



## NetVanta Unified Communications Technical Note

---

# Integrating Mitel SX-200 ML/EL/Digital/Light Analog

## Introduction

Full integration between the UC server and the SX-200 Digital/Light PBX is achieved through the use of private branch exchange (PBX) features abbreviated dialing and ONS Voicemail features on the SX-200 Digital/Light PBX.

The Dialogic D/41JCT-Ls, D/120JCT-LS, and VFX/PCI hardware connects to an ONS (analog) port. The SX-200 signals the UC server with in-band DTMF call signaling indicating the call reason, caller, and called number information. The use of ONS Voicemail features also allow external calling line information to be sent to the UC server. The UC server then answers and plays the appropriate greeting. Message waiting indication is set and canceled using DTMF commands over the same connection.

## Supported Features

- Call coverage to personal greetings
  - Busy
  - Ring-no-answer
  - All calls
- Automated attendant
- Return to operator
- Personal greeting of original-called party on double-call forward using call coverage
- Direct call
- Message waiting
- Direct inward dialing (DID) services
- Transfer callers to both internal and external sources
- Notification services
  - Active message delivery
  - Pager notification

- E-mail notification

## **NetVanta UC Server Requirements**

- Dialogic D/41JCT-LS, D/120JCT-LS, and VFX/PCI with corresponding cables
- Dialogic software release 5.1.1 or higher
- NetVanta UC server release 2.1 or higher

## **Mitel SX-200 D/L/EL/ML Requirements**

- The SX-200 Digital/Light must be at a minimum software level of G1005/LW16 F41.0.2 to support the enhanced in-band integration and use of the superset message key to retrieve messages.
- The message waiting light must be only turned off by the UC server and not by the private automatic branch exchange (PABX) console operator or the cancel softkey on the telephone.
- Callers hear ringback while the digits are pulsed to the voice mail system. Audio is not cut through until the last pause has been executed.

## **Mitel PBX Voice Mail Port Configuration**

The UC server system interfaces to the SX-200 Digital/Light family of PBXs with ONS lines. The UC server ports use shared ONS lines that are programmed in the same hunt group. The message waiting lights are turned on and off using any one of the analog voicemail ports in the hunt group.

There are a total of eight common desk environment (CDE) forms that must be accessed in order to program UC server integration with the SX200 Digital/Light:

- Form 01: System Configuration
- Form 02: Feature Access Codes
- Form 03: Class of Service
- Form 04: System Options
- Form 09: Station Programming
- Form 14: Non Dial-In Trunks
- Form 17: Hunt groups
- Form 31: System Abbreviated Dial

### **System Configuration (Form 01)**

Program the ONS line cards in this form.

## Feature Access Codes (Form 02)

1. Program a feature access code for **Abbreviated Dial Access** (feature 24):
2. Program a feature access code for **Send Message** (feature 41).
3. Program a feature access code for call message sender of oldest message (feature 42).
4. Depending on the call forwarding configuration, you can choose to use either a single call forwarding for both internal and external calls or have internal and external calls forwarding to different telephone numbers.
  - To enable single call forwarding, program a feature access code for Call Forwarding - All Calls (feature 3). The code used as an example in this procedure is 61.
  - To enable split call forwarding, program a feature access code for **Call Forwarding - Internal Only** (feature 4). The code used in this procedure is 62. Then program a feature access code for **Call Forwarding - External Only** (feature 5). The code used as an example in this procedure is 63.

The call forward feature access codes will be sent as part of the in-band DTMF sequence indicating the call reason to the UC server. The UC server will then match them with a template entry to determine which conditional greeting will be played (for example, always, busy, or no-answer greeting).

## Class of Service (COS) (Form 03)

Voicemail ports should each be assigned a unique COS number so as they do not interfere with other users. The following COS options should be enabled:

- COS Option 212 (Can Flash if Talking to an Incoming Trunk)
- COS Option 213 (Can Flash if Talking to an Outgoing Trunk)
- COS Option 216 (Data Security)
- COS Option 238 (Override Security)
- COS Option 259 (Message Sending)
- COS Option 261 (ONS Voice Mail Port)
- COS Option 265 (VoiceMail System Speed Dial Index 0-255)

**NOTE:** *COS Option 265 must be set to the index number programmed in Form 31 for message retrieval.*

## System Options (Form 4)

Enable System Option 21 (Incoming and Outgoing Call Forwarding).

## **Station Programming (Form 09)**

Program the ONS lines and give the appropriate COS.

## **Non Dial in Trunks (Form 14)**

If required, enter the Voice Mail Port Hunt Group Access Code in form 14 for DAY, Night 1, and/or Night 2 for administrator automated attendant services.

## **Hunt Group (Form 17)**

1. Program all Voice Memo ONS lines in a Hunt Group and give them a Hunt Group Access code.
2. Program the Message Waiting Line(s) in a Hunt Group and give them a Hunt Group Access code.

## **System Abbreviated Dial (Form 31)**

The integration is based upon the use of system abbreviated dial numbers. This eliminates several dialing steps involved in the sending and retrieving of voicemail messages.

Special codes entered in form 31 allow the caller to customize the PABX operation to suit the operation of the particular voice mail system.

The UC server in-band DTMF integration expects three types of information. These digits are sent as DTMF tones by the PBX after the voicemail port answers a call sent to it. The three fields expected are:

- The reason the call was forwarded to voicemail, i.e. Always, Busy or No Answer. Currently the UC server only recognizes a single forwarding condition.
- The called party's mailbox number.
- The calling parties mailbox number if it's a system user.

All of these fields are provided by the insertion of special codes in the abbreviated dial string used to access the UC server. If any of these fields are not available, e.g. the call was sent to the UC Server directly as it was the answer point for a non dial in trunk, then the \*4, \*6 and \*6 fields are not replaced by any digits to be sent to UC Server.

The special codes are:

**Code Description**

- \*1 5 second pause
- \*3XX Insert manual dialed digits (XX represents digits)
- \*4 Send Call Forward Condition to Voice Mail
- \*6 Tone out caller extension number
- \*8 Send Digits of Calling Party to Voice Mail
- \*9 1 second pause
- \*\* DTMF digit \*
- 0-9 DTMF digits 0 -9

**Message Forwarding/Retrieve Abbreviated dial number**

The index number for users to forward/retrieve their messages to/from must be set up in form 31, System Abbreviated Dial Entry, as follows:

Index #	Digit String
XXX	<CAO Voicemail Hunt Group Access> + *9 + *4 + # + *6 + # + *8 + #

E.g. 100 = 5000\*9\*4#\*6#\*8#  
(<CAO number> <1 s. pause> <Call Reason># <Called>#<Calling>)

**Call Forwarding Abbreviated Dial String Explanation**

User phones are set up to forward calls on Always, Busy or No-Answer conditions to this abbreviated dial number. If a call made to a user’s telephone is not answered or encounters a busy condition the PBX will forward the call to the hunt group access code (5000 in this example).

When the UC server answers the forwarded call, the PBX will send the remaining digits (\*9\*4#\*6#\*8#).

The \*9 will cause the PBX to wait one second before continuing to dial the remaining digits.

The \*4 will be converted into the call forward always, busy or call forward no-answer access code defined in form 2. This code will be matched to a template in the UC server template configuration so that the appropriate greeting will be played.

The \*6 will be converted into the extension number of the phone that is being forwarded or, in the case of a direct call, the extension number of the caller that is calling voicemail.

The \*8 will be converted into the extension number of the party that is calling the set that is being forwarded to the UC server.

The # characters are used as de-limiting characters.

## Message Retrieval Abbreviated Dial String Explanation

The index number for users to retrieve their messages is the same as that used for call forwarding above.

Index #	Digit String
XXX	<CAO Voicemail Hunt Group Access> + *9 + *4 + # + *6 + # + *8 + #

E.g. 100 = 5000\*9\*4#\*6#\*8#

**NOTE:** *It is this number that is programmed as the index number for COS option 265 in the message waiting ports COS and is used by the Superset message key and Call Message Sender of Oldest Message PBX features. Users can also dial this abbreviated number to access their own mailbox from their own phone at any time.*

The PBX will dial the hunt group access code (5000 in this example).

When the UC server answers the call the PBX will send the remainder of the DTMF digits in the abbreviated dial string (\*9\*4#\*6#\*8#).

The \*9 will cause the PBX to wait one second before continuing to dial the remaining digits.

The \*4 will not be substituted by any digits in this case because we are calling the UC server directly and not being call forwarded to it due to a busy or no answer condition.

The \*6 will be converted into the number of the extension calling the UC server which will also be the users mailbox number.

The \*8 will not be substituted by any digits in this case because we are calling the UC server directly and there is no calling party extension that is being forwarded to the UC server.

The # characters are used as de-limiting characters.

## Mitel PBX User Configuration

The following configuration applies to individual users of the UC server.

### Class of Service (COS) Form 3

#### User Extensions COS

- COS option 206 (Call Forwarding - Busy)
- COS option 207 (Call Forwarding - Don't Answer)
- COS option 208 (Call Forwarding - External)
- COS option 209 (Call Forwarding - Follow Me)
- COS option 231 (Message Waiting Setup Bell) or COS option 232 (Message Waiting Setup Lamp) in the COS of the Mailbox holders extension.
- COS option 245 (Abbreviated Dial Access).

## Message Retrieval

Messages can be retrieved from the UC server by one of the following methods. These methods assume that the user is calling from their own telephone. Consult additional UC server user documentation for instructions on how to login in as a different mailbox. The UC server system will prompt for the user pass code before playing any saved messages.

### Message Retrieval Using a Superset

- On Superset 4, Superset 430, and Superset 4DN:
  1. Press the **Message** Softkey
  2. Press **Read**
  3. Press **Call**
- On Superset 420:
  1. Press the **Message** key
  2. Press **Call**
- On Superset 410:
  1. Press the **Message** key
- On Superset 401:
  1. Go Off Hook
  2. Press the **Message** key

### Message Retrieval Using Feature Code

Go off hook and dial the *Call Sender of Oldest Message* feature access code. This code is programmed in form 2 (Feature Access Codes) and is feature number 42.

## NetVanta UC Server Configuration

### Server Configuration Wizard

Configure the message waiting on and off codes to match the configuration for “send message” in form 31. Configure the UC server to be integrated with a “Generic Analog” PBX.

### Analog Configuration File

Contained within the UC server release 2.0 software (and higher) is a configuration file that provides the ability to map in-band DTMF signaling strings to *UC Server* functionality. By modifying the Generic Analog configuration file, you can customize the integration to match that of the PBX.

The Configuration file is located on “*c:\program files\ADTRAN\NetVanta UC Server Server\Data\System*” directory. The file that needs modification is the **UserDefinedPBX.cfg**.

**WARNING:** *Modifying the configuration files alters the behavior of the UC server. Make frequent backups of this file and ensure that you TEST the behavior after each change in the configuration file.*

**NOTE:** *You must restart the UC Server to apply the changed configuration file. This can be accomplished by stopping and restarting the UC server service through the Services control panel application.*

## **Generic Analog Configuration File**

Generic analog configuration file is made up of two sections: [PBX] and [In band signaling]. Do not modify anything in the PBX section unless you are instructed to do so by ADTRAN.

Within the [In band signaling] section are a series of numbers. The number dictates the matching order for the PBX mapping information. The format of each line is:

**<Number> = <call reason> : <DTMF signaling string> [: overrides]; Comments**

The following is a sample file that analog configuration file that makes the assumption that the configuration and values were taken from this integration guide.



## Example

[In Band Signaling]

; The feature access codes used in this file are not representative of what is programmed in the SX-200.  
; The examples below are assuming the following Feature Access code assignment  
; 61 = Call Forward All calls  
; 62 = Internal Call Forward  
; 63 = External Call forward  
; The SX-200 uses speed dials (Abbreviated dial) to accomplish e-mail integration. The following assumes:  
; that the Abbreviated dial number contains [Voice Mail Pilot]\*9\*4#\*6#\*8#

; Description of PBX Interpretation of Abbreviated dial number special characters.

CODE	DESCRIPTION
*1	5 second pause
*3XX	Insert manual dialed digits (XX represents digits expected)
*4	Send Call Forward Condition To Voice Mail
*6	Tone out caller extension number
*8	Send Digits of Calling Party to Voice Mail
*9	1 second pause
**	DTMF digit *
0-9	DTMF digits 0 - 9

; Direct Auto-attendant Call. Play the associated trunk service.

10 = DirectAnswer : ### : T=01 ; Direct Trunk comes in with no specific trunk. Override with Trunk 01  
; play main greeting "Thank you for calling"

; Direct extension call. Prompt user to enter their password if valid mailbox.

20 = DirectAnswer : #M## ; Call to voice mail from extension M, login to M's mail box and prompt for password

; Forwarded call (Covered). Play the mailbox owner's greeting.

301 = UnconditionalForward : 611#M#S# ; CFA - all calls

302 = BusyForward : 612#M#S# ; CFB - all calls

302 = NoAnswerForward : 613#M#S# ; CFNA - all calls

310 = UnconditionalForward : 621#M#S# ;CFA Internal. Call to extension M from extension S is forwarded to voice mail,

311 = BusyForward : 622#M#S# ;CFB Internal. Call to extension M from extension S is forwarded to voice mail,

312 = NoAnswerForward : 623#M#S# ;CFNA Internal. Call to extension M from extension S is forwarded to voice mail,

321 = UnconditionalForward : 631#M#C# : T=01 ;CFA External. Call to extension M from CLID C is forwarded to voice mail,

322 = BusyForward : 632#M#C# : T=01 ;CFB External. Call to extension M from CLID C is forwarded to voice mail,

323 = NoAnswerForward : 633#M#C# : T=01 ;CFNA External. Call to extension M from CLID C is forwarded to voice mail,

96 = Unknown : X ;Unknown call reason, maybe call Login, please enter mailbox number

## Automated Attendant Trunk Services

The UC server can serve as a company's automated attendant.

### Non Dial-in Routing of Calls to the NetVanta UC Server Hunt Group

The PBX's Form 14 will be configured to send incoming trunks to Day, Night 1, and Night 2 destinations. One of the destinations may be directly to the UC server hunt group.

By default, with the above configuration file, a default trunk number "01" exists. From the UC server administrator ensure that you create a trunk number "01" and associate it with a trunk service.

If you wish to have multiple automated trunks for non dial in trunks perform the actions in the next section on dial-in trunk services.

### Dial-in Trunk Services

For additional non-dial-in trunks or DID trunks you can create a phantom extension on the PBX that forwards directly to the UC server. The phantom extension number will be used as a DID trunk configured in UC Server.

**To create a DID trunk on UC Server perform the following:**

1. From the administrator application, select Trunks from the administrator tab.
2. Right mouse click in the trunk pane. Select New Dialed Number option.
  - a. Create a unique name in the name field.

- b. Enter the phantom PBX extension number in both the Switch Identifier and Received Digits text fields.
  - c. Select a service that you want to have executed.
3. Click OK to save the service.