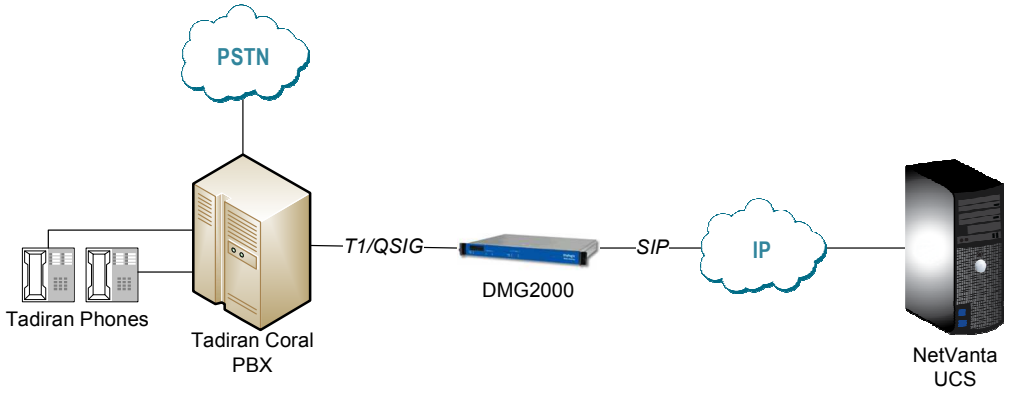
NetVanta Unified Communications Technical Note

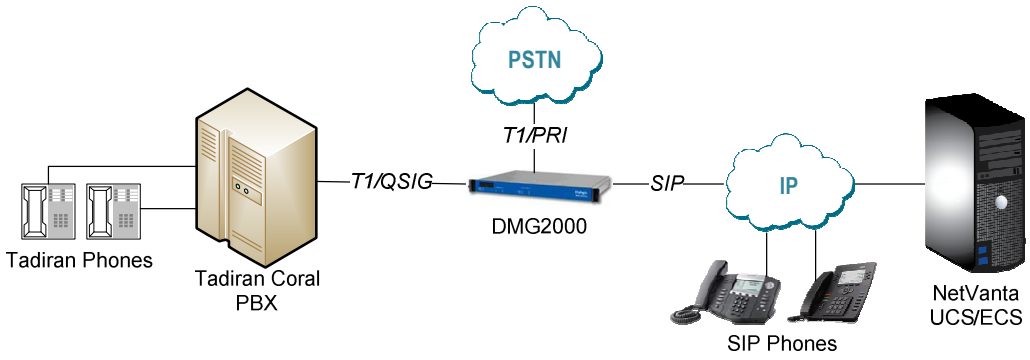
Configuring a Tadiran Coral PBX using DMG2000 with QSIG

Introduction

The Dialogic Media Gateway 2000 series provide integration with one or more existing Tadiran Coral PBXs and the NetVanta UC server. The physical connection to the Tadiran Coral PBX is via one or more T1 lines using the QSIG protocol, and the NetVanta UC server uses the SIP protocol to communicate with the Dialogic Media Gateway. The result is that the two systems are bridged together; this modernizes the functionality of the Tadiran PBX by adding advanced unified communications functionality without having to replace any existing PBX hardware infrastructure. Multiple Dialogic Media Gateways can be used to increase capacity and/or to provide fault tolerance. Furthermore, the Dialogic Media Gateway can also be used to terminate T1/PRI trunks from the PSTN.



Customers that intend to migrate to VoIP over time by adding the Enterprise Communications Server (ECS) licenses to NetVanta UC server can also use the Dialogic Media Gateway to provide extension dialing capabilities between SIP-based phones connected to ECS and Tadiran phones.



Intended Audience

This guide is intended for Tadiran PBX technical support specialists and administrators that are responsible for configuring the Tadiran PBX to integrate with the NetVanta UC server software. These administrators should ideally also have some exposure to the Dialogic Media Gateway products and configuration methodologies.

Supported Features

- Call coverage to personal greetings
  - Busy
  - Do not disturb (DND)
  - Ring no answer
  - All calls
- Caller ID (internal and external)
- Automated attendant
- Return to operator
- Personal greeting of originally called party on double call forward using call coverage
- Direct call
- Message waiting
- Centralized voice mail
- Direct inward dialing (DID) services
- Transfer callers to both internal and external sources (blind and supervised transfers)
- Notification services
  - Active message delivery
  - Pager notification
  - Email notification
- Faxing

ADTRAN NetVanta UC Server Requirements

- NetVanta Unified Communications Server release 4.6 or higher

Dialogic Hardware Requirements

Dialogic Media Gateway 2000 series:	6.0 service update 7

Tadiran PBX Requirements

PBX:	Tadiran Coral
Tadiran version (minimum):	15.68.05
Required licenses/capacities:	ARS, QSIG, PRI, software ports for 24-port PRI card

Other Software Requirements

Tadiran configuration:	Windows HyperTerminal

Nomenclature

The configuration instructions throughout the document include PBX output text, command input, site-specific values and general comments/examples. PBX output text is shown in regular non-bold/italicized text, with a best-effort to ensure it is the same as it appears in the hyper-terminal interface (occasionally the text is capitalized). Command input is shown in **bold**. Site-specific values – those that correspond specifically to the customer site - are shown in **<bold and surrounded by angled-brackets>**. *Comments are italicized*. For example:

PBX output text:	NAME:	
Command input:	**dtdb,4**	
Site-specific values (and comment):	**<Name>**	*E.g. Adtran*

In many areas throughout the document if values to be entered are not specific to the integration they are often not shown. This is noted were applicable.

Tadiran Configuration Instructions

Install PRI card in Tadiran

1. Verify that there is sufficient licensing and SAU authorization for the PRI card.
2. Connect the card to the cabinet.
3. Set up the D channel using the following commands:

dtdb,4
choose access method: **1**
choose mode: **0**
<shelf> *E.g. for shelf 0, slot 0, DSL 0: 0*
<slot> *8*
<circuit> *0*

> The following steps show only values required for the integration. Use defaults or your own values for the other entries.

NAME*: **<Name>*** *E.g. Adtran*
B_CHANNEL_NEGOTIATION*:* **Exclusive**
PROTOCOL_ID*:* **Qsig**
PROTOCOL_SIDE: **Network**
END_OF_DIAL_DIGIT*:* **NONE**
Adjacent Entity Number*:* **<a number not yet used on the PBX>**

> Note: if this is a multi-PRI integration then the Adjacent Entity Number needs to be the same for each of the D channels to the gateway.

TRANSIT_COUNTER_CODING (Ecma/Iso)*:* **Ecma**
PROTOCOL_PROFILE (Ecma/Iso)*:* **Ecma**

```
   0,8,0
------------


NAME-    Adtran
SIGNALING_CHANNEL-    1
MAIN_CHANNEL:
     SHELF   -    0
     SLOT    -    8
     CHANNEL -   24
B_CHANNEL_NEGOTIATION:
   (Exclusive/Preferred)- Exclusive
PROTOCOL_ID (At&t/Etsi/aUstralia/Qsig)-  Qsig
PROTOCOL_SIDE: U(User or slave)/N(Network or master)-  Network
END_OF_DIAL_DIGIT-  NONE
SENDING_COMPLETE for outgoing calls (Y/N)-  N
SENDING_COMPLETE for Enblock Incoming calls (Y/N)-  N
Send Connected Number to Public Network (Y/N)-  N
CONNECT_WHEN_DEST_IS_NOT_ISDN (Y/N)- Y
DTMF_WHEN_CALL_PROC (OVERLAP ONLY) (Y/N)- Y
MLPP_SUPPORT (Y/N)- N
Adjacent Entity Number -   2
Filter out IN_BAND_PROGRESS (Y/N)- N
Send Redirecting Number (Y/N)- N
  QSIG DEFINITIONS :
Support Call Independent Signalling Connection (CISC) (Y/N)- Y
Transit Counter in CISC calls (Y/N)-  Y
NET DIVERSION (Y/N)- N
TRANSIT_COUNTER_CODING (Ecma/Iso)-  Ecma
PROTOCOL_PROFILE (Ecma/Iso)-  Ecma
Path Replacement re-use of connection element (Y/N)- Y
```

4. Set up the B channels. Commands:

   npl,0
   2
   <next set of 23 numbers for B-channels> *E.g. 7300*
   7322
   NUMBERS ALREADY DEF*:* **n**
   choose type*:* **0**
   ENTER (SHELF, SLOT, CKT) – **(<shelf,slot,circuit>)** *E.g. (0,8,1)*

```
GENERAL

choose mode             |

 0 - UPDATE
 1 - DISPLAY
 2 - ADD
 3 - REMOVE
 5 - SHOW
 7 - ERASE

*:  2


FROM  NEW DIAL# -  7300

TO    NEW DIAL# -  7322

NUMBERS ALREADY DEF ? (Y/N)  n
```

```
 0 - TRUNK                1 - SLT
 2 - KEYSET               3 - KEYSET_V_PAGE
 4 - TRUNK_GRP            5 - HUNT_GRP
 6 - BOSS_GRP             7 - PUBLIC_LIB
 9 - FEATURE             10 - EDIT
11 - BELL                12 - PAGE
13 - MODEM               14 - DID_NUMS
16 - DATA_PORT           19 - PRIVATE_LIB
20 - KEYSET_Z_PAGE       21 - RELAY
22 - DATA_USER           23 - DATA_GRP
30 - CONF                31 - DVMS_MSG
32 - DVMS_PORTS          33 - PAGE_Q
35 - GROUP_CALL          36 - DIAL_SERV
37 - ROUTING_ACC         38 - WAIT_QUE
39 - NETWORK             40 - WIRELESS
41 - IP_KEYSET           42 - IP_SLT
43 - IP_LGS              44 - IP_KEY_VPG
45 - IP_NET              46 - SIP_TERMINAL
47 - SIP_TRUNK           48 - DYNAMIC_CONF

choose type
*:  0

ENTER (SHELF,SLOT,CKT) -  (0,8,1)_
```

Configure Trunk Group for UC Server

1. Find the next unused trunk group number. Commands:

   tgdef
   choose mode: **1**

   a. Accept FROM/TO defaults
   b. Find a GRP# that is UNDEF, and use that group number for the new trunk group.
   c. If there are no undefined trunk groups (otherwise skip to next section):

      i. Find the next available index. Commands:

         npl,0
         choose mode: **5**
         choose type: **4**

         Examine the existing entries and pick the next available Index.

      ii. Create a new trunk group. Commands:

         npl,0
         choose mode: **2**
         FROM NEW DIAL#: **<new trunk group number>**
         TO NEW DIAL#: **<same number as above>**
         NUMBERS ALREADY DEF ? (Y/N): **n**
         choose type: **4**
         ENTER INDEX#: **<Index as above>**

      iii. Locate the QSIG routing access number. Commands:

         lcr,1
         choose mode: **1**
         FROM … **<accept default>**
         TO … **<accept default>**

         Look for NPID with 'Private' and use the corresponding routing access number (screen shot on following page).

```
choose mode

 0 - UPDATE
 1 - DISPLAY

*:  1

FROM   ROUTING_ACCESS DIAL# -          9
TO     ROUTING_ACCESS DIAL# -       7080

Any specific data field (type ? for help)
 -


Routing general definitions


   9
------------


NAME - BLANK
```

```
DEFAULT ELEMENT# -   0
NPID (Isdn_telephony/Private) - Isdn_telephony
OUTGOING ANI:
PREFIX - --
SITE LDN - --
TYPE OF NUMBER (International/National/Subscriber/Unknown)
               CALLED (DEFAULT) - National
               CALLING - National
MLPP METHOD (Y/N) - N

   7080
------------


NAME - QSIG
DEFAULT ELEMENT# -  10
NPID (Isdn_telephony/Private) - Private
SITE LDN - --
TYPE OF NUMBER (Unknown/Regional-1/Regional-2/PTN/Local)
               CALLED (DEFAULT) - Regional-1
               CALLING - Regional-1
MLPP METHOD (Y/N) - N
```

iv. Define the parameters for the trunk group. Commands:

tgdef
choose mode: **0**

> The following steps show only values required for the integration. Use defaults or your own values for the other entries.

FROM TK_GRP#: <**trunk group number as above>**
TO TK_GRP#: **<same trunk group number as above>**
SHORT(5): **<same trunk group number as above>**
FULL(16): **ADTRAN_UC**
IP_ZONE (#/R): **0**
ISDN ONLY (Y/N): **N**
QSIG (Y/N): **Y**
DTMF_DIGITS_BEFORE_ANSWER: **Y**
ROUTING ACCESS: **<QSIG routing access number as in step iii above>**
MEM #1: **<starting number for B-channel series on PRI>**
MEM #2*:* **<next number>**
…
MEM #23: **<last number for B-channel series on PRI>**

(Screen shot on following page)

```
 0 - UPDATE
 1 - DISPLAY

*:  0

FROM   TK_GRP# -         80   7081
TO     TK_GRP# -       7081
Any specific member (CR/NUM) -

   7081
------------


NAME: (for space use underscore: "_")
 SHORT(5) -  7081
 FULL(16) -  Adtran_VM

 NOTE: All NET IP calls in this group will disconnect upon update!
IP_ZONE (#/R) -    0
ISDN ONLY (Y/N) - N
QSIG (Y/N) -  Y
DTMF_DIGITS_BEFORE_ANSWER - Y
ANI_SCREENING_SEND(Unavailable,Site_ldn,Transparent,Omit) - T
SEARCH TYPE (0-circ 1-term) - 1
DTD OVERRIDE - N
OGR_OVERRIDE - N
COLLECT_TONE_OVERRIDE - Y
PAGING - N
TK_TK_CONNECT_OVERRIDE - N
BCCOS -    0
ROUTING ACCESS -         7080
LAR_MAX_ASYNCHRONOUS_FAILS (0-10) -  2
LAR_SYSTEM_PREFERENCE (Cost/Performance) -  P
LAR_TRIGGERS_SET -  0
TRANSIT ALI - NONE
DIALING METHOD (Enblock/Overlap) - E
DIAL IN FILTER -
DIAL IN/CALLER OUT OFFSET- NONE
CALLER # OUT FILTER -
INCOMING ANI FILTERS (Y/N) - N
METERING_UNIT_CHARGE (xxxxx.yy) - N
INCOMING_CLI_REQUEST (Y/N) - N
NUMBER OF DIGITS EXPECTED -
DISABLE_DTMF_SUPERVISION (Y/N) -  N
JOIN GROUP CALL IN MUTE (Y/N) -  N

 NOTE: ADD/REMOVE MEMBERS MAY EFFECT CLA EVENTS. RESTART CLA IF NEEDED
(A/R/CR)
MEM#  1 -     7300
MEM#  2 -     7301     ^U
```

Create a Dial Service

1. Look for a Dial Service that is undefined. Commands:

   lcr,3
   choose mode: **1**
   FROM SERVICE DIAL#: **<press Enter>**
   TO SERVICE DIAL#: **<press Enter>**

   Wait for the list to finish displaying, this could take several seconds. Look for an entry ROUTING DEST NUM where the value is "--". Make note of the corresponding routing destination number.

```
   4873
------------


NAME - BLANK
NSF - -
ROUTING ACCESS -        9
(DIAL IN/CALLER OUT) OFFSET - -
CALLER # OUT FILTER -
SERVICE TYPE (Outgoing/Incoming/Both) - Both
LAR ON Call Independent Signaling Connections (Yes/No) - Y
LAR TRIGGERS SET - 0
EXTENDED INTERNAL DIAL_SERVICE (Y/N) - N
ROUTING DEST NUM -      --
DIAL_FILTER -
EXPENSIVE TONE
(day/even/night) - N/N/N
TNNT_GRP -   0
BCCOS -   0
COS -   0
D.I.L. DESTINATION -     NONE
NIGHT1 DESTINATION -     NONE
NIGHT2 DESTINATION -     NONE
DIAL IN FILTER -
USE SECOND ALI (Y/N) - N
 compression
 0=G.711 with 10ms  1=G.711 with 20ms  2=G.711 with 40ms  11=G.711 with 80ms
 4=G.729 with 10ms  5=G.729 with 20ms  6=G.729 with 30ms  7=G.729 with 40ms
 13=G.729 with 80ms 3=G.723 with 30ms  9=G.723 with 60ms  12=G.723 with 90ms
 10-G.729 20ms+vad  8-G.723 30ms+vad

replace by (...) / add by (a,...) / remove by (r,...) / end by <CR>:
COMPRESSION_CAPABILITY -  ()

 NET_IP:
IP_ADDRESS(#/R) - ---.---.---.---:----
SIGNALING_LOCAL_IP_ADDRESS (Y/N) - N

 SIP_TRUNK (Y/N) -  N
```

2. If there is no undefined dial service, you must create one.
   a. Find the next available index. Commands:

      npl,0
      choose mode: **5**
      choose type: **36**

      Examine the existing entries and pick the next available index.

   b. Create a dial service. Commands:

      npl,0
      choose mode: **2**
      FROM NEW DIAL #: **<new number not currently in use>**
      TO NEW DIAL #: **<same number as above>**
      NUMBERS ALREADY DEF ? (y/n): **n**
      choose type: **36**

ENTER INDEX#: **<next available index, as above>**

3. Define the parameters for the dial service. Commands:

lcr,3
choose mode: **0**
FROM NEW DIAL #: **<dial service number>**
TO NEW DIAL #: **<same number as above>**

> The following steps show only values required for the integration. Use defaults or your own values for the other entries.

NAME: **Adtra**
ROUTING ACCESS: **<QSIG routing access number>**
SERVICE TYPE: **Both**
ROUTING DES NUM: **<trunk group number>**
DIAL_FILTER:

```
   4858
------------


NAME - Adtra
NSF - -
ROUTING ACCESS -     7080
(DIAL IN/CALLER OUT) OFFSET - -
CALLER # OUT FILTER -
SERVICE TYPE (Outgoing/Incoming/Both) - Both
LAR ON Call Independent Signaling Connections (Yes/No) - Y
LAR TRIGGERS SET - 0
EXTENDED INTERNAL DIAL_SERVICE (Y/N) - N
ROUTING DEST NUM -    7081
DIAL_FILTER -
EXPENSIVE TONE
(day/even/night) - N/N/N
```

```
TNNT_GRP -   0
BCCOS -   0
COS -   0
D.I.L. DESTINATION -     NONE
NIGHT1 DESTINATION -     NONE
NIGHT2 DESTINATION -     NONE
DIAL IN FILTER -
USE SECOND ALI (Y/N) - N
 compression
 0=G.711 with 10ms  1=G.711 with 20ms  2=G.711 with 40ms  11=G.711 with 80ms
 4=G.729 with 10ms  5=G.729 with 20ms  6=G.729 with 30ms  7=G.729 with 40ms
 13=G.729 with 80ms 3=G.723 with 30ms  9=G.723 with 60ms  12=G.723 with 90ms
 10-G.729 20ms+vad  8-G.723 30ms+vad

replace by (...) / add by (a,...) / remove by (r,...) / end by <CR>:
COMPRESSION_CAPABILITY -  ()

 NET_IP:
IP_ADDRESS(#/R) - ---.---.---.---:----
SIGNALING_LOCAL_IP_ADDRESS (Y/N) - Y

 SIP_TRUNK (Y/N) -  N
```

Create an Element

1. Locate an empty element. Commands:

   lcr,4
   choose mode: **1**
   FROM ELEMENT #: **<press Enter>**
   TO ELEMENT #: **<press Enter>**

   Wait for all elements to be displayed. Scroll up and look for an element that has no priority defined.

```
------------


LAR MAX ASYNCHRONOUS FAILS (0-10) - 2
LAR SYSTEM PREFERENCE (Cost/Performance) - P
DAY:   FROM -   0:00
       PRIO - ()
EVEN.: FROM -   NONE
       PRIO - ()
NIGHT: FROM -   NONE
       PRIO - ()
```

2. Set the parameters for the empty element. Commands:

   lcr, 4
   choose mode: **0**
   FROM ELEMENT#: **<enter the empty element #>**
   TO ELEMENT #: **<same as above>**

   Accept default values except for the priority fields:
   DAY:
   PRIO: **(<enter dial service number from previous section>)**
   EVEN:
   PRIO: **(<enter dial service number from previous section >)**
   NIGHT:
   PRIO: **(<enter dial service number from previous section >)**

```
choose mode

 0 - UPDATE
 1 - DISPLAY
 3 - REMOVE

*:  1

FROM   ELEMENT#-         0   18
TO     ELEMENT#-        18


route elements number
from is hh:mm or n for none
prio is (high dial service/group,.....,low)


   18
------------


LAR MAX ASYNCHRONOUS FAILS (0-10) - 2
LAR SYSTEM PREFERENCE (Cost/Performance) - P
DAY:   FROM -   0:00
       PRIO - (4858)
EVEN.: FROM -   0:00
       PRIO - (4858)
NIGHT: FROM -   0:00
       PRIO - (4858)
```

Create a New Network Node Definition

1. Locate an empty network node definition. Commands:

   net,0
   choose mode: 1
   FROM NODE#: **<press Enter>**
   TO NODE #: **<press Enter>**

   Look through results for "NAME – BLANK" and "R.E#--" and make note of the NODE#.

```
NODE# -      17

NAME- BLANK              R.A#-       NONE              L/R-R       R.E#--
```

2. Define the network node definition. Commands:

   net,0,1
   choose mode: ***0***
   FROM NODE #: **<node number from step 1>**
   TO NODE #: **<same as above>**
   FULL NAME: ***ADTRAN_UC***
   ROUTING_ACCESS #: **<routing access number from 'Create a Dial Service' section>**
   LOCAL/REMOTE: **R**
   ROUT_ELEMENT #: **<route element from 'Create an Element' section>**

```
TO      NODE#-         2

NODE_CONTENT


   2
------------


FULL NAME -  BLANK             ADTRAN
ROUTING_ACCESS # -    NONE     7080
LOCAL/REMOTE  -     R
ROUT_ELEMENT #  - --  18




choose mode

 0 - UPDATE
 1 - DISPLAY

*:
```

Create a New Number Plan Entry

1. Create a new number plan entry to correspond to the UC server answering group number. Commands:

   npl,0
   choose mode: **2**
   FROM NEW DIAL #: **<answering group number to be used for UC server>** *E.g. 4999*

   > The answering group number must be unique in the Tadiran number plan. All phones will be forwarded to this number when the extension is not answered, busy, etc…

   TO NEW DIAL #: **<same as above>**
   NUMBERS ALREADY DEF? (Y/N): **n**
   choose type*:* **39**
   ENTER NODE #: **<enter node number from previous section>**

```
choose mode

 0 - UPDATE
 1 - DISPLAY
 2 - ADD
 3 - REMOVE
 5 - SHOW
 7 - ERASE

*:  2


FROM  NEW DIAL# -  4999

TO    NEW DIAL# -  4999

NUMBERS ALREADY DEF ? (Y/N)  n
```

```
 0 - TRUNK                1 - SLT
 2 - KEYSET               3 - KEYSET_V_PAGE
 4 - TRUNK_GRP            5 - HUNT_GRP
 6 - BOSS_GRP             7 - PUBLIC_LIB
 9 - FEATURE             10 - EDIT
11 - BELL                12 - PAGE
13 - MODEM               14 - DID_NUMS
16 - DATA_PORT           19 - PRIVATE_LIB
20 - KEYSET_Z_PAGE       21 - RELAY
22 - DATA_USER           23 - DATA_GRP
30 - CONF                31 - DVMS_MSG
32 - DVMS_PORTS          33 - PAGE_Q
35 - GROUP_CALL          36 - DIAL_SERV
37 - ROUTING_ACC         38 - WAIT_QUE
39 - NETWORK             40 - WIRELESS
41 - IP_KEYSET           42 - IP_SLT
43 - IP_LGS              44 - IP_KEY_VPG
45 - IP_NET              46 - SIP_TERMINAL
47 - SIP_TRUNK           48 - DYNAMIC_CONF

choose type
*:  39

ENTER NODE# -  18_
```

Verify System Feature Control values

1. Verify SFE 11 value is set to Ecma (E). Commands:

   sfe,11
   choose mode: **1**

2. The following entries must be set to these corresponding values:

   INITIATE_TRANSFER_BY_REROUTING: N
   PATH REPLACEMENT: Y
   ACTIVATE PATH REPLACEMENT ON TRANSFER: Y
   ACTIVATE PATH REPLACEMENT OF FORWARD: Y
   NET MESSAGE: E

```
choose mode

 0 - UPDATE
 1 - DISPLAY

*:  1

Any specific data field (type ? for help)
 -


Network


TRANSIT COUNTER(1-31) -  15
INITIATE_TRANSFER_BY_REROUTING -  N
ALLOW_TRANSFER_BY_REROUTING_TO_VM -  N
ALLOW_TRANSFER_BY_REROUTING_VIA_NET_IP  -  Y
MAX DIVERSIONS(1-31) -  15
CAMP_ON   -   Y
NET MESSAGE (Coral/Ecma) - E
PATH REPLACEMENT   -   Y
    ACTIVATE PATH REPLACEMENT ON TRANSFER - Y
    ACTIVATE PATH REPLACEMENT ON FORWARD - Y
NETWORKING_WIDE_VFAC (Y/N) - Y
DEFAULT MLPP SERVICE DOMAIN (N/#)-        0
MLPP NETWORK ID -   0
TBCT_TO_B_CHANNEL_TRANSFER_ALLOWED(AT&T) (Y/N) - N
ENABLE_TBCT_WITHOUT_SMDR (at&t)(Y/N) -    N
MAXIMUM_HOURS_TBCT_CALL (at&t)(1-250) -    0
```

If these entries are not set according to the values above then enter “update mode” and set them to the correct values.

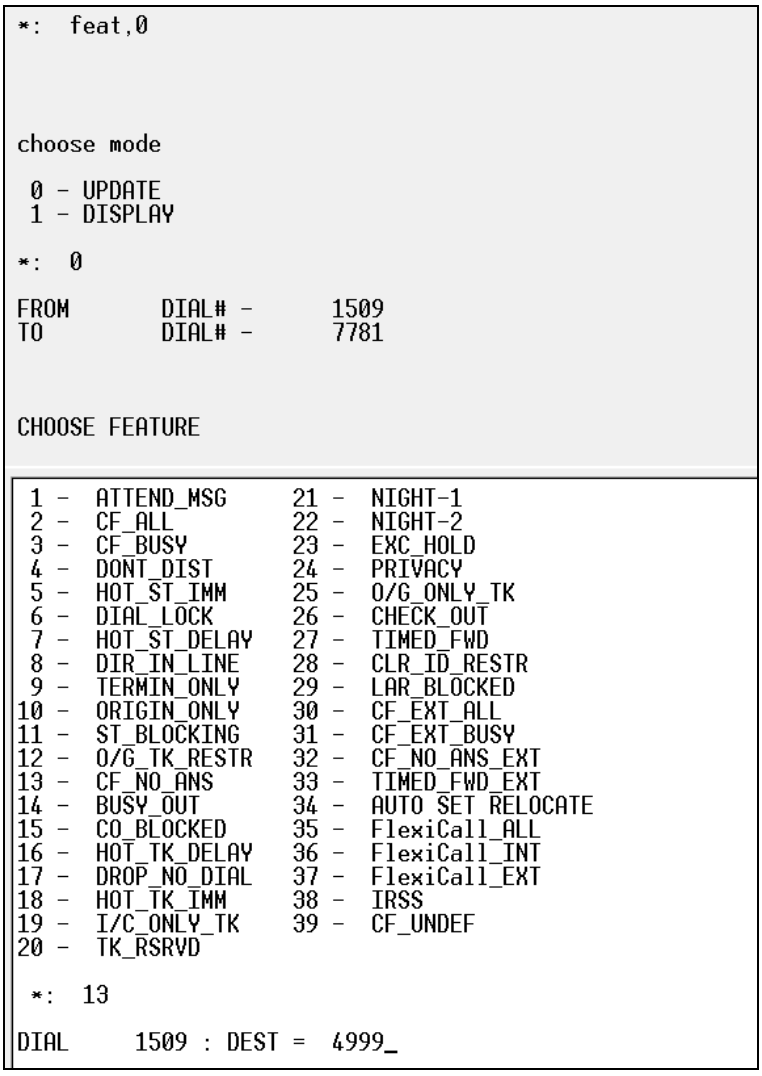
Set Phones to Forward to the New Number Plan (Answering Group #)

1. From the phone, dial:

#142***<new answering group number for UC server>*** *E.g. #1424999*

2. From the console (to quickly set a range of extensions):

feat,0
choose mode: **0**
FROM DIAL #: **<starting extension number in range>**
TO DIAL #: **<ending extension number in range>**
CHOOSE FEATURE: **13**



Dialogic Media Gateway Configuration Instructions

Follow the instructions in the technical note labeled Configuring the Dialogic Media Gateway in the ADTRAN support forums, with the following difference noted below:

QSIG Protocol Specification: ECMA_Only