

# CobraNet™

## CobraNet Discovery User's Manual

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## 1 Overview

This version of the CobraNet Discovery User's Manual applies to CobraNet Discovery Version 4.0.2. CobraNet Discovery (a.k.a. Disco) runs on a Windows PC and communicates with a CobraNet network through the PC's standard Ethernet network interface card (NIC). CobraNet Discovery's primary role is to discover and monitor status of CobraNet devices. It can also be used to assign IP addresses to devices, update firmware, control and monitor the configuration of devices and generate status reports.

## 2 Supported environments

CobraNet Discovery is supported and tested under Windows Vista and XP. The previous versions of Windows operating systems are not supported. Microsoft .NET Framework 3.5 and its SP1 (or higher) are required. The PC running CobraNet Discovery must contain a properly configured Ethernet network interface card (also known as a NIC, or network adapter).

## 3 Operational issues

### 3.0 Network adaptor configuration

Network adaptors on home or business PC networks are normally configured to obtain an IP address automatically from the network to which they are connected. These address services are typically provided by an internet gateway or a server computer on the network. Although some sophisticated audio networks may have these services, a dedicated CobraNet network typically will not. Therefore, your network adaptor should be manually assigned an IP address in most cases.

#### 3.0.1 IP address assignments on a CobraNet network

Cirrus offers the following recommendations for CobraNet networks regarding IP address assignment.

- 192.168.1.1 through 192.168.1.199 - CobraNet devices (Default IP addresses assigned by CobraNet Discovery)
- 192.168.1.200 through 192.168.1.219 - Network switches and infrastructure.
- 192.168.1.220 through 192.168.1.254 - Computers

When following the above recommendations, your computer should be assigned an unused IP address in the range 192.168.1.220 through 192.168.1.254.

#### 3.0.2 Manually assigning an IP address on Vista

1. From Control Panel, open *View Network Status and Tasks* then *Manage network connections*.
2. Right click on the Ethernet adaptor you will be using for connection to the CobraNet network and select *Properties*.
3. Find *Internet Protocol (TCP/IPv4)* in the list of services.
4. Press *Properties* button.
5. In the *Internet Protocol (TCP/IP) Properties* dialog, select *Use the following IP address*

6. Enter *IP Address*
7. Enter 255.255.255.0 for *Subnet mask*
8. Leave *Default gateway* blank
9. Settings in the second half of the dialog box are unimportant for Disco operation. It is fine to leave *Preferred DNS server* and *Alternate DNS server* fields blank.
10. Click *OK* on all dialogs to save settings.

Note: To restore settings to automatic assignment at a later time, return to the *Internet Protocol (TCP/IPv4) Properties* dialog and select *Obtain and IP address automatically*.

### **3.1 Computer privileges**

Disco installs and uses a device driver to send and receive CobraNet packets. The following corrective action is required.

#### **3.1.1.1 Install Disco from an account with administrative privileges**

Log on to a user account with administrator privileges or modify your user account to have administrative privileges. Accounts can be modified in Control Panel, *User Accounts*. You must log on to an account with administrative privileges to modify user accounts.

You must install Disco from an account with administrative privilege.

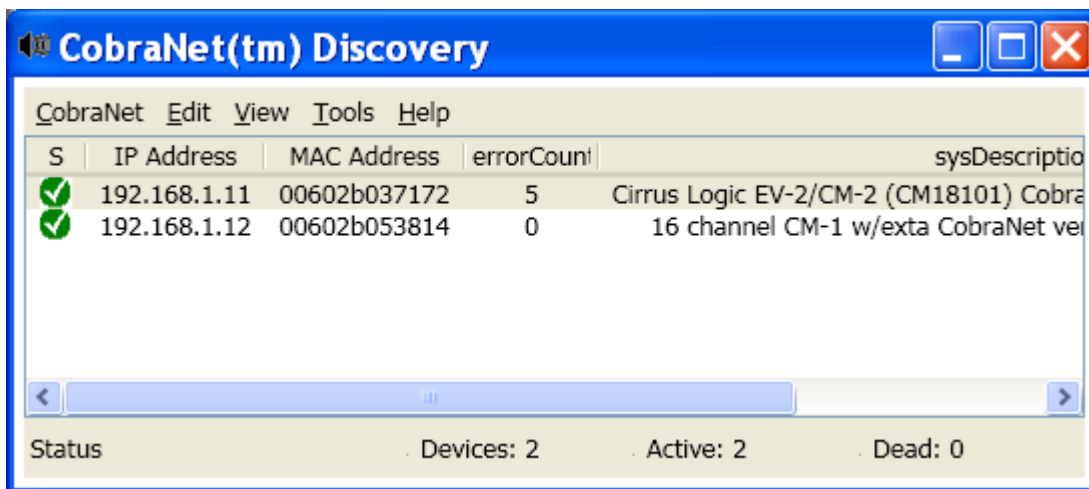
### **3.2 Large networks**

On networks with more than 20 CobraNet devices, it may be necessary to modify `<add key="Age To Die" value="30000" />` entry in your CNDisco.exe.Config file to stabilize the Discovery display.

## 4 Discovery window

The Discovery window is a dynamic display of devices found on the network. When a CobraNet device is added to the network, the device is added to the list. If a device is removed from the network or powered down, its status will change to off line but it will remain on the list until the display is manually reset with the [Refresh \(F5\)](#) operation or the application is restarted.

Columns in the discovery window may be resized by dragging the boundaries between columns in the column heading area. Columns may be reordered by dragging the text area in the column heading area.



### 4.0 Standard columns

The discovery window contains default columns. "S" (Status), "MAC Address", and "IP Address". These columns are always present and cannot be hidden or removed.

The information in these columns is obtained by passively monitoring communications on the network. Therefore, if these are the only columns present in your discovery display, Disco will not generate any traffic on the network. This mode of operation is useful for diagnosing legacy repeater based networks.

#### 4.0.1 S (Status)

Displays device status. A green checkmark indicates that the device is active. A red cross indicates that the device is not communicating or is no longer connected to the network. Devices with an inactive status will be removed from the list by a [Refresh \(F5\)](#) operation.

#### 4.0.2 MAC Address

Displays the globally unique (Ethernet MAC) address for each discovered device. Ethernet MAC addresses are assigned to devices at manufacture and do not change.

### 4.0.3 IP Address

Displays the network (IP) address assigned to each device. CobraNet devices initially have an IP address of 0.0.0.0. by default. CobraNet Discovery will assign unique IP addresses to each device when [Enable Auto Assignment](#) is checked in the [Options Dialog](#). Once an IP address has been assigned to a device, information in the SNMP columns (described below) will be updated.

## 4.1 SNMP columns

Additional columns may be added to the discovery window by right-clicking on the column header and/or by using the [Column Chooser](#) dialog. These columns correspond to SNMP variables. The variables specified are monitored on the CobraNet devices and updated in real time in the Discovery display.

SNMP variables on CobraNet devices are described in detail in the CobraNet Programmer's Reference Manual. All SNMP variables described therein are available for monitoring by entering the specified Object Identifier (OID) in the Add dialog from Column Chooser.

Some of the SNMP variables available for monitoring in a default CobraNet Discovery installation are documented below.

### 4.1.1 sysDescription

Displays the full name and firmware version of each discovered device.

### 4.1.2 errorCount

Displays the number of errors that have occurred on the device since the CobraNet Discovery application was started or the display manually reset. Some errors result from normal operation, i.e. re-routing audio, disconnecting/reconnecting Ethernet cables.

### 4.1.3 errorCode

Reason for the last error reported. *errorCode* values are documented in the Error Codes section at the back of the CobraNet Programmer's Reference Manual.

### 4.1.4 ifInErrors

Count of physical errors and packet data detected by the Ethernet receiver. Physical errors are most frequently the result of bad wiring.

### 4.1.5 Rx1 through Rx4

Bundle receiver status. CobraNet devices typically have four or eight bundle receivers. These four variables show the status of each receiver.

Three metrics are displayed separated by slashes ("/"). The three values are as follows:

- Bundle number (*rxBundle*)
- Receive status (*rxStatus*). 1 if audio data is being received. 0 if not. The most common reason for not receiving is that there is no transmitter sending that bundle.
- Receive dropouts (*rxDropouts*). Counts the transitions from receiving to not receiving. Ongoing dropouts may indicate network problems although dropouts also occur when audio is intentionally re-routed.

### 4.1.6 Tx1 through Tx4

Bundle transmitter status. CobraNet devices typically have four bundle transmitters. These four variables show the status of each transmitter.

Three metrics are displayed separated by slashes (“/”). The three values are as follows:

- Bundle number (*txBundle* variable)
- Number of receivers being served by this transmitter (*txReceivers*).
- Transmit dropouts (*txDropouts*). Counts the transitions from transmitting to not transmitting. Ongoing dropouts may indicate network problems although dropouts also occur when audio is intentionally interrupted and re-routed.

## 5 Menus

The discovery window contains a menu bar by which additional functionality is accessed.

### 5.0 CobraNet

#### 5.0.1 Update Firmware...

Updates the firmware on the selected CobraNet device(s). Discovery will first upload the exiting firmware in order to identify it from a database of known firmware versions. The [Firmware Update Dialog](#) is then displayed.

Firmware updates are conducted from binary files located in the Database location.

CobraNet Discovery does not ship with firmware files. Firmware must be obtained from the respective CobraNet equipment manufacturer.

#### 5.0.2 New IP Address...

Assigns a new IP address to the selected device. This may be used to assign IP addresses when [Auto Assignment](#) is disabled or to override the IP address assignments given by the Auto Assign mechanism.

#### 5.0.3 Close

Closes and exits the application.

### 5.1 Edit

#### 5.1.1 Copy

Copies the contents of the discovery window to the clipboard as comma separated values. Information may then be pasted into a text editing program, saved with a .CSV file extension, and then opened in a spreadsheet application.

#### 5.1.2 Select all

Selects (highlights) all devices in the discovery window. Selected devices are eligible for [Update Firmware](#) , [New IP Address](#) and [Report](#) operations.

## 5.2 View

### 5.2.1 Refresh

Clears all data from the list and restarts the discovery process. This causes all counter values to be reset to 0. Any non-communicating devices (those with a red “X” in their S column) will be removed from the discovery window.

### 5.2.2 Column Chooser...

Opens the [Column Chooser dialog](#).

## 5.3 Tools

### 5.3.1 Options...

Opens the Options dialog used to set options for configuring the CobraNet Discovery program.

### 5.3.2 Configure...

Opens the Configuration dialog used to control and configure CobraNet interfaces. See the [CobraNet Control and Configuration](#) section.

### 5.3.3 Report...

This is used to generate .csv spreadsheet compatible report files showing current status and configuration of one or more CobraNet interfaces. See the [Report Functions](#) section.

### 5.3.4 Preference...

This is used to alter the operational parameters of the Configuration functions See the [Disco Preference](#) section.

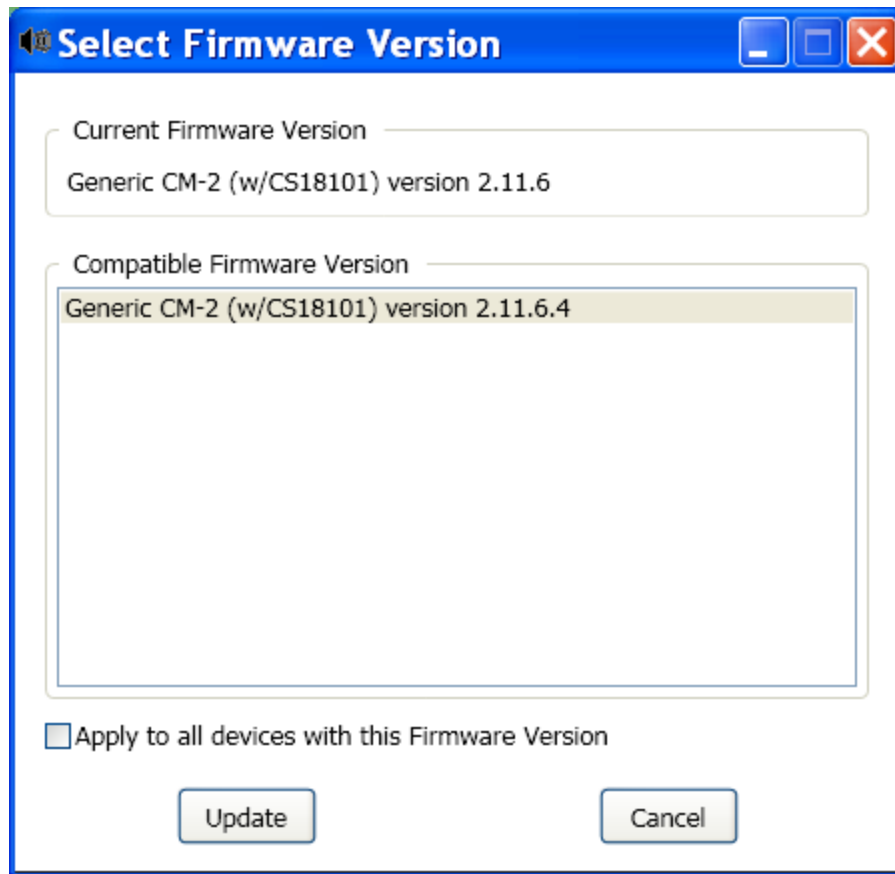
## 5.4 Help

### 5.4.1 About CobraNet Discovery...

Displays CobraNet Discovery copyright and version information.

## 6 Firmware Update dialog

This dialog box is invoked from the CobraNet menu bar. The selected device or devices in the discovery window are candidates for firmware update. If multiple devices are selected prior to invoking the Update Firmware command, the Firmware Update dialog may be shown multiple times (see Apply to all devices with this firmware version).



## 6.0 Standard controls

### 6.0.1 Current firmware version

Displays the current firmware version installed on the selected device. In the event that the currently installed version is unrecognized, "Unknown" is displayed.

### 6.0.2 Compatible firmware versions

This window displays the firmware versions found in the firmware directory (see Database location) which are compatible with the firmware currently loaded in the device.

### 6.0.3 Apply to all devices with this firmware version

When checked, the chosen firmware version will be applied to all selected devices that currently run similar firmware versions. When unchecked, the Firmware Update dialog will be displayed for each selected device.

### 6.0.4 Update

Press this button to update the selected CobraNet device(s) with the chosen firmware version.

## 6.0.5 Cancel

Press this button to cancel the entire update process for all selected CobraNet devices.

## 6.1 Advanced controls

Default settings of advanced controls are appropriate and safe for most upgrades. Use of advanced controls is recommended for experts only. Advanced controls are hidden by default. They may be enabled by editing the `CNDisco.exe.Config` file found in the Discovery installation directory. Locate the line `<add key="Advanced Feature" value="0" />` and change the "0" to "1".

### 6.1.1 Show all firmware versions

When checked, all firmware versions found in the [Database Location](#) of the [Configuration Dialog](#) are displayed in the *Compatible Firmware Versions* window. When unchecked, only firmware versions known to be compatible to the selected CobraNet device(s) will be displayed.

This feature is useful when you are sure that the firmware appropriate for the device is being updated. Loading incompatible firmware onto a CobraNet device can potentially render the device inoperable.

### 6.1.2 Boot update

Updating the boot sector of a CobraNet device involves risk. If power is lost during the update, the device may be left in an erased state and will be unable to boot when power is restored. If the boot sector is to be updated during a firmware update, a message box will provide a warning.

- If necessary – New firmware releases generally do not require boot sector update. This is the default boot update mode.
- If different – The boot sector will be updated if different from the boot code included with the firmware release. The boot code contains self-test algorithms. In some cases it may be desirable to update these algorithms.
- Unconditionally – Boot sector will be erased and rewritten.

### 6.1.3 Code update

- If different – Download process is skipped if target firmware is already loaded onto the device.
- Unconditionally – Firmware is erased and rewritten.

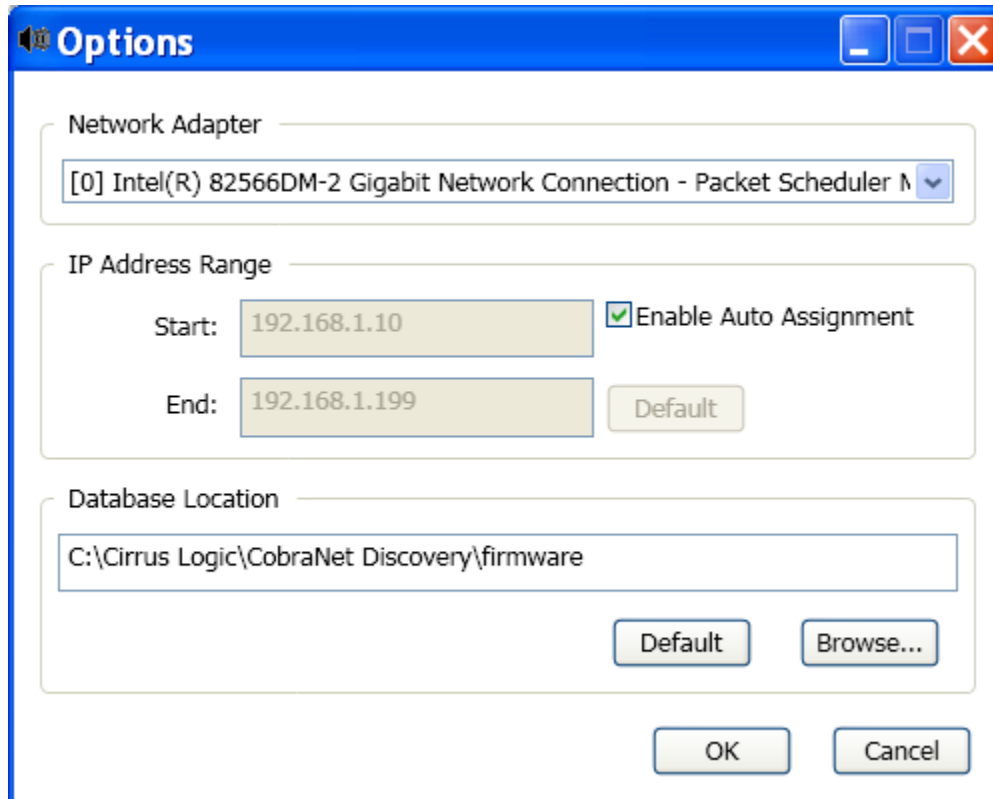
### 6.1.4 Config update

The configuration record contains product identification and customization information.

- If different – Configuration record is updated to match target firmware. This is the default selection when downloading compatible firmware. When this option is used with Show all firmware versions, the identity of a device may be inappropriately altered.
- Never – Configuration record is not altered. The device retains its identity. This is the default selection when downloading firmware selected manually with the Show all firmware versions option enabled.
- Unconditionally – Configuration record is erased and rewritten.

## 7 Options (Software Configuration) dialog

The Configuration dialog box is invoked by selecting Tools | Options from the menu bar. This dialog contains all of the controls required to customize the CobraNet Discovery application.



### 7.0 Network adapter

Displays the Network Interface Card (NIC) used to connect to the CobraNet network. For PCs containing multiple NICs, this list box selects the card to serve as the network adapter used in the discovery process.

### 7.1 IP address range

Enable Auto Assignment must be (temporarily) disabled to adjust the IP address range.

#### 7.1.1 Enable auto assignment

When checked, CobraNet Discovery assigns IP addresses to all discovered devices according to the specified IP address range.

#### 7.1.2 Start

The first IP address to be assigned when Automatic Assignment is enabled.

### **7.1.3 End**

The last IP address to be assigned when Automatic Assignment is enabled.

### **7.1.4 Default**

Pressing this button will detect the IP address of the selected network adapter and sets Start and End accordingly.

## **7.2 Database location**

This window displays the path to the directory where CobraNet firmware files reside. By default, the firmware sub-directory created during the CobraNet Discovery installation process will be displayed in this window. The firmware files obtained from CobraNet equipment manufacturers must be manually placed in this directory.

### **7.2.1 Default**

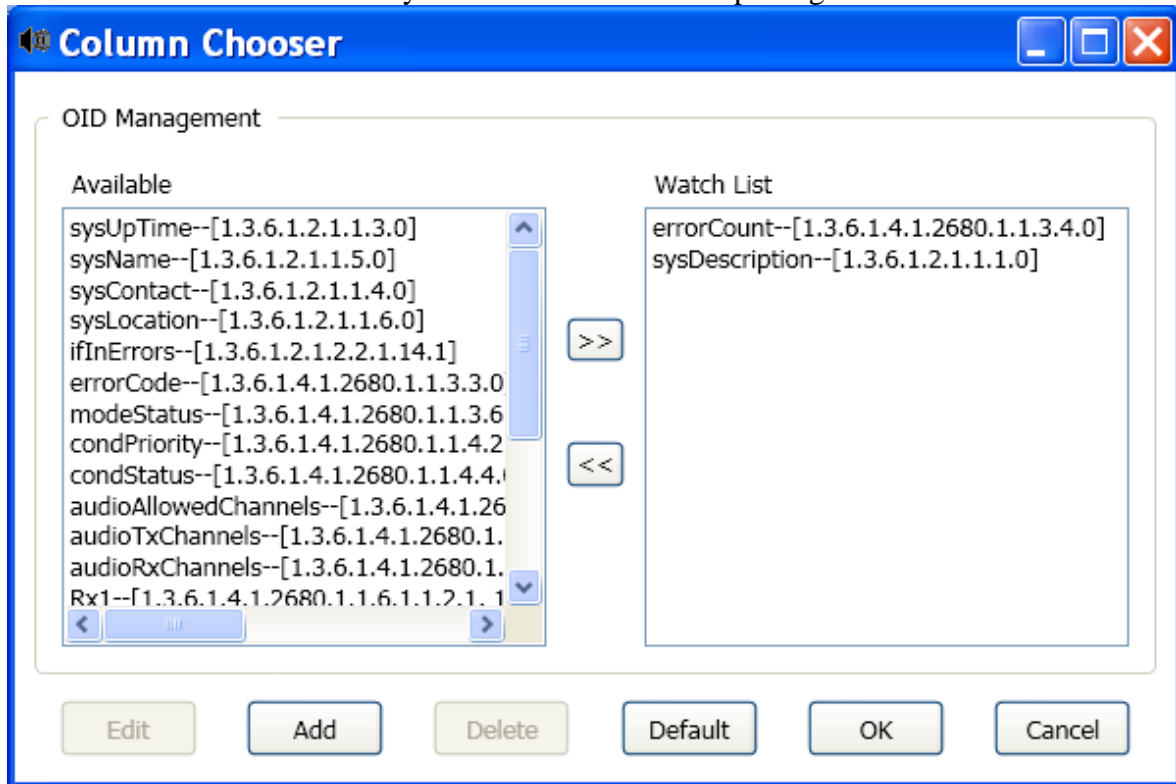
Pressing this button returns the *Database Location* path statement to the default firmware directory. This button is unavailable when Database Location already specifies the default location. For a default installation of Discovery, the default location is “c:\ Cirrus Logic\CobraNet Discovery\firmware”.

### **7.2.2 Browser...**

Specify an alternate firmware database location using a file browser interface.

## 8 Column Chooser dialog

The Column Chooser dialog box is invoked from the View menu or by right-clicking on the column header and selecting *More...* The Column Chooser allows SNMP variables to be added to and/or removed from the Discovery window and the SNMP polling list.



### 8.0 Available OID

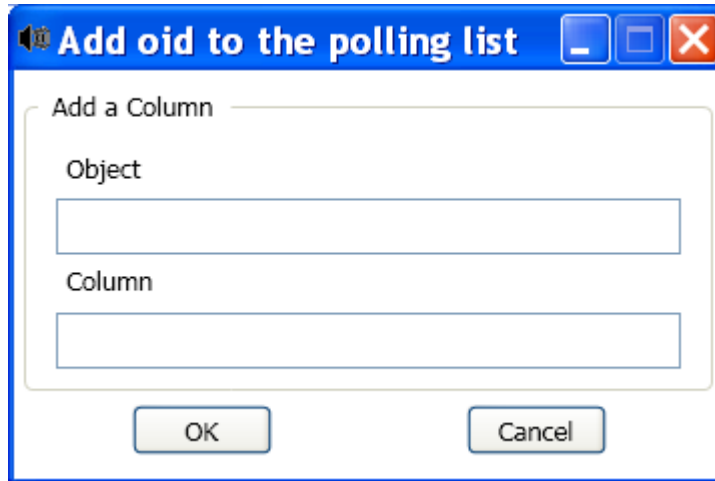
A number of commonly-monitored SNMP variables are displayed by default in the *Available OID* window.

### 8.1 Watch list OID

This window displays the list of SNMP variables to be monitored. Each of these will be shown as its own column in the discovery window. Variables may be added to this list by selecting the desired variable in the *Available OID* window and then clicking the > button. Similarly, variables may be removed from this list by selecting the desired variable in the *Watch List OID* window and clicking the < button.

## 8.2 Add

Allows SNMP variables other than those shown by default in the *Available OID* window to be added to the list of available OIDs. When Add is invoked a secondary dialog with the following controls is displayed.



### 8.2.1 Object ID

Enter the full system object identifier (OID) of the variable to be monitored.

### 8.2.2 Column name

Enter the desired name to be displayed in the column header for the OID specified.

## 8.3 Edit

Edit an OID specification previously created with Add. The same secondary dialog is shown with Object ID and Column Names pre-filled with current values. Note that an item can only be selected for editing when displayed in the *Available OID* pane.

## 8.4 Delete

Allows previously-added, custom SNMP variables to be removed from the list of *Available OIDs*. To delete a variable from the *Available OID* list, simply select the variable and press the *Delete* button. Note that the default SNMP variables can not be deleted.

## 8.5 Default

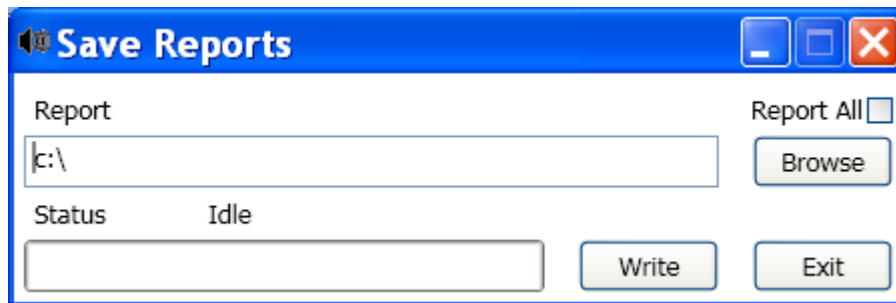
Clicking this button moves all of the default SNMP variables shown in the *Available OID* window into the *Watch List OID* window.

# 9 Report Functions

The report function can be selected in two ways. Select one or more CobraNet devices on the main Disco screen, then select Report... from the Tools menu in the main menu bar or right click and select Report from the pop-up menu.

A dialog will be displayed which allows selection of the directory in which the report file(s) will be saved. Report files are saved in Comma Separated Vale (.csv) format, which can be opened using most spreadsheet applications. The report file contains all information required to determine the current configuration and status of a CobraNet interface. The report generator automatically creates the file names based on either the device's sysName or, if none exists, its MAC address. For example, a device with a sysName of 'PEAK\_AUDIO\_COBRANET\_EV2\_0001' could have a file name of:

001\_PEAK\_AUDIO\_COBRANET\_EV2\_0001.csv



After selecting a save directory, press the 'Write' button to begin generating report(s). The report data is read from each CobraNet device via SNMP, labeled, formatted and saved in a .csv file.

A report for a single device can also be optionally generated from the main [Configuration Dialog](#)

## 10 CobraNet Control and Configuration

### 10.0 General CobraNet Configuration Operation Principles

CobraNet Discovery can be used to change configuration settings in a CobraNet device. One CobraNet device at a time may be configured. Select the device to be configured in the main [Discovery window](#). Then either right click and select Configure... OR select Configure... from the Tools menu. You may also double click on the device to invoke the Configuration dialog.

The configuration dialogs allow the user to read and, where appropriate, change configuration variables used in defining the functionality of a CobraNet device. Unlike the main CobraNet Discovery window, the variable values displayed are not periodically updated. The variables are read once using SNMP when the dialog is invoked. Each dialog will have one or more of the following buttons:

**Cancel** – Exit the dialog without writing any changed values to the CobraNet device.

**OK** - Exit the dialog. For dialogs that allow changing values, any values that were changed will be written to the CobraNet device as the dialog is exited.

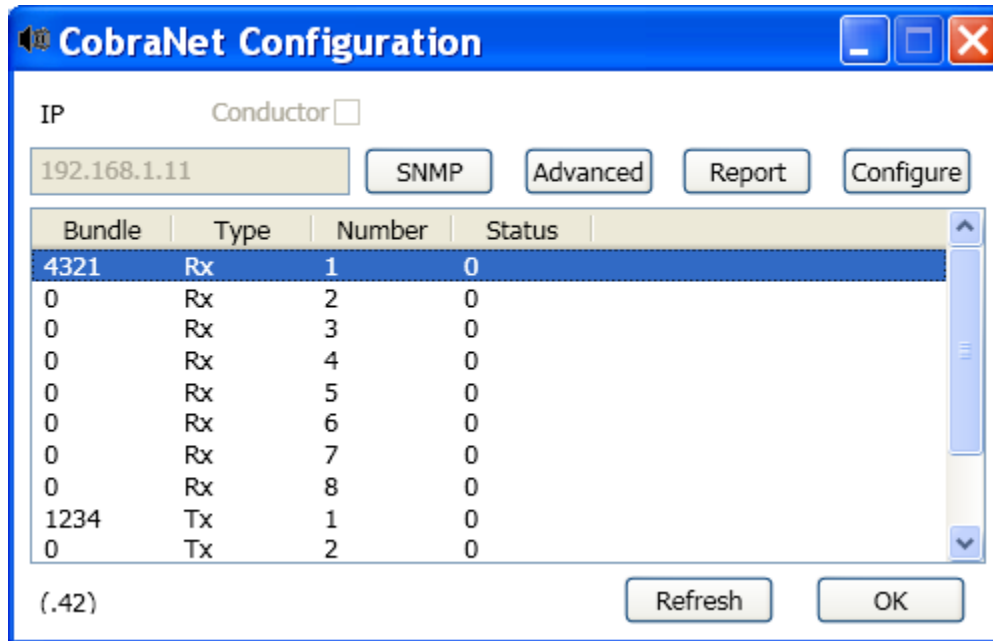
**Apply** – Write any variables changed within the dialog to the CobraNet device.

**Refresh** – Re-read all values displayed within the dialog,

### 10.1 CobraNet Configuration Dialog

This dialog shows each transmitter and receiver in the device along with its bundle number assignment and transmission or reception status. A non zero value in the Status column indicates that the transmitter or receiver is receiving or sending a bundle. In addition to transmitter and receiver information, the dialog will also display the IP address currently assigned to the device as

well as its conductor status: The Conductor check box will be checked if the device is the conductor for the network.



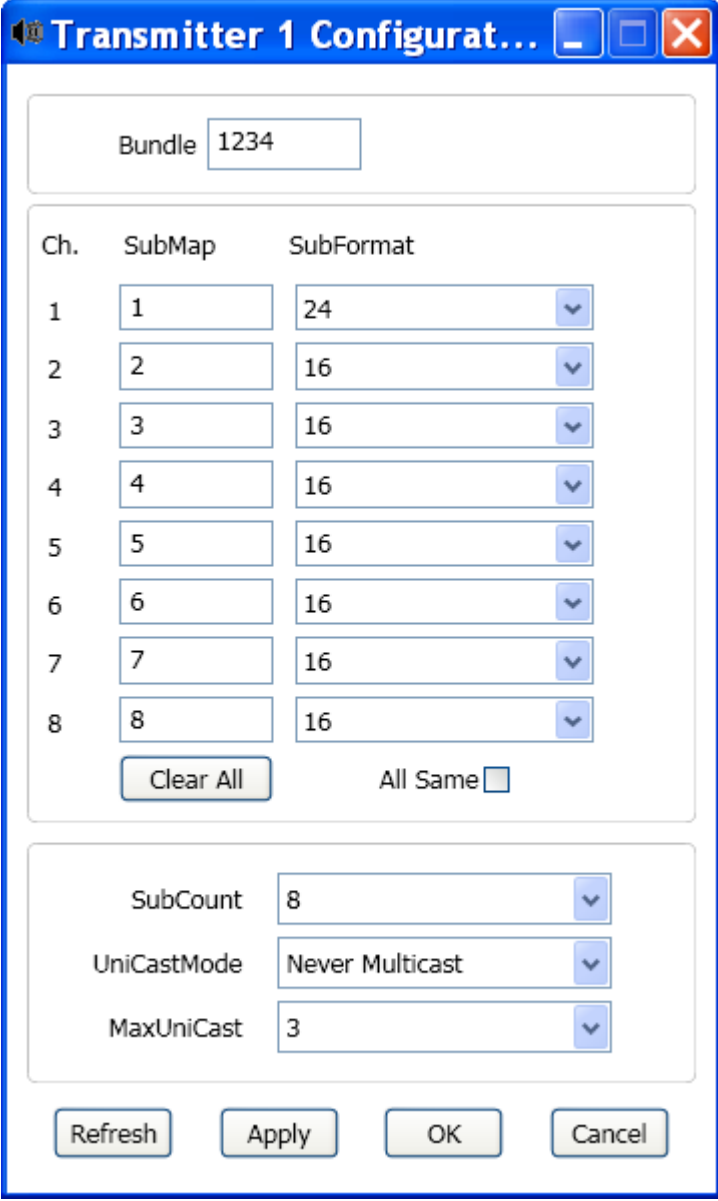
Six actions are supported from the main configuration Dialog:

- Press the Configure button with a transmitter highlighted to launch the Transmitter Configuration Dialog
- Press the Configure button with a receiver highlighted to launch the Receiver Configuration Dialog
- Press the Report button to launch the single Report Generation Dialog
- Press the Advanced button to launch the Advanced Dialog
- Press the SNMP button to launch the Generic SNMP R/W Dialog. This Button is not displayed by default and must be enabled using the Disco Options applet.
- Single click on a Bundle number to edit/change the number

\* You may also double click on a Tx or Rx line to invoke the configuration dialog for that transmitter or receiver.

## 10.2 Transmitter Configuration

The transmitter configuration dialog is launched from the Main Configuration Dialog by highlighting the line containing the transmitter information and then pressing the Configure Button, or by double clicking on the line containing the transmitter information.



Bundle

Ch.	SubMap	SubFormat
1	<input type="text" value="1"/>	24 <input type="button" value="v"/>
2	<input type="text" value="2"/>	16 <input type="button" value="v"/>
3	<input type="text" value="3"/>	16 <input type="button" value="v"/>
4	<input type="text" value="4"/>	16 <input type="button" value="v"/>
5	<input type="text" value="5"/>	16 <input type="button" value="v"/>
6	<input type="text" value="6"/>	16 <input type="button" value="v"/>
7	<input type="text" value="7"/>	16 <input type="button" value="v"/>
8	<input type="text" value="8"/>	16 <input type="button" value="v"/>

All Same

SubCount  8

UniCastMode  Never Multicast

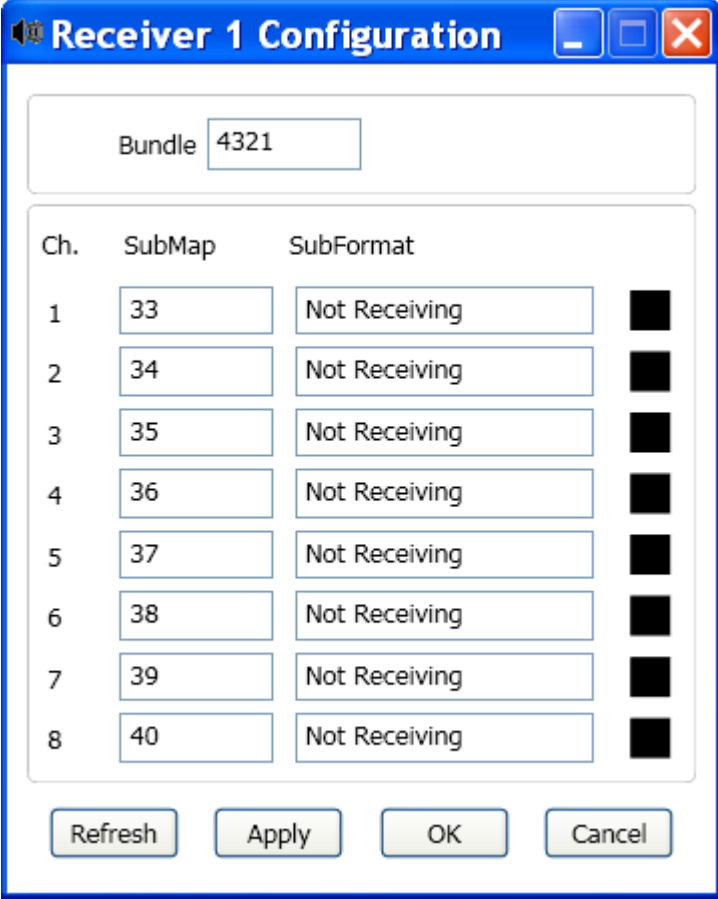
MaxUniCast  3

The transmitter configuration dialog provides access to the most useful configuration variables associated with a transmitter. Please refer to the CobraNet Programmer's Reference Manual for more detailed and up to date information regarding the meaning and usage of these variables.

- **txBundle** – Allows assigning a bundle number to this transmitter
- **txSubMap** – Defines the audio routing channel assigned to a bundle channel. See the Audio Routing Primer Application note for more information on audio routing channels. The 'Clear All' Button can be pressed to assign a value of 0 (transmit nothing) to all channels in the bundle.
- **txSubFormat** – Normally the txSubFormat value contains information defining the sample size, sample rate and transmission latency. As sample rate and sample latency must be in agreement with the current value of the modeRateControl variable (settable from the Advanced Dialog) this dialog only allows setting the sample size and will insure that the sample rate and latency portion of this variable will be in agreement with the value of modeRateControl. Typically the sample size will be the same for all channels in a bundle so the 'All Sam' option can be checked to assign the same value to all channels.
- **txSubCount** – This variable can be used to limit the number of channels that will be transmitted in the bundle. The default value is equal to 8 but can be set to any value from 0 to 8 in order to minimize bandwidth utilization when desired.
- **txUnicastMode** – This value can be used to override or modify the normal unicast vs. multicast implications of the assigned bundle number. The normal default value is 'Never Multicast'. The available options are:
  - Always Multicast – All bundles are sent multicast regardless of Bundle number.
  - Multicast over 1 – If more than one receiver is set to receive this bundle, it will be multicast, else it will be Unicast
  - Multicast over 2 – If more than two receivers are set to receive this bundle, then it will be multicast, else it will be unicast or multi-unicast
  - Multicast over 3 – If more than three receivers are set to receive this bundle, then it will be multicast, else it will be unicast or multi-unicast
  - Multicast over 4 – If more than four receivers are set to receive this bundle, then it will be multicast, else it will be unicast or multi-unicast
  - Never Multicast – Only a single bundle will be sent unicast
- **txMaxUnicast** – This value can be set to limit the number of multi-unicast bundles sent by this transmitter. The default for this value is '1' with allowed values of 1 through 4.

### 10.3 Receiver Configuration

The Receiver Configuration dialog is launched from the Main Configuration dialog by highlighting the line containing the receiver information and then pressing the Configure Button, or by double clicking on the line containing the receiver information.



The dialog box titled "Receiver 1 Configuration" features a "Bundle" field with the value "4321". Below this is a table with columns "Ch.", "SubMap", "SubFormat", and a status indicator. The table lists channels 1 through 8, each with a SubMap value (33-40) and a "Not Receiving" status, accompanied by a black square. At the bottom are "Refresh", "Apply", "OK", and "Cancel" buttons.

Ch.	SubMap	SubFormat	Status
1	33	Not Receiving	Black
2	34	Not Receiving	Black
3	35	Not Receiving	Black
4	36	Not Receiving	Black
5	37	Not Receiving	Black
6	38	Not Receiving	Black
7	39	Not Receiving	Black
8	40	Not Receiving	Black

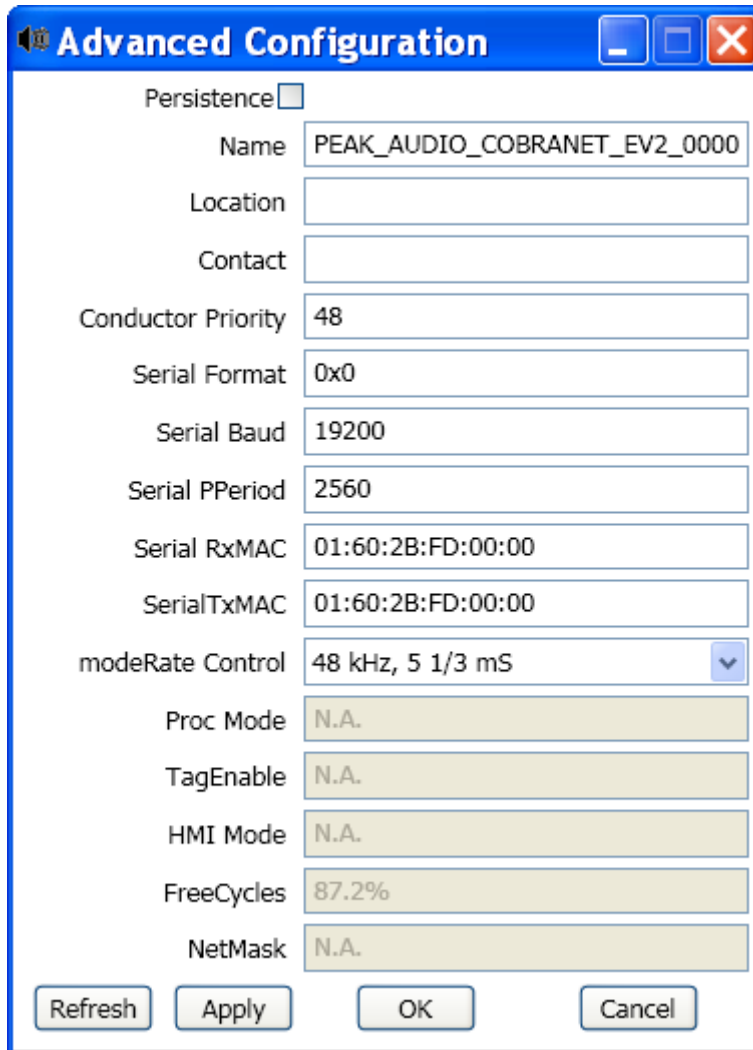
This receiver configuration dialog provides access to the most useful configuration variables associated with a receiver. Please refer to the CobraNet Programmer's Reference Manual for more detailed information regarding the meaning and usage of these variables.

- **rxBundle** – Allows assigning a bundle number to this receiver
- **rxSubMap** – Defines the audio routing channel assigned to an audio channel within the bundle. See the Audio Routing Primer Application note for more information on audio routing channels.
- **rxSubFormat** – Status: read only. This show the status of the audio received in a bundle. This will indicate 'Not Receiving' or will show the current sample rate, sample size and transmission latency of the received audio. The colored squares to the right of the rxSubFormat display provide further status.
  - **Green** – indicates audio is being received and properly decoded
  - **Black** – indicates no audio is being received on this channel
  - **Red** – indicates audio is being received but cannot be processed. This is usually due to receipt of audio data that is formatted incompatibly with the

current operating mode of this receiving device. i.e. The sample rate and/or latency settings of the transmitting device are different than those of the receiving device. If latency setting are incompatible, it is normal to see the colored indicators alternate between black and red with periodic presses of the ‘Refresh’ button.

## 10.4 Advanced Configuration

The Advanced Dialog allows setting more advanced variables not usually associated with bundle management and which apply to the CobraNet device globally. Care should be used when changing variables in this dialog. Please refer to the CobraNet Programmer’s Reference Manual for more detailed information regarding the meaning and usage of these variables.



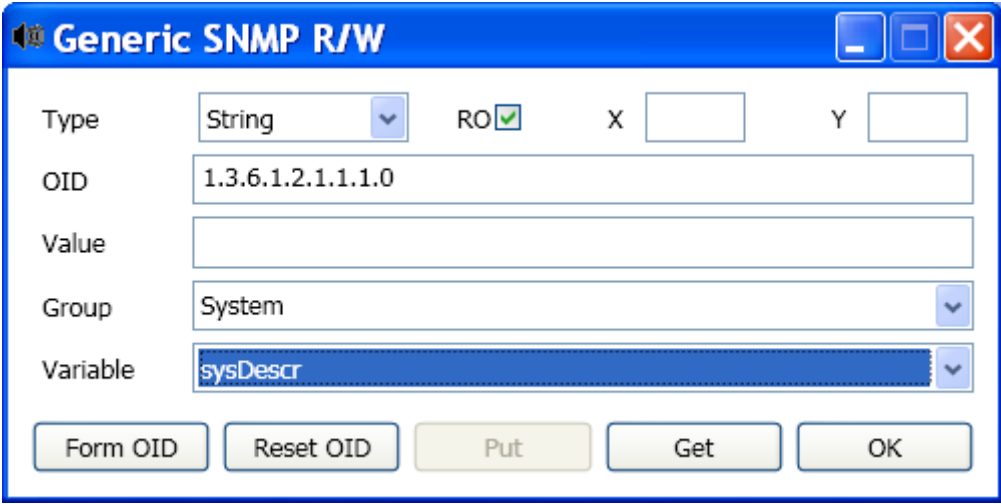
Persistence	<input type="checkbox"/>
Name	PEAK_AUDIO_COBRANET_EV2_0000
Location	
Contact	
Conductor Priority	48
Serial Format	0x0
Serial Baud	19200
Serial PPeriod	2560
Serial RxMAC	01:60:2B:FD:00:00
SerialTxMAC	01:60:2B:FD:00:00
modeRate Control	48 kHz, 5 1/3 mS
Proc Mode	N.A.
TagEnable	N.A.
HMI Mode	N.A.
FreeCycles	87.2%
NetMask	N.A.

Not all of variables that can be displayed in the Advanced Dialog are supported in all versions of CobraNet firmware. Variables that are not supported will be displayed as ‘N.A.’ with a grey background color. Variables that are supported but are read only and can not be changed are also displayed with a grey background color.

## 10.5 Generic SNMP R/W

### FOR ADVANCED USERS ONLY; MUST BE USED WITH CAUTION.

Most commonly used Management Interface configuration variables can be accessed from the Transmitter Configuration, Receiver Configuration and Advanced Dialogs. However there are many less used configuration and status variables within a CobraNet interface. The Generic SNMP R/W dialog provides access to these variables. It differs from the standard configuration dialogs in one very important aspect: **the values written are not checked before writing to insure that they are valid values.** This is a ‘raw’ interface and should be used carefully, if at all. Most users should never have occasion to use this dialog. This is why access to it is disabled by default. **Users should familiarize themselves with proper usage of the CobraNet Management Interface variables before using this dialog. The MI variables are documented in the CobraNet Programmer’s Reference**



### General Usage:

- Use the ‘Group’ droplist to select the group in which the variable resides. Variables are organized by functional group in the same manner as described in the MI variables section of the CobraNet Programmer’s Reference.
- After selecting the desired group, select the variable within that group using the Variable droplist.
- In the screen example, above txSubMap is accessed from within the Transmitters group.
- Some MI variables can be single variables, one dimensional arrays or two dimensional arrays. In the example above, txSubMap is a two dimensional array in which a Transmitter must be selected and then an audio channel within that transmitter. This can be seen by the ‘X’ and ‘Y’ characters in the OID. Before performing a get or a put (Read or Write) with array variables, the X and/or Y edit boxes must be filled in order to allow formation of the OID.

## SNMP Dialog Fields:

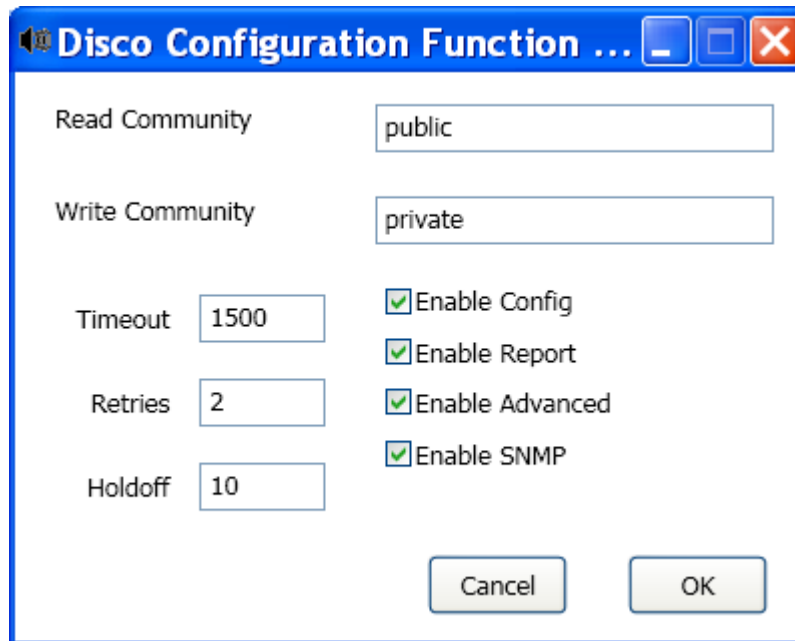
- Group:** Select the group from which to choose the desired variable. Each time this is changed the OID field will change to match the variable selected.
- Variable:** Select the specific variable to be accessed within the selected group.
- Value:**
- Put:**  
This field is filled in by the user in order to specify that value that will be written. A decimal or hexadecimal value can be specified when performing a put (i.e. 10 or 0xA would be the same value)
- Strings:** Entered as ASCII strings  
**Example:** string
  - Integers:** Entered as hex or decimal values  
**Example:** 10 or 0xA
  - Octets:** Entered as ':' or ' ' delimited hex values w/o 0x hex indicator  
**Example:** 01:60:2B:FD:00:00
  - IP:** Entered in standard dotted decimal format  
**Example:** 192.168.10.20
- Get:**  
This field shows the value that was read using the Get function. Both decimal and hexadecimal representations of the value are shown when reading numeric values.
- OID:** This field is automatically filled in with the OID (SNMP address) of the selected variable. It will contain an X or an X.Y if the variable selected is an array variable. This field can be manually changed by the user.
- Type:** This field is automatically filled in with the correct access type when a variable is selected from the droplist. Possible types are Integer, String or Octets. This field can be manually changed by the user.
- RO:** This checkbox indicates if the variable is read only or can be written. The checkbox will automatically be set correctly when a variable is selected from the droplist. This checkbox can be manually changed.
- X:** This edit box is used to specify the X parameter of an array variable. In most cases it would be used to indicate a Transmitter or Receiver number. The value is automatically placed in the OID when doing a Get or Put.
- Y:** This edit box is used to specify the Y parameter of an array variable. In most cases it would be used to indicate a channel within a Transmitter or Receiver. The value is automatically placed in the OID when performing a Get or Put function.

**Form OID:** Press this button to preview the OID that will be used with an array variable. Any X or Y fields in the OID will be replaced by the values in the X and Y edit fields.

**Reset OID:** Press this button to re-display the OID according to the currently selected variable.

## 11 Disco Preference

Disco Preference is used to alter the operational parameters of the Configuration functions.



### General Usage:

The *Preference* dialog provides a convenient way of changing the operational parameters used by the Configuration functions. From the main dialog, click *Tools* then *Preference*. This dialog can be modified at any time, but the values are only read by the Configuration dialog when it is launched. Therefore, restart CNDisco.exe if the settings are changed in the Preference dialog.

The default values will allow proper operation in most cases and should not require changing except in specialized or extreme cases.

It may be useful to increase the Timeout or Retries values when accessing devices on a very busy network or devices that themselves are heavily loaded.

Changes are saved only when 'OK' is pressed. Pressing Cancel or closing the dialog will exit without saving changes.

## Disco Preferences Dialog Fields:

- Read Community:** The SNMP read community. It should never have to be changed.  
**Default:** public
- Write Community:** The SNMP write community. It should never have to be changed.  
**Default:** private
- Timeout:** The amount of time to wait for an SNMP response before aborting the operation. This value is specified in milliseconds. The minimum allowable value is 150 (.15 seconds) and all values are automatically rounded to the nearest 10 ms by the program.  
**Default:** 1500
- Retries:** The maximum number of times an SNMP operation will be retried in the event of a failure.  
**Default:** 2
- Holdoff:** The time in milliseconds to wait between SNMP accesses. CobraNet interfaces require a holdoff period. The default value of 10 should not have to be changed except in very rare instances when the device being accessed is very heavily loaded. The value should NEVER be set below 10. A value above 80 will be automatically reduced to 80.  
**Default:** 10
- Enable Config:** Check this box to enable the Configuration functions in general. The Configuration dialog can not be launched from the main CobraNet Discovery dialog when this box is unchecked.  
**Default:** Checked
- Enable Report:** Check this box to activate (make visible) the Report button in the Configuration dialog.  
**Default:** Checked
- Enable Advanced:** Check this box to activate (make visible) the Advanced button in the Configuration dialog.  
**Default:** Checked
- Enable SNMP:** Check this box to activate (make visible) the SNMP button in the Configuration dialog.  
**Default:** Unchecked

## 12 Revision History

### 12.0 Changes from version 3.0.0

Fixed the general protection fault when upgrading multiple devices in one operation. Fault would occur if unrecognized firmware was encountered on any devices except the first.

Added diagnostic console window. Console window may be activated by setting [PACNDisco]show\_console = 1 to the cndisco.ini file in the directory containing the CobraNet Discovery executables.

Fixed firmware upgrade problem whereby "Code download invalid" was reported when attempting to write a 2.5.x series to a device.

### 12.1 Changes from version 3.0.1

Eliminated many cases where boot code was reprogrammed but actually didn't need to be. Default behavior can be adjusted by setting [configuration]Advanced Feature=1. With this enabled, a dialog will allow you to change download behavior.

### 12.2 Changes from version 3.0.2

Added support for manufacturer firmware revision variants. CobraNet firmware revision numbers are of the form: a.b.c[.d] where:

- a - CobraNet protocol version.
- b - Major firmware revision number.
- c - Minor firmware revision number.
- d - Optional manufacturer revision number.

In support of low latency and 96kHz, added *modeStatus* as an SNMP column option.

Fixed a problem with IP address assignment on networks with large numbers (>20) of CobraNet device.

### 12.3 Changes from version 3.0.3

Support firmware updates for CM-2 and CS18101 based CobraNet interfaces.

### 12.4 Changes from version 3.1.0

Fixed hang attempting to update firmware of a CS18101 device with empty flash memory.

Even if "Show all versions" option is checked, the Firmware Update dialog box will never show firmware for incompatible hardware platforms as an option for update. This prevents the possibility of loading CM-1 code onto a CS18101 based device. Doing so would render the target device unbootable.

Combined multiple firmware upgrade warnings into a single message box. Please read message boxes carefully!

Added advanced feature control for configuration record update. Two options are currently supported: "If different" and "Never". The default setting is dependent on the firmware selected for update and is designed to do the right thing. Customization settings will be overwritten "If different" if you're updating from a customized firmware file. Settings will be retained "Never" when upgrading with generic firmware.

## **12.5 Changes from version 3.2.0**

Disco now reliably retains column width and orders when shut down and restarted. The first three columns, "S", "MAC Address" and "IP Address", are exceptions. These are always at the leftmost side of the discovery window on startup.

Added "Unconditionally" option for configuration record update.

"Show all firmware versions" option is now hidden unless advanced features are enabled (by setting [configuration]Advanced Feature=1 in the cndisco.ini file).

When advanced features are enabled, "Current Firmware Version" text box will indicate firmware and customization information separately when appropriate. In simple mode, "Unknown" is displayed for these unusual cases.

## **12.6 Changes from version 3.3.0 for version 3.3.2**

Configuration and Control functions and Reporting functions have been added.

Configuration and Control Functions must be enabled by setting [Configuration] CC\_Enable=1 in the cndisco.ini file

Support for Spansion and AMD FLASH has been added.

## **12.7 Changes from version 3.3.2 for version 3.4.4**

Bundle numbers can now be edited directly in the main configuration dialog without need to launch the Receiver or Transmitter Dialogs.

A Generic SNMP read/write dialog was added.

The serial variables write order bug in the Advanced Configuration dialog was fixed.

A new applet (Disco Options) was added and is accessible from the Windows start menu.

This applet allows setting of operational parameters used by the Configuration functions.

NOTE: The Disco Options parameters affect only the configuration functions and have no effect on the functionality supported by the main CobraNet Discovery dialog.

## **12.8 Changes from version 3.4.4 for version 4.0.1**

Support Microsoft Vista and XP.

DiscoOptions.exe is merged to CNDisco.exe

## **12.9 Changes from version 4.0.1 for version 4.0.2**

Support 64-bit PC.

## **13 Legal notices**

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