ADTRAN

NetVanta Unified Communications Technical Note

Integrating the Avaya Definity G3, Definity Prologix, S87x0, and S87x0 Digital Set Emulation PBXs

Introduction

The Dialogic D/82JCT-U and D/42JCT-U private branch exchange (PBX) integration boards emulate the Avaya 7434ND, 7434D, or 8434D digital display telephones. The UC server uses the boards to emulate a digital telephone in order to interpret the digital display and collect information about the call, such as Caller ID, call reason, and call direction.

The integration requires a one-to-one mapping of Dialogic channels to digital card channels. For example, an eight-port UC server system would require a single eight -port dialogic card and eight digital station ports on the PBX.

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 (DCS required)
- 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

UC Server Requirements

- Dialogic D/82JCT-U and D/42JCT-U with corresponding cables
- Dialogic System 5.1.1 or higher
- NetVanta Unified Communications Server release 4.0 or higher

PBX Requirements

Hardware Requirements

PBX Circuit pack(s)

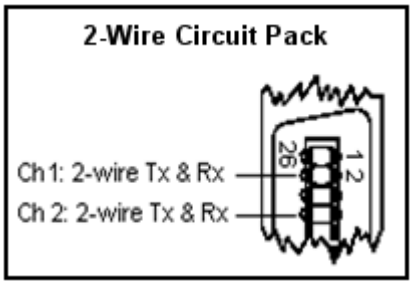
Digital ports (such as TN2224, TN754, and TN2181) to support 7434ND, 7434D, or 8434D telephones. Each UC server port requires a unique digital station port. Consult the Avaya documentation for a list of pinouts and wiring for the digital station port circuit packs.

NOTE: *2-wire circuit packs can be configured to emulate a traditional 4-wire telephone. For example, a 2-wire TN2224 circuit pack will connect to a Dialogic D/82 Card and can be configured as a 7434ND (a traditional 4-wire telephone).*

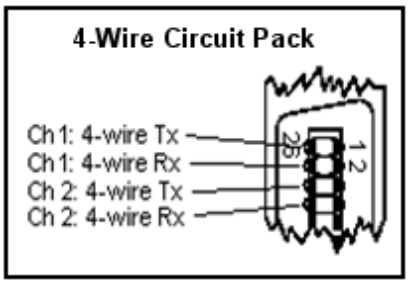
Cables

A special D/82JCT-U cable is required to connect the D/82JCT-U or D/42JCT-U card to the PBX.

The D/82JCT-U cable attaches to each Dialogic card with a mini-D connect and provides a standard 25-pair male amphenol connector that connects to the customer punchdown block. The following illustrations show the Dialogic D/82JCT-U cable pinouts on the 25-pair male amphenol connector.



Dialogic D/82JCT-U cable pinout for 2-wire circuit pack



Dialogic D/82JCT-U cable pinout for 4-wire circuit pack

NOTE: *2-wire circuit packs use every second pair (even wiring pairs only).*

Software Requirements

- Definity PBX software G3v9c.01.0.031.4 or higher
- Avaya MultiVantage release 1.0 or higher

Definity PBX Configuration

The following steps must be taken in order to integrate the UC server with the Definity PBXs:

1. Program a digital port as 7434ND, 7434D, or 8434D station for each Dialogic port on your system. It is preferable to configure the ports as 7434ND telephones in order to minimize user configuration. For more information see *UC Server Digital Station Set Administration on page 6*.
2. Create a hunt group that includes the UC server digital ports. For more information see *Programming the Hunt Group on page 10*.
3. Create call coverage path(s) that include the UC server access number. For more information see *Coverage Path Administration on page 12*.
4. Change subscriber's station programming to include the proper name field information (specific to 7434D and 8434D terminals), and call coverage path. For more information see *Administering the Name Field for UC Server Ports Configured as 7434D or 8434D Terminals on page 14*, and *Assigning the Call Coverage Path on page 15*.
5. If centralized messaging with distributed Avaya Communications Managers is required, refer to the instructions in Appendix A.

Note*: Some of the fields are default values, but ensure that all values are set as recommended. The fields shown in bold are critical, but do not alter the default values of the other fields. The fields may not align exactly for your PBX pages as described, since they change from release to release, but you should find them within one of the programming pages. If fields are not indicated (missing), they should be left as default.*

Configuring Numeric Display System Options

It is recommended that the UC server ports be configured as 7434ND telephones in order to minimize user configuration.

Definity software releases 7.0 and higher include a standard feature to enable **Numeric Display** type terminals. This feature can be enabled in **System Parameter Features** programming.

If your Definity PBX software is below release 9.5, ensure that no other **Numeric Display** terminals are configured. Definity software releases 9.5 and above allow more than one type of ND terminal.

To enable the Numeric Terminal Display, use the **change system-parameters features** administration function. Enable the 7434ND by setting that value to **y**.

display system-parameters features Page 5 of 12

FEATURE-RELATED SYSTEM PARAMETERS

Public Network Trunks on Conference Call: 5 Auto Start? n

Conference Parties with Public Network Trunks: 6 Auto Hold? n

Conference Parties without Public Network Trunks: 6 Attendant Tone? y

Night Service Disconnect Timer (seconds): 180 Bridging Tone? n

Short Interdigit Timer (seconds): 3 Conference Tone? n

Unanswered DID Call Timer (seconds): Intrusion Tone? n

Line Intercept Tone Timer (seconds): 30 Special Dial Tone? n

Long Hold Recall Timer (seconds): 0 Mode Code Interface? n

Reset Shift Timer (seconds): 0

Station Call Transfer Recall Timer (seconds): 0

DID Busy Treatment: tone

Invalid Number Dialed Intercept Treatment: tone

Allow AAR/ARS Access from DID/DIOD? n

Allow ANI Restriction on AAR/ARS? n

7405ND Numeric Terminal Display? n **7434ND? y**

DISTINCTIVE AUDIBLE ALERTING

Internal: 1 External: 2 Priority: 3

Attendant Originated Calls: external

Setting System Parameters

Ensure the system parameter **Station Tone Forward Disconnect** is set to **silence**.

```
display system-parameters features                          Page 10 of 15
                    FEATURE-RELATED SYSTEM PARAMETERS

      Pull Transfer: n                  Update Transferred Ring Pattern? n
  Outpulse Without Tone? y                  Wait Answer Supervision Timer? n
  Misoperation Alerting? n                  Repetitive Call Waiting Tone? n
Allow Conference via Flash? y
Vector Disconnect Timer (min):      Network Feedback During Tone Detection? y
Hear Zip Tone Following VOA? y      System Updates Time On Station Displays? y
        Intercept Treatment On Failed Trunk Transfers? n
                    Station Tone Forward Disconnect: silence
                  Level Of Tone Detection: precise
          Charge Display Update Frequency (seconds): 30
           Date Format on 4600/607/6400 Terminals: mm/dd/yy
     On-hook Dialing on 4600/607/6400/8400 Terminals? n
RECALL TIMING
      Flashhook Interval? y                 Upper Bound (msec): 1000
                                  Lower Bound (msec): 200
                                Forward Disconnect Timer (msec): 600
```

UC Server Digital Station Set Administration

Follow these steps to program the digital ports assigned to the UC server:

Define the digital port as 7434ND, 7434D or 8434D terminal using the **ADD STATION** command as described in the following tables.

Note: Some instructions differ depending on whether 7434ND, 7434D, or 8434D is selected. For more information refer to *Administering the Name Field for UC Server Ports Configured as 7434D or 8434D Terminalss on page 14*.

add station 5001 Page 1 of 5

STATION

Extension: 5001 Lock Messages? **n** BCC: 0

Type: 7434ND (7434D or 8434D) Security Code: TN: 1

Port: 01C0506 Coverage Path 1: COR: 10

Name: VOICEMAIL1 Coverage Path 2: COS: 10

Hunt-to Station:

STATION OPTIONS

Loss Group: 2 Personalized Ringing Pattern: 1

Data Module? n **Message Lamp Ext: 5001**

Display Module? y

Display Language: english **Coverage Module? N**

Media Complex Ext:

IP SoftPhone? N

add station 5001 Page 2 of 5

STATION

FEATURE OPTIONS

LWC Reception: none Auto Select Any Idle Appearance? n

LWC Activation? y **Coverage Msg Retrieval? y**

LWC Log External Calls? n Auto Answer? none

CDR Privacy? n **Data Restriction? y**

Redirect Notification? y Idle Appearance Preference? n

Per Button Ring Control? n

Bridged Call Alerting? n **Restrict Last Appearance? y**

Active Station Ringing: single

H.320 Conversion? n **Per Station CPN - Send Calling Number? y**

Service Link Mode: as-needed

Multimedia Mode? Basic **Audible Message Waiting? n**

MWI Served User Type**:** **Display Client Redirection? y**

Select Last Used Appearance? n

Coverage After Forwarding? S

Direct IP-IP Audio Connections? n

IP Audio Hairpinning? N

NOTE: *If a customer wants callers to hear Music on Hold (MOH) during transfers or while on hold, then set the Data Restriction to* ***n****.*

Ensure that the following button programming is configured correctly. Button 6 must be configured as **trk-id** for automated attendant services.

```
add station 5001                          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 ASSIGMENTS
 1: call-appr                           6: trk-id
 2: call-appr                           7:
 3:                                     8:
 4:                                     9:
 5:                                    10:
```

Below is an example of Page 5 for a 7434D set:

```
display station 5001                    Page   5 of   5
                        STATION


DISPLAY BUTTON ASSIGNMENTS


 1: normal
 2:
 3:
 4:
 5:
 6:
 7:
```

UC Server Port Class of Service Administration

In order to take advantage of the UC server's ability to transfer to external telephone numbers, the PBX must be programmed to allow trunk-to-trunk transfers.

NOTE: *Enabling trunk-to-trunk transfers opens up the potential for toll fraud. Toll fraud can be eliminated by co-operatively programming both UC server toll control and the PBX routing options.*

Programming the Hunt Group

Follow these steps to program the Hunt group assigned to the UC server:

```
display hunt-group 5                                Page 1 of 10
                          HUNT GROUP

     Group Number: 5                                ACD? n
      Group Name: NetVanta                          Queue?
   Group Extension: 5000                            Vector? n
      Group Type: DDC                   Coverage Path:
           TN: 1        Night Service Destination:
          COR: 1                        MM Early Answer? N

     Queue Length:
    Security Code:
ISDN Caller Display:
```

```
display hunt-group 5                                Page 2 of 10
                          HUNT GROUP

                     Message Center: none

                               LWC Reception: none
```

```
display hunt-group 5                                    Page 3 of 10

                        HUNT GROUP

 Group Number: 5   Group Extension: 5000   Group Type: DDC

Voice Mail Number:      Administered Members (min/max): 1/1

                        Total Administered Members: 1

GROUP MEMBER ASSIGNMENTS

     Ext  Name             Ext   Name

  1: 5001 VOICEMAIL1        14:

  2: 5002 VOICEMAIL2        15:

  3: 5003 VOICEMAIL3        16:

  4: 5004 VOICEMAIL4        17:

  5:                        18:

  6:                        19:

  7:                        20:

  8:                        21:

  9:                        22:

 10:                        23:

 11:                        24:

 12:                        25:

 13:                        26:

 At End of Member List
```

Setting Hunt Group Parameters for Call Coverage and Call Forwarding

A PBX feature called Temporary Bridged Appearance is invoked when calls to another station or hunt group member takes place. When a call is forwarded from a phone to another station, the PBX does not release the line appearance on the user's station until the caller disconnects. The user can conference with the caller if conferencing is enabled. If disabled, then the user cannot pick up the line while it is in use. Set multiple line appearances on user's phones to allow users to use their phones while messaging is occurring.

To disable the Temporary Bridged Appearance feature:

1. Set Data Restriction to **Yes**.
2. Set Restrict Last Appearance to **Yes**.
3. Set Data Privacy class of service parameter to **Yes**.
4. Set the Feature-Related system parameter, Temporary Bridged Appearance on Call Pickup to **No**.
5. Set the Call Coverage/Call Forwarding system parameter Keep Held SBA at Cover Point to **No**.

NOTE: *The Temporary Bridged Appearance feature on Avaya software prior to G3V4 cannot be disabled using these instructions. Use vectoring to avoid the Temporary Bridged Appearance.*

Coverage Path Administration

Follow these steps to program the Coverage Path assigned to the UC server:

display coverage path 20

COVERAGE PATH

Coverage Path Number: 10

Hunt after Coverage? n

Next Path Number: Linkage

COVERAGE CRITIRIA

Station/Group Status	Inside Call	Outside Call	
Active?	**n**	**n**	
Busy?	**y**	**y**	
Don't Answer?	**y**	**y**	**Number of Rings: 4**
All?	**n**	**n**	
DND/SAC/GOTO Cover?		**y**	**y**

COVERAGE POINTS

Terminate to Coverage Pts. with Bridged Appearance?

Point1: h5 Point2: Point3:

Point4: Point5: Point6:

NOTE: *Leave the **Number of Rings** at the default of 4. If you want the ports to answer faster, then this number can be decreased to 2, however the functionality of some UC server features may be affected.*

User Administration

User administration has two parts: Administering the name field, and assigning the call coverage path.

Administering the Name Field for UC Server Ports Configured as 7434ND Terminal

The subscriber's name can appear as the customer wishes with no special configuration rules.

Follow these steps to program the subscribers stations assigned to the UC server, where a **Numeric Display** terminal is configured for the UC server ports:

```
display station 3000                    Page 1 of 4
                      STATION
Extension: 3000              Lock Messages? n       BCC: 0
    Type: 8410D              Security Code:         TN: 1
    Port: 01A0102            Coverage Path 1: 10    COR: 1
    Name: Jones Ed           Coverage Path 2:       COS: 1
                        Hunt-to Station:
STATION OPTIONS
     Loss Group: 2          Personalized Ringing Pattern: 1
     Data Module? n                 Message Lamp Ext: 3000
  Display module? Y
    Speakerphone: 2-way             Mute Button Enable? n
Display Language: english
```

Administering the Name Field for UC Server Ports Configured as 7434D or 8434D Terminals

In order for the 8434D and 7434D stations to integrate, the entire extension number must appear within the first 15 characters of the name field. Each location may differ in the format used for inserting the extension number within the name field, as long as the extension number appears. Note that long names may need to be abbreviated. For example:

Ed Jones 3000

Ed 3000 Jones

Jones Ed 3000

3000 Ed Jones

3000: Ed Jones

display station 3000 Page 1 of 4

STATION

Extension: 3000 Lock Messages? n BCC: 0

Type: 8410D Security Code: TN: 1

Port: 01A0102 **Coverage Path 1**: **20** COR: 1

Name: Jones Ed 3000 Coverage Path 2: COS: 1

Hunt-to Station:

STATION OPTIONS

Loss Group: 2 Personalized Ringing Pattern: 1

Data Module? n **Message Lamp Ext**: **3000**

Display Module? y

Speakerphone: 2-way Mute Button Enable? y

Display Language: english

Assigning the Call Coverage Path

NOTE*: If the LWC Reception is not set to* ***spe****, then Message Waiting Indicators (MWI) will not function. Set Per Station CPN – Send Calling Number to* ***y****.*

Single Line sets should have the Message Waiting Indicator set to **led** or **neon**, depending on the phone type used.

display station 3000 Page 2 of 4

STATION

FEATURE OPTIONS

LWC Reception: spe Auto Select Any Idle Appearance? n

LWC Activation? y Coverage Msg Retrieval? y

LWC Log External Calls? n Auto Answer? none

CDR Privacy? n Data Restriction? n

Redirect Notification? y Idle Appearance Preference? n

Per Button Ring Control? n

Bridged Call Alerting? n Restrict Last Appearance? y

Active Station Ringing: single

H.320 Conversion? n **Per Station CPN – Send Calling Number? y**

MWI Served User Type: Display Client Redirection? n

Select Last Used Appearance? n

Coverage After Forwarding? S

Configuring Message Waiting Indicators

The message waiting activation and deactivation codes must be configured to match that of the UC server. You can check the current configuration using "**display feature-access-codes"** (page 2) in the Definity/MultiVantage configuration.

```
display feature-access-codes                Page  2 of  7                FEATURE
ACCESS CODE (FAC)
    Emergency Access to Attendant Access Code:
            Enhanced EC500 Activation:      Deactivation:
 Extended Call Fwd Activate Busy D/A    All:      Deactivation:
   Extended Group Call Pickup Access Code:
      Facility Test Calls Access Code:
            Flash Access Code:
     Group Control Restrict Activation:     Deactivation:
        Hunt Group Busy Activation:     Deactivation:
            ISDN Access Code:
      Last Number Dialed Access Code:
  Leave Word Calling Message Retrieval Lock:
 Leave Word Calling Message Retrieval Unlock:
      Leave Word Calling Send A Message: *53
     Leave Word Calling Cancel A Message: #53
       Malicious Call Trace Activation:     Deactivation:
    Meet-me Conference Access Code Change:


PASTE (Display PBX data on Phone) Access Code:
 Personal Station Access (PSA) Associate Code:      Dissociate Code:
    Per Call CPN Blocking Code Access Code:
```

Limitations and Restrictions

- The same port that sets the message waiting indicator (MWI) must be used to turn the MWI off.
- For ports programmed as 8434D or 7434D, set emulations, the extension numbers (mailbox numbers) for each user must be entered in the first 15 characters of the user's name field on the PBX.
- Blind transfers require coverage for calls made to phones that are busy. That is, calls that are transferred blindly to phones which are busy and are not call covered, will be lost.

Configuring the UC Server

Configuring Intel Dialogic

The Intel Dialogic D/82JCT-U or D/42JCT-U boards must be configured to match the type of emulated telephone that will be connected to the PBX. This can be accomplished by using the **dialogic configuration manager** utility.

The Intel Dialogic Control Manager can be found on the UC server by selecting **Start > Dialogic System Software > Dialogic Configuration Manager – DCM**

For each D/82JCT-U or D/42JCT-U board, perform the following:

1. **Stop** the Intel Dialogic Service. (The UC server service will also need to be stopped).
2. **Select** the board that requires configuration.
3. Right- click and select **Configure Device** or double click on the board.
4. Select the **Misc** tab.
5. Configure the **PBXSwitch** parameter and set it to match the emulated telephone.
   - Select Lucent_2_wire if emulating either the 7434D or 7434ND type telephones.
   - Select Lucent_4_wire if emulating the 8434D type telephones.

Migrating from Analog Mode Code Integration to Digital Emulation

Prior to upgrading the UC server software, back up the user data to another location. To make a copy of the UC server user data perform the following:

- Copy the C:\program files\ADTRAN\NetVanta UC Server \Data directory to another location.

To upgrade your existing analog integration to a digital integration

1. Shut down the UC server.
2. Replace the analog Intel Dialogic Card with the digital Intel Dialogic Card.
3. Remove the analog Dialogic card.
4. Install the D/82JCT-U card.
5. Turn on the UC server.
6. Stop the UC server service through the Microsoft Services control panel.
7. Configure the Dialogic card through the Dialogic Configuration Manager.
8. Uninstall the old version of UC server software, with the Add/Remove programs from the Control Panel.
9. Re-install the new version of UC server.
10. Run the Server Configuration Wizard, as described below. All of the previous configuration data will be retained. You will need to reconfigure the digital ports.

Running the Server Configuration Wizard for the First Time

To run the server configuration wizard

- Select **Start > Programs > UC Server > Server Configuration Wizard**.

The Server Configuration Wizard will perform as documented in the *UC Server Configuration Guide*. Additional options will be presented that allow selection and configuration of Definity and MultiVantage PBX.

Appendix A – Configuring Centralized Voice Mail

This section describes the UC server configuration required to support centralized voice mail with multiple networked Avaya PBXs using DCS or enhanced Q.SIG signaling.

Without implementing the recommendations, a UC server user who accesses their mailbox directly from their telephone on the remote PBX will not hear the "Please enter your password" prompt.

It is beyond the scope of this documentation to describe or give configuration advice on PBX networking. Consult Avaya's documentation for specific and detailed instructions.

Configuring the UC Server for Centralized Messaging

Configuring the CallInfoOverrides.cfg file for centralized messaging

To add an Avaya PBX node

1. Open the following file, if the UC server was installed in the default location:

   C:\Program Files\ADTRAN\NetVanta UC Server\Data\System\ CallInfoOverrides.cfg

2. Add a line to the bottom of the file which follows the following format.

   ```
   T=<TAC number on central PBX>; CS=External : CS=Internal ; S=C
   ```

Understanding the CallInfoOverrides.cfg file

Although most of the configuration for the UC server is performed using the UC server administrator application, there are also text based files that define the UC server answering behavior.

This section describes two specific files that can be used for customizing the UC server.

- C:\Program Files\ADTRAN\NetVanta UC Server\Data\System\ DefinityPbxDefinition.cfg
- C:\Program Files\ADTRAN\NetVanta UC Server\Data\System\CallInfoOverrides.cfg

CAUTION: *A UC server software upgrade will not replace these files with newer ones. However, if you remove or uninstall the UC server software the files will also be removed from the UC server.*

NOTE: *Ensure that any modifications to this file are saved in a safe location.*

DefinityPBXDefinition.cfg Configuration File

CAUTION: *The DefinityPBXDefinition.cfg file includes many configuration options that can negatively impact the performance of the UC server. Ensure that you make a backup of this file, and that only necessary changes are made to this file.*

There are 3 main sections to this file

[PBX] – Digital emulation parameters.

[Display format] – Digital telephone display parsing rules

[Reason code translation] – Provides the specific call forwarding rule translation.

Ensure the display format section has the following configuration:

[Display format]

internalDirect = "a=" s[23] X[21] __ ; Calling from extension to UC Server port or hunt group number.

internalForwarded = "a=" s[23] _ "to" __ e[15] _ R[2] ; Calling from one extension to another, covered by UC Server ports

internalForwarded1 = "a=" s[23] __ "to" _ e[15] _ R[2] ; Special definition for listed directory number and interception.

internalForwarded2 = " " R[2] "Info:" e[15] X[18] ;Special definition to handle vector routing

externalDirect = "a=" c[23] _ "to" __ e[15] _[3] ; Calling from an external number to PBX trunk, covered by UC Server

externalForwarded = "a=" c[23] _ "to" __ e[15] _ R[2] ; External call to an external covered by UC Server port hunt group.

externalForwarded1 = "a=" c[23] __ "to" _ e[15] _ R[2] ; Special definition for listed directory number and interception.

externalForwarded2 = " " R[2] "Info:" e[15] X[18] ; Special definition to handle vector routing

CallInfoOverrides.cfg Configuration File

The CallInfoOverrides file allows the UC server administrator to override specific incoming call behaviors. For example, you may want specific internal forwarded extension calls to be interpreted as external trunks.

Changes to this file will override the default behavior when a remote extension (not on the same system as the UC server) calls into the centralized UC server.

Definitions

Each rule is processed starting from the top of the configuration file, skipping each comment line.

Rules:

1. Everything to the right of a '#' character is treated as a comment.

   A colon character (':') separates the original call behavior from the new desired call behavior.

   I.e., <Original call behavior> : <New call behavior>
2. Individual variables are separated by a semi-colon character (';').
3. A range of numbers can be selected by using the comma (',')

   I.e., M=100,150 represents a range of mailboxes beginning at 100 and ending at 150; inclusive.
4. Any errors in this file will be reported in the UC server administrator logs.

The parameters are:

C: External calling number – The calling telephone number of an external caller.

D: External called number – The original dialed number that is presented to the UC server. This field is not always present depending on the PBX.

S: Calling extension number – An internal extension number calling into or forwarding into voice mail.

E: Called Extension number – The forwarded mailbox.

T: Trunk ID

R: Local call reason

The currently supported reasons are:

- UnknownReason
- DirectAnswer
- DirectTransfer
- Forwarded

CS: Call source

The currently supported call sources are:

- UnknownSource
- Internal
- External
- ExternalDID

NR: Network call reason

The currently supported network call reasons are:

- Unknown
- Normal
- PrivateName
- Private
- OutOfArea

Specific Configuration

Entries to add to the bottom of the CallInfoOverrides.cfg file.

1. Open up the file using the following path if installed in the default location:

   C:\Program Files\ADTRAN\NetVanta UC Server\Data\System\CallInfoOverrides.cfg

2. Insert the following lines at the bottom of the file.

   # Example: DCS Support - Allows remote PBX extension support direct login from remote site

   # ----------

   # T= <DCS TAC>; CS=External : CS=Internal ; S=C

   # T= <DCS TAC> number using for PBX connection. You will need to have an entry for each remote PBX.

   #

   # This rule will change all external calls that came in on trunk 191 to an internal call reason.

   #

   T=191; CS=External : CS=Internal ; S=C

The above example changes the meaning of any calls that have an external call source from trunk group (TAC number) 191. The resultant behavior is that of an internal call where the source number becomes the calling number.