CONFERENCE to combine or merge the two call appearances. This results in a 3-way conference.

If all three parties are video equipped, then a 3-way video conference results. Conference members see the current speaker on video. The current speaker sees the last speaker on video. If one of the parties is not video equipped, then a 3-way audio conference exists and the two video equipped parties have 2-way video. The CONFERENCE action may be repeated until 6 parties have been conferenced together. The 6 parties may be any mix of voice or video, local or remote parties.

The following steps create a multi-party voice/video conference:

1. Enhanced mode complex station A originates a multimedia call to, or receives a multimedia call from, party B. Station A and party B have 2-way voice and video.
2. Station A, activates CONFERENCE.
3. Station A originates a multimedia call (i.e. uses the mm-call button/FAC/etc.) and dials the party to be added, Enhanced multimedia complex C.
4. Party C, answers the call from station A.
5. Station A selects CONFERENCE to complete the 3-way conference. Parties A,B and C will be in a 3-way voice/video conference.

 **NOTE:**

If party C is another Enhanced mode complex on the same switch as station A, station A does not need to indicate a multimedia call prior to dialing the new party in step 3. While A consults with C, the call will be audio only. When A completes the conference in step 5, party C's video will be activated.

A multi-party video conference uses voice activated switching to determine which parties are seen. The current speaker is seen by all other parties. The current speaker sees the previous speaker.

Additional voice or video parties may be added by repeating these steps.

Data Collaboration

Once you have established a multi-point video conference, multi-point T.120 data collaboration may be enabled for that call. This will allow all video parties on the current conference to collaborate.

T.120 Data conferencing is made possible through the Expansion Services Module (ESM) which is an adjunct to the DEFINITY ECS. Up to six parties may participate in a single data conference, and up to 24 parties may use ESM facilities for data collaboration at any given time.

The following steps add data sharing to a video conference:

1. Set up a multimedia conference.
2. Once a multimedia call is active, any member can initiate data collaboration by pressing the mm-datacnf button. Or, to use the feature access code to initiate a data conference, press the Transfer button. A second line-appearance becomes active and you hear dial tone. Dial the multimedia data conference feature access code. Confirmation tone is heard and the system automatically reselects the held call appearance of the multimedia conference. The DEFINITY ECS will select an MLP data rate which is acceptable to all H.320 DVC systems in the current call.

If the system does not have sufficient ESM resources available for all parties currently in the call, activation of T.120 data sharing will be denied. The mm-datacnf status lamp will flash denial or the mm-datacnf FAC will produce reorder.

3. Each H.320 DVC system in the conference call is joined to the data conference. On many DVC systems, the provided GUI may prompt the user with a dialog box, requesting the user to select a specific conference to join. With DEFINITY MMCH, there should only be one conference available to select.

4. The user must now use the PC's GUI to begin application sharing. The method for beginning application sharing or file transfer is different for each H.320 multimedia application. One of the H.320 DVC systems activates data sharing from the H.320 DVC vendor provided GUI. See your H.320 DVC system documentation for details.
5. The same H.320 DVC system as in step 4, opens an application, whiteboard, etc. to share and the image of the application is displayed on all H.320 DVC systems in the conference.

For details on how multiple users may control the shared application, see the vendor provided documentation for your specific H.320 DVC system.

6. To end the data collaboration session and retain the voice/video conference, the station that selected the mm-datacnf button or FAC may press the mm-datacnf button or hit transfer and dial the mm-datacnf deactivation FAC.

⇒ NOTE:

Currently, many endpoints do not respond correctly to ending the data collaboration session and retaining voice/video. Some H.320 DVC systems drop the entire call. It is recommended that once T.120 data sharing has been enabled for a conference, that it remain active for the duration of the conference call. When all endpoints have dropped from the call, the T.120 resources will be released.

Joining a multimedia conference after T.120 data sharing has been enabled.

If a multimedia conference with T.120 data sharing is already active and it is desired to conference in a new video endpoint, the new video endpoint can be conferenced into the existing call. The new endpoint will be allowed into the data conference if there exists sufficient ESM resources for the new endpoint. The new endpoint will get voice/video and data sharing if the new endpoint supports the data rate chosen by the system when T.120 data collaboration was activated. If the endpoint does not support the pre-existing data rate, the new endpoint will only receive voice and video.

Activating HOLD while on a T.120 data collaboration conference.

If an Enhanced multimedia complex is active on a multimedia call and the call has activated T.120 data collaboration, the user should be receiving voice/video and data. If the station places this existing call on hold, audio and video will be disconnected for the current call. The data collaboration portion of the call will remain intact and unaffected. While this T.120 data conference is on hold, the user will only be allowed to receive audio on all other call appearances. Thus a user is limited to one call appearance that has T.120 data collaboration active.

Single switch data collaboration. When all parties involved in data collaboration conference are located on the same physical DEFINITY ECS,

there is no restriction on the type of user. The parties may be any combination of Enhanced multimedia complexes, Basic multimedia complexes or stand-alone H.320 DVC systems.

Multi-switch data collaboration. When all parties involved in data collaboration conference are *not* located on the same physical DEFINITY ECS, the parties located on the DEFINITY ECS hosting the data conference (i.e. the switch that activated mm-datacnf) may be any combination of Enhanced multimedia complexes, Basic multimedia complexes or stand-alone H.320 DVC systems.

⇒ NOTE:

All parties on remote switches must not be Enhanced multimedia complexes. They must be Basic multimedia complexes or stand-alone H.320 DVC systems.

Prior to originating or receiving a multimedia mode call, the mm-basic feature button or feature access code can be used to dynamically change an Enhanced mode complex into a Basic mode complex and back again.

Voice station audio vs. H.320 DVC system audio

When an Enhanced mode complex originates or receives a voice or multimedia call, the call is originated with the station handset or answered with the station handset. The audio path will be through the handset. If the user's H.320 DVC system has speakers and a microphone, the user may wish to use the H.320 DVC system for audio in much the same manner as a built-in or separate telephone speakerphone. The user can move the station's audio to the H.320 DVC system by selecting an mm-pcaudio feature button on the voice station. There is no feature access code for this function.

The mm-pcaudio feature button works very much like a speakerphone on/off button. If the station is off-hook and selects mm-pcaudio, audio is directed to the PC DVC system. The switch-hook may be placed on-hook. If the handset is taken off-hook, the audio moves back to the handset. If the mm-pcaudio button is selected while audio is already on the DVC system and the handset is on-hook, this acts as a speakerphone off action and disconnects the current call.

The mm-pcaudio feature button may be used for voice as well as multimedia calls. If the mm-pcaudio feature button is selected while on a voice only call, the DVC system is alerted and brought into the call. No video will be transmitted or displayed. Audio will be directed through the PC DVC system.

Switching between Basic and Enhanced modes

There may exist occasions when an Enhanced mode complex needs to switch to Basic mode operation temporarily. One example is when a user wishes to make a direct point to point multimedia call originated directly from the H.320 DVC. Basic mode operation allows this functionality at the expense of

losing multimedia call handling capabilities (i.e. hold/xfer/conf). To switch from Enhanced mode to Basic mode, the station may either select a mm-basic feature button or dial the mm-basic feature access code. Both of these actions are valid only if the Enhanced mode station has no multimedia calls active.

When in Basic mode, the status lamp for the mm-basic button, if present, will be on solid. The mm-basic feature button acts as a toggle. If the status lamp is on, when the button is selected, the lamp will go off and the station will return to Enhanced mode. The mm-enhanced feature access code will set the state of the station back to Enhanced. Switching to Enhanced mode is only valid if the associated H.320 DVC system is idle.

⇒ NOTE:

 Toggling between Basic and Enhanced mode changes the station's administered Multimedia mode. When in Basic mode this field on the station form will show `basic`. When in Enhanced mode this field on the station form will show `enhanced`. The current station Multimedia mode will be saved to translation when a **save translation** command is executed.

Forwarding of voice and multimedia calls

The Enhanced multimedia mode complex voice station may use the existing standard call forwarding mechanisms to activate forwarding for voice calls. If the forwarding destination is on the same switch then this will also forward multimedia calls as multimedia calls to the destination. If the forwarding destination is off switch, multimedia calls will forward off switch as voice only calls. This is appropriate when the user will be at a location that is not able to receive multimedia calls.

To forward multimedia calls off switch as multimedia calls, the user must activate multimedia call forwarding. This may be done with an mm-cfwd button or feature access code. The user may also activate standard voice call forwarding and select the mm-call button prior to entering the forwarding address.

Coverage

Multimedia calls to an Enhanced mode complex are subject to the same coverage criteria as voice calls and follow the coverage path administered for the voice station of the Enhanced multimedia mode complex.

If a plain voice station or a Basic mode complex is the covering party, the answering voice station will receive audio only. If all voice stations in the coverage path have the station form Early Answer field set to **n** and the originator of the multimedia call was not a local Enhanced mode complex, the answering station will hear hourglass tone.

If an Enhanced mode complex is the covering party, the answering voice station will receive voice and video. If all voice stations in the coverage path

have the station form Early Answer field set to **n** and the originator of the multimedia call was not a local Enhanced mode complex, the answering station will hear hourglass tone.

Multimedia calls and off-net call coverage. If the principal station's coverage path include a remote coverage point, the multimedia call will cover off-switch as voice only. If the call is unanswered off-switch and proceeds to the next coverage point on-switch, the multimedia nature of the call is preserved.

Multimedia calls and coverage to voice mail. Voice mail systems such as AUDIX are typically the last point in a coverage path and are usually implemented as a hunt group. In order to guarantee that the originator of an H.320 multimedia call hears the voice mail greeting, the hunt group that defines the list of voice mail ports should have the Early Answer field on the hunt group set to **y**. This field will have no effect on voice calls to the voice mail system.

Hunt Groups using Enhanced Mode Complexes

When creating hunt groups with Enhanced multimedia mode complexes, only the station extension should ever be entered as a hunt group member. Any hunt group or ACD skill can include the voice station of an Enhanced multimedia complex as a member. The data extension of an Enhanced mode complex should never be entered as any hunt group member. A hunt group or skill may have a mix of members that are stand-alone stations and Enhanced mode complex stations. In order to guarantee that all members of the hunt group or skill can receive voice or multimedia calls, all members should have the H.320 field on the station form set to **y**. Simple voice stations will receive voice only. Enhanced mode stations will receive voice and video.

The MM Early Answer field (on the Hunt Group form) tells the system to answer an incoming multimedia call and establish audio before it reaches the first member of the hunt group. Thus, when the talk path is established, the caller is able to speak with an agent immediately.

Other considerations. CMS measurements may indicate unusually slow ASA, because of the time required for the system to establish early-answer before offering the call to an agent.

Call association (routing). Typically incoming voice calls consist of 2 B-channel calls to the same address, to provide greater bandwidth and better video resolution. DEFINITY ECS attempts to correctly pair up incoming calls and offer them as a unit to a single agent. MMCH uses call association to route both calls to the extension that answered the first call, regardless of how the call was routed internally.

Two 56K/64K data calls with the same calling party number to the same destination number are considered to be associated. The system makes every attempt to route both calls of a 2-channel call to the same answering

party. If the first call terminates at a member of a hunt group, the second call does not have to hunt, but goes directly to the same member.

In order for 2B multimedia calls to be correctly given to a single agent, incoming calls to the hunt group must have ANI information. The ANI information may be in the form of ISDN calling party number or DCS calling party number. Multimedia calls made on the same switch as the hunt group are easily associated. If multimedia calls into a hunt group have insufficient ANI information (i.e. all calls from switch X to switch Y include the LDN for switch X), then as the volume of calls increases the number of mis-associated calls will increase. If multimedia calls into a hunt group have no ANI information, the switch will never associate pairs of calls and all calls will be treated independently and routed to separate agents. This is not a recommended configuration.

Multimedia vectors. Very often, calls are routed to hunt groups or skills via a vector. The existing VDNs and vectors which exist for routing voice calls can be used to route multimedia calls.

In order to use a vector for multimedia calls, you must set the Multimedia field on the vector form to **y**. This field has no effect on voice calls routing through the vector. This field will cause multimedia calls routed through the vector to receive early answer treatment prior to processing the vector steps. This provides a talk path to the caller for announcements or immediate conversation with an agent.

⇒ NOTE:

Vectors which have the Multimedia field set must eventually route to hunt groups, skills or numbers which are voice extensions. A vector with the multimedia field set to y should never be set up to route to a hunt group or number which is a data extension.

Interactions

Interactions are listed here only if the operation is different from standard.

- Administered Connections

An Enhanced multimedia complex voice station may serve as the origination point or destination of an administered connection. If the Multimedia call feature access code is included in the administration of the administered connection, this will result in a video AC.

An Enhanced multimedia complex H.320 DVC system may not serve as the origination point of an administered connection.

- Administration without Hardware

You cannot use AWOH to administer a data module or the data endpoint in a multimedia complex. However, you can use AWOH to administer the telephone.

- Bridged Appearances

Enhanced multimedia complex voice station users can bridge onto a call if the user has a bridged appearance. If the bridged appearance is for a multimedia call, selecting the bridged appearance will result in a multimedia call.

- Call Detail Recording

Each channel of a 2-channel multimedia call generates a separate CDR record that is tagged as data.
- Call Park

Any station can park a multimedia call, and unpark the call from another telephone. If a multimedia call is unparked by an Enhanced mode complex station, a multimedia call will result. Users cannot park or unpark calls using multimedia endpoints.
- Call Pickup

Any member of a pickup group can answer a multimedia call after the call has begun alerting at a station call appearance. If the station picking up the call is an Enhanced mode complex station and the call is multimedia, a multimedia call will result. This is true for standard or directed call pickup.
- Consult

After a multimedia call has been answered, consult may be used when transferring or conferencing the call.
- COR/COS

The Class of Restriction and Class of Service for a multimedia call originated from an Enhanced multimedia complex are those of the voice station in the complex.
- Data Call Setup

An Enhanced mode multimedia H.320 DVC system may not originate calls from the DVC system. All calls, both voice or video are originated from the voice station.
- Data Hotline

An Enhanced multimedia complex H.320 DVC endpoint may not be used to originate a call for hotline dialing. In order to setup a video hotline function with an Enhanced mode complex, the hotline number administered for the voice station should include the Multimedia call feature access code.
- Data Trunk Groups

Data trunk groups may be used to carry H.320 calls of a fixed (administered) bearer capability.
- ISDN Trunk Groups

Lucent Technologies highly recommends that you use ISDN trunks for multimedia calls. ISDN PRI trunks allow complete 1-number access for an Enhanced multimedia complex. ANI provided over PRI trunks allows correct routing of multiple bearer channels to the correct destination device. ISDN also provides the bearer capability on a call by call basis that can be used to distinguish voice calls from multimedia calls.

- Night Service

Incoming H.320 calls follow established night-service processing for data calls.

- Remote Access

The switch does not prevent Enhanced multimedia complexes from attempting to use remote access. However, these endpoints will most likely not be able to dial the necessary codes.

- Station Hunting

Multimedia calls to Enhanced mode complex voice stations that have an extension administered in the hunt-to-station field hunt based on established hunting criteria. If the hunt-to-station is also an Enhanced mode complex station, a multimedia call will result when the call is answered.

- Terminating Extension Groups

A multimedia call to a TEG may be answered by any member of the TEG. If the member answering the call is an Enhanced mode complex station, a multimedia call will result.

- Telephone Display

Display information for calls to or from an Enhanced multimedia complex contains the display information associated with the voice station.

Troubleshooting

If one channel of a 2 B-channel call goes down, your choices are to continue with reduced transmission quality, or to hang up the call and start over. It is not possible to re-establish the second channel while the call is still active.

If you cannot share data with others, it may be that both parties do not have the same endpoint software. This is true for some data collaboration, but most whiteboard and file transfer software implementations are compatible.

Monitoring MMCH

This section briefly discusses some of the commands you can use to monitor multimedia complexes and conferences. *DEFINITY Enterprise Communications Server Release 6 — Maintenance for R6vs/si* and *DEFINITY Enterprise Communications Server Release 6 — Maintenance for R6r* discuss these commands and their output in detail.

Action	Objects	Qualifier
display	station data module	xxxxx (extension) xxxxx (extension)
list	mmi measurements multimedia	multimedia-interface voice-conditioner esm endpoints ['print' or 'schedule'] h.320-stations ['print' or 'schedule']
status	attendant conference conference conference data module station trunk esm	xxxx (console number) all xxx (conference ID) xxx (conference ID) endpoint (endpoint ID) xxxxx (extension) xxxxx (extension) (group number or group number/member number)

Status commands

The **status** commands for data module, station, trunk, and attendant provide the conference ID and endpoint ID for any of these involved in an active multimedia conference.

```

status station 1002

                                GENERAL STATUS

      Type: 7405D                Service State: in-service/on-hook
      Extension: 1002            Maintenance Busy? no
      Port: 01C0702             SAC Activated? no
      Call Parked? no           User Cntrl Restr: none
      Ring Cut Off Act? no      Group Cntrl Restr: none
      Active Coverage Option: 1  CF Destination Ext:
                                MM Conference ID:
                                MM Endpoint ID:

      Message Waiting:
      Connected Ports:

      ACD STATUS                  HOSPITALITY STATUS
      Agent Logged In   Work Mode  AWU Call At:
                                User DND: not activated
                                Group DND: not activated
                                Room Status: non-guest room

      On ACD Call? no

```

Screen 11-30. Status Station 1002 — General Status Form

The following fields specific to multimedia appear on the status station, attendant, data module and trunk screens.

- **MM Conference ID** — This field appears only if the station is active on a multimedia conference. It displays the ID for the conference. Enter this number with the status conference command to get more information about this conference.
- **MM Endpoint ID** — This field appears only if the station is active on a multimedia conference. It displays the endpoint ID for the station. Enter this number with the status conference endpoint command to learn more about this endpoint's involvement in the conference.

List commands

The **list multimedia endpoints** command shows you all the multimedia data modules that exist in your system, and their associated telephones, if any. The **list multimedia H.320-stations** command shows you all the stations that are administered for H.320 conversion.

MULTIMEDIA ENDPOINTS			
Data Ext	MM Complex Voice Ext	H.320 Conversion?	
100	87654	y	
1321			
15683	738	n	

Screen 11-31. List Multimedia Endpoints Form

MULTIMEDIA H.320-STATIONS	
Station Ext	MM Data Ext
100	87654
1321	
15683	738

Screen 11-32. List Multimedia H.320-Stations Form

List measurements commands

Several reports are available to help you determine the amount of traffic your switch carries for multimedia conferences and conversion calls. All reports show traffic over multimedia circuit packs housed within the same switch, although not necessarily in the same port network. You can use these reports to determine if you have adequate resources to handle the multimedia traffic on your system.

NOTE:

Point-to-point multimedia calls between Basic mode or standalone multimedia endpoints do not use MMIs or VCs, and therefore do not count in these measurements.

The following reports are available:

- MMI Hourly and Summary
- ESM-MMI Hourly and Summary
- VC Hourly and Summary

The Hourly and Summary reports provide the same types of information. The hourly report shows measurements for the last 24 hours, whereas the summary reports show measurements for one hour, according to the type of summary you request.

MMI reports

Use the following commands to view the MMI reports. You can also print or schedule any of these reports.

list measurements multimedia-interface hourly

list measurements multimedia-interface summary yesterday-peak, today-peak, or last-hour

```
list measurements mmi hourly Page 1
Switch Name: Cust_Switch_Name          Date: 11:33 am TUE JUL 31, 19xx
                MMI HOURLY REPORT

Meas Avail Avail Total Total  MMI    Out of %   %
Hour Ports Usage Usage Alloc Denials Srv-CCS APB Blockage
1900 0    0    0    0    0    0    0    0
1800 0    0    0    0    0    0    0    0
1700 0    0    0    0    0    0    0    0
1600 0    0    0    0    0    0    0    0
1500 0    0    0    0    0    0    0    0
1400 0    0    0    0    0    0    0    0
1300 0    0    0    0    0    0    0    0
1200 0    0    0    0    0    0    0    0
1100 0    0    0    0    0    0    0    0
1000 0    0    0    0    0    0    0    0
0900 0    0    0    0    0    0    0    0
0800 0    0    0    0    0    0    0    0
      press CANCEL to quit -- Press NEXT PAGE to continue
```

Screen 11-33. MMI Hourly Report

```
list measurements mmi summary today-peak Page 1
Switch Name: Cust_Switch_Name          Date: 11:33 am TUE JUL 31, 19xx
                MMI SUMMARY REPORT

                Peak Hour for all MMIs : 1100

Meas Avail Avail Total Total  MMI    Out of %   %
Hour Ports Usage Usage Alloc Denials Srv-CCS APB Blockage
1100 0    0    0    0    0    0    0    0
```

Screen 11-34. MMI Summary Report

Table 11-3. MMI Summary Report

Field	Description
Switch Name	The name of the switch that contains the MMIs.
Date	The date and time that you requested the report, or that the report was run, if scheduled.
Peak Hour For All MMIs	If you use the yesterday-peak or today-peak qualifiers, this field displays the hour of greatest usage for the specified day.
Meas Hour	The hour for which these measurements apply, on the 24-hour clock.
Avail Ports	Total network MMI ports in the system. This does not include any MMIs that are cabled to an ESM. ESM-MMIs are measured separately.
Avail Usage	Total time that is available in the system for network MMI ports, in CCS units.
Total Usage	The total time, in CCS units, that MMI ports are in use on a call. Includes the time that the ports are out of service or maintenance busy. Usage is measured from the time the port is allocated until it is released.
Total Alloc	The total number of times that an MMI port was allocated to a call. Keep in mind that a 2-channel call occupies 2 ports, so this number does not necessarily reflect the number of calls that took place. Also, point-to-point calls do not use MMI resources, so these allocations are for conversion calls of multimedia conferences.
MMI Denials	Total number of times an MMI port was needed but could not be allocated because all ports were busy. Ideally, this number should be zero. If you see denials on a regular basis, you should consider adding MMIs to your system.
Out of Srv - CCS	The total time, in CCS units, that any MMI ports were out of service during any part of the measured interval.
% APB	Percent All Ports Busy. The percentage of time during the measured interval that all MMI ports are unavailable to carry a new call.
% Blockage	The percentage of attempted allocations of MMI ports that are not successful. This value is calculated as % blockage = (MMI Denials / Total Alloc + MMI Denials) * 100

ESM Reports

Use the following commands to view the ESM reports. You can also print or schedule any of these reports. ESM reports show traffic over the MMI that is cabled to the ESM.

list measurements esm hourly

list measurements esm summary yesterday-peak, today-peak, or last-hour

```
list measurements esm hourly Page 1
Switch Name: Cust_Switch_Name          Date: 11:33 am TUE JUL 31, 19xx
                        ESM HOURLY REPORT

Meas Avail Avail Total Total  MMI   Out of %   %
Hour Ports Usage Usage Alloc Denials Srv-CCS APB Blockage
1900 0    0    0    0    0    0    0    0
1800 0    0    0    0    0    0    0    0
1700 0    0    0    0    0    0    0    0
1600 0    0    0    0    0    0    0    0
1500 0    0    0    0    0    0    0    0
1400 0    0    0    0    0    0    0    0
1300 0    0    0    0    0    0    0    0
1200 0    0    0    0    0    0    0    0
1100 0    0    0    0    0    0    0    0
1000 0    0    0    0    0    0    0    0
0900 0    0    0    0    0    0    0    0
0800 0    0    0    0    0    0    0    0
      press CANCEL to quit -- Press NEXT PAGE to continue
```

Screen 11-35. ESM Hourly Report — Page 1

```
list measurements esm summary today-peak Page 1
Switch Name: Cust_Switch_Name          Date: 11:33 am TUE JUL 31, 19xx
                        ESM SUMMARY REPORT

                        Peak Hour for all ESM-MMIs : 1100

Meas Avail Avail Total Total  MMI   Out of %   %
Hour Ports Usage Usage Alloc Denials Srv-CCS APB Blockage
1100 0    0    0    0    0    0    0    0
```

Screen 11-36. ESM Summary Report

Table 11-4. ESM Summary Report

Field	Description
Switch Name	The name of the switch that contains the ESM-MMIs.
Date	The date and time that you requested the report, or that the report was run, if scheduled.
Peak Hour For All ESM-MMIs	If you use the yesterday-peak or today-peak qualifiers, this field displays the hour of greatest usage for the specified day.
Meas Hour	The hour for which these measurements apply, on the 24-hour clock.
Avail Ports	Total network ESM-MMIs in the system.
Avail Usage	Total time, in CCS units, that is available in the system for ESM-MMI ports.
Total Usage	The total time, in CCS units, that ESM-MMI ports are in use on a call. Includes the time that the ports are out of service or maintenance busy. Usage is measured from the time the port is allocated until it is released.
Total Alloc	The total number of times that an ESM-MMI port was allocated to a call.
MMI Denials	Total number of times an ESM-MMI port was needed but could not be allocated because all ports were busy.
Out Srv	The total time, in CCS units, that any ESM-MMI ports were out of service during any part of the measured interval.
%APB (all ports busy)	The percentage of time during the measured interval that all ESM-MMI ports are unavailable to carry a new call.
% Blockage	The percentage of attempted allocations of ESM-MMI ports that are not successful. This value is calculated as $\% \text{ blockage} = (\text{MMI Denials} / \text{Total Alloc} + \text{MMI Denials}) * 100$

VC reports

Use the following commands to view the MMI reports. You can also print or schedule any of these reports.

list measurements voice-conditioners hourly

**list measurements voice-conditioners summary yesterday-peak,
today-peak, or last-hour**

```
list measurements esm hourly Page 1
Switch Name: Cust_Switch_Name Date: 11:33 am TUE JUL 31, 19xx
VC HOURLY REPORT

Meas # -----USAGE----- --ALLOCATIONS--- -----DENIALS---- Out % %
Hour Prt Avail H320 Voice Total H320 Voice Total H320 Voice Total Srv APB Blk
1900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1800 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1700 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1600 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1500 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1400 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1300 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
1000 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0900 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0800 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
press CANCEL to quit -- Press NEXT PAGE to continue
```

Screen 11-37. ESM Hourly Report — Page 1

```
list measurements vc summary today-peak Page 1
Switch Name: Cust_Switch_Name Date: 11:33 am TUE JUL 31, 19xx
VOICE-CODITIONERS SUMMARY REPORT

Peak Hour for all VC : 1100

Meas # -----USAGE----- --ALLOCATIONS--- -----DENIALS---- Out % %
Hour Prt Avail H320 Voice Total H320 Voice Total H320 Voice Total Srv APB Blk
1100 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Screen 11-38. VC Summary Report

Table 11-5. VC Summary

Field	Description
Switch Name	The name of the switch that contains the VCs.
Date	The date and time that you requested the report, or that the report was run, if scheduled.
Peak Hour For All VC	If you use the yesterday-peak or today-peak qualifiers, this field displays the hour of greatest usage for the specified day.
Meas Hour	The hour for which these measurements apply, on the 24-hour clock.
# Prt	Total number of VC ports in the system.
Usage - Avail	Total time, in CCS, that all VC ports are available in the system. Calculated as #MMI ports x 36.
Usage - H320	Total time that VC ports are allocated to H320 endpoints.
Usage - Voice	Total time VC ports are allocated to voice endpoints.
Usage -Total	Total time, in CCS units, that VC ports are unavailable to carry a new call. This includes time that the ports are busy on a call, out of service or maintenance busy. Measured from the time that the port is allocated until it is released.
Allocation s - Total	Total number of times a VC port was allocated to a call. Each B-channel used on a multimedia call counts as one allocation.
Denials-H320	Number of times a port was needed for an H320 call, but was not available.
Denials -voice	Number of times a port was needed for a voice call, but was not available.
Denials-To tal	Total number of times a VC port was needed for any call, but was not allocated because all VC ports were busy.

Continued on next page

Table 11-5. VC Summary

Field	Description
Out Srv	The total time, in CCS units, that any MMI ports were out of service during any part of the measured interval.
%APB (all ports busy)	The percentage of time during the measured interval that all MMI ports are unavailable to carry a new call.
% Blockage	The percentage of attempted allocations of MMI ports that are not successful. This value is calculated as % blockage = (MMI Denials / Total Alloc + MMI Denials) * 100

Considerations

Each channel of a 2-channel BRI call takes one port on an MMI circuit pack. This alone limits the number of multimedia calls your system can handle. In addition, each conference takes one port on a voice-conditioner circuit pack.

Also, there is a limit to the number of conversion calls that the system can handle simultaneously. If you experience traffic problems after installing multimedia, you may want to lower the number of stations that use H.320 conversion.

References

Other information about MMCH is available in the following books:

DEFINITY ECS Release 6 — Overview contains a high-level description of the MMCH feature.

DEFINITY ECS Release 6 — Installation for Adjuncts and Peripherals describes how to install necessary circuit packs, and how to set up endpoint hardware and software.

DEFINITY ECS Release 6 — Maintenance

DEFINITY ECS Release 6 — System Description Pocket Reference describes the hardware components that are required for MMCH.

