METASYS®

APPLICATION NOTE

NDM Configurator

*Indicates those sections where changes have occurred since the last printing.

Dialing   Page   25

* Indicates those sections where changes have occurred since the last printing.

Introduction

The NDM Configurator creates a configuration file for an N2 Dialer Module (NDM). The NDM Configurator can download/upload configuration files for local and remote NDMs. The NDM Configurator can also be used to command a local NDM, initiate a dial-out to a remote site, and upload or download controllers on the remote N2 Bus. For passive printer applications, a Configuration Tool (e.g., NDM Configurator) can also be used to clear alarms and offline/online transitions to allow additional dial-ins. This application is described in the *Passive Printer Application* section of this technical bulletin.

Configuration Files

Hardware Requirements

At least two NDM controllers and two 9600-baud external modems are required for a typical N2 Dial configuration. Only one NDM is required for the passive printer application. See the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)* in the *Metasys Application Specific Controllers Technical Manual (FAN 636.3)* for hardware requirements, installation procedures, and a summary of which controllers and firmware support the N2 Dial application.
Be sure to record the phone numbers for all modems involved in the N2 Dial application.

Software Requirements

GX-9100 for Windows, Release 3.00 or later, includes the NDM Configurator.

Creating a Configuration File

To create an N2 Dial configuration file:
1. Click on File/New.
2. Select N2 Dial Applications from the Application Group. N2 Dial Module Configuration appears as the only available application.

NEWN2AP
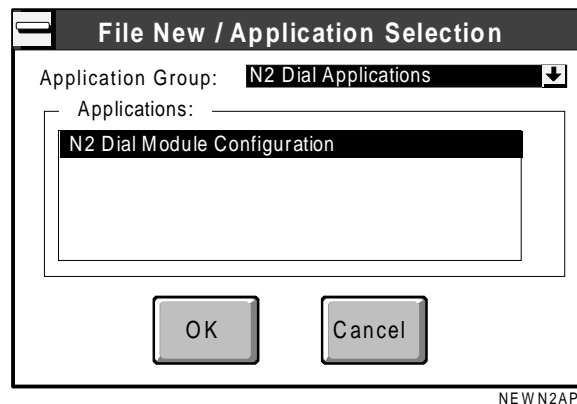
Figure 1: Creating an N2 Dial Configuration

3. Click on OK to begin the Question/Answer Session.

N2PROQA
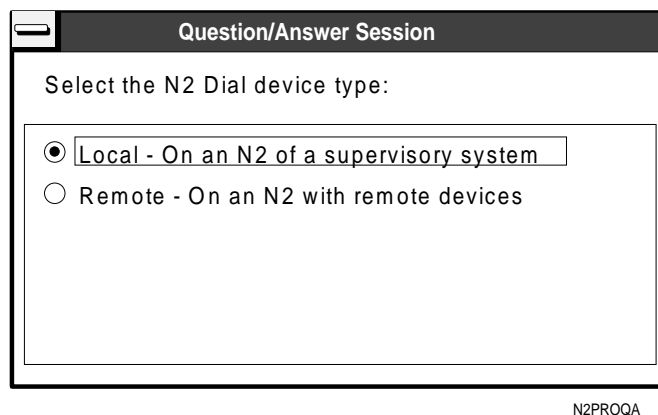
Figure 2: N2 Dial Question/Answer Session

The following illustration shows the complete question and answer path for the N2 Dial application.

Select the N2 Dial device type:

Local - On an N2 of
a supervisory system

Remote - On an N2
with remote devices

Go to Parameter Definition
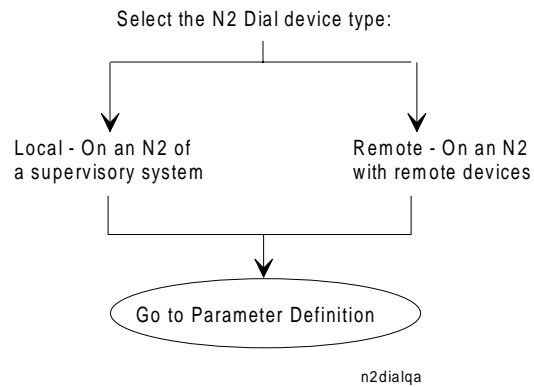
n2dialqa

Figure 3: N2 Dial Question and Answer Path

Local NDM

A configuration file for a local NDM is created by answering "Local - On an N2 of a supervisory system" when asked to "Select the N2 Dial device type."

A local NDM is connected directly to a Facility Management System (FMS) via the N2 Bus. The local NDM can be commanded to dial a remote NDM and can answer calls from a remote NDM.

The following NDM Configurator main screen appears for a local NDM configuration file. The values of the Communication State parameters will appear as asterisks unless the NDM Configurator is in Commissioning mode with the local NDM.

xN2LOCAL

Figure 4: Local N2 Dial Module Configuration

Remote NDM Choose the "Remote - On an N2 with remote devices" answer to create a remote NDM configuration file.

The remote NDM is located at the remote site and is not directly connected to a FMS system. The remote NDM scans the remote devices for Changes-of-State (COS) or alarms. When either is detected, the remote NDM dials in to a local NDM or to a passive device (e.g., a printer).

The following NDM Configurator main screen appears for a remote NDM configuration file.


```
┌─────────────────────────────────────────────────────────┐
│ ⊖    Johnson Controls - NDM Configurator             ▼  │
├─────────────────────────────────────────────────────────┤
│ File  Download  Upload  Commission  Action  Options  Help│
│                                                          │
│  ┌──────┐  ┌────────┐  ┌─────────┐  ┌────────┐ ┌─────────┐│
│  │ Q/A  │  │ INPUTS │  │ OUTPUTS │  │ PARAMS │ │SIDELOOP ││
│  └──────┘  └────────┘  └─────────┘  └────────┘ └─────────┘│
│                                                          │
│ ─Current Question/Answer Path─    ─Parameters──────────  │
│                                    Communication Parameters│
│  Select the N2 Dial device type:   Number of Retries   3   Times │
│   Remote - On an N2 with remote devices  Dial Delay    4   Minute │
│                                    Modem Connect Time  60  Second │
│                                    Dial In Control    Enable      │
│                                    Idle Timeout        5   Minute │
│                                                          │
│                                       Polling Paramters  │
│                                    Online Poll Count   20 │
│                                    Offline Poll Count   5 │
│                                                          │
│  ←                      →                                │
│ ─────────────────────────────────────────────────────   │
│     Date: 05/20/94         Time: 1:00:00 PM              │
│ ───────────────────────────────────────────────────     │
│  ┌──────────────────────────────────────────────────┐   │
│  │ Device Type:   N2 Dial Module - NDM               │   │
│  │ Application:   N2 Dial Applications - N2 Dial Module Configuration│
│  │  Filename:     C:\WGX9100\FILES\N2REMOTE.CFG      │   │
│  └──────────────────────────────────────────────────┘   │
└─────────────────────────────────────────────────────────┘
```
xn2remot

Figure 5: Remote N2 Dial

Modifying N2 Dial Parameters

The parameters can be modified as necessary after completing the Question/Answer Session. Parameter changes must be saved and downloaded to the NDM before they take effect.

Table 1: NDM Parameters

Parameter Name	Description	Default	Maximum	Usage
Number of Retries	Number of retries before a dial attempt ceases	3 Times	100	Both
Dial Delay	Number of minutes to delay before retrying a dial operation	4 Minutes	30	Both
Modem Connect Time	Time required for the modem to make a connection	60 Seconds	255	Both
Connection Status	0 = Idle, 1 = Dialing, 2 = Connected, 3 = Retry, 4 = Fail	0		Local
Dial Command	-1 = Remote Connection, 0 = Hang Up, 1-50 = Site Number	0	50	Local
Disconnect Delay	Number of minutes to wait before disconnecting a call	10 Minutes	255	Local
Disconnect Delay Control	Determines whether the Disconnect Delay is used. 0 = Use Disconnect Delay, 1 = 4 Hour Delay, 2 = Never Hang Up	0	2	Local
Remote NDM Address	N2 Address of the Remote NDM	NA	255	Local
Dial In Control	Enable = Alarm or COS initiates Dial-in from Remote NDM. Disable = Remote NDM will not Dial-in on Alarm or COS	0 Enable		Remote
Idle Timeout	After a Dial-in, the remote NDM will hang up if no N2 communication is detected during the idle timeout.	5 Minutes	255	Remote
Online Poll Count*	Number of online devices to poll before offline devices	20	255	Remote
Offline Poll Count*	Number of offline devices to poll before online devices	5	255	Remote
* These parameters are used on NDMs with D00 firmware only.				

Not all of the parameters shown in Table 1 are contained in a local NDM or in a remote NDM. The "Usage" column indicates whether a parameter is used in a local NDM, a remote NDM, or both.

The N2 Dial application does not use any inputs or outputs.

To modify a parameter:

1. Display the parameters in a list box.
2. Double-click on a parameter.
3. Modify the long name, short name, value, or units.
4. Press Enter or click on OK.

The NDM configuration file contains a modem setup string. The NDM uses the setup string to configure the modem to which it is directly connected.

The NDM sends the modem setup string to the modem after the NDM is turned on. The NDM will also send the modem setup string if the modem is replaced or loses power for a period of time. The modem must accept the string before the NDM can resume normal operation.

The modem setup string can be modified to meet modem requirements and phone line conditions. The appropriate modem setup string can be determined by reading the modem user's manual. The default modem setup string is for a Hayes® Smartmodem™ OPTIMA™ 96 or any Hayes-compatible 9600 baud modem. Refer to the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)* in the *Metasys Application Specific Controllers Technical Manual (FAN 636.3)* for a list of supported modems and the setup strings of other modems.

The default modem setup string for the NDM is:

    AT &F
    ATE0L0N0Q1&C1&D3&Q0&S0
    ATS0=1 S8=4 S11=50 S37=9

Table 2: Default Modem Setup String
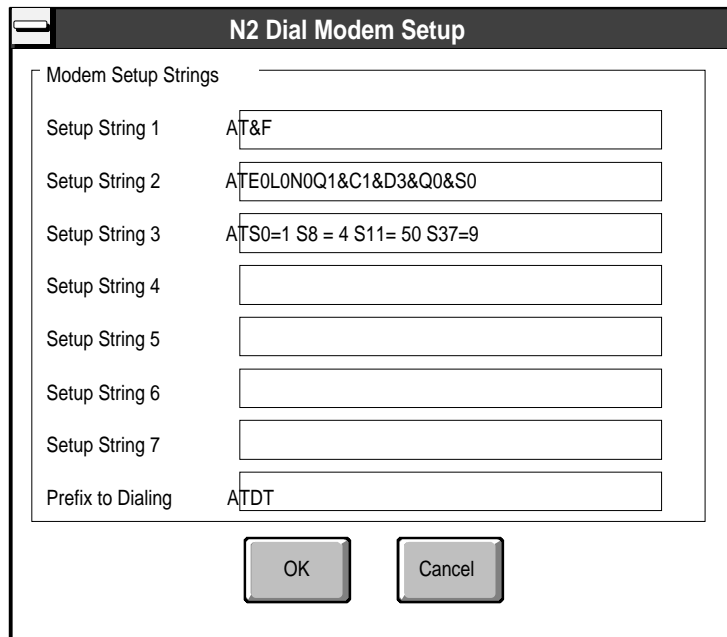
String	Description
AT	Prefix to get the modem's attention
&F	Recall factory settings as active configuration
E0	Disable character echo
L0	Low speaker volume
N0	Lock in at speed specified in S37
Q1	Disable result codes
&C1	DCD tracks the carrier
&D3	DTR signals a hard-reset of modem
&Q0	Communicate in asynchronous mode (local NDM only)
&S0	DSR is always active
S0 = 1	Answer after 1 ring
S8 = 4	Comma duration set at 4 seconds
S11= 50	Used to increase dialing speed (tone only)
S37 = 9	Connect only at 9600 baud
DT	Initiate a dial using the tone method
Note: In this table, "0" indicates the number zero.	

The &Q0 forces the local modem into asynchronous mode. The local and remote modem will communicate asynchronously, allowing faster modem turnaround and better N2 Bus performance. The FMS system will provide the required error correction.

Exclude the &Q0 parameter from the remote NDM. If this parameter is in the remote NDM's setup string and the remote NDM dials a printer's modem, there will be no error correction and false characters may print.

To modify the modem setup string:

1.   Open an N2 Dial configuration file. Open the Action menu and select Modem Setup Strings.

N2 Dial Modem Setup

Modem Setup Strings

Setup String 1	AT&F
Setup String 2	ATE0L0N0Q1&C1&D3&Q0&S0
Setup String 3	ATS0=1 S8 = 4 S11= 50 S37=9
Setup String 4	
Setup String 5	
Setup String 6	
Setup String 7	
Prefix to Dialing	ATDT

OK   Cancel

N2MODEM

Figure 6: Modem Setup String

2.   Tab to the appropriate field and enter a modem setup string. Refer to the modem user's manual.
3.   Press Enter or click on OK.

The NDM sends all of Setup Strings 1-7 to the modem when the modem is turned on. Those strings that are not used should be left blank. The NDM uses the Prefix to Dialing whenever a call is made.

**Phone
Numbers--
Local NDM**

A local NDM can store the phone numbers of up to 50 remote sites.
To enter phone numbers in the local NDM configuration file;
1. Obtain the phone numbers for all modems located at the remote NDMs.
2. Obtain the *exact* Remote Site Names for all remote NDMs. The Remote Site Name is stored in the remote NDM configuration file, under the Action/Phone Number Configuration menu.
3. Open the Action menu and select Phone Number Configuration. A dialog box similar to the following illustration will appear.

N2CONFIG
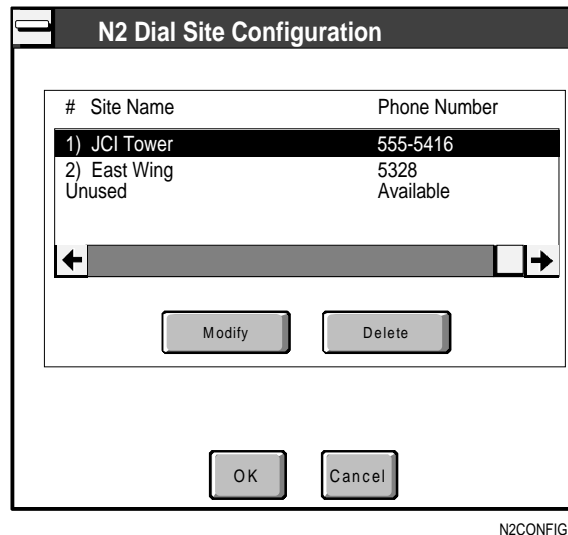
**Figure 7: Remote Site Phone Numbers
Stored in a Local NDM**

4. Select Unused to add a site name. To modify any existing site name which may already have been entered, select the site name. Click on Modify.

MRSDB
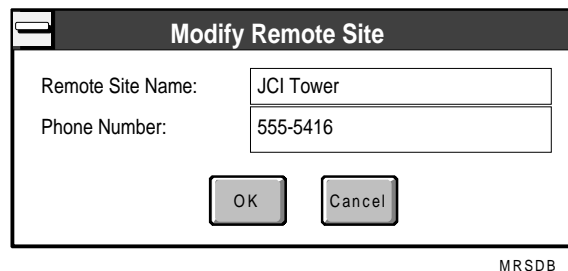
Figure 8: Modify Remote Site

5. Type in a remote site name using 31 characters or less.

Note: The Remote Site Name in the local NDM must *exactly* match (case insensitive) the Remote Site Name listed in the remote NDM, under the Action/Phone Number Configuration menu. Failure to do so will disable certain functions on the FMS system.

Remote Site Name in the local NDM ...

N2 Dial Site Configuration

#	Site Name	Phone Number
1)	JCI Tower	555-5416
2)	East Wing	5328
	Unused	Available

... must exactly match the Remote Site Name in the remote NDM

N2 Dial Site Configuration

Remote Site Name: JCI Tower

#	Site Name	Type	Phone Number
1)	Local NDM#1	Active	555-4708
2)	Main Printer	Passive	555-2183
3)	Tony's Printer	Passive	555-2345
	Unused		Available

XSITENAM

Figure 9: Matching Remote Site Names

6. Type in a remote site phone number of 31 characters maximum. The phone number will be used as part of the ATDT modem dial command.
7. Click on OK. Be sure to save the file and download it to the local NDM for the phone numbers to be stored in the NDM.

Phone Numbers, Remote Site ID, and N2 Addresses-- Remote NDM
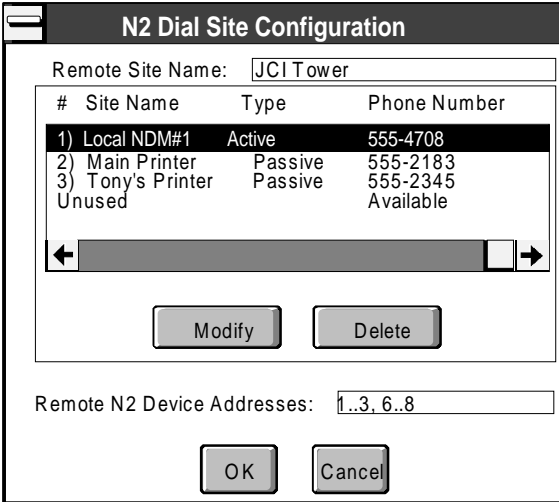
To specify phone numbers, remote site ID, and remote N2 addresses, select Phone Number Configuration from the Action menu.

The remote site ID can be up to 31 characters and must match the Remote Site Name defined in the local NDM (case insensitive).

A remote NDM contains the phone number of a local NDM and/or any printers to be called. The remote NDM can have up to three backup phone numbers, in case the first number is busy. The remote NDM will cycle through these numbers until it makes a connection, as described in the *Dialing* section of this technical bulletin.

The remote NDM configuration must also contain a complete and accurate list of all N2 addresses for all devices connected to the remote N2 Bus.

1. Obtain the phone numbers of the modem(s) at the local NDMs.
2. Open the Action menu, and select Phone Number Configuration.

```
╔══════════════════════════════════════════════╗
║ ▬        N2 Dial Site Configuration           ║
╟──────────────────────────────────────────────╢
║  Remote Site Name:     │JCI Tower          │  ║
║                                               ║
║   #  Site Name       Type        Phone Number ║
║  ┌──────────────────────────────────────────┐ ║
║  │1) Local NDM#1    Active        555-4708   │ ║
║  │2) Main Printer   Passive       555-2183   │ ║
║  │3) Tony's Printer Passive       555-2345   │ ║
║  │Unused                          Available  │ ║
║  │                                           │ ║
║  │ ◄─ ████████████████████      █ ─►         │ ║
║  └──────────────────────────────────────────┘ ║
║                                               ║
║          ┌──────────┐    ┌──────────┐         ║
║          │  Modify  │    │  Delete  │         ║
║          └──────────┘    └──────────┘         ║
║                                               ║
║  Remote N2 Device Addresses:   │1..3, 6..8 │  ║
║                                               ║
║          ┌──────┐    ┌────────┐               ║
║          │ OK   │    │ Cancel │               ║
║          └──────┘    └────────┘               ║
╚══════════════════════════════════════════════╝
```

X2CONFI

Figure 10: Local Site Phone Numbers Stored in a Remote NDM

3. Type in the Remote Site Name, using a maximum of 31 characters. The Remote Site Name is an identifier so the local NDM or passive device can identify which remote NDM initiated the dial-in. For instance, if the remote NDM dials out to a printer on a COS or alarm, it will print its Remote Site Name. The Remote Site Name is saved as part of the configuration file.

Note: For a given site, the Remote Site Name in the remote NDM must *exactly* match (case insensitive) the Site Name listed in the Action/Phone Number Configuration menu of the local NDM. Certain functions will not work from the FMS system if the site names do not match.

4. Select Unused to add a site name, or select a site name to modify an existing entry. Click Modify.

┌───┐
│ ▭   **Modify Local Site**   │
│   │
│ Local Site Name: │ Local NDM #1   │ │
│   │
│ Phone Number: │ 555-4708   │ │
│   │
│   ⦿ Active   ◯ Passive   │
│   │
│   ┌──────┐   ┌────────┐   │
│   │ O K │   │ Cancel │   │
│   └──────┘   └────────┘   │
└───┘

                                    MLSDB

Figure 11: Modify Local Site

5.   Type in a local site name (31 characters maximum).
6.   Type in a local site phone number (31 characters maximum). The phone number will be used as part of the ATDT modem dial command.
7.   Select Active or Passive.
     Active devices are devices that control communication on the N2 Bus. Examples are PC and Panel versions of Companion™, and Metasys®.
     Passive devices are non-N2 devices, such as printers. For passive devices, once the connection is made, the remote NDM sends an ASCII string containing its Remote Site Name and N2 address, the N2 address of the alarm device, and a list of online remote devices.
     Note: For passive printer applications (defined as applications where **all** primary and secondary phone numbers in the remote NDM configuration file are for passive devices), see the *Passive Printer Application* section of this technical bulletin for additional information.
8.   Click OK.
9.   Enter the Remote Site N2 addresses in the space provided at the bottom of the dialog box. This list identifies the active addresses on the remote N2 trunk. Use the standard syntax for specifying N2 addresses and verify the N2 addresses. For example,
     Individual N2 Addresses: 1,3,7
     Range of N2 Addresses: 1..3
     Combination of N2 Addresses: 1..3,6..8

IMPORTANT:	**This field must correctly list all N2 addresses for devices connected to the remote NDM.** This list must be updated whenever devices are added or removed from the remote N2 Bus.
	Do not include the address of the local NDM or remote NDM in the list.
	Also, do **not** include the N2 addresses of any XT-9100 modules connected to the XT Bus of a DX-9100 controller.

10. Be sure to save the file and download it to the remote NDM for the phone numbers to be stored in the NDM.

Deleting a Phone Number

To delete an N2 Dial phone number:
1. Open the Action menu and select Phone Number Configuration.
2. Highlight the site name and select Delete. Click on OK.

Saving the Configuration File

To save the N2 Dial configuration:
1. Click on File/Save As.
2. The device type defaults to N2 Dialer Module and the target device defaults to NDM. Click on OK or press Enter.
3. Enter a filename and click on OK or press Enter.

Downloading

Downloading via Direct Access

Direct Access means the PC with the Configuration Tool is accessing the local or remote NDM by directly connecting to the N2 Bus via a MM-CVT101 (IU-9100 in Europe). This standard download procedure is described below. Direct Access is described in the *Controller Access Technical Bulletin (LIT-6364013)* in this manual.

Make sure the local configuration is downloaded to the local NDM, and the remote configuration goes to the remote NDM.

You will need the NDM's N2 address to download to it. An NDM has an N2 address that is set with a hardware switch like other N2 devices. The NDM cannot be downloaded using a Zone Bus. There is no Zone Bus access to an NDM.

When downloading from a PC directly connected to a local or remote NDM (Direct Access), turn off the modem connected to the NDM before downloading. Be sure to turn on the modem after completing the procedure.

To download the configuration file to an NDM:

1. Determine the N2 address by reading the DIP switch on the NDM.
2. Connect the NDM's power supply.
3. Turn *off* the modem connected to the NDM before downloading.
4. Connect the NDM Configurator's computer to the NDM using an MM-CVT101-0 (or IU-9100 in Europe) RS-485 converter.
5. Start the NDM Configurator application.
6. Drop down the File menu and choose Open. Open the N2 Dial configuration file to be downloaded.

Note: Make sure the local configuration is downloaded to the local NDM, and the remote configuration goes to the remote NDM.

7. Open the Download menu and click on Current Configuration. Specify the communications port, bus type, and N2 Device Addresses.
   You may download the same configuration file to multiple NDMs by specifying their N2 address as described in the *Phone Numbers, Remote Site ID, and N2 Addresses--Remote NDM* section of this document.

8. Begin the download. The NDM Configurator shows the progress of the download, waits for the controller(s) to reset, and checks the controller(s) status.
An error message will display if the download failed due to communication errors. If this occurs, acknowledge the message, check the connections on the communications cable, and retry the download.

9. Turn on the modem after the download is complete.

Downloading a Remote NDM and Remote N2 Devices via Auxiliary Access

The Auxiliary Access feature allows the Configuration Tool to dial the remote NDM or connect via null modem cable and perform the full range of commissioning functions (e.g., downloading, commissioning). Auxiliary Access requires HVAC PRO for Windows 6.00 or GX-9100 4.0 (which includes the NDM Configurator).

For details, see the *Controller Access Technical Bulletin (LIT-6364013)* in this manual.

Downloading a Remote NDM and Remote N2 Devices via a Local NDM
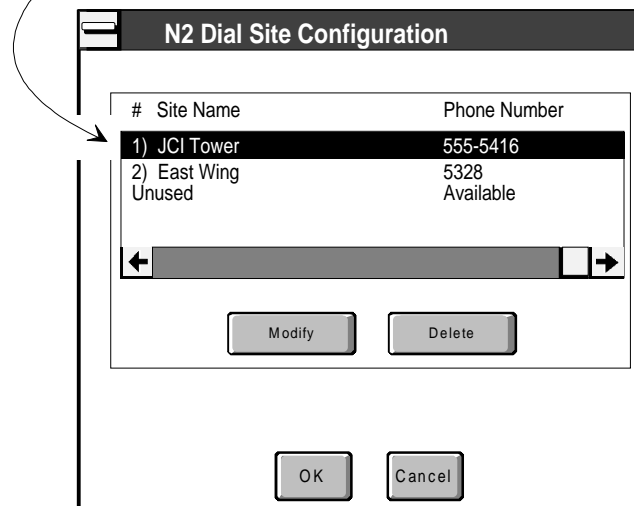
A remote NDM and remote N2 devices can be downloaded via a local NDM and the NDM Configurator using the following procedure:

1. Connect a computer running the NDM Configurator to a local NDM using a MM-CVT101-0 (IU-9100 for Europe).
2. Download the local NDM with the local N2 Dial configuration file. This configuration should contain the phone number of the remote site to be downloaded.
3. From the Commission menu, choose Configuration in Controller and provide the N2 address of the local NDM. Click OK. The NDM Configurator may also ask to read the configuration from the file; click Yes. The NDM Configurator should now be in Commissioning mode with the local NDM.
4. Open the Action menu and select Phone Number Configuration. Look at the first column on the far left and identify the number of the remote site to be dialed. The NDM Configurator assigns a site number from 1 to 50 in the order in which the sites were defined.

   For example, the following illustration shows JCI Tower as Site Number 1. The local NDM can be commanded to dial out to the JCI Tower by overriding the Dial Command to 1. The Dial Command is located in the Communication State section of the Parameters list box.

JCI Tower is Site Number 1, and the East Wing is Site Number 2.

To dial out to the JCI Tower, override the Dial Command to 1.
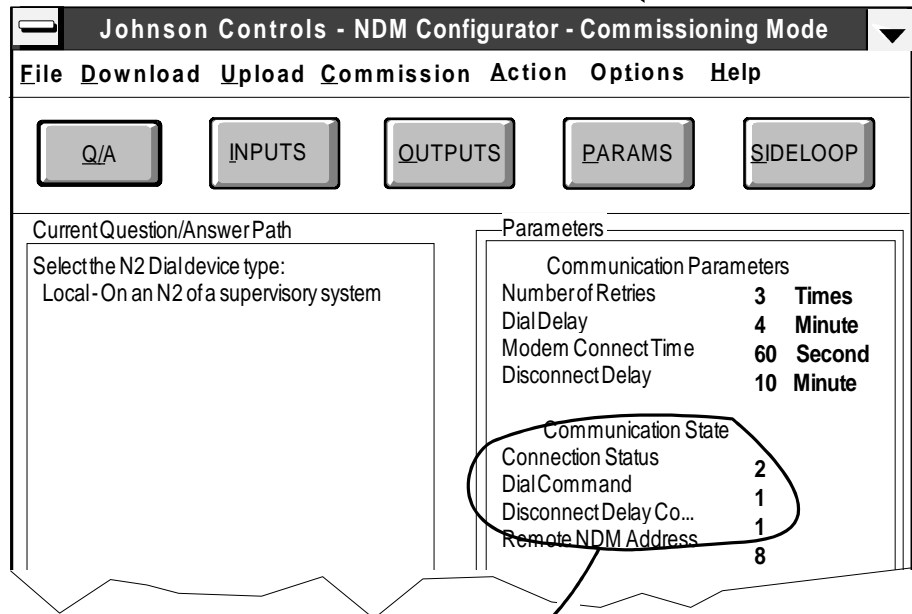To dial out to the East Wing, override the Dial Command to 2.

N2 Dial Site Configuration

# Site Name	Phone Number
1) JCI Tower	555-5416
2) East Wing	5328
Unused	Available

Modify   Delete

OK   Cancel

n2confgb

Figure 12: Identifying the Site Number

5. Close the Phone Number Configuration dialog box.
6. In the Communication State section of the Parameters list box, double-click Dial Command, enter the site number of the remote NDM, and click Override.

While in Commissioning Mode
with the local NDM ...

Johnson Controls - NDM Configurator - Commissioning Mode

File Download Upload Commission Action Options Help

| Q/A | INPUTS | OUTPUTS | PARAMS | SIDELOOP |

Current Question/Answer Path

Select the N2 Dial device type:
  Local - On an N2 of a supervisory system

Parameters

Communication Parameters
Number of Retries   **3   Times**
Dial Delay   **4   Minute**
Modem Connect Time   **60 Second**
Disconnect Delay   **10 Minute**

Communication State
Connection Status   **2**
Dial Command   **1**
Disconnect Delay Co...   **1**
Remote NDM Address   **8**

... set the Disconnect Delay Control to 1,
override the Dial Command to the appropriate Site Number,
and monitor the Connection Status.

xconnect

Figure 13: Communication State Parameters

Watch the Connection Status to verify connection (a value of 2 means connection is made). It should change in the following sequence:

0   The modem is idle.
1   The modem is dialing out to the remote NDM.
2   A connection has been made between the local NDM and the remote NDM.

If there are problems with the connection process, you may see the following connection status values:

3   NDM is currently retrying the number. The NDM will repeatedly try to redial the remote site according to the defined Number of Retries.
4   Failed connection--the NDM has used up all its retries without a successful connection. In this case, address the problem and start again with Step 4. See the *Troubleshooting Charts* section in the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)* in *FAN 636.3*.
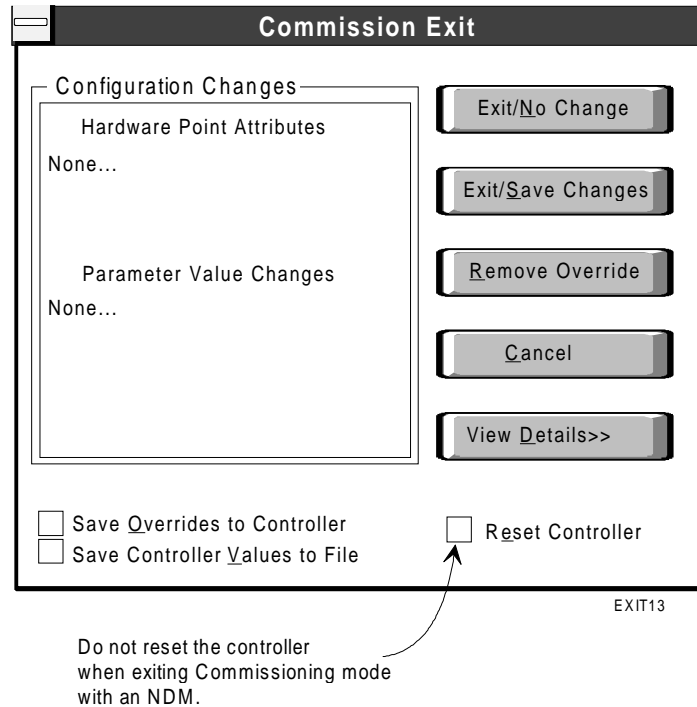
```
┌─────────────────────────────────────────────────────────┐
│ ▭  ▐                    Commission Exit                    │
├─────────────────────────────────────────────────────────┤
│ ┌─ Configuration Changes ─────────┐   ┌─────────────────┐ │
│ │                                 │   │  Exit/No Change │ │
│ │    Hardware Point Attributes    │   └─────────────────┘ │
│ │ None...                         │                       │
│ │                                 │   ┌─────────────────┐ │
│ │                                 │   │ Exit/Save Changes│ │
│ │                                 │   └─────────────────┘ │
│ │    Parameter Value Changes      │                       │
│ │ None...                         │   ┌─────────────────┐ │
│ │                                 │   │ Remove Override │ │
│ │                                 │   └─────────────────┘ │
│ │                                 │                       │
│ │                                 │   ┌─────────────────┐ │
│ │                                 │   │     Cancel      │ │
│ │                                 │   └─────────────────┘ │
│ │                                 │                       │
│ └─────────────────────────────────┘   ┌─────────────────┐ │
│                                        │ View Details>>  │ │
│                                        └─────────────────┘ │
│                                                           │
│   ☐ Save Overrides to Controller       ☐ Reset Controller │
│   ☐ Save Controller Values to File                        │
│                                              EXIT13        │
└─────────────────────────────────────────────────────────┘
```

Do not reset the controller
when exiting Commissioning mode
with an NDM.

Figure 14: Exit Commissioning without Resetting the Controller

7. Once Connection Status is 2, override the Disconnect Delay Control to a value of 1.
    This sets the automatic disconnect delay timer in the local NDM to four hours. The
    local NDM will not hang up the line (for four hours) while you are downloading or
    commissioning the remote devices.
    Note: Overriding the Disconnect Delay Control to 2 disables the automatic
            disconnect delay feature. In this case, the phone connection will be
            maintained indefinitely until the Dial Command point is manually
            overridden to hang up the call. Care should be used when disabling the
            automatic disconnect function, especially on long distance phone calls, as
            there is a potential for large phone bills if the user does not manually hang
            up the connection.
8. Exit Commissioning mode with the local NDM after the connection has been made.
    Do not reset the controller upon exiting commissioning or the modem will hang up.
    Retain the overrides to non-configurable parameters.
9. If you are unsure of which remote N2 addresses are connected to the remote NDM,
    upload the remote NDM's configuration file. Then open the Action menu and select
    the Phone Number Configuration option. Scan the list of Remote N2 Device
    Addresses.
10. Download or commission the desired controllers.

11. When finished downloading or commissioning the remote devices, enter Commissioning mode with the local NDM again. Double-click Dial Command and override the value to 0. This will issue a hang-up command to the local NDM. The remote NDM will also hang up once the remote modem loses the Carrier Detect.
12. Exit Commissioning mode, retaining overrides to non-configurable parameters.

Downloading with Metasys

Metasys provides the same download functions to the NDMs and the devices on the remote N2 Bus as it does to any device on a local N2 Bus. Once the NDM hardware has been mapped into Metasys and the devices come online, they can be downloaded. In addition, the NDM Configurator can be used in conjunction with Metasys to perform downloads. This section describes the following methods:
- downloading the local NDM using the NDM Configurator with Metasys running in the background
- downloading the remote NDM or remote N2 devices using the NDM Configurator with Metasys running in the background
- downloading the local or remote NDM, or remote N2 devices, using Metasys device focus windows (without the NDM Configurator)

Downloading the Local NDM

To download the local NDM:
1. From Metasys, exit to Program Manager while keeping Metasys running in the background. This will allow the necessary interaction between the two programs.
2. In the NDM Configurator, open the local NDM configuration file to download.
3. Select Current Configuration from the Download menu. This brings up a window displaying the NCs (Network Control Modules--
   e.g., NCM300s and NCM200s) on the network.
4. Select an NC. This displays a list of controllers connected to that NC.
5. Highlight the local NDM to download, and click OK to start the download.

After the download is complete, the NDM resets, which causes the device to go offline. After the reset is complete, it will report back online and that the download sequence has been completed.

Downloading the Remote NDM and Remote N2 Devices

To download the remote NDM or remote devices connected to it:
1.   Select N2 Dial from the Network Map Setup menu. This displays the N2 Dial Summary.
2.   Highlight the remote site.
3.   Select Dial from the Action menu and wait till connection is established. After the communication link is established between the local and remote NDM, and the remote devices come online, the devices can be downloaded.
4.   Exit to Program Manager while keeping Metasys running.
5.   In the NDM Configurator, open the configuration file to download.
6.   Select Current Configuration from the Download menu. This brings up a window displaying the NCs on the network.
7.   Select an NC. This displays a list of controllers connected to that NC.
8.   Highlight the controller to download, and click OK.

   Note: After the remote NDM is downloaded, it hangs up, resets, and then dials back to verify a successful download.
   If you are going to download other remote devices after downloading the NDM itself, start again with Step 1 to avoid a disconnection.

9.   After the download is complete, return to the Metasys N2 Dial Summary to disconnect.

Downloading NDMs and Remote Devices from Metasys Device Focus Window

It is also possible to download the local and remote NDMs and their associated remote N2 devices through Metasys without the NDM Configurator. First, dial out to the remote facility. Once connection is established, use the device's focus window.
1.   Select N2 Dial from the Network Map Setup menu. This displays the N2 Dial Summary.
2.   Highlight the remote site.
3.   Select Dial from the Action menu.
4.   After the communication link is established between the local and remote NDM, and the remote devices come online, the devices can be downloaded. To do so, display the remote device focus window, and select Download Controller from the Action menu.

   Note: After the remote NDM is downloaded, it hangs up, resets, and then dials back to verify a successful download.

Dialing

Dial-in

Dial-in is the action taken by the remote NDM to establish a connection with the local NDM and the FMS system. Dial-in is usually initiated by a Change-of-State (COS), alarm, or offline condition on the remote N2 Bus.

The Dial In Control parameter on the remote NDM must be set to Enable for the remote NDM to dial in upon alarm or offline conditions.

All devices on the remote N2 Bus will report their online status when a remote NDM dials in on alarm.

The local NDM configures the local modem to answer after one ring. The remote N2 devices appear as online to the FMS system when communication is established. Alarms that occurred at the remote site will be logged by the FMS system.

Note: For additional information on passive printer applications (defined as applications where **all** primary and secondary phone numbers in the remote NDM configuration file are for passive devices), see the *Passive Printer Application* section in this technical bulletin.

Dial-in from a Remote NDM

The remote NDM is configured with one primary and three optional secondary phone numbers. The remote NDM dials in when an alarm, COS, or offline condition is detected *and* the Dial In Control is enabled.

The remote NDM begins by dialing the primary number listed in the Action/Phone Number Configuration menu of the NDM's configuration file. If the connection is not accomplished before the Modem Connect Time expires, the NDM hangs up, waits a period of the Dial Delay, and begins dialing the primary number a second time. This process will continue until a connection is made or the number has tried four times without success.

If the remote NDM fails to connect on the fourth try, it checks to see if additional phone numbers are defined. If additional phone numbers are defined, the remote NDM will dial the next number in the same manner as described above for the primary number.

This process will continue until all of the defined numbers have been attempted. If no connection is made during this phase, the remote NDM starts the entire cycle again. This process is repeated until the connection is completed or the NDM has reached the number of retries specified in the configuration file's Number of Retries parameter.

Once the connection is established, the following occurs:

- If the phone number is configured as Passive, the remote NDM sends its 31-character Remote Site ID and N2 address, the N2 address of the remote device with the alarm, and a list of online devices. Then it disconnects. This allows the receiver of the call to identify the remote site that called in. The passive device is a printer. See the *Passive Printer Application* section in this technical bulletin for additional information on passive applications.
- If the phone number is configured as Active, the Remote Site Name will not be sent and N2 Bus communications is expected. If N2 communication is not detected for a period of Idle Timeout, the remote NDM will transmit the Remote Site Name and an error message, hang up, and continue the dialing sequence.

Take precautions to prevent excessive phone bills. Several ways to minimize phone bills are:

1. Never disable the Disconnect Delay parameter.
2. Make the Disconnect Delay parameter as small as possible.
3. Disable dial-in on known trouble sites.

Disabling Dial-in

The dial-in feature of a remote NDM can be disabled by setting the Dial In Control parameter to Disable. This will prevent the remote NDM from dialing in to report alarms or offline/online transitions in the remote N2 devices connected to it. (You may want to disable dial-in to eliminate nuisance calls from a known problem site.)

If Dial In Control is not enabled, the remote NDM will dial-in only when it is reset by download, N2 command, or after a power-fail.

Note: Some N2 devices that can reside on a remote N2 Bus should not be used to initiate dial-in. In fact, Dial In Control **must** be disabled if these types of devices are used on a remote N2 Bus. These devices are listed in the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)*, in *Appendix A: Supported Devices and Firmware Revisions* under the *Special Cases* column.

Dial-out

Dial-out is the action taken by the local NDM to establish a connection with a remote site, usually due to a command from the FMS system or from the NDM Configurator. Dial-out can be used to monitor points on a remote N2 Bus or to change parameters in a remote NDM. A dial-out from the NDM Configurator can also be used to clear alarms or offline/online transitions for passive applications. See the *Passive Printer Application* section, later in this document, for additional information on passive applications.

The local NDM can be issued a dial command from its FMS system. See *Appendix B: Using Companion with an NDM* in the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)*, for Companion procedures. See *Appendix C: Using Metasys CS Objects with an NDM* in the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)*, for CS Object information. See *Using Dial-Up with the NDM* in the *Operator Workstation User's Manual (FAN 634)*, for information on dialing out from an OWS.

Establishing Connection Between Local and Remote NDMs

A dial command can be issued from the NDM Configurator, using the following procedures:

1. Connect a computer running the NDM Configurator to a local NDM using an MM-CVT101-0 (or IU-9100 in Europe) RS-485 converter.
2. From the Commission menu, choose Configuration in Controller and provide the N2 address of the local NDM. Click on OK. The NDM Configurator may also ask to read the configuration from the file, click on Yes. The NDM Configurator should now be in Commissioning mode with the local NDM.
3. Open the Action menu and select Phone Number Configuration. Look at the first column on the far left and identify the number of the remote site to be dialed. The NDM Configurator assigns a site number from 1 to 50 in the order in which the sites were defined.

   For example, the following illustration shows JCI Tower as Site Number 1. The local NDM can be commanded to dial out to the JCI Tower by overriding the Dial Command to 1. The Dial Command is located in the Communication State section of the Parameters list box.
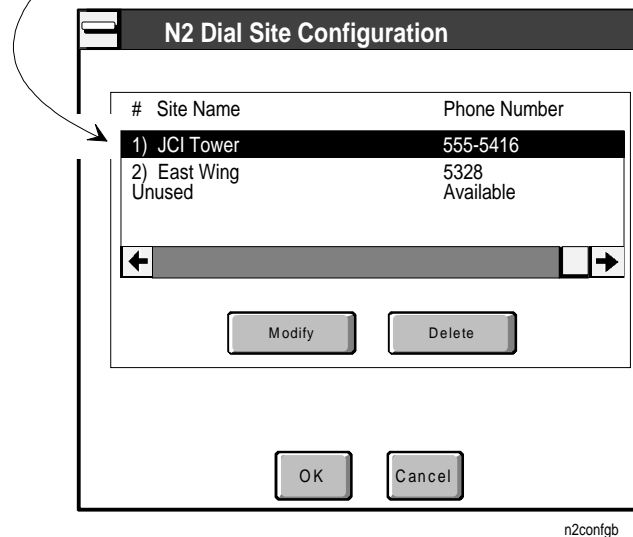

Figure 15: Identifying the Site Number

4. Close the Phone Number Configuration dialog box.
5. In the Communication State section of the Parameters list box, double-click on the Dial Command and enter the site number of the remote NDM. The site number was determined in Step 3. Click on Override.
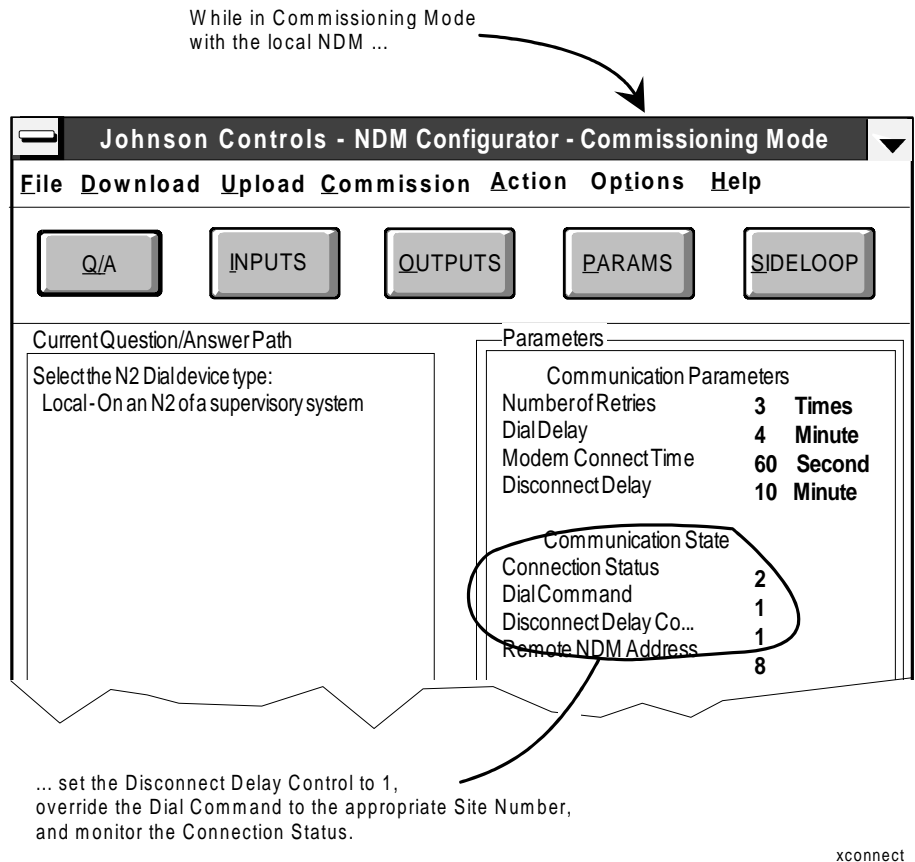
While in Commissioning Mode
with the local NDM ...

```
 ┌──────────────────────────────────────────────────────────────────────┐
 │ ▭   Johnson Controls - NDM Configurator - Commissioning Mode    ▼     │
 ├──────────────────────────────────────────────────────────────────────┤
 │ File  Download  Upload  Commission  Action  Options  Help            │
 ├──────────────────────────────────────────────────────────────────────┤
 │   ┌──────┐   ┌────────┐   ┌─────────┐   ┌─────────┐   ┌──────────┐   │
 │   │ Q/A  │   │ INPUTS │   │ OUTPUTS │   │ PARAMS  │   │ SIDELOOP │   │
 │   └──────┘   └────────┘   └─────────┘   └─────────┘   └──────────┘   │
 │                                                                      │
 │  Current Question/Answer Path        ┌─Parameters─────────────────┐  │
 │  ┌────────────────────────────────┐  │    Communication Parameters │  │
 │  │ Select the N2 Dial device type:│  │  Number of Retries    3  Times │
 │  │  Local - On an N2 of a         │  │  Dial Delay           4  Minute │
 │  │  supervisory system            │  │  Modem Connect Time  60  Second │
 │  │                                │  │  Disconnect Delay    10  Minute │
 │  │                                │  │                             │  │
 │  │                                │  │    Communication State      │  │
 │  │                                │  │  Connection Status     2    │  │
 │  │                                │  │  Dial Command          1    │  │
 │  │                                │  │  Disconnect Delay Co.. 1    │  │
 │  │                                │  │  Remote NDM Address    8    │  │
 └──────────────────────────────────────────────────────────────────────┘
```

... set the Disconnect Delay Control to 1,
override the Dial Command to the appropriate Site Number,
and monitor the Connection Status.

xconnect

Figure 16: Communication State Parameters

6. Watch the Connection Status. It should change in the following sequence.
    - 0   Initially the Connection Status should be 0, meaning the modem is idle.
    - 1   A Connection Status of 1 indicates the modem is dialing out to the remote NDM.
    - 2   The Connection Status becomes 2 when a connection has been made between the local NDM and the remote NDM.

7. The remote NDM initializes the modem to answer after one ring. The remote NDM's modem is switched on to the N2 Bus when an incoming call is detected. The remote NDM no longer polls the remote N2 Bus. The NDM Configurator will take control of the remote N2 Bus communications.
    The remote N2 Bus is now continuous with the local N2 Bus. You can perform any procedures on the entire N2 Bus, as normal.

8. Once Connection Status is 2, override the Disconnect Delay Control to a value of 1. This sets the automatic disconnect delay timer in the local NDM to four hours. The local NDM will not hang up the line while you are downloading or commissioning the remote devices.

    Note: Overriding the Disconnect Delay Control to 2 disables the automatic disconnect delay feature. In this case, the phone connection will be maintained indefinitely until the Dial Command point is manually overridden to hang up the call. Care should be used when disabling the automatic disconnect function, especially on long distance phone calls, as there is a potential for large phone bills if the user does not manually hang up the connection.

9. Exit Commissioning mode with the local NDM after the connection has been made. *Do not* reset the controller upon exiting commissioning or the modem will hang up. Retain the overrides to non-configurable parameters.

10. When finished downloading or commissioning the remote devices, enter Commissioning mode with the local NDM again. Double-click Dial Command and override the value to 0. This will issue a hang-up command to the local NDM. The remote NDM will also hang up once the remote modem loses the Carrier Detect.

11. Exit Commissioning mode, retaining overrides to non-configurable parameters.

Dial Command

Each remote site telephone number is associated with a value. Overriding the Dial Command parameter in a local NDM to a value from 1 to 50 will cause a dial-out to the remote site associated with the number.

If the value of the Dial Command is overridden while connected to a remote site, the NDM will hang up with the current site and dial-out to the new site.

If a remote site dials-in to the local NDM, a value of minus one (-1) is displayed for the Dial Command. Setting the Dial Command to 0 will cause a disconnect.

If the NDM is given a Dial Command to dial a telephone number which is undefined, or if the NDM cannot make a connection within the allotted retries, the Dial Command will become 0 and the Connection Status will equal 4, for a failed connection.

Number of Retries

When the local NDM commands the modem to dial a number, the modem on the other end of the phone line may not answer. The local NDM will first wait a length of time equal to the Modem Connect Time. Then, if a connection has not been made, the modem will hang up and wait the Dial Delay time.
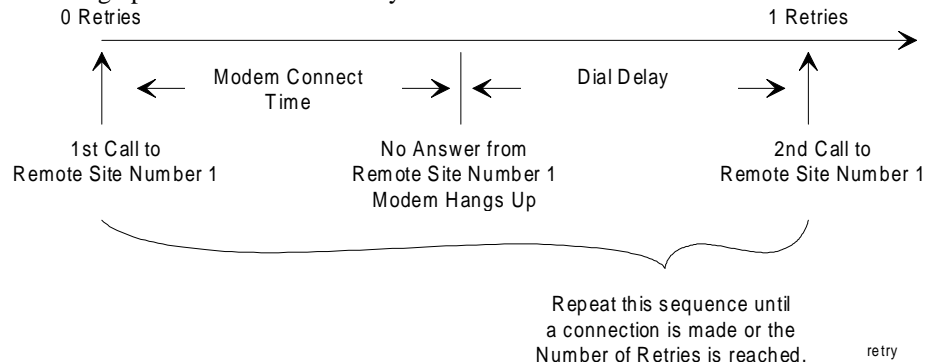

Figure 17: The Local NDM Retries a Dial

The retry counter in the local NDM is now incremented to one. The modem redials the original phone number and waits for the Modem Connect Time to expire.
If the remote modem still does not answer, the retry counter increments by one again. The modem will continue retrying until a connection is made or the Number of Retries parameter is reached.
A value of 0 for Number of Retries tells the local NDM to never stop redialing.

Disconnect Delay

A local NDM can be configured to disconnect with a remote NDM after a specified length of time. The two parameters that affect the disconnection of the call are the Disconnect Delay and the Disconnect Delay Control.

The Disconnect Delay defines the amount of time that will expire before the local NDM will automatically hang up a connection.

The Disconnect Delay Control allows the user to select whether to:

- use the default time defined in the Disconnect Delay,
- set the disconnect for four hours, or
- never hang up

The local NDM must contain a Disconnect Delay long enough to allow all remote N2 devices to come online and report alarms. If any alarms go unreported before the trunk disconnects, the remote NDM will detect those alarms and dial-in again.

To use a Disconnect Delay, set the Disconnect Delay Control parameter to 0 and enter a value between 0 and 255 minutes for the Disconnect Delay parameter. Ten minutes is the default Disconnect Delay.

If you want the local NDM to hang up four hours after connecting with the remote NDM, set the Disconnect Delay Control to 1.

If you *do not* want to use any Disconnect Delay, set the Disconnect Delay Control to 2. In this case, the automatic disconnect feature is disabled and you *must* disconnect by issuing a Dial Command of 0 to the local NDM.

The Disconnect Delay Control is automatically reset to 0 whenever a connection is made.

Monitoring the Modem Lights

The modem lights and the Communication State parameters are two means of monitoring the connection status.

The NDM configuration requires an external modem, and most external modems have indicator lights, so these lights are a good way to determine the status of the NDM connection. Table 3 contains a description of typical modem front panel indicator lights.

Table 3: Modem Indicator Lights

Light	Description
HS	High Speed
AA	Auto Answer, on when the modem is set to answer incoming calls
CD	Carrier Detect, the modem is receiving a valid data carrier signal from the sending modem
OH	Off Hook
RD	Receive Data
SD	Send Data
TR	Terminal Ready
MR	Modem Ready

The following figures indicate which lights should be on for each phase of NDM operation using a Hayes Smartmodem OPTIMA 96.

MODEM.DRW
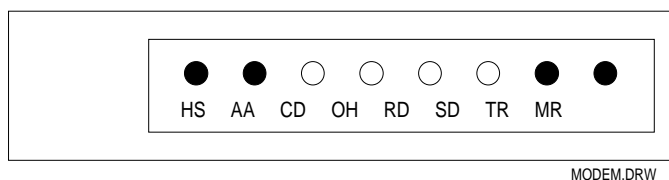
Figure 18: Modem is On, No Dial Initiated

MODEM.DRW
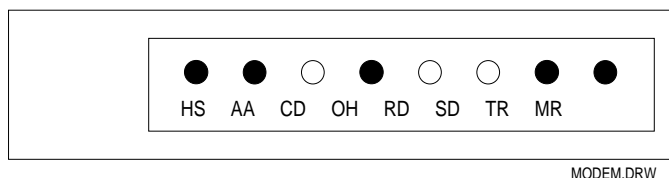
Figure 19: Modem is Initiating a Dial

MODEM.DRW
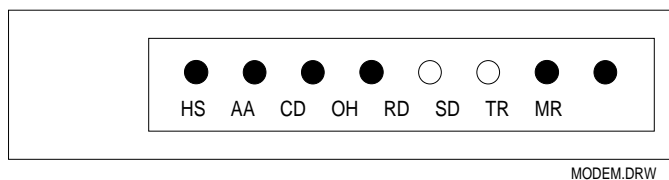
Figure 20: Modem Connection is Made

MODEM.DRW
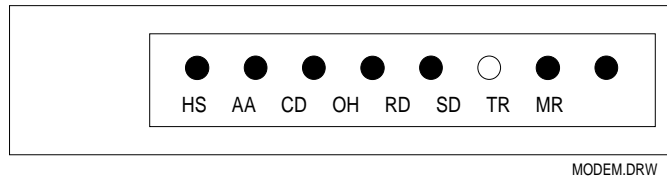
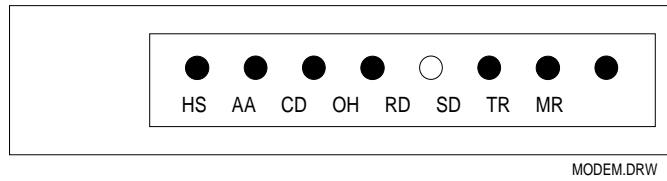**Figure 21: Uploading from a Remote NDM**

MODEM.DRW

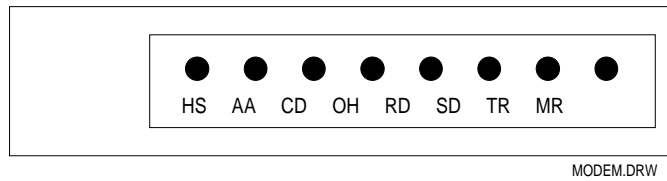**Figure 22: Downloading to a Remote NDM**

MODEM.DRW

Figure 23: Controller Information for Remote N2 Devices

Communication State Parameters

The Communication State parameters are another way to monitor NDM communications. The values of the Communication State parameters will appear as asterisks unless you are in Commissioning mode with a local NDM.

Table 4 indicates the Communication State parameters for each phase of NDM operation.

Table 4: Communication State Parameters

NDM Activity	Connection Status	Dial Command
Modem is On, No Dial Initiated	0	0
Modem is Initiating a Dial	1	1-50*
Modem Connection is Made	2	1-50*
Phone is Busy, No Connection	3	1-50*
No Connection, Retries Exhausted	4	
Downloading to a Remote NDM	2	1-50*
Uploading from a Remote NDM	2	1-50*
Obtaining Remote Controller Information	2	1-50*
Remote NDM Dials in to a Local NDM	-1	NA

* Dial Command should equal the site number of the site being dialed, from 1-50, as shown in the Phone Number Configuration information from the Action menu.

Online and Offline Polling

A remote NDM controls the communications on the remote N2 Bus when the modem is inactive. The remote NDM polls all N2 devices. The alarm and COS information is preserved for the FMS system until the telephone connection is established. In an active application, only the FMS system can "clear" the alarm condition or COS. In a passive application, a Configuration Tool (e.g., the NDM Configurator) must clear the alarm condition.

NDM Firmware Revision D01 and Later

The remote NDM polls only the device addresses defined in its configuration. These are the addresses listed in the Remote N2 Device Address field in the N2 Dial Site Configuration dialog box. The NDM builds an online/offline table containing these listed device addresses. The NDM polls the listed device addresses in consecutive order.

NDM Firmware Revision D00

The Online Poll Count and Offline Poll Count parameters determine how the remote N2 devices are polled.

The default values for Online and Offline Poll Count are 20 and 5, respectively. The remote NDM will poll 20 devices it has determined to be online, then poll 5 offline devices, then repeat the process.

The poll count defaults should be adequate for most remote sites. Increasing the Online Poll Count may reduce the time required for the remote NDM to detect an alarm in a remote N2 device. Increasing the Offline Poll Count may improve the rate at which remote N2 devices come online.

Offline Remote N2 Devices

N2 devices are normally scanned continuously from the FMS system. The FMS system marks a device as offline if it fails to respond to a poll.

The remote N2 devices will appear as offline to the FMS system when there is no phone line connection between the local NDM and the remote NDM. This offline condition *is not* always an alarm condition. A problem exists only if the remote devices are offline while a phone connection is established with the remote NDM.

From the remote NDM's perspective, the remote N2 devices do not lose N2 communications when there is no phone connection. The remote NDM continues to poll the devices on the remote N2 Bus. If the remote NDM does see a change in the online/offline status of a device, it initiates a dial-in to the local NDM. Remote NDM activity can be tracked by a passive printer. If the remote NDM is configured to dial in to a printer on alarm, examine the printer output for which devices reported alarms.

Note: For additional information on passive printer applications (defined as applications where **all** primary and secondary phone numbers in the remote NDM configuration file are for passive devices), see the *Passive Printer Application* section in this technical bulletin.

The Disconnect Delay parameter in the local NDM must be long enough to allow all remote N2 devices to come online and report alarms. If any alarms go unreported before the remote N2 Bus disconnects, the remote NDM will detect those alarms and dial in again.

Use caution when implementing standard features on remote N2 devices. Some standard features, such as scheduling and point history, cannot function properly when a device is offline. Therefore, these features are not recommended for use with a remote NDM.

The N2 communication status is used by a controller to enable standalone operation, that is, to change the occupancy point at a specified time.

Note: Standalone operation of remote N2 devices is disabled by the remote NDM. Offline scheduling of remote N2 devices should *never* be activated.

Idle Timeout

The remote NDM contains an Idle Timeout parameter. It is used when the remote NDM dials in to an Active device. The remote NDM will begin a timer for the Idle Timeout parameter when it connects with the local NDM. The remote NDM will watch for N2 traffic. If no N2 traffic occurs for a length of time equal to the Idle Timeout parameter, three things will occur in succession:

1. The remote NDM will send a remote site ID and an error message.
2. The remote NDM will hang up.
3. The remote NDM will dial the next phone number from the Action/Phone Number Configuration list.

Disconnect Control

The local NDM is responsible for disconnect control, regardless of which NDM initiated the call. The connection will be maintained until one of the three things occur:

● The Dial Command is overridden to a value of zero. This causes the modem to disconnect.

● A different number is entered for the Dial Command. This causes the modem to disconnect and dial the new number.

● The Disconnect Delay Control is set to 0 and the Disconnect Delay Timer expires and causes the disconnection. The disconnect timer is kept in the local NDM. The timer is started when the connection is established. The local NDM monitors the disconnect timer. The local NDM will break the connection when the timer expires. The Disconnect Delay Timer may be disabled by setting the Disconnect Delay Control equal to 2. Set the Disconnect Delay Control to 2 if you *do not* want to use any Disconnect Delay. If the automatic disconnect feature is disabled, you *must* disconnect by issuing a Dial Command of 0 to the local NDM.

Notes: The potential exists for excessive phone bills when the Disconnect Delay Control is overridden to 2.

The local NDM must contain a Disconnect Delay at least long enough to allow all remote N2 devices to come online and report alarms. If any alarms go unreported before the trunk disconnects, the remote NDM will detect those alarms and dial in again.

Passive Printer Application

A passive printer application is comprised of a remote NDM, remote devices, and printers used for alarm notification. The passive printer application does not have a local NDM connected to an FMS headend. Instead, the remote NDM dials only passive printers to report alarms (changes of state) and offline/online transitions. To set up a passive printer application, **all** primary and secondary phone numbers in a remote NDM configuration must be defined as passive devices (printers).

In a passive printer application, reported alarms and offline/online transitions must be cleared using a Configuration Tool (e.g., the NDM Configurator). The NDM will **not** dial in to report subsequent alarms and offline/online transitions for a device until the original alarm or offline/online transition is cleared.

Note: For information on setting up modems for this application, see *Passive Printer Modem Setup* in the *N2 Dialer Module (NDM) Technical Bulletin (LIT-6363065)* of the *Metasys Application Specific Controller Technical Manual (FAN 636.3)*.

The passive printer application works as follows:

- The NDM firmware must be D01 or later.
- All primary and secondary phone numbers in the remote NDM configuration must be defined as passive.
- For Changes of State (COS) to be reported for points, alarms must be enabled and alarm limits (analog) or alarm conditions (binary) must be defined for the points in a Configuration Tool such as GX-9100 for Windows. If the point is defined for alarms, and the point transitions into alarm or back to normal, the NDM will initiate the dial in sequence and report the COS. For analog points, if warning limits are defined in addition to alarm limits, the NDM will also dial in to report value transitions into warning and back to normal. Conversely, if there are no alarm limits or alarm conditions defined, value or state changes will not cause the NDM to dial in. Note that if only warning limits are defined and not alarm limits, the NDM will not dial in to report values that exceed the warning limits.
- In a passive printer application, when attempting connection, the remote NDM uses its configured communication parameters (e.g., dial in control, number of retries, dial delay, and modem connect time) just as it would in a standard application.

- When the remote NDM comes online (e.g., after reset or power up), it dials the passive printer to report its online status and the online status of connected N2 devices. When connection is established, the printer prints the following information and the NDM disconnects:
    - remote site ID and N2 address of remote NDM initiating connection
    - list of N2 addresses of all online devices connected to the NDM

  If a remote N2 device has an alarm, the NDM will immediately dial in again to report the alarm condition. At this point, a Configuration Tool must be used to clear the alarm to allow additional reports to be sent.

- In the case of an alarm or offline/online transition in a N2 device, the remote NDM dials in to the local passive printer.

  When connection is established, the printer prints the following information and the NDM disconnects:
    - remote site ID and N2 address of remote NDM initiating connection
    - Alarm Device: N2 address of offline device or device with alarm
    - list of N2 addresses of all **online** devices connected to the NDM

  Example:
  ```
  Remote West
  NDM 3 - ALARM DEVICE 15
  Devices online: 11, 12, 13, 14, 16
  ```

  If the device listed as the alarm device is **not** in the list of online devices (as shown in the above example), the NDM is reporting the offline transition of this device. If the device listed as the alarm device **is** in the list of online devices, the NDM is reporting an alarm or online transition for this device.

- If the printout does not include a line indicating an alarm device, this means the NDM has reset and is reporting its online status, not an alarm or offline/online transition in one if its connected devices.

  Example:
  ```
  Remote West
  NDM 3 - Devices online: 11, 12, 13, 14, 15, 16
  ```

- If the dial-in was initiated to report an offline device, the remote NDM will initiate another dial-in when that device comes online.

  In the printout for this second dial-in, the device will appear as the alarm device and in the list of online devices.

  This is the **only** case in which the remote NDM will dial in a second time for a device without first having the alarm or offline/online transition cleared. For subsequent alarms or offline/online transitions to be reported for this device, the initial offline transition must be cleared.

- Once the remote NDM initiates a dial-in to report an alarm or offline/online transition for a device, it **cannot** report another condition for that device until the first alarm or offline/online transition is cleared (except in the case of the second dial-in to report the device coming back online, as described above).

- To clear the alarm or offline/online transition, use a Configuration Tool (e.g., the NDM Configurator) to dial the remote NDM and initiate communication with the remote device. Once any sort of dial communication (e.g., commissioning, downloading, or performing controller information) is established between the Configuration Tool and the device, the alarm or offline/online transition is automatically cleared by the remote NDM, after the NDM disconnects. If an alarm occurs while the Configuration Tool is communicating with the remote NDM, it will also be cleared after the remote NDM disconnects.

  Using the Configuration Tool, you can clear alarms and offline/online transitions for one device at a time or for all devices connected to the remote NDM.

- If the Configuration Tool is connected to the NDM to clear an alarm COS, but the point status cannot be returned to normal before disconnection, the NDM will dial in again to report when the point returns to normal. This report will then have to be cleared with the Configuration Tool. In the printout, the device with the normal COS will be indicated as the ALARM DEVICE.

- If all connections fail (e.g., exhausted number of retries), and the alarm or offline/online transition was never reported or printed at any of the defined passive devices, the condition must still be cleared for subsequent alarms or offline/online transitions to be reported.

Clearing Alarms and Offline/Online Transitions

To clear an alarm or offline/online transition, use a Configuration Tool, such as the NDM Configurator, to dial the remote NDM and initiate communication with the remote device. Once any sort of dial communication (e.g., commissioning, downloading, or performing controller information) is established between the Configuration Tool and the remote device, the alarm or offline/online transition is automatically cleared by the remote NDM (once the remote NDM disconnects).

To clear an alarm or offline/online transition for one device or multiple devices using a Configuration Tool:

1. Dial the remote NDM as described in the *Using Auxiliary Access* section of the *Controller Access Technical Bulletin (LIT-6364013)* in this manual.

    Once connection is established, all controller Configuration Tool functions are available (e.g., commissioning, downloading).

2. Once the connection is established, we recommend that you commission the specific device with the alarm to investigate the problem and determine whether it is necessary to send service personnel to the site. In this case, follow the usual commissioning procedures (i.e., selecting Configuration in Controller from the Commissioning menu and specifying the N2 address of the device to commission). Once the Configuration Tool communicates with the device and disconnects from the NDM, the alarm or offline/online transition is automatically cleared.

    Or, if you know the cause of the alarm (e.g., online/offline report caused by a power failure) and just wish to clear it without commissioning the device, use the Controller Information option from the Action menu. The Controller Information option allows you to clear alarms and offline/online transitions for a single device or for multiple devices at one time.

    After selecting Controller Information from the Action menu and specifying the device or devices, wait for the controller information to be processed. Once the controller information is processed and the Configuration Tool disconnects from the NDM, the NDM will clear alarms in whichever device(s) the Configuration Tool talked to. Alarms in the other devices will not be cleared.