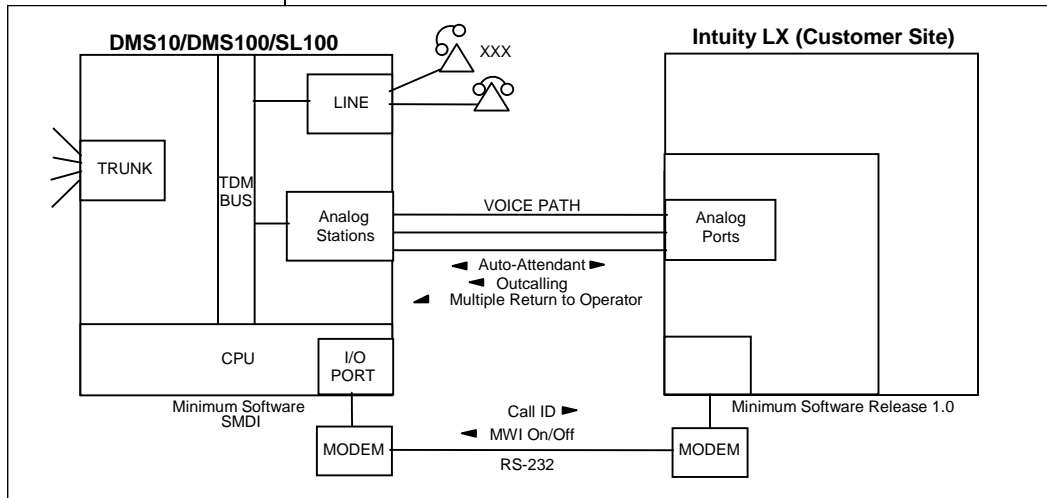


Configuration Note 9511 – RIP 02/10

Nortel DMS-10 /DMS100/SL100



IMPORTANT:
 This CN is for Support ONLY of Existing Integrations as originally installed.
 No NEW Sales or Conversions to different Integrations are supported.

With RS-232 integration, call information is transmitted over a digital link between the DMS-100 and the INTUITY AUDIX LX™

Avaya INTUITY AUDIX LX™ requirements

1.0 METHOD OF INTEGRATION

With RS-232 integration, call information is transmitted over a digital link between the DMS-100 and the INTUITY AUDIX LX™. Voice communications are provided by a separate path created by a hunt group of single-line stations on the DMS-100 that connect to voice port cards within the INTUITY AUDIX LX™. When an incoming call is received by the hunt group, it is accompanied by a digital message from the DMS-100 which contains call information. The INTUITY AUDIX LX™ then answers the call on the specified port and plays the appropriate greeting. To set or cancel message-waiting notification, the INTUITY AUDIX LX™ sends a digital message over the RS-232 link to the DMS-100.

2.0 AVAYA INTUITY AUDIX LX ORDERING INFORMATION

- Voice Port Cards, four analog connections per card (three cards per system)
- INTUITY AUDIX LX Software R1.x; R2.0
- Serial and Inband Integration Software

DMS-100 hardware requirements**3.0 DMS10/DMS100 HARDWARE REQUIREMENTS**

- Station appearances, one per INTUITY AUDIX LX™ port
- Cables
- DMS-100 I/O channel
- One Series “3002” private line data channel
- One modem provided by the CO - *see section 8.8*
- One modem for customer site

NOTE: If the INTUITY AUDIX LX™ is not co-located with the DMS-100, it will be necessary to use modems and a private data line for the RS-232 link. Co-located systems require a null modem instead. The customer must provide the necessary hardware.

In addition the customer should request dialable extension numbers for each LTN (Logical Terminal Number). These dialable extensions are needed for testing and troubleshooting.

DMS-100 software requirements**3.1 DMS10/ DMS100 SOFTWARE REQUIREMENTS**

- Minimum Software: DMS100 BCS 24 or 404.30 on DMS10
- NTIX67 cards have been replaced with NTIX89 cards in later versions of software.
- Simplified Message Desk Interface (SMDI)
- Feature Package NTX119AA

4.0 SUPPORTED FEATURES

- Station forward to personal greeting
 - all calls
 - busy
 - ring-no-answer
- System forward to personal greeting
 - busy
 - ring-no-answer
- Multiple Greetings
 - busy
 - ring-no-answer
- Message Waiting Indicator
 - lights/lamps (Note: requires 405.20 or higher on DMS10)
 - stutter dial tone
- Automated Attendant

- Outcalling
- Multiple return to operator
- Direct Call
- Personal greeting of original-called party on multiple-call forward
- Reply to message left by subscriber in internal telephone-answering mode

5.0 CONFIGURING THE DMS-100 TO INTEGRATE

The Voicemail system connects to the PBX using a data connection between the I/O port on the PBX Switch and the I/O port of the INTUITY LX. This connection is an RS-232 that will provide connectivity for the SMDI protocol.

The characteristics of the physical link consist of setting baud rate, data bits, parity, and stop bits. These settings must match on both the PBX and the INTUITY LX.

The voice path is configured as if it were a series of single line telephones. These single line telephones are referred to as analog ports. Each port requires an RJ11 connection into the INTUITY LX. These analog ports must be configured in a hunt group. The hunt group is created in the PBX to allow the station to hunt to the next voice port. Call Information packet is passed from the PBX to the INTUITY LX over the data-connection via the SMDI protocol. The call information packet will contain a message desk number (MDN), a logical terminal number (LTN) and the called party ID (where the call was forwarded from) at the minimum.

For a better integration, the switch should pass the calling party ID & the reason code for why the call was forwarded.

In case MWI is to be supported, the switch protocol should support passing of MWI ON/OFF code and the switch is responsible for switching the MWI lamp ON/OFF on the user's telephone when the switch receives such a code from the INTUITY AUDIX LX.

In addition, all users telephones must be programmed to forward to the Pilot Number of the voicemail system on a ring-no-answer and busy condition.

The following steps are required on the DMS10/DMS100/SL100:

The I/O channel should be configured as follows:

- Full duplex
- 1200 baud
- Asynchronous
- 7 data bits, 1 stop bit

**Configure the I/O channel
Map Lines to Ports on the IA LX**

Create a UCD hunt group for the analog lines connected to the voice module

Create the analog lines connected to the INTUITY AUDIX LX™ system

Modify each subscriber's extension to allow message-waiting notification and forwarding

- Even parity
- NOTE: On DMS 10 SMDI card strap option for TTY, not modem.
- The modem on the Central Office should be configured as follows: 4-wire, full duplex, 1200 baud, station to station mode, continuous carrier.
- The modem set that will be located with the INTUITY LX will be configured as follows: 4-wire, full duplex, 1200 baud.
- Create a UCD hunt group for the analog lines connected to the INTUITY AUDIX LX™. Configure the UCD hunt group as a group using the SMDI feature.
- Configure the Release Count # for **0**. This count sets the maximum number of times a port can take abandoned calls before logging itself out. Setting it to 0 will guarantee that ports are not locked out.
- Create the analog lines connected to the INTUITY AUDIX LX™. Place the lines in the UCD hunt group. Verify that the line identification numbers (line ID for the data link messages) for each analog line are in the same sequential order as they are connected into the INTUITY AUDIX LX™.
- If you are using loop-start station appearances, the Cut-off on Disconnect (**COD**) feature must be programmed. In the **Table OFCVAR** (Office Variables), program the **COD** mnemonic for greater than 600 ms. this programming causes the DMS-100 to disconnect the INTUITY AUDIX LX™ ports immediately when callers hang up. If this is not programmed correctly, subscribers might receive messages with a recording of "Please hang up and dial again" at the end.
- Define the following feature codes:
 - Call Request Activate (CRA)
 - Call Requestor Deactivate (CRDS)
- Modify each subscriber's extension profile to allow message-waiting notification.
- For subscriber phones with lights, assign one position on the phone set for message-waiting notification.
- Forward all subscriber phones to the pilot number of the UCD hunt group on busy and ring-no-answer. The pilot number is the INTUITY AUDIX LX™ System Access Number.

NOTES:

- For exact DMS-100 programming instructions, refer to Northern Telecom's SMDI interface document (NTP 555-4151-100).

Configuring the INTUITY AUDIX LX™

6.0 CONFIGURING THE INTUITY AUDIX LX™

For more information on configuring the INTUITY AUDIX LX, click Help on the appropriate page, or refer to the INTUITY AUDIX LX CD ROM and refer to the Switch Integration chapters for detailed information.

□ The following are the steps required for an INTUITY AUDIX LX™. R2.x. INTUITY AUDIX LX 2.x uses a simpler GUI as shown in our example screen below. All you need do is open the category you will administer (shown in yellow text next to the small white triangles in the left column). You can expand these by click on the white triangle to left of it. Once this is done the category will expand providing choices below it. In our example we have opened Switch Administration. The triangle points down to indicate it is open.

Here we selected Interface Parameters. This is noted by the white rectangle around the text Interface Parameters in blue.

AVAYA Intuity™ Audix@ LX Messaging Administration
This server: hplataulx.dr.avaya.com

Help Log Off

- ▶ Messaging Administration
- ▶ Server Administration
- ▶ INAP/SMTP Administration
- ▶ Server Information
- ▶ Profiles
- ▶ Logs
- ▶ Reports
- ▶ Diagnostics
- ▶ Software Management
- ▶ Security
- ▶ Alarming
- ▶ Call Transfer Administration
- ▶ Backup/Restore
- ▶ Voice System Admin
- ▶ Voice Equipment Diagnostics
- ▶ Switch Administration
 - ▶ Switch Selection
 - ▶ Inband Interface Admin
 - ▶ Device Assignment
 - ▶ MWI Parameters
 - ▶ Dial Plan Translation
 - ▶ Trunk Translation
 - ▶ Transfer Parameters
 - ▶ Call Info Parameters
 - ▶ Interface Parameters
 - ▶ Tones Administration

Interface Parameters

Country: UNITED STATES Switch: DEFINITY MODE CODE

	Default	Current	Range	Unit
Answer Delay	0	0	0 - 50	rings
Post Onhook Delay	2500	2500	0 - 30000	msec
Post Offhook Delay	1500	1500	0 - 30000	msec
Switch Hook Flash Duration	600	600	100 - 3000	msec
Wink Duration	50	50	50 - 800	msec
DTMF On-time	100	100	40 - 2500	msec
DTMF Off-time	50	50	40 - 2500	msec
CPT Detect Minimum	-40	-40	-48 - 3	dBm
Energy Detect Minimum	-44	-44	-44 - 3	dBm
Input Volume	-20	-20	-57 - 0	dBm
Output Volume	-3	-3	-57 - 0	dBm
Number of Rings To Wait For DNIS	0	0	0 - 99	rings
Hunt Group Method	ascending	descending	-	-

Save Help

Important: This is an example screen of IALX R2.x Administration. The values shown here are not necessarily the ones you need to enter. Please read the CN for more detailed information.

HINT: When changes to the Switch Interface Administration are completed, the voice system must then be stopped and started.

- Start at the Administration main menu
- Select Basic System Administration.
- Select **Switch Selection**.

Once a selection is made the appropriate screen will open allowing you to enter the parameters as noted in the CN.

NOTE: The Definity Mode Code software may have to be loaded from the software CD that came with the Intuity LX.

Note:

Leave these settings blank if you are using ONE Hunt Group / Pilot Number (aka Message Desk).

Entries only need to be made if you are using more than one Hunt Group / Pilot Number (aka Message Desk).

- Under **Switch Administration**:
 - Click on *Switch Selection*
 - *Select UNITED STATES – NORTEL DMS100/SL100*
 - Click **Save**
- Under **Voice System Admin**
 - Click on *Assign Chans to Groups*
 - If you are setting up different channels to different groups, complete these fields as follows:
 - Channels: *Enter a number or range* (for example, **0,1,2** or **0 1 2** or **2-4** or **all**).
 - Groups: *Enter a number or range* (for example, **0,1,2** or **0 1 2** or **2-4** or **all**).
 - NOTE:** By default all channels are assigned to group 2.
 - Click **Save**
 - Click on *Assign PBX Ext/Chans*
 - Starting PBX Extension: *Enter a phone number (the pilot number)* for the first channel (up to 7 digits).
 - Starting Channel Number: *Enter a number* (start at channel 0).
 - Ending Channel Number: *Enter the last channel number.*
(Example: If 12 port system the last port is 11)
 - Click **Save**
 - Click on *Assign Services/Chans*
 - Channel: Enter the channel number and/or a range of numbers.
 - Service: (You have the option to select *DNIS_SVC, AUDIX, Chan Tran, chandip, or init_xfer). Choose ***DNIS_SVC**.
 - Click **Save**
- Under **Voice Equipment Diagnostics**

Click on *Display* and verify that the information you entered was entered correctly and that the voice card is INSERT state.
- Under **Voice System Admin**
 - Click on *Assign Number Services*
 - Called Numbers: *any* (the field after the “to” is blank).
 - Calling Numbers: *any* (the field after the “to” is blank).
 - Service Name: **AUDIX**.
 - Click **Save**

- Click on *Display Number Services* and verify that the information was correctly entered.
- Under **Call Transfer Administration**. Customers have the option to select numbers to be allowed or denied when they are performing transfers. You can add, delete and display numbers here. Restrictions (denied numbers) can also be administered if any are to be used.
- If you click on *Allowed Number Display*, you will see the following for a four-digit dial plan:

From	To
0	9999

Click **Return to Main**.

Note: If 7 digit plan it would be 0 to 9999999

- Under **Switch Administration**
 - Click **Switch Link Admin**
 - Assign parameter values that match the DMS100/SL100 serial port (*below are examples of parameters used.*):
 - Data bits: 7
 - Stop bits: 1
 - Start bits: 1
 - Baud rate: 1200
 - Parity: E
 - Flow control: N
 - Under **Serial Ports, Port 1** (pull-down menu): select /dev/ttyS0
- Click on **Device Assignment**
 - Link Test: **N** (If link test is set to 'Y' enter the values for the following fields:
 - Link Test Interval: 100 (specifies the heartbeat interval in seconds)
 - Heartbeat Timeout: 30
 - Switch Number: 1 (range can be 1-64)
 - Device ID: /dev/ttyS0 (*see note below*)
 - Link Test Number: 5551212

NOTE: Before configuring the Device ID field, the Link parameters for the serial interface need to be configured. This should have been done in the previous step.

The serial port /dev/ttyS0 and /dev/ttyS1 are reserved for INTUITY AUDIX LX™ system use. Select /dev/ttyS0.

Click on **MWI Parameters**

Note: The MWI Prefix/Suffix are grayed out and cannot be administered. They are displayed for verification only.

- MWI On Prefix: OP:MWI,0x20
- MWI On Suffix: !,0x04
- MWI Off Prefix: RMV:MWI,0x20
- MWI Off Suffix: !,0x04
- MWI Update: **Y**
- Intuity Prefix: **N**
- Log MWI Update: **Y**
- Switch Prefix: **Y** (This appends a prefix to the extension number for MWI)
- Background Refresh: **N** (If set to '**Y**' set the following values)
 - Background Interval: **60**
 - Background Updates: **1**
 - Broadcast Interval: **10**
 - Broadcast Updates: **3**
- Click **Save**
- Click **Dial Plan Translation**
 - Add or Update INTUITY Extension Length
 - Max PBX Extension Length: 10
 - Define the Switch Network Access Code: <If required>
 - Add or update the "Switch Prefix" as 000.
 - Enter the valid extension ranges in Switch Start Ext. as **0000** and in Switch End Ext. as **9999**.
 - Leave the INTUITY Prefix field blank.
 - Enter Switch number. This is the same number that is used in the AUDIX subscriber database.
 - Enter **N** in the Remote [Y/N] field.
- Click **Update**
- Click **Trunk Translation**
 - Enter the Trunk Number <if required>
 - Define the INTUITY Subscriber Number.
- Click **Update**

ADD
 Subscriber Msg Admin
 Enter command:
 cha ma
 (means *change machine*)
 Then set:
 start ext: 0000000
 end ext: 9999999

In Switch Administration
 Intuity Subscriber Name
 should be left blank

- Click on **Attendant Translation**

- Attendant ID: (Specifies Attendant extension # on the switch)
- Intuity Subscriber Number: (the Mailbox that is substituted for the Attendant ID passed on by the switch)

- Click **Update**

- Click on **Hunt Group Translation**

Note: Administering Hunt Group Translations are typically used with multiple trunk groups and may not be required for implementations that use a single Hunt Group/Pilot #

- Message Desk Number: 2 (specifies the MDN being mapped to the specified INTUITY channel. Range is from 1 to 999.)
- Logical Terminal Number: 0-11 (*Note: 0-11 is for 12 ports*)

Click Return to Administration main menu

- After all the required administration is completed, stop and restart the INTUITY AUDIX LX .

7.0 HARDWARE INSTALLATION

□ Each voice card supports four analog (Tip/Ring) connections. The voice path between the DMS10/DMS100/SL100 and the INTUITY AUDIX LX™ requires one pair in each RJ11 connection of the voice card. See to the installation instructions for the hardware connectivity.

- To ensure that the ports are physically connected correctly, ask the switch administrator to place calls to each individual INTUITY AUDIX LX™ voice channel, one at a time. Use the **System Monitor** menu in the INTUITY AUDIX LX™ to monitor that the correct channel is dialed from the switch.
- Connect the 4-wires that are terminated from the data channel should be connected to the modem with 4-wire line cords.

7.1 INSTALLING THE INTEGRATION LINK

- Fasten the DB25 end of the RS232 cable to the appropriate asynchronous connector of the INTUITY AUDIX LX. Connect the other end of the same cable to the DB25 connector on the DMS10/DMS100.

Connecting analog voice
channels

Connecting analog voice
channels

Steps to verify our
installation when complete

7.2 TESTING THE INSTALLATION

- Create two mailboxes associated with two test extensions. Record a name and personal greeting for each mailbox.
- By using one test extension, call the other test extension. You need to hear the appropriate greeting (see “Test call coverage scenarios” which follows).

Test call coverage scenarios:

- **Forward all calls:** When a subscriber forward all calls to the INTUITY AUDIX LX™ number, calls placed to the subscriber should follow the correct INTUITY AUDIX LX™ prompt should be played for that subscriber.

- **Busy:** Place a call to a busy extension. This call has to follow the right coverage path and INTUITY AUDIX LX™ must play the Busy greeting.

- **Ring-no-answer:** Place a call to a station that is ring-no-answer. This call has to follow the right coverage path and INTUITY AUDIX LX™ must play ring-no-answer greeting.

- If calls are Non-Integrated, check the following:
 - Is the appropriate COS has been assigned to the Tip/Ring lines.
 - PBX Extn to Channel mapping has been administered properly.
 - Review Switch Integration log to make sure the RAW data is seen for every call and is appropriately parsed and translated.
 - Review maintenance log to verify that an error has been logged indicating Bad data. If yes, then check the switch setup to ensure that the correct mode codes are being passed to INTUITY AUDIX LX™.
 - Review Dial Plan Translation screen to verify that the translation table has been administered correctly.
- For message-waiting indicators, listen to the message left for the test mailbox, delete the message, and verify that message waiting is turned off.

If Message Waiting failures occur, check the following:

- Appropriate COS was administered on the switch or subscriber telephone sets.
- Review Switch Integration Log to verify INTUITY AUDIX LX™ is dialing the required sequence of digits. If not, check the DIAL PLAN Translation and make sure that it is administered correctly.
- INTUITY AUDIX LX™ is detecting that dial tone?

- Test Transfers by using the *T option from the Audix mailbox, transfer to another mailbox. Monitor the transfer time. Transfer to a station that is in a Do-Not-Disturb mode, busy mode, or RNA mode.
 - The transfer time is approximately from 5 to 8 seconds.
 - Test multiple transfers. Set up phone A to transfer to Phone B. Phone B then transfers to phone C, and phone C transfers to phone D. Determine how many transfers can be supported on the switch.

If Transfer failures are encountered, then check the following:

- Is the flash duration that is set on INTUITY AUDIX LX™ the same as what is configured on the switch? If not, then modify the flash duration.
- Is the transfer type set on the change system-parameters feature form.

NOTE: If the caller is disconnected during transfers, then the flash duration is too high and has to be reduced. If the caller hears INTUITY AUDIX LX dialing digits during transfer, then the flash duration is too low and has to be increased.

- Call Disconnect. Leave a message for the test mailbox, retrieve the message, and listen for the call progress tones. Place an external call and document the time that it takes the INTUITY AUDIX LX™ to disconnect after the caller hangs up.
 - If there is no progress tone in the message, disconnect is working fine.
- Zero (“0”) Out. Verify that return-to-operator works properly.
- Call the INTUITY AUDIX LX™ from a test extension and leave a message for a station with a voice mail button.
 - If the subscribers stations are programmed to support a button that will dial the voice mail access number and the mailbox number followed by the # sign, the INTUITY AUDIX LX™ will prompt for the password. The system will play “Please enter your password”.
- Automated Attendant. Call the automated attendant mailboxes.
 - If the correct Auto-Attendant mailbox is not reached and all the previously described tests passed, the most likely problem will be in the switch translations. Check with the system administrator to Ensure proper translation.
- Set up outcall notification in the test mailbox and leave a message to generate an outcall. Make sure that the ports are configured for Outcall.

- INTUITY AUDIX LX™ must call the number administered for outcalling after the administered time has passed.
 - If Outcalling failures occur, check if INTUITY AUDIX LX™ is detecting the dial tone.
- Incoming and Outgoing Fax.
- Send a fax to a subscriber mailbox from a fax machine. Click the **Start** key on the fax machine. Check that the fax arrived in the mailbox and print the fax.
 - Send a fax from a subscriber's mailbox to a fax machine. Check the fax machine to make sure that the fax was received.

NOTE: If you encounter problems while performing these tasks, review the “switch log” before escalating problems to your local Technical Support Center.

Important notes regarding this integration

8.0 CONSIDERATIONS

- 8.1 **At software levels BCS 26 and below, extensions on the DMS-100 are not allowed to transfer calls directly to a UCD group.** A suggested workaround is to create a hardware-supported analog station that is ring-no-answer forwarded to the voice module. Use this station as a transfer target to the INTUITY AUDIX LX™. In this scenario, the person transferring the call must stay on the line until at least one burst of ringing is heard. If not, the DMS-100 will re-ring the transferring party and the transfer will not be complete. *BCS 27 or higher does allow calls to be directly transferred to the INTUITY AUDIX LX™.*
- 8.2 **If you are using loop-start station appearances, the Cut-off on Disconnect (COD) feature must be programmed for proper disconnect signaling.** The programming is covered in section 5.0 of this note. If this feature is not available on your PBX, ground-start lines are recommended for immediate disconnect. If loop-start lines are used, users might hear silence or “Please hang up and dial again” recorded at the end of messages.
- 8.3 **For proper disconnect, a PBX patch must be removed.** The patch #RPG50A24 prevents the DMS-100 from providing the required cutoff for disconnect supervision. This patch if installed on the DMS-100 must be removed.

- 8.4 **In order to use the 1X67FA card, you must enable Patch #DDK14A29 on the DMS-100.** (Later software will incorporate the patch.) The 1X67FA card transmits data at multiple baud rates. The INTUITY AUDIX LX™ accepts SMDI messages at 1200 baud only. Verify this is true?
- 8.5 **Loss of data link reverts the INTUITY AUDIX LX™ to interface mode.** Calls can still be forwarded to the INTUITY AUDIX LX™ ports but will not have call ID therefore will answer with a generic greeting..
- 8.6 **Different Central Offices may use different modems for remote support.** The Anderson-Jacobs AJ2443 modem might be used instead of the 202-T Data Set. Check with your Central Office.
- 8.7 **Half duplex SMDI links are not supported.** The SMDI must be full-duplex.

Change History		
Revision	Issue Date	Reason for Change
Version A	6/25/03	Initial release after validation
Version B	1/25/08	Added sidebar about Hunt Group/Message Desk settings and another about MWI and Switch Prefix in section 6.0
Version C	3/3/08	Noted support for IALX 2.0 in section 2.0. Made changes to accommodate new administration screens in Section 6.0 for IALX 2.0
RIP	02/23/10	Made CN RIP

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