

Planning for Switch Integration with Digital Station Interface

2

Overview

This chapter describes the information that must be obtained in advance of performing the procedures to integrate a Northern Telecom (Nortel) Meridian 1 switch with the Lucent™ INTUITY™ system. Worksheets are included to record the necessary information. Completion of the worksheets:

- Ensures that both the switch and the Lucent INTUITY system are properly administered.
- Aids cooperation between the personnel installing the Lucent INTUITY system and the switch administrator.

Responsibility for implementing the information on the worksheets is as follows:

- The project planner or project manager is responsible for completing the worksheets.
- The switch administrator must provide information on the worksheets specific to the switch. The switch administrator is also responsible for administering the information on the switch.
- The Lucent installer is responsible for administering information on the worksheets specific to the Lucent INTUITY system.

Purpose

This chapter provides worksheets ([Table 2-2](#) through [Table 2-10](#)) used by planners or project managers, Lucent installers, and the switch administrator to integrate a Lucent INTUITY system with a Nortel Meridian 1 switch. A checklist is also provided ([Table 2-1](#)) to ensure that all the worksheets are completed in advance of the integration.

Checklist for Planning

The following checklist ([Table 2-1](#)) lists the worksheets that must be completed before the integration. Use the checklist to ensure that all worksheets are completed.

Table 2-1. Planning Checklist

Worksheet	Section	✓
Table 2-2	“Determining the Number of Ports to Use on the Digital Station Interface Circuit Card”	
Table 2-3	“Obtaining Terminal Numbers for Ports on the Digital Station Interface Circuit Card”	
Table 2-4	“Obtaining the Lucent INTUITY Message Retrieval Number”	
Table 2-5	“Obtaining the Dedicated MWI Port Extension Number (Optional)”	
Table 2-6	“Obtaining Extension Numbers and ACD DNs for the Lucent INTUITY Tip/Ring Lines”	
Table 2-7	“Mapping Tip/Ring Extensions to Keys on the Digital Station Interface Circuit Card Ports”	
Table 2-9	“Determining the Call Redirection Display Strings Currently Set on the Switch”	
Table 2-10	“Determining the Serial Number of the Digital Station Interface Circuit Card”	
Table 2-11	“Determining the Start and End Times for Night Audits (If Run)” NOTE: This worksheet is required <i>only</i> for integrations with Meridian 1 and SL-1 switches when night audits are run.	
Table 2-12	“Obtaining the Day/Night Service Automated Attendant Number (If Used)” NOTE: This worksheet is required <i>only</i> for integrations with a Meridian 1 switch when the customer has day/night service and uses the automated attendant feature of the INTUITY AUDIX system.	
Table 2-13	“Obtaining the Express Messaging Automated Attendant Number (If Used)” NOTE: This worksheet is required <i>only</i> for integrations with a Meridian 1 switch that will use the Lucent INTUITY Express Messaging feature.	

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Table 2-1. Planning Checklist — Continued

Worksheet	Section	✓
Table 2-14	“Obtaining the Call Routing Automated Attendant Number (If Used)”	
Table 2-15	“Obtaining Numbers for the Call Routing Automated Attendant Menu (If Used)”	
Table 2-16	“Planning for Phantom Numbers (If Used)”	

Determining the Number of Ports to Use on the Digital Station Interface Circuit Card

[Table 2-2](#) provides guidelines for determining the number of ports to use on the digital station interface circuit card based on the number of extension numbers required on the Lucent INTUITY system.

- As a general rule, for satisfactory performance, a maximum of nine extension numbers on the Lucent INTUITY system can be mapped to a single port on the digital station interface circuit card. See [“Mapping Tip/Ring Extensions to Keys on the Digital Station Interface Circuit Card Ports”](#) below for information for more information on the distribution of Tip/Ring lines across the ports.
- Operating efficiency can be enhanced by distributing the extension numbers for the Tip/Ring channels across a greater number of ports.
- If MWI updates are to be performed on the system, *one port* on the digital station interface circuit card must be reserved *exclusively* for this purpose. By convention, port 8 is used for MWI updates. If MWI updates are not to be performed, then extension numbers can be mapped to all eight ports on the digital station interface circuit card.

Worksheet

Use the following worksheet ([Table 2-2](#)) to record the total number of ports to be used on the digital station interface circuit card. If MWI updates are to be done on the system, be sure to include one port for that purpose in the total.

Table 2-2. Worksheet for the Number of Ports to be Used

Number of Tip/Ring Extensions Required	Minimum Recommended Number of Ports (Excluding Port for MWI Updates)	MWI Updates Required? (Y/N)	Total Number of Ports Required (Including Port for MWI Updates)
5 or fewer	1		
6-10	2		
11-18	3		
19-24	4		
25-30	5		
31-40	6		
More than 40	7		

Examples

- For a system with 18 voice channels, 3 ports (minimum) on the digital station interface circuit card are recommended. If MWI updates are to be performed on the system, 4 ports (minimum) are required.
- For a system with the maximum of 64 voice channels, 7 ports on the digital station interface circuit card are recommended. If MWI updates are to be performed on the system, 8 ports are required.

Obtaining Terminal Numbers for Ports on the Digital Station Interface Circuit Card

Every termination on the Meridian 1 or Meridian SL-1 switch is uniquely identified by a *terminal number* (TN). The switch TN is a 4-digit number, for example 4 0 4 0, that identifies the physical location on the switch digital line card of a line to or from the switch. The digits designate, from left to right, the following:

- Loop number The loop to which the termination belongs.
- Shelf number The shelf on which the circuit termination's card is present.
- Card number The number of the card that contains this termination.
- Unit number The termination on the specified card.

⇒ NOTE:

Do not confuse the abbreviation “TN” used for a terminal number on the switch with the abbreviation “TN” used in Lucent circuit pack designations.

Load Leveling

For load leveling, every port of the digital station interface circuit card on the Lucent INTUITY system should be assigned to a different digital line card on the switch. That is, only one port should be assigned to a particular switch digital line card.

On Meridian 1 and Meridian SL-1 switches, the digital line cards in slot 0 and slot 1 are given higher priority than the cards in other slots. Therefore, for optimal system performance, all ports should be assigned to digital line cards in these slots.

Worksheet

Use the following worksheet ([Table 2-3](#)) to record the TNs for the ports on the digital station interface circuit card that will be used for switch integration. Use the following procedure to fill in the worksheet:

1. Obtain from the switch administrator a switch TN for *each* port on the digital station interface circuit card that will be used for integration or MWI updates.
 - Make sure each TN is from a different digital line card on the switch.
 - Assign only one port to a digital line card.
 - Assign the ports to digital line cards in slot 0 or slot 1.

⇒ NOTE:

A TN is not required for any ports that will not be used for integration. By convention, port 8 is used for MWI updates.

2. Fill in the [Table 2-3](#) to show the mapping between the ports on the digital station interface circuit card and the switch TNs.

Table 2-3. Worksheet for Port-to-Terminal Mapping

Port Number	Switch TN
1	
2	
3	

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Table 2-3. Worksheet for Port-to-Terminal Mapping — Continued

Port Number	Switch TN
4	
5	
6	
7	
8	

Obtaining the Lucent INTUITY Message Retrieval Number

The Lucent INTUITY number is the extension number that system subscribers call to retrieve their messages. This number is the first Tip/Ring extension in the hunt chain mapped to the keys on the digital station interface circuit card ports. See [“Mapping Tip/Ring Extensions to Keys on the Digital Station Interface Circuit Card Ports”](#) below for related information.

The extension number assigned as the Lucent INTUITY number does *not* need to be contiguous with the extension numbers used for mapping the remaining Tip/Ring lines. (It may be contiguous, however.) See [“Obtaining Extension Numbers and ACD DNs for the Lucent INTUITY Tip/Ring Lines”](#) below for related information.

Worksheet

Use the following worksheet ([Table 2-4](#)) to record the Lucent INTUITY message retrieval number.

Table 2-4. Worksheet for the Lucent INTUITY Message Retrieval Number

Lucent INTUITY number:

Obtaining the Dedicated MWI Port Extension Number (Optional)

If MWI updates are to be performed on the system, obtain from the switch administrator a unique number not assigned to any other extension on the switch.

The extension number assigned for MWI updates does *not* need to be contiguous with the extension numbers used for the remaining Tip/Ring lines. (It may be contiguous, however.) See [“Obtaining Extension Numbers and ACD DN’s for the Lucent INTUITY Tip/Ring Lines”](#) below for related information.

Worksheet

Use the following worksheet ([Table 2-5](#)) to record the MWI port extension number.

Table 2-5. Worksheet for the MWI Port Extension Number

MWI port extension number:

Obtaining Extension Numbers and ACD DN’s for the Lucent INTUITY Tip/Ring Lines

Integration with a Meridian 1 switch requires *contiguous* extension numbers for the Tip/Ring lines on the Lucent INTUITY system. An extension number is required for every Tip/Ring line on the system.

NOTE:

The *first* extension number is assigned as the Lucent INTUITY message retrieval number and is configured separately (see [Table 2-4](#)). The extension number for MWI updates is also configured separately (see [Table 2-5](#)). These two extension numbers do not need to be contiguous with each other or the remaining Tip/Ring lines. All other Tip/Ring extension numbers on the system *must* be contiguous.

For example, if 30 Tip/Ring lines are needed, any of the following sets of 29 contiguous extensions could be used, depending on the number of digits in the dial plan (extension length).

2001-2029, 000-028, 65550-65578

These ranges do *not* include the Lucent Intuity message retrieval number or the MWI port extension number.

For systems with more than 16 Tip/Ring extension numbers, the switch administrator must provide unique automatic call distribution directory numbers (ACD DN's) for each group of 15 extension numbers from 16 upwards:

- ACD DN 1 is used for Tip/Ring extensions 16-30.
- ACD DN 2 is used for Tip/Ring extensions 31-45.
- ACD DN 3 is used for Tip/Ring extensions 46-60.
- ACD DN 4 is used for Tip/Ring extensions 61-64.

Worksheet

Use the following worksheet ([Table 2-6](#)) to configure the extension numbers and ACD DN's. To fill in the worksheet, do the following:

1. Obtain an appropriate set of contiguous extension numbers from the switch administrator.
2. Obtain an appropriate set of ACD DN's from the switch administrator, if required (systems with more than 16 Tip/Ring extension numbers).
3. In [Table 2-6](#), record the Lucent INTUITY message retrieval number as the first extension number (Ext. 1).
See [Table 2-4](#) for the Lucent INTUITY message retrieval number.
4. Beginning with Ext. 2 in the table and proceeding *in order*, record all the extension numbers, from lowest to highest.
5. Record the ACD DN's, if required.



NOTE:

The extension number used for MWI updates is *not* recorded in [Table 2-6](#).

Table 2-6. Worksheet for Obtaining Lucent INTUITY Extension Numbers

Tip/Ring Extension Numbers/ACD DN's				
Ext. 1:	ACD DN 1:	ACD DN 2:	ACD DN 3:	ACD DN 4:
(Lucent INTUITY number	Ext. 16:	Ext. 31:	Ext. 46:	Ext. 61:
Ext. 2:	Ext. 17:	Ext. 32:	Ext. 47:	Ext. 62:
Ext. 3:	Ext. 18:	Ext. 33:	Ext. 48:	Ext. 63
Ext. 4:	Ext. 19:	Ext. 34:	Ext. 49:	Ext. 64:
Ext. 5:	Ext. 20:	Ext. 35:	Ext. 50:	Not used.
Ext. 6:	Ext. 21:	Ext. 36:	Ext. 51:	
Ext. 7:	Ext. 22:	Ext. 37:	Ext. 52:	
Ext. 8:	Ext. 23:	Ext. 38:	Ext. 53:	
Ext. 9:	Ext. 24:	Ext. 39:	Ext. 54:	
Ext. 10:	Ext. 25:	Ext. 40:	Ext. 55:	
Ext. 11:	Ext. 26:	Ext. 41:	Ext. 56:	
Ext. 12:	Ext. 27:	Ext. 42:	Ext. 57:	
Ext. 13:	Ext. 28:	Ext. 43:	Ext. 58:	
Ext. 14:	Ext. 29:	Ext. 44:	Ext. 59:	
Ext. 15:	Ext. 30:	Ext. 45:	Ext. 60:	

Mapping Tip/Ring Extensions to Keys on the Digital Station Interface Circuit Card Ports

The Tip/Ring lines on the Lucent INTUITY system must be mapped correctly to the keys and ports on the digital station interface circuit card.

- For best system performance, distribute the Tip/Ring lines as equally as possible across the recommended number of ports. (See [Table 2-2](#) for the recommended number of ports.)
- If the lines cannot be distributed exactly equally, map the larger number of lines to the lowest-numbered ports.

For example, excluding the dedicated port for MWI updates, for systems with 24 Tip/Ring lines a minimum of 4 ports is recommended ([Table 2-2](#)). The optimal distribution of the lines across the ports is 6-6-6-6. If for enhanced system performance the 24 lines are to be mapped onto 5 ports, the optimal distribution is 5-5-5-5-4. For 6 ports, the distribution is 4-4-4-4-4-4. For 7 ports, the distribution is 4-4-4-3-3-3-3.

As another example, excluding the dedicated port for MWI updates, a minimum of 7 ports is recommended for systems with 64 Tip/Ring lines. The optimal distribution of the lines across the ports is 10-9-9-9-9-9-9. If MWI updates are not to be performed on the system, then all 8 ports are available for Tip/Ring mapping, and the optimal distribution is 8-8-8-8-8-8-8-8.

Worksheet

Use the following worksheet ([Table 2-7](#)) to map the Lucent INTUITY system Tip/Ring lines to the keys of the digital station interface circuit card ports. The lines must be mapped in sequential order *across* the ports. To fill in the worksheet, do the following:

1. Record the switch TNs obtained for the ports on the digital station interface circuit card in the fields at the top of the worksheet.

See [Table 2-3](#) for the switch TNs.

2. If the system is to perform MWI updates, fill in the key 0 scr entry for port 8 with the extension number recorded in [Table 2-5](#).

NOTE:

By convention, port 8 is used for MWI updates. Another port can be used, however.

3. Starting with the first Tip/Ring extension number on the Lucent INTUITY system (see [Table 2-6](#)) and preceding *sequentially*, fill in the fields in the table *horizontally*, one-by-one, starting with the field for the key 0 scr.

Observe the following guidelines:

Determining the Call Redirection Display Strings Currently Set on the Switch

The Lucent INTUITY system uses call redirection display strings sent by the switch to parse call data. The settings for these strings on the switch and on the Lucent INTUITY system must match for the integration to succeed.

The switch administrator can check the call redirection display strings currently set on the switch by using overlay 95 and entering the following commands at the switch administration terminal:

```
LD95
REQ PRT
TYPE CPND
CUST 0
```

Among other details, the output of these commands shows the call redirection display strings, as follows:

```
CFNA: <call_forward_on_no_answer>
HUNT: <call_forward_on_busy>
CFWD: <cover_all_calls>
```

where:

- *<call_forward_on_no_answer>* is the string to forward answered calls to the Lucent INTUITY system.
- *<call_forward_on_busy>* is the string to forward busy calls to the Lucent INTUITY system.
- *<cover_all_calls>* is the string for call forward all calls to the Lucent INTUITY system.

Worksheet

Use the following worksheet ([Table 2-9](#)) to record the current switch settings for the call redirection display strings.

NOTE:

If the output of the overlay 95 commands above does *not* list the call redirection display strings, then leave [Table 2-9](#) blank. Ensure that the switch administrator configures the strings as described in [“Configuring the Call Redirection Display Strings”](#) in [Chapter 3, “Requirements and Administration for Nortel Meridian 1”](#). See also [“Setting the Call Redirection Display Strings”](#) in [Chapter 4, “Lucent INTUITY Administration for Switch Integration with Digital Station Interface”](#).

Table 2-9. Worksheet for Switch Call Redirection Display String Settings

Reason	String Configured on the Switch
Call forward on no answer	
Call forward on busy	
Cover all calls	

Determining the Serial Number of the Digital Station Interface Circuit Card

The serial number of the VB-PC digital station interface circuit card is a 4-digit number needed for Lucent INTUITY administration. This number is printed on a stamp affixed to the card faceplate, where it is easily visible. It also appears on the surface of the circuit card. For an illustration of the circuit card showing the locations of the serial number, see Chapter 5, "Replacing or Installing Circuit Cards" in the maintenance for your platform. The serial number may be prefixed by characters indicating the switch type. You must strip off these characters to get the 4-digit serial number. For example, a card for the Meridian 1 switch might be labeled M1 3093. Strip off the prefix (M1) to get the serial number: 3093

Worksheet

Use the following worksheet ([Table 2-10](#)) to record the serial number of the digital station interface circuit card.

Table 2-10. Worksheet for the Digital Station Interface Circuit Card Serial Number

Serial number:

Determining the Start and End Times for Night Audits (If Run)

The Meridian 1 switch normally performs an audit every 24 hours. Since the audit is usually done at night, it is called the night audit or midnight audit. Any MWI activity that occurs while the audit runs can create a conflict that disables the affected digital station interface port. If all ports go out of service, no calls can be integrated and switch personnel must return the ports to service. Therefore, MWI updates *must* be blocked while the switch audit runs.

Worksheet

Use the following worksheet ([Table 2-11](#)) to record the times when audits normally start and end. Use the 24-hour format *HH MM SS*, where:

- *HH* is the hour in the 24-hour system (range 0-23).
- *MM* is the minute (range 0-59).
- *SS* is the second (range 0-59).

Table 2-11. Worksheet for the for the Night Audits Start and Stop Times

Start time for night audits: (24-hour format)	End time for night audits: (24-hour format)
--	--

Obtaining the Day/Night Service Automated Attendant Number (If Used)



NOTE:

This worksheet is required only for Meridian 1 and Meridian SL-1 integrations when the customer has day/night service.

The day/night service number is an INTUITY AUDIX extension number administered as an automated attendant mailbox.

Worksheet

Use the following worksheet ([Table 2-12](#)) to record the automated attendant number used for day/night service.

Table 2-12. Worksheet for the Day/Night Service Automated Attendant Number

Day/night service number:

Obtaining the Express Messaging Automated Attendant Number (If Used)



NOTE:

This worksheet is required only for Meridian 1 and Meridian SL-1 integrations when the customer uses the Lucent INTUITY Express Messaging feature.

The Lucent INTUITY Express Messaging number is an INTUITY AUDIX extension number administered as an automated attendant that a system subscriber dials to use the Express Messaging feature. See [Appendix A, "Administering Express Messaging"](#) for a description of this feature. See also ["Planning for Phantom Numbers \(If Used\)"](#) below for information on administration required for phantom numbers.

Worksheet

Use the following worksheet ([Table 2-13](#)) to record the Express Messaging number.

Table 2-13. Worksheet for the Express Messaging Automated Attendant Number

Express Messaging number:

Obtaining the Call Routing Automated Attendant Number (If Used)

 **NOTE:**

This worksheet is required only for Meridian 1 and Meridian SL-1 integrations when the customer uses an automated attendant number for call routing to far-end switches in the customer network.

A call routing number is an INTUITY AUDIX extension number configured as an automated attendant that a system subscriber dials to access far-end switches in a customer network. See [Appendix B, "Administering Call Routing for Far-End Switches"](#) for a description of this feature and ["Obtaining Numbers for the Call Routing Automated Attendant Menu \(If Used\)"](#) below for additional planning that must be done for this feature. See also ["Planning for Phantom Numbers \(If Used\)"](#) below for information on administrative requirements for phantom numbers.

Worksheet

Use the following worksheet ([Table 2-13](#)) to record the automated attendant number for call routing to far-end switches.

Table 2-14. Worksheet for the Call Routing Automated Attendant Number

Call routing number:

Obtaining Numbers for the Call Routing Automated Attendant Menu (If Used)



NOTE:

This worksheet is required only for Meridian 1 and Meridian SL-1 integrations when the customer is creating a menu of locations for routing calls to far-end switches in the customer network.

For every menu choice offered via the call routing automated attendant feature:

1. Obtain from the switch administrator a unique phantom extension number.
2. Determine the telephone number for the far-end location.

See [Appendix B, "Administering Call Routing for Far-End Switches"](#) for a description of this feature and ["Obtaining the Call Routing Automated Attendant Number \(If Used\)"](#) above for additional planning that must be done for this feature. See also ["Planning for Phantom Numbers \(If Used\)"](#) below for information on administrative requirements for phantom numbers.

Worksheet

Use the following worksheet ([Table 2-15](#)) to record the phantom numbers and external location numbers for the menu for call routing to far-end switches.

Table 2-15. Worksheet for the Call Routing Automated Attendant Menu

Digit (Menu Choice)	Phantom Extension for Automated Attendant Menu	External Location Number
1		
2		
3		
4		
5		
6		
7		
8		
9		
0		

Planning for Phantom Numbers (If Used)

A *phantom number* (also called a dummy number) on the switch is an extension number that is not associated with a switch port or a telephone station. In integrations with the Meridian 1 and Meridian SL-1 switches, a phantom number is used for directing the call to the Lucent INTUITY system by enabling the forward all calls feature on the phantom extension to the Lucent INTUITY system.

A phantom number is also used for the Lucent INTUITY Express Messaging feature and the call routing automated attendant. See [“Obtaining the Express Messaging Automated Attendant Number \(If Used\)”](#) and [“Obtaining the Call Routing Automated Attendant Number \(If Used\)”](#) above.

WARNING:

All phantom numbers must be assigned to switch 0 (zero) in the INTUITY AUDIX database. If switch 0 is not used for these extensions (which do not have real stations), the system will try to turn MWIs on and off and will continually fail to do so. This condition can seriously impede system performance.

For information on administering the switch number, see the description of the `Switch Number:` field in the “Administration” section of one of the following INTUITY Messaging Solutions Release 5 Documentation CDs:

- *INTUITY Messaging Solutions Release 5 Documentation*, 585-313-803, Issue 3
- *INTUITY Messaging Solutions Release 5 Documentation for Technicians*, 585-313-807, Issue 3

Worksheet

Use the following worksheet ([Table 2-16](#)) to record any phantom numbers used for switch integration.

Table 2-16. Worksheet for Phantom Numbers Used for Switch Integration

Phantom numbers:

2 Planning for Switch Integration with Digital Station Interface
Planning for Phantom Numbers (If Used)

Page 2-20